IN RE: GREENSPRING MANOR DEVELOPMENT PLAN AND ZONING HEARING (2310 West Joppa Road)	*	BEFORE THE
	*	COUNTY BOARD OF APPEALS
	*	OF
8th Election District 3rd Council District	*	BALTIMORE COUNTY
	*	Case No. 08-0922 and Case No. 2021-0250-SPH
Greenspring Joppa Falls, LLC Owner and Developer	*	

* * * * * * * * * * *

NOTICE OF APPEAL

Pursuant to § 32-4-281 of the Baltimore County Code ("BCC"), Greenspring Joppa Falls, LLC ("Appellant"), by undersigned counsel, feeling aggrieved by the decision of the Office of Administrative Hearings with respect to the Development Plan and Petition for Special Variance in the above-captioned matter, hereby files this Notice of Appeal.

Appellant is appealing the Development Plan Opinion and Order, dated July 31, 2023, as well as the portions of the Order that pertain to the denial of the Petition for Special Variance related to traffic, and the Petition for Special Variance to remove a specimen tree, as well as the "Amended Combined Development Plan and Zoning Opinion & Order After Motion for Reconsideration Hearing" dated April 17, 2024. The Orders are attached hereto and respectively incorporated herein as Exhibits A and B.

In compliance with Rule 3.A of the Board's Rules of Practice and Procedure, Appellant provides its contact information as follows:

Greenspring Joppa Falls, LLC
1 South St #2800, Baltimore, MD 21202
(410) 347-7150
rpowell@atapco.com

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OFFICE OF
ADMINISTRATIVE HEARINGS

Appellant files concurrently with this Notice of Appeal a check to cover the costs of the appeal. Additionally, as required by Section 32-4-281(b) of the Baltimore County Code, a copy of this Notice of Appeal will be concurrently filed with the Baltimore County Department of Permits, Approvals and Inspections.

Respectfully submitted,

Adam M. Rosenblatt
Christopher D. Mudd
Venable LLP
210 W. Pennsylvania Ave., Suite 500
Towson, Maryland 21204
(410) 494-6206
Attorneys for Developer/Appellant

CERTIFICATE OF SERVICE

I hereby certify on this 18th day of April, 2024 that a copy of the foregoing pleading was emailed to: Michael R. McCann, P.A., 118 W. Pennsylvania Avenue, Towson, Maryland 21204 (michael@mmccannlaw.net), Peter Zimmerman (pzimmerman@baltimorecountymd.gov); Michael Wyatt (mwyatt@wyattgunning.com); and Doug Sachse (dsachse@dtslawoffices.com).

Adam M. Rosenblatt

JOHN A. OLSZEWSKI, JR.
County Executive

MAUREEN E. MURPHY
Chief Administrative Law Judge
ANDREW M. BELT
Administrative Law Judge
DEREK J. BAUMGARDNER
Administrative Law Judge

April 17, 2024

Adam M. Rosenblatt, Esq. – amrosenblatt@venable.com
Christopher Mudd, Esq. – cdmudd@venable.com

Michael McCann, Esq. – michael@mmccannlaw.net

RE: **AMENDED COMBINED DEVELOPMENT PLAN AND ZONING OPINION & ORDER AFTER MOTION FOR RECONSIDERATION HEARING**
Project: GREENSPRING MANOR
Address: 2310 W. Joppa Road
PAI Case Nos: HOH 08-0922 & 2021-0250-SPH

Dear Counsel:

Enclosed please find a copy of the decision rendered in the above-captioned matter.

In the event any party finds the decision rendered is unfavorable, any party may file an appeal to the Baltimore County Board of Appeals within thirty (30) days of the date of this Order. For further information on filing an appeal, please contact the Baltimore County Office of Administrative Hearings at 410-887-3868.

Sincerely,

Maureen E. Murphy

Maureen E. Murphy
Administrative Law Judge
for Baltimore County

MEM/dlm
Attachment
c: Doug Sachse – dsachse@dtslawoffices.com
Michael Wyatt – mwatt@wyattgunning.com
Pete Zimmerman – pzimmerman@baltimorecountymd.gov

IN RE: **DEVELOPMENT PLAN HEARING & PETITION FOR SPECIAL HEARING** 8th Election District 2nd Council District **(2310 W. Joppa Road)** **GREENSPRING MANOR** **GREENSPRING JOPPA FALLS, LLC** *Owner/Applicant*	*	BEFORE THE OFFICE OF ADMINISTRATIVE HEARINGS FOR BALTIMORE COUNTY **CASE NOS. 08-0922 and 2021-0250-ASA**

* * * * * * * * * *

ADMINISTRATIVE LAW JUDGE'S
AMENDED COMBINED DEVELOPMENT PLAN AND ZONING OPINION & ORDER
AFTER MOTION FOR RECONSIDERATION HEARING

Pursuant to the Order on Motion for Reconsideration dated September 25, 2023, a Motion for Reconsideration hearing was held on February 26, 2024 (the "Motion for Reconsideration Hearing") which was limited to two (2) issues: (1) to accept into evidence a revised Development Plan to eliminate the previously proposed Emergency Access Gate; and (2) to consider testimony and/or documents from a Department of Public Works and Transportation ("DPWT") representative in regard to the sewer path from this Property.

The Order on Motion for Reconsideration was issued pursuant to Code of Baltimore County Regulations ("COBAR"), Title 2, Chapter 1, Part 1, Rule 4K which permits discretion to convene a hearing to receive evidence as follows:

> K. Motion for Reconsideration.
>
> A party may file a motion for reconsideration of an order issued by the Zoning Commissioner. Such a motion must be made in writing, within 30 days of the date of the original order. The motion must state, with specificity, the grounds and reasons for the request. The filing of a motion for reconsideration shall stay all further proceedings in the matter, including the time limits/deadlines for the filing of an appeal. The Zoning Commissioner shall rule on the motion within 30 days from the date which the motion is accepted

> for filing. A ruling by the Zoning Commissioner on the motion for reconsideration shall be considered the final decision in accordance with Section 26-209 or 26-132 of the Baltimore County Code. At his discretion, the Zoning Commissioner may convene a hearing to receive testimony and/or argument on the motion. Each party shall be limited to that which is the subject matter of the motion.

(*See also*, *Brandywine Senior Living at Potomac LLC v Paul*, 237 Md. App. 195, 216-17 (2018) (acceptance of an amended zoning plan during course of a hearing with sufficient notice to opposing parties with a fair opportunity for comment and cross-examination, was permitted). The Motion for Reconsideration Hearing provided Counsel of Record, as well as Mr. Wyatt and Mr. Sachse, with opportunity to cross examine the DPWT witness. Prior to the Motion for Reconsideration Hearing, both Counsel for the Developer and Mr. Wyatt each separately met with the DPWT witness.

After considering the evidence provided during the Motion for Reconsideration Hearing, the Opinion and Order on the development project known as "Greenspring Manor" dated July 31, 2023 shall be amended as follows:

1. Revised Greenlined Development Plan to Eliminate Proposed Emergency Access Gate.

As set forth in the Order on Motion for Reconsideration, the Developer was permitted to offer a revised Greenlined Development Plan (as a separately numbered Exhibit) to eliminate the proposed Emergency Access Gate (also referred to in the Opinion and Order as the "Mays Chapel Gate"). At the Motion for Reconsideration Hearing, Developer offered the revised Greenlined Development Plan (hereinafter the "Bluelined Development Plan") which was accepted into evidence as Developer's Exhibit 1C. As a result, the portion of the Opinion and Order (pp. 107-112) which previously denied the Greenlined Development Plan based on the testimony of the representative of Development Plans Review ("DPR") at the hearing on September 1, 2022 (Day

1), that the proposed Emergency Access Gate violated DPR Policy Manual, Section XIII.B, will be amended such that the Bluelined Development Plan (which no longer has the Emergency Access Gate) will be approved.

2. Sewer Capacity.

The Order on Motion for Reconsideration also permitted the testimony and/or documents from a DPWT representative in regard to the sewer path from this Property.

A. The County Attorney's letter dated February 23, 2024.

On behalf of DPWT, the County Attorney, James Benjamin, submitted a letter dated February 23, 2024 which provided new facts about the sewer path from the Property and sought to clarify inaccuracies reflected in the record (the "County Attorney Letter"). Mr. Benjamin was present during the entire Motion for Reconsideration hearing. The County Attorney Letter was accepted as County Ex. 14.

First, in response to any contention that the County Attorney Letter was admitted into evidence without testimony from, or cross examination of, the County Attorney, it should be noted that County-authored government documents, letters and/or emails (whether obtained from County agencies, by Public Information Act request, or from the County website) are regularly accepted into evidence at administrative hearings, without having a witness testify as to the contents of those documents, because they have an indicia of trustworthiness. Here, the County Attorney Letter, was emailed to OAH and to the attorneys of record in the Case, on February 23, 2024. It was also shown on the screen at the Motion for Reconsideration Hearing.

Second, the County Attorney Letter corrected factual information previously provided by the County and the Parties which information was relied upon in issuing the Opinion and Order. As detailed in the Opinion and Order, the Developer was the first party to raise the issue of sewer

capacity when it provided an email from DPWT dated September 4, 2020 responding to a request from Developer's engineers. In that email, DPWT responded that adequate sewer capacity did not exist in the down stream sewer system for [62 sic] new single family detached homes. (Dev. Ex. 55). [1] Another email from DPWT dated March 3, 2021 repeating much of same information which was then transferred to the official Concept Plan Conference ("CPC") comment prepared jointly by DPR and DPWT:

> Six of the segments noted above were to be addressed by the Johns Hopkins at Greenspring Station development prior to issuance of their use and occupancy permit. PAI did not enforce this requirement and the project was completed without the necessary sewer system improvements being completed. The Greenspring Manor development may not connect to public sewer until the agreement with Johns Hopkins at Green Spring Station is enforced and all sewer improvements are completed, including the additional improvements to segments 43794-43793 and 43793-43792 noted in the above table.

(Prot. Ex. 12). That same information was then carried over into subsequent DPWT emails, memos and correspondence until it was transcribed into the official DPR/DPWT Development Plan Conference ("DPC") comment dated August 10, 2021. The DPR/DPWT DPC comment added that Johns Hopkins was to complete 6 of the sewer segment improvements by August of 2023. These facts were relied upon in the Opinion and Order in finding that there was no evidence presented as to whether, or when, Johns Hopkins would be completing the segments at issue. (Opinion, pp. 129-130).

The County Attorney Letter, now makes clear that that information contained in the CPC and DPC comments was not correct. (County Ex. 14). The County Attorney Letter explained that the County entered into a Memorandum of Understanding ("MOU") with Johns Hopkins dated

[1] Developer's Post Reconsideration Hearing Memorandum p. 5 inadvertently identifies September 4, 2020 DWPT email as Protestants Ex. 55.

September 27, 2017 which expressly defined the roles and responsibilities of the parties in regard to the completion of 6 of the 8 sewer segments. The MOU clearly states that Johns Hopkins was not responsible for the construction of any sewer segments, much less by August of 2023. (County Ex. 14). The MOU expressly provides that the Use and Occupancy Permit would be issued to Johns Hopkins for the construction of Pavilion III at Greenspring Station, *regardless of whether the 6 sewer segments were improved.* (MOU, ¶ 4C). In fact, Johns Hopkins role was only to "coordinate with the County" to obtain federal and state permits and to "use good faith efforts" to obtain access easements. (MOU, ¶ 2B, 2C, 2D). The County was to substantially complete the construction by January 1, 2020. When that date came and went, the MOU expired by its own terms. (MOU, ¶2E). It should be noted that the 2017 MOU was agreed to by the prior County Administration and it expired at a time when the COVID pandemic hit.

Of particular relevance for this sewer path, the MOU expired before the first inaccuracies were written in the DPWT's response to Developer's September 4, 2020 email. (Dev. Ex. 55). The County Attorney Letter confirms that the DPC comment (from which the DPR representative read on Day 1 of the hearing) stating that the "other developer" (i.e., Johns Hopkins) was "obligated" to complete the improvements by August of 2023, was not factually correct. (County Ex. 12A). Indeed, the County Attorney Letter verified that Johns Hopkins' sewer design drawings, grading plan and sediment and erosion control plan had already been approved. As to confirmation that the 6 sewer segments will be improved in the future, the County Attorney Letter emphasized that the County and Johns Hopkins are currently working together to finalize a new MOU to complete the 6 segments within this sewer path.

I find that the County Attorney Letter constitutes new evidence which, by itself, answers the questions that the DPR representative was not able provide at the hearing, and corrects the

inadvertent inaccuracies and/or discrepancies contained in the CPC and DPC comments, in the memoranda, and multiple emails which documents were relied upon as a basis for the denial of the Greenlined Development Plan on the issue of sewer capacity. Equally as important, the County Attorney Letter provides the assurance that was previously missing - that there are ongoing coordinated efforts by the County and Johns Hopkins to finalize a new MOU which will result in the future completion of the 6 sewer segments.

B. Testimony of David Bayer, PE – DPWT, Sewer Design Section.

David Bayer, PE, Project Manager in the Sewer Design section of DPWT, was subpoenaed by the Developer to testify at the Motion for Reconsideration Hearing. Mr. Bayer, who is a professional engineer with a Master's degree in Environmental Pollution Control, testified that he has been a County employee for 30 years, 22 of which have been with the Sewer Design Section. Mr. Bayer explained that he is familiar with the Consent Decree, which required both the RKK Long Term Capacity Report dated November, 2012 ("RKK-LTC 2012 Report") and the Sewershed, Repair, Replacement and Rehabilitation Plan dated December, 2012 (the "SRRR 2012 Plan"). (Prot. Ex. 68, 67). Mr. Bayer explained that the Consent Decree did not require the County to repair the sewer system to any particular level of storm. Map 6.1 of the SRRR 2012 Plan recommended corrective actions for 5 storm types, in order to eliminate Sanitary Sewer Overflows ("SSOs") and reduced Inflow and Infiltration ("I&I"). Importantly, Mr. Bayer testified that the sewer path from the Property (from Joppa Rd. to Baltimore City line) does not exhibit either SSOs or I&I.

At the suggestion of Maryland Department of Environment ("MDE"), the County selected the 10 hr./6 yr. storm event as it most closely resembled storms in the County. Both EPA and MDE approved the corrective actions listed in the SRRR 2012 Plan. Mr. Bayer testified that the

County also hired RJN to review the improvements made between 2010-2019 within the Jones Falls Sewer Shed which findings were set forth in the RJN Performance Assessment Report dated May 27, 2021 (the "2021 RJN Performance Assessment Report"). Specifically, Map 2 of the 2021 RJN Performance Assessment Report shows corrective actions and structural repairs which were completed including lining, frame seals, frame covers, and flow inserts, for which RJN determined to be effective. Mr. Bayer emphasized that the only work remaining to be completed are 4 or 5 sewer segments and 2 manholes, *none* of which are within the sewer path from the Property.

In 2022, the County hired Hazen and Sawyer to perform a comprehensive evaluation or needs analysis, to provide long-term planning on sewer system improvements with the end goal that funding could be appropriately allocated. (Prot. Ex. 85, 86). Also in 2022, after video revealed corrosion on the inside of the sewer pipe under Lake Roland, DPWT proactively hired Ramboll to provide designs to re-line the Lake Roland sewer pipe. (Prot. Ex. 87). He acknowledged that the scope of the Ramboll work was then expanded beyond the Lake Roland pipe to include lining other sewer segments and interceptors so that the environmental areas (floodplains and wetlands) would only be impacted once. He made clear that the Lake Roland Sewer Rehabilitation project is not an indication of lack of sewer capacity in the Jones Falls Sewershed, but would increase capacity when the re-lining is complete. In any event, construction on the Lake Roland Sewer Rehabilitation project has not yet commenced.

Mr. Bayer was able to provide a historical perspective adding that when the Consent Decree was filed in 2005, there were 44 structures showing SSOs throughout the County sewer system. Since that time, 34 SSOs have been eliminated and that, of the 10 remaining, 4 are Baltimore City issues. Of the remaining 6 SSOs, only 1 of those is within the Jones Falls Sewer Shed but it is not located within the sewer path from the Property.

Mr. Bayer explained that, for every development project, DPWT analyzes each sewer path to determine whether there is adequate capacity. With regard to compliance with the DPWT Design Manual, it is not applied when evaluating sewer capacity for a development project which connects into an existing system; it is used to design a new sewer system. (Prot. Ex. 70). In regard to Mr. Bayer's email that zero homes could connect to the sewer system, he explained that his response (which he believed to be accurate at the time he wrote it) was based on an assumption that Johns Hopkins would not be improving 6 of the 8 sewer segments. Without these needed improvements, Mr. Bayer had concerns that there would be a high possibility of SSOs occurring. (Prot. Ex. 90). If all 8 segments are improved, Mr. Bayer agreed that the sewer path from the Property can handle the existing sewage and sewage from 61 proposed homes. He highlighted that it was this concern for SSOs which caused DPWT to designate the area where the Property is located as an 'Area of Special Concern' on the Basic Services Map. That designation may be removed upon completion of the segments.

Also of relevance, Mr. Bayer clarified that while Map 3 of the 2021 RJN Performance Assessment Report contained model-predicted SSOs and flow restrictions, his comment that zero units could be built was not based on any model predictions. (Prot. Ex. 78). It was again based entirely on the assumption that the 8 segments would not be improved. Mr. Bayer stressed that when model-predicted SSOs are presented in a consultant report, DPWT field verifies these areas first by installing flow monitors. He explained that flow monitors provide an accurate assessment of how the sewer segments are responding during wet weather, and provide more information than flow sensors. After DPWT collects and analyzes the data from the flow monitors, an I&I analysis will be performed to determine whether it is an area showing extraneous flow. Other tools can also be used by DPWT include 'sanitary sewer evaluation surveys' ("SSES") which involve

evaluating sewer pipes at night to see if any particular segments are, or will, leak. Additionally, DPWT also conducts 'smoke testing' to determine whether there are any illegal sewer connections. After the data is collected and analyzed, he explained that it will provide DPWT with the necessary information to decide whether to repair/replace a sewer segment.

In regard to the sewer path from this Property, five (5) flow monitors were installed as listed in Mr. Bayer's March 8, 2023 email. (Dev. Ex. 47-B). After installing those flow monitors, Mr. Bayer noted certain sewer segments showed blockages or restrictions from grease which required cleaning and maintenance. As is routinely done, he requested the Bureau of Utilities to clean out and inspect certain segments along the sewer path. When RJN submitted its model-predictions which included the sewer path, DPWT had little confidence in the results because the areas shown in red on Map 3, were 'overpredictions' which indicate inaccuracies. (Prot. Ex. 78). Because of the overpredictions in the RJN simulations, DPWT did not require any improvements downstream of 8 sewer segments.

Mr. Bayer verified that, as required by the SRRR 2012 Plan, the list of structural repairs downstream of the Property listed in his email dated May 30, 2023, were all either completed, or eliminated as unnecessary. (Dev. Ex. 45-A, 45-B). Consequently, he added that there are no other improvements that need to be completed in this sewer path. Mr. Bayer made clear that after the 8 segments are improved, the sewer path from this Property will operate safely and without detriment to the public health or the environment.

Mr. Bayer commented that a manhole cover had come off near or around Lake Roland and that, as a result, he had the top resecured and locked. From his review of that manhole opening, it appears that there was a storm on January 13, 2024 which caused sewage to back-up from the Baltimore City Jones Falls Pumping Station into the County lines. But he highlighted that he had

already installed flow sensors from Lake Roland down to the Jones Falls pumping station to monitor that area. Essentially, the Jones Falls Pumping Station cannot handle the amount of sewage that needs to be pumped. He added that the Jones Falls Pumping Station is in need of equipment to be installed and he understood the City would install the equipment in June of 2024. After the City improvements are completed, Mr. Bayer will continue to monitor the area to determine whether the pumping station improvements resolve any back-up into the County lines.

Unlike most development plan cases, DPWT's designation of the Property here as an *Area of Concern* on the Basic Services Map, along with the issue of outstanding work needed on the 8 sewer segments, presented a unique set of facts which necessitated DPWT's direct testimony. In the majority of development plan cases, the testimony of a representative from DPR is more than sufficient to address outstanding issues on behalf of both DPR and DPWT. It should be noted however, in many cases, notwithstanding the testimony of a DPR representative at a development plan hearing, Mr. Bayer's written confirmation on sewer capacity for a project is not only sought after, but routinely admitted in evidence. [2] Because of that often-used practice, it appeared that his written confirmation here was missing.

Yet, through his testimony, Mr. Bayer was able to provide DPWT's perspective – a perspective that neither expert witness can provide. In particular, not having had the benefit of Mr. Bayer's insight prior to issuance of the Opinion and Order, led to the conclusion that based on model-predictions by outside consultants, SSOs within the sewer path were imminent, and that repairs/replacement were warranted before additional homes could be added to the system.

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[2] In *Torch Hill*, Case Nos. 08-0919 and 2021-0274-SPHA, notwithstanding the testimony of DPR representative at the HOH, Mr. Bayer provided an email confirming there was adequate sewer capacity for the 32 proposed homes. (Dev. Ex. 19). In Developer's Post Hearing Memorandum, Counsel in *Torch Hill* (which is same Counsel here), emphasized that the developer was not to rely on the testimony of the DPR representative but instead pointed to Mr. Bayer's confirmation as proof of sewer capacity. (See Post Hearing Memorandum, pp. 18, 19, and 21).

Without being provided DPWT's view about County-requested consultant reports (RJN, Hazen, Ramboll), it left each party's expert to opine as to how each report should be interpreted and what the reports should mean for County repairs/replacements to the sewer system. It is now clear that model-predictions allow DWPT to study a specific area and along with data collected using other tools, are actually used as part of DPWT's larger analysis. Importantly, the decision by DWPT to use flow monitors to continuously monitor and gather data from the sewer path is not only disciplined, but practicable, in that using those tools helps to pinpoint real-time issues, rather than relying on modeled-predictions which may or may not capture the true picture. Similarly, having Mr. Bayer verify that the Hazen Report is a long-term planning tool which, like Ramboll report, provides DPWT with a comprehensive needs analysis, allows DPWT to proactively prioritize future repairs/replacements.

Having Mr. Bayer explain that flow monitors, installed from the Lake Roland area to the Baltimore City Jones Falls Pumping Station, are being used to monitor the recent manhole opening near Lake Roland which was caused by a backup from lack of equipment in Baltimore City's pumping station, was invaluable. Using this data-driven, methodical approach, rather than immediately making repairs/replacements to County segments, DPWT can analyze whether the Pumping Station improvements by the City solve the problem. DPWT's collection and analysis of data from the flow monitors, is the most efficient approach for the County. Mr. Bayer's testimony also verified that while the Lake Roland sewer pipe shows signs of corrosion, the corrosion will not impede the sewage flow from this Property. As he explained, the Ramboll report was the product of DPWT proactively planning for the relining of both the Lake Roland sewer pipe, and simultaneously also re-lining other sewer segments to prevent impacting environmentally sensitive areas more than once. This approach protects the environmental areas.

It is now clear from Mr. Bayer's testimony that the list of repairs submitted by Developer in Dev. Ex. 45-A, 45-B were not 'minor' repairs as the Opinion and Order reads, but rather the required repairs under the SRRR 2012 Plan. Of relevance here, those required repairs were either completed, or eliminated as unnecessary. Other than the 8 segments addressed by the County Attorney Letter which will be repaired and/or replaced, Mr. Bayer confirmed no other improvements or repairs need to be completed in the sewer path from this Property.

In regard to the finding in the Opinion and Order that the sewer path did not comply with DPR Design Manual, Mr. Bayer explained it only applies to the design of new sewer systems; it does not apply to the connection of a development project to an existing sewer system. Having that information, I find that the Design Manual is not applicable to this Case.

As stated in the Opinion and Order, compliance with the Consent Decree as it pertains to the entire County sewer system is not an issue to be resolved in this Case. Rather, it is only whether the sewer path from the Property can handle both the existing and anticipated sewage flow from the proposed homes. Having Mr. Bayer explain the concerns that he raised in his emails, were based on an assumption that the 8 sewer segments would not be repaired/replaced, is critical. Given that the 8 sewer segments will now be repaired/replaced by the County and/or in conjunction with Johns Hopkins, Mr. Bayer was confident that, once those 8 segments are completed, the sewer path from the Property will be able to handle all existing and future sewage. Accordingly, I find that the basis for denial of the Greenlined Development Plan with regard to sewer capacity, as previously articulated in the Opinion and Order, has now been resolved in favor of approval. I find that the Bluelined Development Plan meets all rules and regulations for a safe and efficient sewer system. However, the Amended Order will be conditioned upon the completion of the 8

segments listed in the DPR/DPWT comment dated August 10, 2021 (County Ex. 12A), prior to issuance of any Use and Occupancy Permits.

THEREFORE, IT IS ORDERED by this Administrative Law Judge/Hearing Officer for Baltimore County, this **17th** day of **April, 2024,** that the Bluelined Development Plan for the Project known as **"GREENSPRING MANOR"** (Dev. Ex. 1C), be, and it is hereby, **APPROVED**.

The relief granted herein shall be subject to the following:

1. The Bluelined Development Plan (Dev. Ex. 1C), a copy of which is attached hereto, is incorporated herein.

2. Prior to the issuance of Use and Occupancy Permits, all improvements/repairs and/or replacements of the eight (8) sewer segments identified in the DPR/DPWT dated August 10, 2021 (County Ex. 12A) shall be completed.

Any appeal of this Order shall be taken in accordance with Baltimore County Code, § 32-4-281.

Maureen E. Murphy

MAUREEN E. MURPHY
Chief Administrative Law Judge
for Baltimore County

MEM/dlm/dlw

IN RE: DEVELOPMENT PLAN HEARING, PETITION FOR SPECIAL VARIANCE, etc. 2310 W. Joppa Road *Greenspring Manor* 9th Election District 3rd Councilmanic District	*	BEFORE THE OFFICE OF ADMINISTRATIVE HEARINGS Case nos. 08-0922 2021-0250-SPH

* * * * * * * * * * * *

PROTESTANTS' SUPPLEMENTAL POST-HEARING MEMORANDUM

Protestants, Valleys Planning Council, Inc., Falls Road Community Association, Inc., Heatherfield Community Association, Seminary Ridge Owners Association, Boxwood Homeowners Association, The Meadows of Greenspring HOA, and Tally Ho Community Association, submit this post-hearing memorandum in support of their opposition to the development plan and requested zoning relief.

I. INTRODUCTION

In her original decision, the ALJ thoroughly discussed the evidence in this case and made a number of findings regarding the capacity of the sewer system, ultimately concluding that the "overwhelming evidence" shows that, for this particular sewage path, the system does not "safely, adequately and efficiently function" and the sewage path "cannot handle the existing sewage which flows along that path much less the additional sewage which will come from adding 61 homes...." (Op., p. 129).

The specific findings upon which the ALJ's conclusions were based bear repeating and are set forth below *in seriatim*, the more important of these are highlighted in red.

1. The reports of consultants hired by the County reflect that "overcapacity defects and model-predicted SSOs are within the sewage path from this Property" (Op., p. 113).

2. The chronology of comments and emails from County representatives is enlightening, culminating in the March 2021 email between Mr. Bayer, Ms. Eicholtz and Mr. Peluso, who were "unequivocal" that there are "capacity deficient areas within the sewer path from the Property." (Op., pp. 113-17) (Prots' Exs. 12, 13, 14, 89, 90; Dev's Ex. 55; County Ex. 12A).

3. "[T]he only work actually performed as recommended by the SRRR 2012 Plan within the sewage path from the Property were 2 minor repairs." (Op., p. 117).

4. RJN's Map 3 supports that "for the County-chosen storm events (i.e., the 2 yr/6 hr and 10 yr/6 hr) there are model-predicted SSOs along the sewage path of the Property." (Op., p. 117).

5. The model-predicted SSOs "are not only within the Johns Hopkins' sewer segments, but are also downstream of the [segments], and again within the Project's sewer path flow." (Op., p. 118).

6. There was no evidence that DPWT changed its position or were satisfied that the deficiencies would be corrected and, consequently, the presumption in favor or plan compliance is not found. (Op., p. 120).

7. Protestants presented additional evidence that was instructive and "confirmed the inadequate sewer capacity." (Op., p. 120).

    a. Protestants' Ex. 69 (chart) revealed that "most of the sewer segments from the Property exceed the peak flow of 90-95%," which is the standard in the DPWT Design Manual and the industry standard per Mr. Grachek. (Op., p. 121).

        i. The pipe segments at MH 44216-MH 44212 exceed 90-95% and were recommended by RKK to be upsized to 18 inches. (p. 121).

        ii. The pipe segments at MH 20759 – MH 20755 are also overcapacity and were recommended of 10 inch relief sewers. (p. 121).

        iii. It is undisputed that the upsizing of pipes or installation of relief sewers has not been completed. (p. 122).

    b. RJN's Map 3 shows that "SSOs have been model-predicted within the Property's sewage path." (Op., p. 121).

8. "Based on this evidence, the sewage for this Project violates the DPWT Design Manual and should be denied on that basis." (Op., p. 121).

9. The sewage path from the Project "does not comply with DPWT Design Manual, p. 6-2," which requires sewer system to "safely collect[] and transport[] wastewater without harm to human health or environment." (Op., p. 122).

10. Mr. Lessner agreed that all of the action items in Section 6.14 of the SRRR Plan to address model-predicted SSOs have not been completed. (Op., pp. 122-24).

    a. I/I reduction was only completed in meter basins BC02, BC04, BC09, which is in the Timonium area and not in the sewer path from the Property.

    b. Developer's argument that SSO volumes are trending "downward overtime" does not address the existing and future problems along the sewer path from the Property.

        i. RJN's Map 2 reflects that only 2 minor repairs have been completed in the sewage path for this Property.

    c. There is no basis for Mr. Leffner's opinion that structural deficiencies in Corrective Action 3 only refer to those listed in the SRRR Plan and not in the Ramboll or Hazen Reports.

11. The results of the Ramboll Report "showed a worsening of condition of the sewer system...." (Op., p. 125).

    a. Ramboll Report cannot be discounted as only a "planning document" and only used for capital budget purposes. It does not matter whether Ramboll was prepared under the Consent Decree. It was created at the County's request and it informs the County about sewer capacity. (Op., pp. 124-25).

    b. Ramboll's examinations and inspections are examples of field verification that Mr. Lessner stated was not performed. (Op., p. 125).

12. Hazen Report confirmed that sewer pipes are over 100% capacity. (Op., p. 125).

    a. Hazen Report cannot be discounted as only a "planning document." The County may also use it for capital budget purposes, but the County hired Hazen to perform a comprehensive evaluation of the RKK models and to update those models. (Op., p. 126).

13. "[B]oth the Ramboll Report and the Hazen Report provided compelling evidence that the pipes in the sewage path from the Property are at overcapacity and that SSOs are predicted to result during the County-selected 10 yr/6 hr storm event." (Op., p. 126).

14. Protestants' evidence in regard to overcapacity defects and model-predicted SSOs within the sewage path was not sufficiently rebutted by the Developer. (Op., p. 126).

    a. If there was a change in DPWT's position or clarification to explain the evidence presented by Protestants, then testimony and evidence from DPWT was necessary.

    b. DPWT engineers needed to provide testimony to support the Developer's assertion that the model upon which Map 3 was based is "unverified in the field." (Op., p. 127).

    c. If there was a change in DPWT's position, then Mr. Bayer would have included the same in his emails of March 8 and May 30, 2023. (Op., p. 127).

15. The sewage to be generated by this Project does not comply with sections 32-4-410(b), 32-4-102, and 32-4-103(a) or the DPR Policy Manual. (Op., pp. 128-129).

16. The overwhelming evidence shows that, for this particular sewer path, the sewage system will not be safely, adequately and efficiently function. (Op., p. 129).

17. No evidence was presented as to whether Johns Hopkins will complete the work on the six sewer segments. This issue goes to the Developer's burden of proof and I am not willing to condition approval on the possibility that Johns Hopkins may or may not complete that work. (Op., p. 130).

Protestants submit that the testimony of David Bayer spoke to very few of these findings and was clearly insufficient to warrant any new or different findings or conclusions by the ALJ.

ARGUMENT

As noted, the ALJ found that there are *model-predicted* SSOs along the sewer path from the Property, not just in the eight segments immediately below the site, but also downstream of those segments. (Op., pp. 113, 117, 118). The ALJ pointed to, among other things, (1) the chart comparing DPW and RKK capacities, (2) RJN's Map 3, (3) the specific corrective actions recommended by RKK for the 10/6 storm that have not been performed by the County, (4) the Ramboll Report, and (5) the Hazen Report. (Prots' Ex. 69, 78, 87, 107, 108). The ALJ characterized this evidence as "compelling" and "overwhelming" and concluded that, for this sewage path, the system violates the Design Manual, County Code provisions, and the DPR Policy Manual. (Op., pp. 121, 122, 126, 128-29).[1]

Early on in this case, the Developer took the position that the County is *not* obligated to undertake corrective actions to address the *model-predicted* capacity problems identified by its consultants (RKK, RJN, Ramboll and Hazen). However, over the course of these proceedings, and most recently through the loaded questioning of Mr. Bayer, it is clear that the Developer's position on this issue has been toned down and now morphed into several alternative or lesser theories, namely: (1) the model-predicted incapacities need not be addressed because structural repairs have been performed downstream, (2) there is a "new model" from Hazen that does not show problems in the sewer system, (3) when a model-predicted capacity problem is identified, the County need not undertake corrective action unless it is able to first "verify" there is a problem through flow meters or flow monitoring, and (4) the model-predicted incapacities identified by the

[1] It need not be elucidated any further here, but there is no legitimate question that the Consent Decree requires the County to take corrective actions to address the model-predicted capacity problems identified by its consultants. The plain language of the Consent Decrees provides this and all experts (Mr. Grachek, Mr. Summers and Mr. Leffner) agreed that it does. (T10, pp. 40-42; T11, pp. 75-78; T13, pp. 139-40, 145). Mr. Bayer, likewise, agreed. (T14, p. 101).

County's consultants should not be relied upon because County has concerns about "over-predicting" in the model.

Mr. Bayer's testimony on these points was superficial, at times self-serving, and refuted by the operative documents and other substantial evidence introduced in this case. In the end, if we look at what Mr. Bayer actually said, his testimony does not come close to altering or changing any of the ALJ's findings and conclusions.

A. The "Structural Repairs" That The County Has Performed Were Minimal And Do Not Alter Or Change Any Of The ALJ's Findings And Conclusions

Mr. Bayer testified that there are only four or five segments and two manholes recommended by RKK in Map 6-1 that have not yet been performed by the County. He pointed out that the area of the unfinished work is located near the Towson Run interceptor, not downstream of this property. (T14, pp. 29-35).

This testimony does not add much to the Developer's previous introduction of Exhibits 45A and B, which showed the (minimal) work performed by the County downstream of the site, but the testimony is irrelevant in any event.[2] The structural repairs undertaken by the County do not increase the capacity of the system and have no connection to model-predicted capacity. (*See* T13, pp. 204, 206) (testimony of Mr. Leffner that the repairs would not cure or correct the model-predicted SSOs and hydraulic restrictions determined by RJN and reflected in Map 3).[3]

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[2] Mr. Bayer confirmed that Exhibits 45A and B reflect all of the work performed downstream of the site by the County. (T14, p. 76-78).

[3] Mr. Bayer was asked about the SSOs that have been eliminated since the Consent Decree was entered. Instead of responding to this question, Mr. Bayer stated that there were 44 *structural* SSO's at the time the Consent Decree was entered, 34 of which have been eliminated and only one of the remaining ten is in the Jones Falls sewershed. (T, pp. 39-40). On cross, Mr. Bayer acknowledged that the SSOs that were eliminated were not SSOs at all, but rather "structural" SSOs. Structural SSOs are physical structures constructed by the County for the purpose of allowing discharge from the sewer system. (Prots' Ex. 65, pp. 7-8) (definitions of "sanitary sewer overflow" and "sanitary sewer overflow structure"). Mr. Bayer acknowledged that there have been SSOs in the system, including one in

More fundamentally, the model-predicted capacity improvements proposed by RKK and RJN were based on an assumption that rehabilitation, including the rehabilitation called for in Map 6-1 and Map 2, was *already* performed. (Prots' Ex. 68 (LTC report), § 3.1 (assumptions in modeling approach for determining corrective actions); (Prots' Ex. 78 (RJN report), pp. iv, 14) (hydraulic model updated based post-rehabilitation conditions).

In short, the structural repairs that the County has performed mean very little. They do not alter or even speak to the ALJ's conclusion, based on "overwhelming" and "compelling" evidence, that there are *model-predicted* capacity problems in the sewer path from this property (both in the eight segments *and* downstream), that those problems have not been fixed, and the system does not comply with County law.

B. The Alleged New, But "Unfinished," Model Cannot Be Relied Upon And Does Not Alter Or Change Any Of The ALJ's Findings And Conclusions

Remarkably, Mr. Bayer revealed at the hearing that, although Hazen has not finished developing its updated model yet, he recently asked Hazen to run a simulation with that model to see if capacity was improved if the eight segments below the site were repaired.[4] The simulation showed that "once the eight segments were improved there weren't any issues." (T14, pp. 42-44). Putting aside evidentiary objections,[5] there are obvious problems with this testimony from Mr. Bayer.

January of this year in the area of Lake Roland. (T14, pp. 114-15). Photographs of the SSO were introduced as Protestants' Ex. 110.

[4] The questioning of Mr. Bayer and his answers assumed the eight segments were "repaired." (T14, p. 44). The evidence supported that the segments required replacement/upsizing, not repairs.

[5] This is new evidence that should not be admitted. Mr. Bayer requested the simulation in November 2023, long after the hearing in this case closed. (T14, pp. 69, 70-71). Moreover, Mr. Bayer's email exchange with Hazen and the simulation itself were not produced by the County in response to counsel's December 14, 2023 Public Information Act request. A copy of the request is attached at **Exhibit 1**. Mr. Bayer did not know why these documents were not produced. (T14, p. 74-75). Had the County produced them as it should have, then counsel would have had the opportunity to cross-examine Mr. Bayer on this important point. Instead, the County and the Developer have insulated

Mr. Bayer stated, without elucidation, that the model was not completed, is still being worked on, and is not finished yet. (T14, pp. 42, 68, 69, 70). We have no idea what that means in terms of its accuracy or reliability. Mr. Bayer did not testify that the model was accurate or reliable or otherwise provide any information that would allow us to conclude it was accurate and reliable. In the absence of such evidence, an "unfinished" model is inherently unreliable and should not be considered. Moreover, Mr. Bayer did not run the simulation himself and was unqualified to speak to its result.

Further, Mr. Bayer acknowledged, on cross-examination, that his request of Hazen was "limited to" the eight segments. (T14, p. 71). However, he did *not* affirmatively state that, if the eight segments were replaced, then all the capacity problems in the sewer path downstream from the segments would be fixed and disappear.[6] There is no evidence – none – to support this conclusion. To the contrary, as the ALJ has pointed out, the "overwhelming" and "compelling" evidence is that there are *model-predicted* capacity problems in the sewer path from this property (both in the eight segments *and* downstream). This evidence includes, of course, the reports of *all* of the consultants hired by the County - RKK, RJN, Hazen and Ramboll. Thus, even if we consider this testimony from Mr. Bayer, it means very little.

Mr. Bayer from cross-examination, both because the documents were not produced and because Mr. Bayer was not the person who performed the simulation. As Mr. Bayer pointed out, it is not his role at DPWT to perform modeling. (T14, p. 72).

[6] Specifically, Mr. Bayer's testimony was:

> MR. ROSENBLATT: ... [W]ere you able to run the new model considering the eight segments [] were repaired?
> MR. BAYER: Yes.
> MR. ROSENBLATT: And did the system show any downstream problems from the project when these eight segments were repaired.
> MR. BAYER: No, once the eight segments were improved *there weren't any issues*.

(T14, pp. 43-44) (emphasis added).

C. Mr. Bayer's "Verification" Theory (*i.e.*, "Let's wait and see what happens") Is Contrary To The Consent Decree And Industry Standards; In Any Event, RJN Has Already Verified The Capacity Problems

Mr. Bayer acknowledged that RJN's Map 3 shows capacity issues downstream from the eight segments across from the site. (T14, pp. 46, 106). However, Mr. Bayer indicated that "[w]hen a model like this shows potential problems," you "don't immediately go and make those changes in the [] field." (T, p. 46). The County "like[s] to evaluate and try [to] confirm, validate what is predicted by those models." (T14, p. 105).

In response to questioning from the ALJ about one of the relief sewers recommended by RKK (20767-20766), Mr. Bayer explained that the County's "game plan" is to monitor flow meters to "watch to see if there's any kind of issues"; "we're looking for areas that are segments of pipe that are very leaky." (T14, pp. 124-25).[7] The ALJ then asked Mr. Bayer whether he feels comfortable if the eight segments are repaired and this property is hooked up to the sewer system.

> MR. BAYER: I'm not seeing anything on my flow monitoring that's concerning right now, but that doesn't mean I won't see something in the future.
>
> ALJ: Okay. So, right, obviously that in the future there could always be something. But I just was curious as to, you know, at least as you see it today, sitting here today, is there any issue that you see?
>
> MR. BAYER: Like I said, I'm not seeing anything in that flow path there that we ran a couple minutes ago.

(T14, p. 125).

The ALJ then asked Mr. Bayer about the SSO that occurred near Lake Roland. His testimony on this issue bears repeating in full:

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[7] A point of correction regarding 20767-20766. As reflected in Protestants' chart (Ex. 69) and maps 7.1 and 7.2 in the LTC Report, DPW recommended that a 15" relief sewer be installed at 20767-20766 for *only* the 10/24 and 20/24 storms, *not* the 10/6 or lesser storms. (For the 10/6 storm, RKK recommend relief sewers for 19 other sewer segments, but not 20767-20766).

ALJ: .... [I]s there any concern that you have having seen those photos [of the SSO] with this project?

MR. BAYER: Not with the project, but yeah, I was very concerned, so I immediately directed some staff to go out there and put that lid back on because that's a safety issue. I didn't want someone to get hurt. So, he went out there immediately after I got that e-mail and put the lid back on and locked it. It's a particular type of lid, so it needs to be locked.

ALJ: Understood. So, but for this particular project, does the fact that you saw those lids off in that Lake Roland, in that area, does that have any concern that the, you know, the sewage, again, from this project, would not be able to flow safely?

MR. BAYER: There was a concern, so I have sensors all the way down to the Jones Falls pumping station in Baltimore City.

ALJ: That's down here, right?

MR. BAYER: Yes, it goes way down, miles or so down into the City, along the Jones Falls interceptor in the City and all the way up into, into this area, so –

ALJ: So, you added, did you say you added sensors because of this?

MR. BAYER: No, no, no. I'm just saying I've has sensors in there for about a year.

ALJ: Oh.

MR. BAYER: All the way down to the City's Jones Falls pumping station. So, and this is a preliminary review of that January 13th storm, I think, showed that the wastewater was backing up all the way from the City back up into the County. Every one of my sensors or meters down below. So, again, that's just a preliminary review of what it appears might have happened.

ALJ: Okay.

MR. BAYER: So, to answer your question, I'm concerned, yeah.

ALJ: Well, you, you were concerned and so what you do is, what do you do then as a result of that concern?

MR. BAYER: Well, like I said, preliminary review is I, I looked at the information I was getting from all those meters, all the way down to the City's Jones Falls pumping station.

ALJ: And you just keep going, gathering the information and then, so then at what, is there a breaking point at one point where do you say, you know, there, something has to be done or, or you just, how long does it take?

MR. BAYER: Well, as I said, it's just a preliminary analysis so far. What, what is occurring is Baltimore City has some issues at their Jones Falls pumping station and they need to install some equipment and I think that that's part of the problem is the station wasn't able to pump as much as it possibly could, resulting in a backup into the County. But again, this is just a preliminary review.

ALJ: Yeah.

MR. BAYER: But that appears as, as what's happening is the City's Jones Falls pumping station is struggling to keep up.

ALJ: Okay, okay.

MR. BAYER: And then to, to ask you what we, what happens moving forward is hopefully the City is going to complete their improvements sometime in June, is what I've heard. And we'll continue to monitor and see if they're effective in their improvements.

MR. BAYER: And then to, to ask you what we, what happens moving forward is hopefully the City is going to complete their improvements sometime in June, is what I've heard. And we'll continue to monitor and see if they're effective in their improvements

ALJ: Okay, all right. But from your experience, you believe that these flow sensors, the flow monitors, I keep calling them sort of the same thing. Obviously, you're, you know, but using those is giving you a better picture of what is going on and you just want to continue to look at that and gather that data?

MR. BAYER: Oh, yes. It gives us great information on how it, how, how the sewer system responds to wet weather, which is what we're really trying to figure out.

(T14, pp. 126-27).[8]

[8] Mr. Bayer's attempt to place blame on the City's pumping station is irrelevant. The pumping station may be physically located in the City but it is the pumping station that receives sewage from the County. If the pumping station has "issues" and sewage backs up, that is not an excuse or reason for allowing additional development in the County. As explained by Mr. Summers, who is familiar with the City's issues, the County and City systems are "interconnected" and "one big system." (T11, p. 7). In fact, while Mr. Bayer places blame on the City, Mr. Summers explained that a critical impediment to the City addressing its sewer problems is actually the *County's* failure to provide adequate information regarding the sewage flows it is sending down the Jones Falls (in terms of timing, peak volume, and duration). (T11, pp. 100, 103).

In any event, the pumping station as nothing to do with the County's model-predicted capacity problems because, as also explained by Mr. Summers, RJN's modeling is based on a "free discharge assumption," meaning an assumption that there's no restriction downstream that would cause a backup in the County. (T11, p. 104).

The superficiality and naivete of Mr. Bayer's "game plan" for dealing with incapacities in the sewer system, if that's what it is, would be comical if it were not so concerning.

1. Modeling, not monitoring alone, is the approach called for in the Consent Decree and by industry standards

The Consent Decree requires modeling, indeed it is industry standard to perform modeling, precisely because you cannot depend on monitoring to catch a problem before it happens. Short-term, or even daily, monitoring, by definition, is not likely to catch a storm that occurs on average only once in 10 years. One could monitor every day for several years and never see a 10-year storm. And even if one does, it is too late, the overflows are already occurring and the sewer system has to play catch up while the sewage continues to spill into the groundwater and other waterways of the sewershed. This is how the County got sued in the first place by the EPA and the MDE.

Indeed, the fundamental purpose of flow monitoring is not simply to catch overflows when or after they happen but rather to inform and supply data for modeling purposes. This is demonstrated explicitly by the Consent Decree itself, which provides:

> **9. Rainfall and Flow Monitoring.**
>
> A. General Requirements. Baltimore County shall collect rainfall and flow monitoring data as set forth below and utilize that data to perform evaluations of (i) inflow/infiltration ("I/I") into the Collection System, (ii) the Collection System's capacity to collect and convey peak flows experienced by or predicted for the Collection System without causing dry-weather and wet-weather SSOs....
>
> * * *
>
> ii. Flow Monitoring. Flow data shall be collected using a system of permanent and temporary flow monitors....
>
> (a) Baltimore County shall collect flow data at such locations in the Collection System as are necessary to allow the characterization of flow from each Sewershed service area, the characterization of every known SSO, the development of the Model as required by Paragraph 14,

and evaluation of the effectiveness of measures implemented by Baltimore County pursuant to this Consent Decree to reduce I/I and to increase system capacity.

* * *

iii. ...Baltimore County's flow and rainfall monitoring network shall be designed, installed, operated and maintained to provide data representative of actual rainfall and flow conditions and of sufficient quality for use in the development, calibration, and verification of the Model as required by Paragraph 14....

ii. Long-Term Capacity/Peak Flow Management Evaluation.

* * *

Baltimore County shall use flow data and rainfall data collected pursuant to this Paragraph and the Model required by Paragraph 14 both to accurately represent wastewater flow attributable to each service area and to estimate the impact of peak flows experienced by the Collection System on the capacity of the Modeled Components to manage peak flows. Peak flows shall be determined using flow monitoring conducted pursuant to this Paragraph....

14. Collection and Transmission System Model

....The integrated Model(s) shall allow Baltimore County to assess the capacity of its Collection System, as provided herein, and to identify the measures necessary to address capacity limitations as required by Paragraph 9.

* * *

B. Model Elements.

ii. The Model shall also be:....

(b) Calibrated using spatially and temporally representative rainfall data and flow data, either existing or obtained under this Consent Decree pursuant to Paragraph 9; and

(c) Verified using spatially and temporally representative rainfall data and flow data; that data shall be independent of the data used to calibrate the Model.

(Prots' Ex. 65, pp. 22, 24, 28, 54, 55).

In sum, a fundamental purpose of flow monitoring is to inform and supply data for the County's model. Monitoring, alone, can only tell you what has happened, not what will happen.

Modeling is the only way, consistent with the Consent Decree and industry standards, to determine whether or not there will be overflows when new sewage flow is added to the system. The modeling performed by RKK, and the more recent updated and recalibrated modeling by RJN, is the model that the County has and it tells us unequivocally that the system will overflow in multiple locations for the 10/6 storm and even for lesser storms. Indeed, at least one overflow has already happened, without the added flow from the proposed development. Mr. Bayer's flow monitoring did not prevent that from happening. His hopefulness about the ability of flow sensors to detect SSOs, based on the "preliminary review" he is apparently conducting, is simply not enough.

2. *The model-predicted capacity issues found by RKK and RJN have already been verified by flow monitoring data.*

It is important to recognize that the flow monitoring that Mr. Bayer described is the same type of data that RKK and RJN have already used in performing their evaluations and determining model-predicted capacity. RJN, for example, performed flow monitoring, both pre-rehabilitation and post-rehabilitation, at 43 locations throughout the sewershed between 2018 and 2020. (T14, pp. 108-09; Prots' Ex. 78, § 1.1 at p. 2 and Table 1-1). That flow monitoring data formed the basis of Map 3. (Prots' Ex. 78, pp. iv, 14) ("Pre- and post-rehabilitation flow monitoring data was used to update the hydraulic model based on the monitored flow conditions. The model was then used to simulate pre- and post-rehabilitation hydraulic conditions.... Map 3 depicts the model predicted SSO and flow restriction locations in Jones Falls for all five (5) design storm simulations under the post-rehabilitation condition").

In other words, the models used by RKK and RJN have *already* been *verified* by flow monitoring data. There is nothing wrong per se with Mr. Bayer acquiring *new* flow monitoring data, but unless that data shows that the model-predicted capacity problems identified by RKK and RJN have magically disappeared, it is irrelevant. Mr. Bayer did not contend that the new and

ongoing flow monitoring data showed anything different; in fact, he apparently remains "very concerned." If the data revealed something different than what RJN found just a few years ago, then surely Mr. Bayer would have said so or brought that data to the hearing. (T14, pp. 106-07, 110-11).

D. Table 5-3.1 And The Alleged "Over-Predictions" In The Model

Mr. Bayer described Table 5-3.1 in the SRRR Plan as a "self-assessment" by RKK of its model simulations. (T14, p. 48). He pointed to that part of the chart pertaining to meter basin BC-22 and stated that the County was "quite concerned" about "over predicting" at that meter basin. Noting that RJN "used the same model that RKK did," he stated that he has "low confidence" in the accuracy of RJN Map 3 because of the term "significant" in right hand column of the Table. (T, p. 50).

Mr. Bayer's explanation of Table 5-3.1 was conspicuously brief and superficial. He did not explain what any of the columns mean. He didn't explain what the terms "Model predicts SSOs beginning with the 2-year storm" means, how that supports his conclusion that there was overpredicting, or what overpredicting even means in context. He did not address the "**under**predicting" that is also reflected in the table for BC-22 and what effect that had on his level of "confidence." He also did not refer to or discuss the other meter basins that receive sewage from the subject property. Perhaps most importantly, Mr. Bayer did not explain how any of this relates to RJN's Map 3, other than the fact that RJN "used the same model that RKK did." As discussed, we know that RJN updated, recalibrated, and verified the model, but Mr. Bayer did not mention that. Mr. Bayer's attempt to white-wash RJN's modeling cannot reasonably be relied upon.

Moreover, this is a remarkable position for a licensed engineer to take. The model adopted by RKK was validated and calibrated as the Consent Decree requires. When RJN undertook its

performance assessment, it updated, recalibrated and verified that model based on new, post-rehabilitation flow monitoring data at 43 locations throughout the sewershed. (Prots' Ex. , p. iv). This process included targeting five (5) of the model-predicted SSO locations to verify model predictions. (*Id.*, p. 2). RJN established guidelines for calibrating the model for pre- and post-rehabilitation conditions and applied those guidelines to compare *modelled* peak flow with *observed* peak flow. (*Id.*, pp. 9-10). In Figures 3-1 and 3-2, RJN graphically showed the modeled versus the observed metered flow and concluded:

> For wet weather calibration, the R-values were adjusted iteratively until the model was calibrated (model-predicted and observed conditions match within established parameters) and *adequately predicted* peak flow, volume, and the hydrograph shape and timing.... *[T]he model reasonably simulates the recorded (observed) flow data. The modeled and observed data are generally within established margins of error and established tolerances.*

(*Id.*, pp. 10-11) (emphasis added).[9]

Modeling is an accepted and fundamental, if not rudimentary, part of sanitary sewer engineering. All models, by their nature, have tolerances, but that does not mean they can be ignored or discounted, particularly when modeling and corrective actions based on that modeling are required by a consent decree. Mr. Bayer, consistent with the Consent Decree and industry standards, cannot simply ignore the model the County's own consultant has created, updated, calibrated and verified.

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[9] The SRRR Plan states that the model is "capable of predicting" peak flows and flow capacity. (Prots' Ex. 6, pp. 5-2, 5-4; *see also* Appendix I (Model Development and Calibration Report at p. iv ("The hydraulic model of the Jones Falls Sewershed has been built in accordance with the CD and the Model Approach Report. The network was built from field verified GIS information and the flow inputs are based on the 26 County and 6 Boundary flow meters. For the wet-weather calibration, it is concluded that the model responds in a realistic fashion. Based on these facts and the provided supporting material, the Jones Falls hydraulic model is judged to be properly calibrated").

Mr. Bayer's testimony regarding Map 3 is clearly insufficient to refute, alter or change the ALJ's findings and conclusions regarding the map, specifically her findings that:

- Map 3 supports that "for the County-chosen storm events (i.e., the 2 yr/6 hr and 10 yr/6 hr) there are model-predicted SSOs along the sewage path of the Property." (Op., pp. 117, 121).

- The model-predicted SSOs "are not only within the Johns Hopkins' sewer segments, but are also downstream of the [segments], and again within the Project's sewer path flow." (Op., p. 118).

E. Mr. Bayer's Explanation Regarding His March 22, 2021 Email Is Much Ado About Nothing And Does Not Alter Or Change Any Of The ALJ's Findings And Conclusions

During the hearing, Mr. Bayer explained that when he wrote his March 22, 2021 email ("Zero is the 'breaking point' of number of houses that could be built without causing an SSO") he assumed that the eight segments across from the site were not improved, *i.e.,* if the segments were not improved, then no houses could be built without causing an SSO. (T14, p. 45). Mr. Bayer was then asked "if those eight segments are repaired, then what is the breaking point for number of units that can connect" and he responded "once the capacity has been improved, they could connect all the units." (T14, p. 46). Mr. Bayer added that the eight segments needed to be improved because there is a "high possibility of overflow"; the County was concerned that if units were added, there was a "high probability of an SSO." (T14, pp. 45, 68).

We should be careful about not reading anything more into Mr. Bayer's brief and cursory testimony on this point, as the Developer will surely do. Mr. Bayer did *not* say that if, the eight sewer segments were replaced, then any and all capacity problems downstream from those segments would be fixed and disappear. There is no evidence – none – to support this conclusion. To the contrary, as the ALJ has pointed out, the "overwhelming" and "compelling" evidence is that there are *model-predicted* capacity problems in the sewer path from this property (both in the

eight segments *and* downstream). This evidence includes, of course, the reports of *all* of the consultants hired by the County - RKK, RJN, Hazen and Ramboll.

If Mr. Bayer intended that refute this evidence and really meant to say that everything will be fixed, then he would have done so. Instead, Mr. Bayer, while acknowledging the downstream capacity issues reflected in the RKK and RJN reports (T14, pp. 27, 81-82), advanced the several novel theories discussed in detail above (*supra* parts A-D).

Mr. Bayer's testimony regarding his March 22, 2021 email was not sufficient to refute, alter or change the ALJ's findings and conclusions regarding that email. Those findings bear repeating once again:

- The chronology of comments and emails from County representatives is enlightening, culminating in the March 2021 email between Mr. Bayer, Ms. Eicholtz and Mr. Peluso, who were "unequivocal" that there are "capacity deficient areas within the sewer path from the Property." (Op., pp. 113-17) (Prots' Exs. 12, 13, 14, 89, 90; Dev's Ex. 55; County Ex. 12A).

- There was no evidence that DPWT changed its position or were satisfied that the deficiencies would be corrected and, consequently, the presumption in favor or plan compliance is not found. (Op., p. 120).

F. Mr. Bayer's Misunderstanding Of (And Unfamiliarity With) The Ramboll Report

Mr. Bayer testified that the County hired Ramboll because there was some corrosion observed in a video taken of the interceptor under Lake Road. He suggested that the Ramboll work was not pursued because of any concern about capacity, but rather because of the corrosion in the interceptor. He explained that the corrosion "concerned us and we felt we should be proactive and try to initiate a rehabilitation project to take care of that corrosion." (T14, pp. 37, 38, 83). Mr. Bayer added that "the initial inferences for the project was we saw some corrosion and then it was decided that, well, rather than impact those resources with floodplain, wetlands, and

environmentally sensitive areas, that we would expand the scope and then just line everything in that area at the same time." (*Id.*, p. 95).

Mr. Bayer's understanding of the Ramboll report is completely contradicted by the report itself. The report makes clear that Ramboll was not hired to simply address corrosion in the main interceptor. Rather, it was hired, first, to undertake a review of all of the data from the County's previous sewer system evaluation (*i.e.,* the RKK reporting). (Prots' Ex. 87, §§ 2.2, 2.3). The Report reflects that Ramboll reviewed that data and then determined (i) that 35 of the 43 segments in and around Lake Roland had active infiltration and/or structural defects, and (ii) all 44 manholes in the system needed rehabilitation and 31 of them had infiltration. In its Report, Ramboll proposed the rehabilitation of all of these sewer segments and manholes. (*Id.*).

When confronted with the Report on cross-examination, Mr. Bayer admitted that the Report is directed to and covers not just the pipe under Lake Roland but all of the interconnectors and segments in and around Lake Roland. (T14, pp. 83-84). He agreed that the primary focus of the project was to minimize inflow and infiltration to reduce the likelihood of SSOs, not simply address corrosion of the main interceptor. (T14, p. 84). When asked whether he was suggesting that the pipes other than the one under Lake Roland do not actually need the repairs called for, he admitted that he hadn't looked at the video of those segments, so he couldn't say if they are in need of structural repairs or not. (T14, pp. 85-86). Eventually, he disclosed that this is not even his project, so he doesn't know. (*Id.*, p. 86).

Clearly, Mr. Bayer's testimony regarding the Ramboll Report was not sufficient to refute, alter or change the ALJ's findings and conclusions regarding that Report, in particular, the ALJ's conclusions that:

- The Report reflects that "overcapacity defects and model-predicted SSOs are within the sewage path from this Property" (Op., p. 113);

- The Report "showed a worsening of condition of the sewer system...." (Op., p. 125);

- The Report cannot be discounted as only a "planning document" and only used for capital budget purposes. It does not matter whether Ramboll was prepared under the Consent Decree. It was created at the County's request and it informs the County about sewer capacity. (Op., pp. 124-25);

- Ramboll's examinations and inspections are examples of field verification that Mr. Lessner stated was not performed. (Op., p. 125).

- "[B]oth the Ramboll Report and the Hazen Report provided compelling evidence that the pipes in the sewage path from the Property are at overcapacity and that SSOs are predicted to result during the County-selected 10 yr/6 hr storm event." (Op., p. 126).

G. The "Smoking Gun"

In their opening memorandum, Protestants made the rather simple point that if, as the County acknowledges, the eight sewer segments below the site have inadequate capacity and those segments have capacities between 94% and 101% (at least according to the County's capacity calculations), then it stands to reason that any other segments that have 94% or greater capacity are likewise insufficient and should be replaced. As the ALJ observed, there are numerous such segments along the sewer path from this property, best reflected in Protestants' Ex. 69. (Op., p. 121).

There was no testimony or evidence at the reconvened hearing that refuted this simple point. In fact, Mr. Bayer acknowledged that capacities of 94% or greater could be reason for concern:

> MR. MCCANN: [I]s it a safe assumption on my part, Mr. Bayer, that if I were to look at RKK's work product and RJN's work product for capacity numbers, if I were to see capacity numbers that were either 94.32 or greater for any sewer segments, that those are probably sewer segments that should cause us [] some concern....?

> MR. BAYER: If you're talking about a simulation, prediction that the model was run and it showed something like this it could be a cause of concern, yes.

(T14, p. 100). (*See* T14, pp. 45, 68) (eight segments have "high possibility of overflow" and "high probability of an SSO").

H. Other Issues

1. Mr. Bayer's background and authority to speak for the County

Mr. Bayer is employed as a "project engineer" in the County's Sewer Design Section. He reviews and designs capital improvement projects for that section. (T, pp. 18-19, 61). He is not chief of that section and does not hold any other title with DPW. (T, p. 61-62). As such, there is a serious and legitimate question regarding Mr. Bayer's authority to speak on behalf of the County. He was not subpoenaed as a corporate designee, nor was qualified as such during his testimony.

2. Areas of Special Concern

Mr. Bayer described an "Area of Special Concern" as an area "where we had those sanitary sewer overflow *structures*." (T, p. 56) (emphasis added). He explained that the subject property is within an area of special concern, but does not have any SSO structures. It was added because "information that one of the staff members had had gathered that we were very concerned about the possibility of overflow." (T. p. 56). Ms. Bayer clearly does not understand what an area of concern is.

3. The relevance of grease

During questioning of Mr. Bayer, the ALJ showed him RKK's chart of sewer defects (Protestants' Ex. 77) and asked about pipe segment 44212-44211 on page 15 of the exhibit, which reflects 67 total defects in that segment, 66 of which were attributed to "grease." Mr. Bayer

explained that sometimes people put grease into the sewer system and that is serious concern of the County. (T14, pp. 119-21).

Importantly, sewer segment 44212-44211 was one of the sewer segments that RKKK identified as overcapacity (151% for the 10/6 storm) and recommended for upsizing to an 18" replacement sewer. (Prots' Ex. 69, p. 1) (RKK v. DPW capacity chart). If the ALJ was supposing that the cause of the overcapacity may be grease, that cannot be the case. Protestants' Exhibit 77 is a listing of physical defects that existed in the pipe segments at the time RKK performed its physical inspection of the system many years ago. The overcapacity reflected in segment 44212-44211 is a model-predicted overcapacity and is not based on obstructions such as grease. More importantly, RJN's more recent *post*-rehabilitation modeling found this same segment (44212-44211) to still be 148% overcapacity. (Prots' Ex. 81) (RJN pre-rehab v. RJN post-rehab v. RKK capacity comparison chart).

CONCLUSION

In sum, after all the fanfare and anticipation, the evidence introduced at the reconvened hearing was unenlightening and did not move the needle at all. Most importantly, as described above, nothing Mr. Bayer said had any meaningful impact on the thorough and well-reasoning findings and conclusions made by the ALJ in her original opinion. Having been given the opportunity, the Developer could have called other witnesses from the County (in particular, individuals with the legal authority to speak on behalf of DPW, such as Lisa Eicholtz or Jeff Peluso or even the Director herself). Earlier in its case, the Developer also could have called someone from RKK, RJN, Ramboll, or Hazen or hired its own sewer expert. There is a reason the Developer chose not to do any of this and that reason is pretty obvious. Protestants respectfully request that the Development Plan be denied.

Michael R. McCann
118 W. Pennsylvania Avenue
Towson, Maryland 21204
michael@mmccannlaw.net
(410) 825-2150

Attorneys for Protestants

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 22nd day of March 2024, the foregoing memorandum was sent via email to all counsel of record.

Michael R. McCann

Michael McCann

From: Michael McCann
Sent: Thursday, December 14, 2023 12:22 PM
To: dwalker2@baltimorecountymd.gov
Subject: PIA request
Attachments: 20231214120212262.pdf



Ms. Walker: See the below public information act request and the attached exhibit to this request. Thank you.

1. All correspondence and other documents sent to or received from Venable, LLP (including Adam Rosenblatt, Chris Mudd or David Karceski), its consultants or any representative of the developer of the proposed Greenspring Manor development relating in any way to (1) that development, (2) the capacity of the sewer system to handle sewage from the development, and/or (3) the capacity of the sewer system otherwise.
2. All documents reflecting, referring or relating to (1) the status of the replacement of the eight sewer segments listed below, and/or (2) Johns Hopkins' position regarding its undertaking or obligation to undertake the replacements.

   43794-43793
   43793-43792
   43792-43791
   43791-43790
   43790-43789
   43789-43788
   43788-43787
   43787-43786

3. All documents reflecting, referring or relating to the current capacity of any other sewer segments downstream of the proposed Greenspring Manor development.
4. All documents reflecting, referring or relating to other repairs, replacement or maintenance of sewer segments downstream of the proposed Greenspring Manor development (other than those identified in the documents attached at **Exhibit A**).
5. All reports, studies, and other work-product of **Hazen & Sawyer** (Hazen) provided to the County regarding sewer in the Jones Falls sewershed (other than the newsletters that are available on the County's website)
6. All correspondence and other documents sent to or received from Hazen regarding sewer in the Jones Falls sewershed (other than the newsletters that are available on the County's website)
7. All reports, studies, and other work product of **Ramboll Americas Engineering Solutions, Inc.** (Ramboll) provided to the County regarding sewer in the Jones Falls sewershed (other than the Data Evaluation Report dated June 2022)
8. All correspondence and other documents sent to or received from Ramboll regarding sewer in the Jones Falls sewershed (other than the Data Evaluation Report dated June 2022)
9. All reports, studies and other work-product of **RJN Group, Inc.** (RJN) provided to the County regarding sewer in the Jones Falls sewershed (other than the Performance Assessment dated May 27, 2021)
10. All correspondence and other documents sent to or received from RJN regarding sewer in the Jones Falls sewershed (other than the Performance Assessment dated May 27, 2021)

11. All correspondence and other documents sent to or received from MDE and/or EPA relating to the Consent Decree entered in United Stated v. Baltimore County entered in 2005 in Case 1:05-cv-02028-AMD since January 1, 2023.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

E-mail Confidentiality: The information contained in this message may be confidential, proprietary and/or protected by the attorney-client privilege or work product doctrine. If the reader of this message is not the intended recipient, or an employee or agent responsible for delivering this message to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please delete/destroy any copy of this message and notify Michael R. McCann at 410 825-2150.

From: D'Andrea Walker <dwalker2@baltimorecountymd.gov>
Sent: Tuesday, May 30, 2023 12:42 PM
To: Conner, Charles R. <CRConner@Venable.com>
Subject: Fwd: Sewer Asset Confirmations

Caution: External Email

FYI... here is his review.

Get Outlook for iOS

From: Dave Bayer <dbayer@baltimorecountymd.gov>
Sent: Tuesday, May 30, 2023 12:22:40 PM
To: D'Andrea Walker <dwalker2@baltimorecountymd.gov>; Lisa Eicholtz <leicholtz@baltimorecountymd.gov>
Subject: RE: Sewer Asset Confirmations

Good afternoon D'Andrea.
I reviewed the Excel Spreadsheet (EX44) that Mr. Conner had provided you on 5/23/2023 (attached).

Results from my review:

Corrective Action Status

MH 43820: Manhole Lining was not needed so that work was eliminated. An Inflow insert was installed 9/29/2014
MH 43819: Manhole Lining was not needed, so that work was eliminated.
MH 53270: A Watertight Frame and Cover was installed 3/12/2017.
MH 44213: A rain pan was installed 6/3/2019.
MH 44212: A rain pan was installed 6/3/2019.
MH 6883: A brick collar was installed around the Manhole and the outside of the Manhole was parged (sealed).

Segment 6875-6874: Lining completed 12/19/2019.

Segment 43794-43793: Segment Lining was approved 12/6/2019
MH 43794: Manhole Lining and Frame and Cover Replacement deleted per RFI 15
MH 43793: Manhole Lining deleted per RFI 14.

Hope this helps.

David



	A	B	C	D	E	F	G	H
1	ASSET	Type	SOURCE	DEPARTMENT	CORRECTIVE ACTIONS	Completion Date	REVIEW NOTES	STATUS
2								
3		43920 Manhole	EXHIBIT	Baltimore County DPW&T	Manhole lining was not needed, work eliminated. Insert flow installed.	9/29/2014		Completed
4		43919 Manhole	EXHIBIT	Baltimore County DPW&T	Manhole lining was not needed, so work was eliminated.	N/A		Completed
5		43734 Manhole	EXHIBIT					
6	43794-43793 Segment		EXHIBIT					
7		43793 Manhole	EXHIBIT					
8		53273 Manhole	EXHIBIT	Baltimore County DPW&T	Watertight frame and Cover was installed.	9/12/2017		Completed
9		44213 Manhole	EXHIBIT	Baltimore County DPW&T	A rain pan was installed.	6/3/2019		Completed
10		44212 Manhole	EXHIBIT	Baltimore County DPW&T	A rain pan was installed.	6/3/2019		Completed
11		6383 Manhole	EXHIBIT	Baltimore County DPW&T	Brick collar installed around manhole and outside was sealed.			Completed
12	6375-6374 Segment		EXHIBIT	Baltimore County DPW&T	Lined under JF Package 2.			Completed
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EXHIBIT
45B

IN RE:	*	BEFORE THE OFFICE
APPROVAL OF FINAL DEVELOPMENT PLAN & PETITION FOR SPECIAL HEARING	*	OF ADMINSTRATIVE
IN THE MATTER OF : GREENSPRING MANOR & GREENSPRING JOPPA FALLS, LLC	*	HEARINGS FOR
2310 W. JOPPA ROAD	*	BALTIMORE COUNTY
	*	Case Nos. 08-0922 & 2021-250-SPH
8th Election & 2nd Councilmanic Districts		

* * * * * * * * * * * * *

PEOPLE'S COUNSEL FOR BALTIMORE COUNTY'S
MEMORANDUM IN OPPOSITION TO MOTION FOR RECONSIDERATION

People's Counsel's County Charter master plan defense embraces the public interest in adequate sewerage capacity under the incorporated Water Supply and Sewerage Master Plan required by and consistent with the Maryland Environment Article.

I. Baseline: The Administrative Law Judge's Opinion Sewerage Section

A. "Areas of Concern"

The ALJ opinion recognizes DPWT identifies the surrounding Jones Falls Sewershed (JFS) as an "area of concern" (Pages112-13). This is an understatement.

B. The Johns Hopkins University Sewer Segments

The ALJ opinion transitions to the subject of the JHU sewer segments (113-20). This is the sewerage subject the County discussed in the CPC and DPC memoranda and in the initial staff testimony. There were eventually admitted in evidence a series of relevant e-mails by and among the Sewer Design Section staff. The opinion reviews them in detail.

In 2017, the County and JHU signed a Memorandum of Understanding (MOU) relating to development of JHU medical pavilions. This contemplated a sewer project to improve the proximate sewer segments. This involved many steps to implement.[1]

[1] On February 23, 2024, County Attorney James Benjamin sent in an MOU status letter. He described shared responsibilities and said JHU had submitted several plans. Many steps nevertheless remain incomplete. He believes the parties are working in good faith to move forward.

At this juncture, the 8-inch pipes immediately downstream have inadequate capacity. Sister Kathleen McAnany testified about the County's effort to acquire property rights to widen the sewer easement area. This has not been done. (114-15).

David Bayer's March 3, 2021 memo confirms the inadequate capacity. He writes the Greenspring Manor project cannot be approved until **"… all sewer improvements are completed"** (115).[2] Emphasis supplied. He also responds to Valleys Planning Council that the County issued permits to JHU despite their failure to fulfill obligations (116).[3]

On March 22, 2021, in an exchange with Jeff Peluso, Bayer explained no new dwelling units could be built without causing (or aggravating) SSOs (sewerage system overflows) (117). The exchange concluded,

> **"Zero is the "breaking point' of number of units which could be built without causing an SSO."**

The ALJ summarizes,

> "The internal e-mails, by and among County civil engineers in the Sewer Design Section (Bayer, Eichholtz and Peluso) who are charged with special knowledge of the County sewer system were unequivocal that *as of March 2021*, there were 'capacity deficient areas' within the sewer path of the Property. Conclusively, they determined that zero units could be built at the Property without causing SSOs."

Notably, this reflects SSO concerns and problems downstream from the GSM site beyond and south of the proximate 8 (JHU 6) sewer segments.

Meanwhile, seven years into the MOU, he presents no foreseeable timetable for completion. It should be kept in mind that Benjamin is not an expert and did not take the witness stand.

[2] Bayer's Memo implies JHU must complete the improvements. Benjamin's letter appears mainly to be geared to counter any suggestion JHU is blameworthy. For the purpose of the present case, it does not matter who is responsible for the 7-year and ongoing failure to complete the project. The capacity remains inadequate, with no end in sight. Meanwhile, the irregular timing of the letter effectively denied the opportunity to prepare. There was also denied the right of reasonable cross-examination. See, e.g. Hyson v. Montgomery County Council 242 Md. 55, 67-68 (1966).

[3] Again, it does not matter if JHU has been at fault, the fault lies with the County, or the fault is shared. The bottom line is that capacity is still inadequate and any purported progress speculative.

RJN's 2021 model in Map 3 supports Bayer's concerns (118). The RJN model extends to JHU segments, and to those downstream as well. Ibid. The ALJ wrote (118),

> "Consistent with Mr. Bayer's opinion that SSOs would result from the construction of any homes for this project, these model-predicted SSOs within the Johns Hopkins sewer segments (Prot. Exh. 88) but are also downstream of the Johns Hopkins sewer system and within the project's sewer path."

DPWT's Lisa Eichholtz's August 2, 2021 memo reiterated the inadequate capacity and that contemplated improvements were incomplete (118-19). The DPWT's August 10, 2021 DPC memo is consistent with these findings (119).

The ALJ opinion states there is no evidence JHU would complete the sewer work or that it had begun (120).[4] ALJ Murphy wrote,

> "As of Day 13 of this Hearing Officer's Hearing (May 31, 2023), there was no evidence provided by the developer that Johns Hopkins had begun or would be completing the sewer work on these sewer segments through which the sewer from the property would flow."

The disclosure of the DPWT emails and internal memos came only in response to Protestants' attorney Michael McCann's PIA requests. Ibid.

The ALJ ruled the collective evidence negates the "Elm Street" [People's Counsel v. Elm Street Development 172 Md. App. 690 (2007)] presumption (120),

> **"There was no evidence presented by the Developer that DPWT had changed its position,** or that DPWT engineers were satisfied that the deficiencies would ultimately be corrected. **But-for the County documents produced through PIA requests, we would not know the extent of the DWPT concerns about the sewer for this Project. Consequently, the presumption of the development plan compliance in *Elm Street, supra*, is not found here, as there was substantial evidence by DPWT to the contrary**. Accordingly, I place significant weight on DPWT's Sewer Design team engineers' opposition, and that evidence alone is enough to deny the Greenlined Development Plan due to lack of sewer capacity."

[4] This is still the situation. It does not matter if the County shares responsibility, who is at fault, and to what degree. Benjamin writes JHU prepared some plans; and the County approved them. Despite his view of the "good faith" of JHU and the County, there are (to repeat) many more things to implement. The County and JHU are trying to negotiate a new MOU. This shows they are not far from square one. There is no reasonably foreseeable completion date. Even were it evidence, Benjamin's letter does not obscure the 2017-24 failure and lack of discernible significant progress.

DPWT referred on November 10, 2021 to the County's 2015 Jones Falls Interceptor Chart (JFIC) as a basis to identify inadequate capacity in these sewer segments (120-21).

C. The JFS Big Picture

The JHU sewer segments constitute a localized, small corner of the much bigger JFS picture. We recapitulated in our post-hearing memorandum, Pages 25-32:

1. The County and the developer, i.e. the Collective Development Team (CDT), did not address the overall watershed problems in their affirmative cases.

2. The JFS has been subject to the EPA/MDE federal court consent decree for nearly two decades, with no end in sight.

3. The County has churned through four consultants --- RKK, RJN, Ramboll, and Hazen --- with report after report and model after model, and yet barely any progress toward fulfillment. The Hazen 2021 publication virtually puts the County back at the drawing board in its assessments, mapping of multiple SSOs, and projections.

4. The storm events projected in the models, albeit based on the Consent Decree, were at most 10-year events, assuming the County would satisfy the decree about now. The same goes for the 2025 population projections.

5. The communication from MDE in the record is the April 14, 2023 letter imposing stipulated civil penalties for 151 SSOs detected in 2018. There is no County response in the record. It is reasonable to infer MDE is working its way year by year.

6. It is prohibited to swim, fish, and virtually touch Lake Roland because of periodically high e coli concentrations caused by the sewage overflows.

This brings us to the ALJ opinion's discussion of the big picture. The opinion spotlights Protestant's expert Randall Grachek (121, et seq.). Analyzing the JFIC and the 2012 RKK/LTC report -- modeling up to 10-year storms – most sewer segments exceed 90-95% peak flow. This violates the DPWT Design Manual.[5] ALJ Murphy added (121),

> "Comparing the data from the 2015 County Jones Falls Interceptor Chart, with the information in the RKK-LTC 2012 Report, Mr. Grachek created the Comparison

[5] The Comparison Chart haa downstream sewer segments. There was no probative testimony from David Bayer to contradict this data. His scripted answers were conclusory, as discussed below.

> RKK/DPWT Capacities Chart (Prot. Ex. 69). The Comparison RKK/DPWT Capacities Chart from the Property exceed the peak flow of 90-95%. The DPWT Design Manual for Sanitary Sewers prohibits sewage flows above 90-95% revealed that, for the County-selected storm events (2 yr/6 hr and 10 yr/6 hr storms) most of the sewer segments flows above 90-95% of full depth are considered unstable and may result in a sudden loss of carrying capacity with surcharging. (Prot. Ex. 70, p. 6-27). Mr. Grachek testified that 90% peak flow is also the industry standard. The DPWT Design Manual further prohibits SSOs from occurring at any time. Yet, SSOs have been model-predicted within the Property's sewage path as shown by Map 3 of the 2021 RJN Performance Assessment. (Prot. Ex. 70, p. 6-22). Based on this evidence, the sewage for this Project violates the DPWT Design Manual and should be denied on that basis."

RKK recommended increasing pipe sizes and installing relief sewers. But it has not been done, so the sewage path does not comply (121-22). The RKK/SRRR Corrective Action Plan is not satisfied. (Again, the RKK recommendations go beyond the JHU segments).

The ALJ opinion then lists the SRRR Plan recommendations which have not been completed (123). This includes infiltration/inflow (I/I) issues:

> "With regard to I/I reduction, Mr. Lessner agreed that Corrective Action 1 has not been completed. The 2021 RJN Performance Assessment Report informs that I/I reduction was only completed in Metered basins BC02, BC04, BC09 which is in the Timonium area and not in the sewage path from the Property. (Prot. Ex. 78).

The 2021 RJN analysis confirms the incompleteness in the GSM area.

The opinion then turns to the SRRR Plan's description of structural deficiencies and the subsequent concerns expressed by Ramboll and Hazen (123-24),

> "With regard to Corrective Action 3 --- correcting structural deficiencies, I find there is no basis for Mr. Lessner's opinion that those structural deficiencies only refer to those listed in the SRRR 2012 Plan and not in the Ramboll or the Hazen Reports."

In 2022, Ramboll still recommended design, repair, and rehabilitation of interceptors, manholes and junction chambers in the Lake Roland Park area, and minimization of I/I. Despite CDT expert Nicholas Leffner's contention, the Ramboll conclusions are not unrelated to the Consent Decree or as a "planning document" (124-25).

Ramboll referred to the 2021 RJN CCTV examination of sewer pipes and discussed the importance of pipe examination to confirm their suitability for rehabilitation

technologies. They observed that there had not been performed the field verification of the RJN Performance Assessment (125).

The 2022 Ramboll report shows a worsening of conditions: 24 sewer segments with active I/I at pipe joints, 14 with structural defects; and 11 of the remaining 19 segments with structural defects (125). The report added all 44 manholes will need rehabilitation. 31 show infiltration, and they may require full replacement. ALJ Murphy concluded (125),

> "I find that these efforts by Ramboll are examples of 'field verification' of the information from the 2021 RJN Performance Assessment that Mr. Lessner stated was not performed. (Dev. Memo, p. 43). As with the 2021 RJN Performance Assessment, I agree that, unfortunately, the results of the Ramboll Report showed a worsening of condition of the sewer system …."

The ALJ opinion then underlines the February 6, 2023 Hazen report. This assesses that sewer pipes are still over 100% capacity (125-26). It cannot be discounted as a "planning document."[6] ALJ Murphy explained (125-26),

> "Similarly, the Hazen Report dated February 6, 2023 also confirmed that sewer pipes are still over 100% capacity. (Prot. Exs. 107, 108). Similar to the Ramboll Report, whether prepared under the Consent Decree or not, the Hazen Report cannot be discounted as only a "planning document." While the County may *also* use it for capital budget planning, the County hired Hazen to perform a comprehensive evaluation of the accuracy of the data from the RKK models and to update those models. Pursuant to the Protestants' PIA request, the Hazen scope of services, which are on-going, were provided. (Prot. Exs. 106 A, B, C)."

The Hazen Report involves modeling of sewer pipes from the GSM property to the county/city line for up to 10-year/6-hour storms (126). This corroborates previous findings of over 100% capacity. This necessarily includes, but is not limited, to the sewer segments immediately below the GSM property. over capacity.

Accordingly, the ALJ opinion concludes the Ramboll and Hazen reports provide compelling evidence that the pipes in the sewage path from the property are over capacity

[6] David Bayer, again in conclusory fashion, described the Hazen Report as involving "medium-term" or "long-term" strategy. It may refer to such strategy, but also identifies the persistent SSO problems in the JFS, including a map extending downstream from the GSM property.

and that SSOs are likely to result.[7] This includes, but extends way beyond the JHU pipes upon which the County DPC comments narrowly focus.

There is next the perceptive observation that neither Bayer, Eichholtz, nor any other DPWT expert appeared to support the CDT's rebuttal case (126),

> "The evidence provided by the Protestants in regard to overcapacity defects and model predicted SSOs within the sewage path here was not sufficiently rebutted by the Developer. To this point, neither Dave Bayer, nor Lisa Eicholtz, nor any representative from DPWT with knowledge of the sewer system, testified to support Developer's position in rebuttal. If there was a change in DPWT's position, or clarification to explain the evidence presented by the Protestants, then testimony and further evidence from the DPWT was necessary."

The CDT presented only Nicholas Leffner for rebuttal (126-27).[8]

The ALJ opinion also rejected Leffner's recollections of communications with Bayer as not the best evidence to meet the burden of proof. The best evidence would be direct testimony from DPWT witnesses. The opinion proceeds to review more recent emails from David Bayer: March 8 and May 30, 2023 (127). The bottom line is there was no change in the DPWT position. (127).

> "Similarly, in his email dated May 30, 2023, Dave Bayer could have provided any change in DPWT's position wherein, at the request of the Developer, he listed the corrective action status for rehabilitation/repairs that had either been completed, or were determined not to be needed; yet, he did not. (Dev. Exs. 45A, 45B). The silence is deafening."

But the CDT deliberately chose not to call County staff, and indeed resisted in broad terms our office's request that ALJ Murphy to bring in County SWM staff. [9]

---

[7] The April, 2023 MDE imposition of civil penalties for multiple SSOs shows the deficiencies, even if for 2018. There is no indication from MDE of any material improvement thereafter.

[8] This observation also reflects that neither the County nor the CDT addressed the overall JFS sewerage issues in their main cases. It was not until Protestants presented Randall Grachek and Robert Summers, and did the PIA work, that the subject came to the light of day.

[9] When we asked by email that a DEPS expert be brought in to discuss storm water management, the CDT attorney objected vigorously and stressed it was their choice not to call any such county witnesses. And they didn't call any DPWT witnesses until they lost the case.

We cannot emphasize enough that the CDT's reconsideration motion effectively to call David Bayer is the epitome of a "sour grapes" effort to reopen the case and take a bite at the apple which they didn't want to touch in their main case or even in rebuttal. It is an injustice, untimely, and unacceptable.

At the Reconsideration Hearing, ALJ Murphy expressed interest in "contributions" from County' Sewer Design expert staff. But that interest should have translated to action in the main case. Once the case ended, the proper time to call County experts had passed.

The ALJ opinion then rejected Leffner's opinion that the 2019-21 quarterly reports did not document SSOs as irrelevant. There followed the note that Bayer's March 22, 2021 email showed that any manhole corrections (2014/2017/2019) did not solve the problems. Nor was there any evidence from RJN in 2021 that the repairs were completed.

Capping the narrative of persistent major JFS deficiencies, the ALJ opinion identifies violations of County Code Sec. 32-4-410(b), requiring safe sewage which does not contaminate waters; Sec. 32-4-102 (b)(1)(2), safe sewage; Sec. 32-4-103(a), adequate sewage; and DPR Policy Manual 18, safe and sanitary sewage treatment and disposal (128).

The ALJ opinion then logically rejects Leffner's claim that the GSM generation of additional sewage would be inconsequential (129).[10]

Finally, the ALJ opinion turns to the JHU/County sewer segment status (129),

> "On the other hand, if Johns Hopkins is not exempt and is still required to complete the repair/rehabilitation, there was no evidence presented as to whether or when John Hopkins will complete the work. The undersigned even posed questions of DPR during the HOH but no information was known. **Ultimately, this issue goes to the Developer's burden of proof in its case-in-chief that adequate sewer capacity exists in the sewage path for this Project, including the repair/rehabilitation by Johns Hopkins. Given the lack of any direction on this important issue, contrary to the suggestion by DPR DPC comment, I am not willing to condition approval here on the possibility that Johns Hopkins may, or may not, complete that work. (County Ex. 12A).** 4" Emphasis supplied.

[10] We calculated the annual sewage generation for 61 dwelling units in this D.R. Zone would amount to 14,026,950 gallons, more than 14 million gallons. Post-Hearing Memorandum 26.

The ALJ opinion thus puts a lid on the case in rejecting the apparent CDT request to give approval, subject to some sort of condition.

Conditions may perhaps be imposed where they are fairly routine and will be adjusted or satisfied in a timely way. For example, ALJ zoning decisions often impose conditions for landscaping. DOP architectural review, and garage residential use. That is not the case here with the problematic JHU/County sewer segments.[11]

We will proceed to show there has been no material change in the situation. This is admitted explicitly in David Bayer's testimony. To reiterate, nor is there any relevance to attorney James Benjamin's effort to mitigate any arguable JHU blame for the shared seven-year JHU/County failure to meet the MOU and come anywhere close to completion.

II. The Reconsideration Hearing; David Bayer's Testimony

This brings us to a more direct evaluation of David Bayer's testimony. There is nothing there to warrant reconsideration. There are also significant procedural objections.

A. Reconsideration Beyond the Pale; Fundamental Unfairness

Under the guise of reconsideration, the developer effectively inaugurated and opened a new or second case. The word "reconsideration" is a misnomer here.

The debacle began when the County failed to present any DPWT Sewer Design Section or other witnesses with potentially relevant information. They failed, for example, to produce the Program Manager tasked with Consent Decree compliance.

Then the CDT tactically decided to save its sewerage expert for rebuttal. They not only withheld their hired expert, Nicholas Leffner, but also decided not to call any County expert staff. Indeed, they insisted it was their prerogative to call or not to call any County staff when we asked ALJ Murphy to bring in County SWM staff to illuminate that subject.[12]

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[11] Anyway, to reiterate, resolution of the JHU segments is a far cry from resolving the multiple sewerage deficiencies which span the JFS down to the county/city line.

[12] Our Post-Hearing Memorandum analyzed the "Empty Chair" scenario and the adverse inference from their failure to testify. Brooks v. Daley 242 Md. 185, 194-95 (1966); Murphy v. McCloud 650 A.2d 202 (D.C. 1994). (29-30).

The County and CDT utterly failed to meet the burden of production of evidence on sewerage capacity. ALJ Murphy's opinion recognized they failed to meet the substantial evidence test of People's Counsel v. Elm Street Development 172 Md App. 690 (2007).[13]

It was Michael McCann, Protestants' counsel, who did yeoman's work to assist the ALJ. He presented Randall Grachek and Robert Summers with in-depth testimony. There were reviewed copious documents, including the reports of all the consultants. McCann forced the County disclosure of Sewer Design Section staff e-mail, which were revealing.

ALJ Murphy recognized all this in the main opinion.

The CDT still did not call County staff. Rather, they tried to rescue the case on rebuttal with Nicholas Leffner. ALJ Murphy correctly rejected his inadequate testimony.

A trial has a beginning and an end. This one ended after the deliberate choices of the County and developer not to call or present County Sewer Design Section staff. Bayer's untimely appearance now has nothing to do with reconsideration. It is the CDT's play to open a new flank to overcome their evidentiary failures and tactical miscalculations.[14]

As if this were not enough of an anomaly, ALJ Murphy denied Protestants' counsel's request to recall experts to respond to Bayer's testimony. ALJ Murphy disregarded that if Bayer had testified in a timely way for the County in the main case, Protestants' experts would have had the opportunity to respond. The opportunity to cross-examine does not substitute for the right to present testimony in response.

The unfairness crossed another line when Michael McCann submitted the Draft of the County's Triennial Sewerage and Water Supply Plan, required by Maryland law. In a dialogue after developer's counsel's objection, ALJ Murphy viewed this as reopening the case and asserted the reconsideration hearing was not so intended. ALJ Murphy did not recognize that, by accepting what she called a helpful County "contribution," this reopened the case to allow entirely new evidence from a witness who did not appear for the county

[13] We discuss in depth the Elm Street "conundrum" and legal implications in Section III.D below.

[14] As we also show in Section III.C below, there is nothing anyway in Bayer's testimony to cause any change in the ALJ's opinion. Our threshold point here is that the "reconsideration" move is flawed conceptually and procedurally at the outset.

and was not called. Whether or not "shocking," as McCann responded, it illustrated and magnified the reality that the case had been reopened in disguise. The ALJ had done the very thing supposedly rejected, for the benefit of the developer, and then restricted the Protestants. So, a two-tiered system of justice compounded the errors.

The misuse of reconsideration and added suppression of evidence were fundamentally unfair and amounted to a compound denial of procedural due process of law. Maryland Aggregates v. State 337 Md. 658, 686-88 (1994); Mayor and Council of Rockville v Woodmont Country Club 348 Md. 572, 590-92 (1998).

B. Overview

David Bayer agreed to meet with developer's counsel. They orchestrated and scripted a series of leading questions. There is the appearance that Bayer here became a development team adjunct by so jointly preparing the questions and answers. [15]

The legal problem with Bayer's direct serial responses --- particularly when downplaying SSO problems in the downstream path --- is they were conclusory, without supporting documentation or explanation. They did not come close to matching the breadth and depth of Randall Grachek and Robert Summers.

The Court of Appeals long ago emphasized in Worthington Construction Corp. v. Moore 266 Md. 19, 29 (1972),

> "An expert's judgment has no probative force unless there is a sufficient basis upon which to support his conclusions. Stickell v. City of Baltimore, 252 Md. 464, 474, 250 A.2d 541 (1969); State Health Dept. v. Walker, 238 Md. 512, 520, 209 A.2d 555 (1965); State, Use of Stickley v. Critzer, 230 Md. 286, 290, 186 A.2d 586 (1962). Here the very groundwork for his opinion is inadequately supported."

Likewise, Zilichickhis v Montgomery County 223 Md. App. 158, 185 (2015) reiterated,

> "Generally, an expert's opinion has no probative force unless there is a legally sufficient factual basis upon which to support the conclusions. *See Carter v. Shoppers Food Warehouse MD Corp.*, 126 Md.App. 147, 155–59 & n. 9, 727 A.2d 958 (1999)."

[15] Bayer admitted to being uneasy and hesitant to speak with Michael Wyatt, an area citizen who also appeared as an attorney. He did not display such uneasiness in testifying for developer.

In sum, the serial scripted narrative on direct laid inadequate groundwork for the conclusory downplay of downstream path SSO problems.

Nevertheless, Bayer stuck to his opinion that the GMS development could not be approved until the JHU/County project is complete. Nor did he have any evidence that the end is in sight for such completion.

Where unscripted, he provided some fair and interesting answers on cross-examination. We discuss these below.

C. The Scope of the Sewerage Capacity and SSO Problems

1. The Developer's Ostensible Objectives

The developer's counsel's objectives appear to be the following:

> (1) To persuade that capacity and SSO concerns are limited to the proximate 8 JHU/County sewer segments and any problems further downstream are either nonexistent or have been resolved;
>
> (2) To persuade that the 8 JHU/County sewer segments are on course to resolution in the near or reasonably foreseeable future; and
>
> (3) To obtain approval on the sewerage issue subject to a flexible, effectively unreviewable condition that development may proceed as soon as DPWT says the JHU/County sewer segment work is complete.

Based on this record, even with Bayer's testimony, these objectives lack adequate foundation, and are beyond the pale.

2. The Downstream Problems

Let us begin with the downstream issue. To the extent Bayer denied or downplayed capacity and SSO problems further downstream, his conclusory assertions do not stand up against Randall Grachek's analysis, the documented consultants' reports, and the unacceptable persistence of the downstream Lake Roland Dead Zone (LRDZ).[16]

[16] We reviewed the LRDZ and the excessive e coli contamination in our Post-Hearing Memorandum (28). Bayer did not address the LRDZ and the evident sewerage impact from the area south and downstream of the GSM property.

Furthermore, there is not in the record a single county Quarterly or Annual Report which claims elimination of capacity and SSO problems in the JFS area from the GMS property down to polluted Lake Roland. Nor is there a single document from MDE or EPA which indicates that the Consent Decree is satisfied with respect to SSOs in this area.

Even in direct examination, Bayer could not dispute the combined RKK/RJN data showing many 100% over capacity locations. Rather, he suggested models might overpredict. But this speculation does not help his position. As Grachek said, and consultant reports reflect, modeling -- while subject to a degree of error --- is central to capacity and design evaluation. He also admitted the Design Manual's circa 90% maximum flow depth for new sewer construction, albeit downplaying it as "guidance." Prot. Exh. 70. In contrast, the ALJ opinion cites the Design Manual as authoritative.

Michael McCann's cross-examination exposed more downstream problems. Upon review of rehabilitations slated by the RJN 2021 Report, Bayer admitted only two repairs were done in the GSM sewer path and that none were done closer to Lake Roland. Prot. Exh. 78, Map 2. Bayer was not aware of any other repairs downstream. Turning to the RJN Long Term Capacity Report, he admitted the recommended upsizing of pipes for 2 year/24 hour and 10 year/6 hour storms were not done or complete. Prot. Exh. 68, Map 5.1. He admitted more intense storms would warrant increased upsizing.

There was also a discussion of RJN's description of the installation of flow meters to check the effectiveness of any repairs. Ibid. Figure 1.2, Map 3. This included the distinction between structural SSOs, built to discharge, and the generic SSOs targeted by the Consent Decree. The main thing here is that Bayer admitted the presence of SSOs in the JFS downstream from GSM. Bayer tried to downplay them, but had to admit them.

Upon review of the Ramboll 2022 Report, Bayer acknowledged corrosion concerns and rehabilitation issues pertaining to the sewer segments under, in, and/or around Lake Roland. Prot. E.87, Figures 1,1.1. There ensued a discussion of the necessity to minimize inflow/infiltration by lining and/or structural repairs. Sec.2.2. These would help capacity, increase flow, and extend service life. But the design is not finished for this high dollar project. Bayer added this is not his project.

McCann produced photographs of relevant JFS manhole locations where SSOs occurred in January, 2024. Bayer tried to downplay them, but had to admit they happened.

Remarkably, McCann elicited from Bayer that the County has a Program Manager tasked with Consent Decree compliance.[17] This Manager never appeared to describe the County's JFS compliance status or, for example, communications with MDE and EPA.[18] This is another "Empty Chair" which generates yet another negative SSO inference.

This reflects starkly on the County/Developer failure to meet their burden of evidentiary production, here connected directly to the Consent Decree. This aggravates the evidentiary void as to resolution of primary SSO concerns. Bayer acknowledged he is not part of the compliance staff and had no information on their work.

The developer would make the case all about Bayer, fabricate that he gave favorable probative evidence, preempt thirteen hearing days, divert attention from the ALJ's finding of their failed proof, and cast aside the ALJ-credited Grachek and Summers evidence. Indeed, Bayer did not touch, much less dispute, their compelling evidence. As Bayer eventually admitted to Michael Wyatt, **nothing had changed.**

In view of all the evidence, it contradicts and subverts the ALJ's main opinion for developer to suggest the sewerage capacity and SSO problems are confined and isolated to the JHU/County sewer segments. On this record, as a matter of law, they are far more extensive. After close to two decades, there is still no end in sight for County compliance with the Consent Decree and its primary goal to eliminate SSOs. It is beyond the pale to engage in "pathway" tunnel vision and disregard the wide scope of enduring incapacity.

Ultimately, there is no evidence of any material change in the evidence to justify departure from the ALJ opinion's thorough finding, including the negation of "the Elm Street presumption." It would be arbitrary and capricious to display a change of mind.

[17] This should be a reminder that Bayer is just one of several project engineers with delineated assignments. He is not omniscient with respect to Consent Decree and JFS issues.

[18] The record shows only the unrebutted April 14, 2023 MDE letter to the County imposing a Stipulated Penalty Assessment for 151 SSOs in 2018. These are just SSOs which were detected.

3.The Proximate JHU/County Sewer Segments

The main thing and bottom line again is there has been no material or substantial change in the JHU/County sewer segment status which could conceivably justify deviation from the ALJ opinion's well-reasoned determination of inadequate sewer capacity.

Even in his mostly scripted direct examination, Bayer maintained the GSM development could not be approved until completion of the JHU/County sewerage project. Developer's counsel tried to deflect this opinion by asking if Bayer had referred to permit issuance rather than development plan approval. This petty tangential question goes against the ALJ's well-reasoned denial based on inadequate sewer capacity.

Early in Michael McCann's cross-examination, Bayer maintained as still "accurate" his March 3, 2021 email (Prot. Exh. 13) to DPR's DeSai. This email concluded that the Greenspring Manor project cannot be approved until **"… all sewer improvements are completed."** McCann followed up with the inquiry as to whether the March 22, 2021 (Prot. Exh. 90) **"zero 'breaking point'**" position is still accurate. Bayer replied it is accurate.

These two replies are sufficient in themselves to preclude reconsideration.

Remarkably, Michael Wyatt's cross-examination bookended these replies. Wyatt asked Bayer if anything had changed since the time of his earlier analysis. Bayer replied there was no change, Game over. Q.E.D.

Developer's counsel had tried to generate what may be called favorable smoke when he asked Bayer about a new model Hazen was working on, yet incomplete. Bayer asked Hazen to run simulations on the JHU/County project. Bayer did not produce the data, adding to the speculative nature of his inquiry. More important, Bayer made the inquiry to to evaluate if the proposed JHU/County project pipe widths are adequate. This is a reminder and wakeup call that there is uncertainty as to the effectiveness of these model-predicted projects. Even if the project is ever completed in this century, it may turn out to be inadequate to eliminate the downstream SSOs.

As for James Benjamin's tangential letter, he is an attorney, not a sewerage expert. He wrote mainly to deflect or mitigate JHU's share of the 7-year abject failure to meet the

sewerage project requirements for the JHU medical pavilions. He spins the "good faith" of the parties. But actions speak louder than words. There is still no end in sight.

4. The Problematic Effort to Revive the Request for Conditional Approval

The persistently inadequate sewer capacity should foreclose consideration of a condition. Such an open-ended condition would enable developer to pressure DPWT to label the project complete and give approval without further public notice and hearing.

We repeat the core of the ALJ opinion on this subject,

> "Ultimately, this issue goes to the Developer's burden of proof in its case-in-chief that adequate sewer capacity exists in the sewage path for this Project, including the repair/rehabilitation by Johns Hopkins. **Given the lack of any direction on this important issue,** contrary to the suggestion by DPR DPC comment, I am not willing to condition approval here on the possibility that Johns Hopkins may, or may not, complete that work. (County Ex. 12A). 4" Emphasis supplied.

There has been no material change or meaningful progress since that July 31, 2023 Opinion. Benjamin's cosmetic letter conveys sadly that, seven years after the initial MOU (since expired), JHU and the County are just now trying to negotiate a new MOU. This is no new "direction." As for Bayer, he is not involved with the JHU/County interactions and could give no "direction" or speculate on conceivable completion. It is delusive and delusional to suggest there will be completion any time on the discernible horizon.

There is absolutely no justification to give the developer what likely would become the legendary camel's nose under the tent. That is what they want. Then, behind the public curtain, they will try to get the whole camel in as they try to penetrate the DPWT tent.

D. <u>Elm Street</u> Conundrum: Burden of Proof; Presumptions; Substantial Evidence; Failure to Meet Burden of Production; Reconsideration Disqualified

From every perspective, the County and developer did not meet their burden of production of evidence on the sewerage issue. We submit the ALJ opinion, while negating the <u>Elm Street</u> presumption, also recognized the developer's failure of proof,

> **"<u>There was no evidence presented by the Developer that DPWT had changed its position</u>,** or that DPWT engineers were satisfied that the deficiencies would ultimately be corrected. **But for the County documents produced through PIA requests, we would not know the extent of the DWPT concerns about the sewer for this Project.**

> **Consequently, the presumption of the development plan compliance in *Elm Street, supra*, is not found here, as there was substantial evidence by DPWT to the contrary**. Accordingly, I place significant weight on DPWT's Sewer Design team engineers' opposition, and that evidence alone is enough to deny the Greenlined Development Plan due to lack of sewer capacity.

ALJ Murphy here implies Elm Street holds the County and developer enjoy a favorable presumption at the outset even without producing evidence. We believe this misreads Elm Street. But let us first review the law relating to presumptions and burden of proof,

Judge Charles Moylan in Cooper v. Singleton 217 Md. App. 626, 627-28 (2014) made the point that "presumption" and its first cousin, burden of proof, are among the slipperiest terms in the legal canon. Among others, he quoted Charles McCormick in 2 McCormick on Evidence (7th Ed. 2013), 217 Md. App. at 228:

> "Dean Charles McCormick, another of the early Olympians, added to the diagnosis:
>
> > One ventures the assertion that 'presumption' is the slipperiest member of the family of legal terms, except its first cousin, 'burden of proof.'[3]"

The slippery problem here begins with County Code Secs. 32-4-227(e) and 32-4-228(a). These refer to county comments and conditions and hearing officer review of unresolved comments. This brings into play the ritually cited case of People's Counsel v. Elm Street Development 172 Md. App. 690, 701-05 (2007).

ALJ opinions view Elm Street as saying County acceptance automatically creates a favorable presumption. But Elm Street did not say that. Rather, the Court viewed the case from the traditional judicial review standard of substantial evidence, 172 Md. App. at 704,

> "While the circuit court did remand the case for lack of "substantial evidence" as to the property's compliance with the requirements of §§ 1A03.5(A) and (C), "substantial evidence" in this context does not necessarily require, as appellants claim, an articulation of the underlying "facts and reasons." Substantial evidence is merely "such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *Warwick Supply & Equip. Co., Inc.*, 330 Md. at 494, 624 A.2d 1238. The revised red-lined development plan and the recommendations submitted by the Directors of the Office of Planning and DEPRM were such relevant evidence, and the hearing officer properly accepted that evidence as sufficient to meet the requirements of §§ 1A03.5(A) and (C)."

There, the Planning and DEPRM Directors made specific recommendations that the red-lined plan met the purposes of the R.C. 4 (Watershed Protection) Zone. We argued these

fell short of the evidentiary standard. The Court disagreed and sustained the approval.

Even where there is a judicially recognized presumption, as for special exceptions, petitioner must produce evidence. In Turner v. Hammond 270 Md. 41, 55 (1970), after discussing the presumption, the Court nevertheless underlined applicant's burden of proof,

> "While the applicant has the burden of adducing testimony which will show that his use meets the prescribed standards and requirements, he does not have the burden of showing affirmatively that his proposed use accords with the general welfare. If he shows to the satisfaction of the Board that the proposed use would be conducted without real detriment to the neighborhood and would not actually adversely affect the public interest, he has met his burden."

The burden of "adducing testimony" is effectively the classic burden of production. Turner has been cited in Schultz v. Pritts 291 Md. 1, 11 (1981) and People's Counsel v. Loyola College 406 Md. 54, 83 (2008). In other words, to gain the presumption and its benefit, a petitioner must first produce substantial evidence. Let us now return to the present case.

It was and should have been in plain view to DPWT staff and anyone paying minimal attention that the sewerage impact on the JFS would be a major issue. Credit to Michael McCann for presenting the issue with illuminating evidence. The CDT had recognized the issue. They hired Nicholas Leffner, but they held him back until rebuttal.[19]

So, County staff focused on the JHU sewage issue and identified difficulties. But they did not address the overall impact on the JFS. They did not make even a recommendation. Combined with the CDT's tactical decision to hold back Nicholas Leffner, this left a JFS evidentiary void.[20] On this record, there was no JFS overview evidence or any issue raised until Protestants called Randall Grachek. Meanwhile, to the extent DPWT CPC/DPC commented on the JHU sewerage project, they were negative.

[19] The present case comes after Krongard (Torch Hill). Although to the north, across Seminary Avenue, and different in material respects, sewerage impact was well known as a major issue. The developer's and primary protestants' attorneys were the same as here. The issue was no secret.

[20] An aggravating factor, to repeat, is the CDT also chose not to call Bayer or Eichholtz at all.

This is a far cry from Elm Street, where the DOP and DEPRM Directors did make specific written favorable recommendations on the relevant issues. Here, neither the County nor the developer satisfied the substantial evidence test on this major issue.

When a party with the burden of proof fails to produce substantial evidence necessary to meet the burden of production, the case is effectively terminated. There is nothing to rescue by reconsideration or any other mode. The CDT's desperate effort here to call County staff after their empty case ended without proof is the fruit of their manipulative but errant tactics. They have reaped what they sowed.

Developer's failure to satisfy the burden of production leaves absolutely nothing to reconsider without reopening the case. As we observed, there came a time at the hearing when ALJ Murphy told an understandably shocked Michael McCann that she did not want to reopen the case by admitting a County public triennial water supply and sewerage plan document. Yet the ALJ did not realize that by entertaining developer's motion and Bayer's testimony, this was a palpable and unacceptable reopening of magnitude.

The developer's case thus defaulted on the critical overall sewerage issue.

Based on the totality of circumstances, it would be arbitrary, capricious, unjust, and far beyond the pale to grant developer's Motion for Reconsideration in any way, shape, form, or degree.

Peter Max Zimmerman
PETER MAX ZIMMERMAN
People's Counsel for Baltimore County

Carole S. Demilio
CAROLE S. DEMILIO
Deputy People's Counsel
Jefferson Building, Suite 204
105 West Chesapeake Avenue
Towson, MD 21204
(410) 887-2188
peoplescounsel@baltimorecountymd.gov

CERTIFICATE OF SERVICE

I HEREBY CERTIFY this 22nd day of March, 2024, a copy of the foregoing People's Counsel for Baltimore County's Post-Hearing Memorandum in Opposition to Motion for Reconsideration was emailed to:

Adam Rosenblatt, Esquire,
210 W. Pennsylvania Avenue, Suite 500
Towson, Maryland 21204
amrosenblatt@venable.com ,

Michael McCann, Esquire
118 W Pennsylvania Avenue
Towson, MD 21204
michael@mmccannlaw.net

Christopher Mudd, Esquire
210 W. Pennsylvania Avenue, Suite 500
Towson, Maryland 204
CDMudd@venable.com

Michael Wyatt, Esquire
100 W Pennsylvania Avenue
Towson, MD 21204
mwyatt@wyattgunning.com

Douglas Sachse, Esquire
dsachse@dtslawoffices.com

Ying Wei Lum
ylum1@jhmi.edu

Eric Rockel
erockel@earthlink.net

Dean Merritt
dean@merrittinc.net

Blandy Becker
blandy.becker@gmail.com

Peter Max Zimmerman
PETER MAX ZIMMERMAN
People's Counsel for Baltimore County

IN RE: GREENSPRING MANOR DEVELOPMENT PLAN AND ZONING HEARING (2310 West Joppa Road)	*	BEFORE THE
	*	COUNTY BOARD OF APPEALS
	*	OF
8th Election District 3rd Council District	*	BALTIMORE COUNTY
	*	Case No. 08-0922 and Case No. 2021-0250-SPH
Greenspring Joppa Falls, LLC Owner and Developer	*	

* * * * * * * * * * *

DEVELOPER'S POST RECONSIDERATION HEARING MEMORANDUM

Greenspring Joppa Falls, LLC, legal owner and developer ("Developer"), by undersigned counsel, hereby submits this Memorandum and states as follows:

INTRODUCTION

On September 25, 2023, the Office of Administrative Hearings granted Developer's Motion for Reconsideration and permitted: (1) the Developer to offer a revised version of the Development Plan that eliminates the Emergency Access Gate; and (2) an additional hearing to consider testimony and/or documents from a DPWT representative regarding the sewer path from the subject property. On February 26, 2024, the Office of Administrative Hearings held a public hearing to address these two issues. First, as permitted by the Order granting the Motion for Reconsideration, Developer submitted a blue-lined Development Plan that removed reference to a proposed emergency access gate in the rear of the Property. *See* Developer's Exhibit 1C. The ALJ then addressed a letter from the County Attorney, James Benjamin, providing an update on the status of a Memorandum of Understanding between Baltimore County and John Hopkins related to sewer improvements that were referenced throughout this case. *See* Baltimore County Exhibit 14. Mr. Benjamin, who was in attendance, explained that the purpose of the letter was to provide clarifications to the record in this case as counsel of record.

The remainder of the hearing consisted of testimony from Dave Bayer, a Project Engineer for the Sewer Design Section of the Department of Public Works and Transportation (DPWT) with over thirty (30) years of work for Baltimore County related to sewer design.[1] Mr. Bayer provided an independent review of many of the documents and issues referenced throughout this case and explained Baltimore County's position with respect to sewer capacity in the Jones Falls sewershed and its relationship to the sewer path for this project. All parties were given an opportunity to cross examine Mr. Bayer. Notably, People's Counsel asked no questions.

This Memorandum provides a summary of Mr. Bayer's testimony and then explains how his testimony, coupled with the letter from Mr. Benjamin, provides compelling evidence for the ALJ to reconsider the July 31, 2023 Order denying the Development Plan in this case and to now determine that the Development Plan should be approved with conditions.

SUMMARY OF TESTIMONY OF DAVE BAYER

I. CLARIFICATIONS REGARDING THE CONSENT DECREE.

Mr. Bayer testified that he has a master's degree in engineering and has dealt with issues related to Baltimore County's sewer system on a daily basis for over 30 years. T. 24-25. With respect to the Consent Decree, he was involved "from day one" when the county began negotiating with the Department of Justice, EPA, and MDE. T. 28. While the Consent Decree required the preparation of a Long-Term Capacity Report ("LTC Report") and a Sewershed Repair, Replacement, and Rehabilitation Plan ("SRRR Plan"), Mr. Bayer confirmed the Consent Decree does not require Baltimore County to fix the sewer system to any specific level of storm, and the Consent Decree is specifically and intentionally devoid of such a requirement. T. 29.

a. THE SRRR PLAN.

Similarly, while the LTC Report evaluated certain modeled outcomes under various storm scenarios, the SRRR Plan did not require Baltimore County to make all of the improvements to address all of the storms modeled in the LTC Report. T. 33. On suggestion

[1] A transcript of Mr. Bayer's testimony from the February 26 hearing is attached hereto and referenced herein as "T."

from MDE, the County chose to evaluate their system under the 10-year, 6-hour storm because it most closely matches the rainfall pattern in the area. T. 34. With respect to the path of sewage from the Property, the SRRR Plan contained a map identifying areas exhibiting high inflow and infiltration (I&I) and existing SSO's. T. 36. Mr. Bayer confirmed that neither SSO's nor I&I exist downstream from the Property. *Id.* Both MDE and EPA confirmed in writing that the SRRR Plan meets the requirements of the Consent Decree. T. 39.

II. CLARIFICATIONS REGARDING VARIOUS CONSULTANT REPORTS.

a. THE RJN REPORT.

Mr. Bayer explained that the Consent Decree requires Baltimore County to prepare performance assessments for each sewershed, and that Baltimore County hired RJN to prepare a progress report for the Jones Falls sewershed (the "RJN Report"). T. 40. The RJN Report included two maps that detail the progress that has been made throughout the Jones Falls – Map 1 (the corrective actions recommendations map from the SRRR Plan), and Map 2 (entitled "Rehabilitation Completed"). T. 40-41. Mr. Bayer confirmed that he reviewed the status of the improvements identified throughout the Jones Falls sewershed and the only outstanding repairs are "four or five segments and two manholes." T. 41. These outstanding repairs are entirely comprised within: (1) a relief sewer project in Towson, where the county is using a relief sewer as a bypass to minimize environmental impact to a floodplain and wetlands area, and (2) a structured SSO on Marnat Avenue that requires Baltimore City assistance to resolve. T. 42-43. Neither of these outstanding repairs are within the sewerage path downstream from the Property. T. 42-43. RJN's performance evaluation concluded that the county's rehabilitation work has been effective. T. 43.

b. THE HAZEN REPORT.

Mr. Bayer explained that Baltimore County hired Hazen in 2022 to perform a comprehensive evaluation or needs analysis that focuses on medium to long term improvements to the overall sewer system within the Jones Falls sewershed. T. 44. Importantly, Mr. Bayer

testified that, in undertaking its evaluation, Hazen will be offering strategies that may help with future allocation of funding to specific projects, but Hazen's scope and duty in this instance is not to identify any immediate improvements within the Jones Falls sewershed that would be required to be completed before any new connections are made to sewer system. T. 44. Hazen's comprehensive evaluation and planning exercise is ongoing, and a final report has not been issued to date. *Id.*

c. THE RAMBOLL REPORT.

Baltimore County hired Ramboll as a consultant to design certain rehabilitation work in the Lake Roland area of the Jones Falls sewershed. T. 45. Mr. Bayer confirmed that Baltimore County did not hire Ramboll as a result of concerns about capacity in the Jones Falls sewershed; the purpose and scope for Ramboll's evaluation stemmed from certain structural anomalies/deficiencies in limited portions of the existing sewer infrastructure, namely the relining of a portion of the sewer pipe nearby Lake Roland. T. 45. While the relining project would address a specific pipe in Lake Roland and result in improved capacity within the system, Ramboll's scope and the report they prepared were completely unrelated to the overall capacity of the Jones Falls sewershed. T. 46. Mr. Bayer flatly stated that adding 60 homes to the Jones Falls sewershed would have no impact on the Lake Roland project evaluated by Ramboll. T. 46.

III. SUMMARY OF IMPROVEMENTS TO THE JONES FALLS SEWERSHED.

Mr. Bayer testified that, following execution of the Consent Decree, Baltimore County has spent more than $25 million in construction costs to make improvements in the Jones Falls sewershed. T. 47. At the time of the Consent Decree, there were 44 SSO's in the County, and 34 have now been eliminated. Four of the remaining 10 require Baltimore City improvements, and only 1 is located in the Jones Falls sewershed – Marnat Avenue – which is not within the sewerage path downstream from the Property. T. 47-48.

IV. DPWT EVALUATION OF GREENSPRING MANOR THROUGH MODELING.

Mr. Bayer confirmed that the Sewer Design section of DPWT evaluates all subdivisions proposed in Baltimore County. T. 48. In this case, the Developer's consultant emailed Lisa Eicholtz, Mr. Bayer's colleague, and asked whether Baltimore County's sewer system could handle the Greenspring Manor project. T. 48-49; Protestant Ex. 55. Ms. Eicholtz copied Mr. Bayer on her response and identified eight (8) sewer segments that needed to be upsized before homes from the Greenspring Manor project could connect to the public sewer system (6 of the segments are attributed to the Johns Hopkins project and 2 are the responsibility of the Developer). T. 48-49.

Baltimore County uses a model to conduct this analysis, and Mr. Bayer confirmed the results for this project are contained in Protestant's Ex. 64. T. 49. Importantly, and contrary to the testimony of Mr. Gracheck, Mr. Bayer testified that the model does account for wet weather through the "infiltration" column, which includes "extraneous flow, which would be inflow and infiltration." T. 50. The model includes Baltimore County's "best guess at what we thought the weather impacts would be." T. 50.

Baltimore County is also working on a new model, which is not yet complete. Nevertheless, Mr. Bayer ran the Greenspring Manor project through the new model to ensure that the 8 segments identified by Ms. Eicholtz were the only segments that needed improvement prior to connection of the Greenspring Manor project to the sewer system. T. 50-53. Mr. Bayer confirmed that "once the eight segments [are] improved, there [will not be] any issues." T. 53.

V. CLARIFICATION RE: THE PELUSO EMAILS.

Mr. Bayer explained that before he retired, Jeff Peluso was the Chief of the Bureau of Engineering and Construction for DPWT. T. 53. In March 2021, Mr. Peluso emailed Mr. Bayer and asked him questions about Greenspring Manor. T. 54; Prot. Ex. 90. Specifically, Mr. Peluso asked what the breaking point for Greenspring Manor was in terms of number of units that could connect to the County sewer system without creating an issue. *Id*. Mr. Bayer responded by email

stating that "zero" is the breaking point of number of units that could be built without causing an SSO. *Id.*

At the Reconsideration Hearing, Mr. Bayer clarified that his response assumed the 8 sewer segments identified by Ms. Eicholtz (6 Hopkins, 2 Developer) were not improved prior to connecting the Greenspring Manor project to the system. T. 55. He confirmed that if the 8 segments are improved, all of the units can safely connect to the County sewer system. T. 55.

Additionally, Mr. Bayer reviewed Map 3 of the RJN Report, entitled model predicted SSO and flow restriction locations. He confirmed that the Map does show additional modeled issues downstream from the 8 segments identified by Ms. Eicholtz. T. 56. However, when Mr. Bayer wrote his email to Mr. Peluso saying "zero is the breaking point" for homes that could connect to the system without causing an SSO, his email did not have anything to do with the modeled results shown on Map 3 of the RJN Report. T. 56; Prot. Ex. 78, Map 3.

VI. HOW THE COUNTY USES AND INTERPRETS MODELED RESULTS.

Mr. Bayer explained that when the County reviews a model such as the results shown in Map 3 of the RJN Report, they do not immediately make changes to address any issues shown by the model. T. 56. Instead, the County tries to verify the existence of actual issues in the field prior to allocating funding for a rehabilitation or repair project. T. 57. The County uses a variety of tools such as flow monitoring (Dev. Ex. 47B shows five flow monitors downstream of Greenspring Manor), simulations, and sanitary sewer evaluation surveys ("SSES"), which include video and smoke testing to identify issues and try to find and eliminate any illegal connections. T. 58.

Baltimore County also requires each of its consultants to prepare model calibration summary tables that are included in the SRRR Plans for the various sewersheds. T. 59. For the Jones Falls sewershed, Table 5-3.1 of the SRRR Plan contains the model calibration summary table. T. 59. Mr. Bayer explained that the table shows a "self-assessment" that evaluates whether

the models used are over or underpredicting SSO's in each meter basin. T. 59. Table 5-3.1 sheds light on Map 3 of the RJN Report because RJN used "the same model that RK&K did." T. 60.

For example, Mr. Bayer reviewed the results for meter basin BC22, which is immediately downstream from Greenspring Manor and shows numerous "red" segments in Map 3 of the RJN Report. T. 60-61. Mr. Bayer explained that the County was "quite concerned" with the over predicting in that area demonstrated on the model calibration summary table, which he labeled as "significant." T. 60. Accordingly, the County had "low confidence" in the accuracy of the predictions that were being provided for meter basin BC22, where the bulk of the "red" is shown downstream from the project on Map 3 of the RJN Report. T. 61.

VII. DPWT'S POSITION WITH RESPECT TO APPROVAL OF GREENSPRING MANOR.

Mr. Bayer walked through the various correspondence from DPWT regarding Greenspring Manor and confirmed that the only issues ever identified with respect to sewer capacity were the 8 segments mentioned by Lisa Echoltz. Specifically, Ms. Eicholtz authored a memo on August 2, 2021 identifying the 8 segments as needing repair prior to use and occupancy permit for the Greenspring Manor homes. T. 62. On August 10, 2021, the Development Plan Conference Comments for Greenspring Manor again referenced the 8 segments as needing improvement prior to use and occupancy permits being issued for this project. T. 62. This correspondence came after the RJN Report and "Map 3" that showed additional modeled ("red") issues on the path of sewage downstream from Greenspring Manor. T. 62. Mr. Bayer confirmed that DPWT never opposed the approval of the Greenspring Manor Development Plan on the basis of sewer capacity and limited its comments to requiring repair/replacement of the 8 segments prior to use and occupancy for the homes proposed by Greenspring Manor (i.e., after Development Plan approval). T. 63.

VIII. PIPE DESIGN, PERCENTAGES, AND THE DESIGN MANUAL.

Mr. Bayer testified that when pipes are shown to be flowing at 100% or higher, it does not necessarily mean they are unsafe. T. 64. Other factors, such as the cover elevation at ground surface must be considered. T. 64.

Additionally, Mr. Bayer shed light on the DPWT Design Manual, which requires new pipes to be constructed to operate at percentages varying from 70-90% depending on what type of pipe is being constructed. T. 64. Mr. Bayer explained that the Design Manual percentages pertain to design of new sewers: "Someone is constructing a new sewer, they are supposed to follow these guidelines." T. 66. This is not the requirement for existing pipes, only for "new sewer construction." T. 66.

IX. IMPROVEMENTS DOWNSTREAM FROM GREENSPRING MANOR.

Mr. Bayer testified that the SRRR Plan required certain improvements downstream from the Greenspring Manor Property. T. 67. As part of DPWT's review of the Greenspring Manor Development Plan proposal, Mr. Bayer was asked to list and to provide an update on the status of the SRRR Plan required repairs. T. 67. Upon performing that review, he verified that there were no outstanding SRRR Plan required improvements remaining downstream from Greenspring Manor. T. 67. All of the repairs identified in the SRRR Plan were already addressed prior to his review of the Development Plan proposal. *Id*.

X. EXPLANATION OF AREAS OF SPECIAL CONCERN.

Mr. Bayer explained that "Areas of Special Concern" depicted on Baltimore County's Sewerage Basic Services Map are generally locations where the County had seen SSOs occur. T. 65. With respect to the Area of Special Concern within which Greenspring Manor is situated on the 2023 Basic Services Map, Mr. Bayer confirmed that DPWT has not observed any actual

SSOs, but DPWT was concerned about the possibility of an overflow so they created the Area of Special Concern. T. 68. However, Mr. Bayer clarified that if the 8 segments are improved, "that concern would go away." T. 68. Mr. Bayer concluded that if the 8 segments are improved, DPWT believes the sewer system within the Jones Falls sewershed can function safely and without detrimental impact to the public health or environment. T. 68-69.

IMPACT ON ALJ ORDER

Mr. Bayer's testimony, coupled with the letter from Mr. Benjamin, provides compelling reasons for the ALJ to reconsider and reverse the portion of the Development Plan Order denying the Plan for "Lack of Sewer Capacity." The ALJ's analysis with respect to sewer capacity began on page 112 of the Development Plan Opinion and Order. The impact of the evidence presented at the Reconsideration hearing on each of the ALJ's findings is addressed individually below.

I. STATUS OF THE 8 SEGMENTS.

Much of the discussion and concern regarding the sewer path for this project revolved around the "8 segments" that indisputably need to be improved. The Order reflects that there was too much uncertainty regarding these segments, and the ALJ was "not willing to condition approval here on the possibility that Johns Hopkins may, or may not, complete that work." Order at p. 130.

Two of the 8 segments are the direct responsibility of the Developer and are actually shown in the bottom left corner of the Development Plan. Dev. Ex. 1C. Accordingly, as part of its overall improvements and construction for the project, Developer will be spending significant resources to design and to construct the improvement/enlargement of the 2 segments detailed on the Development Plan.

With respect to the remaining 6 segments, Mr. Benjamin's letter clarifies that Baltimore County and Johns Hopkins actually share the responsibility for making the improvements and have a "shared commitment" to improving the 6 sewer segments. BC Ex. 14, p. 2. Mr. Benjamin stated that Johns Hopkins will "continue to coordinate its efforts in good faith so that the County will be able to bid the Sewer Project for construction." *Id.* The letter makes clear that the project will be bid through the County's procurement process as a county infrastructure project and the County will actually be the applicant for the permits. BC Ex. 14, p. 2. The effort to improve these 6 segments is already underway.

These clarifications provide additional justification for approval of the Development Plan with a condition that Use and Occupancy permits be withheld until the repair/replacement of the 8 sewer segments are completed. Indeed, Mr. Bayer testified that DPWT never opposed the approval of the Greenspring Manor Development Plan. Instead, DPWT actually recommended approval of the Development Plan, subject to its comments requiring improvement of the 8 segments prior to use and occupancy for the homes proposed by Greenspring Manor. T. 63. This testimony, coupled with the letter from Mr. Benjamin, provides certainty that the Development Plan can be approved with appropriate conditions.

II. AREA OF SPECIAL CONCERN.

a. ORIGINAL ORDER.

The Order identified the "Area of Special Concern" surrounding the Property as a primary initial concern for the ALJ when evaluating the sewer path of this project. Order, pp. 113-114. This case was actually distinguished from the Torch Hill project on that basis. *Id.* Without the testimony of Mr. Bayer, the ALJ did not have independent, unbiased testimony on this issue at the time the original Order was written.

b. IMPACT OF BAYER TESTIMONY.

Mr. Bayer clarified that the reason the County put the Property in an Area of Special Concern was its fear that SSOs may occur unless the 8 segments identified by Ms. Eicholtz were repaired. If the required work on the 8 segments were to be completed, "that concern would go away." T. 68. Additionally, according to Mr. Bayer, once the 8 segments are improved, the county's sewer system will function safely and without detrimental impact to the public health or environment. T. 68-69.

Mr. Bayer provided independent, unbiased testimony explaining the justification for the Area of Special Concern, which will be alleviated when the 8 segments are improved. Approval of the Development Plan with a condition withholding the issuance of Use and Occupancy permits until the required work on the 8 segments is completed will ensure the Area of Special Concern "does its job" in requiring improvements prior to authorizing additional hookups to the system.

III. FINDINGS RE: DPWT EMAILS.

a. ORIGINAL ORDER.

In the original Order, the ALJ reviewed the chronology of correspondence both internal to DPWT and externally to representatives of the Developer and of the Protestants. Order, pp. 115-120. As DPWT did not initially testify to explain their internal emails, the ALJ was strongly influenced by Mr. Bayer's email stating that "no units could be built at the Property without causing an SSO." Order, p. 117. The ALJ repeatedly referenced this statement as evidence of "Mr. Bayer's opinion that SSOs would result from the construction of any homes from this Project." Order p. 118. Indeed, the Order states "I place great amount of weight on expertise and knowledge of DPWT engineers…that if any homes were added to the sewer system, SSOs will occur." *Id*. It also states that "DPWT and the Sewer Design team engineers have maintained their steadfast opposition to adding 61 homes to the sewer system due to inadequate capacity and

concern for SSOs." Order, p. 120. The email from Mr. Bayer was termed "enough to deny the Greenlined Development Plan due to lack of sewer capacity." *Id.*

b. IMPACT OF BAYER TESTIMONY.

This was arguably the most important part of Mr. Bayer's testimony. Mr. Bayer clarified that his email to Jeff Peluso (stating that no units can connect without causing an SSO) assumed the 8 sewer segments identified by Ms. Eicholtz would not be improved prior to connecting the Greenspring Manor project to the system. T. 55. He confirmed that once the required work on the 8 segments is completed, all of the units can safely connect to the County sewer system. T. 55.

Mr. Bayer's testimony also confirmed that DPWT was never opposed to the approval of the Development Plan. Rather, DPWT just wanted to ensure the required work on the 8 segments would be completed prior to Use and Occupancy permits being issued for the project. T. 63. He walked through the various correspondence from DPWT (including the Lisa Echoltz August 2, 2021 memo and DPWT Development Plan Conference comments dated August 10, 2021), and confirmed that DPWT never opposed the approval of the Greenspring Manor Development Plan on the basis of sewer capacity. T. 63. In fact, DPWT expressly recommended approval of the Development Plan, subject to the described protective conditions regarding the 8 segments. Additionally, Mr. Bayer testified that the modeled issues downstream from the Property shown in Map 3 of the RJN Report had nothing to do with his email to Mr. Peluso. T. 56; Prot. Ex. 78, Map 3.

Mr. Bayer's testimony confirmed that DPWT does not (and never did) oppose approval of the Development Plan (which was consistent with the testimony of Geno Cauley from DPR at the outset of the case), and does not believe that approval of this plan will lead to SSOs. The DPWT team just wanted to make sure that the required work on the 8 segments will be completed prior to Use and Occupancy permits being issued for the homes proposed for this

project. This is exactly what the Developer seeks in this case through the imposition of a condition in an order from the ALJ approving the Development Plan. The testimony provides compelling reasons for the ALJ to reconsider the decision to deny the Plan on the basis of sewer capacity and, instead, to approve the Development Plan subject to one or more protective conditions.

IV. FINDINGS RE: CONSULTANT REPORTS.

a. ORIGINAL ORDER.

In the original order, the ALJ found "that both the Ramboll Report and the Hazen Report provide compelling evidence that the pipes in the sewage path from the Property are at over-capacity and that SSOs are predicted to result during the County-selected 10yr/6hr storm event." Order, p. 126. Without testimony from DPWT, the ALJ did not have the benefit of an unbiased, neutral opinion as to the purpose of the consultant reports.

b. BAYER TESTIMONY.

Mr. Bayer's testimony confirms that neither report supports the conclusion that there is insufficient capacity in the system or that SSOs will result if the homes proposed on the Development Plan are constructed. According to Mr. Bayer, the Ramboll report does not relate to capacity of the system at all, and the construction of 60 additional homes would have no impact on the Lake Roland project (T. 45-46). Contrary to the findings in the original Order, the yet-to-be issued Hazen Report will be a long-range planning document that will not identify actions that require immediate repair before any connections are made to the Jones Falls sewershed. (T. 44). This testimony alleviates one of the major concerns expressed by the ALJ in the initial Order, as the consultant reports do not prove that there is insufficient capacity within the system overall, let alone insufficient capacity to handle the homes proposed by this project.

V. FINDINGS RE: MODEL PREDICTED SSOs.

a. ORIGINAL ORDER.

In the original Order, the ALJ found that testimony regarding "model predicted SSOs within the sewage path here was not sufficiently rebutted by the Developer." Order, p. 126. In particular, Map 3 of the RJN Report raised concerns at it showed a lot of "red" areas indicating potential issues under the model.

b. IMPACT OF BAYER TESTIMONY.

Mr. Bayer explained that the model calibration tables contained in Table 5-3.1 of the SRRR Plan demonstrate that the model predicted SSOs shown in Map 3 of the RJN Report showed "significant" overpredicting. Based on this information, DPWT had "low confidence" in the accuracy of the predictions. T. 60. This was particularly true in meter basin BC22, which is immediately downstream from the Property. T. 60-61.

According to Mr. Bayer, the County does not ignore model predicted SSOs, but they try to verify actual issues in the field before allocating funding for a rehabilitation or repair projects that may be indicated by models. T. 57. The County uses a variety of tools such as flow monitoring (Dev. Ex. 47B shows five flow monitors downstream of Greenspring Manor), simulations, and sanitary sewer evaluation surveys ("SSES"), which include video and smoke testing to identify issues and try to find and eliminate any illegal connections. T. 58.

The model predicted SSOs do play a role in guiding where the County should focus its observations in the field, but they do not prove that the Development Plan in this case violates any law or regulation pertaining to sewer capacity. The testimony provides justification for reconsidering the findings in the original Order related to sewer capacity.

VI. PROVISIONS OF THE DPWT DESIGN MANUAL AND BCC.

a. ORIGINAL ORDER.

In the original Order, the ALJ was concerned with the percentages of flow downstream from the Property, which exceed 90-95% under various storm events. Order, p. 121. The DPWT

Design Manual was quoted, with the ALJ concluding that flows above 90-95% are unstable. Order, pp. 121-22. The ALJ found that the Plan violates the section of the Manual providing that: "As part of any land subdivision or development of land, provision shall be made for the safe and sanitary treatment and disposal of sewage without detrimental effects to the public health or environment." Order p. 128, quoting DPR Policy Manual, p. 18. Additionally, the ALJ found that the sewage generated by this project would not satisfy BCC §§ 32-4-410(b), 32-4-102(b), and 32-4-103(a)(8), which require "sewage facilities to function safely." *Id.* at p. 128.

b. IMPACT OF BAYER TESTIMONY.

With respect to the percentages issue, Mr. Bayer testified that when pipes are shown to be flowing at 100% or higher, it does not necessarily mean they are unsafe. T. 64. Other factors, such as the cover elevation at ground surface, must be considered. T. 64.

Additionally, Mr. Bayer shed light on the DPWT Design Manual, which requires new pipes to be constructed to operate at percentages varying from 70-90% depending on what type of pipe is being constructed. T. 64. Mr. Bayer explained that the Design Manual percentages pertain to design of new sewers: "Someone is constructing a new sewer, they are supposed to follow these guidelines." T. 66. This is not the requirement for existing pipes, only for "new sewer construction." T. 66.

Finally, with regard to the sewer system "functioning safely" Mr. Bayer confirmed that if the required work on the 8 segments is completed, all of the units from Greenspring Manor can safely connect to the County sewer system. T. 55. The county's sewer system can function safely and without detrimental impact to the public health or environment. T. 68-69.

This testimony provides a compelling justification for the ALJ to reconsider the findings regarding the BCC and Design Manual. Mr. Bayer's testimony confirms that the project will comply with the applicable code and manual provisions if it is approved with a condition that the

required work on the 8 segments be completed prior to Use and Occupancy permits being issued for homes proposed on the Development Plan.

VII. IMPROVEMENTS DOWNSTREAM FROM THE PROPERTY.

a. ORIGINAL ORDER.

The ALJ was not convinced that repairs downstream from the project had been made. The Order cites to Map 2 of the RJN report and states that it only showed "2 minor improvements" to the system. Order, p. 117. Additionally, the ALJ felt that Dave Bayer could have alluded to additional downstream repairs in either his March 8, 2023 or May 30, 2023 email to Mr. Leffner, but held that the "silence is deafening." Order, p. 127.

b. IMPACT OF BAYER TESTIMONY.

Mr. Bayer broke the silence on this issue. He testified that since the Consent Decree was signed, Baltimore County has spent more than $25 million in construction costs to make improvements in the Jones Falls sewershed. T. 47. At the time of the Consent Decree, there were 44 SSO's in the County and 34 have been eliminated. Four of the remaining 10 require Baltimore City improvements, and only 1 is located in the Jones Falls sewershed – Marnat Avenue – which is not within the sewer path downstream from the Property. T. 47-48. With respect to the sewer path for this project, Mr. Bayer testified that all of the downstream repairs identified in the SRRR Plan have been addressed. T. 67.

Much of the analysis in the original Order expressed frustration with the fact that the ALJ was left to guess how to interpret correspondence from DPWT. Mr. Bayer's testimony answered important questions about the County's overall effort to make improvements in the Jones Falls sewershed and the status of the improvements downstream from the project, which have all been addressed. This testimony filled the void left by the prior silence, and presents compelling justification for the ALJ to reconsider the initial decision and to approve the Development Plan, subject to one or more protective conditions.

REQUEST FOR RECONSIDERATION

The evidence presented at the reconsideration hearing was sufficient to warrant reconsideration of the Order denying the Development Plan. Initially, a Blue-Lined plan was submitted that removes reference to an emergency access gate. This resolves the ALJ's concern that the plan violates the DPR Policy Manual. The testimony of Dave Bayer, coupled with the letter from James Benjamin, provided clarity on all of the issues in the original Order related to sewer capacity. The record in this case now contains substantial evidence supporting approval of the Development Plan with a condition that the work required for the 8 segments must be completed prior to the issuance of Use and Occupancy permits for the homes proposed on the Development Plan.

Protestants counsel and People's Counsel seem fixated on the Motion for Reconsideration, arguing that it never should have been granted and it was somehow "unfair" to hold this proceeding to hear testimony from DPWT. We assume this will continue in their post hearing Memoranda. The Appellate Courts have determined that it is soundly within an administrative law judge's authority to permit an applicant to present new evidence and even to amend an administrative application on the last day of a hearing, provided the Protestants are given "a fair opportunity for comment and cross-examination." Brandywine Senior Living at Potomac LLC v. Paul, 237 Md. App. 195, 216-17 (2018).

All parties were given an opportunity to cross examine Mr. Bayer. Notably, People's Counsel did not ask a single question. All parties could have contacted and met with Mr. Bayer prior to the hearing, but Mr. Bayer confirmed that only Developer's Counsel asked to meet with him and his attorney. T. 25. Mr. Bayer's testimony is incredibly probative and assists the ALJ in understanding the truth about the path of sewage from this project. Any argument about fairness is misplaced.

CONCLUSION

For the reasons stated herein, Developer respectfully requests that the ALJ approve the Development Plan with a condition that the work required for the 8 segments must be completed prior to the issuance of Use and Occupancy permits for the homes proposed on the Development Plan.

Respectfully submitted,



Adam M. Rosenblatt
Christopher D. Mudd
Venable LLP
210 W. Pennsylvania Ave., Suite 500
Towson, Maryland 21204
(410) 494-6206
Attorneys for Developer

CERTIFICATE OF SERVICE

I hereby certify on this 22nd day of March, 2024 that a copy of the Memorandum was emailed to: Michael R. McCann, P.A., 118 W. Pennsylvania Avenue, Towson, Maryland 21204 (michael@mmccannlaw.net), Peter Zimmerman (pzimmerman@baltimorecountymd.gov); Michael Wyatt (mwyatt@wyattgunning.com); and Doug Sachse (dsachse@dtslawoffices.com).



Adam M. Rosenblatt

IN RE: APPROVAL OF FINAL DEVELOPMENT PLAN & PETITION FOR SPECIAL HEARING IN THE MATTER OF: GREENSPRING MANOR LLC 2310 W. JOPPA ROAD	*	BEFORE THE OFFICE OF ADMINSTRATIVE HEARINGS FOR BALTIMORE COUNTY
8th Election & 2nd Councilmanic Districts	*	Case Nos: 08-0922 and 2021-250-SPH

* * * * * * * * * * * * *

PROTESTANT MICHAEL T. WYATT'S
POST-HEARING MEMORANDUM IN OPPOSITION
TO DEVELOPMENT PLAN

Protestant, Michael T. Wyatt, hereby submits this post-hearing memorandum in opposition to the development plan and requested zoning relief sought by Developer in the context of its Motion for Reconsideration.[1]

During thirteen (13) days of evidentiary hearings in this matter, Administrative Law Judge ("ALJ") Maureen Murphy heard abundant evidence about the lack of adequate sewer capacity along the path from the location of the proposed development. A specific issue of concern is the property adjacent to the proposed development. The property known as "Pavilion III", a medical office complex owned by Johns Hopkins, was constructed somewhere between 2017 and 2020. As part of the development of Pavilion III, Johns Hopkins and Baltimore County were required to perform certain obligations and incur financial expense for the improvement of 6 of 8 sewer segments identified in Protestants' Exhibit 13. ("JH-BC Sewer Work"). The JH-BC Sewer Work sewer work was never done.

The JH-BC Sewer Work was addressed during the underlying evidentiary hearing in this matter. And although the details of relative responsibility between Johns Hopkins and Baltimore County were not clearly enunciated, these details were not crucial to ALJ Murphy's decision in this case. From the

[1] Recognizing other opposition parties, through counsel, capably address the myriad of issues presented by the proposed development, the undersigned adopts those positions and only addresses in this Memorandum the issue relating to what is referenced herein as the "JH-BC Sewer Work".

evidentiary record, the objective status of the JH-BC Sewer Work was initially referenced by David Bayer, PE who stated the following:

> "Hopkins engineer just stopped working on the project. They never got the permits that are needed, and they never acquired the off-site right-of-way that is needed. PAI issued the occupancy for the building without requiring that Hopkins fulfill their obligations in accordance with the agreement."
> Mr. Bayer made that statement in a March 2021 email to his colleagues at DPWT.

(*See* Prot. Ex. 89). As correctly noted by ALJ Murphy in her decision, there was no evidence or information as to when, if at all, the JH-BC Sewer Work was to be completed:

> "[T]here was no evidence presented as to whether or when Johns Hopkins will complete the work…this issue goes to the Developer's burden of proof in its case in chief that adequate sewer capacity exists in the sewage path for this project, including the repair/rehabilitation by Johns Hopkins."

(Opinion/Order at pp. 129 – 130).

The purpose of this memorandum is to highlight that nothing has changed regarding the JH-BC Sewer Work, despite recent intercessions by Developer and the Baltimore County Office of Law.

In granting Developer's Motion for Reconsideration, ALJ Murphy ordered that a hearing be conducted to "consider testimony and/or documents from DPWT representatives in regard to the sewer path from this Property". The hearing was convened on Monday, February 26, 2024. Contrary to the limited scope afforded Developer in the context of reconsideration, Baltimore County Attorney James R. Benjamin, Jr. interjected his thoughts into this matter in the form of a letter, written one day prior to the hearing, and many months after the issuance of an Order/Opinion. Mr. Benjamin is not a DPWT representative and the authority for his involvement is at best unknown.[2] Over objection, Mr. Benjamin's February 23, 2024, letter and its attachment were received into the record as Balt. Co. Ex. 14. The situation created by Mr. Benjamin's

[2] Baltimore County Code § 3-2-1002 enumerates the duties and responsibilities of the County Attorney, who has general charge of the legal business of the County. The County Attorney shall "perform all of the legal work for each officer and unit of the county government". The County Attorney shall also "institute, defend, or discontinue a suit, action, or legal proceeding in a local, state, or federal court, or before a local, state, or federal administrative agency". *Id.* Authority for the County Attorney to gratuitously present evidence in a combined development/zoning hearing is nowhere to be found in the enabling legislation, and his role in this case is opaque.

unseemly appearance in this matter is even more problematic since he was not called as a witness, and his non-sworn letter and attachment were not subject to any scrutiny, including cross examination by Protestants.[3]

Putting aside for the moment these considerable concerns, a close examination of Mr. Benjamin's letter serves to reinforce ALJ Murphy's decision in this case, notwithstanding Mr. Benjamin stated intention of "correct[ing] certain factual inaccuracies reflected in the record concerning [the] development".

Through his letter, Mr. Benjamin purports to place new evidence into the record in this case in the form of a Memorandum of Understanding ("MOU") by and between Johns Hopkins and Baltimore County. Mr. Benjamin concedes "the September 27, 2017, MOU has expired" and, indeed, a reading of it confirms its non-enforceability.

Nevertheless, Mr. Benjamin goes on, for several pages, explaining what has and has not happened in the context of the construction of Pavilion III. In doing so, he confirms: (1) the JH-BC Sewer Work was a necessary consideration for the construction of Pavillion III (regardless of whether or not the JH-BC Sewer Work completion was a condition precedent to the issuance of any permits for Pavillion III); (2) the Johns Hopkins sewer work was never completed; and (3) currently there is no enforceable agreement requiring that the JH-BC Sewer Work actually get completed. [4]

Without support, Mr. Benjamin sunnily offers that:

> "Johns Hopkins and the County continue to coordinate its [sic] efforts in good faith so that the County will be able to bid the Sewer Project for construction… Johns Hopkins and the County are working together on finalizing a new MOU confirming and memorializing the items that are to be completed".

Again, instead of clarity there is vague reference and conjecture about purported negotiations of a possible agreement to be entered into at some future, ill-defined time frame. It bears emphasis that Johns

[3] The undersigned was not provided a copy of Mr. Benjamin's letter until after February 23, 2024 hearing was concluded. To say the entirety of the matters set forth in Mr. Benjamin's letter were unfairly insulated from any critical review would be an understatement.

[4] It should be added that the addition of 62 residential units proposed in the Greenspring Manor development in this case was clearly not a consideration when MOU was executed in 2017 and Johns Hopkins constructed Pavilion III.

Hopkins is not involved in this matter yet Mr. Benjamin purports to represent obligations Johns Hopkins may or may not have at some point in the future, under some yet-to-be-finalized MOU.

Critically, Mr. Benjamin confirms one of the major items which remains incomplete - some 7 years after the now-expired MOU was executed. And it is this: securing temporary construction and access easements necessary for the JH-BC Sewer Work. These yet-to-be-negotiated-for property rights would need to be acquired from off-site, third-party property owners such as the Benedictine Sisters of Baltimore, Inc. ALJ Murphy will recall the testimony of Sister Kathleen McNany who mentioned being approached several years ago about easement rights and the general reluctance of Benedictine Sisters of Baltimore, Inc. to grant such easement rights due, in part, to the severe disruption it would cause the religious monastery.

Mr. Benjamin also glosses over that the expired MOU provides that Johns Hopkins "may elect to not proceed" with the project should "the total bid costs" exceed a project threshold, or "Cap Amount" as contrasted with the requirement that Johns Hopkins provide "Security" in the form of a letter of credit. (Balt. Co. Ex. 14, MOU at pp. 2-3). These critical pieces, too, are nowhere near completion.

In sum, the purported obligations contained in the expired MOU are largely illusory. This is amply demonstrated by the failure to move the JH-BC Sewer Work forward after many years and the absence of any enforceable agreement to compel its completion. This situation cannot reasonably be expected to improve notwithstanding Mr. Benjamin's optimism. Mr. Benjamin's letter, instead of clarifying the issues relating to the JH-BC Sewer Work, serves to amplify uncertainty whether it will ever be completed.

Respectfully,

/s/ Michael T. Wyatt
Michael T. Wyatt
Residence: 4 Trelawny Court
Lutherville, MD 21093
Office: Wyatt & Gunning LLC
100 W. Pennsylvania Ave., Suite 10
Towson, Maryland 21204
mwyatt@wyattgunning.com
(410) 296-5960

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 22nd day of March 2024, the foregoing Memorandum was sent via email to:

Peter Max Zimmerman
People's Counsel for Baltimore County
105 W. Chesapeake Ave.
Towson, MD 21204
peoplescounsel@baltimorecounty.gov

Adam Rosenblatt, Esquire,
210 W. Pennsylvania Avenue, Suite 500
Towson, Maryland 21204
amrosenblatt@venable.com

Michael McCann, Esquire
118 W Pennsylvania Avenue
Towson, MD 21204
michael@mmccannlaw.net

Christopher Mudd, Esquire
210 W. Pennsylvania Avenue, Suite 500
Towson, Maryland 21204
CDMudd@venable.com

Douglas Sachse, Esquire
dsachse@dtslawoffices.com

Eric Rockel
erockel@earthlink.net

Blandy Becker
blandy.becker@gmail.com

Ying Wei Lum
ylum1@jhmi.edu

Dean Merritt
dean@merrittinc.net

/s/ *Michael T. Wyatt*
Michael T. Wyatt

IN RE: GREENSPRING MANOR DEVELOPMENT PLAN AND ZONING HEARING (2310 West Joppa Road)	*	BEFORE THE
	*	OFFICE OF
	*	ADMINISTRATIVE HEARINGS
8th Election District 3rd Council District	*	FOR BALTIMORE COUNTY
	*	Case No. 08-0922 and Case No. 2021-0250-SPH
Greenspring Joppa Falls, LLC Owner and Developer	*	

* * * * * * * * * * * * *

SUBPOENA

STATE OF MARYLAND, BALTIMORE COUNTY TO WIT:

TO: David Bayer
Department of Public Works and Transportation
Sewer Design
111 W. Chesapeake Avenue, Room 200
Towson, MD 21204

YOU ARE HEREBY COMMANDED TO: (X) Personally appear by WebEx; ( ) Produce documents and/or objects only; ( ) Personally appear and produce any and all documents outlined below on **Monday, February 26, 2024 at 10:00 AM.**

The above scheduled hearing will be held remotely using WebEx for audio and video participation. Call-In information and a link to the hearing is below:
https://baltimorecountymd.webex.com/baltimorecountymd/j.php?MTID=m70b241f852c5624985426824e918df96

If you do not have access to a computer or smart device, please contact the Office of Administrative Hearings at 410-887-3868 for the call-in information the day before the scheduled hearing.

SUBPOENA REQUESTED BY:
Adam Rosenblatt, Esq.
Venable LLP
210 West Pennsylvania Avenue, Suite 500
Towson, MD 21204

The witness named above is hereby ORDERED to so appear before the Office of Administrative Hearings by WebEx. The Office requests (__) the Sheriff, (X) Private Process Server, to issue the summons set forth herein.

Lauren E. Murphy

Office of Administrative Hearings

From:	James R. Benjamin Jr.
To:	Maureen E Murphy
Cc:	Adam M. Rosenblatt; Michael McCann; Peter Max Zimmerman; Sameer Sidh; D"Andrea Walker; Peter Gutwald; David Gildea; Jason Vettori
Subject:	Greenspring Manor - PAI Case Nos.: HOH 08-0922 & 2021-0250-SPH
Date:	Friday, February 23, 2024 1:16:15 PM
Attachments:	FINAL - 02.23.2024 Correspondence to ALJ Murphy - Greenspring Manor.pdf

Good afternoon ALJ Murphy:

Please see attached correspondence. Thank you.

Regards,

James R. Benjamin, Jr.
County Attorney
Baltimore County Office of Law
Historic Courthouse
400 Washington Avenue
Towson, Maryland 21204
(410) 887-4420
(410) 296-0931 (fax)

Confidentiality Notice:
This e-mail, including any attachment(s), is intended for receipt and use by the intended addressee(s), and may contain legal or other confidential and privileged information. If you are not an intended recipient of this e-mail, you are hereby notified that any unauthorized use or distribution of this e-mail is strictly prohibited, and you are requested to delete this communication and its attachment(s) without further review or making any copies thereof and to contact the sender of this e-mail immediately by reply e-mail.

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In accordance with Internal Revenue Service rules, any federal tax advice that appears to be provided in this communication is not intended or written by the author to be used, and cannot be used, by the recipient, for the purpose of avoiding penalties which may be imposed on the recipient by the IRS.

JOHN A. OLSZEWSKI, JR.
County Executive

JAMES R. BENJAMIN, JR., *County Attorney*
Office of Law

February 23, 2024

VIA E-MAIL
Office of Administrative Hearings
Maureen E. Murphy, Administrative Law Judge
Jefferson Building
105 W. Chesapeake Avenue, Suite 103
Towson, Maryland 21204

Re: Greenspring Manor - PAI Case Nos: HOH 08-0922 & 2021-0250-SPH

Dear ALJ Murphy:

I am writing in regard to the above-referenced matter. It is my understanding that a hearing will be conducted on February 26, 2024 to consider testimony and/or documents from Department of Public Works and Transportation (DPWT) representatives in regard to the sewer path from a proposed 61 home subdivision development at 2310 West Joppa Road known as Greenspring Manor. In reviewing this matter, I thought it was important for the County to correct certain factual inaccuracies reflected in the record concerning this development.

The construction of a building and related facilities known as Pavilion III has been completed on land owned by Johns Hopkins. As part of the development plan for Pavilion III, the County and Johns Hopkins agreed to a Memorandum of Understanding (MOU) dated September 27, 2017 (see attached) that defined roles and responsibilities in the completion of certain offsite improvements to the County's sewer system ("Sewer Project"). The September 27, 2017 MOU has expired.

Given that an MOU governing the completion of the Sewer Project is atypical of the County's standard development review process, and that this MOU was executed prior to the current Administration taking office, I felt that it was necessary to note the existence of this document in order to provide the appropriate context for consideration of this case.

The record in this matter currently fails to include any information about the terms of the MOU. Moreover, the record incorrectly indicates that Johns Hopkins was obligated to independently "address" certain improvements for the Greenspring Manor development before the development may connect to the public sewer.

Under the MOU and as part of its role in jointly addressing the project with the County, Johns Hopkins was to hire an engineer to develop grading plans, as well as sediment and erosion control plans. These plans and mylars have been reviewed, and have been signed and approved.

The Sewer Project was to be bid by the County through its procurement process and be done as a County infrastructure project. The permits to be obtained for the Sewer Project would all be in the name of Baltimore County, not Johns Hopkins. Johns Hopkins was to coordinate with the County on the effort to obtain the State Highway Permit required to allow the County to perform the Sewer Project as well as all other required permits, such as those from the Army Corps of Engineers, Maryland Department of the Environment, the Baltimore County Soil Conservation District or any other entity, which permits are also needed in order to allow the County to perform the Sewer Project. Subject to the County's completion of the Sewer Project, Johns Hopkins was also to make a financial contribution to offset the County's costs with respect to it. In addition, Johns Hopkins was to use good faith efforts to obtain the temporary construction and access easements for the benefit of the County needed to allow the Sewer Project to move forward. The County's role under the MOU, was to coordinate with Johns Hopkins, to bid the Sewer Project through its procurement process, advance funds for the cost of and construct the project without undue delay once all permits and easements are acquired.

Importantly, to correct the record, please note that any inference that completion of the Sewer Project was a pre-requisite to issuance of the Use and Occupancy Permit for Pavilion III is inconsistent with the express terms of the MOU. Section 4(c) of the MOU reads as follows:

> *"Upon Pavilion III meeting all County requirements to obtain a Use and Occupancy Permit, and notwithstanding the completion status of the Project, which the parties agree, is not relevant in determining whether Pavilion III should obtain a Use and Occupancy Permit, the County will issue a Use and Occupancy Permit for Pavilion III."*

Johns Hopkins and the County have a shared commitment to completing the Sewer Project. Please be advised that, as contemplated in the original MOU, the grading plans as well as sediment and erosion control plans have been done by Johns Hopkins. Those plans have been reviewed, and the mylars for those plans have been signed and approved.

Johns Hopkins and the County continue to coordinate its efforts in good faith so that the County will be able to bid the Sewer Project for construction. As part of that effort, Johns Hopkins and the County are working together on finalizing a new MOU confirming and memorializing the items that are to be completed. [1]

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[1] What remains to be done now is the securing of the remaining permits and financial contribution, as well as securing the necessary temporary construction and access easements. Once these aforementioned items are completed, the Sewer Project can move forward.

It is my hope that this information is helpful in clarifying the parties' roles in relation to the sewer project and in correcting the record. Thank you.

Very truly yours,

James R. Benjamin, Jr.
County Attorney

JRB/jb

cc: Counsel of Record
Sameer Sidh, DCAO, Office of County Executive
D'Andrea L. Walker, DPWT
C. Peter Gutwald, PAI
David K. Gildea, Esquire
Jason T. Vettori, Esquire

MEMORANDUM OF UNDERSTANDING

THIS MEMORANDUM OF UNDERSTANDING (referred to hereinafter as the "**Memorandum**") is made this 27 day of SEPTEMBER, 2017 by and between **JOHNS HOPKINS HEALTH CARE AND SURGERY CENTER DEVELOPMENT, LLC** ("**JHHCSCD**") and **BALTIMORE COUNTY, MD**, a body corporate and politic ("**County**").

Recitals

WHEREAS, JHHCSCD is the fee owner of 5.5769 acres of land as more particularly described on Exhibit A attached hereto (the "**Land**"); and

WHEREAS, JHHCSCD intends to commence the construction of a building and related facilities to be known as Pavilion III, as depicted on the Development Plan attached hereto as Exhibit B, on the Land (hereinafter "**Pavilion III**"); and

WHEREAS, as part of the County's approval of the Development Plan for Pavilion III, the County is requiring certain offsite modifications to the County's sewer system as described on Exhibit C attached hereto and incorporated herein (the "**Project**"); and

WHEREAS, the County has requested and JHHCSCD has agreed to participate in the Project as described herein below.

NOW, THEREFORE, it is STIPULATED AND AGREED to by and between the parties as follows:

1. *Recitals.* The above recitals form an integral part of this Memorandum and are incorporated herein as if set forth again in their entirety.

2. *JHHCSCD Responsibilities for the Sewer Project.* JHHCSCD agrees to the following:

   a. *Sewer Design.* JHHCSCD has engaged an engineer to design the Project (the "**Design**"). Prior to the date hereof, JHHCSCD has delivered a preliminary Design to the County for the County's review and approval. Within 21 days of JHHCSCD's receipt of the County's comments on the preliminary Design, JHHCSCD will cause the engineer to deliver a final Design to the County. The Design will be provided to the County by JHHCSCD on an "as-is" "where-is" basis, without any representations or warranties by JHHCSCD; provided that, the engineer who prepared and affixed his seal to the Design: (a)

shall be responsible for errors in the Design caused by his negligence, and (b) to the extent questions arise regarding the Design, will make himself available to the County to discuss and make appropriate modifications (with any related cost to be part of the cost of the Project that will be shared pursuant to Section 2(e) below). JHHCSCD will have no liability to the County with respect to the Design and the County's use thereof. JHHCSCD will pay all costs of the engineer incurred in connection with the Design.

b. *State Highway Administration Permit.* JHHCSCD will coordinate with the County on the effort to obtain the State Highway Permit (the "**SHA Permit**") required to allow the County to perform the Project. JHHCSCD will pay all costs and expenses of the Maryland State Highway Administration in issuing the SHA Permit.

c. *Other Permits.* JHHCSCD will coordinate with the County to obtain all other required permits, such as from The Army Corps of Engineers, Maryland Department of the Environment, the Baltimore County Soil Conservation District or any other entity, which permits are needed in order to allow the County to perform the Project.

d. *Temporary Construction Easements.* JHHCSCD will use good faith efforts to obtain the temporary construction and access easements needed to allow the County to construct the Project; provided, however, that the County shall approve and initially pay for any and all costs associated with obtaining such easements. Costs incurred by the County under this paragraph 2(d) are part of the cost of the Project that will be shared pursuant to Section 2(e) below. Any temporary construction easements must be executed and provided to the County prior to its acceptance of the bids for the work.

e. *Payment.* Subject to the County substantially completing the Project by no later than January 1, 2020, and upon JHHCSCD's receipt of an invoice sent by the County no later than thirty days after substantial completion of the Project, JHHCSCD will pay the County the lesser of: (i) 50% of the actual construction costs incurred by the County to complete the Project plus the County Administration/Inspection Costs (as defined below) (as supported by reasonable details provided to JHHCSCD); or (ii) an amount equal to 55% of the Project costs as reflected in the accepted bids for the work plus the County Administration/Inspection Costs; minus in the case of either clause (i) or (ii) the amounts paid by JHHCSCD pursuant to Sections 2(b)-(c) above (the "**Reimbursement Ceiling**"). The term "County

Administration/Inspection Costs" means costs for inspection and administration work performed for the County (which are estimated to be 8% of the cost of the work). If the total bid costs for the Project are in excess of $900,000 ("**Cap Amount**"), either the County or JHHCSCD may request a meeting within fifteen (15) days after receipt of the bids to discuss alternatives that might reduce the excess costs. Both parties will work in good faith to reduce the costs to the Cap Amount but, if unable to agree, JHHCSCD may elect to not proceed. JHHCSCD will pay the County any undisputed amounts within 45 days of its receipt of the County's invoice.

f. *Security.* JHHCSCD shall provide the County with a letter of credit ("**Security**") to secure JHHCSCD's payment obligations as set out in Section 2(e) above within thirty (30) days after the County's acceptance of bids for the Project. The amount of the Security shall be equal to the best estimate of the Reimbursement Ceiling as mutually agreed by JHHCSCD and the County, each acting in its reasonable discretion, at the time the Security is posted. The Security will be released upon the earlier of: (i) January 1, 2020 to the extent the Project is not substantially completed by that date; or (ii) on the date JHHCSCD satisfies its payment obligations as set out in Section 2(e) above.

3. *County Responsibilities for the Sewer Project.* Once all permits and easements are acquired, the County agrees to advance funds for the cost of and construct the Project without undue delay.

4. *Grading Permit; Demolition Permit; Building Permit; Use and Occupancy Permit.*

a. The parties acknowledge that the County has previously issued a grading and demolition permit for the existing tennis barns located on the Land.

b. The County shall issue a Building Permit for Pavilion III upon satisfaction by JHHCSCD of the County's normal requirements for the issuance of building permits which shall not include any requirements related to offsite improvements needed for the Project.

c. Upon Pavilion III meeting all County requirements to obtain a Use and Occupancy Permit, and notwithstanding the completion status of the Project which, the parties agree, is not relevant in determining whether

Pavilion III should obtain a Use and Occupancy Permit, the County will issue a Use and Occupancy Permit for Pavilion III.

5. *Governing Law.* This Memorandum shall be construed, interpreted and enforced according to the laws of the State of Maryland, without regard to principles of conflict of law. Should any provision of this Memorandum require judicial interpretation, it is agreed that the court interpreting or construing the same shall not apply a presumption that the terms of any such provision shall be more strictly construed against one party or the other by reason of the rule of construction that a document is to be construed most strictly against the party who itself or through its agent who prepared the same, it being agreed that the agents of all parties hereto have participated in the preparation of this Memorandum.

6. *Full Agreement and Understanding.* This Memorandum contains the full and complete agreement of the parties hereto and no oral agreements, past, present or future shall be effective or binding on or against the parties unless the same shall be reduced to writing and executed in the same manner as this Memorandum.

7. *Authority.* Each of the parties warrants that it has the authority to enter into this Memorandum and to bind itself hereby and have carefully read and understand this Memorandum and are cognizant of the terms and conditions hereof and the obligations associated herewith.

8. *Warranties and Representations.* The parties hereto each warrant and represent that they have the power and requisite legal authority to bind themselves, their organization if acting in a representative capacity and their respective successors and assigns to the agreements herein contained, and if a corporation, limited liability company, partnership or similar entity, each further warrants and represents that it is duly organized and is in existence in accordance with Maryland law and that it has taken all necessary action required to be taken by its charter, by-laws, or other organizational documents to authorize the execution of this Memorandum.

9. *Notices.* Any notices required or permitted to be given by either party to the other shall be addressed to the parties as follows:

On behalf of the County:

Steven A. Walsh, P.E.
Department of Public Works
Director
111 West Chesapeake Avenue
Room 307
Towson, MD 21204
410-887-3300

Copy to:

Michael Field, Esquire
County Attorney
Baltimore County Office of Law
400 Washington Avenue
Towson, Maryland 21204

On behalf of the JHHCSCD:
David K. Gildea, Esquire
600 Washington Avenue
Suite 200
Towson, MD 21204

Any notice that is required to be given pursuant to this Memorandum shall be in writing, and shall be deemed given upon actual receipt and shall be sent to all other parties by certified or registered mail, prepaid, or by federal express or other commercial overnight courier service to the last known address of the receiving party.

10. *Amendments.* This Memorandum may be amended only by a subsequent written instrument and signed by the parties hereto or their respective successors and/or assigns.

11. *Binding.* This Memorandum shall inure to the benefit of and be binding upon JHHCSCD and the County and their respective heirs, personal representatives, successors and assigns.

12. *Counterparts.* This Memorandum may be executed in counterparts, each of which shall be deemed an original for all purposes, all of which shall together constitute one and the same Memorandum; each counterpart may be signed and transmitted initially by tele-facsimile or PDF and the facsimile or PDF shall be considered as containing original signatures, provided that said counterpart is provided subsequently to each other party in its original form.

[SIGNATURE PAGE TO FOLLOW]

IN WITNESS WHEREOF, the parties hereto have affixed their respective hands and seals the date and year first above written.

WITNESS/ATTEST:

WITNESS:

JOHNS HOPKINS HEALTH CARE AND SURGERY CENTER DEVELOPMENT, LLC

By: _____
Name: W. Gill Wylie
Title: Authorized Signatory

ATTEST:

BALTIMORE COUNTY, MARYLAND,
A body corporate and politic

By: _____
Fred Homan
County Administrative Officer

REVIEWED AND APPROVED

_____
Director
Department of Public Works

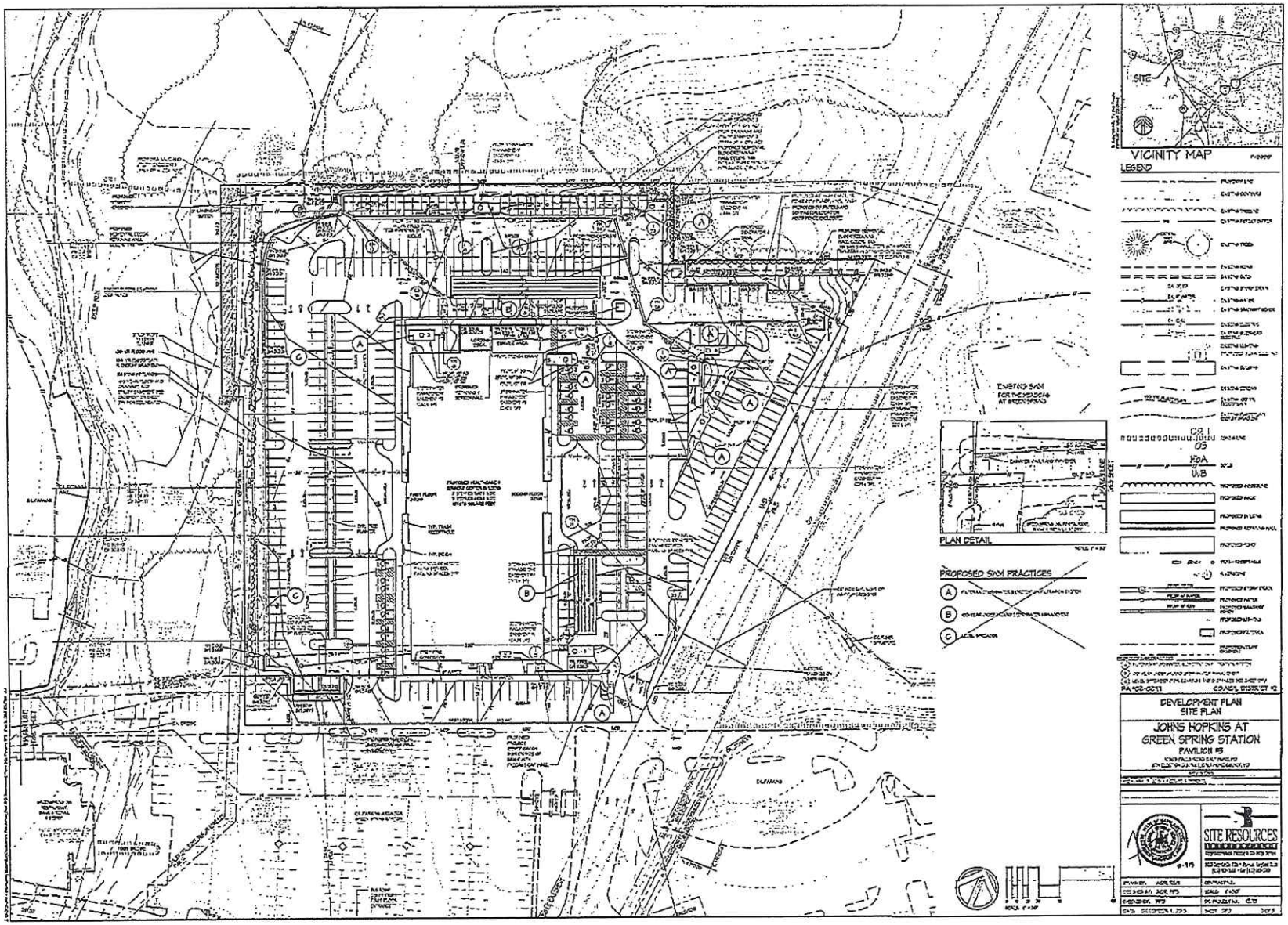
NO CERTIFICATION NECESSARY

_____ 9/19/17
Office of Budget and Finance Date

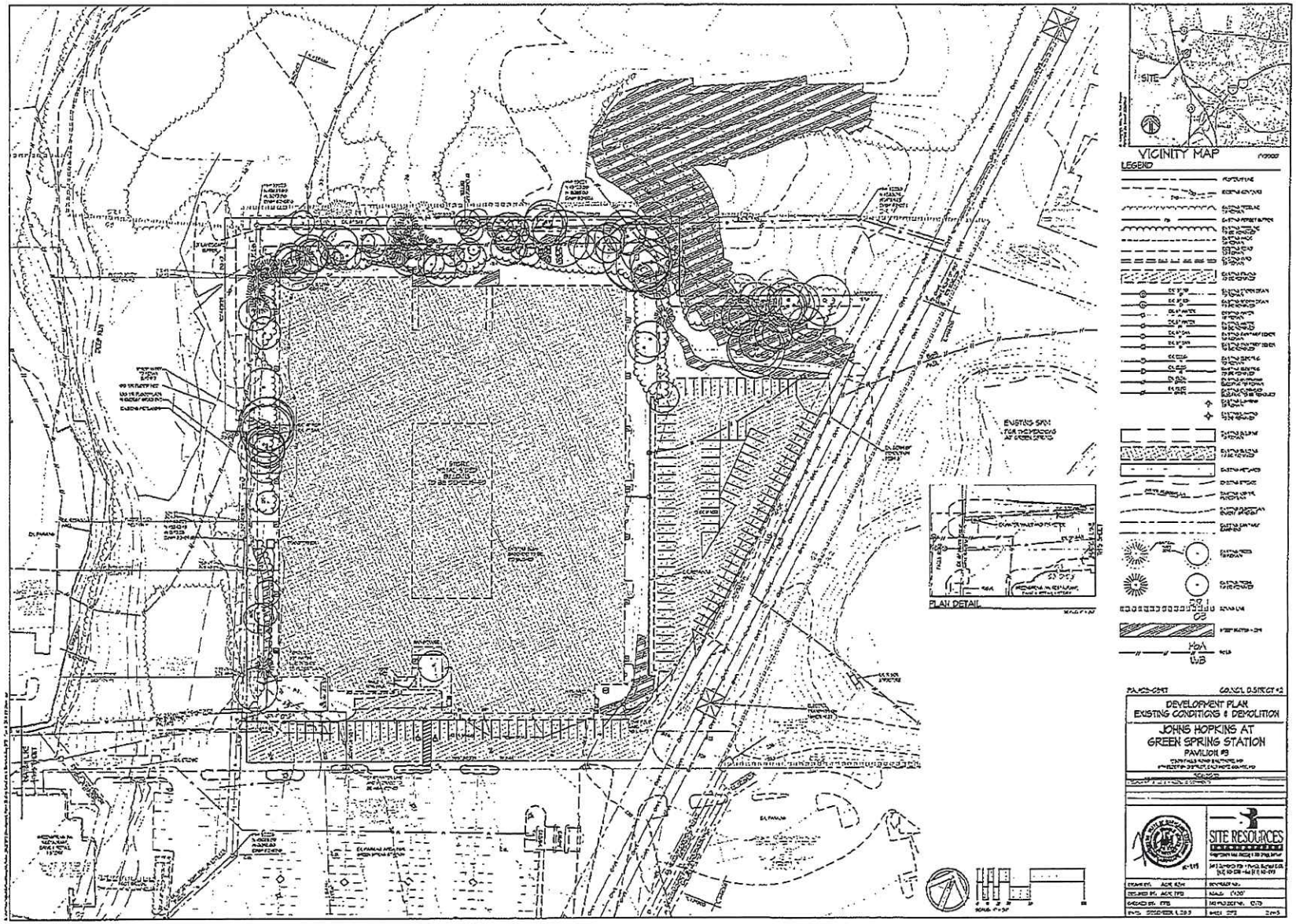
APPROVED FOR FORM AND LEGAL SUFFICIENCY:
*(Subject to execution by the duly authorized County Administrative Official
And County Council, if indicated)

9/15/17

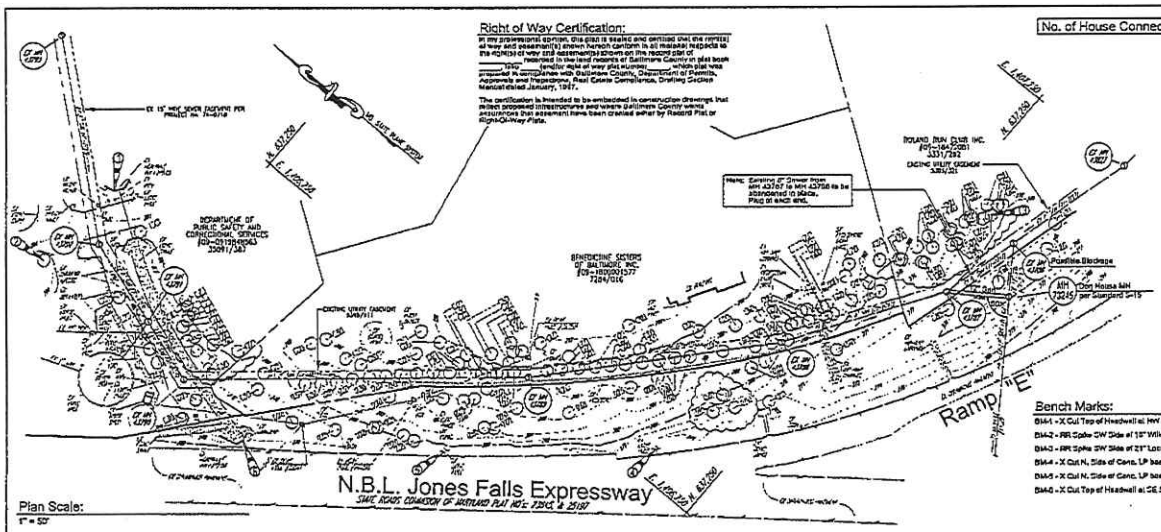
_____ 9/21/17
Assistant County Attorney
*Approval of Form and Legal Sufficiency does not convey approval or disapproval of the substantive nature of this transaction. Approval is based upon typeset document. All modifications require re-approval.

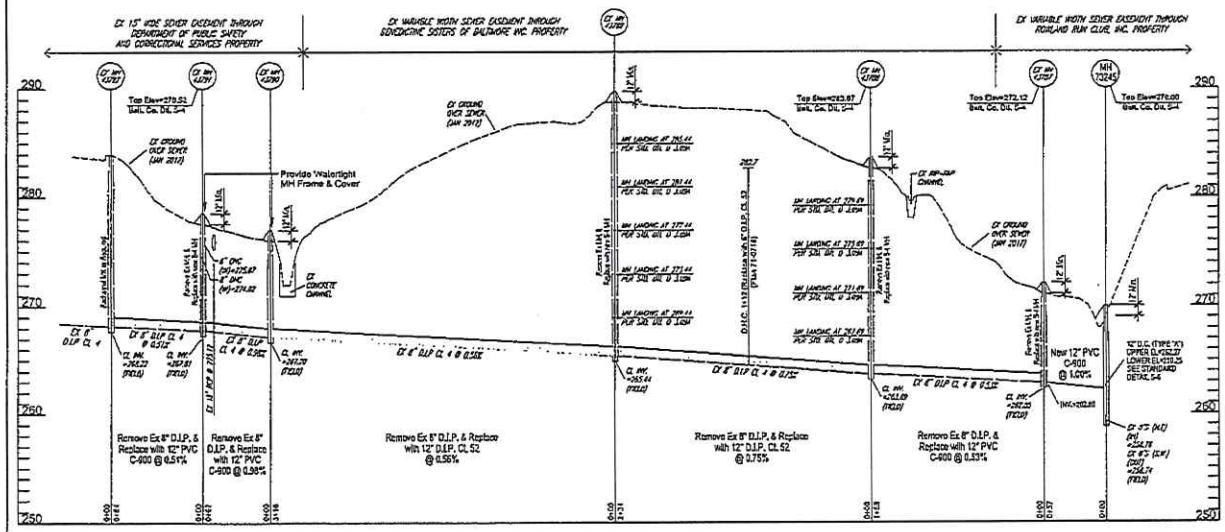

VICINITY MAP
SITE
LEGEND
PLAN DETAIL
PROPOSED SWM PRACTICES
DEVELOPMENT PLAN
SITE PLAN
JOHNS HOPKINS AT
GREEN SPRING STATION
PAVILION #3
SITE RESOURCES

A


VICINITY MAP
SITE
LEGEND
PLAN DETAIL
DEVELOPMENT PLAN
EXISTING CONDITIONS & DEMOLITION
JOHNS HOPKINS AT
GREEN SPRING STATION
PAVILION #3
SITE RESOURCES

B





Sanitary Sewer Construction Notes

1. The cost of connecting to existing sewer and/or manholes, including the construction of a new channel or modification of an existing channel, is considered incidental and will be included in the unit price bid for sanitary sewer work.
2. The cost for construction under and/or over any existing utilities and utility service house connections including Gas, Electric, Cable, Storm Drains, water, and Sewer shall be included in the unit price bid for Sanitary Sewer pipe.
3. Trees and shrubs are to be preserved from damage to the maximum extent possible. Contractor to remove the stumps and roots of any tree or shrub that needs removal, but trees and shrubs within the limit of disturbance also will be removed. All costs for removal of trees, shrubs, stumps, etc. will be included in the lump sum price bid for "Clearing and Grubbing".
4. The existing utilities and other existing features shown are from the best available records and the accuracy and completeness of this information is not guaranteed. The information should be verified by the contractor to his satisfaction prior to the start of work. The contractor shall take all necessary precautions to protect existing utilities and shall maintain uninterrupted supply. Any damage incurred shall be repaired immediately at the contractors expense.
5. Underground utilities (electric, water, etc.) may, or may not, exist on private property. The location of these services are unknown. The contractor shall take all necessary precautions to avoid damaging these services. Any damage incurred shall be repaired immediately at the contractors expense.
6. All construction shall be accomplished in accordance with Baltimore County Standard Specifications and Details for Construction (February 2000, as amended).
7. The contractor shall notify Miss Utility at (800) 257-7777 at least 72 hours prior to starting excavation.
8. Location of house connections are shown for information only. Final location will be determined in the field by the inspector.
9. Sewer alignment to be regraded to original contours and stabilized.
10. The contractor shall maintain traffic at all times.
11. The contractor shall use extreme caution during excavation and/or installation of all work shown on these plans. All utilities shall be fully protected from damage or interruption.
12. Where two (2) feet of clearance cannot be obtained between pipes and structures, sand backfill shall be placed as directed by the engineer in the field.
13. Unless otherwise noted, the bid line for excavation shall be subgrade under proposed roads, established grade under turf areas, and existing grade along existing pavement.
14. Full trench compaction is required for a minimum distance of 20 feet on each side of all crossings, within all existing road rights-of-way, and where shown on the plans.
15. All connections to DIP must be made with DIP (class 52).
16. When connecting to any existing manhole, the manhole must be core drilled and an "A-lock" connector, or approved equal must be used to provide a watertight connection.
17. All property markers shown on the drawings and disturbed by the contractor must be reset in the original location by the contractor after construction is complete. All cost for resetting property markers to be included in other items bid.
18. All construction within Jones Falls Expressway right of way shall be in accordance with State Highway Administration Permit Number _____.

Sewer Bypass Pumping Notes:

1. The Contractor shall notify the Bureau of Utilities of the proposed bypass method and schedule. Contact Mr. Rodney Turner at 410-887-7440.
2. Sewage flow in the existing sewer is to be maintained at all times during construction. At no time will it be permitted for sewage to be discharged onto the ground, into any storm drains, or into any streams. All costs to maintain flow are to be included in the unit prices bid.
3. The Contractor shall be responsible for any flooding or damage that may result from the work.
4. Temporary bulkheads shall be installed as necessary. The temporary bulkheads shall be designed to resist sewage flows, and fit into the manholes as required to accommodate the work.
5. The Contractor shall notify Mr. Rodney Turner of the Bureau of Utilities at 410-887-7440 at least 48 hours in advance of the intended start of the work and coordinate all work with Mr. Turner. The Contractor shall determine to the satisfaction of the County that this operation will not result in surcharging the sewer or cause flooding backups or backflow into basements.
6. The Contractor shall furnish and install temporary pumps, suction and discharge piping, pipes, flow level controls and appurtenances to divert the flow of sewage around the pipe section to be constructed. The bypass pumping system shall be of sufficient capacity to transport peak flows in the sanitary sewer segment as are constructed. The Contractor shall be responsible for furnishing the necessary labor and supervision to set-up and operate the bypass pumping system. Stationary equipment (pumps, compressors, electric generator, etc.) engines shall be properly silenced with exhaust silencers and insulated enclosures. The bypass pumping system shall be furnished and installed to prevent spills from the pumps and piping. Any spillage that occurs shall be immediately reported.
7. Should any liquid or solid matter from the sewer collection system be spilled, discharged, leaked or otherwise discharged to the environment as a result of the Contractors flow control operations, the Contractor shall be responsible for all clean up and disinfection of the affected area and all costs associated with the cleanup. The Contractor shall also be responsible for notifying the County and performing all cleanup operations at no additional cost to the County. All sewer spills shall be reported within 24 hours to the Bureau of Engineering & Construction, Construction Inspection Division.
8. When flow in a sanitary sewer is plugged, blocked, or bypassed, sufficient precautions must be taken by the Contractor to protect the sanitary sewers and adjacent property owners from overflow damage that might result from the sanitary sewer surcharging.
9. The design flow for the bypass system should be based upon the maximum capacity of the sewers to be constructed using a safety factor of two (2).
10. All bypass system components, installation and operation shall conform to the Specifications and Guidelines of the manufacturer.
11. All bypass operations shall be monitored 24/7 and never left unattended. The Contractor shall provide an emergency contact name and telephone number to the Inspector.

Note:
Design Drawing Based on Maryland Coordinate System
Horizontal: NAD 83/91
Vertical: NADV 88

AS-BUILT PER RECORD PRINT		REVISION	DATE	BY	P. W. A. NO.	KEY SHEETS	POSITION SHEETS	DRAWING SCALE
DRAFTSMAN	DATE				RIGHT OF WAY	9-26	43 of 44 RW 19	PLAN 1" = 50' PROFILE HORIZ. 1"=50' VERT. 1"=10'

DEPARTMENT OF PUBLIC WORKS
APPROVED _____ DIRECTOR
DATE _____
BUR. OF ENGINEERING & CONSTRUCTION
APPROVED _____ CHIEF
DATE _____

ENGINEER	BUREAU OF ENGINEERING AND CONSTRUCTION	BUILDINGS	HIGHWAYS	STRUCTURES	STORM DRAINS	WATER	MAPS	FIELD SURVEYS
OFFICE ENGINEERING CORPORATION 10755 BALTIMORE AVE, BELTSVILLE, MD	REVIEWED							
DRAWN BY:	DATE							
CHECKED: WILLIAM A. HOYLE								
DATE: 06/13/2017 LIC. NO.: 22243								

BALTIMORE COUNTY DEPARTMENT OF PUBLIC WORKS BUREAU OF ENGINEERING & CONSTRUCTION

SANITARY SEWER REPLACEMENT
DRAINAGE AND UTILITY EASEMENT SOUTHWEST OF JOPPA ROAD
ALONG THE RAMP FROM THE OUTER LOOP TO NORTHBOUND JONES FALLS EXPRESSWAY

SUBDIVISION: JOHNS HOPKINS AT GREEN SPRING STATION

ELECT. DISTRICT NO. 9&2

SHEET DESIGNATION	CONTRACT NO.
	-UAO
	JOB ORDER NO. 210-201-
	SHEET 1 OF 1
	DRAWING NO. 2017-0274
	FILE NO. 1

JOHN A. OLSZEWSKI, JR.
County Executive

PAUL M. MAYHEW
Managing Administrative Law Judge
MAUREEN E. MURPHY
Administrative Law Judge

September 25, 2023

Adam M. Rosenblatt, Esq. – amrosenblatt@venable.com
Christopher Mudd, Esq. – cdmudd@venable.com

Michael McCann, Esq. – michael@mmccannlaw.net

RE: **MOTION FOR RECONSIDERATION**
Project: GREENSPRING MANOR
Address: 2122 W. Joppa Road
PAI Case Nos: HOH 08-0922 & 2021-0250-SPH

Dear Counsel:

Enclosed please find a copy of the decision rendered in the above-captioned matter.

In the event any party finds the decision rendered is unfavorable, any party may file an appeal to the Baltimore County Board of Appeals within thirty (30) days of the date of this Order. For further information on filing an appeal, please contact the Baltimore County Office of Administrative Hearings at 410-887-3868.

Sincerely,

Maureen E. Murphy

Maureen E. Murphy
Administrative Law Judge
for Baltimore County

MEM/dlm
Attachment

c: *See* Email Addresses Next Page

Ann Bruder – annb@charmcityart.com
Barbara Schumann – bcschumann@comcast.net
Ben Proctor - bgpmdp@comcast.net
Beth Winter – kelizabeth.robertson@gmail.com
Blandy Becker – bland.becker@gmail.com
Bob Summers – bsummers@ecologixgroup.com
Bradley Knatz – sknatz@baltimorecountymd.gov
Brett Williams – bmwilliams@baltimorecountymd.gov
Bruce Oxley – boxley@atapco.com
Chuck Connor – crconnor@venable.com
Cliff Faber – csfaber@comcast.net
Dan Radebaugh – dan@radebaughlaw.com
Daniel OLeary – djoleary@esd-associates.com
Dean Merritt – dean@merrittinc.com
Diane Litz - dlitz@224 @gmail.com
Doug Sachse – dsachse@dtslawoffices.com
Edward Consroe – econsroe@aol.com
Eric Rockel – erockel@earthlink.net
Eugene Cauley – ecauley@baltimorecountymd.gov
Fred Hallahan – fredhallahan@gmail.com
James Clayton – james.d.clayton7@gmail.com
James Gary – bfjmj1@gmail.com
James Hermann – jhermann@baltimorecountymd.gov
James Malico – james.malico@kimley-horn.com
Jason Goldsmith – jason@carchex.com
Jay Weiss jweissco@comcast.net
Jeff Livingston – jlivingston@baltimorecountymd.gov
Jeff Perlow – jperlow@baltimorecountymd.gov
JenniferBusse- jbusse@wtplaw.com
Jenifer Nugent – jnugent@baltimorecountymd.gov
Jen Frankovich, Esq. jfranchovich@baltimorecountymd.gov
Jerry Chen – jchen@baltimorecountymd.gov
Jim Smith – jsmith258@gmail.com
Joshua Waranch – jwaranch@gmail.com
John Canoles – espijc@aol.com
Karen McGraw – karen.mcgraw@verizon.net
Katie Dillon – katie.dillon@kimley-hor.com
Kathleen McNany – kmcnany@emmanuelosb.org
K. Gillies – kgjunk@mac.com
Kelly Madigan - kmadigan@baltimorecountymd.gov
Lachelle Imwiko – limwiko@baltimorecountymd.gov

Lara Townsley – lara.townsley@danaher.com
Laurence Bruder – lburder@noxilizer.com
Lloyd Moxley – lmoxley@baltimorecountymd.gov
Lynn Manthy – lynnsmanthy@hotmail.com
Mark Towsley – mgtownsley@gmail.com
Matt Bishop – matt.bishop@kimley-horn.com
Michael Friedman – mikefriedman311@comcast.net
Michael Tanczyn, Esq. – michael.tanczyn@gmail.com
Mike Lenhert – mlenhart@lenharttraffic.com
Michael Wyatt – mwatt@wyattgunning.com
Nancy Hubble – nancy@hubbleisbee.com
Nick Driban – ndriban@lenharttraffic.com
Nick Leffner – nick.leffner@kimleyhorn.com
Nick Ottomaniello – nick.ottomaniell@kimley-horn.com
Patricia Hampton – thampton1117@gmail.com
Patrick Coggins – pcoggins@atapsco.com
Pete Zimmerman – pzimmerman@baltimorecountymd.gov
Randall Gracheck – rgrachek@newfields.com
Rebecca Wheatley – rwheatley@baltimorecountymd.gov
Renee Hamidi – renee@thevpc.org
Richard Burch – rcb@mhblaw.com
Richard Compton – richcompton@comcast.net
Richard McGraw – petemcgraw515@gmail.com
Robert Smith – besmtih01@verizon.net
Roy Snyder – rsnyder@atapco.com
Roz Johnson – rvjohnson@baltimorecountymd.gov
Russ Powell – rpowell@atapco.com
Shannon Hoffman – shannon9528@gmail.com
Shaun Crawford – scrawford@baltimorecountymd.gov
Sima Della Vecchia – theautumnsweater@gmail.com
Steve Smith – ssmith@gaylordbrooks.com
Susan Shelhoss – susan.shelhoss@stryker.com
Susan Tinanoff – stinanoff@gmail.com
Tom McCord – tbmccord@aol.com
Vishnubhai Desai – vdesai@baltimorecountymd.gov
Ying Wei Lum – yingwellum@gmail.com

IN RE: **DEVELOPMENT PLAN HEARING & PETITION FOR SPECIAL HEARING**	*	BEFORE THE OFFICE OF
8th Election District 2nd Council District	*	ADMINISTRATIVE HEARINGS
(2310 W. Joppa Road)	*	FOR
	*	BALTIMORE COUNTY
GREENSPRING MANOR	*	
GREENSPRING JOPPA FALLS, LLC *Owner/Applicant*	*	**CASE NOS. 08-0922 and 2021-0250-ASA**

* * * * * * *

ORDER ON MOTION FOR RECONSIDERATION

This matter comes before the Office of Administrative Hearings ("OAH") as a Motion for Reconsideration filed by Christopher Mudd, Esquire, Adam Rosenblatt Esquire and Venable, LLP on behalf of Greenspring Joppa Falls, LLC, Owner/Applicant, and Atapco Properties, Inc., Developer, and Protestants' Response to Motion for Reconsideration filed by Michael McCann, Esquire on behalf of Valley's Planning Council, Inc., Falls Road Community Association, Inc., Heatherfield Community Association, Seminary Ridge Owners Association, Boxwood Homeowners Association, The Meadows of Greenspring HOA, and Tally Ho Community Association, and People's Counsel's Response to on the Motion for Reconsideration filed by Peter M. Zimmerman.

Owner/Developer cited *Frederick Classical Charter Sch. Frederick Cty. Bd. of Educ.*, 454 Md. 330, 406 (2017), in support of their belief that 'precedent' exists, and/or that one must be followed by OAH, in hearing evidentiary issues in a case, such that OAH is required to provide notice to a party of the type of evidence is sufficient to meet the burden of proof, is inapposite. The *Frederick Classical School* case concerned the State Board of Education's interpretation of a statute. The Supreme Court of Maryland reversed the State Board of Education's statutory

interpretation holding that it was not only contrary to its previous interpretation, but was also contrary to the "statutory purpose and legislative history of the statute." (*Id.* at 342-343). Thus, the *Frederick Classical School* case has nothing to do with the above captioned case. Indeed, it would be improper for OAH to have such a precedent as the production of evidence is particular to each case.

In reviewing other cases decided by OAH on the issue of convening a supplementary hearing to take additional testimony after Motions for Reconsideration were filed namely, *In Re: PUD, 101 York Rd.*, Case No. 09-0843 and *In Re: Development Plan Hearing, 2609-2615 Caves Rd.*, Case No. HOH-03-0499, in both cases ALJ John Beverungen held supplementary hearings and took additional testimony on specific issues raised in the Motions for Reconsideration. In allowing additional hearing and evidence to be submitted, ALJ Beverungen found that it was "a reasonable request, and is one that will allow for this matter to be resolved in a sensible and economical fashion, without the need for multiple appeals and a procedural morass." After careful consideration of the Motion and Responses in this case, I agree that, in the interests of judicial economy, and pursuant to the OAH's discretion as authorized in Rule 4K, this approach makes practical sense here and the Motion for Reconsideration will be granted.

THEREFORE, IT IS ORDERED by this Administrative Law Judge/Hearing Officer for Baltimore County, this **25th** day of **September, 2023,** that the Motion for Reconsideration filed by the Owner/Developer, be, and it is hereby **GRANTED**; and

IT IS FURTHER ORDERED, that a hearing will be conducted to consider testimony and/or documents from DPWT representative(s) in regard to the sewer path from this Property; and

IT IS FURTHER ORDERED, the Owner/Developer is permitted, at the hearing, to offer a revised version of the Development Plan (to be marked as a separately numbered exhibit) that would eliminate the Emergency Access Gate, but no additional testimony or evidence will be provided in regard to that issue.

Maureen E. Murphy

MAUREEN E. MURPHY
Administrative Law Judge
for Baltimore County

MEM/dlm/dlw

IN RE: DEVELOPMENT PLAN HEARING, PETITION FOR SPECIAL VARIANCE, etc. 2310 W. Joppa Road *Greenspring Manor* 9th Election District 3rd Councilmanic District	*	BEFORE THE
	*	OFFICE
	*	OF
	*	ADMINISTRATIVE
	*	HEARINGS
	*	Case nos. 08-0922 2021-0250-SPH
	*	

* * * * * * * * * * * *

PROTESTANTS' RESPONSE TO MOTION FOR RECONSIDERATION

Protestants, Valleys Planning Council, Inc., Falls Road Community Association, Inc., Heatherfield Community Association, Seminary Ridge Owners Association, Boxwood Homeowners Association, The Meadows of Greenspring HOA, and Tally Ho Community Association, submit this response to the Motion for Reconsideration filed by Greenspring Joppa Falls, LLC (the "Developer").

ARGUMENT

A. The ALJ Did Not Misunderstand The Evidence

The Developer contends that the ALJ misunderstood the evidence before her, specifically (i) "the intent of internal emails from DPWT staff," (ii) the "purpose of third party consultant reports obtained by DPWT," and (iii) "conflicting statements from competing expert witnesses regarding the state of the sewer system serving the Property." (Mot., p. 1). There is no merit to this assertion.

1. The email from Dave Bayer and Mr. Cauley's "recommendation"

The Developer points to an email from Dave Bayer of DPWT (Prots' Ex. 90) in which he states, among other things, that sanitary sewer overflows would occur if Johns Hopkins did not replace the sewer segments below the site and that "zero" is the number of units that could be developed at the site without causing an SSO. (Mot., p. 2). The Developer argues that the ALJ's reliance on this email is contradicted by the testimony of DPW's Eugene Cauley, in which he testified that DPWT recommended approval of the development plan. (*Id.* (*citing* T. 9/1/22, p. 235).

It was certainly within the ALJ's prerogative and discretion to discredit the "recommendation" of Mr. Cauley in light of all of the other evidence introduced on the issue of sewer capacity. That evidence, which consisted of several witnesses and dozens of exhibits, need not be repeated here but is described in great detail in Protestants' post-hearing memorandum (pp. 2-28) and the ALJ's decision itself (pp. 30, 31, 44-45, 47-58). The recommendation of agency staff is not sacrosanct and, in the case of Mr. Cauley, was simply not sufficient to even raise a presumption in favor of plan approval.[1] Indeed, although Mr. Cauley stated, in conclusory fashion, when asked by the Developer's counsel, that DPWT recommended approval, it was clear that he knew very little about the sewer capacity.[2] With respect to the eight sewer segments, he did not know what development project required replacement of the segments or where the segments are even located, and had only become aware of the issue when he read the memoranda about it. (*Id.*, pp. 212-13, 265-66). When asked whether he could say that replacement of the eight segment would resolve the problems in the sewershed, he could not answer. (*Id.*, pp. 283-84).

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[1] The ALJ agreed, concluding that "the presumption of development plan compliance … is not found here…." (Op., p. 120).

[2] Counsel for the Developer did not ask any questions of Mr. Cauley regarding sewer capacity.

2. The Ramboll and Hazen reports

The Developer contends that the ALJ "disregarded" testimony that the Ramboll and Hazen reports were "long term planning documents." (Mot., p. 3). The "testimony" referenced by the Developer is apparently that of Mr. Leffner, who described the Ramboll Report as "just an example of the County being proactive…doing what they do, which is own, maintain, operate, repair the sewer system." (T13, p. 133). "I think the Ramb[oll] report was, essentially, a study and improvement that the County planning to do for relining the main under Lake Roland. It's not necessarily any kind of capacity improvement." (T13, pp. 134-35). With respect to the Hazen study, Mr. Leffner described the study as "kind of like a further horizon study that the, the County is embarking up" and "kind of an example of the County, [] doing more with regard to the analysis and development of standard County practices beyond what just the Consent Decree requirement would be…. [I]t's more so a planning document, right? Continuing to identify analysis, capacity studies, long term planning to help influence the County's future capital spending in the County." (T13, pp. 134, 135).

The ALJ did *not* disregard this testimony by Mr. Leffner. Indeed, the ALJ made specific reference to it in her summary of the evidence (*see* Op., pp. 68-69) (Mr. Leffner "described the Hazen and Ramboll reports as the County's future long term planning for the capital budget" and "testified that neither Hazen nor Ramboll reports were cause of any concern") and then explicitly rejected his testimony. *Id.*, p. 124 ("I am not convinced by Mr. Lessner's opinion that [the Ramboll report] was only a 'planning document' and only used for 'capital budget' purposes"); *id.*, pp. 125-26 (the Hazen Report cannot be discounted as only a 'planning document'").

In any event, Mr. Leffner's view of the reports is hardly credible. The express "primary purpose" of the improvements identified in the Ramboll report is to "minimize the inflow and

infiltration into the interceptors to reduce the likelihood of sanitary sewer overflows." (Prots' Ex. 87, p. 1).[3] There is no mention or indication anywhere in the report that it is simply a "long term planning document." As for Hazen, there is language in the Hazen newsletter (Prots' Ex. 85) suggesting that the County would *use* the results of the Hazen study for budgeting and planning purposes, but the newsletters as well as Hazen's Scope of Services (Prots' Ex. 86) make clear that the study was not simply a "planning document" but rather a "comprehensive evaluation" for the purpose of determining the near-term and long-term capacity of the system and the preparation of a "capacity assessment report." (Prots' Ex. 86, pp. 1-19). The ALJ agreed. (*See* Op., p. 126) ("While the County may *also* use it for capital budget planning, the County hired Hazen to perform a comprehensive evaluation of the accuracy of the data from the RKK models and to update those models"). The suggestion that the Hazen and Ramboll reports are merely "planning" documents and therefore insignificant somehow is fictional.[4]

3. The repairs made by the County

The Developer states that the ALJ "was not convinced despite the introduction of an email from Dave Bayer, that repairs had been made to the County's sewer system downstream from the property." (Mot., p. 3).

First, a close review of the repairs performed by the County (reflected in Dev.'s Ex. 44 and 45B)[5] reveals that, aside from the lining of one sewer segment, the work consisted of simply repairs

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[3] When asked whether he was aware of the purpose the Ramboll report, Mr. Leffner could not recall. (T. 5/31/23, p. 149). When asked whether he had an understanding of the scope of the work called for the report, he said he had "[a] general idea" and was "generally familiar." (*Id.*). And when shown the report itself, he agreed that the repairs involved "a lot of pipe." (*Id.*, p. 150).

[4] To be fair, it is unclear what exactly Mr. Leffner meant when he described the reports as "planning" documents. Was he suggesting that the County was not required to undertake the repairs or that the County was "planning" on performing the repairs?

[5] Some of the work identified in these exhibits was not performed because the County believed it was not necessary.

to four manholes. Indeed, Mr. Leffner agreed that these repairs were "minor" in nature and would not cure or correct, for example, the model-predicted SSOs and hydraulic restrictions determined by RJN and reflected in Map 3. (T. 5/31/23, pp. 204, 206).

Second, as the ALJ perceptively pointed out, the repairs were performed in 2014, 2017 and 2019 and, thus, Mr. Bayer would have known about them when he wrote his email on March 22, 2021, *i.e.*, he would not have written that email if he believed that the repairs corrected the deficiencies. (Prots' Ex. 90).

B. The ALJ Had More Than Sufficient Basis To Not Simply Accept The Conclusory Recommendation of Mr. Cauley

The Developer contends that the ALJ erroneously refused to accept the testimony of Mr. Cauley and found that additional testimony from DPWT representative was necessary. The Developer posits that "[a] DPR representative testifies on behalf of DPWT and relays whether there are any open issues or the department recommends approval of the development plan.... The purpose of consolidating DPWT's position on development plans into one single witness is to prevent HOHs from taking multiple employees away from their jobs to attend and testify. Until very recently, DPR confirmation was deemed to be the 'best evidence' – or at least sufficient evidence in an administrative forum, to explain DPTW's issues and position regarding the development plan." (Mot., p. 3).

The Developer's view of the hearing process is skewed and naive. The ALJ is not required to accept the testimony of an agency representative simply because he or she is a County employee and irrespective of what he or she actually says. Moreover, while there is nothing wrong *per se* with having one witness testify on behalf of two agencies, that does not immunize the witness from challenge on issues he or she clearly knows nothing about. Once it becomes clear that the witness's testimony may be inadequate – as was painfully obvious here in the case of Mr. Cauley - the

impetus is on the Developer, not the ALJ, to call other witnesses, either from the County or its own.[6] Following Mr. Cauley's testimony, the Developer had more than eight (8) months to figure this out before the hearing concluded on May 21, 2023.

C. There Is No Basis Whatsoever To Reconvene The Hearing

Remarkably, the Developer next argues that, because the ALJ departed from the "typical" practice of allowing one witness to testimony for two agencies, she should reconvene the hearing to consider testimony from "a DPWT representative." (Mot., p. 4) ("Accordingly, Developer requests that the ALJ...."). This testimony, says the Developer, "will clarify" "the state of the sewer system and the purpose of the third party consultant reports...." (*Id.*). Permitting an additional hearing on an "outstanding issue" would be "efficient" and "fair." (*Id.*, p. 5). Not permitting an additional hearing "would unfairly prejudice a developer that was following the direction of a reviewing agency, because the alternative is to require a developer to proceed all the way through full development plan review and approval process again...." (*Id.*). This would not be the first time, according to the Developer, that the ALJ's office convened a hearing to take additional testimony. (*Id.*) (*citing* PUD Case No. 09-0843 and 2627 Caves Road).

This argument, frankly, is laughable. The Developer had more than ample opportunity over the eight months of hearings during this case to call any and all County witnesses it wanted. Mr. Cauley's testimony was on the first day of the hearing, so the Developer had a full eight months to assess whether additional testimony or evidence on sewer capacity was necessary. Moreover, it was obvious throughout the hearing that sewer capacity was a major part of Protestants' case. Their sewer expert, Mr. Grachek, testified initially on February 10, 2023; Mr. Summers testified on March 27, 2023, and both of them testified again on April 11, 2023. Before the hearing

[6] Counsel for the Developer did not ask a single question of Mr. Cauley regarding sewer capacity. (T. 9/1/22, pp. 223-236)

reconvened for the last day on May 31, 2023, the Developer had plenty time to assess their testimony and call any and all witnesses they chose. They called only Mr. Leffner on May 31, 2023. Moreover, all of the exhibits pertaining to the sewer issue, including Mr. Bayer's emails, were introduced long before the last day of the hearing. The Developer had plenty of time to assess those documents, review them with County representatives or their own consultants, and present additional evidence. There will be no prejudice, at least none not of its own doing, if the Developer's request to reconvene the hearing is denied.

As the ALJ aptly put it:

> [N]either Dave Bayer, nor Lisa Eicholtz, nor any representative from DPWT with knowledge of the sewer system, testified to support Developer's position in rebuttal. If there was a change in DPWT's position or clarification to explain the evidence presented by the Protestants, then testimony and further evidence from [] DPWT was necessary.... The silence is deafening. (Op., pp. 126, 127).

Finally, regarding the two cases cited by Developer, they involved, as the Developer notes, "outstanding issues" that were not addressed during the course of the hearing. For example, in *2627 Caves Road*, the ALJ allowed additional testimony after the close of the hearing because the Planning Office had not submitted its findings on the RC5 Performance Standards to the ALJ prior to the hearing, as the Code requires.[7] There are no "outstanding" issues here, only failures of proof.

D. The Developer Does Not Dispute The ALJ's Conclusions Regarding Traffic

Importantly, the Developer does not mention in its motion any of the ALJ's findings and conclusions regarding traffic. The Developer does not address the thirteen (13) fallacies in the traffic impact study that the ALJ found "undermine the expert testimony by Mr. Driban." (Op., p.

[7] Contrary to the Developer's characterization, the issue on which additional testimony was permitted did not involve the Planning Office's "interpretation and application" of the Performance Standards in the general sense. (*See* ALJ Op., 20-21).

95).[8] And the Developer does not address the ALJ's conclusion that the development, even with the proposed road improvements, would result in a "worsening of conditions" at Falls/Joppa and Falls/Greenspring Valley roads. (*Id.*, p. 105).

Thus, even if the Developer's arguments regarding sewer are accurate and warrant a reconvened hearing, which they clearly do not, the motion for reconsideration still should be denied. ALJ denied the development plan for both sewer and traffic reasons, independent of each other.

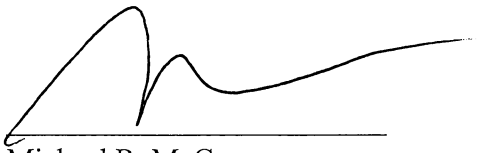
E. The Emergency Access Gate

The Developer asks the ALJ to allow it to submit a revised development without the emergency access gate at the rear of the site. (Mot., p. 6). This request should be denied, of course, because the Developer has not demonstrated any basis for either (1) reconvening the hearing on the issue of sewer capacity or (2) reversing the ALJ's findings and conclusions regarding traffic.

CONCLUSION

The ALJ's Opinion in this case was thorough, well-reasoned, and supported by an extraordinary amount of evidence on both the sewer capacity and traffic issues. The sundry arguments advanced by the Developer in its motion for reconsideration are half-hearted and do not move the dial. After 13 days of hearing, dozens of witnesses, and nearly 200 exhibits, there are no outstanding issues and no basis whatsoever for the ALJ to reconvene the hearing to give the Developer a second bite at the apple. Protestants respectfully request that the motion for reconsideration be denied.

[8] Mr. Driban's testimony, she found, amounted to a "because I think so" opinion. (*Id.*, p. 96).

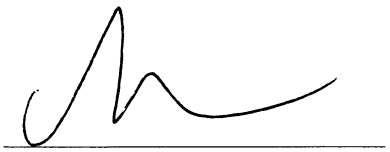


Michael R. McCann
118 W. Pennsylvania Avenue
Towson, Maryland 21204
michael@mmccannlaw.net
(410) 825-2150

Attorneys for Protestants

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 11th of September 2023, the foregoing memorandum was sent via email to all counsel of record.



Michael R. McCann

IN RE:	*	BEFORE THE OFFICE
APPROVAL OF FINAL DEVELOPMENT PLAN & PETITION FOR SPECIAL HEARING	*	OF ADMINSTRATIVE
IN THE MATTER OF : GREENSPRING MANOR & GREENSPRING JOPPA FALLS, LLC	*	HEARINGS FOR
2310 W. JOPPA ROAD	*	BALTIMORE COUNTY
	*	Case Nos. 08-0922 & 2021-250-SPH
8th Election & 2nd Councilmanic Districts		

* * * * * * * * * * * * *

PEOPLE'S COUNSEL FOR BALTIMORE COUNTY'S
ANSWER TO DEVELOPER'S MOTION FOR RECONSIDERATION

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IN RE:	*	BEFORE THE OFFICE
APPROVAL OF FINAL DEVELOPMENT PLAN & PETITION FOR SPECIAL HEARING	*	OF ADMINSTRATIVE
IN THE MATTER OF : GREENSPRING MANOR & GREENSPRING JOPPA FALLS, LLC	*	HEARINGS FOR
2310 W. JOPPA ROAD	*	BALTIMORE COUNTY
	*	Case Nos. 08-0922 & 2021-250-SPH
8th Election & 2nd Councilmanic Districts		

* * * * * * * * * * * * *

PEOPLE'S COUNSEL FOR BALTIMORE COUNTY'S
ANSWER TO DEVELOPER'S MOTION FOR RECONSIDERATION

1. **Standard for Review; Fraud, Mistake, and Irregularity:** Zoning Commissioner/Hearing Officer (ALJ) Rule 4K, BCZR Appendix G, makes available a Motion for Reconsideration. But it does not state the standard for review. In this absence, it is appropriate to apply the common law rule, which requires fraud, surprise, mistake, or inadvertence. See, e.g. Redding v. Board of County Commissioners 263 Md. 94, 111-12 (1971). This rule is construed strictly, and does not encompass a change of mind. The Court of Appeals revisited the equivalent "mistake" standard under Maryland Rule 2-535. Claibourne v. Willis 347 Md. 684, 692-93 (1997),

> "It is well settled that "mistake," as used in Rule 2–535(b), is limited to a jurisdictional error, such as where the Court lacks the power to enter the judgment. *Tandra S. v. Tyrone W.,* 336 Md. 303, 317, 648 A.2d 439, 445 (1994); *see Hamilos v. Hamilos,* 297 Md. 99, 107, 465 A.2d 445, 450 (1983). "The typical kind of mistake occurs when a judgment has been entered in the absence of valid service of process; hence, the court never obtains personal jurisdiction over a party." *Tandra S.,* 336 Md. at 317, 648 A.2d at 445; *see also Hughes v. Beltway Homes, Inc.,* 276 Md. 382, 386–87, 347 A.2d 837, 840–41 (1975) (providing numerous examples of mistakes, non-jurisdictional in nature, which would not permit a court to exercise its revisory power)."

The Collective Development Team's (CDT's) Motion does not allege anything close to the level of jurisdictional mistake, fraud of any kind, or irregularity. End of story.[1]

[1] Nor does the CDT Motion challenge the adverse determinations about traffic and denial of the special variance. So even if there were any merit to the motion, it would not affect the outcome.

2. **Discretion to Evaluate Evidence.** There is more. The ALJ has discretion to evaluate and weigh credibility and persuasiveness of witnesses. Pollard's Towing v. Berman's Body Parts & Mechanical 127 Md. App. 277, 289-95 (2001). As recognized by ALJ Maureen Murphy, there must be a sufficient basis for any expert opinion. Rochkind v. Stevenson 454 Md. 277, 286-95 (2017); Zilichiklis v. Montgomery County 223 Md. App. 158, 184-86, cert. denied 444 Md. 641 (2015); Even if admitted, there is discretion to evaluate such evidence. MEMC Electronic Materials v. BP Solar System 196 Md. App. 318 355-58 (2010); Bryant v. State 396 Md. 196, 203 (2006); Organic Farmacy Mgt. v. Four Greenfields 2021 WL 3173262; Telos Corp. v. Hamit 2018 WL 190374.[2]

3. Alleged "Misunderstandings" of DPWT Staff Emails, Consultant Reports, and Competing Statements of Expert Witnesses Regarding JFS Sewer System Capacity. (Motion Paragraphs 3-9). None of these allegations involve jurisdictional mistake. Anyway, ALJ Murphy exercised appropriate discretion to analyze and evaluate all the evidence, including the bases for expert opinions.

The 2005 Consent Decree was to be resolved by 2025. But the consultant reports and summer 2021 Hazen memo showed the County was still just about back to square one on the SSOs. The Bayer email amounted to the same thing. MDE got on record in 2023 with its imposition of civil penalties for 2018 SSOs. The Lake Roland *e coli* levels are as excessive as ever. There is no end in sight.[3]

4. Alleged Conclusiveness or Value of Eugene Cawley's Testimony. (Motion Paragraph 5). Eugene Cawley appeared as a county staff liaison for Development Plans Review and circuitously the Department of Public Works and Transportation (DPWT). He said the DPWT was satisfied generally, but did not mention or touch the sewerage issue, much less the Jones Falls Sewershed (JFS).

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[2] Maryland Rule 1-104 precludes the citation of unreported opinions as precedent in the courts, but not before administrative agencies. Anyway, the unreported opinions reflect that the law in this area is so settled that it is unnecessary for republication.

[3] We addressed the sewer capacity debacle at Pages 25-31 of our Post-Hearing Memorandum.

5. "That's the Way You Do It?" (Motion Paragraphs 8-9). The CDT complains they usually can take advantage of such superficial testimony of county staff who at times are messengers with no expertise or even specific knowledge of relevant issues. They say this is supposed to save valuable time of multiple county employees! Ignorance is bliss.

If so, that may work where there is no opposition or no significant controversy, but that does not work where there is a real controversy. Here, it was obvious JFS sewer capacity would be a major issue. It is up to the parties to choose whether or not to call relevant county staff. They must then take the consequences.

6. Elm Street Revisited. Developer's lawyers often cite People's Counsel v. Elm Street Development 172 Md. App. 690 (2007) to deify the so-called "presumption" generated merely by county staff support. But even where the support might have some basis, Judge Peter Krauser's opinion explains that the presumption no longer controls when there occur relevant cross-examination and/or opposing evidence. In this context, it is noteworthy that Judge Charles Moylan cited Dean McCormick's "… assertion that 'presumption' is the slipperiest member of the family of legal terms, except its first cousin, 'burden of proof.'" Cooper v. Singleton 217 Md. App. 626, 627-28 (2014).

7. Elm Street Further Distinguished. In Elm Street, the Office of Planning and DEPRM (Environmental Protection) did at least submit written recommendations that the development plan was acceptable as having a solely owned R.C. 4 Zone conservancy area and in compliance with the R.C. 4 Zone performance standards. 172 Md. App. at 698-700. We challenged the reasoning as falling short or insufficient, but at least they addressed the specific R.C. 4 Zone criteria. In the present case, neither Cawley nor any other county witness even mentioned, much less addressed, the Consent Decree or overall JFS capacity problem.

8. CDT Tactics. The CDT chose not to call the relevant staff in their main case. They also chose not to present an expert witness on the subject. By the end of the CDT case, the JFS may as well have been on some other planet or moon.[4] There was nothing in the record to locate it on the map. There was a failure to meet the burden of proof.

[4] See Kurt Vonnegut, The Sirens of Titan (1959) for Titan and other possibilities.

9. Protestants Came "Ready to Play". Gary Williams, the legendary Maryland basketball coach, would stress that the team has to be ready to play. Protestants were more than ready. They opened up on stormwater management, with Daniel O'Leary. They then produced convincing testimony and documentation of the sewer capacity problems, per Randall Gracheck and Robert Summers. The CDT sponsored Nicholas Leffner for rebuttal. He said he communicated with county DPWT staff. When People's Counsel asked whether he suggested that they testify, he said it was not his place. Leffner may be right about that. It was up to CDT counsel to bring in county staff, and they chose not to. The relevant county staff (David Bayer, Lisa Eichholtz) were never called. As ALJ Murphy aptly perceived, the silence is deafening.[5]

10. CDT Resistance to the Calling of Any More County Witnesses. Ironically, on February 2, 2023, after Protestants' produced Daniel O'Leary to address stormwater management, People's Counsel sent an email to suggest (among other things) that ALJ Murphy call county staff to bring in their perspective:

> "1) Now that stormwater management has been placed in controversy, it is appropriate to have the presence of county staff to explain their position, and reasoning. Just as there was your appropriate request to bring in Kris Nebre to provide some clues as to the DPWT position on traffic, it would be equally or perhaps more necessary that there be a similar request for the presence of Kitty Uhdin and Ella Kaplan of DEPS SWM staff to explain their point of view on stormwater management."

After a back and forth, CDT counsel Mr. Rosenblatt voiced his emphatic objection:

> ""The most 'frustrating" part of the email from Mr. Zimmerman was the suggestion that the hearing should be delayed/extended for further county testimony. It would be unprecedented to 'require' that at this stage of the process While Mr. McCann and I have certain disagreements about how a Hearing Officer's Hearing should proceed, it appears we are in agreement that it is the developer's choice whether to call further county witnesses and I am confirming we do not intend to do so."

The e-mail chain is attached.

---

[5] We called it "The Empty Chair" (1959), comparing to S1 E1 of the iconic Untouchables TV series. Post-Hearing Memorandum Page 29.

That is where things were left. Metaphorically, CDT counsel insisted the staff ship had effectively completed its voyage, and there were no more ports to visit. Now they want to extend the itinerary.[6]

CDT counsel doubled down by producing Nicholas Leffner but not DPWT staff, even though, as noted, Leffner had apparently communicated with staff. So that ship sailed. The time for boarding or reboarding is long gone. It's too late now.[7]

11. Convening an Additional Hearing? (Motion Paragraphs 10-12). This case may be the most protracted land use hearing in history in hearing days and/or months duration. It went for 13 hearing days from September 1, 2022 to May 31, 2023. It was our office's effort which led to bringing in Kris Nebre. We continued to suggest, impartially, that additional county staff be called to contribute more information. The CDT continued to take the negative course.

Now they want to prolong the process into late 2023 and likely 2024 (given the right of other parties to bring in witnesses and file another memorandum).[8] Anyway, there is nothing any county staff could say at this juncture to downplay the documented sewer capacity deficiencies.[9]

12. Departure from Prior Decisions? (Motion Paragraph 10). The CDT argues,

> "Indeed, the requirement to hear testimony from a DPWT representative on the issue of sewer capacity is departure from all prior ALJ decisions, and when an administrative agency 'changes a position clearly established in its own prior precedent it 'must supply a reasoned analysis indicating the prior policies and standards are being deliberately changed, not casually ignored."

There are multiple problems with this argument.

---

[6] People's Counsel's impartial goal was to achieve a more complete record. However, when staff were not called, we did not register an objection or say staff were required to appear as a matter of law. Their absence just became part of the failure of proof of adequate sewer capacity.

[7] Carole King, It's Too Late Now (1971). (At least in the song, they really tried to make it).

[8] It may be acceptable to have six more weeks of winter after Groundhog Day, but not six more months of this trial.

[9] As we observed, DPWT euphemistically described the JFS as an "area of concern."

First of all, ALJ Maureen Murphy's decision does not articulate a requirement that DPWT primary staff testify in all cases, or even this case. Rather, the decision evaluates all of the evidence relative to sewer capacity, including documents generated by DPWT staff. Their failure to appear, for whatever reason, including CDT's positions, is just one of many aspects of the case. After all, ALJ Murphy did not require their testimony. When the issue came to center stage, it was up to CDT to bring them in if they chose to do so.

Secondly, there is no such thing as precedent or policy when it comes to such evidentiary issues. The production of witnesses is particular to each case.[10]

Thirdly, the closest case turns out to be CPC Falls Road ("Bluestem"), No. 20-006 (2020). It is familiar to ALJ Murphy and all counsel.[11] The developer made a motion to produce additional evidence at the County Board of Appeals (CBA) relating to sewer capacity in the JFS. There were apparently affidavits from county staff. The CBA denied the motion. Pages 30-31. Bluestem was the first case to address JFS sewer capacity. If there were any surprise then, it is no longer the case. Everyone knows about it.

13. Emergency Gate Redux. (Motion Paragraph 13). This has always been a sideshow. The CDT was trying to get credit with Meadows of Greenspring (MOG) and mitigate their overall disapproval by promoting the emergency gate. They succeeded to the extent that this became the main focus of MOG.

Now that it has been correctly determined that the emergency gate could not legally be justified, the CDT is willing to back off or downplay the issue.

---

[10] The CDT cites Frederick Classical Charter School v. Frederick County Board of Education 454 Md. 330 (2017). But that case does not apply. There the Court found that the State Board of Education had arbitrarily, without explanation, departed from its previous statutory declaration and interpretation of a transportation funding formula for charter schools articulated previously and confirmed in Baltimore City Bd. of School Comm'rs v. City Neighbors charter School 400 Md. 324, 3288 (2007). The Court still afforded the Board an opportunity on remand to hold proceedings to adopt a different interpretation. Montgomery County v. Anastasi 77 Md. App. 126 (1988) is likewise inapplicable. There, the County Merit System Protection Board departed, without adequate reasoning, from its prior adjudicatory decision that certain casual consultations by the police chief relating to police promotion procedures must were prejudicial and improper.

[11] ALJ Murphy discussed Bluestem in the Krongard case. PAI 08-919.

14. It's All in the Game. The deficient JFS capacity is just one of the many reasons this development proposal is excessive and deserves to be denied.[12] If ALJ Murphy had gotten to the master plan conflict and stormwater management issues, these would have been additional grounds for denial and/or referral to the Planning Board and County Council. But the given reasons are enough.

We have recognized the fairness and patience of ALJ Murphy in conducting this case. There are no procedural due process objections. The diligence, effort, and work rate are above and beyond the ordinary.

The End

Judge Kehoe introduced his recent opinion in Grier v. Heidenberg 255 Md. App. 526, cet. denied 482 Md. 149 (2022) with this quotation from Oliver Wendell Holmes, Jr.,

> "The language of judicial decision is mainly the language of logic." 10 Harv. L. Rev. 457, 465 (1897).

Holmes also wrote, positing the "bad man" point of view,

> The prophecies of what the courts will do in fact, and nothing more pretentious, are what I mean by the law. 10 Harv. L.Rev. at 460-61.

Based on the language of logic and law, the prophecy of what will be done in fact is that the CDT's Motion for Reconsideration will be denied.

This brings to mind the Doors' 1966 classic, The End.

[12] Given the apparent deficiency, CDT should have filed a special variance petition on this issue.

Peter Max Zimmerman
PETER MAX ZIMMERMAN
People's Counsel for Baltimore County

Carole S. Demilio
CAROLE S. DEMILIO
Deputy People's Counsel
Jefferson Building, Suite 204
105 West Chesapeake Avenue
Towson, MD 21204
(410) 887-2188

CERTIFICATE OF SERVICE

I HEREBY CERTIFY this 11th day of September, 2023, a copy of the foregoing People's Counsel for Baltimore County's Answer to Developer's Motion for Reconsideration was emailed to:

Adam Rosenblatt, Esquire,
210 W. Pennsylvania Avenue, Suite 500
Towson, Maryland 21204
amrosenblatt@venable.com ,

Christopher Mudd, Esquire
210 W. Pennsylvania Avenue, Suite 500
Towson, Maryland 204
CDMudd@venable.com

Douglas Sachse, Esquire
dsachse@dtslawoffices.com

Eric Rockel
erockel@earthlink.net

Blandy Becker
blandy.becker@gmail.com

Michael McCann, Esquire
118 W Pennsylvania Avenue
Towson, MD 21204
michael@mmccannlaw.net

Michael Wyatt, Esquire
100 W Pennsylvania Avenue
Towson, MD 21204
mwyatt@wyattgunning.com

Ying Wei Lum
ylum1@jhmi.edu

Dean Merritt
dean@merrittinc.net

Peter Max Zimmerman
PETER MAX ZIMMERMAN
People's Counsel for Baltimore County

From: Rosenblatt, Adam M.
To: Michael McCann; Doug Sachse; Peter Max Zimmerman; Maureen E Murphy; Administrative Hearings
Cc: Mudd, Christopher D.; Michael Wyatt; Kristen L Lewis; Donna Mignon; Debra Wiley
Subject: RE: Greenspring Manor Case: 2021-0250-SPH; PAI 08-0922; Scheduling Redux
Date: Monday, February 6, 2023 9:23:23 AM

CAUTION: This message from AMRosenblatt@venable.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

The most "frustrating" part of the email from Mr. Zimmerman was the suggestion that the hearing should be delayed/extended for further county testimony. It would be unprecedented to "require" that at this stage of the process. While Mr. McCann and I have certain disagreements about how a Hearing Officer's Hearing should proceed, it appears we are in agreement that it is the developer's choice whether to call further county witnesses and I am confirming we do not intend to do so. We truly believe, absent any unanticipated curveballs in the remainder of Mr. McCann's case, that February 10 and one additional day will be sufficient to conclude this case. We anticipate 2-3 rebuttal witnesses, but obviously that can go up or down depending on the subject matter of Mr. McCann's remaining witnesses.

With that in mind, the attorneys have been emailing unavailable dates in March and have responses from Mr. Wyatt, Sachse, and the developer's team regarding March availability. We would respectfully request that Mr. McCann and Mr. Zimmerman inform Kristen if any of the following dates do not work for them, and then we can schedule another hopefully final date for this case.

The available dates for Mr. McCann and Zimmerman to review are:

- March 2, 20, 27-29

Hopefully some of these work for them and are available for scheduling with Judge Murphy.

Adam M. Rosenblatt, Esq. | Venable LLP
t 410.494.6271 | f 410.821.0147 | m 410.294.9430
210 W. Pennsylvania Avenue, Suite 500, Towson, MD 21204

AMRosenblatt@Venable.com | www.Venable.com

From: Michael McCann <michael@mmccannlaw.net>
Sent: Monday, February 6, 2023 8:40 AM
To: Doug Sachse <dsachse@dtslawoffices.com>; Rosenblatt, Adam M. <AMRosenblatt@Venable.com>; Peter Max Zimmerman <pzimmerman@baltimorecountymd.gov>; Maureen E Murphy <mmurphy@baltimorecountymd.gov>; Administrative Hearings <administrativehearings@baltimorecountymd.gov>
Cc: Mudd, Christopher D. <CDMudd@Venable.com>; Michael Wyatt <mwyatt@wyattgunning.com>; Kristen L Lewis <klewis@baltimorecountymd.gov>; Donna Mignon <dmignon@baltimorecountymd.gov>; Debra Wiley <dwiley@baltimorecountymd.gov>
Subject: RE: Greenspring Manor Case: 2021-0250-SPH; PAI 08-0922; Scheduling Redux

Caution: External Email

Judge: My thoughts on Mr. Zimmerman's email and Mr. Rosenblatt's response are set forth below.

1. I agree that an additional hearing day should be scheduled in the event it is necessary. As I said, I anticipate calling two more witnesses. This may change, it may not, but it is entirely my prerogative, subject only of course to your view of the relevance of any additional testimony/evidence. Mr. Rosenblatt and Mr. Mudd don't get to decide how many witnesses I call or whether I can change my mind on the issue. Assuming there are only two witnesses, given how things have progressed so far, I think it is fair to say that none of us know how long those witnesses might take. Moreover, counsel for Developer still have given us any indication of how many witnesses they will call on rebuttal or how long they think rebuttal will take. Scheduling a second day in case it's needed makes sense. (Please recall that I initially suggested a second day, Feb 10, in case it was necessary, which turned out to be true).

2. I don't disagree that it is Mr. Rosenblatt's prerogative whether to call any County representative to testify in his rebuttal. Mr. Zimmerman was not suggesting otherwise.

3. I agree with Mr. Zimmerman that, in considering whether to schedule a second day, some consideration should be given to at least the possibility of sur-rebuttal. I understand that you cannot make that call now – we haven't heard the developer's rebuttal case yet – but right now we're just considering simply holding a second day in case it is needed.

Finally, Mr. Rosenblatt sternly concludes, "Eleven hearing days over many months is beyond sufficient for this case, which involves 60 (not 6000) homes." I have never understood objections by this developer's counsel regarding the length of this hearing, as if the hearing process is some sort of charade with an outcome already determined. No one wants to waste time or money in a hearing, but the length of any hearing is ultimately determined by the issues generated by developer's plans, and your handling of the evidence and the application of law. There is no time limit here, certainly not one based on Mr. Rosenblatt's level of patience or frustration.

Thanks for your consideration.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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this message and notify Michael R. McCann at 410 825-2150.

From: Doug Sachse [mailto:dsachse@dtslawoffices.com]
Sent: Friday, February 3, 2023 2:01 PM
To: Michael McCann <michael@mmccannlaw.net>; Rosenblatt, Adam M. <AMRosenblatt@Venable.com>; Peter Max Zimmerman <pzimmerman@baltimorecountymd.gov>; Maureen E Murphy <mmurphy@baltimorecountymd.gov>; Administrative Hearings <administrativehearings@baltimorecountymd.gov>
Cc: Mudd, Christopher D. <CDMudd@Venable.com>; Michael Wyatt <mwyatt@wyattgunning.com>; Kristen L Lewis <klewis@baltimorecountymd.gov>; Donna Mignon <dmignon@baltimorecountymd.gov>; Debra Wiley <dwiley@baltimorecountymd.gov>
Subject: RE: Greenspring Manor Case: 2021-0250-SPH; PAI 08-0922; Scheduling Redux

Dear Judge Murphy- my 2 cents on the email sting here is that Mr. Zimmerman was simply being cautious and requesting that another day be set aside "just in case." If anything, it appeared to me to be an attempt to insure that everything is completed as soon as possible. Thanks for listening.
Doug Sachse

From: Michael McCann <michael@mmccannlaw.net>
Sent: Friday, February 03, 2023 8:43 AM
To: Rosenblatt, Adam M. <AMRosenblatt@Venable.com>; Peter Max Zimmerman <pzimmerman@baltimorecountymd.gov>; Maureen E Murphy <mmurphy@baltimorecountymd.gov>; Administrative Hearings <administrativehearings@baltimorecountymd.gov>
Cc: Mudd, Christopher D. <CDMudd@Venable.com>; Michael Wyatt <mwyatt@wyattgunning.com>; Doug Sachse <dsachse@dtslawoffices.com>; Kristen L Lewis <klewis@baltimorecountymd.gov>; Donna Mignon <dmignon@baltimorecountymd.gov>; Debra Wiley <dwiley@baltimorecountymd.gov>
Subject: Re: Greenspring Manor Case: 2021-0250-SPH; PAI 08-0922; Scheduling Redux

Judge Murphy. We are all familiar by now with Mr. Rosenblatt's accusatory tone and personal attacks and should take much of it with a grain of salt, but I do intend to respond. I have a medical procedure today but will do so later today or tomorrow. Thank you.

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From: Rosenblatt, Adam M. <AMRosenblatt@Venable.com>
Sent: Friday, February 3, 2023 5:18:13 AM
To: Peter Max Zimmerman <pzimmerman@baltimorecountymd.gov>; Maureen E Murphy <mmurphy@baltimorecountymd.gov>; Administrative Hearings <administrativehearings@baltimorecountymd.gov>
Cc: Mudd, Christopher D. <CDMudd@Venable.com>; Michael McCann <michael@mmccannlaw.net>; Michael Wyatt <mwyatt@wyattgunning.com>; dsachse@dtslawoffices.com <dsachse@dtslawoffices.com>; Kristen L Lewis <klewis@baltimorecountymd.gov>; Donna Mignon <dmignon@baltimorecountymd.gov>; Debra Wiley <dwiley@baltimorecountymd.gov>
Subject: RE: Greenspring Manor Case: 2021-0250-SPH; PAI 08-0922; Scheduling Redux

Judge Murphy,

We completely disagree with Mr. Zimmerman's email. Mr McCann has confirmed he has two more witnesses that will definitely conclude on February 10. We will be prepared to begin our rebuttal case on February 10 and will conclude our case within one more hearing day. There is no reason to call any additional county witnesses, nor is there any reason to entertain any of Mr. Zimmerman's thoughts with regard to stormwater management, which is well beyond his statutory authority to participate in cases that involve the county's zoning maps and the Master Plan. The passing references to stormwater management within the Master Plan hardly give Mr. Zimmerman any "authority" to be scrutinizing a highly technical element of a Development Plan, particularly where there are numerous other attorneys involved who do have the right and ability to do so and who, in fact, did so through the presentation of expert testimony.

Ultimately, it is the developer's burden in this case, and we will determine if and how we wish to address stormwater management in our rebuttal case. Mr. Zimmerman should not – and indeed cannot –involve himself in the strategy and decision making regarding the developer's rebuttal case.

As happens in every single development plan hearing, the county witnesses appear on the very first day of the hearing, testify, and recommend the development plan for approval (assuming they have determined to do so, as they have in this case). The well-known Elm Street case – in which People's Counsel participated and lost – makes clear that, upon recommendation of the County agencies, the plan is deemed to be compliant with the Code and regulations, unless the protestants can rebut that presumption. Here, the Department of Environmental Protection and Sustainability has already confirmed their recommendation for approval of the development plan, and they likewise confirmed that the concept stormwater management plan has been approved (Mr. Zimmerman may or may not be aware that development stormwater management plan approval is not required for a traditional development plan case – only for PUDs). That testimony and recommendation established a presumption that the Development Plan complied with all laws applicable to DEPS' review of the plan, including stormwater management laws. Of course, we heard from Mr. O'Leary during the last hearing, in an effort to rebut that presumption – as is permissible under Elm Street. Now, the developer may or may not choose to rebut the testimony of Mr. O'Leary, in whatever way we deem fitting. That is the developer's decision, not Mr. Zimmerman's. And, ultimately, you will have to determine who is correct on the issues pertaining to stormwater management. Mr. O'Leary has testified against dozens of developments and to our knowledge no county reviewers have ever been recalled following his testimony.

Mr. Zimmerman's email demonstrates a clear and continued delay tactic, and an attempt to

continue to exceed the limited statutory authority afforded to the Office of People's Counsel. We have been exceedingly patient in this matter, throughout the numerous hearing days during which the four attorneys opposing this development plan have put on their cases, but Mr. Zimmerman's email has pushed us beyond the point of frustration. He rested his case months ago, yet continues to randomly email additional exhibits that he attempts to introduce without the support of any witness testimony. He continues to re-ask witnesses the same questions asked by Mr. McCann in a less effective manner. This has all been allowed, but he is now going too far.

This is the first Hearing Officer's Hearing that developer's counsel has been involved in where we can recall People's Counsel ever having attended at this level, and he clearly lacks an understanding of the process and legal standard under the Elm Street case. His suggestion that surrebuttal may be necessary or appropriate in this case demonstrates his lack of understanding of the administrative process in these hearings, and his "threats" about the potential for arguments of procedural error if surrebuttal is not permitted, borders on abusive behavior. Your Honor has made perfectly clear that the case will conclude with developer's rebuttal case, which is entirely consistent with developer's counsel's experience in these cases for our collective 20+ years of handling these cases. Surrebuttal is not part of this process, because if it were permitted to occur, these cases would never conclude within any reasonable amount of time.

Eleven hearing days over many months is beyond sufficient for this case, which involves 60 (not 6000) homes. Please do not entertain Mr. Zimmerman's delay tactics and continue to allow him to waste all of our time in this case. He fails to recognize that county employees have jobs and day to day responsibilities and do not serve at his whim to testify multiple times in a single hearing. Please do not allow him to continue to extend this case in perpetuity. He has taken enough of our time already.

Adam M. Rosenblatt, Esq. | Venable LLP
t 410.494.6271 | f 410.821.0147 | m410.294.9430
210 W. Pennsylvania Avenue, Suite 500, Towson, MD 21204

From: Peter Max Zimmerman <pzimmerman@baltimorecountymd.gov>
Date: Thursday, Feb 02, 2023 at 1:46 PM
To: Maureen E Murphy <mmurphy@baltimorecountymd.gov>, Administrative Hearings <administrativehearings@baltimorecountymd.gov>
Cc: Rosenblatt, Adam M. <AMRosenblatt@Venable.com>, Mudd, Christopher D. <CDMudd@Venable.com>, Michael McCann <michael@mmccannlaw.net>, Michael Wyatt <mwyatt@wyattgunning.com>, dsachse@dtslawoffices.com <dsachse@dtslawoffices.com>, Kristen L Lewis <klewis@baltimorecountymd.gov>, Donna Mignon <dmignon@baltimorecountymd.gov>, Debra Wiley <dwiley@baltimorecountymd.gov>
Subject: Greenspring Manor Case: 2021-0250-SPH; PAI 08-0922; Scheduling Redux

Caution: External Email

Thursday, February 2, 2023, Groundhog Day

Dear Judge Murphy,

This is my scheduling contribution and primer for today. (I am sending this separately to save paper and forest resources rather than extend the lengthy current e-mail chain).

In view of the scheduling debate at the conclusion of the January 30 hearing day, and for reasons stated below, Kristen should be asked to schedule **two additional days in March**:

1) Now that stormwater management has been placed in controversy, it is appropriate to have the presence of county staff to explain their review, position, and reasoning. Just as there was your appropriate request to bring in Kris Nebre to provide some clues as to the DPWT position on traffic, it would be equally or perhaps more necessary that there be a similar request for the presence of Kritty Uhdin and Ella Kaplan of DEPS SWM staff to explain their point of view on stormwater management. Otherwise, the record will be incomplete. We will be left with Daniel O'Leary and maybe a "rebuttal" witness. The county staff presence should be requested for February 10 if reasonably possible. P.S. Please note that the 3-page Development Plan Conference August 11. 2021 comments conclude with the statement: "The project **does not** meet the Baltimore County Code development plan requirements at this time." I do not recall any detailed or specific testimony from any county staff on this subject, including the issues raised by Mr. Daniel O'Leary. Nor do I recall any expert presented by the developer on the stormwater management issue. Please somebody correct me if I am wrong. The testimony of Mr. Uhdin and Ms. Kaplan may be supportive of either the developer or the protestants in various ways, may be probative or not. Whatever it may be, it is appropriate and fair to have it. It also appears from documents Mr. O'Leary received the morning of his testimony that there were communications after the August 11, 2021 DPC comment. Mr. Uhdin and Ms. Kaplan should be able to illuminate this subject. They should provide any review documents subsequent to August 11, 2021. (Any testimony by a developer's witness on county review and any alleged "approval" would be hearsay and would not anyway qualify as "rebuttal"). Please note also that the Master Plan does cover stormwater management.

2) It is uncertain what the scope and length of the rebuttal case will be.

3) There may be evidentiary issues regarding the scope of rebuttal evidence, as there are well-known limitations, See M.L.E. Trial Sec. 31. Among other things, a party cannot use rebuttal to present part of its case in chief. M.L.E. Trial Sec. 32.

4) It should not be overlooked that there is a right to surrebuttal. M.L.E. Trial Sec. 33: "Where new matter is introduced by the plaintiff in rebuttal, it is an error to refuse to permit the defendant to introduce evidence in surrebuttal."

5) Given that administrative hearings are intended to be more flexible than court hearings, there is some degree of discretion in admitting rebuttal and surrebuttal evidence. In any event, if Protestants wish to present surrebuttal, that is a potential right.

6) There is also the potential that one of the parties may have a "hard stop" on one of the days. This may further stress the situation. (No hard stop for me, by the way).

7) This case will potentially affect this neighborhood for decades and perhaps the rest of the 21st century. A second additional day will help cover all the bases. This will also avoid another contentious debate if it turns out that the second additional day is needed. It will also reduce or eliminate the potential stress and temptation to cut witnesses or evidence short or off on the first additional day. In the felicitous event that the case concludes after February 10 and just one additional day, then that second additional day may be available to everyone for constructive work on other matters. Often, there are relatively late postponements of hearings without irreparable damage to the collective hearing schedule from an open day.

I hope this contribution is helpful. As for the March dates, Adam Rosenblatt tells us today that between his office, Michael Wyatt, and Doug Sachse (pending me and Michael McCann) the only available dates are March 2, 20, 27, 28, and 29. I may have a CBA hearing scheduled March 2, but will make whatever arrangements are necessary to prioritize this GM case for March 2 and therefore am available here for March 2. The rest of the dates are also good. So all remaining dates are good (as well as just about every other date in March, by the way, in case anyone else is willing to make adjustments). Looks like the trial is approaching Vivaldi territory (Four Seasons – 1723), but I've always gone the extra mile to cooperate on scheduling.

Thank you so much for your consideration of this thought process. As the Beatles spotlighted in We Can Work It Out (1965): "Life Is very short, and there's no time for fussing and fighting, my friend. I have always thought that it's a crime. So I will ask you once again. Try to see it my way."

Respectfully, Peter Max Zimmerman, People's Counsel, 410 887-2188

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****

IN RE: GREENSPRING MANOR DEVELOPMENT PLAN AND ZONING HEARING (2310 West Joppa Road)	*	BEFORE THE
	*	COUNTY BOARD OF APPEALS
	*	OF
8th Election District 3rd Council District	*	BALTIMORE COUNTY
	*	Case No. 08-0922 and Case No. 2021-0250-SPH
Greenspring Joppa Falls, LLC Owner and Developer	*	

* * * * * * * * * * *

MOTION FOR RECONSIDERATION

Pursuant to Rule 4K of the Rules of Practice and Procedure before the Zoning Commissioner/Hearing Officer of Baltimore County, Owner/Developer Greenspring Joppa Falls, LLC, by undersigned counsel, hereby submits this Motion for Reconsideration, and, in support thereof, states as follows:

1. On July 31, 2023, a Combined Development Plan and Zoning Opinion and Order (the "Order") was issued denying the green lined Development Plan marked and accepted into evidence as Developer's Exhibit 1B (the "Plan"). The denial was based in part on certain "sewer incapacity and deficiencies" outlined in the Order. *See* Order, p. 130.

2. As explained below, Developer is asking the ALJ to exercise the authority contained in Rule 4K to reconsider the decision made in the Order and to convene a hearing and hear additional testimony from a Department of Public Works and Transportation (DPWT) representative.

3. Developer contends the ALJ's findings on sewer capacity were based on misunderstandings with respect to the intent of internal emails from DPWT staff, the purpose of third party consultant reports obtained by DPWT, and conflicting statements from competing expert witnesses regarding the current state of the sewer system serving the Property.

4. For example, the ALJ interpreted an internal email from DPWT employee Dave Bayer that was written over two years before the decision was issued in this case to mean that "no units could be built at the Property without causing an SSO." Order, p. 117, citing Prot. Ex. 90. Mr. Bayer's email is repeatedly cited as an indication of the current state of the system, which the ALJ found to be incapable of handling even the existing sewage in the system: "It was clear to me that the sewage path from this Property cannot handle the existing sewage which flows along the path, much less the additional sewage which will come from adding 61 homes to the sewer system." Order, p. 129. Indeed, the ALJ held "I place great amount of weight on expertise and knowledge of DPWT engineers and shown in the DPWT CPC comment and Dave Bayer's internal email to DPWT colleagues, that if any homes were added to the sewer system, SSOs will occur. Order, p. 118. The ALJ also found that "DPWT and the Sewer Design team engineers have maintained their steadfast opposition to adding 61 homes to the sewer system due to inadequate capacity and concern for SSOs." P. 120.

5. These findings all contradict the testimony from Eugene Cauley, who represented Development Plans Review (DPR) and DPWT on the first day of the HOH and testified that DPWT is recommending approval of the Development Plan:

> Q. …the only issue preventing your recommendation of approval of this plan is this gate issue to Mays Chapel Road?
>
> **A. Yes.**
>
> Q. Other than the gate, DPR is satisfied that this plan meets all other requirements and can be approved?
>
> **A. Yes.**
>
> Q. Okay. DPWT is recommending plan approval and deferring the gate issue to the Judge?
>
> **A. Correct.**

T. 9/1/22 at p. 235.

6. Additionally, the ALJ disregarded testimony that the "Ramboll" and "Hazen" reports were long term planning documents and found that the reports "provide compelling evidence that the pipes in the sewage path from the Property are at over-capacity and that SSOs are predicted to result during the County-selected 10 yr/6 hr storm event." Order, p. 126. She was not convinced, despite introduction of an email from Dave Bayer, that repairs had been made to the County's sewer system downstream from the property. *See* Dev. Ex. 45A-B.

7. The ALJ directly stated that expert testimony was not the "best evidence" of the purpose of these reports and state of the system and that testimony from a DPWT representative was required in this case. Order, pp. 126-27.

8. As the ALJ is well aware, testimony from a DPWT sewer representative is not something that typically occurs in the context of an HOH. A DPR representative testifies on behalf of DPWT and relays whether there are any open issues or the department recommends approval of the development plan. That is precisely what occurred here, when Mr. Cauley introduced himself as follows before confirming that DPWT is recommending approval of the development plan:

> Q. Go ahead and let us know who you're reviewing for.
>
> **A. Yes. Hello, good afternoon. My name is Mr. Eugene Cauley, I review for DPR, and also DPW.**

T. 9/1/22, p. 195; *see* pp. 235-36 for confirmation that DPWT recommended plan approval.

9. The purpose of consolidating DPWT's position on development plans into one single witness is to prevent HOHs from taking multiple employees away from their jobs to attend and testify. Until very recently, DPR confirmation was deemed to be the "best evidence" – or at least sufficient evidence in an administrative forum, to explain DPWT's issues and position regarding development plans. Obviously, from the ALJs decision in this case, she did not feel it was sufficient to convey DPWTs position with respect to sewer capacity.

10. Accordingly, Developer respectfully requests that the ALJ convene an additional hearing to consider testimony from a DPWT representative, which will clarify, among other issues, the state of the sewer system and purpose of the third party consultant reports retained by DPWT to evaluate the state of their sewer system. Indeed, the requirement to hear testimony from a DPWT representative on the issue of sewer capacity is a departure from all prior ALJ decisions, and when an administrative agency "changes a position clearly established in its own prior precedent it 'must supply a reasoned analysis indicating the prior policies and standards are being deliberately changed, not casually ignored." *Frederick Classical Charter Sch. v. Frederick Cty. Bd. of Educ.*, 454 Md. 330, 406 (2017) (citing *Anastasi*, 77 Md. App. at 137) (emphasis added). Hearing from DPWT would give the ALJ the information needed to supply a reasoned analysis on the issue of sewer capacity.

11. This would not be the first time the ALJ's office has convened a hearing to take additional testimony to clarify the County's interpretation and application of a law/regulation. In at least two cases, PUD Case No. 09-0843 (the "PUD Case") and 2627 Caves Road (the "Prior HOH"), just as in this case, Protestants' counsel raised a novel issue that points out a potential shortcoming in a County agency's interpretation and application of a law/regulation. In the PUD Case, the issue pertained to a County reviewing agency's interpretation and application of stormwater management related-requirements prior to PUD development plan approval. In the Prior HOH, the issue pertained to a County reviewing agency's interpretation and application of BCZR provisions governing the RC 5 Performance Standards prior to development plan approval. In both cases, just as this case, the issue at hand did not require any change to the development plan that was the subject of review and approval. There, as here, the issue could be resolved through additional testimony and analysis by a County agency after timely filing of a Motion for Reconsideration. And there, as here, the requisite reviewing County agency simply did not require the submission of additional information prior to recommending approval of the

development plan at the HOH, because that agency's review of the additional information would have otherwise occurred at a later stage of review of the development proposal. *See Monkton Pres. Ass'n v. Gaylord Brooks Realty Corp*., 107 Md. App. 573, 585 (1996) (holding that Developer's obligation to comply with the applicable regulations does not end with approval of its development plan; the process "is indeed an 'ongoing process,' and the hearing officer's affirmation of the plan is just the first step").

12. As the ALJ properly determined in the PUD Case and the Prior HOH, this type of issue can be resolved most efficiently and fairly by permitting an additional hearing to take testimony on an outstanding issue. As the ALJ undoubtedly recognized when scheduling the additional hearing date in the PUD Case and Prior HOH, not permitting the additional hearing would unfairly prejudice a developer that was following the direction of a reviewing County agency, because the alternative is to require a developer to proceed all the way through the full development plan review and approval process again, even though the development plan itself is not required to change in order to resolve the issue at hand. Accordingly, Developer asks the ALJ to exercise similar discretion in this case, to hear from a DPWT witness, so that a more detailed and accurate state of the County's sewer system can be established in the record of this case.

13. The ALJ also found that the emergency access gate proposed in the rear of the Property violated BCZR Section 260.4.A.1 and the DPR Policy Manual, which prohibited approval of the Development Plan under BCC § 32-4-229. As was explained during the hearing, Developer proposed the gate as an accommodation to the residents of the Meadows/Boxwood communities, who expressed concerns over a "cut-through" road being established by virtue of the development proposal. Notwithstanding Developer's gesture to the Meadows/Boxwood community, DPR indicated in its comments and testimony that it could not fully support approval of the Development Plan, because it viewed installation of the gate as being violative of the requirements of the DPR Manual. Developer disagreed with DPR's interpretation of the

Manual, but Developer explained in its Memorandum that, if the ALJ determined the gate should not be installed for whatever reason, the ALJ could condition the order on *not* installing a gate. Given the discussion and rationale offered by the ALJ in the Order regarding the gate, and in order to obtain the full recommendation in favor of Development Plan approval from DPR (including DPWT), Developer is hereby asking the ALJ to permit Developer to offer a revised version of the Development Plan that would *eliminate the gate*, thereby establishing the connectivity contemplated under § 260 of the BCZR and unequivocal compliance with the DPR Manual.

CONCLUSION

For the reasons stated herein, Developer respectfully requests that the ALJ grant Developer's Motion for Reconsideration and reconvene a hearing to consider testimony from a DPWT representative and to accept a revised version of the Development Plan that eliminates the proposed emergency access gate.

Respectfully submitted,



Adam M. Rosenblatt
Christopher D. Mudd
Venable LLP
210 W. Pennsylvania Ave., Suite 500
Towson, Maryland 21204
(410) 494-6206
Attorneys for Developer

CERTIFICATE OF SERVICE

I hereby certify on this 30th day of August, 2023 that a copy of the foregoing Post-Hearing Memorandum was emailed to: Michael R. McCann, P.A., 118 W. Pennsylvania Avenue, Towson, Maryland 21204 (michael@mmccannlaw.net), Peter Zimmerman (pzimmerman@baltimorecountymd.gov); Michael Wyatt (mwyatt@wyattgunning.com); and Doug Sachse (dsachse@dtslawoffices.com).



_____
Adam M. Rosenblatt

JOHN A. OLSZEWSKI, JR.
County Executive

PAUL M. MAYHEW
Managing Administrative Law Judge
MAUREEN E. MURPHY
Administrative Law Judge

July 31, 2023

Adam M. Rosenblatt, Esq. – amrosenblatt@venable.com
Christopher Mudd, Esq. – cdmudd@venable.com

Michael McCann, Esq. – michael@mmccannlaw.net

RE: Development Plan and Zoning
Project: GREENSPRING MANOR
Address: 2122 W. Joppa Road
PAI Case Nos: HOH 08-0922 & 2021-0250-SPH

Dear Counsel:

Enclosed please find a copy of the decision rendered in the above-captioned matter.

In the event any party finds the decision rendered is unfavorable, any party may file an appeal to the Baltimore County Board of Appeals within thirty (30) days of the date of this Order. For further information on filing an appeal, please contact the Baltimore County Office of Administrative Hearings at 410-887-3868.

Sincerely,

Maureen E. Murphy

Maureen E. Murphy
Administrative Law Judge
for Baltimore County

MEM/dlm
Attachment

c: *See* Email Addresses Next Page

Ann Bruder – annb@charmcityart.com
Barbara Schumann – bcschumann@comcast.net
Ben Proctor - bgpmdp@comcast.net
Beth Winter – kelizabeth.robertson@gmail.com
Blandy Becker – bland.becker@gmail.com
Bob Summers – bsummers@ecologixgroup.com
Bradley Knatz – sknatz@baltimorecountymd.gov
Brett Williams – bmwilliams@baltimorecountymd.gov
Bruce Oxley – boxley@atapco.com
Chuck Connor – crconnor@venable.com
Cliff Faber – csfaber@comcast.net
Dan Radebaugh – dan@radebaughlaw.com
Daniel OLeary – djoleary@esd-associates.com
Dean Merritt – dean@merrittinc.com
Diane Litz - dlitz@224 @gmail.com
Doug Sachse – dsachse@dtslawoffices.com
Edward Consroe – econsroe@aol.com
Eric Rockel – erockel@earthlink.net
Eugene Cauley – ecauley@baltimorecountymd.gov
Fred Hallahan – fredhallahan@gmail.com
James Clayton – james.d.clayton7@gmail.com
James Gary – bfjmj1@gmail.com
James Hermann – jhermann@baltimorecountymd.gov
James Malico – james.malico@kimley-horn.com
Jason Goldsmith – jason@carchex.com
Jay Weiss jweissco@comcast.net
Jeff Livingston – jlivingston@baltimorecountymd.gov
Jeff Perlow – jperlow@baltimorecountymd.gov
JenniferBusse- jbusse@wtplaw.com
Jenifer Nugent – jnugent@baltimorecountymd.gov
Jen Frankovich, Esq. jfranchovich@baltimorecountymd.gov
Jerry Chen – jchen@baltimorecountymd.gov
Jim Smith – jsmith258@gmail.com
Joshua Waranch – jwaranch@gmail.com
John Canoles – espijc@aol.com
Karen McGraw – karen.mcgraw@verizon.net
Katie Dillon – katie.dillon@kimley-hor.com
Kathleen McNany – kmcnany@emmanuelosb.org
K. Gillies – kgjunk@mac.com
Kelly Madigan - kmadigan@baltimorecountymd.gov
Lachelle Imwiko – limwiko@baltimorecountymd.gov

Lara Townsley – lara.townsley@danaher.com
Laurence Bruder – lburder@noxilizer.com
Lloyd Moxley – lmoxley@baltimorecountymd.gov
Lynn Manthy – lynnsmanthy@hotmail.com
Mark Towsley – mgtownsley@gmail.com
Matt Bishop – matt.bishop@kimley-horn.com
Michael Friedman – mikefriedman311@comcast.net
Michael Tanczyn, Esq. – michael.tanczyn@gmail.com
Mike Lenhert – mlenhart@lenharttraffic.com
Michael Wyatt – mwatt@wyattgunning.com
Nancy Hubble – nancy@hubbleisbee.com
Nick Driban – ndriban@lenharttraffic.com
Nick Leffner – nick.leffner@kimleyhorn.com
Nick Ottomaniello – nick.ottomaniell@kimley-horn.com
Patricia Hampton – thampton1117@gmail.com
Patrick Coggins – pcoggins@atapsco.com
Pete Zimmerman – pzimmerman@baltimorecountymd.gov
Randall Gracheck – rgrachek@newfields.com
Rebecca Wheatley – rwheatley@baltimorecountymd.gov
Renee Hamidi – renee@thevpc.org
Richard Burch – rcb@mhblaw.com
Richard Compton – richcompton@comcast.net
Richard McGraw – petemcgraw515@gmail.com
Robert Smith – besmtih01@verizon.net
Roy Snyder – rsnyder@atapco.com
Roz Johnson – rvjohnson@baltimorecountymd.gov
Russ Powell – rpowell@atapco.com
Shannon Hoffman – shannon9528@gmail.com
Shaun Crawford – scrawford@baltimorecountymd.gov
Sima Della Vecchia – theautumnsweater@gmail.com
Steve Smith – ssmith@gaylordbrooks.com
Susan Shelhoss – susan.shelhoss@stryker.com
Susan Tinanoff – stinanoff@gmail.com
Tom McCord – tbmccord@aol.com
Vishnubhai Desai – vdesai@baltimorecountymd.gov
Ying Wei Lum – yingwellum@gmail.com

IN RE: **DEVELOPMENT PLAN HEARING & PETITION FOR SPECIAL HEARING**	*	BEFORE THE OFFICE OF
8th Election District	*	ADMINISTRATIVE HEARINGS
2nd Council District		
(2310 W. Joppa Road)	*	FOR
	*	BALTIMORE COUNTY
GREENSPRING MANOR		
	*	
GREENSPRING JOPPA FALLS, LLC		**CASE NOS. 08-0922 and**
Owner/Applicant	*	**2021-0250-ASA**

* * * * * * *

CORRECTED ADMINISTRATIVE LAW JUDGE'S
COMBINED DEVELOPMENT PLAN AND ZONING OPINION & ORDER

This matter comes before the Office of Administrative Hearings ("OAH") for a public hearing on a development proposal submitted in accordance with Article 32, Title 4, of the Baltimore County Code ("BCC"). Greenspring Joppa Falls, LLC Owner/Applicant (herein known as "Owner") and Atapco Properties, Inc., Developer (herein known as "Developer") submitted for approval a 1-sheet redlined development plan ("Redlined Development Plan") and a 1-sheet greenlined development plan ("Greenlined Development Plan") prepared and sealed by Kimley-Horn known as "Greenspring Manor." (Dev. Exs. 1 and 1B). The Developer proposes to build 61 single-family homes (the "Project") on 39.4± acres of land split-zoned Density Residential - DR 1 and DR 2, located at 2310 W. Joppa Rd. (the "Property"). There is one existing house which is to remain.

The Developer has also filed a Petition for Special Variance from the Baltimore County Zoning Regulations ("BCZR"), §4A02.4.G to allow the development of the Property within the Falls Road and Joppa Road and Falls Road and Greenspring Valley Road failing traffic sheds. The development and zoning cases were filed as a combined hearing as permitted by BCC, §32-4-230.

The Concept Plan Conference ("CPC") was held on March 9, 2021. A Community Input Meeting ("CIM") was held on April 27, 2021. A Development Plan Conference ("DPC") was held on August 11, 2021.

The Property was posted with the Notice of Hearing Officer's Hearing ("HOH") and Zoning Notice in compliance with the regulations. A public virtual WebEx hearing, in lieu of an in-person public hearing, was held on the following dates: September 1, 2022; September 20, 2022; September 21, 2022; October 27, 2022; October 28, 2022; November 1, 2022; December 5, 2022; December 7, 2022, January 30, 2023, February 10, 2023, March 27, 2023, April 11, 2023 and May 31, 2023 (Days 1-13).

Russell Powell, representative of the Developer, attended the HOH in support of the Plan. Also in attendance was Matthew Bishop of Kimley-Horn, the firm that prepared both the Redlined Development Plan and Greenlined Development Plan. Christopher Mudd, Esquire and Adam Rosenblatt, Esquire of Venable, LLP, represented the Developer. Michael McCann, Esquire represented Valleys Planning Council; Seminary Ridge Homeowner's Association; Boxwood Homeowner's Association; Heatherfield Homeowner's Association; and Falls Road Community Association. Peter Max Zimmerman, People's Counsel for Baltimore County also participated. In addition, Michael Wyatt, Esquire and Douglas Sachse, Esquire, neighboring property owners participated in the hearings. There were many property owners and interested citizens who attended some or all of the hearings.

COUNTY AGENCY WITNESSES

Numerous representatives from Baltimore County agencies who reviewed the Plan also attended the hearing, including the following individuals from the Department of Permits, Approvals and Inspections ("PAI"): Jerry Chen, the Project Manager, Jim Hermann on behalf of both Development

Plans Review ("DPR") and Department of Recreation and Parks ("R&P"); LaChelle Imwiko from Real Estate Compliance ("REC"); Eugene Cauley from Development Plans Review ("DPR"); and Shawn Crawford, Office of Zoning Review ("OZR"). Also appearing on behalf of the County were Jeff Livingston from the Department of Environmental Protection and Sustainability ("DEPS"), and Brett M. Williams from the Department of Planning ("DOP").

Shawn Crawford verified both the OZR DPC comments dated November 3, 2021 and the OZR Final (HOH) comments dated April 4, 2022. (County Exs. 1A, 1B). The list of changes/additions requested by OZR set forth in the DPC Comments were made on the Redlined Development Plan and as a result, OZR recommended approval. LaChelle Imwiko testified for REC and listed the DPC comments which included labeling the 100-year Floodplain Easements, and Drainage and Utility Easements. (County Ex. 2A, 2B). At the hearing, the final change requested by Ms. Imwiko, pertaining to the total acreage for the 10 Drainage and Utility easements, was made in green which then resulted in the Greenlined Development Plan. With that final correction, REC recommended approval of the Greenlined Development Plan. (Dev. Ex. 1B).

Jeff Livingston testified on behalf of 3 sections within DEPS: (1) Ground Water Management ("GWM"); (2) Stormwater Management ("SWM"); and (3) Environmental Impact Review ("EIR"). GWM provided a comment dated August 26, 2022 that GWM had no outstanding issues or comments. (County Ex. 4). On behalf of SWM, the Concept SWM Plan was approved on June 23, 2021 as confirmed by a SWM comment dated November 10, 2021. (County Ex. 5). Mr. Livingston confirmed that the SWM devices will consist of 2 submerged gravel wetlands.

EIR provided HOH comments dated August 26, 2022 indicating that EIR reviewed the Redlined Development Plan dated November 10, 2021. (County Ex. 3). A Forest Buffer Variance was approved by the Director of DEPS on September 24, 2021 and an Alternatives Analysis was approved on

September 21, 2021. [1] The EIR HOH comments added 2 more minor changes that will need to be corrected prior to Final Development Plan approval. Finally, Mr. Livingston verified that the Director of DEPS approved the Developer's request for a Forest Conservation Variance to remove one (1) Specimen tree as set forth in the Director's letter dated September 21, 2021. (County Ex. 6).

In preparation for the HOH, Brett Williams provided a Memorandum on behalf of the DOP dated August 24, 2022 with an attached HOH Report dated November 18, 2021. (County Ex. 7). In response to DOP's DPC comments, the Developer provided a point-by-point response dated July 29, 2021. (County Ex. 9). DOP also reviewed and approved a School Impact Analysis ("SIA") with a filing date of July 9, 2021. (County Ex. 8). Mr. Williams explained that the projected enrollment for Riderwood Elementary School, Ridgely Middle School and Dulaney High School were under the State Rated Capacity ("SRC") and is 96.43%, 102.80% and 97.28% respectfully. Mr. Williams also stated that DOP reviewed the Redlined Pattern Book dated August 30, 2021 and found that it met all of the requirements of the Residential Performance Standards in BCZR, §260.

In the HOH Report, DOP addressed the Petition for Special Variance to develop within the 'F' level traffic shed of Falls Rd. and Joppa Rd., and Falls Rd. and Greenspring Valley Rd. Although BCZR, §4A02.4.G, requires DOP to provide a report to the Zoning Commissioner prior to consideration of the Special Variance in their HOH Report, DOP deferred the Petition to the Department of Public Works and Transportation (DPWT) for final recommendation and decision.

Jim Hermann, the Baltimore County Landscape Architect, testified that he approved the Schematic Landscape Plan on October 13, 2021 and, as a result, DPR recommended approval of the Redlined Development Plan from a landscaping perspective. (County Ex. 10). He added that a Final Landscape Plan would be filed in Phase II of the development process. In regard to Open Space

[1] The Protestants separately appealed these decisions to the Board of Appeals which approved of the same.

requirements, Mr. Hermann stated that for the 61 total proposed units, the required amount of Open Space ("OS") under BCC, §32-6-108 is 60,000 sf (1,000 sf per unit). (County Ex. 11). The Developer will provide 148,300 sf of OS at the Property as shown on the OS Proposed Conditions Plan which will be owned and maintained by a private Homeowner's Association ("HOA"). There are no Master Plan Greenways affected by this Project. As a result, on behalf of R&P, Mr. Hermann recommended approval of the Redlined Development Plan.

Eugene Cauley testified on behalf of both DPR and the Department of Public Works & Transportation ("DPWT") in regard to roadways, sidewalks, storm drains, water and sanitary sewer systems. DPR's general and site-specific comments were provided in the DPC comments dated August 10, 2021 (the "DPR DPC Comments"). (County Ex. 12A). He explained that a floodplain study need not be approved for filing in Phase I, and was permitted to be moved to Phase II of the development process. (County Ex. 12D).

Mr. Cauley testified that DPR could *not* recommend approval of the Redlined Development Plan with an 'emergency only access gate' because the number of homes adjacent to the Property exceeds 100, and therefore it is a violation of DPR Policy Manual, Access Guidelines, XIII.B. (Prot. Ex. 9). In regard to sewer capacity, he acknowledged the DPR DPC Comments dated August 10, 2021 indicated that eight (8) sewer segments do not have adequate capacity to accommodate 61 homes. (County Ex. 12A). Mr. Cauley confirmed that these 8-inch pipes were to be replaced and/or upgraded by Johns Hopkins when it built the 3 medical buildings at Greenspring Station as part of that prior development project. However, Mr. Cauley could not provide information as to when, or whether, JHH would be doing that work. He was clear that, as of HOH Day 1, the Johns Hopkins sewer segments had not been replaced/upgraded. The DPR DPC Comments also indicated that Johns Hopkins is obligated to complete that work by 2023. Mr. Cauley added that the Developer of this Project (Atapco), was required to

complete work on two (2) other sewer segments (MH 43793, 43794) for another development project but did not have specific information. (County Ex. 12A).

When asked about the Petition for Special Variance and failing intersections along Falls Rd., Mr. Cauley stated that a traffic impact study (TIS) was approved by State Highway Administration (SHA). In Case No.: 2021-250-ASA, DPR provided zoning advisory comments ("ZAC") dated October 18, 2021 wherein it was reiterated that no development is permitted in a traffic shed or along local roads with an 'F' level of service ("LOS") and that the Special Variance request needed to be coordinated/discussed with DPWT Traffic Design section. (County Ex. 12C). Mr. Cauley testified that he spoke with a County traffic engineer, Kristopher Nebre, PE, who works in the Traffic Planning and Traffic Engineering Section of DPWT. Mr. Cauley testified that Kris Nebre told him that DPWT had no further comment. From his conversations with Kris Nebre, Mr. Cauley understood that Falls/Joppa Rd. and Falls/Greenspring Valley Rd. were rated by the County as 'F' intersections. Mr. Cauley was also told by Kris Nebre that roadway improvements would be made to the intersection of Falls/Joppa but not to Falls/Greenspring Valley. When Mr. Cauley was shown the DPWT ZAC comment dated September 20, 2021 from Terry Curtis, PE - Engineer III with DPWT, Mr. Cauley acknowledged that, at that time, DPWT recommended denial of the Petition for Special Variance. (County Ex. 12B). Mr. Cauley then repeated the information provided to him by Kris Nebre that the traffic generated by the Project would have no net impact on the failing intersections. (County Ex. 12D). He testified that the levels of service for those intersections after the improvements are completed would still be rated as 'F'. (County Ex. 12 D).

Because of Mr. Cauley's testimony about traffic issues, at the request of the undersigned, Kristoffer Nebre, PE, Engineer IV, Division Chief of Traffic Engineering, Department of Public Works and Transportation (DPWT) was requested to testify. Kris Nebre testified that he reviewed the Redlined

Development Plan and the TIS prepared by the Developer's traffic engineer.

While he does not make the boundary line determination for traffic sheds, Kris Nebre did verify with the County GIS department that this Property is located within a failing traffic shed which includes both the Falls/Greenspring Valley intersection and the Falls/Joppa intersection. The relevant traffic shed does not include the Falls Rd. and Seminary Ave. (MD Rt. 131) intersection. He clarified that both Falls Rd. (MD Rt. 25) and Greenspring Valley Rd. (MD Rt. 130) are owned and maintained by the State of Maryland (SHA), while Joppa Rd. is owned and maintained by the County. As a result, the State, not the County, has jurisdiction to undertake work to physically improve those State-owned roadways, and/or to make changes to the signal timing. Alternatively, the State could approve plans by a developer to improve the roadways.

In order to rate intersections for the purpose of the Basic Services Map ("BSM"), Kris Nebre explained that the County uses the 'loaded cycle methodology' ("LCM") as found in the Highway Capacity Manual (1965). Under the LCM, the Traffic Engineering/Planning section employs a team of people to perform traffic counts at intersections for a 1-2 hours to evaluate each approach to an intersection. A traffic cycle becomes 'loaded' if on a green light, the last vehicle in line on a green light does not make it through the intersection. Stated in percentages, failing movements generate the assigned rating; an 'F' rated intersection has a load factor of 86-100%. For intersections rated 'D', 'E' and 'F', Kris Nebre explained that DPWT conducts annual traffic counts to reevaluate the ratings each year. For intersections rated 'A', 'B' and 'C', the counts are conducted every 3 years. He explained that because it is a snapshot in time, the LCM cannot be used to forecast future traffic generated by a proposed development.

Kris Nebre did confirm that both Falls/Greenspring Valley and Falls/Joppa are both rated by DPWT with a level of service of 'F.' He was not able to state which approach(es) for each of these

intersections was causing the 'F' rating, or how long either intersection had been rated an 'F'. He agreed that there were 12 intersections in the County with 'F' LOS, and that 3 of those 12 were located along the Falls Road corridor. (PC Ex. 9).

Kris Nebre also verified that SHA did not approve the Developer's proposed improvements to the Falls/Greenspring Valley intersection but did approve the proposed improvements to Falls Rd/Joppa Rd. intersection. Those improvements which will consist of one (1) additional left turn lane on both the eastbound and westbound approaches. He stated that these improvements will allow multiple movements simultaneously thus providing more time during green lights along the Falls Rd. corridor. After the improvements at Falls/Joppa Rd. are completed, SHA will change the signal timing. Kris Nebre stated that both the physical improvements at the Falls Rd./Joppa Rd. intersection, and the timing at the Falls Rd. intersections will improve traffic flow for Falls/Greenspring Valley intersection.

Kris Nebre explained that the standard for a Special Variance requires DPWT to analyze whether the proposed improvements to the roadway were such that the additional traffic generated by the development, will not make the intersections any worse. The roadway improvements must have the capacity to accommodate all new traffic generated from the development such that it would be as if no additional traffic was added to the intersection resulting in a net impact to the intersection. Having reviewed the TIS, and supplemental information provided to DWPT by the Developer's traffic engineer, it was Kris Nebre's opinion that the proposed development would result in a net zero impact along Falls Rd. (County Ex. 13).

Kris Nebre explained that when a development is being proposed, DPWT does not generate a TIS, nor does it conduct traffic counts. In analyzing a TIS to determine the impact of the development on a traffic shed, DPWT reviews the Critical Lane Volume ("CLV") and Highway Capacity Manual ("HCM") methodologies because, unlike the LCM, each method can project the number of trips to be

generated by a proposed development. He acknowledged that the intersections may still be rated as 'F'. In regard to whether Greenspring Manor development should have a permanent connection through Mays Chapel community, Kris Nebre deferred to DPR.

On cross examination, Kris Nebre acknowledged a series of emails obtained by the Protestants' counsel (the "DPWT Traffic Emails"). (Prot. Ex 15, 16, 17, 18 and 19). Kris Nebre explained that the DPWT Traffic Emails were created at a time when Greg Carski was the Bureau Chief of Transportation Planning and Transportation Engineering and Michael Filsinger was the Division Chief of Traffic Engineering. Kris Nebre now occupies the job of Division Chief. At the time of the DPWT Traffic Emails, both Mike Filsinger and Kris Nebre worked under Greg Carski. Greg Carski still works for the County. Kris Nebre also acknowledged DPWT DPC comments were prepared during review of the development plan dated August 12, 2021 ("DPWT DPC Comments"). (PC Ex. 6). Kris Nebre recalled that the DPWT DPC Comments were compiled by him and the DPWT team and he agreed that its contents were correct. (PC Ex. 6). He also acknowledged having seen the DPWT ZAC Comments authored by Terry Curtis, PE wherein DPWT recommended denial of the Petition for Special Variance. (County Ex. 12B).

DEVELOPER'S CASE

1) Erin Kuhn, SHA Associate District Engineer Traffic.

The Developer's first witness was Erin Kuhn, Associate District Engineer Traffic at SHA. She is assigned to District 4 which includes Baltimore County. District 4 reviews TIS and development plans but is not involved with the Special Variance. In this case, SHA reviewed the revised TIS dated December 9, 2020 and the Point-by-Point Response to State and DPWT comments. It was approved by SHA on January 21, 2021. (Dev. Ex. 15). The TIS included the proposed roadway improvements to Falls/Joppa Rd. (Dev. Ex. 16). By letter dated August 4,

2021, SHA did not object to the Development Plan for the Project, and by subsequent letter dated September 13, 2021, SHA had no objection to the Petition for Special Variance. (Dev. Exs. 17, 18).

Ms. Kuhn testified that as indicated in the March 7, 2022 Maryland Department of Transportation ("MDOT") letter, SHA did not approve the proposed improvements to Falls/Greenspring Valley Rd. intersection. (Dev. Ex. 20). At that intersection, the Developer was proposing one (1) additional left turn lane from Greenspring Valley Rd. turning north onto Falls Rd. SHA denied those improvements and found that they would create a safety issue when traffic in those left turn lanes merge together to head north on Falls Rd. (Dev. Exs. 19, 20, 21). After SHA denied the proposed improvements, Lenhart Traffic Engineers resubmitted the same improvements for Falls/Greenspring Valley Rd. which were denied by SHA for a second time.

Ms. Kuhn added that all three (3) traffic signals along Falls Rd. operate through a coordinated signal system. After the Falls/Joppa Rd. improvements are completed, SHA will retime all 3 signalized intersections. Ms. Kuhn repeated that under both the CLV and HCM methodologies, the TIS showed that neither the LOS for Falls/Joppa, nor the Falls/Greenspring Valley intersections, operate at LOS 'F'. However, as far SHA is concerned, when the proposed roadway improvements at Falls/Joppa Rd. are completed, the LOS for Falls/Joppa would change from LOS 'E' to 'D.'

2) Russell Powell, Senior Vice President, Atapco Properties.

Russell Powell was the Developer's second witness. As the Senior Vice President for the Developer, Mr. Powell is responsible for all new acquisitions. Atapco has a 100-year history in Baltimore. He described the Project as low impact with proximity to Greenspring Station and Johns Hopkins medical facilities. He highlighted that the proposed homes were being pushed

behind the existing house to preserve one-half the Property in OS. Atapco found the Property desirable for a by-right development, on cleared farm land, with its connection to utilities. The existing home will be sold to a new buyer. Atapco will contract with NVR Homes as the builder. He was also certain that community outreach with adjacent communities had been conducted. He stated that Atapco requested to meet with Valleys Planning Counsel ("VPC") but VPC denied the request.

Mr. Powell informed that since the Concept Plan, the following changes to the Development Plan have taken place:

1) adding a berm and landscaping to enhance the vegetative buffer;
2) clustering the homes away from W. Joppa Rd.;
3) changing the Mays Chapel gate to emergency-access-only;
4) the addition of speed bumps on Tally Ho Rd.;
5) roadway improvements at Falls/Joppa; and
6) upgrade sections of the sewer system.

Mr. Powell confirmed that the Developer here has elected to proceed with construction drawings for both roadway improvements and sewer system repair/replacement prior to approval of the Greenlined Development Plan. During cross examination, Mr. Powell stated that, prior to the purchase of the Property, the Developer learned that Johns Hopkins had not repaired the sewer system as part of its development approval in Greenspring Station. He also stated that the community outreach was with Seminary Ridge HOA, Boxwood Community and Meadows Community. He confirmed that the proposed homes would have 2-3 car garages and 3-4 bedrooms. The homes would range between 3,000 sf – 4,500 sf without basements. Market studies indicated that buyers want 3-car garages. He further acknowledged on cross that the proposed density was non-negotiable. The price point will range from 800,000.00-1,000,000.00.

3) Matthew Bishop, Landscape Architect, Kimley Horn.

Matthew Bishop was admitted as an expert in landscape architecture, land planning, in

development regulations and zoning process. In describing the location of the Property, Mr. Bishop stated it is located northwest of I-695, northeast of W. Joppa Rd., and east of Falls Rd. Immediately surrounding the Property are homes to the north and east, SHA property to the south, and to the west, Greenspring Station with mixed-use offices and medical facilities. The Property is split-zoned nearly in its center with Density Residential - DR1 to the south and DR2 to the north. The permitted density for 39.4 +/- acre Property is 61 homes which would be divided as 16 homes (16.8 acres +/-) in DR 1 and 45 homes in DR 2 (22.6 acres +/-). Mr. Bishop testified that the homes meet all bulk regulations and no variances were being requested.

Mr. Bishop conducted an analysis of the lots in the surrounding area and prepared a document showing lot size ranges from 6,500 sf-12,500 sf. (Dev. Ex. 4). This document was submitted to DOP in response to DOP's CPC comment. Street view photographs were provided. (Dev. Ex. 5A-5Y). A rendered Development Plan was provided to show Project. (Dev. Ex. 6). The Property has minimal topographical changes and therefore no retaining wall will be constructed thus minimizing the grading here. The first home will be located 550 ft away from W. Joppa Rd. The proposed access driveway will have dedicated in and out drive aisles.

After speaking with the Meadows and Boxwood Communities, the Developer is proposing the Mays Chapel Gate now be approved to be an emergency-access-only gate where Mays Chapel Rd. connects to the Property. The Mays Chapel Gate would prevent traffic between W. Joppa and Seminary Avenue. At the location of the Mays Chapel Gate, would be a 3-4 ft tall berm with large shade trees to buffer the Project from the Meadows and Boxwood communities. A Schematic Landscape Plan has been filed and approved by the County. There will be 1,000 new plantings including shrubs, shade trees, flowering trees and Evergreens.

The Project will provide more than double the amount of required OS with grass areas, a

pavilion, or gazabo and garden areas. The required amount of OS is 60,000 sf, while 148,000 sf of OS is being provided. A walking trail will proceed through Lots 2 – 9. The cost of the OS is $308,000.000. Public sidewalks will be on both sides of the interior roads. The homeowner's association will own the OS. There currently are no SWM devices on the Property; 3 submerged gravel wetlands are being proposed to treat both 100-year water quantity and quality. There are SWM facilities located in the residential communities to the north of the Property and at Greenspring Station.

The existing floodplain which is currently located in the front of the Property in farm fields, will be contained within the Forest Buffer and Forest Conservation easement areas. The proposed driveway will be built on fill at a higher elevation. The environmental areas will be protected in perpetuity through easements. There will be no negative impact to adjacent properties.

Mr. Bishop used the Pattern Book to describe the proposed home styles which will have variable widths of 40 ft; 50 ft; and 55 ft. (Dev. Exs. 7A, 7B, 7C). There will be a mix of front-end loaded and side-loaded garages. Most 2-car front-loaded garages will have first floor living.

Mr. Bishop testified that the Project meets the Master Plan which is intended only as a guide. He opined that the Project is consistent with the T3 suburban transect zone in that it will have single family dwellings which are oriented to the streets in a grid pattern embellished with landscaping. T3 applies to lowest density zones DR1 and DR 2, and permits a wide variety of density, design and setbacks.

In regard to rehabilitation of the sewer segments, Mr. Bishop stated that the Developer has agreed to upgrade the 8 inch sewer pipes to 12 inch sewer pipes located across Joppa Rd. Plans for the rehabilitation have been prepared and filed with the County.

As to the Residential Performance Standards in BCZR, §260, Mr. Bishop opined that the

Project met each section. Specifically, he testified that the Project meets BCZR, §260.2 – *Site Planning* in that 27 specimen trees ("STs") are being retained and only 1 ST is being removed, there is little forest clearing, and additional quality vegetation will be planted. Under BCZR, §260.3 – *Open Space*, the existing grading is being maintained, the homes are located 550 ft away from W. Joppa Rd., there are a mix of lot sizes without any panhandle lots. There will be plantings along the front of the Property which will link to the network of natural landscape open areas. All sidewalks will connect to Mays Chapel Rd. and a pedestrian path will be provided along W. Joppa Rd. All homes are oriented to open areas and to the gazebo park. The trail system will proceed through the open areas to adjoining communities. Under BCZR, §260.4 – *Streets and Parking*, there will be a street connection with Mays Chapel Gate being emergency-access-only to meet community concerns. In addition to garage parking, street parking is also provided. Under BCZR, §260.5 – *Landscape Design*, the entrance will be an inviting OS, with sidewalks leading to the OS. The gazebo, walking trail and garden are located in a pocket park. There is a berm on the northern end, and fencing on side and rear of the Property; tree canopy along the streets; a monument sign will be provided. Under BCZR, §260.6 – *Buildings*, under Subsection A, the Project provides a variety of housing types with variable widths and both front and side garage entries. All porches face the street and the front yard setbacks provide a uniform street edge. Decks and porches are available to buyers. The proposed gazebo provides the same architectural theme. The finish materials are provided in the Pattern Book, with similar materials and design on building facades, and compatible materials for siding using stone and brick. (Dev. Ex. 7). Under BCZR, §260.6.B, the front and side loaded garages are not the dominant theme. In conclusion, Mr. Bishop opined that the Project meets all Residential Performances Standards and the Development Plan meets all applicable development regulations.

On cross examination, Mr. Bishop acknowledged that the Developer was maximizing the number of density units on the DR2 and thereby condensing them onto the northern portion of the Property. He agreed that the smallest lot size was 7,507 sf (less than 1/5 acre) and the largest was 21,571 sf (less than ½ acre). He stated that 15 of the 61 homes have 3 car garages. He acknowledged that of the 61 lots, 24 of the lots are less than 10,000 sf and none will be near 30,000 sf. In regard to setbacks, the 3 typical lot layouts as shown on the Greenlined Development Plan provide the minimum required front, side and rear setbacks; there is no breakdown for the number of proposed lots which may have larger setbacks. He also acknowledged that the Floodplain Study had not been 'approved for filing' by the County as of the time of the hearing. The proposed driveway, connection to the sewer, and roadway widening of W. Joppa Rd. for acceleration/deceleration lanes, will all impact the floodplain. Bishop opined that there was no requirement under BCC, §32-4-414(c) to obtain a waiver to develop in the floodplain. Mr. Bishop recognized that his request to DPWT on June 28, 2021, for DPWT's confirmation that existing 'overtopping of water' on W. Joppa Rd. will not be made worse by the Project. (Prot. Ex. 23). DPWT did not respond to the request. In regard to SWM devices, Mr. Bishop explained that it is typical not to be able to treat all the water draining onto and off a property.

Mr. Bishop also explained that the Developer has agreed to repair/replace eight (8) sewer segments located on the SHA property across from this Property on W. Joppa Rd., and SHA has granted an easement to do the work. Mr. Bishop added that, in light of Johns Hopkins' failure to repair certain sewer segments for the medical and surgical buildings in Greenspring Station, he has not analyzed whether there is sufficient sewer capacity. He stated that he is relying on the County's expertise as to sewer capacity and the County was only requiring the rehabilitation of 8 sewer segments on SHA property.

4) John Canoles, Eco Science Professionals.

John Canoles of Eco Science Professionals was admitted as an expert environmental consultant with special knowledge of State and County requirements for Specimen Trees ("STs") and Forest Conservation Variances. (Dev. Ex. 10). Mr. Canoles prepared the Application for Forest Conservation Variance (the "Forest Conservation Application"). (Dev. Ex. 12).

With regard to the Forest Conservation Variance, Mr. Canoles explained that the Developer is requesting approval to remove one (1) specimen tree – ST12 - as identified in the photo. (Dev. Ex. 11). The Forest Conservation Application reveals the location of the tree is on W. Joppa Rd. and needs to be removed due to widening of W. Joppa Rd. with the acceleration/deceleration lanes for the Project. The Forest Conservation Application indicates that the ST12 is a 43-inch, Norway Spruce in fair condition which has already been impacted by tree trimming for overhead BGE lines. The Director of DEPS approved the removal of ST12 finding that all requirements in BCC, §33-6-116(d) and §33-6-116(e) have been met. (County Ex. 6; Dev. Ex. 13). Mr. Canoles opined at the HOH that the removal of ST12 meets all requirements in BCC.

5) Nick Driban, PE, PTOE, Associate Vice President, Lenhart Traffic Consulting, Inc.

Mr. Driban is a senior traffic engineer with nearly 16 years of experience in the field of traffic engineering. He is a licensed professional engineer in the State of Maryland with a Professional Traffic Operations Engineer ("PTOE") certification. He has worked for Lenhart Traffic Consulting ("Lenhart") for the past 5 yrs. Although he has been accepted as an expert witness in other counties in Maryland, this was the first case in which Mr. Driban has testified as an expert witness in Baltimore County. In this case, he was accepted as a professional traffic operations engineer with special knowledge of the BCZR and development regulations. (Dev. Ex. 24).

Mr. Driban prepared the TIS dated September 14, 2020 and, due to comments he received from both SHA and DPWT - Traffic Engineering Section, he revised it on December 7, 2020. (Dev. Ex. 25). In the TIS, Mr. Driban analyzed the roadway improvements at intersections of Falls/Joppa and Falls/Greenspring Valley, as well as the Mays Chapel Gate as emergency-access-only. Mr. Driban explained that since the State of Maryland owns and maintains the intersections of Falls/Joppa and Falls/Greenspring Valley as well as both Falls Rd. (MD 25) and Greenspring Valley Rd. (MD 130), SHA has the authority to approve any proposed roadway improvements. While Joppa Rd. is a local County Road, he stated that SHA also has jurisdiction within 50 ft of the Falls/Joppa intersection. However, it was his understanding that DPWT is still responsible for oversight and review of traffic requirements under the BCZR.

Mr. Driban explained that the TIS is divided into: (1) existing conditions which includes roadway network, existing lane configurations and existing traffic counts; (2) background developments which includes all developments which have been approved prior to the TIS; and (3) a growth rate of 1.5% which accounts a projection for the effect of regional growth on the roadways. The total conditions include the existing conditions, the background developments plus the traffic generated by the Project.

Mr. Driban testified that in analyzing the traffic to be generated by the Project, he used the Institute for Traffic Engineers ("ITE") Trip Generation Manual, 10th Edition. Mr. Driban explained that the ITE compiles studies conducted throughout the country for types of land uses and provides the number of morning peak hours and afternoon peak hours for vehicles which would enter and exit a site. For this case, Mr. Driban used Land Use Code 210 for Single-Family Detached Homes, and the ITE indicated that for the 61 proposed homes, 46 (11 in, 35 out) morning peak hours trips would be generated, and 61 afternoon peak trips (38 in, 23 out) would be

generated. (Dev. Ex. 25, p. 13).

He then explained that the total number of trips generated must be assigned directionally to a roadway network. Toward that end, he compiled a trip assignment chart contained within the TIS. (Dev. Ex. 25, p. 14). Mr. Driban projected that:

> (1) 60% of trips to and from the Project will turn onto Falls Rd. heading south or coming from I-695 and I-83;
> (2) 20% will head east on Joppa Rd;
> (3) 5% will cross over to Meadowood Regional Park;
> (4) 10 % will head north on Falls Rd. past St. Paul's Schools; and
> (5) 5% will turn left onto Greenspring Valley Drive.

Mr. Driban stated that his trip assignment projections are based on the theory that most travelers are going to regional destinations rather than to rural destinations.

The TIS also analyzed the LOS for each intersection using the CLV and HCM methodologies. CLV analyzes how much traffic passes through an intersection, while HCM looks at the average delay per vehicle at a given intersection. Mr. Driban described both the CLV and HCM as modern methodologies for analyzing traffic. Baltimore County was the only jurisdiction that applies LCM to rate intersections. He added that, conversely, LCM cannot be used to predict traffic to be generated by a development because LCM only reflects a specific moment in time, not the future.

Under the CLV analysis, Mr. Driban stated that in the morning peak hours, without the proposed improvements to Falls/Joppa, the CLV impact would be 13 vehicles added, and the LOS would remain an 'E'. With the proposed improvements, in the morning peak hours, he stated that Falls/Joppa would improve its LOS from 'E' to a 'D'. He also testified that, under CLV, Falls/Greenspring Valley would become LOS 'D'. (Dev. Ex. 25, p. 16). Similarly, under HCM, he concluded that the impact of the Project was negligible with Falls/Greenspring Valley remaining at LOS 'D' and Falls/Joppa improving from 'E' to a 'D'. (Dev. Ex. 25, p. 17).

Mr. Driban testified that the failing movements for the Falls/Joppa intersection is northbound in the morning peak hours, and for the Falls/Greenspring Valley intersection is the northbound in the afternoon peak hours. The roadway improvements proposed by the Developer are not to add lanes to the northbound direction on Falls Rd. Rather, Mr. Driban explained that the concrete median strip on W. Joppa Rd. at the intersection, will be removed to make way for an additional left turn lane for traffic heading south on Falls Rd. The lanes heading toward Meadowood Park will be repainted such that there will be 2 dedicated left turn lanes; 1 straight-thru lane toward Meadowood Park; and a dedicated/merge right turn lane heading north on Falls Rd. will remain. Heading eastbound from Meadowood Park toward the Property, the Developer is also repainting those lines to create a left-turn-only lane in order to provide 2 left-turn lanes heading north on Falls Rd., and 1 combined thru-lane/right turn only lane. An aerial photograph with the proposed improvements was provided. (Dev. Ex. 16). Prior to obtaining approval here, the Developer made the decision to proceed with SHA approval of the design plans for the roadway improvements.

Mr. Driban further testified that, only after the roadways improvements to Falls/Joppa are completed, will SHA retime the lights at each of the 3 intersections along Falls Rd. Mr. Driban prepared a document entitled 'MD 25 (Falls Road) Corridor Travel Times' (the "Corridor Analysis") using SHA's Synchro files factoring in Falls/Joppa roadways improvements and SHA retiming of the lights at the 3 intersections, to conclude that for every vehicle traveling northbound along Falls Rd., 45 seconds would be saved, and southbound 8 seconds would be saved. (Dev. Ex. 26). Without specifically stating the amount of time saved at each intersection, he then testified that some of the 45 seconds northbound would be saved at Falls/Seminary and that "it stands to reason that" some of the 45 seconds would also be saved at Falls/Greenspring Valley Rd. He then

concluded that, after the development is constructed, the proposed improvements and retiming of lights will have a positive impact on traffic along the Falls Rd. corridor.

In his opinion, Mr. Driban believes that the Project creates a small impact on traffic and that, with the proposed roadway improvements and retiming of the lights, any impact will be mitigated. With this opinion, Mr. Driban contends that the Special Variance standards have been satisfied. He asserts that the roadway improvements to Falls/Joppa will not only accommodate the traffic from the Project but will substantially improve the average delay along the entire Falls Rd. corridor. In terms of reserve capacity certificates, as specified in the Special Variance Standard, Mr. Driban did not find any. He concluded that the Developer has met all the County rules and regulations.

In regard to the neighborhood concern about cut-thru traffic particularly on Tally Ho Rd., Mr. Driban testified that Lenhart performed an Origin Destination Study. This study was conducted prior to installation of speed humps on Tally Ho Rd. in Fall of 2021. The result was that for the morning peak hours, an average of 3-10 vehicles drove on Tally Ho Rd.; 1.5 vehicles during mid-day and 5 vehicles in evening peak hours. It was Mr. Driban's understanding that the County does not have any threshold for when the amount of cut-thru vehicles amount to a traffic problem. He then concluded that there is not a substantial amount of cut-thru traffic on Tally Ho Rd.

Mr. Driban also opined that, the Mays Chapel Gate needs to be an emergency-only-access gate between the Project and The Meadows/Boxwood communities. Under his reading of the DPR Policy Manual, given that the proposed number of units is 61, there is no requirement for a second, permanent access. In his view, the DPR Policy does not mandate 2 separate access points. He reads the purpose of the DPR policy for more than 1 access point as needed to provide circulation

of vehicles and emergency access. Under that analysis, he reasoned that The Meadow has 99 units and 2 access points onto Mays Chapel Rd., and the 16 homes in Boxwood also have access to Mays Chapel Rd. He believes that an emergency-access-only gate gives full access to emergency vehicles headed to W. Joppa Rd. However, he then reasoned that if the DPR Policy did apply, the "unusual circumstances" exception in the DPR Policy should apply. According to him, those unusual circumstances are that Mays Chapel Rd. does not have any lights and is a local road which was not designed for a lot of traffic. (Dev. Ex. 28). Allowing full access through the Project would connect Seminary to Joppa Rd. and would attract 600-1,000 vehicles during both peak and non-peak hours, negatively impacting The Meadows and Boxwood communities.

In response to the DPWT email dated September 20, 2021 by Terry Curtis, PE, (County Ex. 12B; PC Ex. 6), Mr. Driban referred an email dated January 15, 2021 from Mike Filsinger, PE, who, at the time, was Chief, Division of Traffic Engineering, to Counsel for Developer stating:

> While the proposed development is located within a failing traffic shed, the proposed improvements associated with the traffic impact study will mitigate the increased traffic generated by the proposed development. Any questions, let us know.

(the "Filsinger Jan. 15, 2021 Email"). (Dev. Ex. 30). Mr. Driban stated that he believed the Filsinger Jan. 15, 2021 Email provided DPWT's approval that the Special Variance standard has been met. He testified that he assumed the Terry Curtis must have mistaken the TIS for the Sensitivity Analysis which was requested by Greg Carski and Mike Filsinger during a meeting Mr. Driban had with them in June, 2021. Mr. Driban testified that he submitted the Sensitivity Analysis on July 8, 2021 but it was never reviewed by Traffic Engineering prior to the transfer of both Greg Carski and Mr. Filsinger out of the Traffic Engineering department of DPWT. (Prot. Ex. 39). Mr. Driban then testified that, he did not want to "take for granted" that approval, and

continued to work with Kris Nebre, who had by that point become Acting Director of Traffic Engineering. Mr. Driban stated that, at Kris Nebre's request, he continued to provide Kris Nebre with more analysis to address his concerns.

On cross examination, Mr. Driban acknowledged that this is the first case in Baltimore County in which he has been accepted as an expert, and, consequently, this case is the first time he has had to analyze the Special Variance standard. He agreed that a TIS is only one aspect considered under the Special Variance standard. In his discussions with the representatives in Traffic Engineering and Design, Mr. Driban was not expressly told that the 'district standard' as referenced in BCZR, §4A02.4.G was the CLV, HCM or a Corridor Analysis. Mr. Driban added that under the LCM used by the County, there is no model and therefore LCM cannot be utilized to project future conditions. On the other hand, he stated that both CLV and HCM have software which can calculate future projections.

Mr. Driban confirmed on cross that for Falls/Joppa Rd. intersection, the County traffic counts for **February 19, 2020**, showed the following existing morning and afternoon peak volumes, amount of vehicles:

Direction	Morning Peak (7:00-9:00 am)	Afternoon Peak (4:00-6:00 pm)
Northbound	1782 vehicles	1700 vehicles
Westbound	585 vehicles	726 vehicles
Southbound	1925 vehicles	1174 vehicles
Eastbound	259 vehicles	340 vehicles

(Dev. Ex. 25, p. 26).

Notwithstanding Mr. Driban's opinion that the Project would generate 46 peak morning trips and 61 peak afternoon trips, he acknowledged that the Greenlined Development Plan at Note

11 indicates that the average number of daily trips ("ADT") from the Project is 600 ADT. (Dev. Ex. 1B). He further conceded that he did not review the 200 studies which are the basis for the ITE trips and therefore, did not know whether any of the studies included 2-3 car garages. He then stated that he "would have to believe" the studies would include garages. In his view, the fact that 200 studies were conducted for Land Use 210 was a sufficient basis for his opinion, as the ITE trip generation numbers for other Land Uses were based on fewer studies. The ITE Manual is not a government publication but he referenced the most recent one. Mr. Driban did not know the age range of the studies contained therein but believes they go back 30-40 years, conducted between 1970-2010. The ITE trip generation numbers for this Project also do not factor in the number of drivers living in a home, nor the number of vehicles per home. Even with the proposed garages, he recognized that the Project also includes on-street parking. He summarized that the "best we can do is to use the trip generations."

He further acknowledged that the Trip Assignment percentages are estimates based on "local and regional patterns." (Dev. Ex. 25, p. 14). He agreed that his estimated percentages contain a margin of error. (*Id*.).

Mr. Driban agreed that the application of the ITE trip generation numbers for this Project does not account for additional trips in and out of the Property by residents, visitors, deliveries or vehicles providing a service, or to and from adjoining neighborhoods, or in and out of Greenspring Station. It also does not factor in trips in and out of Meadowood Regional Park for regular use or during athletic events, nor trips to and from the local private schools including St. Paul's Schools located at Falls/Seminary Ave. The Greenspring Station access drives were not studied. The ITE trip generation numbers do not account for off-peak hour trips as the peak trips account for the worst traffic times. While emphasizing that Falls Rd./Seminary Ave. is not part of the traffic shed

for this Project, the Corridor Analysis included Falls Rd. and Seminary Ave. He also recognized that his Corridor Analysis is a projection where Synchro data of average overall travel speed was inputted and the focus is on how long it could possibly take a vehicle to drive through the 3 intersections along Falls Rd. The Corridor Analysis is not a speed study and he did not conduct one. He conceded that the Falls Rd. corridor has the most concentrated group of 'F' intersections in the County.

In regard his HCM Signalized Intersection Capacity Analysis for Falls/Joppa Rd. intersection, he admitted on cross examination that after the roadway improvements at Falls/Joppa are complete, the delay for three (3) movements (both turning and straight) will be longer than currently exist for the *morning* peak hours, namely: (1) eastbound left lane ("EBL"); (2) westbound right lane ("WBR"); and (3) southbound thru lane ("SBT"):

Falls/Joppa Intersection	EBL	WBR	SBT
AM Existing Delay (sec)	79.0	62.6	29.8
AM After Improvements Delay (sec)	92.1	67.3	33.5

In the morning peak hours for the Falls/Joppa Rd. intersection, there will be additional delays after the improvements are completed such that 2 of 3 existing eastbound movements will remain failing: EBL will drop from an 'E' to an 'F', and EBT will remain an "E'. For westbound traffic, all 3 movements will remain failing: WBL will remain at an 'F', WBR will remain an 'E', and WBT will become an 'E'. For northbound traffic, LOS for NBL will become an 'E'. For southbound traffic, LOS for SBL will become an 'E'.

Likewise, after the improvements to Falls/Joppa intersection are completed, the *afternoon* delay increases for WBR and NBL:

Falls/Joppa Intersection	WBR	NBL
PM Existing Delay (sec)	59.9	23.2
PM After Improvements Delay (sec)	63.8	45.8

With regard to LOS in the afternoon peak hours after improvements are completed, two (2) eastbound turning movements will still be failing: EBL will remain at an 'F', and EBT becomes an 'E'. For westbound traffic, all 3 turning movements will still be failing: WBL becomes an 'E', WBT becomes an 'E', and WBR becomes an 'E'. For southbound traffic, SBL becomes an 'E'. (Dev. Ex. 25; Prot. Exs. 36, 37).

For Falls/Greenspring Valley intersection which will not have an roadway improvements, the TIS confirms that for existing conditions, there are 5 failing turning movements: EBL –'E'; EBT- 'E'; WBL – 'E'; WBT – 'E'; and SBL- 'E'. Similarly, in the afternoon peak hours, there are 3 failing movements: WBL – 'E'; WBT – 'E' and SBL – 'E'.

Mr. Driban was also cross examined on the TIS 'Results of Level-of-Service Analyses – CLV' chart ("LOS-CLV Chart") which he prepared for Falls/Joppa and Falls/Greenspring Valley intersections. He explained that the intersection letter grades for existing, background and total conditions on that chart were obtained from SHA. (Dev. Ex. 25, p. 16). He agreed that the CLV numbers for background and total conditions were projections. He conceded that the LOS-CLV Chart confirms that after the proposed roadway improvements to Falls/Joppa intersection are completed, the LOS for the Falls/Greenspring Valley intersection for both morning and afternoon peak hours decreases from a 'B' LOS to a 'D' LOS under SHA ratings. While the LOS-CLV Chart shows that, after the roadway improvements are completed, for the Falls/Greenspring Valley intersection, 3 trips will be added to the morning peak hours and 2 trips will be added in the afternoon peak hours. Likewise, under the CLV analysis, for the Falls/Joppa intersection, 13 trips

will be added to in the morning peak hours, and 16 trips will be added in the afternoon. Mr. Driban opined that these additional trips for Falls/Joppa Rd. are negligible because the overall 'mitigation' for Falls/Joppa intersection is 931% (-121/13) in the morning, and 819% (-131/16) in the afternoon. However, he agrees that, even after the improvements to Falls/Joppa intersection are completed, there is no mitigation by the Developer at Falls/Greenspring Valley Rd. intersection.

Similarly, Mr. Driban agreed that under the TIS 'Results of Level-of-Service Analyses – HCM' chart ("LOS-HCM Chart") which he also prepared for Falls/Joppa and Falls/Greenspring Valley intersections, after the roadway improvements to Falls/Joppa intersection are completed, the LOS for Falls/Greenspring Valley, for both morning and afternoon peak hours, drops from a 'C' LOS to a 'D' LOS. (Dev. Ex. 25, p. 17). Moreover, he further acknowledged that the existing LOS for Falls/Joppa intersection as shown on the LOS-HCM Chart, was actually the average from the HCM Signalized Intersection Capacity Analysis. (Prot. Ex. 36, 37). Again, that average was calculated, in part, based on LOS designations for merge lanes for which there is never a delay because merging vehicles do not wait at lighted intersections. Mr. Driban countered that the LOS under the HCM analysis is for the whole intersection and not for individual turning movements. As with his LOS-CLV analysis, to the extent that his LOS-HCM Chart shows an increase in the average delay per vehicle at those intersections (i.e. 1.1 sec in morning; 1 sec in afternoon), in his view, these delays were negligible.

During cross examination, Mr. Driban acknowledged that neither the CLV nor HCM accounted for the multiple entrances into Greenspring Station from Falls Rd. and Joppa Rd. He added that again, the net effect of the access points was negligible as there were at most 100 vehicles using those access points as compared to 1,000 vehicles typically driving on Falls Rd. While looking at the aerial photograph of Greenspring Station, Mr. Driban did not know the

number of parking spaces in Greenspring Station.

With regard to the proposed emergency-access-only gate, on cross examination Mr. Driban testified that he was requested by Greg Carski and Mike Filsinger to conduct a Sensitivity Analysis. He testified that the results of the Sensitivity Analysis showed that if the gate remained permanently open, substantial traffic would be incentivized to use Mays Chapel Rd. as a cut-thru between Seminary and Falls Rd. such that several hundred vehicles in both morning and afternoon would use that connection. Mr. Driban also testified that he believes the September 20, 2021 DPWT ZAC comment written by Terry Curtis, and the nearly identical DPWT DPC comment dated August 12, 2021, mistakenly refer to the Sensitivity Analysis for the Mays Chapel Gate as a Supplemental TIS. (PC Ex. 6).

PROTESTANTS CASE

1) Blandy Becker - 1205 Clearfield Circle.

Since 2020, Ms. Becker has been the President of Seminary Ridge Homeowner's Association ("Seminary Ridge HOA"). Seminary Ridge HOA includes 167 homes next to the Property. Ms. Becker has lived in her home since 2015. At the HOH, she testified individually and on behalf of Seminary Ridge HOA. She described the concerns of Seminary Ridge HOA about the Project adding more traffic to the Falls Rd. corridor; the lack of sewer capacity; and the small lot sizes of the proposed homes. Ms. Becker testified that traffic for St. Paul's Schools backs up on Seminary Ave. to Tally Ho Rd. Maryvale School, adjacent to St. Paul's Schools, also contributes to area traffic. Mays Chapel heading south backs up to turn left onto Seminary Ave., which has 1 lane in each direction.

Ms. Becker, who has been a realtor since 2013, stated that most lots in Seminary Ridge and Heatherfield communities have an average lot size of 0.56 acres, and the homes in The Meadows

and Boxwood communities are 0.426 acre lots. She lives on the smallest lot in Seminary Ridge which is 0.33 acre. In her view, the proposed detached homes on 0.1 acre lots are not compatible with the neighboring communities. She testified that in order to construct 3,000 sf - 3,500 sf homes with garages, the homes have to be built taller. Some proposed homes have 2 and 3 car garages which will add more traffic. She agreed that most homes in Seminary Ridge do not have any garages. Ms. Becker acknowledged that the homes in Heatherfield are mostly brick/stone ranchers, some have basements and some do not. Trelawny Court has 6 homes on large lots. The Boxwood community consists of attached homes.

Seminary Ridge HOA is also concerned that the sewer shed is failing and is opposed to connecting more homes to it. She added that Johns Hopkins never repaired/replaced the sewer segments which was required as a condition of approval for the medical buildings in Greenspring Station. It is her understanding that the sewage from Johns Hopkins buildings, and the sewage from Seminary Ridge neighborhood, flows through the same pipes. Ms. Becker added that, since the inception of this Project, the Developer has never reduced the proposed number of homes. Seminary Ridge HOA is concerned that the proposed road improvements at Falls/Joppa will be less safe because it would be more difficult to make a left turn out of Greenspring Station; adding another lane of traffic will only aggravate the problem. She stated that, presently, making a left turn from Exxon Station/Snowball stand onto Joppa Rd. is very difficult.

While Seminary HOA is opposed to the Project, if it is approved, Seminary Ridge HOA wants the Mays Chapel Gate to remain permanently open so as to provide another means of access for traffic other than Tally Ho Rd. Over the years, the cut-thru traffic and speeding on Tally Ho Rd. warranted the removal of the stop signs and the installation of speed bumps. The traffic generated by St. Paul's Schools adds to the cut-thru on Tally Ho Rd. She highlighted that Tally

Ho Rd. has 77 homes and several bus stops, in addition to the number of walkers, bicyclists and dog walkers who use the road for exercise.

2) Sister Kathleen McNany, Emmanuel Monastery, 2229 W. Joppa Rd.

The property located at 2229 W. Joppa Rd. is located across from the intersection of Tally Ho Rd. and W. Joppa Rd. (Prot. Ex. 44). It is owned and occupied by Benedictine Sisters of Baltimore, Inc. and is known as Emmanuel Monastery. According to SDAT records, it measures 2.96 acres +/- and houses 10 sisters of faith. St. Kathleen McNany has lived in the Monastery since 1986 and she has been its Head since 2020.

The collective concerns of the Sisters about this Project are traffic, safety, and impact on sewer. In regard to traffic, Sr. McNany testified that, 2 months ago, an automobile collision occurred on W. Joppa Rd. There are several dangerous points including the left turn merge lane from I-83 onto W. Joppa Rd.; the left turn into and out of the Exxon/snowball stand; and the left and right turns in and out of the Monastery driveway when traffic backs up along W. Joppa Rd. Adding another left turn lane at Falls/Joppa is just another lane to cross adding to the safety issues. On weekends, Sr. McNany mentioned that, in addition to daily services, programs and activities at the Monastery chapel, there are 3 other churches on W. Joppa Rd. (Trinity Assembly of God, Valley Presbyterian, and a Korean Church) each of which hold similar services and programs which add to traffic. Additionally, driving from the Johns Hopkins medical buildings at Greenspring Station, making a left onto existing W. Joppa Rd. is already difficult due to all the traffic. Moreover, between Memorial Day through Labor Day, Roland Run Swim Club, which is located next to the Monastery on W. Joppa Rd., brings more people and traffic. There are no sidewalks on W. Joppa Rd. When asked about the proposed improvements to the intersection of Falls/Joppa, Sr. McNany testified that when Meadowood Park was opened 10 years ago, a left turn

lane was added to that intersection and it did not alleviate traffic problems; vehicle collisions still occurred.

In regard to impact on the sewer system, Sr. McNany described that the sewer lines for this Project and for Johns Hopkins medical buildings run through an easement on the Monastery property. In 2017, she was approached by the County to widen the existing easement by 15 ft which was needed to enlarge the sewer pipe from 8 inches to 12 inches. She understood that this was related to the sewer improvements for the Johns Hopkins buildings at Greenspring Station. Sr. McNany expressed that she was concerned about this additional easement in that it would negatively impact the walking garden in the rear yard which has mature pine trees and fencing, both of which are needed for a sound barrier and privacy from Falls Rd. After that interaction with the County, there have not been any other communication about the sewer improvements.

3) Michel Brassert, Film maker, Cinematographer

Mr. Brassert, a film maker and cinematographer is involved in both tv and films and was called as a witness to authenticate photos he took using a drone. Mr. Brassert has a commercial drone license. Mr. Brassert testified in regard to each of the photos he took of Greenspring Station and the surrounding roadways. (Prot. Exs. 40 A-H; 41A-J; 42A-Y) (Prot. Exs. 43A-D).

4) Peter George, 8214 White Manor Dr.

Mr. George has lived in his home since 1997. He grew up on Thornton Ridge and as a child, frequently visited Greenspring Station. Mr. George testified that the proposed improvements to Falls/Joppa intersection will not improve traffic. The 3 intersections are congested in all directions. Specifically, traffic backs up down W. Joppa Rd. to the Ruxton-Riderwood bridge. Driving on W. Joppa Rd. between 4:00-6:00 pm, traffic backs up past Thornton Rd., and up to and including where Bellona Ave. intersects with Joppa Rd. He emphasized that

the number of trips made by patrons to Greenspring Station to eat, shop, work and attend medical appointments should be considered in this case. Traffic backs up at Falls/Joppa from many directions. In his view, adding 61 homes with 3 vehicles per home, will be 183 vehicle trips, all entering and exiting onto congested Joppa Rd.

Mr. George testified that he has witnessed at least 10 collisions at Falls/Joppa and 12 collisions at Falls/Seminary Ave. Mr. George was living in this neighborhood prior to the opening of Meadowood Park. With sports events and park rentals for events and parties, the amount of people and traffic has increased in the Falls Rd. corridor, particularly in the summer months.

On HOH Day 9, Mr. George was recalled to identify photographs which he took after the HOH on December 7, 2022. The photographs depicted sewer lines next to Tally Ho Rd. being pumped by the County to unclog the lines. (Prot. Exs. 47 A-C). Mr. George described that, whenever there is a heavy rain, the sewer system backs up and the area floods.

Mr. George testified that, on the day he took the photographs, he observed sewer manhole 43819 ("MH") near Tally Ho Rd. open and being flushed with water from the nearby fire hydrant. He mentioned that, in the Summer of 2022, he had observed the same flushing of the sewer lines due to a clog. Mr. George also provided a map from My Neighborhood GIA which showed not only MH 43819 but also MH43795 and MH43794A. Mr. George testified that either MH 43795 or MH 43794A was being unclogged that day.

5) Lynn Manthy, 8300 Tally Ho Rd.

Ms. Manthy has lived in her home, a 0.7 acre lot in the Heatherfield community for 13 years. She is a commercial banker. She described Heatherfield as having between 42-45 rancher style homes constructed in the 1950s on larger lots with a lot of green area. She is opposed to the Project finding that the area is already stressed with both traffic and sewer insufficiency. The

sewer system was never upgraded with the construction of the Johns Hopkins medical buildings. In her rear yard, there is a 6-7 ft wide stream located 45 ft from her home which overflows during rain events and fills her crawl space with water. (Prot. Exs. 30A, 30B).

In regard to traffic, Ms. Manthy stated that her husband was rear-ended at intersection of Falls/Joppa. She relayed that traffic backs up from Falls/Joppa past Tally Ho Rd. and that Tally Ho is used as a cut-thru for drivers wanting to avoid Falls Rd. traffic. She testified that many people and vehicles travel to Greenspring Station which has expanded. She highlighted that the group of townhouse style office buildings which abut the Property also have medical offices, dentists and orthodontists which generate traffic on W. Joppa Rd. Ms. Manthy indicated that she makes between 2-10 trips to and from her home each day including to and from Greenspring Station. She has personally observed northbound traffic approaching Falls/Seminary backing up through Falls/Greenspring Valley Rd. intersection.

6) Elias Pope, 308 Southwind Rd., Ruxton.

Mr. Pope does not reside in the communities immediately surrounding the Property. However, since 2010, he has worked in Greenspring Station. Having attended St. Paul's School, he has travelled W. Joppa Rd. many times. He also travels from his home to either work and to drop off/pick up his daughter from Maryvale School. Mr. Pope emphasized that both Falls/Joppa and Falls/Greenspring Valley Rd. are main thoroughfares for vehicles by-passing I-695. He stressed that a high volume of traffic outside of peak hours of 7:00-9:00 am and 4:00-6:00 pm. With the addition of Johns Hopkins outpatient services at Greenspring Station, the off-peak high volume of traffic is constant throughout the day. As someone who works in Greenspring Station, he testified that the parking lots at Greenspring Station are full during the work week.

In addition, there is heavy traffic on Falls Rd. for St. Paul's Schools and Maryvale,

particularly between 7:00-9:00 am. The Exxon station on Falls Rd. which is accessed by service road behind it is a frequently used gas station for larger trucks and contractor service vehicles. The restaurants in Greenspring Station also bring traffic. In his view, the surrounding roadways were not designed to handle the volume of traffic in and around Greenspring Station.

7) Richard Compton, 25 Seminary Farm Rd. Mr. Compton has lived in the Meadows at Greenspring community ("The Meadows") for 53 years. He is the President of the Board of Directors of Meadows at Greenspring Homeowners' Association ("Meadows HOA") and was provided with the authority to speak on behalf of the Meadows HOA. Mr. Compton described the residents at The Meadows as having the average age of 75 years. There are no sidewalks or trails in the community. The residents walk in the street and have social gatherings there. Mr. Compton identified the photographs taken in August of 2021 of the neighborhood. (Prot. Exs. 32A-C).

Mr. Compton described The Meadows as consisting of 21 single family homes, and 78 cluster homes in groups of 2, 3 and 4, for a total of 99 homes. The 5 primary concerns of the Meadows HOA are: (1) overdevelopment of the Property by proposing the maximum number of homes (61); (2) the County's previous approval of Johns Hopkins medical buildings in Greenspring Station with the existing sewer and traffic deficiencies; (3) existing traffic congestion and 3 failing intersections along Falls Rd.; (4) the existing sewer deficiency made worse by the addition of 61 homes; and (5) the Mays Chapel Gate must be an emergency-use-only or it will negatively impact the Meadows by becoming a cut-thru for traffic.

While The Meadows is against the proposed development, if it is permitted to proceed, they want the Mays Chapel Gate to remain closed for emergency-access-only. If the gate is permitted to remain open, the Meadows HOA is concerned about security, safety, outdoor socializing, exercise, character of neighborhood, and diminishing the value of those homes. The

Meadows will no longer be a retirement community. The neighborhood as it currently exists does not have crime because there is only 1 access point into Seminary Rd. The residents enjoy social gatherings and exercise in the streets. Some residents use canes or walkers.

8) Karen McGraw, 65 Seminary Farm Rd. Ms. McGraw resides in one of the cluster homes in The Meadows. She expressed the same concerns that Mr. Compton raised. She testified that the existing traffic on Seminary Ave. backs up to Thornton Rd., which makes a left out of the Meadows onto Seminary difficult. She is opposed to adding more homes along with a permanent pass-thru their neighborhood. She submitted a Petition signed by all of the property owners in The Meadows. (Prot. Ex. 33).

9) James Gary, 6 Trelawny Ct. Mr. Gary indicated that he and his family moved into his home in Seminary Ridge community in 2000. While he is now retired, he previously worked as an industrial engineer. His concern is the lack of capacity in the sewer infrastructure which currently overflows when it rains. Mr. Gary is opposed to adding development to that infrastructure which was not corrected with the developments at Greenspring Station. Mr. Gary is also concerned with the Falls Rd. and Joppa Rd. intersection in that, even with all the mitigating factors identified by Kris Nebre, that intersection will still be failing. Mr. Gary also noted that the Developer's HCM Signalized Intersection Capacity Analysis Chart included 3 dedicated merge lanes at Falls/Joppa which do not go through the lighted part of the intersection, namely: northbound, westbound and southbound. (Prot. Exs. 36 and 37). Because those merge lanes were included in the average calculation, it raised the LOS ratings for those lanes to an 'A' rating for northbound right turn land and southbound right turn lane (westbound remains at 'E'). This inclusion, he reasoned, inflated the LOS.

Mr. Gary also testified about the existing safety problems at Falls/Joppa intersection based

on the fact that he has personally observed traffic accidents at that location. The speed limit southbound on Falls Rd. is 40 mph but is typically exceeded. Traffic and excess speeds prevent pedestrians from crossing from Meadowood Park to Greenspring Station and to the snowball stand next to the Exxon. He testified that the access road into the snowball stand and the Exxon is already dangerous. With the proposed removal of the concrete median on W. Joppa Rd., the conditions will be more dangerous. In support of the safety issue, Mr. Gary testified that the Developer failed to consider that the vehicles driving into and out of Greenspring Station at the Exxon access road, will have to cross 3 lanes of traffic when making a left onto W. Joppa Rd. He believes traffic will back up at the light at the Falls/Joppa intersection making the access into and out of Tally Ho Rd. more difficult. He reasoned that the proposed roadway improvements will not help the flow of traffic east and westbound on W. Joppa Rd.

10) Dan Radebaugh, Esq. 8212 Tally Ho Rd.

Mr. Radebaugh, a title attorney, and his family purchased 8212 Tally Ho Rd. in September of 2020. After renovating it, they began living there in February of 2022. He did not know about the proposed development. He has 4 children and has concerns about increased traffic. In Summer of 2022, his college-aged son was involved in an accident at Falls/Joppa intersection. Another son drives to Gilman School. Mr. Radebaugh drives his daughter to St. Paul's School and his 4 year old daughter to Hunt's Preschool. With the existing traffic in the morning, it takes a long time to drive anywhere. He described the traffic as backing up from St. Paul's Schools to Falls/Greenspring Valley Rd. He reiterated the testimony that, in the morning, Tally Ho Rd. has become a cut-thru to Seminary Ave. While the speed limit is 25 mph on Tally Ho Rd., there are always speeding vehicles through the neighborhood. He believes that if the Mays Chapel Gate remains closed, this will increase traffic on Tally Ho. Rd. He added that there are no sidewalks

on Tally Ho Rd., street parking is permitted and there are 3 bus stops. Each bus stop services approximately 5 children per bus stop. Additionally, children also bike in the street.

11) Renee Hamidi, Valleys Planning Council

Renee Hamidi, Executive Director of Valleys Planning Council ("VPC"), which currently has 450 members, and whose geographic boundaries include 130 square miles between Pretty Boy Reservoir in north, I-695 in south, I-83 to east, and Rt. 30 to west. Specifically, VPC territory includes Greenspring Station and Meadowood Park. Ms. Hamidi testified that, while the Property is not within the geographic boundaries of VPC, VPC considers the Falls/Joppa intersection to be the 'gateway to the Valley.' Ms. Hamidi testified that she was given authority to speak on behalf of the VPC which is opposed to the Project due to the traffic and sewer issues. By and through its website, VPC collected signatures of property owners adjacent to and outside the immediate area of the Property who were purportedly opposed to the Project (the "VPC Petition"). Upon close examination of the Petition at the HOH, Ms. Hamidi was requested to redact all duplicate signatures and all signatures from people outside the immediate area and to resubmit the VPC Petition. (Prot. Ex. 26). Additionally, Ms. Hamidi analyzed the lot sizes in the existing neighborhoods in terms of range, average, and median. (Prot. Ex. 28). She calculated that the greater percentage of existing 752 lots are larger (17, 870 sf) than the proposed lots at Greenspring Manor (11,400 sf; median 11, 300 sf).

12) Susan Shellhoss, 8207 Tally Ho Rd.

Susan Shellhoss has lived on Tally Ho Rd. for the last 4 years. For 15 years prior to that, she lived across from St. Paul's Schools at 1407 W. Joppa Rd. as shown in photographs. (Prot. Ex. 29). She indicated that she is intimately familiar with the area, having moved 5 times within the 21093 zip code. In her experience the intersections along Falls Rd. have all been failing for over

30 years. There have been frequent collisions at Falls/Seminary Ave. intersection. Traffic backs up from St. Paul's Schools down Seminary Ave. where it is one (1) lane in both directions. Traffic regularly backs up from Falls/Seminary through the Falls/Greenspring Valley Rd., particularly turning into St. Paul's Schools in morning and afternoon. Heading north between Falls/Greenspring Valley and Falls/Seminary Ave. intersections, there is only 1 lane which contributes to the back-ups. Traffic increases at different times of the day, not just in morning and afternoon. In her view, the Developer here has not provided a traffic solution to the failing intersections along the Falls Rd. corridor, and the proposed improvements at Falls/Joppa Rd. are merely a 'band aid' to the traffic problems. She is concerned that adding another development combined with the 5 private schools in the area, only makes traffic problem worse. In listening to the Developer's witnesses, she calculates that the proposed 61 homes, with only 2 car garages, adds at least 122 vehicles to the existing traffic. She noted that during the summer months, foot traffic increases along W. Joppa Rd. due to Roland Run Swim Club and the snowball stand at Falls/Joppa.

13) Carol Berman, 2 Old Boxwood Rd.

Carol Berman has lived at 2 Old Boxwood Rd. with her husband for 15 years. She is the Secretary of Boxwood Homeowner's Association ("Boxwood HOA") and has been authorized to speak on its behalf. Boxwood is comprised of 27 homes, the owners of which are mostly retired. Boxwood HOA is opposed to the Project because it will add vehicles to existing traffic. She explained that traffic currently backs up from I-83 to Seminary Ave., and gets worse when there are sports events at St. Pauls's Schools. If the Project is approved, the Boxwood HOA is opposed to the Mays Chapel Gate remaining open as indicated by the Petition signed by owners in Boxwood. (Prot. Ex. 34). Boxwood and Meadow communities have no sidewalks with narrow

streets which are used by the residents for exercise and social events.

14) Dean Merritt, Esq., Heatherfield Community Association, Inc.

Dean Merritt has lived with his family at 3 Horseshoe Circle for 8 years. Mr. Merritt is President of Heatherfield Association, Inc. which is a community association with 47 homes ("Heatherfield"). Mr. Merritt described most of the homes in Heatherfield adjoining the Property are 1 acre in size. Heatherfield Association is opposed to the Project due to the increase in traffic and lack of sewer capacity. Mr. Merritt testified that he drives in and out of his property 15 times a day. Heading in both directions on W. Joppa Rd., heading towards the Royal Farms store at Thornton Rd. eastbound on W. Joppa Rd., the typical vehicle back-up occurs between 3:00 pm - 5:00 pm each day. The backup on W. Joppa Rd. gets worse when there is a backup on I-695 and I-83 as vehicles find alternate routes. Mr. Merritt can see traffic driving on W. Joppa Rd. from his house. (Prot. Ex. 46).

Meadowood Park gets very busy with sports and other events, and there are no crosswalks from Meadowood across Falls Rd. The SHA property at the corner of W. Joppa Rd., across from the Property here has become a parking lot for BGE trucks and is now being used as a police motorcycle training facility. Because he works from home, he observes cut-thru traffic on Tally Ho Rd. throughout the day, describing Tally Ho as a 'drag-racing-strip.' It was only in April of 2021 that Heatherfield Association learned about the Project from Seminary Ridge HOA; the Developer had not reached out to Heatherfield. The density of the Project has not changed; no alternative proposals have been offered. After attending the CIM, the Developer then began to provide copies of the Development Plan and offered landscaping to buffer the view of the Project from the homes in Heatherfield. In August of 2022, Developer finally offered to meet with Heatherfield Association but by that point, Heatherfield had retained legal counsel. If the Project

is approved over Heatherfield's objection, Heatherfield wants the Mays Chapel Gate to remain permanently open. If the gate is permitted to be emergency-access-only, the traffic from the Project will use Tally Ho Rd. as a cut-thru.

In regard to the lack of sewer capacity, Mr. Merritt's home has a crawl space due to the high water table. In 2018, there was sewage backup into the crawl space. The County came to unclog the lines along W. Joppa Rd. Mr. Merritt explained that the sewage from the Project will flow in the same pipes as the sewage for Heatherfield.

15) Michael Wyatt, Esq., 4 Trelawny Ct.

Michael Wyatt, Esquire has lived in his home with his family at 4 Trelawny Court for 20 years. His property is less than 1 acre. He is a life-long resident of the neighborhood, having grown up on Clearfield Circle in Seminary Ridge prior to moving to Heatherfield. During his youth, Greenspring Station consisted of a golf driving range and Windy Valley ice cream store. Mr. Wyatt, who participated fully as an attorney during the hearings cross examining witnesses and testifying, stated that part of his law practice involves doing zoning work. His concerns are threefold: (1) existing and increase in traffic; (2) lack of sewer capacity for more homes; and (3) density of the Project.

Mr. Wyatt articulated that Falls/Joppa intersection is a unique location in that there "is a lot going on" in terms of the roadway network and many turns/approaches, sub-intersections into and out of Greenspring Station, the Exxon and snowball stand, as well as its proximity to I-83/I-695, and Meadowood Park. Specifically, he stated that vehicles coming off I-83 northbound onto Falls Rd. drive 55 mph in a 40-mph zone, and come to a halt when turning right onto W. Joppa Rd. The same speeding traffic occurs southbound on Falls Rd. Just as the right turn from I-83 onto W. Joppa Rd. is a sharp 130 degree turn, the turning angles into and out of Meadowood Park

onto Falls Rd. are irregular. (Wyatt Ex. A). He reasoned that, as a result, Falls/Joppa Rd. intersection is less safe than other intersections.

Mr. Wyatt provided a photograph of the existing median strip on W. Joppa Rd. which has been in that location a long time and is an added safety measure. (Wyatt Ex. I). That median strip also has 2 signs both warning drivers not to turn left into the Exxon access road during certain times of day. He noted that the proposed roadway improvements to east/west W. Joppa Rd. will only create longer wait times for vehicles entering and exiting the sub-intersections. The proposed additional left turn lane will be a safety hazard in an already complicated roadway network.

Meadowood Park was opened 15 years ago and holds many sporting tournaments and events which cause overflow parking onto the shoulders of Falls Rd. As reiterated by other Protestants, there are no sidewalks on either side of W. Joppa Rd. He testified that there was a fatal accident 10 years ago at the stone gate going into the Property. Having driven on that section of W. Joppa Rd. his whole life, he described the site line as 'bad' because a driver can not anticipate oncoming traffic until the vehicles have cleared.

Similarly, having driven through the Falls/Greenspring Valley intersection, he has witnessed an increase in commuter traffic at that intersection. In mornings and afternoons, traffic backs-up from Falls/Seminary through Falls Greenspring Valley for parents driving into and out of St. Paul's Schools. Traffic congestion is not only in the morning and afternoons but throughout the day. Afternoon school and sporting events both at area schools and Meadowood Park increase traffic in and around the Falls Rd. area. Using street view photos, he testified that making left turns out of Tally Ho onto W. Joppa Rd is very difficult in the morning. (Wyatt Ex. F-H). He described traffic typically being backed up on Joppa Rd. both east and westbound and particularly at the intersection with Thornton Rd. where the Royal Farms is located. Traffic also back up at Joppa

Rd/Old Court Rd. He indicated that W. Joppa Rd. is a commuter road to Towson. As a resident of the neighborhood, he is opposed to additional traffic generated by the Project using Tally Ho as a cut-thru because it is a safety concern for bikers and runners.

Mr. Wyatt believes that the Special Variance should be denied because Kris Nebre from DPWT conceded that the proposed roadway improvements would not change the LOS under LCM for any of the Falls Rd. intersections. Mr. Wyatt read the original emails from DPWT wherein DPWT denied the requested Variance. In reviewing the Developer's TIS, Mr. Wyatt testified that the opinions are based on theoretical trip calculations rather than analyzing the actual traffic. The TIS ignores the multiple trips in and out of all adjoining developments through all intersections that take place daily. The theoretical calculations contain a margin of error. The addition of lanes at the intersection of Falls/Joppa will make the traffic worse, not better. Greenspring Station and its tenants which include a couple banks, medical offices, pediatric medical offices, restaurants, a gas station, shopping and Post Office, generate these trips. Having lived in the neighborhood for years, he is in and out of his driveway 7-10 times a day. He has observed that the residents of his neighborhood with children are doing the same thing. Service and delivery trucks have also increased throughout the neighborhood. Mr. Wyatt also provided street view photographs of traffic on Falls Rd. (Wyatt Ex. A); and from southbound Mays Chapel, down Seminary Ave. (Wyatt Ex. B).

In regard to sewer capacity, Mr. Wyatt expressed that existing problems with the sewer lines have not been fixed, and more developments have only added to the problems. Finally, Mr. Wyatt finds that the proposed density of 61 homes on 10,000-12,000 sf lots is not consistent with the T3 transect of low density housing with deep setbacks. The proposed homes on the highest part of the Property will have a negative visual impact and, in his view, will resemble "a stadium

of townhomes." The Greenspring Development Plan only provides a typical lot layout and shows the minimum required setbacks. He pointed out the front portion of the Property is a low-lying area prone to flooding which he believes, drove the Developer's decision to push the homes toward the back of the Property. Mr. Wyatt added that he learned during the CIM that Developer was also seeking environmental variances. He also took photographs from his home showing his view toward the Property. The only concession offered by the Developer was landscaping, not a reduction in density. (Wyatt Ex. C-E).

16) Doug Sachse, Esq., 9 Sedgefield Ct.

Doug Sachse, an attorney, has lived with his family at 9 Sedgefield Ct. in the Seminary Ridge community since 1984. As with Mr. Wyatt, Mr. Sachse fully participated in the HOH, cross examining witnesses and testifying. Mr. Sachse reiterated much of the concerns raised including that all 3 intersections on Falls Rd. are dangerous. Mr. Sachse added that safety from additional traffic generated by the Project is a huge concern due to number of children who live in neighborhoods adjacent to the Property. Several bus stops are on Tally Ho. Rd. There are no sidewalks in his neighborhood so children ride bikes, skateboards and play in the streets. There are no crosswalks from Meadowood Park to W. Joppa Rd. Even with stop signs and speed humps, vehicles use Tally Ho as a cut-thru and this will only worsen with traffic generated by the Project. The proposed roadways improvements will not make the roads any safer.

17) Beth Winter, 10934 Mays Chapel Rd.

Beth Winter lives at 10934 Mays Chapel Rd. and is opposed to the Mays Chapel gate being permanently open. She added that Mays Chapel Rd. is narrow and cannot accommodate two-way traffic. It is used by residents to exercise and socialize; there are no sidewalks.

18) Edward Consroe, 71 Seminary Farm Rd.

Edward Consroe, who lives at 71 Seminary Farm Rd. is opposed to a permanent vehicular connection on Mays Chapel Rd. While there may only be 5 homes fronting on Mays Chapel Rd., he stated that the Meadows has 99 homes with over 200 residents, plus family, friends and visitors.

19) Susan Tinanoff, 10934 Mays Chapel Rd.

Susan Tinanoff has lived at 10934 Mays Chapel Rd. for 24 years. Her home is the first house fronting on Mays Chapel after turning from Seminary and prior to Seminary Farm Rd. Ms. Tinanoff is opposed to the Project. If it is approved, she is opposed to the Mays Chapel Gate remaining open. There are many dog walkers in the neighborhood. There are no walking trails for the residents to use. Mr. Tinanoff testified that if gate remains permanently open, all of the homes in neighborhood will be adversely affected.

20) Lauren Greenberg, 51 Seminary Farm Rd.

Lauren Greenberg lives at 51 Seminary Farm Rd. and is also opposed to the Project. Similar to other Protestants, Ms. Greenberg is concerned about traffic and safety. She mentioned that there are 4 stop signs in the Meadows and Boxwood communities. Adding a cut-thru between Seminary and W. Joppa Rd. will increase the opportunity for collisions. She believes the character of the neighborhood will change and property values will decrease.

21) Daniel O'Leary, PE, SWM Expert.

Daniel O'Leary, PE was accepted as an expert in stormwater management ("SWM") with specialty knowledge in Maryland Stormwater Design Manual and Baltimore County storm water management controls. Mr. O'Leary has not designed SWM devices for a development in the County. For the last 8 years, he has been working at ESB Associates in Baltimore as a civil and water resource engineer. Prior to working at ESB, he was the Sediment and Stormwater Management Chief at Maryland Department of Environment ("MDE").

Mr. O'Leary reviewed the Developer's storm water management report dated May, 2021 (Prot. Ex. 51, 53) and a recent filing dated November 10, 2021. (Prot. Ex. 56). He explained that in determining the design of storm water management devices to control water quantity, the purpose is to compare the rate of discharge both pre- and post-development. To do so, a land use is chosen. Mr. O'Leary opined that the Developer used an incorrect land use category for non-forested land. The Developer used land use for 'agriculture' and should have used 'meadow in good hydrologic condition.' (Prot. Ex. 50). The 'meadow' land use category yields a conservative curve of 63 and will show water traveling over a wider area and at a slower pace. Mr. O'Leary calculated a rate of discharge of 0.39/hr for a curve of 63 in the 'meadow' category. He further calculated that the rate of discharge measured in cubic feet per seconds in a 'meadow' land use for the 10-yr storm as 56.78 cfs, and for the 100-yr storm at 167.69 cfs. Mr. O'Leary opined that the design of the storm water management devices should be based on more conservative numbers.

Under his analysis, the proposed storm water management devices here which consist of 3 submerged gravel wetlands and a retention ponds, is not enough for the Project. In his view, the proposed devices are insufficient to control the quantity of water from Property post-development. The Developer needs to either design larger ponds (30%-50% larger) or add another pond. Mr. O'Leary acknowledged that DPR does not consistently require the 'meadow' land use category to be applied. He further acknowledged that the County approved the proposed Concept Storm Water Management Plan and that the County will continue to review that plan.

22) Beth Miller, Architect, Green Towson Alliance.

Beth Miller, a licensed architect, was not offered as an expert witness. She is on the Executive Committee for Green Towson Alliance ("GTA") which is an all-volunteer advocacy group that monitors development projects in Baltimore County. Part of her duties on the GTA

Executive Committee include keeping track of development projects. GTA has been recognized by the DOP as a formal organization who regularly receives notice of development projects within its geographic boundaries. GTA is also a member of Towson Community Alliance ("TCA") which is an umbrella organization. She regularly attends DRC meetings, Planning Board meetings and Design Review Panel meetings. To track development projects in the County, Ms. Miller used My Neighborhood maps, SDAT, and the Baltimore County website.

In preparation for this case, Ms. Miller prepared a spreadsheet of development projects within the Jones Falls Watershed which are being proposed, which have been approved and are being constructed, and existing development already constructed. (Prot. Ex. 31). On January 24, 2023, she took photographs of some of the projects. (Prot. Exs. 31A-H). The purpose of the spreadsheet was GTA's concern about the capacity of the sewer shed. The results of her investigation indicated that since 2012, 2.5 million sf of development has been, or will be, constructed in the Jones Falls Watershed. She explained that the County sewer sheds follows the streams.

On cross examination, Ms. Miller conceded that while the spreadsheet lists the number of beds, that number does not necessarily correspond to the number of plumbing fixtures or the number of bathrooms. She also conceded that some of the projects are redevelopment projects such as Lutherville Station which would already have had sewer and water connections. When asked about specific details of the data on her spreadsheet, she sometimes recalled, and sometimes did not recall, where the information came from. In some cases, she admitted that she was not sure if some of the projects listed were constructed in 2012 or thereafter.

In regard to a project adjacent to the Property, the spreadsheet provides that the John Hopkins University Greenspring Station, Pavilion III, 10751 Falls Rd. is 110,000 sf and was

constructed in 2019-2021 based upon SDAT records.

23) Lawrence Bruder,74 Seminary Farm Rd.

Lawrence Bruder testified that he has lived in his home since April of 2022. He described his backyard as a low area where water drains to and forms a pool. In reviewing the Development Plan, he testified that his property will abut two (2) of the proposed homes. He is concerned that more water will drain from those homes onto his property and form a canal. He is concerned that all the wildlife which currently lives on the Property will move into his neighborhood. Mr. Bruder echoed the concerns about having the Mays Chapel Gate permanently open which will become a bypass and cut-thru road which will destroy the use and enjoyment of the residents of The Meadows. He explained that there are many walkers, children riding bikes, parents pushing strollers and elderly people who regularly walk on the streets in The Meadows; there are no sidewalks or speed bumps.

At a minimum, Mr. Bruder has observed at least 3 collisions at the intersection of Falls/Joppa. He is not convinced that the proposed roadway improvements to Falls/Joppa will alleviate any traffic congestion. He added that speed of vehicles on Falls Rd. becomes an even bigger problem when traffic is congested. The addition of the Johns Hopkins medical offices at Greenspring Station has increased the traffic. It is concerning to Mr. Bruder that the County did not ensure that Johns Hopkins repaired/replaced the sewer system prior to constructing the medical buildings.

24) Brooke Yearley, 66 Seminary Farm Rd.

Brooke Yearley, a preschool teacher, has concerns about the wildlife on the existing Property. She also had water flooding into her rear yard which causes her to use a dehumidifier in her basement. She echoed Mr. Bruder's concern that Johns Hopkins was required to make

improvements to the sewer system and never did. Ms. Yearley testified that traffic backs up along Seminary Ave. towards St. Pauls Schools during drop off and pick up times, which causes vehicles to make illegal U-turns in the middle of Seminary Ave. Vehicles do use Tally Ho Rd. as a cut-thru. She repeated that Meadows is a closed-loop community with young children on bikes and elderly people using walkers to walk in the streets. Ms. Yearley mentioned that, 2 years ago there was a fatal motor cycle collision at Falls/Greenspring Valley Rd. She added that the proposed improvements to Falls/Joppa will not improve traffic flow and will only cause additional volume.

25) Michael Singer, 10937 Mays Chapel Rd.

Michael Singer has lived in his home with his wife and 3 children since November of 2013. His home is located 2 houses down from Seminary Ave. on Mays Chapel. Mr. Singer is concerned about his children's safety if the Mays Chapel Gate remains permanently open. He explained that when driving his son to St. Paul's School in the morning he must leave before 7:30 am. Otherwise, the short drive will take 30-40 minutes. He believes that adding more traffic will negatively impact his property value. He is concerned about the safety of his other children who take the school bus from his neighborhood to Riderwood Elementary.

26) Michael Volley, 8 Trelawney Ct.

Michael Volley has lived in his home with his wife and 5 children for 18 years. Mr. Volley described a backup in the County sewer system on Trelawney Ct. which caused a backup into his basement on the evening of November 11, 2022. He took photographs of the manhole covers. (Prot. Ex. 48A, 48B). Mr. Volley explained that there was a blockage between the manholes (MH 45744 and MH 45722) as shown in the photographs. The County unclogged the sewer pipes by flushing the pipes with water from the fire hydrant. Mr. Volley hired a plumber to repair the issues inside his home. He noted that there was $60,000.00 worth of damage and expense to his home,

and that he and his family were not able to use the basement for 2 ½ months. Mr. Volley described the raw sewage which leaked into his basement, was vacuumed up, and filled 25 large bags.

27. Randall Grachek, PE, expert waste water engineering/sewer systems.

Mr. Grachek is an environmental engineer employed by NewFields, Inc. Although he is not licensed as a professional engineer in the State of Maryland, Mr. Grachek was previously accepted as an expert before the BOA in Case No.: CBA-20-006, *In the Matter of CPC Falls Road, LLC (CPC Falls Road Project/Bluestem)* ("*Bluestem*"), and before OAH in Case Nos. 08-0919 and 2021-0274-SPHA *Torch Hill Project* ("Torch Hill"), 1400 W. Seminary Avenue. As such, in this Case, he was likewise admitted as a professional engineer, in waste water engineering, and in the evaluation of a sewer system and its capacity. (Prot. Ex. 58).

Mr. Grachek testified that he is familiar with the Baltimore County sewer system and specifically the sewer infrastructure from the Property to the Baltimore County/Baltimore City line. The County sewer system is a gravity flow system (no pumping of sewage) with lateral lines flowing into main trunk lines. All waste water from the Jones Falls sewer shed (shown in green on My Neighborhood Map) and from the Property (outlined in blue), is conveyed to City. (Prot. Ex. 59). He explained that the sewer shed follows the 3 major streams namely: Jones Falls, Towson Run and Roland Run each of which flow into Lake Roland. Each of those streams has a separate sewer shed which sends all waste water through interceptors to the main sewer (trunk) line under Lake Roland and then into the City. (Prot. Ex. 60). The My Neighborhood Map for the Jones Falls sewer shed at issue here was provided. (Prot. Ex. 61). The sewage path from the Property (highlighted in yellow) is shown by blue line which runs under Lake Roland and into the City. (Prot. Ex. 62). The specific manholes through which the sewage flows is shown by yellow highlighted line by manhole numbers (MH) beginning with MH 43819, into 43794, 43793, 43792, 43791, 43790, etc. until it proceeds through the sewer segments into MH 6888 under the

Lake Roland. (Prot. Ex. 63).

Through a Public Information Act ("PIA") request, Protestant's counsel obtained a County prepared chart analyzing the sewage flow for Greenspring *Station* dated 2013 - updated as of October 8, 2015 with Johns Hopkins credits - (the "2015 County Jones Falls Interceptor Chart"). (Prot. Ex. 64). Protestant's counsel also produced the PIA request and emails from the Director of DPWT, verifying that when DPWT was reviewing the sewer capacity for this Project, they used the data from the same 2015 County Jones Falls Interceptor Chart. (Prot. Ex. 64A). The manholes at issue here through which the sewage from the Property flows (MH 43794 – 43786) are highlighted in yellow (Prot. Ex. 64) correspond to the same manholes shown on the My Neighborhood Map. (Prot. Ex. 63). Using the 2015 County Jones Falls Interceptor Chart, Mr. Grachek explained that the sewer lines between those manholes were listed by the County as each being 8 inches in diameter, and were between 94% to 100% full capacity. (Prot. Ex. 64).

Mr. Grachek referred to a Complaint filed on July 26, 2005 by the Environmental Protection Agency ("EPA") against Baltimore County in the United States District Court of the District of Maryland, Northern Division, Case No.: 1:05-cv-02028-AMD, regarding the discharge of tens of millions of gallons of untreated wastewater containing raw sewage into navigable waters and waters of the State beginning in 1997. (Prot. Ex. 66). Those waters included Towson Run, Lake Roland and the Jones Falls. The lawsuit resulted in a Consent Decree ("CD") dated September 21, 2005 in which the County was provided a legal framework and direction to eliminate sanitary sewer overflows ("SSOs"), the term used to describe when a sewer pipe reaches overcapacity causing sewage to flow into waterways. (Prot. Ex. 65). Mr. Grachek testified that when SSOs occur, often the manhole cover is pushed open. He explained that the concept of Inflow and Infiltration ('I&I') results from water from a storm event leaking into the sewer system pipes via cracks or defects.

Mr. Grachek explained that, under the CD, the County was charged with conducting a full evaluation of the system, inspecting the condition of the pipes, and modeling it with different weather events to determine whether the pipes were at overcapacity. Toward that end, the County hired consulting engineering firm Rummel, Klepper & Kahl, LLP ("RKK") to perform the study. RKK evaluated, inspected, and modeled the system using software to input data showing where the pipes were at capacity during both dry and wet weather events. He further explained that wet weather flows occur during and after rainfall event. Conversely, a dry weather flow results from users. RKK prepared a Long Term Capacity Report dated November, 2012 ("RKK-LTC 2012 Report"). (Prot. Ex. 68).

Mr. Grachek emphasized that the RKK-LTC 2012 Report recommended that the County take corrective action, depending on the storm event. Specifically, RKK studied 5 different storm events: (1) 2-Year, 6-hour storm; (2) 2-year, 24-hour storm; (3) 10-year, 6-hour storm; (4) 10-year, 24-hour storm; and (5) 20-year, 24-hour storm. RKK's recommended corrective action was set forth in the Sewershed Repair, Replacement and Rehabilitation Plan dated December, 2012 (the "SRRR 2012 Plan"). (Prot. Ex. 67). The RKK-LTC 2012 Report is appendix L to the SRRR 2012 Plan. In reviewing the SRRR 2012 Plan, Mr. Grachek stated that he agreed with the RKK modeling used. For the 2 yr, 24 hr storm, RKK recommended rehabilitation to 16 service areas including upsizing pipes and sealing manholes. For the 10 yr, 6 hr storm event, RKK recommended all of the corrective items for the 2 yr, 6 hr storm event which would result in installing 2,000 linear feet of relief sewer. He explained that a relief sewer pipe is a storage unit which may include an underground vault or additional parallel piping designed to temporarily manage water during these storm events.

Mr. Grachek's firm prepared an additional chart combining the data from the RKK-LTC 2012 Report with the 2015 County Jones Falls Interceptor Chart in order to compare in the information about sewer capacity (the "Comparison RKK/DPWT Capacities Chart"). (Prot. Ex. 69). Mr. Grachek stated

that numbers shown in green where sewer capacity is less than 100% on the Comparison RKK/DPWT Capacities Chart, indicates that the County analyzed those sewer pipes during dry weather which is not the industry standard. He confirmed that DPWT's numbers in green were taken from the 2015 County Jones Falls Interceptor Chart which included Johns Hopkins existing use credits as shown in yellow highlighted section. (Prot. Ex. 64). The Comparison RKK/DPWT Capacities Chart also confirms that for the 8 inch sewer pipes connecting MH 43792 through 43786 (highlighted in yellow on Prot. Ex. 64), which were determined by DPWT/County to be at 100% capacity and over capacity, were the sewer segments that Johns Hopkins was to replace/repair as part of the 3 medical buildings constructed at Greenspring Station. (Prot. Ex. 69). In addition, the blue highlighted numbers indicate that nearly all of the sewer pipes are at least 100% or overcapacity. (*Id*.). Moreover, Mr. Grachek testified that the red highlighted numbers show existing 10 inch pipes (MH 44216-44212) were to be upsized to 18 inches, or that relief sewers (ranging from 10 inches - 30 inches) were to be added because each of those pipes exceeded 100% capacity. (*Id*.).

Future pipe capacity charts were prepared by DPWT using data from the RKK-LTC 2012 Report (Prot. Ex. 68). Mr. Grachek opined that a sewer system should only be designed/repaired to manage sewage flow during wet weather, not dry weather. Toward that end, he reviewed the Baltimore County Design Manual which directs that the system should be designed to accommodate 90% capacity for trunk/interceptors; 80% for lateral pipes; and 70% for connector pipes; and that "flows above 90-95% of full depth are considered unstable and may result in a sudden loss of carrying capacity with surcharging at manholes." (Prot. Ex. 70, p. 6-27). He explained that pipes at greater than 90% capacity prevents water from flowing and can causes manhole covers to push open. A photograph of the manhole located northwest of Lake Roland showing the manhole lid was pushed open in 2019 and repaired in 2020. (Prot. Ex 71). He stated that the industry standard is 90% peak flow of sewage during dry and

wet weather.

Mr. Grachek added that the trunk or interceptor pipe underneath Lake Roland is a 42-inch, reinforced concrete pipe, and was installed in the 1940s-1950s. As part of his testimony in the *Bluestem* case from 2019, he used an aerial map to identify the pipe capacity to the Lake Roland interceptor during each of the 5 storm events. (Prot. Ex.73). This aerial showed that certain sewer pipes are over 100% capacity for each of the 5 storm events. (*Id*.). From his review of the SRRR 2012 Plan, Mr. Grachek opined that there were 541 defects found in the sewer system, and the most defective pipe, MH 6888-6887, and contained 536 of the 541 total defects. (Prot. Ex. 77).

Mr. Grachek further explained that SSOs pose health risks when raw sewage with I&I is leaked into streams. On this issue, Mr. Grachek reviewed E coli sampling results from studies performed by the County. (Prot. Ex. 75). Based on COMAR 26.08.02.03-3, he explained that the standard geometric means is 126. (Prot. Ex. 74). The Lake Roland sampling results from April, 2016 - August, 2022 as posted on the County website showed varying levels of E coli. (Prot. Ex. 75). Mr. Grachek stated that during his site visit to Lake Roland on January 20, 2023, he took 3 photographs of 'Stream Sense' signs erected by the County to alert people to the presence of E coli in water. (Prot. Ex. 76). He opined that the recurrence of SSOs increases the risk of high E coli levels.

In regard to the performance assessment required under the Consent Order, the County hired RJN Group who prepared a Performance Assessment Report dated May 27, 2021 (the "2021 RJN-Performance Assessment"). (Prot. Ex. 78). Mr. Grachek explained that while work was performed in 4 meter basins (BC02, BC03, BC04, BC09), as shown on Map 2, the meter basin for the flow of sewage within the sewer pipes from the Property to the Jones Falls interceptor, begins in BC05. He opined that, other than minor work on manholes, no work has been performed in meter basin BC05 and in particular, no upsizing of 10 inch pipes to 18 inches has been completed. He also found it significant that MDE has

not approved the proposed corrective action. Toward that end, Protestant's counsel confirmed with MDE via email in February and March of 2023, that MDE has not reviewed the SRRR 2012 Plan, and confirmed that the latest communication between MDE and the County occurred in April of 2021. (Prot. Exs. 79A, 80, 80A). MDE acknowledged in the email that while the County provided a response dated June of 2022, MDE has not responded. (Prot. Ex. 80).

In the 2021 RJN Performance Assessment Report, Mr. Grachek highlighted that for the lesser 2 year, 6 hr storm event, the model predicted SSOs showed a problem with the flow path from the Property to the Jones Falls interceptor in terms of both capacity and manholes. (Prot. Ex. 78, Map 3). In short, he explained that the 2021 RJN Performance Assessment Report presents a more dire situation than the RKK-LTC 2012 Report which showed overcapacity in the sewer pipes for sewage flowing from the Property to the Jones Falls interceptor, and then from Jones Falls interceptor to Lake Roland. Mr. Grachek's firm prepared a summary chart entitled 'Comparison of Sewer Pipe Capacities for greater than 90% GS Manor from the Property to the City line for both RJN existing and RJN post-rehab data (the "RJN Pre-Rehab and Post-Rehab Chart"). (Prot. Ex. 81). The manholes reflected on that RJN Pre-Rehab and Post-Rehab Chart are also shown in yellow highlighted line from My Neighborhood Map (Prot. Ex. 63). He emphasized that, for the 10 yr, 6-hr storm event, the 2021 RJN-PAR, the percentage of over-capacity exceeds 100% for the relevant sewer segments and more specifically, of the 40 pipes to be rehabbed, 36 indicate increased capacity usage post rehab (>90%); 4 pipes showed decreased capacity deficits. (Prot. Ex. 81). The Jones Falls Wet weather analysis which is contained in the 2012 RJN-PAR shows that for the 10 yr/6 hr storm event, the post- rehab for one of the sewer segments that Johns Hopkins was to fix (43793) is calculated as .52 peak capacity divided by a full pipe of .37.

Mr. Grachek also testified that it was incorrect for RKK and RJN to use population projections based on year 2008. (Prot. Ex. 83). Rather, he asserts that the population projections for the years 2013-

2030 should have been used. (Prot. Ex. 84). The population projections for 2013-2030 were obtained pursuant to a PIA request. (Prot. Ex. 84A). Additionally, he indicated that projected developments should also be considered as those have an effect on the sewer system. (Prot. Ex. 31).

Mr. Grachek then explained that in 2013-2014, the County hired Hazen and Sawyer ("Hazen") to perform a comprehensive evaluation of the accuracy of the data from the RKK models. A copy of the Hazen's newsletter was provided. (Prot. Ex. 85). Hazen's scope of services was provided pursuant to a PIA request. (Prot. Ex. 86). Hazen issued a progress report dated February 6, 2023. (Prot. Ex. 107). Hazen also issued a Model Pipe Capacity Report (the "Hazen Report") evaluating each pipe in the system as modeled during the 5 storm events. (Prot. Ex. 108). Mr. Grachek concluded that the sewer pipes from the Property to the County/City line as modeled during the 5 storm events shows >100% capacity. (Id.). Specifically, during the 10 year/6 hr storm event, the existing capacity for the sewer segment immediately below the Property through which sewage from the Project would flow, beginning with MH 43794 – MH43793, is greater than 100% (other than MH 43787-MH 43786 which is at 80% capacity). (Prot. Ex. 108, p. 9). Mr. Grachek stated that all 8 inch pipes are above 100% capacity and therefore deficient. He confirmed that the data on the Hazen Report nearly matches the information on the Comparison RKK/DPWT Capacities Chart (Prot. Ex. 69). He clarified that the reason the data is not an exact match is due to Hazen's adjustment of the model. Likewise, the Hazen Report shows that for MH 20753 – MH 20761 during the 10 yr/6 hr storm event, which are located immediately before the Lake Roland interceptor, the existing capacity of the sewer segments is >100% and in one segment is > 500% capacity. (Prot. Ex. 108, p. 3).

Mr. Grachek next explained that the County subsequently hired Ramboll Americas Engineering Solutions, Inc. ("Ramboll") for the development of design documents for the repair and rehabilitation of the interceptors, manholes, and junction chambers located within Lake Roland Park. Ramboll

prepared a Data Evaluation Report dated June, 2022 (the "Ramboll Report"). (Prot. Ex. 87). He stated that the Ramboll Report informs that the area of study included 19,550 linear feet of pipe (43 segments) ranging in size from 24 inches to 42 inches in diameter and their associated 43 manholes. The Ramboll Report reads that the County requested a detailed review/evaluation of available existing system data to:

- Confirm the condition of the pipelines and manholes associated with this project based on available system inspection data.
- Verify the rehabilitation recommendation (pipelines and manholes) included as part of this project.
- Identify data gaps requiring additional/follow up field evaluation efforts.
- Develop a preliminary list of permitting needs/requirements for the project.

(Prot. Ex. 87, p. 2). The scope of Ramboll's work included the inspection of 24 sewer segments by closed-circuit television, the videos for which saw I&I. Included in the Ramboll Report is an aerial map with sewer segments being rehabbed in red, and the manholes to be rehabbed in green circles. Mr. Grachek opined that in order to do this work, temporary lines would need to be installed. He further opined that these 70-year old pipes have structural integrity problems. In his review of the 2021 RJN Performance Assessment Report, the Hazen Report, and the Ramboll Report, the County has not certified that the work has been completed, and the County has not taken all corrective action as required under the CD.

28. Robert Summers, Ph.D.

Robert Summers, Ph. D., was admitted as an expert in environmental engineering, water quality standards, and regulatory enforcement as the regulations relate to sewer systems. (Prot. Ex. 98). Mr.

Summers testified that the dominant bacteria source from the E coli sampling in Lake Roland was from humans. He based his opinion on the fact that the spikes of bacteria were from rainfall events which leads to the conclusion that the sewer system is leaking into Lake Roland. Mr. Summers testified that he is familiar with the bacteria monitoring program of the Jones Falls which began in 2014. Mr. Summers testified about his review of a document entitled 'Total Maximum Daily Loads of Fecal Bacteria for the Non-Tidal Jones Falls Basin in Baltimore City and Baltimore County, Maryland' (the "TMDL") from September of 2006 which was an analysis of the fecal source and recommendation for limiting the bacteria in the Jones Falls basin. (Prot. Ex. 96). In Table 2.4.1, only 16% of the homes in the Jones Falls have septic systems. (Prot. Ex. 96, p. 20). The map in Figure 2.4.1 shows 84% sewer service for Jones Falls. (Prot. Ex. 96, p. 21).

In Table 2.4.4, bacteria contamination from human sources for the entire year (not only spring/summer months) shows contamination in the sub-sewer sheds as follows: JON0082 between 44%-56%; UQQ0005 between 40%-67%; and JON0184 between 44%-46%. (Prot. Ex. 96, p. 29). During Spring/Summer, the distribution of bacteria source loads in Jones Falls watershed are higher than the annual data. (Prot. Ex. 96, p. 30). Mr. Summers attributes the higher seasonal data to the increase in rain fall events between May – September. When taking seasonal water samples from Lake Roland, the County does not examine the source of the contamination. He explained that 'high flow' is defined as a rain event with run-off when river levels are higher. Based on that data that 84% homes use sewer system and the sources of contamination are human bacteria, Mr. Summers concluded that sewage is leaking from the sewer system into the streams and into Lake Roland.

The TMDL conclusion was to eliminate SSOs in County sewer system. Mr. Summers referenced the Clean Water Act which provides standards to achieve the elimination of SSOs. He found that the TMDL was consistent with the requirement in the Consent Decree to evaluate the sewer

system by modeling under dry and wet weather conditions to identify the existing problems. He added that modeling is the EPA standard for predicting future capacity and to eliminate SSOs. Toward that end, Mr. Summers testified that through the SRRR 2012 Plan, the County has identified existing problems in the sewer system and the future model-predicted capacity problems. (Prot. Ex. 67).

Similarly, the 2021 RJN Performance Assessment provides updated modeling and monitoring projections and in particular, for the 10 yr/6 hr storm event, showed model-predicted SSOs in BC0022 which is downstream from the Property. Importantly, the 2021 RJN Performance Assessment shows worsening of conditions in BC0022 than the original model in the SRRR Report. As a result of the model-predicted SSOs in BC0022, recommended upgrading the size of the sewer pipes. He also testified that all of the modeled deficits for the 2 yr/6 hr storm event apply to the 10 yr/6 hr storm event. He agreed that the County had only upgraded the 4 meter basins BC02, BC03, BC04 and BC09 which are not applicable to the Property here. Likewise, the Hazen Report shows increased levels of I/I during high rainfall (i.e. during wet weather).

Mr. Summers also discussed the MDE Design Guidelines from 2016 which provides standards for designing wastewater facilities. (Prot. Ex. 100). As such, according to the MDE Guidelines, a sewer system should be designed to accommodate peak flows during wet weather, or the highest flow in the sewer pipes to account for I/I. The State recommended standards from 2014 were also provided. (Prot. Ex.101).

Mr. Summers went on to describe that the capacity for the sewage from the Jones Falls travels through the Metered basin into the City and finally into the Back River Waste Water Treatment Plant. Mr. Summers testified that under a separate Consent Decree which the City entered into with EPA, the County still has not provided the City with information on flows in order that the City can address its problems. Toward that end, he offered a copy of the Phase II Plan for the City's Modified Consent

decree (Prot. Ex. 97). However, that exhibit was not admitted because the work required by the City under its Consent Decree with EPA, whether provided by the County to date or not, is not relevant to the issues regarding the sewage flow from this Property.

On cross examination, Mr. Summers added that the Consent Decree also has quarterly and annual reporting requirements wherein the County reports to MDE showing the rehabilitation of the sewer system. He also acknowledged on cross that the Consent Decree was dated 2005, the TMDL was dated 2006, and he was not certain if there have been updates since 2006. He indicated that the County does not perform its own TMDL monitoring. MDE relies on data collected and reports same to EPA under the Clean Water Act. Additionally, if there was new data since the TMDL in 2006, it could change the number of homes on sewer and septic systems. During the 16 years since 2006, there could be more homes on septic systems than connected to the sewer system.

PEOPLE'S COUNSEL CASE

1) Eric Rockel, Greater Community Timonium Council

Eric Rockel, 1610 Riderwood Drive, is President of Greater Community Timonium Council ("GCTC"), an umbrella organization of 40 community associations. The GCTC was originally formed in the 1970s and then reformed in 1989. Some of the local community associations involved here are part of GCTC such as Seminary Ridge Community Association, Heatherfield, Meadows and Boxwood communities. The Property is included within the GCTC boundaries which are: Schwann Rd. to north; I-695 to south; Dulaney Valley Rd. to east; and Falls Rd. to west. Mr. Rockel was previously employed by the County in Land Acquisition Department for 26 years when he retired from County in 2007. While working in Land Acquisition Department (now known as 'Real Estate Compliance'), he was a supervisor of County right-of-ways.

GCTC is opposed to the Project because it is too dense as noted by DOP in its CPC comments dated March 1, 2021. (Prot. Ex, 4; PC Ex. 3). Sixty-One homes are still being proposed. The proposed lot sizes are not compatible with the adjoining developments where existing lots measure in the 30 sf lot range. On Seminary Farm Rd. there are 5 homes which measure 23,300-26,600 sf, and on Old Boxwood there are 4 lots over 10,000 sf. The lots for the Project range from 8,800 sf (smallest) to 17,640 sf (largest) with average being 12,500 sf.

GCTC also opposes the Mays Chapel Gate as emergency-access-only gate because it is in violation of DPR Policy Manual which requires a second means of access for more than 100 homes (Meadows and Boxwood communities = 111 homes). GCTC contends that if the Project is approved, it is more practical to leave the Mays Chapel Gate open as a thru-street between Seminary Ave. and Joppa Rd. for not only the additional vehicles generated by the Project but also for emergency service vehicles

2) Ying Wei Lum, MD, 8308 Tally Ho Rd.

Ying Wei Lum, MD lives at 8308 Tally Ho Rd. with his wife and children. Dr. Lim is a vascular surgeon at Johns Hopkins Hospital. He testified that the proposed roadway improvements to Falls/Joppa Rd. with the additional left turn lane and removal of the existing concrete median strip will be more dangerous for vehicles turning from the access road behind the Exxon/snowball stand, and for those turning left onto Joppa Rd. out of Greenspring Station at Station Dr. Not only will left turning vehicles have to cross an additional lane of traffic but they will also need to navigate into the traffic from I-83 turning right onto Joppa Rd. Additionally, Tally Ho Rd. is a cut-thru street where extra traffic is obvious on weekends and outside of the peak hours. Dr. Lim testified that there are 4 bus stops on Tally Ho. picking up/dropping off 10-12 children per bus stop. Tally Ho is used by residents for biking, walking and neighborhood events.

COMMUNITY TESTIMONY

1) Michael Tanczyn, Esquire, 9 Old Boxwood Lane.

Michael Tanczyn is a retired zoning attorney who has lived in the Boxwood community since January of 2009. He provided a series of street view photographs. (Tanczyn Exs. 4A, 4B). Mr. Tanczyn is concerned about the traffic on Seminary Ave. and indicated that there are site distance issues turning into The Meadows. He witnessed a collision on Seminary Ave. He prepared a hand drawn diagram of the developments along Seminary Ave. (Tanczyn Ex. 5). He confirmed that his research of area record plats showed: (1) homes in the Boxwood community from a 1985 Plat; (2) homes on Seminary Ridge on a Plat from 1967; and (3) the Seminary Fields I development constructed in 1987 and Seminary Fields II in 1988. Mr. Tanczyn testified that the speed limits for the surrounding roads are: Seminary Ave. – 40 mph; Tally Ho – 25 mph; Joppa Rd. 30 mph; and Falls Rd. – 40 mph. In short, Mr. Tanczyn is not opposed to the Project but is opposed to the Mays Chapel Gate remaining permanently open. He noted that the Project is proposing 3-car garages which will generate a lot of traffic up Mays Chapel Rd. and vehicles will be backed up to exit onto Seminary Ave.

2) Fred Hallahan, 76 Seminary Farm Rd.

Fred Hallahan's home at 76 Seminary Farm Rd. is on the corner of Mays Chapel Rd. next to the Property. While he signed the Petition opposing the Project, Mr. Hallahan requested to speak on his own behalf. He stated that he is not opposed to the 61 homes but is opposed to the Mays Chapel Gate remaining open because Mays Chapel Rd. will become a primary thruway. He recommended that, in lieu of a gate, that a permanent 14 ft berm be created in that location to permanently close off May Chapel Rd. to traffic. The berm would be directly behind his home. Mr. Hallahan presented his idea to the Board of Directors of Meadows but they did not agree.

3) Susan Weiss, 8302 Tally Ho Rd.

Ms. Weiss has lived in her home which abuts the Property since 1978. She has seen the extent of development in the area including at Greenspring Station. She recalls when the Greenspring Inn and Windy Valley Ice Cream were at Greenspring Station. She emphasized that Joppa Rd. is dangerous for walkers as there are no sidewalks. Her husband is a cardiologist and worked at the Greenspring Station Johns Hopkins medical buildings and she acknowledged that the presence of Johns Hopkins medical buildings in Greenspring Station has contributed to the increased traffic. She believes Johns Hopkins Pavilions I and II were constructed in the 1980s and Pavilion III was constructed more recently. She regularly walks at Meadowood Park which requires driving to the western side of Falls Rd. because it is too dangerous to cross Falls Rd.

REBUTTAL

1. Nick Driban.

In rebuttal, Mr. Driban was recalled by the Developer and went over the same points covered in his direct testimony. Mr. Driban testified in rebuttal that the 'district standard' for the Special Variance requires evidence that after roadway improvements are completed, the relevant intersections will be no worse than currently exist. After the roadway improvements to Falls/Joppa intersection are completed, he reiterated that the Developer would be mitigating more than it would be impacting. He did not agree that adding a left turn lane at Falls/Joppa would create a safety issue and that was because the lines would only be shifted 1-2 feet. He repeated that the trip generation numbers used in TIS are based on 200 studies as set forth in the ITE Manual, and are based on the number of proposed units, not the number of vehicles generated by the each unit. As in direct, he opined again that leaving the Mays Chapel Gate permanently open will induce a "substantial amount of traffic" and Mays Chapel, a local road, will become a cut-thru. He opined

that Falls Rd. as an arterial street should be handling most of the traffic. In regard to accident data for the last 3 years, the SHA crash data for the 3 intersections along the Falls Rd. corridor was 0.54%. He added that if crash data was greater than or equal to 1.0, than it would warrant further action by SHA before considering improvements. The SHA data is derived from both State and County police. SHA had no record of a fatal crash at Falls/Joppa. Therefore, in his view, Mr. Driban opined that there is no safety issue. He added that he reviewed a federal data base for crash modification factors which indicates that adding a left turn lane will reduce the number of accidents by 20%.

Mr. Driban also testified that Lehnart set up 9 cameras along Falls Rd. corridor as follows: 2 – Falls/Joppa; 1 Falls/Greenspring Valley; 2 – Falls/Seminary; and 4 – W. Joppa Rd. near Property access. These cameras were set up during the period of Wednesday, January 18, 2023 - Saturday, January 21, 2023 (3.5 days total) and recorded the data by video. (Dev. Exs. 38, 39). He testified that after 9:00 am, queuing is non-existent, with minimal delay at the intersections which equates to a LOS of 'A' and 'B' under the HCM during off-peak hours. He also submitted photographs taken showing traffic builds around 3:00 pm when schools let out and at 5:00 pm with traffic from I-695 and I-83. He agreed that traffic peaks during lunch hour from 12:00-1:00 pm. He concluded that the amount of traffic shown in the videos and photographs is typical for an arterial road.

Mr. Driban did admit on cross examination that he did not watch the videos for all 9 cameras for all 3 days; he only watched the videos in real time at key locations. He did not keep a log when he watched the videos. While he saw some queuing at Station Drive next to the Property at the orthodontist/dentist office buildings, he did not see queuing on the videos at Station Drive towards Tally Ho Rd., or at Tally Ho Rd. Mr. Driban testified that over the last 3 years, he

had met with Greg Carski, Mr. Filsinger, and Kris Nebre at various times regarding the Special Variance standard. Mr. Driban described that he spent more than 2 years attempting to interpret the Special Variance standard and researching its legislative history. He believes that the only decision interpreting the Special Variance standard is the decision in *Torch Hill*, Case Nos.: 08-0919 and 2021-0274-SPHA. (Dev. Ex. 37).

Mr. Driban further agreed in cross examination that the week the videos were taken was a 4-day work week due to Martin Luther King. Jr. Holiday on January 16, 2023. He was not certain whether the DPWT also used cameras to conduct traffic counts to rate intersections under the LCM. Mr. Driban also explained that the furthest camera was placed east of Tally Ho Rd. but not as far as Thornton and Bellona at the Royal Farms store. There were no cameras placed along Tally Ho Rd.

2. Matthew Bishop.

Mathew Bishop, landscape architect, was also recalled as a rebuttal expert witness. In response to the Protestants' testimony, Mr. Bishop opined that the proposed homes meet the 3 goals of the Master Plan 2020 ("MP 2020"). (Dev. Ex. 35, p. 1). He further opined that the Project meets the T3 – Land Use Transect, and highlighted that T zones are only a guide providing conceptual and general standards and should not be read literally. He added that the transect zones replaced the conventional separate land uses in that the zones overlap and provide for a variety of housing types. Mr. Bishop testified that the Project exceeds the County design manuals which support the requirements in the BCC and BCZR. In response to Protestant's testimony that the lot sizes are compacted together in a certain area of Property, Mr. Bishop indicated that this is due to a planning practice of clustering homes on a property to preserve environmental areas. Mr. Bishop testified that the proposed clustering here is protecting the natural resources. Mr. Bishop added

that the proposed 30 ft building to building setbacks are also seen on the homes on Trelawny Ct. and Scottsdale Ct.

In regard to Mr. Hallahan's proposed 14 ft landscape berm, a 4 ft landscape berm is proposed by the Developer and there is a 10 ft Drainage and Utility Easement designated for that area to carry water away from the Property. He also pointed out that the proposed environmental and SWM areas labeled on the Development Plan. (Dev. Ex. 1B). On cross examination, Mr. Bishop agreed the adjacent neighborhoods have a variety of housing types with variable lot sizes. He also agreed that only Lot 29 is greater than 29,000 sf, and that there were a 'significant' number of larger lots in the adjacent neighborhoods.

3. Nicholas Leffner, PE, Kimley, Horn

Nicholas J. Leffner, PE was accepted as an expert professional engineer with special knowledge in development and development related policies, sewer design, sewer capacity analysis and storm water management design. (Dev. Ex. 41). Mr. Leffner has been a professional engineer in Maryland since 2013, and has been accepted as an expert witness in zoning and development cases in Baltimore County. Mr. Leffner testified that he has been involved with 12-24 sewer design projects in Baltimore County some of which included residential projects. In the past 3 years, he has worked on 1 case in the Jones Falls Sewershed which involved the redevelopment of a commercial property at 6400 Falls Rd. Civil engineering includes sanitary sewer design and engineering. Mr. Leffner agreed that modeling, using computer software to analyze sewer capacity, is accepted in the industry.

Mr. Leffner first addressed the issue of SWM and the testimony of Protestants' expert in SWM, Daniel O'Leary, PE. Mr. Leffner testified that Baltimore County does not require the designation of existing conditions for farm fields as "meadow". (Prot. Ex. 50). It was Mr.

Leffner's understanding that Mr. O'Leary's emphasis on the red highlighted box is misplaced because the County, in its control of floodplains and SWM studies, determines downstream flooding. Mr. Leffner emphasized that the County approved the Concept SWM Plan here which process he described as a conservative review that ensures the minimal County requirements are met. In response to Mr. O'Leary's opinion, Mr. Leffner testified that Phase II of the SWM process will identify the type and location of SWM devices. Given the Phase II process, he added that changing the existing conditions to 'meadow' at this stage would not change the type of device or current location on the Concept SWM Plan.

Contrary to the testimony of Mr. Grachek/Mr. Summers, Mr. Leffner testified that MDE approved the SRRR 2012 Plan by letter to the County dated September 6, 2013, and EPA approved the same by letter dated December 9, 2013. (Dev. Ex. 43). Mr. Leffner prepared an exhibit showing the sewage flow (in pink) from the Property to the County/City line. In regard to the specific manholes and sewer segments through which the sewage from the Property will flow, the Developer obtained an updated status of the sewer line from David Bayer, PE by emails dated May 30, 2023 and an accompanying spreadsheet. (Dev. Exs. 45A and B). The emails and spreadsheet confirm what manholes and sewer segments were repaired, what repairs were determined not to be needed, and/or what repairs have been approved. The email address 8 manholes and 2 sewer segments. The most recent repair date was 2019. By way of example, on September 29, 2014, the County installed an inflow insert at MH 43820. [2]

Mr. Leffner testified that repairs to the sewer system were also made in BC02, BC03, BC04

[2] Developer offered an Internal Memo (Dev. Ex. 46) which was on DWPT letterhead dated May 1, 2023 which Counsel for Developer and Counsel for Protestants agree was prepared for the benefit of the County Council to address questions/concerns about the capacity and repairs to sewer system under the Consent Decree. Because the Memo had no author, and there was no County employee offered to testify and be cross examined as to its contents, and given that it appears to address many issues raised in this case, it was not admitted into evidence as it was found to be unduly prejudicial to the Protestants and People's Counsel.

and BC09 meter basins or sub-sewer sheds because they were exhibiting a high degree of I&I into the sewer system and were contributing to the SSOs. (Prot. Ex. 78). Those meter basins are depicted in yellow-shaded area on Map 6-1 of the 2012 SRRR Plan. (Prot. Ex. 67). Mr. Leffner testified that the repairs to those meter basins made an impact on the whole sewer system; I&I has been kept out of the system thereby creating more reserve capacity. He added that the proposed 61 homes would produce 19,000 gallons of sewage per day.

In regard to the 2021 RJN Performance Assessment Report, Mr. Lessner stated that it was his understanding that the red areas on Map 3 are only model predicted and do not include current information verified in the field by the County. (Prot. Ex. 78, Map 3). He indicated that the information on Mr. Grachek's RJN Pre-Rehab and Post-Rehab Chart (Prot. Ex. 81) is also not field verified by the County. Mr. Lessner testified that DPWT installed flow meters in 5 manhole locations (MH 44220, MH 44217, MH 44215, MH 53270, MH 44209) to monitor if SSOs occur. It was his understanding that, the data from those flow meters did not show any active SSOs. (Dev. Ex. 47A). The model-predicted SSOs in the 2021 RJN Performance Assessment are in the same areas where the flow sensors are located. Mr. Lessner also opined that a sewer pipe which is at 100% capacity is not defective but just flowing at full capacity; none of the pipes are under pressure. He added that the Sewer Design Manual actually requires smaller sewer laterals and mains, not larger ones because oversized pipes have a slower velocity. He added that there is no restriction in the Sewer Design Manual that limits the operation of a pipe which is at overcapacity.

In regard to questioning about whether the 2021 RJN Performance Assessment identified problems in the sewer system, his response was "I don't think so." In support of this opinion he mentioned that as listed in the CD, "fats, oils and grease" ("FOG") cause blockages in the sewer system. (Prot. Ex. 65, p. 35). The CD further mentions other causes of blockages in the sewer

system including, illegal storm drain discharges (p. 42) and pumping stations repairs and replacements (p. 43). The 2021 RJN Performance Assessment primarily analyzed large storm events which do not frequently occur in the County.

Mr. Leffner reviewed the Quarterly and Annual Reports for the Jones Falls sewer shed required to be prepared by the County under the CD (p. 67) (the "Quarterly/Annual Reports"). He testified that the Quarterly/Annual Reports contain all of the required updates as well as the construction projects during the last 3 years. (Dev. Exs. 47-54). He emphasized that, even with model-predicted SSOs, there were no actual SSOs in Jones Falls Sewershed in the Quarterly/Annual Reports. He acknowledged that there is a structural SSO at the Marnat Rd. location which does not affect the sewage flow from this Property (the "Marnat Rd. SSO"). The Marnat Rd. SSO is the reason that the CD has not been terminated. In light of the amount of work performed by the County on the sewer system, he opined that the absence of SSOs shows that the purposes of the CD have been met. In his opinion, the proposed 61 homes will produce minimum sewage flow as compared to the flow in the existing sewer system.

Mr. Lessner acknowledged the email response of Lisa Eicholtz, PE of DPWT's dated September 4, 2020 to the Developer that the 8 inch sewer segments (MH 43794 – MH 43786) do not have adequate capacity to accommodate the 61 homes proposed in the Project. (Dev. Ex. 55). Mr. Lessner testified that the Developer here has provided the design for upsizing 2 sewer segments (MH 43794 - MH 43792).

In regard to Mr. Grachek's conclusion that the model-predicted analysis was based on dry weather in the 2015 County Jones Falls Interceptor Chart, Mr. Lessner testified that it was his understanding that the column "Infil. MGD" and "Inflow MGD" concerned flows beyond the sewer system. (Prot. Ex. 64). As for the Lake Roland Ecoli sampling results, Mr. Leffner opined

that there is a lot of variability in the sampling with no particular source found. The locations where the sampling occurred was shown in an aerial photograph. (Dev. Ex. 56). He highlighted that Lake Roland is not the only location where the County conducts sampling and *Stream Sense* signs are located in other parts of the County. (Dev. Exs. 57, 63). Mr. Lessner disagreed with Mr. Gracheck's and Mr. Summer's conclusion that SSOs were the source of the E coli readings and mentioned that those readings could also come from agricultural use and septic systems. He reasoned that since there have not been any SSOs since 2019, humans cannot be the source of the E Coli. He pointed out that there are 60,000 septic systems. (Dev. Exs. 58, 59). He obtained a color-coded map from the County of the septic systems located within the Lake Roland watershed wherein 635 homes are on septic. (Dev. Ex. 60). The County does not monitor septic systems. He provided an aerial map from My Neighborhood showing the extent of agricultural uses (green) (including horse farms) within the confines of the Jones Falls watershed (red) which could contribute to the E Coli levels. (Dev. Ex. 61). The County has not issued any advisory warnings as of May 26, 2023. (Dev. Ex. 62). Accordingly, it was Mr. Lessner's opinion that the E Coli readings in Lake Roland were from varied sources including wildlife, agricultural uses and septic systems. While he reviewed the TMDL Report, in his view, that because there have not been SSOs in last 3 years, humans cannot be the E Coli source.

In regard to the Hazen and Ramboll reports, Mr. Lessner testified that neither report was required under the CD but were prepared for the County to be proactive in its ownership, maintenance, operation and repair of the sewer system. (Prot. Exs. 85, 86, 87). He described the Hazen and Ramboll reports as the County's future long term planning for the capital budget. Mr. Lessner testified that neither Hazen nor Ramboll reports were cause for any concern. Mr. Lessner sees the relining of the main under Lake Roland as a planned improvement but not necessarily a

capacity issue, and the Project would not have any effect on that relining.

On cross examination, Mr. Lessner agreed that the CD requires the County to conduct the LTC evaluation and the SRRR 2012 Plan to identify long term deficiencies and corrective actions necessary to correct those deficiencies in the sewer system. (Prot. Ex. 67). Toward that end, he acknowledged that the County hired RKK to perform that evaluation and prepare the RKK-LTC 2012 Report. (Prot. Ex. 68). In regard to whether the RKK recommendations were necessary to repair the deficiencies, Mr. Lessner found that there were a lot of assumptions which were not verified including population projections that went into the recommendations. Therefore he reasoned that the recommended improvements may not be required and alternative repairs were available. As far as he knew, the County never determined that the RKK recommended actions were not necessary.

Mr. Leffner agreed that the 'majority' of the corrective actions identified in the SRRR 2012 Plan (Paragraph 6.14) has been done but otherwise, those actions have not been fully implemented by the County including the reduction and rehabilitation of I&I. (Prot. Ex. 67). As of May 31, 2023, Mr. Leffner agreed that there are areas of the County which are still exhibiting I&I. The Hazen Newsletter shows areas at least surrounding the Property in red where there is I&I. (Prot. Ex. 85). He conceded that 2021 RJN Performance Assessment found areas of model-predicted SSOs, through which sewage from the Property will flow, and specifically, as shown on Map 3. (Prot. Ex. 78). He also agreed that Ramboll Report identified 19,550 linear feet or 43 sewer segments (several miles) and 43 junction boxes in and around Lake Roland that could be repaired to control I&I but, did not agree that I&I is the reason for the model-predicted overflows. (Prot. Ex. 81). He further acknowledged that the Ramboll Report indicates that 24 of the 43 segments had active infiltration at sewer joints, and 14 of which had some structural defects; of the remaining

19 segments, 11 had structural defects. Given the Hazen Newsletter, the Ramboll Report and 2021 RJN Performance Assessment Map 3, Mr. Lessner agreed that corrective action 1 in the SRRR 2012 Plan (Paragraph 6.14) is not completed and that, while there was the 'balance of the area within the JF Sewershed' which was still outstanding, he did not know how many still needed to be repaired. He clarified that one of the areas which is outstanding is within the limits of proposed sewer improvements for the Project.

Mr. Leffner also conceded that the work in the Hazen Report has not been completed. He was not sure whether the County had performed any capacity improvements listed in Paragraph 6.14.2 the SRRR 2012 Plan. (Prot. Ex. 67). Specifically, as shown in red on Map 6.1 of the RKK-LTC 2012 Report for the 10 yr/6 hr storm, Mr. Leffner agreed that RKK recommended that sewer segments be repaired by sealing manholes and/or installing relief sewers, and that Map 6.1 includes all of the recommended repairs and replacements. (Prot. Ex. 68). In particular, RKK recommended upsizing the sewer segment pipe at MH 44219 (Meter Basin BC 22). (Prot. Ex. 68, ¶ 5.1). He was not sure whether MH 44219 had the manhole sealed but acknowledges that the upsizing of the pipe to 18 inches was not completed. However, he qualified his opinion stating that he does not believe the improvements recommended by RKK were an exhaustive list of improvements and that there could be alternative repairs/replacements for the 10 yr/6 hr storm event. He believes these were recommendations at the time RKK issued the report.

As to SRRR 2012 Plan, he agreed that Paragraph 6.14.3 correctly identified structural deficiencies, given that those structural deficiencies which were also identified in the Ramboll Report from June, 2022. Mr. Leffner stated that it 'could be' that 'structural deficiencies' listed in the SRRR 2012 Plan are inclusive of only the deficiencies identified therein, and not in the Hazen and Ramboll Reports.

As to Paragraph 6.14.5, as to confirming model simulations and revise if necessary, he agreed that RJN mostly updated the RKK model and recalibrated a portion of the model. The CD includes on-going analysis for a finite amount of work. While Hazen is conducting a comprehensive evaluation of the JF Sewershed for future 'planning' as opposed to required improvements. He believes that Hazen Report is beyond the study period of what is required by the CD.

In regard to rehabilitation work completed as shown on Map 2 of the 2021 RJN Performance Assessment, Mr. Lessner conceded that Map 2 shows that there was little work completed within Meter Basin 22 where the sewage would flow from the Property (i.e. green square/yellow circle – sewer lining); no relief sewers or upsizing of pipes has been completed. (Prot. Ex. 78). After the 2021 RJN Performance Assessment was issued, he testified that "presumably" more improvements have been completed within the sewage path from the Property and he referenced those improvements as the ones identified by Dave Bayer in the DPWT Email dated May 30, 2023. (Dev. Exs. 45A, 45B). Some of the improvements listed in DPWT May 30, 2023 Email were from the 2021 RJN Performance Assessment.

The 2021 RJN Performance Assessment discusses work performed in Meter Basins 02, 03, 04 and 09 which is not the area where the sewage from the Property will flow. Sewage from the project will flow through the JF interceptor, whereas sewage from Meter Basins 02, 03, 04 and 09 where rehabilitation was performed will flow through Roland Run interceptor. While he described Map 3 of the 2021 RJN Performance Assessment as a 'snapshot in time', he qualified his direct testimony by stating that he agrees that Map 3 shows future information. He stated that the RJN modeling has not been verified by flow sensor monitoring. Yet, Mr. Lessner did not have the data from flow sensor monitoring. He acknowledged that there is a difference between SSOs and

hydraulic restrictions on Map 3. In his view, Map 3 of the 2021 RJN Performance Assessment did not show a worsening of conditions from the RKK-LTC 2012 Report, even if pipes are over 100% capacity. He recognized that the 2021 RJN Performance Assessment used the same 2008 population projections as the RKK-LTC 2012 Report. (Prot. Ex. 83).

Mr. Leffner agreed that the Comparison Chart RJN Pre-Rehab and Post-Rehab Chart showed an increase in hydraulic restrictions (red). (Prot. Ex. 81). He also agreed that on the 2015 County Sewer Capacity Chart, DPWT determined that there is not adequate capacity because the 8 segments were at 94%-100% capacity. (Prot. Ex. 64). He agreed that numerous segments below the 8 segments for 10 yr/6 hr storm event are shown to be over-capacity. On the 2015 Jones Falls Interceptor Chart, based on his conversations with County representatives, Mr. Lessner understood that the modeling was based on wet weather as shown by columns labeled: 'Infil MSG' and 'Inflow MSG'. Yet, he indicated that infiltration can also occur in dry weather. (Prot. Ex. 64). There is an Appendix 5A to the RKK-LTC 2012 Report which lists capacity during dry weather. (Prot. Ex. 68). He agreed that the CD requires evaluation of capacity, modeling and corrective action is based on wet weather flow.

With regard to the DPWT May 30, 2023 email, his office inquired as to what repairs had been completed. (Dev. Ex. 45A, 45B). Mr. Leffner agreed that sewage from the Property does not flow through MH 43820. (Prot. Ex. 63). The repairs listed on DPWT May 30, 2023 email are minor and that none of those listed repairs increase capacity of the segments or capacity of the manhole. In his view, sealing manholes and lining pipes will increase capacity. (Dev. Ex. 45A, 45B). He admitted that the repairs listed in the DWPT May 30, 2023 email are not the repairs that were recommended in the 2012 RJN Performance Assessment, or in the Ramboll Report.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

Pursuant to BCC § 32-4-229, the "Hearing Officer *shall* grant approval of a development plan that complies with these development regulations and applicable policies, rules and regulations." (Emphasis Added). In *People's Counsel v. Elm Street Development, Inc.,* 172 Md. App. 690 (2007), the Court of Special Appeals held that if the county agencies recommend approval of a development plan, it is "then up to [protestants] to provide evidence rebutting the Director's recommendations." *Id.* at 703.

The Property is the last remaining undeveloped parcels in this area. Residential neighborhoods and the large commercial complex known as Greenspring Station have grown up around, and encircle it. Across from the Property is Meadowood Park, a public park, which attracts volumes of people year-round. The Property's location on W. Joppa Rd. - a local County road - and its proximity to the failing Falls/Joppa Rd. intersection, with numerous sub-intersections, make it a challenging place for 61 homes.

As shown by the County agency comments in review of the Development Plan and in their review of the Petition for Special Variance, as well as the emails and other documents produced in response to PIA requests, DPR and DPWT found that the Project did not comply with the development regulations and applicable policies due to the traffic, proposed emergency-access-only gate, and inadequate sewer capacity. After 13 days of hearings over many months, the Protestants and People's Counsel provided compelling evidence to counter the evidence produced by the Developer's in its case-in-chief, which evidence was then not sufficiently rebutted. Substantial evidence is merely "such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *Elm Street*, 917 A.2d 166, 174 (2007), (quoting *Md. State Police v. Warwick Supply & Equip. Co., Inc*., 330 Md. 474, 494, 624 A.2d 1238 (1993). Accordingly,

the Greenlined Development Plan must be denied under BCC, §32-4-229(b)(1). *Elm Street*, *supra*, 172 Md. App. at 696, for the reasons set forth herein.

A. <u>Traffic</u>.

The Property lies on the north side of W. Joppa Rd. The aerial photographs produced by the Protestants set the scene more accurately than words can describe showing the extensive surrounding development and intricate roadway network involved here. (Prot. Exs. 38, 40-44). It is undisputed that the Property lies within the a failing traffic shed which includes the intersections of both Falls Rd. and Joppa Rd., and Falls Rd. and Greenspring Valley Rd. DPWT determines the boundaries of the traffic sheds. For decades, both intersections have maintained an 'F' rating on the County Basic Services Map. The County owns and maintains W. Joppa Rd. The State of Maryland owns and maintains Falls Rd. (MD 25) and Greenspring Valley Rd. (MD 130) as well as the intersections of Falls/W. Joppa Rd. and Falls/Greenspring Valley Rd.

1. <u>Transportation Basic Services Map Standard</u>.

Before addressing the evidence which was presented on the Petition for Special Variance BCZR, §4A02.4.G, an issue arose during the HOH as to whether the standards employed by the County to rate intersections for the purposes of the Basic Services Map and the standards which a petitioner needs to meet for a Petition for Special Variance, were the same. Protestants and People's Counsel assert in their Post-Hearing Memorandums that the 'loaded cycle methodology' ("LCM") as set forth in the Highway Capacity Manual (1965) is the only standard which must be applied for both the Basic Services Map and a Special Variance; the Developer contends that the LCM cannot be used to meet the burden of proof in a Special Variance case. Consistent with the holding in *Torch Hill* and in review of the plain language in the Transportation Basic Services subsection and the Special Variance subsection, in my reading of the relevant provisions, the LCM

can only be used for Basic Services Map purposes.

In order to determine whether public facilities are adequate to meet the demands of a proposed development, the County applies the LCM to assign letter grades A-F to intersections within a mapped area (A being the best and F being the worst). When an intersection has received an 'E' or 'F' rating under the LCM, there is an automatic prohibition on the issuance of a building permit within that failing traffic shed, thereby regulating development.

Using the LCM, the Traffic Engineering/Planning section of DPWT performs traffic counts at intersections during a two-hour period to evaluate each approach during both morning and afternoon peak hours. Peak hours are 7:00-9:00 am and 4:00-6:00 pm. A traffic cycle becomes 'loaded' if on a green light, the last vehicle in line at the light does not get through the intersection. It is undisputed that an intersection which has just one (1) failing movement will be assigned an "F" rating. Stated in percentages, an 'F' rated intersection has a load factor of 86-100%. (See County Website, DPWT). For intersections rated D, E and F, DPWT conducts annual traffic counts and reevaluates the intersections each year. For intersections rated A, B and C, the counts are conducted every 3 years.

Because it compiles traffic counts from a specific day, the LCM is limited in its application. The singular purpose of the LCM is set forth in the express language of the general purpose and intent of Basic Services Map as found in BCZR, §4A02.1:

> §4A02.1. - Purpose and intent.
>
> The County Council finds that important public facilities in certain predominantly urban areas of the county are inadequate to serve all of the development that would be permitted under the regulations of the zones or commercial districts within which those areas lie. **Basic Services Maps are hereby established to regulate nonindustrial development** in those under-served areas to a degree commensurate with the availability of these facilities. Basic

> Services Maps are not permanent and will be reviewed annually with reports to the County Council.

In BCZR, §4A02.3, the Basic Services Map for water, sewer and transportation was adopted by the County Council. There is language in BCZR, §4A02.3 about the Transportation Basic Services Map. BCZR, §4A02.3.E.3.b informs that the Transportation Map shall be amended after DPWT certifies that the needed facility has been constructed and is performing where there has been actual construction to correct a deficiency in a failing intersection, by either the County through the capital improvements program, or through private funds of a developer. BCZR, §4A02.3.F makes clear that it was the intended goal to correct water, sewer or transportation deficiencies listed on the Basic Services Map in accordance with the Master Plan and the capital improvements program. BCZR, §4A02.3.G provides that no building permit or subdivision approval can be granted unless the Director of the DOP has issued a reserve capacity use certificate for the proposed development.

In BCZR, §4A02.4 are the mapping standards for water, sewer and transportation. The standards for each of the public facilities – water, sewer and transportation – are individually established for the purposes of designations on the Basic Services Map: (1) water supply standards are found in Subsection B; (2) the sewer standards are found in Subsection C; and (3) the transportation standards are set forth in Subsection D.

As title alone '*BCZR, §4A02.4 - Basic services mapping standards'* makes expressly clear, the LCM is a Basic Services Mapping Standard which forms the basis for the delineation of areas on the Transportation Basic Services Map as well as to evaluate development applications and restrict the issuance of building permits for failed intersections:

§ 4A02.4. - **Basic services mapping standards**.

A. Generally. The *standards contained herein* are intended to *form the basis for the delineation of areas on the Basic Services Maps* as well as for the evaluation of development applications in accordance with the requirements of this article.

B. Water supply standards.
* * * *

C. Sewerage standards.
* * * *

D. Transportation. [3]

1. Intent. The **transportation standards and maps are intended to regulate nonindustrial development** where it has been determined that the capacity of arterial and arterial collector intersections is less than the capacity necessary to accommodate traffic both from established uses and from uses likely to be built pursuant to this article. Such development is not intended to be restricted unless there is a substantial probability that an arterial and arterial collector intersection situated **within the mapped area will, on the date the map becomes effective, be rated at level-of-service E or F under standards established by the Highway Capacity Manual, 1965,** published by the Highway Research Board of the Division of Engineering and Industrial Research, National Academy of Sciences National Research Council.

The Transportation Basic Services Map explains that the standards from the 1965 HCM will control how to rate intersections within a mapped area and to the review of development applications to make sure that a building permit is not automatically issued. It is significant in Subsection D.1 that the phrase 'be rated at level-of-service E or F' precedes the phrase 'under standards'.

[3] The word 'standards' is missing from sub-title in 'D. Transportation.' Given that the word 'standards' appears after both 'water supply' and 'sewer' in those subsections, and the section title is 'Basic services mapping standards', and the phrase 'transportation standards' appears in the 'Intent' paragraph, this appears to be an inadvertent error in drafting.

In this case, the LCM served its purpose in that an 'F' LOS rating was assigned by DPWT under the Highway Capacity Manual, 1965 to both Falls/Joppa Rd. and to Falls/Greenspring Valley Rd. intersections which resulted in both intersections being part of a failing traffic shed. By doing so, it prevented the issuance of a building permit, which in turn, forced the Developer here to file the Petition for the Special Variance under BCZR, §4A02.4.G.

From the unambiguous language above, the Basic Service Mapping standards and the Special Variance standards are not one and the same. As cited by People's Counsel in his Post-Hearing Memorandum, citing Judge Brynja [sic Brianna] Booth in *Mayor and City Council of Baltimore v. Thornton Mellon*, 478 Md. 396, 429 (2022) statutory construction must make sense as:

> "Finally, we check our interpretation against the consequences of alternative readings of the text…..Doing so ensures that we adopt an interpretation that avoids a construction that is 'illogical, unreasonable, or inconsistent with common sense.'…. Indeed, 'it has been called a golden rule of statutory interpretation that, when one several possible interpretations produces an unreasonable result, that is reason for rejecting that interpretation in favor of another which would produce a reasonable result.'' Internal citations omitted.

(PC Memo, p. 13). The only logical, reasonable and consistent-with-common-sense reading is that the Special Variance standard is something other than the LCM.

2. Special Variance Standard.

From reading the above sections, the logical, reasonable and consistent interpretation is that the Special Variance standard is separate from the letter grade assigned under the Basic Services Map. While the building permit is withheld, BCZR, §4A02.4.G provides that an exception or waiver (i.e. a Special Variance) can be sought if the evidence meets the requirements in BCZR, §4A02.4.G.1:

> G. Petitions for special variance from provisions of this subsection.
>
> > 1. The Zoning Commissioner may, after a public hearing, grant a petition for a special variance from a provision of this subsection, only to an extent that will not violate that provision's purpose, pursuant to a finding:
> >
> > > a. That the demand or impact of the development proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal; and
> > >
> > > b. That the granting of the petition will not adversely affect a person whose application was filed prior to the petitioner's application in accordance with Section 4A02.3.G.2.b.

Because the burden of proof includes proving what impact a proposed development (not yet built) would have on the failing traffic shed, the LCM, with its limited application, cannot be applied. Therefore, the letter grade assigned under the LCM for inclusion on Basic Services Map does not need to change to a better letter grade. Indeed, if an intersection rating on the Basic Services Map is to be changed, DPWT is the County agency charged with that task and the County Council would need to approve the change. But that is not to say that if demand and impact are shown using the CLV or HCM methods, that changes in letter grades are not important.

To determine logical, reasonable and consistent-with-common-sense reading of BCZR, §4A02.4.G.1, a Special Variance can only be granted if under Subsection G.1, it does 'not violate that provision's purpose.' As set forth above, the purpose or intent of the Transportation *Standards* found in Subsection D.1 is a determination that:

> …the capacity of arterial and arterial collector intersections is less than the capacity necessary to accommodate traffic both from established uses and from uses likely to be built pursuant to this article.

From the Transportation Standards, the only logical, reasonable and consistent interpretation is as follows:

> (1) the phrase "…it has been determined that the capacity of arterial and arterial collector intersections is *less than*..." refers to the determination by DPWT to assign a letter grade for the intersection using LCM;
>
> (2) the phrase "…the capacity [of the intersection] necessary to accommodate traffic…" refers to the district standard; and
>
> (3) the phrase "…traffic both from established uses and from uses likely to be built…" refers to "the demand or impact of the development proposed…" which is in Subsection G.1.a. above.

Read together, a Special Variance requires a finding, after a hearing, that the demand or impact of the development proposed will be less than that assumed by the capacity which is necessary to accommodate traffic. As a result, it is clear that assigning a letter grade to an intersection using LCM does not answer the question of what the *capacity* of the existing intersection is, or what the impact of the development will be on that capacity.

3. OAH Cases on Special Variances.

The Special Variance provision BCZR, §4A02.4.G.1 has been also been interpreted in previous OAH cases. Thus, Mr. Driban was not correct when he testified that the only case which has interpreted the Special Variance provision was *Torch Hill*. In this case, People's Counsel provided copies of previous OAH Opinion and Orders from 8 cases involving the issue of Special Variance. (PC Ex. 38). These cases were helpful in terms of not only the type of evidence which can be provided in a Special Variance case, but the factors considered by OAH in making findings:

> (1) what is the capacity of the intersection?
>
> (2) what is traffic generated by existing uses?
>
> (3) what is the traffic from the uses likely to be built (i.e. the development project)

> (4) what is the capacity of the intersection that is needed to accommodate both existing and future uses?

To answer those questions, OAH has previously looked to a series of factors including, without limitation, whether: (1) the project is for less than 10 homes; (2) the trip generation number for the homes; (3) the distance of the property from the 'F' intersection; and (4) the direction of the traffic to and from the intersection.

In 2000 case, Deputy Zoning Commissioner ("DZC") Timothy Kotroco in Case No.: 00-557-SA, granted a Special Variance for 7 homes. DZC Kotroco was persuaded by a traffic study conducted by DPWT (f/k/a 'County Bureau of Traffic & Transportation') which study analyzed what percentage of vehicles would exit from an adjacent apartment complex to determine whether those vehicles would utilize the failing intersection. The developer's traffic engineer was C. Richard Moore, a retired head traffic engineer with Baltimore County for 31 years. Mr. Moore testified that the driving habits of the apartment complex residents would be representative of the future property owners of the proposed 7 homes. Because of his experience with the County, he was able to testify that the same traffic shed containing the 'F' intersection at issue had existed for 30 years. Mr. Moore opined that traffic shed did not apply to the property because the traffic patterns had changed due to the construction of additional streets and roads.

In a 2008 case, Case No.: 08-264-A, DZC Thomas H. Bostwick noted that Petitions for Special Variance were "rarely considered" by OAH (f/k/a Office of Zoning Commissioner) and that it was "a case of first impression" for him. The development there was for five (5) homes. As DZC Bostwick repeated Subsection G.1.a, and wrote it contained a two-prong test:

> ***First***, the [ALJ] must determine that the demand or impact of the proposed development will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal. ***Second***, the [ALJ] must find

> that the granting of a petition would not adversely affect a person whose application was filed prior to Petitioner's application.

In his application of the two-prong test in that case, DZC Bostwick was provided a copy of the failing traffic shed, the boundaries of which included the property at issue. Importantly, DZC Bostwick made clear that, given the property's location within the failing traffic shed, there were two (2) ways that a building permit could be issued:

> As the subject property is located within the shed, building permits cannot be issued nor development approval given until the intersection is improved and no longer failing ***or*** special variance relief is granted.

(Emphasis Added). DZC Bostwick's reading supports the interpretation that the 'standard' for a Special Variance is different than the Basic Services Map standards for assigning letter graded to intersections to prevent building permits from being issued.

In that 2008 case, DZC Bostwick addressed the term "district standard" and wrote that it was:

> …..neither a defined term nor is it described anywhere in Article 4A. In fact, testimony offered at the hearing is that the Baltimore County Bureau of Engineering has not defined the term and it is not a phrase used in the parlance of traffic engineers.

In pursuit of the meaning of "district standard," DZC Bostwick looked to a 2005 case written by DZC John V. Murphy (Case No.: 05-336-SA) where a Special Variance was granted to build three (3) homes. In the 2005 case, the "district standard" was interpreted to be the impact normally associated with a development of the type and size:

> …whether the anticipated impacts on traffic as they relate to such issues as volume, congestion, movement and timing of the proposed development **would be less than the impact normally associated with a development of that type and size**. He concluded that if the impacts were less, then relief could be granted pursuant to a petition for special variance. **Specific factors such as the anticipated**

> **volume of traffic to be generated, the route (including access and exit) of traffic to and from the proposed development, anticipated road improvements in the area, the nature and timing of the traffic generated by the proposed development, existing potential development patterns in the area, the nature of the land use proposed for development and existing development in the area *are all factors that need [to] be considered in determining whether special variance relief should be granted.***

(Emphasis Added). While the factors in the 2005 case are directed towards the existing traffic and traffic to be generated, I must *respectfully* disagree with DZC Murphy's interpretation of "district standard" as that term more likely refers to the *capacity* of an intersection as discussed below.

Nevertheless, in the 2005 case, the evidence provided to DZC Murphy in support of the Variance in Case No.: 05-336-SA was primarily from the testimony of two (2) County officials who both appeared and testified namely, Walter Smith, project manager for PAI, and Steven Weber, Chief of Traffic Engineering Division of DPWT. Steven Weber testified that the road at issue, Putty Hill Avenue, was the subject of ongoing County capital improvement program to widen that road at its intersection with Harford Rd. He also testified in regard to a County study which showed the actual number of vehicles (3,100) which used the failing intersection. He then compared actual counts to the 2.55 trips to be generated by the proposed 3 homes. After doing so, Mr. Weber opined that the daily fluctuations of traffic using the failing intersection were greater than the added trips from the proposed 3 homes. Additionally, Mr. Weber - who was subject to cross examination by residents of adjacent properties - testified that Special Variances were *generally granted in failing traffic sheds when the number of lots is less than 10*.

In another 2008 case, Case No.: 08-264-A, DZC Bostwick granted a Special Variance for 5 homes, and found that 'the impact of the proposed development will be less than anticipated,' by weighing the fact that the subject property was located 'a significant distance to the southwest of the failing intersection of Middle River and Pulaski Highway and was not easily accessible

thereto.' He also found that the residents of the proposed development would not even use the failing intersection during either morning or evening peak hours. In determining whether the anticipated impact of the development will be less than that assumed by the 'district standard,' he determined the intersection capacity by considering the existing traffic patterns; anticipated road improvements; the contemplated volume direction; and the anticipated timing of traffic to and from the proposed development.

In a later case, Zoning Commissioner ("ZC") William J. Wiseman, III, in Case No.: 08-436-SA, adopted the same 2-prong test and analyzed the same impact factors set forth in Case Nos.: 05-336-SA and 08-264-A. ZC. In that case, when building permit was sought, the County informed property owners that the permit would not be issued because the property was in a failing traffic shed. ZC Wiseman summarized the Special Variance relief as one for "the issuance of building permits for fifteen (15) single-family dwelling units where it has been determined that the capacity of the public facilities necessary to accommodate same (transportation) is less than necessary." The Petition language there speaks to the "capacity [of the intersection] necessary to accommodate…" In regard to the impact a proposed development would have, ZC Wiseman repeated DZC Bostwick's analysis that:

> Obviously, the manner in which a proposed development will impact specific directions/movements in the intersection is a significant consideration in determining the merits of a special variance request.

The type of persuasive evidence provided to DZC Wiseman included a copy of the County's data collection sheet and traffic analysis for the applicable intersection. That exhibit depicted the traffic counts for the intersection and analyzed the LOS for the respective movements through that intersection. In ZC Wiseman's case, he granted the Special Variance for 15 homes based on the

fact that the proposed improvements to the failing intersection were included within the State of Maryland's capital budget, that it was anticipated that SHA would complete the improvements, and that the building moratorium would be lifted by Summer of 2009. He also emphasized that there were numerous alternative routes to the subject property, each of which avoided the failing intersection.

Subsequently, ZC Wiseman in Case No.: 2009-0080-XSA granted a Special Variance to allow a proposed addition to an office building located within the failing traffic shed of Loch Raven Blvd./Joppa Rd. In that case, Stephen Weber, then Chief of Traffic Engineering Division of DPWT, provided a written comment addressing the Special Variance noting specific facts considered by him in support thereof:

> Based on the relatively small size of the addition, the distance of this site from the critical intersection, and recognizing that the eastern border of the moratorium area only lies 200 feet to the east at the Beltway, we would find that the additional traffic impacts from this site on the critical intersection would be nearly imperceptible and therefore we would have no objection to the granting of a Special Variance for this proposal.

In another 2009 case (Case No.: 2009-275-SA), the same failing traffic shed of Loch Raven Blvd./Joppa Rd. was at issue. The Petitioner there sought to construct an office building. DZC Bostwick applied the same impact factors applied by DZC Murphy in Case No.: 05-336-SA. In that case, DZC Bostwick was provided with County's data collection sheet and traffic analysis for the intersection of Loch Raven Blvd. and East Joppa Rd. from 2 separate years. Those traffic counts analyzed the capacity for specific movements through the intersection. DZC Bostwick noted the ZAC comment from Stephen Weber, Chief of County Division of Traffic Engineering to Dennis Kennedy with County's Bureau of Development Plans Review supporting the Special Variance Petition. He factored in that the property there was located some distance to the east of

the failing intersection and the only direction of travel that is failing was westbound in the morning peak hours away from the property. He concluded that the location of the property was largely unaffected by the failing intersection.

Summarily, the evidence presented here did not address the important factors identified in the prior OAH cases.

4. Fallacies of TIS.

Applying the analysis from Case Nos.: 00-557-SA, 05-336-SA, 08-264-A, 08-349-SA, 08-436-SA, 09-0080-XSA, 09-0275-SA to the facts here, I find the TIS was flawed in several ways. First, the demand or impact of the development was based on the ITE Manual. While the ITE Manual can be useful in some cases to determine demand and impact of a proposed development, in this particular case, given the existing residential, commercial and County park land development surrounding this remaining undeveloped parcel, as well as the State and County roads and location within a failing traffic shed, reliance solely on the ITE Manual underestimates the real trip generation numbers.

On this issue, ALJ Lawrence Stahl in Case No.: 2012-0060-SA denied a Petition for Special Variance for a proposed health/fitness facility at Greenspring Station where a racquet club existed. In that case ALJ Stahl recognized the traffic engineer did not only rely on the trip generation numbers from the ITE Manual for a comparable land use category but also referred to a related traffic study for another building in the area (the Osler building study). In that case, the traffic engineer candidly conceded that he did not want to only use the ITE numbers due to their 'regional inaccuracy':

> …..the IT[E] materials not accurate, as he noted that in this situation in the Baltimore/Washington region it was the custom to use other numbers rather than the ITE figures; and offered that the ITE manual itself suggests *the use of local data where appropriate*.

(Emphasis Added). In denying the Special Variance, ALJ Stahl articulated that use of the ITE Manual is akin to "running the numbers" and was not impressed with either the ITE trip generation numbers, or with the additional traffic study:

> Further, no additional traffic count studies were carried out on the Petitioner's behalf to produce "real" numbers or at least to focus, supplement or extend traffic count studies already available.
>
> Instead, Petitioner's traffic expert created a structural definition on paper of what he opined to be the accurate description of the Petitioner's present facility. The resulting description was then fit into the ITE land use categories to which the ITE formulae and resulting numbers were applied. The ITE manual (and software programs utilized) are admittedly consisting of compilations and averages useful to a degree, especially in the absence of actual numbers. Unfortunately, even the ITE acknowledges that it is sometimes inapplicable and may not reflect actual use in a particular situation. Petitioner's own traffic expert applied this caution in rationalizing his use of the "Osler building study" instead of the ITE numbers relative to the proposed medical office building facility.

Unlike the proposed Greenspring Station development before ALJ Stahl, the demand or impact of the development here is based solely on the ITE trip generation numbers for single family detached homes (Land Use 210) and nothing more. (Prot. Ex. 35; Dev. Ex. 25). Borrowing Judge Stahl's analysis, it was incumbent upon Developer's traffic engineers to do more than just "running the numbers" by finding a use and plugging the trip generation numbers into the TIS. It is inconceivable given the Property location as depicted in the photographs taken by Mr. Brassert, that the 61 homes would only generate 46 am peak trips and 61 pm peak trips and it defies common sense. (Prot. Exs. 40, 41, 42, 43).

Second, the Greenlined Development Plan proposes 60 new homes with 47 – 2-car garages, and 13 – 3-car garages which is a minimum of 135 vehicles, not to mention that the existing home

could also have, at a minimum 3 vehicles, for a total of at least 138 new vehicles. This total does not include visitors, deliveries, or service vehicles which add to the traffic in and out of the Property. That fact alone contradicts the ITE numbers. Third, the ITE numbers are inconsistent with the Greenlined Development Plan at Note 11 confirms that the average daily trips (ADT) is 600. (Dev. Ex. 1B). Mr. Driban did not provide any explanation as to that inconsistency.

Fourth, the Property's location next to Greenspring Station, private schools, Meadowood Park, US Post Office, religious institutions, and Roland Run Swim Club, to name just a few local destinations screams for a TIS which factors in those obvious daily non-peak trips. Greenspring Station, an immense commercial area with medical offices, restaurants, a bank, and retail stores, was not factored in to the number of trips generated. Mr. Driban did not opine that any of the single family housing developments in the ITE were next to a commercial area such as Greenspring Station or near a public park.

Fifth, while the ITE trip generation numbers underestimate the trips to be generated, I note that in support of his Sensitivity Analysis, Mr. Driban testified that "600" vehicles would use Mays Chapel in the morning peak hours, and "1,000s" of vehicles would use Mays Chapel in evening peak hours if the emergency-access-only gate was not approved. The trip numbers increased when advocating for an emergency-only-access gate, but were minimized when addressing trips generated from the development or how the proposed roadway improvements would account for the purported trips generated.

Sixth, I agree with People's Counsel's characterization that the ITE trip generation numbers are based on obsolete studies from 21 states other than Maryland, and included Ontario, Canada and those studies were dated from the 1980s, 1990s, 2000s and 2010s. There was no evidence as to how many studies were from Maryland, or whether any studies were from Baltimore

County and if so, the year of any Baltimore County studies. While Mr. Driban continued to repeat that 200 studies formed the basis for the ITE trips, he conceded that he did not review any of those studies, and none were produced in evidence. (Prot. Ex. 35). As a result, it is unclear whether any of those studies were for single family homes with garages as proposed here. Even still, the ITE informs that for at least 30 of the study sites from the 22 states and Ontario, data on the number of residents and number of household vehicles was *actually available*. However, no such data was discussed by him and no data was produced in evidence. (Prot. Ex. 35).

Seventh, as pointed out by Protestants, the County traffic counts from February 19, 2020 for Falls/Joppa Rd. intersection showed that in the morning peak hours, 1,782 vehicles were northbound, 1,925 were southbound, 259 were westbound, and 585 were eastbound. In the evening peak hours, 1,700 vehicles were northbound, 1,174 were southbound, 340 were westbound, and 726 were eastbound. (Dev. Ex. 25). The volume of existing traffic is an important factor considered in the prior OAH Special Variance cases, and these volumes are not insignificant. What ALJ Stahl saw in the Greenspring case was also present here in that no traffic counts were conducted to produce "real" numbers for existing traffic, or even to focus, supplement or extend the County's February of 2020 traffic counts:

> …. no additional traffic count studies were carried out on the Petitioner's behalf to produce "real" numbers or at least to focus, supplement or extend traffic count studies already available.

Here, I find that these 2020 County numbers show a heavy volume of traffic and should, at the least, have been a red-flag to conduct an accurate, updated traffic count.

Eighth, Mr. Driban's Trip Assignment contained in the TIS where he stated that 60% of traffic from the Project would head southbound toward I-83/I-695, 20% would go eastbound on W. Joppa Rd., 10% would drive north past Falls/Seminary Ave., 5% would head west toward

Meadowood Park, and the remaining 5% would turn left onto Greenspring Valley Rd., was not persuasive. (Dev. Ex. 25). He explained this Trip Assignment was on based on "applying local and regional patterns" where, without explanation, he opined that most traffic from the Project would head toward "urban regional destinations," rather than a local road. These assignments are not only estimates, but are self-serving in that they seemingly only exist to justify the proposed additional left turn lane on Falls/Joppa Rd intersection heading towards I-83/I-695. Yet on the issue of trip assignment, the County's actual traffic counts from February 19, 2020 support the opposite conclusion. The County traffic counts show that for the left-turn lane heading southbound on Falls Rd. toward I-83/I-695, there were only 230 vehicles in the morning peak hours, and 292 in the evening peak hours, contrasted with 1,782 vehicles headed north in the morning, and 1,700 vehicles headed north in the evening. I find it more probable that vehicles from the Project would follow the existing traffic patterns, and head north which is the failing movement. Given that there was no basis to support his "urban regional destination" theory of trips assignment from the Project, his opinion on this issue is unsubstantiated.

Ninth, comparing the County traffic counts of February 19, 2020 (ITS, p. 26 of 79) with the TIS Existing Peak Hour Volumes of Traffic (TIS, p. 8 of 79 – Exhibit 3), Lenhart transposed the County traffic counts for both northbound right turn from W. Joppa Rd. and southbound left turn onto W. Joppa Rd. This mistake made it appear that there were less vehicles heading northbound after turning right onto Falls Rd. from W. Joppa Rd. in both the morning and evening peak hours, as well as less vehicles in the southbound left turn lane onto W. Joppa Rd. from Falls Rd. driving toward, to, or past the Property in the evening peak hours. Specifically, Lenhart transposed the County numbers from the Property turning right at Falls/Joppa Rd. heading northbound: the County's northbound counts were 249 (339), not 230 (292). As a result, there

were actually19 more vehicles in the morning, and 47 more vehicles in the afternoon, turning right from W. Joppa northbound onto Falls Rd. This is not inconsequential given Mr. Driban's testimony that northbound is the failing movement at Falls/Joppa is in the morning peak hours, as well as at Falls/Greenspring Valley in the afternoon peak hours heading toward Seminary Ave.

The other Lenhart error was for the southbound left turn from Falls Rd. onto W. Joppa Rd. driving toward the Property's access in the evening peak hours. The County's southbound counts making the left turn onto W. Joppa Rd. were 318 (255), not 371 (237). While the morning counts turning left decreased, Lenhart's error for the afternoon counts resulted in 18 more vehicles headed in the direction of the Property access point. Both of these errors directly impact the existing traffic numbers and undermine the credibility of the TIS and the traffic engineering opinions expressed at the hearing.

Tenth, in regard the HCM Signalized Intersection Capacity Analysis for Falls/Joppa Rd. intersection, Mr. Driban admitted on cross examination that after the roadway improvements at Falls/Joppa are complete, the delay for three (3) movements (both turning and straight) will be longer than currently exist for the morning peak hours, namely: (1) eastbound left lane ("EBL"); (2) westbound right lane ("WBR"); and (3) southbound thru lane ("SBT"):

Falls/Joppa Intersection	EBL	WBR	SBT
AM Existing Delay (sec)	79.0	62.6	29.8
AM After Improvements Delay (sec)	92.1	67.3	33.5

Additionally, after the improvements are completed, 2 of 3 existing eastbound movements will remain failing: EBL will drop from an 'E' to an 'F', and EBT will remain an "E'. For westbound traffic, all 3 movements will remain failing: WBL will remain at an 'F', WBR will remain an 'E',

and WBT will become an 'E'. For northbound traffic, LOS for NBL will become an 'E'. For southbound traffic, LOS for SBL will become an 'E'.

While it need not be proven that the LOS under the **LCM** changes to a better letter grade due to the nature of that methodology being singularly focused on rating intersections for the Basic Services Map, the same is not true for the LOS under the CLV and the HCM. As indicated, both the CLV and HCM are methods used to measure the impact of the proposed development and/or the impact of proposed roadway improvements. The previous OAH Special Variance cases emphasized that turning movements at the intersection at issue is a significant factor used to analyze the impact of the traffic generated by a development and the efficacy of the roadway improvements. Here, the CLV and HCM were the chosen methodologies and, as shown in the TIS, the LOS will be worse for the morning peak hours at the very intersection where the improvements are proposed. That fact does not help the Developer's case.

Likewise, after the improvements to Falls/Joppa intersection, the afternoon delay for two (2) turning movements (*i.e.* westbound right lane ("WBR") and northbound left (NBL")) will also be longer than currently exists as follows:

Falls/Joppa Intersection	WBR	NBL
PM Existing Delay (sec)	59.9	23.2
PM After Improvements Delay (sec)	63.8	45.8

With regard to LOS in the afternoon peak hours after improvements are completed, two (2) eastbound turning movements will still be failing: EBL will remain at an 'F', and EBT becomes an 'E'. For westbound traffic, all 3 turning movements will still be failing: WBL becomes an 'E', WBT becomes an 'E', and WBR becomes an 'E'. For southbound traffic, SBL becomes an 'E'. (Dev. Ex. 25; Prot. Exs. 36, 37). As with the morning peak hours, the LOS for these turning

movements at Falls/Joppa intersection will be worse after the improvements are completed.

Also, it is not lost that, according to the TIS, Falls/Greenspring Valley intersection (which will not have an roadway improvements) currently has 5 failing movements in the morning peak hours: EBL –'E'; EBT- 'E'; WBL – 'E'; WBT – 'E'; and SBL- 'E'. Similarly, in the afternoon peak hours, there are 3 failing movements: WBL – 'E'; WBT – 'E' and SBL – 'E'. Given that the roadway improvements to Falls/Joppa Rd intersection have not been shown to improve that intersection, there is even less reason to believe that Falls/Greenspring Valley Rd. will improve.

The distance of a failing intersection and the route (access to and from a property) were additional factors considered in the previous OAH Special Variance cases. As applied here, the Falls/Joppa Rd. intersection is the closet intersection to the Property and there was no dispute that it will be heavily used by vehicles going to and leaving the Property. Consequently, its capacity to function, after the proposed improvements, and with the additional traffic from the Project, is worse than the existing capacity.

Eleventh, the HCM Signalized Intersection Capacity Analysis in the TIS incorrectly included the westbound-right turn, southbound-right turn and northbound-right turn lanes in assigning individual letter grades. This resulted in the inflation of the average LOS for the Falls/Joppa Rd. intersection after the improvements are completed. (Prot. Ex. 36, 37). Each of those turns were merge lanes for which vehicles do not go through the light and as such, those vehicles would never be delayed. As a result, when Lenhart averaged all of the letter grades for all of the turning movements, the average letter grade was artificially inflated.

Twelfth, Mr. Driban's testimony was that the proposed roadway improvements are "substantial". As the above facts have already shown that Falls/Joppa Rd. intersection is worse *after the improvements*, I find the Falls/Joppa Rd. roadway improvements are minimal at best.

Thus, it was not surprising that Developer had already proceeded with having design plans for the improvements at Falls/Joppa approved by SHA because the roadways improvements are nothing more than removing a median strip and repainting lines. Worse yet, there are no physical roadway improvements proposed along the northbound direction of Falls Rd. at either Falls/Joppa or Falls/Greenspring Valley intersections to improve the failing movement.

I also find proposed removal of the concrete median combined with the creation of an additional lane of traffic creates an additional safety problem given the substantial number of vehicles that need to navigate in many directions and with several access roads at the Falls/Joppa Rd. intersection. While SHA approved of the improvements, because SHA does not consider Falls Rd. corridor intersections to be failing, there is no harm in repainting the lines and adding an extra lane at Falls/Joppa Rd. Those improvements are at no-cost to the State which has no plans to make physical roadway improvements. The County will never be making improvements to Falls Rd. or Greenspring Valley Rd. since they are State-owned.

As for the Corridor Analysis, it does not validate the proposed roadway improvements to Falls/Joppa Rd. (Dev. Ex. 26). It amounts to projections created using traffic software program to show an overall decrease in delay on Falls Rd. It is not persuasive because it does not breakdown the time purportedly saved at each failing intersection.

Thirteenth, the LOS-CLV Chart confirms that after the proposed roadway improvements to Falls/Joppa intersection are completed, the LOS for the Falls/Greenspring Valley intersection for both morning and afternoon peak hours worsens from a 'B' LOS to a 'D' LOS using SHA ratings. While the LOS-CLV Chart shows that, after the roadway improvements are completed, for the Falls/Greenspring Valley intersection, 3 trips will be added to the morning peak hours and 2 trips will be added in the afternoon peak hours. Likewise, under the CLV analysis, for the

Falls/Joppa intersection, 13 trips will be added to in the morning peak hours, and 16 trips will be added in the afternoon. I do not see these trips as 'negligible' particularly in light of the fact that even after the improvements to Falls/Joppa intersection are completed, there is no mitigation by the Developer at Falls/Greenspring Valley Rd. intersection.

These 13 fallacies with the TIS as expressed above undermine the expert opinions expressed by Mr. Driban. In *Rockland v Stevenson*, 471 Md. 1 (2020), Maryland adopted the *Daubert* standard in regard to expert testimony. By adopting *Daubert*, the Court held that an expert opinion "must provide a sound reasoning process for inducing its conclusion from the factual data and must have an adequate theory or rational explanation of how the factual data led to the expert's conclusion". (*Id*. at 32). "Maryland law makes clear that an expert cannot assert an admissible opinion without an adequate factual basis or reliable methodology." *Giant Food, Inc. v. Booker*, 152 Md. App. 166, 188 (2003). "Our cases hold that an expert's opinion is of no greater probative value than the soundness of his reasons given therefor will warrant. Otherwise stated, we have said that 'an expert's judgment has no probative force unless there is a sufficient basis upon which to support his conclusions." (Id). (quoting *Beatty v. Trailmaster Prods., Inc*., 330 Md.726, 741 (1993). The Court of Appeals has explained:

> The premises of fact must disclose that the expert is sufficiently familiar with the subject matter under investigation to evaluate his opinion about the realm of conjecture and speculation, for no matter how highly qualified the expert may be in his field, his opinion has no probative force unless a sufficient factual basis to support a rational conclusion is shown. The opinion of any expert, therefore, must be based on facts, proved or assumed, sufficient to form a basis for an opinion, and cannot be invoked to supply the substantial facts necessary to support such conclusion. The facts upon which an expert bases his opinion must permit reasonably accurate conclusions as distinguished from mere conjecture or guess.

(Id. at 189) (quoting *Beatty*, 330 Md. at 741. Along these lines, an expert's opinion may not

amount to a 'because I think so' opinion. (*Id*. at 188). For these reasons, the TIS was not compelling evidence to meet the burden of proof necessary for the Special Variance.

5. DPWT – Opposition to Special Variance.

At the HOH, in fairness to Mr. Cauley who works in DPR and not in Traffic Engineering of DPWT, he could only testify as to what he had been told and was not able to testify in any specific detail about the merits of traffic concerns in this case. In the interest of transparency and to seek information, the undersigned had to request the testimony of a DPWT representative, Kris Nebre. Kris Nebre's testimony largely repeated his email to Mr. Driban dated August 16, 2022 that there would be "net zero impact along the corridor." (County Ex. 13). However, in reviewing the chronology of events learned from the documents produced pursuant to the Protestants' PIA request, I find that DPWT's official position, which was well-reasoned and thorough, had already been provided prior to the August 22, 2022 email.

On October 8, 2020, Developer's traffic engineer, Mike Lenhart, submitted to DPWT officials, the TIS dated September 14, 2020. (Prot. Ex. 16). At time of the DPWT emails, Kris Nebre's title was Traffic Engineer III and he was supervised by both Greg Carski, the Bureau Chief for the Bureau of Transportation, and Michael Filsinger, PE, Chief of Division of Traffic Engineering. In addition to Kris Nebre, Terry Curtis, PE, also had the title of Traffic Engineer III. Upon receipt of the TIS, on October 8, 2020, Greg Carski sent an email to Mike Filsinger, Kris Nebre, Vishnu Desai (DPR) and Rahee Famili questioning why a TIS would have been submitted for an 'F' rated traffic shed:

> Why would they do a traffic study for a development in a F level traffic shed? Isn't this development dead on arrival?

(Prot. Ex. 16). By email dated October 13, 2022, Mike Lehart requested a response from the DPWT

officials. (Prot. Ex. 15). In reply, Greg Carski wrote:

> Good Morning Mike – we took a quick peak at the study. As noted, the site falls within a LOS F traffic shed, thus prohibiting development. As you are aware, the LOS F determination based on actual peak hour field observations of the intersection. Theoretical calculations do not override our observations and ratings.
> * * * *

(Prot. Ex. 15). After the October 13, 2020 email, it appears that, based on an email dated October 22, 2020, DWPT officials had a discussion(s) with Developer's representatives in regard to Developer's proposed roadway improvements. (Prot. Ex. 17). On October 23, 2020, Greg Carski circulated those roadway improvements to the Mike Filsinger and Kris Nebre to which Mr. Filsinger replied:

> Let's discuss on Monday – this is interesting that they want to developer in a deficient shed.

(Prot. Ex. 17). On October 27, 2020, Mike Filsinger sent an internal email to Kris Nebre questioning whether the proposed roadway improvements at Falls/Joppa Rd. would help or hurt the Falls/Greenspring Valley Rd. intersection when he wrote:

> Kris – looking at this – the intersection just to the north is failing badly with a 92% load in the NB direction in the PM hours. If the improvements were made to the intersection to the south as the report shows, would it help or hurt the intersection to the north? From a common sense perspective, I can't see that it would help, therefore it would improve the overall failing shed. Your thoughts?

(Prot. Ex. 19). Between October 29 - October 20, 2020, the DPWT officials continued to review the proposed roadway improvements. (Prot. Ex. 18).

By email dated November 13, 2020 (of which both Mr. Filsinger and Kris Nebre were copied), the official response of DPWT was to oppose the development. (Prot. Ex. 18). In that email, Greg Carski wrote that ***improvements would need to be done to all 3 failing intersections***

to handle the additional traffic from the development, and that it was not sufficient to propose improvements to only one intersection for the approval requested:

> Good Afternoon Adam –
>
> In regards to the traffic analysis for the 2310 W Joppa Rd site, we offer the following comments:
>
> The proposed site is currently within a failing traffic shed as identified on the 2020 Basic Service Map. Furthermore, it actually lies within overlapping failing traffic sheds from three failing intersections, Falls Rd & Joppa Rd, Falls Rd & Greenspring Valley Rd and Falls and Seminary Ave. With new traffic being introduced into the three failing intersections, improvements would also need to be done to handle additional traffic at all three intersections. Since we are required to count all three intersections at the same time per the county council bill, the three intersections along the Falls Rd Corridor from Joppa to Seminary must be analyzed together. Because of this council bill which combines the corridor into one study, the increased traffic along the corridor needs to be accounted for and improvements would also be needed at the three intersections. Because of the special conditions that are in place to study this corridor and the fact that we have overlapping traffic sheds, it is not sufficient to propose improvements to only one intersection for the approval of this site.
>
> Given the above, we have noted that the report calls for proposed changes to the signal/striping/geometrics at the Joppa/Falls Rd intersection. The change is to remove the split phasing and go to a more conventional phasing. In addition, lane assignments were changed along Joppa and Falls to allow for double left turns on both legs. Since the proposal is to remove the split phasing, we believe that the dashed lines providing guidance to the drivers making that movement are extremely close to one another and we would have concerns making that movement. Unfortunately, the geometry of the intersection in our opinion would not be conducive to allowing this movement without the split phasing. Additionally, it does not appear that the proposed changes would bring the intersection of Falls Rd/Joppa Rd out of the failed rating given the fact that the level of service following the improvements with site traffic is worse than the existing level of service. Clearly the changes would not ameliorate the currently failing intersection.
>
> Based upon the above information, this report does not justify approval of the additional development within the failing traffic

shed.

Please contact us if you have any questions. Thank you.

Greg
Gregory W. Carski, Bureau Chief
Bureau of Transportation
410-887-3554

(Prot. Ex. 18). As of that date, DPWT's objection was that the improvements were only proposed to Falls/Joppa Rd., along with the removal of split-phasing signal timing in place of conventional phasing. The roadway improvements proposed today are the same ones proposed in 2020 and proposed adding a left turn lane to the eastbound and westbound of Joppa Rd. The DPWT email expressed concern with the removal of split-phasing signal timing. Significantly, DPWT wrote that the 'level of service following the improvements with site traffic *is worse than* the existing level of service.' (Id.). As a result, the position of DPWT was that the TIS did not 'justify approval of the additional development within the failing traffic shed.' (*Id*.).

Dissatisfied with DPWT's position, an internal email dated November 24, 2020 between Mike Filsinger, Greg Carski and Kris Nebre notes that, the Developer was then asking whether '…with the improvements will the intersection operate better than existing.' (Prot. Ex. 19). That email ends with the Developer's deadline for DPWT to respond by 'early next week.' (*Id*.).

By December of 2020, the TIS reads that it was modified slightly to retain the existing split signal-phasing but the same left turn lanes were proposed for the east-west directions. (Dev. Ex. 25, p. 4). In Memorandum dated December 9, 2020 which is attached to the TIS, Lenhart responded to comments posed by SHA from December 1, 2020 and from DPWT dated December 3, 2020. (Dev. Ex. 25). In that Memorandum, Mike Lenhart wrote that the 100 ft long concrete median on W. Joppa Rd. which was proposed for removal, did not serve any significant purpose,

and its removal would assist with snow plowing. With regard to the intersection of Falls/Greenspring Valley Rd., one comment (Comment #3) from MDOT SHA Office of Traffic and Safety noted that the LOS at that intersection was 'F" in the AM and "D" in the PM and that eastbound Greenspring Valley Rd. was not a free right turn as the lane became a mandatory right turn after the signal.

Developer produced an email dated January 15, 2021 from Mike Filsinger to Counsel for Developer stating that the proposed roadway improvements would mitigate the increased traffic generated by the Project:

> Adam,
> Hope this is what you are looking for:
> While the proposed development is located within a failing traffic shed, the proposed improvements associated with the traffic impact study will mitigate the increased traffic generated by the proposed development. Any questions, let us know.
>
> Mike Filsinger, PE
> Chief Division of Traffic Engineering

(Dev. Ex. 30).

Importantly, at the HOH there was no testimony by Mike Filsinger, Greg Carski or DPWT to explain what facts had changed to reverse course if that was what it was. In my view, in order for the Developer to meet its burden of proof under *Elm Street*, *supra*, there needed to be evidence as to what relevant facts had changed after the DPWT's November 13, 2020 email. The proposed roadway improvements to Falls/Joppa Rd. were the same, and there were no improvements being made to Falls/Greenspring Valley Rd. Although Mr. Driban testified that he believed that Mike Filsinger's January 15, 2021 email was the official approval of DPWT for the Special Variance Petition, Mr. Driban's thoughts about Mr. Filsinger's email do not rise to the level of testimony of County witnesses, particularly in light of the *subsequent DPWT emails* after January 15, 2021 which made clear that the

opposite was true.

Moreover, given the failing traffic shed which has existed for decades where the Property is located, comparing this January 15, 2021 Filsinger email with Mr. Filsinger's comment to Kris Nebre on October 27, 2020 indicating his concern that "from a common-sense perspective," Mike Filsinger did not see the proposed improvements to Falls/Joppa Rd. as improving the failing Falls/Greenspring Valley intersection. Mr. Filsinger's comment on October 27, 2020 was consistent with the DPWT November 13, 2020 official position in opposition to the Project, which is evidence that DPWT was not convinced that the proposed roadway improvements at Falls/Joppa Rd. would have any meaningful impact on Falls Rd/Greenspring Valley Rd. intersection. Even more, I find that the Filsinger email of January 15, 2021 could not actually be DPWT's official position because otherwise it would have been found in the Development File, and/or in the Special Variance file; however, it was not. This cannot actually be DPWT's official position, because it did not provide notice to anyone, or even other County agencies reviewing the Development Plan, other than the Developer.

The chronology continues in that, after the Mike Filsinger January 15, 2021 email, DPWT then issued both a DPC comment dated August 12, 2021, and a separate ZAC comment dated September 20, 2021, which expressed failings of the TIS and opposition to the Project. The DPWT DPC comment entitled *Baltimore County Department of Public Works & Transportation, Development Review – Agenda and Approval* was acknowledged by Kris Nebre at the HOH as one that he worked on with DPWT representatives, and which contains his initials 'KN' in the 'Traffic' section. (PC. Ex. 6). The 'Miscellaneous Comments' section makes clear that DPWT wanted to be sure that PAI considered its opposition particularly because it was being submitted *after the DPC* on August 11, 2021:

MISCELLANEOUS COMMENTS	These comments are coming in after the DPC. We are asking PAI to take these into consideration.

(PC Ex. 6). This Miscellaneous Comment shows the *ongoing concern* that DPWT and Kris Nebre still had for the traffic problems in this traffic shed even after the Mike Filsinger January 15, 2021 email.

In the DWPT DPC comments, DPWT expressed concern about worsening of traffic problems at Falls/Greenspring Valley Rd. As noted therein, DPWT saw a bias in the TIS, that there was a relationship between the existing traffic on Falls Rd., the additional traffic to be generated by the Project, and the worsening of traffic at Falls Rd. and Greenspring Valley Rd. due to the proposed emergency-access-only gate:

> Comments:
>
> Traffic
>
> We have received and reviewed the Greenspring Station Development – Supplemental Traffic Impact Study. We offer the following comments:
>
> A TIS needs to present an unbiased view of traffic conditions pre/post development. This study was clearly written with the bias not to provide the required connection to Mays Chapel Rd. This connection is required by DPWT due to amount of homes (over 100) in The Meadows of Greenspring community. It should be a traffic impact not a "sensitivity analysis".
>
> The report does not note that the proposed development is in LOS F Traffic Shed. It also falls to mention the 3 LOS F rated intersections along Falls Rd.
>
> **The analysis clearly shows a reduction of critical lane volumes at the subject intersections along Falls, due to the bypass traffic generated from the extension of Mays Chapel acting as permanent connecting road from Seminary to Joppa, and with the increased capacity from the proposed improvements by the developer at Falls & Joppa**. The benefits of the connection to Falls Rd is glossed over.
>
> Furthermore, the conclusion stated on the cover letter says that the Mays Chapel connection is not recommended. It then is stated that

> Falls Rd. is designed to handle significant volumes more than Mays Chapel which is obviously true. However, this development is currently in an 'F' traffic shed, which by definition is at capacity and cannot handle anymore volume. **The initial report which did not have the Mays Chapel bypass accounted for, already showed an increase of CLV at Falls and Greenspring Valley at full build out conditions**. The supplemental report does not address Falls and Seminary with the scenario of no bypass with full build out. In accordance to the ordinances tied with the basic service map, this development should have some improvement to result in 0 net critical volume trips added to the affected 'F' intersections along Falls Rd.

(PC. Ex. 6). Using the CLV analysis, Falls/Greenspring Valley Rd. would be worse after the Project was built. The Traffic Engineers within DPWT present a neutral, objective view of the actual conditions and their real concerns with adding traffic to this failing traffic shed. This is particularly true given that as with all development plan files, DPWT issued this DPC comment in the normal course of reviewing the Development Plan here. I find that, if DPWT's official position on the development plan was already expressed in Mr. Filsinger's January 15, 2021 email to the Developer, there is no need to issue this DPC comment. This DPWT DPC comment was contained within the Development Plan file.

Additionally, after the DPC comment was issued and provided to PAI, DPWT issued a ZAC comment dated September 20, 2021 which was filed in the companion Special Variance file, Case No.: 2021-0250-ASA. (County Ex. 12B). Terry Curtis, PE of DPWT wrote the ZAC comment and copied Kris Nebre. While the DPWT ZAC Comment is nearly verbatim of the DPWT DPC Comment, it added a new sentence at the beginning which was not found in the DPWT DPR comment, definitively expressing that DPWT's position was to deny the Petition for Special Variance:

> * * * *
> **The Department of Public Works and Transportation (DPWT) Bureau of Traffic Engineering and Transportation Planning**

feels this request must be denied based on the following reasons. We have received and reviewed the Greenspring Station Development – Supplemental Traffic Impact Study. We offer the following comments:

1) A Traffic Impact Study needs to present an unbiased view of traffic conditions pre/post development. This study was clearly written with the bias not to provide the **required** connection to Mays Chapel Road. This connection is **required** by DPWT by regulation due to amount of homes (over 100) in The Meadows of Greenspring community. It should be a traffic impact study not a "sensitivity analysis".

2) The report does not note that the proposed development is in LOS F Traffic Shed. It also fails to mentioned [sic] the 3 LOS F rated intersections along Falls Road.

3) **The analysis clearly shows a reduction of critical lane volumes at the subject intersection along Falls, due to the bypass traffic generated from the extension of Mays Chapel acting as permanent connecting road from Seminary to Joppa, and with the increased capacity from the proposed improvements by the developer at Falls & Joppa.** The benefits of the connection to Falls Rd is glossed over.

4) Furthermore, the conclusion stated on the cover letter says that the Mays Chapel connection is not recommended. It then is stated that Falls Road is designed to handle significant volumes more than Mays Chapel which is obviously true. However, this development is currently in an 'F' traffic shed, which by definition is at capacity and cannot handle anymore volume. **The initial report which did not have the Mays Chapel bypass accounted for, already showed an increase of CLV at Falls & Greenspring Valley at full build out conditions.** The supplemental report does not address Falls & Seminary with the scenario of no bypass with full build out. In accordance to the ordinances tied with the basic service map, this development should have some improvements to result in net critical volume trips added to the affected 'F' intersections along Falls Rd.

If you have any questions please feel free to contact me anytime.

Terry Curtis, Jr.
Engineer III
Department of Public Works and Transportation

(County Ex. 12B). As occurs with all zoning files, this DPWT ZAC comment was issued in the normal course of reviewing the Petition for Special Variance here. There is no ambiguity in DPWT's position. It is obvious to me that there was clear coordination by DPWT, Kris Nebre and Terry Curtis to be consistent in reviewing the Development Plan and Special Variance Petition. Accordingly, the official position of DPWT was, once again, to deny the Special Variance.

The DPWT DPC and DPWT ZAC comments were also the basis for the original postponement of the Case in November of 2021. The email written by Kris Nebre to Mr. Driban dated August 16, 2022 came after the Case was already postponed. Unlike the *Torch Hill* case where 8 vehicles were projected to be generated from that development and the proposed lengthening of the left turn lane prior to Falls/Seminary Avenue accounted for those 8 vehicles, the additional left turn lanes proposed east-west for Falls/Joppa Rd. does not result in a net zero impact within the traffic shed. It results in worsening of conditions at both Falls/Joppa Rd. and Falls/Greenspring Valley Rd.

5. Developer's Proposed Falls/Joppa Rd. Roadway Improvements - Falls/Greenspring Valley Rd. Intersection.

Both DPWT 2021 comments are consistent with Mike Filsinger's original email to Kris Nebre dated October 27, 2020 wherein Mike Filsinger did not see the proposed improvements to Falls/Joppa Rd. as improving the failing Falls/GreensprFing Valley intersection. And there is no doubt that the Developer's traffic engineer recognized DPWT's continuing concern about Falls Rd./Greenspring Valley Rd. because Mr. Driban then prepared and filed with SHA a document entitled "Supplemental Analysis for 2310 Joppa Road Traffic Impact Study" dated January 19,

2022, which for the first time proposed roadway improvements to Falls Rd./Greenspring Valley Rd. intersection. (Dev. Ex. 20). Those roadway improvements, as shown on an aerial photograph, included adding a left turn lane for vehicles headed north toward Falls/Seminary Ave. (Dev. Ex. 19).

Unfortunately for the Developer, by letter dated March 7, 2022, SHA rejected the proposed Falls Rd/Greenspring Valley Rd. improvements and instead, asked the Developer to make improvements to Falls/Seminary Ave. which SHA described as a 'critical intersection', or to the beltway (I-695):

> 1. The new lane will only hold 2 cars. The lane will get blocked, and people will not want to use the lane because it drops immediately. It does not seem a significant amount of capacity will be added.
>
> 2. The lane drop looks too small for the double left turn incoming volumes at MD 25 @ MD 130. A high volume of vehicles would have to merge into the lane drop.
>
> 3. Please consider looking at the intersection of MD 25 @ MD 131 (Seminary), which is a critical intersection, or the beltway for mitigation efforts.
>
> 4. The left turning path should be able to accommodate for the biggest trucks (WB40/WB50) regardless of the current truck restrictions. The turning path crosses the island even in the cut median, which is highlighted by the green line.
>
> 5. The island toward the north is planned to be reduced. However, the island at the south might also need to be reduced because the turning path crosses the shoulder and almost touches the median.

(Dev. Ex. 20). The SHA response here informs of at least 2 existing problems with the north and south medians at Falls/Greenspring Valley Rd.

After SHA rejected the proposed Falls/Greenspring Valley Rd. improvements, Mr. Driban testified, and Ms. Kuhn of SHA confirmed, that Mr. Driban resubmitted the same improvements for Falls Rd/Greenspring Valley Rd. a second time. Unfortunately for the Developer, SHA again

rejected those improvements. (Dev. Ex. 21).

With the second rejection by SHA, and knowing the County's concern for the negative impact on Falls Rd. Greenspring Valley Rd., the "Corridor Analysis" chart purports to make up for the lack of physical improvements to Falls/Greenspring Valley Rd., or to anywhere else along the Falls Rd. corridor, by contending that there will be an overall time savings after SHA retimes each of the signalized intersections. I am not persuaded by the Corridor Analysis as it does not show the alleged savings in delay times at each intersection.

Because of the negative impact to Falls/Greenspring Valley Rd. within this traffic shed, I find that the TIS does not show mitigation of the increased traffic generated by the proposed development.

B. <u>Emergency-Access-Only Mays Chapel Gate Connecting Mays Chapel Rd</u>.

Seeking to gain the support of the Meadows and Boxwood communities, the Developer's proposal is that the Mays Chapel Gate be an emergency-access-only gate, rather than a thru-street. Indeed, the Greenlined Development Plan expressly describes that the May Chapel Gate is being proposed as an emergency-access-only gate. Accordingly, the issue is whether, as proposed, the Mays Chapel Gate, as emergency-access-only, meets all development policies, rules, and regulations. BCC, §32-4-229(b)(1); not whether the undersigned should change the Developer's Greenlined Development Plan proposal to a thru-street.

Throughout the HOH, the Mays Chapel Gate became a tense issue which pitted the residents of The Meadows and Boxwood communities against the adjoining neighborhoods of Seminary Ridge and Heatherfield. As shown by their Petitions, the Meadows (99 homes) and Boxwood communities (27 homes) were entirely opposed to the Project (other than the one resident who was out-of-the-country when the Petition was circulated). (Prot. Exs. 33, 34).

Additionally, the Meadows and Boxwood communities only wanted the Mays Chapel Gate to be emergency-access-only *if* the Project was approved. Their collective testimony described their neighborhood as an enclave with internal, walkable streets used daily by residents for exercising and socializing which would be permanently changed if Mays Chapel Gate was permitted as a thru street. Both The Meadows and Boxwood communities access Seminary Rd. via Mays Chapel Road. There are currently 4 homes which front on Mays Chapel Rd. Conversely, while the Seminary Ridge and Heatherfield communities were equally opposed to the Project, if approved, they advocated for a permanent thru-street to redirect the cut-thru traffic away from Tally Ho Rd.

DPR Policy Manual, XIII.B reads as follows:

> B. ACCESS GUIDELINES 1. Maximum Number of Units with One Means of Access
>
> a. Limits of Units
>
> - 100 units with no future street extension proposed
>
> - 150 units when a future street extension is proposed and is feasible
>
> - >150 ↑ 2"d means of access must be constructed
>
> b. Exception These limits may be increased when restricted by a limited or controlled access highway or other physical barrier or limitation as advised by the Department of Public Works
>
> c. Emergency access points in place of full-use access points generally will be discouraged, but may be approved in unusual circumstances.

(Prot. Ex 9). DPR in its DPC comment dated August 10, 2021 stated that the proposed emergency-access-only gate was not permitted as follows:

> Since the number of (off-site) units are over 100, Mays Chapel needs to be a full access road and not an emergency access road.

(County Ex. 12A, p. 8). At the HOH, DPR representative Eugene Cauley, PE, further explained

that DPR could not recommend approval of the Greenlined Development Plan because the total units in the Meadows and Boxwood communities, combined with the 61 units in this Project, totals 126 units. Therefore, under DPR's interpretation, a full access road is required by DPR Policy Manual, XIII.B.

DPR, as the County agency whose Manual and policy is at issue here, has the authority to interpret and administer DPR Policy Manual, XIII.B. The Court of Appeals in *Marzullo v. Kahl*, 366 Md. 158, 783 A.2d 169, 177 (2001), quoting *In Board of Physician Quality Assurance v. Banks*, 354 Md. 59, 729 A.2d 376 (1999), held that an administrative agency's interpretation and application of the statute which the agency administers should ordinarily be given considerable weight by reviewing courts. *Lussier .v Md. Racing Commission*, 343 Md. 681, 696-697, 684 A.2d 804, 811-812 (1996), and cases there cited; *McCullough v. Wittner*, 314 Md. 602, 612, 552 A.2d 881, 886 (1989) ('The interpretation of a statute by those officials charged with administering the statute is . . . entitled to weight'). Furthermore, the expertise of the agency in its own field should be respected. *Fogle v. H &G Restaurant*, 37 Md. 441, 455, 654 A.2d 449, 456 (1995); *Christ [ex rel. Christ] v. Department of Natural Resources*, 335 Md. 427, 445, 64 A.2d 34, 42 (1994) (legislative delegations of authority to administrative agencies will often include the authority to make 'significant discretionary policy determinations'); *Bd. of Ed. For Dorchester Co. v. Hubbard*, 305 Md. 774, 792, 506 A2.d 625, 634 (1986) (application of the State Board of Education's expertise would clearly be desirable before a court attempts to resolve the legal issues).

Accordingly, based on DPR's opposition , I find the Greenlined Development Plan must be denied because the proposed emergency-access-only gate violates DPR Policy Manual, XIII under BCC, §32-4-229. Moreover, given that the Developer's proposal for Mays Chapel is emergency-access-only and not a full access road, that proposal can only be approved or denied;

the undersigned will not rectify this policy non-compliance by changing the Mays Chapel Gate to a full access road, in order to approve the Greenlined Development Plan.

I also note that in its original review of the Development Plan and Petition for Special Variance, DPWT agreed with DPR's interpretation of the DPR Policy Manual. The facts reveal that two days after the DPR comment above, DPWT took a definitive position that the Mays Chapel Gate must be permanently open. (PC Ex. 6). That DPWT DPC comment dated August 12, 2021 was initialed by Kris Nebre 'KN', and confirms that DPWT was also requiring the Mays Chapel remain open as a thru street:

> A TIS needs to present an unbiased view of traffic conditions pre/post development. This study was clearly written with the bias not to provide the required connection to Mays Chapel Rd. This connection is required by DPWT due to amount of homes (over 100) in The Meadows of Greenspring community. It should be a traffic impact study not a "sensitivity analysis".

* * * *

(County Ex. 12A; PC Ex. 6). In that DPWT DPC comment, the impact of the Mays Chapel Gate on traffic was described by DPWT. DPWT noted that, prior to changing the Mays Chapel Gate to emergency-access-only, the Developer's TIS showed an *improvement* in traffic conditions (reduction in critical lane volumes) along Falls Rd. However, with the Mays Chapel Gate as emergency-access-only, the traffic at Falls and Greenspring Valley Rd. intersection <u>increased</u>:

> The analysis clearly shows a reduction of critical lane volumes at the subject intersections along Falls, due to the bypass traffic generated from the extension of Mays Chapel acting as permanent connecting road from Seminary to Joppa, and with the increased capacity from the proposed improvements by the developer at Falls & Joppa. The benefits of the connection to Falls Rd is glossed over.
>
> * * * *
>
> The initial report which did not have the Mays Chapel bypass

> accounted for, already showed an **increase of CLV at Falls & Greenspring Valley at full build out conditions**.

(*Emphasis Added*). (*Id*.). A little over 1 month later, Terry Curtis, PE of DPWT issued the nearly identical ZAC comment on September 20, 2021 which was contained in Case No.: 2021-0250-SPH in its review of the Special Variance case here. (County Ex. 12B; PC Ex. 6).

In its Post-Hearing Memorandum, Developer states that the DPWT DPC comments were not presented to PAI. Yet, there was no evidence of that; the DPWT DPR comment expressly state that the comments are for PAI's review. Nevertheless, the nearly identical comment was in the Petition for Special Variance file. On this issue, it is unclear why, after the DPWT DPC comment and the DPWT ZAC comment, that the DPWT HOH Report dated August 26, 2022, deferred the Mays Chapel Gate issue to the undersigned, rather than just reasserting its prior position. (County Ex. 12D). When asked at the HOH about the Mays Chapel Gate and its impact on DPWT's recommendation of the Greenlined Development Plan, Kris Nebre testified that DPWT would not take a position, and that this issue was for DPR. Accordingly, based on the DPWT DPC comment and the DPWT ZAC comment that the Mays Chapel Gate does not comply with DPR Manual Policy XIII, is another reason that the Greenlined Development Plan under BCC, §32-4-229 must be denied.

The Developer asserts that the proposed emergency-access-only gate qualifies under the exception in the DPR Policy Manual XIII.B.c. because there are 'unusual circumstances' warranting such a gate with this Project:

> c. Emergency access points in place of full-use access points generally will be discouraged, but may be approved in unusual circumstances.

With this issue, the Developer in its Post-Hearing Memorandum, uses the failing intersections

within the traffic shed to suggest approval of the emergency-access-only gate is warranted. I do not find that there are any 'unusual circumstances' presented in this Case. To the contrary, it is merely the Property's location within failing traffic shed. This is a typical development proposal where the maximum number of homes is being proposed within the allowable density located within a congested area. An exception is not warranted here.

In addition to the non-compliance with the DPR Policy Manual, XIII, I also find that the Mays Chapel Gate as emergency-access-only does not comply with BCZR, §260.4.A.1 – *Residential Performance Standards* which requires:

> A. A development proposal shall:
>
> > 1. Provide for at least one street connection to an adjoining neighborhood or an adjoining property, not including the principal access to the subdivision, in order to facilitate good traffic circulation.

(PC. Ex. 13). As proposed, the emergency-access-only gate does not provide for the street connection between the Property and the Meadows/Boxwood communities. The effect of the emergency-access-only gate is to have abutting residential communities which do not have a street connection between them; only emergency vehicles would be permitted to drive between those neighborhoods. As a result, because the Greenlined Development also violates BCZR, §260.4.A.1, it cannot be approved under BCC, §32-4-229.

C. <u>Lack of Sewer Capacity</u>.

Greenlined Development Plan at Note 3 reads that the Property is located in an 'Area of Concern' on the 2020 Basic Services Map Sewer Deficient and Areas of Concern. (Dev. Ex. 1B, DPR, Note 3). On the 2021, 2022 and 2023 Basic Services Maps, the Property is still located in 'Area of Concern'. (Prot. Exs. 92, 93, 95). Unlike the sewer capacity here, the sewer capacity in

Torch Hill was not located within an 'Area of Concern' on the Basic Services Map. In the Growth Management Act, and Basic Services Map, BCZR, §4A02.4.C.2, states that sewage capacity must be capable of serving already established uses, and new uses likely to be established.

In the *Torch Hill* Case, there was clear evidence from DPWT that there was adequate capacity in the sewer segments stemming from the Property. The County support was derived from the following evidence: (1) an email from Dave Bayer, PE dated September 2, 2021 (Torch Hill, Dev. Ex. 19); (2) DPR/DPWT – DPC comment dated November 1, 2021; and (3) the testimony of DPR representative at the *Torch Hill* HOH. To be clear, the sewage path for *Torch Hill* development is not the same path here. The sewage path here flows through Metered basins BC05, BC22, BC18, BC31, and TSJF01. (Prot. Exs. 62, 63; 78). (Dev. Ex. 44).

In this case, I am faced with a Property which has continued to be designated by DPWT as an 'Area of Concern' on the 2023 Basic Services Map and prior Maps, coupled with reports of consultants hired by the County, that overcapacity defects and model-predicted SSOs are within this sewage path from this Property. While I do not disagree with the Developer's position that the testimony of Protestants' expert witnesses, at times, focused on what, their view, the County's obligations were under the Consent Decree, and the County's obligation (or not) to provide information to Baltimore City, or the City's obligations to the County under the City's separate Consent Decree, this is not an enforcement case against the County or the City. I am charged with determining whether the sewerage from this Property, created by the proposed Project, along with the existing sewage, will flow through an adequate, safe and efficient sewer system which is in compliance with all County regulations and policies. In that regard, this Order and Opinion will only focus on the issue at hand.

In examining the adequacy of the sewer capacity for this Project, a review of the

chronology is enlightening. It begins by way of email dated August 26, 2020 from Developer's engineers asking DPWT whether there was "adequate capacity in the downstream sewer system for [62 sic] new single family detached homes." (Dev. Ex. 55). DPWT's email response dated September 4, 2020 from Lisa Eicholtz, PE, Chief of Sewer Design Section to Matthew Bishop, Developer's landscape architect, was that the 8 sewer segments of 8 inch pipes immediately downstream from the Property (MH 43794 - MH 43786), do not have adequate capacity for the proposed 62 homes. (Dev. Ex. 55). DPWT's email sheds light on the lack of capacity:

> Matt,
>
> We've reviewed your request and determined the following 8" sewer segments do not have adequate capacity to accommodate the proposed 62 home subdivision at 2310 West Joppa Road:

Upstream MH	Downstream MH	Length	Diameter	Status
43794	43793	137.96	8"	
43793	43792	192.31	8"	
43792	43791	87.36	8"	Part of Hopkins project
43791	43790	60.00	8"	Part of Hopkins project
43790	43789	316.80	8"	Part of Hopkins project
43789	43788	232.57	8"	Part of Hopkins project
43788	43787	159.01	8"	Part of Hopkins project
43787	43786	76.00	8"	Part of Hopkins project

> As noted in the table shown above, six of the segments are included in the Hopkins project which has not been constructed. As we discussed on the phone, my understanding is that there is an outstanding right-of-way issue that is holding up the project. Vishnu Desai from Development Plans Review may be able to offer more information on the status of that sewer replacement project.
>
> Dave Bayer of Sewer Design had a copy of the drawing showing the work that was to be completed by Hopkins. The drawing is attached for your reference.

(Dev. Ex. 55). The sewer segments for which Johns Hopkins was to repair/replace are shown on My Neighborhood map. (Prot. Ex. 88). The above DPWT email regarding easement issues is consistent with the testimony of Sr. Kathleen McNany, 2229 W. Joppa Rd. Sr. McNany testified

that in 2017, she was approached by a representative from the County in regard to widening the existing sewer easement on the Monastery property by 15 ft, in order to enlarge the sewer pipes from 8 inches to 12 inches. She testified that she understood this request was part of the Johns Hopkins buildings to be constructed at Greenspring Station. After that contact in 2017, Sr. McNany stated the Monastery was not again contacted.

As part of their PIA request, Protestants obtained an internal memo dated March 3, 2021, from Dave Bayer, PE who was then the Acting Chief of Sewer Design Section, to Vishnu Desai, Supervisor in DPR which reads the same as the above Lisa Eicholtz email to the Developer:

> 18. The following existing 8" sewer segments do not have adequate capacity to accommodate the proposed 61 home subdivision at 2310 West Joppa Road, known as Greenspring Manor:
>
> | Upstream MH | Downstream MH | Length | Diameter | Status |
> |---|---|---|---|---|
> | 43794 | 43793 | 137.96 | 8" | |
> | 43793 | 43792 | 192.31 | 8" | |
> | 43792 | 43791 | 87.36 | 8" | Part of Hopkins project |
> | 43791 | 43790 | 60.00 | 8" | Part of Hopkins project |
> | 43790 | 43789 | 316.80 | 8" | Part of Hopkins project |
> | 43789 | 43788 | 232.57 | 8" | Part of Hopkins project |
> | 43788 | 43787 | 159.01 | 8" | Part of Hopkins project |
> | 43787 | 43786 | 76.00 | 8" | Part of Hopkins project |
>
> Six of the segments noted above were to be addressed by the Johns Hopkins at Greenspring Station development prior to issuance of their use and occupancy permit. PAI did not enforce this requirement and the project was completed without the necessary sewer system improvements being completed. **The Greenspring Manor development may not connect to public sewer until the agreement with Johns Hopkins at Green Spring Station is enforced and all sewer improvements are completed, including the additional improvements to segments 43794-43793 and 43793-43792 noted in the above table**.
>
> 19. Developer is responsible for acquisition of off-site easements for downstream sewer improvements.

(Prot. Ex. 13). The contents of that internal County Memo were then inserted into DPWT CPC comment dated March 8, 2021. (Prot. Ex. 12)

There were additional emails obtained by the Protestants through a PIA request. On March 15, 2021, after the CPC occurred on March 9, 2021, the then-Executive Director of VPC sent an email to the Acting Chief of Bureau of Engineering and Construction in DPWT, Jeffrey Peluso, PE, inquiring about information that was discussed by DPWT during the CPC (*i.e.* that Johns Hopkins work on the sewer segments was required as part of the approval of the surgical center at Johns Hopkins Medical at Greenspring Station). (Prot. Ex. 89). By that point, the VPC email confirms that the surgical building was constructed and occupancy permits had been issued. Indeed, the GTA spreadsheet indicates that, based on SDAT records, John Hopkins Pavilion III (110,000 sf) was constructed between 2019-2021. (Prot. Ex. 31).

In order to answer the VPC email, the same day, Jeff Peluso, PE sent an email to Dave Bayer, PE with a copy to Lisa Eicholtz, PE, inquiring as to the status of the Johns Hopkins sewer work. David Bayer, PE timely responded the same day stating the following:

> Hopkins' engineer just stopped working on the project.
> They never got the permits that are needed, and they never acquired the offsite right of way that is needed.
> PAI issued the occupancy for the building without requiring that Hopkins fulfill their obligations in accordance with the agreement.

(*Id*.). Given that the CPC had occurred on March 9, 2021, and the CIM was scheduled for April 27, 2021, Jeff Peluso, PE followed up with another email dated March 22, 2021 to Dave Bayer, PE and Lisa Eicholtz, PE asking the following questions:

> 1. Was Hopkins to prepare all plans and specifications along with permits for [the] their project? If so, were we (Engineering) sending it up to contracts? Who is responsible for securing the R/W?
>
> 2. Does this feed the Jones Falls Sewershed (Lafferty)?
>
> 3. If Hopkins didn't do the improvements, what are the ramifications of their new connection?
>
> 4. If Greenspring Manor were to continue through development, is there

> another way to provide capacity? Is there a "breaking point" for Greenspring Manor (no. of units)?

(Prot. Ex. 90). Dave Bayer, PE responded the same day that **no units could be built at the Property without causing an SSO**:

> 1. Yes, as outlined in the MOU Section 2, Hopkins was to prepare the drawings, and get all of the permits and off-site right-of-way. Yes, we agreed to manage the Contract from Request to Advertise through construction after we received all of the BLD Ready Documents and the easements were acquired by Hopkins.
>
> 2. Yes.
>
> 3. Sanitary sewer overflows.
>
> 4. Storage (and DPW has been opposed to that option) would be one option, finding another location that avoids the capacity deficient areas would be another option, however, we believe that option would be unfeasible.
> Zero is the "breaking point" of number of units that could be built without causing an SSO.

(Prot. Ex. 90). This internal email by and among the County civil engineers in the Sewer Design Section (Bayer, Eicholtz and Peluso) who are charged with, and have special knowledge of the County sewer system, were unequivocal that, *as of March of 2021*, there were "capacity deficient areas" within the sewer path from the Property. Conclusively, they determined that <u>zero units</u> could be built at the Property without causing SSOs. Additionally, the County engineers did not agree with alternative capacity options.

Only two months later, on May 27, 2021, the 2021 RJN Performance Assessment was issued and sent to Dave Bayer, PE. (Prot. Ex. 78 – See Cover Letter). By way of Map 2 attached therein, it confirmed that the only work actually performed as recommended by the SRRR 2012 Plan within the sewage path from the Property were 2 minor repairs:

- "Inflow Insert & Replace Frame and Cover" (yellow circle inside green square); and

- "Inflow Insert & Grout Bench and Riser" (yellow circle inside pink square).

(Prot. Ex. 78). Additionally, Map 3 of the 2021 RJN Performance Assessment supports Dave Bayer's PE's concern for SSOs in that for the County-chosen storm events (i.e. the 2 yr/6 hr and 10 yr/6 hr), there are model-predicted SSOs along the sewage path of the Property. (*Id*.). Consistent with Mr. Bayer's opinion that SSOs would result from the construction of any homes for this Project, these model-predicted SSOs are not only within the Johns Hopkins' sewer segments (Prot. Ex. 88), but are also downstream of the Johns Hopkins' segments, and again within the Project's sewer flow path. (Prot. Ex. 78, Map 3). I place great amount of weight on expertise and knowledge of DPWT engineers and shown in the DPWT CPC comment and Dave Bayer's internal email to DPWT colleagues, that if any homes were added to the sewer system, SSOs will occur. (Prot. Ex. 89, 90). Weighed against the DPWT engineers' collective judgment, Mr. Lessner's testimony in rebuttal that these model-predicted SSOs should not be outcome-determinative here because they have not been field-verified, and because no SSOs have been reported within the last 3 years on the Quarterly/Annual Reports, is not convincing.

As part of their PIA request, Protestants also obtained an internal memo dated August 2, 2021 from Lisa Eicholtz, PE, Chief of Sewer Design Section to Vishnu Desai, Supervisor in DPR again reiterating that the sewer segments lacked capacity for the proposed homes:

> The following eight 8" sewer segments do not have adequate capacity to accommodate the proposed 61 home subdivision at 2310 West Joppa Road, known as Greenspring Manor.

Upstream MH	Downstream MH	Length	Diameter	Status
43794	43793	137.96	8"	*
43793	43792	192.31	8"	*
43792	43791	87.36	8"	Part of Hopkins project
43791	43790	60.00	8"	Part of Hopkins project
43790	43789	316.80	8"	Part of Hopkins project
43789	43788	232.57	8"	Part of Hopkins project
43788	43787	159.01	8"	Part of Hopkins project
43787	43786	76.00	8"	Part of Hopkins project

* required sanitary sewer upsizing from 8" to 12" by this developer is shown on the development plan.

Six of the segments noted above were to be addressed by the Johns Hopkins at Greenspring Station development. To date, these improvements have not been completed.

Issuance of Use and Occupancy permits for the residential units at Greenspring Manor development should be subject to completion of the system improvements noted above, including those Johns Hopkins at Greenspring Station is obligated to complete.

(Prot. Ex. 14). All of this evidence shows DPWT has maintained the same position on the lack of sewer capacity.

By August 10, 2021, during its review of the Development Plan here, DPR/DPWT issued a DPC comment which was also consistent with both the CPC comment and with the DPWT emails above:

20. The following eight -8" sewer segments do not have adequate capacity to accommodate the proposed 61 home subdivision at 2310 West Joppa Road, known as Greenspring Manor. Six of the segments noted are to be addressed by another developer. To date, these improvements have not been completed. This developer is required to complete the other two segments noted with a *. Issuance of Use and Occupancy permits for the residential units from the Greenspring Manor development should be subject to completion of the system improvements noted above, including those by the other developer. Currently the other developer is obligated to complete this by August 2023.

Upstream MH	Downstream MH	Length	Diameter	
43794	43793	137.96	8"	*
43793	43792	192.31	8"	*
43792	43791	87.36	8"	
43791	43790	60.00	8"	
43790	43789	316.80	8"	
43789	43788	232.57	8"	
43788	43787	159.01	8"	
43787	43786	76.00	8"	

(County Ex. 12A).

When asked at the HOH on September 1, 2022 (Day 1) about the 8 deficient sewer

segments in DPR/DPWT DPC comment, Eugene Cauley, PE (who works in DPR and not DPWT) stated that he did not know whether, or when, Johns Hopkins would be completing that work; he added that he would have to look into the issue. As of Day 13 of the HOH (May 31, 2023), there was no evidence provided by the Developer that Johns Hopkins had begun, or would be completing its sewer work on those sewer segments through which the sewage from this Property will flow. Mr. Cauley's testimony was also that this Developer was completing the work on segments 43794-43792 but for *another* development project. When asked about the details of that other development project, he stated he would have to look into it. There was no evidence presented by the Developer as to any *other* development project for this Developer.

Contrary to the Developer's Post Closing Memorandum that DPWT (through DPR) recommended approval of the Greenlined Development Plan, as the above chronology reflects, DPWT and the Sewer Design team engineers have maintained their steadfast opposition to adding 61 homes to the sewer system due to inadequate capacity and concern for SSOs. There was no evidence presented by the Developer that DPWT had changed its position, or that DPWT engineers were satisfied that the deficiencies would ultimately be corrected. But-for the County documents produced through PIA requests, we would not know the extent of the DWPT concerns about the sewer for this Project. Consequently, the presumption of the development plan compliance in *Elm Street*, *supra*, is not found here, as there was substantial evidence by DPWT to the contrary. Accordingly, I place significant weight on DPWT's Sewer Design team engineers' opposition, and that evidence alone is enough to deny the Greenlined Development Plan due to lack of sewer capacity.

Additional evidence provided by the Protestants as part of their PIA request was instructive and again confirmed the inadequate sewer capacity. Specifically, Protestants asked

DWPT for its sewer capacity analysis for this Project. By confirmation email dated November 10, 2021, DPWT verified that the 2015 County Jones Falls Interceptor Chart was the chart used by DPWT to analyze capacity for this Project, and that there was no other analysis conducted, or information used. (Prot. Exs. 64, 64A). Although the information on the 2015 County Jones Falls Interceptor Chart was dated 2015, it nevertheless formed the basis for the DPWT's position that there was not adequate capacity within above sewer segments to support the proposed 61 homes. (Prot. Ex. 64).

Comparing the data from the 2015 County Jones Falls Interceptor Chart, with the information in the RKK-LTC 2012 Report, Mr. Grachek created the Comparison RKK/DPWT Capacities Chart (Prot. Ex. 69). The Comparison RKK/DPWT Capacities Chart revealed that, for the County-selected storm events (2 yr/6 hr and 10 yr/6 hr storms) most of the sewer segments from the Property exceed the peak flow of 90-95%. The DPWT Design Manual for Sanitary Sewers prohibits sewage flows above 90-95%:

> Flows above 90-95% of full depth are considered unstable and may result in a sudden loss of carrying capacity with surcharging.

(Prot. Ex. 70, p. 6-27). Mr. Grachek testified that 90% peak flow is also the industry standard. The DPWT Design Manual further prohibits SSOs from occurring at any time. Yet, SSOs have been model-predicted within the Property's sewage path as shown by Map 3 of the 2021 RJN Performance Assessment. (Prot. Ex. 70, p. 6-22). Based on this evidence, the sewage for this Project violates the DPWT Design Manual and should be denied on that basis.

In particular, the RKK recommendation for those pipe segments on the Comparison RKK/DPWT Capacities Chart which were shown to exceed 90-95% flow between MH 44216-MH 44212, was to upsize the pipes to 18 inches. Similarly, the recommendation for MH 20759 - MH 20755 which were also over capacity, was to install 10 inch relief sewers. (Prot. Ex. 69). It

is undisputed that no upsizing of pipes or installation of relief sewers within the sewage path of the Property has been completed. While Developer argues in its Post Hearing Memorandum that any recommendations from the RKK-LTC 2012 Report need not have been completed, Mr. Lessner's opined that flows above 90% were not "cause for concern" and that upsizing of deficient sewer pipes is worse than a smaller pipe. The DPWT Design Manual states that the County's Bureau of Engineering and Design has the authority to determine the size of the sewer pipes. In this regard, I find that the sewage path from the Project does not comply with DPWT Design Manual, p. 6-2 which "provides a sanitary sewer system that safely collects and transports wastewater without harm to human health or environment…."

The Developer agrees in its Post-Hearing Memorandum that the SRRR 2012 Plan is the "operative document[s] for Baltimore County's efforts to address the sewer system issues." (Dev. Memo, p. 35). The Developer further acknowledged that the Consent Decree described the SRRR 2012 Plan as: "…the document that controls and 'describes the deficiencies identified through the Collection System Inspection and provides for the performance of any repair, replacement, rehabilitation or other corrective action necessary to address those deficiencies." (Dev. Memo, p. 36). The Developer also agreed in its Post-Hearing Memorandum regarding the Corrective Action Recommendation Plan in SRRR 2012 Plan, Paragraph 6.14 (and Map 6.1) that "only these specified improvements within the SRRR 2012 Plan (i.e. to address I/I, capacity improvements and correcting structural deficiencies), were required. (Dev. Memo, p. 38).

With those facts not in dispute, during the cross examination of Mr. Lessner, he agreed that some of those action items dictated by the SRRR 2012 Plan, Section 6.14 - Corrective Action Recommendation Plan to address model-predicted SSOs in the Jones Falls Sewershed for the County selected 10 hr/6 yr storm event, have <u>not</u> been completed as follows:

1. Complete comprehensive I/I reduction rehabilitation of public manholes and sewers within SSA's exhibiting excessive I/I or other areas that contribute to model predicted SSOs determined by model simulations using the 10-Year/6-hour SCS Type II storm event.

2. Complete select capacity improvements based on a model simulation of the 10-Year/6-Hour SCS Type II storm event.

3. Correct identified structural deficiencies through rehabilitation or replacement.

4. Complete post-construction flow monitoring and analysis to confirm the I/I reduction effectiveness.

5. Confirm model simulations or revised the collection system model, if necessary.

6. Determine if additional improvements are needed based on the updated collection system model.

With regard to I/I reduction, Mr. Lessner agreed that Corrective Action 1 has not been completed. The 2021 RJN Performance Assessment Report informs that I/I reduction was only completed in Metered basins BC02, BC04, BC09 which is in the Timonium area and not in the sewage path from the Property. (Prot. Ex. 78). In its Post-Hearing Memorandum, while conceding that "…the total number of improvements completed at the time were less than the total required under the SRRR Plan…", Developer highlights that the Timonium area improvements reduced I/I and reduced predicted SSOs in the Timonium area. However, the Timonium area work does not remedy the inadequate sewer capacity within the sewage path from this Property. The Developer's other argument that SSO volumes are trending "downward overtime" does not address the existing and future problems along the sewer path from this Property. (Dev. Memo, p. 41). Indeed, Map 2 of the 2021 RJN Performance Assessment Report confirms that only 2 minor repairs involving "Inflow Inserts" as above have been completed in the sewage path for this Property (BC05).

With regard to Corrective Action 3 – correcting structural deficiencies, I find there is no

basis for Mr. Lessner's opinion that those structural deficiencies only refer to those listed in the SRRR 2012 Plan and not in the Ramboll or the Hazen Reports. Neither the Ramboll Report nor the Hazen Report were produced in evidence in *Torch Hill*. In terms of the Ramboll Report which was issued June of 2022, I am not convinced by Mr. Lessner's opinion that it was only "a planning document" and only used for "capital budget" purposes. (Prot. Ex. 87). It matters not whether the Ramboll Report was prepared under the Consent Decree. It was created at the County's request and it informs the County about sewer capacity. The Ramboll Report provides the express purpose for which the County retained Ramboll:

> The County engaged Ramboll Americas Engineering Solutions, Inc. (Ramboll) for the development of design documents for the repair and rehabilitation of the interceptors, manholes, and junction chambers located within Lake Roland Park. The primary focus of this project is to minimize the inflow and infiltration (I/I) into the interceptors to reduce the likelihood of sanitary sewer overflows.
>
> * * * *
>
> 1.2 PURPOSE
>
> As part of the preliminary engineering efforts for the project, the County requested a detailed review/evaluation of available existing system data in order to identify/accomplish the following:
>
> ▪ Confirm the condition of the pipelines and manholes associated with this project based on available system inspection data.
>
> ▪ Verify the rehabilitation recommendation (pipelines and manholes) included as part of this project.
>
> ▪ Preliminarily identify access and bypass requirements.
>
> ▪ Identify data gaps requiring additional/follow-up field evaluation efforts.
>
> ▪ Develop a preliminary list of permitting needs/requirements for the project.

(Prot. Ex. 87, pp. 1-2). Upon completion of the analysis, the Ramboll Report indicates that after

County approval, it will proceed with design activities to rehabilitate the sewer segments and manholes. With the clear directives outlining the scope of Ramboll's work including analyzing the sewer pipes and manholes, as well as the future corrective actions to be taken by Ramboll upon County approval, the Ramboll Report cannot be discounted as just a "planning document."

Importantly, the Ramboll Report referred to, and used the data from the 2021 RJN Performance Assessment. (*Id*. p. 3). Ramboll examined the sewer pipes using closed circuit television cameras (CCTV), performed sonar inspections, and physically inspected manholes to confirm that sewer pipes were suitable for trenchless rehabilitation technologies. I find that these efforts by Ramboll are examples of 'field verification' of the information from the 2021 RJN Performance Assessment that Mr. Lessner stated was not performed. (Dev. Memo, p. 43). As with the 2021 RJN Performance Assessment, I agree that, unfortunately, the results of the Ramboll Report showed a worsening of condition of the sewer system wherein it reads:

> The review of the CCTV inspections showed 24 segments with active infiltration at pipe joints, 14 of which included some level of structural defects. Of the remaining 19 segment inspections available, 11 segments had structural defects alone and 8 segments either showed no structural defects or infiltration.

Upon completion of manhole inspections, Ramboll determined that:

> …all 44 manholes within the system will need rehabilitation. Of the 43 manholes, 31 assets show evidence of infiltration. There are 2 manholes that are noted as 24" in their inspection reports. Field verification will be required to confirm that they are 24". Should this confirm manhole size, it will require full replacement to facilitate CIPP lining of the adjoining pipe segment.

Similarly, the Hazen Report dated February 6, 2023 also confirmed that sewer pipes are still over 100% capacity. (Prot. Exs. 107, 108). Similar to the Ramboll Report, whether prepared under the Consent Decree or not, the Hazen Report cannot be discounted as only a "planning

document." While the County may *also* use it for capital budget planning, the County hired Hazen to perform a comprehensive evaluation of the accuracy of the data from the RKK models and to update those models. Pursuant to the Protestants' PIA request, the Hazen scope of services, which are on-going, were provided. (Prot. Exs. 106 A, B, C).

Hazen issued a progress report dated February 6, 2023. (Prot. Ex. 107). Hazen's Model Pipe Capacity Report evaluated each pipe in the system as modeled during the 5 storm events which showed that the sewer pipes from the Property to the County/City line will be over 100% capacity. (Prot. Ex. 108). Specifically, during the County-selected 10 yr/6 hr storm event, the existing capacity for the sewer segment immediately below the Property through which sewage from the Project would flow, *beginning* with MH 43794 – MH43793 and continuing through the sewer segments, is greater than 100% (except for MH 43787-MH 43786 which is at 80% capacity). (Prot. Ex. 108, p. 9). Accordingly, I find that both the Ramboll Report and the Hazen Report provide compelling evidence that the pipes in the sewage path from the Property are at over-capacity and that SSOs are predicted to result during the County-selected 10 yr/6 hr storm event.

The evidence provided by the Protestants in regard to overcapacity defects and model predicted SSOs within the sewage path here was not sufficiently rebutted by the Developer. To this point, neither Dave Bayer, nor Lisa Eicholtz, nor any representative from DPWT with knowledge of the sewer system, testified to support Developer's position in rebuttal. If there was a change in DPWT's position, or clarification to explain the evidence presented by the Protestants, then testimony and further evidence from the DPWT was necessary. Given the importance of the sewer capacity issue in this case, Mr. Lessner's understanding of his interactions with DPWT representatives, his investigation of Map 3 of the 2021 RJN Performance Assessment with DPWT, and specifically his conversations with Dave Bayer, PE, is not the best evidence to meet the burden

of proof, particularly given the DPWT comments and emails as above have expressed the opposite view. With the facts presented in this case, the best evidence is to have the DPWT witnesses testify, particularly if, as the Developer writes in its Post Hearing Memorandum, the "County regards the model upon which Map 3 was based as being 'unverified' in the field." (Dev. Memo, p. 46). The DPWT Sewer Design Team engineers needed to provide that testimony.

I also find that, if Mr. Lessner's understanding of his interactions with DPWT is correct as described in the Developer's Post-Hearing Memorandum, and there was a change in DPWT's position, Dave Bayer would have included the same in his email dated March 8, 2023 wherein, at the request of the Developer, he lists the flow sensors downstream from the Property; yet, he did not. (Dev. Exs. 47A, 47B). Similarly, in his email dated May 30, 2023, Dave Bayer could have provided any change in DPWT's position wherein, at the request of the Developer, he listed the corrective action status for rehabilitation/repairs that had either been completed, or were determined not to be needed; yet, he did not. (Dev. Exs. 45A, 45B). The silence is deafening.

As to Mr. Lessner's point that the 2019, 2020 and 2021 Quarterly/Annual Reports (Dev. Exs. 48-53) did not document SSOs, this fact certainly did not alleviate Dave Bayer's real concern for SSOs as shown in his internal email to his DPWT colleagues dated March 22, 2021, and, without question, Dave Bayer has access to those Quarterly/Annual Reports. (Prot. Exs. 89, 90). What's more, each of the defects in the manholes which were listed in David Bayer's May 30, 2023 email as being corrected, were performed in 2014, 2017 or 2019, and therefore, when he wrote the March 22, 2021 email, he would have known about those repairs. (Dev. Exs. 45A, 45B). Thus, given the years of those repairs, Mr. Lessner's testimony that "presumably" repairs/rehabilitation were completed after the 2021 RJN Performance Assessment, was not accurate. (Id.).

In addition to the violation of DPWT Design Manual as above, based on the collective evidence presented, I also find that the sewage to be generated by this Project does not comply with BCC, §32-4-410 (b) which requires sewage facilities to function safely:

> (b) *Sewage.* Proposed public or private sewage facilities shall be designed and located to function safely and without danger of contaminating groundwater, surface water, or public or private water supplies.

Additionally, in not providing safe or adequate sewerage, I further find that the sewage generated by this Project also does not comply with BCC, §32-4-102:

> (b) *Intent of laws.*
>
> (1) This title is intended to protect and promote public health, safety, and welfare and to ensure that public facilities, services, and amenities are provided.
>
> (2) This title is intended to ensure that proposed development projects are safe, adequate, convenient and, where applicable, provide for the following:
>
> * * * *
>
> (iv) …..sewerage,…..

Moreover, I find that the sewage from the Project does not comply with BCC, §32-4-103(a):

> (a) *In general.* This title is adopted for the following purposes:
>
> (8) To provide adequate and efficient…..sewerage, …..and other public requirements and facilities;

Finally, I find that, as supported by the evidence, the Greenlined Development Plan also violates the DPR Policy Manual which provides that: "As part of any land subdivision or development of land, provision shall be made for the safe and sanitary treatment and disposal of sewage without detrimental effects to the public health or environment." (DPR Policy Manual, p. 18).

Each of these regulations and policies requires sewage facilities to safely, adequately and efficiently function. Here, the overwhelming evidence shows that, for this particular sewage path, it will not. As a result, I cannot accept the argument that just adding the sewage from 61 new homes to the sewer system is "inconsequential when compared to the amount of sewage which flows through the system." It was clear to me that the sewage path from this Property cannot handle the existing sewage which flows along that path, much less the additional sewage which will come from adding 61 homes to the sewer system.

With regard to the Johns Hopkins' sewer segments, as mentioned by People's Counsel in his Post Hearing Memorandum, under BCZR, §4A02.4.E.1.h, health care and surgery centers are exempt from the Basic Service Map. (PC Memo at p. 19). According to People's Counsel, the exemption was enacted after Johns Hopkins' Petition for Special Variance was denied in *Foxleigh Enterprises*, CBA 2012-0060-SA. (PC. Ex. 11). If that exemption applies, it may explain why Johns Hopkins was permitted by PAI to construct the 3 medical pavilions without first repairing/rehabilitating the sewer segments. If that is accurate, the exemption was not mentioned in any of the DPWT internal emails, or in the DPC comments. Again, the DPR DPC comment dated August 10, 2021 states that the Johns Hopkins is obligated to complete sewer segments repair/rehabilitation by August of 2023. (County Ex. 12A). The Dave Bayer emails confirm that Johns Hopkins stopped working on the sewer. (Prot. Ex. 89, 90).

Accordingly, if Johns Hopkins is entitled to an exemption from the Basic Services Map standards, it would stand to reason that DPR and/or DPWT would have known about it. For this case however, that exemption would means that the Johns Hopkins will never be repairing/rehabilitating those sewer segments. On the other hand, if Johns Hopkins is not exempt and is still required to complete the repair/rehabilitation, there was no evidence presented as to

whether or when John Hopkins will complete the work. The undersigned even posed questions of DPR during the HOH but no information was known. Ultimately, this issue goes to the Developer's burden of proof in its case-in-chief that adequate sewer capacity exists in the sewage path for this Project, including the repair/rehabilitation by Johns Hopkins. Given the lack of any direction on this important issue, contrary to the suggestion by DPR DPC comment, I am not willing to condition approval here on the possibility that Johns Hopkins may, or may not, complete that work. (County Ex. 12A). [4]

For all the reasons specified regarding sewer incapacity and deficiencies, the Greenlined Development Plan must be denied under BCC, §32-4-229.

D. <u>Remaining Issues</u>.

Given the denial of the Greenlined Development Plan on the basis of traffic, emergency-access-only gate and inadequate sewer capacity, there is no need to address the issues of alleged Master Plan conflict, alleged E Coli contamination, stormwater management, Forest Buffer Variance for a Specimen Tree, or floodplain issues.

<u>CONCLUSION</u>

[4] As the Board of Appeals held *In the Matter of Bluestem*, CBA-20-006, in response to the Developer's argument in Bluestem that the Development Plan should be approved with a condition that no building permit be issued until the sewer-shed deficiencies are remedied, the Board of Appeals wrote:

> Certainly, the ALJ is neither compelled to approve the Plan in the face of evidence that it fails to comply with development laws, regulations, policies, or rules, nor is the ALJ compelled to impose conditions in lieu of denying approval. To the contrary, the Code mandates the ALJ's decision in only one set of circumstances: where the ALJ finds the development plan complies with development laws, regulations, policies and/or rules. BCC §32-4-229(b)(1). The ALJ did not find that the Plan so complied, ergo, the ALJ had the discretion to deny approval. Similarly, the Code confines the ALJ's discretion when imposing conditions, requiring that the conditions be tethered to certain evidence and in furtherance of certain goals. BCC §32-4-229(d). On the other hand, the APFO [Adequate Public Facilities Ordinance] neither identifies circumstances requiring approval of a development plan, nor does it mandate approval with conditions.

I am cognizant that the owners of this Property are permitted by right to develop the Property with residential uses. Unfortunately, the Property's location within failing traffic sheds, and within an 'Area of Concern' in the public sewer system, made worse by the existing development of surrounding commercial, residential, educational and public uses, define the limits for this last, undeveloped Property. The existing residential communities are justifiably concerned about the additional traffic, inadequate sewer system, and the proposed emergency-access-only gate, all of which negatively impact the surrounding properties. While there may be a common notion that I approve a lesser number of homes on the Property, the Developer did not provide any testimony or evidence concerning a potential project based on a lesser number of units. Accordingly, I am tasked with the job of approving or denying the Greenlined Development Plan as submitted – for 60 new homes and 1 existing home, with an emergency-only-access gate. For the reasons set forth herein, I must deny the Greenlined Development Plan.

THEREFORE, IT IS ORDERED by this Administrative Law Judge/Hearing Officer for Baltimore County, this **31st** day of **July, 2023,** that the Greenlined Development Plan for the Project known as **"GREENSPRING MANOR"** (Dev. Ex. 1B), be and it is hereby **DENIED.**

IT IS FURTHER ORDERED that the Petition for Special Variance from the Baltimore BCZR, §4A02.4.G to allow the development of the subject property within the Falls Road and Joppa Road and Falls Road and Greenspring Valley Road traffic sheds, be, and it is hereby **DENIED**.

Any appeal of this Order shall be taken in accordance with Baltimore County Code, § 32-4-281.



MAUREEN E. MURPHY
Administrative Law Judge
for Baltimore County

MEM/dlm/dlw

IN RE: GREENSPRING MANOR DEVELOPMENT PLAN AND ZONING HEARING (2310 West Joppa Road)	*	BEFORE THE
	*	OFFICE OF
	*	ADMINISTRATIVE HEARINGS
8th Election District 3rd Council District	*	FOR BALTIMORE COUNTY
	*	Case No. 08-0922 and Case No. 2021-0250-SPH
Greenspring Joppa Falls, LLC Owner and Developer	*	

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DEVELOPER'S POST-HEARING MEMORANDUM

Greenspring Joppa Falls, LLC, legal owner and developer ("Developer"), by undersigned counsel, hereby submits this Post-Hearing Memorandum in support of the Greenspring Manor Development Plan (the "Development Plan" or the "Plan"), petition for special variance related to traffic, and petition for special variance to remove a specimen tree, and states as follows:

INTRODUCTION

This matter set a record for the most hearing dates (13) ever held before the Office of Administrative Hearing ("OAH") in a Hearing Officer's Hearing (HOH). The project, known as Greenspring Manor, proposes a residential community featuring 61 single-family homes (one existing home and 60 proposed homes) on an approximately 40± acre property located on the north side of Joppa Road, east of Falls Road, in the Lutherville area of Baltimore County ("the Property"). *See* Developer's Exhibit 1B ("Dev. Ex."). Many of the issues raised in the case, particularly related to traffic and sewer, are substantially similar to those recently addressed in the Torch Hill case, where the ALJ issued an opinion directly addressing the arguments again raised by the Protestants and approving the development plan. *See* Dev. Ex. 37.

In this case, the Property is split-zoned DR 1 (Density Residential – one dwelling unit per acre) and DR 2 (Density Residential – two dwelling units per acre), is located entirely within the Urban-Rural Demarcation Line, and is the last cleared farm field in the surrounding area, which is otherwise improved with residential and/or commercial development. *See* Dev. Ex. 3A-B. As part of the approval process, Developer will provide over a million dollars of offsite public road and sewer improvements if this project is constructed. *See* Dev. Ex. 1B (lower left corner for sewer improvements) and Ex. 16 (traffic improvements).

This unfortunately is going to be a long Memorandum. The project drew interest from several neighboring communities (groups that live on or adjacent to Tally Ho Road to the east of the Property, the Meadows and Boxwood communities to the north of the Property, the Valleys Planning Council (even though their Executive Director testified that the Property is not located within the group's expansive boundary, *see* Dev. Ex. 34), and the Office of People's Counsel, who, in unusual fashion, attended and actively participated in the Hearing Officer's Hearing for the project.[1] As this is a combined hearing, this Memorandum will first address the issues related to approval of the Development Plan and then will address the special variance to remove a specimen tree and the special traffic variance. With respect to the Development Plan, the issues that will each be addressed are: (1) Master Plan compliance; (2) stormwater management; (3) the proposed emergency access "gate" at the rear of the Property; (4) compliance with BCZR § 260; and (5) Sewage Capacity. The Memorandum will then address the specimen tree and traffic special variance requests, for which the ALJ heard from several expert witnesses (all presented by the Developer).

[1] People's Counsel often participates in zoning cases before the Board of Appeals, but this is undersigned counsel's first time seeing People's Counsel participate in an HOH before the ALJ.

PROCEDURAL HISTORY

Even the path to the Hearing Officer's Hearing ("HOH") in this case was an eventful one. On August 11, 2021, a Development Plan Conference ("DPC") was held between Developer's consultants and various Baltimore County agencies. At the DPC, various Baltimore County agencies responsible for the review of the Development Plan submitted written comments regarding the compliance of the Development Plan with the various Baltimore County regulations governing land development in the County. Comments were received from Development Plans Review ("DPR"), Real Estate Compliance ("REC"), Zoning Review, the Department of Planning ("DOP"), the Department of Environmental Protection and Sustainability ("DEPS"), State Highway Administration ("SHA"), and the Department of Recreation and Parks ("Rec and Parks"). Developer then worked to address these comments prior to the Hearing Officer's Hearing ("HOH"), through preparation of a redlined Development Plan and greenlined Development Plan.[2] The HOH was originally set November 18, 2021, but as explained below, it was postponed for many months.

The process and procedure for a DPC is outlined in § 32-4-226(c) of the Baltimore County Code ("BCC"). Pursuant to § 32-4-226(c)(3), if any county agency does not attend the DPC, "the agency is presumed to have no comment on the plan." In this case, however, the Traffic section of the Department of Public Works and Transportation ("DPWT") did not attend the DPC but generated comments dated August 12, 2021, which state at the outset "these comments are coming in after the DPC. We are asking PAI to take these into consideration." *See*

[2] As Developer's witness Matt Bishop explained, a "redlined" version of the Development Plan (Dev. Ex. 1) was prepared to address agency comments made during the DPC. Additional green text was then added to the plan in order to respond to correct a typo in the Dedication Table located in the upper left corner of the plan (Exhibit 1B). In this Memorandum, the term "Development Plan" or "Plan" shall refer to the "greenlined" version of the Development Plan (Developer's Exhibit 1B) unless otherwise specified.

People's Counsel Ex. 6. The DPWT comments were not presented to the Developer, its consultants, nor were they presented to PAI, until the days leading up to the scheduled HOH. They were only discovered when the DPR representative, Mr. Cauley, was making his final rounds to confirm that each section of DPWT supported approval of the Development Plan. Following a lengthy postponement, the Developer was able to work with the DPWT traffic reviewer to obtain confirmation that the proposed project will not have any negative impact on the surrounding road network. *See* Dev. Ex. 14. The Developer also worked with SHA to confirm the proposed offsite road improvements (depicted in Dev. Ex. 16) would have a substantial benefit to the overall Falls Road corridor between Joppa Road and Seminary Avenue. *See* Dev. Ex. 20-22.

After the HOH (which was combined with the special variance petitions) was rescheduled, an unprecedented thirteen days of hearings were held before ALJ Murphy. In its case in chief, Developer offered testimony from Russell Powell, representative of the Developer, and a series of experts including, Matthew Bishop, a Registered Landscape Architect and professional land planner, Erin Kuhn, Assistant District Engineer for Traffic at MDOT/SHA, Nick Driban, Professional Traffic Operations Engineer, and John Canoles, an ecologist and professional environmental consultant. On rebuttal, Developer again presented testimony from Matthew Bishop and Nick Driban, and also from Nick Leffner, a civil engineer with expertise in Baltimore County's regulations governing stormwater management and sewer capacity.

Numerous individuals testified about the project primarily on the basis of traffic, Dan O'Leary, a professional engineer, testified regarding stormwater management, and two expert witnesses, Randall Gracheck and Robert Summers, testified regarding sewer capacity. Citizen testimony was split over the proposed "emergency access gate" in the rear of the Property, as the

Tally Ho residents favored a full access road connection between Seminary Avenue and Joppa Road and the Meadows and Boxwood residents favored an emergency access only connection.[3]

As outlined in this Memorandum, Developer, through County agency representatives and Developer's expert witnesses, presented strong and substantial evidence demonstrating that: (1) the Development Plan complies with all applicable County laws, regulations, and policies and should be approved by the ALJ; (2) the Department of Environmental Protection and Sustainability ("DEPS") was correct in approving the removal of the single specimen tree along Joppa Road and this recommendation should be followed by the ALJ; and (3) the burdens of proof for the special variance to permit this development in failing traffic sheds has been met. Protestants provided a significant amount of testimony, but they did not present evidence that would compel the ALJ to deny the Plan or the special variance petitions. Instead, their concerns are addressed in a list of voluntary proposed conditions contained in the conclusion to this Memorandum. Based on the entire record in this case, the Development Plan and related relief should be approved.

BACKGROUND

The Greenspring Manor project proposes 60 new homes on just under 40 acres of land located on the NE side of Joppa Road east of Greenspring Station and Falls Road. It is a project very important to Atapco, and one that has drawn the interest of various neighboring communities.

As Russell Powell confirmed, Atapco performed more voluntary public outreach in this case than any other case they have worked on in Baltimore County. Numerous voluntary meetings were held with the closest neighbors, including representatives from the Meadows and

[3] It will be truly interesting to see how Protestants' counsel addresses this issue, as half of his clients are on each side of this issue.

Boxwood communities and various groups within the boundaries of Tally Ho Road. *See* Dev. Ex. 31-32. Various changes to the Plan (such as moving the homes farther from Joppa Road, installing a landscaping berm to the rear of the Property, and proposing an emergency only access gate between the Property and Mays Chapel Road) were implemented to address the concerns of the neighbors that would be most affected by the project. The Plan respects all zoning requirements, does not require any variances to bulk and area regulations, and proposes the density that is permitted by right on the Property.

While open space is often a concern in BC, this project provides more than double the amount of required open space and preserves over 40% of the property as open and green. Dev. Ex. 1B, 6. While school capacity is often a concern, none of the schools are overcrowded so no relief from the Adequate Public Facilities regulations for schools is needed.

Thousands of trees will be planted where there is now a fallow farm field. *See* Dev. Ex. 6. There is no forest clearing, and the only specimen tree being removed is a nonnative tree located adjacent to Joppa Road that will be removed as part of the road widening. The existing Lankford home, which is located in the forest buffer near a stream, will be converted from well/septic to public utilities.[4]

The Falls Road corridor has created traffic issues for Baltimore County for many years and this project is a mechanism for providing hundreds of thousands of dollars of relief that SHA confirmed will significantly improve travel time through the entire corridor from Joppa Road to Seminary Avenue. *See* Dev. Ex. 20-22. This project is also a mechanism for upgrading specific portions of the county sewer line that have been identified as needing improvement. *See* Dev. Ex.

[4] The ALJ can take judicial notice that Developer obtained final, unappealable approval of a forest buffer variance and alternatives analysis for this project in February 2023 after VPC dismissed its appeal with prejudice in Circuit Court Case No. C-03-CV-23-00020.

1B. At the conclusion of this Memorandum, Developer proposes conditions of approval that address and require the offsite road and sewer improvements that will be provided if the project is approved.

Communities almost always prefer status quo, but the overall evidence confirmed that the benefits of this project far outweigh any impact that Greenspring Manor, if approved with the conditions suggested herein, would have on the surrounding area.

OVERVIEW OF THE DEVELOPMENT PROCESS

Baltimore County Code ("BCC") §§ 32-4-201, *et seq*. governs review and approval of a development plan. These Code provisions define what a development plan is, when a plan is required, what information must be on the plan, how the plan is prepared and submitted, who reviews that plan, and how the plan is ultimately approved.

With respect to the last two these functions – review and approval – the Code is likewise very specific. Upon submission, the Code requires that the development plan be reviewed by agency representatives for compliance with the regulations within that agency's area of expertise. BCC § 32-4-226(b). These agency representatives report their findings in the form of written "comments" at the DPC, which are then submitted to the Hearing Officer. BCC § 32-4-226(d). If an agency "does not attend the conference, the agency is presumed to have no comment on the plan." BCC § 32-4-226(c)(3). If the Hearing Officer receives no comments at all, "the Development Plan shall be considered to be in compliance with the county regulations." BCC § 32-4-226(e)(2).

The Code contains no provision that actually requires County agency representatives to appear at the HOH. Therefore, by application of these Code provisions, even if every agency failed to show up at the DPC, submitted no comment, and did not appear at the HOH, the

Hearing Officer would be obligated to consider the development plan to be "in compliance with the county regulations." BCC § 32-4-226(e)(2). *See also People's Counsel for Baltimore County v. Elm Street*, 172 Md. App. 690, 703 (2007).

On the other hand, if, based on the comments submitted by the agency representatives, "unresolved comments" are identified, the Code requires the Hearing Officer to take testimony and to receive evidence on those issues. BCC § 32-4-228(a). If, after taking testimony and receiving evidence on those "unresolved comments," the Hearing Officer finds that the plan "complies with the development regulations [Section 32, Title 4] and applicable policies, rules and regulations adopted in accordance with Article 3, Title 7 of the Code," the Hearing Officer is required to approve the development plan. BCC § 32-4-229(b)(1). *See also Elm Street*, 172 Md. App. at 696.

Additionally, Developer's obligation to comply with the applicable regulations does not end with approval of its development plan; the process "is indeed an 'ongoing process,' and the hearing officer's affirmation of the plan is just the first step." *Monkton Pres. Ass'n v. Gaylord Brooks Realty Corp*., 107 Md. App. 573, 585 (1996).

THE GREENSPRING MANOR DEVELOPMENT PLAN

Given that all County agencies recommended approval of the Development Plan, Developer produced strong and substantial evidence in support of the Plan, and Developer effectively rebutted the arguments raised by Protestants, the ALJ should approve the Development Plan.

I. THE COUNTY AGENCIES IDENTIFIED NO "UNRESOLVED COMMENTS OR CONDITIONS" ON THE DEVELOPMENT PLAN.

Representatives of the various Baltimore County agencies who reviewed the Development Plan attended the HOH, including the following individuals: Jerry Chen, Project

Manager (Department of Permits, Approvals and Inspections ("PAI")); Jim Hermann, Baltimore County Landscape Architect (PAI, also reviewing for the Department of Recreation and Parks); Eugene Cauley (PAI/Bureau of Development Plans Review, also reviewing for the Department of Public Works and Transportation ("DPWT")); LaChelle Imwiko (PAI/Real Estate Compliance); Shaun Crawford, (PAI/Office of Zoning Review); Jeff Livingston (DEPS); and Brett Williams (Department of Planning ("Planning")). All agency witness indicated that the Development Plan satisfied all applicable policies, rules, and regulations and each reviewer recommended approval of the Plan:

Office of Zoning Review: Shaun Crawford confirmed that all prior comments made by his Office had been addressed, and there were no outstanding issues with the Development Plan.

Development Plans Review/Department of Recreation and Parks: Jim Hermann testified that the Schematic Landscape Plan had been reviewed and approved. Mr. Hermann further confirmed that the project was far exceeding the open space requirements by providing onsite (providing over 140,000 SF when only 60,000 SF is required) in compliance with BCC § 32-6-108 and the Local Open Space Manual and that he had no outstanding issues related to open spaceOn behalf of both agencies, Mr. Hermann recommended approval of the Plan.

Development Plans Review: Geno Cauley testified that he had reviewed the Development Plan and Developer had addressed all of his comments from the DPC. The traffic study had been approved by SHA and the County had no further comments. *See* Transcript ("T."), 9/1/22, p. 197.[5] With respect to the floodplain study for the project, Mr. Cauley confirmed a study must be accepted for filing prior to the recordation of a plat or issuance of building permits for the project. T. 9/1/22, p. 196. This is consistent with BCC § 32-4-414(d)(3), which specifically states that a floodplain study must be prepared "before the issuance

[5] Protestants and People's Counsel presented comments from Terry Curtis that came a year or more prior to the HOH in this case. Mr. Driban explained the history of his dealings with DPWT and DPR, which resulted in full approval of the traffic study and confirmation that the project will not have any negative impact on the surrounding road network. *See* T. 10/27/22, pp. 230-235; *see also* Dev. Ex. 29-30.

of a permit or the recording of a subdivision plat." Additionally, the Director of DPWT confirmed that no waiver would be required to install a public access road off of Joppa Road to reach the proposed homes in Greenspring Manor. *See* Prot. Ex. 8.

With respect to the "emergency only" gate at the rear of the Property, Mr. Cauley initially stated that the DPR Manual requires it to be a full, open access point unless the ALJ determines that it falls into an exception in the applicable Manual section. *See* Prot. Ex. 9. Mr. Cauley made clear that if the gate issue is resolved, he recommended approval of the Plan as it complies with all applicable DPR and DPWT requirements. T. 9/1/22, p. 235. DPWT recommended approving the Development Plan and deferring the gate issue to the ALJ. *Id*. Additionally, on cross examination from Mr. McCann, Mr. Cauley admitted that he has heard no actual concerns from the Fire Department or DPWT related to the proposed emergency access gate. *Id.* at p. 256. Additionally, he could not state that a sufficient number of units exist for the DPR Manual Policy to apply, and confirmed that if residents from the Meadows or Boxwood community expressed safety concerns due to the potential for increased vehicles using Mays Chapel Road, that could constitute an "unusual circumstance" within the exception to the DPR Policy Manual. *See* Prot. Ex. 9.

Real Estate Compliance: LaChelle Imwiko, representing Real Estate Compliance, initially testified that there was one typo in the Dedication Table on the Red Lined Development Plan with respect to the total drainage and utility easement square footage. Developer addressed the square footage type with a green line (Dev. Ex. 1B), which, in turn, provided Ms. Imwiko with what she needed to recommend approval of the Development Plan.

Environmental Protection and Sustainability: Jeff Livingston appeared and provided testimony on behalf of three divisions with DEPS: Groundwater Management, Stormwater Management, and Environmental Impact Review (EIR). All three agencies recommended approval of the Plan. Additionally, EIR recommended approval of the request for special variance to remove a specimen tree along Joppa Road (Dev. Ex. 13) and Stormwater

Management had approved the concept stormwater management plan, which is all that is required for Development Plan approval.

Department of Planning: Brett Williams provided testimony on behalf of the Department of Planning ("DOP"), which included presentation of the approved school impact analysis (County Ex. 8) and Department's Final HOH Report (County Ex. 7). As explained by Mr. Williams, the Final Report included: (1) confirmation that the project satisfies the requirements of BCC § 32-4-103(f)(3) with regard to school capacity; (2) a statement that the Department has "no objection" to the request for special variance to permit development in the failing traffic shed; (3) a finding as to compliance with BCZR § 260 and Master Plan 2020; and (4) a recommendation of plan approval. ***Id.*** Over the year between the Department's Concept Plan Comments and Final Report to the ALJ, Developer worked with the Department and submitted a point by point analysis that addressed the Department's initial issues. *See* County Ex. 9. Additionally, Mr. Williams testified that the DOP did review the traffic study and has no objection to the ALJ approving the petition for special variance. T. 9/1/22, p. 77. Indeed, Mr. Williams determined the proposed offsite improvements "positively improved, would improve the traffic, the traffic level in this area." *Id*. at p. 100.

As demonstrated above, representatives of each of the County agencies responsible for reviewing and commenting on the Development Plan appeared and, after confirming compliance with all applicable rules and regulations, recommended approval of the Development Plan introduced as Developer's Exhibit ("Dev. Ex.") 1B. These recommendations from the County agencies, absent evidence to the contrary, provide a sufficient basis on which to grant approval of the Development Plan. BCC § 32-4-227(e). *See also Elm Street Development*, 172 Md. App. at 703.

II. DEVELOPER PRESENTED STRONG AND SUBSTANTIAL EVIDENCE TO SUPPORT APPROVAL OF THE DEVELOPMENT PLAN.

Rather than relying on the *Elm Street* presumption, Developer provided independent testimony, through a series of witnesses, confirming that the Development Plan does, in fact, comply "with the development regulations [Section 32, Title 4] and applicable policies, rules and regulations adopted in accordance with Article 3, Title 7 of the Code" and is entitled to approval. *See* BCC § 32-4-229(b)(1).

In its case in chief, Developer presented testimony from Matt Bishop, a professional land planner and landscape architect, with 20 years of experience in preparing and presenting development, zoning, and related plans in Baltimore County. As Mr. Bishop explained, he prepared the Development Plan and the Pattern Book (Dev. Ex. 7) for this project.

He first oriented the ALJ to the Property using an aerial image (Dev. Ex. 3), explained its location on the northside of Joppa Road east of Falls Road within the Urban-Rural Demarcation Line, within which properties are served by public water and sewer, and generally described the neighborhood and surrounding properties. Next, using photographs introduced as Dev. Ex. 5, Mr. Bishop described the current condition of the Property, which is largely a cleared farm field with an existing dwelling located on the southeast side of the Property and accessed off of Joppa Road. As Mr. Bishop explained, the property gently slopes up from front to back and has environmental resources along the border with the Tally Ho communities. There is no forest clearing required given that the Property is already cleared and farmed, and only a single specimen tree is impacted along the Joppa Road frontage.

As a planner, Mr. Bishop looked to the overall area to develop a site plan that fits in context to the surrounding properties. He studied the size of lots in the area and determined there is a wide range from sub-10,000 square foot lots to lots over 30,000 square feet. *See* Dev. Ex. 4. He explained that the Greenspring Manor layout reflects the split-zoned Property (16 homes in DR1, 45 in DR2) and that all lots are large enough to provide decks without the need for

variances. T. 9/21/22, p. 528. He aimed to provide landscaping throughout the project and to maintain a sizeable buffer along the east of the Property closest to the Tally Ho neighborhoods. He also explained that a decorate landscaping berm was added to the rear of the Property at the request of neighbors from the adjacent Meadows community. Additionally, while only 60,000 square feet of open space is required, this project is providing 148,300 square feet. *Id*. The open space program will include walking trails, pavilions, and garden areas for area residents. *Id*. at 530. All of the open space is accessed by public sidewalk and an asphalt walking trail that traverses and connects the open space areas. *Id*. at 531. The approximate cost of the open space improvements is $309,000. *Id*. at 549.

With respect to architecture, Mr. Bishop explained the homes will be a mix of 40, 50, and 54-foot wide single family dwellings that are projected to sell for $800,000 to $1 million. *Id*. at 542. There will be a variety of home types with varying but complementary architecture. *Id*. at 542-543; *see also* Pattern Book, Dev. Ex. 7.

Mr. Bishop provided a high level overview of the proposed stormwater management for the project and its relationship to the floodplain that crosses the front of the Property along Joppa Road. *Id*. at 535-537. He explained that the grading associated with the proposed entrance road will actually improve the situation for the neighboring property to the west along Joppa Road as the floodplain will be reduced west of the access road. *Id*. at 537-539. Additionally, there would be "zero" impact to the Tally Ho neighborhood in terms of stormwater and runoff from the Property. *Id*. at 540.

As a planner, Mr. Bishop explained his analysis of the Transect designation (T3 suburban area) contained in Baltimore County's Master Plan 2020 (MP 2020) and of the project's compliance with § 260 of the Baltimore County Zoning Regulations (BCZR). He testified that the project is "exactly the definition of" T3 development, in that the DR1 and DR2 densities are the lowest density for properties located inside the URDL and the Property is adjacent to higher density homes (Boxwood townhomes immediately adjacent) and commercial development

(Greenspring Station). *Id*. at 555-557. He also analyzed the surrounding properties in the T3 Transect and determined the project is substantially similar to many nearby development. *See* Dev. Ex. 9. Contrary to People's Counsel's apparent assertions, there are more heavily developed neighborhoods in the T3 Transect and even townhomes. *Id.;* T. 9/21/22, pp. 558-62.

Mr. Bishop explained that DPWT identified several sections of the public sewer system that must be upgraded in order to accommodate the homes from this project. Specifically, a segment of the existing line located south of the property across the street from West Joppa Road is currently 8-inches in size and the pipe must be replaced with 12-ince pipe. T. 9/21/22, p. 563. This improvement is shown directly on the Development Plan in the lower left corner. *Id*.; Dev. Ex. 1B. Plans for the sewer improvement have been prepared, submitted, and approved by Baltimore County. *Id*. at p. 564. Mr. Bishop then walked through each and every requirement of BCZR § 260, explaining how the project complies with the regulations. *Id*. at 567-583. He testified that the project complies with § 260 as well as all applicable development regulations, policies, rules and regulations. *Id*. at 583. Protestants did not present any expert testimony regarding the Master Plan, § 260, floodplain, or traffic.

Developer also presented testimony from Erin Kuhn, the highest ranking traffic official at MDOT/SHA's office that governs Baltimore County, and Nick Driban, a professional traffic engineer that studied and prepared the traffic impact study for the project. For the sake of brevity, the bulk of their testimony is summarized in the section of this Memorandum discussing the Petition for Special Variance and is not repeated in this section. However, it must be noted that Protestants did not call any expert witnesses to counter the testimony these experts presented with respect to traffic.

To summarize, the county agencies all testified that the project meets their applicable regulations and should be approved. Developer then presented substantial evidence further supporting approval of the Development Plan. At the conclusion of the Developer's case in chief, the ALJ had substantial evidence supporting approval of the Plan. Protestants proceeded

to make a number of arguments that are individually addressed below. As the following demonstrates, none of their arguments provide a basis for the ALJ to deny the Plan.

III. THE DEVELOPMENT PLAN COMPLIES WITH THE MASTER PLAN.

People's Counsel's involvement in this case was apparently due to their feeling that the project conflicts with Baltimore County's Master Plan 2020 ("MP 2020"). As demonstrated at the hearing, and restated below, this project fully complies with MP 2020.

As an initial matter, the Department of Planning is the agency that reviews projects for compliance with MP 2020, and they confirmed the following in their Hearing Officer's Hearing Final Report:

> The Development Plan is in conformance with the Baltimore County Zoning Regulations, the Comprehensive Manual of Development Policies, as well as the Master Plan 2020. The Department of Planning has reviewed the submitted redline Development Plan and associated materials for the above development for Greenspring Manor and recommends approval.

County Ex. 7.

Indeed, when asked point blank by the ALJ, Mr. Williams confirmed he sees no conflict with the Master Plan or any local plans:

> Q. … Do you see any conflict with the master plan or any of the local community plans?
>
> A. No, I do not.

T. 9/1/22, p. 80.

Additionally, Matt Bishop, who was accepted as an expert land planner and landscape architect, provided substantial testimony confirming the Plan conforms to MP 2020. Mr. Bishop testified at length regarding Baltimore County's "Proposed Land Use Map", which provides the "Transect Designation" for all properties throughout the County. Mr. Bishop pointed to language in the Master Plan confirming that the Map is "conceptual and general and is intended to reflect land use patterns and support the land use objectives rather than identify land use of individual

properties or parcels." MP 2020, p. 27 (People's Counsel Ex. 8). In this case, the Property is located in the T3 Sub-Urban transect, which Mr. Bishop explained is characterized as follows:

> Sub-Urban Zone consists of low density residential areas, adjacent to higher zones that some mixed use. Home occupations and outbuildings are allowed. Planting is naturalistic and setbacks are relatively deep. Blocks may be large and the roads irregular to accommodate natural conditions.

MP 2020, P. 30 (Developer's Exhibit 8).

Mr. Bishop testified that the project meets this definition as the density is developed under the Property's DR1 and DR2 density (the two lowest density residential zones for land inside the URDL) and is adjacent to a mix of uses including other single family detached homes, townhomes, and commercial uses in Greenspring Station. According to Mr. Bishop, the image in MP 2020 accompanying the T3 transect shows a project substantially similar to the proposed development, while the T2 and T4 transects respectively depict homes much more spread out on larger lots, and attached housing at a much greater density. *Id.* In Mr. Bishop's opinion, the project fully complies with the T3 Transect contained in MP 2020. His analysis of the surrounding T3 Transect revealed higher density homes, and even townhomes, in the same Transect in which the project is proposed. *See* Dev. Ex. 9.

Additionally, Mr. Bishop testified MP 2020 emphasizes that the Baltimore County Zoning Regulations (BCZR) regulate the "uses, intensities, areas and setbacks" on property within the County. MP 2020 p. 179, Dev. Ex. 35. MP 2020 specifically contrasts the purpose of the Proposed Land Use Map by stating that the map "provides general recommendations for future land use within the context of the goals of the Master Plan and aids in rezoning considerations required by the various aforementioned zoning processes." *Id*. Here, the development proposes the density (intensity) that is permitted by right on the Property and does not require any variances to the bulk or area requirements within the Property's zoning classifications. This is further evidence of consistency with the language in MP 2020.

After hearing complaints regarding the size of the lots proposed in Greenspring Manor, Mr. Bishop performed a lot size comparison and demonstrated that the lots are laid out in a substantially similar matter to the surrounding neighborhoods. *See* Dev. Exs. 4, 36. In fact, the Tally Ho neighborhood, where the bulk of the testimony concerning setbacks and lot sizes came from, has many areas with similar or smaller setbacks between the existing homes than are proposed in this community. *See* Dev. Ex. 36.[6] While there is no requirement to be "the same" as your neighbor, Mr. Bishop's testimony and Exhibits demonstrated that Greenspring Manor fits well with the surrounding area, in compliance the T3 Transect designation.

Beyond the Transect designation of the Property, Mr. Bishop presented testimony that the project meets a number of the overall goals of MP 2020, including:

- Direct the future growth within the Urban-Rural Demarcation Line (URDL)
- Develop compact, mixed-use, transit-oriented, and walkable neighborhoods
- Provide a mixture of housing types for an emerging diversity of residents
- Provide adequate open space and recreational opportunities and increase connections to nature by linking open spaces and parks
- Tree planting and buffer conservation
- Reduce pollutant loadings of runoff with enhanced stormwater management
- Protect health of the natural environment and maintain a valuable biodiversity

MP 2020, p. i, Dev. Ex. 35. These are further evidence that the project complies with MP 2020.

Mr. Zimmerman's correspondence and Exhibits lead us to believe he will be arguing that the Woodley Park and Davis Farms cases help to establish that this project conflicts with MP 2020. Each case is easily distinguishable from the case at hand.

In Woodley Park, the ALJ and Board of Appeals denied the development plan because the developer failed to prove the standard necessary to obtain approval for panhandle lots. *See* People's Counsel Ex. 17. The Board of Appeals specifically held that the denial was <u>not</u> based on any conflict with MP 2020, holding "the Board does not agree that the ALJ found a conflict

[6] Additionally, Blandy Becker, to her credit, admitted on cross examination that the size of the lots does not really change any impact that the project may or may not have on the surrounding neighborhoods.

with the Master Plan nor does it agree with the ALJ's opinion as to his requirement to make compatibility findings in all development cases." *Id.* at Board of Appeals Order, p. 20. The Board also specified that the ALJ's comment on MP 2020 "is mere dicta regarding his opinion on the nature of this development and it is ambiguous to the Board as to whether he is definitively finding a conflict with the Master Plan." *Id*.

The Woodley Park case also had a number of significant factual differences from this case, including but not limited to:

- The plan called for the removal of 9 specimen trees;
- The plan proposed panhandle driveways and duplexes;
- The DOP recommended against approval until the hearing, and their change in position was not reflected in any documents prior to the hearing;
- Planning was critical of the proposed duplexes on small lots and could not say whether the proposal was consistent with surrounding neighborhood;
- Access to the property was provided via Woodley Avenue, a small residential street, as opposed to Joppa Road.

People's Counsel Ex. 17.

These substantial differences further demonstrate that the Woodley Park case has no persuasive value to the ALJ with respect to whether the Greenspring Manor project complies with MP 2020.

In Davis Farms, the case was referred to the Baltimore County Planning Board to determine whether the Board believed the plan conflicted with MP 2020. *See* People's Counsel Ex. 18. The Department of Planning recommended a finding that the plan complies with MP 2020, and after hearing argument from all counsel, the Planning Board voted that the project did <u>not conflict</u> with MP 2020. *Id*. However, in Davis Farms, former Councilman Quirk proposed a Resolution overruling the Planning Board and determining that the plan conflicts with MP 2020. *Id*. The Council's action did not come following a quasi-judicial hearing and has no precedential value to the ALJ in this case, where all administrative bodies found no evidence of a Master Plan

conflict. Additionally, like Woodley Park, the project had a number of significant factual differences from this case, including but not limited to:

- The plan called for removal of 22 specimen trees;
- A zoning petition was required for a "density anomaly" to accommodate the project;
- Access was provided through a unique narrow, dead end road with existing traffic issues (and no public improvements proposed);
- Testimony confirmed the project would create a 40% increase in traffic on road;
- Public sewer was provided via 19 grinder pumps and no offsite sewer improvements were proposed to the public system;
- The project was located next to Patapsco State Park;
- The project was found to violate portions of BCZR § 260;
- The proposal was for rear facing lots;
- The developer did not testify or confirm any public outreach prior to the hearing.

People's Counsel Ex. 18.

Again, these factual differences, combined with the fact that no administrative body found a Master Plan conflict following a quasi-judicial hearing, confirm that Woodley Park provides no persuasive support for Mr. Zimmerman's Master Plan argument.

In sum, Mr. Bishop's testimony, and the analysis contained herein, demonstrate that the project complies with MP 2020 and should not be referred to the Planning Board nor denied on the basis of MP 2020.

IV. STORMWATER MANAGEMENT.

As an initial matter, the plan on trial before the ALJ is the Development Plan, not the Final Stormwater Management Plan for this project. The final Stormwater Management Plan will not be reviewed and approved until the permitting stage of the development process. All that is required for approval at this stage is a development plan that shows "[s]tormwater management areas supported by preliminary hydrology computations, and proposed and existing storm drainage systems and verification of suitable outfall." BCC § 32-4-224(a)(10). As the ALJ is well aware, the development process "is indeed an 'ongoing process,' and the hearing officer's affirmation of the plan is just the first step." *Monkton Pres. Ass'n*, 107 Md. App. at 585.

During its case in chief, Developer presented testimony from Matt Bishop explaining that DEPS had approved the Concept Stormwater Management Plan for the project, which contains all of the information that is required to comply with BCC § 32-4-224(a)(10). Mr. Bishop also provided a high level overview of the location and type of stormwater management facilities proposed as part of the project. His testimony added additional detail from the initial DEPS testimony, which confirmed DEPS is the agency is responsible for reviewing Development Plans for compliance with the applicable stormwater management regulations and issued a comment initially dated November 1, 2021, and re-initialed August 26, 2022, confirming that the Plan meets the requirements and should be approved.

Protestants presented testimony from Dan O'Leary in an attempt to undercut the conceptual stormwater management design depicted on the Development Plan and Concept Stormwater Management Plan approved by DEPS. Mr. O'Leary argued that the MDE manual requires developers to treat the "before" condition of agricultural land as "meadow in good hydraulic condition" pursuant to Section 2.4, entitled Overbank Flood Protection Volume Requirements. Prot. Ex. 50. Based on his reading of the Manual, Mr. O'Leary testified that the project does not meet its concept stormwater management requirements.

In rebuttal, Developer presented testimony from Nick Leffner, who was accepted as an expert civil engineer with expertise in stormwater management (among other areas). Mr. Leffner explained that Mr. O'Leary overlooked the statement in the first paragraph of Section 2.4 limiting the application of the overbank flood protection requirements, including the requirement to treat predevelopment agricultural areas as meadows in good hydrologic condition:

> Overbank flood protection for the ten-year storm **shall only be required** if local approval authorities have no control of floodplain development, no control over infrastructure and conveyance system capacity design, or determine that downstream flooding will occur as a result of the proposed development.

Prot. Ex. 50 (emphasis added).

As the introductory paragraph states, the overbank flood protection to which Mr. O'Leary was testifying only pertains to certain jurisdictions. Mr. Leffner confirmed that Baltimore County does in fact control development in the floodplain, infrastructure and conveyance system capacity design, and has not determined that downstream flooding will occur as a result of the proposed development. As a result, the section cited by Mr. O'Leary does not apply in this case.

Furthermore, Mr. Leffner presented a blue lined exhibit confirming that even if Mr. O'Leary was correctly reading the MDE Manual, which he was not, no changes to the Development Plan would be required to calculate and treat the stormwater from this project. *See* Dev. Ex. 42. Based on the County's recommendation of approval, explanation of the information necessary for approval by Mr. Bishop, and confirmation from Mr. Leffner that (1) Mr. O'Leary is incorrect; and (2) even if he was correct no changes to the Development Plan would be necessary, Protestants have not presented any basis for the ALJ to deny the Development Plan on the basis of stormwater management.

V. THE GATE ISSUE.

At the outset, it must be stated that whether the ALJ determines that a gate should or should not be installed in the rear of the Property has no impact on whether the Development Plan should be approved. At DPWT's request, a note was placed on the Plan making clear that the ALJ will determine whether or not to permit the installation of the proposed gate: "to be approved by Administrative Law Judge." *See* Dev. Ex. 1B. Regardless of the ALJ's determination, the plan will meet all requirements and should be approved. Ultimately, the note will either be stricken, or will state "approved by Administrative Law Judge." However, despite the fact that it does not impact project approval, Developer respectfully requests that the ALJ authorize an emergency access gate to be installed because it will have a positive impact on the neighboring residents most affected by this issue.

The purpose of the proposed gate is to provide emergency access to Greenspring Manor in case the access road off of Joppa Road is somehow blocked, but to prevent the creation of a

"cut through" between Joppa Road and Seminary Avenue that could negatively impact the residents of the Meadows and Boxwood communities as well as future residents of Greenspring Manor. The policy potentially impacting the installation of the gate is contained on page 22 of the DPR Policy Manual and is entitled "Access Guidelines." *See* Prot. Ex. 9. The Access Guidelines Policy reads as follows:

B. ACCESS GUIDELINES

1. Maximum Number of Units with One Means of Access

a. Limits of Units

- 100 units with no future street extension proposed
- 150 units when a future street extension is proposed and is feasible
- >15 2nd means of access must be constructed

b. Exception.

These limits may be increased when restricted by a limited or controlled access highway or other physical barrier or limitation as advised by the Department of Public Works.

c. **Emergency access points in place of full-use access points generally will be discouraged, but may be approved in unusual circumstances**.

(emphasis added).

For several reasons, Developer respectfully submits that the Policy does not mandate a second, full-use access connection to Mays Chapel Road.

A. The Policy does not apply because the project does not exceed 100 units with one means of access.

As several witnesses including Mr. Driban and Mr. Cauley (on cross examination by Mr. McCann) confirmed, the project only proposes 61 units with a connection to Joppa Road and a second emergency access point to Mays Chapel Road. The Meadows at Greenspring project contains 99 units and has two separate access points onto Mays Chapel Road. The Boxwood community has approximately 27 units with a single access point onto Mays Chapel Road.

These three separate neighborhoods are clearly identified on Dev. Ex. 27, which confirms there are no neighborhoods exceeding 100 units with only one means of access. Accordingly, the Policy does not apply to this situation or project. The only expert testimony on this issue came from Mr. Driban, who confirmed his belief that the Policy does not mandate two separate access points for Greenspring Manor given the number of units in each neighborhood. T. 10/27/22, pp. 222-223. Indeed, the Policy does not state that multiple access points *to an arterial road* or other specific class of road are required. Each of the projects will have two means of access (or more) if the gate is installed as requested.

B. A full-use access does not promote proper planning principles and does not further the intent of this Policy.

Mr. Driban explained that from a traffic planning perspective, it does not make sense to incentivize traffic to use Mays Chapel Road in lieu of larger surrounding roads such as Thornton Road and Falls Road. *Id.* at 226-227. Higher class roads are designed to handle higher volumes of traffic, and promote more mobility. *Id.* In contrast, Mays Chapel Road is designed to serve residential traffic and does not even have a sidewalk. If gated as proposed by Developer, Mr. Driban confirmed the purpose of the Policy will be fulfilled. *Id*. at 223. In fact, he testified the County's Master Plan and traffic calming literature speak to limiting cut through traffic. *Id*. at 227-228. He also reviewed regulations from neighboring jurisdictions, such as Anne Arundel County, and the Federal Highway Administration, to explain how cut through traffic in residential streets is discouraged. *Id*. at 228-229.

Mr. Nebre made clear that the Mays Chapel connection does not have to be fully open in order for the proposed improvements on Joppa Road to mitigate the impacts of this development. PT. 9/20/22, p. 324. When directly asked by the ALJ whether the Development plan should be approved based on the improvements to the Joppa/Falls intersection even if the gate remains closed or for emergency access only, Mr. Nebre testified that from a traffic perspective it should

be approved. *Id*. at 324-325. Additionally, numerous Meadows and Boxwood residents testified that they use the street for exercise and other community events and strongly oppose opening the road to cut through traffic, which could cause safety issues for residents.

Additionally, the emergency access gate would fulfill the purpose of the Policy by permitting a second access to all three neighborhoods if somehow their primary access point was blocked (fallen trees, floods, etc.) during an emergency. T. 10/27/22, pp. 223-224. While the numerous Meadows and Boxwood residents all testified that there has never been an issue with emergency access with their existing access configuration, the access gate would provide an additional means of access to all three communities in the event of an unanticipated emergency.

On examination by Mr. McCann, Brett Williams, from the Department of Planning, confirmed that the Planning Department supported the installation of an emergency access gate, and that the community was in favor of the gate. T. 9/1/22, pp. 113-114 ("we believe that the connectivity should be done, the connectivity should be there, but only to provide for emergency access due to the negative response from the community.")

C. If the ALJ determines the Policy applies, the resulting cut through is "unusual."

The Policy permits emergency access points to be approved in "unusual" circumstances. As Dev. Ex. 28 demonstrates, Mays Chapel Road would essentially be a straight shot between Seminary Avenue and Falls Road, both of which have "failing" intersections along Falls Road. As several Protestant witnesses testified, it is unusual to have a road with two failing traffic sheds in close proximity to each other. The direct nature of the cut through is also unusual when compared, for example, to the distance between Seminary and Joppa along Tally Ho (6,100 linear feet with 8 speed humps and 7 turns). *Id*. Installation of the emergency access gate alleviates any issues that could be created if a direct cut through is established between two major roads that abut failing intersections with Falls Road. Indeed, Mr. Cauley, on behalf of DPR, testified that "too much traffic going through might be an unusual situation." T. 9/1/22, p. 234. For these reasons, the ALJ should either find that the Policy does not apply, or that the

request meets the exception in the Policy and should be approved to promote good traffic circulation in an unusual circumstance.

VI. THE DEVELOPMENT COMPLIES WITH BCZR § 260.

Mr. Bishop testified in detail about each and every requirement in BCZR § 260. Additionally, the Department of Planning issued a statement confirming they had reviewed the plan and pattern book for compliance with § 260 and recommend approval. This section is included in the memo because Mr. Zimmerman asked Mr. Bishop an issue related to the road connection to Mays Chapel Road. Section 260.4.A.1 contains the following requirement:

> Provide for at least one street connection to an adjoining neighborhood or an adjoining property, not including the principal access to the subdivision, in order to facilitate good traffic circulation.

In this case, the plan does provide an additional street connection to Mays Chapel Road, but proposes to gate the access for the reasons stated above. As explained in detail herein, and as Mr. Driban specifically testified, installation of the gate will facilitate good traffic circulation because it will promote the use of higher class roads in lieu of a residential street that is not equipped to handle the potential volume of cut through traffic that would result if the gate is not installed. T. 10/27/22, pp. 229-230. As the Plan does propose an additional street connection, and gates the access point to promote good traffic circulation, the Plan (with the gate) complies with § 260 and should be approved. Indeed, the Department of Planning supported providing the connection for emergency access and confirmed the addition of sidewalks would provide proper circulation and connectivity between the project and the adjacent neighborhoods. T. 9/1/22, pp. 113-114.

For these reasons, the record demonstrates that the project fully complies with BCZR § 260 and should be approved with the emergency access gate in place.

VII. SEWER CAPACITY.

A. The Protestants did not Present any Evidence that Warrants Denial of the Development Plan for any Issues related to the County Sewer System.

DPWT – the agency responsible for the study, operation, management, maintenance, and comprehensive planning of the County's sewerage system – not only recommended approval of the Development Plan (through DPR), but also specifically determined that the sewer system has adequate capacity to handle the 61 new units proposed on the Development Plan, subject to the completion of a handful of offsite improvements to the sewage system. *See* Dev. Ex. 55. Of course, under *Elm Street*, the recommendation by DPR/DPWT in favor of approving the Development Plan establishes a presumption that the Plan complies in all respects with applicable laws, policies, rules, and regulations applicable to those agencies, unless the Protestants can adequately demonstrate some sort of non-compliance. Further, the Appellate Court of Maryland in *Md. Securities Com'r v. U.S. Securities Corp.* held that "in the absence of evidence to the contrary, administrative officers ... [are] presumed to have properly performed their duties and to have acted regularly and in a lawful manner." 122 Md. App. 574, 58 (1988). Accordingly, without any evidence to the contrary – and there is none in the record – DPWT shall be presumed by the ALJ to be operating, managing, maintaining, and comprehensively planning the County sewage system properly and effectively, and the Development Plan was deemed compliant with applicable laws, etc., at the outset of the hearing.

Over the course of their numerous days of presenting their case, the Protestants spent a significant amount of time attempting to demonstrate that the County's sewer system downstream of the Property has certain problems that should compel the ALJ to withhold approval of the Development Plan. In doing so, the Protestants dwelled on the past, attempted to rewrite some of the history surrounding the County sewer system, relied heavily upon theoretical

studies and corresponding conjecture, and attempted to invent allegedly acute "problems" within the system that require immediate rehabilitation, which simply do not exist. They simply failed to: (i) generally present any evidence to demonstrate that DPWT is somehow acting inappropriately or in some other way that is detrimental to the operation of the sewage system; and (ii) rebut the presumption in favor of Development Plan approval following DPR/DPWT's recommendation of approval with any compelling evidence to demonstrate how the Plan somehow fails to comply with applicable laws, policies, rules, or regulations.

For its part, the Developer presented strong rebuttal testimony through expert professional engineer Nicholas Leffner and accompanying exhibits that: (i) support DPWT's recommendation of Development Plan Approval; (ii) confirm the County's compliance with the Consent Decree; (iii) confirm the adequacy of the overall sewerage system and the capacity to handle the modest additional sewage that would be generated by the new homes; and (iv) reinforces the specific improvements required to the sewer system in order to repair the only known acute issues that must be addressed prior to connection of the proposed new homes to the system. Accordingly, for all of the reasons explained in detail below, the ALJ should approve the Development Plan, subject to an appropriate condition that the limited improvements identified by DPWT be completed prior to the issuance of any use & occupancy permits for the homes within the proposed development.

B. A summary of the Protestants' case.

Through the testimony of Randall Grachek, Robert Summers, and a handful of neighbors, Protestant attempted to demonstrate that the public sewer system, into which the project would flow, is not adequate to handle the anticipated flows from the project and that the Plan should, therefore, be denied. Initially, the Protestants offered a handful of neighbors who testified about

problems with the sewer lines serving their homes (situated in the neighborhoods to the east of the Property). However, the neighbors really did not know the source of the problems (i.e., whether within the public system in their street or the private line between the street and their homes), and in all instances Baltimore County immediately came out to resolve the respective problem affecting their home. This testimony simply provided no compelling evidence of any widespread "capacity issues" – or any other chronic issue whatsoever – within the sewer system.

Next the Protestants offered Mr. Grachek, and at the foundation of his testimony lies the investigation and work that he undertook *nearly five years ago*, in conjunction with the *CPC Falls Road Project/Bluestem ("Bluestem")*[7] matter that dealt with a property several miles away on Falls Road, near the Baltimore City line. As part of that case – as well as this one – he identified the 2005 Consent Decree entered into between Baltimore County, the Maryland Department of the Environment ("MDE") and the United States Environmental Protection Agency ("EPA") as having dictated the evaluation and repair of the sewer system within the Jones Falls Sewershed ("JFS") (that includes the Property and areas downstream) and throughout the County. *See* Prot. Ex. 65. He also correctly identified a number of other reports generated in response to the Consent Decree, including a 2012 Sewershed Repair, Replacement and Restoration Plan ("SRRR Plan") and a 2012 Long-Term Capacity Report ("LTC Report"). *See* Prot. Ex. 67 & 68. However, his erroneous conclusions drawn from his review of these documents, his misplaced reliance upon several other documents, the numerous assumptions he has made without documentary evidence and/or a thorough understanding of certain evidence provided to him by Protestants' counsel, and his failure to have reviewed certain relevant

[7] *See CPC Falls Road Project/Bluestem*, PAI Case No. 09-0861.

portions of the County's files, collectively, have significantly clouded his testimony and correspondingly minimized its reliability and effectiveness.[8]

It became perfectly clear shortly into Mr. Grachek's testimony that his opinion was going to track the opinions that he previously provided in the *Bluestem* case, as well as in the *Torch Hill* case,[9] wherein he opined that the County's sewer system was deficient and lacked adequate capacity to serve the proposed development in those cases. He has had nearly five years to hone his narrative, which involves his formulation of numerous erroneous assumptions and the mistaken heavy reliance upon unverified and inapplicable computer modeling. In short, Mr. Grachek erroneously contends that the Consent Decree, SRRR Plan, and LTC Report *require* the County to undertake improvements to its sewer system that were recommended under computer modeling performed to mimic *massive* storm events (i.e., hurricane level storms) that are *not* representative of the types of rainfall events in this region; in fact, these three documents did *not* require improvements to be performed in accordance with the models that Mr. Grachek favored.

His testimony did evolve somewhat in this case, where he pointed to certain data assembled by a third party – whom he eventually identified as Mr. Tom McCord – in an attempt to assert that, even under the 10-year storm scenarios (which are the ones that informed the improvements required to be performed under the SRRR Plan approved by MDE and EPA) there are capacity issues elsewhere in the sewer system. He also pointed to a map appended to the

[8] Protestants' Counsel stated several times about how he had personally filed PIA requests with DPWT, and, at one point, noted that he had been provided with over 8,000 documents in response. Remarkably, Mr. Grachek admitted on cross examination that he had only reviewed somewhere between 50 and 106 of those documents in preparation for his testimony. *See* T. 4/11/23 P. 138. Despite not having even close to the full complement of materials from DPWT's files, he nevertheless attempted to upend the presumption in favor of Development Plan through passive criticism of: (i) DPWT's response to the Consent Decree and (ii) DPWT's evaluation of the available capacity in the sewer system to accommodate the project. The consequences of Mr. Grachek's limited review of materials also shone through in the *significant* amount of assumptions he made throughout his testimony and his failure to understand the sources for a number of the exhibits upon which he relied. *See, e.g.,* T. 2/10/23 p. 241-46, 259-60, 266-67; T. 4/11/23 p. 154.

[9] *See Torch Hill*, PAI Case No., 09-0919.

2021 RJN Performance Assessment Report and contends it demonstrates that, even after the improvements made to the sewer system in response to the SRRR Plan, there are modeled capacity issues along the stretch of the sewer system just downstream of the Property. As explained below, these attempts to demonstrate some sort of capacity problem simply did not do so.

Mr. Grachek then produced a smattering of exhibits regarding E. coli levels in Lake Roland and apparent "warnings" about the water quality there. What he failed, to produce, however, was any documentary or demonstrative evidence that the proves the E. coli levels measured in Lake Roland are: (i) from human waste; or (ii) caused by any sanitary sewer overflow ("SSO") or any other defect in the sewer system. Instead, he simply *assumed* that there must be some overflow or defect that is causing an actual leak of sewage into the County water system and that it must be causing the infrequent elevated E. coli levels measured in Lake Roland. Mr. Grachek admitted on cross examination that he had not reviewed any of the quarterly or annual reports filed by the County in conformance with the Consent Decree (see Dev. Ex. 47-54), which provide explanations of all of the progress in the County's implementation of SRRR plans throughout all sewersheds, as well as explanations of the presence of SSOs (or lack of presence of them) in sewersheds during the respective reporting periods. *See* T. 2/10/23, p. 202-03. Interestingly, these reports were apparently *not* among the 50 to 106 documents Protestants' counsel and Mr. McCord provided to Mr. Grachek – they almost assuredly would have been among the materials included in the PIA response, and, regardless, are available on the County website. Had he reviewed these reports, he would have seen that there has been *great progress* of the County in the last three years in implementing the SRRR Plan within the JFS and that there were no reports of any major issues within the JFS,

including no reports of SSOs that could be discharging into waterbodies that drain into Lake Roland during the reporting period.[10]

The final point that Mr. Grachek attempted to make was that DPWT's ongoing efforts to proactively maintain its sewer system – through implementation of a comprehensive future planning study performed by Hazen, and a proposal by Ramboll to reline certain aging sewer lines within the JFS – was some sort of indictment on current capacity or efficacy of the system. He also opined that both Hazen's and Ramboll's work are required under and in response to the Consent Decree, when there is zero evidence to support that allegation. Although the Protestants certainly want the ALJ to believe that the County's proactive retention of Hazen and Ramboll is some sort of "admission" of problems that somehow demonstrate a failure to comply with the Consent Decree, even Mr. Grachek admitted on cross examination that at least the Ramboll scope of work constituted "preventive maintenance" on the sewer system. *See* T. 2/10/23 p. 262.

Following Mr. Grachek, the Protestants offered Mr. Summers, who was a longtime employee at MDE, holding several positions while there, including a limited run as Secretary. Mr. Summers largely echoed the opinions of Mr. Grachek. While he offered some exhibits purporting to shed some light on wastewater disposal system designs and E. coli sources within the JFS, the presentation of his testimony seemed to be Protestants' attempts to have two separate experts offer virtually the same opinion, built upon the same flawed evidence, and rooted in the same unfounded assumptions.

In summary, the Protestants want the ALJ to believe there are major capacity issues in the County's sewer system, that the issues can only be solved through significant repair and replacement work (some of which they may not even be able to identify or to articulate the scope

[10] Even the Marnat Road structured SSO that remains active within the JFS, but well west of – and not along any waterbody that drains into – Lake Roland has not experienced an SSO since 2020.

of), and that the Development Plan cannot be approved until all of the work they feel must be complete is complete. What the Protestants ask of the ALJ is, effectively, to impose a judicial moratorium on development within the JFS. They feel that the ALJ should not approve this Development Plan – and undoubtedly any development – within the JFS, until certain unidentified and unplanned improvements are made to the sewer system that presumably will cause certain speculative and unverified models to reflect acceptable future modeled conditions within the JFS. They also feel that the ALJ cannot approve the Development Plan until the County's ongoing forward thinking long-term evaluation by Hazen and the preventative maintenance proposed by Ramboll are complete, both of which could take *years* and in the case of Hazen even decades. These are simply untenable positions taken by Protestants, which are completely unsupported by the evidence in the record and applicable law, and the ALJ should reject them and approve the Development Plan.

C. A 1,000 foot view of the Developer's rebuttal.

The Developer presented the testimony of expert professional engineer, Mr. Leffner, who has 15 years of experience designing sewer systems and evaluating sewer system capacity. *See* T. 5/31/23 p. 7. He has worked on hundreds projects in which he has performed sewer design/capacity evaluation services. *Id.* at 8. He reviewed hundreds of pages of documents in preparation for his testimony and, unlike any of the Protestants' witnesses had *directly engaged with representatives of DPW&T in order to understand the intricate details of the Consent Decree, the other reports generated in response to the Consent Decree, the sewer system improvements performed by the County, and the resulting impacts those improvements have had on the performance of the system*. He provided a fresh and enlightening description of the state of the sewer system within the JFS, while informedly refuting and flatly rejecting the Protestants' testimony and evidence.

His approach was rather simple. He effectively marched through the inner workings of the Consent Decree, to describe how it has been applied and followed by Baltimore County in regards to the JFS from its inception in 2005 through to today. *See* T. 5/31/23 p. 47-136. While his testimony and the contents of the salient documents are described in greater detail below, as a baseline, Mr. Leffner demonstrated that: (i) under the Consent Decree, Baltimore County agreed to develop and to implement measures with *the express goal of eliminating SSOs from its sewer collection system* (*see* Prot. Ex. 65, p. 8; T. 5/31/23 p. 48-49); (ii) in order to evaluate the baseline conditions, the County agreed to inspect the sewer system, to identify defects within the system, to monitor inflow/infiltration into the system, and to investigate the capacity of the sewer system (*see* T. 5/31/23 p. 51-52); (iii) the integral document that described the system evaluation and then provided the measures required to achieve the Consent Decree's goal of eliminating SSOs was the SRRR Plan (*see id.*, p.52-77; Prot. Ex. 67); (iv) the RJN Performance Assessment demonstrates how the improvements implemented under the SRRR Plan have been successful in reducing SSOs (*see* T. 5/31/23 p. 77-87; Prot. Ex. 78); (v) the quarterly and annual reports produced by Baltimore County in accordance with the Consent Decree demonstrate the progressive improvement of conditions, and the reduction of unstructured SSOs, within the JFS (*see* T. 5/31/23 p. 100-07; Dev. Ex. 48-54); (vi) there is no causal evidence supporting the notion that occasional E. coli level spikes in Lake Roland are related to SSOs, but plenty of evidence to the contrary (*see* T. 5/31/23 p. 116-27; Dev. Ex. 56-63); and (vii) the County is doing an excellent job in being forward thinking in its approach to monitoring and planning ongoing maintenance of the sewer system within the JFS (*see* T 5/31/23 p. 131-35).[11]

[11] All of the various documents in evidence refer to constructed SSOs and non-constructed SSOs. Constructed SSOs are manholes or other structures that were specifically designed/constructed to provide an overflow outlet for sanitary sewerage, as a means of providing relief to the system. Over the course of years, the County had installed a handful of constructed SSOs within the system, as a relief to the system,

Mr. Leffner effectively shut the door on the fantastical narrative spun by the Protestants during their presentation, and his testimony should compel the ALJ to agree that, with regard to the sewer issues raised by the Protestants, the Development Plan should be approved, subject to a limited condition pertaining to incomplete work required to the sewer system.

D. The Consent Decree and SRRR Plan clearly and adequately identify the sewer system work that was necessary to reduce SSOs and to improve system capacity, while the LTC Report merely informed the determination of the work required under the SRRR Plan.

Notwithstanding the Protestants' attempts to obfuscate the clear terms of the Consent Decree, a review of the document makes clear that it is the SRRR Plan – not the LTC Report – that dictates improvements that must be made within the JFS. The LTC does serve an important purpose in informing the decisions made under the SRRR Plan, but it simply does not do anything more than that.

As noted, the chief goal of the Consent Decree is to ensure the elimination of SSOs within the County's sewer system. *See* Prot. Ex. 65, p. 8. The Consent Decree also makes it perfectly clear that the primary tools to be utilized in determining the improvements necessary to achieve that goal are the SRRR Plans. Specifically, the Consent Decree provides:

> Following completion of the Collection System Inspection required by Paragraph 8, and considering the rainfall and flow monitoring data collected pursuant to Paragraphs 7.D. and 9, Baltimore County shall prepare a Sewershed Repair, Replacement and Rehabilitation Plan ("SRRR Plan") for each Sewershed that describes the deficiencies identified through the Collection System Inspection and provides for the performance of any repair, replacement, rehabilitation or other corrective action necessary to address those deficiencies.

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and the Consent Decree – as well as all plans and reports generated in response to it – seeks to eliminate these constructed SSOs. *See* Prot. Ex. 65, p. 9-11. The non-constructed SSOs are those overflows that happen spontaneously within the system, typically due to some blockage in the system or some other issue that may unexpectedly cause an overflow to occur within a standard manhole structure. Given that they had been "unexpected" or "unplanned," the measures implemented in accordance with the Consent Decree are, at least in part, meant to eliminate these non-constructed SSOs.

Prot. Ex. 65, p. 31. Upon inspection, the ALJ will undoubtedly find that, outside of the Consent Decree, the SRRR Plans are, literally, the operative documents for Baltimore County's efforts to address the sewer system issues. They summarize and take into consideration all of the other evaluations required under the Consent Decree – including the LTC Report – and they then provide solutions to address the particular issues within each sewershed. *See, e.g.*, Prot. Ex. 67. And, in accordance with the Consent Decree, they are required to be reviewed and approved by MDE and EPA. *Id.* at pp. 34, 75-76.

Within the JFS, Baltimore County retained the engineering firm Rummel, Klepper & Kahl, LLP ("RKK") to prepare the required SRRR Plan, which was submitted to and approved by MDE and EPA. *See* Prot. Ex. 67; Dev. Ex. 43; T. 5/31/23 p. 53-55. In developing the SRRR Plan, Mr. Leffner described how the Consent Decree required RKK and the County, among performing other analyses and evaluations, to prepare a LTC Report for the purpose of evaluating the potential operation of the sewer system under various design storm event criteria. *See* Prot. Ex. 65, p. 32-33; T. 5/31/23 p. 50-52. RKK expressly utilized the LTC Report for that purpose when preparing the SRRR Plan for the JFS, and RKK appended the LTC Report to the SRRR Plan, as Appendix L. *See* Prot. Ex. 67, p. ES-1, 1-1, 5-1, 6-1, 6-12, 6-13. However, RKK explained in the SRRR Plan how it did *not* adopt or require all of the improvements recommended for all of the design storms studied under the LTC Report; rather it targeted certain improvements to reduce inflow and infiltration ("I/I") into the system – particularly in areas where I/I was exceedingly high – which would facilitate the required elimination of SSOs under anticipated wet weather conditions comparable to those experienced in Baltimore County. *See id.*, p. 6-12, 6-13, 6-16, 6-17.

Despite the Protestants' claims to the contrary, as Mr. Leffner noted, the LTC Report itself did not require any improvements whatsoever; rather, it was meant to inform RKK and the County for purposes of providing the final sewer system improvements required under the SRRR Plan. *See* T. 5/31/23 p. 50-52. Under the Consent Decree, the LTC Report was expressly

intended to be used "*to evaluate* whether the construction projects required by Paragraph 7.D. of the Consent Decree and the projects *Baltimore County proposes to complete pursuant to Paragraph 10* will ensure adequate long-term transmission capacity in the Collection System." Prot. Ex. 65, p. 27. The Consent Decree further provided that the SRRR Plan – which is expressly described in *Paragraph 10* of the Consent Decree – was the document that controls and "describes the deficiencies identified through the Collection System Inspection and provides for the performance of any repair, replacement, rehabilitation or other corrective action necessary to address those deficiencies." *Id.*, p. 31.

Indeed, the Consent Decree specifically describes how an LTC Report – one of which, as noted, was appended to the JFS SRRR Plan – was meant as a source to inform the ultimate identification of the corrective actions required under the SRRR Plans: "Within each SRRR Plan, Baltimore County shall:…vi. Propose a plan and schedule for implementing rehabilitation and other corrective action determined necessary to correct deficiencies in the relevant Sewershed identified during the inspections required by Paragraph 8, *taking into consideration the Long Term Capacity/Peak Flow Management analysis performed for the relevant Sewershed pursuant to Paragraph 9*." Prot. Ex. 65, p. 32 (emphasis added); *see also* T. 5/31/23 p. 50-52.

For the JFS evaluations conducted by RKK, the LTC Report provided the results of model simulations of the JFS using five design storm events. Based on that modeling, corrective actions were suggested and categorized by design storm event – i.e., different levels of corrective actions were determined based upon each hypothetical design storm event. *See* Prot. Ex. 68, Maps 4.1, 5.1, 6.1, 7.1, and 8.1. However, the LTC Report for the JFS did *not recommend or require* the County to adopt a particular design storm event criterion; it just provided a roadmap for potential corrective action, should the County choose to pursue design in accordance with particular storm event criteria. In fact, the Consent Decree made it perfectly clear that, even though the County was required to model for various storms, it was not required to implement improvements that would be responsive to all of them. It specifically permitted the County to

utilize "an alternative rainfall distribution that is more representative of Actual Baltimore County rainfall patterns." *Id.* p. 22; *see also* T. 5/31/23 p. 52-53.

Indeed, that is exactly what RKK and the County did when adopting the SRRR Plan for the JFS. Section 6.7 of RKK's SRRR Plan plainly explains that, while the LTC Report evaluates numerous types of storms, "as stipulated in Paragraph 9.C.ii(b) of the CD, the County may utilize an alternative rainfall distribution." Prot. Ex. 67, p. 6-12. The SRRR Plan furth explains that "[t]he County has reviewed various rainfall distribution methodologies and believes the recommendations outlined in the Maryland Hydrology Panel's Application of Hydrologic Methods in Maryland report are more representative of actual storm events experienced in Baltimore County and will result in more accurate predictions of the synthetic design events compared to the SCS Type II storm events [analyzed in the LTC Report]." *Id.* Ultimately, the SRRR Plan concludes that "[b]ased on a review of the Panel's analysis, the County recognizes that deficiencies exist in the synthetic design storm procedure and concurs that the 2- and 10-year/6-hour design storms are more representative of actual County rainfall patterns." *Id.*, p. 6-13; *see also* T. 5/31/23 p.

Prior to applying these anticipated rainfall patterns in their modeling for the SRRR Plan, RKK first evaluated the effectiveness of remedial corrective action previously taken by the County to eliminate structured SSOs and to perform other pre-determined sewer system improvements, as required under the Consent Decree. *See id.*, p. 2-1 to 2-5; *see also* Prot. Ex. 65, p. 9-16. RKK also performed a flow monitoring analysis "[t]o characterize flows within the sewage collection system and correlate rainfall to inflow and infiltration (I/I)." Prot. Ex. 67, p. 3-1; *see also* Protestants' Exhibit 65, p. 22-26. Additionally, RKK performed a thorough inspection of the sewer system, including manhole inspections, closed circuit television inspections, smoke testing, and dyed-water testing, in order to evaluate and to rank/rate the

physical condition of the infrastructure. *See* Prot. Ex. 67, p. 4-1 to 4-12; *see also* Prot. Ex. 65, p. 17-22.

Ultimately, the SRRR Plan outlined a plan for implementing the *necessary* repair, replacement, rehabilitation, and other corrective actions to address identified deficiencies, in order to achieve the stated goal of eliminating SSOs. *See* Prot. Ex. 67, p. 6-1 to 6-17; T., 52-77. In evaluating the *necessary* corrective actions, Baltimore County, under the watchful eye of EPA and MDE, utilized the approved "alternative rainfall distribution" for its modeling. *See* Prot. Ex. 67, p. 6-12 to 6-13; T. 5/31/23 p. 52-53. This modeling resulted in the scope of work described in Section 6 – Corrective Action Recommendation Plan – of the SRRR Plan. *See* Prot. Ex. 67, Table 6-5.3 (summary of the recommended sewer and manhole corrective action by flow meter basin); Table 6-6.1 (summary of the recommended capacity improvements by meter basin); and Map 6-1 (graphic depiction of capacity and structural condition improvements recommended by the SRRR Plan); T. 5/31/23 p. 52-77. It was ***only these specified improvements*** within the SRRR Plan that were required, which improvements were expressly targeted to (i) comprehensively reduce I/I; (ii) selectively perform capacity improvements; and (iii) correct certain identified structural deficiencies. *See id.*, p. ES-1 to ES-2; T. 5/31/23, p. 52-77. As Mr. Leffner noted, while the LTC Report was among the ***plethora of information*** RKK utilized in formulating the Corrective Action Recommendation Plan, there simply is ***no obligation*** for Baltimore County to separately perform any scope of work hypothesized in the LTC Report that was not otherwise contained within the Corrective Action Recommendation Plan section of the SRRR Plan. *See* T. 5/31/23 p. 50-77, 139-46.

E. The work performed in accordance with the Consent Decree and SRRR Plan to date has, in fact, reduced SSOs and increased system capacity.

In addition to specifying the ways in which the County was to evaluate its sewerage system and to implement improvements to it through the SRRR Plans, the Consent Decree required the County (i) to undertake assessments of the performance of the work required under the SRRR Plans; and (ii) to produce quarterly and annual reports on various aspects of the sewer system's performance. *See* Prot. Ex. 65, p. 34-35, 67-74. The County has prepared and produced these reports/assessments over the course of many years. *See* Prot. Ex. 78; Dev. Ex. 48-54. Collectively, they demonstrate the success of the improvements performed in the JFS, including a significant reduction in SSOs, in accordance with the goals of the Consent Decree. Furthermore, despite their attempts, the Protestants' simply have *not* demonstrated some sort of widespread sewer system capacity issue within the JFS.

i. The 2021 RJN Performance Assessment revealed positive results stemming from a significant amount of work performed under the SRRR Plan.

Paragraph 10.E of the Consent Decree required the County "to conduct a Performance Assessment of the work performed in each Sewershed as required under Paragraphs 7, 10, and 13 to determine the effectiveness of the evaluation and corrective action work performed." Prot. Ex. 65, p. 34-35. Each report was required, at a minimum, to: "(a) evaluate the number and causes of SSOs that occur on an annual basis in each Sewershed; (b) quantify the reduction of I/I in each Sewershed; (c) evaluate the effectiveness of repair, replacement, and rehabilitation projects in addressing structural and/or capacity issues; and (d) evaluate the effectiveness of preventative and proactive maintenance practices in reducing root, grease, and other blockages." *Id.*, p. 35.

In 2021, RJN Group, Inc. prepared a Performance Assessment Report for the JFS, which evaluated the County's efforts performed within the JFS performed over the period of time

between 2010 and 2019. The report identified all of the improvements performed under the SRRR Plan as of the date of the Report, which were depicted on Map 2, appended to the Report. *See* Prot. Ex. 78. While the total number of improvements completed at the time were less than the total required under the SRRR Plan, a significant portion of the required improvements had been completed, including hundreds of improvements required within the Timonium area that were expressly targeted to comprehensively reduce I/I within the system. RJN evaluated all of the improvements made up to that point, and it ultimately concluded that: (i) "the completed rehabilitation projects in [sewer meter] basins BC02, BC04, and BC09 (i.e. Timonium) were effective in reducing groundwater infiltration and exceeded the predicted base infiltration reductions in the 2013 SRRR Plan"; (ii) "I/I reduction rehabilitation and relief sewer construction in Jones Falls reduced predicted overflow volumes between 89 and 100 percent in total, for those basins where comprehensive I/I reduction rehabilitation was performed, or relief sewers were constructed"; (iii) "[n]on-constructed [sewage] overflows trended downward during the overall 2010 – 2019 evaluation period…[and] [t]here were *no discharges attributed to high flows during the assessed post-rehabilitation period*"; and (iv) "[o]verall the results of the performance assessment indicate that the rehabilitation performed, and relief sewers constructed or planned, were effective." Prot. Ex. 78, p. iv.

In regard to the chief goal of the Consent Decree to reduce and eliminate SSOs, it is important to review Section 2.3 of the RJN Report, which addresses "Non-Constructed Overflows." *See id.*, p. 6. As that section explains, "[n]on-constructed overflows are SSOs that occur from a County manhole or gravity sewer that is not an intentionally constructed non-pump station overflow structure" and they "can be caused by blockages, defective pipes, or high flows." *Id.*, p. 6. This section, and particularly Figure 2-1, demonstrate that SSO volumes have

progressively trended downward over time, and that outlier years with larger volumes are attributable to force main breaks (in 2016) and excessive rainfall (in 2018). Additionally, all of the constructed SSOs within the JFS have been eliminated, except for one – located on Marnat Road – that is located in the far western part of the JFS and is not situated within the path of the sewerage that would flow from Greenspring Manor. *See* Prot. Ex. 78, p. 5-6.

Again, at the very end of the Report, RJN reiterated that "the results of the performance assessment indicate that the rehabilitation performed and relief sewers constructed were effective." *Id.*, p. 19. And it explained how "[t]here out of the four constructed overflows have been eliminated. The volume of non-constructed SSOs have begun to decrease in the post rehabilitation monitoring period and the model predicted SSO volumes are projected to decrease 90 to 100 percent." *Id.* This objectively paints a very good picture for the health of the JFS as of 2019.[12]

ii. The quarterly and annual reports produced for the time periods since 2019 likewise reveal positive results.

Section VI of the Consent Decree imposes certain Reporting Requirements upon the County, in the form of quarterly and annual reporting for the County's entire sewerage system, not necessarily broken down by sewershed. *See* Prot. Ex. 65, p. 67-74. The quarterly reports are required to contain summarizations of: (i) discharges, flow meter installations, and mitigation measures from structured SSOs; (ii) construction activity performed during the quarter; (iii) progress on sewer system inspections; (iv) progress in implementing the SRRR Plans; (v)

[12] Mr. Grachek insisted that the RJN report only addresses the performance of work in four meter basins, and not the overall JFS. *See* T. 2/10/23 p. 98. The plain language of the report confirms that it assessed the performance within these basins, but it also looked at the elimination of constructed SSOs, the performance of pump stations, the County's FOG program, basement backups throughout the JFS, and SSOs throughout the sewershed. Map 2 appended to the report also confirms the work performed throughout the JFS, which informed RJN's assessment. *See* Prot. Ex. 78. Mr. Leffner flatly disagreed with Grachek and pointed out all of the various aspects of the RJN report that addressed things other than the four meter basins. *See* T. 5/31/23, p. 80-81, 172-74.

progress in implementing the County's Fats Oils and Grease ("FOG") Program; (vi) progress in completing certain supplemental environmental projects required under the Consent Decree; and (vii) issues that may prevent compliance with the Consent Decree. *See id.*, p. 67-70. The annual reports are required to contain summarizations of: (i) progress in implementing the plan to eliminate structured SSOs, including post-elimination monitoring; (ii) annual rainfall evaluations and ongoing flow monitoring; (iii) completion of I/I evaluations; (iv) progress in implementing the County's FOG Program; (v) any discovered illegal stormwater discharges into the sewerage system; (vi) performance of pump stations; (vii) completion of required modeling; (viii) performance of required sewer system inspections; (ix) completion of required gravity sewer line cleaning; (x) completing inventory of the sewer system; (xi) any deviations from the Emergency Response Plan; and (xii) any building backups discovered. *See id.*, p. 70-74.

During the rebuttal case, the Developer produced the annual reports from 2019, 2020, and 2021, as well as the quarterly reports from 2019, 2020, 2021, and three quarters of 2022. *See* Dev. Ex. 48-54; *see also* T. 5/31/23 p. 99-107. A thorough review of these documents in sequential order tells a remarkable story about the JFS, including highlights like: (i) reports of completion of the SRRR Plan in 2019, subject to time extensions for a limited number of assets (*see* Dev. Ex. 48); (ii) reports of subsequent competition of many of the remaining incomplete assets, subject to time extension for only 10 remaining assets (*see* Dev. Ex. 50, 52); (iii) explanations that, the incomplete assets "have no effect on performance of the collection system" (Dev. Ex. 52); (iv) Countywide reductions in discharges from structured SSOs from 2019 through 2022, including *zero* such discharges in one quarter of 2022 (*see* Dev. Ex. 54); (v) *no discharges from the Marnat Road structures SSO within the JFS since 2020* (*see* Dev. Ex. 52, 54); and (vi) no other mentions of any other Consent Decree compliance problems whatsoever

within the JFS, including no mention of any chronic or rampant SSOs (*see generally* Dev. Ex. 44-52).

Indeed Mr. Leffner specifically noted the import of these reports in that they: (i) described the County's progress in complying with the Consent Decree; (ii) provide updates on work recently completed and remaining work, the latter of which has decreased over time; (iii) explain that there have been a significant reduction in SSOs over time, including zero reported constructed SSOs since 2020 in the JFS; and (iv) no other reports of noncompliance with the Consent Decree, including no reports of non-constructed SSOs. *See* T. 5/31/23 p. 105-07.

In short, by all accounts of the official reports required to be produced under the Consent Decree, the sewer system within the JFS appears to be performing very well. And the Protestants did not produce any evidence to the contrary. Amazingly, the Protestants *had not even reviewed the quarterly or annual reports in any meaningful way.*

iii. The Protestants produced <u>zero</u> evidence demonstrating actual acute problems within the JFS that require immediate attention or would otherwise compel denial of the Development Plan.

The Protestants' case is built *entirely* on theories, suppositions, unsubstantiated data, and corresponding circumstantial evidence. They point to and rely upon a handful of charts and maps, which have been prepared using computer models, at least some of which are unverified, for the premise that, because the models show *the potential for* issues within the sewerage system, then there must be actual issues. And, based on this theoretical potential that is supported only by the circumstantial materials that the Protestants produced, the Protestants are demanding that the ALJ deny the Development Plan. In other words, they effectively demand a moratorium on all development within the JFS. Their demands, their position, and their substantial reliance upon modeling is flawed for at least three reasons: (1) some of the modeling has not been field verified by the County or any third party; (2) there is otherwise zero evidence

that demonstrates any *actual* SSOs, capacity problems, or other noteworthy issues with the system that would compel denial of the Development Plan; and (3) the quarterly and annual reporting required under the Consent Decree demonstrates that, in fact, the County's efforts have progressively improved the sewer system throughout Baltimore County, including the JFS.

The Protestants rely heavily upon two sources to make their point: (i) the LTC Report; and (ii) Map 3 appended to the RJN Performance Assessment. Neither of these documents are reliable sources upon which the ALJ can rely to reach the Protestants' desired outcome of Development Plan denial. First of all, as explained in great detail above, the LTC Report is *not* a document that controls or compels any sort of action by Baltimore County whatsoever. This document was expressly required under the Consent Decree to inform the preparation of the SRRR Plan, which governs the improvements required to the JFS sewer system. The maps to which the Protestants hopelessly point in the LTC Report, which are based upon design storms that have been rejected as being representative of rainfall patterns in Baltimore County, simply do not impose any specific improvements within the JFS. The ALJ has already made this finding in the *Torch Hill* case (PAI No. 09-0919), and it need not be revisited nor altered here.

Map 3 appended to the RJN Performance Assessment, which purports to demonstrate certain "model predicted overflows" and "model predicted hydraulic restriction" in certain segments of the sewerage system downstream of the Property, is just as unreliable as the LTC Report. *See* Prot. Ex. 78. According to Protestants, this Map, which is supposed to depict modeled conditions *after* the County has completed some (but not all) improvements required under the SRRR Plan, somehow demonstrates *actual* problems with the sewer system that they feel should be addressed. The problem for the Protestants is that the Map does *not* show any *actual* problems with the JFS sewer system; rather it is based upon modeled outcomes from a

renovated system where less than 100% of the work required to be performed under the SRRR Plan has actually been completed.[13] At best, it evidences anticipated and unverified conditions from a snapshot in time when *a portion* of the work required to be completed under the Consent Decree had been completed. Mr. Leffner specifically noted how he investigated Map 3 with DPWT and learned that they had not verified any of the problems that had been modeled, once they increased their monitoring in these areas. *See* T. 5/31/23 p. 87-90; Dev. Ex. 47A, 47B. Accordingly, it simply cannot be fairly relied upon by the ALJ, as Protestants hope it can, as some sort of dagger to the heart of the Greenspring Manor project, particularly when its predictions have demonstrably not been verified, and when the Protestants have failed to present even a shred of other evidence to demonstrate any *actual* chronic or acute problems within the JFS sewer system.

During their respective testimony, Messrs. Grachek and Summers both indicated that they have had little – if any – direct communications with County representatives to discuss anything related to the Protestants' alleged sewer issues, including the import or reliability of this map. Mr. Grachek flatly admitted that he had made no attempt to inquire with the County as to whether there have been any *actual* SSOs in the JFS within the past three years. *See* T. 2/10/23 p. 246. On the other hand, Mr. Leffner engaged directly with Mr. Dave Bayer from Baltimore County, among others, several times during his evaluation of all of the issues raised by the Protestants. T. 5/31/23 p. 59, 64-65, 89. He asked Mr. Bayer specifically about the import of Map 3, and he learned several interesting things: (i) upon receiving the RJN report and Map 3,

[13] Among the improvements required under the SRRR Plan that have not been completed and were not part of the assessment that was performed when generating Map 3 are the offsite improvements that the Developer has admitted from the beginning of this development review and approval process are required to be completed prior to connection of a single home to the sewer system. *See* Dev. Ex. 1B. These improvements will be included in a condition of approval the Developer proposes in this Memorandum.

Baltimore County immediately increased its field monitoring efforts in the "red areas" highlighted by the Protestants along the Greenspring Manor sewer run through the installation of four new flow meters in the area (*see* T. 5/31/23 p. 88-92; Developer's Exhibit 47A, 47B); (ii) this flow monitoring, which would provide immediate alerts to DPWT representatives when detecting any issues, has not generated results that mimic the predicted conditions – neither SSOs, nor hydraulic restrictions – from Map 3 (*see* T. 5/31/23 p. 88-92); and (iii) therefore, the County regards the model upon which Map 3 was based as being "unverified" in the field (*see* T. 5/31/23 p. 88-92). Being an unverified model, it cannot be deemed reliable, and it most definitely should not inform any decisions to be made in this case.

It should also be pointed out that, if Map 3 were so damning to the condition of the JFS, as Protestants claim it is, then it most definitely would have been prominently featured in the RJN Performance Assessment. One would think that, if RJN felt that Map 3 unquestionably demonstrated such a disastrous outcome for the JFS, it would have provided a lengthy explanation of the Map and it would have surmised in its report that perhaps the improvements completed to date have not been as effective as the County would have hoped. After all, under the Consent Decree, the very purpose for the report was to "determine the effectiveness of the evaluation and corrective action work performed"; so if RJN deemed the work to be ineffective for the JFS, it should have stated so. *See* Prot. Ex. 65, p. 35. But, RJN did not do that. Instead, they mentioned Map 3 twice: once in the table of contents, and a second time, buried within the document, simply explaining that it "depict[ed] the model predicted SSO and flow restriction locations in Jones Falls for all five (5) design storm simulations under the post-rehabilitation condition." Prot. Ex. 78, p. 14. That is hardly some red flag raised about the condition of the JFS. Far from it; recall that RJN's ultimate conclusion was that "Overall, the results of the

performance assessment indicate that the rehabilitation performed, and relief sewers constructed were effective." Id., p. 19.[14]

Mr. Leffner agreed that the RJN report and Map 3 do not support the Protestants' theories. Specifically, he described it as a "snapshot in time on the performance of the improvements and the ongoing…programs that are being just continuously rolled out within the County….[I]t's a model update mainly related to the SSO closures and Cockeysville improvements that were made to show the effectiveness of the SRRR improvements as they're being implemented within the County." T. 5/31/23 p. 85-86. Regarding the modeled SSOs and hydraulic restrictions shown on the Map, he explained that "[t]hey're model predicted based on whatever information was available to the modeler at the time. And don't necessarily include, I would say like current day information, nor has it been verified in the field." *Id.* p. 87.

Beyond their hopeless reliance upon the LTC Report and Map 3, as well as the testimony of lay witnesses who have experienced a sewer back-up in their homes (that were immediately addressed by the County) and another lay witness who observed nondescript maintenance work by certain contractors in a manhole in Joppa Road, the Protestants did not present a single shred of evidence identifying an *actual* chronic or acute problem with the sewer system. There was not a single photo presented; not a single video; not even a single account of anyone who has

[14] The Protestants have suggested that MDE and the EPA have "never approved" the Performance Assessment. First, of all, their approval is not required under the Consent Decree. While MDE and EPA have to approve many items, the Performance Assessments are not among them; rather, the only requirement is for MDE and EPA to have 90 days to provide comments. *See* Prot. Ex. 78, p. 35. The only evidence in the record on this issue demonstrates that MDE received the Performance Assessment in June 2021, but never provided any comments to RJN or the County. *See* Prot. Ex. 80. By contrast, MDE did choose to provide comments on other Performance Assessments for other sewersheds. *See* Prot. Ex. 79. It cannot be fairly claimed under the evidence in the record that the RJN Assessment Report for the JFS has somehow "not been accepted" or "not been approved" by MDE and EPA, when approval is not required, and the only evidence in the record demonstrates delivery of the document to MDE and no comment issued by MDE.

observed a *drop* of sewage discharging from the sewer system within the JFS. They, instead, relied upon unverified models, ecoli testing results (addressed below), and contracts for future maintenance services (addressed below), packaged together with tortured analyses of the Consent Decree and the plans and reports required by it, in their attempt to have the ALJ impose a judicial moratorium on all development within the JFS – starting, of course, with the homes proposed at Greenspring Manor.

There just simply is *zero* evidence in the record that should compel the ALJ to deny the Development Plan on the basis of some alleged – and entirely theoretical – chronic sewerage overflows or capacity issues.

iv. Protestants' evidence does <u>not</u> demonstrate capacity issues within the JFS.

The Protestants once again rely upon information extrapolated from theoretical and unverified models to claim that the sewer system has some sort of capacity issue.[15] These assertions should be rejected. First, DPWT, which has been managing the County's response to and implementation of the Consent Decree for nearly twenty years, has confirmed that there is adequate capacity in the system to handle the connection of the project to the system, subject to the completion of a handful of offsite improvements to be made to the system. *See* Dev. Ex. 55. Additionally, DPWT (through DPR) separately recommended approval of the Development Plan at the outset of the hearing. These two actions are due presumptive effect, in accordance with *Elm Street, Md. Securities Com'r,* and *Marzullo v. Kahl*, 366 Md. 158, 172-73 (2001). Thus, it is

[15] As a baseline for their overall position, if Protestants had their way, Baltimore County would require improvements to the system in accordance with the most intense storm design contained in the LTC Report. They seem to want the County to design their system to withstand rain conditions that would result from an incredibly intense hurricane. Mr. Leffner refuted an approach to sewer design that is based upon oversizing of the sewer systems. *See, e.g.*, T. 5/31/23 p. 93.

up to the Protestants to present evidence that effectively rebuts this presumption, which, as explained below, they have not done.

The Protestants offered testimony from Mr. Grachek in an attempt to prove the sewer system lacked capacity. He pointed to one exhibit (Prot. Ex. 69), which was apparently prepared by a lay person and provided to him and which he had not independently verified, but rather assumed to be correct; and he even seemed confused about the source of some of the information.[16] *See* T. 2/10/23 T. p. 72-73, 229-33. It turns out that the only sewer sections where capacities, as computed by DPWT, exceeded 100% were those sections that DPWT is requiring to be improved as a condition of its recommendation of approval of the Development Plan in this case. *See* Dev. Ex. 45A, 45B. And the other columns in the exhibit were from the LTC Report, which *modeled* a number of storms that were deemed inapplicable, and otherwise showed anticipated capacities *without any improvements to the system whatsoever*, which is of course an unfair and inappropriate comparison. *See* 2/10/23 T. p. 233-36. At the conclusion of cross examination, Mr. Grachek flatly admitted that his "*entire opinion of capacity issues [was] based on the assumptions that were made in these models" and in the data provided by the County. Id.* p. 236-37. Further, *he was not aware of any field measurement or data captured in the field that supported his position that the pipes in the system are actually over 100% capacity*. *See* T. 4/11/23 p. 154.

Mr. Grachek submitted a second exhibit (Prot. Ex. 81[17]), which provided *modeled* capacities based upon the unverified model that RJN performed when undertaking its performance assessment. Once again, he did not prepare this exhibit, but he assumed it was correct. *See* 2/10/23 T. p. 254-56. He also admitted that (i) the was not familiar with RJN's

[16] The source documents for Prot. Ex. 69 were apparently Prot. Ex. 64 and 72.
[17] The source document for Prot. Ex. 81 was Prot. Ex. 82.

model and had no idea what assumptions or information informed the model; and (ii) the post-rehabilitation portion of the model was based on a limited number of improvements within the JFS. That is, the model was performed at a time prior to the completion of at least some of the improvements required under the SRRR Plan. *Id*. at 256-57.

Finally, he pointed to an undated chart (Prot. Ex. 108), purportedly prepared by Hazen, which was apparently obtained by Protestants' counsel as part of a PIA request. Mr. Grachek could provide absolutely no explanation for when this chart was prepared, how it was prepared, or what it was really intended to show. *See* T. 4/11/23 p. 147-53. He fully admitted that his evaluation and testimony regarding Prot. Ex. 108 was formulated based upon a host of presumptions. This Exhibit is entirely unreliable.

Mr. Leffner easily picked-up on the common theme woven throughout the Protestants' evidence in support of their assertions about an alleged lack of capacity within the sewer system. He clearly recognized that the Protestants' assertions were built upon a heap of assumptions, including the unverified model performed by RJN and the misunderstanding that Baltimore County's own capacity analysis was based upon dry weather flows.[18] *See, e.g.*, T. 5/31/23, pp. 86-88, 110-12. He ultimately concluded that the County's approach to improving capacity within the system – significant reduction in I/I – had demonstrably worked, as demonstrated by the RJN Performance Assessment, the Quarterly and Annual Reports submitted under the Consent Decree, the County's confirmation of capacity for this project, and his interactions with

[18] The Protestants assumed that the County's own sewer capacity model (Prot. Ex. 64) applies dry weather flows, because there are "0.00" values contained in the "INFLOW" column, and also based upon their own extrapolation of the County's analysis compared to wet weather analyses performed by other consultants. Essentially, because certain wet weather analyses are larger than the County's analysis, the Protestants effectively *assumed* that the County's analysis must be a dry weather analysis. However, they never bothered to inquire with DPWT about it. *See e.g.*, T. 2/10/23 p. 214. Mr. Leffner, on the other hand, did, and he learned that the County applies one wet weather factor – for both infiltration and inflow – in the single column marked "INFIL." on the County's model analysis (Prot. Ex. 64). T. 5/31/23 p. 111-12. Thus, the Protestants' assumptions in this regard are erroneous.

DPWT generally regarding capacity, installation of new level sensors, and any corresponding issues with the sewer system. *See, e.g.,* T. 5/31/23 59, 76, 86-90, 99-112; Prot. Ex. 78; Dev. Ex. 47A, 47B, 48-55.

Mr. Leffner further opined that, even when assuming RJN's capacity model was accurate, the capacity numbers in excess of 100% may not be problematic for a couple of reasons. First, the performance assessment did not take into consideration a number of improvements required under the SRRR Plan, including the handful off offsite improvements required by DPWT to be completed prior to this project's connection to the sewer system; so the numbers would almost certainly change if the model is re-run with those improvements made. Additionally, operational capacity in excess of 100% does *not* automatically mean the system "is going to overflow" or cause other capacity-related issues with the system; there are host of factors that must be considered, including the depth of the sewer lines and manholes. *Id.* at 88-94.[19] He ultimately opined that, for all of these reasons, he opined that the Protestants' evidence did not present any capacity issues. *Id.* at 94. He also remarked that, from his perspective, the capacity modeling performed by the County's consultants "may be overly conservative," given the discrepancy in *actual* rainfalls in the area and the fact that there have *not* been any *actual* overflows or capacity problems demonstrated in the field. *Id.* at 108-9. The ALJ should likewise find that, given the battle of expert opinions and testimony, the Protestants have not effectively rebutted the

[19] While the Protestants insist that design manuals' "requirement" that sewer pipes be *designed* to a capacity less than 100% demonstrates an automatic "overcapacity issue" for a pipe that operates at more than 100% capacity, Mr. Leffner refuted that position, noting that systems themselves should not be deemed to be overcapacity, if one or more particular segment is showing a capacity in excess of 100%, particularly if there are no resulting SSOs. *See* T. 5/31/23 p. 92-94. He also noted that it is not good engineering practice to "oversize" a sewer pipe for the sake of avoiding a 100%+ capacity measurement, "because then the velocities may be really low and that can result in damage to the sewer lines or maintenance concerns." *Id.* at 93.

presumption in favor of DPWT's determination of sufficient sewer capacity in the system. *See Elm Street, Md. Securities Com'r,* and *Marzullo*.

F. The record evidence demonstrates that any elevated E. coli readings in Lake Roland are likely *not* caused by SSOs or leaks from the sewerage system.

Protestants presented a smattering of samples of E. coli level readings taken in Lake Roland, in an effort to argue that the elevated E. coli levels *must* be from SSOs. *See* Prot. Ex. 75. Mr. Grachek, in presenting the data, really had no idea how or why the County implemented its testing program. *See* T. 2/10/23 p. 241-46. He ultimately provided his assessment for why there were random spikes of E. coli levels in the Lake, which ultimately amounted to pure guesswork. His testimony, combined with Mr. Summers' equally speculative testimony[20], represented Protestants' attempt to put icing on a cake made out of hypotheses, assumptions, and conjecture. In a nutshell, the Protestants' witnesses insisted that, because various models – including at least one that was unverified – suggest that SSOs *could* be happening during particular large storm events, the occasional elevated E. coli readings must mean that the SSOs definitely are happening. *See, e.g.*, T. 2/10/23 p. 90. But the witnesses never presented a single ounce of proof that human effluent was making its way into any waterbody within the JFS; nor did any other witness.

On cross-examination, however, both of Protestants' witnesses admitted that there could be other sources of E. coli that cause or contribute to E. coli spikes in Lake Roland. For example, animal feces could cause E. coli to enter into water bodies, including livestock. T. 2/10/23 p. 246; T. 4/11/23 p. 136, 155. Additionally, septic systems could also pollute

[20] Mr. Summers' entire opinion – which was that human effluent was the most pervasive cause of E. coli within the JFS receiving waters – was based upon information contained in a TMDL report *issued in 2006*, which he admitted to have been issued right at the start of the County's efforts to address issues within the JFS under the Consent Decree. He further admitted that the TMDL report, which was not at all related to the Consent Decree, is not reliable in demonstrating E. coli readings *today*, given that there has been significant work performed within the JFS that would most definitely influence the 2006 analysis. *See* T. 3/7/23 p. 67, 115, 148-49.

waterways with E. coli and other pollutants that could negatively impact the water quality within Lake Roland. T. 2/10/23 p. 247; T. 4/11/23 p. 136, 155. As Mr. Summers freely admitted during cross examination, he – and the entire team supporting the Protestants – have not produced any evidence that would directly tie any E. coli spikes contained on Prot. Ex. 75 with an SSO. *See* T. 3/7/23 p. 136.

Mr. Leffner concurred with the Protestants' opinions about alternative causes of elevated E. coli readings in Lake Roland, and he prepared a few exhibits to demonstrate how the alternative sources are likely the primary causes. First, he presented a map showing the five water testing locations within Lake Roland, including at least one testing area that sits right below a dog park area, where dogs relieve themselves and are permitted to swim in the Lake Roland waters. *See* Dev. Ex. 56; T. 5/31/23, p. 113-15. Next, he presented a second map showing how large the Jones Falls Watershed is, including tens of thousands of acres of land and tens of thousands of homes situated outside of the Urban Rural Demarcation Line, which utilize septic systems. *See* Dev. Ex. 58, 59; T. 5/31/23 p. 117-21. He then presented a third map demonstrating that there are over 600 septic systems sitting right above and surrounding Lake Roland on all sides, situated between I-695 to the north, Charles Street to the east, the City line to the south, and I-83 to the west. *See* Dev. Ex. 60; T. 5/31/23 p. 121-24. He explained that he obtained the latter map from Baltimore County's Groundwater Management Division within DEPS, and he confirmed that the County does not monitor or inspect the quality or functionality of septic systems in Baltimore County. T. 5/31/23, pp. 121-24. Finally, he presented a map that showed the voluminous acres of agriculturally used land within the Jones Falls Watershed, including farmland that includes various branches of waterbodies that feed into Lake Roland. *See* Dev. Ex. 61; T. 5/31/23 pp. 124-28.

For Mr. Leffner, given the complete lack of proof of any active SSOs within the JFS, and recognizing the abundance of evidence identifying numerous other potential sources of E. coli within the JFS waterbodies, he was confident in opining that the elevated E. coli levels were not being caused by any SSOs. Specifically, he stated that "there's multiple sources that [the E. coli spikes] could come from" but that "there was nowhere near as much of an understanding [by Messrs. Grachek and Summers] of the amount of potential agricultural, septic, wildlife, urban land use within the watershed" as Mr. Leffner has. T. 5/31/23 p. 117. But with his understanding of the parameters of the area, and based on the evidence in the record, Mr. Leffner ultimately concluded that "the sources are varied as reported in…even some of the exhibits that we didn't review today, as far as the TMDL exhibits…where there's differentiation between wildlife, urban areas, agricultural uses." *Id.* p. 126. He went on: "there is a huge number of properties within the overall watershed that are on private well and septic, which…[are] not necessarily regulated or managed [by the County]." *Id.* p. 127. Finally, given the significant progress demonstrated in eliminating actual SSOs in the JFS, Mr. Leffner "[did not] know how you could say that…the source of the bacteria is just from sanitary sewer overflows" and given the record evidence to the contrary, it made sense that the *other* sources were the primary contributors to the E. coli spikes. *Id.*

There certainly is enough evidence in the record to support Mr. Leffner's opinion on this issue. At the very least, the record evidence must cast significant doubt for the ALJ that E. coli readings are definitively caused by SSOs, as the Protestants have baldly asserted. Accordingly, the ALJ should not draw any definitive conclusions that the occasional elevated E. coli readings have anything at all to do with the condition of the sewage system in the JFS. Similarly, the Stream Sense signs – which Mr. Leffner demonstrated to exist at numerous locations throughout

the County – do not present any compelling evidence that there is some sort of serious or acute water quality condition at Lake Roland. *See* Dev. Ex. 63; T. 5/31/23 p. 129-30. The signs are just a common practice used by Baltimore County to make citizens who may come into contact with public recreational waterbodies aware of the *potential* for health hazards, from time-to-time, for whatever reason. Indeed, as of the date of the hearing, the County had not identified Lake Roland – nor any waterbody in the County – as being subject to any closures, water contact alerts, nor water quality advisories. *See* Dev. Ex. 62.

Accordingly, the ALJ should reject any attempt by the Protestants to suggest that SSOs exist and are somehow causing elevated E. coli readings in Lake Roland. There just simply is not evidence in the record to support Protestants' theory.

G. The ongoing Hazen and Ramboll studies are not part of the Consent Decree and are identifying separate scopes of work for the County in implementing its routine maintenance program and long-term system planning.

During their fishing expedition in the County's records, the Protestants stumbled upon information regarding two separate consultants that Baltimore County has hired as part of its renewed and proactive efforts to maintain the sewer system within Jones Falls and to plan for the future. Specifically, they found evidence of: (i) a forthcoming report that will be prepared by Hazen and Sawyer to plan for future improvements to the sewer system over a 5-, 20-, and 50-year horizons; and (ii) an evaluation report by Ramboll to perform certain relining work on certain sewer lines nearby Lake Roland. The Protestants tried desperately to insist that Hazen and Ramboll were performing work in accordance with the Consent Decree, in an effort to assert that their respective reports are evidence that the County has failed to comply with the Consent Decree; however, as Mr. Leffner opined, and a review of the Hazen and Ramboll documents themselves will reveal, the evaluations being performed by these companies are completely

unrelated to the Consent Decree and are, instead, evidence of good maintenance and planning practices being implemented by Baltimore County.

The purpose for Hazen's work can be found right on the first page of the proposal document submitted by Protestants. Specifically, Hazen's "comprehensive evaluation," for which it was retained in 2020 to "complete an evaluation addressing the capacity, operations and maintenance (O&M), and structural needs of the sewer system and develop a comprehensive plan and strategies to address system deficiencies at year 2025, 20-year, and 50-year planning horizons and two additional planning horizons determined by the County." Prot. Ex. 86, p. 1. And a more thorough review of the document reveals that this is a forward-looking proposal from a company who has been tasked with reviewing the system comprehensively, including all improvements made to date, considering anticipated growth, and recommending improvements to the system that can be made over the next half century. It is a planning document. It is not tied to the Consent Decree whatsoever; it does not even mention the Consent Decree, though it does identify the SRRR Plan and LTC Report as items that Hazen would review, which is to be expected given the recent role of those two documents in informing the improvements made to the system over the last decade.

There is nothing remarkable, or telling, or scandalous about Hazen's work. Mr. Leffner described it as "a further horizon study that the…County is embarking on that's going to involve…future long-term planning for sewer system upgrades, considering costs and strategy, operation and maintenance kind of protocol or systems they can implement." T. 5/31/23 p. 134. Even Mr. Grachek agreed it was not something that he could confirm to be required as part of the Consent Decree. *See* T. 2/10/23 p. 260-61. In short, the forthcoming Hazen Report can be fairly

characterized as good planning practices by Baltimore County; this is the exact type of ongoing maintenance and planning that citizens should expect from their government.

The Ramboll report similarly demonstrates the County's ongoing efforts to maintain the sewer system within the JFS. There can be no doubt that the sewer assets set for relining and similar work described in the Ramboll report were among the assets thoroughly reviewed and evaluated by RKK in 2012. At that time, RKK evaluated and graded all of the assets within the sewershed – including those being re-evaluated by Ramboll – and made the determinations they made with regard to what improvements were and were not necessary to comply with the goal and requirements of the Consent Decree. And MDE and the EPA agreed with them, when approving the SRRR Plan. *See* Prot. Ex. 67; Dev. Ex. 43.

It should be no surprise then, that when taking a close look at the Ramboll report, Ramboll *agreed* that the assets that are the subject of the report do not have any major problems. Over the course of 13 pages, Ramboll breaks down its scope into 9 different "sites," and evaluates various aspects of each site, including the condition of the assets within each site. For every single site, Ramboll reports that review of inspection data confirms "***no major defects***." Protestants' Exhibit 87, p. 8-11, 14-15, 17, 19-20. The report calls for relining of all of the pipes, epoxy lining many of the manholes, and replacing the frame and cover of a handful of manholes. *This is hardly an indictment on the functionality of the system or any sort of evidence that the County has failed to comply with the Consent Decree. There is zero indication anywhere in the Ramboll report that there are any sewerage leaks or SSOs being experienced within or along any of the assets that are the subject of the report.* Plain and simple, this is a protective measure being undertaken by Baltimore County in order to continue to eliminate I/I into the sewer system. Again, this is a service that citizens should expect their government to perform.

In reviewing these reports and reflecting on the days of testimony and loads of evidence that the Protestants put into evidence, it is almost as if they are rooting for the sewer system to fail. And it is certainly clear that they completely distrust Baltimore County and DPWT. They want these two latest reports to viewed as some sort of proof that the millions of dollars the County has already spent and DPWT has deployed in improving the sewer system over the last decade has not done a single thing to improve conditions within the JFS. It seems the Protestants would suggest that any proactive measure by the County and DPWT going forward must be construed to mean that the overall sewer system is failing. And they most definitely feel that the ALJ should not be approving a single new toilet to flush into the system until the system is repaired to the satisfaction of the Protestants – whatever (and whenever) that may be. That simply is not practicable, nor is it the legal standard.

Protestants' counsel tried desperately to get Mr. Leffner to admit that the Hazen and Ramboll reports were somehow tied to the Consent Decree and/or that they provided evidence of some terrible sewer defect that should compel denial of the Development Plan. He did not bite. *See* T. 5/31/23 p. 148-53; 156-58. When Protestants' counsel attempted to tie the reports to the obligations under the Consent Decree and SRRR Plan, Mr. Leffner stated: "I don't think that statement [requiring the repair of structural deficiencies] is made to be an all-encompassing forever more recommendation. I think it's specific to correcting the identified structural deficiencies in [the SRRR] report, through rehabilitation and replacement…I do think the…Consent Decree does include ongoing analysis, but for a finite amount of work." *Id.* p. 158. There should be little doubt that the Hazen and Ramble reports – which were both commissioned nearly two decades removed from the adoption of the Consent Decree and after

the date by which all work under the Consent Decree was to be completed[21] – are completely separate from, and not a requirement of, the Consent Decree. Neither Hazen nor Ramboll even mention the Consent Decree in their proposals to the County.

H. The Development Plan should be approved, subject to a limited condition.

Section 32-4-229(b)(1) of the BCC requires the ALJ to approve a development plan that complies with County laws, policies, rules, and regulations. With regard to the sewer issues, there is nothing within the various documents, theories, and assumptions presented by the Protestants that demonstrates a single way in which the Development Plan fails to comply with a County law, policy rule, or regulation. The evidence does demonstrate – and the Developer fronted this issue for the ALJ – that there are a handful of improvements downstream of the Property that were required to be completed under the SRRR Plan and have not yet been completed. Some of these are already shown on the Development Plan itself, and the Developer is aware that it should not be able to connect any of the new homes to the sewer system until the improvements required by DPWT are completed.

Indeed, at the outset of the hearing DPR/DPWT recommended approval of the Development Plan, and DPWT has separately confirmed that there is sufficient capacity in the sewer system to accommodate the development. This provides the ALJ with presumptive evidence that the Development Plan should be approved, unless the Protestants can adequately rebut the presumption. *See Elm Street*, *Md. Securities Com'r*, and *Marzullo*. The have failed to do so. Accordingly, the Developer proposes that the ALJ should approve the Development Plan, subject to the condition provided in the Conclusion Section.

[21] It should also be noted that Baltimore County reported in several Quarterly and Annual Reports to MDE that the County's SRRR Plan implementation in the JFS was "completed," subject to a very limited number of remaining improvements.

VIII. THE DEVELOPMENT PLAN SHOULD BE APPROVED.

For the reasons stated herein, there is substantial evidence on which the ALJ should approve the Development Plan. Conditions are proposed as part of the conclusion of this Memorandum to ensure that the project provides the necessary traffic and sewer improvements to ensure the project is safely and effectively constructed.

SPECIMEN TREE SPECIAL VARIANCE

Developer presented testimony from John Canoles, a natural resource consultant with over 30 years of experience in the industry. *See* Dev. Ex. 10. Mr. Canoles explained that a petition for special variance was filed to remove a single specimen tree, a Norway spruce located along Joppa Road in the front of the Property. A photograph of the tree in question was marked and accepted into evidence as Dev. Ex. 11. Mr. Canoles noted that the tree is in "fair" condition as it has been "limbed" or trimmed around existing power lines, as is clearly evident from the photograph. *Id.* This is one of the few issues that was not contested by the neighbors or Protestants.

As Mr. Canoles explained, he performed a survey and found 25 specimen trees on the Property. Dev. Ex. 12. One of the trees was damaged during a storm, but the remaining specimen trees are all being preserved with the exception of the single tree along Joppa Road. *Id.* Following review of a request for special variance to remove the tree, the Director of DEPS issued a letter dated September 21, 2021 approving the petition. *See* Dev. Ex. 13. According to BCC § 33-6-116(g)(2)(i), this approval "shall be considered a recommendation to the [ALJ], who may either grant or deny the special variance requested."

As the ALJ is well aware, an applicant for special variance must meet one of three criteria listed in BCC § 33-6-116(d) and all three criteria listed in § 33-6-113(e).

Mr. Canoles provided testimony demonstrating that strict compliance with Article 33, Title 6 (requiring retention of the specimen tree) would cause unwarranted hardship (as defined by § 33-6-116(d)), in that the plight of the Petitioner is due to circumstances unique to the site and are not reflective of general conditions in the neighborhood. BCC § 33-6-116(d)(2). DEPS agreed, finding that the close proximity of the tree to West Joppa Road, and requirement to widen the road, demonstrate a unique circumstance not a general condition in the neighborhood. *See* Dev. Ex. 13. Additionally, Mr. Canoles argued, and DEPS agreed, that consistent with BCC § 33-6-116(d)(3), the removal of this single tree will not alter the essential character of the largely developed surrounding neighborhood. In fact, DEPS stated that "the tree would likely be removed by Baltimore County at some point due to its declining condition or eventual widening of Joppa Road as a necessary capital improvement project. *Id.* The request therefore meets two of the requirements in § 33-6-116(d) when only one is required to be met.

Next, Mr. Canoles testified in support of the additional findings required by BCC § 33-6-116(e). As he explained, the request will not adversely affect water quality as 5.9 acres of affectation are proposed for this project within the floodplain and forest buffer. Dev. Ex. 13, p. 2. The request also does not arise from a condition or circumstance on the Property for which Developer is responsible, as DEPS agreed the tree has existed adjacent to Joppa Road for many years prior to this development proposal and would likely be removed at some point "regardless of the proposed development." *Id.* Finally, the request is consistent with the spirit and intent of Article 33, Title 6 as the project does not propose any impact to forests and will retain all of the other specimen trees on site. *Id*.

In a complicated case, finding in favor of this request for special variance is a relatively easy task. Protestants must have recognized this as they focused their efforts on other issues and did not put on any testimony to contest the removal of this single tree. Developer respectfully submits that the criteria has been met and this special variance should be granted.

SPECIAL VARIANCE TRAFFIC PETITION

The balance of testimony regarding the Special Variance request in this case was strikingly lopsided. In addition to the County's DPWT representative, Kris Nebre, the Developer presented expert testimony from Erin Kuhn the highest ranking traffic employee for the District 4 office of MDOT SHA, which includes Baltimore and Harford County, and Nick Driban, a senior traffic engineer with 15 years of experience working for both SHA and as a professional engineer for Lenhart Traffic Consulting. In contrast, the Protestants did not present any expert testimony related to traffic and relied solely on lay testimony from area residents confirming what we already knew: there is a lot of existing traffic in this area.

I. BACKGROUND RE: FALLS ROAD CORRIDOR.

Kris Nebre confirmed that the Property is located in the failing traffic shed that includes the intersections of Falls Road with Joppa Road and Greenspring Valley Road, but not in the failing traffic shed that includes the intersection of Falls Road and Seminary Avenue. T. 9/20/22, p. 301. Under the County's Loaded Cycle Methodology (LCM), the "failing" movements in question are the northbound movement at the Joppa/Falls intersection during the morning peak hour, and the northbound movement at the Falls/Greenspring Valley intersection during the afternoon peak hour. T. 10/27/22, p. 201.

It is undisputed that Falls Rd. (MD Rt. 25), Greenspring Valley Road (MD Rt. 130) and Seminary Ave. (MD Rt. 131) are owned and maintained by the State of Maryland. T. 9/20/22, p. 301. Additionally, the signals at the intersections of Falls Road/Joppa Road and Falls Road/Greenspring Valley Road are owned and maintained by the State of Maryland. Mr. Nebre confirmed that the county has no jurisdiction over the "maintenance and operations" of the State roads and intersections. *Id.* at p. 303.

Testimony from Erin Kuhn confirmed that using the Critical Lane Volume (CLV) and Highway Capacity Manual (HCM) methodologies - both of which are used by SHA- the intersections are not failing. T. 09/20/22, p. 402. Specifically, Falls/Greenspring Valley is not close to failing and will not be failing in the future, under either of the methodologies utilized by the state. The Falls/Joppa intersection is a level E, which is "close to" but not failing. *Id.* Ms. Kuhn stated that with the improvements proposed by Developer, it will only improve. *Id.*

Given that the State does not rate the intersections as failing, the State has not, and likely will not, pay to make improvements to the intersections. Although the County has rated the intersections with an 'F' level of service under its Loaded Cycle Methodology (LCM) for many years, the County has not, and likely will not, incur the cost to improve State roads and intersections. As a practical matter, any improvements made to these intersections would have to be paid for with private funds by a developer like the applicant in this petition.

II. LEGAL FRAMEWORK FOR SPECIAL VARIANCES.

On its face, the Growth Management law confirms that the purpose for the Basic Services Maps (for water, sewer, and transportation) is "to regulate nonindustrial development in [certain predominantly urban areas of the county that are inadequate to serve all of the development that would be permitted] to a degree commensurate with the availability of these facilities." BCZR § 4A02.1. Importantly, the BCZR further confirms that these provisions are not intended to establish a permanent moratorium on development, nor to prohibit development within the identified "deficient" areas in all instances. Specifically, the BCZR provides: (i) "Basic Services Maps are not permanent and will be reviewed annually with reports to the County Council." BCZR § 4A02.1; and (ii) "Basic Services Maps are not intended to permanently establish either areas of service deficiencies or areas of service availability and adequacy. Such maps will be

reviewed annually, as it is the intent of the County Council that existing service deficiencies will be corrected in accordance with the Master Plan and capital improvements program." BCZR § 4A02.3.F.

The Growth Management law provides a mechanism – the special variance – whereby, upon a proper showing, the final subdivision of land (i.e., recordation of plats) and the issuance of building permits for properties within deficient, F-rated areas (depicted on the approved Basic Services Maps) may be approved or issued despite the existing deficiency. The required finding for a special variance is that the *actual* impact of the proposed subdivision/construction would be "less than that *assumed* by the district standard that would otherwise restrict or prohibit" the subdivision/construction. BCZR § 4A02.4.G (emphasis added).

Section 4A02.4.G of the BCZR requires that the Special Variance Petition not violate the provision's purpose. That purpose is set forth in BCZR, §4A02.4.D.1 as follows:

> D. Transportation.
>
> 1. Intent. The transportation standards and maps are intended to regulate nonindustrial development where it has been determined that the capacity of arterial and arterial collector intersections is less than the capacity necessary to accommodate traffic both from established uses and from uses likely to be built pursuant to this article.

As the ALJ recently found in the Torch Hill decision (Developer's Exhibit 37), the LCM standard is not the standard to apply in a Special Variance case under BCZR §4A02.4. LCM is the standard applied by the County to rate an intersection, but is not the standard to apply when a Petition is requested for what is essentially a waiver or exception (i.e. Special Variance) from the prohibition on issuing a building permit.

The purpose for determining the 'level of service' is to assign a letter grade (i.e. a 'rating') to an intersection, and the purpose of rating an intersection, is to control the issuance of building

permits at the outset. The 'F' letter rating is a 'red flag' on the file. The Special Variance, on the other hand, focuses on what impact the particular development will have on the intersection rated as failing, so that it can be determined whether or not the building permit restriction can be lifted for a project. If the impact from the development is net zero (due to a proposed improvement to the roadway and/or a TIA which calculates the impact as zero), then a waiver of the building permit moratorium can be granted. Mr. Nebre specifically stated that a developer does not need to improve the intersection's letter grade from F to D or better, it could remain an F but accommodate the traffic from the project so that the intersection "won't be any worse." T. 9/20/22, p. 307. This is consistent with the purpose of the Transportation Basic Services Map, which is whether capacity will exist at the intersection to accommodate both existing traffic and that generated by Greenspring Manor. It is also consistent with the required finding in BCZR § 4A02.4.G.1.a that the demand or impact from traffic generated by Greenspring Manor will be less than that presumed by the district standard.

Protestants repeatedly pressed for an interpretation that the LCM is the correct standard for the ALJ to evaluate a petition for special variance. But the LCM cannot be used to predict or forecast the impact of future projects or intersection improvements. As Nebre explained, LCM "controls development on our basic service map" but CLV would be used for traffic analysis for the TIS report. T. 9/20/22, p. 355. In fact, you have to use the CLV and HCM methodologies to project impacts caused by a development, or proposed improvements to an intersection, because the LCM methodology is "not something that can be forecasted. It's something that's based off of observations." *Id.* at 356.

It is actually **impossible** to evaluate a petition for special variance using LCM. You would have to build a project, allow people to live in the homes, construct an intersection

improvement, and then re-test the intersection by observing the new traffic pattern in the field. It would turn any special variance petition into an "after the fact" request because you cannot test a proposed improvement under LCM without first constructing it and then observing traffic in the field. The only methodologies that are predictive and can therefore be used to evaluate a petition for special variance, are CLV and HCM, which are both utilized by SHA and widely accepted in the industry.

Another element to a petition for Special Variance is contained in BCZR §4A02.4.G.2, which states that the DOP will provide the ALJ with a report prior to consideration of the Special Variance. In this case, unlike prior cases, DOP did provide an HOH Report indicating they have "no objection" to the approval of the special variance, but ultimately, they still deferred the issue to DPWT due to their expertise with traffic issues. *See* County Ex. 7. At the beginning of the hearing, DPR, who typically represents DPWT, was not able to answer all of the questions about traffic or the Special Variance Petition. As in Torch Hill, the ALJ therefore requested testimony from Kris Nebre in DPWT, notwithstanding the presumption that BCC § 32-4-226(c) and (d) presume that no comment from a County agency means the agency is not opposed to a development plan. Mr. Nebre did his best to provide answers to questions in regard to the applicable traffic shed, the 'F' rated intersections, the County's use of the LCM, and whether the proposed improvements will provide a zero net impact on the intersection.

Lastly, the ALJ is asked to find the Petition for Special Variance will not adversely affect a person whose application was filed prior to the Petitioner's application in accordance with § 4A02.3.G.2.b. This should not come into play in this case, as there was no evidence that any

applications for reserve capacity use certificates are on file with Baltimore County and the Developer is not seeking a reserve capacity use certificate here.

III. THE PROPOSED IMPROVEMENTS TO FALLS/JOPPA.

This is not a case where the Developer is simply asking the ALJ to determine that the surrounding road network is acceptable and can handle the traffic that will be created by the proposed project. Developer is proposing to spend hundreds of thousands of dollars to add a lane to both the eastbound and westbound approaches to the Falls/Joppa Road intersection. *See* Dev. Ex. 16; T. 10/27/22, pp. 202-203. As explained below, widening and adding additional lanes will provide a "substantial improvement to capacity." *Id.* at p. 203.

IV. SUBSTANTIAL EXPERT TESTIMONY CONFIRMED THE PROPOSED IMPROVEMENTS AT THE FALLS/JOPPA INTERSECTION WILL IMPROVE THE ENTIRE FALLS ROAD CORRIDOR FROM JOPPA THROUGH SEMINARY.

a. Testimony of Erin Kuhn.

One item that sets this case apart from other recent requests for special variance is that Erin Kuhn, the highest ranking traffic employee over the MDOT, SHA's 4th District (which covers Baltimore and Harford County), testified to SHA's findings with respect to the proposed improvements to the intersection of Joppa/Falls Road. Ms. Kuhn has held her title for 15 years, and reviews traffic studies that accompany development plans in Baltimore County. T. 09/20/22, p. 390.

Ms. Kuhn confirmed that in January 2021, SHA approved the traffic study for the Greenspring Manor project. *Id*. see also Dev. Ex. 15. The proposed improvements to the Joppa/Falls Road intersection "were shown in the traffic impact study, which we approved." T. 09/20/22, p. 392. By letter to Baltimore County dated August 4, 2021, Ms. Kuhn confirmed that

SHA indicated no opposition to the approval of the Development Plan. *See* Dev. Ex. 17. SHA also had no objection to the petition for special variance. *See* Dev. Ex. 18.

With respect to the proposed improvements at Falls/Joppa Road, Ms. Kuhn stated that SHA supported those improvements. T. 09/20/22, p. 396. The improvements, Ms. Kuhn explained, will improve the entire Falls Road corridor from Joppa Road to Seminary Avenue:

> We had asked originally when we first got the traffic impact study that all three signals at Seminary, Greenspring Valley and Falls be analyzed since they do all operate in a coordinated signal system together, and so as far as the improvements to be made at Falls and Joppa, those studies showed with those improvements that that would improve the corridor operations, it would reduce the delay, specifically reduce travel time through the corridor with the improvements that are being made at the Joppa Road intersection.

Id.

She again stated that MDOT/SHA agrees that the improvements will have a positive impact on travel times along the corridor. *Id*. at 397. The improvements to the corridor are significant, so much so that SHA did not support or require additional proposed physical improvements to Falls/Greenspring Valley Road, which Developer had offered to make in an effort to further reduce traffic along the Falls Road corridor. *Id*. at 397-98.

When asked to describe why the improvements to Falls/Joppa would benefit the entire corridor, Ms. Kuhn explained as follows:

> Yes. The improvements on Joppa Road, adding the additional lanes on Joppa Road. When you add an additional lane through an intersection, it helps get more traffic through the intersection more quickly by getting more traffic through Joppa Road sides of the intersection more quickly, and that would mean that they would need less time in the signal, so we could give more green time to Falls Road, similar to what Chris [Kris] has said so Falls Road is our main concern at the state, that's our main corridor that we want to maintain traffic flow, so if we can give more green time to Falls Road, that is actually going to improve the corridor, because these three signals are timed together, and, you know, one intersection can actually hold up another intersection. So more time to Falls Road

> gets more traffic through along Falls Road, and as shown in the study, will reduce the travel time through the corridor, and these numbers were pulled directly from the study which analyzed the corridor and looked at travel times though the corridor both with and without the improvements.

Id. at 400-401.

Finally, Ms. Kuhn confirmed that the traffic signals at Falls/Joppa, Falls/Greenspring Valley, and Falls/Seminary all work in a coordinated signal system, and that once the physical improvements are made to Falls/Joppa, the signals will be retimed to maximize the benefit of the physical improvements. *Id*. at 403-404. Her conclusion is that the travel times along Falls Road will be reduced from the existing levels, and the existing levels adding in Greenspring Manor, once the physical improvements are made to the Joppa/Falls intersection. *Id*. at 405.

b. Testimony of Kris Nebre.

Much of Mr. Nebre's testimony was previously discussed in this Memorandum and will not be repeated herein. However, on behalf of DPWT, Mr. Nebre provided written confirmation that "the proposed development along with the improvements to the intersection would not have a net negative impact on the intersection." Dev. Ex. 29. He also verified that his former supervisor, Mike Filsinger, found in January 2021 that "the proposed improvements associated with the traffic impact study will mitigate the increased traffic generated by the proposed development." Dev. Ex. 30.

c. Testimony of Nick Driban.

Mr. Driban walked through his traffic study and explained his evaluation of the level of service at the Falls/Joppa intersection where the road improvements are proposed. Under the CLV methodology, the intersection functions at a level of service E during the morning peak hour and would improve to a D if the proposed improvements are constructed. T. 10/27/22, pp.

196-197. The improvements would actually mitigate 931% of the trips that would be added from the Greenspring Manor project. *Id*. at 197. For the evening peak hour, the intersection functions at a level of service D, and would remain D, but at an improved level of efficiency. *Id*. at 197-98. Specifically, the improvements would mitigate 879% of the evening peak hour trips added from Greenspring Manor. Mr. Driban testified that the intersection would be "substantially better" with the proposed improvements. *Id*. at 198.

Mr. Driban presented similar and even more striking findings under the HCM methodology, where Falls/Joppa currently functions as a D in the morning peak hour and Falls/Greenspring Valley functions at a C. *Id*; *see also* Dev. Ex. 15, p. 17. The proposed improvements will mitigate 1364% of the trips added by Greenspring Manor at Falls/Greenspring Valley and 780% of the trips added at Falls/Joppa. *Id*. at 199. Notably, under the modern methodologies, CLV and HCM, Mr. Driban confirmed that neither of the intersections show as "failing" once the proposed improvements to Joppa/Falls are constructed. *Id*. at 201-202.[22]

Mr. Driban performed a corridor analysis to review the impact that this project and the proposed improvements would have on the Falls Road corridor from Joppa Road to Seminary Avenue. He used Synchro files obtained directly from SHA and added in the additional lanes that will be constructed by the Developer at the Falls/Joppa intersection. *Id*. at 207-208. In the morning peak hour, northbound traffic (where the failing movement exists at Falls/Joppa under the County's LCM), will see a 45 second savings, on average, for every car traveling along the Falls Road corridor during the morning peak hour:

[22] Mr. Zimmerman attempted to question the use of the ITE Manual to project the trips that would result from this project. Expert testimony confirmed the ITE Manual is the accepted methodology used to project trips in the field of traffic engineering. Additionally, this was not a "close call" as the proposed improvements mitigate hundreds of percentage points over what is proposed by this project.

> So, that's a forty-five second savings for, on average, for every vehicle passing through this corridor. Every single vehicle. That's the average delay per vehicle. Which is a twenty-four percent improvement in the overall corridor travel time.

Id. at p. 209.

Similarly, for southbound traffic during the morning peak hour, the improvements show a 14% increase in efficiency, or savings of eight seconds, for every vehicle passing through the intersections. *Id*.

During the evening peak hour, (where the failing movement exists at Falls/Greenspring Valley under the County's LCM), there will be a 31 second (10%) improvement for cars traveling northbound on the corridor and a 5% increase in efficiency for cars traveling southbound. *Id*. Mr. Driban summarized his results as follows: "So, the bottom line is, you know, we're talking about very substantial improvements for all traffic passing through this corridor as a result of the improvements being proposed." *Id.* Through re-timing of the signals, more time will be allocated to the movements north/south on Falls Road and travelers will notice a significant benefit if this project and the proposed improvements are permitted to proceed. *Id.* at 210. He concluded that "the demand or impact of the development being proposed is less than that assumed by the district standard." *Id*. at 213.

Mr. Driban also explained how far along the proposed improvements are in the approval process. *Id*. at 205-206. The improvements have been reviewed and approved by SHA, who owns the intersection, as part of the traffic study, and the Developer has spent its resources to ensure it will be ready to construct the improvements when the project is approved:

> The developer would typically move forward after those are completed and sort of all the entitlements are in hand. In this case, you know, the, the, the developer has elected to move forward, you know, at their own risk, to, to really be ready to make improvements.

> I mean, this is a major improvement and, and they want to be ready to make it, you know, as soon as, as soon as they can.

Id. at p. 206.

V. The petition for special variance should be granted.

The balance of expert testimony supporting approval of the project and proposed road improvements far outweighed any lay testimony summarizing the current state of traffic in and around the Falls Road corridor. Uncontradicted expert testimony established that the Developer is proposing to "mitigate far more" than the traffic that would be added to the "failing" traffic shed. T. 10/27/22, p. 212. County, State, and Developer experts all testified that the demand or impact of the development being proposed is less than that assumed by the district standard. Accordingly, the petition for Special Variance should be granted.

CONCLUSION AND PROPOSED CONDITIONS

Developer has produced strong and substantial evidence in support of its Development Plan, the specimen tree variance, and the traffic special variance. For these and all of the reasons stated herein, Developer respectfully requests that the Administrative Law Judge approve all three requests with Development Plan approval being subject to the following conditions:

CONDITIONS OF DEVELOPMENT PLAN APPROVAL

1. As of the date of this Opinion, it is known that the following sewer segments, including the two starred segments that are the financial responsibility of the developer, and the six additional segments that are tied to another project, are not yet repaired in accordance with the requirements of the 2012 SRRR Plan, and DPWT is requiring this work to be completed by the Developer and a third-party developer. This work must be completed to the satisfaction of DPWT prior to the issuance of any use and occupancy permits for the homes proposed in Greenspring Manor:

Upstream MH	Downstream MH	Length	Diameter	
43794	43793	137.96	8"	★
43793	43792	192.31	8"	★
43792	43791	87.36	8"	
43791	43790	60.00	8"	
43790	43789	316.80	8"	
43789	43788	232.57	8"	
43788	43787	159.01	8"	
43787	43786	76.00	8"	

2. The proposed offsite traffic improvements depicted on Dev. Ex. 16 must be constructed prior to the issuance of any use and occupancy permits for the homes proposed in Greenspring Manor.

3. Revise the note on the Development Plan to state that the emergency access gate is "approved by the Administrative Law Judge."

Respectfully submitted,



Adam M. Rosenblatt
Christopher D. Mudd
Venable LLP
210 W. Pennsylvania Avenue
Suite 500
Towson, Maryland 21204
(410) 494-6200
amrosenblatt@venable.com
cdmudd@venable.com
Attorneys for Developer

CERTIFICATE OF SERVICE

I hereby certify on this 17th day of July, 2023 that a copy of the foregoing Post-Hearing Memorandum was emailed to: Michael R. McCann, P.A., 118 W. Pennsylvania Avenue, Towson, Maryland 21204 (michael@mmccannlaw.net), Peter Zimmerman (pzimmerman@baltimorecountymd.gov); Michael Wyatt (mwyatt@wyattgunning.com); and Doug Sachse (dsachse@dtslawoffices.com).



Adam M. Rosenblatt

IN RE: APPROVAL OF FINAL DEVELOPMENT PLAN & PETITION FOR SPECIAL HEARING	*	BEFORE THE OFFICE OF ADMINISTRATIVE
IN THE MATTER OF : GREENSPRING MANOR & GREENSPRING JOPPA FALLS, LLC 2310 W. JOPPA ROAD	*	HEARINGS FOR BALTIMORE COUNTY
	*	Case Nos. 08-0922 & 2021-250-SPH

8th Election & 2nd Councilmanic Districts

* * * * * * * * * * * * * *

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Maryland Department of Environment letter to Baltimore County regarding civil penalties dated April 14, 2023.

IN RE:	*	BEFORE THE OFFICE
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IN THE MATTER OF : GREENSPRING MANOR & GREENSPRING JOPPA FALLS, LLC	*	HEARINGS FOR
2310 W. JOPPA ROAD	*	BALTIMORE COUNTY
	*	Case Nos. 08-0922 & 2021-250-SPH
8th Election & 2nd Councilmanic Districts		

* * * * * * * * * * * * *

PEOPLE'S COUNSEL FOR BALTIMORE COUNTY'S
POST-HEARING MEMORANDUM

I. All Along the Watchtower

Bob Dylan, Jimi Hendrix (Cover), All Along the Watchtower (1967)

"Long road sometime shortest way to end of journey."
Charlie Chan at the Racetrack (1936)

Let us introduce the analytic kaleidoscope to this land use marathon:

People's Counsel's Participation: The Baltimore County Charter assigns People's Counsel to defend the comprehensive zoning maps and master plan. This encompasses development cases where such issues arise. The focus here is on an array of master plan conflicts, compatibility, special variance, environmental, and residential performance standards, all involving the master plan and zoning.

Master Plan Conflict: The development conflicts with and exceeds Master Plan 2020 (MP 2020) T-3 Suburban Transect Zone low density/deep setback criteria. The conflict is more extreme than in Davis Farms (DF). As in DF, these density/setback criteria focus on the particular site, not others near or far. Anyway, other subdivisions cited by developer predate MP 2020; those with high density are nonconforming.

Compatibility: The compatibility requirement applies to all residential subdivisions. County Code Sec. 32-4-402. The development fails the compatibility criteria regarding arrangement, orientation, massing, scale, and details of proposed buildings. It also fails the compatibility criterion requiring street connection.

Traffic and Transportation: Special Variance; Public Safety: The legislation focuses on the existing road network. The key assumptions or criteria are distance from the "F" intersection, and direction of traffic to or away. The legislation does not contemplate

unilateral orchestration of road network changes to gain a special variance.

Anyway, ITE trip generation projections are inadequate and obsolete for many reasons, the trip generation and Synchro modeling also suffer from inevitable margins of error in risk assessment. Citizen testimony and photos indicate higher trip generation levels.

Separately, the citizen testimony and photos show severe area congestion and hazards.

The Jones Falls Sewershed (JFS) Debacle; Consent Decree; Inadequate Capacity; Public Health; Basic Services Maps; MP 2020 Redux: In the wake of the 2005 EPA/MDE consent decree, there are unresolved JFS sewer incapacity and resulting water contamination. This implicates the Basic Services Maps, MP 2020, Maryland and County master sewer plan law, and public safety, health, and welfare generally.

Stormwater Management (SWM); MP 2020 Trifecta: The SWM plan is inadequate due to overstatement of existing runoff and understatement of projected runoff, skewing requirements both ways. This raises more MP 2020 conflict issues.

Residential Performance Standards (RPS) --- The Mays Chapel Road (MCR) Issue: The "emergency gate" scenario is a distraction. Anyway, it conflicts with the RPS street connection standard. There is no legislative basis to deviate. The Bureau of Development Plans Review "100-unit or less" policy is unauthorized and anyway inapplicable. It is also wrong to favor any particular community over others.

Expert and Citizen Evidence: Expert evidence and opinions must have a sound factual and legal basis. The Collective Development Team's (CDT's) expert evidence is biased, inadequate, and misguided. The citizen evidence on density and traffic is compelling.

"**Reaching Out" or "Gaslighting":** The CDT's "reaching out" for emergency gate and landscaping is tactical. Its function is to project a favorable image. There was no reach on density. There was no consideration given to multiple legal conflicts and adverse impacts.

The Forest Buffer Variance (FBV) and Alternatives Analysis (AA): The County Board of Appeals (CBA) sustained the County Department of Environment (DEPS) approval of the FBV and AA. Greenspring Joppa Falls, LLC, Case Nos. CBA 22-027, 22-028, 22-029 (2022). The CBA observed, however, Page 2, footnote 1:

> "This decision clears the way for the development process to continue. However, the Board made one point quite clear during it deliberations and reiterates that point now: there is nothing in this decision that should or can be construed as endorsement of, or opposition to, the ultimate development. This is left for another day."

The decision is apparently final. Our office did not participate in that case.

"Eternal Vigilance Is the Price of Liberty" --- This quote, often attributed to Thomas Jefferson but more likely by Wendell Phillips in 1852, resonates here. The tendency of legal analysis is to compartmentalize issues. There is also a holistic perspective.[1]

II. People's Counsel's Master Plan and Zoning Public Interest Defense

Checks and Balances
Montesquieu, The Spirit of the Laws (1748); James Madison, Federalist Papers No, 51 (1788)

A. Evolution

In 1974, Baltimore County citizens approved Baltimore County Charter Sec. 524.1 to establish the office of People's Counsel to defend the comprehensive zoning maps in the public interest.[2] From 1980 onward, Maryland appellate courts have consistently confirmed the standing of People's Counsel to exercise such defense.[3]

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[1] We appreciate the fairness and patience of Administrative Law Judge Maureen E. Murphy in this arguably record-setting five-season hearing process. September 1, 2022 – Jul-August, 2023.

[2] Let us revisit the key language in Baltimore County Charter Sec. 524.1:

"*Powers and Duties*: The people's counsel shall have the following powers and duties: A. He shall appear as a party before the zoning commissioner of Baltimore County, his deputy, the county board of appeals, the planning board, and the courts on behalf of the interests of the public in general, to defend any duly enacted master plan and/or comprehensive zoning maps as adopted by the county council, and in any matter or proceeding now pending or hereafter brought involving zoning reclassification and/or variance from or special exception under the Baltimore County Zoning Regulations, as now or hereafter in force and effect, in which he may deem the public interest to be involved …"

* * *

"He shall have in such appearance, all the rights of counsel for a party in interest, including but not limited to the right to present his case, to cross-examine, to object, to be heard, and to file and prosecute an appeal in his capacity … as an aggrieved party." (Emphasis supplied).

[3] People's Counsel v. A.V. Williams, 45 Md. App. 617 (1980); People's Counsel v. Webster 65 Md. App. 694, (1986); People's Counsel v. Maryland Marine Manufacturing Co. 316 Md. 491 (1989); Board of Child Care v. Harker 316 Md. 683 (1989); Security Management Co. v. Baltimore County 104 Md. App. 234, cert. denied 339 Md. 643, 516 U.S. 115 (1995); People's Counsel v. Beachwood I Limited Partnership 107 Md. App. 627, cert. denied 342 Md. 472 (1996); Sycamore Realty v. People's Counsel 344 Md. 57 (1996); Marzullo v. Kahl 366 Md. 158 (2001); People's Counsel v. Surina 400 Md. 662 (2007) People's Counsel v. Loyola College 406 Md. 54 (2008); Geddes v. People's Counsel unreported, 232 Md. App. 726, 2017 WL 1193781 , cert. denied 455 Md. 443 (2017); Baddock v. Baltimore County 239 Md. App. 467 (2018), cert. denied Sahbi Hookah v. Baltimore County 463 Md. 545 (2019); Staples v. Baltimore County unreported, 239 Md. App. 730, 2018 WL 6437681 (2018).

In 1978, the citizens amended the Charter to add master plan defense. HNS Development Corp. v. People's Counsel 425 Md. 436 (2012) is the landmark master plan conflict decision for development cases.

The County Board of Appeals (CBA) in Woodley Park PAI 04-728, CBA 20-024, (2020) granted our office's motion to intervene to defend Administrative Law Judge (ALJ) Paul Mayhew's findings, especially Master Plan conflict. The CBA affirmed. (M. Murphy, Chair). P.C. Exh. 17.[4] Our office intervened again in Davis Farms to defend ALJ Mayhew's conflict finding. PAI # 01-0606, CBA-21-018 (2021). We tried the CBA remand. The Council confirmed ALJ Mayhew's decision. County Council Resolution 137-21. P.C. Exh. 18. It was then incorporated in his final ALJ decision.

The present case revisits the Master Plan T-3 Transect Zone, RPS, and compatibility and adds the special variance about traffic. BCZR Sec. 4A02.4. P.C. Exh. 14. Following WP and DF, we deemed it right to defend the public interest to provide an even more timely assessment of the important issues.

B. Complementary and Integral Master Plan, Zoning and Subdivision Controls

There are three "integral" and "complementary" parts of land planning; master plan, zoning, and subdivision (development) regulations. Board of County Comm'rs v. Gaster 285 Md. 233, 245-50 (1979); Coffey v. Md. Nat'l Capital Park v. Planning Comm'n 293 Md. 24, 26-31 (1982); Surina, 400 Md. at 688-695. Many cases mix master plan, zoning, and subdivision elements, i.e. density (Gaster, Coffey), stormwater management, access roads (Surina), and historic preservation (HNS Development).

County Charter Sec. 523 links the zoning maps to the master plan and development.[5] The County Code integrates them to protect public health, safety, and

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[4] The County Council then downzoned the property, superseding the petition for judicial review. 2020 CZMP Issue 2-012, W of Main Street and E of Diploma Drive. Bill 80-20.

[5] Sec. 523 states, in its entirety, "Sec. 523. - The master plan and the zoning maps.

> (a) *Definition and implementation of the master plan.* The master plan shall be a composite of mapped and written proposals setting forth comprehensive objectives, policies and standards to serve as a guide for the development of the county. Upon receipt of the master plan from the department of planning, the county council shall accept or modify and then adopt it by resolution.

welfare: zoning Sec. 32-3-101, zoning; development plan purposes and policies; Secs. 32-4-102, 32-4-103. Development plans must comply with all other county laws, including zoning. Secs. 32-4-104(b), 32-4-114(a). Surina.[6] They must conform to the master plan. Secs. 32-4-103; 32-4-231; 32-4-232.

C. Crown Development and Its Progeny

People's Counsel v. Crown Development Corp. 328 Md. 303, 317 (1992) confirmed the office's broad charge for zoning and related matters in development cases:

> In any event, the circuit court did not err in permitting intervention. **People's Counsel has been given a broad charge to protect the public interest in zoning and related matters. *See* Baltimore County Charter § 524.1.** Density regulation is an important part of the zoning process. *West Mont. Ass'n v. MNCP & P Com'n,* 309 Md. 183, 194, 522 A.2d 1328 (1987). Although participation in the development plan process may often be outside the intended ambit of People's Counsel's authority, where protection against a violation of a density regulation is involved, People's Counsel has a legitimate interest." (Emphasis supplied).

Density regulation is one aspect of the zoning process. People's Counsel successfully defended comprehensive rezoning amid the development process. Sycamore Realty v. People's Counsel 344 M. 57 (1996). This is a landmark case on zoning estoppel.

Oella Mill, 02-412-SPH, I-498 (2002) involved high-redevelopment of the historic mill. There were zoning issues on parking, recreational open space, residential transition area controls, flooding, and density. The same law firm (Venable) challenged our participation. Hearing Officer Lawrence Schmidt held our office had standing. Pages 6-7,

> "As a preliminary matter, Counsel for the Owner/Developer [Venable] objected to the participation of the Office of People's Counsel in the Hearing Officer's Hearing component of this case. …. Essentially, the Developer argues that People's Counsel's

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> (b) *Definition and implementation of the zoning maps.* The zoning maps shall show the boundaries of the proposed districts, divisions and zones into which the county is to be divided consistent with the master plan. Upon receipt of the zoning map from the department of planning, the county council shall accept or modify and then adopt it by legislative act."

[6] Judge Glenn Harrell wrote in Surina, "Zoning regulations and subdivision/development controls, along with … the master plan …, serve additional common objectives in terms of the effective, efficient, and consistent use of land within similarly-situated districts." Continuing, he admonished, "To the contrary, all proposed subdivision developments must comply with the applicable zoning ordinances in effect at the time the subdivision is proposed." 400 Md. at 691-93. In this context, he quoted Baltimore County Code Secs. 32-4-104(b) and 32-4-114(a).

authority is limited by Section 524.1 of the Baltimore County Code to participation in matters relating to defense of the master plan/duly enacted zoning reclassifications, variances or special exception petitions. The Developer argues that this authority does not include the development plan review process· codified in Title 26 of the Baltimore County Code. In response**,** People's Counsel argues that its standing has been broadly construed and cited a number of appellate decisions**,** including People's Counsel v. Crown Development Corp., 328 Md. 303 (1992), and Sugarloaf v. Department of the Environment, 344 Md. 271 (1996).

A review of the Baltimore County Charter (Section 524.1) as well as the cases cited above is persuasive to a finding that People's Counsel is a proper party. The appellate courts of this state have confirmed that People's Counsel may participate in all matters related to the defense of duly enacted Master Plan and/or Comprehensive Zoning Maps as adopted by the County Council. The appellate courts have given wide latitude and broad discretion to People's Counsel's duties in this respect. This includes participation in development plan hearings. Therefore, I find that People's Counsel is a proper party to this case. Moreover, it is to be noted that the concerned citizens of Oella (Protestants) raised and participated in the identical arguments offered by People's Counsel so that those issues were properly raised and considered in any event."

Judge McAuliffe added in Crown Development that where another party on the same side has standing, it is unnecessary to inquire into People's Counsel's standing,

"Finally, respondent argues that the People's Counsel for Baltimore County should not have been permitted to intervene at the circuit court level. Respondent does not, however, suggest how the presence of People's Counsel has prejudiced it. Alison Tucker was a proper party before the circuit court, and had standing to appeal to the Court of Special Appeals and to petition this Court for certiorari. Accordingly, the presence of People's Counsel was not required to obtain appellate review at any level in this case. *See Sugarloaf v. Waste Disposal,* 323 Md. 641, 650 n. 6, 594 A.2d 1115 (1991), and *Board v. Haberlin,* 320 Md. 399, 404, 578 A.2d 215 (1990) ("[w]here there exists a party having standing to bring an action ... we shall not ordinarily inquire as to whether another party on the same side also has standing.").

* * *

There also arose MP 2020 conflicts concerning JFS sewerage capacity. These implicated the integral Master Sewer and Water Plan as well. Concurrently, there arose MP 2020 conflict issues involving the SWM plan.

D. Historical Perspective and Primer

Since 1974, the office has participated successfully in 88 appellate cases. The CBA recognized our office's broad charge in Riffin. 14-094-SPH (2014). The Court of Special Appeals (CSA) affirmed. Geddes v. People's Counsel 2017 WL 1193781, cert. denied 455 Md. 443 (2017). Judge Salmon's CSA opinion included this footnote 2,

> "The People's Counsel for Baltimore County is an independent organization, separate from Baltimore County, with **the "specific public interest function" of defending the comprehensive zoning maps and master plan in a variety of cases**, **including special hearings**. *See generally* Baltimore County Charter, § 524.1(a)(3)A."[7]

We successfully defended the hookah lounge midnight curfew zoning law in Baddock/Sahbi Hookah 16-089-SPH (2017), Maureen E. Murphy, Chair; aff'd Baddock v. Baltimore County 239 Md. App. 467 (2018), cert. denied 463 Md. 545 (2019);

Occasionally, petitioners exaggerate the Crown Development "often outside the intended ambit" language" as if it were a blanket exclusion. Since no two cases are exactly alike, they fabricate distinctions. Anyway, there are master plan and zoning issues here. Our office is directing its attention to these priority issues.

Moreover, it is basic that standing does not depend on the outcome on the merits. It is the threshold for participation. Sugarloaf Citizens v. MDE 344 Md. 271 (1996).

III. What's It All About, Alfie?

"Is it just for the moment we live?
What's it all about when you sort it out, Alfie?
Are we meant to take more than we give,
Or are we meant to be kind?
Cilla Black, Dionne Warwick cover, Alfie (1966)

The CDT fabricated a narrative to secure a favorable ruling to reach their $61,000,000 revenue goal.[8] It's all about the money. But their plan conflicts with MP 2020 density and other standards referred to in the introduction. They overburden the most congested and hazardous Baltimore County road network. They maximize the generation of sewage to the severely inadequate JFS and generate excessive stormwater runoff. They ignore RPS. They override not only multiple laws, but also the legitimate interests of area citizens and the public.

---

[7] The CBA may review unreported appellate decisions, especially where they involve review of this CBA's own record. Moreover, Maryland Rule 1-104, which generally precludes their citation in court cases, does not apply to administrative proceedings. See Rule 1-101.

[8] This is a projection which looks increasingly doubtful as interest rates rise, inflation goes long-term, and the real estate market slips into recession.

IV. Master Plan Conflict

A. "In The Thick of Things"

Master Plan 2020 (MP 2020) is mandatory. HNS Development, *supra.* The T-3 Sub-Urban Zone Transect overlay is likewise thus mandatory. It is discussed, delineated, and applied on a Smart-Coded Land Use Map. P.C. Exh. 8, also attached here as Exh. A.

The key T-3 standards are "low density" and "deep setbacks." The word "low" frames the four corners of the proposed development and site plan parameters. The Lot Table and relevant statistics in in People's Counsel Exhibits 24 and 31. The proposed 61 dwelling lots on 39 acres computes to overall density of 1.56 lots per acre. The 60 new dwelling lots 2-61 are squeezed into 14.4 acres. The concentrated dwelling density is thus 4.2 lots per acre. Average lot size for 2-61 is .24 acre. The mode (most common 1,000sf segment) has 13 lots at .18-.21 acre (8,000-9000sf). There are 24 lots under .23 acres (10,000sf). This is not low density. To suggest otherwise is beyond the pale.

The site plan shows "typical" lot layouts with minimal setbacks. The Lot Table does not include the exact setbacks for each lot, so there is no other documentary evidence. The building models in the pattern book are large and multi-story. Dev. Ex. 1B, 7. These are not deep setbacks from any reasoned perspective.[9] The minimal setbacks also contribute to the high density. Moreover, while no zoning variances are yet proposed, eventual homeowners may request them for accessory uses and buildings. These would magnify effective density and tighten setbacks even more.

B. The T-3 Transect Zone

MP 2020 frames six Transect Zones, their function and purpose, and places them on a Smart Coded Transect Map. P.C. Exh. 8, also attached here.

To set the stage, with admirable scholarship, MP 2020 states, Page 27,

> "A 'transect' of nature, first conceived by Alexander Von Humboldt at the close of the 18th century, is a geographical cross-section of a region intended to reveal a sequence of environments. Originally, it was used to analyze natural ecologies, showing varying characteristics through different zones such as shores, wetlands, plains and

[9] Consider, for example, that the 30-feet building to building setback is comparable to a bunt down the first base line rather than a double off the scoreboard in Camden Yards.

uplands. It helps study the many elements that contribute to habitats where certain plants and animals thrive in symbiotic relationships to the minerals and microclimate."

"This same system can be used to demonstrate different human habitats. Some individuals prefer living on farms while others prefer living in cities. Before the automobile, American development patterns were walkable, and transects within towns and city neighborhoods reflected a variety of development patterns and uses. These degrees of urbanism are represented in a rural-to-urban transect [that] has been developed which provides six "Transect Zones" (T-zones) for application on the proposed land use map. "

MP 2020 then describes Transects as "zoning categories" with "a range of habitats from the most rural to the most urban. They integrate "environmental and zoning methodologies." The Transects are arrayed on Pages 27-29, including T-3:

"**T-3 ((Sub-Urban Zone)** includes **low-density residential areas**, adjacent to higher zones that contain mixed use. Home occupations and outbuildings may be allowed. Landscaping is naturalistic and **setbacks are relatively deep**. Blocks may be large and the roads irregular to accommodate natural conditions." Emphasis supplied in the text.

The T-3 Transect conflict centers on density. We provided statistics for average lot size, median, mode, and thereby density. P.C. Exh. 24, 31. The 60 new lots are concentrated on 14.4 acres, 4.2 lots per acre; average lot size is .24 acres; median is .3325 acre, and mode (most common) is .18-21 acre. There are 24 lots under the .23 acre (10,000sf) described by Matthew Bishop on Dev. Exh. 4.

The typical Lot Layouts and Pattern Book show minimal setbacks: 25' front yard, 30' rear yard (22.5', decks), and 30' building to building, 15' side yard. P.C. Exh. 26.[10] Building models are 40'- 54' wide, wider than the 15' side yard setbacks combined. The models look to be in the 3500sf range and over 2 stories tall.

Webster's Third New International Dictionary (there being no BCZR Sec. 101.1 definition states, in pertinent part, on Pages 1340-41:

" 4 **low** … *adj* ... **3 :** deficient, inferior, or unusually small in quantity, intensity, value or degree: as **a :** less than normal **:** not intense **:** MODERATE … **b** (1) **:** not loud **:** SOFT … (2) **:** depressed in musical pitch **:** FLAT … **f :** designed for slow or usu. the slowest speed; *specif.* giving the lowest ratio of propeller – shaft to engine shaft speed and the highest amplification of torque (gear) **… 4 :** very low **:** marking a nadir **:** LOWEST …"

[10] This is the prevailing pattern. Mr. Bishop said there are larger setbacks in some lots, but there was no table or any statistics. The entire site plan pictures minimal setbacks.

"6 **low** … *adj* … **1 :** in or to a low position **:** not on high **:** near the ground …."

These confirm the proposed subdivision is not low-density. There follow other hyphenated definitions of "**low**" which correlate to the main definitions.

As for setbacks, the 30' side to side building face setbacks are far from "relatively deep." The same goes for the rest of the setbacks.

Webster's Third New International Dictionary, Page 589, defines,

> "**deep** …*adj* ... **1 :** extending far or comparatively far from some level, edge, surface, or area : as **a :** extending downward to a considerable degree … **b :** extending well inward … **c :** extending well back from a surface … **d :** extending far laterally from something expressed or implied that is regarded as central …."

It is implausible to stretch this language to conclude the setbacks are deep. They are shallow. Consider them metaphorically as snorkeling rather than SCUBA diving. The CDT's apparent suggestion this plan has low density and deep setbacks is an an oxymoron, a classic juxtaposition of the incongruous.

C. Davis Farms

ALJ Mayhew judged the setbacks in Davis Farms (DF) to conflict, even on larger lots with greater setbacks. P.C. Exh. 18. The site plan here likewise "squeezes" maximum zoning density on the buildable portion of an environmentally constrained property, here even more restricted by floodplains, wetlands, and forests. The density here is much higher by any measure. Moreover, ALJ Mayhew did not extend his Davis Farms T-3 Transect inquiry to the lot sizes and configurations of adjacent areas.

ALJ Mayhew's incisive Davis Farms analysis is at Page 18, P.C. Exh. 18,

> "Master Plan
>
> As noted by the Planning Office in their Final HOH Report, this tract consists of TR 2 Rural Residential and TR 3 Sub-Urban transects. The GIS database indicates that the tract is primarily in the TR 3 transect. The TR 2 Rural Residential transect is described as consisting of "large lot single-family detached housing," with setbacks "generally 50 plus feet. Lots are deep to accommodate a larger backyard. Density varies between 2 to 5 acres per dwelling." And the TR 3 transect describes "low density residential areas, adjacent to higher zones that contain mixed use. Landscaping is naturalistic and setbacks are relatively deep."
>
> "In my view the development plan in this case does not comply with the Master Plan vision for these transects. As the "Lot Area Table" on the Plan shows, the 19 proposed lots range from .27 acres to .63 acres, with the majority of lots falling in the .30

> to .45 range. And the "Typical Lot Layout on the Plan for the lots in the DR 1 and DR 2 zones show front setbacks of as little as 25', and side building-to-building distances of as little as 30'. This is how 19 four to five bedroom homes are squeezed onto the buildable portion of this tract."

The County Council sustained ALJ Mayhew's decision. Resolution 137-21. P.C. Exh. 18. The Council Resolution confirms ALJ Mayhew's T-3 Transect interpretation and application.[11] This focuses on the site itself. Agency interpretations are entitled to deference, especially when adjudicated publicly and then confirmed or reinforced.[12]

A picture is worth a thousand words. The comparative statistics are telling:

	Davis Farms	**Greenspring Manor**
Effective Lot Density (Concentrated Area)*	2.4 Lots/Acre	4.2 Lots/Acre
Effective Lot Density (Entire Site)	.9 Lots/Acre	1.56 Lots/Acre
Average Lot Size (Concentrated Area)*	.42 Acre	.24 Acre (Lots 2-61)
Median Lot Size	.475 Acre	.33 Acre (Lots 2-61)
Mode (Most Common Lot Size, 1000Sfs)	.30-.46 Acre	.18-.21 Acre

*The concentrated lot area for Davis Farms is 8 Acres of the 21. For Greenspring Manor, it is 14.4 Acres of the 39, not counting Lot 1.

Neither Lot Table lists setbacks. Nevertheless, a scan of the DF lot diagrams shows larger DF lots with larger setbacks, especially rear yard setbacks. Yet ALJ Mayhew still found a setback pattern there does not meet the "deep" standard.[13]

ALJ Mayhew concluded, Page 19, "… the owners of the property have the right to develop the tract to some reasonable degree …..," then adding "Certainly the owner of this parcel has the right to build some number of homes." But his role was to approve or deny the plan as submitted. The same may be said here.[14]

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[11] The County Charter defines a Council Resolution as administrative. Sec. 1009 (c).

[12] See, e.g. Skidmore v. Swift & Co. 323 U.S. 134, 140 (1944); Comptroller v. John Louis Co. 285 Md. 527, 544 (1979); MDE v. Co. Comm'rs of Carroll County 465 Md. 169, 206 (2019).

[13] Take any metaphor: a first-down rush vs. a 35-yard post pattern to the corner of the end zone; a 12-yard penalty kick in soccer vs. a goalie punt over 50 yards; the forest edge vs. the forest center; the entry to the cave vs. distant interior; snorkeling vs. scuba diving.

[14] As in Bob Seger's Still the Same (1978), the law here is still the same, with facts much worse.

D. Diversionary Comparisons.

CDT fashioned colorful exhibits (4, 9) to argue for a comparison of neighborhood and regional land uses. But the T-3 Transect language does not go outside the borderline. The T-3 criteria are "low" density, not "lower than some other area lots," and "deep" setbacks, not "deeper than others." This is elementary literacy.

Anyway, Matt Bishop's Dev. Exh. 4 distorts Greenspring Manor density, colored purple at 10,000-30,000sf. This misrepresents the Lot Table's 7,000-21,000sf for Lots 2-61, with 24 lots under 10,000sf. The immediately adjoining dwelling lots in HFD, SR, and MOG are much larger single-family dwelling lots around 1-acre. The purported general ranges for other area subdivisions are vague, with no Lot Tables.

Existing area subdivisions date from the 20th century: HFD, 1953; SR, 1967, MOG, 1982; Huntspring, 1990. Michael Tanczyn's exhibits showed other subdivisions similarly dated. So the attached-dwelling lots in some areas are nonconforming to the MP 2020 Transect. Mr. Bishop compounds the diversion with distant nonconforming dense areas in Mays Chapel, Five Farms, Thornleigh, and Pikesville. Dev. Exh. 9.

In sum, CDT presents some dense subdivisions in T-3 Sub-Urban Zone areas to argue for T-3 compliance here. Even if other subdivisions were relevant, these are in nonconforming subdivisions.[15] It is normal for the legislature to adopt zones which span nonconforming uses rather than draw a checkerboard to mark each such existing use. The T-3 Transect areas with older subdivisions comprising attached dwellings and/or small lots does not excuse or exempt new developments. Anyway, the adjoining Heatherfield (HFD), Seminary Ridge (SR), and Meadows of Greenspring (MOG border area) have much larger lots and setbacks and mostly smaller houses. The CDT's repeated focus on attached lots in MOG and more distant subdivisions is diversionary and irrelevant.

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[15] Nor does it matter that the busy and dense Greenspring Station and JHMI pavilions are nearby. The pyramids of Egypt could be next door, and it would not change the analysis. Indeed, the commercial and institutional uses just aggravate the traffic difficulties.

Meanwhile, CDT Exhibit 4 blanks out and disregards the one nearby subdivision which is current. That is the Krongard (Torch Hill) subdivision, shrouded in white, like a ghost. We address Torch Hill below.

Judge Brianna Booth recapitulated the applicable statutory construction canon in Mayor and City Council of Baltimore v. Thornton Mellon 478 Md. 396, 429 (2022):

> "Finally, we check our interpretation against the consequences of alternative readings of the text. …. Doing so ensures that we adopt an interpretation that avoids a construction that is 'illogical, unreasonable, or inconsistent with common sense.'... Indeed, 'it has been called a golden rule of statutory interpretation that, when one several possible interpretations produces an unreasonable result, that is reason for rejecting that interpretation in favor of another which would produce a reasonable result.'" Internal citations omitted.

In sum, CDT's purported statutory construction is nonsensical. The MP 2020 "Smart Code" Transect Zone Land Use Map, Page 28, arrays Transects regionally. To sprinkle transects, property by property, to isolate existing subdivisions, would form an irregular crazy-quilt, a virtual Jackson Pollock drip/splash abstract expressionist painting.

E. Department of Planning Memoranda

The Department of Planning (DOP) found a Master Plan conflict in their March 9, 2021 CPC memo, but flipped to support in the September 11, 2021 DPC memo. The DOP's reversal of position lacks any rational basis. [16]

The DOP's errant rationale for eventual support of the project echoes DF. There, despite CPC concerns, the DOP flipped to favor the project. The DOP called the T-3 Transect advisory and "coincident" with the zoning classification. This conflated zoning compliance with master plan compliance, eviscerating and subverting the independent master plan mandate. The DOP reverts to its flawed concept here.

Our office's November 9, 2021 letter to the County Council in DF included this critique of the DOP position,

[16] The DOP CPC memo states, "As designed, the proposed development does not achieve the vision of the Master Plan 2020 nor the Comprehensive Manual of Development Policies. The Master Plan 2020 recommends low-density residential development adjacent to higher zones consisting of mixed-uses." Their DPC reversal argued the plan was revised "…to meet bulk regulations … and comply with the CMDP and BCZR without the need for relief." But such zoning compliance is irrelevant and insufficient to satisfy the higher T-3 Transect criteria.

> "The DOP Report asserts that MP 2020 is advisory and does not apply to individual properties or subdivisions. P. 1. This directly contradicts the Code and HNS Development. While the Master Plan may not "identify land use of individual properties or parcels," the Transects still provide criteria which must are mandatory and must be applied.
>
> "The DOP Report labels Transects as "coincident" with zoning, as if they add nothing to zoning controls. P. 3. This false conflation, equivalency, and subsuming of MP 2020 Transects into zoning map classifications renders the master plan ineffectual, nugatory, and superfluous. This is contrary to the Code, Surina, and HNS Development. The DOP Report also disregards ALJ Mayhew's analysis.
>
> "The DOP's approach makes it impossible ever to assess any master plan conflict. So they sidestepped the issue during the process, and now come back to rationalize their disinterest."

Ironically, in HNS Development, the DOP had appreciated the independent master plan mandate. They DOP's regression in DF also disregarded ALJ Mayhew's Woodley Park analysis.[17] Unfortunately, the DOP is still locked in to an ineffectual approach.

F. Krongard (Torch Hill) Distinguished

ALJ Maureen Murphy approved Torch Hill on October 13, 2022. PAI 08-0919, 2021-274-SPHA.[18] Our office did not challenge Krongard (Torch Hill). With 32 lots on 42 acres (about .4 -.5 acres per lot) at 1400 West Seminary Road, it looked arguably in the ballpark for T-3 low density and compatibility. The density is less than in DF (.76 Lots/Acre vs. .9 Lots/Acre). Area citizens did not raise a master plan conflict issue. So, Torch Hill did not pose the extreme master plan conflict ripe for resolution here...

Moreover, the Torch Hill developers found it economically feasible to market 32 lots on 42 acres. This suggests it is marketable here to situate and sell a proportionate number of 30 lots on 39 acres. So there is no economic excuse either.

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[17] Their regressive approach echoed was already evident in Woodley Park.

[18] Protestants appealed.to the CBA. It has just been tried on July 11 and 13, 2023. We shall assume for the purpose of this memo that the CBA will affirm.

G. The Play Within the Play

Prince Hamlet encounters his father's ghost early in Shakespeare's iconic drama. Hamlet (1602), Act I, Scene V. The ghost confides a stirring and terrible history. So, the plot unfolds, with twists and turns, the play within the play, consciences caught, a fateful trip to England, and then the road to denouement. As Hamlet put it, "The play's the thing where I'll catch the conscience of the king." Act II, Scene II.

In our concurrent November 9, 2021 letter to ALJ Mayhew in the present case, we previewed master plan conflict, RPS, and special variance problems.[19] P.C. Exh. 15 (ID). There is a play to be performed within the play before the ultimate curtain falls at dusk. In view of the seriousness of the master plan conflict issue, the matter must be referred to the Planning Board and then to the County Council.

V. Compatibility

"Square peg in a round hole"

ALJ Mayhew spotlighted the hybrid zoning/development compatibility issue in Woodley Park. County Code Sec. 32-4-402. P.C. Exh. 17; Pages 17-21.[20] ALJ Mayhew decided this compatibility provision covers development plans in all zones. He distinguished the narrower group of zones involving DOP recommendations. His

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[19] There were no written responses to or disagreement with our letter.

[20] County Code Sec. 32-4-402 begins, with these subsections applicable to the scope,

§ 32-4-402. - COMPATIBILITY.

(a) *"Neighborhood" defined.* In this section, "neighborhood" means the existing buildings and land uses adjacent to and extending from the proposed development to:
(1) A definable boundary such as a primary collector street or arterial street;
(2) An area with a significant change in character or land use; or
(3) A major natural feature.
(b) *Exception.* This section does not apply to a research park.
(c) *Recommendations by Director of Planning.* The Director of Planning shall make compatibility recommendations to the Hearing Officer for:
(1) A cluster subdivision;
(2) A development in the RCC, R-O, OR-1, OR-2, O-3, SE, OT zones, the CR districts, or, except as provided for a development described in § 32-4-402.1, a Planned Unit Development; or
(3) Alternative site design dwellings as provided in the comprehensive manual of development policies.

extensive reasoning deserve attention. Pages 18-19.[21] ALJ Mayhew's analysis addresses the relationship between statutory subsections and other relevant statutory sections. This accords with statutory construction principles. See Buarque de Macedo v. Automobile Ins. Co. 480 Md. 200, 215-30 (2022).

The CBA (M. Murphy, Chair) affirmed denial of the development plan based on RPS conflicts, but disagreed in *dicta* as to compatibility. Pages 17-20. The CBA said it needed to be consistent with its 11301 Pulaski Highway decision CBA 19-002 (2019). The CBA did not criticize ALJ Mayhew's reasoning. There was no judicial review.

Here, the plan does not satisfy the relevant criteria. The DOP said in their CPC memorandum, P.C. Exh.3:

> "The Department of Planning considers this site to be overdeveloped. Many of the lot sizes are not compatible to the surrounding neighborhoods."

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[21] "While it is true that this subsection enumerates the types of development projects where the DOP Director shall make compatibility recommendations to the Hearing Officer, it does not state that these development scenarios are the only types of development where the concept of compatibility should be considered. In enacting this Code provision the County Council may have reasoned that certain types of development are more technical or unique and that the DOP should therefore be required to assist the Hearing Officer with recommendations. Further, subsection (b) expressly states the only type of development to which the section does not apply are research parks. So the County Council knows how to exempt a type of development from compatibility review when it wants to. Moreover, the Comprehensive Manual of Design Policies ("CMDP"), contains a "Residential Compatibility" Section that states that the BCZR and CMDP "require the Director of Planning to make compatibility recommendations for all development proposals other than certain single family housing in DR 5.5 zones." This "Compatibility" section lists five "compatibility objectives," including "Site Development Context," whose objective is to ensure that "[t]he arrangement and orientation of the proposed buildings and site improvements are patterned in a similar manner to those in the neighborhood." See, CMDP p. 66. Finally, and conclusively, BCC § 32-4-104, titled "Scope of Title," states that "[t]his title shall apply to the process preview for approval of *all* development." (Emphasis added).

"In sum, I believe that DOP is charged with making compatibility assessments on virtually all development projects, and I further believe that the Hearing Officer can and should consider compatibility in deciding whether a development plan should be approved."

As we saw, their DPC memo flipped to support, but without cognizable reasoning. GTCC President Eric Rockel aptly highlighted the DOP's irrational reversal of position during his concise and excellent testimony.

The plan conflicts with Code Secs. 32-4-402(d)(1), (d)(3), and (d)(8):

> (d) *Compatibility objectives.* Subject to subsection (c) of this section, development of property shall be designed to achieve the following compatibility objectives in accordance with the guidelines in the comprehensive manual of development policies:
>
> (1) The arrangement and orientation of the proposed buildings and site improvements are patterned in a similar manner to those in the neighborhood.
>
> * * *
>
> (3) The proposed streets are connected with the existing neighborhood road network wherever possible …."
>
> * * *
>
> (8) The scale, proportions, massing, and detailing of the proposed buildings are in proportion to those existing in the neighborhood."

The clustered lots conflict with the prevailing neighborhood pattern of larger lots and setbacks in HFD, SR, and immediate MOG border. The six building schemes in the Pattern Book are all larger in scale, more massive, and higher than those in the area. The detailing and styles are also quite different. They fail (d)(1) and (d)(8). The proposed Mays Chapel Road gate plainly conflicts with (d)(3), tracking the RPS.

To be sure, compatibility does not require an identical pattern. But the current plan is beyond the pale of the character of area subdivisions.[22] It is also useful to consider the relationship of compatibility to the master plan conflict. The concentrated density and minimum setbacks significantly contribute to the incompatible plan.

[22] Metaphorically, Camden Yards (1992) brought back compatibility with historic ballparks. Such multipurpose enclosed stadiums as Three Rivers (Pittsburgh, 1970)) and Veterans Stadium (Philadelphia, 1971) had broken and degraded the beautiful tradition.

VI. Traffic and Transportation

A. The Special Variance

"It is difficult to make predictions, particularly about the future."
Attributed to Mark Twain, Nostradamus, Niels Bohr, and Yogi Berra

Zoning is an exercise of the police power.[23] In 1979, Baltimore County enacted a Growth Management Law (GML) "... to implement the objectives of the county-wide Master Plan …." relating to "necessary public facilities." Bill 178-79. As amended, it is codified in BCZR Sec. 4A00.1, et seq. The County Council found "important public facilities in certain predominantly urban areas of the county are inadequate." There were established Basic Service Maps (BSM) to regulate nonindustrial development. They are reviewed annually and not intended to be permanent. BCZR Secs. 4A02.1, 4A02.3.F.

Where a residential development is proposed in a designated traffic shed with an "F" intersection, then a "special variance' is prerequisite for any building permit. The law provides the standard: "That the demand or impact of the development proposed will be less than that assumed by the district standard." BCZR Sec. 4A02.4.G.1.

This area not only has three "F" intersections, but also congestion and hazards attributable to the land use array, roads configurations, difficult turns, and lengthy time-consuming backups. There are problems not only at rush hour, but also at other hours where the churches and schools generate much traffic.

* * *

The County Council classified this petition genre as a "special variance" rather than "special exception." Juliet sighed in Shakespeare's Romeo and Juliet (1595), "What's in a name?" But the names Montague and Capulet were important. The law strictly construes variances. This includes a need which must be substantial and urgent.[24] In contrast, there is a settled presumption in favor of special exceptions. So the very name, special variance, implies strict scrutiny.

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[23] Village of Euclid v. Ambler Realty Co. 272 U.S. 365, 387-88 (1926). Zoning laws "... must find their justification in some aspect of the police power, asserted for the public welfare."

[24] Chesley v. Annapolis 176 Md. App. 413 (2007), cited in Otter, 2022-173-A (2022).

It is also noteworthy that the Council has excluded or made exceptions for specific areas and uses from the BSM. P.C. Exh. 37. But the Council has chosen consistently to maintain control of the Falls Road area with its three F" intersections.

To illustrate, Bill 25-22 excluded the Ellicott Mill National Historic District in the South Rolling/Frederick Road commuter shed. BCZR Sec. 4A02.3.A. This excluded the Ellicott Mill redevelopment. ALJ Mayhew approved the project, recognizing this exclusion. Ellicott Mill PAI 01-0616, 2021-291-SPHASA, Pages 1, 19-20 (2022).[25]

Previously, the Council excluded part of the Ebenezer Road/Pulaski Highway commuter shed, and so the 130001 Pulaski Highway development. Bills 15-17, 30-20, 32-21, 25-22. BCZR Sec. 4A03.2.C. See PAI Case 11-1041, CBA Case 19-002 (2019). The Council also excluded a portion of the Charles Street/Bellona Avenue/Kenilworth Drive commuter shed. Bills 32-21, 25-22. BCZR Sec. 4A03.2.B.

The Council made an exception for Health Care and Surgery Centers Bill 37-15; BCZR Sec. 4A02.4.E.1.h. This facilitated Johns Hopkins Pavilion 3 at Greenspring Station.[26] There are other exceptions, such as for developments in Commercial Revitalization Districts and the Downtown Towson District. BCZR Sec. 4A02.4.E.1.a-j.

None of the exclusions or exceptions apply in the present case.[27]

While these legislative choices do not automatically disqualify the present application, they raise the implication and arguable presumption that the County Council ordinarily does not intend to make available special variances for developments in commuter shed areas still under control. This is another basis for strict construction.

* * *

The CDT argues their additional Joppa Road lanes result in less waiting times than assumed, thereby avoiding the otherwise inevitable adverse impact on the "F" level. They

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[25] The CBA sustained ALJ Mayhew's decision. CBA 21-291-SPHSA and 23-013 (2023).

[26] This came after their petition for special variance had been denied. Foxleigh Enterprises, P.C. Exh. 11. 2012-0060-SA; 03-C-13-013521.

[27] Recently enacted Bill 19-23 maintains the "F" ratings.

submitted the Lenhart/Driban consulting Traffic Impact Analysis (TIA), September 14, 2020; revised December 7, 2020. Dev. Exh. 25.

There is no court case interpreting "impact less than that assumed by the district standard." But there is a decisional prism here. Rizakos, Castlemoor Road, 2000-557-SA (2000), T. Kotroco, DZC; FDP,LLC, Wilson Ave., 05-336 (2005), J.V. Murphy, DZC; Stillerman, 852 Middle River Road, No. 08-264-A (2008), T. Bostwick, DZC; LaPenna, Forest Ave., 08-349-SA (2008), T. Bostwick, DZC; Sterling Reserve, LLC, Wampler Road, 08-436-SA (2008), Wiseman, ZC; T. Bostwick, DZC; Hitt, East Joppa Road, 2009-080-XSA (2009), W. Wiseman, ZC; Rave-On Enterprises, 1801 East Joppa Road, 2009-0275-SA (2009), T. Bostwick, DZC; Baynesville Properties, East Joppa Road, 2022-079-XSA (2022), P. Mayhew, ALJ. These decisions depict a consistent path:

(1) Is the likely trip generation minor, such as for a modest number of homes or self-storage?

(2) Is the property located at a substantial distance from the "F" intersection?

(3) Is the likely direction of traffic toward or away from this intersection?

The consistent theme is that the standard is satisfied where the project is minimal, the property is distant, and the predominant traffic flow is away from the "F" intersection.

The situation here is opposite. The project is major and very close to the Falls/Joppa intersection. The TIA shows 80% of trip generation to and from that direction. Page 14. To escape the law, the CDT orchestrates a change to the intersection for their benefit. Nicholas Driban projected a reduced rush hour waiting time at the "F" intersection and so no negative effect.[28] But the statute does not intend for the developer to stage manage road changes and give rose-colored predictions about the effects.

In sum, the "demand or impact of the development" and "that assumed by the district standard" relate to the existing road network. The rule of strict construction applies if there were any doubt. Anyway, the impacts are at best speculative.

[28] The actual impact cannot be measured until the project is built. So there is no realistic remedy for any worsening situation. An aggravating factor is that the TIA still projects a Joppa/Falls "F" level intersection, so there is no room for the several errors, both specific and general.

* * *

If we assume *arguendo* the CDT lane addition theory were acceptable as a matter of law, it collapses factually anyway.

The TIA places the Institute of Traffic Engineers (ITE) Manual average trip generation projections into a Synchro computer model. It projects 46 AM rush hour trips (35 out) and 61 PM trips (38 in). Dev. Exh. 25, 13-14. But in the real world, the projection is too low.

ITE Land Use Section 210, Single-Family Detached Housing, cites data on household residents and vehicles for 30 sites, averaging 3.6 residents and 1.5 vehicles per dwelling unit.[29] Prot. Exh. 35 The surveys were in 22 states and Ontario in the 1980s, 1990s, 2000s, and 2010s. These outdated surveys clearly relate to lower dwelling populations than from 3500sf homes with 2-3 garages. Online shopping and deliveries (Amazon, etc.) came later, so those added trips must be considered. The sites surveyed likely had several access points, lessening trip generation for each one. Logically, the GSM subdivision will far exceed ITE trip generation projections.[30]

Let us explore further with a simple equation to compute waiting times:

> W = TS, where W = waiting times; T = trip generation factors (garages/unit, delivery trips, access road coefficient); and S = Synchro model coefficient

GSM trip inputs exceed ITE studies inputs. So real T exceeds projected T. Even if we leave S alone for the moment, this means real W is much greater than projected W. So, the errant or obsolete inputs of the ITE --- 1.5 garages/unit, 1980s-2000s, multiple access roads --- necessarily produce an errant conclusion.

[29] There was no showing of the underlying studies.

[30] The CDT argues the ITE is a tool commonly used in the profession. While it may be useful for some purposes as a starting point, it is too dated and superficial to be used mechanically for the current day's new developments.

It likely would have helped to do trip counts for the Tally Ho/Joppa Road and Thornton/Joppa intersections. But the CDT deliberately failed to do so. Nor did DPWT staff or the SHA request or conduct any counts.[31]

This brings us to the Synchro/SimTraffic models. They are fraught with inevitable margins of error and unforeseen circumstances.[32] The fields of risk assessment and risk management address traffic.[33] The TIA did not consider or taken them into account.[34]

To conclude, the CDT's traffic projections are biased, misguided, incomplete, and not credible. They fail to meet the legal standard, however interpreted.

* * *

Let us turn to Baltimore County and SHA reviews. The DPWT issued DPC comments on August 12, 2021. P.C. Exh. 6. Terry Curtis submitted their similar special variance comments on September 20, 2021.

The TIA, revised December, 2020, was available to DPWT. Yet they do not discuss the TIA assumptions and methodology. The CDT eventually got the August 16, 2022 e-mail from Kristofer Nebre to "Nick." Dev. Exh. 14. While not an official DPWT comment, Nebre concurs there "… would not [be] a net negative impact on the

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[31] In Rizakos, former County Bureau Division Chief C. Richard Moore conducted traffic counts on the adjacent subdivision to provide a reasonable traffic analysis.

[32] Added lanes may just attract added trips from all area motorists, regenerate congestion, and protract waiting times. As Ying Wei Lum also observed, the reduced Joppa Road signalization may cause drivers to speed up to beat the light.

[33] See X. Yu, Risk Assessment: method and case study for traffic projects, J. Mod. Transport (2017), 25(4):236-49, https://link.springer.com/article/10.1007/s40534-017-0140-zU.S.;
K. Rink, Time Series Forecast Error Metrics You Should Know (2021)
https://towardsdatascience.com/time-series-forecast-error-metrics-you-should-know-cc88b8c67f27; Understanding the margin of error in simulations,
https://conjointly.com/guides/simulator-margin-of-error/
Department of Homeland Security, Risk Assessment, https://www.ready.gov/risk-assessment.

[34] While based on more definite historical data, 100-year floodplain models failed to foresee the 2018 extreme storm which flooded Ellicott City. Upslope development approvals contributed. Hurricane models are subject to changes in course. Economic, political, and public health models may be speculative and/or wide of the mark.

intersection." Nebre leaves it to the Zoning Commissioner (ALJ) to decide the special variance.[35] There was no copy to other DPWT officials. None of them commented.

Kris Nebre then testified at ALJ Murphy's request. He said nonchalantly that he did not prepare. Nor had he independently studied the TIA. He did not discuss traffic projection or modeling methodologies. He gave no reasons to support his agreement there would be no negative intersection impact. He did not address area congestion and safety problems. Despite prodding by CDT counsel, he refused to voice a departmental position to support the special variance.[36] Angelica Daniels, Bureau Chief, did not appear.

There followed SHA Assistant District Engineer Erin Kuhn to echo their approval. This is irrelevant. Their lesser method to assess intersection levels muted their concerns. They focused on reducing traffic signal time east-west to enhance north-south corridor flow. They did not address area congestion and safety issues at all. They did no independent modeling study. Ms. Kuhn admitted to margins of error in ITE and modeling projections. She admitted area traffic counts could provide helpful information.[37]

* * *

Last but not least, there is no accountability. If the project is approved, and traffic worsens, there is no remedy for overdevelopment and aggravated consequences.[38]

* * *

This brings us back to Krongard. ALJ Murphy accepted the developer's 8-vehicle extension of the Seminary Roade left-turn lane and projection of no negative impact on the Falls/Seminary intersection. Pages 6-9, 12-14, 40-44. But there were not presented the legal analysis, precedents, and argument presented here, including the focus of the law on the existing road network and likely traffic direction. Other than Krongard, this appears to be the only case with a proposal to satisfy the standard with a unilateral improvement.

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[35] The record is silent as to the written or verbal communications between Driban and Nebre which led to this friendly e-mail.

[36] On the whole, he seemed disengaged.

[37] "Crystal ball, There's so many things I need to know, Crystal ball, There's so many things I've got to know, Crystal ball, Won't you tell me please before I go." Styx, Crystal Ball (1976).

Anyway, there are significant distinctions. Torch Hill has about half the lot density. There was no dispute to the projected peak hour trip generation of substantially less than 50. There is attenuated impact on the more distant and problematic Falls/Joppa intersection. The lane extension is modest compared to lane additions here. It does not pose significant safety hazards. There is not as much of a scale of massive area congestion and safety problems as here.

Torch Hill Protestants did not produce lay or expert testimony. Page 40. There was no challenge to the validity or reliability of ITE traffic projections and Synchro modeling. There was no discussion of margins of error or risk assessment.

* * *

The DOP never issued the required report on the special variance. BCZR Sec. 4A02.4.G.2. Webster's Third New International Dictionary defines a report, *inter* alia, as:

> "**2 a:** something that gives information: usu. detailed account or statement (a weather ---) (an intelligence --) (news --) (a stock market --) …." Page 1925.

Black's Law Dictionary (4th Ed. 2014) corroborates,

> "**report and recommendation:** A written statement of findings and a proposed course of action for consideration by another, esp. a superior.

DOP's Brett Williams deferred to DPWT. P.C. Exh. 3. But there is no statutory authority for the DOP to shift or transfer statutory responsibility. Cf. United States ex. Rel. Accardi v. Shaughnessy 347 U.S. 260, 266-68 (1954). Nor does Kris Nebre's informal e-mail qualify as a report. So there is no agency report anywhere.

If the special variance issue were fairly debatable, there could be a remand for a report. But the special variance fails here factually and as a matter of law. Therefore, a remand would be futile. O'Donnell v. Bassler 289 Md. 501, 509-10 (1991).

B. Public Safety and Welfare

The special variance issue is a subset of the overall traffic issue. The transportation problems relate not only to special variance review, but also to development plan review generally. County Code Secs. 32-4-102(b), 32-4-103(a), and 32-4-229.

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[38] Mr. Wyatt accurately assessed the county and SHA performance as disappointing.

ALJ Mayhew addressed safety issues in Woodley Park and Davis Farms although no "F" intersections were involved. WP covered manifold traffic problems on Woodley and Dean Avenues. P.C. Exh. 17, Pages 12-15-22-23.[39] DF identified hazards on Maple Avenue and its Frederick Road intersection. P.C. Exh. 18, Pages 7-11, 16-18. ALJ Mayhew also addressed traffic safety issues in Ellicott Mill, Page 20.

Here, there has unfortunately been zero study of potential aggravation of existing safety hazards. Neither the CDT nor DPWT paid any attention. The added Joppa Road lanes are likely to worsen rather than neutralize or mitigate the existing problems.

Area citizens' testimony and photographs demonstrate congestion and safety difficulties. The right turns from Falls to Joppa call for "eyes in the back of your head." The left turns from the Exxon passage and Greenspring Station are accident central. The multiple curb cuts on Falls Road east side are a jungle. Tally Ho Road is already a commuter thruway. The backups on Joppa extend a mile and a half to Thornton Road.

The CDT's traffic presentation focuses almost exclusively on the special variance. They did a Tally Ho Road traffic study to try to downplay commuter traffic. Ironically, they chose not to do traffic counts for the Tally Ho and White Manor/Joppa intersections.

VII. The Jones Falls Sewershed

> ***"And worse I may be yet. The worst is not So long as we can say "This is the worst.'"***
> William Shakespeare, King Lear Act 4, Scene 1 (1605)

A. Sewage Generation

To verify the expected sewage generation, we consulted the County Sewer Design Manual.[40] There are stated these projections on Page 24:

> a) Contributing Population: Domestic wastewater quantities normally are to be computed on a contributing population basis except as noted in the subparagraphs below. The population to be used in design depends upon the zoning of the area that the sewer serves. If the area contains residential zoning, the design population is based on full occupancy of all housing to be served at the population density shown on the following table. If the area contains non-residential zoning, the design contributing population for

[39] The CBA affirmed ALJ Mayhew's denial of the plan, based mainly on RPS conflicts.

[40] https://resources.baltimorecountymd.gov/Documents/PublicWorks/standardsandspecs/sept2010/06sewer2010.pdf.

non-residential areas is based on the population per acre and dwelling units per acre densities in the following table: Zoning Classification Dwelling Units per Acre, **Population per Acre**: RC 2, RC 5: 0.667, 2.33; DR 1: 1.0, 3.5; **DR 2**: 2.0, **7.0**; DR 3.5: 3.5, 12.25; DR 5.5: 5.5, 19.25; DR 10.5: 10.5, 36.75 DR 16: 16.0, 56.0; R 0: 5.5, 19.25 BL -- 12.0 BM -- 10.0; BR -- 12.0; MR -- 10.0; ML -- 10.0; MLR -- 10.0; MH -- 16.0

b) Average Daily Flow: 1. Residential: The average daily per capita wastewater quantity for residential areas shall be 90 gallons per capita per day. **The average daily residential flow rate shall be determined by multiplying the applicable population densities by the average daily per capita wastewater quantity of 90 gpcd.**

Given D.R. 2 Zone population density at 7.0 per acre, 90 gpcd average daily flow, and 61 dwellings, this computes to 7 x 90 x 61 = 38,430 gpd.[41] If we then calculate the annual sewage generation, we get 38,430 x 365 = 14,026,950. In other words, at maximum D.R. 2 Zone density, there will annually be more than 14 million gallons added.

Each new development generates an incremental addition to the overall sewage situation. This insidiously escalates the adverse impacts of infiltration, inflows, and SSOs. Is it appropriate to continue on every occasion to maximize density in a perpetually failing sewer region? The answer is no. While it is not the fault of developers that the JFS situation is a debacle, the public health has to be a priority.[42]

B. The 2005 Consent Decree

In 2005, the EPA and MDE imposed a federal court Consent Decree for the Baltimore County sewer system, including the JFS. Prot. Exhs. 65-66. The main purposes are to gain adequate sewer capacity, eliminate sanitary sewer overflows (SSOs), and mitigate adverse public health and welfare impacts. Sec. V, Para. 8. The decree spotlights 6, 10, and 20-year storms at 6 and 24-hour intervals. It projects population to 2025. These reflect a then reasonable expectation that the County would satisfy the decree by 2025. Otherwise, the population and storm projections would have extended longer.

[41] Nicholas Leffner estimated the gpd at 19,000 based on the design manual. It appears his estimate was too low and about 50% the design criteria.

[42] In 2018, Ellicott City experienced yet another disastrous flood According to UMBC Professor of Geography Andrew Miller, it appears that the degree of upslope development was an aggravating and contributing factor. https://umbc.edu/stories/learning-from-ellicott-city/

The County must file quarterly and annual reports. Sec. VI. MDE reviews the reports and either approves or disapproves. The County acquiesced to a civil penalty of $750,000.00. Sec. IX, Para. 26-30 and agreed to a myriad of major stipulated penalties in the event of noncompliance. Sec. XI, Para. 38-45.

On April 14, 2023, MDE Water and Science Administration Director D. Lee Carey wrote DPWT Deputy Director Lauren Buckler to conclude their review, with EPA, of County SSO information just for calendar year 2018. Prot. Exh. 111. The letter attached a chart of 151 SSOs and applied penalties, along with waiver status: uncontested, waived, or denied. As a result MDE reduced its penalty from 320,875 to 136,687.50. Director Carey added EPA would in due course send a separate letter for penalties due to the United States. The Carey letter is attached to this memorandum.

The review and penalties are just for calendar year 2018. There is no evidence to infer any significant reduction in SSOs for subsequent years. This is reflected in the labyrinth of ongoing reports and publications, with Hazen the latest.

C. Four Consultants and Hazen Redux

It took seven years for the County to get the RKK reports (2012). Prot. Exh. 67-68. This signaled a winding road. There was the first Hazen review, RJN (2021), Ramboll (2022) and again Hazen.[43] There is expected a further report from Hazen later in 2023.

Protestants' counsel Michael McCann did yeoman work to present and evaluate the reports. RKK listed major tasks, still incomplete. RJN mapped 38 meter basins and an unmetered area. Prot. Exh. 78, 81-82. Figure 1-2, Page 4. They assessed improvements in four Roland Run basins.[44] There is no serious rehabilitation downstream from GSM or elsewhere. RJN Map 3 shows Code Red model-predicted SSOs downstream from GSM even for the mildest 2-year 6-hour storm The SSOs are thus not even close to elimination. Indeed, it appears the post-rehab conditions are worse than pre-rehab conditions.

[43] It is unclear why the County took seven years to get a report from RKK. It is even more concerning that the County so often and rapidly changed consultants. This does not bode well.

[44] These meter basins were previously slated for rehabilitation by RKK. Prot. Exh. 67, Map 5.1. RJN found reduced infiltration/inflow in BC 02, BC O4, and BC 09. but not BC 03. It is unknown whether these reductions will last, and if so, for how long.

Hazen's 2021 Summer Update includes "Strategies needed to further protect the environment from potential sanitary sewer overflows (SSOs) …" Prot. Exh. 85-86, Page 1. They will "map out what the sewer system needs to look like over a 50-year period, *** to cover all possible aspects of what the sewer system could become by the year 2070." Page 4. The "Target Completion Date" is "in Fall 2023." Hazen will use its monitoring program to improve the County's JFS hydraulic model and "… will allow for informed decisions to be made on capacity needs throughout the entire sewershed and at the neighborhood level." The Update includes a map which identifies multiple SSOS still active in the relevant JFS area.

To read the Hazen Update, it is as if the county's back to square one. The recent MDE civil penalty caps this evidentiary debacle.[45] After 18 years, there is no end in sight.

D. Lake Roland – The Dead Zone

Lake Roland is the main receiving water downstream in the JFS area. It is at the county-city boundary. From there, sewage flows south to the Back River Treatment Plant. Lake Roland suffers from severe e coli contamination. Prot. Exh. 74-76, 96-102. The e coli levels fluctuate, largely related to storm events.[46]

The county record and common sense reflect that human sources of sewage largely contribute to the lake's e coli pollution. Nicholas Leffner tried to deflect the problems to septic systems and agriculture. But it is inescapable that the GSM downstream area is severely impacted by increased development. Prot. Exh. 31.

It should be kept in mind that several streams flow into Lake Roland. There are a myriad of intense residential, institutional, and commercial uses in the watershed, including the Towson Town Center, Towson University, St. Joseph's Hospital, Greenspring Station, the Johns Hopkins Medical Institutions, and the like.

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[45] MDE makes efforts to monitor their decrees. The recent resolution of the Howard County decree is illustrative.

[46] E coli numbers are measured in MPN, Most Probable Number. Based on IS EPA Recreational Water Quality Criteria (2012), Any number above 100 per ml (millileter) reflects significant pollution. https://www.epa.gov/sites/default/files/2015-10/documents/rwqc2012.pdf. County Health Department sampling results show Lake Roland frequently in hundreds and thousands. Prot. Exh. 45. These are extreme numbers.

E. The Empty Chair

There were notable absences. Based on e mails and Leffner's testimony, David Bayer and Lisa Eichholtz are the principal county DPWT staff responsible for GSM sanitary sewer issues. They may have had informal communications with Leffner.[47] Anyway, they did not testify.

This presents the "empty chair" situation.[48] The Courts have developed a relevant rule of evidence. Their absence of witnesses under circumstances where they would be expected to testify raises the inference that their evidence would be unfavorable to the party, here the County and CDT.

The Court of Appeals underlined this point in Brooks v. Daley 242 Md. 185, 194-95 (1966). The Court referred to the iconic treatises on evidence,

> Professor Wigmore states the rule in regard to permissible inferences to be drawn from a party's failure to testify as follows:
>
> > 'It would be generally agreed, to be sure, that the mere fact of the party's failure to testify is not of itself open to inference; it is his failure when he could be a useful and natural witness * * * that is significant.' (2 Wigmore on Evidence (3rd ed.), s 289, page 173).
>
> See also McCormick on Evidence, s 249, pages 533-534.

The D.C. Court cited Brooks in Murphy v. McCloud 650 A.2d 202 (D.C. 1994),

> "Various courts have provided different characterizations of the inference to be drawn when a civil litigant fails to take the stand under circumstances in which she might ordinarily be expected to do so. *See, e.g.,* ***Brooks, supra,*** **218 A.2d at 189** (alluding to "the rule in regard to *permissible* inferences"); *Duratron Corp. v. Republic Stuyvesant Corp.,* 95 N.J.Super. 527, 231 A.2d 854, 856 (App.Div.1967) (referring to "the rule *permitting* adverse inferences"); *but cf. People ex rel. Borelli v. Sain,* 16 Ill.2d 321, 157 N.E.2d 417, 420 (1959) ("relator's failure to testify in his own behalf in a civil proceeding of this type detracts greatly from his position"); *Dunckelman v. T. Baker Smith & Sons, Inc.,* 447 So.2d 26, 29 (La.App. 1st Cir.1984) (party's failure to testify "creates a presumption that his testimony would be damaging to his case"). This court has also spoken in terms of a "presumption." *Namerdy v. Generalcar,* 217 A.2d 109, 112 (D.C.1966).[27] The United States Court of Appeals, in a pre–1971 case binding

[47] In contrast, their responses to Protestants' counsel's PIA requests may have been fraught.

[48] This brings to mind the iconic episode of The Untouchables S1 E1 (1959) starring Robert Stack as Eliot Ness and Bruce Gordon as Frank Nitti, referring to the empty chair of Al Capone.

> on us, *see* *M.A.P. v. Ryan,* 285 A.2d 310 (D.C.1971), has done the same. *Tendler v. Jaffe,* 92 U.S.App.D.C. 2, 7, 203 F.2d 14, 19 (1953)."

The inescapable inference is that county staff would have had to admit the JFS sewerage capacity situation is still in dire straits.[49]

F. Randall Gracheck and Robert Summers

Randall Gracheck confirmed JFS sewer capacity is still inadequate. There recur a plethora of downstream sanitary sewer overflows (SSOs), with many manholes measured at more than full capacity. Prot. Exh. 64, 69-73, 77. Robert Summers corroborated his testimony and illuminated the history of the consent decree based on his outstanding experience. The County is nowhere near fulfilling the purposes of the Consent Decree.

G. The CDT Case

The CDT presented nothing in their main case. In light of the obvious sewerage capacity issues, the CDT case failed right there.

The CDT apparently thought they could disregard the issue or, if necessary, counter with rebuttal. Even though there is some flexibility to administrative hearings, the burden is still on the developer to prove its case. See Grasslands Plantation v. Frizz-King Enterprises 410 Md. 191, 204-17 (2009). A case cannot be won purely on rebuttal.

Anyway, Nicholas Leffner's rebuttal is unconvincing. He consistently tried to downplay sewerage problems and present a rose-colored picture of county compliance with the consent decree. He orchestrated his presentation to get the CDT a result.

The CDT's game plan with Leffner was to deflect and divert attention from the serious deficiencies which every consultant identified. He seems to think the county's submission of required quarterly and annual reports translates to high grades. He didn't MDE has to review these reports. He made no mention of MDE's recent assessment of SSOs and imposition of more civil penalties. His reduction of the current Hazen undertaking to cosmetic budget planning was the last nail in the coffin of his credibility.

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[49] Shakespeare's King Lear, in dividing his kingdom, said to Cordelia, "Nothing will come of nothing. Speak again." King Lear (1606), Act 1, Scene 1. Cordelia could only muster polite but bare speech. Here, what comes of nothing to the CDT is a losing case.

He did have to admit there is not a single document from the county, MDE, or EPA Region 3 to show the county is on the path to resolving the consent decree.

H. Public Health and MP 2020

The County Code prioritizes protection of public health, safety, and welfare. Secs. 32-4-102(b), 32-4-103(a). Sec. 32-4-410 requires sewage facilities to function safely.

This extends Maryland law. Environment Article, Title 9, Subtitle 5, governs county water and sewerage plans. This includes Sec. 9-505, which states in pertinent part,

> "(a) In addition to the other requirements of this subtitle, each county plan shall:
>
> **"(4)** Provide: **(i)** For sewage treatment facilities that are adequate to prevent the discharge of any inadequately treated sewage or other liquid waste into any waters; or **(ii)** Otherwise for safe and sanitary treatment of sewage and other liquid waste;
>
> **(5)** Provide for facilities that are adequate to treat, recover, or dispose of solid waste in a manner that is consistent with the laws of this State that relate to air pollution, water pollution, and land use;

Each incremental addition of sewage intensifies SSOs and insidiously spreads e coli contamination.[50] The approval of the GSM maximum density development an multimillion gallon annual sewage generation would conflict with Maryland and County law and, as a corollary, present a master plan conflict.

Moreover, MP 2020 and the integrated Baltimore County Master Sewer and Water Plan prioritize protection of water quality.[51] So there are more master plan conflict problems which warrant referral to the Planning Board and County Council.

I. The Growth Management Law

The Growth Management Law (GML) controls nonindustrial development in deficient sewage areas. BCZR Sec. 4A02.4.C. BCZR Sec. 4A02.C.3 begins:

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[50] Notice may be taken that the impact may not be as dramatic as that widely reported from destruction of the Kakhovka Dam in Kherson Oblast, Ukraine. But the downstream e coli contamination there illustrates the potentially devastating types of problems.

[51] MP 2020 encompasses sewerage and water quality in its Visions; Public Infrastructure section, pages 45-49; Sustainable Environment section, pages 145-56; the Water Resources Element, Executive Summary, Appendix A. P.C. Exh. 41.

> "The maximum level of nonindustrial development per sewerage area shall not be greater than that capable of being provided with available sewerage capacity based on the following factors: …"

The 2021 Basic Services Map (BSM) for sewerage identified the JFS as an "Area of Concern." Prot. Exh. 92. It was one of just five countywide areas of concern. The DPWT correspondence strangely listed no deficiencies, but added this warning:

> "Everyone should be aware that the removal of an area of special concern does not mean that an area has unlimited developmental potential."

The 2022 BSM inadvertently omitted the "area of concern" designations. This is to be corrected in 2023. Prot. Exh. 94, 95.

Neither the law nor DPWT define "area of special concern." It is a euphemism for deficiency. The inadequate JFS capacity, multiple SSOs, and resulting pollution translate to a major deficiency. This is another reason to limit development in the JFS. The CDT must file a petition for special variance because of the inadequate sewage capacity.[52]

VIII. Stormwater Management (SWM); MP 2020 Trifecta

"Like all detectives, must consider every possibility." Charlie Chan in Paris (1935)

Pursuant to the Maryland Stormwater Management Act of 2007, Baltimore County enacted a comprehensive SWM law. Bill 25-10; County Code Article 33, Title 4. New development must manage stormwater runoff so existing runoff does not increase. To evaluate existing site runoff and project anticipated runoff involves an array of criteria and calculations. There is a Stormwater Manual which addresses these matters.

The Department of Environmental Protection and Sustainability (DEPS) is the designated county agency. As with sewerage, there were no county staff on hand to assess SWM. Again, the empty chair. But when DEPS submitted its August 11, 2021 DPC comment, they concluded, Prot. Exh. 3,

> "This project **does not** meet Baltimore County Code Development Plan requirements at this time."

[52] There was mention of the Krongard (Torch Hill) approval. The present case has to be decided on the present record. Anyway, the Torch Hill property is in the Roland Run section of the JFS and thus distinguishable. The recent MDE imposition of major civil penalties is telling.

Once again, the CDT did not produce any witness to address SWM in their main case. Protestants presented Daniel O'Leary, a well-qualified expert. He showed the CDT overstated existing runoff by assuming "straight row" or "road crops" pre-development rather than the required "meadow in good hydrologic condition." This involves a faster flow and less runoff. He explained the "row crop" premise has a much higher percentage runoff curve; and did the math. O'Leary also observed the CDT projection of anticipated runoff appeared understated by failing to apply the proper criterion for one-quarter acre lots. These errors skewed the SWM analysis to rationalize less SWM.

There was yet another problem. The CDT began with four SWM ponds but ended up with just three ponds. O'Leary would have to do a full design to come up with precise numbers; but he estimated the ponds would have to be 38-50% larger. This would undoubtedly have an impact on the entire site plan.

The CDT tried to counter O'Leary with Leffner, multi-tasking He said pre-development meadow criteria apply only when overbank flood protection is required. He questioned whether such protection is required. But he did not even inquire with county staff as to their approach. Leffner also said he could redesign the SWM to address the meadow criteria, but such hypothetical plan had not been presented or reviewed.

Meanwhile, Leffner did not address the understatement of anticipated runoff. Nor did he address the change from four SWM ponds to three ponds.

When all is said and done, it adds up to inadequate SWM.

Notably, MP 2020 also covers SWM and expresses the purpose to have appropriate SWM. P.C. Exh. 39. So, this is another master plan conflict issue.

IX. Residential Performance Standards

A. The MCR Connection Issue Is Secondary and Should Not Distract

There is no need to reach the MCR connection issue because the major issues require denial of the GSM plan. Yet it is MOG's priority. Otherwise stated, MCR should not distract from or overshadow the larger conflicts. The sideshow should not turn into the main event. Anyway, the proposed connection also conflicts with the law.

B. Legislative Context and Language

In 2001, the County Council enacted RPS Bills 34-01 and 58-01. P.C. Exh. 35. Bill 34-01 set procedural and substantive standards for all residential developments. Sec. 260.1.A. As enacted, it required DOP findings. BCZR Sec. 260.1.C. If the DOP found a proposal did not comply, then it could not be approved. The findings were subject to due process and were appealable.

The Bill also stated in Sec. 260.1.B.4 that:

> "Deviation from the standards may be allowed only if clearly necessary to:
> 1. Comply with another standard;
> 2. Comply with environmental regulations: or
> 3. Achieve the best possible development design, considering other goals in the comprehensive manual of development policies."

This provision remains. It is the only provision which allows for any deviation.

The substantive provisions in the Bill include the Sec. 260.4.A.1 "Streets" requirement explicitly mandates:

> "a) A development proposal shall:
> Provide for at least one street connection to an adjoining neighborhood or adjoining property, not including the principal access of the subdivision, in order to facilitate good traffic circulation."

The Site Planning provisions require "smooth transitions" with complementary buildings and site improvements. Sec. 260.2.A.5, 6. The street connection and site planning standards mirror the Code sections on compatibility and development policy. Secs. 32-4-402(d)(3), Sec. 32-4-102(b)(2)(iii).[53] There are also the open space criteria and restriction on cul de sacs. BCZR Secs. 260.3; 260.4.B.

Bill 58-01 adjusted the scope to residential developments of four or more lots within the urban/rural demarcation line (URDL). It retained DOP findings, but repealed the DOP denial's finality. The substantive standards stayed essentially intact.

[53] The statutory development policy calls for "Improved linkage between developments to enhance circulation of motor vehicles, bicycles, and pedestrians …"

C. The MCR Connection Does Not Fit

Mays Chapel Road anyway is a normal suburban subdivision access road. It is wide enough for cars to pass each other. While all the residents use the access road, only a few dwellings front on the road, so few parked cars. The road's very name shows it was intended in due course to be a through road to the eventual adjoining development, coupling also with the nearby north MCR section.

MOG wants to preserve its enclave for walking, bicycling, parties, and the like. MOG asserts that the connection impact on them would be far greater than any converse impact on HFD and SR. But those communities have legitimate concerns. The law does not intend an arbitrary choice or fiat to favor one association over others.

The main thing is the proposed gate conflicts with the plain legislative language. There is, moreover, no basis to deviate. If this community gets a gate, then virtually every subdivision in the county should get it. But that is not the law.

D. County Policy Analyzed, Dissected, and Exposed

The CDT argues Baltimore County Policy accepts one means of access for subdivisions with up to 100 units. Bureau of Development Policy Manual, Section XIII.B.1. Pages 22-23 (2002). P.C. Exh. 36. They say an MCR street connection to the adjoining neighborhood is not required because they propose 61 units and MOG has 99 units. This argument is flawed conceptually and factually.

DPR Policy states, in pertinent part,

> B. ACCESS GUIDELINES
> 1. Maximum Number of Units with One Means of Access
> a. Limits of Units
> --- *100 units with no future street extension proposed*
>
> * * *
>
> c. Emergency access points in place of full-use access points generally will be discouraged, but may be approved in unusual circumstances."

To begin, this is a kind of traffic access policy and not a land use policy. It does not supersede the RPS connection requirement. It does add an emergency access policy which is not in the RPS.

Moreover, it the DPR policy allowing one access up to 100 units were applied, it would conflict with the RPS. There is no such allowance in the legislation. But Christ v. Department of Natural Resources 335 Md. 427, 439 (1994) explained,

> "In any particular area of legislative concern, whether there should be a broad delegation of regulatory authority to administrators, or a more specific delegation, is a choice for the General Assembly."

As Bd. of Liquor License Comm'rs v. Hollywood Prod. 344 Md. 2, 11(1996) put it,

> "A determination of the scope of the agency's powers, therefore, turns on the General Assembly's intent in empowering the agency and the statutory scheme under which the agency acts."

Here, there is zero delegation of authority to any agency to alter the RPS, much less relax the street connection test. The only agency with a statutory RPS role is the DOP, limited to findings, not policy. The DPR has no statutory function. Anyway, the DPR policy does not even refer to the RPS and has nothing to do with it.[54]

The RPS law provides for "deviation from the standards" only in three specified ways quoted above. Section 260.1.B.4. A blanket relaxation for subdivisions with 100 units or less does not qualify. There is no other applicable standard and no environmental or design criterion. Notably, there is no deviation for the age of community residents.

Anyway, the adjoining neighborhood includes not only 99 MOG units, but also 27 in Boxwood, adding to 126 units. Combined with 61 proposed, there are 187 units. So this area does not even qualify by the numbers. The policy also discourages emergency access points.[55] This is especially apt where it intensifies "F" intersection traffic.

E. Open Space Location and Visibility, and the Cul de Sac

The proposal fails to provide open space visibility at the entrance and adjoining street. BCZR Sec. 260.3.A.2. Most of the dwelling units are not "around open spaces or squares." BCZR Sec. 260.3.A.4. Nor is there any justification for the cul de sac based

[54] So the DPR comments do not even address the RPS issue. P.C. Exh. 5.

[55] An "emergency gate" could fail. Also, the Lutherville Volunteer Fire Company (LVFC) first responders may have difficulties getting it open. There is no evidence of any input from LVFC. Any ensuing delays could be fatal. Blue Oyster Cult, Burnin' For You (1981).

on constrained site conditions. BCZR Sec. 260.4.B. While these conflicts may not be as broad in scope as the other conflicts with the law, attention should be paid to them.

F. No DOP Findings

The DOP meanwhile failed to make required RPS findings. Their DPC comment rubber-stamped the Pattern Book and developer lobbying points.[56] They errantly deferred this RPS issue to DPWT. Anyway, DPWT wanted the connection.[57] There is no need for a remand because the connection is required as a matter of law.[58]

X. Expert and Citizen Evidence in Perspective

"To conceal oneself from law is like trying to hide in birdcage."
Charlie Chan's Greatest Case (1933)

A. Take It With Many Grain of Salt!

Many land use cases feature contrasting "expert" and citizen evidence and opinions. Such expert opinions are more subjective and judgmental than in hard science disciplines. A background in landscape architecture, traffic engineering, and/or working with zoning petitions does not translate to expertise on zoning law, especially statutory construction and application. There also must be taken into account their bias.

Every expert opinion must have a valid factual and legal predicate. In People's Counsel v. Beachwood 107 Md. App. 627, 649-50 (1995), cert. denied 342 Md. 472 (1996), the Court rejected "expert" planning opinions. Judge Charles Moylan wrote,

> "A part of that *Boyce v. Sembly* opinion … not yet discussed in this opinion, and quoted with approval by the *Dorsey* opinion, observed,
>
> > 'The Court of Appeals and this Court have stated than an opinion, even that of an expert, is not evidence strong or substantial enough to show some error in the comprehensive rezoning unless the reasons given by the witness as the

[56] Agency reasoning must not be conclusory or "half-baked." Greater Baden-Aquasco Citizens v. Md. Nat'l Cap. Parks & Pl. Comm'n 412 Md. 73, 109 (2009), citing Bucktail v. County Council of Talbot County 352 Md. 530, 553 (1999).

[57] The DPWT called out the "bias" against Mays Chapel Road connection and criticized the failure to mention the "F" traffic shed and three intersections. They also observed that absence of a bypass would cause increased traffic toward "F" intersections.

[58] A remand would be an exercise in futility. O'Donnell v. Bassler 289 Md. 501, 509-11 (1981).

> basis for his opinion, or other supporting facts relied on by him, are themselves substantial and strong enough to do so. …'" Internal citations omitted.

Here, CDT's Mr. Bishop and his Exhibit 4 were misleading as to the proposed lot sizes and density. It diverted attention to peripheral subdivisions, several nonconforming. His Exhibit 9 went further beyond the pale to distant subdivisions with nonconforming townhouses and high density. His presentation on RPS was promotional and superficial.

CDT traffic expert Mr. Driban misused the inapplicable and obsolete ITE traffic generation input. They avoided area trip generation counts. There was no attention to margins of error. They had no remedy for potential traffic deterioration. They downplayed traffic congestion and safety.

Then Mr. Leffner downplayed the SWM and JFS problems. He painted a fairy tale picture of compliance with the Consent Decree

B. Respect for Area Citizens

This brings us to area citizens. The Court of Appeals recognized their ability to depict the neighborhood and potential impacts in Eger v. Stone 253 Md. 533, 540-43 (1969). The Court held admissible the testimony of an area resident who investigated and researched the traffic situation. The Court reminded that hearsay evidence is admissible. See, e.g. Tauber v. County Board of Appeals 257 Md. 202, 213 (1970). The many citizens here presented high quality probative evidence as to density and traffic, to which we alluded. There was no genuine dispute with their observations.

XI. "Reaching Out" or "Gaslighting" --- The Alternative Universe

"Reach out, reach out for me"
Four Tops, Reach Out (I'll Be There) (1966)

The CDT promoted they "reached out" to the "community." Their "reach" was to agree with MOG on the MCR gate. 2021 Community Input Meeting (CIM). P.C. Exh. 7, Page 2. But it divided the community associations, alienating HFD and SR. There were also the Rosenblatt e-mails to SR's Blandy Becker, offering landscaping. Messrs. Merritt and Wyatt exposed the artificiality of this offer.[59]

[59] Landscaping is required anyway.

A serious effort to "reach out" would have been a substantial offer to reduce density. The CIM Minutes include these exchanges at Pages 6, 8:

> "Question: Why not build the highly needed downsize community on this site? Less actual density?" "Mr. Rosenblatt: This is the developer's proposal."
>
> * * *
>
> "Question: What would it take for the developer NOT to move forward with this project?" "Mr. Rosenblatt: This is the project that is being proposed."

Their so-called "reaching out" amounts to gaslight and spin.[60] It masks their lack of reverse gear.[61] This deserved and got a cool reaction.[62]

XII. "Eternal Vigilance Is the Price of Liberty

"*Truth, like football, receive many kicks before reaching goal.*"
Charlie Chan at the Olympics (1937), quoted in Y. Huang, Charlie Chan, xvi (2010)

The GSM development plan conflicts with MP 2020; compatibility; traffic and transportation law and basic services; JFS sewershed legal criteria, SWM standards; and RPS criteria. There should be the requisite master plan conflict referrals to assess and/or confirm multiple conflicts, especially involving the T-3 Transect.

"Story are now completely extracted like aching tooth."
Earl Derr Biggers, House Without A Key 274 (1925)

Peter Max Zimmerman
PETER MAX ZIMMERMAN
People's Counsel for Baltimore County

Carole S. Demilio
CAROLE S. DEMILIO
Deputy People's Counsel
Jefferson Building, Suite 204
105 West Chesapeake Avenue
Towson, MD 21204
(410) 887-2188

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[60] Patrick Hamilton, Angel Street/Gaslight (1938); Rainbow, Stone Cold (1982).

[61] The CDT should look in the magic mirror at their rigid insistence on maximum density. They are far from the fairest of them all. Brothers Grimm, Snow White (1812).

[62] Paul Revere and the Raiders, I'm Not Your Steppin' Stone (1966), covered by the Flies and Monkees, among others.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY this 17th day of July, 2023, a copy of the foregoing People's Counsel for Baltimore County's Post-Hearing Memorandum was emailed to:

Adam Rosenblatt, Esquire,
210 W. Pennsylvania Avenue, Suite 500
Towson, Maryland 21204
amrosenblatt@venable.com ,

Christopher Mudd, Esquire
210 W. Pennsylvania Avenue, Suite 500
Towson, Maryland 204
CDMudd@venable.com

Douglas Sachse, Esquire
dsachse@dtslawoffices.com

Eric Rockel
erockel@earthlink.net

Blandy Becker
blandy.becker@gmail.com

Michael McCann, Esquire
118 W Pennsylvania Avenue
Towson, MD 21204
michael@mmccannlaw.net

Michael Wyatt, Esquire
100 W Pennsylvania Avenue
Towson, MD 21204
mwyatt@wyattgunning.com

Ying Wei Lum
ylum1@jhmi.edu

Dean Merritt
dean@merrittinc.net

Peter Max Zimmerman
PETER MAX ZIMMERMAN
People's Counsel for Baltimore County

Maryland
Department of
the Environment

Wes Moore, Governor
Aruna Miller, Lt. Governor

Serena McIlwain, Secretary
Suzanne E. Dorsey, Deputy Secretary

APR 14 2023

CERTIFIED MAIL / ELECTRONIC MAIL

Lauren Buckler, Deputy Director
Baltimore County Department of Public Works and Transportation
lbuckler@baltimorecountymd.gov
111 West Chesapeake Avenue
Towson, MD 21204

Re: *United States and State of Maryland v. Baltimore County*
Consent Decree Civil Action No. AMD 05-2028, AI# 31394
Stipulated Penalty Assessment for SSOs in CY 2018

Dear Ms. Buckler:

The Maryland Department of the Environment, Water and Science Administration, Compliance Program ("Department"), in consultation with the United States Environmental Protection Agency ("EPA") (collectively, the "Agencies"), has reviewed the additional information which the Baltimore County Department of Public Works and Transportation (the "County") provided to the Department and the EPA on November 18, 2022, regarding Sanitary Sewer Overflows from the County's collection system ("SSOs") occurring in calendar year 2018.

The County is liable for stipulated penalties to the United States and the State of Maryland for all SSOs, per Paragraph 39 of the Consent Decree, Civil Action No. AMD 05-2028 (Consent Decree). Following the review of twenty-four (24) hour and five (5) day SSO reports provided to the Agencies, and considering record corrections provided by the County during the review process, the Department has determined that the County is liable for stipulated penalties for 151 SSOs during calendar year 2018, and a total penalty of $641,750. Half of this amount, $320,875, is due to the State of Maryland.

The Agencies may, "in their own behalf and in their unreviewable exercise of discretion, reduce or waive stipulated penalties otherwise due," per Paragraph 45 of the Consent Decree. The Department, in consultation with EPA, has conducted a thorough review of all waiver requests, along with any additional data provided by the County to support these requests. While the Department declines to make *force majeure* determinations, it does agree to a waiver of certain SSO stipulated penalties at its discretion. The Department gives consideration to circumstances under the County's control and measures taken by the County to avoid or minimize delays. The Department has utilized metrics in certain categories of SSOs, such as the storm recurrence interval, in an effort to apply its discretion in a more consistent and replicable manner.

The Department, at its discretion, waives stipulated penalties for the 57 SSOs listed in Attachment I; $136,687.50 total waived penalties. These penalties would have otherwise been due to the State of Maryland. Please note that this waiver is for penalties due to the State of Maryland only. As such, the Department has determined that the County owes stipulated penalties for the remaining 94 SSOs.

Ms. Lauren Buckler, AI# 31394

Pursuant to Section XI of the Consent Decree, and as detailed in Attachment I, the County owes a total stipulated penalty of $184,187.50 to the State of Maryland, for SSOs occurring during calendar year 2018.

Please notify Mr. Arno Laud, Chief, Enforcement Division, Compliance Program at (410) 537-3510 or by email at arno.laud@maryland.gov within fourteen (14) days confirming your acceptance of this stipulated penalty assessment. Upon acceptance, an invoice payable to the Maryland Department of the Environment will be mailed to you under a separate cover.

Please note that this letter addresses the Department's request for payment of stipulated penalties only. The EPA will provide a separate letter regarding payment of penalties to the United States, and any waivers granted.

Sincerely,

D. Lee Currey, Director
Water and Science Administration

DLC:jrh

cc: Randolph Rollman/CD Admin, Baltimore County DPWT
Chad Thornton, Chief, Bureau of Utilities, Baltimore County DPWT
Lisa Eicholtz, Chief, Bureau of Engineering & Construction, Baltimore County DPWT
Jennifer Frankovich, Baltimore County Law Office
Karen Melvin, U.S. EPA
Nina Rivera, U.S. EPA
Peter Gold, U.S. EPA
Lynn Angotti, MDE OAG
Nathan P. Short, MDE OAG

Attachment I. All SSOs occurring in CY2018.

Overflow Date	Location of Overflow	Volume Released	Total Stipulated Penalty	Waiver Status
1/3/2018	7904 Seven Miles Ln & Old Court Rd	80	$ 125	Uncontested
1/14/2018	2227 Lincoln Ave.	150	$ 750	Uncontested
1/31/2018	2231 Lincoln Ave.	160	$ 750	Uncontested
2/5/2018	221 Coldbrook Rd. & Eastridge Rd.	4,700	$ 1,250	Uncontested
2/12/2018	41 Bellanca Ct. & Morane Way	9,000	$ 1,250	Uncontested
2/21/2018	1837 Clark Blvd. & Superior Ave.	160	$ 750	Uncontested
3/2/2018	Forge Acres PS (11820 Philadelphia Rd.)	5,500	$ 1,250	Waived
3/23/2018	3437 Liberty Gardens Rd. & Lord Baltimore Dr.	60	$ 125	Uncontested
4/7/2018	6601 Baltimore National Pike	70	$ 125	Waived
4/8/2018	228 Fallsbrook Rd.	65	$ 125	Uncontested
4/16/2018	7829 Aiken Ave. (SSO #41)	733	$ 750	Denied
4/16/2018	Alter & Southern Cross Rd. (SSO #22)	473	$ 750	Denied
4/16/2018	3902 Patterson Ave. (SSO #24)	47,082	$ 4,500	Denied
4/16/2018	Queen Anne Dr. (SSO #129)	1,201	$ 750	Denied
4/16/2018	3909 Southern Cross Dr. (SSO #23B)	13,287	$ 4,500	Denied
4/16/2018	Southern Cross Dr. & Parsons (SSO #23A)	12,904	$ 4,500	Denied
4/16/2018	Marnat Rd. and Hatton Rd. (SSO #113)	492	$ 750	Waived
4/25/2018	143 Othoridge Rd. & Bellona Ave.	1,000	$ 750	Uncontested
5/15/2018	7829 Aiken Ave. (SSO #41)	19,194	$ 4,500	Denied
5/15/2018	Queen Anne Dr. (SSO #129)	18,965	$ 4,500	Denied
5/21/2018	7616 Canton Center Dr. (Highlandtown)	100	$ 750	Uncontested
5/25/2018	8225 Fischer Rd. & Beachwood Rd.	50	$ 125	Uncontested
5/27/2018	7829 Aiken Ave. (SSO #41)	158,939	$ 10,000	Denied
5/27/2018	Queen Anne Dr. (SSO #129)	132,573	$ 10,000	Denied
5/27/2018	Alter & Southern Cross Rd. (SSO #22)	30,659	$ 4,500	Waived
5/27/2018	Briarwood Rd. (SSO #117)	486,082	$ 10,000	Waived
5/27/2018	Marnat Rd. and Hatton Rd. (SSO #113)	5,060	$ 1,250	Waived
5/27/2018	Nunnery Lane (SSO #116)	138,303	$ 10,000	Waived
5/27/2018	Overbrook Rd. (SSO #118)	1,822,170	$ 15,000	Waived
5/27/2018	3902 Patterson Ave. (SSO #24)	333,491	$ 10,000	Waived
5/27/2018	3909 Southern Cross Dr. (SSO #23B)	52,686	$ 4,500	Waived
5/27/2018	Southern Cross Dr. & Parsons (SSO #23A)	52,592	$ 4,500	Waived
5/27/2018	North Point Village PS (7618 New Battle Grove Rd.)	5,200	$ 1,250	Waived
5/27/2018	Frederick PS (1809 Frederick Rd.)	47,000	$ 4,500	Waived
5/27/2018	McTavish PS (50 University Ave.)	9,700	$ 1,250	Waived
5/27/2018	Oak Forest Park PS (407 Seminole Ave.)	6,000	$ 1,250	Waived
5/27/2018	Patapsco PS (4612 Annapolis Blvd.)	607,000	$ 10,000	Waived
5/27/2018	2235 Lincoln Rd. (MH #19656??)	300	$ 750	Waived
6/3/2018	Alter & Southern Cross Rd. (SSO #22)	6,393	$ 1,250	Denied
6/3/2018	3902 Patterson Ave. (SSO #24)	204,947	$ 10,000	Denied
6/3/2018	Southern Cross Dr. & Parsons (SSO #23A)	37,860	$ 4,500	Denied
6/3/2018	3909 Southern Cross Dr. (SSO #23B)	39,560	$ 4,500	Denied
6/3/2018	Marnat Rd. and Hatton Rd. (SSO #113)	4,611	$ 1,250	Waived

Attachment I. All SSOs occurring in CY2018.

Overflow Date	Location of Overflow	Volume Released	Total Stipulated Penalty	Waiver Status
6/3/2018	Overbrook Rd. (SSO #118)	398,582	$ 10,000	Waived
6/5/2018	Jenifer Rd. & W. Timonium Rd.	200	$ 750	Uncontested
6/11/2018	Overbrook Rd. (SSO #118)	16,055	$ 4,500	Waived
6/19/2018	10320 York Rd.	37,500	$ 4,500	Uncontested
6/20/2018	4835 Hollins Ferry Rd.	900	$ 750	Uncontested
6/25/2018	8776 Philadelphia Rd. & Rossville Blvd.	75	$ 125	Uncontested
6/28/2018	4835 Hollins Ferry Rd.	450	$ 750	Uncontested
7/5/2018	Rear of 8629 Berryfield Dr.	60	$ 125	Waived
7/12/2018	Stonewall Ct. r/w & Stonewall Rd.	6,750	$ 1,250	Uncontested
7/16/2018	9654 Belair Rd.	100	$ 750	Waived
7/16/2018	8 Dowling Circle	255	$ 750	Uncontested
7/21/2018	Nunnery Lane (SSO #116)	5,700	$ 1,250	Waived
7/21/2018	3902 Patterson Ave. (SSO #24)	172,411	$ 10,000	Denied
7/21/2018	3909 Southern Cross Dr. (SSO #23B)	104,020	$ 10,000	Denied
7/21/2018	Southern Cross Dr. & Parsons (SSO #23A)	74,340	$ 4,500	Denied
7/21/2018	Alter & Southern Cross Rd. (SSO #22)	66,280	$ 4,500	Denied
7/21/2018	Overbrook Rd. (SSO #118)	865,661	$ 10,000	Waived
7/21/2018	Marnat Rd. and Hatton Rd. (SSO #113)	26,334	$ 4,500	Waived
7/22/2018	7829 Aiken Ave. (SSO #41)	5,111	$ 1,250	Denied
7/22/2018	Queen Anne Dr. (SSO #129)	10,894	$ 4,500	Denied
7/23/2018	Alter & Southern Cross Rd. (SSO #22)	305,324	$ 10,000	Denied
7/23/2018	Southern Cross Dr. & Parsons (SSO #23A)	344,692	$ 10,000	Denied
7/23/2018	3909 Southern Cross Dr. (SSO #23B)	756,776	$ 10,000	Denied
7/23/2018	3902 Patterson Ave. (SSO #24)	1,259,760	$ 15,000	Denied
7/23/2018	Marnat Rd. and Hatton Rd. (SSO #113)	103,803	$ 10,000	Waived
7/23/2018	Overbrook Rd. (SSO #118)	1,320,950	$ 15,000	Waived
7/24/2018	7829 Aiken Ave. (SSO #41)	92,145	$ 4,500	Denied
7/24/2018	Queen Anne Dr. (SSO #129)	61,304	$ 4,500	Denied
7/24/2018	3098 Wells Ave.	15,000	$ 4,500	Uncontested
7/25/2018	Oak Forest Park PS (407 Seminole Ave.)	5,500	$ 1,250	Waived
7/25/2018	Frederick PS (1809 Frederick Rd.)	17,000	$ 4,500	Waived
7/27/2018	McTavish PS (50 University Ave.)	6,400	$ 1,250	Waived
7/27/2018	Oak Forest Park PS (407 Seminole Ave.)	4,700	$ 1,250	Waived
7/27/2018	Frederick PS (1809 Frederick Rd.)	5,300	$ 1,250	Waived
7/27/2018	Alter & Southern Cross Rd. (SSO #22)	4,317	$ 1,250	Waived
7/27/2018	Southern Cross Dr. & Parsons (SSO #23A)	23,796	$ 4,500	Waived
7/27/2018	3909 Southern Cross Dr. (SSO #23B)	30,366	$ 4,500	Waived
7/27/2018	3902 Patterson Ave. (SSO #24)	133,835	$ 10,000	Waived
7/27/2018	7829 Aiken Ave. (SSO #41)	113,742	$ 10,000	Waived
7/27/2018	Queen Anne Dr. (SSO #129)	105,137	$ 10,000	Waived
7/27/2018	Marnat Rd. and Hatton Rd. (SSO #113)	16,782	$ 4,500	Waived
7/27/2018	Overbrook Rd. (SSO #118)	415,257	$ 10,000	Waived
8/13/2018	Alter & Southern Cross Rd. (SSO #22)	3,008	$ 1,250	Denied

Attachment I. All SSOs occurring in CY2018.

Overflow Date	Location of Overflow	Volume Released	Total Stipulated Penalty	Waiver Status
8/13/2018	3902 Patterson Ave. (SSO #24)	37,111	$ 4,500	Denied
8/13/2018	Southern Cross Dr. & Parsons (SSO #23A)	9,270	$ 1,250	Denied
8/13/2018	3909 Southern Cross Dr. (SSO #23B)	11,116	$ 4,500	Denied
8/13/2018	7829 Aiken Ave. (SSO #41)	83,879	$ 4,500	Waived
8/13/2018	Marnat Rd. and Hatton Rd. (SSO #113)	3,074	$ 1,250	Waived
8/13/2018	Overbrook Rd. (SSO #118)	6,154	$ 1,250	Waived
8/13/2018	Queen Anne Dr. (SSO #129)	61,701	$ 4,500	Waived
8/21/2018	Overbrook Rd. (SSO #118)	7,737	$ 1,250	Waived
9/6/2018	6609 Collinsdale Rd.	17,500	$ 4,500	Denied
9/9/2018	Queen Anne Dr. (SSO #129)	40,580	$ 4,500	Denied
9/9/2018	7829 Aiken Ave. (SSO #41)	17,129	$ 4,500	Denied
9/9/2018	3909 Southern Cross Dr. (SSO #23B)	103,390	$ 10,000	Denied
9/9/2018	Southern Cross Dr. & Parsons (SSO #23A)	138,392	$ 10,000	Denied
9/9/2018	Alter & Southern Cross Rd. (SSO #22)	18,742	$ 4,500	Denied
9/9/2018	3902 Patterson Ave. (SSO #24)	577,083	$ 10,000	Denied
9/9/2018	Marnat Rd. and Hatton Rd. (SSO #113)	104,177	$ 10,000	Waived
9/9/2018	Overbrook Rd. (SSO #118)	248,106	$ 10,000	Waived
9/16/2018	8500 Cove Road	3,000	$ 1,250	Waived
9/17/2018	Queen Anne Dr. (SSO #129)	79,904	$ 4,500	Denied
9/18/2018	7829 Aiken Ave. (SSO #41)	14,038	$ 4,500	Denied
9/18/2018	Oak Forest Park PS (407 Seminole Ave)	420	$ 750	Denied
9/18/2018	Overbrook Rd. (SSO #118)	136,882	$ 10,000	Waived
9/26/2018	Alter & Southern Cross Rd. (SSO #22)	1,211	$ 750	Denied
9/26/2018	Southern Cross Dr. & Parsons (SSO #23A)	28,646	$ 4,500	Denied
9/26/2018	3909 Southern Cross Dr. (SSO #23B)	20,850	$ 4,500	Denied
9/26/2018	3902 Patterson Ave. (SSO #24)	20,048	$ 4,500	Denied
9/26/2018	Marnat Rd. and Hatton Rd. (SSO #113)	2,242	$ 750	Waived
9/27/2018	3902 Patterson Ave. (SSO #24)	477,171	$ 10,000	Denied
9/27/2018	3909 Southern Cross Dr. (SSO #23B)	93,236	$ 4,500	Denied
9/27/2018	Southern Cross Dr. & Parsons (SSO #23A)	104,835	$ 10,000	Denied
9/27/2018	Alter & Southern Cross Rd. (SSO #22)	14,354	$ 4,500	Denied
9/27/2018	Marnat Rd. and Hatton Rd. (SSO #113)	38,008	$ 4,500	Waived
9/28/2018	Overbrook Rd. (SSO #118)	40,836	$ 4,500	Waived
9/29/2018	6705 Canongate Rd. (MH #3998)	20,500	$ 4,500	Waived
10/17/2018	10 E. Towsontown Blvd at York Road	313	$ 750	Uncontested
11/2/2018	3902 Patterson Ave. (SSO #24)	24,199	$ 4,500	Denied
11/2/2018	3909 Southern Cross Dr. (SSO #23B)	3,079	$ 1,250	Denied
11/2/2018	Southern Cross Dr. & Parsons (SSO #23A)	1,688	$ 750	Denied
11/3/2018	Overbrook Rd. (SSO #118)	9,223	$ 1,250	Waived
11/14/2018	2107 East Boundary Avenue	60	$ 125	Waived
11/19/2018	Park Heights Ave & Old Court Rd	1,900	$ 750	Uncontested
11/24/2018	7829 Aiken Ave. (SSO #41)	89,110	$ 4,500	Denied
11/24/2018	Queen Anne Dr. (SSO #129)	72,812	$ 4,500	Denied

Attachment I. All SSOs occurring in CY2018.

Overflow Date	Location of Overflow	Volume Released	Total Stipulated Penalty	Waiver Status
11/24/2018	Alter & Southern Cross Rd. (SSO #22)	10,930	$ 4,500	Denied
11/24/2018	Southern Cross Dr. & Parsons (SSO #23A)	57,240	$ 4,500	Denied
11/24/2018	3909 Southern Cross Dr. (SSO #23B)	40,399	$ 4,500	Denied
11/24/2018	3902 Patterson Ave. (SSO #24)	122,945	$ 10,000	Denied
11/24/2018	Overbrook Rd. (SSO #118)	3,102	$ 1,250	Waived
12/3/2018	7839 Eastpoint Mall	9,050	$ 1,250	Uncontested
12/3/2018	3901 Hebrew Cemetery Rd.	325	$ 750	Uncontested
12/5/2018	Rear of 5 Periwinkle Ct	600	$ 750	Uncontested
12/6/2018	8267 Berryfield Dr	4,100	$ 1,250	Uncontested
12/11/2018	8375 Tapu Ct & Dunfield Rd.	375	$ 750	Uncontested
12/15/2018	Alter & Southern Cross Rd. (SSO #22)	13,949	$ 4,500	Denied
12/15/2018	Southern Cross Dr. & Parsons (SSO #23A)	78,391	$ 4,500	Denied
12/15/2018	3902 Patterson Ave. (SSO #24)	266,850	$ 10,000	Denied
12/15/2018	3909 Southern Cross Dr. (SSO #23B)	74,100	$ 4,500	Denied
12/15/2018	Overbrook Rd. (SSO #118)	164,786	$ 10,000	Waived
12/17/2018	3200 Elba Drive	1,625	$ 750	Uncontested
12/21/2018	Southern Cross Dr. & Parsons (SSO #23A)	984	$ 750	Denied
12/21/2018	3909 Southern Cross Dr. (SSO #23B)	2,600	$ 1,250	Denied
12/21/2018	3902 Patterson Ave. (SSO #24)	30,834	$ 4,500	Denied
12/21/2018	7829 Aiken Ave. (SSO #41)	1,674	$ 750	Denied
12/21/2018	Queen Anne Dr. (SSO #129)	19,585	$ 4,500	Denied
12/26/2018	908 Scotts Hill	150	$ 750	Uncontested

	SSO Count	Total Penalty	State of Maryland Penalty
Total SSOs for which the County is Liable	151	$ 641,750.00	$ 320,875.00
Total Waivers Approved by the Department	57		$ 136,687.50
Total Penalty Demanded by the Department	94		$ 184,187.50

IN RE: DEVELOPMENT PLAN HEARING, PETITION FOR SPECIAL VARIANCE, etc. 2310 W. Joppa Road	*	BEFORE THE
	*	OFFICE
Greenspring Manor 9th Election District 3rd Councilmanic District	*	OF
	*	ADMINISTRATIVE
	*	HEARINGS
	*	Case nos. 08-0922 2021-0250-SPH
	*	

* * * * * * * * * * * *

PROTESTANTS' POST-HEARING MEMORANDUM

Protestants, Valleys Planning Council, Inc., Falls Road Community Association, Inc., Heatherfield Community Association, Seminary Ridge Owners Association, Boxwood Homeowners Association, The Meadows of Greenspring HOA, and Tally Ho Community Association, submit this post-hearing memorandum in support of their opposition to the development plan and requested zoning relief.

I. INTRODUCTION

Protestants comprise seven homeowners and land preservation organizations representing hundreds, if not thousands, of people in the area surrounding the subject property. As was evident from the testimony of the numerous witnesses who testified during the course of the 13-day hearing, the community is strongly and fundamentally opposed to the proposed development. The reasons are numerous and, frankly, pretty obvious. The public sewer system that would receive sewage from the site is, in the words of former ALJ John Beverungen, "woefully inadequate" to handle any additional sewage. Within a stone's throw of the site are not one, but three, failing "F-rated" intersections, among only a small handful of such intersections in the entire County. The

public facilities that would serve the proposed development are simply not adequate. This is precisely the type of development that the County's Growth Management Act was intended to prevent. This memorandum will be limited to addressing these important sewer capacity and traffic congestion issues.[1] In addition, as will be addressed in the post-hearing memorandum of People's Counsel, there are also serious issues regarding, *inter alia*, stormwater management, floodplain impacts, and conflicts with the County's Master Plan.[2] For all these reasons, Protestants respectfully request that the ALJ deny the development plan and zoning relief requested by the Developer,

II. SEWER CAPACITY[3]

A. The Jones Falls Sewershed and the sewer interceptors that serve the subject property

The subject property (the "Property") is located within the Jones Falls sewershed. Maps of the sewershed, and the location of the Property in the sewershed, were introduced by Protestants as Exhibit 59. The three major interceptors or trunk lines in the sewershed are: (i) the Jones Falls trunk line which conveys sewage from the west (including Pikesville), (i) the Roland Run trunk line which conveys sewage from the north, and (iii) the Towson Run trunk line which conveys sewage from the east (including Towson proper). (Prots' Ex. 61).

The three trunk lines, and the sewage they convey, converge at a single manhole (manhole 6888) located at the northern end of Lake Roland. All of the sewage then travels southward under Lake Roland in a single trunk line, 42" in diameter, before heading into the Baltimore City sewer

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[1] The Meadows of Greenspring has filed a separate memorandum on the issue of the "pass-through."

[2] Protestants incorporate herein the memorandum filed by People's Counsel.

[3] The transcript of the hearing in this matter will be referenced as "T1, p. __" for the first day, "T2, p. __" for the second day, etc. The days of the hearing were September 1, 2022, September 20, 2022, September 21, 2022, October 27, 2022, October 28, 2022, November 1, 2022, December 5, 2022, December 7, 2022, January 30, 2023, February 10, 2023, March 27, 2023, April 11, 2023, and May 31, 2023.

system. Ultimately, the sewage is treated at the City's Back River wastewater treatment plant. The County does not have its own wastewater treatment system. The majority of sewage in the entire sewershed travels in this fashion, to manhole 6888[4] and under Lake Roland.[5] (T10, pp. 15-25, 80-81).

The three trunk lines and other sewer lines in the sewershed are depicted in a map introduce at Exhibit 61 (a copy Map 1.1 of the LTC Report (discussed below)). The sewer system is gravity-fed, and therefore, the three main trunk lines follow the path of the three major stream systems in the Jones Falls watershed that drain to Lake Roland. They derive their names from those streams – the Jones Falls, Roland Run, and Towson Run. Protestants' Exhibit 60 is a map showing the three streams.

B. The Lawsuit against the County and the Consent Decree

1. The Lawsuit

In July 2005, the EPA and MDE filed a lawsuit in federal court against Baltimore County alleging that it was discharging tens of millions of gallons of wastewater containing raw sewage from its sewer system into various water resources, including Towson Run, Lake Roland and the Jones Falls. (Prots' Ex. 66, pp. 5, 6 at ¶¶ 26, 30). The EPA and MDE alleged that these discharges were caused by, *inter alia*, inadequate flow capacity in the County's sanitary sewers and excessive infiltration and inflow to the sewers. (*Id.*, p. 6 at ¶30). The EPA and MDE alleged that the

[4] Protestants' Ex 71 is a photograph of manhole 6888, which shows the manhole cover to be ajar which, according to Protestants' expert Randy Grachek, was likely caused by a sanitary sewer overflow. The next photographs in the exhibit are photographs of the same manhole after being sealed by the County. (*Id.*; T10., pp. 82-83). Mr. Grachek explained that sealing a manholes has to be done in conjunction with work performed to increase capacity "so that you don't just exacerbate the problem by forcing the problem upstream." (T10, p. 83).

[5] Protestants' Ex. 78 (RJN Performance Assessment (discussed below)), p. 2 ("The majority of flow from the Jones Falls sewershed flows through a 42-inch interceptor gravity main discharging into the City of Baltimore's sewer system, where the flow is metered by a jurisdictional boundary meter (TSJF01) operated and maintained by the City of Baltimore.").

discharges have caused or contributed to the presence of elevated levels of coliform bacteria in these waters and sought injunctive relief and civil penalties against the County amounting to millions of dollars. (*Id.*, pp. 6-8).

2. The Consent Decree

The MDE, EPA and the County subsequently entered into a Consent Decree, signed by the parties and the federal court judge. (Prots' Ex. 65). Pursuant to the Consent Decree, the County is required to develop and implement a series of measures (set forth in Paragraphs 7 through 18) with the goal of eliminating all sanitary sewer overflows (SSO's)[6] in the County's collection system. The most pertinent of these required measures are/were to (i) conduct a physical inspection of sewer lines, manholes, and force mains in the collection system (Paragraph 8 (the "Collection System Inspection")), (ii) perform an evaluation of inflow/infiltration (I/I)[7] in the system and the long-term capacity of the system to transmit peak flows (Paragraph 9 (the "Long Term Capacity/Peak Flow Management" evaluation), and (iii) prepare a plan that describes the deficiencies in the system and provides for the performance of any corrective actions necessary to address those deficiencies (Paragraph 10 (the "Sewershed Repair, Replacement and Rehabilitation Plan")). (*Id.*, pp. 17-35).

3. The Sewershed Repair, Replacement & Rehabilitation Plan ("SRRR Plan")

The Consent Decree identifies the elements that must be part of the County's SRRR Plan. Among these are that the Plan must identify the corrective actions taken or to be taken to address the deficiencies in the current physical condition of system (*i.e.*, those identified in the Collection

[6] An SSO occurs when a pipe is overcapacity and sewage flows out of the pipe and into the ground and groundwater.

[7] Infiltration and inflow (I/I) is when water enters into a pipe either from groundwater or from a rain event.

System Inspection)[8] and propose a plan for implementing the corrective actions. The corrective actions must "tak[e] into consideration the Long Term Capacity/Peak Flow Management analysis" (discussed below). (*Id.*, p. 32 at C.vi). Importantly, the SRRR Plan must also provide projections regarding the range of storm events for which the system will be able to convey peak flows without the occurrence of SSOs. These projections must be "consistent with the results of the long-term capacity/peak flow management evaluation" and "shall assume completion" of the corrective actions recommended by the Plan. (*Id.*, p. 33 at C.ix).

4. The Long-Term Capacity/Peak Flow Management ("LTC") Evaluation

The County's LTC evaluation must assess the "existing and long-term capacity of" the system, the ability of the system to transmit "current and predicted" peaks flows in the system, and "identify appropriate measures to address capacity issues." (*Id.*, pp. 27-28, at 9.C.ii.a). The County must determine whether the corrective actions proposed by the County in the SRRR Plan "*will ensure* adequate long-term transmission capacity in the Collection System." (*Id.*, p. 27 at para. 9C.ii) (emphasis added).

5. The modeling of capacity

The Consent Decree requires the County to implement and maintain a hydraulic model to determine the present and future capacity of the system and the impact of improvements made to the system. (*Id.*, Para. 14, at pp. 54-55). The model must also "identify the measures *necessary* to address capacity limitations as required by Paragraph 9 (the LTC evaluation)." (*Id.*, Para. 14, at p. 54) (emphasis added).

[8] The Consent Decree requires the County to undertake construction of certain projects that were already identified at the time the Consent Decree was entered. They are set forth in Appendix B. (*See id.*, p. 15 at sec. 7D and p. 42 at sec. 13B).

6. Storm events

The County is required to determine future predicted peak flows "for, at a minimum, 2, 10, and 20 year/24-hour storm events." (*Id.*, p. 28 at sec. 9Cii(b)). The County is not required to "design or construct" its sewer system to any specific recurring storm interval." (*Id.*, p. 31 at C.ii(g)).

7. Population projections

The LTC evaluation must be based on "reasonable population projections for the year 2025." (*Id.*, p. 28 at para. 9C.ii(b); *see also id.* at para. 9C.ii(a) (peak flows must account for "year 2025 predicted population and land uses").

8. *Performance assessment*

The Consent Decree requires the County to conduct a "performance assessment" of the work "as required under" paragraph 10 (*i.e.*, the SSSR Plan) and "to determine the effectiveness of the evaluation and corrective action work performed." (*Id.*, pp. 34-35 at Para. 10E). The performance assessment must be submitted to MDE and EPA for review and comment. (*Id.* 10E.iii). After completion of the Performance Assessment, the County must "modify its Collection System operation and maintenance program as appropriate to achieve the purpose of this Consent Decree." (i.e., to eliminate all SSO's). (*Id.* at 10E.iv).

9. Purpose and goal of Consent Decree

The "express purpose" of the Consent Decree is for Baltimore County to take all measures necessary to comply with the Clean Water Act and the regulations promulgated thereunder, and the Maryland water pollution control laws and the regulations promulgated under such laws, with the goal of eliminating Sanitary Sewer Overflows." (*Id.*, pp. 3-4). The requirements of the Consent Decree in Paragraphs 7 through 18 (which include the LTC Report and SRRR Plan) are

to be developed and implemented "with the goal of eliminating all SSO's from Baltimore County's Collection System." (*Id.*, p. 8 at para. 7A).

C. The County's Hiring of RKK to Evaluate Capacity and Recommend Corrective Actions

After entry of the Consent Decree, the County retained an engineering firm, Rummel, Klepper & Kahl ("RKK"), to undertake the required evaluation of the sewer system and to recommend corrective actions to meet its obligations under the Consent Decree.

1. RKK's SRRR Plan

In December 2012, RKK issued a SRRR Plan for the Jones Fall Sewershed. (Prots' Ex. 67). Notably, as will be discussed in detail below, the SRRR Plan identifies both (i) corrective actions needed to address current deficiencies *and* (ii) corrective actions needed to address future/model predicted deficiencies identified in the LTC Report. RKK calls the entire plan its "Corrective Action *Recommended* Plan."

2. RKK's LTC Report

The LTC Report is Appendix L to the SRRR Plan. Consistent with the Consent Decree, RKK prepared a calibrated hydraulic model to evaluate the County's system in order to "determine where improvements are needed to eliminate SSO's and prevent model-predicted SSOs from occurring." (*i.e.*, to eliminate both current SSOs and future predicted SSO's) (*Id.*, p. 2) (emphasis added).

The LTC Report identifies the specific corrective actions "*necessary* to eliminate capacity deficiencies and sanitary sewer overflows (SSOs) predicted by the hydraulic model simulations developed for the sewershed." (*Id.*) (emphasis added). These corrective actions recommended by RKK are described in the body of the LTC Report (*id.*, pp. 9-27) and depicted in five (5) maps attached to the Report, one for each storm event. (*Id.* at maps 4.1–8.1). The results of the LTC

Report, as they relate to the proposed development, are discussed in detail below. In short, RKK found significant model-predicted capacity problems in the sewer lines that would receive sewage from the subject property.

D. The Sewer Lines That Would Serve The Proposed Development And Their Extreme Overcapacities

The Developer proposes to connect to the public sewer lines that presently exist across Joppa Road from the site. The precise manhole where the connection would be, and the sewer segments that run from that manhole, are depicted in Protestants' Exs. 63 and 88A and B. Sewage from the site would then flow southward in the manner depicted in Protestants' Ex. 62 and 63, until it reaches the Jones Falls interceptor, then westward to manhole 6888 and to the Lake Roland trunk line. As described above, the vast majority of sewage in the Jones Falls Sewershed flows to the same location.

Importantly, the LTC Report finds numerous model-predicted SSOs and overcapacities in the manholes and sewer lines that would serve the proposed development, beginning with the lesser 2 yr/24 hour storm. The specific corrective actions recommended by RKK for these deficiencies are reflected in the maps attached to the LTC Report. (Ex. 68 (Maps 4.1 to 8.1). The sealing of manholes is reflected by a brown dot, the replacement/upsizing of a sewer line is shown by a pink line, and installation of a relief sewer is shown by a red line. For the sewer lines that would serve the proposed development, RKK recommended the following:

2/24	*	replacement of 1377 liner feet of 10" sewer with 18" sewer[9] (MH 44216 to MH 44212)
	*	SSO at manhole 44219

[9] Increasing the diameter of the pipe from 10 inches to 18 inches is a significant increase. The area of a pipe, i.e., a circle, is a function of the radius squared (r2). So, the area an 18-inch pipe (9x9=81) is more than three times that of a 10-inch pipe (5x5=25).

10/6	*	[the above corrective actions for 2/24 storm]
	*	sealing 4 additional manholes [6883, 44212, 44213, 53270][10]
10/24	*	[the above corrective actions for 10/6 storm]
	*	installation of 11,557 additional linear feet of relief sewer ranging in size from 10- to 30-inches
	*	sealing 24 additional manholes
20/24	*	installation of 630 additional linear feet of relief sewer ranging in size from 21-inches to 30-inches
	*	sealing of 7 additional manholes

E. RKK v. DPW Capacities

Protestants' Exhibit 69 is a chart that compares the specific capacity percentages from RKK with those from the County for all of the sewer segments from the site to the border of the sewer shed at the County-City line. The fourth column reflects (in green) the capacities of these segments pulled from the chart that DPW generated during its review of the proposed development. (Prots' Ex. 64). The next five columns reflect the capacities determined by RKK for each of the storm events. (*See* Prots' Ex. 72 (RKK's pipe capacity charts)). Even a cursory review of this chart reflects enormous differences between DPW's capacities and those of RKK. Highlighted in blue are all of the capacities that, according to RRK, exceed the 90% design capacity prescribed in the County's Sewer Design Manual. (Prots' Ex. 70). The capacities highlighted in red reflect those segments that RKK determined need to be upsized or require the installation of a relief sewer. The last column in this chart identifies the specific sewer segments that RKK recommended for upsizing or the installation of relief sewers. Whether highlighted in blue or red, this chart shows

[10] The volume of overflow from these manholes, if they are not sealed for the 10/6 storm, is well over a million gallons. *See id.*, p. 13 at Table 7.1 (MH 6883 (1,031,000 gallons), MH 44213 (12,100 gallons), MH 44219 (81,500 gallons), and MH 53270 (8,700 gallons)).

that the vast majority of sewer segments that would receive sewage from the proposed development exceed 90%, many of them are far in excess of that standard. (T10, pp. 65-74).

As will be discussed below, Protestants' expert Randy Grachek concluded that the reason for the stark contrast between DPW's capacities and those of RKK is that DPW's capacities, remarkably, are based on dry weather, not wet weather, flow.

F. The "Smoking Gun" - The County's Concession Regarding The Threshold For When Sewer Lines Must Be Replaced

The incapacities of the sewer segments across Joppa Road

It is undisputed that eight (8) sewer segments where the Developer proposes to connect across Joppa Road do not have sufficient capacity to receive sewage from the development. In its development plan comments, the Bureau of Development Plans Review identifies the manhole numbers of these eight segments, the length of the pipes (1259 feet), and indicates that six of the segments were supposed to be replaced in connection with improvements made by Johns Hopkins at Greenspring Station, just northwest of the site. DPR's comment and other memoranda from DPW reflect that the County mistakenly issued occupancy permits to Johns Hopkins without first requiring Hopkins to install the six new sewer segments and acquiring the right of way necessary to do so. (Prots' Ex. 13, 14, 89, 90). DPW's comments state that the proposed development cannot connect to public sewer unless all eight sewer segments were replaced. (*Id.*).

Jeff Peluso, Acting Chief of the Bureau of Engineering and Construction saw this to be "a big problem." (Prots' Ex. 89). In an email exchange, Mr. Peluso asked Dave Bayer of the Sewer Design section what the ramifications would be if the new segments are not installed and Mr. Bayer responded "sanitary sewer overflows." (Prots' Ex. 90). Mr. Peluso asked whether there was another way to provide capacity for the proposed development; Mr. Bayer responded that it

was not feasible to avoid the capacity deficient areas and that "Zero is the 'breaking point' of number of units that could be built without causing an SSO." (Prots' Ex. 90).[11]

1. *The capacity threshold conceded by the County*

The eight sewer segments that the County acknowledges have inadequate capacity are depicted in Protestants' Ex. 88. These segments have capacities between 94% and 101% (at least according to the County's capacity calculations). (Prots' Exs. 64, 69). The two segments that Johns Hopkins were not required to be replaced (43794-43793 and 43793-43792) have capacities of 94% and 95%, respectively (again, at least according to the County's calculations).

As will be discussed below, the importance of this unprecedented concession by the County cannot be overstated. If the least of these capacities, 94%, is insufficient, then it stands to reason that any and all other segments that have 94% or greater capacity are insufficient and must be replaced. This conclusion is consistent, of course, with the 90% standard in the County's Sewer Design Manual. (Prots' Ex. 70).

2. *The testimony of Kathy McCany from the Sisters of St. Benedictine*

Across the street from the site is the home and chapel of the Sisters of St. Benedictine. Sister Kathy McNany testified that she was approached by County representatives about obtaining the right of way across the Sisters' property for several of the sewer segments. She testified that this would entail losing a substantial area of pine trees behind the monastery which is in immediate view from the windows of their sanctuary. She stressed the importance of the natural landscape to their mission. She testified that she has not granted the County the right of way and has no intention of doing so, nor has the Developer approached her about the issue.

[11] Mr. Grachek agrees that "zero" is the breaking point. (T10, p. 128). This email exchange was produced to Protestants' counsel in response to a Public Information Act request.

G. The Silver Bullet - RJN's Performance Assessment

As noted above. paragraph 10D of the Consent Decree requires the County to conduct a performance assessment to "determine the effectiveness of the evaluation and corrective action work performed." (Prots' Ex. 65, p. 35 at para. 10D).

For this task, the County chose to hire a new consultant, RJNgroup ("RJN"). On May 27, 2021, RJN issued a Performance Assessment Report that focuses on "comprehensive rehabilitation" performed by the County in four water meter basins located in the northeast corner of the sewershed (specifically, meter basins BC02, BC03, BC04, BC09). (Prots' Ex. 78, pp. iii, 3). This rehabilitation consisted of lining pipes and manholes and installation of two relief sewers (one near Coppermine Terrance one near Towsontown Boulevard). These improvements, and the others made by the County in the sewershed, are reflected in Map 2 of the Performance Assessment. (Prots' Ex. 78, map 2).[12]

In evaluating the effectiveness of the improvements, RJN used an "updated" and "recalibrated" hydraulic model to simulate conditions before and after the improvements (pre- and post-rehabilitation). (*Id.*, pp. iv, 12).

> 4.0 Effectiveness of Repair, Replacement, and Rehabilitation Projects
>
> This section evaluates the effectiveness of corrective actions completed in the Jones Falls Sewershed to address capacity and structural issues outlined in the Jones Falls SRRR Plan. The evaluation was performed based on a review of County-provided post-construction inspection records, improvements implemented based on the 2013 SRRR Plan (Section 6.0), and model simulation results *using the updated hydraulic model recalibrated based on pre- and post-rehabilitation flow monitoring data.*

(*Id.*, p. 12) (emphasis added).

[12] The two relief sewers, shown in pink in Map 2, are relatively short and, notably, are not amongst the relief sewers recommended by RKK. The Coppermine Terrace relief sewer is depicted in RJN's future capacity map (Map 3) (discussed below), but the Towsontowne one is not.

Using this model, RJN, like RKK, performed an evaluation of future/predicted capacity of the system. (*Id.*, 12-14). The narrative portion of the report identifies the future/predicted overflows in the four meter basins (BC02, BC03, BC04, BC09), but Map 3 attached to the Performance Assessment shows *all* of the model-predicted overflows in the entire sewershed *post-rehabilitation*. (Prots' Ex. 78, map 3; *id.* p. 14 ("Map 3 depicts the model predicted SSO and flow restriction locations in Jones Falls for all five (5) storm simulations under the *post-rehabilitation* condition").

Map 3 is critically important to this case. Preliminarily, it is important to note that Map 3 is a compilation of *all* of the predicted overflows (in both pipes and manholes) for *all* of the storm events. [RKK, in contrast, prepared a separate map for each storm event]. The deficiencies shown in Map 3 are cumulative; for example, if the Map shows predicted overflows for the *least* of the storms (2 yr/6 hr) (depicted in red), then there will be overflows for *all* of the remaining storms as well (the 2/24, 10/6, 10/24 and 20/24 storms). In other words, the color of the overflow (red, orange, yellow, green, or blue) identifies the storm event during which overflows/restrictions *begin* to occur.

The Map (entitled "Model Predicted SSOs and Flow Restriction Locations") shows numerous SSOs and hydraulic restrictions concentrated along the sewage path for the proposed development, beginning right below the site and continuing without interruption all the way to Lake Roland and then to the City line. There are more SSOs and restrictions along this path than anywhere else in sewershed. Moreover, they are predicted for the lesser storm events – the 2 yr/6hr storm as shown with red dots and lines, and the 2 yr/24hr storm as shown with orange dots and lines.

Perhaps most importantly, the SSOs and hydraulic restrictions reflected in Map are based on "post-rehabilitation conditions," that is taking into consideration the rehabilitation work completed by the County. As the Report explains, "Pre- and post-rehabilitation flow monitoring data was used to update the model based on the monitored flow conditions. The model was then used to simulate pre- and post-rehabilitation conditions.... Map 3 predicts the model predicted SSOs and flow restriction locations in the Jones Falls for all five (5) design storm simulations under the post-rehabilitation conditions." (*Id.*, pp. iv, 14).[13]

RJN v. RKK Capacities

A comparison of RJN's Map 3 with RKK's maps reveals that, under the updated and recalibrated model, the capacity situation is far worse than even estimated by RKK. Many sewer lines and manholes reach capacity in lesser storms and many new sewer lines and manholes reach capacity that did not do so in RKK's model.

Protestants' Exhibit 81 is a chart showing these differences for the 10 yr/6 hr storm alone from below the site to the County-City line. The column in blue shows the capacities determined by RKK for the 10 yr/6 hr storm. The columns in green and yellow show RJN's determinations before and after the rehabilitation performed by the County, respectively. Notably, RKK's capacities (blue) and RJN's pre-rehab capacities (green) are roughly the same, supporting consistency in the model before updating and recalibrating.[14] The most significant column in the chart is the last column which shows, in red, the increases in capacity percentages (*i.e.,* increased incapacity) determined by RJN under *post*-rehabilitation conditions. Thus, the chart demonstrates

[13] The "pre" and "post" rehabilitation capacity percentages are set forth in the charts attached as Protestants' Exhibit 82.

[14] The Consent Decree requires the County to update and recalibrate the model.

that the capacity problem is worse than RKK determined and was not improved by the rehabilitation performed by the County.

H. The Ramboll Data Evaluation Report – Lake Roland

The County engaged Ramboll Americas Engineering Solutions, Inc. ("Ramboll") to design the repair and rehabilitation of the interceptors, manholes, and junction chambers located within Lake Roland Park. (Prots' Ex. 87). In June 2022, Ramboll issued a Data Evaluation Report finding that 24 sewer segments in and near Lake Roland had active infiltration, 14 of which had structural defects. Of the remaining 19 sewer segments, 11 segments had structural defects. (*Id.*, p. 4). Ramboll found that all 44 manholes in the system required rehabilitation and that 31 of them were showing evidence of infiltration. (p. 4).

Ramboll proposed the rehabilitation of 43 sewer segments comprising 19,55 linear feet of pipe ranging in size from 24 to 42 inches in diameter as well as the rehabilitation of 43 manholes and junction chambers. (*Id.*, p. 2). The report explains that bypass pipes will be required to be installed to handle sewage while the segments are relined. The installation of these bypass pipes will require nine (9) staging areas, each one 50 feet by 100 feet, in and around the Park and obtaining easements from 15 private property owners as well as Baltimore City and the Mass Transit Administration. (*Id.*, pp. 5, 6, 7). Further, because the work will be conducted in dense forest, wetlands, and steep slopes, the County will need to obtain federal wetlands and other state and county permits. (*Id.*, pp. 7, 21).

The focus and goal of project is to "minimize the inflow and infiltration (I/I) into the interceptors to reduce the likelihood of sanitary sewer overflows." (*Id.*, p. 1; *see also* p. 3 (the goal of the project is "to minimize the amount I/I into the system and prevent overflows"). The scope of the project is reflected in a map on page 1 of the Report.

(*Id.*, p. 1; *see also* Figures 2.1 – 2.10).

I. The Whitewashing? - The Ongoing Study by Hazen & Sawyer

In or about January 2020, the County hired yet another consultant, Hazen & Sawyer, to evaluate the capacity of its sewer system in the Jones Falls Sewershed.[15] Prots' Ex. 86 is the Scope of Services (SOS) for the work that Hazen is performing. The SOS explains that the County requested a "comprehensive evaluation of the Jones Falls Sewershed to assess the near-term and long-term needs of the sanitary sewer system." (*Id.*, p. 1). Hazen's work will include reviewing all available data from the County and performing an evaluation of the capacity and structural needs of the system, a calibration and verification of the hydraulic model, and development of future flow projections. (*Id.*, pp. 2-19). Hazen will use the calibrated and verified model to evaluate the sewer system's response to five storm events and prepare a "capacity assessment report." (*Id.*, p. 19). All of Hazen's work will be detailed in a "comprehensive sewershed evaluation report." The report will provide a "flexible roadmap enabling the County to develop, informed, asset-based, and prioritized Capital Improvement Plan (CIP budgets for near-term and long-term system improvements and strategies."[16]

Protestants' Exhibit 85 is a newsletter that is posted, inconspicuously, at the Sewer Design section of DPW's site on the County's website. The newsletter describes Hazen's ongoing study and indicates its final report will be issued in late 2023.[17]

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[15] The evaluation is being undertaken only for this sewershed and no other.

[16] One wonders how the County can possibly, consistent with its *legal* obligations under the Consent Decree, embark upon a "flexible roadmap" for "asset-based" and "prioritized" budgets.

[17] The ALJ can draw her own conclusions about why the County would hire yet another consultant to perform essentially the same tasks as RKK, RJN, and Ramboll, particularly while the County is still under the auspices of the Consent Decree. Any suspicions about consultant-shopping might be confirmed by the Scope of Services or, perversely, by the fact that the Scope of Services does not even mention the Consent Decree or the County's

Notable in the newsletter is Figure 3 on page 2, which shows a substantial area of rain dependent inflow/infiltration RDII at and above the subject property. This area is depicted in red, reflecting it to be the worst area in the entire sewershed for RDII. (Ex. 85, p. 2).

J. Hazen's Modeled Pipe Capacity Evaluation from 2013

In response to a Public Information Act request, the County produced a capacity evaluation conducted by Hazen back in 2013. Protestants' Exhibit 108 is a chart entitled "Jones Falls - Modeled Pipe Capacity – Existing Conditions." (Ex. 108; *see also* Ex. 104). The chart shows the dry weather flow capacity as well as the wet weather flow capacities for each of the five storm events. The dry and wet weather capacities for the sewer segments below the subject property which would receive sewage from the proposed development are highlighted in yellow. The vast majority of segments have capacities for in excess of the 90% standard, even for the lesser storms. If we look only at the 10 yr/6 hr storm, the first 24 segments immediately below the site all exceed, with one exception, 90% by far. The vast majority are well above 100% and as high as 266%. (*Id.* at p. 9 (stamped Hazen – 00927)). (T12, pp. 103-119).

The scope of services for Hazen's capacity evaluation reflects that Hazen, as part of its services, validated the model used by RKK in its LTC report. (Prots' x. 104, p. 2; T12, pp. 101-02). As Mr. Grachek explained, the capacities found by Hazen are comparable to those found by RKK in the LTC report. (115-16, 118-19).

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obligations under the decree. Undersigned counsel can confirm that, in his review of thousands of documents produced by MDE in response to PIA requests, there was no mention of Hazen, the work undertaken by Hazen, or any reporting of its results.

K. The Consent Decree Is Still In Effect and Has Not Terminated

The Consent Decree terminates when, among other things, the County certifies that it has completed all of its obligations under Section V of the Consent Decree and the parties file a Joint Motion to Terminate. Section V (entitled "Remedial Measures") includes all of the obligations discussed above pertaining to inspection, evaluation, corrective actions, and performance assessment. (*Id.*, p. 104 at sec. XXIV). It is undisputed that the County has *not* certified completion of its obligations under Section V for the Jones Falls Sewershed. Protestants' Exhibit 91 are certification letters issued by the County for *other* sewersheds. No such letter has been issued for the Jones Falls Sewershed. Indeed, an additional pre-condition to termination of the Consent Decree is that the County pay all civil penalties assessed against it under the Consent Decree. Protestants' Exhibit 111 is a letter from MDE assessing $641,750 in penalties against the County for SSOs. After waiving penalties for certain SSOs, MDE requested payment of a total stipulated penalty of $184,187. (Prots' Ex. 111).

L. The Basic Services Map

Each spring the County Council adopts the Basic Services Maps for transportation, water supply and sewer. The 2021 and 2022 sewer maps show the subject site to be an "area of concern." (Prots' Exs. 92-94).[18] The sewer map *proposed* by DPW for 2023 likewise showed the site to be in an area of concern. (Prots' Ex. 95). However, the County Council, in adopting the map, changed the area below the site to be a "deficient area" rather than an "area of concern."

[18] To be accurate, the 2022 map as adopted by the Council mistakenly did not show the site to be an area of concern. When this was pointed out, DPW acknowledge that through a "printing error" the map signed by the Council in 2022 did not include area of concern. (*See* Prots' Ex. 94).

M. The Testimony of Randy Grachek

Randy Grachek is an environmental engineer with NewFields, an environmental engineering and consulting firm in Atlanta. He works in the firm's water and wastewater practice group. He has a masters in civil engineering with an emphasis on water and wastewater. Over the course of his career, he has designed, implemented, and evaluated the capacity of public sewer systems, including those in Washington, DC and Baltimore City. He is currently working on a project evaluating all of the sewer treatment systems in the City. In Baltimore County, he evaluated the sewer system and served as an expert in the *Bluestem* case (discussed below), involving a mixed-use development on Falls Road, south of the subject site, and the *Torch Hill* case, a residential development just north of the site. Mr. Grachek was accepted by the ALJ as an expert in wastewater engineering and in the evaluation of sewer systems and their capacities. (T10, p. 9-14; Prots' Ex. 58).

1. Non-compliance with the Consent Decree

Mr. Grachek testified that the Consent Decree requires the County to (1) *evaluate* its sewer system for model-predicted future capacity issues, (2) *identify corrective actions necessary* to address those model-predicted future capacity issues, and (3) *actually perform* the corrective actions necessary to address the model-predicted future capacity issues. He stated that the County cannot comply with the Consent Decree without taking the corrective actions necessary to address the model-predicted capacity issues. (T10, pp. 40-42).

Mr. Grachek testified that, based on findings of RKK and RJN, there are "significant capacity issues" in the sewer system that would receive sewage from the subject property. Based on the 10 yr/6hr storm alone, the problems are "significant." (T10, pp. 269, 282). He believes that

the County has not undertaken all corrective actions necessary to address the model-predicted capacity problems as required by the Consent Decree. (T10., pp. 159-160, 269).[19]

2. The County Sewer Design Manual

The County's design manual requires that "trunk and interceptor sewers shall be designed to flow at depths not exceeding 90% of full depth; laterals and main sewers, 80%; and building connections, 70%." (Prots' Ex. 70). The manual notes that capacities above these percentages are "unstable and may result in sudden loss of carrying capacity with surcharging at manholes."[20] (*Id.*). Mr. Grachek explained that "carrying capacity" is the capacity of the sewer line to convey water. He described a loss of carry capacity as: "[W]hen you get above ninety percent, you start losing [] the ability for the water to flow because [] you end up with []massive pressure losses because you filled up the pipe and now the pipe is [] basically being pushed back, or the flow is being pushed back through the system. And so, the only, the only thing that could happen is that [] surcharges or it basically flows out of the manholes." (T10, p. 77). As he put it, "you should never have above ninety percent in the trunk lines, or eight[y] or seventy for the other lines...." (T10, p. 79). Mr. Grachek explained that these percentages are consistent with industry standards. (T10, p. 78)).

3. RJN Performance Assessment

Mr. Grachek explained that RJN's Performance Assessment address only a limited amount of work done in the four meter basins in the northeast of the sewershed and several manholes elsewhere in the sewershed. (T10, pp. 98, 100). Map 3, he explained, shows a considerable number of problems with capacity and a "much worse situation" in the sewage path from the proposed development than the RKK reporting. (T10, pp. 108, 112).

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[19] Mr. Grachek stated that he did not see the actual model used by RKK and RJN "no more so than I need to [] watch the guy [fixing] his car" and does not dispute that the modelling was appropriate. (T10, pp. 274-75, 276-77).

[20] Surcharging is when sewage leaves system in a manner that is not intended, such as the popping off of the cap of a manhole. (T8, p. 66).

4. The County's Dry Weather Capacity Analysis

As noted, Exhibit 64 is the capacity analysis generated by the County for this proposed development. As Mr. Grachek explained, the County's analysis considers only dry weather, not wet weather conditions. He explained that "capacity needs to be determined by wet weather flow because it's wet weather flow that typically determines when you have over capacity in the system." He's never been involved in a project where dry weather flow is used to either design or determine capacity. (T10, p. 78). It is not consistent with industry standards to determine capacity based on dry weather flow. (T10, p. 70).

5. The County's Population and Employment Growth Projections

The Consent Decree required the County to use reasonable projections for the year 2025 for its evaluation of future capacity. (Prots' Ex. 65, p. 28 at Para. 9C.ii). In the SRRR Plan, RKK used 2025 projections of population and employment growth from 2008. (Ex. 67, p. 5-9; Prots' Ex. 78). In its Performance Assessment, RJN, used these same projections from 2008. (Prots' Ex. 78, p. iv). Mr. Grachek testified that it is important to rely upon reasonable projections of population and employment growth when modeling future capacity. He explained that it is not reasonable for RKK and RJN to have used projections from four years prior to their reports. (T10, pp. 131-32, 134).

6. The condition of the Lake Roland Park interceptor

Mr. Grachek described the Lake Roland Park trunk line is a 42-inch reinforced concrete pipe that was installed in the middle of the last century. He explained that RKK performed an assessment of all pipes in the system and found 541 defects in the interceptor under Lake Roland. (Prots' Ex. 77, p. 22). No pipe segment in the entire sewershed has anywhere close to that number of defects.

7. The water quality in Lake Roland

Under COMAR 26.08.02.03-3, the maximum level of e. coli permissible in Class I waters is 126. (Prots' Ex. 74). The County Health Department tests Lake Roland every two weeks and reports the results on the County's website. The results between April 2016 and June 2022 reflect levels higher than 126, sometimes significantly higher, on numerous occasions during that period.

Mr. Grachek explained that the fluctuation in the results occur because "water is continually flowing through the lake" and reflects storm events and SSOs that occur. (T10, p. 91), pp. 100, 140). The County posts signs at Lake Roland to warn citizens of the potentially dangerous e coli levels due to sanitary overflows. (Ex. 76).

N. The Testimony of Bob Summers

Robert M. Summers is a teacher at the Johns Hopkins School of Engineering and an environmental consultant with EcoLogix Group Inc. (Prots' Ex. 98). He also presently serves as interim Executive Director of BlueWater Baltimore, a non-profit dedicated to protection and restoration of waterways in the Baltimore region, including the Jones Falls. He has a bachelor's degree in Natural Sciences and a Ph.D in environmental engineering from Johns Hopkins.

Mr. Summers was employed by MDE for more than 32 years, working in a number of positions. In 2001, he became Director of the Water Administration. From 2007 to 2010, he served as Deputy Secretary of MDE and in 2010 was appointed by the Governor as Secretary of the Department. (T11, pp. 27-29). In these positions, he had a number of duties relating to regulatory enforcement and compliance, including overseeing and managing the water-related enforcement programs and the regulation of public sewer systems under the NSDS program. His regulatory and enforcement responsibilities extended to regulations themselves but also consent decrees and other judgments entered by the courts. (T11, pp. 30-33, 58-59). This entailed "determining the nature of [a] violation and ensuring that an enforcement action is taken

appropriately to address that." (T11, p. 33). He negotiated and signed consent decrees, including those pertaining to sanitary sewer overflows and clean-up. (T11, pp. 33-36).

Mr. Summers is familiar with the County's Consent Decree. He was at MDE when the Consent Decree was entered and attended meetings and briefings on the matter. (T11, pp. 36-37, 57). In connection with this case, he reviewed and is familiar with the work and the numerous reports of County and its consultants, including reports or RKK, RJN, Ramboll and Hazen & Sawyer. (T11, pp. 37-39, 54-56). Mr. Summers spoke with Mr. Grachek regarding sewer capacity issues in this case and visited the site with him. (T11, pp. 40-41). Mr. Summers is familiar with the area and the Jones Falls Sewershed at large; he lives and travels throughout the area. (T11, pp. 40-41, 53).

Mr. Summers' work at MDE included the areas of water quality, water quality monitoring and modeling, and water quality standards. He developed and worked on water quality monitoring programs and, as Director of Technical and Regulatory Services, was responsible for development of water quality and contamination level standards and put those standards into place through the regulatory process. As Director of the Water Administration, he administered programs to protect water quality and ensure those standard were met. (T11, pp. 41-43, 49-50).

Mr. Summers has testified on water quality and other regulatory and compliance issues before the Maryland General Assembly, the U.S. Congress, and the U.S. Senate. (T11, pp. 43-44). He was proffered and accepted by the ALJ as an expert in environmental engineering, water quality and water quality standards, and regulatory enforcement and compliance with environmental laws and regulations and consent decrees, including as they relate to sewer systems. (T11, pp. 43-45, 61)

1. Water quality and Lake Roland

Mr. Summers testified that the e.coli levels in Lake Roland are due to failures in the sewer system. He pointed to MDE's report to the EPA entitled "Total Maximum Daily Load of Fecal Bacteria for Non-Tidal Jones Falls Basin," which provides an analysis of fecal bacteria contamination in the Jones Falls basin. (Prots' Ex. 96). Mr. Summers explained that the TMDL report concludes that human sources are the dominant source of the bacterial contamination in Lake Roland. (T11, pp. 62-63). He explained, first, that Table 2.4.1 in the report supports that 16% of the households in the Jones Falls basin are on septic systems and 84% are on the public sewer system. (T11, pp. 67-68; *see also* Figure 2.4.1). He explained that Tables 2.4.4 and 2.4.5 reflect the sources of bacteria load in the Lake Roland basin (specifically station JON82, JON184, and UQQ005) and show that human sources are the largest, accounting for between 40 and 67% of the total load. (T11, pp. 69-70; Figure 2.4.4). Mr. Summers added that given 84% of households are on the public sewer system, it's fair to say human sewage is the major or dominant source of bacteria. (T11, pp. 69-73). He explained that this is supported by the conclusion section of the report entitled "Assurance of Implementation." The report states: "The most significant planned implementation measures in the Jones Falls watershed involve the separation of combined sewer systems in Baltimore City and the elimination of sanitary sewer overflows in Baltimore City and Baltimore County. Each of these jurisdictions is obligated under a judicial consent decree and judgment to adopt and implement a Long Term Control Plan ("LTCP") to eliminate sewer overflows." (*Id.*, p. 51).

Protestants' Exhibit 102 is the County's TMDL Implementation Plan, which is a plan that the County is required to submit to MDE. Mr. Summers explained that this Implementation Plan,

which was submitted in December 2014, has new data since the TMDL report, and that the data supports his opinions regarding the source of bacteria in Lake Roland. (T12, pp. 18-20).[21]

2. The Consent Decree

Mr. Summers explained that the Consent Decree requires the County to evaluate its sewer system for future model-predicted capacity issues and identify the measures necessary to address those future capacity issues (75-76),[22] but it also requires the County to actually implement those measures:

> MR. MCCANN: [D]oes the Consent Decree require Baltimore County to undertake the model predicted corrective actions identified in the SRR[R] plan, including the LTC report?
>
> MR. SUMMERS: SO, the Consent Decree requires the, as I said, the evaluation of the system, it requires the development of a plan and it also requires the identified measures in the plan [] resulting from both monitoring and modeling, that those be implemented in order to eliminate sanitary sewer overflows, which is the overall objective of the Consent Decree.

(77-78; *see also id.*, p. 76 (the County "*definitely needs to deal with future conditions* because the overall objective of the Consent Decree is to eliminate sanitary sewer overflows")).

[21] Mr. Summers stated that the TMDL report, which is from 2006, has not been updated, but that does not affect his opinion because of his familiarity with the area and the extent of growth and development in the area. (T11, pp. 68-69). He described the spikes in contamination level, which he attributed to rainfall events and runoff and sewer spills. (T11, pp. 63-64, 71). This variability is not unusual. (T11, pp. 72-73).

[22] Mr. Summers stated that identifying future model-predicted capacity problems is consistent with his experience and industry practice. (T11, p. 76) "[E]very sanitary sewer overflow Consent Decree that I'm familiar with and, and I have participated in national meetings on this issue, they all must deal with the wet weather flows and future conditions. And it is definitely an EPA standard way of dealing with this, this problem. And it's necessary to meet the requirements of the Clean Water Act. So, it would be standard practice").

3. The RJN Performance Assessment

Mr. Summers testified that the Performance Assessment supports that the County has not undertaken all of the corrective actions necessary to address model-predicted capacity problems. He pointed to the area downstream of the proposed development in Map 3 which shows "modeled overflows" for the 10/6 storm and even the 2yr/6hr storm. In his words, the RJN report "does not show successful implementation in the portion of the basin where the sewage from the proposed development needs to flow through the system.... [Based on the performance assessment, there are definitely modeled overflows in this area." (T11, pp. 80, 81-82).

Mr. Summers explained that RJN updated the model and if you compare the modeled results with the initial SRRR Plan, "the performance assessment that RJN did actually shows worse conditions in this section of the system than the original modeling work." (T11, pp. 83, 84).

4. The Hazen study

Mr. Summers described the Hazen study as a "very comprehensive assessment." (T11, p. 84). Although the study has not been issued, what struck him was the rainfall dependent I/I (RDII) reflected in the Hazen newsletter (Prots' Ex. 85). He described the map on page 2 of the newsletter as showing "a very prominent red area of high I&I in the vicinity [] of the proposed development." This concerns him because the overflows shown on Map 3 of the RJN report "are a risk for this area for sure." (T11, p. 85). He explained that in high RDII areas, "you see a surge in inflow and infiltration into the sewer system." (T11, p. 86).

5. The County-City Problem

As noted, Mr. Summer is familiar with the City's consent decree and its sewer system. He described the County and City systems as "interconnected" and "one big system." (97). He explained that the City, in order to address its sewer problems and comply with its consent decree, needs information from the County regarding the sewage flows it is sending down the Jones Falls

(in terms of timing, peak volume, and duration). The City has asked for that information but the County has told the City that it is in the process of figuring this out and can't provide the information. (100, 103). The City is proposing to reduce I/I and prevent overflows and the sewage from the County "is a critical part of what the City needs...." (T11, p. 103).

Mr. Summers explained that, despite this, RJN's modeling used a "free discharge assumption," meaning an assumption that there's no restriction downstream that would cause a backup in the County." (T11, p. 104).

O. The testimony Of Beth Miller

Ms. Miller is a licensed architect and co-chair of the Green Development Workgroup of the Green Towson Alliance. On behalf of GTA, she regularly monitors development and participates in the development review process. (T2, pp. 156-157).

Ms. Miller performed an investigation of all of the residential and commercial development that has been constructed, is under construction, or has been proposed in the Jones Falls sewershed since the issuance of RKK's LTC Report in 2012, which includes many of the projects that anyone visiting Towson has seen such as Towson University's expanded dormitory housing, other residential apartments, and various new retail and office units.[23] Based on the information she obtained, Ms. Miller prepared a chart reflecting, for each development, the name of the development, the number of residential units or in square footage in the case of commercial units, the source of the information, and the estimated sewage generated per day based on both the State and County design manuals. (Prots' Ex. 24).

[23] Ms. Miller explained that some of the developer that was under construction is now existing, e.g., portions of Towson Row, two student housing buildings and some retail. (T2, p. 165).

Ms. Miller sent the chart to the County's sewer design section and asked them to confirm the accuracy of the estimated sewage amounts, which they did. (T2, pp. 161-163) (Ex. 24 "County Comments"). The chart reflects that all of the newly constructed or approved development since 2012 – which includes nearly 6000 residential units or beds and nearly 1.5 million square feet of construction - will generate 959,205 gallons per day under the State's design manual and 1,171,772 gallons per day under the County's manual. (Ex. 24). Ms. Miller took photographs of a number of the newly construction buildings in and around Towson proper. (Prots' Ex. 31A-H).

P. The ALJ's Ruling In The Bluestem Case

On August 30, 2019, ALJ John Beverungen, after receiving post-hearing memoranda from the parties, entered an Opinion and Order denying the development plan in that on the basis that it is not "in compliance with the myriad state and county laws which require all residential projects to provide adequate and safe sewage disposal systems." (ALJ Op., pp. 26-27). The ALJ found that the sewer system serving the property "is woefully inadequate to handle existing demand, much less the additional inputs from recently approved development in the Towson area." (*Id.*, p. 25). He noted that the County's consultant, RK&K, evaluated the system and found the interceptors serving the property to be "severely over capacity." (*Id.*, p. 23). He noted the numerous defects (541 of them) in the Lake Roland interceptor discovered by RK&K, "more than any pipe segment in the Jones Falls watershed," and that "the County's own testing of levels of E coli in Lake Roland far exceed safe levels set forth in state regulations." (*Id.*). He pointed to the "extensive" and "sobering" testimony of Mr. Grachek concerning the interceptor serving the Property and the overcapacities in the system (ranging from 104% to 589%), which he described as "sobering testimony." (*Id.*, p. 22). The ALJ stated: "I am persuaded by Mr. Grachek's testimony and the findings of the County's own consultant [RK&K] that the sewer system serving the subject

property is woefully inadequate to handle existing demand, much less the additional inputs from recently approved development in the Towson area." (*Id.*, p. 25). He noted that RK&K's findings were submitted to the EPA pursuant to the Consent Decree and thus found them to be "especially trustworthy" and placed "a great deal of reliance upon them." (*Id.*, p. 24).

Q. The Board's ruling in the Bluestem case

On January 3, 2020, the Board of Appeals entered an Opinion and Order affirming the ALJ's decision on the sewer capacity issue. The Board rejected the developer's argument that the ALJ exceeded his statutory authority or jurisdiction. Specifically, the Board found that the ALJ properly concluded that there was a sewer deficiency and that the proposed development would contribute to the existing problem. (Bd. Op., p. 8). The Board rejected the developer's argument that only the County Council has authority to determine sewer deficiency through its adoption of the Basic Services Maps, agreeing with the ALJ that the Basic Services Maps do not control and are "not dispositive on the question of whether a development plan complies with the development regulations and applicable policies, rules and regulations." (*Id.*, p. 10). The Board added that the protestants introduced evidence regarding the condition of the sewer system and the ALJ properly weighed that evidence, which persuaded him that the system in the area cannot handle the expected additional demand. (*Id.*).

The Board concluded that the ALJ's opinion reflects "careful consideration of the evidence" and "fully aligns and harmonizes with the County's development policies, legislative intent, and scope of the development regulations." (*Id.*, pp. 16, 17). The ALJ's conclusions were "reasonable and rational" and based on "more than sufficient" evidence. (*Id.*, p. 17).

III. ARGUMENT

A. The Development Plan Should Be Denied Because The Uncontradicted Evidence Supports That There Is Woefully Insufficient Capacity In The Sewer Lines That Would Receive Sewage From This Development

1. The evidence was overwhelming and uncontroverted and comes from the County's own consultants

The evidence was uncontroverted at the hearing that the sewer lines that would receive sewage from the proposed development are severely overcapacity. The chart which is Protestants' Exhibit 69 demonstrates that, for all storm events, the vast majority of sewer segments from the site to Lake Roland were determined by RKK to be well over 100% capacity, far exceeding even the maximum flowrate capacity that the County requires for the design of new systems. Many are well over 200% and some are as high as 400-500%. (Prots' Exs. 69, 70). RK&K recommended that a number of these segments be upsized or relief sewers be installed, as reflected in the last column of Exhibit 69. It is undisputed that the County has not done so.

There is perhaps no more important piece of evidence in this case than the County's acknowledgement that the eight sewer segments across Joppa Road from the site *presently* lack sufficient capacity to handle the sewage from the proposed development and must be replaced. As Mr. Bayer put it, the breaking point for the number of homes that these sewer segment can handle is "zero." (Prots' Ex. 90, p. 1). According to the County's own capacity analysis, these segments are between 94% and 101% capacity. If we assume, as we must, that 94% is the threshold for when even the County believes pipe replacement must occur, then that same threshold at the barest minimum must be applied to other segments, keeping in mind that the County's capacity analysis is based on dry weather flow.[24]

[24] This threshold, if that is what it is, is consistent with the County's own design guidelines, which provide for a design capacity of 90% for trunk and interceptor sewers and 80% for laterals and main sewers. (Prots' Ex. 70).

RKK's findings are fully supported by the work of the County's next consultant, RJN, who updated and recalibrated the model used by RKK and found SSOs and hydraulic restrictions in numerous more sewer lines, for lesser storm events, and to a much greater degree. (Prots' Ex. 78, Map 3). Indeed, RJN's Map 3 shows the sewer path from the subject property to be littered with SSOs and hydraulic restrictions for the least of the storms (2 yr/6hr) more so than any other area in the entire sewershed. (*Id.*). The chart which is Protestants' Exhibit 81 shows the overcapacities for these sewer segments and demonstrates that the overcapacities actually worsened *after* the County performed rehabilitation in the sewershed. (Prots' Ex. 81).

RKK's and RJN's findings are also supported by the recent report from Ramboll, which proposes an enormous amount of rehabilitation in and around Lake Roland Park, including the main interceptors (Jones Falls, Roland Run, and Towson Run) that tie into the Lake Roland interceptor. The report notes the active infiltration that is *presently* ongoing in numerous sewer segments and the *current* physical defects in the segements and manholes. The stated purpose and goal of the Ramboll project is to "minimize the inflow and infiltration (I/I) into the interceptors to reduce the likelihood of sanitary sewer overflows." (Prots' Ex. 87, p. 1).

The problems identified by RK&K, RJN, and Ramboll are exacerbated by the outdated population projections used by RKK and RJN. The Consent Decree requires the County to determine predicted peak flows under future conditions and to base future conditions "on *reasonable* projections of population and employment for the year 2025." (Prots' Ex. 65, p. 28) (emphasis added). It is not disputed that RKK's findings are based on population projections that were made in April 2008 and that RJN used those same projections in its Performance Assessment. (Prots' Ex. 68 and 78, p. iv ("The model was [] used to simulate … hydraulic conditions, under projected 2025 population and employment conditions *as obtained from the hydraulic model used*

for the 2013 SRRR Plan")). Mr. Grachek explained the importance of considering population and employment growth when determining capacity and concluded that it was not reasonable to use 2008 numbers as the baseline for the projections.

Projections aside, anyone living or working in the Towson area is aware of the enormous amount of development that the County has continued to approve since RKK issued its findings in 2012 and continues to approve after RJN's findings in 2021. As Ms. Miller testified, hundreds of new residential housing units and other retail, office and residential units have been proposed or constructed in Towson since then. (Prots' Ex. 31). The sewage from these units will be directed *via* the Towson Run interceptor to the Lake Roland Park interceptor. The problem is only getting worse.

2. There is abundant authority upon which the ALJ can rely to deny this Development Plan

As the ALJ in *Bluestem* correctly concluded, there are "myriad state and county laws which require all residential projects to provide adequate and safe sewage disposal systems." (ALJ Op., pp. 26-27). These laws, individually and collectively, provide more than a sufficient basis for the denial of this Development Plan.

(1). The Zoning Regulations – Growth Management Act

Section 32-6-106 of the County Code states that a building permit may not be issued unless the applicant meets the requirements of section 4A02 of the Zoning Regulations, the Growth Management Act (the "Act"). Section 4A02.3.G of the Act prohibits the issuance of a building permit in any area that has deficient sewer, transportation or water facilities based on standards set forth in section 4A02.4 of the Act. The sewage standards are set forth in 4A02.4.C, which provides:

1. Intent. The sewerage standards and maps are intended to regulate nonindustrial development where it has been determined that the county's share of public sewerage capacity *is substantially less than the capacity necessary both to serve already established uses and to serve new uses likely to be established pursuant to this legislation.*
2. Determination of reserve capacity. The county's share of public sewerage capacity must be *capable of serving already established uses and new uses likely to be established under the provisions of this legislation.*
3. Maximum level of nonindustrial development. The maximum level of nonindustrial development per sewerage area *shall not be greater than that capable of being provided with available sewerage capacity* ....

(2). <u>The State Environment Article</u>

Section 9-512(b) of Environment Article of the Maryland Annotated Code prohibits local jurisdictions from issuing a building permit unless the sewage system (i) "is adequate to serve the proposed construction, taking into account all existing and approved developments in the service area" and (ii) "will not overload any present facility for conveying, pumping, storing, or treating water, sewage, or solid waste." (Emphasis added).

(3). <u>The County Code</u>

Section 32-4-102(b) of the County Code (Development Policies) states that the intent of the development regulations is to "protect and promote public health, safety, and welfare and to ensure that public facilities, services, and amenities are provided," to "ensure that proposed development projects are safe, adequate, convenient and, where applicable, provide for... sewerage," and to "prevent[] environmental degradation and promotion of environmental enhancement...." Section 32-4-103(a), similarly, states that the development regulations in Title 4 are adopted to "protect and provide for the public health safety, and general welfare of the county," to "minimize adverse environmental... impacts on the surrounding community," and to "provide adequate and efficient ...sewerage."

To these ends, section 32-4-401 *et seq.* sets forth "design standards and requirements... for the preparation and review of proposed development." Among these, section 32-4-410(b) states: "*Sewage*. Proposed public or private sewage facilities shall be designed and located to function safely and without danger of contaminating groundwater, surface water, or public or private water supplies." Finally, section 34-3-104(b) of the Water and Sewer Article provides that "[t]he owner of any property in the county is responsible for maintaining the property in such a manner that no overflow of sewage, wash water, or other liquids or solids shall be discharged onto any ground surface, streets, or roads or into any waters of the county...."

(4). DPW's Design Manual, Sanitary Sewer

The Sanitary Sewer section of the Design Manual adopted by the Department of Public Works sets forth minimum design criteria for the design of components of a sewer system. (Prots' Ex. 15). The objective of the design standards is to "provide a sanitary sewer system that safely collects and transports wastewater without harm to human health or environment...." (Design Manual, p. 6-2). To that end, the Manual states that "[c]onstructed overflows shall not be permitted at any time." (p. 6-22). The Manual requires sewer capacities to be "designed for the estimated ultimate tributary population" and that "[c]onsideration shall be given to the maximum anticipated capacity of institutions, industrial parks, etc...." (p. 6-22). The Manual identifies specific maximum peak flow capacities for trunk and interceptors (90%), laterals and mains (80%), and building connections (70%). (p. 6-27). The Manual states that "[f]lows above 90-95% of full depth are considered unstable and may result in sudden loss of carrying capacity with surcharging at manholes...." (*Id.*).

(5). PAI's Development Plans Review Policy Manual

The Development Plans Review Policy Manual adopted by Department of Permits, Approvals and Inspections states that "[a]s part of any land subdivision of development of land, provision shall be made for the safe and sanitary treatment and disposal of sewage without detrimental effects to the public health or environment." (Policy Manual, p. 18).[25] The Policy Manual prohibits the granting of a permit for construction of any building or structure "unless provision is made and approved by Baltimore County for disposing of sewage from such building or structure" (*Id.*, p. 19).

B. The County Must Address The Future Model-Predicted Capacity Problems Found By RKK and RJN

The Developer will no doubt argue, as it must, that the County is not required to abide by the recommendations of its consultants and undertake corrective actions to address model-predicted capacity problems because they are just "recommendations." The Consent Decree does not require the County to undertake those corrective actions and the SRRR Plan itself, the story goes, did not propose to do so. This argument demonstrates a fundamental, if not naïve, misunderstanding of the Consent Decree, the relationship between the SRRR Plan and LTC Report, the distinction between physical rehabilitation of the sewer system and addressing model-predicted future capacity, and the assumptions underlying the RKK's and RJN's modeling.

1. The Consent Decree, the SRRR Plan, and the LTC Report

The Consent Decree required the County to develop and implement a series of measures (set forth in Paragraphs 7 through 18) with the goal of eliminating all sanitary sewer overflows (SSO's) in the County's collection system. The most pertinent of these required measures are/were

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[25] PAI's Development Plans Review Policy Manual is available at: http://resources.baltimorecountymd.gov/Documents/Permits/Development%20Plans%20Review/devplanmanual.pdf

to (i) conduct a physical inspection of sewer lines, manholes, and force mains in the collection system (Paragraph 8), (ii) perform an evaluation of the future model-predicted capacity of the system to transmit peak flows (Paragraph 9), and (iii) prepare a plan that describes the deficiencies in the system and provides for the performance of any corrective actions necessary to address those deficiencies (Paragraph 10). (Prots' Ex. 65, pp. 17-35).

With respect to future capacity, all experts (Mr. Grachek, Mr. Summers and Mr. Leffner) each confirmed that the Consent Decree requires the County to (1) *evaluate* its sewer system for model-predicted future capacity issues, (2) *identify corrective actions necessary* to address those model-predicted future capacity issues, and (3) *actually perform* the corrective actions necessary to address the model-predicted future capacity issues. Indeed, as Mr. Grachek confirmed, the County cannot comply with the Consent Decree without taking the corrective actions necessary to address the model-predicted capacity issues. (T10, pp. 40-42; T11, pp. 75-78; T13, pp. 139-40, 145).

This plain reading is borne out by the provisions in the SRRR Plan itself. The very first paragraph of the Executive Summary states, explicitly, that this three-pronged purpose was the objective of the Consent Decree:

> Executive Summary
>
> The objective of Paragraph 10 of the CD was to prepare a Sewershed Repair, Replacement, and Rehabilitation (SRRR) Plan that [1] describes the deficiencies identified through [a] Collection System Inspection **and** [b] the Long Term Capacity/Peak Flow Management Evaluation (LTC/PFME), and [2] recommends repair, replacement, rehabilitation, or other corrective actions **necessary to address those deficiencies**.

(Ex. 67 at ES-1) (emphasis added).

Similarly, the very first paragraph of the first substantive section of SRRR Plan states:

> 1.1 Background
>
> ....Paragraph 10 of the CD requires the County to prepare a Sewershed Repair, Replacement, and Rehabilitation (SRRR) Plan that [1] describes the deficiencies identified through [a] collection system inspections **and** [b] the Long Term Capacity/Peak Flow Management Evaluation (LTC/PFME), and [2] provides for the determination of any repair, replacement, rehabilitation, or other corrective actions **necessary to correct identified deficiencies**. This SRRR Plan is for the Jones Falls Sewershed.

(*Id.*, p. 1-1) (emphasis added).

The SRRR Plan also expresses this purpose in describing the "recommended corrective action plan" itself:

> Data analysis, evaluation, and decision-making criteria were utilized to identify collection system defects and deficiencies and prioritize the corrective actions. The recommended Corrective Action Plan consists of [1] various structural and hydraulic corrective actions that are needed to address the deficiencies that were identified during the sewershed collection system inspection work. **The plan also** [2] identifies specific rehabilitation and other corrective actions **needed to eliminate model predicted sanitary sewer overflows (SSOs) that were determined by** the simulations completed during the Long-Term Capacity/Peak Flow Management Evaluation (LTC/PFME).

(*Id.*, p. ES-1) (emphasis added).

> 6.0 Corrective Action Recommendation Plan (CD Ref. P.10.C.iii-vii)
>
> 6.1 Overview
> The Corrective Action Recommendation Plan discussed in this section consists of [1] various structural and hydraulic corrective action recommendations needed to address the deficiencies identified during the collection system investigations and modeling activities for the Jones Falls Sewershed. **The Plan also** [2] identifies specific rehabilitation and other corrective actions **needed to eliminate model predicted sanitary sewer overflows (SSOs) that were determined by** the Long-Term Capacity/Peak Flow Management Evaluation (LTC/PFME).

(*Id.*, p. 6-1) (emphasis added).

These provisions demonstrate and emphasize not only that the Consent Decree requires addressing both physical problems and future capacity problems, but also that the future capacity problems are set forth in the LTC report and that the LTC is supposed to identify the corrective actions "necessary" to address those problems. The use of the terms "necessary to address," "necessary to correct," and "needed to eliminate" are critical.

Further, the ALJ should not be troubled by the use of the word "recommended" when describing the correction plan proposed in the SRRR Plan (sections 6.1 and 6.14), as if that suggests some of the corrective actions are required and others are not. The term "recommended corrective action plan" is used to describe the *entirety* of the plan. The SRRR Plan does not differentiate amongst the corrective actions in that way.

The Developer will make much of the provision in the Consent Decree requiring the County, in its SRRR Plan, to "*tak[e] into consideration* the Long Term Capacity/Peak Flow Management analysis," suggesting that this means something less than undertake the LTC report's corrective (*Id.*, p. 32 at C.vi). Importantly, however, the SRRR Plan must also provide projections regarding the range of storm events for which the system will be able to convey peak flows without the occurrence of SSOs. These projections must be "*consistent with* the results of the long-term capacity/peak flow management evaluation" and "shall assume completion" of the corrective actions recommended by the Plan. (*Id.*, p. 33 at C.ix).

2. The Assumption in RKK's and RJN's modeling

Throughout the hearing, it was suggested that the County has performed a lot of comprehensive rehabilitation throughout the system and therefore the capacity problems no longer exist. The Developer misses the fundamental point that the model-predicted capacity improvements proposed by RKK and RJN were based on an assumption that the comprehensive

rehabilitation was *already* performed. The LTC report, itself, states that this assumption was built into its modeling because, as the report states, comprehensive rehabilitation was deemed to be the preferred method for reducing I/I in the system.

The LTC report states:

> 3.0 MODELING APPROACH FOR DETERMINING CORRECTIVE ACTIONS
>
> 3.1 Procedure and Assumptions
>
> In determining the corrective actions recommended to eliminate model-predicted SSOs, several alternatives have been considered. The preferred method to eliminate model-predicted SSOs is to reduce inflow and infiltration (I/I) in the collection system(s) impacting an SSO by completing a comprehensive rehabilitation program of the public sanitary sewers and manholes within the identified SSAs. Rehabilitation of the sewers and manholes were modeled by reducing the Manning's "n" value of the pipe roughness coefficient to 0.01, assuming sewer rehabilitation was completed using cured-in-place-pipe (CIPP). Rehabilitation would also reduce the BI and the rainfall-dependent inflow and infiltration (RDII). Following the Baltimore County SRRR Guidelines, it was assumed that rehabilitation would reduce the BI by 23 percent, the total RDII volume by 35 percent and the peak RDII flow by 37 percent. Because of the complexity of the sanitary sewer systems, reduction of 35 percent in total RDII volume and reduction of 37 percent of the peak RDII flow were not always achieved. In these cases, a reduction of 36 percent of the capture coefficient (R value) was then used....

The Performance Assessment likewise reflects that RJN, in updating the model used by RKK, assumed *post-rehabilitation* conditions. The report states:

> Pre- and post-rehabilitation flow monitoring data was used to update the hydraulic model based on the monitored flow conditions. The model was then used to simulate pre- and post-rehabilitation hydraulic conditions, respectively, under projected 2025 population and employment conditions as obtained from the hydraulic model used for the 2013 SRRR Plan.

(Prots' Ex. 78, p. iv).

The report notes that Map 3, in particular, assumes post-rehabilitation conditions.

> Map 3 depicts the model predicted SSO and flow restriction locations in Jones Falls for all five (5) design storm simulations under the post-rehabilitation condition.

(*Id.*, p. 14).

This assumption makes eminent sense, of course. It would be foolish to create a model to determine capacity problems and not have that model take into account any work that was already performed or contemplated. It is important to read RJN's Performance Assessment in this light and recognize that, even with respect to the rehabilitation that was performed, RJN's findings cannot possibly be read to mean that the capacity problems found by RKK were fixed or that its own capacity findings can be ignored.

3. The Performance Assessment - Targeted v. Comprehensive Rehabilitation

It is also important to consider the limited nature of the Performance Assessment, aside from Map 3. The Performance marks a clear distinction between (1) "targeted" rehabilitation performed throughout the sewershed to address "structural defects" and (2) "comprehensive" rehabilitation to address I/I. The Report explains:

> Targeted rehabilitation to correct structural defects was performed throughout the sewershed. Comprehensive rehabilitation to eliminate sources of I/I was implemented in meter basins BC02, BC03, BC04, and BC09.

(*Id.*, p. 3; *see also id.*, p. 1("Rehabilitation construction in the four meter basins (BC02, BC03, BC04, and BC09) targeted for comprehensive rehabilitation for I/I reduction was performed from 2015 through 2019").

The conclusions of the RJN Report bear this out and support that the Report's findings, in large part, are directed only the four water meter basins:

- The results of the base infiltration reduction assessment indicate that the completed rehabilitation projects *in basins BC02, BC04, and BC09* were

effective in reducing groundwater infiltration and exceeded the predicted base infiltration reductions in the 2013 SRRR Plan while basin BC03 showed an increase in base infiltration.

- Model simulations show that I/I reduction rehabilitation and relief sewer construction in Jones Falls reduced predicted overflow volumes between 89 and 100 percent in total, for those basins *where comprehensive I/I reduction rehabilitation was performed*, or relief sewers were constructed.

- Tables 4-1A and 4-1B present the model predicted occurrences of sewer overflow locations and flood volumes for all five design storm events in the meter basins *where comprehensive rehabilitation I/I reduction projects and/or relief sewers were constructed (BC02, BC03, BC04 and BC09)*.

(*Id.*, pp. iii, 14).[26]

C. The Testimony of Mr. Leffner

In rebuttal to the testimony of Mr. Grachek and Mr. Summers, the Developer recalled Mr. Leffner. Mr. Leffner's opinions regarding sewer capacity would be laughable if they were not so serious.

1. Mr. Leffner's qualifications

First, a word about Mr. Leffner's qualifications to render the opinions he did. Mr. Leffner is a civil engineer, registered since 2013. (T13, p. 24). He does not have a master's degree in wastewater or sanitary sewer engineering. He is not a waste water or sanitary sewer engineer. His resume (Dev's Ex. 41) does not reflect any experience in sewer design or capacity evaluation. He has not published any articles nor belongs to any professional associations in wastewater or sanitary sewer engineering. (T13, pp. 15-16). Mr. Leffner's experience with the design of sewer systems is typically connected to a proposed development as opposed to an evaluation of an

[26] Notably, even in these meter basins comprehensive rehabilitation was already performed (i.e., post-rehabilitation), there are still SSOs. This is represented in Table 4-1B of the RJN Report, which "shows the predicted number of overflows in each meter basin under the post-rehabilitation condition. According to the results, the rehabilitation projects have decreased the occurrence as well as volume of SSOs in the meter basins where rehabilitation work was completed. The model predicts no overflow for the 2-year 6-hour, three (3) SSOs for the 2-year 24-hour storms, four (4) SSOs for the 10-year 6-hour storm, eleven (11) SSOs for the 10-year 24-hour storm, and twelve (12) overflows for the 20-year 24-hour design storm." (*Id.*, p. 14).

jurisdiction's or area's sewer system. (T13, pp. 12-13). A few years ago he worked on a project where he was looking at upsizing requirements related to a pump station for a military facility in Kansas and one in Forte Meade, Maryland. (T13, pp. 13-14). He has served as expert in sewer design on only once occasion in a case in St. Mary's County approximately five years ago, which involved downstream capacity analysis and onsite sewer design. (T4, pp. 17-18).

2. The Repairs made by the County along the sewer path from this site

With some fanfare, Mr. Leffner testified regarding the repairs that, based on his communications with the County, the County had undertaken along the sewer path from the subject property. The location of these repairs are reflected in Developer's Exhibit 44 and the actual work performed is described in Exhibit 45B. (For example, some of the lining work was not done because the County believed it was not necessary). Aside from the lining of one sewer segment, the work consisted of repairs to four manholes. Mr. Leffner agreed that these repairs are "minor" in nature and would not cure or correct the model-predicted SSOs and hydraulic restrictions determined by RJN and reflected in Map 3. (T13, pp. 204, 206).

3. RJN 's Map 3

Mr. Leffner downplayed the significance of Map 3, characterizing it as "kind of say like a snapshot in time on the performance of the improvements and the ongoing [] County kind of programs that being just continuously rolled out within the County. So, [] it's kind of a snapshot in time and model update mainly related to the SSO closures and Cockeysville improvements that were made to show the effectiveness of the SRR improvements as they're being implemented within the County." (T13, pp. 85-86). When asked for his understanding of all of the red areas shown in the map, Mr. Leffner stated:

> I think they're, they're kind of just that. They're model predicted based on whatever information was available to the modeler at the time. And don't

> necessarily include, I would say like current day information, nor has it been verified in the field. So, a lot of it, it's model predicted.
>
> The model may have been calibrated, but it hasn't since been verified by the County because some of the other County kind of ongoing measures that aren't included necessarily in this would be flow monitoring within some of the sub sewer basins, as well as level censors.
> So, you know, at, at some locations where they may have a model predicted overflow, the County could install an actual level censor to identify if there is actually an overflow or, you know, a problem that is occurring that the model is predicting.

(T3, p. 87).

Mr. Leffner did not explain how the installation of level censors would reveal or dispute *future* capacity problems. In any event, on cross, Mr. Leffner acknowledged that, while input values are specific, the map itself is *not* a "snapshot" and "doesn't reflect a single second in time." (T13, p. 181).

4. SSO's v. I/I

The Developer will no doubt argue that there is no evidence of active SSOs in the sewer path from the proposed development. This demonstrates another fundamental misunderstanding of SSOs and their relationship to I/I. An "SSO" is defined in the Consent Decree as any "spill, release, or Discharge from the Collection System, including all Building Backups." Contrary to the Developer's suggestion, SSOs are not limited to outwardly manifestations of capacity problems such as a blown manhole, but can be type of release that happens in an I/I situation. The Ramboll report makes this point perfectly in setting forth the purpose of the work proposed: "the primary focus of the project is to minimize the inflow and infiltration (I/I) into the interceptors to reduce the likelihood of sanitary sewer overflows." (Prots' Ex. 87, p. 1; *see also id.*, p. 3 (the goal of the project is "to minimize the amount I/I into the system and prevent overflows").

5. The LTC Report

Mr. Leffner stated that the purpose of the LTC Report was a "kind of evaluation tool" as a "kind of model or an appropriate baseline for considering future growth." (T13, pp. 51-52). This assertion is laughable and not supported by the Consent Decree or any evidence in the record.

6. The Ramboll Report

When asked about the significance of the Ramboll report, Mr. Leffner stated that the report was not prepared in response to a Consent Decree requirement and will not address capacity. He described it as "just an example of the County being proactive...doing what they do, which is own, maintain, operate, repair the sewer system." (T13, p. 133). "I think the Ramb[oll] report was, essentially, a study and improvement that the County planning to do for relining the main under Lake Roland. It's not necessarily any kind of capacity improvement. It's the relining of the main." (T13, pp. 134-35).[27]

This statement is remarkable not only because Mr. Leffner clearly did not know or understand the scope of the repairs and rehabilitation project at Lake Roland.[28] It is also remarkable, or ironic, given his own description of how the very same types of repairs and rehabilitation in the Cockeysville area *would* improve capacity. He testified:

> MR. MUDD: Okay. Getting back to this yellow area, what, what, what impact would the repairs performed in that highlighted area have on the system and its capacity in general?
>
> MR. LEFFNER: It, essentially, the lining and rehabilitation efforts meet what the, I'd say, kind of global intent of that SRRR plan was, which is do improvements within the existing infrastructure to keep inflow and infiltration out of the system.

[27] Mr. Leffner did not know that the purpose of the Ramboll report is to "minimize the inflow and infiltration into the interceptors to reduce the likelihood of sanitary sewer overflows." (148-49).

[28] On cross, Mr. Leffner indicated that he was only "generally familiar" with the Ramboll report. (T13, p. 150).

> By keeping those inflow and infiltration sources out of the system, essentially, there's more reserve capacity or capacity for wastewater flow. So, it improves the capacity of the existing system by preventing non-wastewater sources from entering into it.

(T13, p. 76).[29]

7. The Hazen Study

When asked about the Hazen study, Mr. Leffner likewise stated that the study, like the Ramboll report, is not being done in response to the Consent Decree. He described the study as "kind of like a further horizon study that the, the County is embarking up" and like the Ramboll report "is kind of an example of the County, [] doing more with regard to the analysis and development of standard County practices beyond what just the Consent Decree requirement would be.... [I]t's more so a planning document, right? Continuing to identify analysis, capacity studies, long term planning to help influence the County's future capital spending in the County." (T13, pp. 134, 135). These assertions are troubling, but there is no support for them, either in the Hazen documentation or from the County.

8. Assumptions

Mr. Leffner does not know whether the Consent Decree requires that the SRRR Plan determined future capacity based on the assumption that rehabilitation and repair was already performed. (T13, pp. 170-71). He is uncertain whether the SRRR plan itself makes that assumption. (T13, pp. 171-72).

9. Implementation of the SRRR Plan

Mr. Leffner agreed that that Consent Decree is still in force and that the County is still subject to its terms and requirements. (T13, p. 213). He also agreed that the SRRR Plan has not

[29] Later, on cross, Mr. Leffner acknowledged that the lining of the interceptors would minimize I/I and reduce SSOs. (T13, p. 149).

been fully implemented. (T13, pp. 85, 145, 146, 152-53). With respect to the Recommended Corrective Action Plan described in Section 6.14 of the SRRR Plan, Mr. Leffner:

1. There are still significant areas in the County exhibiting excessive I/I (T13, p. 146) (Ex. 85). RJN has identified significant areas of model-predicted SSOs including the areas that would serve the proposed development. (T13, p. 148). Given the Hazen study, the Ramboll report, and the RJN Map 3, item 1 is not completed. (T13, p/ 152-53).
2. Mr. Leffner was unaware if the County performed any of the capacity improvements recommended in the LTC Report. (T13, p. 153-54). He conceded that the upsizing of the pipe for the 10/6 storm was not done. (T13, p. 155).
3. Mr. Leffner does not believe the structural deficiencies referenced include those identified in the Ramboll report or that may be identified in the Hazen study. All of the work referenced in 3 is in the SRRR plan itself, but acknowledged that the Consent Decree requires "ongoing analysis, but for a finite amount of work." (T. 13, p. 158).

5 Mr. Leffner admitted that confirming and revising the model is an "ongoing evaluation" and that Hazen is in the process of redoing the model. (T13, p. 160). He admitted that Hazen is performing a comprehensive evaluation of capacity. (161).

III. Traffic and the Special Variance

A. The Growth Management Act

1. Development "commensurate with availability of public facilities"

In the "purpose and intent" section of the Growth Management, the County Council finds that "important public facilities in certain predominantly urban areas of the county are inadequate to serve all of the development that would be permitted under the regulations of the zones or commercial districts within which those areas lie." 4A02.1. The Act establishes the Basic Services Maps in order to "regulate nonindustrial development in those under-served areas to a degree commensurate with the availability of these facilities." The Maps are not intended to be permanently establish deficient areas; rather, the intent is "that existing service deficiencies will

be corrected in accordance with the Master Plan and capital improvements program," *i.e.*, the problem will be fixed *by the County*. 4A02.3.F

2. Reserve Capacity Certificates

To that end, the Act prohibits the issuance of building permit in a mapped service area unless the Director of Planning has issued a "reserve capacity use certificate." 4A02.3.G.1. A reserve capacity use certificate may authorize development "*only to the extent that it ... will not utilize more than the reserve capacity of the ... transportation network* ... of the Basic Services Mapped area within which the property is located." 4A02.3.G.4.a. (emphasis added).

In other words, the Act contemplates the issuance of a certificate in circumstances where there is some reserve capacity in the area where the property is located. Transportation capacity is determined based on a formula set forth in 4A02.3.G.4.a.

3. The Transportation Standards

Section 4A02.4 sets forth standards that are "intended to form the basis for the delineation of areas on the Basic Services Maps as well as for the evaluation of development applications in accordance with the requirements of this article," *i.e.*, the standards apply to both the adoption of the maps and to the approval of development during the development review process. 4A02.4.A.

Subsection D of 4A02.4 sets forth the "transportation standards." It provides:

> Intent. The transportation standards and maps are intended to regulate nonindustrial development where it has been determined that the capacity of arterial and arterial collector intersections is less than the capacity necessary to accommodate traffic both from established uses and from uses likely to be built pursuant to this article. Such development is not intended to be restricted unless there is a substantial probability that an arterial and arterial collector intersection situated within the mapped area will, on the date the map becomes effective, be rated at level-of-service E or F under *standards established by the Highway Capacity Manual, 1965, published by the Highway Research Board of the Division of Engineering and Industrial Research, National Academy of Sciences National Research Council.*

(Emphasis added).

4. *Special Variances*

Subsection D identifies certain "exceptions" to the transportation standards, but a provision authorizing petitions for special "from provisions of this subsection."

> 1. The Zoning Commissioner may, after a public hearing, grant a petition for a special variance from a provision of this subsection, only to an extent that will not violate that provision's purpose, pursuant to a finding:
> a. That the demand or impact of the development proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal; and
> b. That the granting of the petition will not adversely affect a person whose application was filed prior to the petitioner's application in accordance with Section 4A02.3.G.2.b.

A plain reading of these provisions of the Growth Management Act tells us the following: (1) the primary intent and purpose of the Act is for the County to fix deficient public facilities through the capital budget process; (2) to the extent there is any "capacity" in public facilities, the intent is for a reserve capacity certificate to be issued, (3) the Act sets forth a formula for determining such transportation capacity, (4) the Act also sets forth transportation standards that apply not only when adopting the basic services map but also to the review and approval of development during the development review process, (5) these transportation standards are set forth in the 1965 Highway Capacity Manual, and (6) the ALJ may grant a special variance only from a provision in 4A02.4, which is the "subsection" in which this authority appears.

B. The Developer Has Not Proven Entitlement To A Special Variance

1. The testimony of Mr. Driban

Mr. Driban testified that, in his opinion, the standard for a special variance is met because the intersection of Falls/Joppa will be "substantially" improved in terms of overall delay. (T4, pp. 213, 215). Putting aside the limitations and fallacies in this conclusion (addressed below), Mr. Driban's conclusion is not supported by the plain language of the Growth Management Act or the evidence in this case.

Preliminarily, it should be noted that while Mr. Driban has worked on "tens of projects" in Baltimore County, none of these projects involved the review or evaluation of Baltimore County regulations or standards. In particular, he has never been involved in a project or testified in a case involving a special variance request or the standards for such a request. (T4, pp. 111, 243-45). Mr. Driban nevertheless testified that in this case "the County was onboard with concurring with our, with our approach to, to meeting the special variance requirements." (T4, p. 231). He based this observation, apparently, on Mr. Nebre's email communication of August 16, 2022 (Dev's Ex. 29). A review of this email reveals nothing of the sort. The only reference to the special variance in the email was as follows:

> The development sits in a current LOS F traffic shed, and therefore, per Baltimore County Zoning Regulations Manual, 4A02.4.G.1, we defer the findings from Lenhart Traffic and SHA responses be subjected to review from the Zoning Commissioner to determine if this development would be eligible for a waiver based off the zoning regulations.

(Dev's Ex. 29, p. 1).[30]

[30] Mr. Driban remarkably described the email from Mr. Nebre as "kind of his, is his sign off on, you know, his review of, of the traffic impact study...where he is agreeing that the improvements are, at the Joppa intersection, are enough to accommodate the volume from the site and that the mitigation from the improvement results in net zero impact along the corridor. Actually, it, it results [] this is my, you know, annotation, actually results in improvement along the corridor." (T4, p. 234). Again, the email says no such thing.

Indeed, when asked whether he was ever told by anyone in the County that the CLV or the HCM methods he used are the district standard under the zoning regulations, he answered: "I don't believe that I was told that those specific items are the district standard." (T4, p. 52). In the end, Mr. Driban acknowledged that he cannot say that the level of service under the loaded cycle methodology will be improved from an F. (T, 4, p. 52).

2. The testimony of Mr. Nebre

It is fair to say that the testimony of Kris Nebre was less than crystalline in numerous respects, but he was clear on some things. He testified that the *only* method used by the County for determining levels of service is the loaded cycle methodology. (T2, pp. 354-55T5, p. 6-7, 18). When a development is proposed in a failing intersection, the standard that the County applies is the loaded cycle methodology. (T2, p. 355). The standard that he applied in reviewing the Developer's traffic impact study, however, was not the loaded cycle methodology but rather whether or not the proposed development would make the situation "any worse" or, as he also put it, result in a "net zero impact." (T2, pp. 325, 327, 338, 339). When asked where that standard comes from, he responded "partially engineering" but "there's not like a standard I could really point to for that one." (T2, p. 339).[31]

Importantly, Mr. Nebre agreed that "net zero impact" is not the special variance standard set forth in the Growth Management Act. He explained that he was not speaking to that standard, which is why he "deferred" to the ALJ on that issue. (T2, p. 338). However, when pressed at the hearing, he stated that the "district standard" referenced in the special variance standard was the loaded cycle methodology.

[31] Mr. Nebre did not explain or elucidate how or on what basis he assessed net zero impact, e.g., is it based on volume, delay, safety, etc. He was unsure about the number of lots in the proposed development, but thought it was "more or less than 100 units." (T2, pp. 376-77).

> MR. WYATT: ....What is the standard? What is your Bureau's practice with regard to the word standard that's used in the regulations?
>
> MR. NEBRE: The standard for the basic serves map would be the, the loaded cycle methodology
>
> * * *
> MR. WYATT: When the, when the variance regulation refers to the district standard that would otherwise restrict or prohibit development, isn't that referring to the LOS standard that we've spent some time talking about today?
>
> MR. NEBRE: That's the best that we could see it.

(T3, p. 20).[32]

Finally, and most importantly, Mr. Nebre acknowledged that like Mr. Driban he cannot say, to any reasonable degree of certainty, that the proposed development, with the road improvements, will improve the F level of service at the intersection of Falls/Joppa. (T4, pp. 355-56).

3. The District Standard Must Necessarily Be The County's Level Of Service Methodology

As Mr. Nebre and Mr. Driban acknowledged, the only standard in Baltimore County for determining failing intersections is the loaded cycle methodology. It defies logic that the "district standard" for obtaining a special *variance from this failing level of service* could be achieved by applying some *other* standard. It would be mixing apples and oranges to obtain a variance from one standard by applying another standard. Other methodologies such as CLV and the modern

[32] Mr. Nebre stated that others in his department have expressed the opinion that in order for this development to be approved, the F level of service needs to be improved, however, he added obliquely that there have been changes in the department since this development was proposed and reviewed. (T2, pp. 340-41). Protestants' Exhibits 15-19 are emails between Mr. Nebre, his superiors Greg Carski and Mike Filsinger, and the Developer. At the time of these emails, Mr. Carski and Mr. Filsinfer were bureau chief and division chief, respectively, and his mentors. (T2, pp. 345-48, 351, 358). These emails are some indication that Messrs. Carski and Filsinger believed that the level of service under the loaded cycle methodology must change for a development to be approved. (Prots' Exs. 15-19).

HCM may be useful when considering traffic impact studies, but they have no connection to the loaded cycle methodology. They are separate and distinct methodologies that, when applied, do not speak to or affect levels of service as the County determines them. Importantly, in the very few cases decided by the OAH or the Board of Appeals, the ALJ and the Board have not seen fit to adopt a new standard for special variances. *See In re: Petition for Variance, Foxleigh Enterprises*, Case no. 2012-00060-SA; *In re Petitions for Special Hearing & Variance, 6503 Baltimore Nat'l Pike,* Case no. 2021-0130-SPHA; *In re Petition for Special Variance, Elias Rizakos*, Case no. 00-557-SA; *In re Petitions for Special Exception, Special Variance*, 1807 E. Joppa Rd., Case no. 2009-0080-XSA.

In other words, the "district standard" is the loaded cycle methodology. Mr. Nebre conceded this, of course, but this conclusion is also supported by the Growth Management Act itself. The transportation "standards" are set forth in 4A02.4 and identified as the standards in the 1965 Highway Capacity Manual, which includes the loaded cycle methodology.[33] The Developer did not address these standards or otherwise seek a variance from them.

Further, the fact that the load cycle methodology is predictive in nature and determined by field observations, rather than by numbers that a traffic engineer inputs in his or her computer, does not mean that we should abandon the County's methodology and just accept other methodologies as the district standard. The loaded cycle methodology is *the* standard in Baltimore County. The fact that it may have been around for a long time, or even the fact that other jurisdictions do not use the methodology, is irrelevant. As developers often like to say, everyone has the prerogative to seek changes in the law if they believe existing the law is outdated or should be changed.

[33] The 1965 Highway Capacity Manual is not the "HCM" methodology used by Mr. Driban to determine intersection delay.

Nevertheless, there are certainly ways to prove entitlement to a special variance based on the loaded cycle methodology. The standard requires a demonstration that "the demand or impact of the development proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal." One impact "assumed" by the loaded cycle methodology is that more than 50% of the vehicles from the proposed development site will travel to the failing intersection. A developer could obtain a special variance by proving that less than 50% of the traffic from the proposed development will travel to the intersection. In fact, this was the developer's theory in at least a few of the cases that have been decided in this area.

The purpose and intent of the Growth Management Act should not be forgotten in all of this. The Act contemplates that the County is supposed to fix deficient public facilities through the capital budget process. If there is any available "capacity" in a deficient public facility – as the Developer contends there is this case – then the remedy is to obtain a reserve capacity certificate to use that capacity. The Act sets forth a formula for determining such capacity. *See* 4A02.3.G.4.a. The Developer has not applied for a reserve capacity certificate nor sought to meet the capacity standard for obtaining such a certificate. It would make no sense to allow a developer to demonstrate capacity and obtain a variance through some other capacity standard, as this Developer seeks to do.

In sum, Mr. Driban's assertion that intersection delay will be reduced, even if true, is irrelevant and does not speak to standard in the Growth Management Act. The same goes for Mr. Nebre's "zero impact" opinion. The bottom line, as Mr. Nebre and Mr. Driban agreed, even with the proposed road improvement, the LOS at Falls/Joppa would not change from an F level of service under the district standard.

C. The Limitations and Fallacies in Developer's Traffic Impact Study

The Developer's expert, Nick Driban, prepared a traffic impact study that reviews the intersections at Falls/Joppa and Falls/Greenspring Valley Roads, taking into account the Developer's proposal to add a lane on the westbound and eastbound approaches to the light at Falls and Joppa Roads to be exclusively for left hand turns. (Dev.'s Ex. 16).[34] The traffic impact study reviews the levels of service at the two intersections under the CLV and HCM methodologies.[35] According to Mr. Driban, the level of service under the CLV method goes from E to D in the am peak hour and remains a D in the pm peak hour. (Ex. 25 at p. 15 of 79, Ex. 8a) (T6, pp. 267-68). Under the HCM method, according to Mr. Driban, the level of service in the am, with the proposed improvements, stays at D. In the pm, the level of service likewise stays a D. (p. 17 of 79, Ex, 8b) (T4, p. 269). Mr. Driban concludes that the proposed improvements at Falls/Joppa would "substantially" improve capacity and reduce the amount of delay at the intersection. (T4, pp. 204-05). Mr. Driban goes so far as to say that the intersection will be "orders of magnitude better in terms of overall delay, the average delay per vehicle, than it is today." (T4, p. 213).

As preliminary matter, before addressing the relevance of any of this, there are significant shortcomings and fallacies in Mr. Driban's analysis. First, as Mr. Driban acknowledged, his levels of service analysis address only the signalized intersections at Falls/Joppa and Falls/Greenspring Valley and do not account for the many ingresses to and egresses from retail businesses, offices, and food establishments along this corridor during all hours of the day, not just peak hours. (T5, p. 31). Protestants' Exhibit 38 is an aerial showing all of these accesses onto and off Falls Road and the enormous amount of parking available to employees and customers at these businesses.

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[34] Not described by Mr. Driban, but reflected in the plans for the improvements, is that the Developer also proposes to eliminate the left hand turn option for one eastbound and one westbound approach. (Dev's Ex. 16).

[35] It was stated that the loaded cycle methodology is old. The CLV methodology is 35 years old. (T4, p. 265).

Several witnesses testified regarding their typical travel and the multiple stops they make along this corridor. Mr. Driban's levels of service and trip generation data do not account for vehicles that might only make one right hand turn onto Falls Road but make multiple stops along the corridor. (T5, pp. 33-35, 37-39).[36]

Second, as Mr. Driban acknowledged, his conclusions about delay are based on an "averaging" of delay in the various the turning movements at these intersections or as he also put it "overall" delay. Attached in the appendix to the traffic impact study are charts setting forth the important details of the results of Mr. Driban's delay analysis. Protestants' Exhibit 36 and 37 are copies of pages from this appendix, specifically the analysis details for the intersection at Falls/Joppa in the am and pm, respectively. These details reflect that the delays and levels of service actually worsen, in some cases significantly worsen, for turning movements in both the am and pm with the Developer's proposed road improvements. Below is a chart reflecting some of the increases in delay reflected in Exhibits 36 and 37:

Comparison of Existing to Post-Improvements Delay and LOS

	EBL	WBR	SBT
Delay (**am**)			
Existing	79	62.6	29.8
W/improvements	92.1	67.3	33.5

	WBR	NBL	NBR
Delay (**pm**)			
Existing	59.9	23.2	.2

[36] Mr. Driban did not highlight the fact that his numbers under the CLV method actually worsen slightly in both the am and pm peak hours at the intersection of Falls and Greenspring Valley. (T5, pp. 10-11).

W/improvements	63.8	45.8	.3
LOS			
Existing		C	
W/improvements		D	

(Prots' Exs. 36 and 37).[37]

Similarly, Mr. Driban's "corridor study," which he glowingly described as reflecting "*very substantial* improvements for *all* traffic passing through this corridor as a result of the improvements being proposed," is based on averaging and modeling. (T5, pp. 40-41; T4, p. 209). He could have done a speed study, which would tell us the actual lengths of time it takes to drive from one of end of the corridor to the other, but instead used a model. (T5, pp. 41-42). Further, he did not study or perform traffic counts on non-peak hours to determine the effect on the corridor of the many non-peak trips made to and from Greenspring station or St. Paul's School when school is getting out or for sporting events. (T5, p. 125).

Third, Mr. Driban's traffic impact study focuses only on the projected peak *hour* volumes of traffic that would be generated by this site because that's what typical impact studies do. Mr. Driban was unaware of the total volumes of traffic generated throughout the day by the proposed development. That volume, according to the development plan, is 600 average trips per day. In this regard, it is important to identify the sheer number of cars that presently travel through the failing F intersection at Falls/Joppa Roads. Based on the traffic counts provided by the County, in

[37] In Exhibit 8a and 8b of the traffic study, Mr. Driban quantifies "mitigation as a result of proposed improvements." This description is misleading and the numbers he uses are misleadingly high. The numbers are actually a percentage of the impact that is being mitigation (e.g., 121/13 = 931%). They are not a comparison of background and post-development conditions. (T5, pp. 9-10).

the morning peak *hour* alone, 1782 vehicles pass through the intersection in a northbound direction, 481 vehicles pass through in the westbound direction, and 1925 pass through in the southbound direction. In the pm peak hour, 1696 vehicles pass through the intersection in a northbound direction, 686 vehicles pass through in the westbound direction, and 1174 pass through in the southbound direction. (Dev's Ex. 28, p. 26 of 79 (Exhibit 3) (handwritten notes provided by County) (T4, p. 251). Protestants introduced numerous photographs showing the amount of traffic in this corridor along Falls Road and on Joppa Road. (*See* Prots' Exs. 29, 40, 41, 42, 43).

Fourth, perhaps most importantly, Mr. Driban's traffic impact study conspicuously fails to address the impacts of increased traffic and the proposed road improvements on traffic safety. Numerous witnesses spoke compellingly about the existing safety issues at the corner of Falls/Joppa and on the approach to that intersection. They testified regarding the difficult curve for northbound vehicles taking a right hand turn onto Joppa and the frequency of accidents at that turn. They testified regarding the impact that removal of the concrete median on westbound Joppa Road would have on the safety of drivers and pedestrians crossing at the intersection.

Finally, although it is common to accept traffic impact studies as gospel, particularly when there is no opposing traffic expert, it is important to recognize the margins of error inherent in any traffic study, including this one. The margins of error in Mr. Driban's study are obvious from the very nature of the many variables he considered. These variables are:

- "trip generation" – Trip generation is derived from the ITE manual, which is based on studies of residential developments between 1980 and 2010. (Prots' Ex. 35). The amount of trips generated by this site during the am and peak hours is thus a projection or estimate based on studies that themselves have margins of error. According to Mr. Driban, it is also based on "intuition." (T5, p. 191).

- "trip distribution" - Trip distribution is the identification of the relative percentage of vehicles entering versus those leaving during the am and pm peak hours. Here, Mr. Driban assigned 25/75 ratio to the percentage of vehicles

coming in/out during the am peak hour and 63/37 ratio to the percentage of vehicles coming in/out during the pm peak hour. (Dev's Ex. 28, p. 13 of 79 (Ex. 6)). Like trip generation, it is a projection or estimate. In fact, Mr. Driban acknowledged that trip distribution is also based on "intuition." (T4, p. 191).

- "trip assignment" – Trip assignment is the identification of the direction in which vehicles leaving the site will travel and the direction they will come when they return. Here, the traffic impact study states, in nice round numbers, that 80% of the traffic generated at this site will travel to and from the west and 20% from and to the east. (Dev's Ex. 28, p. 14 of 79 (Ex. 6)). This is obviously a projection and an estimate.

- "growth rate" – Mr. Driban applied a growth rate of 1.5% to the traffic counts provided by the County. He acknowledged that the growth rate is an "estimate." (T4, p. 253).

- "averaging" – Mr. Driban acknowledged that his conclusion

Mr. Driban repeatedly used the word "substantial" to describe the improvements in delay that he believes will result from the road improvements on Joppa. In actuality, the improvements he found (even if we assume them to be correct) are a matter of seconds. Given this thin thread that Mr. Driban has weaved, it must be considered that his findings and conclusions could change entirely if one or more of the estimated and projected variables described above are altered even slightly. In other words, Mr. Driban's opinions leave no room – none – for margins of error. This is particularly true because, in addition to the conjectural nature of the variables themselves, he "averaged" them and assessed their "overall" effect. As was demonstrated by the simple exercise of the looking at the individual turning movements in his delay analysis (Prots' Exs. 36 and 37), Mr. Driban's findings, on another day, could be entirely different. The basis for his opinions is razor thin and should not be justify the granting of the important special variance that the Developer seeks.

D. The Planning Office's "Deferral"

Section 4A.02.4G.2 of the Growth Management Act requires the Department of Planning to "give a report on the petition to the Zoning Commissioner prior to his consideration of the petition." It is undisputed that the report contemplated by this provision has not been provided to the ALJ.

The Planning Department's "deferral" and the reasons offered why the required report has not been provided are unacceptable. A fair inference from all of this, similar to the inference that can be drawn from DPW's "deferral" (discussed above) is that these two agencies do not feel comfortable recommending approval of the special variance. The development plan should not be approved for this additional alone.

CONCLUSION

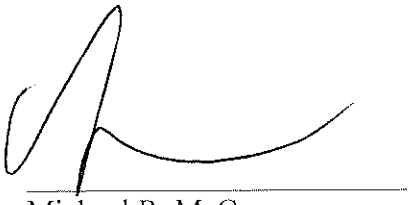
For the reasons stated, Protestants respectfully requests that the Development Plan and the requested zoning relief be denied.

Michael R. McCann
118 W. Pennsylvania Avenue
Towson, Maryland 21204
michael@mmccannlaw.net
(410) 825-2150

Attorneys for Protestants

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 17th day of July 2023, the foregoing memorandum was sent via email to all counsel of record.



Michael R. McCann

IN RE: DEVELOPMENT PLAN HEARING, PETITION FOR SPECIAL VARIANCE, etc. 2310 W. Joppa Road *Greenspring Manor* 9th Election District 3rd Councilmanic District	*	BEFORE THE OFFICE OF ADMINISTRATIVE HEARINGS Case nos. 08-0922 2021-0250-SPH

* * * * * * * * * * * *

POST-HEARING MEMORANDUM OF THE MEADOWS OF GREENSPRING

Protestant, The Meadows of Greenspring ("The Meadows"), submits this post-hearing memorandum in support of their opposition to the development plan and requested zoning relief.

INTRODUCTION

The Meadows is an established small, tight-knit community of 99 homes located immediately north of the subject property. The Meadows is opposed to the proposed development for reasons that include over-development of the area, sewer capacity, and traffic conditions. Protestants' Exhibit 33 is a petition signed by 97 residents in the community expressing this opposition.

If the ALJ approves the development plan, then the Meadows requests that the ALJ deny the proposed emergency-only access and prohibit permanently any vehicular access or connection to Mays Chapel Road and The Meadows community. Alternatively, The Meadows requests that the ALJ condition her approval on (i) emergency-*only* access to Mays

Chapel Road and The Meadows community, and (ii) the permanent prohibition of any future opening of vehicular access or connection to Mays Chapel Road and The Meadows community. (*See* Prots' Ex. 34).

ARGUMENT[1]

A. The Testimony of Residents of The Meadows

Richard Compton, Karen McGraw, and a number of other residents from The Meadows spoke compellingly at the hearing regarding the many reasons why there should be no vehicular access from the proposed development to their community.

They explained that The Meadows is not a retirement community *per se*, but it has naturally evolved into a community comprised primarily of residents in their 60s, 70s, and 80s. They place a high value on the safety, security and tranquility that presently exists in their neighborhood. Every day, a significant number of homeowners use the circular street pattern in The Meadows as a walking trail, many with their dogs and sometimes grandchildren. The roads are narrow, with no sidewalks and no speed control bumps. They are not designed for high volumes of traffic. Indeed when a vehicle is parked on one side of the street, a driver must wait until any oncoming vehicle passes before proceeding. A pass-through will undoubtedly have a negative impact on the value, attractiveness, character and most importantly the safety of the community. Photographs depicting these aspects of the neighborhood were introduced as Protestants' Exhibits 32A and b.

Residents are also concerned that allowing an emergency-only access at this stage, as some sort of compromise, will simply open the door for some future effort, outside the hearing

[1] The Meadows incorporates herein the post-hearing memorandum filed by the remaining Protestants in this matter.

process, to convert the access to a full vehicular pass-through. At the hearing, there was no testimony or evidence – none - from anyone in the County (including representatives of the police or fire departments) expressing the need for an emergency connection.

B. The Recommendation of the Planning Office

Importantly, the Planning Office recommends *against* allowing a public vehicular pass-through to The Meadows. In their development plan comments (Prots' Ex. 6), staff note that the vision of Master Plan is to provide "a network of design that exemplifies walkability, a greater pedestrian experience, enhanced circulation, connectivity etc." Staff conclude that a pedestrian-only access via a sidewalk will provide the connectivity called for in the Master Plan. (*Id.*, p. 4).

C. The Studies by Mr. Driban – There is No Need for a Pass-Through

The Developer's expert, Nick Driban, performed an "original destination study" over the course of several days. The study involved having someone sit at either end of Tally Ho Road and document the number of vehicles that cut through from one end to the other. The study revealed that very few vehicles actually use Tally Ho as a by-pass route. During the am peak hour, Mr. Driban found only 3-10 vehicles, or about 5%-12% of the traffic, was by-pass traffic. During mid-day, only 3% of traffic went through neighborhood and during the pm peak hour, only 4-5 vehicles on average over the several days used Tally Ho as a cut-through, accounting for 5% of the traffic. (T4, p. 217)

Mr. Driban also performed a "sensitivity study" to determine the percentage of vehicles that might be incentivized to cut through Mays Chapel Road if a pass-through were installed. Mr. Driban concluded that a fairly substantial percentage of traffic would be incentivized to use the pas-through because it's a direct connection with no traffic lights and

would allow faster travel time than Tally Ho. (Dev's Ex. 39; T5, p. 54). Developer's Exhibit 28 is a map showing various roads in the area. Mr. Driban explained that the cut through, if installed, would create a very direct connection between Joppa and Seminary that would likely be used by hundreds of vehicles during the morning and evening peak hours and the rest of the day. (T4, p. 225). He estimated as many as 600 vehicles in the morning and 1000 in the evening. He stated that this is a high volume of commuter traffic that should not be on residential streets like those in The Meadows where people are walking dogs. (T4, p. 229).

D. The Development Plans Review Policy Manual

In its development plan comments, the Development Plans Review (DPR) section recommend in favor of a full access pass-through to Mays Chapel Road. DPR relies, apparently, upon the following provision in its Policy Manual:

> ACCESS GUIDELINES
>
> 1. Maximum Number of Units with One Means of Access.
>
> a. Limits of Units
>
> -100 units with no future street extension proposed
> - 150 units when a future street extension is proposed and is feasible
> >150 2nd means of access must be constructed

(DPR Policy Manual, pp. 22-23).

Under a plain reading of this provision, a second means of access is not required if either the proposed development *or* The Meadows has 100 or less units.

The Meadows community has 99 homes and the proposed development would have 61 homes so neither community meets the threshold requiring a second means of access.

The Policy Manual cannot reasonably be read to require a *totaling* of homes in all adjacent communities when determining whether the 100-unit threshold is met. This would lead to a never ending computation of units in nearby and distant neighborhoods to ensure that, at no point, is there only one access for any combination of residential units across neighborhoods (*i.e.*, that the number of units ÷ 101 =/> 1). This would lead to absurd results. The clear intent of the Policy Manual is to simply look at each community individually and ensure that if it has more than 100 units a second means of access if provided.

E. Section 260.4 in the Residential Performance Standards

Section 260.4 in Zoning Regulations requires a developer to "[p]rovide for at least one street connection to an adjoining neighborhood or an adjoining property, not including the principal access to the subdivision, in order to facilitate good traffic circulation." Here, the pass-through would clearly not facilitate, for all the reasons cited above, "good traffic circulation." Instead, it would create congestion and safety issues for The Meadows and not resolve any problems perceived by residents of Tally Ho. As noted, the Planning Office, which is charged with applying the residential performance standards, recommended against the pass-through.

CONCLUSION

For the reasons stated, The Meadows respectfully requests that, if the development plan is approved, the ALJ deny the proposed emergency-only access and prohibit permanently any vehicular access or connection to Mays Chapel Road and The Meadows community. Alternatively, The Meadows requests that the ALJ condition her approval on (i) emergency-*only* access to Mays Chapel Road and The Meadows community, and (ii) the permanent

prohibition of any future opening of vehicular access or connection to Mays Chapel Road and The Meadows community. (*See* Prots' Ex. 34).

Michael R. McCann
118 W. Pennsylvania Avenue
Towson, Maryland 21204
michael@mmccannlaw.net
(410) 825-2150

Attorneys for Protestant The Meadows of Greenspring

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 17th day of July, the foregoing post-heairng memorandum was sent via email to all counsel of record and via first class mail, postage prepaid:

Christopher Mudd
Adam Rosenblatt
Venable, LLP
210 W. Pennsylvania Avenue, Suite 500
Towson, MD 21204

Michael R. McCann

IN THE MATTER OF:	*	BEFORE THE OFFICE OF
Greenspring Manor	*	ADMINISTRATIVE HEARINGS
2310 West Joppa Road	*	OF
	*	BALTIMORE COUNTY
	*	CASE NO: 2021-0250-SPH
		PAI 08-0922
	*	MAJ-2021-00001

* * * * * * * * * * * * * *

SUBPOENA

TO: Erin S. Kuhn, P.E.
Assistant District Engineer – Traffic
MDOT State Highway Administration, District 4
320 W. Warren Road
Hunt Valley, MD 21030
410-229-2380

You are hereby summoned and commanded to appear at a **Virtual WebEx Hearing** before the Administrative Law Judge for Baltimore County on Tuesday, the 20th day of September, 2022 at 1:30pm and Wednesday, the 21st day of September, 2022 at 1:30pm, regarding the above captioned matter for the purposes of testifying at the request of Adam Rosenblatt, Esq.

Upon receipt of service of this subpoena you are required to contact the Office of Administrative Hearings at 410-887-3868 or administrativehearings@baltimorecountymd.gov to provide your email address so that a WebEx link/invitation can be emailed to you prior to the hearing so that you can testify as commanded. Please then accept the link/invitation promptly upon receipt.

Private Process Server:

Please process in accordance with Rule 4(c) of the Rules of Practice and Procedure before the Zoning Commissioner/Hearing Officer of Baltimore County.

Paul M Mayhew

PAUL M. MAYHEW
MANAGING ADMINISTRATIVE LAW JUDGE
FOR BALTIMORE COUNTY

Issued:

RECEIVED
SEP 12 2022
OFFICE OF
ADMINISTRATIVE HEARINGS

GREENSPRING MANOR

2310 W. JOPPA ROAD

DEDICATION TABLE

THE FOLLOWING RIGHTS OF WAY ARE TO BE CONVEYED TO BALTIMORE COUNTY BY THE DEVELOPER/OWNER OF THIS PROPERTY AS A CONDITION OF APPROVAL OF THESE PLANS.

TYPE OF CONVEYANCE	NO.	TOTAL AREA**
ACCESS EASEMENT	2	0.10 AC
DRAINAGE AND UTILITY EASEMENT	4-10	0.66 AC-0.9 AC; 5.72 AC
FOREST CONSERVATION EASEMENT	5	3.32 AC- 1.17 AC
STORMWATER MANAGEMENT EASEMENT	3	2.19 AC- 0.72 AC
100 YEAR FLOODPLAIN AND DRAINAGE AND UTILITY EASEMENT	5	5.10 AC- 5.13 AC
FOREST BUFFER AND FOREST CONSERVATION EASEMENT	6	0.28 AC- 0.32 AC
HIGHWAY WIDENING	1	0.54 AC
FOREST BUFFER EASEMENT	6	1.19 AC

** NOTE: TOTAL AREAS SHOWN IN THIS TABLE ARE APPROXIMATE ONLY. REFER TO THE RECORD PLAT OR RIGHT OF WAY DRAWING FOR EXACT AREAS.

ENTRANCE FEATURE AND SIGN



NOT TO SCALE
SIGN FACE AREA: 24 SQUARE FEET

DELINQUENT ACCOUNTS CERTIFICATION:

I, _____ DIRECTOR OF LAND DEVELOPMENT CERTIFY UNDER OATH THAT THERE ARE NO DELINQUENT ACCOUNTS FOR ANY OTHER DEVELOPMENT WITH RESPECT TO ANY OF THE FOLLOWING: THE APPLICANT, A PERSON WITH FINANCIAL INTEREST IN THE PROPOSED DEVELOPMENT, OR A PERSON WHO SHALL PERFORM CONTRACTUAL SERVICES ON BEHALF OF THE PROPOSED DEVELOPMENT.

GROUNDWATER MANAGEMENT

PRIOR TO RECORD PLAT APPROVAL THE EXISTING DWELLING MUST BE CONNECTED TO PUBLIC WATER AND SEWER. UPON CONNECTION, THE EXISTING WELL MUST BE BACK-FILLED BY A LICENSED MASTER WELL DRILLER WHO MUST SUBMIT A WELL ABANDONMENT REPORT TO GROUNDWATER MANAGEMENT. THE EXISTING SEPTIC SYSTEM MUST BE PUMPED AND BACK-FILLED OR REMOVED BY A LICENSED SEWAGE DISPOSAL CONTRACTOR. ABANDONMENT REPORTS MUST BE SUBMITTED PRIOR TO RECORD PLAT APPROVAL.

ADJACENT PROPERTY INFORMATION

1. 13 OLD BOXWOOD LANE
PAMELA BOYER
TAX ID: 2000004431
DEED REF.: 11943/3693
PLAT REF.: 53/34

2. 15 OLD BOXWOOD LANE
BRIAN AND ROBIN RUBIN
TAX ID: 2000004432
DEED REF.: 4478/0173
PLAT REF.: 53/34

3. 17 OLD BOXWOOD LANE
THOMAS AND CAROL BRADLEE
TAX ID: 2000004433
DEED REF.: 4044/0243
PLAT REF.: 53/34

4. 19 OLD BOXWOOD LANE
LORRAINE BRONSTEIN TRUSTEE
TAX ID: 2000004434
DEED REF.: 23741/666
PLAT REF.: 53/34

5. 21 OLD BOXWOOD LANE
ALVIN AND MARI KALIN
TAX ID: 2000004435
DEED REF.: 30686/144
PLAT REF.: 53/34

6. 23 OLD BOXWOOD LANE
JAMES AND DOROTHY TRUITT
TAX ID: 2000004436
DEED REF.: 26568/25
PLAT REF.: 53/34

7. 76 SEMINARY FARM RD.
FRED AND JAN HALLAHAN
TAX ID: 1900006676
DEED REF.: 24347/083
PLAT REF.: 49/124

8. SEMINARY FARM RD.
THOMAS AND PATRICIA PRUETT
TAX ID: 1900006677
DEED REF.: 7840/474
PLAT REF.: 49/124

9. 72 SEMINARY FARM RD.
MICHAEL, JR. AND WILLIAM HALL
TAX ID: 1900006678
DEED REF.: 43037/169
PLAT REF.: 49/124

10. 70 SEMINARY FARM RD.
GARY WOODRUFF
TAX ID: 1900006679
DEED REF.: 31146/40
PLAT REF.: 49/124

11. 68 SEMINARY FARM RD.
HARJIT AND JAMALA SINGH
TAX ID: 1900006680
DEED REF.: 7640/129
PLAT REF.: 49/124

12. 66 SEMINARY FARM RD.
MELVILLE AND BETSY YEARLEY
TAX ID: 1900006681
DEED REF.: 31642/30
PLAT REF.: 49/124

FIRE MARSHAL

1. PROPOSED BUILDINGS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO MEET THE APPLICABLE PROVISIONS OF THE BALTIMORE COUNTY FIRE PREVENTION CODE NO. 3-17.
2. LANDSCAPING OR OTHER OBSTRUCTIONS PLACED AROUND STRUCTURES SHALL NOT IMPAIR OR IMPEDE ACCESSIBILITY FOR FIRE DEPARTMENT OPERATIONS. ANY TREES PLANTED WITHIN 10 FEET OF THE PERIMETER OF THE BUILDING SHALL BE OF A TYPE THAT WILL NOT INTERFERE WITH EMERGENCY OPERATIONS AND MAINTAIN THE CLEARANCES REQUIRED BY THE CODE.
3. A FISHER RUN ROAD FOR ACCESS TO BUILDINGS AND ADEQUATE WATER SUPPLIES SHALL BE AVAILABLE FOR THE USE BY EMERGENCY FIRE APPARATUS AND CAPABLE OF HANDLING EMERGENCY APPARATUS WEIGHING 70,000 LBS. WHEN CONSTRUCTION OF ANY BUILDING IS UNDER ROOF, IN ACCORDANCE WITH THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO.3-17, SECTION 1.116.4.3.1.3.
4. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A RESIDENTIAL SPRINKLER SYSTEM FOR EACH INDIVIDUAL DWELLING.
5. THE SPRINKER SYSTEM MUST BE INSPECTED BY THE BALTIMORE COUNTY FIRE MARSHAL'S OFFICE PRIOR TO TAKING OCCUPANCY. (SPRINKLER HYDRO / SPRINKLER FINAL)
6. THE PRIVATE FIRE HYDRANTS SHALL BE PAINTED "OSHA RED" TO DISTINGUISH THEM FROM THE PUBLIC (ORANGE) FIRE HYDRANTS IN ACCORDANCE WITH BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17 SECTION 1: 18.5.10.5 PRIVATE HYDRANT COLOR.
7. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A PRIVATE UNDERGROUND FIRE LINE AND SHALL BE REVIEWED BY THE PLANS REVIEW SECTION OF BALTIMORE COUNTY. A PLUMBING PERMIT SHALL NOT BE USED TO INSTALL AN UNDERGROUND FIRE LINE.
8. ALL FIRE HYDRANTS SPACING SHALL BE IN ACCORDANCE WITH THE BALTIMORE COUNTY STANDARD DESIGN MANUAL.
9. THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17, SECTION 1:10.11.1.5, REQUIRES THAT THE ADDRESS NUMBERS FOR RESIDENTIAL PROPERTIES SHALL BE A MINIMUM OF 3 INCHES IN SIZE.

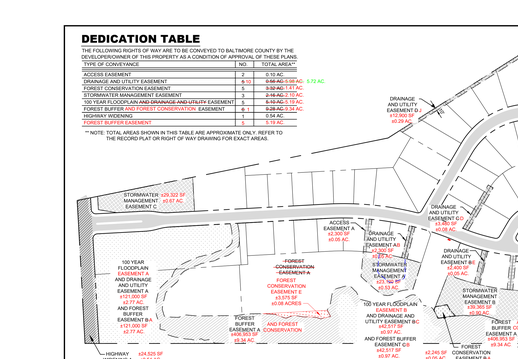
GREENSPRING MANOR - OPEN SPACE AMENITY COST ESTIMATE

				9/2/2021
Walking Path				
Stone Asphalt Walking Path	4,800	SF	$5.00	$24,000.00
			Walking Trail Total:	$24,000.00
Fencing				
3/4 Rail Fence	900	LF	$25.00	$22,500.00
			Fence Total:	$22,500.00
Trail Head Signs				
Sign and Post	2	EA	$250.00	$500.00
			Sign and Post Total:	$500.00
Entrance Masonry and Fencing			Quantity	Units Cost
Entry Masonry Entrance (dry laid)				
Entry Wall and Entrance Sign	2	EA	$40,000.00	$80,000.00
			Subtotal	$80,000.00
Free Standing Columns and Fencing				
Entry Columns	10	EA	$3,000.00	$30,000.00
3/4 Rail Fence	438	LF	$25.00	$10,950.00
			Subtotal	$40,950.00
			Entrance Feature Total:	$120,950.00
Amenity Space - Entrance Area Park				
Tree Sanitary				
Tree Sanitary - BRICK / 10 Bike Rack	2	EA	$800.00	$1,200.00
Tree Sanitary - EVA-DUI Backrest Bench	2	EA	$1,000.00	$2,000.00
Tree Sanitary - Dbl 3 Picnic Table w/ Pavilion	1	EA	$1,500.00	$1,500.00
			Subtotal	$4,700.00
Pavilion				
Community Pavilion	1	EA	$30,000.00	$30,000.00
			Subtotal	$30,000.00
Hardscape				
Concrete Sidewalk and Concrete Pad at Bike Rack	600	SF	$10.00	$6,000.00
			Subtotal	$6,000.00
Landscaping				
Ornamental Plantings	732	SF	$10.00	$10,980.00
			Subtotal	$10,980.00
			Entrance Area Total:	$51,680.00
Amenity Space - Park Space 1				
Tree Sanitary				
Tree Sanitary - BRICK / 10 Bike Rack	2	EA	$800.00	$1,200.00
Tree Sanitary - EVA-DUI Backrest Bench	2	EA	$1,000.00	$2,000.00
Tree Sanitary - Mulch	1	EA	$1,500.00	$1,500.00
			Subtotal	$4,700.00
Hardscape				
Concrete Sidewalk and Concrete Pad at Bike Rack	488	SF	$10.00	$4,880.00
			Subtotal	$4,880.00
Landscaping				
Ornamental Plantings	293	SF	$10.00	$2,930.00
Ornamental tree	2	EA	$350.00	$700.00
			Subtotal	$3,630.00
			Park Space 1 Total:	$13,210.00
Amenity Space - Park Space 2				
Tree Sanitary				
Tree Sanitary - CP-3 Picnic Table w/ Grade	3	EA	$2,516.66	$7,550.00
			Subtotal	$7,550.00
Grade				
Constructed Gradito	1	EA	$20,000.00	$20,000.00
			Subtotal	$20,000.00
Hardscape				
Concrete Sidewalk and Concrete Pad at Bike Rack	763	SF	$10.00	$7,630.00
			Subtotal	$7,630.00
Landscaping				
Ornamental Plantings	900	SF	$15.00	$13,500.00
Ornamental tree	4	EA	$350.00	$1,400.00
			Subtotal	$14,900.00
			Park Space 2 Total:	$50,080.00
				$189,940.00

Note: Tax, freight, and installation not included

DEDICATION PLAN

1"=150'


STORMWATER MANAGEMENT EASEMENT A ±12,900 SF ±0.29 AC
DRAINAGE AND UTILITY EASEMENT A
ACCESS EASEMENT A ±0.06 AC
DRAINAGE AND UTILITY EASEMENT A1 ±0.06 AC
DRAINAGE AND UTILITY EASEMENT B1 ±2,400 SF ±0.06 AC
ACCESS EASEMENT B ±0.06 AC
FOREST CONSERVATION EASEMENT D ±0.10 AC
STORMWATER MANAGEMENT EASEMENT B ±0.06 AC
FOREST CONSERVATION EASEMENT B ±406,959 SF ±9.34 AC
100 YEAR FLOODPLAIN EASEMENT C AND DRAINAGE AND UTILITY EASEMENT B ±0.90 AC
AND FOREST BUFFER EASEMENT C ±13,168 SF ±0.30 AC
FOREST BUFFER EASEMENT C ±2,246 SF ±0.05 AC
100 YEAR FLOODPLAIN EASEMENT D AND DRAINAGE AND UTILITY EASEMENT B ±0.30 AC
AND FOREST BUFFER EASEMENT D ±0.07 AC
100 YEAR FLOODPLAIN EASEMENT A AND DRAINAGE AND UTILITY EASEMENT A ±121,060 SF ±2.77 AC
AND FOREST BUFFER EASEMENT A ±121,060 SF ±2.77 AC
HIGHWAY WIDENING A ±24,525 SF ±0.54 AC
FOREST CONSERVATION EASEMENT A ±0.54 AC
FOREST BUFFER EASEMENT A ±0.54 AC
FOREST CONSERVATION EASEMENT E ±13,200 SF ±0.30 AC
DRAINAGE AND UTILITY EASEMENT E ±3,585 SF ±0.08 AC
FOREST CONSERVATION EASEMENT E1 ±4,660 SF ±0.10 AC
ACCESS EASEMENT E ±0.06 AC
100 YEAR FLOODPLAIN EASEMENT E AND DRAINAGE AND UTILITY EASEMENT B1 ±49,023 SF ±1.12 AC
AND FOREST BUFFER EASEMENT E ±49,033 SF ±1.12 AC
100 YEAR FLOODPLAIN EASEMENT G AND DRAINAGE AND UTILITY EASEMENT B ±0.67 AC
AND FOREST BUFFER EASEMENT G ±0.52 AC
STORMWATER MANAGEMENT EASEMENT C ±38,640 SF ±0.89 AC
FOREST CONSERVATION EASEMENT C ±0.89 AC
FOREST BUFFER EASEMENT C ±0.89 AC
STORMWATER MANAGEMENT EASEMENT D ±0.72 AC
FOREST CONSERVATION EASEMENT F ±0.32 AC
FOREST BUFFER EASEMENT F ±0.32 AC
FOREST CONSERVATION EASEMENT G ±0.52 AC
FOREST BUFFER EASEMENT G ±0.52 AC
100 YEAR FLOODPLAIN EASEMENT H AND DRAINAGE AND UTILITY EASEMENT H ±49,023 SF ±1.12 AC
AND FOREST BUFFER EASEMENT H ±49,033 SF ±1.12 AC
STORMWATER MANAGEMENT EASEMENT E ±0.72 AC
FOREST CONSERVATION EASEMENT H ±0.10 AC
FOREST BUFFER EASEMENT H ±0.10 AC
FOREST CONSERVATION EASEMENT I ±0.40 AC
FOREST BUFFER EASEMENT I ±0.40 AC
FOREST CONSERVATION EASEMENT J ±0.08 AC
FOREST BUFFER EASEMENT J ±0.08 AC
FOREST CONSERVATION EASEMENT K ±0.10 AC
FOREST BUFFER EASEMENT K ±0.10 AC
FOREST CONSERVATION EASEMENT L ±0.10 AC
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FOREST CONSERVATION EASEMENT JJ ±0.10 AC
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FORE

GREENSPRING MANOR

2310 W. JOPPA ROAD

DEDICATION TABLE

THE FOLLOWING RIGHTS OF WAY ARE TO BE CONVEYED TO BALTIMORE COUNTY BY THE DEVELOPER/OWNER OF THIS PROPERTY AS A CONDITION OF APPROVAL OF THESE PLANS.

TYPE OF CONVEYANCE	NO.	TOTAL AREA**
ACCESS EASEMENT	2	0.10 AC
DRAINAGE AND UTILITY EASEMENT	4-10	0.66 AC-1.35 AC
FOREST CONSERVATION EASEMENT	5	3.32 AC- 7.17 AC
STORMWATER MANAGEMENT EASEMENT	3	2.19 AC- 7.70 AC
100 YEAR FLOODPLAIN AND DRAINAGE AND UTILITY EASEMENT	5	5.10 AC- 5.15 AC
FOREST BUFFER AND FOREST CONSERVATION EASEMENT	6	0.28 AC- 5.14 AC
HIGHWAY WIDENING	1	0.54 AC
FOREST BUFFER EASEMENT	6	1.19 AC

** NOTE: TOTAL AREAS SHOWN IN THIS TABLE ARE APPROXIMATE ONLY. REFER TO THE RECORD PLAT OR RIGHT OF WAY DRAWING FOR EXACT AREAS.

ENTRANCE FEATURE AND SIGN



NOT TO SCALE
SIGN FACE AREA: 24 SQUARE FEET

DELINQUENT ACCOUNTS CERTIFICATION:

I, _____ DIRECTOR OF LAND DEVELOPMENT CERTIFY UNDER OATH THAT THERE ARE NO DELINQUENT ACCOUNTS FOR ANY OTHER DEVELOPMENT WITH RESPECT TO ANY OF THE FOLLOWING: THE APPLICANT, A PERSON WITH FINANCIAL INTEREST IN THE PROPOSED DEVELOPMENT, OR A PERSON WHO SHALL PERFORM CONTRACTUAL SERVICES ON BEHALF OF THE PROPOSED DEVELOPMENT.

GROUNDWATER MANAGEMENT

PRIOR TO RECORD PLAT APPROVAL THE EXISTING DWELLING MUST BE CONNECTED TO PUBLIC WATER AND SEWER. UPON CONNECTION, THE EXISTING WELL MUST BE BACK-FILLED BY A LICENSES MASTER WELL DRILLER WHO MUST SUBMIT A WELL ABANDONMENT REPORT TO GROUNDWATER MANAGEMENT. THE EXISTING SEPTIC SYSTEM MUST BE PUMPED AND BACK-FILLED OR REMOVED BY A LICENSES SEWAGE DISPOSAL CONTRACTOR. ABANDONMENT REPORTS MUST BE SUBMITTED PRIOR TO RECORD PLAT APPROVAL.

ADJACENT PROPERTY INFORMATION

1. 13 OLD BOXWOOD LANE
PAMELA BOYER
TAX ID: 2000004431
DEED REF.: 11943/3693
PLAT REF.: 53/34

2. 15 OLD BOXWOOD LANE
BRIAN AND ROBIN RUBIN
TAX ID: 2000004432
DEED REF.: 44769/313
PLAT REF.: 53/34

3. 17 OLD BOXWOOD LANE
THOMAS AND CAROL BRADLEE
TAX ID: 2000004433
DEED REF.: 40440/243
PLAT REF.: 53/34

4. 19 OLD BOXWOOD LANE
LORRAINE BRONSTEIN TRUSTEE
TAX ID: 2000004434
DEED REF.: 23741/666
PLAT REF.: 53/34

5. 21 OLD BOXWOOD LANE
ALVIN AND MARI KALIN
TAX ID: 2000004435
DEED REF.: 30686/144
PLAT REF.: 53/34

6. 23 OLD BOXWOOD LANE
JAMES AND DOROTHY TRUITT
TAX ID: 2000004436
DEED REF.: 26568/25
PLAT REF.: 53/34

7. 76 SEMINARY FARM RD.
FRED AND JAN HALLAHAN
TAX ID: 1900006676
DEED REF.: 24347/683
PLAT REF.: 49/124

8. SEMINARY FARM RD.
THOMAS AND PATRICIA PRUETT
TAX ID: 1900006677
DEED REF.: 7540/474
PLAT REF.: 49/124

9. 72 SEMINARY FARM RD.
ROBERT C. BAKER JR. AND WILLIAM HALL
TAX ID: 1900006678
DEED REF.: 43037/169
PLAT REF.: 49/124

10. 70 SEMINARY FARM RD.
GARY WOODRUFF
TAX ID: 1900006679
DEED REF.: 31146/40
PLAT REF.: 49/124

11. 68 SEMINARY FARM RD.
HARJIT AND JAMALA SINGH
TAX ID: 1900006680
DEED REF.: 7540/129
PLAT REF.: 49/124

12. 66 SEMINARY FARM RD.
MELVILLE AND BETSY YEARLEY
TAX ID: 1900006681
DEED REF.: 31642/30
PLAT REF.: 49/124

FIRE MARSHAL

1. PROPOSED BUILDINGS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO MEET THE APPLICABLE PROVISIONS OF THE BALTIMORE COUNTY FIRE PREVENTION CODE NO. 3-17.
2. LANDSCAPING OR OTHER OBSTRUCTIONS PLACED AROUND STRUCTURES SHALL NOT IMPAIR OR IMPEDE ACCESSIBILITY FOR FIRE DEPARTMENT OPERATIONS. ANY TREES PLANTED IN THE VICINITY OF THE PERIMETER OF THE BUILDING SHALL BE OF A TYPE THAT WILL NOT INTERFERE WITH EMERGENCY OPERATIONS AND COMPLY WITH THE BALTIMORE COUNTY FIRE CODE.
3. A FISHER RUN ROAD FOR ACCESS TO BUILDINGS AND ADEQUATE WATER SUPPLIES SHALL BE AVAILABLE FOR THE USE BY EMERGENCY FIRE APPARATUS AND CAPABLE OF HANDLING EMERGENCY APPARATUS WEIGHING 70,000 LBS. WHEN CONSTRUCTION OF ANY BUILDING IS UNDER ROOF, IN ACCORDANCE WITH THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO.3-17, SECTION 1.116.4.3.1.3.
4. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A RESIDENTIAL SPRINKLER SYSTEM FOR EACH INDIVIDUAL DWELLING.
5. THE SPRINKLER SYSTEM MUST BE INSPECTED BY THE BALTIMORE COUNTY FIRE MARSHAL'S OFFICE PRIOR TO TAKING OCCUPANCY. (SPRINKLER HYDRO / SPRINKLER FINAL)
6. THE PRIVATE FIRE HYDRANTS SHALL BE PAINTED "OSHA RED" TO DISTINGUISH THEM FROM THE PUBLIC (ORANGE) FIRE HYDRANTS IN ACCORDANCE WITH BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17 SECTION 1: 18.5.10.5 PRIVATE HYDRANT COLOR.
7. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A PRIVATE UNDERGROUND FIRE LINE AND SHALL BE REVIEWED BY THE PLANS REVIEW SECTION OF BALTIMORE COUNTY. A PLUMBING PERMIT SHALL NOT BE USED TO INSTALL AN UNDERGROUND FIRE LINE.
8. ALL FIRE HYDRANTS SPACING SHALL BE IN ACCORDANCE WITH THE BALTIMORE COUNTY STANDARD DESIGN MANUAL.
9. THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17, SECTION 110.11.1.5, REQUIRES THAT THE ADDRESS NUMBERS FOR RESIDENTIAL PROPERTIES SHALL BE A MINIMUM OF 3 INCHES IN SIZE.

DEVELOPER'S EXHIBIT 1

GREENSPRING MANOR - OPEN SPACE AMENITY COST ESTIMATE

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
Walking Path				$0.00
6' Wide Asphalt Walking Path	4,870	LF	$5.00	$24,350.00
			Walking Trail Total:	$24,350.00
Fencing				
3 Rail Split Fence	985	LF	$35.00	$34,500.00
			Fence Total:	$34,500.00
Trail Head Signs				
Sign and Post	2	EA	$250.00	$500.00
			Sign and Post Total:	$500.00
Entrance Masonry and Fencing			Quantity (Units)	Total
Entry Masonry Columns (Stone Veneer)				
Stone Veneer Entrance Sign	2	EA	$40,000.00	$80,000.00
			Subtotal	$80,000.00
Fine Standing Columns and Fencing				
Fine Standing Columns	10	EA	$3,000.00	$30,000.00
3 Rail Rail Fence	438	LF	$35.00	$15,350.00
			Subtotal	$45,350.00
			Entrance Feature Total:	$125,350.00
Amenity Space - Entrance Area Park				
Tree Seedlings				
Tree Variety - BRCA - 10 Bare Stock	2	EA	$800.00	$1,200.00
Tree Variety - EVA-20 Bareout Stock	2	EA	$1,000.00	$2,000.00
Tree Variety - CA-3 Piece Table at Pavilion	2	EA	$1,000.00	$2,000.00
			Subtotal	$5,200.00
Pavilion				
Commercial Pavilion	1	EA	$30,000.00	$30,000.00
			Subtotal	$30,000.00
Hardscape				
Concrete Sidewalk and Concrete Pad at Bike Rack	400	SF	$10.00	$4,000.00
			Subtotal	$4,000.00
Landscaping				
Additional Plantings	732	SF	$10.00	$10,980.00
			Subtotal	$10,980.00
			Entrance Area Park Total:	$51,180.00
Amenity Space - Park Space 1				
Tree Seedlings				
Tree Variety - BRCA - 10 Bare Stock	2	EA	$800.00	$1,200.00
Tree Variety - EVA-20 Bareout Stock	2	EA	$1,000.00	$2,000.00
Tree Variety - CA-3 Piece Table at Pavilion	2	EA	$1,000.00	$2,000.00
			Subtotal	$5,200.00
Hardscape				
Concrete Sidewalk and Concrete Pad at Bike Rack	400	SF	$10.00	$4,000.00
			Subtotal	$4,000.00
Landscaping				
Additional Plantings	293	SF	$10.00	$2,930.00
Ornamental tree	2	EA	$500.00	$1,000.00
			Subtotal	$3,930.00
			Park Space 1 Total:	$13,130.00
Amenity Space - Park Space 2				
Tree Variety - CP-3 Piece Table at Gazebo	1	EA	$2,516.00	$2,500.00
			Subtotal	$2,512.00
Gazebo				
Customized Gazebo	1	EA	$20,000.00	$20,000.00
			Subtotal	$20,000.00
Hardscape				
Concrete Sidewalk and Concrete Pad at Bike Rack	763	SF	$10.00	$7,600.00
			Subtotal	$7,600.00
Landscaping				
Additional Plantings	900	SF	$15.00	$12,000.00
Ornamental tree	4	EA	$500.00	$2,000.00
			Subtotal	$13,320.00
			Park Space 2 Total:	$43,432.00
			Amenity Total:	**$229,530.00**

Note: Tax, freight, and installation not included

SUITABLE OUTFALL STATEMENT

IN THE EXISTING CONDITION, THE SITE CONTAINS A SINGLE-FAMILY HOME AND AGRICULTURAL FIELDS ON APPROXIMATELY 39.5 ACRES. THERE ARE VERY FEW STEEP SLOPES AND NO SOILS CLASSIFIED AS HIGHLY ERODIBLE ON THE SITE. THE SOILS ON THE SITE CONSIST OF HYDROLOGIC SOILS GROUPS (HSG) B, C, AND D. SEE APPENDIX A FOR THE SOIL MAP. THE SITE GENERALLY DRAINS FROM THE NORTHWEST TO THE SOUTHEAST. THE SITE IS WITHIN THE JONES FALLS WATERSHED. THE ENTIRE SITE EVENTUALLY DRAINS TO AN EXISTING CULVERT UNDER JOPPA ROAD WHICH HAS BEEN ANALYZED AS THE PROJECT STUDY POINT.

THE PROPOSED DEVELOPMENT WILL GENERALLY MAINTAIN THE DRAINAGE PATTERNS OF THE EXISTING SITE; HOWEVER, THE PROPOSED DEVELOPMENT EFFORTS WILL RESULT IN CHANGES TO SURFACE RUNOFF CONDITIONS WITHIN RESIDENTIAL AREAS, PROPOSED ROADWAYS, AND WITHIN PROPOSED STORM DRAIN SYSTEMS. THE PROPOSED SITE RUNOFF WILL BE MANAGED THROUGH THE IMPLEMENTATION OF ENVIRONMENTAL SITE DESIGN PRACTICES, SPECIFICALLY 3 SUBMERGED GRAVEL WETLANDS. A SEPARATE FLOODPLAIN STUDY HAS BEEN PREPARED AND IS UNDER COUNTY REVIEW. QUANTITY CONTROL FOR INCREASED RUNOFF WILL BE MANAGED WITHIN 2 OF THE 3 PROPOSED SUBMERGED GRAVEL WETLAND AREAS, INCLUDING ON-SITE DETENTION FOR 100-YEAR PEAK RUNOFF RATES.

COMBINED HEARING REQUEST

WE ARE REQUESTING A COMBINED DEVELOPMENT PLAN AND SPECIAL VARIANCE HEARING. THE SPECIAL HEARING PETITION IS TO PERMIT BUILDING PERMITS IN AN F LEVEL TRAFFIC SHED AS DELINEATED ON THE 2020 BASIC SERVICES MAP.

ADDITIONAL INFO

ANTICIPATED ACTIONS:
1. VARIANCES NONE
2. SPECIAL VARIANCE: TO PERMIT BUILDING PERMITS IN AN F LEVEL TRAFFIC SHED AS DELINEATED ON THE 2020 BASIC SERVICES MAP
3. VARIANCE: TO PAVING ON A 50' ROW IN LIEU OF 30' PAVING ON A 50' ROW
4. SPECIAL EXCEPTIONS: NONE
5. OTHER: NONE
6. CONSISTENCY WITH DESIGN MANUALS: YES

LEGEND

CONTOUR LINE (1' INTERVAL)
DEPRESSION CONTOUR
CONCRETE CURB W/ GUTTER
CONCRETE LINE
BUILDING LINE
EDGE OF PAVEMENT
SANITARY SEWER
STORM DRAIN
WOOD LINE
OVERHEAD WIRE
WALL
FLOOD PLAIN
FOREST BUFFER
MONITORING WELL
WATER VAULT
CLEANOUT
SANITARY SEWER MANHOLE
ELECTRIC METER
LIGHT POLE
GAS VALVE
MAJOR TREE
MINOR TREE (FLOWERING)
MINOR TREE (EVERGREEN)
SHRUB
SIGN
WATE VALVE
HAND BOX
UTILITY POLE
INLET
PINE TREE
DECIDUOUS TREE

VICINITY MAP

SCALE: 1" = 1000'

BENCHMARKS

NAME	NORTHING (NAD 83)	EASTING (NAD 83)	ELEVATION (NAVD 88)	DESCRIPTION
BHA 320	637,711.75	1,405,853.28	290.31	BRASS DISC
BHA 320 AZ MK	637,537.08	1,406,230.87	292.89	CAPPED PIPE
4194				

LOT AREAS

LOT NO.	SF	ACRE
LOT 1	130,099+/-	3.986+/-
LOT 2	11,040+/-	.253+/-
LOT 3	8,222+/-	.188+/-
LOT 4	9,343+/-	.214+/-
LOT 5	10,315+/-	.236+/-
LOT 6	9,790+/-	.224+/-
LOT 7	8,311+/-	.190+/-
LOT 8	8,311+/-	.190+/-
LOT 9	7,507+/-	.172+/-
LOT 10	12,173+/-	.279+/-
LOT 11	12,453+/-	.286+/-
LOT 12	12,453+/-	.285+/-
LOT 13	12,453+/-	.285+/-
LOT 14	12,193+/-	.279+/-
LOT 15	8,809+/-	.202+/-
LOT 16	8,809+/-	.202+/-
LOT 17	13,483+/-	.309+/-
LOT 18	15,499+/-	.355+/-
LOT 19	18,799+/-	.431+/-
LOT 20	16,573+/-	.380+/-
LOT 21	16,950+/-	.389+/-
LOT 22	11,593+/-	.266+/-
LOT 23	13,315+/-	.305+/-
LOT 24	14,067+/-	.322+/-
LOT 25	11,363+/-	.260+/-
LOT 26	12,154+/-	.279+/-
LOT 27	9,851+/-	.226+/-
LOT 28	12,336+/-	.283+/-
LOT 29	17,640+/-	.404+/-
LOT 30	21,571+/-	.495+/-
LOT 31	13,584+/-	.311+/-
LOT 32	11,252+/-	.258+/-
LOT 33	11,369+/-	.260+/-
LOT 34	12,256+/-	.281+/-
LOT 35	13,484+/-	.309+/-
LOT 36	13,154+/-	.301+/-
LOT 37	14,360+/-	.329+/-
LOT 38	9,827+/-	.225+/-
LOT 39	8,107+/-	.186+/-
LOT 40	8,226+/-	.188+/-
LOT 41	9,845+/-	.226+/-
LOT 42	11,724+/-	.269+/-
LOT 43	11,872+/-	.221+/-
LOT 44	8,549+/-	.272+/-
LOT 45	8,299+/-	.190+/-
LOT 46	7,953+/-	.182+/-
LOT 47	7,953+/-	.182+/-
LOT 48	10,552+/-	.242+/-
LOT 49	11,066+/-	.254+/-
LOT 50	9,676+/-	.222+/-
LOT 51	11,887+/-	.273+/-
LOT 52	13,098+/-	.298+/-
LOT 53	12,195+/-	.280+/-
LOT 54	11,011+/-	.208+/-
LOT 55	9,099+/-	.209+/-
LOT 56	9,090+/-	.209+/-
LOT 57	8,563+/-	.196+/-
LOT 58	8,244+/-	.189+/-
LOT 59	8,244+/-	.189+/-
LOT 60	9,775+/-	.224+/-
LOT 61	8,855+/-	.203+/-

SITE DEVELOPMENT PROPOSAL

DWELLING TYPE	PROPOSED UNITS	PARKING REQUIRED	PARKING PROVIDED	OPEN SPACE REQUIRED	OPEN SPACE PROPOSED	AVERAGE DAILY TRIPS	PHASE	DEVELOPMENT SCHEDULE
SINGLE FAMILY DETACHED	61	122	244	1.38 AC x	1.40 AC.	600	I&II	
TOTAL	61	122	244	1.38 AC x	1.40 AC.	600	I&II	

EXISTING ZONING AND MAXIMUM DENSITY PERMITTED

ZONE	GROSS ACRES	DWELLING UNITS PERMITTED		DWELLING UNITS PROPOSED	
DR-1	±16.8 AC	16		16	
DR-2	±22.6 AC	45		45	
			TOTAL	61	

SETBACK TABLE

SETBACK TYPE - DR 1 & 2	SETBACK
FRONT BUILDING FACE TO:	
PROPERTY LINE:	25'
SIDE BUILDING FACE TO:	
SIDE BUILDING FACE:	20'
PUBLIC STREET ROW:	30'
REAR BUILDING FACE TO:	
REAR BUILDING FACE:	30'
PUBLIC STREET ROW:	30'

SITE PLAN

1"=60'

TYPICAL CORNER LOT LAYOUT

TYPICAL 54' WIDE UNIT LAYOUT

TYPICAL 50' WIDE UNIT LAYOUT

TYPICAL 40' WIDE UNIT LAYOUT

ENVIRONMENTAL IMPACT REVIEW

THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST BUFFER EASEMENT, FOREST CONSERVATION EASEMENT AND FOREST BUFFER & FOREST CONSERVATION EASEMENT EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.

1. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION IN FOREST BUFFER & FOREST CONSERVATION EASEMENT EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.
2. PRIOR TO RECORD PLAT APPROVAL, THE EXISTING DWELLING MUST BE CONNECTED TO PUBLIC WATER AND SEWER. UPON CONNECTION, THE EXISTING WELL MUST BE BACK-FILLED BY A LICENSES MASTER WELL DRILLER WHO MUST SUBMIT A WELL ABANDONMENT REPORT TO GROUNDWATER MANAGEMENT. THE EXISTING SEPTIC SYSTEM MUST BE PUMPED AND BACK-FILLED OR REMOVED BY A LICENSES SEWAGE DISPOSAL CONTRACTOR. ABANDONMENT REPORTS MUST BE SUBMITTED PRIOR TO RECORD PLAT APPROVAL.
3. A VARIANCE WAS GRANTED ON SEPTEMBER 24, 2021, BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY FROM THE LAW FOR THE PROTECTION OF WATER QUALITY, STREAMS, WETLANDS AND FLOODPLAINS TO REDUCE THE 100-FOOT BUFFER WITHIN THE BUFFER EASEMENT SHOWN HEREON AS REFLECTIVE OF THE FACT THAT THIS VARIANCE WAS GRANTED. CONDITIONS WERE PLACED ON THIS VARIANCE TO REDUCE WATER QUALITY IMPACTS INCLUDING PLANTING 17 438 SQUARE FEET OF BUFFER AREA, AND INSTALLING PROTECTIVE SIGNS ALONG THE BOUNDARY OF THE FUNCTIONING FOREST BUFFER EASEMENT.
4. A VARIANCE WAS GRANTED ON SEPTEMBER 21, 2021 BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY IN ACCORDANCE WITH SECTION 33-3-112 OF THE LAW FOR THE PROTECTION OF WATER QUALITY, STREAMS, WETLANDS AND FLOODPLAINS TO FACILITATE INFRASTRUCTURE AND UTILITY CONSTRUCTION. CONDITIONS WERE PLACED ON THIS APPROVAL TO REDUCE WATER QUALITY IMPACTS, INCLUDING REFORESTATION (INCLUDING NATIVE SEED MIX PLANTING IN EXCESS OF 2.07 ACRES) AND FOREST BUFFER MITIGATION.
5. A SPECIAL VARIANCE WAS GRANTED ON SEPTEMBER 21, 2021 TO BALTIMORE COUNTY'S FOREST CONSERVATION LAW TO ALLOW OFFSITE IMPACT TO ONE SPECIMEN TREE FOR THE WIDENING OF WEST JOPPA ROAD. CONDITIONS WERE PLACED ON THIS VARIANCE, INCLUDING PROTECTION OF THE REMAINING SPECIMEN TREES AND FOREST RECREATION.

SCHOOL IMPACT ANALYSIS

SCHOOL DISTRICT	NET STATE RATED CAPACITY (SRC)	ACTUAL SEPTEMBER 30TH ENROLLMENT (2020)	LAST UPDATED JUNE 30, 2021 PROJECTED # OF PUPILS FOR PROP. DEVELOPMENT	PROJECTED # OF PUPILS FOR OTHER DEVELOPMENTS	TOTAL PROJECTED ENROLLMENT	# OF STUDENTS ABOVE OR (BELOW) CAPACITY	PROJECTED # OF PUPILS AS A % OF SRC
RIDERWOOD ELEMENTARY SCHOOL	440 420	405	9	0	414	(26)	94.1% 96.6%
MARY E. MIDDLE SCHOOL	1,070	1,100	4	4	1,108	38	103.6%
OLD MILL HIGH SCHOOL	1,984	1,930	5	8	1,943	(41)	97.9%

UNDEVELOPED AREAS

DESCRIPTION	ACRES
STORMWATER MANAGEMENT	2.15 ±
HOA/COA AREAS	1.75 ±
OTHER	12.55 ±
TOTAL PROVIDED	16.45 ±

OPEN SPACE

1. OPEN SPACE REQUIRED - 50 UNITS (60 NEW + 1 EXISTING) X 1,000 S.F. = 60,000 S.F. OPEN SPACE.
2. OPEN SPACE PROVIDED - 169,900 S.F. OPEN SPACE NOTES: (169,346)
3. ALL LOCAL OPEN SPACE SHALL BE IN COMPLIANCE WITH THE LOCAL OPEN SPACE MANUAL, LATEST EDITION.
4. WITHIN THE AREA SHOWN AS OPEN SPACE, DISTURBANCE BEYOND THAT WHICH IS SHOWN ON THE DEVELOPMENT PLAN SHALL NOT BE ALLOWED WITHOUT PRIOR APPROVAL FROM THE DEPARTMENT OF RECREATION AND PARKS.
5. ANY FILL PLACED IN OPEN SPACE AREAS WHICH WERE PREVIOUSLY 100-YEAR FLOODPLAIN SHALL BE DESIGNED AND CERTIFIED BY A REGISTERED ENGINEER TO PREVENT ANY INCREASE IN THE 100-YEAR WATER SURFACE ELEVATION RESULTING FROM NET SOILS.
6. OPEN SPACE SHALL BE OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION.

DEVELOPMENT PLANS REVIEW

1. THIS PROJECT IS LOCATED WITHIN THE URBAN RURAL DEMARCATION LINE.
2. THE SITE IS LOCATED WITHIN A LEVEL OF SERVICE F AS SHOWN ON THE 2020 BASIC SERVICES MAP TRANSPORTATION ZONE. A SPECIAL VARIANCE IS BEING SOUGHT IN CONJUNCTION WITH THIS DEVELOPMENT PLAN.
3. THE SITE IS LOCATED WITHIN AN AREA OF CONCERN AS SHOWN ON THE 2020 BASIC SERVICES MAP SEWER DEFICIENT AREAS AND WATER SUPPLY AREA.
4. THE SITE IS NOT LOCATED IN A DEFICIENT AREA FOR PUBLIC WATER AS SHOWN ON THE 2020 BASIC SERVICES MAP WATER SUPPLY AREA.
5. RAMPS SHALL BE PROVIDED FOR PHYSICALLY HANDICAPPED PERSONS AT ALL STREET INTERSECTIONS WITH DETECTABLE WARNING AREAS. PER STANDARD DETAILS R-36A AND R-36B.
6. SIDEWALKS SHALL BE PROVIDED ALONG ALL PUBLIC ROADS AND WILL MEET ALL STATE HIGHWAY ADMINISTRATION STANDARDS FOR CONSTRUCTION.
7. A CMI WAS HELD ON APRIL 27, 2021. ISSUES WERE RAISED REGARDING THE POTENTIAL EXTENSION OF MAYS CHAPEL ROAD THROUGH THE SUBJECT PROPERTY. THE PLAN PROPOSES TO EXTEND MAYS CHAPEL ROAD BUT TO GATE IT FOR EMERGENCY ACCESS ONLY, TO BE APPROVED BY THE ALJ.
8. STREET LIGHTS SHALL BE INSTALLED ALONG ALL PUBLIC ROADS.
9. ALL SIGNS WILL CONFORM TO BALTIMORE COUNTY ZONING REGULATIONS AND THE APPROPRIATE RELIEF WILL BE REQUESTED.
10. IT IS ANTICIPATED THAT THIS PROJECT WILL BE DEVELOPED IN TWO PHASES.

OPEN SPACE CONT.

11. NO UTILITIES, WHETHER PUBLIC OR PRIVATE, INCLUDING BUT NOT LIMITED TO ELECTRIC, GAS, CABLE TELEVISION, TELEPHONE, TELEVISION, SEWER AND STORM DRAINS SHALL BE PLACED OR CONSTRUCTED ON OR WITHIN AREAS LABELED AS OPEN SPACE WITHOUT PRIOR WRITTEN CONSENT FROM BALTIMORE COUNTY DEPARTMENT OF RECREATION AND PARKS.
12. PRIOR TO CONSTRUCTION AND INSTALLATION OF ALL AMENITIES SHOWN ON THE DEVELOPMENT PLAN SHALL BE THE RESPONSIBILITY OF THE DEVELOPER.
13. THE PROPOSED OPEN SPACE AMENITIES INCLUDING THE WALKING PATHS SHALL BE CONSTRUCTED WITHIN THE 50TH BUILDING PERMIT IS ISSUED BUT PRIOR TO THE 40TH.

PLANNING

1. THERE SERVED BY PUBLIC SEWER AND INSIDE URDL PER BALTIMORE COUNTY MY NEIGHBORHOOD WEBSITE.
2. THERE ARE NO HISTORIC PROPERTIES, OR SITES WITHIN THE PROPOSED DEVELOPMENT AREA INCLUDED ON THE MARYLAND HISTORICAL TRUST INVENTORY (MHT), BALTIMORE COUNTY LANDMARKS LIST, THE NATIONAL REGISTER OF HISTORIC PLACES, OR THE MARYLAND ARCHEOLOGICAL SURVEY
3. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR NATIONAL HISTORIC DISTRICTS.
4. THE STACKED FLAT UNITS ARE AREA OF 500 CONFIGURATIONS AND ARE FOUND IN §1801.2.C1(d) OF THE BCZR. CONFIRMED THAT NO PART OF THE GROSS AREA OF THIS PROPERTY AS SHOWN ON THE PLAN HAS EVER BEEN UTILIZED, RECORDED OR REPRESENTED AS DENSITY OR AREA TO SUPPORT ANY OFF-SITE DWELLINGS.
5. NO THERE ARE NO EXISTING BUILDINGS TO BE RAZED.
6. MAXIMUM BUILDING HEIGHT WILL NOT EXCEED 35' IN THE ZONES
7. NO ACCESS EASEMENTS ARE PROPOSED.
8. ACCESS EASEMENTS MAY NOT BE FENCED.
9. ACCESS EASEMENTS ARE PROPOSED ON THE FOLLOWING LOTS: 6, 7 AND 11,12.
10. THE PROPOSED DECK DIMENSION OF 10'FT. X 20'FT. SHALL PROVIDE THE MINIMUM REAR DECK SETBACK OF 23 FT.

ZONING

1. EXISTING ZONING ON 1 & DR-2
2. THIS DEVELOPMENT IS SUBJECT TO THE COMPREHENSIVE MANUAL OF DEVELOPMENT POLICIES (SECTION 504.2), THE BALTIMORE COUNTY LANDSCAPE MANUAL, AND THE BALTIMORE COUNTY ZONING REGULATIONS. THE DEVELOPMENT WITH ALL OF THE AFOREMENTIONED REGULATIONS, STANDARDS, GUIDELINES, AND POLICIES OR THE PROPER RELIEF WILL BE REQUESTED.
3. ALL SIGNS WILL CONFORM TO BALTIMORE COUNTY ZONING CODE. SECTIONS AND OR APPROPRIATE RELIEF WILL BE REQUESTED. ALL SIGNAGE WILL COMPLY WITH SECTION 450 OF THE BCZR.
4. THE DENSITY CALCULATION IS PURSUANT TO §1801.2.C1(d) OF THE BCZR. SECTION 1B-C1.1(d).
5. THE STACKED FLAT UNITS ARE AREA OF 500 CONFIGURATIONS AND ARE FOUND IN §1801.2.C1(d) OF THE BCZR
6. NO ACCESS EASEMENTS ARE PROPOSED ON THE PLAN HAS BEEN HELD INTACT SINCE 1971. THE DEVELOPERS ENGINEER HAS CONFIRMED THAT NO PART OF THE GROSS AREA OF THIS PROPERTY AS SHOWN ON THE PLAN HAS EVER BEEN UTILIZED, RECORDED OR REPRESENTED AS DENSITY OR AREA TO SUPPORT ANY OFF-SITE DWELLINGS.
7. NO THERE ARE NO EXISTING BUILDINGS TO BE RAZED.
8. MAXIMUM BUILDING HEIGHT WILL NOT EXCEED 35' IN THE ZONES
9. NO ACCESS EASEMENTS ARE PROPOSED.
10. ACCESS EASEMENTS MAY NOT BE FENCED.
11. ACCESS EASEMENTS ARE PROPOSED ON THE FOLLOWING LOTS: 6, 7 AND 11,12.
12. THE PROPOSED DECK DIMENSION OF 10'FT. X 20'FT. SHALL PROVIDE THE MINIMUM REAR DECK SETBACK OF 23 FT.

VEHICLE AND BIKE PARKING

1. PARKING
REQUIRED PARKING
SINGLE FAMILY ATTACHED
61 UNITS @ 2 SPACE / DWELLING UNIT = 122 PARKING SPACES
TOTAL REQUIRED SPACES = 122 PARKING SPACES
PROVIDED PARKING SPACES 122 PARKING SPACES
GARAGE PARKING SPACES 122 PARKING SPACES
DRIVEWAY PARKING SPACES 244 PARKING SPACES
TOTAL 122 04 = 5
2. REQUIRED BICYCLE PARKING SPACES 5 SPACES
3. PROVIDED BICYCLE PARKING SPACES

OFFSITE SANITARY SEWER IMPROVEMENTS

1"=60'

STORMWATER MANAGEMENT

STORMWATER MANAGEMENT FEE IN LIEU FOR ±20,730 SF OF JOPPA RD. IMPROVEMENTS WHICH CANNOT BE TREATED ONSITE

SEDIMENT CONTROL

SEDIMENT CONTROL DEVICES WILL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

PUBLIC UTILITIES

PUBLIC WATER AND SEWER SERVICE WILL BE PROVIDED BY BALTIMORE COUNTY.

FLOODPLAIN STATEMENT

THE 100-YEAR FLOODPLAIN WAS DELINEATED BY A FLOODPLAIN STUDY PREPARED BY GREENHORNE & O'MARA, INC. DATED JANUARY 2021 AND APPROVED BY BALTIMORE COUNTY ON MARCH 2021.

WETLANDS STATEMENT

WETLANDS WERE DELINEATED BY ECO-SCIENCE PROFESSIONALS, INC. IN JULY 2020.

TRAFFIC STATEMENT

THE PROPOSED DEVELOPMENT IS EXPECTED TO GENERATE 600 ADT WITH 44 AM PEAK HOUR TRIPS AND 58 PM PEAK HOUR TRIPS.

PARKING STATEMENT

PARKING REQUIRED: 2 SPACES PER DWELLING UNIT = 122 SPACES
PARKING PROVIDED: 244 SPACES

HISTORIC STATEMENT

THERE ARE NO HISTORIC STRUCTURES ON THE PROPERTY.

PUBLIC WORKS AGREEMENT

A PUBLIC WORKS AGREEMENT WILL BE REQUIRED FOR THE IMPROVEMENTS TO JOPPA ROAD.

FOREST CONSERVATION

FOREST CONSERVATION OBLIGATIONS WILL BE MET BY A COMBINATION OF ON-SITE AND OFF-SITE MITIGATION.

OWNER'S CERTIFICATE

I/WE HEREBY CERTIFY THAT I/WE ARE THE OWNER(S) OF THE PROPERTY SHOWN AND DESCRIBED

GREENSPRING MANOR

2310 W. JOPPA ROAD

DEDICATION TABLE

THE FOLLOWING RIGHTS OF WAY ARE TO BE CONVEYED TO BALTIMORE COUNTY BY THE DEVELOPER/OWNER OF THIS PROPERTY AS A CONDITION OF APPROVAL OF THESE PLANS.

TYPE OF CONVEYANCE	No.	TOTAL AREA**
ACCESS EASEMENT	2	0.10 AC
DRAINAGE AND UTILITY EASEMENT	6-10	0.66 AC-0.19 AC; 0.72 AC
FOREST CONSERVATION EASEMENT	5	3.32 AC- 1.71 AC
STORMWATER MANAGEMENT EASEMENT	1	2.19 AC- 0.72 AC
100 YEAR FLOODPLAIN AND DRAINAGE AND UTILITY EASEMENT	5	5.10 AC- 5.13 AC
FOREST BUFFER AND FOREST CONSERVATION EASEMENT	6	9.28 AC- 3.32 AC
HIGHWAY WIDENING	1	0.54 AC
FOREST BUFFER EASEMENT	6	1.19 AC

** NOTE: TOTAL AREAS SHOWN IN THIS TABLE ARE APPROXIMATE ONLY. REFER TO THE RECORD PLAT OR RIGHT OF WAY DRAWING FOR EXACT AREAS.

ENTRANCE FEATURE AND SIGN



NOT TO SCALE
SIGN FACE AREA: 24 SQUARE FEET

DELINQUENT ACCOUNTS CERTIFICATION:

I, _____ DIRECTOR OF LAND DEVELOPMENT CERTIFY UNDER OATH THAT THERE ARE NO DELINQUENT ACCOUNTS FOR ANY OTHER DEVELOPMENT WITH RESPECT TO ANY OF THE FOLLOWING: THE APPLICANT, A PERSON WITH FINANCIAL INTEREST IN THE PROPOSED DEVELOPMENT, OR A PERSON WHO SHALL PERFORM CONTRACTUAL SERVICES ON BEHALF OF THE PROPOSED DEVELOPMENT.

GROUNDWATER MANAGEMENT

PRIOR TO RECORD PLAT APPROVAL THE EXISTING DWELLING MUST BE CONNECTED TO PUBLIC WATER AND SEWER. UPON CONNECTION, THE EXISTING WELL MUST BE BACK-FILLED BY A LICENSED MASTER WELL DRILLER WHO MUST SUBMIT A WELL ABANDONMENT REPORT TO GROUNDWATER MANAGEMENT. THE EXISTING SEPTIC SYSTEM MUST BE PUMPED AND BACK-FILLED OR REMOVED BY A LICENSED SEWAGE DISPOSAL CONTRACTOR. ABANDONMENT REPORTS MUST BE SUBMITTED PRIOR TO RECORD PLAT APPROVAL.

ADJACENT PROPERTY INFORMATION

1. 13 OLD BOXWOOD LANE
PAMELA BOYER
TAX ID: 2000004431
DEED REF.: 11943/3693
PLAT REF.: 53/34

2. 15 OLD BOXWOOD LANE
BRIAN AND ROBIN RUBIN
TAX ID: 2000004432
DEED REF.: 44769/173
PLAT REF.: 53/34

3. 17 OLD BOXWOOD LANE
THOMAS AND CAROL BRADLEE
TAX ID: 2000004433
DEED REF.: 40440/243
PLAT REF.: 53/34

4. 19 OLD BOXWOOD LANE
LORRAINE BRONSTEIN TRUSTEE
TAX ID: 2000004434
DEED REF.: 23741/666
PLAT REF.: 53/34

5. 21 OLD BOXWOOD LANE
ALVIN AND MARI KALIN
TAX ID: 2000004435
DEED REF.: 30686/144
PLAT REF.: 53/34

6. 23 OLD BOXWOOD LANE
JAMES AND DOROTHY PRUITT
TAX ID: 2000004436
DEED REF.: 26568/25
PLAT REF.: 53/34

7. 76 SEMINARY FARM RD.
FRED AND JAN HALLAHAN
TAX ID: 1900006676
DEED REF.: 24347/683
PLAT REF.: 49/124

8. SEMINARY FARM RD.
THOMAS AND PATRICIA PRUETT
TAX ID: 1900006677
DEED REF.: 7540/474
PLAT REF.: 49/124

9. 72 SEMINARY FARM RD.
ROBERT C. BUTLER, JR. AND WILLIAM HALL
TAX ID: 1900006678
DEED REF.: 43037/169
PLAT REF.: 49/124

10. 70 SEMINARY FARM RD.
GARY WOODRUFF
TAX ID: 1900006679
DEED REF.: 31146/40
PLAT REF.: 49/124

11. 68 SEMINARY FARM RD.
HARJIT AND JAMALA SINGH
TAX ID: 1900006680
DEED REF.: 7640/129
PLAT REF.: 49/124

12. 66 SEMINARY FARM RD.
MELVILLE AND BETSY YEARLEY
TAX ID: 1900006681
DEED REF.: 31642/30
PLAT REF.: 49/124

FIRE MARSHAL

1. PROPOSED BUILDINGS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO MEET THE APPLICABLE PROVISIONS OF THE BALTIMORE COUNTY FIRE PREVENTION CODE NO. 3-17.
2. LANDSCAPING OR OTHER OBSTRUCTIONS PLACED AROUND STRUCTURES SHALL NOT IMPAIR OR IMPEDE ACCESSIBILITY FOR FIRE DEPARTMENT OPERATIONS. ANY TREES PLANTED WITHIN 10 FEET OF A FIRE HYDRANT OR PERIMETER OF THE BUILDING SHALL BE OF A TYPE THAT WILL NOT INTERFERE WITH EMERGENCY OPERATIONS AND MUST COMPLY WITH THE BALTIMORE COUNTY LANDSCAPE CODE.
3. A FIRE CRASHER RUN ROAD FOR ACCESS TO BUILDINGS AND ADDITIONAL WATER SUPPLIES SHALL BE AVAILABLE FOR THE USE BY EMERGENCY FIRE APPARATUS AND CAPABLE OF HANDLING EMERGENCY APPARATUS WEIGHING 70,000 LBS. WHEN CONSTRUCTION OF ANY BUILDING IS UNDER ROOF, IN ACCORDANCE WITH THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO.3-17, SECTION 1.116.4.3.1.3.
4. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A RESIDENTIAL SPRINKLER SYSTEM FOR EACH INDIVIDUAL DWELLING.
5. THE SPRINKER SYSTEM MUST BE INSTALLED IN ACCORDANCE WITH THE BALTIMORE COUNTY FIRE MARSHAL'S OFFICE PRIOR TO TAKING OCCUPANCY. (SPRINKLER HYDRO / SPRINKLER FINAL)
6. THE PRIVATE FIRE HYDRANTS SHALL BE PAINTED "OSHA RED" TO DISTINGUISH THEM FROM THE PUBLIC (ORANGE) FIRE HYDRANTS IN ACCORDANCE WITH BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17, SECTION 1: 18.5.10.5 PRIVATE HYDRANT COLOR.
7. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A PRIVATE UNDERGROUND FIRE LINE AND SHALL BE REVIEWED BY THE PLANS REVIEW SECTION OF BALTIMORE COUNTY. A PLUMBING PERMIT SHALL NOT BE USED TO INSTALL AN UNDERGROUND FIRE LINE.
8. ALL FIRE HYDRANTS SPACING SHALL BE IN ACCORDANCE WITH THE BALTIMORE COUNTY STANDARD DESIGN MANUAL.
9. THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17, SECTION 1:10.11.1.5, REQUIRES THAT THE ADDRESS NUMBERS FOR RESIDENTIAL PROPERTIES SHALL BE A MINIMUM OF 3 INCHES IN SIZE.

GREENSPRING MANOR - OPEN SPACE AMENITY COST ESTIMATE				9/2/2021
Walking Path				
Stone Asphalt Walking Path	4,800	SF	$5.00	$24,000.00
			Walking Trail Total:	$24,000.00
Fencing				
3/4 Rail Fence	900	LF	$35.00	$31,500.00
			Fence Total:	$31,500.00
Trail Head Signs				
Sign and Post	2	EA	$250.00	$500.00
			Sign and Post Total:	$500.00
Entrance Masonry and Fencing			Quantity	Units Cost
Entry Masonry Entrance (dry laid)				
Entry Wall and Entrance Sign	2	EA	$40,000.00	$80,000.00
			Subtotal	$80,000.00
Free Standing Columns and Fencing				
Free Standing Columns	10	EA	$3,000.00	$30,000.00
3/4 Rail Fence	438	LF	$35.00	$15,000.00
			Subtotal	$45,000.00
			Entrance Feature Total:	$125,000.00
Amenity Space - Entrance Area Park				
Tree Seedlings				
Tree Variety - BRCA - 15 Bare Stock	2	EA	$800.00	$1,200.00
Tree Variety - EVA-22 Bareroot Bench	2	EA	$1,000.00	$1,600.00
Tree Variety - CA-3 Picnic Table w/ Pavilion	1	EA	$1,500.00	$1,500.00
			Subtotal	$4,300.00
Pavilion				
Commercial Pavilion	1	EA	$30,000.00	$30,000.00
			Subtotal	$30,000.00
Hardscape				
Concrete Sidewalk and Concrete Pad at Bike Rack	400	SF	$10.00	$4,000.00
			Subtotal	$4,000.00
Landscaping				
Ornamental Plantings	732	SF	$10.00	$10,980.00
			Subtotal	$10,980.00
			Entrance Area Total:	$57,280.00
Amenity Space - Park Space 1				
Tree Seedlings				
Tree Variety - BRCA - 15 Bare Stock	2	EA	$800.00	$1,200.00
Tree Variety - EVA-22 Bareroot Bench	2	EA	$1,000.00	$1,600.00
Tree Variety - CA-3 Picnic Table w/ Pavilion	1	EA	$1,500.00	$1,500.00
			Subtotal	$4,300.00
Hardscape				
Concrete Sidewalk and Concrete Pad at Bike Rack	400	SF	$10.00	$4,000.00
			Subtotal	$4,000.00
Landscaping				
Ornamental Plantings	293	SF	$10.00	$2,930.00
Ornamental tree	2	EA	$350.00	$700.00
			Subtotal	$3,630.00
Gazebo				
Constructed Gazebo	1	EA	$20,000.00	$20,000.00
			Subtotal	$20,000.00
Hardscape				
Concrete Sidewalk and Concrete Pad at Bike Rack	763	SF	$10.00	$7,630.00
			Subtotal	$7,630.00
Landscaping				
Ornamental Plantings	900	SF	$15.00	$13,500.00
Ornamental tree	4	EA	$350.00	$1,400.00
			Subtotal	$14,900.00
			Park Space 1 Total:	$50,460.00
Note: Tax, freight, and installation not included				
			Amenities Total:	$232,740.00

FIRE MARSHAL

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VICINITY MAP

SCALE: 1" = 1000'



BENCHMARKS

NAME	NORTHING (NAD 83)	EASTING (NAD 83)	ELEVATION (NAVD 88)	DESCRIPTION
BHA 320	1,405,688.76	292.63	292.63	BRASS DISC
BHA 320 AZ MK	637,711.75	1,405,853.28	290.31	BRASS CAP
4194	637,537.08	1,406,230.87	282.89	CAPPED PIPE

LOT AREAS

LOT NO.	SF	ACRE
LOT 1	130,099+/-	3.00+/-
LOT 2	11,040+/-	.253+/-
LOT 3	8,222+/-	.188+/-
LOT 4	9,343+/-	.214+/-
LOT 5	10,315+/-	.236+/-
LOT 6	9,780+/-	.224+/-
LOT 7	8,311+/-	.190+/-
LOT 8	8,311+/-	.190+/-
LOT 9	7,507+/-	.172+/-
LOT 10	12,173+/-	.279+/-
LOT 11	12,453+/-	.285+/-
LOT 12	12,453+/-	.285+/-
LOT 13	12,453+/-	.285+/-
LOT 14	12,193+/-	.279+/-
LOT 15	8,809+/-	.202+/-
LOT 16	8,809+/-	.202+/-
LOT 17	13,483+/-	.309+/-
LOT 18	15,499+/-	.355+/-
LOT 19	18,799+/-	.431+/-
LOT 20	16,573+/-	.380+/-
LOT 21	16,950+/-	.389+/-
LOT 22	11,593+/-	.266+/-
LOT 23	13,315+/-	.305+/-
LOT 24	14,067+/-	.323+/-
LOT 25	11,363+/-	.260+/-
LOT 26	12,154+/-	.279+/-
LOT 27	9,851+/-	.226+/-
LOT 28	12,336+/-	.283+/-
LOT 29	17,640+/-	.404+/-
LOT 30	21,571+/-	.495+/-
LOT 31	13,584+/-	.311+/-
LOT 32	11,252+/-	.258+/-
LOT 33	11,369+/-	.260+/-
LOT 34	12,256+/-	.281+/-
LOT 35	13,484+/-	.309+/-
LOT 36	13,154+/-	.301+/-
LOT 37	14,360+/-	.329+/-
LOT 38	9,827+/-	.225+/-
LOT 39	8,107+/-	.186+/-
LOT 40	8,226+/-	.188+/-
LOT 41	9,845+/-	.226+/-
LOT 42	11,724+/-	.269+/-
LOT 43	11,872+/-	.221+/-
LOT 44	8,549+/-	.272+/-
LOT 45	8,299+/-	.190+/-
LOT 46	7,953+/-	.182+/-
LOT 47	7,953+/-	.182+/-
LOT 48	10,552+/-	.242+/-
LOT 49	11,066+/-	.254+/-
LOT 50	9,676+/-	.222+/-
LOT 51	11,887+/-	.273+/-
LOT 52	13,098+/-	.298+/-
LOT 53	12,195+/-	.280+/-
LOT 54	11,011+/-	.208+/-
LOT 55	14,656+/-	.336+/-
LOT 56	9,090+/-	.209+/-
LOT 57	8,563+/-	.196+/-
LOT 58	8,244+/-	.189+/-
LOT 59	8,244+/-	.189+/-
LOT 60	9,775+/-	.224+/-
LOT 61	8,855+/-	.203+/-

SUITABLE OUTFALL STATEMENT

IN THE EXISTING CONDITION, THE SITE CONTAINS A SINGLE-FAMILY HOME AND AGRICULTURAL FIELDS ON APPROXIMATELY 39.5 ACRES. THERE ARE VERY FEW STEEP SLOPES AND NO SOILS CLASSIFIED AS HIGHLY ERODIBLE ON THE SITE. THE SOILS ON THE SITE CONSIST OF SOIL GROUPS (HSG) B, C, AND D. SEE APPENDIX A FOR THE SOIL MAP. THE SITE GENERALLY DRAINS FROM THE NORTHWEST TO THE SOUTHEAST. THE SITE IS WITHIN THE JONES FALLS WATERSHED. THE ENTIRE SITE EVENTUALLY DRAINS TO AN EXISTING CULVERT UNDER JOPPA ROAD WHICH HAS BEEN ANALYZED AS THE PROJECT STUDY POINT.

THE PROPOSED DEVELOPMENT WILL GENERALLY MAINTAIN THE DRAINAGE PATTERNS OF THE EXISTING SITE; HOWEVER, THE PROPOSED DEVELOPMENT EFFORTS WILL RESULT IN CHANGES TO SURFACE RUNOFF CONDITIONS WITHIN RESIDENTIAL AREAS, PROPOSED ROADWAYS, AND WITHIN PROPOSED STORM DRAIN SYSTEMS. THE PROPOSED SITE RUNOFF WILL BE MANAGED THROUGH THE IMPLEMENTATION OF ENVIRONMENTAL SITE DESIGN PRACTICES, SPECIFICALLY 3 SUBMERGED GRAVEL WETLANDS. A SEPARATE FLOODPLAIN STUDY HAS BEEN PREPARED AND IS UNDER COUNTY REVIEW. QUANTITY CONTROL FOR INCREASED RUNOFF WILL BE MANAGED WITHIN 2 OF THE 3 PROPOSED SUBMERGED GRAVEL WETLAND AREAS, INCLUDING ON-SITE DETENTION FOR 100-YEAR PEAK RUNOFF RATES.

COMBINED HEARING REQUEST

WE ARE REQUESTING A COMBINED DEVELOPMENT PLAN AND SPECIAL VARIANCE HEARING. THE SPECIAL HEARING PETITION IS TO PERMIT BUILDING PERMITS IN AN F LEVEL TRAFFIC SHED AS DELINEATED ON THE 2020 BASIC SERVICES MAP.

ADDITIONAL INFO

ANTICIPATED ACTIONS:
1. VARIANCES NONE
2. SPECIAL VARIANCE: TO PERMIT BUILDING PERMITS IN AN F LEVEL TRAFFIC SHED AS DELINEATED ON THE 2020 BASIC SERVICES MAP
3. VARIANCE: TO PAVING ON A 50' ROW IN LIEU OF 30' PAVING ON A 50' ROW
4. SPECIAL EXCEPTIONS: NONE
5. OTHER: NONE
6. CONSISTENCY WITH DESIGN MANUALS: YES

1301 W. SEMINARY AVE.
LINDA NICHOLS
TAX ID: 1800005977
DEED REF.: 14919/416
PLAT REF.: NONE

LEGEND

CONTOUR LINE (1' INTERVAL)
DEPRESSION CONTOUR
CONCRETE CURB W/ GUTTER
CONCRETE LINE
BUILDING LINE
EDGE OF PAVEMENT
SANITARY SEWER
STORM DRAIN
WOOD LINE
OVERHEAD WIRE
WALL
FLOOD PLAIN
FOREST BUFFER
MONITORING WELL
WATER VAULT
CLEANOUT
SANITARY SEWER MANHOLE
ELECTRIC METER
LIGHT POLE
GAS VALVE
MAJOR TREE
MINOR TREE (FLOWERING)
MINOR TREE (EVERGREEN)
SHRUB
SIGN
WATE VALVE
HAND BOX
UTILITY POLE
INLET
PINE TREE
DECIDUOUS TREE

DEDICATION PLAN

1"=150'

SITE PLAN

1"=60'

TYPICAL CORNER LOT LAYOUT

TYPICAL 54' WIDE UNIT LAYOUT

TYPICAL 50' WIDE UNIT LAYOUT

TYPICAL 40' WIDE UNIT LAYOUT

OFFSITE SANITARY SEWER IMPROVEMENTS

1"=60'

ENVIRONMENTAL IMPACT REVIEW

THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST BUFFER EASEMENT, FOREST CONSERVATION EASEMENT AND FOREST BUFFER & FOREST CONSERVATION EASEMENT EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.

1. THE FOREST BUFFER EASEMENT, FOREST CONSERVATION EASEMENT AND FOREST BUFFER & FOREST CONSERVATION EASEMENT SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF BALTIMORE COUNTY AND WHICH RESTRICT DISTURBANCE AND USE OF THIS AREA.
2. PRIOR TO RECORD PLAT APPROVAL, THE EXISTING DWELLING MUST BE CONNECTED TO PUBLIC WATER AND SEWER. UPON CONNECTION, THE EXISTING WELL MUST BE BACK-FILLED BY A LICENSED MASTER WELL DRILLER WHO MUST SUBMIT A WELL ABANDONMENT REPORT TO GROUNDWATER MANAGEMENT. THE EXISTING SEPTIC SYSTEM MUST BE PUMPED AND BACK-FILLED OR REMOVED BY A LICENSED SEWAGE DISPOSAL CONTRACTOR. ABANDONMENT REPORTS MUST BE SUBMITTED PRIOR TO RECORD PLAT APPROVAL.
3. A VARIANCE WAS GRANTED ON SEPTEMBER 24, 2021, BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY FROM THE LAW FOR THE PROTECTION OF WATER QUALITY, STREAMS, WETLANDS AND FLOODPLAINS TO REDUCE THE WIDTH OF THE FOREST BUFFER WITHIN THE 100-YEAR FLOODPLAIN BY 2' (REFLECTIVE OF THE FACT THAT THIS VARIANCE WAS GRANTED. CONDITIONS WERE PLACED ON THIS VARIANCE TO REDUCE WATER QUALITY IMPACTS INCLUDING PLANTING 17 438 SQUARE FEET OF FOREST BUFFER, AND POSTING PROTECTIVE SIGNS ALONG THE BOUNDARY OF THE FUNCTIONING FOREST BUFFER EASEMENT.
4. A VARIANCE WAS GRANTED ON SEPTEMBER 21, 2021 TO THE BALTIMORE COUNTY'S FOREST CONSERVATION LAW FOR THE DISTURBANCE OF FOREST CONSERVATION EASEMENTS AND FOREST BUFFER EASEMENTS IN ACCORDANCE WITH SECTION 33-3-112 OF THE LAW FOR THE PROTECTION OF WATER QUALITY, STREAMS, WETLANDS AND FLOODPLAINS TO FACILITATE INFRASTRUCTURE AND UTILITY CONNECTIONS. CONDITIONS WERE PLACED ON THIS APPROVAL TO REDUCE WATER QUALITY IMPACTS, INCLUDING VEGETATIVE ENHANCEMENT (USING NATIVE SEED MIX PLANTING IN EXCESS OF 2.07 ACRES) AND POSTING PROTECTIVE SIGNS.
5. A SPECIAL VARIANCE WAS GRANTED ON SEPTEMBER 21, 2021 TO BALTIMORE COUNTY'S FOREST CONSERVATION LAW TO ALLOW OFFSITE IMPACT TO ONE SPECIMEN TREE FOR THE WIDENING OF WEST JOPPA ROAD. CONDITIONS WERE PLACED ON THIS VARIANCE, INCLUDING PROTECTION OF THE REMAINING SPECIMEN TREES AND FOREST PROTECTION.

SCHOOL IMPACT ANALYSIS

SCHOOL DISTRICT	NET STATE RATED CAPACITY (SRC)	ACTUAL SEPTEMBER 30TH ENROLLMENT (2020)	PROJECTED # OF PUPILS FOR PROP. DEVELOPMENT	PROJECTED # OF PUPILS FOR OTHER DEVELOPMENTS	TOTAL PROJECTED ENROLLMENT	# OF STUDENTS ABOVE OR (BELOW) CAPACITY	PROJECTED # OF PUPILS AS A % OF SRC
RIDERWOOD ELEMENTARY SCHOOL	440 420	405	9	0	414	(26) 6	94.1% 96.0%
SUDBROOK MIDDLE SCHOOL	1,070	1,100	4	4	1,108	38	103.6%
DULANEY HIGH SCHOOL	1,984	1,930	5	8	1,943	(41)	97.9%

LAST UPDATED JUNE 30, 2021

1) THE SETBACK REQUIREMENTS ARE PURSUANT TO THE LARGE TRACT TABLE FOUND IN §1801.2.C(1)(f) OF THE BCZR.
2) ENVELOPES OR TYPICAL DWELLINGS AS SHOWN DICTATE A SPECIFIC LOCATION AND ORIENTATION WHICH IS INTENDED TO ALLOW COMPLIANCE WITH BALTIMORE COUNTY ZONING REGULATIONS AND POLICIES. SHOULD THE LOCATION OR ORIENTATION CHANGE OR CREATE CONFLICTS WITH THE REGULATIONS OR POLICIES, THE LOCATION OR ORIENTATION MUST BE CHANGED TO ALLEVIATE THE CONFLICT.

UNDEVELOPED AREAS

DESCRIPTION	ACRES
STORMWATER MANAGEMENT	2.15 ±
HOA/COA AREAS	1.75 ±
OTHER	12.55 ±
TOTAL PROVIDED	16.45 ±

OPEN SPACE

1. OPEN SPACE REQUIRED - 50 UNITS @0.69 NEW + 1 EXISTING) X 1,000 S.F. = 40,000 S.F. OPEN SPACE.
2. OPEN SPACE PROVIDED - 169,900 S.F. (148,340)
3. OPEN SPACE NOTES:
ALL LOCAL OPEN SPACE SHALL BE IN COMPLIANCE WITH THE LOCAL OPEN SPACE MANUAL, LATEST EDITION.
ALL PLAYGROUND EQUIPMENT SHALL BE INSTALLED ON RUBBER, SAND, OR FIBER MATERIALS MEETING ASTM F1292 OR APPROVED EQUIVALENT SHALL BE INSTALLED PRIOR TO ANY CLEARING OR GRADING.
WITHIN THE AREA SHOWN AS OPEN SPACE, DISTURBANCE BEYOND THAT WHICH IS SHOWN ON THE DEVELOPMENT PLAN SHALL NOT BE ALLOWED WITHOUT PRIOR APPROVAL FROM THE DEPARTMENT OF RECREATION AND PARKS.
ANY FILL PLACED IN OPEN SPACE AREAS WHICH WERE PREVIOUSLY 100-YEAR FLOODPLAIN SHALL BE DESIGNED AND CERTIFIED BY A REGISTERED ENGINEER TO ENSURE THAT THERE WILL BE NO RISE IN THE 100-YEAR WATER SURFACE.
10. OPEN SPACE WILL BE OWNED AND MAINTAINED BY THE GREENSPRING MANOR HOMEOWNERS ASSOCIATION.

DEVELOPMENT PLANS REVIEW

1. THIS PROJECT IS LOCATED WITHIN THE URBAN RURAL DEMARCATION LINE.
2. THE SITE IS LOCATED WITHIN A LEVEL OF SERVICE F AS SHOWN ON THE 2020 BASIC SERVICES MAP TRANSPORTATION ZONE. A SPECIAL VARIANCE IS BEING SOUGHT IN CONJUNCTION WITH THIS DEVELOPMENT PLAN.
3. THE SITE IS LOCATED WITHIN AN AREA OF CONCERN AS SHOWN ON THE 2020 BASIC SERVICES MAP SEWER DEFICIENT AREAS AND WATER SUPPLY AREA.
4. THE SITE IS NOT LOCATED IN A DEFICIENT AREA FOR PUBLIC WATER AS SHOWN ON THE 2020 BASIC SERVICES MAP WATER SUPPLY AREA.
5. RAMPS SHALL BE PROVIDED FOR PHYSICALLY HANDICAPPED PERSONS AT ALL STREET INTERSECTIONS WITH DETECTABLE WARNING AREAS. PER STANDARD DETAILS R-36A AND R-36B.
6. SIDEWALKS SHALL BE PROVIDED ALONG ALL PUBLIC ROADS AND WILL MEET ALL STATE HIGHWAY ADMINISTRATION STANDARDS FOR CONSTRUCTION.
7. A CMI WAS HELD ON APRIL 27, 2021. ISSUES WERE RAISED REGARDING THE POTENTIAL EXTENSION OF MAYS CHAPEL ROAD THROUGH THE SUBJECT PROPERTY. THE PLAN PROPOSES TO EXTEND MAYS CHAPEL ROAD BUT TO GATE IT FOR EMERGENCY ACCESS ONLY, TO BE APPROVED BY THE ALJ.
8. STREET LIGHTS SHALL BE INSTALLED ALONG ALL PUBLIC ROADS.
9. ALL SIGNS WILL CONFORM TO BALTIMORE COUNTY ZONING REGULATIONS AND OR THE APPROPRIATE RELIEF WILL BE REQUESTED.
10. IT IS ANTICIPATED THAT THIS PROJECT WILL BE CONSTRUCTED IN TWO PHASES.

OPEN SPACE CONT.

11. NO UTILITIES, WHETHER PUBLIC OR PRIVATE, INCLUDING BUT NOT LIMITED TO ELECTRIC, TELEPHONE, CABLE TELEVISION, GAS AND ELECTRIC, TRAFFIC SIGNALS AND STORM DRAINS SHALL BE PLACED OR CONSTRUCTED ON OR WITHIN AREAS LABELED AS OPEN SPACE WITHOUT PRIOR WRITTEN CONSENT FROM BALTIMORE COUNTY DEPARTMENT OF RECREATION AND PARKS.
12. ALL GRADING, CONSTRUCTION AND INSTALLATION OF ALL AMENITIES SHOWN ON THE DEVELOPMENT PLAN SHALL BE THE RESPONSIBILITY OF THE DEVELOPER.
13. THE PROPOSED OPEN SPACE AMENITIES INCLUDING THE WALKING PATHS SHALL BE CONSTRUCTED WITH THE 50TH BUILDING PERMIT IS ISSUED BUT PRIOR TO THE 40TH.

PLANNING

1. TIER I SERVED BY PUBLIC SEWER AND INSIDE URDL PER BALTIMORE COUNTY MY NEIGHBORHOOD WEBSITE.
2. THERE ARE NO HISTORIC PROPERTIES, OR SITES WITHIN THE PROPOSED DEVELOPMENT AREA INCLUDED ON THE MARYLAND HISTORICAL TRUST INVENTORY (MHT), BALTIMORE COUNTY LANDMARKS LIST, THE NATIONAL REGISTER OF HISTORIC PLACES, OR THE MARYLAND ARCHEOLOGICAL SURVEY
3. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR NATIONAL HISTORIC DISTRICTS.
4. THE STOCKPILE AREA IS LESS THAN AREA OF 500 CUBIC/SQUARE FEET CONFIRMED THAT NO PART OF THE GROSS AREA OF THIS PROPERTY AS SHOWN ON THE PLAN HAS EVER BEEN UTILIZED, RECORDED OR REPRESENTED AS DENSITY OR AREA TO SUPPORT ANY OFF-SITE DWELLINGS.
5. NO THERE ARE NO EXISTING BUILDINGS TO BE RAZED.
6. MAXIMUM BUILDING HEIGHT WILL NOT EXCEED 35' IN THE DR ZONES
7. NO SIGNS ARE PROPOSED AS PART OF THIS PLAN.
8. ACCESS EASEMENTS ARE NOT BEING REQUESTED.
9. ACCESS EASEMENTS ARE PROPOSED ON THE FOLLOWING LOTS: 6,7 AND 11,12.
10. TYPICAL OPEN DECK DIMENSION OF 10'FT. X 20'FT. SHALL PROVIDE THE MINIMUM REAR DECK SETBACK OF 23 FT.

ZONING

1. EXISTING ZONING ON 1 & DR-2
2. THIS DEVELOPMENT IS SUBJECT TO THE COMPREHENSIVE MANUAL OF DEVELOPMENT POLICIES (SECTION 504.2), THE BALTIMORE COUNTY ZONING REGULATIONS (BCZR), AND THE BALTIMORE COUNTY LANDSCAPE MANUAL. THE DEVELOPMENT WITH ALL OF THE AFOREMENTIONED REGULATIONS, STANDARDS, GUIDELINES, AND POLICIES OR THE PROPER RELIEF WILL BE REQUESTED.
3. ALL SIGNS WILL CONFORM TO BALTIMORE COUNTY ZONING CODE. SECTIONS 450 OR APPROPRIATE RELIEF WILL BE REQUESTED. ALL SIGNAGE WILL COMPLY WITH SECTION 450 OF THE BCZR.
4. THE DENSITY CALCULATION IS PURSUANT TO THE RANGE OF DENSITY TABLE FOUND IN §1801.2.C(1)(f) OF THE BCZR
5. THE SETBACK REQUIREMENTS ARE PURSUANT TO THE LARGE TRACT TABLE FOUND IN §1801.2.C(1)(f) OF THE BCZR
6. THE PROPOSED DWELLINGS ON THE PLAN HAS BEEN HELD INTACT SINCE 1971. THE DEVELOPERS ENGINEER HAS CONFIRMED THAT NO PART OF THE GROSS AREA OF THIS PROPERTY AS SHOWN ON THE PLAN HAS EVER BEEN UTILIZED, RECORDED OR REPRESENTED AS DENSITY OR AREA TO SUPPORT ANY OFF-SITE DWELLINGS.
7. NO THERE ARE NO EXISTING BUILDINGS TO BE RAZED.
8. MAXIMUM BUILDING HEIGHT WILL NOT EXCEED 35' IN THE DR ZONES
9. NO SIGNS AR

GREENSPRING MANOR

2310 W. JOPPA ROAD

DEDICATION TABLE

THE FOLLOWING RIGHTS OF WAY ARE TO BE CONVEYED TO BALTIMORE COUNTY BY THE DEVELOPER/OWNER OF THIS PROPERTY AS A CONDITION OF APPROVAL OF THESE PLANS.

TYPE OF CONVEYANCE	NO.	TOTAL AREA**
ACCESS EASEMENT	2	0.10 AC
DRAINAGE AND UTILITY EASEMENT	4-10	0.66 AC-0.9 AC; 5.72 AC
FOREST CONSERVATION EASEMENT	5	3.32 AC- 1.17 AC
STORMWATER MANAGEMENT EASEMENT	3	2.19 AC- 0.72 AC
100 YEAR FLOODPLAIN AND DRAINAGE AND UTILITY EASEMENT	5	5.10 AC- 5.13 AC
FOREST BUFFER AND FOREST CONSERVATION EASEMENT	6	0.28 AC- 0.32 AC
HIGHWAY WIDENING	1	0.54 AC
FOREST BUFFER EASEMENT	6	1.19 AC

** NOTE: TOTAL AREAS SHOWN IN THIS TABLE ARE APPROXIMATE ONLY. REFER TO THE RECORD PLAT OR RIGHT OF WAY DRAWING FOR EXACT AREAS.

ENTRANCE FEATURE AND SIGN



NOT TO SCALE
SIGN FACE AREA: 24 SQUARE FEET

DELINQUENT ACCOUNTS CERTIFICATION:

I, _____ DIRECTOR OF LAND DEVELOPMENT CERTIFY UNDER OATH THAT THERE ARE NO DELINQUENT ACCOUNTS FOR ANY OTHER DEVELOPMENT WITH RESPECT TO ANY OF THE FOLLOWING: THE APPLICANT, A PERSON WITH FINANCIAL INTEREST IN THE PROPOSED DEVELOPMENT, OR A PERSON WHO SHALL PERFORM CONTRACTUAL SERVICES ON BEHALF OF THE PROPOSED DEVELOPMENT.

GROUNDWATER MANAGEMENT

PRIOR TO RECORD PLAT APPROVAL THE EXISTING DWELLING MUST BE CONNECTED TO PUBLIC WATER AND SEWER. UPON CONNECTION, THE EXISTING WELL MUST BE BACK-FILLED BY A LICENSED MASTER WELL DRILLER WHO MUST SUBMIT A WELL ABANDONMENT REPORT TO GROUNDWATER MANAGEMENT. THE EXISTING SEPTIC SYSTEM MUST BE PUMPED AND BACK-FILLED OR REMOVED BY A LICENSED SEWAGE DISPOSAL CONTRACTOR. ABANDONMENT REPORTS MUST BE SUBMITTED PRIOR TO RECORD PLAT APPROVAL.

ADJACENT PROPERTY INFORMATION

1. 13 OLD BOXWOOD LANE
PAMELA BOYER
TAX ID: 2000004431
DEED REF.: 11943/3693
PLAT REF.: 53/34

2. 15 OLD BOXWOOD LANE
BRIAN AND ROBIN RUBIN
TAX ID: 2000004432
DEED REF.: 4478/0173
PLAT REF.: 53/34

3. 17 OLD BOXWOOD LANE
THOMAS AND CAROL BRADLEE
TAX ID: 2000004433
DEED REF.: 4044/0243
PLAT REF.: 53/34

4. 19 OLD BOXWOOD LANE
LORRAINE BRONSTEIN TRUSTEE
TAX ID: 2000004434
DEED REF.: 23741/666
PLAT REF.: 53/34

5. 21 OLD BOXWOOD LANE
ALVIN AND MARI KALIN
TAX ID: 2000004435
DEED REF.: 30686/144
PLAT REF.: 53/34

6. 23 OLD BOXWOOD LANE
JAMES AND DOROTHY TRUITT
TAX ID: 2000004436
DEED REF.: 26568/25
PLAT REF.: 53/34

7. 76 SEMINARY FARM RD.
FRED AND JAN HALLAHAN
TAX ID: 1900006676
DEED REF.: 24347/083
PLAT REF.: 49/124

8. SEMINARY FARM RD.
THOMAS AND PATRICIA PRUETT
TAX ID: 1900006677
DEED REF.: 7840/474
PLAT REF.: 49/124

9. 72 SEMINARY FARM RD.
MICHAEL, JR. AND WILLIAM HALL
TAX ID: 1900006678
DEED REF.: 43037/169
PLAT REF.: 49/124

10. 70 SEMINARY FARM RD.
GARY WOODRUFF
TAX ID: 1900006679
DEED REF.: 31146/40
PLAT REF.: 49/124

11. 68 SEMINARY FARM RD.
HARJIT AND JAMALA SINGH
TAX ID: 1900006680
DEED REF.: 7640/129
PLAT REF.: 49/124

12. 66 SEMINARY FARM RD.
MELVILLE AND BETSY YEARLEY
TAX ID: 1900006681
DEED REF.: 31642/30
PLAT REF.: 49/124

FIRE MARSHAL

1. PROPOSED BUILDINGS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO MEET THE APPLICABLE PROVISIONS OF THE BALTIMORE COUNTY FIRE PREVENTION CODE NO. 3-17.
2. LANDSCAPING OR OTHER OBSTRUCTIONS PLACED AROUND STRUCTURES SHALL NOT IMPAIR OR IMPEDE ACCESSIBILITY FOR FIRE DEPARTMENT OPERATIONS. ANY TREES PLANTED WITHIN 10 FEET OF THE PERIMETER OF THE BUILDING SHALL BE OF A TYPE THAT WILL NOT INTERFERE WITH EMERGENCY OPERATIONS AND MAINTAIN THE CLEARANCES REQUIRED BY THE CODE.
3. A FISHER RUN ROAD FOR ACCESS TO BUILDINGS AND ADEQUATE WATER SUPPLIES SHALL BE AVAILABLE FOR THE USE BY EMERGENCY FIRE APPARATUS AND CAPABLE OF HANDLING EMERGENCY APPARATUS WEIGHING 70,000 LBS. WHEN CONSTRUCTION OF ANY BUILDING IS UNDER ROOF, IN ACCORDANCE WITH THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO.3-17, SECTION 1.116.4.3.1.3.
4. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A RESIDENTIAL SPRINKLER SYSTEM FOR EACH INDIVIDUAL DWELLING.
5. THE SPRINKER SYSTEM MUST BE INSPECTED BY THE BALTIMORE COUNTY FIRE MARSHAL'S OFFICE PRIOR TO TAKING OCCUPANCY. (SPRINKLER HYDRO / SPRINKLER FINAL)
6. THE PRIVATE FIRE HYDRANTS SHALL BE PAINTED "OSHA RED" TO DISTINGUISH THEM FROM THE PUBLIC (ORANGE) FIRE HYDRANTS IN ACCORDANCE WITH BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17 SECTION 1: 18.5.10.5 PRIVATE HYDRANT COLOR.
7. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A PRIVATE UNDERGROUND FIRE LINE AND SHALL BE REVIEWED BY THE PLANS REVIEW SECTION OF BALTIMORE COUNTY. A PLUMBING PERMIT SHALL NOT BE USED TO INSTALL AN UNDERGROUND FIRE LINE.
8. ALL FIRE HYDRANTS SPACING SHALL BE IN ACCORDANCE WITH THE BALTIMORE COUNTY STANDARD DESIGN MANUAL.
9. THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17, SECTION 1:10.11.1.5, REQUIRES THAT THE ADDRESS NUMBERS FOR RESIDENTIAL PROPERTIES SHALL BE A MINIMUM OF 3 INCHES IN SIZE.

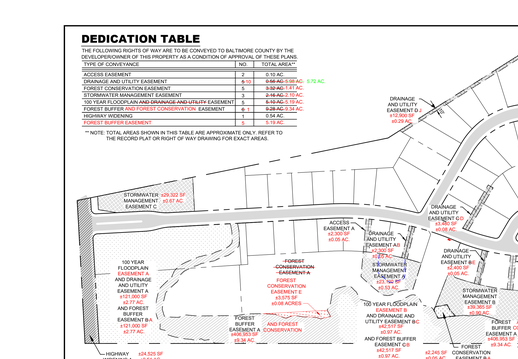
GREENSPRING MANOR - OPEN SPACE AMENITY COST ESTIMATE

				9/2/2021
Walking Path				
Stone Asphalt Walking Path	4,800	SF	$5.00	$24,000.00
			Walking Trail Total:	$24,000.00
Fencing				
3/4 Rail Fence	900	LF	$25.00	$22,500.00
			Fence Total:	$22,500.00
Trail Head Signs				
Sign and Post	2	EA	$250.00	$500.00
			Sign and Post Total:	$500.00
Entrance Masonry and Fencing			Quantity	Units Cost
Entry Masonry Entrance (dry laid)				
Entry Wall and Entrance Sign	2	EA	$40,000.00	$80,000.00
			Subtotal	$80,000.00
Free Standing Columns and Fencing				
Entry Columns	10	EA	$3,000.00	$30,000.00
3/4 Rail Fence	438	LF	$25.00	$10,950.00
			Subtotal	$40,950.00
			Entrance Feature Total:	$120,950.00
Amenity Space - Entrance Area Park				
Tree Sanitary				
Tree Sanitary - BRICK / 10 Bike Rack	2	EA	$800.00	$1,200.00
Tree Sanitary - EVA-DUI Backrest Bench	2	EA	$1,000.00	$2,000.00
Tree Sanitary - Dbl 3 Picnic Table w/ Pavilion	1	EA	$1,500.00	$1,500.00
			Subtotal	$4,700.00
Pavilion				
Community Pavilion	1	EA	$30,000.00	$30,000.00
			Subtotal	$30,000.00
Hardscape				
Concrete Sidewalk and Concrete Pad at Bike Rack	600	SF	$10.00	$6,000.00
			Subtotal	$6,000.00
Landscaping				
Ornamental Plantings	732	SF	$10.00	$10,980.00
			Subtotal	$10,980.00
			Entrance Area Total:	$51,680.00
Amenity Space - Park Space 1				
Tree Sanitary				
Tree Sanitary - BRICK / 10 Bike Rack	2	EA	$800.00	$1,200.00
Tree Sanitary - EVA-DUI Backrest Bench	2	EA	$1,000.00	$2,000.00
Tree Sanitary - Mulch	1	EA	$1,500.00	$1,500.00
			Subtotal	$4,700.00
Hardscape				
Concrete Sidewalk and Concrete Pad at Bike Rack	488	SF	$10.00	$4,880.00
			Subtotal	$4,880.00
Landscaping				
Ornamental Plantings	293	SF	$10.00	$2,930.00
Ornamental tree	2	EA	$350.00	$700.00
			Subtotal	$3,630.00
			Park Space 1 Total:	$13,210.00
Amenity Space - Park Space 2				
Tree Sanitary				
Tree Sanitary - CP-3 Picnic Table w/ Grade	3	EA	$2,516.66	$7,550.00
			Subtotal	$7,550.00
Grade				
Constructed Gradito	1	EA	$20,000.00	$20,000.00
			Subtotal	$20,000.00
Hardscape				
Concrete Sidewalk and Concrete Pad at Bike Rack	763	SF	$10.00	$7,630.00
			Subtotal	$7,630.00
Landscaping				
Ornamental Plantings	900	SF	$15.00	$13,500.00
Ornamental tree	4	EA	$350.00	$1,400.00
			Subtotal	$14,900.00
			Park Space 2 Total:	$50,080.00
				$189,940.00

Note: Tax, freight, and installation not included

DEDICATION PLAN

1"=150'


STORMWATER MANAGEMENT EASEMENT A ±12,900 SF ±0.29 AC
DRAINAGE AND UTILITY EASEMENT A
ACCESS EASEMENT A ±0.06 AC
DRAINAGE AND UTILITY EASEMENT A1 ±0.06 AC
DRAINAGE AND UTILITY EASEMENT B1 ±2,400 SF ±0.06 AC
ACCESS EASEMENT B ±0.06 AC
FOREST CONSERVATION EASEMENT D ±0.10 AC
STORMWATER MANAGEMENT EASEMENT B ±0.06 AC
FOREST CONSERVATION EASEMENT B ±406,959 SF ±9.34 AC
100 YEAR FLOODPLAIN EASEMENT C AND DRAINAGE AND UTILITY EASEMENT B ±0.90 AC
AND FOREST BUFFER EASEMENT C ±13,168 SF ±0.30 AC
FOREST BUFFER EASEMENT C ±2,246 SF ±0.05 AC
100 YEAR FLOODPLAIN EASEMENT D AND DRAINAGE AND UTILITY EASEMENT B ±0.30 AC
AND FOREST BUFFER EASEMENT D ±0.07 AC
100 YEAR FLOODPLAIN EASEMENT A AND DRAINAGE AND UTILITY EASEMENT A ±121,060 SF ±2.77 AC
AND FOREST BUFFER EASEMENT A ±121,060 SF ±2.77 AC
HIGHWAY WIDENING A ±24,525 SF ±0.54 AC
FOREST CONSERVATION EASEMENT A ±0.54 AC
FOREST BUFFER EASEMENT A ±0.54 AC
FOREST CONSERVATION EASEMENT E ±13,200 SF ±0.30 AC
DRAINAGE AND UTILITY EASEMENT E ±3,585 SF ±0.08 AC
FOREST CONSERVATION EASEMENT E1 ±4,660 SF ±0.10 AC
ACCESS EASEMENT E ±0.06 AC
100 YEAR FLOODPLAIN EASEMENT E AND DRAINAGE AND UTILITY EASEMENT B1 ±49,023 SF ±1.12 AC
AND FOREST BUFFER EASEMENT E ±49,033 SF ±1.12 AC
100 YEAR FLOODPLAIN EASEMENT G AND DRAINAGE AND UTILITY EASEMENT B ±0.67 AC
AND FOREST BUFFER EASEMENT G ±0.52 AC
STORMWATER MANAGEMENT EASEMENT C ±38,640 SF ±0.89 AC
FOREST CONSERVATION EASEMENT C ±0.89 AC
FOREST BUFFER EASEMENT C ±0.89 AC
STORMWATER MANAGEMENT EASEMENT D ±0.72 AC
FOREST CONSERVATION EASEMENT F ±0.32 AC
FOREST BUFFER EASEMENT F ±0.32 AC
FOREST CONSERVATION EASEMENT G ±0.52 AC
FOREST BUFFER EASEMENT G ±0.52 AC
100 YEAR FLOODPLAIN EASEMENT H AND DRAINAGE AND UTILITY EASEMENT H ±49,023 SF ±1.12 AC
AND FOREST BUFFER EASEMENT H ±49,033 SF ±1.12 AC
STORMWATER MANAGEMENT EASEMENT E ±0.72 AC
FOREST CONSERVATION EASEMENT H ±0.10 AC
FOREST BUFFER EASEMENT H ±0.10 AC
FOREST CONSERVATION EASEMENT I ±0.40 AC
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FOREST BUFFER EASEMENT NNNNNN ±0.10 AC
FOREST CONSERVATION EASEMENT OOOOOO ±0.10 AC
FOREST BUFFER EASEMENT OOOOOO ±0.10 AC
FOREST CONSERVATION EASEMENT PPPPPP ±0.10 AC
FOREST BUFFER EASEMENT PPPPPP ±0.10 AC
FOREST CONSERVATION EASEMENT QQQQQQ ±0.10 AC
FOREST BUFFER EASEMENT QQQQQQ ±0.10 AC
FOREST CONSERVATION EASEMENT RRRRRR ±0.10 AC
FOREST BUFFER EASEMENT RRRRRR ±0.10 AC
FOREST CONSERVATION EASEMENT SSSSSS ±0.10 AC
FOREST BUFFER EASEMENT SSSSSS ±0.10 AC
FOREST CONSERVATION EASEMENT TTTTTT ±0.10 AC
FOREST BUFFER EASEMENT TTTTTT ±0.10 AC
FOREST CONSERVATION EASEMENT UUUUUU ±0.10 AC
FOREST BUFFER EASEMENT UUUUUU ±0.10 AC
FOREST CONSERVATION EASEMENT VVVVVV ±0.10 AC
FOREST BUFFER EASEMENT VVVVVV ±0.10 AC
FOREST CONSERVATION EASEMENT WWWWWW ±0.10 AC
FOREST BUFFER EASEMENT WWWWWW ±0.10 AC
FOREST CONSERVATION EASEMENT XXXXXX ±0.10 AC
FOREST BUFFER EASEMENT XXXXXX ±0.10 AC
FOREST CONSERVATION EASEMENT YYYYYY ±0.10 AC
FOREST BUFFER EASEMENT YYYYYY ±0.10 AC
FOREST CONSERVATION EASEMENT ZZZZZZ ±0.10 AC
FOREST BUFFER EASEMENT ZZZZZZ ±0.10 AC
FOREST CONSERVATION EASEMENT AAAAAAA ±0.10 AC
FOREST BUFFER EASEMENT AAAAAAA ±0.10 AC
FOREST CONSERVATION EASEMENT BBBBBBB ±0.10 AC
FOREST BUFFER EASEMENT BBBBBBB ±0.10 AC
FOREST CONSERVATION EASEMENT CCCCCCC ±0.10 AC
FOREST BUFFER EASEMENT CCCCCCC ±0.10 AC
FOREST CONSERVATION EASEMENT DDDDDDD ±0.10 AC
FOREST BUFFER EASEMENT DDDDDDD ±0.10 AC
FOREST CONSERVATION EASEMENT EEEEEEE ±0.10 AC
FOREST BUFFER EASEMENT EEEEEEE ±0.10 AC
FOREST CONSERVATION EASEMENT FFFFFFF ±0.10 AC
FOREST BUFFER EASEMENT FFFFFFF ±0.10 AC
FOREST CONSERVATION EASEMENT GGGGGGG ±0.10 AC
FOREST BUFFER EASEMENT GGGGGGG ±0.10 AC
FOREST CONSERVATION EASEMENT HHHHHHH ±0.10 AC
FOREST BUFFER EASEMENT HHHHHHH ±0.10 AC
FOREST CONSERVATION EASEMENT IIIIIII ±0.10 AC
FOREST BUFFER EASEMENT IIIIIII ±0.10 AC
FOREST CONSERVATION EASEMENT JJJJJJJ ±0.10 AC
FOREST BUFFER EASEMENT JJJJJJJ ±0.10 AC
FOREST CONSERVATION EASEMENT KKKKKKK ±0.10 AC
FOREST BUFFER EASEMENT KKKKKKK ±0.10 AC
FOREST CONSERVATION EASEMENT LLLLLLL ±0.10 AC
FOREST BUFFER EASEMENT LLLLLLL ±0.10 AC
FOREST CONSERVATION EASEMENT MMMMMMM ±0.10 AC
FORE

GREENSPRING MANOR

2310 W. JOPPA ROAD

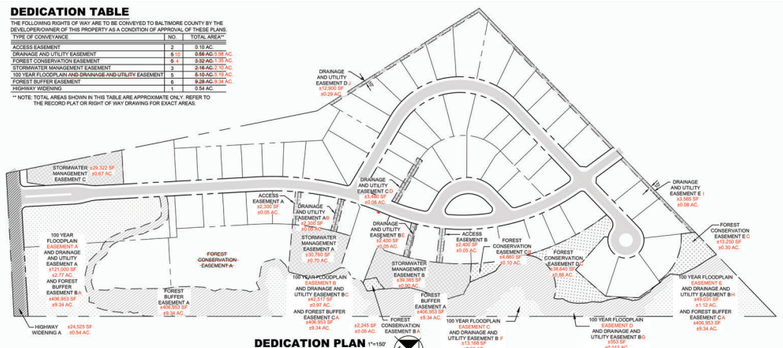
DEDICATION TABLE

THE FOLLOWING RIGHTS OF WAY ARE TO BE CONVEYED TO BALTIMORE COUNTY BY THE DEVELOPER/OWNER OF THIS PROPERTY AS A CONDITION OF APPROVAL OF THESE PLANS.

TYPE OF CONVEYANCE	NO.	TOTAL AREA**
ACCESS EASEMENT	2	0.10 AC
DRAINAGE AND UTILITY EASEMENT	6-12	0.64 AC +/- ST.AC.
FOREST CONSERVATION EASEMENT	5-7	3.32 AC +/- ST.AC.
STORMWATER MANAGEMENT EASEMENT	3	2.18 AC +/- ST.AC.
100 YEAR FLOODPLAIN AND DRAINAGE AND UTILITY EASEMENT	5	5.15 AC +/- ST.AC.
FOREST BUFFER EASEMENT	6	9.28 AC +/- ST.AC.
HIGHWAY WIDENING	1	0.54 AC

** NOTE: TOTAL AREAS SHOWN IN THIS TABLE ARE APPROXIMATE ONLY. REFER TO THE RECORD PLAT OR RIGHT OF WAY DRAWING FOR EXACT AREAS.

DEDICATION PLAN 1"=150'



FLOODPLAIN TO BE FILLED AS PART OF STREET, UTILITY, AND DRAINAGE IMPROVEMENTS. THE OPEN SPACE WILL NOT BE WITHIN A FLOODPLAIN POST CONSTRUCTION

7,630 Square Feet of Open Space within a Stormwater Management Easement including Stormwater Outfall

ADJACENT PROPERTY INFORMATION

1. 13 OLD BOXWOOD LANE
PAMELA BOYER
TAX ID: 2000004431
DEED REF.: 11943/689
PLAT REF.: 53/34

2. 15 OLD BOXWOOD LANE
BRIAN AND ROBIN RUBIN
TAX ID: 2000004432
DEED REF.: 4478/413
PLAT REF.: 53/34

3. 17 OLD BOXWOOD LANE
THOMAS AND CAROL BRADLEE
TAX ID: 2000004433
DEED REF.: 4044/243
PLAT REF.: 53/34

4. 19 OLD BOXWOOD LANE
LORRAINE BRONSTEIN TRUSTEE
TAX ID: 2000004434
DEED REF.: 23741/666
PLAT REF.: 53/34

5. 21 OLD BOXWOOD LANE
ALVIN AND MARI KALIN
TAX ID: 2000004435
DEED REF.: 30688/144
PLAT REF.: 53/34

6. 23 OLD BOXWOOD LANE
JAMES AND DOROTHY TRUITT
TAX ID: 2000004436
DEED REF.: 26568/25
PLAT REF.: 53/34

7. 76 SEMINARY FARM RD.
FRED AND JAN HALLAHAN
TAX ID: 1900008676
DEED REF.: 24347/683
PLAT REF.: 49/124

8. 74 SEMINARY FARM RD.
THOMAS AND PATRICIA PRICE
TAX ID: 1900008677
DEED REF.: 7540/474
PLAT REF.: 49/124

9. 72 SEMINARY FARM RD.
THOMAS ONEILL JR. AND WILLIAM HALE
TAX ID: 1900008678
DEED REF.: 43537/169
PLAT REF.: 49/124

10. 70 SEMINARY FARM RD.
GARY WOODRUFF
TAX ID: 1900008679
DEED REF.: 31148/40
PLAT REF.: 49/124

11. 68 SEMINARY FARM RD.
HARJIT AND JAIMALA SINGH
TAX ID: 1900006680
DEED REF.: 7646/129
PLAT REF.: 49/124

12. 66 SEMINARY FARM RD.
MELVILLE AND BETSY YEARLEY
TAX ID: 1900006681
DEED REF.: 31642/30
PLAT REF.: 49/124

10753 FALLS RD.
FOXLEIGH PAVILIONS LIMITED PARTNERSHIP
TAX ID: 2200011094
DEED REF.: NONE
PLAT REF.: 64/19
COMMERCIAL

2330 W. JOPPA RD.
MULLAN GREENSPRING LLLP
TAX ID: 0809035026
DEED REF.: 17369/497
PLAT REF.: NONE
COMMERCIAL

2324 W. JOPPA RD.
JOPPA GREEN LIMITED PARTNERSHIP LLLP
TAX ID: 0823075000
DEED REF.: 17319/272
PLAT REF.: NONE

2323 W. JOPPA RD.
DEPT. OF PUBLIC SAFETY AND CORRECTIONAL SERVICES TAX ID: 0919846410
DEED REF.: 3509/387
PLAT REF.: NONE

FALLS RD.
DEPT. OF PUBLIC SAFETY AND CORRECTIONAL SERVICES TAX ID: 0919846563
DEED REF.: 3509/387 PLAT REF.: NONE

2233 W JOPPA RD.
MARY AND LEO OTTERBEIN
TAX ID: 1800001575
DEED REF.: 4007/179

2235 W JOPPA RD.
BENEDICTINE SISTERS OF BALTIMORE INC.

8200 TALLY HO RD.
GEORGE KENNEDY
TAX ID: 0805063890
DEED REF.: 22119/130
PLAT REF.: 19/109

8202 TALLY HO RD.
DEMETRIOS AND AMELIAL
TAX ID: 0818012770
DEED REF.: 43808/276
PLAT REF.: 19/109

8204 TALLY HO RD.
NADINE HENCHCLIFFE
TAX ID: 0802088200
DEED REF.: 31112/307
PLAT REF.: 19/109

8206 TALLY HO RD.
DOUGLAS AND PAMELA JOHNSON
TAX ID: 0813023130
DEED REF.: 33328/322
PLAT REF.: 19/109

8210 TALLY HO RD.

8212 TALLY HO RD.

8302 TALLY HO RD.
JAMES AND SUSAN WEISS
TAX ID: 1800014964
DEED REF.: 5913/648
PLAT REF.: 37/113

8304 TALLY HO RD.
THOMAS AND PAMELA LLOYD
TAX ID: 1800014963
DEED REF.: 29611/36
PLAT REF.: 37/113

TALLY HO RD.
BALTIMORE COUNTY MD
TAX ID: 2000007923
DEED REF.: NONE
PLAT REF.: 37/113

1301 W. SEMINARY AVE.
LINDA NICHOLS
TAX ID: 1800009977
DEED REF.: 1491/416
PLAT REF.: NONE

8 TREL. JNNY CT
MICHAEL AND BETH VOLLEY
TAX ID: 1800014906
DEED REF.: 18853/743
PLAT REF.: 37/113

6 TRELAWNY CT
JAMES AND MARY JO GARY
TAX ID: 1800014960
DEED REF.: 16669/449
PLAT REF.: 37/113

10 TRELAWNY CT.
MARK AND CAROLYN ROBINSON
TAX ID: 1800014958
DEED REF.: 20864/729
PLAT REF.: 37/113

SEMINARY RIDGE OWNERS ASSOCIATION, INC.
TAX ID: 1800014972
DEED REF.: 5572/199
PLAT REF.: 37/113

OLD BOXWOOD LANE PF&M INCORPORATED
TAX ID: 2000004443
DEED REF.: NONE
PLAT REF.: 53/34

LEGEND

CONTOUR LINE (1' INTERVAL)		MONITORING WELL	SIGN
DEPRESSION CONTOUR		WATER VAULT	WATE VALVE
CONCRETE CURB W/ GUTTER		CLEANOUT	HAND BOX
CONCRETE LINE		SANITARY SEWER MANHOLE	UTILITY POLE
BUILDING LINE		ELECTRIC METER	INLET
EDGE OF PAVEMENT		LIGHT POLE	PINE TREE
SANITARY SEWER		GAS VALVE	DECIDOUOS TREE
STORM DRAIN			
WOOD LINE		MINOR TREE (FLOWERING)	
OVERHEAD WIRE		MINOR TREE (EVERGREEN)	
WALL		SHRUB	
FLOOD PLAIN			
FOREST BUFFER			

FIRE MARSHAL

1. PROPOSED BUILDINGS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO MEET THE APPLICABLE PROVISIONS OF THE BALTIMORE COUNTY FIRE PREVENTION CODE NO. 3-17.
2. LANDSCAPING OR OTHER OBSTRUCTIONS PLACED AROUND STRUCTURES SHALL NOT IMPAIR OR IMPEDE ACCESSIBILITY FOR FIRE DEPARTMENT OPERATIONS. ANY TREE PLANTINGS AROUND THE PERIMETER OF THE BUILDING SHALL BE OF A TYPE THAT WILL NOT INTERFERE WITH EMERGENCY APPARATUS ACCESS WHEN THEY MATURE, NFPA 1141 CODE SECTION 18.2.4.1
3. A CRUSHER RUN ROAD FOR ACCESS TO BUILDINGS AND REQUIRED WATER SUPPLIES SHALL BE AVAILABLE FOR THE USE BY EMERGENCY FIRE APPARATUS PRIOR TO COMMENCEMENT OF BUILDING CONSTRUCTION WEIGHING 70,000 LBS. WHEN CONSTRUCTION OF ANY BUILDING IS UNDER ROOF, IN ACCORDANCE WITH THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO.3-17, SECTION 1.18.4.3.1.3
4. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A RESIDENTIAL SPRINKLER SYSTEM FOR EACH INDIVIDUAL DWELLING. THE SPRINKLER SYSTEM MUST BE INSPECTED BY THE BALTIMORE COUNTY FIRE MARSHAL'S OFFICE PRIOR TO TAKING OCCUPANCY (SPRINKLER HYDRO / SPRINKLER FINAL).
5. THE PRIVATE FIRE HYDRANTS SHALL BE PAINTED "OSHA RED" TO DISTINGUISH THEM FROM THE PUBLIC (ORANGE) FIRE HYDRANTS IN ACCORDANCE WITH BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17 SECTION 1: 18.6.10.5 PRIVATE HYDRANT COLOR
6. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A PRIVATE UNDERGROUND FIRE LINE AND SHALL BE REVIEWED BY THE PLANS REVIEW SECTION OF BALTIMORE COUNTY. A PLUMBING PERMIT SHALL NOT BE USED TO INSTALL AN UNDERGROUND FIRE LINE.
7. ALL FIRE HYDRANTS SPACING SHALL BE IN ACCORDANCE WITH THE BALTIMORE COUNTY STANDARD DESIGN MANUAL.
8. ALL FIRE HYDRANTS SHALL BE PAINTED "OSHA RED" TO DISTINGUISH THEM FROM THE PUBLIC (ORANGE) FIRE HYDRANTS IN ACCORDANCE WITH BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17, SECTION 1:18.6.10.5 PRIVATE HYDRANT COLOR
9. THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17, SECTION 1:10.11.1.5, REQUIRES THAT THE ADDRESS NUMBERS FOR RESIDENTIAL PROPERTIES SHALL BE A MINIMUM OF 3 INCHES IN SIZE.

VEHICLE AND BIKE PARKING

1. PARKING
REQUIRED PARKING
SINGLE FAMILY ATTACHED
61 UNITS @ 2 SPACE / DWELLING UNIT = 122 PARKING SPACES
TOTAL REQUIRED SPACES = 122 PARKING SPACES
PROVIDED SPACES
GARAGE PARKING SPACES 122 PARKING SPACES
DRIVEWAY PARKING SPACES 122 PARKING SPACES
TOTAL 244 PARKING SPACES
2. REQUIRED BICYCLE PARKING SPACES 122 : 24 = 5
3. PROVIDED BICYCLE PARKING SPACES 5 SPACES

ADDITIONAL INFO

ANTICIPATED NOTICING:
1. VARIANCES: NONE
2. SPECIAL VARIANCE: TO PERMIT BUILDING PERMITS IN AN F LEVEL TRAFFIC SHED AS DELINEATED ON THE 2020 BASIC SERVICES MAP
3. WAIVERS: 28' PAVING ON A 52' ROW IN LIEU OF 30' PAVING ON A 52' ROW.
4. SPECIAL EXCEPTIONS: NONE
5. OTHER: NONE
6. CONSISTENCY WITH DESIGN MANUALS: YES

DELINQUENT ACCOUNTS CERTIFICATION:

I, _____, DIRECTOR OF LAND DEVELOPMENT CERTIFY UNDER OATH THAT THERE ARE NO DELINQUENT ACCOUNTS FOR ANY OTHER DEVELOPMENT WITH RESPECT TO ANY OF THE FOLLOWING: THE APPLICANT, A PERSON WITH FINANCIAL INTEREST IN THE PROPOSED DEVELOPMENT, OR A PERSON WHO SHALL PERFORM CONTRACTUAL SERVICES ON BEHALF OF THE PROPOSED DEVELOPMENT.

FOREST BUFFER MITIGATION AREA

FOREST BUFFER MITIGATION AREA #1	0.76 ACRES
FOREST BUFFER MITIGATION AREA #2	0.42 ACRES
FOREST BUFFER MITIGATION AREA #3	0.38 ACRES
TOTAL FOREST BUFFER MITIGATION AREA	1.56 ACRES

ENVIRONMENTAL IMPACT REVIEW

1. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST BUFFER EASEMENT, FOREST CONSERVATION EASEMENT, OR STREAM BUFFER EASEMENT EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.
2. ANY FOREST BUFFER EASEMENT, FOREST CONSERVATION EASEMENT AND FOREST BUFFER & FOREST CONSERVATION EASEMENT SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF BALTIMORE COUNTY AND WHICH RESTRICT DISTURBANCE AND USE OF THESE AREAS.
3. ALL LOTS SHALL BE SERVED BY PUBLIC WATER AND SEWER. UPON CONNECTION TO PUBLIC WATER AND SEWER, UPON CONNECTION, THE EXISTING WELL MUST BE BACK-FILLED BY A LICENSES MASTER WELL DRILLER WHO MUST SUBMIT A WELL ABANDONMENT REPORT TO GROUNDWATER MANAGEMENT. THE EXISTING SEPTIC SYSTEM MUST BE PUMPED AND BACK-FILLED OR REMOVED BY A LICENSES SEWAGE DISPOSAL CONTRACTOR. ABANDONMENT REPORTS MUST BE SUBMITTED PRIOR TO RECORD PLAT APPROVAL.

GROUNDWATER MANAGEMENT

1. PRIOR TO RECORD PLAT APPROVAL, THE EXISTING DWELLING MUST BE CONNECTED TO PUBLIC WATER AND SEWER. UPON CONNECTION, THE EXISTING WELL MUST BE BACK-FILLED BY A LICENSES MASTER WELL DRILLER WHO MUST SUBMIT A WELL ABANDONMENT REPORT TO GROUNDWATER MANAGEMENT. THE EXISTING SEPTIC SYSTEM MUST BE PUMPED AND BACK-FILLED OR REMOVED BY A LICENSES SEWAGE DISPOSAL CONTRACTOR. ABANDONMENT REPORTS MUST BE SUBMITTED PRIOR TO RECORD PLAT APPROVAL.

SCHOOL IMPACT ANALYSIS

LAST UPDATED JUNE 30, 2021

SCHOOL DISTRICT	NET STATE RATED CAPACITY (SRC)	ACTUAL SEPTEMBER 30TH ENROLLMENT (2020)	PROJECTED # OF PUPILS FOR PROP. DEVELOPMENT	PROJECTED # OF PUPILS FOR OTHER DEVELOPMENTS	TOTAL PROJECTED ENROLLMENT	# OF STUDENTS ABOVE OR (BELOW) CAPACITY	PROJECTED # OF PUPILS AS A % OF SRC
RIDERWOOD ELEMENTARY SCHOOL	440	405	4	0	414	(26)	94.1%
RIDGELY MIDDLE SCHOOL	1,070	1,100	4	4	1,108	38	103.6%
DULANEY HIGH SCHOOL	1,984	1,930	5	8	1,943	(41)	97.9%

UNDEVELOPED AREAS

DESCRIPTION	ACRES
STORMWATER MANAGEMENT	2.15 ±
HOA/COA AREAS	1.75 ±
OTHER	12.55 ±
TOTAL PROVIDED	16.45 ±

OPEN SPACE CONT.

11. NO UTILITIES, WHETHER PUBLIC OR PRIVATE, INCLUDING BUT NOT LIMITED TO TELEPHONE, CABLE TELEVISION, GAS AND ELECTRICITY, WATER, SEWER AND STORM DRAINS SHALL BE PLACED OR CONSTRUCTED ON OR WITHIN AREAS LABELED AS OPEN SPACE WITHOUT PRIOR WRITTEN CONSENT FROM BALTIMORE COUNTY DEPARTMENT OF RECREATION AND PARKS.
12. THE DESIGN, CONSTRUCTION AND INSTALLATION OF ALL AMENITIES SHOWN ON THE DEVELOPMENT PLAN SHALL BE THE RESPONSIBILITY OF THE DEVELOPER.

OPEN SPACE

1. OPEN SPACE REQUIRED - 60 UNITS (60 NEW + 1 EXISTING) X 1,000 S.F. = 60,000 S.F. OPEN SPACE.
2. OPEN SPACE PROVIDED - 169,090 S.F.
ON SITE - 114,700 S.F. + 48,000 SF
ALL LOCAL OPEN SPACE SHALL BE IN COMPLIANCE WITH THE LOCAL OPEN SPACE MANUAL, LATEST EDITION.
3. TEMPORARY OPEN SPACE BOUNDARY MARKERS, TREE PROTECTION DEVICES AND FOUR FOOT HIGH SNOW FENCING OR APPROVED EQUIVALENT SHALL BE INSTALLED PRIOR TO ANY CLEARING OR GRADING.
4. WITHIN THE AREAS SHOWN AS OPEN SPACE, DISTURBANCE BEYOND THAT WHICH IS SHOWN ON THE DEVELOPMENT PLAN SHALL NOT BE ALLOWED WITHOUT PRIOR APPROVAL FROM THE DEPARTMENT OF RECREATION AND PARKS.
5. ANY FILL PLACED IN OPEN SPACE AREAS WHICH WERE PREVIOUSLY 100-YEAR FLOODPLAIN SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE BALTIMORE COUNTY STANDARD DESIGN MANUAL.
10. DEMOLITION OF EXISTING BUILDINGS AND PAVEMENT IS ANTICIPATED AS PART OF THIS PROJECT.

DEVELOPMENT PLANS REVIEW

1. THIS PROJECT IS LOCATED WITHIN THE URBAN RURAL DEMARCATION LINE.
2. THE SITE IS LOCATED WITHIN A LEVEL OF SERVICE F AS SHOWN ON THE 2020 BASIC SERVICES MAP TRANSPORTATION ZONE. A SPECIAL VARIANCE IS BEING SOUGHT IN CONJUNCTION WITH THIS DEVELOPMENT PLAN.
3. THE SITE IS LOCATED WITHIN AN AREA OF CONCERN AS SHOWN ON THE 2020 BASIC SERVICES MAP SEWER DEFICIENT AREAS AND WATER SUPPLY AREA.
4. THE SITE IS NOT LOCATED IN A DEFICIENT AREA FOR PUBLIC WATER AS SHOWN ON THE 2020 BASIC SERVICES MAP WATER SUPPLY AREA.
5. RAMPS SHALL BE PROVIDED FOR PHYSICALLY HANDICAPPED PERSONS AT ALL STREET INTERSECTIONS WITH DETECTABLE WARNING AREAS, PER STANDARD DETAILS R-30A AND R-30B.
6. SIDEWALKS SHALL BE PROVIDED ALONG ALL PUBLIC ROADS AND WILL MEET ALL STATE HIGHWAY ADMINISTRATION STANDARDS FOR CONSTRUCTION.
7. A GM WAS HELD ON APRIL 27, 2021. ISSUES WERE RAISED REGARDING THE POTENTIAL EXTENSION OF MAYS CHAPEL ROAD THROUGH THE SUBJECT PROPERTY. THE PLAN PROPOSES TO EXTEND MAYS CHAPEL ROAD BUT TO GATE IT FOR EMERGENCY ACCESS ONLY. TO BE APPROVED BY THE ALJ.
8. STREET LIGHTS SHALL BE INSTALLED ALONG ALL PUBLIC ROADS.
9. ALL SIGNS WILL CONFORM TO BALTIMORE COUNTY ZONING CODE, SECTIONS 450 OR THE APPROPRIATE RELIEF WILL BE REQUESTED.
10. IT IS ANTICIPATED THAT THIS PROJECT WILL BE DEVELOPED IN TWO PHASES.
11. TOTAL ACT GENERATED BY THE SITE= 600
12. THE SITE IS LOCATED WITHIN A W-1 AND S-1 (EXISTING SERVICE AREA) WATER AND SEWER SERVICE AREA.
13. THERE ARE WETLANDS PRESENT ON THE SITE.
14. THE PROPOSED ROADWAYS SHALL BE DESIGNED UTILIZING PARALLEL PARKING WITHIN THE TURNAROUND AREAS/CUL-DE-SAC.
15. ALL SIDEWALKS SHALL BE A MINIMUM OF 5-FEET WIDE AND SHALL BE INSTALLED IN CONFORMANCE WITH BALTIMORE COUNTY STANDARDS AND TO CURRENT AMERICANS WITH DISABILITIES ACT (ADA) GUIDELINES.
16. A PRESSURE REDUCING VALVE WILL BE REQUIRED IF THE STATIC PRESSURE EXCEEDS 80 PSI.
17. AREAS BETWEEN THE SIGHT LINE AND THE CURB LINE MUST BE CLEARED, GRADED, AND KEPT FREE OF ANY OBSTRUCTIONS.
18. IT IS ANTICIPATED THAT THIS PROJECT WILL BE DEVELOPED IN TWO PHASES. GRADING, EDC, AND SWM WILL BE INSTALLED FOR THE ENTIRE PROJECT IN PHASE I. THE PAVING, WATER, SEWER, AND STORM DRAIN WILL BE INSTALLED IN TWO PHASES AS SHOWN ON THE SITE PLAN.

PLANNING

1. TIER I SERVED BY PUBLIC SEWER AND INSIDE URDL. PER BALTIMORE COUNTY 10-YEAR WATER AND SEWER PLAN.
2. THERE ARE NO KNOWN BUILDINGS, PROPERTIES, OR SITES WITHIN THE PROPOSED DEVELOPMENT AREA INCLUDED ON THE MARYLAND HISTORICAL TRUST INVENTORY (MHT), BALTIMORE COUNTY LANDMARKS LIST, THE NATIONAL REGISTER OF HISTORIC PLACES, OR THE MARYLAND ARCHEOLOGICAL SURVEY.
3. THE SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR NATIONAL HISTORIC DISTRICTS.
4. A MINIMUM PRIVATE YARD AREA OF 500 CONTIGUOUS SQUARE FEET WITH A MINIMUM 15-FOOT DIMENSION IS PROVIDED FOR EACH LOT.

ZONING

1. EXISTING ZONING DR-1 & DR-2
2. THIS DEVELOPMENT IS SUBJECT TO THE COMPREHENSIVE MANUAL OF DEVELOPMENT POLICIES (SECTION 804.2), AND THE COUNTY LANDSCAPE MANUAL (SECTION 409.6.A.1). THIS DEVELOPMENT WILL COMPLY AND BE CONSISTENT WITH ALL OF THE APPLICABLE REGULATIONS, STANDARDS, GUIDELINES, AND POLICIES ON THE PROPER RELIEF WILL BE REQUESTED.
3. ALL SIGNS WILL CONFORM TO BALTIMORE COUNTY ZONING CODE, SECTIONS 450 OR APPROPRIATE RELIEF WILL BE REQUESTED.
4. DENSITY CALCULATION IS PURSUANT TO SECTION 1B02.3 OF THE BCZR.
5. THE SETBACK REQUIREMENTS ARE PURSUANT TO THE LARGE TRACT TABLE FOUND IN §1B01.2.C.1.(B) OF THE BCZR.
6. THIS PROPERTY AS SHOWN ON THE PLAN HAS BEEN HELD INTACT SINCE 1971. THE DEVELOPER'S ENGINEER HAS CONFIRMED THAT NO PART OF THE GROSS AREA OF THIS PROPERTY AS SHOWN ON THE PLAN HAS EVER BEEN UTILIZED, RECORDED OR REPRESENTED AS DENSITY OR AREA TO SUPPORT ANY OFF-SITE DWELLINGS.
7. THERE ARE NO EXISTING BUILDINGS TO BE RAZED.
8. THE MAXIMUM LIVING HEIGHT WILL NOT EXCEED 80' IN THE DR ZONES.
9. THERE IS NO KNOWN HISTORIC STRUCTURE ON THE PROPERTY.
10. ACCESS EASEMENTS MAY NOT BE FENCED.
11. ACCESS EASEMENTS ARE PROPOSED ON THE FOLLOWING LOTS: 6,7 AND 11,12.
12. TYPICAL OPEN SPACE DIMENSIONS OF 10 FT. X 20 FT. SHALL PROVIDE THE MINIMUM REAR DECK SETBACK OF 22.5 FT.

SITE DEVELOPMENT PROPOSAL

DWELLING TYPE	PROPOSED UNITS	PARKING REQUIRED	PARKING PROVIDED	OPEN SPACE REQUIRED	OPEN SPACE PROVIDED	AVERAGE DAILY TRIPS	PHASE	DEVELOPMENT SCHEDULE
SINGLE FAMILY DETACHED	61	122	244	1.38 AC ±	1.40 AC.	600	I	
TOTAL	61	122	244	1.38 AC ±	1.40 AC.	600	-	
TOTAL	61	122	244	1.38 AC ±	1.40 AC.	600		

EXISTING ZONING AND MAXIMUM DENSITY PERMITTED

ZONE	GROSS ACRES	DWELLING UNITS PERMITTED	DWELLING UNITS PROPOSED
DR-1	±16.8 AC	16	16
DR-2	±22.6 AC	45	45
			TOTAL 61

SETBACK TABLE

SETBACK TYPE - DR 1 & 2	SETBACK
FRONT BUILDING FACE TO:	
R/W OR PROPERTY LINE:	25'
SIDE BUILDING FACE TO:	
SIDE PROPERTY LINE:	30'
SIDE STREET R/W:	30'
PAVING OR PRIVATE ROAD:	30'
TRACT BOUNDARY:	25'
REAR BUILDING FACE TO:	
REAR PROPERTY LINE:	30'
PUBLIC STREET R/W -	30'

SUITABLE OUTFALL STATEMENT

IN THE EXISTING CONDITION, THE SITE CONTAINS A SINGLE-FAMILY HOME AND AGRICULTURAL FIELDS OR APPROXIMATELY ± 39.5 ACRES. THERE ARE VERY FEW STEEP SLOPES ON THE SITE AND THE SOILS ARE MOSTLY HSG B. THERE ARE NO HSG D SOILS ON SITE ARE IN HYDROLOGIC SOIL GROUPS HSG B, C, AND D. SEE APPENDIX A FOR THE SOIL MAP. THE SITE GENERALLY DRAINS FROM THE NORTHWEST TO THE SOUTHEAST. THE SITE IS WITHIN THE JONES FALLS WATERSHED. THE ENTIRE SITE EVENTUALLY DRAINS TO AN EXISTING CULVERT UNDER JOPPA ROAD WHICH HAS BEEN ANALYZED AS THE PROJECT STUDY POINT.

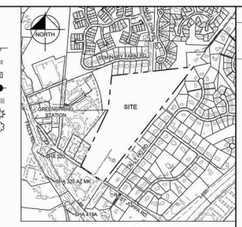
THE PROPOSED DEVELOPMENT WILL GENERALLY MAINTAIN THE DRAINAGE PATTERNS OF THE EXISTING SITE; HOWEVER, THE PROPOSED DEVELOPMENT EFFORTS WILL RESULT IN CHANGES TO SURFACE RUNOFF CONDITIONS WITHIN RESIDENTIAL AREAS, PROPOSED ROADWAYS, AND WITHIN PROPOSED STORM DRAIN SYSTEMS. THE PROPOSED SITE RUNOFF WILL BE MANAGED THROUGH THE IMPLEMENTATION OF ENVIRONMENTAL SITE DESIGN PRACTICES, SPECIFICALLY 4 SUBMERGED GRAVEL WETLANDS. A SEPARATE FLOODPLAIN STUDY HAS BEEN PREPARED AND IS UNDER COUNTY REVIEW. QUANTITY CONTROL FOR INCREASED RUNOFF WILL BE MANAGED WITHIN 3 OF THE 4 PROPOSED SUBMERGED GRAVEL WETLAND AREAS, INCLUDING ON-SITE DETENTION FOR 100-YEAR PEAK RUNOFF RATES.

COMBINED HEARING REQUEST

WE ARE REQUESTING A COMBINED DEVELOPMENT PLAN AND SPECIAL VARIANCE HEARING. THE SPECIAL HEARING PETITION IS TO PERMIT BUILDING PERMITS IN ANY LEVEL TRAFFIC SHED AS DELINEATED ON THE 2020 BASIC SERVICES MAP.

VICINITY MAP

SCALE: 1" = 1000'

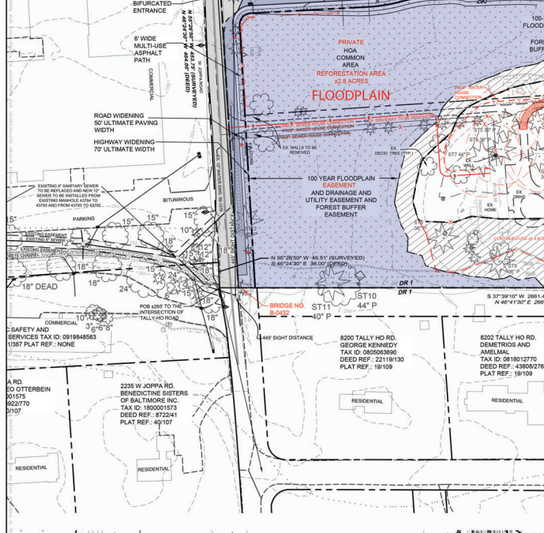


BENCHMARKS

NAME	NORTHING (NAD 83)	EASTING (NAD 83)	ELEVATION (NAVD 88)	DESCRIPTION
BHA 320	638,167.82	1,405,666.78	292.83	BRASS DISC
BHA 320 AZ MK	637,717.75	1,405,663.26	290.31	BRASS CAP
#184	637,037.98	1,406,235.67	292.88	CAPPED PIPE

LOT AREAS

LOT NO.	SF	ACRE	LOT 31	13,584±	.311+/-
LOT 1	130,099±	3.986+/-	LOT 32	11,252±	.258+/-
LOT 2	11,040±	.253+/-	LOT 33	11,389±	.260+/-
LOT 3	8,222±	.188+/-	LOT 34	12,280±	.281+/-
LOT 4	9,343±	.214+/-	LOT 35	13,484±	.309+/-
LOT 5	10,315±	.236+/-	LOT 36	13,104±	.301+/-
LOT 6	9,790±	.224+/-	LOT 37	14,380±	.329+/-
LOT 7	8,311±	.190+/-	LOT 38	9,827±	.225+/-
LOT 8	8,311±	.190+/-	LOT 39	8,107+/-	.186+/-
LOT 9	7,557+/-	.172+/-	LOT 40	8,226+/-	.189+/-
LOT 10	12,173+/-	.279+/-	LOT 41	9,845+/-	.226+/-
LOT 11	12,453+/-	.285+/-	LOT 42	11,724+/-	.269+/-
LOT 12	12,453+/-	.285+/-	LOT 43	11,672+/-	.227+/-
LOT 13	12,453+/-	.285+/-	LOT 44	8,584+/-	.272+/-
LOT 14	12,193+/-	.279+/-	LOT 45	8,289+/-	.190+/-
LOT 15	8,889+/-	.202+/-	LOT 46	7,953+/-	.182+/-
LOT 16	8,889+/-	.202+/-	LOT 47	7,953+/-	.182+/-
LOT 17	13,483+/-	.309+/-	LOT 48	10,552+/-	.242+/-
LOT 18	11,496+/-	.263+/-	LOT 49	11,066+/-	.254+/-
LOT 19	18,798+/-	.431+/-	LOT 50	9,876+/-	.226+/-
LOT 20	15,573+/-	.357+/-	LOT 51	11,897+/-	.273+/-
LOT 21	16,950+/-	.389+/-	LOT 52	13,008+/-	.298+/-
LOT 22	11,553+/-	.266+/-	LOT 53	12,199+/-	.280+/-
LOT 23	13,315+/-	.305+/-	LOT 54	11,011+/-	.208+/-
LOT 24	14,067+/-	.322+/-	LOT 55	14,656+/-	.336+/-
LOT 25	11,383+/-	.260+/-	LOT 56	9,090+/-	.208+/-
LOT 26	12,154+/-	.279+/-	LOT 57	8,563+/-	.196+/-
LOT 27	9,851+/-	.226+/-	LOT 58	8,244+/-	.189+/-
LOT 28	12,336+/-	.283+/-	LOT 59	8,244+/-	.189+/-
LOT 29	17,640+/-	.404+/-	LOT 60	9,775+/-	.224+/-
LOT 30	21,514+/-	.494+/-	LOT 61	8,844+/-	.203+/-


SITE PLAN 1"=60'
OPEN SPACE ±9,310 S.F.
OPEN SPACE ±114,700 SF
FLOODPLAIN
FOREST BUFFER EASEMENT
HOA FOREST CONSERVATION EASEMENT ±1.99 ACRES
REFORESTATION AREA ±1.83 ACRES
HOA OPEN SPACE ±108,500 SF
±114,700 SF ±1.65 AC AREA IN
PUBLIC ROAD A
SURVEYED WETLANDS
HOA FOREST CONSERVATION EASEMENT ±0.10 ACRES
REFORESTATION AREA ±0.85 ACRES
FOREST CONSERVATION EASEMENT ±0.05 ACRES
100 YEAR FLOODPLAIN EASEMENT AND DRAINAGE AND UTILITY EASEMENT AND FOREST BUFFER EASEMENT ±0.00 ACRES
HOA FOREST CONSERVATION EASEMENT ±0.37 ACRES
HOA FOREST CONSERVATION EASEMENT ±0.88 ACRES
REFORESTATION AREA ±0.37 ACRES
HOA FOREST CONSERVATION EASEMENT ±0.30 ACRES
REFORESTATION AREA ±1.03 ACRES
100 YEAR FLOODPLAIN EASEMENT AND DRAINAGE AND UTILITY EASEMENT AND FOREST BUFFER EASEMENT ±1.4 ACRES
STEEP SLOPES
100 YEAR FLOODPLAIN EASEMENT AND DRAINAGE AND UTILITY EASEMENT AND FOREST BUFFER EASEMENT ±0.01 ACRES
100 YEAR FLOODPLAIN EASEMENT AND DRAINAGE AND UTILITY EASEMENT AND FOREST BUFFER EASEMENT ±0.3 ACRES
DRAINAGE AND UTILITY EASEMENT
14' TALL BERM ALONG REAR PROPERTY LINE BEHIND LOTS 19-27
15' TALL BERM ALONG REAR PROPERTY LINE BEHIND LOTS 3-6
10'X20' DECK (TYPICAL ALL LOTS)
GATED FOR EMERGENCY ACCESS ONLY. TO BE APPROVED BY ADMINISTRATIVE LAW JU

GREENSPRING MANOR – COUNTY EXHIBITS

1A. OZR.DPC 8/10/21
1B. OZR.Hearing Report 8/24/22
2A. Real Est Compl.DPC 8/11/21
2B. Real Est Compl.Hearing Report 8/25/22
3. EIR 8/26/22
4. GWM 8/26/22
5. SWM 8/26/22
6. DEPS Appr'd Specimen Tree 9/21/21
7. DOP.Hearing Report 8.24.22 confirming HOH Report 10/13/21 w/ TIS attached
8. DOP. SIA. 7/9/21
9. DOP.Dev Responses to DOP CPC 7/29/21
10. DPR.Appr'd Schematic Landscape Plan Note 8/25/22 w/attached Sch Land Plan 10/13/21
11. R&P.OS. Hearing Report 8/25/22 w/attached County Email 11/10/21 OS Exhibit.Venable Letter.8.10.21
12A. DPR.DPC 8/10/21
12B. DPWT (Curtis) ZAC Comment 9/20/21
12C. DPR.ZAC Comment 10/18/21
12D. DPR.Hearing Report 8/26/22
13. DPWT (Nebre) Email to Dev Traffic Eng 8/16/22
14. Letter from County Attorney 2/23/2024 (MFR)

JOHN A. OLSZEWSKI, JR.
County Executive

DAVID V. LYKENS, *Director*
Department of Environmental Protection and Sustainability

September 21, 2021

Mr. John P. Canoles
Eco-Science Professionals, Inc.
P.O. Box 5006
Glen Arm, MD 21057

Re: Greenspring Manor at 2310 West Joppa Road
Forest Conservation Variance
Tracking # 02-21-3518

Dear Mr. Canoles:

The Department of Environmental Protection and Sustainability (EPS) received an initial request for a variance from Baltimore County's Forest Conservation Law on July 30, 2021 pursuant to our design meeting of July 28, 2021. Revised plans further refining the water and sewer house connection designs in response to our August 11, 2021 comments were received on August 18, 2021. The variance seeks approval to remove Specimen Tree # 12, a non-native Norway spruce in fair condition, for the widening of West Joppa Road associated with a proposed 61-lot residential subdivision. This 43-inch (diameter at breast height) specimen tree has been heavily trimmed on one side due to its proximity to overhead utility pole wires. The variance application proposes no mitigation for removal of this specimen tree given that it is non-native.

The Director of EPS may grant a special variance to the Forest Conservation law in accordance with criteria outlined in Section 33-6-116 of the Baltimore County Code. There are six (6) criteria listed in Subsection 33-6-116(d) and (e) that shall be used to evaluate the variance request. One (1) of the three criteria under Subsection 33-6-116(d) must be met, and all three (3) of the criteria under Subsection 33-6-116(e) must be met, in order to approve the variance.

The first criterion (Subsection 33-6-116 (d)(1) of the Code) requires that the petitioner show that the land in question cannot yield a reasonable return if the requirement from which the special variance is requested is imposed and will deprive the petitioner of all beneficial use of his property. The applicant is not seeking the variance based on deprivation of all beneficial uses. Furthermore, a long-standing homestead-type residence exists on this property. Therefore, this criterion has not been met.

The second criterion (Subsection 33-6-116 (d)(2) of the Code) requires that the petitioner show that his/her plight is due to unique circumstances and not the general conditions in the neighborhood. Rather than the general conditions in the neighborhood, the petitioner's plight is due to the close proximity of the specimen tree to West Joppa Road, which must be

widened to meet the increased traffic resulting from the proposed 61-lot residential subdivision. Therefore, we find that this criterion has been met.

The third criterion (Subsection 33-6-116 (d)(3) of the Code) requires that the petitioner show that the special variance requested will not alter the essential character of the neighborhood. Removing the single specimen tree would not alter the character of the neighborhood. Furthermore, the tree would likely be removed by Baltimore County at some point due to its declining condition or eventual widening of Joppa Road as a necessary capital improvement project. Therefore, we find that this criterion has been met.

The fourth criterion (Subsection 33-6-116 (e)(1) of the Code) requires that the granting of the special variance will not adversely affect water quality. Removing the tree would not directly impact any wetland or stream. The development project related to this specimen tree removal will meet current water quality management requirements through environmental site design and proposes approximately 5.9 acres of afforestation within the floodplain and forest buffer. Therefore, we find that granting of the special variance will not adversely affect water quality and that this criterion has been met.

The fifth criterion (Subsection 33-6-116 (e)(2) of the Code) requires that the special variance request does not arise from a condition or circumstance which is the result of actions taken by the petitioner. The petitioner has not taken any actions necessitating this variance prior to its request. The tree has existed adjacent to West Joppa Road for years prior to this development proposal, and would likely be removed at some point regardless of the proposed development for the reasons cited above. Therefore, this criterion has been met.

The sixth criterion (Subsection 33-6-116 (e)(3) of the Code) requires that the Director of EPS find that the special variance, as granted, would be consistent with the spirit and intent of Article 33 of the Baltimore County Code. Permitting the removal of one specimen tree for the widening of West Joppa Road associated with a proposed residential subdivision would be consistent with the spirit and intent the Forest Conservation Law given that the development does not propose to impact forest and will retain all but one of the 27 specimen trees onsite. Additionally, 3.5 acres of forest conservation afforestation and 2.4 acres of forest buffer mitigation will be provided in and adjacent to the Forest Buffer Easement to comply with both the Forest Buffer Law and Forest Conservation Law. Therefore, this criterion has been met.

Based on our review, this Department finds that the required criteria have been met. Therefore, the requested variance is hereby approved in accordance with Section 33-6-116 of the Baltimore County Code with the following conditions:

1. Prior to issuance of any Baltimore County permit, high visibility fence shall be installed along the limit of disturbance (LOD) wherever the LOD is within 50 feet of the critical root zone of any specimen tree to remain, any Forest Conservation Easement, or Forest Buffer Easement. Installation of this protective fence shall be detailed on both the sediment control plan and final Forest Conservation Plan.

2. The following note must appear on all subsequent plans for this project:

   "A special variance was granted on September 21, 2021 to Baltimore County's Forest Conservation Law to allow critical impact to one specimen tree for the widening of West Joppa Road. Conditions were placed on this variance, including protection of the remaining specimen trees and forest resources."

It is the intent of this Department to approve this variance subject to the above conditions. Any changes to site layout may require submittal of revised plans and a new variance request. Moreover, a special variance to Baltimore County's Forest Conservation Law will be required for removal of any specimen trees shown to remain on this plan.

Please have the appropriate representative sign the statement on the following page and return a signed copy of this entire letter to this Department within 21 calendar days. Failure to return a signed copy may render this approval null and void, or may result in delays in the processing of plans for this project.

If you have any questions regarding this correspondence, please contact Mr. Michael Kulis at (410) 887-3980.

Sincerely yours,

David V. Lykens
Director

DVL/msk

C. Marian Honeczy, Maryland Dept. of Natural Resources

I/we agree to the conditions enumerated in this approval letter to bring my/our property into compliance with Baltimore County's Forest Conservation Law.

Atapco Representative — Date: 10/5/21

Russel Powell
Printed Name

BALTIMORE COUNTY, MARYLAND
DEPARTMENT OF PLANNING

Memorandum

TO: Jerry Chen
Development Management

DATE: August 24, 2022

FROM: Brett M. Williams
Department of Planning

SUBJECT: Department of Planning HOH submittal materials for Greenspring Manor PAI 08-0922

Please accept this memo as a confirmation that the Department of Planning's submittal of Final HOH Report, School Impact Analysis, and point by point response documents on August 24, 2022 are pre-hearing agency comments.

Brett M. Williams

Brett M. Williams

BMW

BALTIMORE COUNTY, MARYLAND
INTER-OFFICE MEMORANDUM

TO: Paul Mayhew
Hearing officer, Administrative Law Judge

DATE: 11/8/2021

FROM: Stephen Lafferty
Director, Department of Planning

SUBJECT: HEARING OFFICER'S HEARING FINAL REPORT
Project Name: Greenspring Manor
PAI #VIII-0922

GENERAL INFORMATION:

Applicant Name: Atapco Properties, INC.
1 South Street, Suite 2800
Location: Baltimore, MD, 21202
Council District: Second
Growth Tier: I
Zoning: DR 1, DR 2
Acres: 39.4 gross acres ±

Surrounding Zoning and Land Use:

North:	DR 2	Residential
South:	DR 1	Residential
East:	DR 1, DR 2	Residential
West:	O3	Office

Project Proposal:

The project proposes 61 single-family homes to be built on 39.4 ±acres of land zoned DR 1 and DR 2. The site is mostly comprised of a field that is primarily being farmed and has environmental floodplains and wetlands. There is currently one existing house, which is to remain.

Project History:

The project exhibits no development history at this time.

Other Anticipated Actions and Additional Review Items:

☐ Variance	☒ Complete Streets*	☒ School Impact Analysis
☐ Special Exception	☐ Scenic Route	☐ PUD
☒ Special Hearing- F Level Intersection, Basic Services	☐ Compatibility	☐ Design Review Panel
☐ RTA Modification	☒ Section 260 Standards*	☐ Referral to Planning Board
☐ Waiver	☒ Pattern Book*	☐ Other

* Information about the requirements for these items is located on the Baltimore County web page at www.baltimorecountymd.gov/devrev

MEETINGS

Concept Plan Conference:	3/9/2021	Community Input Meeting:	4/27/2021
Development Plan Conference:	8/11/2021	Administrative Law Judge's Hearing:	10/21/2021

EVALUATION AND RECOMMENDATION

School Impact:
This development is subject to Section 32-6-103 of the Baltimore County Code, Adequate Public Facilities. The Department of Planning has reviewed the School Impact Analysis submitted on August 30, 2021 and recommends approval.

SIA Approval Finding:

The Department of Planning finds that the subject Development Plan meets the requirements of BCC § 32-6-103 at the time of the filing date, July 9, 2021. The School Impact Analysis performed by the Department of Planning indicates that the projected enrollment for Riderwood Elementary School, Ridgely Middle School, and Dulaney High School is below 115% of the state rated capacity respectively. The projected number of students as a percentage of the state rated capacity is:

- Riderwood ES: 98.57%
- Ridgely MS: 103.55%
- Dulaney HS: 97.88%

The Department of Planning recommends approval of the School Impact Analysis as it meets the requirements of the Baltimore County Code § 32-6-103.

Special Variance Request:

The applicant has requested the County to permit its development in an F level traffic shed as delineated on the 2020 Basic Services Map. This includes the intersection of West Joppa Road and Falls Road/I-83. The development access is within this failing traffic shed. The Department has received the applicant's memorandum regarding the traffic study analysis conducted in September 2020, which proposes improvements to mitigate the traffic in order to obtain a variance from the Basic Serves requirement.

With regard to the Special Variance request, the Department of Planning has no objection, but will defer and rely upon the expert judgement of the Department of Public Works and Transportation for final recommendation and decision.

Residential Performance Standards:

The Baltimore County Zoning Regulations (BCZR) § 260 requires the Director of the Department of Planning to provide a finding to the Hearing Officer for all residential development of four lots or more in Baltimore County that is located within the Urban/Rural Demarcation Line. The Department of Planning has reviewed the pattern book submitted on August 30, 2021 and recommends approval.

FINAL RECOMMENDATION: Through a point-by-point response letter received on September 16, 2021, and attached to this report, the applicants have positively responded to the August 11, 2021 Development Plan Conference comments made by the Department of Planning. The Development Plan is in conformance with the Baltimore County Zoning Regulations, the Comprehensive Manual of Development Policies, as well as the Master Plan 2020. The Department of Planning has reviewed the submitted redline Development Plan and associated materials for the above development for Greenspring Manor and recommends approval.

Prepared by:

Brett M. Williams

Brett M. Williams

Division Chief:

Jenifer G. Nugent

SL/JGN/MK/BMW/

attachment

Lenhart Traffic Consulting, Inc.

Transportation Planning & Traffic Engineering

Memorandum: *Date:* **October 21, 2020**

TO: Mr. Greg Carski FROM: Mike Lenhart

RE: 2310 W. Joppa Road Property

Greg,

We have prepared this memorandum as a supplemental analysis to our Traffic Impact Study dated September 28, 2020.

The referenced Traffic Impact Study included a recommendation to modify the traffic signal phasing and re-allocate the lane use on the east and west legs of the intersection of Falls Road at Joppa Road.

We have conducted an additional analysis including an expanded set of road improvements at this intersection. The road improvements are shown on the attached concept plan, and include widening the east and west legs of the intersection to provide an additional lane on each approach. These expanded improvements would mitigate 571% of the site impacts in the AM peak hour and 663% of the site impacts in the PM peak hour.

We understand that the site falls within a failing traffic shed as shown on the Basic Services Map. However, the applicant will be submitting an application for a Special Variance to allow this development to proceed based on our proposal for improvements that will substantially over-mitigate the traffic impacts. The code section related to this finding states that, "*The demand or impact of the development proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or the standard is not relevant to the development proposal.*" Based on the proposed improvements, the traffic conditions will be better with the approval of the project and the associated improvements, than what would be expected to occur if the project is not approved.

In reviewing the historical imagery in this area, it appears that no significant improvements have been provided in this area in at least 25 to 30 years, and there are currently no improvements programmed. The attached analyses show that the granting of the special variance would improve traffic conditions based on the CLV methodology over what would occur otherwise without the granting of the special variance.

If you have any questions regarding this matter, please do not hesitate to contact me at the number below.

Thanks,
Mike

Lenhart Traffic Consulting, Inc.
645 B&A Blvd, Suite 214
Severna Park, MD 21146

Phone (410) 216-3333
Fax (443) 782-2288
email: mlenhart@lenharttraffic.com



LEGEND

FULL-DEPTH WIDENING

REMOVE PAVEMENT

RE-MARK PAVEMENT

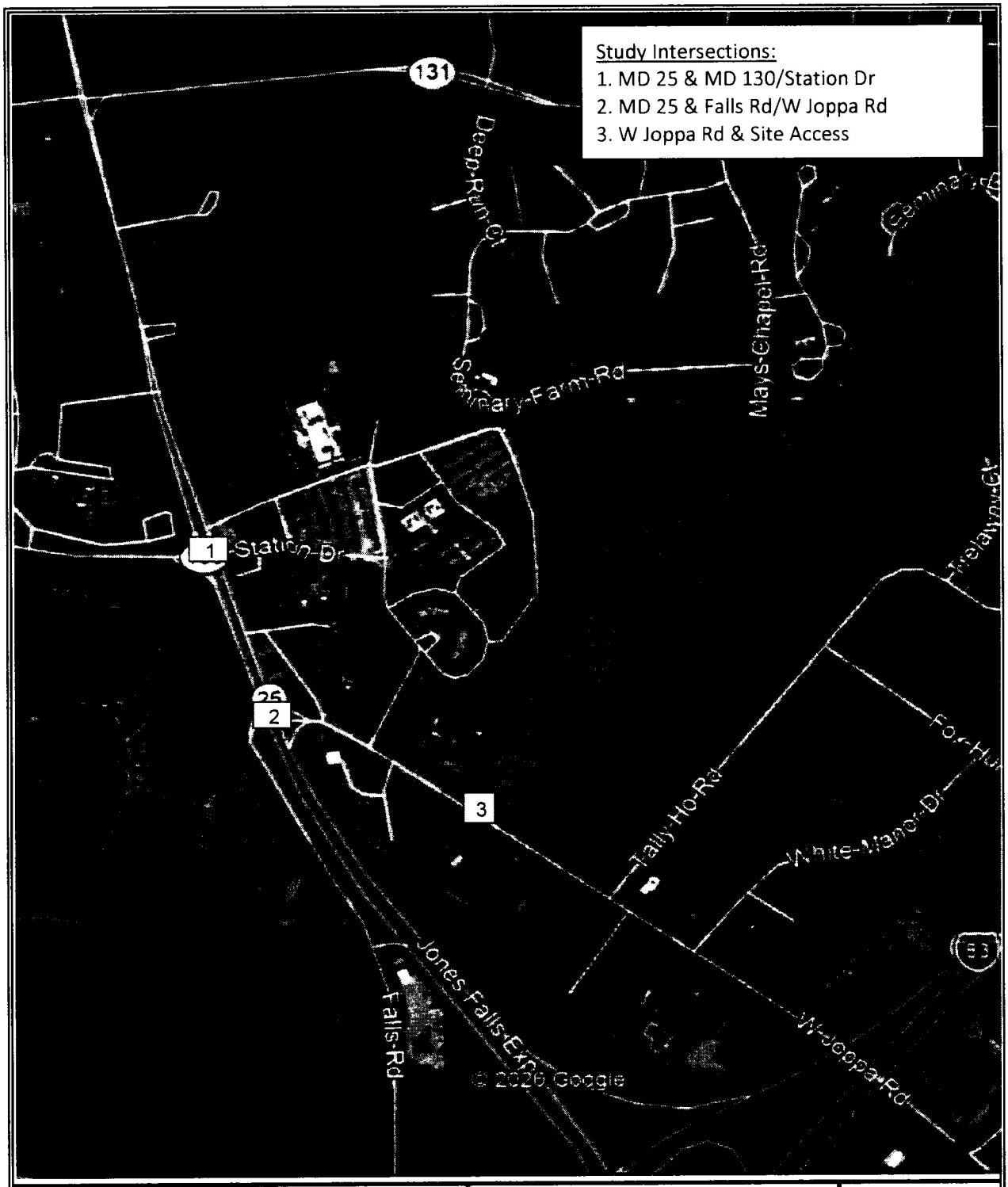
CONCRETE CURB AND GUTTER

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BOULEVARD, SUITE 214
SEVERNA PARK, MD 21146
TEL: (410) 216-3333
FAX: (443) 782-2288
www.lenharttraffic.com

2310 W. JOPPA ROAD

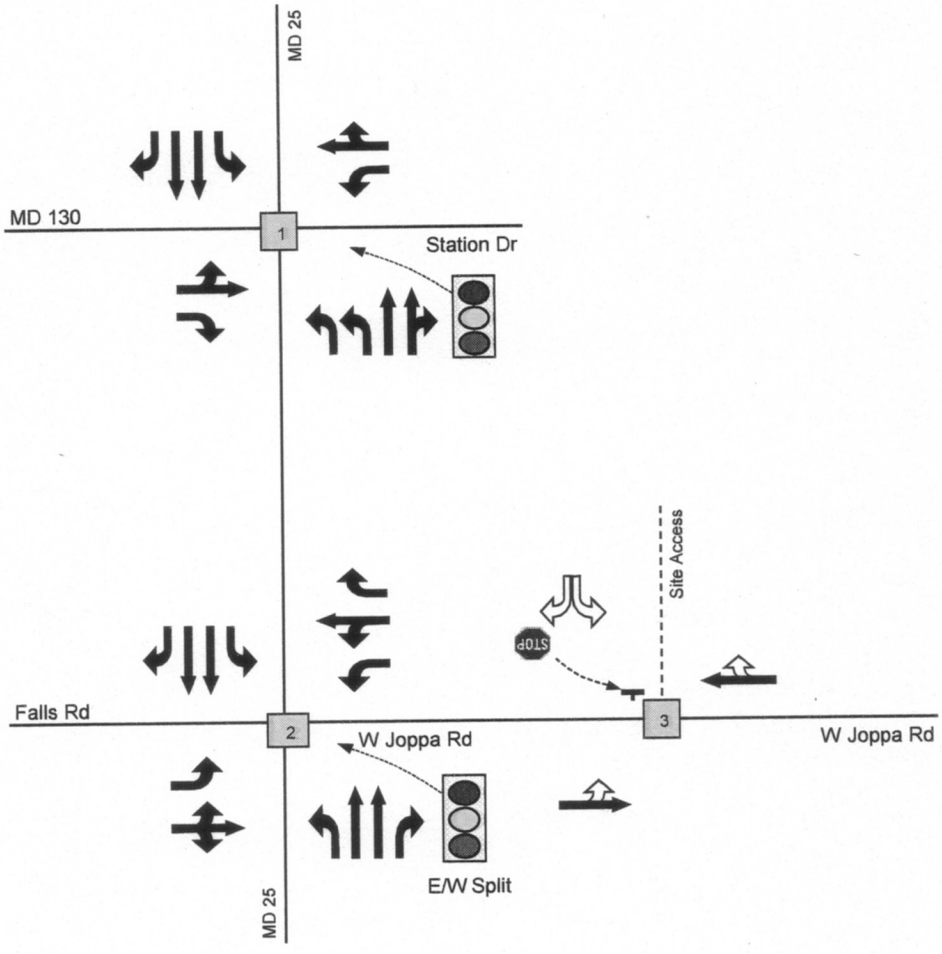
MD 25 AT WEST JOPPA ROAD
CONCEPT GEOMETRIC IMPROVEMENTS

DATE	DRAWN BY	SCALE	SHEET
OCT. 2020	LTC&CS	1"=50'	

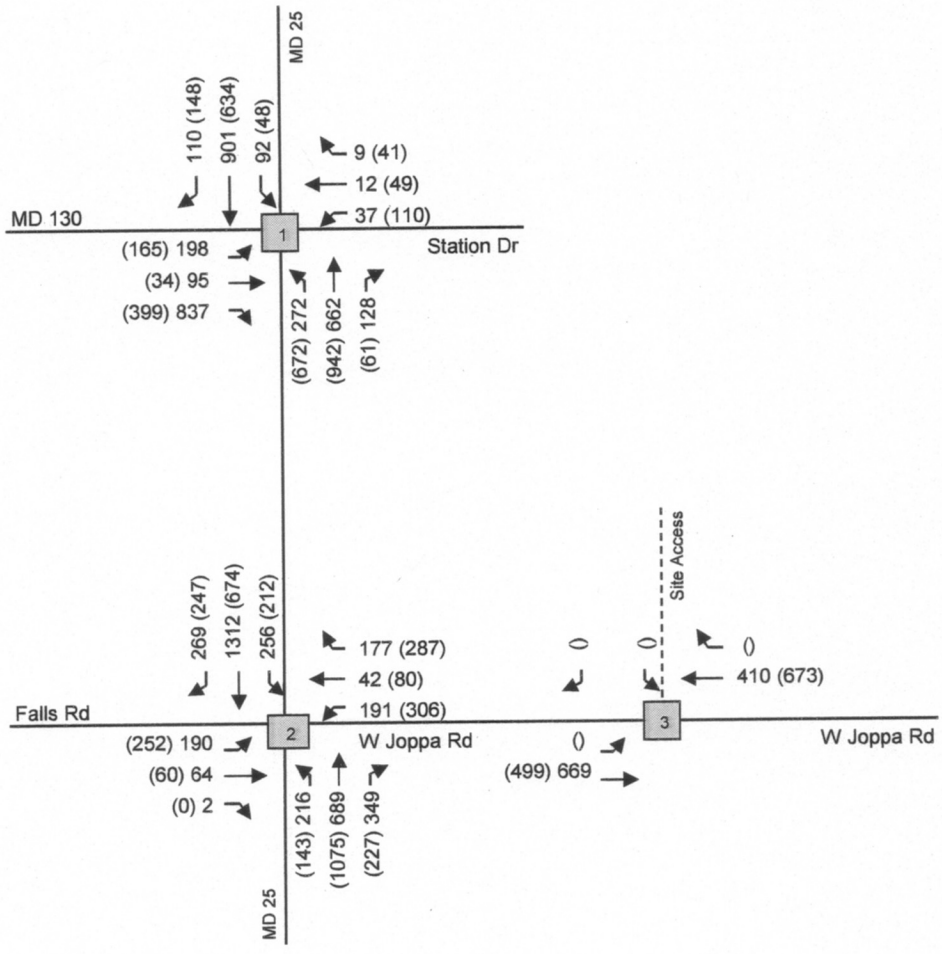


Traffic Impact Analysis	Site Location Map	**Exhibit 1**

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

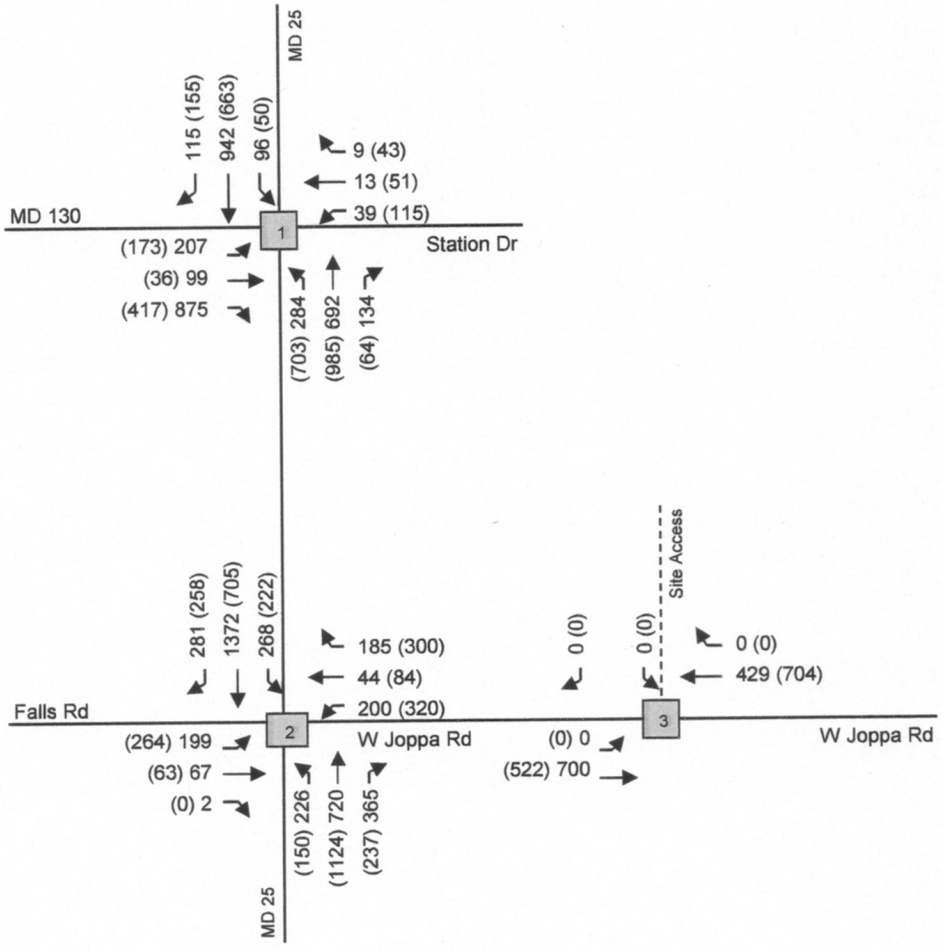


Traffic Impact Analysis	Lane Use & Traffic Control Devices	**Exhibit 2**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Key: Existing - ➡ Proposed - ⇨	



Traffic Impact Analysis	Existing Peak Hour Volumes	**Exhibit 3**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Key: xx = AM Peak Vol's (xx) = PM Peak Vol's	

1.5%	Growth Rate
3	Years of Growth
1.0457	Total Growth



Traffic Impact Analysis	Background Peak Hour Volumes	**Exhibit 4**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Key: xx = AM Peak Vol's (xx) = PM Peak Vol's	

Trip Generation Rates

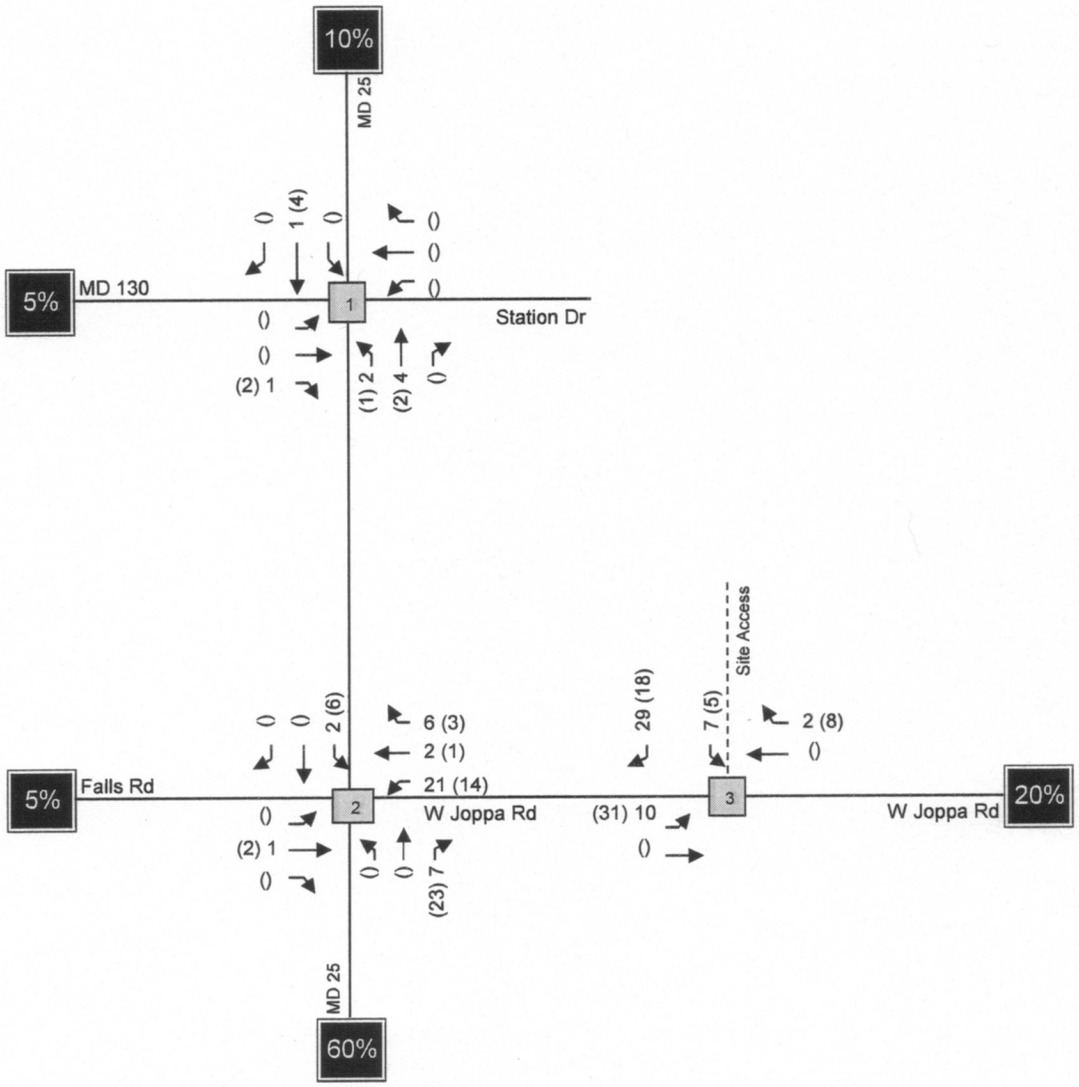
Single-Family Detached (ITE-210, Units)	Trip Distribution (In/Out)
Morning Trips = 0.70 x (Units) + 9.74	25/75
Ln(Evening Trips) = 0.90 x Ln(Units) + 0.51	63/37

Trip Generation Totals

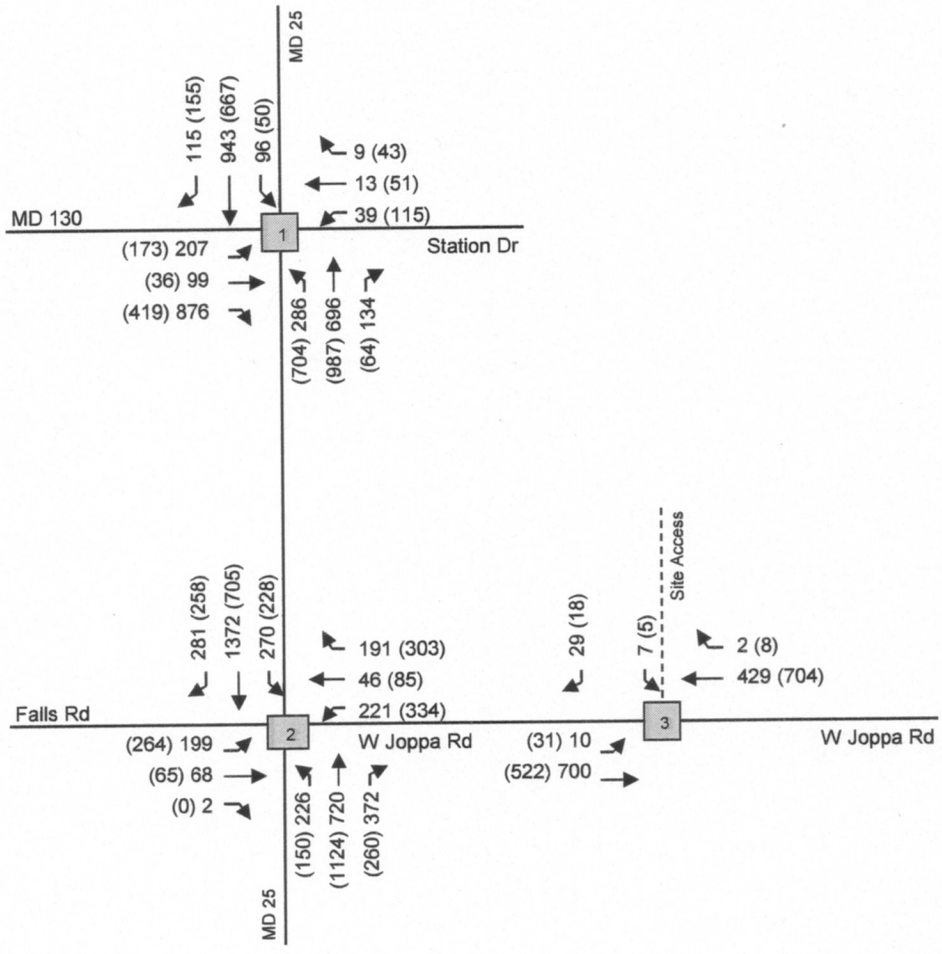
			AM Peak			PM Peak		
			In	Out	Total	In	Out	Total
LU Code 210	Single-Family Detached (ITE-210, Units)	62 units	11	35	46	38	23	61
		Total:	**11**	**35**	**46**	**38**	**23**	**61**

NOTE: Trip Generation Rates obtained from the ITE Trip Generation Manual, 10th Edition

Traffic Impact Analysis	Trip Generation for Site	**Exhibit 6**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com		



Traffic Impact Analysis	Trip Assignment for Site	**Exhibit 6**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146	Key: xx = AM Peak Vol's (xx) = PM Peak Vol's	



Traffic Impact Analysis	Total Peak Hour Volumes	**Exhibit 7**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Key: xx = AM Peak Vol's (xx) = PM Peak Vol's	

Level-of-Service Results

Morning Peak Hour	Critical Lane Volume (CLV)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total	CLV Impact	Mitigates
1). MD 25 & MD 130/Station Dr	B / 1009	B / 1054	B / 1057	3	–
2). MD 25 & Falls Rd/W Joppa Rd	C / 1232	C / 1288	D / 1302	14	–
Improvements in Original TIA			C / 1272	-30	214%
Proposed New Improvements			C / 1222	-80	571%
3). W Joppa Rd & Site Access	N/A	N/A	A / 756	–	–

Evening Peak Hour	Critical Lane Volume (CLV)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total	CLV Impact	Mitigates
1). MD 25 & MD 130/Station Dr	B / 1078	B / 1128	B / 1130	2	–
2). MD 25 & Falls Rd/W Joppa Rd	C / 1222	C / 1278	C / 1294	16	–
Improvements in Original TIA			C / 1245	-49	306%
Proposed New Improvements			C / 1188	-106	663%
3). W Joppa Rd & Site Access	N/A	N/A	A / 766	–	–

Appendix A

Supplemental Information
Turning Movement Counts

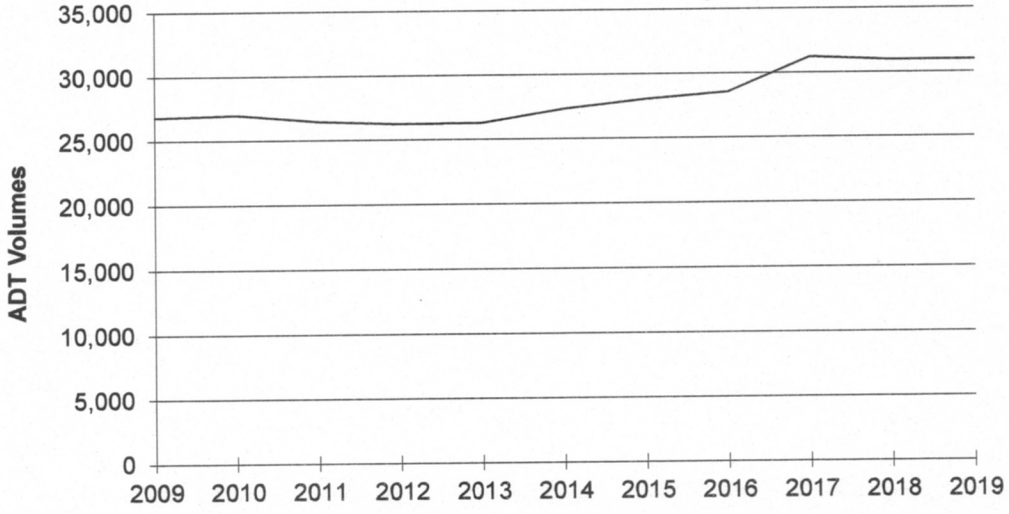
TRAFFIC GROWTH PROJECTION

LOCATION: Jones Falls Expy South of MD 130

REPORT DATE: 03-Sep-20

AVERAGE GROWTH:	1.49%
MATHEMATICAL GROWTH:	1.44%

Year	ADT Volume	Vol. increase	% increase	Average %
2009	26,821			
2010	26,982	161	0.60%	0.60%
2011	26,440	-542	-2.01%	-0.70%
2012	26,231	-209	-0.79%	-0.73%
2013	26,282	51	0.19%	-0.50%
2014	27,330	1,048	3.99%	0.40%
2015	28,041	711	2.60%	0.76%
2016	28,572	531	1.89%	0.93%
2017	31,230	2,658	9.30%	1.97%
2018	30,951	-279	-0.89%	1.65%
2019	30,952	1	0.00%	1.49%



Weekday Morning Peak Hour (6:30 am - 9:30 am)

	Northbound			Southbound			Eastbound			Westbound			
Time:	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
6:30-6:45													0
6:45-7:00													0
7:00-7:15													0
7:15-7:30													0
7:30-7:45													0
7:45-8:00													0
8:00-8:15													0
8:15-8:30													0
8:30-8:45													0
8:45-9:00													0
9:00-9:15													0
9:15-9:30													0

Hourly Totals													
6:30-7:30	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45-7:45	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00-8:00	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15-8:15	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00-9:00	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15-9:15	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30-9:30	0	0	0	0	0	0	0	0	0	0	0	0	0

AM	Northbound			Southbound			Eastbound			Westbound			
Peak Hour	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
6:30-7:30	0	0	0	0	0	0	0	0	0	0	0	0	0

Weekday Evening Peak Hour (4 pm - 7 pm)

	0 Northbound			0 Southbound			0 Eastbound			0 Westbound			
Time:	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
4:00-4:15													0
4:15-4:30													0
4:30-4:45													0
4:45-5:00													0
5:00-5:15													0
5:15-5:30													0
5:30-5:45													0
5:45-6:00													0
6:00-6:15													0
6:15-6:30													0
6:30-6:45													0
6:45-7:00													0

Hourly Totals													
4:00-5:00	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15-5:15	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30-5:30	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45-5:45	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00-6:00	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15-6:15	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30-6:30	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45-6:45	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00-7:00	0	0	0	0	0	0	0	0	0	0	0	0	0

PM	Northbound			Southbound			Eastbound			Westbound			
Peak Hour	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Total
4:00-5:00	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Hour
Turning Movement Count

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Intersection:
Weather:
Count by:
Count Day/Date:
County:

Appendix B

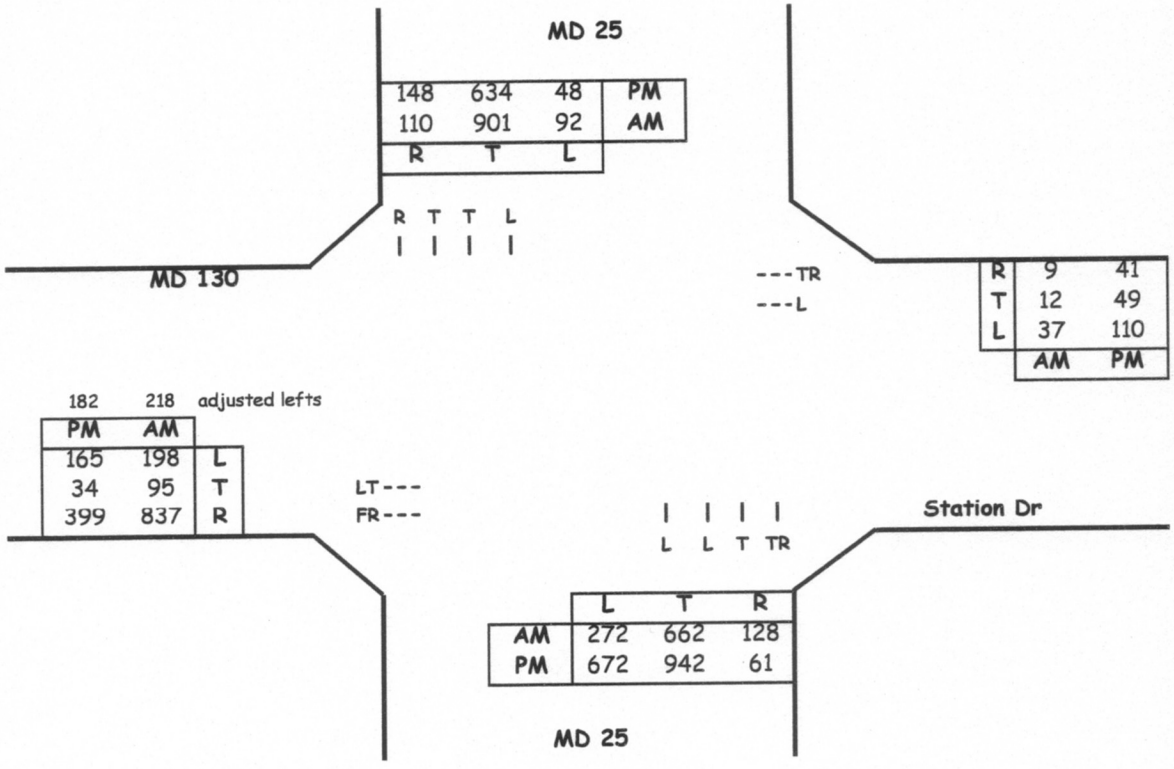
Critical Lane Volume (LOS) Worksheets

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25
Minor Street: Station Dr
Study Period: EXISTING TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	790	0.55	435	92	1	92	659
SB	901	0.55	496	272	0.6	163	
EB	313	1	313	37	1	37	350
WB	21	1	21	198	1	198	

CLV TOTAL= **1009**

Level of Service (LOS)= **B**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1003	0.55	552	48	1	48	752
SB	634	0.55	349	672	0.6	403	
EB	216	1	216	110	1	110	326
WB	90	1	90	165	1	165	

CLV TOTAL= **1078**

Level of Service (LOS)= **B**

Critical Lane Volume Analysis

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MD 25 &
Station Dr
(EXISTING TRAFFIC)

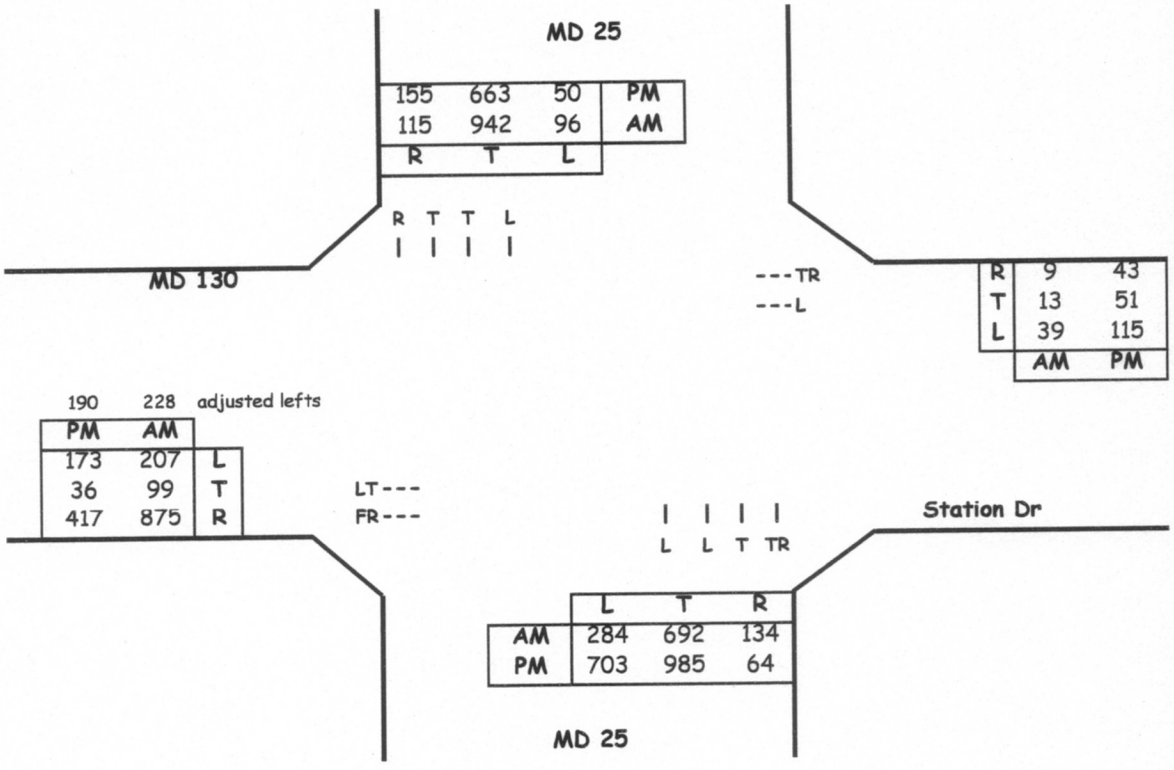
Intersection
1

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25
Minor Street: Station Dr
Study Period: BACKGROUND TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	826	0.55	454	96	1	96	688
SB	942	0.55	518	284	0.6	170	
EB	327	1	327	39	1	39	366
WB	22	1	22	207	1	207	

CLV TOTAL= **1054**

Level of Service (LOS)= **B**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1049	0.55	577	50	1	50	787
SB	663	0.55	365	703	0.6	422	
EB	226	1	226	115	1	115	341
WB	94	1	94	173	1	173	

CLV TOTAL= **1128**

Level of Service (LOS)= **B**

Critical Lane Volume Analysis

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MD 25 &
Station Dr
(BACKGROUND TRAFFIC)

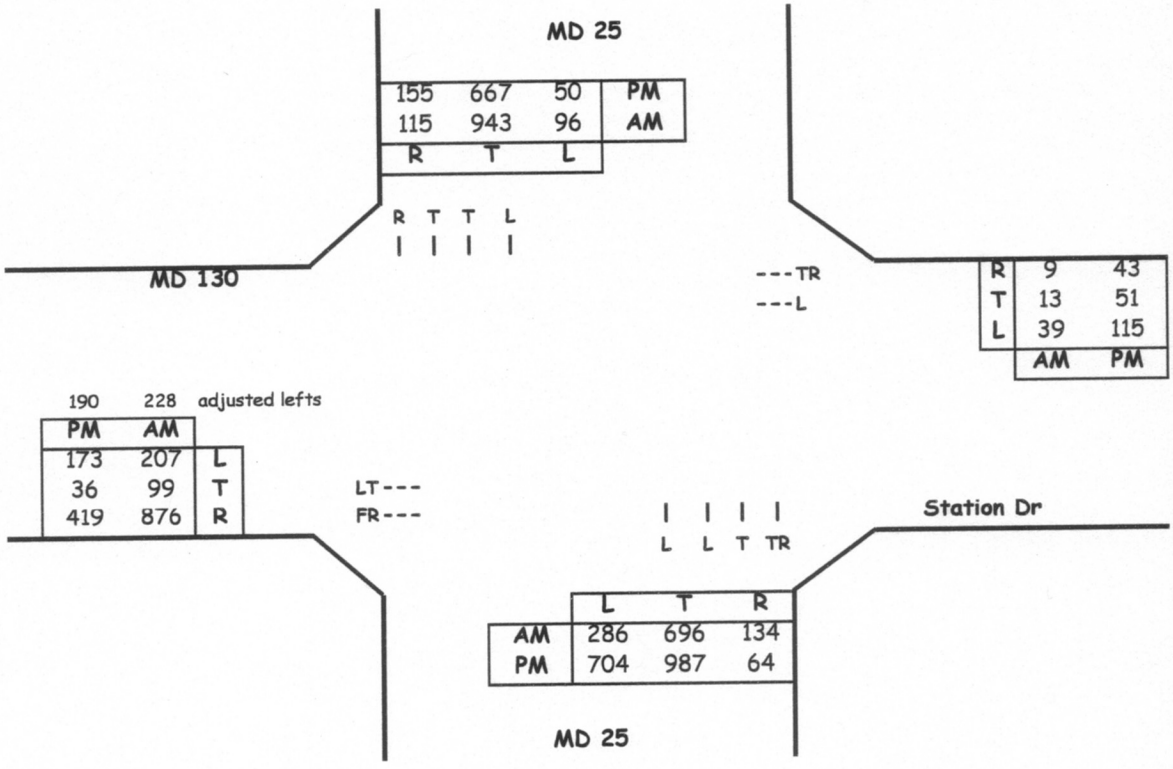
Intersection
1

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25
Minor Street: Station Dr
Study Period: TOTAL TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	830	0.55	457	96	1	96	691
SB	943	0.55	519	286	0.6	172	
EB	327	1	327	39	1	39	366
WB	22	1	22	207	1	207	

CLV TOTAL= **1057**
Level of Service (LOS)= **B**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1051	0.55	578	50	1	50	789
SB	667	0.55	367	704	0.6	422	
EB	226	1	226	115	1	115	341
WB	94	1	94	173	1	173	

CLV TOTAL= **1130**
Level of Service (LOS)= **B**

Critical Lane Volume Analysis

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MD 25 &
Station Dr
(TOTAL TRAFFIC)

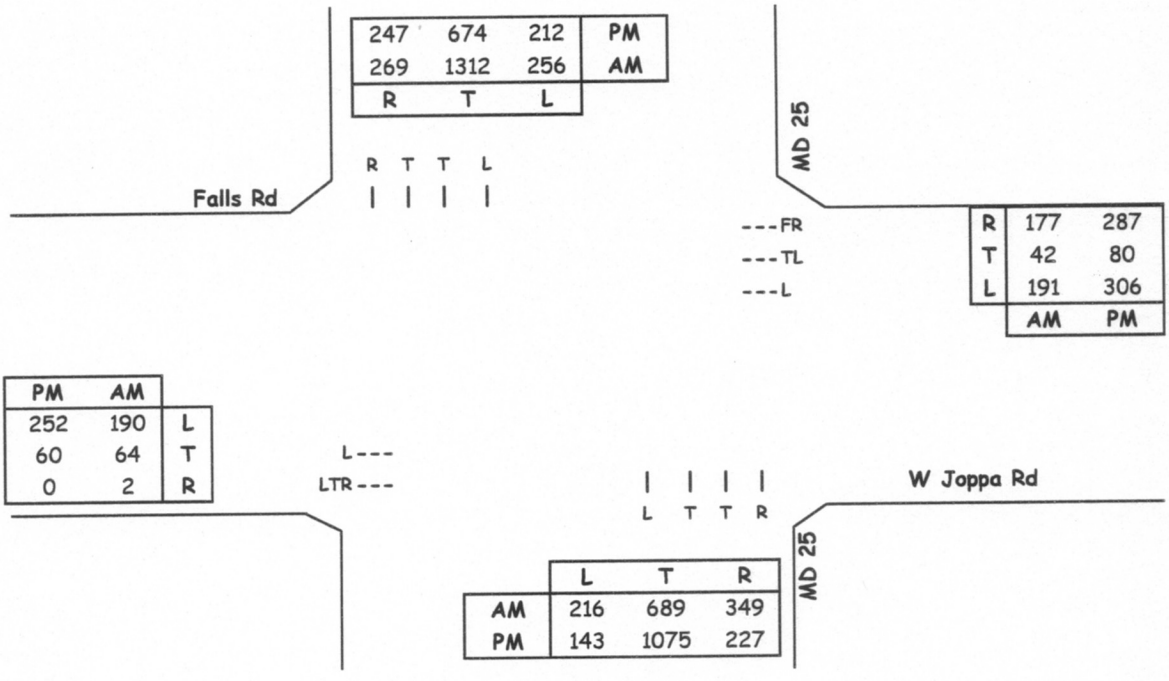
Intersection
1

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: MD 25
Minor Street: W Joppa Rd
Study Period: Existing Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	256	0.60	154				154
WB	233	0.60	140				140
NB	689	0.55	379	256	1.00	256	938
SB	1312	0.55	722	216	1.00	216	
						CLV TOTAL=	1232
						Level of Service (LOS)=	C

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	312	0.60	187				187
WB	386	0.60	232				232
NB	1075	0.55	591	212	1.00	212	803
SB	674	0.55	371	143	1.00	143	
						CLV TOTAL=	1222
						Level of Service (LOS)=	C

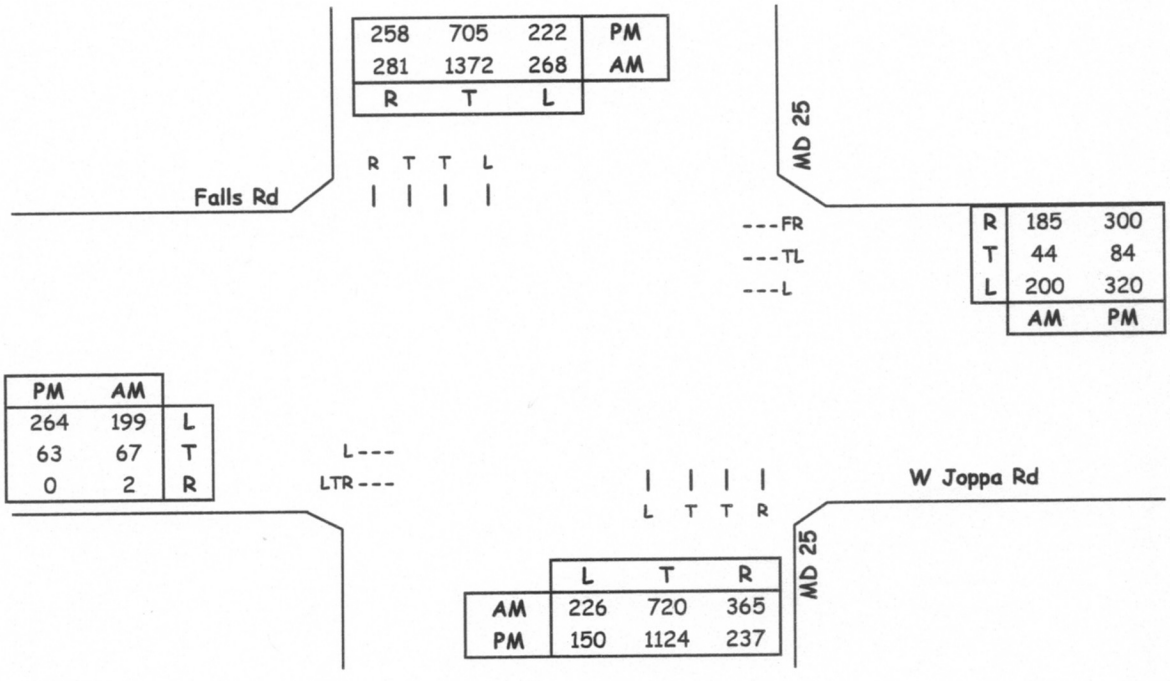
Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning		MD 25 & W Joppa Rd (Existing Traffic)	Intersection 2

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: MD 25
Minor Street: W Joppa Rd
Study Period: Background Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	268	0.60	161				161
WB	244	0.60	146				146
NB	720	0.55	396	268	1.00	268	981
SB	1372	0.55	755	226	1.00	226	
						CLV TOTAL=	1288
						Level of Service (LOS)=	C

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	327	0.60	196				196
WB	404	0.60	242				242
NB	1124	0.55	618	222	1.00	222	840
SB	705	0.55	388	150	1.00	150	
						CLV TOTAL=	1278
						Level of Service (LOS)=	C

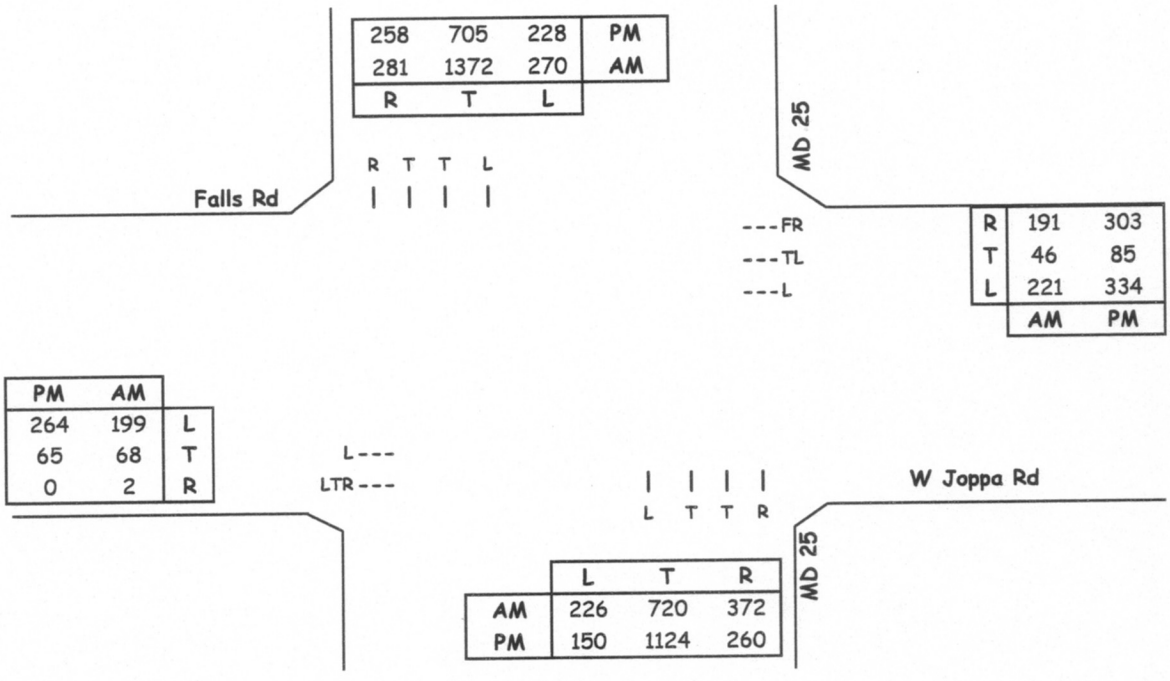
Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning		MD 25 & W Joppa Rd (Background Traffic)	Intersection 2

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: MD 25
Minor Street: W Joppa Rd
Study Period: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	269	0.60	161				161
WB	267	0.60	160				160
NB	720	0.55	396	270	1.00	270	981
SB	1372	0.55	755	226	1.00	226	

CLV TOTAL= 1302

Level of Service (LOS)= D

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	329	0.60	197				197
WB	419	0.60	251				251
NB	1124	0.55	618	228	1.00	228	846
SB	705	0.55	388	150	1.00	150	

CLV TOTAL= 1294

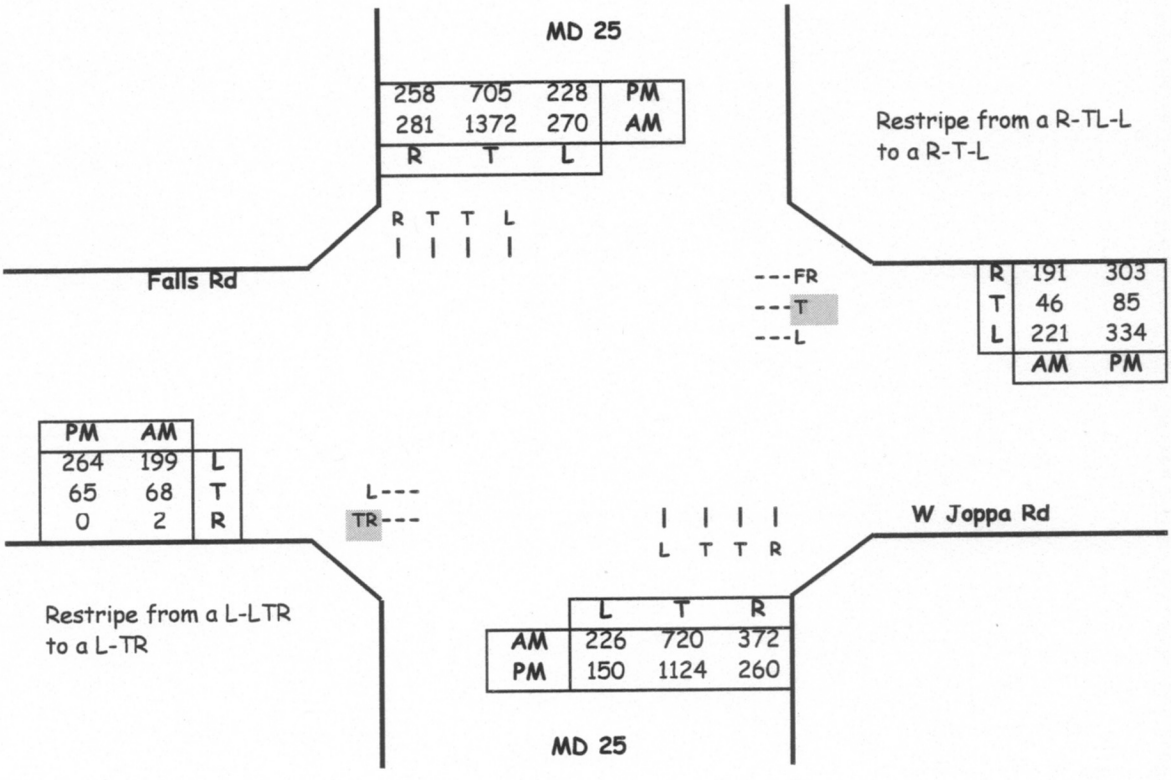
Level of Service (LOS)= C

Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning		MD 25 & W Joppa Rd (Total Traffic)	Intersection 2

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25 **Analyst:** Lenhart Traffic
Minor Street: W Joppa Rd
Study Period: TOTAL TRAFFIC
With Original Proposed Improvements

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	720	0.55	396	270	1	270	981
SB	1372	0.55	755	226	1	226	
EB	70	1	70	221	1	221	291
WB	46	1	46	199	1	199	

CLV TOTAL= **1272**
Level of Service (LOS)= **C**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1124	0.55	618	228	1	228	846
SB	705	0.55	388	150	1	150	
EB	65	1	65	334	1	334	399
WB	85	1	85	264	1	264	

CLV TOTAL= **1245**
Level of Service (LOS)= **C**

Critical Lane Volume Analysis		MD 25 & W Joppa Rd (TOTAL TRAFFIC)	**Intersection 2**

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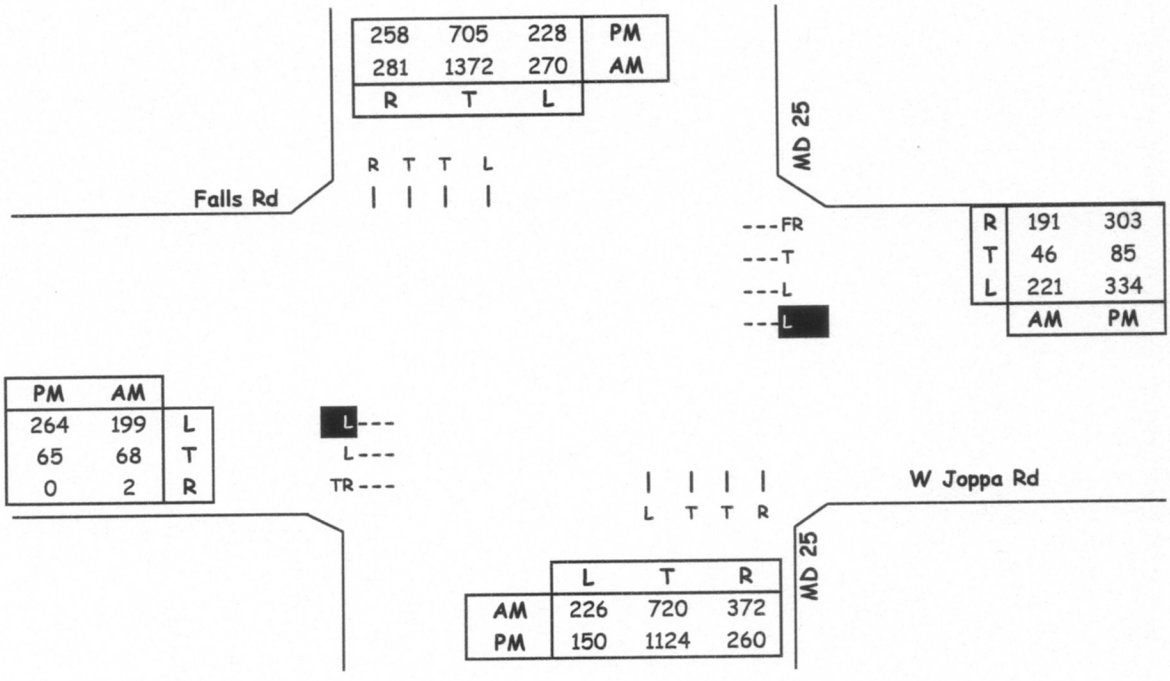
Critical Lane Volume (CLV) Methodology for MSHA

Main Line: MD 25
Minor Street: W Joppa Rd
Study Period: Total Traffic with Expanded Improvements and Intersection Widening

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	199	0.60	119				119
WB	221	0.55	122				122
NB	720	0.55	396	270	1.00	270	981
SB	1372	0.55	755	226	1.00	226	
						CLV TOTAL=	1222
						Level of Service (LOS)=	C

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	264	0.60	158				158
WB	334	0.55	184				184
NB	1124	0.55	618	228	1.00	228	846
SB	705	0.55	388	150	1.00	150	
						CLV TOTAL=	1188
						Level of Service (LOS)=	C

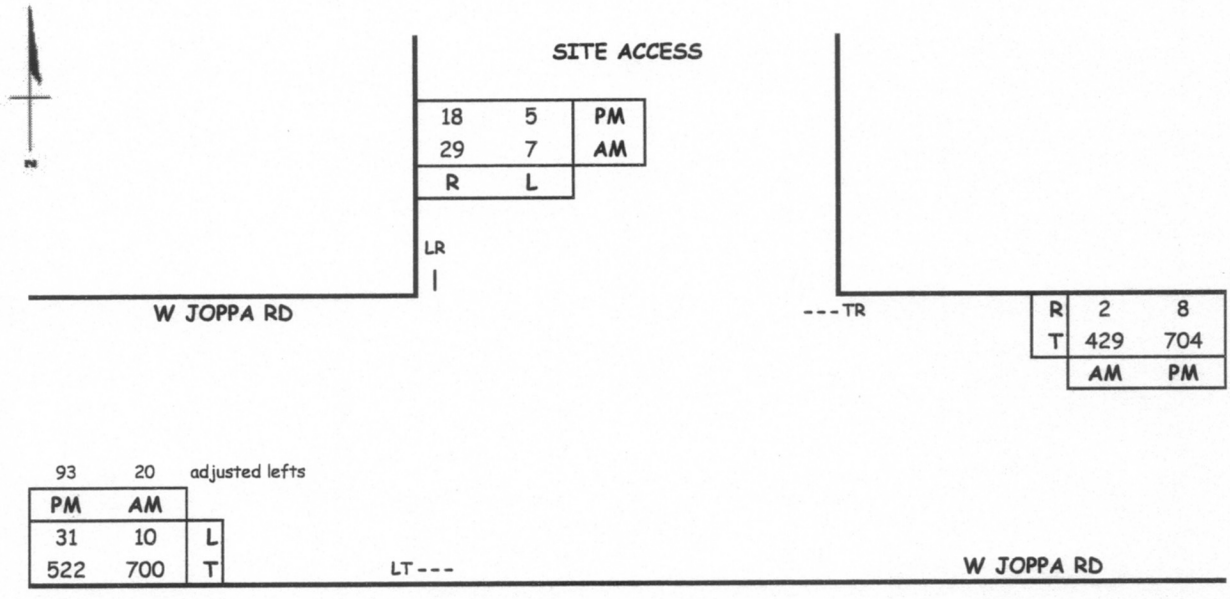
Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning		MD 25 & W Joppa Rd fic with Expanded Improvements and Intersection	Intersection 2

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Intersection of: Site Access
and: W Joppa Rd
Conditions: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
SB	36	1.00	36				36
EB	720	1.00	720				720
WB	431	1.00	431	10	1.00	10	

CLV TOTAL= **756**
Level of Service (LOS)= **A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
SB	23	1.00	23				23
EB	615	1.00	615				743
WB	712	1.00	712	31	1.00	31	

CLV TOTAL= **766**
Level of Service (LOS)= **A**

Critical Lane Volume Analysis

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Site Access &
W Joppa Rd
(Total Traffic)

Intersection
3

Greenspring Manor

July 29, 2021

Point-by-Point Responses to Department of Planning Comments on the Submitted Concept Plan

1. *The Department of Planning considers this site to be overdeveloped.*
    a. Density permitted by underlying zoning – 61 units.
    b. Open Space Required – 61,000 sf Open Space Proposed 167,500 sf
    c. Undeveloped area – (Forest Buffer, Forest Conservation, SWM, Open Space) = ±717,000 sf or ±16.45 acres. Site is 39.9 acres. Total Undeveloped area = ±41.22% of overall site.
    d. No bulk area variances are being requested.
    e. Only Clearing ±52,000 of wooded area or ±3% of the property.

2. *Many of the lot sizes are not compatible to the surrounding neighborhoods.*
    a. Boxwood Lane Semi-Detached and Townhome lots = 5,500-12,500 sf.
    b. Tally Ho average is ±31,500 sf.
    c. Seminary Farm Road Single family detached lots = ±24,000 sf.
    d. Seminary Farm Single Family Attached Lots = ±6,500 sf
    e. Greenspring Station Commercial Development
    f. Our proposed average lot size is. ±11,500 sf.
    g. We have prepared an exhibit showing the diversity of density in the surrounding neighborhoods.

3. *The number of lots should be decreased to allow for larger lots and would help achieve a design that could accommodate future improvements and yard space without the need for relief.*
    a. 10'x20' decks can be accommodated on all lots without need for a variance.
    b. Pools can be installed in the rear yards without need for variances.

4. *As designed the proposed development does not achieve the vision of the Master Plan 2020 nor the CMDP.*
    a. See evidence of how the proposed project does achieve the vision of the Master Plan 2020 and CMDP below.

5. *The Mater Plan 2020 recommends low-density residential development adjacent to higher zones consisting of mixed-uses.*
    a. Our plan provides this. DR-1 and DR-2 are the lowest Density Residential Zones.
    b. Directly adjacent to our site is the Greenspring Station development which contains higher density commercial uses.
    c. Directly to our north is a denser development containing semi-detached and single family attached units.

6. *The site also would require extensive grading. The site should be redesigned to minimize cut and fill while using the natural features of the land pursuant to the CMDP as well as Section 260 of the BCZR.*
    a. We intentionally set the proposed road as close to existing grade as possible. In most areas the proposed road is within 2' of existing grade.
    b. The general landform is being maintained. This can be evidenced by the fact that we have no perimeter retaining walls tying into existing grades.

    c. Section 260 Compliance
        i. *Provide variety in housing type or design, while maintaining continuity in scale, rhythm, proportion and detail. We are doing this.*
            1. We are providing 40', 50' and 54' wide units. This provides a variety of housing type and design but they are not so different that they don't maintain continuity.
            2. We are also providing a variety of front load and side load garages.

        ii. *Orient the front of the dwelling toward the street and incorporate prominent entries such as porches or stoops in the front building façade.*
            1. All of the homes front a street.
            2. All of the homes provide a front porch or stoop

        iii. *Adhere to a consistent front building setback for all dwellings on the same street or square, so that the fronts of the dwelling define a uniform street edge.*
            1. The overwhelming majority of the homes hold the same front building setback for continuity. Only 2-3 of the proposed 60 homes are setback slightly farther.

    All of the rest of the Section 260 requirements are architecture related and will be addressed in the Pattern Book.

Additional DOP Comments on the Plan

1.
    a. Redesign the overall layout with uniform lot sizes that are more compatible with the surrounding development.
        i. The Surrounding neighborhoods vary in size, density and use ranging from larger single family detached homes in the Tally Ho neighborhood to the east to Semi-detached and townhomes in the Seminary Farm neighborhood to the north. Directly to the west is the Greenspring Station commercial development.
        ii. Given the diverse range of housing types, sizes and commercial uses in the community and directly adjacent to our site we feel that our proposed community with single-family detached homes is compatible.
        iii. We are meeting yard requirements in CMDP Page 33 and the BCZR.

b. and more compatible with the description of the Master Plan 2020 T-3 Transect Designation.
    i. Our design is fully compatible with the description of the T-3 Transect. "T-3 (Sub-Urban Zone) includes low-density residential areas, adjacent to higher zones that contain mixed use. Home occupations and outbuildings may be allowed. Landscaping is naturalistic and setbacks are relatively deep. Blocks may be large and the roads irregular to accommodate natural conditions"
    ii. Our proposed design is low density. We adhere to the lowest Density Residential requirements and require no bulk area variances.
    iii. Our project is located adjacent to a higher zone which contains mixed use.
    iv. Our landscape design is naturalistic incorporating naturalistic landscape buffering including a mix of deciduous, evergreen and flowering trees.
    v. Our proposed setbacks are relatively deep and either meet or exceed the setbacks required by the zoning regulations.
c. Design road alignments in relation to existing topography.
    i. We have taken great care to keep our grading design close to existing grade. In many cases we are within ±2' of existing grade.
    ii. Per Master Plan Page 29 in T-3 "roads may be irregular to accommodate natural conditions".
d. Minimize cutting and filling and avoid mass grading of large tracts of land where possible pursuant to CMDP, Residential Guideline, page 43.
    i. Our cutting and filling is kept to a minimum by following the existing land formations. This is further evidenced by the lack of proposed retaining walls. The one retaining wall that we are now proposing is only necessary to provide walkout basements for a few of the homes.
e. Coordinate building design, site layout, and grading so that grade transitions are gradual and respect the existing topography pursuant to the Baltimore County Zoning Regulation section 260.2.A.3
    i. We are doing this to a great extent. Most areas are close to existing grade.

2. Remove lot 7 or reallocate it withing the redesign of the site plan to avoid the awkward siting of this home.
    a. We have adjusted the plan to accommodate this request.

3. Show front building orientations for all proposed dwellings.
    a. This has been done.

4. Provide a landscape and lighting plan to the County Landscape Architect for review and approval. Proposed lighting should be designed at a pedestrian scale and not create light spillage onto adjacent properties.
    a. A Schematic Landscape Plan has submitted to the County Landscape Architect.
    b. Lighting and Photometric Plans are not prepared for residential Projects. Streetlight design and spacing are dictated by DPW and BGE.

5. Add a note to the plan stating that the maximum height for a dwelling in a DR 1/DR 2 zone is 50 feet.
    a. This has been done.

6. Confirm with the Office of Zoning Review whether additional on street parking for overflow will be required.
    a. Not required for single family detached communities.
    b. Parking Required = 61 homes x 2 = 122 spaces.
    c. Parking Provided =
        i. (15) 3-car garage = 3 in garage and 2 in driveway = 75 spaces
        ii. (46) 2-car garage = 2 in garage and 2 in driveway = 184 spaces
        iii. Parking on one side of the street = 50 spaces
        iv. Total Parking Provided = 309 spaces.

7. Confirm by note on the plan that a minimum private yard area of 500 contiguous square feet with a minimum 15-foot dimension is provided for each proposed lot to ensure adequate yard space pursuant to the Comprehensive Manual of Development Policies (CMDP) page 33.
    a. The note has been added. The smallest private yard that we will have will be ±2,000 sf.

8. The Department of Planning will require the proposed cul-de-sacs to be designed pursuant to Baltimore County Zoning Regulations section 260.4.B. Landscaped islands will be required unless an unforeseen hardship exists notwithstanding the proposed layout design.
    a. We have increased the size of the cul-de-sac so that it now has a 52' outside radius with a 24' radius center island.

9. Provide all architectural designs to the Department of Planning for review and approval. The architecture should be included in the required pattern book and show all proposed housing types. The proposed architecture should indicate proposed dimensions, materials and colors to be used.
    a. This has been provided in the pattern book as part of the Development Plan submittal.

10. All proposed signage should be included in the pattern book and comply with section 450 of the BCZR. Signage should include proposed sign type, dimensions, materials, and colors.
    a. Signage design has been provide in the pattern book.

11. Indicate in the required pattern book that Lots 2, 6, 8, 15, 36, 46, 47, 52, 53, and 61 are high visibility lots. It should be demonstrated in the required pattern book how these lots meet the higher quality of design pursuant to the Baltimore County Manual of Regulations Section 260.6. The pattern book should include square footage for the side facades with element count requirements.
    a. This has been done.

12. The plan states that the proposed 52,000 sf HOA space will be an active recreation field. Clearly indicate whether this will be an open multi-use field, sport field, tot lot, or other open space.

Clarify whether the proposed open space within the 100-year floodplain is acceptable per county open space standards.

a. We have adjusted the grading so that none of the open space is within the floodplain.
b. The open spaces have been designed in more detail which can be found in the Pattern Book.

13. Confirm with the Department of Environmental Protection and Sustainability that all wetland, floodplain and forest buffer setbacks are being met.
    a. We are currently working with DEPS to have all of the environmental items approved. DEPS will make sure that all of the environmental requirements are met.

14. Make a clear distinction on the plan between the labeled forest buffer and forest conservation easement areas.
    a. This has been accomplished with notes and hatching.

15. Indicate if there are any specimen trees on the site. These trees should be preserved to the fullest extent possible.
    a. There are a total of 27 specimen trees on the property. We are only proposing to remove 1 which is adjacent to Joppa Road and needs to be removed because of required road widening.

16. Any fencing around the storm water management ponds should be of high-quality materials as approved by the Baltimore County Landscape Architect.
    a. We have included fencing details in the pattern book.

17. It is a policy of the Department of Planning that the homeowner should be able to have an open projection (i.t. rear decks) of at least 10' without requiring individual zoning relief.
    a. We can accommodate 10' decks on all lots without the need for variance. On many lots we can accommodate 12' decks without the need for variances.

18. Changes in building location or orientation, or proposed driveway location, at the time of building permit may require a determination from the zoning office of a possible amendment to the Final Development Plan (FDP). IF, at the building permit stage, it is anticipated that dwelling footprints may be reversed, or that the location of garages may change from front to side loaded or vice versa, a detailed alternative typical lot layout plan should be included in the pattern book.
    a. Informational.

Master Plan 2020 and CMDP Compliance

a. CMDP Compliance

i. *Residential Standards*
   1. *Single Family Detached Setbacks*
      a. We meet or exceed all of these.
   2. *Open Space shall be provided in accordance with County Open Space Manual.*
      a. We are doing this. 61,000 sf required. 167,500 sf provided.
   3. *Private Yard Areas: 500 square feet is required in the side or rear yard.*
      a. We easily exceed this. Most lots will have >2,000 square feet.

ii. *Residential Guidelines*
   1. *Site Planning*
      a. *Guideline: The size, scale and pattern of development suits the underlying landforms.*
         i. Vary the project designs for valleys, ridges and plateaus.
            1. We have designed the project so that the main road follows the natural valley of the land and most of the grading closely follows existing grade.
         ii. *Terrace new slopes greater than 25%.*
            1. We do not have many areas >25% other than where we are proposing walkout basements. Other areas >25% are relatively small and do not need to be terraced.
         iii. *Minimize cutting and filling*
            1. Cutting and filling has been minimized by following the existing grades closely.
         iv. *Where possible, avoid mass grading of large tracts of land.*
            1. We are not drastically altering the natural landform. Evidence of this is the lack of perimeter retaining walls.

      b. *Guideline: The project design retains the existing vegetation to the fullest extent possible.*
         i. *Avoid cuts into wooded ridges.*
            1. We are not cutting into any wooded ridges.
         ii. *Evaluate the natural vegetation of the site to determine the placement of buildings.*

1. We are clearing almost no trees. Two small areas to allow for new SWM facilities.

iii. *Protect existing trees during construction by protecting the actual root system, not the tree line.*

1. We will do this where appropriate. This will be required by the Department of Environmental Protection on our Forest Conservation and Forest Buffer Protection Plans.

c. *Guideline: Project design is an element of the watershed management.*

i. *Utilize preserved environmentally sensitive areas and environmental control facilities as site amenities.*

1. We are preserving ±11 acres as Forest buffer and/or Forest Conservation. ±27.5% of overall site.

ii. *Protect and preserve stream valleys and greenways. We are not impacting the stream valley.*

1. We are installing an extensive SWM system which will provide better SWM treatment than the existing farming activities on the property.

d. *Guideline: The project design contributes to the experience of traveling through the area.*

i. *Design side elevations facing the street with architectural features instead of blank walls.*

1. Required by Section 260 and we will do this and it has been shown in the Pattern Book.

ii. *Keep the sightlines of "gateways" open to view.*

1. The 1st new house is 550' from West Joppa Road and the existing home is remaining. This will keep the feel along West Joppa Road similar to what it is today.

e. *Guideline: Entrances to projects respect the character of area roads and driveways.*

i. *Use existing driveways as entrances where feasible.*

1. DEPS is requesting that we remove the existing driveway to reduce continued impacts within the forest buffer. The new driveway for the existing house will come off of the proposed road next to lot 2.

ii. *Employ signage materials that blend with the landscape.*

1. We will provide a tasteful sign that utilizes local materials. See detail in pattern Book.

iii. *Design entrances to be compatible with the immediate vicinity.*

1. Our entrance will meet all of the local regulations/requirements.

2. *Open Space*

a. *Guideline: Resource Conservation areas are integrated into a projects open space network.*

i. *Protect access to and views of stream valleys with an open space network.*

1. We will do this by adding a trail system into the Forest Conservation/Forest Buffer areas.

ii. *Combine common open spaces with views of undevelopable steep slopes.*

1. Not applicable. No steep slopes being developed.

iii. *Incorporate wetlands and natural habitats into an open space network.*

1. We will do this with a proposed trail.

b. *Guideline: The type and desired accessibility of open spaces governs their location.*

i. *Shield access to natural open spaces by locating entry points away from general view.*

1. We will do this by limiting points of access to Trail System.

ii. *Locate site amenities near dwellings to invite use.*

1. We are doing this with location of Open Spaces which are all close to the public road.

c. *Guideline: Open spaces may be partly enclosed.*

i. *Define open space with hedges, fences and trees or buildings.*

1. We are showing that we are doing this with our schematic landscape plan.

ii. *Differentiate types of open spaces through walkways and landscaping.*

1. We are doing this using trails and landscaping.

3. *Circulation*

a. *Guideline: Traffic filters through a neighborhood by means of hierarchy of local routes and through roads of varying widths and designs.*
    i. *Integrate streets with series of looped, local roads.*
        1. We are doing this. We have a curvilinear road network with interconnected loop.
    ii. *Redirect nonlocal traffic with T intersection streets*
        1. We are doing this. All of our intersections are T's.
    iii. *Develop street systems that reflect street function and traffic carrying needs.*
        1. We are doing this. Our proposed roads are following DPW guidelines.

b. *Guideline: New roads are sensitive to the existing landscape.*
    i. *Use mountable curbs on roads to complement rural character of an area.*
        1. We are doing this.
    ii. *Design road alignments in relation to the existing topography.*
        1. We are doing this. As stated our proposed roads closely follow existing grades.

c. *Guideline: Street edges and open spaces are landscape to define pedestrian areas.*
    i. *Vary planting material and paving to accent circulation and recreation areas.*
        1. We are doing this. We have prepared a schematic landscape plan which shows a variation of planting materials.
    ii. Locate landscaped buffer between streets and sidewalks.
        1. We are doing this. We are providing street trees per the landscape manual.

d. Guideline: The mix of garages, alleys and parking complements housing and street types.
    i. Solve overflow and visitor parking requirements with parallel parking on both sides of the street.
        1. Parallel parking provided on one side of street not both sides because there is plenty of off-street parking.
    ii. Reduce street widths when garages and driveway parking is provided for each unit.

1. We are doing this. Design Manual calls for a 30' pavement width we are proposing 28'. This has been approved on every residential I have worked on Baltimore County. Reduces Stormwater runoff and acts as a traffic calming measure.

iii. Create a rear lot garage and alley system for narrow lots.
1. Not Appropriate for this project.

iv. Use rear parking pads for attached houses on major streets with heavy traffic.
1. Not Appropriate for this project.

e. Guideline: A Pedestrian footpath and street network is integrated into the project design.
i. Make sidewalks and paths places for jogging, biking, strolling and informal play.
1. The entire community will have sidewalks and will connect to new trail system.

ii. Integrate streets and pedestrian paths.
1. We are doing this.

iii. Design a system to link local schools to surrounding neighborhoods, shopping and community facilities.
1. We intend to do this with a connection to Greenspring Station.

iii. Residential Compatibility
1. Regulatory Requirements:
a. The CMPD, Zoning Regulations, and Development Regulations require they the Director of Planning make a compatibility recommendation to the Hearing Office for:
i. Development other than single-family detached, semi-detached, or duplex housing that occurs in DR 5.5 zones.
1. We are not required to meet compatibility because we are proposing single-family detached homes.

b. Site Development Context:
i. The arrangement and orientation of the proposed buildings and site improvement are patterned in a similar manner to those in the neighborhood.
1. We are doing this. All homes face a street.

c. Site Features:

i. Locally significant features of the site such as distinctive buildings or vistas are integrated into the site design.
    1. We are doing this. We are keeping the existing home and putting it on a 3-acre lot.

d. Open Space Planning:
    i. The open spaces of the proposed development reinforce the open space patterns of the neighborhood in form and siting and complement existing open space systems.
        1. There are limited open spaces in the adjacent communities. Tally Ho has a walking trail at the rear of many homes. We will be installing a trail similar to Tally Ho and we will be providing more active open spaces which adjacent communities lack.

e. Building and Parking Layouts:
    i. The building and parking lot layouts reinforce existing building and streetscape patterns and assure that the placement of the buildings and parking lots have no adverse impact on the neighborhood.
        1. Not applicable. Geared toward multi-family projects.

f. Road widths and sidewalks:
    i. The proposed streets are connected with the existing neighborhood road network wherever possible and the proposed sidewalks are located to support the functional patterns of the neighborhood.
        1. We are showing a potential vehicular connection to Mays Chapel Road with the following note: "Gated for Emergency Access Only. To Be Approved By Administrative Law Judge".

g. Site Landscaping, Streetscapes and Buffers:
    i. The proposed landscape design complements the neighborhoods landscape patterns and reinforces its functional qualities.
        1. We are doing this with an extensive street tree planting and perimeter screening.

h. Exterior Signs, Lighting and Accessory Structures.
    i. The exterior signs, site lighting and accessory structures support a uniform architectural theme and present a harmonious visual relationship with the surrounding neighborhood.

1. Lighting design is dictated by the County for street lighting.

i. Building Scale, Proportions, Massing and Detailing:
    i. The scale, proportions, massing and detailing of the proposed buildings are in proportion to those existing in the neighborhood.
        1. Our proposed homes will be of similar square footage as Tally Ho homes. There is a wide variety of home types and sizes in the area.

SCHOOL IMPACT ANALYSIS
Form 1
Current Enrollment
Department of Planning

Project Name: Greenspring Manor

PAI Project Number: 08-0922

Filing Date: 7/9/2021

School District	State Rated Capacity (SRC)	Committed Seats	Net SRC	Actual September 30th Enrollment*	# of Pupils Above or (Below) Net SRC	Actual Enrollment as a Percentage of Net SRC
Riderwood ES	440	(20)	420	405	(15)	96.43%
Ridgely MS	1,070	0	1,070	1,100	30	102.80%
Dulaney HS	1,984	0	1,984	1,930	(54)	97.28%
High School						

*Enrollment is defined by the full time equivalent enrollment.

SCHOOL IMPACT ANALYSIS

Form 2

Projected Pupil Yield by Development Type

Department of Planning

Project Name: Greenspring Manor

PAI Project Number: 08-0922

Filing Date: 7/9/2021

Election District: 8

	Number of Units	Pupil Yield		
		Elementary School	Middle School	High School
Single Family Detached (Own)	61	8.357	3.721	4.636
Single Family Detached (Rent)	0	0.000	0.000	0.000
Single Family Attached (Own)	0	0.000	0.000	0.000
Single Family Attached (Rent)	0	0.000	0.000	0.000
Multi- Family (Own)	0	0.000	0.000	0.000
Multi- Family (Rent)	0	0.000	0.000	0.000
Totals		8.357	3.721	4.636
Rounded Totals		9	4	5

*If the calculation of the number of pupils results in a number containing a fraction, the number of pupils shall be rounded to the next highest whole number

SCHOOL IMPACT ANALYSIS

Form 3

Projected Pupil Yield by Development Type

Department of Planning

Project Name: Greenspring Manor

PAI Project Number: 08-0922

Filing Date: 7/9/2021

Elementary School District Approved Development Plans

Name of Project	PAI Project Number	Approval Date	Projected* # of Pupils Elementary School
			0

Middle School District Approved Development Plans

Name of Project	PDM Project Number	Approval Date	Projected* # of Pupils Middle School
			4

High School District Approved Development Plans

Name of Project	PDM Project Number	Approval Date	Projected* # of Pupils High School
			7

*If the calculation of the number of pupils results in a number containing a fraction, the number of pupils shall be rounded to the next highest whole number

SCHOOL IMPACT ANALYSIS

Form 4

Projected Pupil Yield by Development Type

Department of Planning

Project Name: Greenspring Manor

PAI Project Number: 08-0922

Filing Date: 7/9/2021

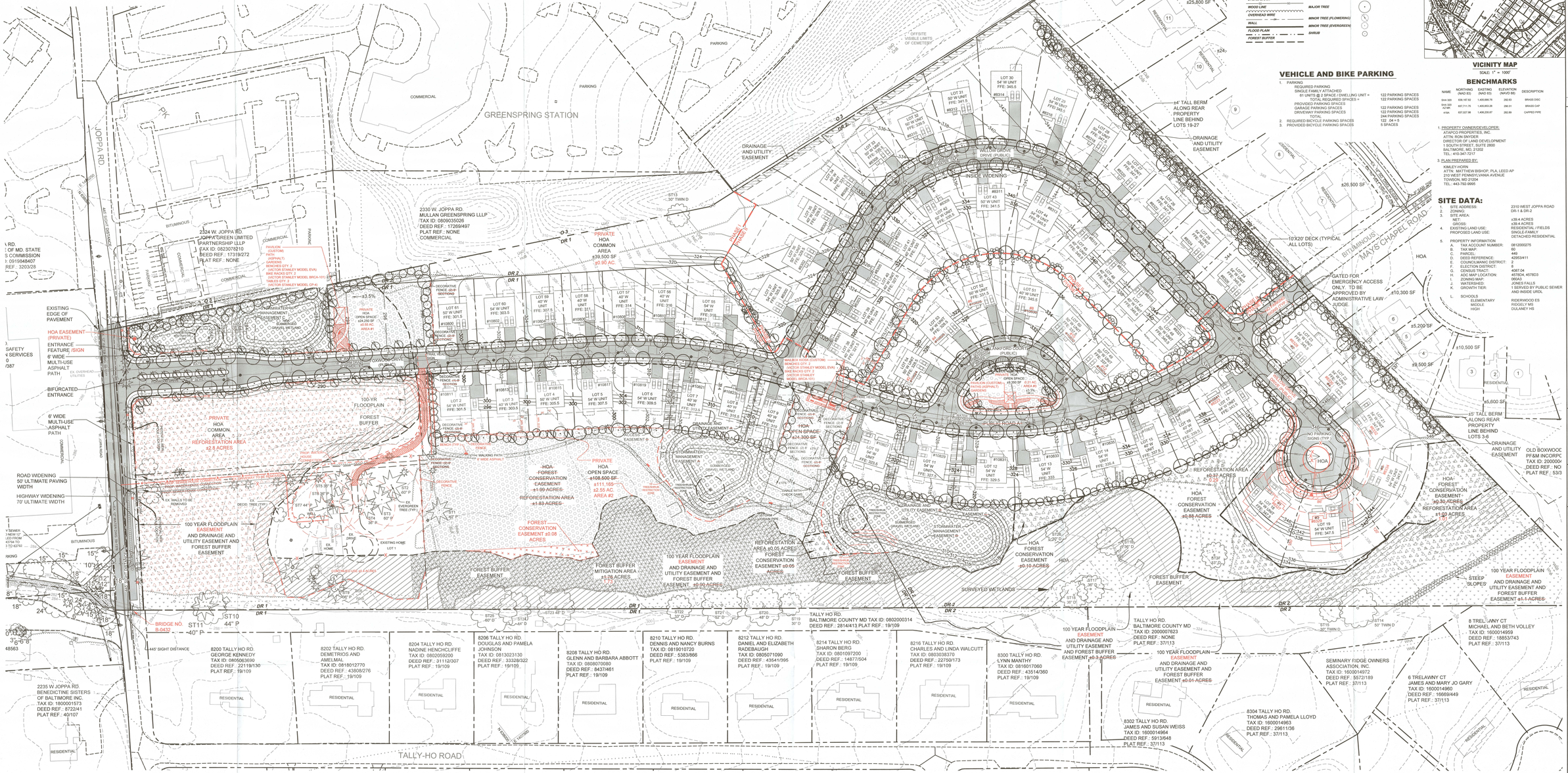
School District	Net SRC	Actual September 30th Enrollment	Projected # of Pupils for Specific Development	Projected # of Pupils for Approved Development	Total Projected Enrollment	# of Students Above or (Below) Net SRC	Projected* # of Pupils as a Percentage of Net SRC
Riderwood ES	420	405	9	0	414	(6)	98.57%
Elementary School							
Ridgely MS	1,070	1,100	4	4	1,108	38	103.55%
Middle School							
Dulaney HS	1,984	1,930	5	7	1,942	(42)	97.88%
High School							

*Projected Number of Pupils as a Percentage of State Rated Capacity must be shown as a number carried out to at least one decimal place.

GREENSPRING MANOR

2310 W. JOPPA ROAD

TIMONIUM, MARYLAND


10753 FALLS RD.
FOXLEIGH PAVILIONS LIMITED PARTNERSHIP
TAX ID: 2200011094
DEED REF.: NONE
PLAT REF.: 64/19
COMMERCIAL
±25,300 SF
±25,800 SF
±24,
±26,500 SF
10'X20' DECK (TYPICAL ALL LOTS)
±10,300 SF
±5,200 SF
±10,500 SF
±9,500 SF
±5,600 SF
HOA
GATED FOR EMERGENCY ACCESS ONLY. TO BE APPROVED BY ADMINISTRATIVE LAW JUDGE.
4' TALL BERM ALONG REAR PROPERTY LINE BEHIND LOTS 19-27
DRAINAGE AND UTILITY EASEMENT
OFFSITE VISIBLE LIMITS OF CEMETERY
PARKING
COMMERCIAL
GREENSPRING STATION
JOPPA RD.
PK
2330 W. JOPPA RD.
MULLAN GREENSPRING LLLP
TAX ID: 0809035026
DEED REF.: 17269/497
PLAT REF.: NONE
COMMERCIAL
2324 W. JOPPA RD.
JOPPA GREEN LIMITED PARTNERSHIP LLP
TAX ID: 0823078210
DEED REF.: 17319/272
PLAT REF.: NONE
PRIVATE HOA COMMON AREA ±39,500 SF ±0.90 AC.
PRIVATE HOA OPEN SPACE ±24,250 SF ±0.56 AC. AREA #1
PRIVATE HOA OPEN SPACE ±108,600 SF ±111,185 ±2.55 AC. AREA #2
PRIVATE HOA OPEN SPACE ±4,300 SF
HOA FOREST CONSERVATION EASEMENT ±1.99 ACRES
REFORESTATION AREA ±1.83 ACRES
FOREST CONSERVATION EASEMENT ±0.08 ACRES
FOREST BUFFER MITIGATION AREA ±1.76 ACRES
100 YEAR FLOODPLAIN EASEMENT AND DRAINAGE AND UTILITY EASEMENT AND FOREST BUFFER EASEMENT ±0.00 ACRES
REFORESTATION AREA ±0.05 ACRES
FOREST CONSERVATION EASEMENT ±0.05 ACRES
HOA FOREST CONSERVATION EASEMENT ±0.10 ACRES
HOA FOREST CONSERVATION EASEMENT ±0.37 ACRES
HOA FOREST CONSERVATION EASEMENT ±0.88 ACRES
REFORESTATION AREA ±1.03 ACRES
HOA FOREST CONSERVATION EASEMENT ±9.30 ACRES
100 YEAR FLOODPLAIN EASEMENT AND DRAINAGE AND UTILITY EASEMENT AND FOREST BUFFER EASEMENT ±0.3 ACRES
100 YEAR FLOODPLAIN EASEMENT AND DRAINAGE AND UTILITY EASEMENT AND FOREST BUFFER EASEMENT ±0.01 ACRES
100 YEAR FLOODPLAIN EASEMENT AND DRAINAGE AND UTILITY EASEMENT AND FOREST BUFFER EASEMENT ±1.1 ACRES
FOREST BUFFER EASEMENT
SURVEYED WETLANDS
STEEP SLOPES
WILLOWGROVE DRIVE (PUBLIC)
ALLANFORD COURT (PUBLIC)
PUBLIC ROAD A
OWNERS DRIVE (PUBLIC)
TALLY-HO ROAD
MAYS CHAPEL ROAD
BITUMINOUS
INSIDE WIDENING
OUTSIDE WIDENING
ROAD WIDENING 50' ULTIMATE PAVING WIDTH
HIGHWAY WIDENING 70' ULTIMATE WIDTH
EXISTING EDGE OF PAVEMENT
HOA EASEMENT (PRIVATE)
ENTRANCE FEATURE /SIGN
6' WIDE MULTI-USE ASPHALT PATH
BIFURCATED ENTRANCE
6' WIDE MULTI-USE ASPHALT PATH
100-YR FLOODPLAIN
FOREST BUFFER
ROAD WIDENING 50' ULTIMATE PAVING WIDTH
HIGHWAY WIDENING 70' ULTIMATE WIDTH
100 YEAR FLOODPLAIN EASEMENT AND DRAINAGE AND UTILITY EASEMENT AND FOREST BUFFER EASEMENT
BRIDGE NO. B-0432
445' SIGHT DISTANCE
2235 W JOPPA RD
BENEDICTINE SISTERS OF BALTIMORE INC.
TAX ID: 1800001573
DEED REF.: 8722/41
PLAT REF.: 40/107
8200 TALLY HO RD.
GEORGE KENNEDY
TAX ID: 0805063690
DEED REF.: 22119/130
PLAT REF.: 19/109
8202 TALLY HO RD.
DEMETRIOS AND AMELMAL
TAX ID: 0818012770
DEED REF.: 43808/276
PLAT REF.: 19/109
8204 TALLY HO RD.
NADINE HENCHCLIFFE
TAX ID: 0802059200
DEED REF.: 31112/307
PLAT REF.: 19/109
8206 TALLY HO RD.
DOUGLAS AND PAMELA JOHNSON
TAX ID: 0813023130
DEED REF.: 33328/322
PLAT REF.: 19/109
8208 TALLY HO RD.
GLENN AND BARBARA ABBOTT
TAX ID: 0808070080
DEED REF.: 8437/461
PLAT REF.: 19/109
8210 TALLY HO RD.
DENNIS AND NANCY BURNS
TAX ID: 0819010720
DEED REF.: 5383/866
PLAT REF.: 19/109
8212 TALLY HO RD.
DANIEL AND ELIZABETH RADEBAUGH
TAX ID: 0805071090
DEED REF.: 43541/395
PLAT REF.: 19/109
8214 TALLY HO RD.
SHARON BERG
TAX ID: 0801097200
DEED REF.: 14677/504
PLAT REF.: 19/109
8216 TALLY HO RD.
CHARLES AND LINDA WALCUTT
TAX ID: 0803038370
DEED REF.: 22750/173
PLAT REF.: 19/109
8300 TALLY HO RD.
LYNN MANTHY
TAX ID: 0816017060
DEED REF.: 43514/360
PLAT REF.: 19/109
TALLY HO RD.
BALTIMORE COUNTY MD TAX ID: 0802000314
DEED REF.: 2814/413 PLAT REF.: 19/109
TALLY HO RD.
BALTIMORE COUNTY MD
TAX ID: 2000007623
DEED REF.: NONE
PLAT REF.: 37/113
8302 TALLY HO RD.
JAMES AND SUSAN WEISS
TAX ID: 1600014964
DEED REF.: 5913/648
PLAT REF.: 37/113
8304 TALLY HO RD.
THOMAS AND PAMELA LLOYD
TAX ID: 1600014963
DEED REF.: 29611/36
PLAT REF.: 37/113
SEMINARY RIDGE OWNERS ASSOCIATION, INC.
TAX ID: 1600014972
DEED REF.: 5572/189
PLAT REF.: 37/113
6 TREELAWNY CT
JAMES AND MARY JO GARY
TAX ID: 1600014960
DEED REF.: 16669/449
PLAT REF.: 37/113
8 TREELAWNY CT
MICHAEL AND BETH VOLLEY
TAX ID: 1600014959
DEED REF.: 18853/743
PLAT REF.: 37/113
OLD BOXWOOD
PFAM INCORPC
TAX ID: 2000006
DEED REF.: NO
PLAT REF.: 53/3
RESIDENTIAL
COMMERCIAL
PARKING
DECORATIVE FENCE -6'H- SECTIONS
DECORATIVE FENCE -3'H- SECTIONS
DECORATIVE FENCE -4'H- SECTIONS
EX. EVERGREEN TREE (TYP.)
EX. DECID. TREE (TYP.)
EX. WALLS TO BE REMOVED
EX. HOME
EXISTING HOME LOT 1
CONSTRUCTED SS FACTORS
WALKING PATH 6' WIDE ASPHALT
SWALE WITH CHECK DAMS
STORMWATER MANAGEMENT EASEMENT A
STORMWATER MANAGEMENT EASEMENT B
DRAINAGE AND UTILITY EASEMENT A
DRAINAGE AND UTILITY EASEMENT B
TREE/SHRUB RESTORATION
TREE/SHRUB PLANTING
MAILBOX KIOSK (CUSTOM) BENCHES QTY. 2 (VICTOR STANLEY MODEL EVA) BIKE RACKS QTY. 2 (VICTOR STANLEY MODEL BRCA-101)
PAVILION (CUSTOM) PATIO (ASPHALT) GARDENS BENCHES QTY. 2 (VICTOR STANLEY MODEL EVA) TABLES QTY. 2 (VICTOR STANLEY MODEL BRCA-101) TABLES QTY. 2 (VICTOR STANLEY MODEL CP-4)
PLAYGROUND (CUSTOM) OPEN SPACE: ±6,290 SF ±0.21 AC. AREA #3 ±3.3%
LOT 1 50' W UNIT FFE: 337.5
LOT 2 50' W UNIT FFE: 335.5
LOT 3 40' W UNIT FFE: 303.5
LOT 4 50' W UNIT FFE: 305.5
LOT 5 54' W UNIT FFE: 307.5
LOT 6 54' W UNIT FFE: 309.5
LOT 7 40' W UNIT FFE: 313.5
LOT 8 54' W UNIT FFE: 315.5
LOT 9 54' W UNIT FFE: 317.5
LOT 10 54' W UNIT FFE: 319.5
LOT 11 54' W UNIT FFE: 321.5
LOT 12 54' W UNIT FFE: 323.5
LOT 13 54' W UNIT FFE: 325.5
LOT 14 54' W UNIT FFE: 327.5
LOT 15 54' W UNIT FFE: 329.5
LOT 16 54' W UNIT FFE: 331.5
LOT 17 54' W UNIT FFE: 333
LOT 18 54' W UNIT FFE: 335.5
LOT 19 54' W UNIT FFE: 347.5
LOT 20 54' W UNIT FFE: 345.5
LOT 21 54' W UNIT FFE: 343.5
LOT 22 54' W UNIT FFE: 341.5
LOT 23 54' W UNIT FFE: 339.5
LOT 24 54' W UNIT FFE: 337.5
LOT 25 54' W UNIT FFE: 335.5
LOT 26 54' W UNIT FFE: 333.5
LOT 27 54' W UNIT FFE: 331.5
LOT 28 54' W UNIT FFE: 329.5
LOT 29 54' W UNIT FFE: 327.5
LOT 30 54' W UNIT FFE: 345.5
LOT 31 50' W UNIT FFE: 341.5
LOT 32 50' W UNIT FFE: 339.5
LOT 33 50' W UNIT FFE: 337.5
LOT 34 50' W UNIT FFE: 335.5
LOT 35 50' W UNIT FFE: 333.5
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BALTIMORE COUNTY, MARYLAND

SUBJECT: Development Plan Review Comments
For DPC August 11, 2021

DATE: August 10, 2021

FROM: Vishnu Desai, Supervisor
Bureau of Development Plans Review
Department of Permits, Approvals and Inspections

PROJECT NAME: GREENSPRING MANOR

P.A.I. NO.: 08-0922

LOCATION: 2310 W. JOPPA ROAD

DISTRICT: 8C2

We reviewed the subject plans dated July 28, 2021 and have the following comments.

GENERAL COMMENTS:

All construction shall be accomplished in accordance with Baltimore County Standard Specifications and Details for Construction *(February, 2000, as amended)* and Baltimore City Standard Details.

Security shall be posted prior to the issuance of building permits unless the posting of said security is deferred. The security shall be posted prior to the recording of the plat.

A *Public Works Agreement* must be executed by the owner and Baltimore County for the required public ***(and/or private)*** improvements.

In accordance with *Baltimore County Code, Section 32-4-414*, dredging, filling or construction in any wetland is prohibited.

Any manmade embankment over 10-feet vertically shall be designed and/or approved by a soils engineer. The following note is to be placed on the sediment control plans and grading plans before approval will be given:

- *"All manmade embankments have been designed and/or certified for stability by a soils engineer".*

The Developer shall be responsible for damages to the County's facilities, such as water meters, manholes, curbs and gutters and inlets within his subdivision and for any damages caused by his construction equipment outside of his subdivision. Occupancy permits will be withheld until such damages have been corrected.

The contours on the plan reveal rather excessive grading. The Developer's engineer is cautioned not to exceed the maximum set by Baltimore County standards. Benching requirements shall be in accordance with *Section 41.02, Item 3* of the *1983 Maryland Standards and Specifications for Soil Erosion and Sediment Control.* Retaining walls that are proposed along road rights-of-way shall be located away from the right-of-way a distance that is at least equal to the height of the wall.

Offsite rights-of-way are necessary for roads, storm drains or other utilities. The Developer is hereby advised that the final plat and/or building permits will not be approved until the offsite right-of-way is acquired.

The Developer and his engineer shall be responsible for investigating the need for and obtaining the necessary permits for the facilities serving this site that may require a "*Corps of Engineer's Permit*," a "*Water Resources Permit*," a "*Water Quality Certification*," and any other federal or state permits.

The Developer shall not allow any cable television cables to be installed in this subdivision without the required County permits being obtained. Baltimore County will not assume any rights-of-way, easements, or maintenance of any public improvements, where such cables have been installed without a permit until the cables are satisfactorily located.

When an *Irrevocable Letter of Credit* is posted as security and the County's ability to draw on or otherwise call the *Letter of Credit* is negatively impacted for any reason (*bank default, receivership, etc.*), it shall be the sole responsibility of the Developer to obtain a replacement *Letter of Credit* under the same terms and conditions.

The Developer shall be responsible for having all proposed street names in any new development approved by the *Street Name and Address Section* of the *Department of Permits, Approvals and Inspections* prior to his engineer placing these names on the final record plat and/or construction drawings. All street name changes made after plat recordation must be approved by the *Street Name and Address Section* and the record plat and construction drawings revised accordingly. The method for changing street names after a plat has been recorded will vary by project, and guidance will be provided by the *Street Name and Address Section.*

Test pits within County roads require a utility cut permit obtained from the *Bureau of Highways and Equipment Maintenance.*

The coordinate system used on all County drawings must be based on the North American Datum of 1983 (NAD 83) with the readjustment date shown in parenthesis. A couple examples are: NAD 83(1991) and NAD 83(2007). The elevation system of all drawings must be based on the North American Vertical Datum of 1988 (NAVD 88).

All drainage and utility easements containing a sewer or storm drain shall be a minimum of twenty (20) feet wide.

HIGHWAY COMMENTS:

WEST JOPPA ROAD is an existing road, which shall ultimately be improved as a 50-foot street cross-section on a 70-foot right-of-way.

The Developer's responsibilities along the existing road frontage of the development shall be as follows:

a) *The submission of detailed construction drawings to extend a minimum distance of 200 feet beyond the limits of the subdivision or as may be required to establish line and grade.*

b) *The submission of full cross sections is deemed necessary for design and/or construction purposes. The sections are to be taken at 25-foot intervals and are to be shown on standard cross-section paper at 1"=5' horizontal to 1"=5' vertical scale.*

c) *The preparation of the right-of-way plat for, and the dedication of, any widening and slope easements at no cost to the County.*

d) *The preparation of the right-of-way plats for any offsite road right-of-way required to make the necessary improvements.*

e) *The grading of the widening and the existing road to the established grade. Where adjacent properties are adversely affected by the improvements, the Developer shall be financially responsible for the necessary repairs to these properties.*

f) *The relocation of any utilities or poles as required by the road improvements.*

g) *The construction of combination curb and gutter in its ultimate location and a maximum of 28.5 feet of paving adjacent thereto along the frontage of the property. The paving thickness shall conform with Baltimore County standards.*

All streets in this subdivision shall be improved with a 28-foot combination curb and gutter cross-section on a 50-foot right-of-way and shall be the Developer's full responsibility.

The paving thickness shall conform to Baltimore County standards and requirements.

It shall be the responsibility of the Developer's engineer to clarify all rights-of-way within the property and to initiate such action that may be necessary to abandon, widen or extend said

rights-of-way. The Developer shall be responsible for the submission of all necessary plats and for all costs of acquisition and/or abandonment of these rights-of-way.

Prior to the recording of this plat, a road closing hearing is required, and the road must be formally closed by the County Executive.

The Developer is responsible for the grading of the widening to the proposed cross section based on the grade of the existing road. Where adjacent properties are adversely affected by the improvements, the Developer shall be financially responsible for the necessary repairs to these properties.

Cul-de-sacs shall be improved with a/an 60-foot paving radius with combination curb and gutter on a/an 71-foot diameter right-of-way and shall be Developer's full responsibility. The Cul-de sacs shall conform to Baltimore County Standard R-E.

The contours on the plan reveal rather excessive grades. The Developer's engineer is cautioned not to exceed the maximum set by Baltimore County standards in the establishment of street grades.

The sharp curves must conform to Baltimore County standards for minimum length of curve, minimum radii and widening.

The Developer shall provide an in-fee right-of-way at no cost to Baltimore County to permit County maintenance forces to perform any necessary work in the SWM and/or storm drain reservation. This right-of-way shall be a minimum of 20 feet wide and shall have a grade less than 10% from the roadway to the reservation.

Guardrails are required along the public road and/or the storm drain reservation and shall be the Developer's responsibility. The guardrails shall be constructed in accordance with Baltimore County standards.

Monumental entrances shall consist of two 20-foot lanes divided by an 8-foot median with minimum 25-foot radii curb returns and shall be constructed in accordance with Baltimore County standards for concrete entrances.

Driveways shall be constructed in accordance with Baltimore County standards with depressed curb and 7-inch concrete aprons within the right-of-way.

The Developer shall grade to the ultimate cross section those areas where the driveways intersect West Joppa Road, so as to provide proper sight distance.

All driveway entrances shall conform to Standard Plates R-15, R-15A, or R-15B.

In accordance with *Baltimore County Code, Section 32-4-408*, streetlights are required along all road frontages of subdivisions. The Developer will be responsible for the full cost of installation of the cable, poles and fixtures. Along new roads, the County will assume the cost of the power

when the roads have been accepted for County maintenance. Along existing roads, the County will assume the cost of power after installation.

"**No Parking**" signs shall be posted prohibiting parallel parking on 24-foot-wide streets and within the turnaround area.

Ramps shall be provided for physically handicapped persons at all street intersections. The ramps shall have detectable warning areas and shall be constructed in accordance with Standard Details R-36A or R-36B.

Sidewalks are required on both sides of the streets within this subdivision and/or along the frontage of all existing streets including state roads. The walks shall be a minimum of 5-feet wide and shall be installed to conform to Baltimore County standards and to current Americans with Disabilities (ADA) guidelines.

Screening shall be placed so as to prevent headlights within the parking areas from interfering with the traffic on the adjacent road.

Security must be posted prior to the issuance of a building permit to insure completion of any private improvement. Upon satisfactory completion of the private improvements and certification by a Professional Engineer that said improvements have been constructed in accordance with County standards and specifications, the security will be refunded.

STORM DRAIN AND SEDIMENT CONTROL COMMENTS:

The Developer is responsible for the total actual cost of drainage facilities required to carry the storm water runoff through the property to be developed to a suitable outfall. The Developer's cost responsibilities include the acquiring of easements and right-of-way both onsite and offsite and the deeding in-fee of said right-of-way at no cost to the County. Preparation of all construction, right-of-way and easement drawings, engineering and surveys, and payment of all actual construction costs including the County overhead both within and outside the development are also the responsibilities of the Developer.

Onsite drainage facilities serving only areas within the site are considered private. Therefore, construction and maintenance shall be the Developer's responsibility. However, a drainage area map, scale 1"=200', including all facilities and drainage areas involved, shall be shown on a plan and submitted to Baltimore County for review.

The Developer must provide necessary drainage facilities (*temporary or permanent*) to prevent creating any nuisances or damages to adjacent properties, especially by the concentration of surface waters. Correction of any problem that may result due to improper grading or improper installation of drainage facilities will be the full responsibility of the Developer.

Development of this property through stripping, grading and stabilization could result in a sediment pollution problem, damaging private and public holdings downstream of the property. A grading permit is, therefore, necessary for all grading, including the stripping of topsoil.

In accordance with *Baltimore County Code 33-5,* a grading plan shall be approved and a *Performance Bond* posted prior to issuance of a grading permit. A sediment control plan is required. The number of square feet of land disturbed shall be indicated on the sediment control drawing.

The Developer shall be responsible to stabilize the sidewalk areas and supporting slopes on all road rights-of-way following completion of the initial grading of the boxed-out subgrade. The stabilization shall be accomplished within the nearest period of optimum seeding as established in the *Baltimore County Sediment Control Manual.* Minimum acceptable stabilization measures will be as specified in the *Baltimore County Sediment Control Manual* under "*Critical Area Stabilization (With Semi-Permanent Seedings).*" Failure by the Developer to accomplish the stabilization as aforementioned will result in the termination of all processing phases of this development.

Floodplain studies will be necessary to be reviewed and approved prior to the recording of any record plat or issuance of any grading or building permits.

The Developer must furnish the *Bureau of Development Plans Review* with a *floodplain study* prepared by and sealed by a Professional Engineer. The study will be done in accordance with the latest version of the "Recommendations for Watershed Studies, Flood Plain Studies and Waterway Crossing Studies".

The 100-year floodplain shall be dedicated to Baltimore County in-fee or as an easement, at no cost to the County.

The rear of buildings may not be constructed within 20 feet of the floodplain as established for a 100-year flood level with a 1-foot freeboard. *See Plate DF-1 and DF-2 in the Baltimore County Design Manual.*

In conformance with *Federal Flood Insurance* requirements, the first floor or basement floor must be at least 1-foot above the floodplain elevation in all construction.

In accordance with *Baltimore County Code, Section 32-4-414,* filling within a floodplain is prohibited.

The Developer is responsible for the cost of temporary structures and measures required in the event of sectional development.
Temporary construction easements of adequate width are necessary adjacent to all offsite right-of-way or easements where utility construction is planned. They should be indicated on the right-of-way plats and construction drawings.

The record plat/building permit shall be withheld until offsite right-of-way and utility construction as required has been cleared and the contract for the utilities has been awarded.

The Developer shall provide a minimum 10-foot drainage and utility easement along all bordering property lines which are not adjacent to road right-of-way or storm drain reservations.

Where a new bridge or culvert adjoins a development or drainage reservation adjacent to a development, the Developer on each side is responsible for one-half the total Developer's responsibility as established by the method described in the preceding paragraph.

Where an existing bridge and/or culvert required replacement, widening or reconstruction, such work will be accomplished within the framework of the *Capital Improvement Program*. When a Developer wishes to proceed with a development requiring rebuilding or relocation of an existing bridge and/or culvert and funds have not been provided in the current *Capital Budget*, he may contribute the funds necessary or must delay development of that portion of the subdivision that would be adversely affected by the existing structure.

WATER AND SANITARY SEWER COMMENTS:

A preliminary print of this property has been referred to the *Baltimore City Water Division* for review and comment in regards to adequacy of water pressure in this development. If Baltimore City has any comment, it will be forwarded.

The Developer is responsible for any public water main extension and/or public sanitary sewer required to serve this property. He is responsible for the preparation and the cost of construction drawings and right-of-way plats required. He is further responsible for conveying any required right-of-way to Baltimore County at no cost to the County.

The Developer is responsible for the entire cost of any relocation of the existing public water main and/or sanitary sewer, including the preparation and the cost of construction drawings and right-of-way plats required, all right-of-way acquisition and/or release costs and recordation charges.

The Developer is responsible for the cost of capping or plugging any existing house connections not used to serve the proposed site.

The Developer will be given credit for one system connection charge for each existing house that is now connected into the public services.

Permission to connect to (*or to connect additional sanitary fixtures to*) the existing public sanitary sewer may be obtained from the *Department of Permits, Approvals and Inspections*.

Water and sanitary sewer service connections shall be installed by a utility contractor prior to the road improvements and shall be included in the *Public Works Agreement*.

The total water and/or sanitary sewer system connection charge is determined, and payable, upon application for the plumbing permit, or prior to the execution of a utility or right-of-way agreement.

The determination of the water system connection charges will be predicated on the established relationship using a 5/8-inch water meter at a cost of $575.00 per living unit. The sewer system connection charge, likewise, is based on a 5/8-inch water meter at a cost of $875.00 per living unit. Note: The same rate applies for 1-inch meters for sprinkler service.

Water mains outside of public right-of-way serving a proposed site improvement are considered private and shall be the Developer's full responsibility for construction and maintenance.

Fire hydrant spacing and location are subject to review and approval by the *Fire Protection Section* of the *Fire Department*.

Public sanitary sewers serving the individual lots/properties within the subdivision shall be located within the public roads serving those lots/properties, where practicable.

TRAFFIC ENGINEERING COMMENTS:

Confirm and then add this note to the development plan:

- *"Bureau of Traffic Engineering and Transportation Planning" has confirmed that the subject site* ***is/is not*** *within a traffic deficient area.*

Sight lines are to be drawn from the centerline of the proposed access at a point ten feet behind the extension of the main road curb line to the centerline of the nearest approach lane on the main road.

All subsequent plans, including record plats, must note that the areas between the sight line and the curb line must be cleared, graded, and kept free of any obstructions.

LANDSCAPE COMMENTS:

Schematic Landscape Plan(s) must be approved prior to Development Plan approval.

An approved Final Landscape Plan, cost estimate and security are required prior to permit approval.

SITE-SPECIFIC COMMENTS:

1. West Joppa Road is an existing road, which shall ultimately be improved as a 50-foot street cross-section on a 70-foot right-of-way.
2. The proposed cul-de-sac shall conform to County Standard Detail, Plate R-E, which requires a 60-foot turning radius.
3. Since the number of (off-site) units are over 100, Mays Chapel Road needs to be a full access road and not an emergency access road.
4. Remove the road label "Public Road A", if the road name is Foxwood Road. Please be consistent with road names and make sure all roads are labeled.

5. **"No Parking"** signs shall be posted prohibiting parallel parking along Mays Chapel Road extension and the cul-de-sac.
6. All designs and drawings shall be prepared in accordance with the latest design manual.
7. Provide additional labeling of the proposed contours on the plan, contours along the internal road network.
8. Note # 10 under the DPR notes indicates the proposed Development is to be developed/ designed in two (2) phases; please delineate phasing on the Development Plan. Also, provide a note detailing specific improvements completed under each phase of work.
9. All existing public utilities within West Joppa Road and Mays Chapel Road shall be clearly labeled, type of utility and size. Provide label all the utility as existing or proposed, if it is an existing utility provide the County reference drawing number.
10. Show proposed streetlights spaced per Baltimore County standards. Also, lights need to be provided along West Joppa Road as part of the frontage improvements, if there are no existing street lights.
11. Engineer should consider relocating the existing private drive and connecting it to Foxwood Drive beyond the Floodplain limits.
12. The Transportation Planning unit recommends that a multi-use path be constructed along the frontage of the property instead of the proposed sidewalk, as stated in Baltimore County's Western Bicycle and Pedestrian Master Plan.
13. Show all proposed Fire Hydrants along the proposed roads within the development. Coordinate with *Fire Protection Section* in regards to possible fire hydrants along Mays Chapel Road extension. Fire hydrant spacing and locations are subject to review and approval by the *Fire Protection Section* of the *Fire Department.*
14. Developer shall provide a **fee simple strip frontage on public road** for all meter services connected to public water main.
15. Developer shall investigate and provide pressure-reducing valve (PRV) when static pressure exceeds 80-psi.
16. Engineer to show and label all existing sewer manhole numbers adjacent to the site on the Development Plan.
17. All site runoff must be conveyed to a suitable outfall without imposing adverse impacts to the receiving watercourse.
18. The existing storm drain system needs to be checked for adequacy and upgraded or provide stormwater management as needed.
19. In accordance with *Baltimore County Code, Section 32-4-414*, filling within a floodplain is prohibited.
20. The following eight -8" sewer segments do not have adequate capacity to accommodate the proposed 61 home subdivision at 2310 West Joppa Road, known as Greenspring Manor. Six of the segments noted are to be addressed by another developer. To date, these improvements have not been completed. This developer is required to complete the other two segments noted with a ☆. Issuance of Use and Occupancy permits for the residential units from the Greenspring Manor development should be subject to completion of the system improvements noted above, including those by the other developer. Currently the other developer is obligated to complete this by August 2023.

Upstream MH	Downstream MH	Length	Diameter	
43794	43793	137.96	8"	★
43793	43792	192.31	8"	★
43792	43791	87.36	8"	
43791	43790	60.00	8"	
43790	43789	316.80	8"	
43789	43788	232.57	8"	
43788	43787	159.01	8"	
43787	43786	76.00	8"	

21. Developer is responsible for acquisition of off-site easements for downstream sewer improvements they are required to complete.
22. Jones Falls is an inter-jurisdictional watershed. 100-year stormwater management is required.
23. The existing culvert crossing on Joppa Road, located at the southwest edge of the development, is Baltimore County Bridge No. B-0432. Reference is made to existing Drawings No. 1988-0930 through 0933_003. This feature should be labeled as Bridge No. B-0432 on all plan details. Any modifications to this structure should be in accordance Baltimore County's DPW&T Design Manual, Section 10-Structures. Please note, the freeboard requirement for bridge structures is prescribed in Section 7.IV.B.2.
24. Any proposed bridge structures (those with effective span lengths of 8' or greater) within the development that will be dedicated to the County for ownership and maintenance should meet the above referenced criteria.
25. Submit suitable storm drain outfall study for review and approval.
26. A revised Floodplain Study was submitted to DPR and is under review.
27. The developer has submitted to the County an updated traffic study, showing an increased scope of work that includes three 3 intersections along Falls Road from Seminary Avenue to Joppa Road. DPW&T has not completed their review of the updated Traffic Impact Study.
28. This site is in a traffic deficient area with an 'F' level of service. Therefore, no building or grading permits shall be issued unless allowed by the Administrative Law Judge at a Special Hearing. Approval of this development plan does not guarantee or warrant that a permit will be issued.

* * * * *

VKD: efc
cc: file

BALTIMORE COUNTY, MARYLAND

INTEROFFICE CORRESPONDENCE

TO: Peter Gutwald, Director
Department of Permits, Approvals

DATE: October 18, 2021

EFC for VKD

FROM: Vishnu Desai, Supervisor
Bureau of Development Plans Review

SUBJECT: Zoning Advisory Committee Meeting
For September 20, 2021
Item No. 2021-0250-SPH

The Bureau of Development Plans Review has reviewed the subject zoning items and we have the following comments

If Special Hearing relief is granted, a Landscape Plan is required per the requirements of the Landscape Manual.

If Special Hearing relief is granted, Open Space requirements shall be addressed.

No Development allowed within a traffic shed or along local roads with an "F" Level of Service. This request needs to be coordinated/discussed with Baltimore County DPW&T Traffic Design Section.

* * * * *

VKD: cen
cc: file

BALTIMORE COUNTY, MARYLAND

SUBJECT: Development Plan Review Comments
For DPC September 1, 2022

DATE: August 26, 2022

FROM: Vishnu Desai P.E., Supervisor
Bureau of Development Plans Review
Department of Permits, Approvals and Inspections

PROJECT NAME: GREENSPRING MANOR

P.A.I. NO.: 08-0922

LOCATION: 2310 W. JOPPA ROAD

DISTRICT: 8C2

RECEIVED
AUG 26 2022
OFFICE OF
ADMINISTRATIVE HEARINGS

We reviewed the subject plans (Red-Lined) dated August 24, 2021 and the following comments/issues to be discussed at the Public Hearing.

LANDSCAPE COMMENTS:

An approved Final Landscape Plan, cost estimate and security are required prior to permit approval – Phase 2.

SITE-SPECIFIC COMMENTS:

1. Floodplain Study - Review and acceptance has been moved to Phase 2. The Floodplain must be accepted for filing by the County prior to Record Plat Recordation & Bldg Permits being issued
2. Proposed Access Gate – There is a note on the plan that states "Gated for Emergency Access Only. To Be Approved By the Administrative Judge." DPWT is deferring this item to the ALJ
3. Traffic Impact Study – Has been approved by the SHA and the County has no further comment. The Traffic shed will be somewhat improved and there will be no net impact to the traffic shed from additional traffic from the proposed development with said improvements. The traffic shed will still be operating at a LOS of F.
4. Development in Traffic Shed operating at a LOS of F (Variance) – DPW&T Traffic is deferring this issue to the ALJ.

* * * * *

VKD: efc
cc: file

BALTIMORE COUNTY, MARYLAND

Subject: Development Plan Review – Schematic Landscape Plan(s) Date: August 25, 2022

From: Bureau of Development Plans Review

Project Name:	Greenspring Manor	
Project Number:	08-0922	Zoning: DR-1, DR-2
Location:	Northeast side of West Joppa Road between I-695 and Falls Road	
Districts:	Elec. 8th	Counc. 2nd

Development Plans Review – Schematic Landscape Plan(s) has been reviewed and Approved and recommends Redlined Development Plan Approval.

Bureau of Development Plans Review for
Department of Recreation and Parks
111 West Chesapeake Avenue, Room 107
Towson, Maryland 21204

Public Works ZAC Comments

Lajuanda Whitaker

From: Terry Curtis
Sent: Monday, September 20, 2021 11:17 AM
To: PAI Zoning Advisory Committee
Cc: Anthony Russell; Kristoffer Nebre; Peoples Counsel
Subject: ZAC Agenda Case #2021-0250-SPH - W. Joppa Rd#2310

Good morning,

During my review of the ZAC Agenda for the distribution meeting of September 13, 2021, I reviewed a Special Hearing for case number 2021-0250-SPH for 2310 West Joppa Road. This request is to allow the development of the subject property within the Falls Road and Joppa Road and Greenspring Valley Road traffic sheds.

The Department of Public Works and Transportation (DPWT) Bureau of Traffic Engineering and Transportation Planning feels this request must be denied based on the following reasons. We have received and reviewed the Greenspring Station Development - Supplemental Traffic Impact Study. We offer the following comments:

1) A Traffic Impact Study needs to present an unbiased view of traffic conditions pre/post development. This study was clearly written with the bias not to provide the **required** connection to Mays Chapel Road. This connection is **required** by DPWT by regulation due to amount of homes(over 100) in The Meadows of Green Spring community. It should be a traffic impact study not a "sensitivity analysis".
2) The report does not note that the proposed development is in LOS F Traffic Shed. It also fails to mentioned the 3 LOS F rated intersections along Falls Road.
3) The analysis clearly shows a reduction of critical lane volumes at the subject intersections along Falls, due to the bypass traffic generated from the extension of Mays Chapel acting as permanent connecting road from Seminary to Joppa, and with the increased capacity from the proposed improvements by the developer at Falls & Joppa. The benefits of the connection to Falls Rd is glossed over.
4) Furthermore, the conclusion stated on the cover letter says that the Mays Chapel connection is <u>not</u> recommended. It then is stated that Falls Road is designed to handle significant volumes more than Mays Chapel which is obviously true. However, this development is currently in an 'F' traffic shed, which by definition is at capacity and cannot handle anymore volume. The initial report which did not have the Mays Chapel bypass accounted for, already showed an increase of CLV at Falls & Greenspring Valley at full build out conditions. The supplemental report does not address Falls & Seminary with the scenario of no bypass with full build out. In accordance to the ordinances tied with the basic service map, this development should have some improvements to result in 0 net critical volume trips added to the affected 'F' intersections along Falls Rd.

If you have any questions please feel free to contact me anytime.

Terry Curtis, Jr.
Engineer III
Department of Public Works and Transportation
111 West Chesapeake Avenue
Room 205
Towson, Maryland 21204
410-887-3117
tcurtis@baltimorecountymd.gov

Exceptional Customer Service
Safe and Efficient Operations
Reliable Infrastructure

JNL 8/26/22

BALTIMORE COUNTY, MARYLAND

Inter-Office Correspondence

To: Jeffrey A. Livingston, Manager
Development Coordination, EPS

Date: August 26, 2022

From: Michael S. Kulis, NRS II MSK
Environmental Impact Review, EPS

Subject: Greenspring Manor
Hearing Officer's Hearing

Environmental Impact Review (EIR) staff of this Department have evaluated the red-lined Development Plan, dated November 10, 2021, for the subject project. The Development Plan generally addresses EIR's Phase I requirements. However, prior to final approval, the Development Plan must be revised to resolve the following:

1. Delete the narrow strip of Forest Conservation Easement Area shown between Lot # 17 and Lot # 18, so that the plan is in accordance with the approved preliminary Forest Conservation Plan.

2. Illustrate the 15' Woody Vegetation Free Zone setback from the outer limits of the Forest Buffer Easement, adjacent to the Stormwater Management/Water Quality Facilities.

BALTIMORE COUNTY, MARYLAND

Inter-Office Memorandum

DATE: July 29, 2021

TO: Jeff Livingston, Development Coordination JWL 8/26/22
Department of Environmental Protection & Sustainability

FROM: Kevin Koepenick, Ground Water Management
Department of Environmental Protection & Sustainability

SUBJECT: Project Name: GREENSPRING MANOR
Plan Type: Development Plan
Plan Date: July 9, 2021

Ground Water Management has the following comments on the above referenced plan:

Comments	Date Resolved	Reviewer
1. No Comments		

Note: Please include a revision date on all revised plans submitted.

Department of Environmental Protection & Sustainability

Inter Office Correspondance

TO: ☐ PAI, M.S. 1105 DATE: 11/10/2021

☐ PAI, Shawn Frankton, M.S. 1105

☐ PAI, Dawn Chaney, M.S. 1105

☒ Other: Steve Ford JWL 8/26/22

FROM: Charu Malhotra, P.E.

Project Name:	Greenspring Manor
EPS Project I.D.:	M210057
PAI#:	08-0922
Tracking NO #:	MAJ-2021-00001
Engineer:	Kimley Horn
Plan Type:	SWM Concept Plan

Staff of **Stormwater Management (SWM)** have reviewed the subject submission. The following recommendations are made:

☒ Approved ☐ Disapproved

☐ Comments:

From: Kristoffer Nebre <knebre@baltimorecountymd.gov>
Sent: Tuesday, August 16, 2022 1:39 PM
To: Nick Driban <ndriban@LENHARTTRAFFIC.COM>
Cc: Angelica Daniel <adaniel@baltimorecountymd.gov>; mlenhart <mlenhart@LENHARTTRAFFIC.COM>; Vishnubhai K Desai <vdesai@baltimorecountymd.gov>
Subject: RE: 2310 Joppa Road; MDOT SHA Tracking 20APBA022XX; 36373

Nick,

This proposed development sits in an "F" traffic shed per Baltimore County Basic Service Map for Transportation. The signalized intersections in question are Falls & Joppa and Falls & Greenspring Valley, which are both intersections that are owned and maintained by the State Highway Administration (SHA), along with the traffic signal too being owned and maintained by SHA. The development calls for improvements along Joppa, which have been reviewed and approved by SHA. The letter from Lennart states that the improvements along Joppa enough to accommodate the generated volumes from the proposed site, and that the mitigation from the improvements result in net zero impact along the corridor.

The scope of the intersections in the traffic impact study are SHA intersections. We agree that the proposed development along with the improvements to the intersection would not have a net negative impact on the intersection. With these statements, we request a copy of the traffic impact study and supplemental analysis be stamped and signed by a Professional Engineer. We do not have additional comments to offer. The development sits in a current LOS F traffic shed, and therefore, per Baltimore County Zoning Regulations Manual, 4A02.4.G.1, we defer the findings from Lenhart Traffic and SHA responses be subjected to review from the Zoning Commissioner to determine if this development would be eligible for a waiver based off the zoning regulations.

KRISTOFFER L. NEBRE, P.E.
Engineer III

Baltimore County, Department of Public Works
Bureau of Transportation
111 W. Chesapeake Avenue, Room 312
Towson, Maryland 21204

Ph. 410-887-3554
Fax 410-887-5784

BALTIMORE COUNTY, MARYLAND

SUBJECT: CONCEPT PLAN COMMENTS

Date of Comments: August 10, 2021

TO: Jerry S. Chen

DPC DATE: August 11, 2021 @ 10:00 A.M.

FROM: PAI – ZONING REVIEW

PAI No. 08-0922

PROJECT NAME: Greenspring Manor

PLAN DATE: 9-9/2021

LOCATION: 2310 W. Joppa Road

DISTRICTS: 08 ED / 02 CD

PROPOSAL: 61 Single-family detached dwelling units

ZONING: DR-1 and DR-2

The following comments are offered as guide during the Development Plan phase:

1. Correction from Zoning: Please revise Zoning Note #4 to state that the density calculation is pursuant to §1B01.2.C.1(b) of the BCZR.
2. List in the Zoning Notes which lots are affected by an access easement. Add to the Zoning Notes that "Access Easements may not be fenced."
3. State in the Zoning notes and on typical lot layouts that "Typical open deck dimension of 10 ft. x 20 ft. shall provide the minimum rear deck setback of 22.5 ft." Show a dimension to decks on typical lot layouts.
4. Label and show the location of the bicycle parking on the plan print.
5. If any signs are proposed, the proposed location of all signs must be shown on the plan print and enough detail of proposed signs must be shown to determine location, size, area, underlying lot ownership and compliance with Section 450 of the BCZR.

A Final Development Plan (FDP) will be required. Final zoning approval is contingent firstly upon all plan comments being addressed on the Development Plan; secondly upon the final resolution of all comments; thirdly upon the outcome of any requested zoning hearings; and finally upon the inclusion of the FDP requirements and all notes and details specified above being included on the zoning FDP.

Rosalie Johnson

Rosalie Johnson, Zoning Planner, Zoning Review 8/10/2021

THE FOREGOING IS MERELY AN INFORMAL OPINION. IT IS NOT AN EXPERT OR LEGAL OPINION. IT IS NOT INTENDED TO BE RELIED ON AS EXPERT OR LEGAL ADVICE, AND IS NOT LEGALLY OR FACTUALLY BINDING ON BALTIMORE COUNTY OR ANY OF ITS OFFICIALS, AGENTS, OR EMPLOYEES. BALTIMORE COUNTY EXPRESSLY DISCLAIMS ANY AND ALL LIABILITY ARISING OUT OF, OR IN ANY WAY CONNECTED WITH THE INFORMATION PROVIDED IN THIS DOCUMENT, OR ANY INTERPRETATION THEREOF.

BALTIMORE COUNTY, MARYLAND

SUBJECT: DEVELOPMENT PLAN HEARING Date of Comments: Aug. 24, 2022

TO: Jerry S. Chen

FROM: PAI – ZONING REVIEW PAI No. 08-0922

PROJECT NAME: **Greenspring Manor** PLAN DATE: 9-9/2021

LOCATION: 2310 W. Joppa Road DISTRICTS: 08 ED / 02 CD

PROPOSAL: 61 Single-family detached dwelling units ZONING: DR-1 and DR-2

Based on redline plan submitted to our office, all comments have been address.

A Final Development Plan (FDP) will be required. Final zoning approval is contingent firstly upon all plan comments being addressed on the Development Plan; secondly upon the final resolution of all comments; thirdly upon the outcome of any requested zoning hearings; and finally upon the inclusion of the FDP requirements and all notes and details specified above being included on the zoning FDP.

8/24/22

Shaun Crawford 8/24/2022
Planner, Zoning Review

BALTIMORE COUNTY, MARYLAND

Subject: Development Plan Review Date: August 25, 2022

From: Bureau of Development Plans Review for the Department of Recreation and Parks

Project Name:	Greenspring Manor	
Project Number:	08-0922	Zoning: DR-1, DR-2
Location:	Northeast side of West Joppa Road between I-695 and Falls Road	
Districts:	Elec. 8th	Counc. 2nd

Recreation and Parks has reviewed the Redlined Development Plan and recommends Approval.

Bureau of Development Plans Review for
Department of Recreation and Parks
111 West Chesapeake Avenue, Room 107
Towson, Maryland 21204

Jerry S Chen

From: James Hermann
Sent: Wednesday, November 10, 2021 3:59 PM
To: Administrative Hearings
Cc: Jerry S Chen; Vishnubhai K Desai; Lloyd Moxley
Subject: Greenspring Manor - 2310 West Joppa Road - PAI # 08-0922 - Request for Determination regarding Open Space Letter - Approved and Signed
Attachments: L-Rec & Parks Exhibit - Greenspring Manor - Request for Determination regarding Open Space Letter - Approved and Signed..pdf; P-Rec & Parks Exhibit - OPEN SPACE Exhibit 11x17 2021 08 17.pdf

Good afternoon.

Hope all is well.

"Enclosed please find the following Exhibit(s):

1. *Rec & Parks Exhibit A – Greenspring Manor – Request for Determination regarding Open Space Letter – Approved and Signed.*
2. *Rec & Parks Exhibit B – Open Space Exhibit*

Please call if you have any questions."

Please confirm receipt. Thanks Jim

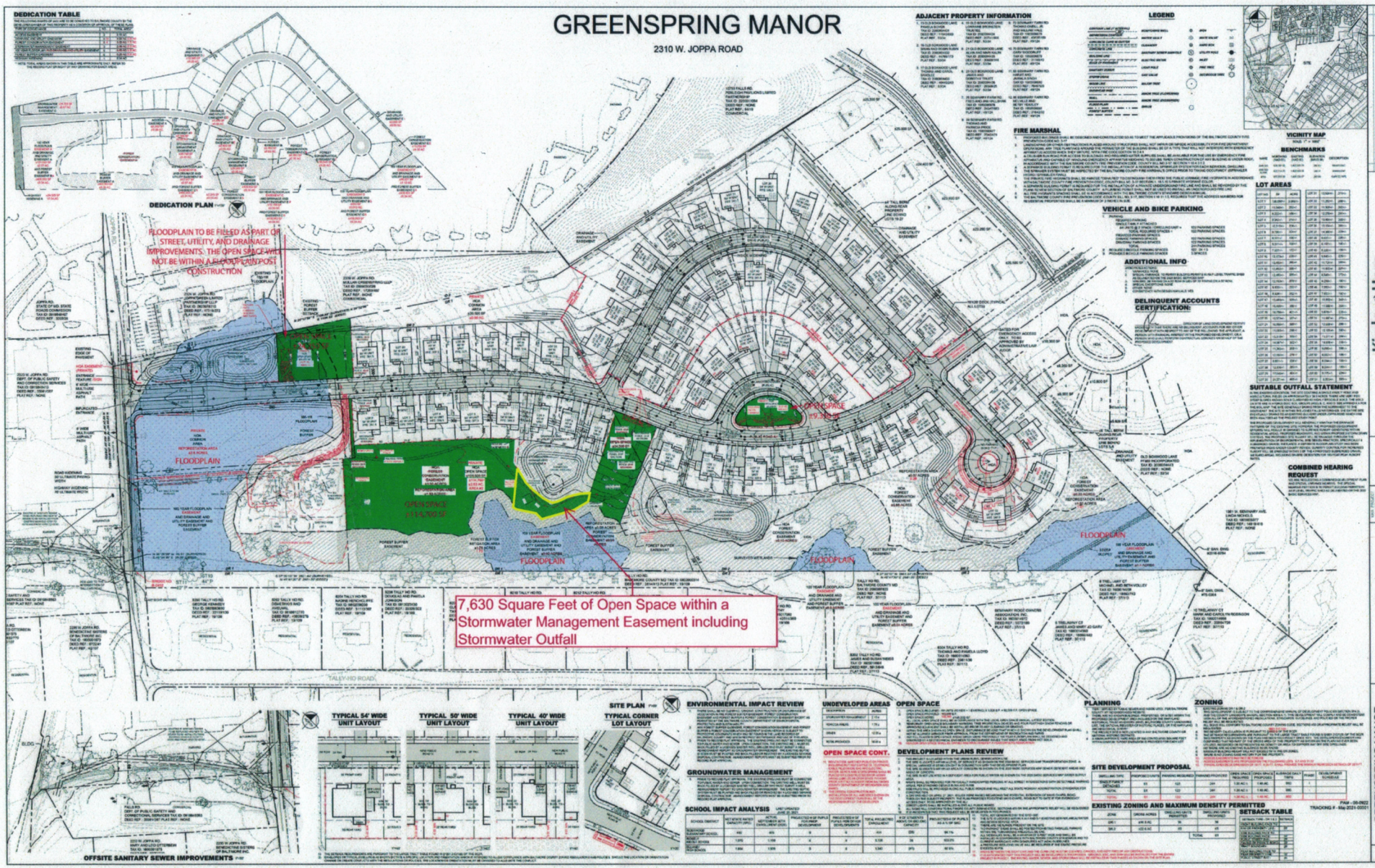
Jim Hermann, RLA - Landscape Architect

Permits, Approval & Inspections,
Development Plans Review
County Office Building, Room 119
111 West Chesapeake Avenue
Towson, Maryland 21204

Email: jhermann@baltimorecountymd.gov
Phone: 410-887-3751
Fax: 410-887-2877

GREENSPRING MANOR

2310 W. JOPPA ROAD



VENABLE LLP

210 W. PENNSYLVANIA AVENUE SUITE 500 TOWSON, MD 21204
T 410.494.6200 F 410.821.0147 www.Venable.com

August 30, 2021

Adam M. Rosenblatt

T 410.494.6271
F 410.821.0147
amrosenblatt@Venable.com

Peter Gutwald, Director
Department of Permits, Approvals and Inspections
111 W. Chesapeake Avenue, Room 105
Towson, Maryland 21204

Roslyn Johnson, Director
Baltimore County Recreation and Parks
9831 Van Buren Lane
Cockeysville, Maryland 21030

Re: **Request for Determination regarding Open Space**
Greenspring Manor
2310 W. Joppa Road
2nd Council District, 8th Election District

Dear Mr. Gutwald and Ms. Johnson:

This firm represents the owner of the above-referenced properly located in the Lutherville-Timonium area of Baltimore County (the "Property"). I am writing to request a determination that certain land that will be encumbered by a stormwater management easement and outfall will qualify as "open space" provided in connection with the Greenspring Manor project.

The Property is located on the north side of Joppa Road east of its intersection with Falls Road. It contains approximately 33.51 acres of land that is improved with a single family dwelling and large open farm field. Our client submitted a Development Plan proposing to construct 60 new single family homes on the Property and we are seeking a determination related to the open space that will be provided in connection with the project.

According to BCC Section 32-6-108(c)(1), the 60 proposed single-family units would generate the need for 60,000 square feet of open space. Developer is proposing to provide ± 148,300± square feet of "open space" spread throughout the proposed development. *See attached* Open Space Exhibit.

A portion of the proposed open space (7,630 square feet) is located within an area that will be designated as a stormwater management easement with a stormwater management outfall area. Despite the stormwater management easement, this area will be "useable" and will be

an integral part of the *Greenspring Manor* community as a whole. A pedestrian walkway will provide access to residents through the area encumbered by a stormwater management easement and will actually connect two other sections of open space that will be provided for this project. Amenities such as a gazebo, benches, and trash receptacles will also be provided within the open space area. The developer could technically meet its open space requirements *without* the addition of the area encumbered by a stormwater management easement, but the encumbered area is essential to providing a usable connection between two separated open space areas on the Property. It will greatly improve the function of the open space program provided for future residents.

At this time, I am seeking confirmation, pursuant to Section 32-6-108(d) of the Baltimore County Code ("BCC"), that the proposed area of on-site open space shown on the enclosed plan qualifies as "open space" even though this area will be encumbered by "an environmental, stormwater management, or utility easement." Please confirm that the entire 7,630 ± square feet (or ± 0.17 acres) of open space will qualify as "open space" under BCC Section 32-6-108.

If you need any additional information in order to make the requested determinations, please feel free to contact me.

Very truly yours

Adam M. Rosenblatt

RECOMMENDED:

10/13/2021
James Hermann

APPROVED:

Peter Gutwald, Director

APPROVED:

Roslyn Johnson, Director

BALTIMORE COUNTY, MARYLAND

Inter-Office Correspondence

DATE: August 11, 2021

TO: C. Pete Gutwald, Director
Department of Permits
Approvals and Inspections
Attn: Jerry Chen

FROM: LaChelle Imwiko LWI
Real Estate Compliance

SUBJECT: Greenspring Manor
PAI #08-0922

A review of the development plan for the above referenced project results in the following comments. These comments are advisory in nature.

1. Offsite rights-of-way and easements must be acquired prior to record plat approval.

2. When necessary, access easements, approved by DEPS, should be shown for storm water management facilities, forest buffers, etc.

3. Please label, and provide deed references, for all existing Baltimore County easements and publicly owned areas on the plan.

4. Please label all proposed easements and publicly owned areas on the plan, and provide a Dedication Table that includes the type of conveyance, quantity of each, and total area to be conveyed.

5. Please delineate and label required dedications for highway purposes as "Highway Widening Area", not "Future", "Proposed" or "Ultimate" regardless of whether or not highway improvements will actually be required as part of the development. New roads within the development, if public, should be labeled as such and included in the Dedication Table as "Highway Right-of-Way."

6. Please label with deed references and provide dimensions for any private easements and/or rights-of-way that exist on the property.

C. Pete Gutwald, Director
Department of Permits
Approvals and Inspections

7. Site-specific comments:

   a. 100 Year Floodplain Easements and Drainage & Utility Easements are dedicated to the County separately even if they encumber the same area. Therefore, please label each 100 year Floodplain Easement in alphabetic order separate from all Drainage & Utility Easements, which should also be labeled in alphabetic order. Ex. 100 Year Floodplain Easement 'A' and Drainage and Utility Easement 'A' and Forest Buffer Easement 'A'. Please see the attached dedication plan for revisions.

   b. In the dedication table remove "and Drainage and Utility Easement" after 100 Year Floodplain. The dedication table should read "100 Year Floodplain Easement. Also, all 100 Year Floodplain areas should be labeled as "100 Year Floodplain Easement".

   c. Please revise the dedication table number and acreage to reflect ten Drainage and Utility Easements. Please see the attached dedication plan for revisions.

   d. Add the square footage or/and acreage to each area identified for County dedication on the plan. Ex. Stormwater Management Easement 'C', X.XXac.

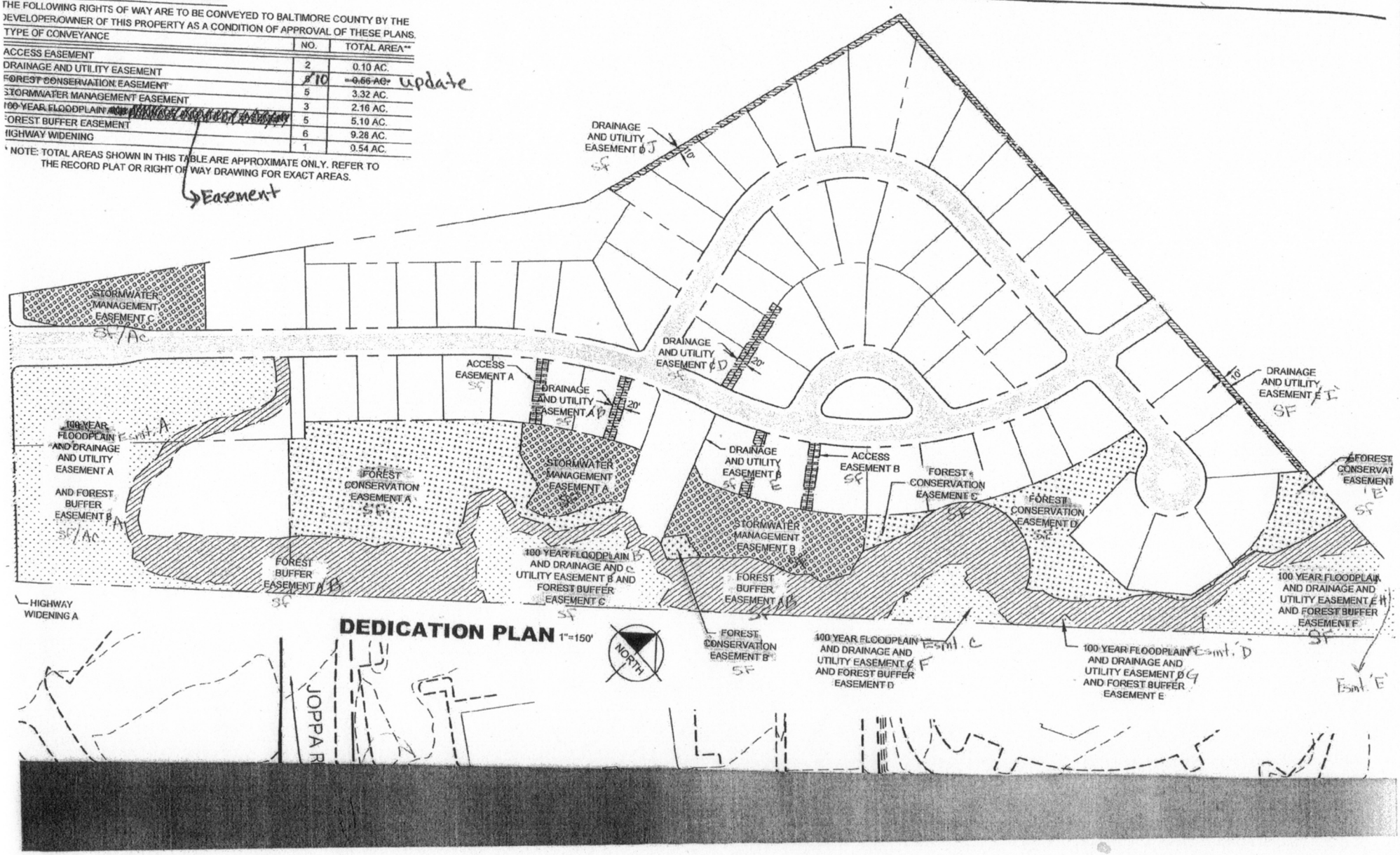
DEDICATION TABLE

THE FOLLOWING RIGHTS OF WAY ARE TO BE CONVEYED TO BALTIMORE COUNTY BY THE DEVELOPER/OWNER OF THIS PROPERTY AS A CONDITION OF APPROVAL OF THESE PLANS.

TYPE OF CONVEYANCE	NO.	TOTAL AREA**
ACCESS EASEMENT	2	0.10 AC.
DRAINAGE AND UTILITY EASEMENT	~~10~~	~~0.66 AC.~~ update
FOREST CONSERVATION EASEMENT	5	3.32 AC.
STORMWATER MANAGEMENT EASEMENT	3	2.16 AC.
100 YEAR FLOODPLAIN AND DRAINAGE AND UTILITY EASEMENT AND FOREST BUFFER EASEMENT	5	5.10 AC.
FOREST BUFFER EASEMENT	6	9.28 AC.
HIGHWAY WIDENING	1	0.54 AC.

** NOTE: TOTAL AREAS SHOWN IN THIS TABLE ARE APPROXIMATE ONLY. REFER TO THE RECORD PLAT OR RIGHT OF WAY DRAWING FOR EXACT AREAS.

Easement



DEDICATION PLAN 1"=150'

BALTIMORE COUNTY, MARYLAND

Inter-Office Correspondence

REAL ESTATE COMPLIANCE FINAL COMMENTS

TO: C. Pete Gutwald, Director
Department of Permits
Approvals and Inspections
Attn: Jerry S. Chen

DATE: August 25, 2022

FROM: LaChelle Imwiko
Real Estate Compliance

SUBJECT: Greenspring Manor, 2310 West Joppa Road
PAI #08-0922

A review of the red-lined development plan for the above referenced project results in the following comments:

1. Real Estate Compliance's recommendation for approval of the above mentioned development plan is contingent upon the following:

    - The sum of the acreage called out on the Dedication Plan for the ten Drainage and Utility Easements is not the total acreage shown in the Dedication Table. The difference between the sum of the acreage called out for the Drainage and Utility Easements and what is given in the Dedication Table is approximately 0.26 +/-. Please rectify the discrepancy.

DEVELOPER'S EXHIBIT
2

Matt Bishop, PLA, LEED AP

Project Manager and Senior Landscape Architect



Matt has 20 years of landscape architecture, land planning, and project management experience and has dedicated 15 years of that experience to building, partnering, and developing Baltimore County, MD. As a project manager and landscape architect, he has a solid understanding of various types of developments and redevelopments, including retail, residential, office, hospitality, and mixed-use. He specializes in land development entitlements, plan approvals, and permitting process and has become a trusted advisor to developers in and the jurisdiction of Baltimore County. Matt prides himself on working closely and collaborating effectively with clients and stakeholders, guiding them through county regulations to move their projects from plans to the built environment. Supervising and managing projects with construction budgets from $50,000 to $60 million, Matt is a proven project leader and partner.

BALTIMORE COUNTY EXPERIENCE

Southwest Physicians Pavilion PUD, Baltimore County, Maryland - Located in Catonsville this project was for the development of a new medical office building. The project followed the Planned Unit Development Process. Responsibilities included preparation and oversight of the PUD Concept Plan, the PUD development plan, pattern book, and landscape plans. Also provided expert witness testimony at the Administrative Law Judge Hearing.

101 York PUD, Baltimore County, Maryland - Located in Towson this project was for the development of a new student housing building. The project followed the Planned Unit Development Process. Responsibilities included preparation and oversight of the PUD Concept Plan, presentation at two community input meetings, the PUD development plan, pattern book, landscape plans, construction drawings, and permit processing. Also provided expert witness testimony at the Administrative Law Judge Hearing.

10540 Philadelphia Road, Baltimore County, Maryland - Located in the Whitemarsh area of Baltimore County, this project included the development of a new Holiday Inn Express, pad site for a second hotel, and pad site for a future retail/restaurant. Consulting services included the preparation of a limited exemption development plan, SHA access permit, forest conservation plans, stormwater management plans, grading plans, erosion and sediment control plans, record plat, and landscape plans. Services also included public agreements, permitting, construction administration, and closeout services.

Rosedale Federal Headquarters, Perry Hall, Maryland - Located on Belair Road in Perry Hall, this project consisted of an approximately 10,000 square foot addition to the bank's corporate headquarters. Consulting services

Professional Credentials

Master of Science, Plant Science, University of Connecticut, 2006

Bachelor of Science, Landscape Architecture, University of Connecticut, 2001

Professional Landscape Architect in Maryland — #3365

Leadership in Energy and Environmental Design Accredited Professional (LEED AP)

Professional Affiliations

Maryland Building Industry Association, Baltimore County Chapter

Baltimore County Engineers Association

included special hearing process, expert witness testimony, Board of Appeals testimony, Baltimore County DRC, limited exemption development plan, construction documents, construction administration, and close-out services.

Rosedale Federal Philadelphia Road Branch, Perry Hall, Maryland - Located at the corner of Philadelphia Road and Golden Ring Road in Perry Hall, this project consisted of the razing of an existing home and replacing it with a new branch bank. Consulting services included Maryland SHA access and utility permits, Baltimore County DRC process including a limited exemption development plan, grading permit, stormwater management permit, utility, right of way, and environmental agreements.

Firestone Auto Care Center, Baltimore County, Maryland - Located in Perry Hall on the east side of Belair Road, this commercial auto care facility included 5,000 sf of service and retail space with associated parking, signage, and landscape improvements. Served as project manager in the preparation of all Baltimore County required plans including a special exception plan, development plan, grading plan, site plan, ESC plan, utility plans, and landscape plans. Served as expert witness at the special exception hearing.

Starbucks, 6900 York Road Baltimore County, Maryland - Located on York Road south of downtown Towson this redevelopment project included the razing of an existing 2-story commercial building and replacing it with a new Starbucks building with drive-through. Served as project manager in the preparation of all Baltimore County required plans and approval processes including Development Review Committee (DRC), stormwater management variance, landscape plan, grading plan (<20,000 sf LOD), permitting, construction administration, and close-out services.

Foundry Station PUD, Baltimore County, Maryland – Located in Dundalk this project was for the redevelopment of the Seagram's Brewery site. The project followed the Planned Unit Development Process and included 189 new townhomes centered around two common open space areas and two historic landmarks. Responsibilities included preparation and oversight of the PUD Concept Plan, presentation at two community input meetings, the PUD development plan, pattern book, and landscape plans. Also provided expert witness testimony at the Administrative Law Judge Hearing.

Hillshire Overlook, Baltimore County, Maryland – Located in the Dundalk Community of Baltimore County, this project consisted of the infill of 18 new single-family detached dwellings on a previously undeveloped site. Consulting services included the preparation of a concept plan, presentation at the community input meeting, development plan, and pattern book.

Baltimore County - My Neighborhood

DEVELOPER'S EXHIBIT
3A



Legend

- Interstates
- Interstate Ramps
- Major Roads
- Minor Roads
- Local Roads
- County Boundary

1:12,000

0 500 1,000 2,000 Feet

November 10, 2021

Baltimore County - My Neighborhood

DEVELOPER'S EXHIBIT
3B

N

TONY DR
FALLS RD
DEER RUN RD
NEARFIELD RD
MAYS CHAPEL RD
YEARLING WAY
OLD BOXWOOD LN
SEMINARY FARM RD
SEMINARY DR
FIELDSPRING CT
DRIVEWAY
DRIVEWAY
DRIVEWAY
BRIARFIELD CT
TALLY HO RD
CLEARFIELD CIR
SCOTTSDALE CT
TRELAWNY CT
SEDGEFIELD CT
GREENSPRING VALLEY RD
RAMP
FALLS RD
ROAD
RAMP
FALLS RD
RAMP
FALLS RD
JFX
JFX RAMP
DRIVEWAY
W JOPPA RD
HORSESHOE CIR
WHITE MANOR DR
FOX HUNT LN
LOCHMOOR CT
695
695
CARRBRIDGE CIR
LEADBURN CT
LEADBURN RD
SHERWICK RD

Legend

- Interstates
- Interstate Ramps
- Major Roads
- Minor Roads
- Local Roads
- County Boundary

1:6,000

0 255 510 1,020 Feet

November 10, 2021

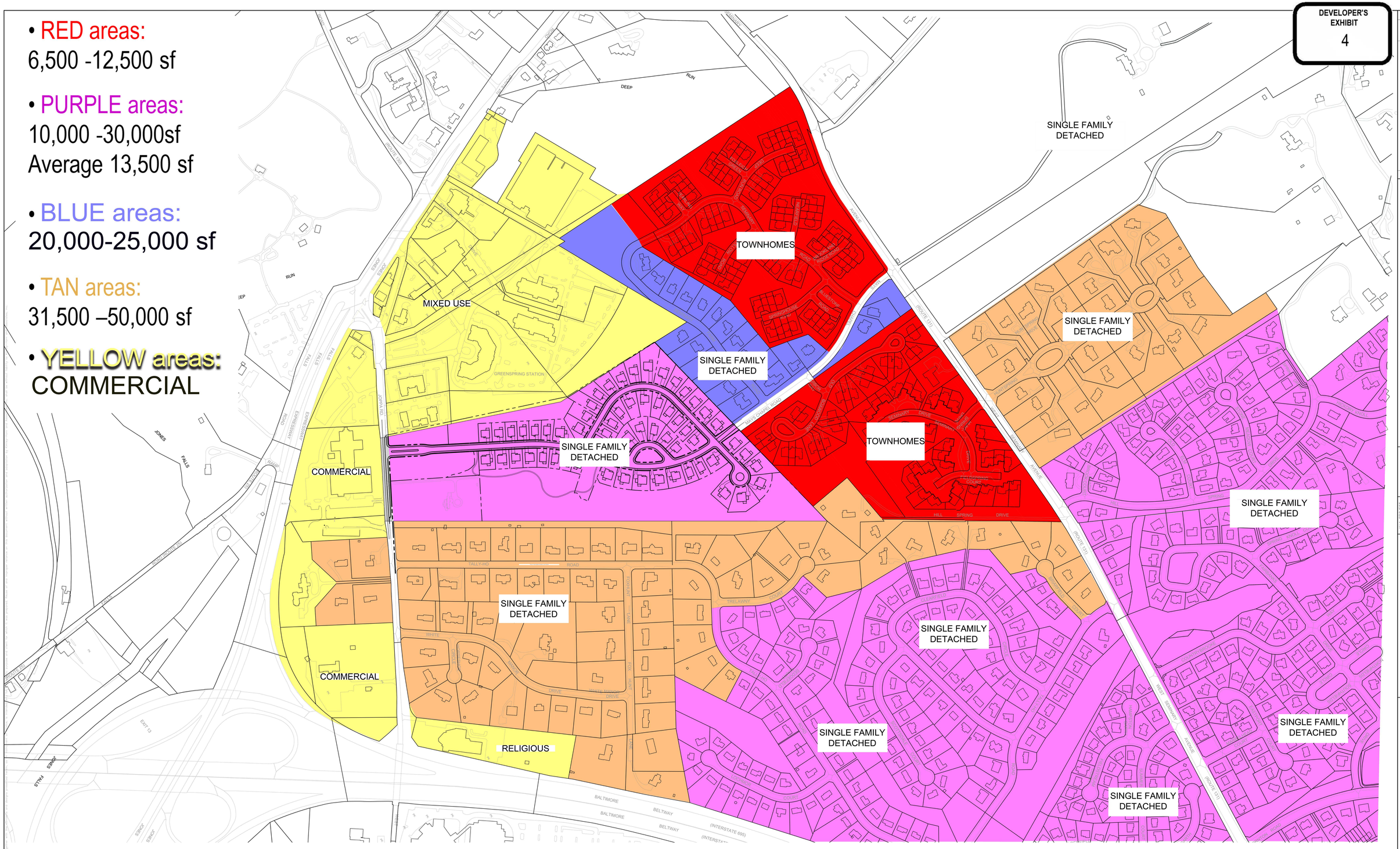
- RED areas:
6,500 -12,500 sf

- PURPLE areas:
10,000 -30,000sf
Average 13,500 sf

- BLUE areas:
20,000-25,000 sf

- TAN areas:
31,500 –50,000 sf

- YELLOW areas:
COMMERCIAL



SITE CONSTRAINTS PLAN 1"=60'

Kimley»Horn

NEIGHBORHOOD DENSITY EXHIBIT

GREENSPRING MANOR
(2310 WEST JOPPA ROAD)
PREPARED FOR
ATAPCO PROPERTIES

SHEET NUMBER
1 OF 1

DEVELOPER'S
EXHIBIT

5


2310


















8204






8420








ROAD
END




76




GREEN SPRING STATION




JOHNS HOPKINS
MEDICINE
PAVILION III
10803
STOP
STOP
MILAN
OHIO
GYD 1624


MACKENZIE
BANK OF AMERICA

DEVELOPER'S EXHIBIT

6

GRENSPRING STATION

MAYS CHAPEL ROAD

W. JOPPA ROAD

TALLY HO ROAD

OPEN SPACE

STORMWATER MANAGEMENT

REFORESTATION AREA

FOREST BUFFER

FOREST CONSERVATION

HOA OPEN SPACE

HOA FOREST CONSERVATION EASEMENT

SWM SHEET FLOW TO BUFFER LOTS 2-6 (-7.29)

SWM SHEET FLOW TO BUFFER LOTS 7-9

SWM SHEET FLOW TO BUFFER LOTS 10-13

2330 W. JOPPA RD
MULLAN GREENSPRING LLLP
TAX ID: 0800003026
DEED REF.: 17269/497
PLAT REF.: NONE
COMMERCIAL

2324 W. JOPPA RD
JOPPA GREEN LIMITED PARTNERSHIP LLLP
TAX ID: 0327076210
DEED REF.: 7579/372
PLAT REF.: NONE

2323 W. JOPPA RD
DEPT. OF PUBLIC SAFETY AND CORRECTION SERVICES
TAX ID: 0919845410
DEED REF.: 3059/1367
PLAT REF.: NONE

JOPPA RD
STATE OF MD. STATE ROADS COMMISSION
TAX ID: 0919848407
DEED REF.: 3037/78

8200 TALLY HO RD.
GEORGE KENNEDY
TAX ID: 0805063690
DEED REF.: 22119/130
PLAT REF.: 19/109

8202 TALLY HO RD.
DEMETRIOS AND AMELMIAL
TAX ID: 0815012770
DEED REF.: 43608/276
PLAT REF.: 19/108

8204 TALLY HO RD.
NADINE HENCHCLIFFE
TAX ID: 0803053500
DEED REF.: 31112/307
PLAT REF.: 19/109

8206 TALLY HO RD.
DOUGLAS and PAMELA JOHNSON
TAX ID: 0813023135
DEED REF.: 33328/322
PLAT REF.: 19/109

8208 TALLY HO RD.
GLENN AND BARBARA ABBOTT
TAX ID: 0808070900
DEED REF.: 44374/61
PLAT REF.: 19/109

8210 TALLY HO RD.
DENNIS AND NANCY BURNS
TAX ID: 0819010720
DEED REF.: 5383/666
PLAT REF.: 19/109

8212 TALLY HO RD.
DANIEL and ELIZABETH RADEBAUGH
TAX ID: 0805071090
DEED REF.: 43541/395
PLAT REF.: 19/109

8214 TALLY HO RD.
SHARON BERG
TAX ID: 0801097200
DEED REF.: 14877/504
PLAT REF.: 19/109

8216 TALLY HO RD.
CHARLES and LINDA WALCUTT
TAX ID: 0803038370
DEED REF.: 22750/173
PLAT REF.: 19/109

8300 TALLY HO RD.
LYNN MARTH
TAX ID: 0816017060
DEED REF.: 43514/360
PLAT REF.: 19/109

8302 TALLY HO RD.
JAMES and SUSAN WEISS
TAX ID: 1600014964
DEED REF.: 5913/548
PLAT REF.: 37/113

8304 TALLY HO RD
THOMAS and PAMELA LLOYD
TAX ID: 1600014963
DEED REF.: 29611/36
PLAT REF.: 37/113

SEMINARY RIDGE OWNERS ASSOCIATION, INC.
TAX ID: 1600014972
DEED REF.: 5572/189
PLAT REF.: 37/113

6 TRELAWNY CT
JAMES AND MARY JO GARY
TAX ID: 1600014960
DEED REF.: 16699/449
PLAT REF.: 37/113

8 TRELAWNY CT
MICHAEL AND BETH VOLLEY
TAX ID: 1600014959
DEED REF.: 18853/743
PLAT REF.: 37/113

1301 W. SEMINARY AVE
LINDA MADDUX
TAX ID: 1600005977
DEED REF.: 1491/416
PLAT REF.: NONE

OLD BOXWOOD LANE
PF&M INCORPORATED
TAX ID: 2000004443
DEED REF.: NONE
PLAT REF.: 53/34

±25,300 SF
±25,800 SF
±24,400 SF
±23,400 SF
±23,250 SF
±26,500 SF
±10,300 SF
±9,200 SF
±10,500 SF
±9,500 SF
±6,600 SF

41' TALL BERM ALONG REAR PROPERTY LINE BEHIND LOTS 19-27

41' TALL BERM ALONG REAR PROPERTY LINE BEHIND LOTS 3-6

10'X20' DECK (TYPICAL ALL LOTS)

GRADED FOR EMERGENCY ACCESS ONLY, TO BE APPROVED BY ADMINISTRATIVE LAW JUDGE

NO PARKING SIGNS (TYP.)

100 YEAR FLOODPLAIN EASEMENT AND DRAINAGE AND UTILITY EASEMENT AND FOREST BUFFER EASEMENT ±0.9 ACRES

100 YEAR FLOODPLAIN EASEMENT AND DRAINAGE AND UTILITY EASEMENT AND FOREST BUFFER EASEMENT ±0.01 ACRES

STORMWATER MANAGEMENT FEE IN-PUT FOR ADD'TO SF IN OF-SITE IMPROVEMENTS WHICH CANNOT BE TREATED ONSITE

ROAD WIDENING 50' ULTIMATE PAVING WIDTH

HIGHWAY WIDENING 70' ULTIMATE WIDTH

EXISTING 100-YR FLOODPLAIN

EXISTING FOREST BUFFER SETBACK

EXISTING EDGE OF PAVEMENT

HOA EASEMENT (TYP.)

ENTRANCE FEATURE - SIGN

6' WIDE MULTI-USE ASPHALT PATH

BIFURCATED ENTRANCE

6' WIDE MULTI-USE ASPHALT PATH

DRAINAGE AND UTILITY EASEMENT

SIGHT DISTANCE

Kimley»Horn
210 WEST PENNSYLVANIA AVENUE, SUITE 150, TOWSON, MD 21204
PHONE: 410-847-3844
WWW.KIMLEY-HORN.COM

NO.	REVISIONS	DATE	BY

KHA PROJECT 114000001
DATE
SCALE: AS SHOWN
DESIGNED BY: MAB
DRAWN BY: JPM
CHECKED BY: MAB

SITE PLAN RENDERING

1"=60'

GREENSPRING MANOR

(2310 WEST JOPPA ROAD)

PREPARED FOR

ATAPCO PROPERTIES

SALTMORE, COATS, MD
1ST ELECTION DISTRICT
BALTIMORE COUNTY, MD

SHEET NUMBER
1 OF 1

DEVELOPER'S EXHIBIT

7A

GREENSPRING MANOR

PATTERN BOOK

6/30/2021

REDLINE 8/29/2022

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Owner/Developer

Atapco Properties, Inc.
1 South Street, Suite 2800
Baltimore, Maryland 21202
Phone (410) 347-7217
Contact: Ron Snyder

Planning/Engineering

Kimley-Horn
210 West Pennsylvania Avenue, Suite 100
Towson, Maryland 21204
Phone (443) 792-9995
Contact: Matthew Bishop, PLA, LEED AP

Environmental Scientist

Eco-Science Professionals, Inc.
P.O. Box 5006
Glen Arm, Maryland 21057
Phone (410) 683-7840
Contact: John Canoles

Land Use Attorney

Venable LLP
210 West Pennsylvania Avenue, Suite 500
Towson, Maryland 21204
410-494-6271
Contact: Adam Rosenblat

Traffic Consultant

Lenhart Traffic Consulting, Inc.
645 Baltimore Annapolis Blvd, Suite 214
Severna Park, Maryland 21146
410-494-6271
Contact: Mike Lenhart

Landscape Architect

LPDA
21515 Ridgetop Circle, Suite 310
Sterling, Virginia 20166
703-437-7907
Contact: Aaron Schwartz, PLA, ALSA

PROJECT OVERVIEW

GREENSPRING MANOR



SITE DATA

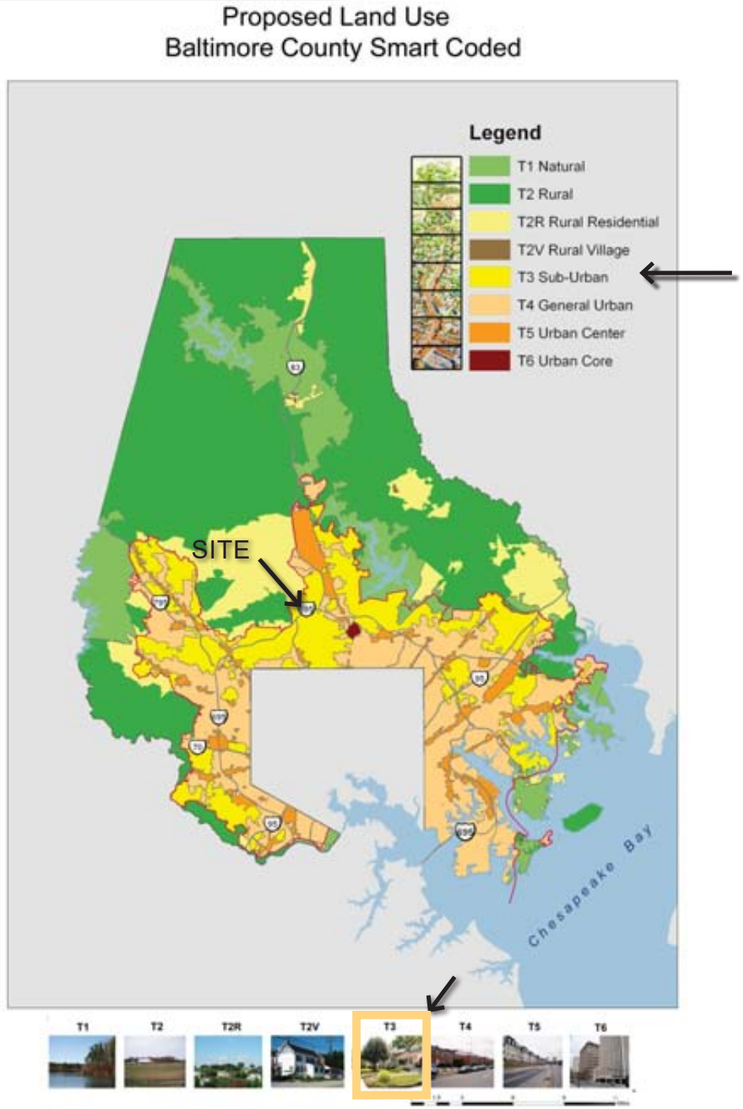
Address:	2310 West Joppa Road
Existing Zoning:	DR 1 & DR 2
Gross Acreage	39.4 ac±
Net Acreage	39.4 ac±

Existing Land Use	Single-Family & Agriculture
Tax Account Numbers	0812000275
Deed References	42953/422
Councilmanic District	2
Election District	8
Zoning Map Reference	060A3
Tax Map	60
Parcels	449
Watershed	Jones Falls
Proposed Land Use	Single Family Detached Residential

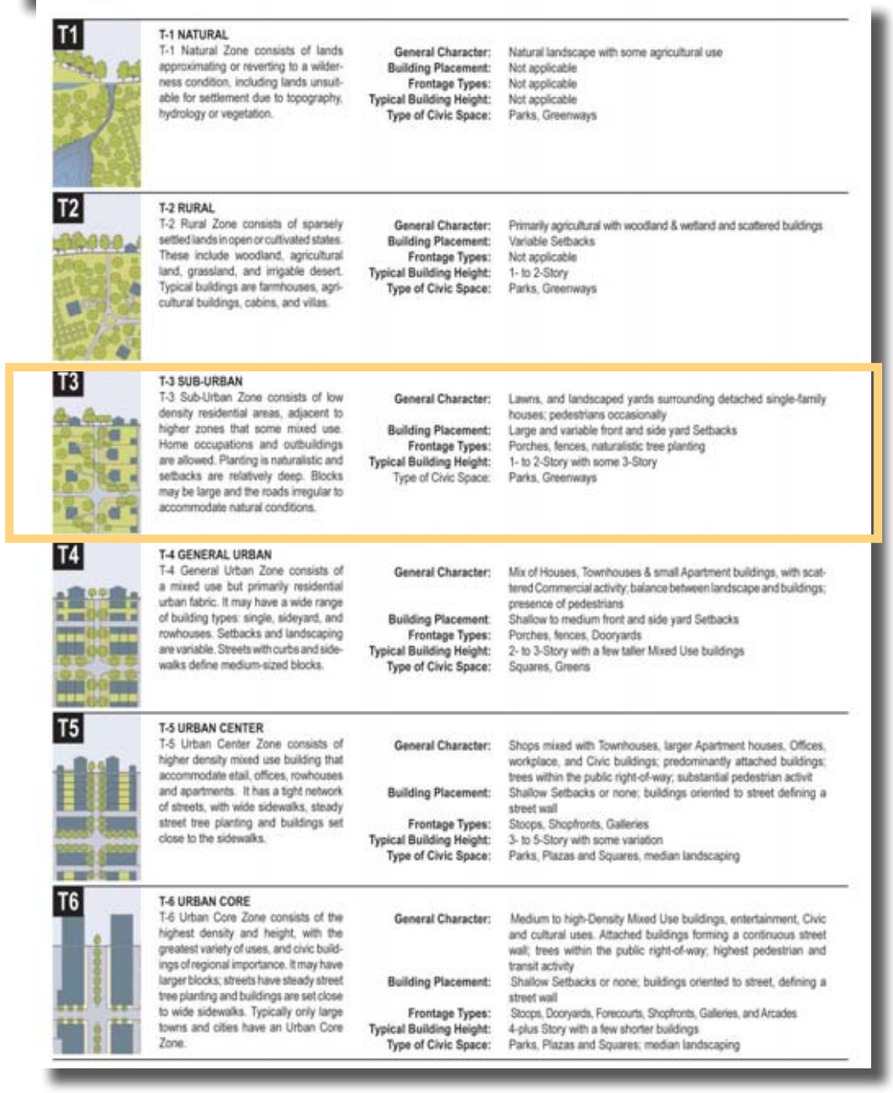


BALTIMORE COUNTY MASTER PLAN AND TRANSECT

Map 5: Proposed Land Use



Transect Zone Descriptions



T1 NATURAL
T-1 Natural Zone consists of lands approximating or reverting to a wilderness condition, including lands unsuitable for settlement due to topography, hydrology or vegetation.

General Character:	Natural landscape with some agricultural use
Building Placement:	Not applicable
Frontage Types:	Not applicable
Typical Building Height:	Not applicable
Type of Civic Space:	Parks, Greenways

T2 RURAL
T-2 Rural Zone consists of sparsely settled lands in open or cultivated states. These include woodland, agricultural land, grassland, and irrigable desert. Typical buildings are farmhouses, agricultural buildings, cabins, and villas.

General Character:	Primarily agricultural with woodland & wetland and scattered buildings
Building Placement:	Variable Setbacks
Frontage Types:	Not applicable
Typical Building Height:	1- to 2-Story
Type of Civic Space:	Parks, Greenways

T3 SUB-URBAN
T-3 Sub-Urban Zone consists of low density residential areas, adjacent to higher zones that some mixed use. Home occupations and outbuildings are allowed. Planting is naturalistic and setbacks are relatively deep. Blocks may be large and the roads irregular to accommodate natural conditions.

General Character:	Lawns, and landscaped yards surrounding detached single-family houses; pedestrians occasionally
Building Placement:	Large and variable front and side yard Setbacks
Frontage Types:	Porches, fences, naturalistic tree planting
Typical Building Height:	1- to 2-Story with some 3-Story
Type of Civic Space:	Parks, Greenways

T4 GENERAL URBAN
T-4 General Urban Zone consists of a mixed use but primarily residential urban fabric. It may have a wide range of building types: single, sideyard, and rowhouses. Setbacks and landscaping are variable. Streets with curbs and sidewalks define medium-sized blocks.

General Character:	Mix of Houses, Townhouses & small Apartment buildings, with scattered Commercial activity; balance between landscape and buildings; presence of pedestrians
Building Placement:	Shallow to medium front and side yard Setbacks
Frontage Types:	Porches, fences, Dooryards
Typical Building Height:	2- to 3-Story with a few taller Mixed Use buildings
Type of Civic Space:	Squares, Greens

T5 URBAN CENTER
T-5 Urban Center Zone consists of higher density mixed use building that accommodate etail, offices, rowhouses and apartments. It has a tight network of streets, with wide sidewalks, steady street tree planting and buildings set close to the sidewalks.

General Character:	Shops mixed with Townhouses, larger Apartment houses, Offices, workplace, and Civic buildings; predominantly attached buildings; trees within the public right-of-way; substantial pedestrian activit
Building Placement:	Shallow Setbacks or none; buildings oriented to street defining a street wall
Frontage Types:	Stoops, Shopfronts, Galleries
Typical Building Height:	3- to 5-Story with some variation
Type of Civic Space:	Parks, Plazas and Squares, median landscaping

T6 URBAN CORE
T-6 Urban Core Zone consists of the highest density and height, with the greatest variety of uses, and civic buildings of regional importance. It may have larger blocks; streets have steady street tree planting and buildings are set close to wide sidewalks. Typically only large towns and cities have an Urban Core Zone.

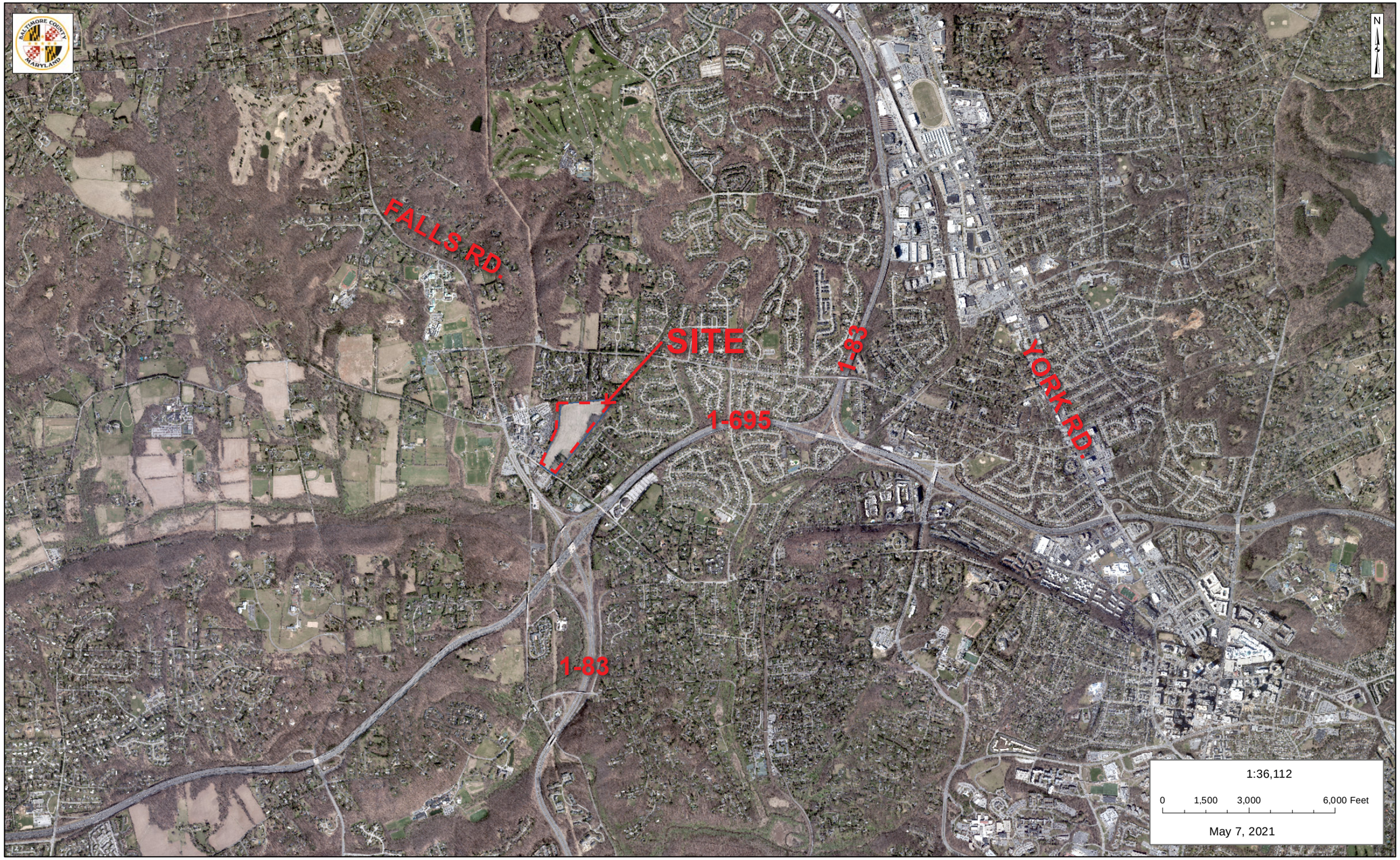
General Character:	Medium to high-Density Mixed Use buildings, entertainment, Civic and cultural uses. Attached buildings forming a continuous street wall; trees within the public right-of-way; highest pedestrian and transit activity
Building Placement:	Shallow Setbacks or none; buildings oriented to street, defining a street wall
Frontage Types:	Stoops, Dooryards, Forecourts, Shopfronts, Galleries, and Arcades
Typical Building Height:	4-plus Story with a few shorter buildings
Type of Civic Space:	Parks, Plazas and Squares; median landscaping

- **T-3 (Sub-Urban Zone)** includes low-density residential areas, adjacent to higher zones that contain mixed use. Home occupations and outbuildings may be allowed. Landscaping is naturalistic and setbacks are relatively deep. Blocks may be large and the roads irregular to accommodate natural conditions.

PAGES FROM THE BALTIMORE COUNTY 2020 MASTER PLAN.
NOT TO SCALE

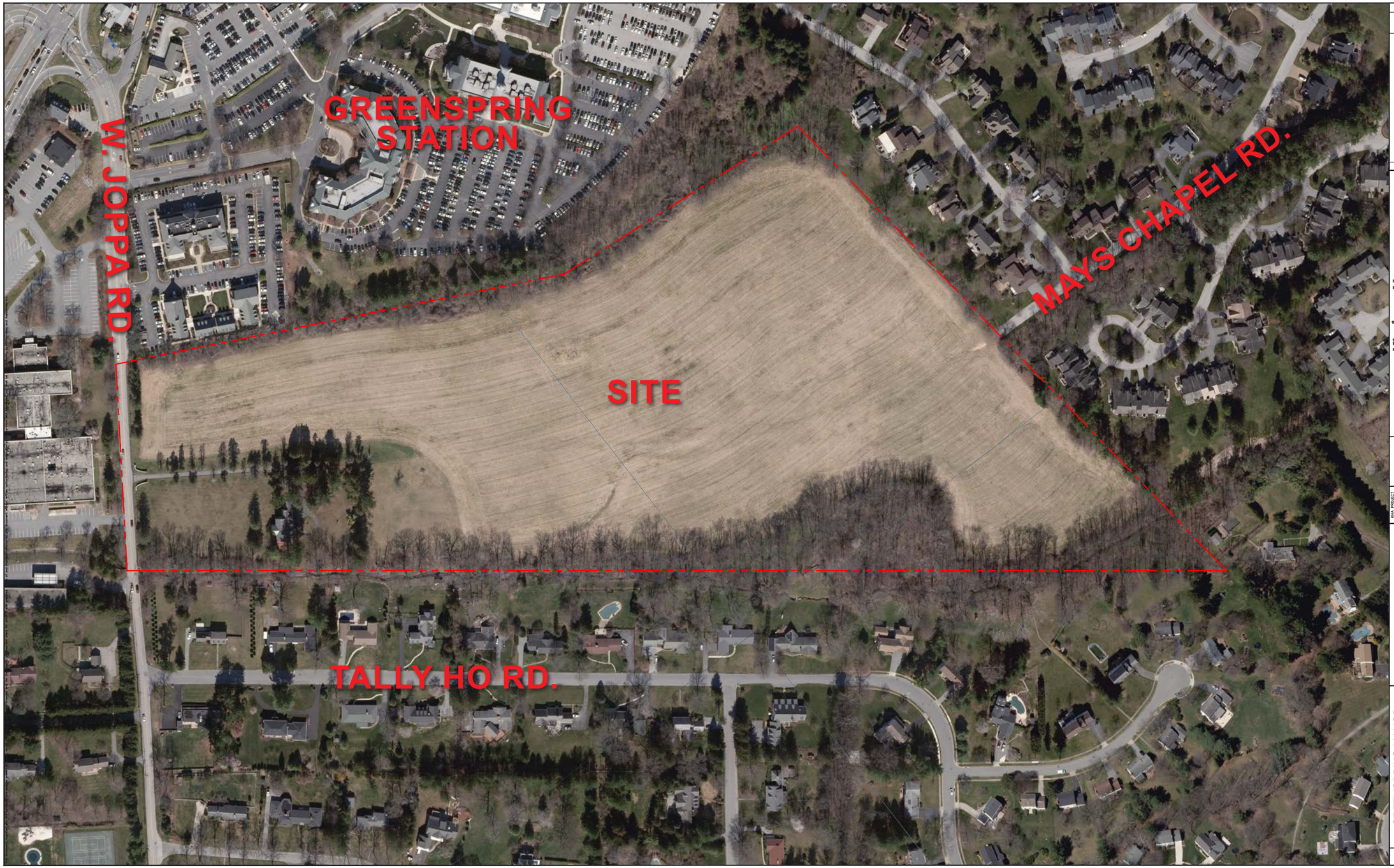
CONTEXT AERIAL PHOTOGRAPH

Baltimore County - My Neighborhood



NOT TO SCALE

SITE AERIAL PHOTOGRAPH



NOT TO SCALE

No.	REVISIONS	DATE	BY

Kimley»Horn
1801 PORTER ST., SUITE 401, BALTIMORE, MD 21230
PHONE: 410-779-7340
WWW.KIMLEY-HORN.COM

PROJECT NO.	114.000001
DATE	05/13/2021
SCALE	AS SHOWN
DESIGNED BY	MJB
DRAWN BY	JPM
CHECKED BY	MJB

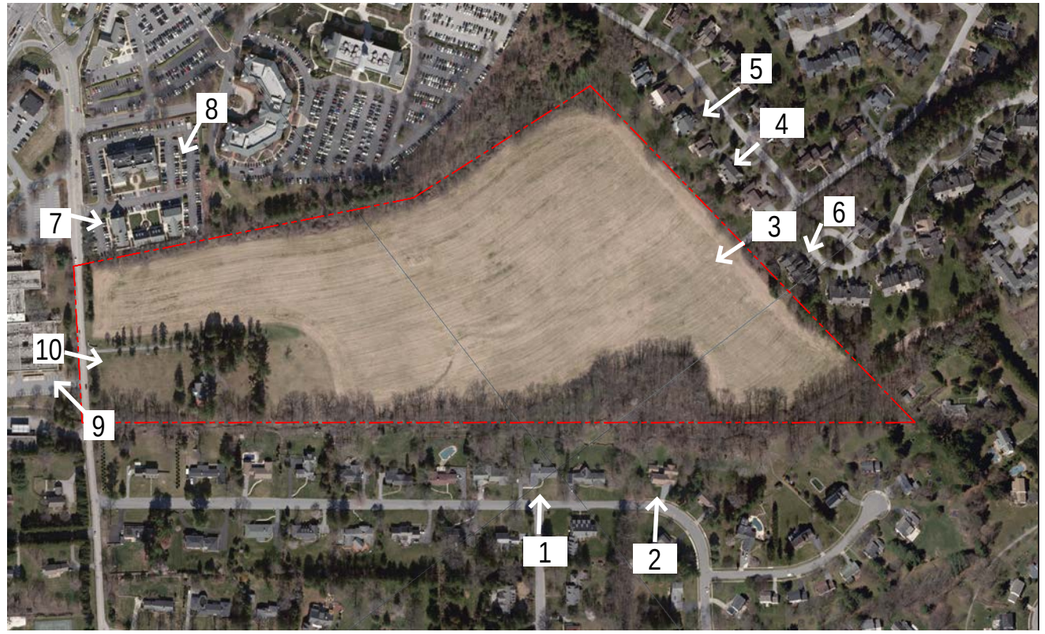
SITE AERIAL

GREENSPRING MANOR
(2161 WEST JOPPA ROAD)
PREPARED FOR
ATAPCO PROPERTIES

BALTIMORE COUNTY, MD
TAX MAP: 70 GRID: 9 PARCEL: 2
ELECTION DISTRICT: 2

SHEET NUMBER
1 OF 1

SITE/NEIGHBORHOOD PHOTOGRAPHS



1.



2.



3.



4.



5.



6.



7.



8.



9.

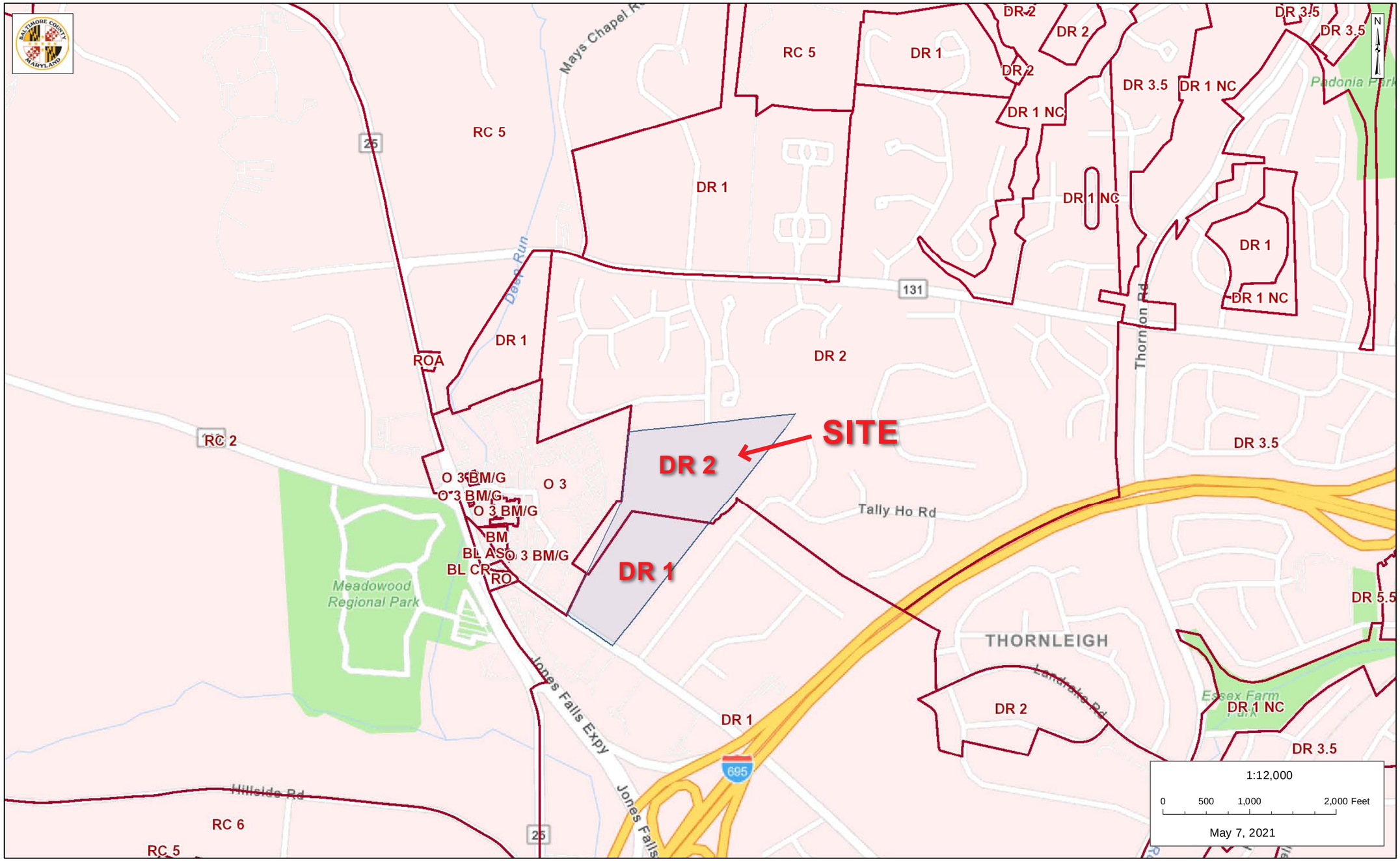


10.



AREA ZONING

Baltimore County - My Neighborhood



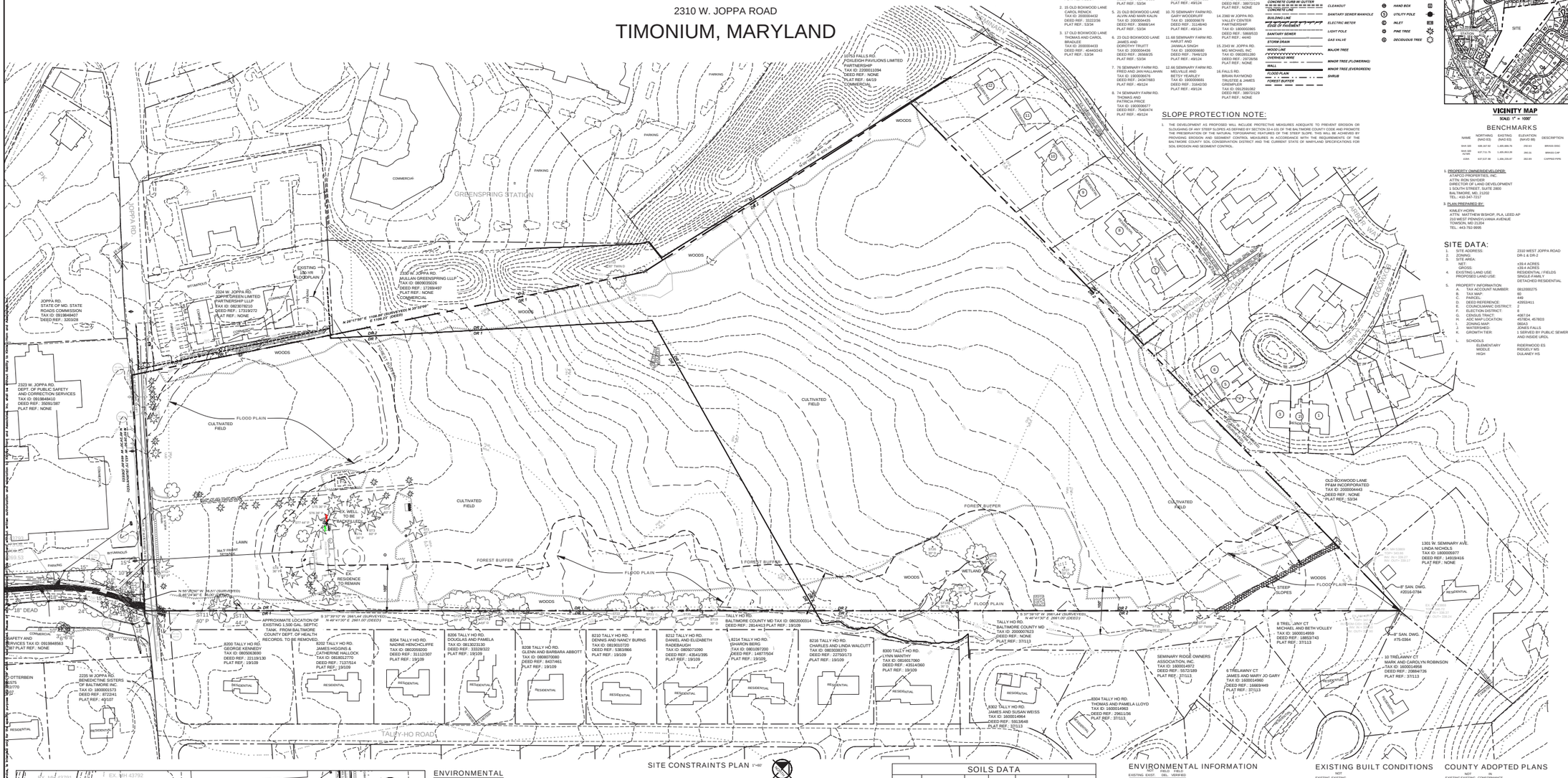
Esri Community Maps Contributors, Baltimore County Government, VITA, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA |

EXISTING CONDITIONS

GREENSPRING MANOR

2310 W. JOPPA ROAD

TIMONIUM, MARYLAND



ADJACENT PROPERTY INFORMATION

1. 13 OLD BOXWOOD LANE
PAMELA BOYER
TAX ID: 2000004431
DEED REF.: 11943/689
PLAT REF.: 53/34
2. 15 OLD BOXWOOD LANE
JOHN ROSS
TAX ID: 2000004432
DEED REF.: 3322/36
PLAT REF.: 53/34
3. 17 OLD BOXWOOD LANE
THOMAS AND CAROL MCCOY
TAX ID: 2000004433
DEED REF.: 4044/243
PLAT REF.: 53/34
4. 19 OLD BOXWOOD LANE
LORRAINE BRONSTEIN
TRUSTEE
TAX ID: 2000004434
DEED REF.: 23741/666
PLAT REF.: 53/34
5. 21 OLD BOXWOOD LANE
ALVIN AND MARI KALIN
TAX ID: 2000004435
DEED REF.: 30689/144
PLAT REF.: 53/34
6. 23 OLD BOXWOOD LANE
ROBERT AND DOROTHY TRUITT
TAX ID: 2000004436
DEED REF.: 2658/25
PLAT REF.: 53/34
7. 76 SEMINARY FARM RD.
ANTHONY AND ANNA MANN
TAX ID: 1800096474
DEED REF.: 24347/683
PLAT REF.: 49/24
8. 74 SEMINARY FARM RD.
THOMAS AND MARY MCCOY
TAX ID: 1800095977
DEED REF.: 7540/474
PLAT REF.: 49/24
9. 72 SEMINARY FARM RD.
THOMAS O'NEILL JR. AND WILLIAM HALE
TAX ID: 1900000679
DEED REF.: 4353/7169
PLAT REF.: 49/24
10. 70 SEMINARY FARM RD.
GARY WOODRUFF
TAX ID: 1900000679
DEED REF.: 5114/640
PLAT REF.: 49/24
11. 68 SEMINARY FARM RD.
JAMES AND JANNILA SINGH
TAX ID: 1900006680
DEED REF.: 7649/129
PLAT REF.: 49/24
12. 66 SEMINARY FARM RD.
JOHN AND BETSY YEARLEY
TAX ID: 1900006681
DEED REF.: 3164/190
PLAT REF.: 49/24
13. FALLS RD.
BRIAN RYMOND
TRUSTEE & JAMES GREMPLER
TAX ID: 0912591081
DEED REF.: 3807/2129
PLAT REF.: NONE
14. 2360 W JOPPA RD.
VALLEY CENTER PARTNERSHIP
TAX ID: 1800002865
DEED REF.: 1868/533
PLAT REF.: 44/40
15. 2343 W. JOPPA RD.
MG MICHAEL INC.
TAX ID: 0903051260
DEED REF.: 2972/856
PLAT REF.: NONE
16. FALLS RD.
BRIAN RAYMOND
TRUSTEE & JAMES GREMPLER
TAX ID: 0912591082
DEED REF.: 3807/2129
PLAT REF.: NONE

LEGEND

CONTOUR LINE (1' INTERVAL)
CONTOUR LINE (5' INTERVAL)
DEPRESSION CONTOUR
CONCRETE CURB W/GUTTER
CONCRETE LINE
BUILDING LINE
EDGE OF PAVEMENT
SANITARY SEWER
STORM DRAIN
WOOD LINE
OVERHEAD WIRE
WALL
FLOOD PLAIN
FOREST BUFFER
MONITORING WELL
WATER VAULT
CLEANOUT
SANITARY SEWER MANHOLE
ELECTRIC METER
LIGHT POLE
GAS VALVE
MAJOR TREE
MINOR TREE (FLOWERING)
MINOR TREE (EVERGREEN)
SHRUB
SIGN
WATE VALVE
HAND BOX
UTILITY POLE
INLET
PINE TREE
DECIDUOUS TREE

VICINITY MAP

SCALE: 1" = 1000'

BENCHMARKS

NAME	NORTHING (NAD 83)	EASTING (NAD 83)	ELEVATION (NAVD 88)	DESCRIPTION
MAR 100	689,347.82	1,499,489.76	354.61	BRASS DISC
MAR 500 AZ MK	687,710.76	1,499,363.08	290.55	BRASS CAP
2304	637,037.98	1,498,239.87	282.89	CAPPED PIPE

1. PROPERTY OWNER/DEVELOPER:
ATAPCO PROPERTIES, INC.
ATTN: RON SNYDER
DIRECTOR OF LAND DEVELOPMENT
1 SOUTH STREET, SUITE 2800
BALTIMORE, MD. 21202
TEL.: 410-347-0119
2. PLAN PREPARED BY:
KIMLEY-HORN
ATTN: MATTHEW BISHOP, PLA, LEED AP
210 WEST PENNSYLVANIA AVENUE
TOWSON, MD 21204
TEL.: 443-792-9995

SITE DATA:

1. SITE ADDRESS: 2310 WEST JOPPA ROAD
2. ZONING: DR-1 & DR-2
3. SITE AREA: ±39.4 ACRES
NET: ±39.4 ACRES
4. EXISTING LAND USE: RESIDENTIAL / FIELDS
PROPOSED LAND USE: SINGLE-FAMILY DETACHED RESIDENTIAL
5. PROPERTY INFORMATION
A. TAX ACCOUNT NUMBER: 0812000275
B. TAX MAP: 60
C. PARCEL NO.: 449
D. DEED REFERENCE: 3509/1411
E. COUNCILMANIC DISTRICT: 2
F. ELECTION DISTRICT: 8
G. CENSUS TRACT: 4067.04
H. ADC MAP LOCATION: 4578D4, 4578D3
I. ZONING MAP: NW04
J. WATERSHED: GUNPOWDER FALLS
K. GROWTH TIER: 2 (SERVED BY PUBLIC SEWER AND INSIDE URDL
L. SCHOOLS
ELEMENTARY: RIDERWOOD ES
MIDDLE: RIDGELY MS
HIGH: DULANEY HS

SOILS DATA

SYMBOL	SOIL SERIES	SLOPE	HYDRIC	HYDROLOGIC CLASSIFICATION	WITHIN LOD?
BcA	BALTIMORE GRAVELLY LOAM	0-3%	NO	B	Y
ChB	CONESTOGA SILT LOAM	3-8%	NO	B	Y
ChB	CONESTOGA SILT LOAM	0-8%	NO	B	Y
HaB	HOLLINGER SILT LOAM	3-8%	NO	B	Y
HoC	HOLLINGER SILT LOAM	8-15%	NO	B	Y
UaD	UDORTHENTS	15-25%	NO	C	Y
UuB	URBAN LAND-UDORTHENTS COMPLEX	0-8%	NO	D	Y
WhA	WILTSHIRE SILT LOAM	0-3%	NO	C	Y
WkB	WILTSHIRE-URBAN LAND COMPLEX	0-8%	NO	C	Y

ENVIRONMENTAL INFORMATION

EXISTING	EXIST	FIELD DEL.	FIELD VERIFIED	
X		X	X	TOPOGRAPHY AND STREET GRADES (MIN 5 FOOT CONTOUR APPROPRIATELY) LABELED
X		X	X	SLOPES GREATER THAN 25%
X		X	X	100 YEAR FLOODPLAIN
X		X	X	SOILS MAPPED ACCORDING TO SOIL SURVEY, BALTIMORE COUNTY, MD
X		X	X	STREAMS, SEEPS, PONDS OR OTHER WATER BODIES SHOWN ON SITE AND WITHIN 200 FT. OF SITE BOUNDARIES
X		X	X	WETLANDS
X		X	X	FOREST BUFFER LIMITS INCLUDING ADJUSTMENTS FOR STEEP SLOPES AND/OR ERODIBLE SOILS
X		X	X	LAND COVER ON OR WITHIN 200 FEET OF SITE.
	X			SIGNIFICANT REGULATED PLANT OR WILDLIFE COMMUNITIES
	X			WELLS ON SITE OR WITHIN 100 FEET OF SITE
X		X	X	SEPTIC ON SITE OR WITHIN 100 FEET OF SITE
	X			UNDERGROUND FUEL TANKS ON SITE AND WITHIN 100 FEET OF SITE
	X			SOIL EVALUATION TESTS (PERC TESTS) PERFORMED: YES___ NO_X
	X			SITE WITHIN 500 FEET OF MAJOR HIGHWAY: YES_ NO_X

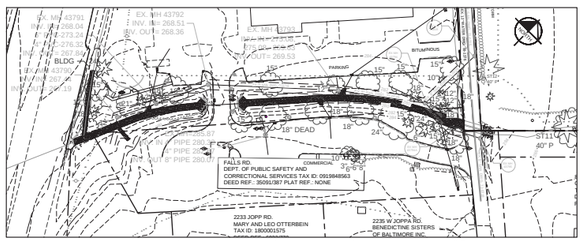
EXISTING BUILT CONDITIONS

EXISTING	EXISTING	
X		LOCATIONS OF EXISTING BUILDINGS WITHIN 200 FT. OF SITE BOUNDARIES
X		LOCATION OF EXISTING ROADS WITHIN 200 FT. OF SITE BOUNDARIES
	X	DESIGNATED HISTORIC SITES AS PER LANDMARKS PRESERVATION COMMISSION OR THE MD HISTORIC TRUST AGENCIES
X		REGISTERED SITES AS PER THE MARYLAND ARCHEOLOGICAL SURVEY
	X	SIGNIFICANT VIEWS
X		SIGNIFICANT FEATURES (SPECIMEN TREES, BUILDINGS, STREETSCAPES, ETC.)
X		LAND USES ON AND WITHIN 200 FT. OF SITE
X		ROADS RIGHT-OF-WAY AND EASEMENTS

COUNTY ADOPTED PLANS

EXISTING	NOT EXISTING	N/A	
X		X	BALTIMORE COUNTY MASTER PLAN 2020
	X		COMMUNITY OR REVITALIZATION PLAN(S)
	X		RECREATION AND PARKS PLAN
	X		STREETSCAPE PLAN
	X		GREENWAYS PLAN
	X		BALTIMORE CO. PEDESTRIAN/BICYCLE PLAN
	X		DESIGN REVIEW PANEL AREA
	X		OTHER

PA## - 08-0922
TRACKING # - May-2021-00001



OFFSITE SANITARY SEWER IMPROVEMENTS 1"=40'

SITE CONSTRAINTS PLAN 1"=60'

ENVIRONMENTAL

1. A TOPOGRAPHIC SURVEY WAS PREPARED BY MTTLS IN SEPTEMBER OF 2020. THIS INFORMATION WAS SUPPLEMENTED BY AVAILABLE BALTIMORE COUNTY GIS DATA.
2. BOUNDARY INFORMATION WAS GENERATED FROM A FIELD RUN SURVEY PREPARED BY MTPLS IN SEPTEMBER OF 2020.
3. THE EXISTING HOME IS SERVED BY A PRIVATE SEPTIC SYSTEM. THE SEPTIC SYSTEM WILL BE PROPERLY ABANDONED BY A LICENSED CONTRACTOR AT THE TIME THE HOME IS CONNECTED TO THE PUBLIC SEWER SYSTEM.
4. TO OUR KNOWLEDGE THERE ARE NO KNOWN UNDERGROUND STORAGE TANKS ON THIS SITE. A LETTER OF REQUEST WAS SENT TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT ON 5/4/2021 TO CHECK THEIR RECORDS. WE RECEIVED A RESPONSE BACK ON 6/11/2021 THAT NO RECORDS WERE FOUND.
5. NO KNOWN HAZARDOUS MATERIALS AS DEFINED BY SECTION 1-101 OF THE ENVIRONMENTAL ARTICLE OF THE ANNOTATED CODE OF MARYLAND EXIST ON SITE. A LETTER OF REQUEST WAS SENT TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT ON 5/4/2021 TO CHECK THEIR RECORDS. WE RECEIVED A RESPONSE BACK ON 6/11/2021 THAT NO RECORDS WERE FOUND.
6. THERE ARE NO KNOWN DESIGNATED AREAS OF CRITICAL STATE CONCERN IDENTIFIED AS SUCH UNDER THE PROCEDURES OF SECTION 5-511 OF THE NATURAL RESOURCES ARTICLE OF THE ANNOTATED CODE OF MARYLAND ON THIS SITE.
7. SOILS WERE OBTAINED FROM THE NRCS SOIL DATA MART WEBSITE.
8. THIS SITE IS NOT LOCATED WITHIN THE CHESAPEAKE BAY CRITICAL AREA.
9. A PORTION OF THE SITE IS LOCATED WITHIN A BALTIMORE COUNTY DEFINED 100 YEAR FLOODPLAIN. THE PROJECT IS NOT LOCATED WITHIN A FEMA FLOODPLAIN.
10. A DFIRST STAND DELINEATION AND PRELIMINARY FOREST CONSERVATION PLAN HAVE BEEN SUBMITTED TO THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.
11. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO KNOWN SIGNIFICANT REGULATED PLANT OR WILDLIFE COMMUNITIES OR RARE, THREATENED OR ENDANGERED SPECIES ON THIS SITE. A LETTER OF REQUEST WAS SENT TO THE MARYLAND DEPARTMENT OF NATURAL RESOURCES WILDLIFE SERVICE AND MARYLAND DEPARTMENT OF NATURAL RESOURCES WILDLIFE HERITAGE DIVISION ON 5/24/2021 TO CHECK THEIR RECORDS. A RESPONSE IS PENDING.

NO.	REVISIONS	DATE	BY

Kimley»Horn
210 WEST PENNSYLVANIA AVENUE, SUITE 100, TOWSON, MD 21204
PHONE: 443-792-9995
WWW.KIMLEY-HORN.COM

XXX PROJECT NO. 069000000
DATE: 07/30/2021
SCALE: AS SHOWN
DESIGNED BY: MAB
DRAWN BY: JPM
CHECKED BY: MAB

DEVELOPMENT PLAN
EXISTING CONDITIONS PLAN

GREENSPRING MANOR
(2310 WEST JOPPA ROAD)
PREPARED FOR:
ATAPCO PROPERTIES

BALTIMORE COUNTY, MD
8TH ELECTION DISTRICT
2ND COUNCILMANIC DISTRICT

SHEET NUMBER
1 OF 2

SITE DESIGN

SITE RENDERING



DEVELOPMENT PLAN & GRADING PLAN

GREENSPRING MANOR

2310 W. JOPPA ROAD

DEDICATION TABLE

THE FOLLOWING RIGHTS OR WAY ARE TO BE CONVEYED TO BALTIMORE COUNTY BY THE OWNER/DEVELOPER ON THIS PROPERTY AS A CONDITION OF APPROVAL OF THESE PLANS.

TYPE OF CONVEYANCE	NO.	TOTAL AREA
ACCESS EASEMENT		0.33 AC.
DRAINAGE AND UTILITY EASEMENT	#A1	0.44 AC.
DRAINAGE AND UTILITY EASEMENT	#A2	0.44 AC.
STORMWATER MANAGEMENT EASEMENT		0.44 AC.
100 YEAR FLOODPLAIN AND DRAINAGE AND UTILITY EASEMENT		0.44 AC.
FOREST BUFFER ENHANCEMENT EASEMENT	#1	0.44 AC.
HIGHWAY WIDENING		0.54 AC.
FOREST BUFFER EASEMENT		0.44 AC.

** NOTE: TOTAL AREAS SHOWN IN THIS TABLE ARE APPROXIMATE ONLY. REFER TO THE RECORD PLAT OR RIGHT OF WAY DRAWING FOR EXACT AREAS.

ENTRANCE FEATURE AND SIGN



NOT TO SCALE
SIGN FACE AREA: 24 SQUARE FEET

DELINQUENT ACCOUNTS CERTIFICATION:

DIRECTOR OF LAND DEVELOPMENT CERTIFY UNDER PENALTY THAT THERE ARE NO DELINQUENT ACCOUNTS FOR ANY OTHER DEVELOPMENT WITH RESPECT TO ANY OF THE FOLLOWING: THE APPLICANT, A PERSON WITH FINANCIAL INTEREST IN THE PROPOSED DEVELOPMENT, OR A PERSON WHO SHALL PERFORM CONTRACTUAL SERVICES ON BEHALF OF THE PROPOSED DEVELOPMENT

GROUNDWATER MANAGEMENT

1. PRIOR TO RECORD PLAT APPROVAL, THE EXISTING DWELLING MUST BE CONNECTED TO PUBLIC WATER AND SEWER SYSTEM. THE EXISTING WELL MUST BE BACK-FILLED BY A LICENSED MASTER WELL DRILLER WHO MUST SUBMIT A WELL ABANDONMENT REPORT TO GROUNDWATER MANAGEMENT. THE EXISTING SEPTIC SYSTEM MUST BE PUMPED AND BACK-FILLED OR REMOVED BY A LICENSES SEWAGE DISPOSAL CONTRACTOR. ABANDONMENT REPORTS MUST BE SUBMITTED PRIOR TO RECORD PLAT APPROVAL.

ADJACENT PROPERTY INFORMATION

1. 12 OLD BOXWOOD LANE
PAMELA BOYER
TAX ID: 2000004431
DEED REF.: 11934/369
PLAT REF.: 53/34

2. 15 OLD BOXWOOD LANE
BRIAN AND ROBIN RUBIN
TAX ID: 2000004432
DEED REF.: 44783/173
PLAT REF.: 53/34

3. 17 OLD BOXWOOD LANE
THOMAS AND CAROL BAKER
TAX ID: 2000004433
DEED REF.: 40940/243
PLAT REF.: 53/34

4. 19 OLD BOXWOOD LANE
LORRAINE BRONSTEIN TRUSTEE
TAX ID: 2000004434
DEED REF.: 23741/466
PLAT REF.: 53/34

5. 21 OLD BOXWOOD LANE
ALVIN AND MARI KALIN
TAX ID: 2000004435
DEED REF.: 30080/144
PLAT REF.: 53/34

6. 23 OLD BOXWOOD LANE
JAMES AND DOROTHY TRUITT
TAX ID: 2000004436
DEED REF.: 29599/25
PLAT REF.: 53/34

7. 76 SEMINARY FARM RD.
FRED AND JAN HALLAHAN
TAX ID: 1900009676
DEED REF.: 24547/483
PLAT REF.: 49/124

8. SEMINARY FARM RD.
THOMAS AND PATRICIA PRICE
TAX ID: 1900099677
DEED REF.: 24547/474
PLAT REF.: 49/124

9. 73 SEMINARY FARM RD.
THOMAS ONEILL JR. AND WILLIAM HALE
TAX ID: 1900009678
DEED REF.: 43537/149
PLAT REF.: 49/124

10. 75 SEMINARY FARM RD.
GARY WOODRUFF
TAX ID: 1900009679
DEED REF.: 31146/40
PLAT REF.: 49/124

11. 66 SEMINARY FARM RD.
HARJIT AND JAMALA SINGH
TAX ID: 1900009680
DEED REF.: 7646/329
PLAT REF.: 49/124

12. 66 SEMINARY FARM RD.
MELVILLE AND BETSY YEARLEY
TAX ID: 1900009681
DEED REF.: 31842/59
PLAT REF.: 49/124

FIRE MARSHAL

1. PROPOSED BUILDINGS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO MEET THE APPLICABLE PROVISIONS OF THE BALTIMORE COUNTY FIRE PREVENTION CODE NO. 3-17
2. ALL TREES AND OTHER OBSTRUCTIONS PLACED AROUND STRUCTURES SHALL NOT IMPAIR OR IMPEDE ACCESSIBILITY FOR FIRE DEPARTMENT OPERATIONS. ANY TREE PLANTINGS AROUND THE PERIMETER OF THE BUILDING SHALL BE OF A TYPE THAT WILL NOT INTERFERE WITH EMERGENCY APPARATUS ACCESS WHEN THEY MATURE. NFPA FIRE CODE SECTION 18.2.4.4.1
3. A CRUSHER RUN ROAD FOR ACCESS TO BUILDINGS AND REQUIRED WATER SUPPLIES SHALL BE AVAILABLE FOR THE USE BY EMERGENCY FIRE APPARATUS AND CAPABLE OF HANDLING EMERGENCY APPARATUS WEIGHING 70,000 LBS. WHEN CONSTRUCTION OF ANY BUILDING IS UNDER ROOF. IN ACCORDANCE WITH THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO.3-17, SECTION 1.16.4.3.1.3.
4. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A RESIDENTIAL SPRINKLER SYSTEM FOR EACH INDIVIDUAL DWELLING.
5. THE PROPOSED SPRINKLER SYSTEM MUST BE INSPECTED BY THE BALTIMORE COUNTY FIRE MARSHAL'S OFFICE PRIOR TO TAKING OCCUPANCY. (SPRINKLER HYDRO SPRINKLER EMAIL)
6. THE PRIVATE FIRE HYDRANTS SHALL BE PAINTED "OSHA RED" TO DISTINGUISH THEM FROM THE PUBLIC (ORANGE) FIRE HYDRANTS IN ACCORDANCE WITH BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17 SECTION 5.18.5.5 PRIVATE HYDRANT COLOR.
7. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A PRIVATE UNDERGROUND FIRE LINE AND SHALL BE REVIEWED BY THE PLANS REVIEW SECTION OF BALTIMORE COUNTY. A PLUMBING PERMIT SHALL NOT BE USED TO INSTALL AN UNDERGROUND FIRE LINE
8. ALL FIRE HYDRANTS SPACING SHALL BE IN ACCORDANCE WITH THE BALTIMORE COUNTY STANDARD DESIGN MANUAL
9. THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17, SECTION 1.10.11.5, REQUIRES THAT THE ADDRESS NUMBERS FOR RESIDENTIAL PROPERTIES SHALL BE A MINIMUM OF 3 INCHES IN SIZE.

LEGEND

CONTOUR LINE (1' INTERVAL)
DEPRESSION CONTOUR
CONCRETE CURB W/ GUTTER
CONCRETE LINE
BUILDING LINE
LIMIT OF DISTURBANCE
SANITARY SEWER
STORM DRAIN
WOOD LINE
OVERHEAD WIRE
WALL
FLOOD PLAIN
FOREST BUFFER
MONITORING WELL
WATER VALVE
GUY WIRE
CLEANOUT
HAND BOX
SANITARY SEWER MANHOLE
UTILITY POLE
ELECTRIC METER
INLET
LIGHT POLE
FIRE TREE
GAS VALVE
DECIDUOUS TREE
MAJOR TREE
MINOR TREE (FLOWERING)
MINOR TREE (EVERGREEN)
SHRUB
SIGN

VICINITY MAP

SCALE 1" = 1000'

BENCHMARKS

NAME	NORTHING (NAD 83)	EASTING (NAD 83)	ELEVATION (NAVD 88)	DESCRIPTION
SHA 501	606,197.49	1,453,489.78	290.63	BRASS DISC
SHA 502	607,713.76	1,454,863.38	290.01	BRASS CAP
SHA 503	607,627.86	1,454,559.97	292.89	COPPED PIPE

LOT AREAS

LOT NO.	SF	ACRE
LOT 1	150,099±	3.446±
LOT 2	11,646±	.263±
LOT 3	9,222±	.189±
LOT 4	9,343±	.214±
LOT 5	10,316±	.236±
LOT 6	9,790±	.224±
LOT 7	8,311±	.190±
LOT 8	8,351±	.192±
LOT 9	7,907±	.172±
LOT 10	12,173±	.279±
LOT 11	12,452±	.285±
LOT 12	12,453±	.285±
LOT 13	12,452±	.285±
LOT 14	12,452±	.285±
LOT 15	14,150±	.275±
LOT 16	8,809±	.202±
LOT 17	8,809±	.202±
LOT 18	12,483±	.309±
LOT 19	15,480±	.355±
LOT 20	16,736±	.431±
LOT 21	16,573±	.357±
LOT 22	16,950±	.389±
LOT 23	11,583±	.266±
LOT 24	13,210±	.303±
LOT 25	14,067±	.323±
LOT 26	11,160±	.256±
LOT 27	12,156±	.279±
LOT 28	9,851±	.226±
LOT 29	12,236±	.281±
LOT 30	17,646±	.404±
LOT 31	21,571±	.495±
LOT 32	13,984±	.311±
LOT 33	11,252±	.258±
LOT 34	11,388±	.260±
LOT 35	12,282±	.281±
LOT 36	11,484±	.263±
LOT 37	13,154±	.301±
LOT 38	14,380±	.329±
LOT 39	9,827±	.225±
LOT 40	8,226±	.188±
LOT 41	9,845±	.226±
LOT 42	11,726±	.269±
LOT 43	11,872±	.272±
LOT 44	8,549±	.272±
LOT 45	8,239±	.189±
LOT 46	7,953±	.182±
LOT 47	7,953±	.182±
LOT 48	10,552±	.242±
LOT 49	11,082±	.254±
LOT 50	9,870±	.226±
LOT 51	11,897±	.273±
LOT 52	11,897±	.273±
LOT 53	11,186±	.256±
LOT 54	11,013±	.253±
LOT 55	14,656±	.336±
LOT 56	9,186±	.211±
LOT 57	8,563±	.196±
LOT 58	8,244±	.189±
LOT 59	8,244±	.189±
LOT 60	9,775±	.224±
LOT 61	8,855±	.203±

SUITABLE OUTFALL STATEMENT

IN THE EXISTING CONDITION, THE SITE CONTAINS A SINGLE-FAMILY HOME AND AGRICULTURAL FIELDS. THE PROPOSED DEVELOPMENT WILL CONSIST OF 61 SINGLE-FAMILY DETACHED HOMES. CLASSIFIED AS HIGHLY ERODIBLE SOILS. THE SOILS ON SITE ARE IN HYDROLOGIC SOIL GROUPS (HSG) B, C, AND D. SEE APPENDIX A FOR THE SOIL MAP. THE SITE GENERALLY DRAINS FROM THE NORTHWEST TO THE SOUTHEAST. THE SITE IS WITHIN THE JONES FALLS WATERSHED. THE ENTIRE SITE EVENTUALLY DRAINS TO AN EXISTING CULVERT UNDER JOPPA ROAD WHICH HAS BEEN ANALYZED AS THE PROJECT STUDY POINT.

THE PROPOSED DEVELOPMENT WILL GENERALLY MAINTAIN THE DRAINAGE PATTERNS OF THE EXISTING CONDITIONS. THE PROPOSED DEVELOPMENT WILL INCREASE THE IMPERVIOUS AREA DRAINING TO SURFACE RUNOFF CONDITIONS WITHIN RESIDENTIAL AREAS. PROPOSED ROADWAYS, FLAT, AND PROPOSED STORM DRAIN SYSTEMS. THE PROPOSED SITE RUNOFF WILL BE MANAGED THROUGH THE IMPLEMENTATION OF ENVIRONMENTAL SITE DESIGN PRACTICES, SPECIFICALLY ✓ SUBMERGED GRAVEL WETLANDS. A SEPARATE FLOODPLAIN STUDY HAS BEEN PREPARED AND IS UNDER COUNTY REVIEW. QUANTITY CONTROL FOR INCREASED RUNOFF WILL BE MANAGED WITHIN 2 OF THE 3 PROPOSED SUBMERGED GRAVEL WETLAND AREAS, INCLUDING ON-SITE DETENTION FOR 100-YEAR RUNOFF RATES.

COMBINED HEARING REQUEST

WE ARE REQUESTING A COMBINED DEVELOPMENT PLAN AND SPECIAL VARIANCE HEARING. THE SPECIAL HEARING PETITION IS TO PERMIT BUILDING PERMITS IN AN F LEVEL TRAFFIC SHED AS DELINEATED ON THE 2020 BASIC SERVICES MAP.

ADDITIONAL INFO

ANTICIPATED ACTIONS:
1. VARIANCES: NONE
2. SPECIAL VARIANCE: TO PERMIT BUILDING PERMITS IN AN F LEVEL TRAFFIC SHED AS DELINEATED ON THE 2020 BASIC SERVICES MAP.
3. WAIVERS: 28' PAVING ON A 50' ROW IN LIEU OF 30' PAVING ON 50' ROW
4. SPECIAL EXCEPTIONS: NONE
5. OTHER: NONE
6. CONSISTENCY WITH DESIGN MANUALS: YES

DEVELOPMENT PLANS REVIEW

1. THIS PROJECT IS LOCATED WITHIN THE URBAN RURAL DEMARCATION LINE.
2. THE SITE IS LOCATED WITHIN AN AREA OF CONCERN AS SHOWN ON THE 2020 BASIC SERVICES MAP TRANSPORTATION ZONE. A SPECIAL VARIANCE IS BEING SOUGHT IN CONJUNCTION WITH THIS PLAN.
3. THE SITE IS LOCATED WITHIN AN AREA OF CONCERN AS SHOWN ON THE 2020 BASIC SERVICES MAP SEWER DEFICIENT AREAS AND AREA OF CONCERN.
4. THE SITE IS NOT LOCATED IN A DEFICIENT AREA FOR PUBLIC WATER AS SHOWN ON THE 2020 BASIC SERVICES MAP WATER SUPPLY DEFICIENT.
5. RAMPS SHALL BE PROVIDED FOR PHYSICALLY HANDICAPPED PERSONS AT ALL STREET INTERSECTIONS WITH DETECTABLE WARNING DEVICES PER STANDARD DETAILS R-36A AND R-36B.
6. SIDEWALKS SHALL BE PROVIDED ALONG ALL PUBLIC ROADS AND WILL MEET ALL STATE HIGHWAY ADMINISTRATION STANDARDS FOR CONSTRUCTION.
7. A CIM WAS HELD ON APRIL 27, 2021. ISSUES WERE RAISED REGARDING THE POTENTIAL EXTENSION OF MAYS CHAPEL ROAD THROUGH THE SUBJECT PROPERTY. THE PLAN PROPOSES TO EXTEND MAYS CHAPEL ROAD BUT TO GATE IT FOR EMERGENCY ACCESS ONLY. TO BE APPROVED BY ADMINISTRATIVE LAW JUDGE.
8. STREET LIGHTS SHALL BE INSTALLED ALONG ALL PUBLIC ROADS.
9. ALL SIGNS WILL CONFORM TO BALTIMORE COUNTY ZONING CODE, SECTIONS 450 OR THE APPROPRIATE RELIEF WILL BE REQUESTED.
10. IT IS ANTICIPATED THAT THIS PROJECT WILL BE DEVELOPED IN TWO PHASES.
11. NO UTILITIES, WHETHER PUBLIC OR PRIVATE, INCLUDING BUT NOT LIMITED TO, TELEPHONE, CABLE TELEVISION, GAS, ELECTRIC, WATER AND SEWER LINES, STORM DRAINS SHALL BE PLACED OR CONSTRUCTED ON OR WITHIN AREAS LABELED AS OPEN SPACE WITHOUT PRIOR WRITTEN CONSENT FROM BALTIMORE COUNTY DEPARTMENT OF RECREATION AND PARKS.
12. THE DESIGN, CONSTRUCTION AND INSTALLATION OF ALL AMENITIES SHOWN ON THE DEVELOPMENT PLAN SHALL BE THE RESPONSIBILITY OF THE DEVELOPER.
13. THE MAINTENANCE OF ALL AMENITIES SHOWN ON THE WALKING PATHS SHALL BE CONSTRUCTED AFTER THE 30TH BUILDING PERMIT IS ISSUED BUT PRIOR TO THE 60TH.
14. 4' TALL BERM ALONG REAR PROPERTY LINE BEHIND LOTS 19-27
15. 6' TALL BERM ALONG REAR PROPERTY LINE BEHIND LOTS 3-6
16. SWM SHEET FLOW TO BUFFER LOTS 13-20 (#16,150 SF IMPERVIOUS AREA)

OPEN SPACE CONT.

11. NO UTILITIES, WHETHER PUBLIC OR PRIVATE, INCLUDING BUT NOT LIMITED TO, TELEPHONE, CABLE TELEVISION, GAS, ELECTRIC, WATER AND SEWER LINES, STORM DRAINS SHALL BE PLACED OR CONSTRUCTED ON OR WITHIN AREAS LABELED AS OPEN SPACE WITHOUT PRIOR WRITTEN CONSENT FROM BALTIMORE COUNTY DEPARTMENT OF RECREATION AND PARKS.
12. THE DESIGN, CONSTRUCTION AND INSTALLATION OF ALL AMENITIES SHOWN ON THE DEVELOPMENT PLAN SHALL BE THE RESPONSIBILITY OF THE DEVELOPER.
13. THE MAINTENANCE OF ALL AMENITIES SHOWN ON THE WALKING PATHS SHALL BE CONSTRUCTED AFTER THE 30TH BUILDING PERMIT IS ISSUED BUT PRIOR TO THE 60TH.

UNDEVELOPED AREAS OPEN SPACE

DESCRIPTION	ACRES
STORMWATER MANAGEMENT	2.15 ±
HOA/COA AREAS	1.75 ±
OTHER	12.55 ±
TOTAL PROVIDED	16.45 ±

1. OPEN SPACE REQUIRED - 40 UNITS (0.5 AC NEW + 1 EXISTING X 1,000 S.F. = 80,000 S.F. OPEN SPACE.
2. OPEN SPACE PROVIDED - 688,946± S.F.
OPEN SPACE NOTES:
ALL LOCAL OPEN SPACE SHALL BE IN COMPLIANCE WITH THE LOCAL OPEN SPACE MANUAL, LATEST EDITION.
TEMPORARY OPEN SPACE BOUNDARY, TREE PROTECTION DEVICES AND FOUR FOOT HIGH SNOW FENCING OR EQUIVALENT SHALL BE INSTALLED PRIOR TO ANY GRADING OR CONSTRUCTION.
WITHIN THE AREA SHOWN AS OPEN SPACE, DISTURBANCE BEYOND THAT WHICH IS SHOWN ON THE DEVELOPMENT PLAN SHALL NOT BE ALLOWED WITHOUT PRIOR APPROVAL FROM THE DEPARTMENT OF RECREATION AND PARKS.
ALL OPEN SPACE LOTS SHALL BE CONVEYED TO THE HOA. ALL OPEN SPACE LOTS SHALL BE DESIGNED AND CROSS-GRADED IN A GEOTECHNICAL ENGINEER TO ENCOURAGE DRAINAGE THAT MIGHT ARISE FROM WET SOILS.
HOA/COA OPEN SPACE SHALL BE OWNED AND MAINTAINED BY A HOMEOWNERS ASSOCIATION.

PLANNING

1. TIER 1 SERVED BY PUBLIC SEWER AND INSIDE URDL. PER BALTIMORE COUNTY MY MESHGOOD MEMO 5.1
2. THERE ARE NO KNOWN BUILDINGS, PROPERTIES, OR SITES WITHIN THE PROJECT BOUNDARY LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES, THE MARYLAND INVENTORY OF HISTORIC PROPERTIES, BALTIMORE COUNTY LANDMARKS LIST, THE NATIONAL REGISTER OF HISTORIC PLACES, OR THE MARYLAND ARCHEOLOGICAL SURVEY.
3. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR MARYLAND CRITICAL AREA.
4. THE GROSS AREA OF THE 100 CONTIGUOUS SQUARE FEET WITH A MINIMUM 15-FOOT DIMENSION IS PROVIDED FOR EACH LOT.

ZONING

1. EXISTING ZONING DR-1 & DR-2
THIS DEVELOPMENT IS SUBJECT TO THE COMPREHENSIVE MANUAL OF DEVELOPMENT POLICIES (SECTION 504.2), AND THE COUNTY LANDSCAPE MANUAL (SECTION 409.6.A.1). THIS DEVELOPMENT WILL COMPLY AND BE CONSISTENT WITH ALL APPLICABLE REGULATIONS, STANDARDS, GUIDELINES, AND POLICIES OR THE APPROPRIATE RELIEF WILL BE REQUESTED.
2. ~~ALL SIGNS WILL CONFORM TO BALTIMORE COUNTY ZONING CODE, SECTION 450 OR APPROPRIATE RELIEF WILL BE REQUESTED~~ ALL SIGNAGE WILL COMPLY WITH SECTION 450 OF THE BCZR.
3. THE DENSITY CALCULATION IS PURSUANT TO ~~1989~~ OF THE BCZR. PARCEL A AS SHOWN ON THE PLAN WAS FOUND IN SUBS.L.2.C(1)B) OF THE BCZR. A MINIMUM PARCEL SIZE OF 10 ACRES IS REQUIRED. THE DEVELOPERS ENGINEER HAS CONFIRMED THAT NO PART OF THE GROSS AREA OF THIS PROPERTY AS SHOWN ON THE PLAN HAS EVER BEEN USED AS PART OF THE CALCULATION OF AREA TO SUPPORT ANY DEVELOPMENT ON ANY OTHER SITE.
4. NO TRADE-IN AREAS EXISTING BUILDINGS TO REMAIN.
5. MAXIMUM BUILDING HEIGHT WILL NOT EXCEED 50' IN THE DR ZONES.
6. THERE IS NO ZONING CASE HISTORY FOR THE PROPERTY.
7. ACCESS EASEMENTS MAY NOT BE FENCED.
8. THE PROPOSED DEVELOPMENT WILL HAVE THE FOLLOWING LOTS: 6-7 AND 11-12.
9. TYPICAL OPEN DECK DIMENSIONS OF 10 FT. X 20 FT. SHALL PROVIDE THE MINIMUM REAR DECK SETBACK OF 22.5 FT.

DEVELOPMENT PROPOSAL

DWELLING TYPE	PROPOSED UNITS	PARKING REQUIRED	PARKING PROVIDED	OPEN SPACE REQUIRED	OPEN SPACE PROPOSED	AVERAGE DAILY TRIPS	PHASE	DEVELOPMENT SCHEDULE
SINGLE FAMILY DETACHED	61	122	244	1.38 AC ±	1.46 AC.	600	1&2	
TOTAL:	61	122	244	1.38 AC ±	1.46 AC.	600	1&2	

EXISTING ZONING AND MAXIMUM DENSITY PERMITTED

ZONE	GROSS ACRES	DWELLING UNITS PERMITTED	DWELLING UNITS PROPOSED
DR-1	±16.8 AC	16	16
DR-2	±22.6 AC	45	45
		TOTAL	61

SETBACK TABLE

SETBACK TYPE - DR 1 & 2	SETBACK
FRONT BUILDING FACE TO ROW OR PROPERTY LINE	30'
SIDE BUILDING FACE TO SIDE BUILDING FACE	60'
SIDE BUILDING FACE TO PROPERTY LINE	30'
CORNER SIDE BUILDING FACE TO TRACT BOUNDARY	30'
REAR BUILDING FACE TO REAR PROPERTY LINE	30'
PUBLIC STREET ROW	25'

SCHOOL IMPACT ANALYSIS

LAST UPDATED JUNE 30, 2021

SCHOOL DISTRICT	MSY STATE RATED CAPACITY (SRC)	ACTUAL SEPTEMBER 30TH ENROLLMENT (2020)	PROJECTED # OF PUPILS FOR PROP. DEVELOPMENT	PROJECTED # OF PUPILS FOR OTHER DEVELOPMENTS	TOTAL PROJECTED ENROLLMENT	# OF STUDENTS ABOVE OR (BELOW) CAPACITY	PROJECTED # OF PUPILS AS A % OF SRC
HIGHWOOD ELEMENTARY SCHOOL	~~462~~ 420	405	9	0	414	~~(48)~~ (6)	~~94.8%~~ 98.6%
WOODLY MIDDLE SCHOOL	1,070	1,100	4	4	1,108	38	103.6%
SUGARLY HIGH SCHOOL	1,984	1,930	5	8	1,943	(41)	97.9%

SITE DEVELOPMENT PLAN REVIEW COMMENTS

1) THE SETBACK REQUIREMENTS ARE PURSUANT TO THE LARGE TRACT TABLE FOUND IN 5.02.1.C.(1)(B) OF THE BCZR.
2) ENVELOPES OR TYPICAL DWELLINGS AS SHOWN DICTATE A SPECIFIC LOCATION AND ORIENTATION WHICH IS INTENDED TO ALLOW COMPLIANCE WITH BALTIMORE COUNTY ZONING REGULATIONS AND POLICIES. SHOULD THE LOCATION OR ORIENTATION 1"=20' CHANGE OR CREATE CONFLICTS WITH THE REGULATIONS OR POLICIES, THE LOCATION OR ORIENTATION MUST BE CHANGED TO ALLEVIATE THE CONFLICT

ENVIRONMENTAL IMPACT REVIEW

THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST BUFFER EASEMENT, FOREST CONSERVATION EASEMENT AND FOREST BUFFER & FOREST CONSERVATION EASEMENT EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.

2. ANY FOREST BUFFER EASEMENT, FOREST CONSERVATION EASEMENT AND HONEYSUCKLE & INVASIVE SPECIES REMOVAL AREA SHALL BE PROTECTED BY SUPER SILT FENCE. THE SUPER SILT FENCE SHALL BE FOUND IN THE LAND RECORDS OF BALTIMORE COUNTY AND WHICH RESTRICTS DISTURBANCE AND USE OF THE AREA.

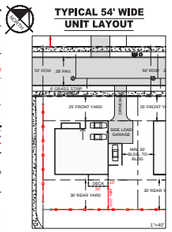
3. PRIOR TO RECORD PLAT APPROVAL, THE EXISTING DWELLING MUST BE CONNECTED TO PUBLIC WATER AND SEWER SYSTEM. THE EXISTING WELL MUST BE BACK-FILLED BY A LICENSES MASTER WELL DRILLER WHO MUST SUBMIT A WELL ABANDONMENT REPORT TO GROUNDWATER MANAGEMENT. THE EXISTING SEPTIC SYSTEM MUST BE PUMPED AND BACK-FILLED OR REMOVED BY A LICENSES SEWAGE DISPOSAL CONTRACTOR. ABANDONMENT REPORTS MUST BE SUBMITTED PRIOR TO RECORD PLAT APPROVAL.

4. A VARIANCE WAS GRANTED SEPTEMBER 24, 2021, BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY FROM THE LAW FOR THE PROTECTION OF WATER QUALITY, STREAMS, WETLANDS AND FLOODPLAINS TO ALLOW DISTURBANCE WITHIN THE FOREST BUFFER EASEMENT SHOWN HEREON IS REFLECTIVE OF THE EXACT RELIEF THE VARIANCE WAS GRANTED. CONDITIONS WERE PLACED ON THIS VARIANCE TO REDUCE WATER QUALITY IMPACTS INCLUDING PLANTING 2.5 ACRES OF FOREST ON THIS BUFFER AS COMPENSATORY PROTECTIVE SIGNS ALONG THE BOUNDARY OF THE FUNCTIONING FOREST BUFFER EASEMENT.

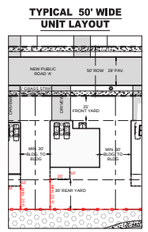
5. A VARIANCE WAS GRANTED ON SEPTEMBER 24, 2021 BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY TO ACCOMPLISH USE WITH SECTION 33-3-112 OF THE LAW FOR THE PROTECTION OF WATER QUALITY, STREAMS, WETLANDS AND FLOODPLAINS TO ALLOW INFRASTRUCTURE AND UTILITY CONNECTIONS. CONDITIONS WERE PLACED ON THIS APPROVAL TO REDUCE WATER QUALITY IMPACTS, INCLUDING PLANTING 0.07 ACRES OF FOREST BUFFER EASEMENT AND MITIGATION OF 3.07 ACRES OF FALLOW FOREST BUFFER EASEMENT.

6. A SPECIAL VARIANCE WAS GRANTED ON SEPTEMBER 21, 2021 TO BALTIMORE COUNTY'S FOREST CONSERVATION LAW TO ALLOW DISTURBANCE WITHIN THE FOREST CONSERVATION EASEMENT SHOWN HEREON IS REFLECTIVE OF THE EXACT RELIEF THE VARIANCE WAS GRANTED. CONDITIONS WERE PLACED ON THE VARIANCE, INCLUDING PROTECTION OF THE ADJACENT STREAM THAT HAS DIRECT IMPACTS.

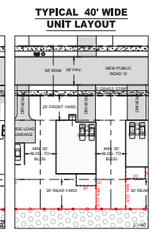
TYPICAL 54' WIDE UNIT LAYOUT



TYPICAL 50' WIDE UNIT LAYOUT



TYPICAL 40' WIDE UNIT LAYOUT



TYPICAL CORNER LOT LAYOUT



OFFSITE SANITARY SEWER IMPROVEMENTS 1"=60'

SITE PLAN 1"=60'

DEDICATION PLAN 1"=150'

ASPHALT TRAIL DETAIL

NOT TO SCALE

VEHICLE AND BIKE PARKING

1. PARKING
REQUIRED PARKING
SINGLE FAMILY ATTACHED
61 UNITS - 2 PER CONTRACT DWELLING UNIT = 122 PARKING SPACES
TOTAL REQUIRED SPACES = 122 PARKING SPACES
PROVIDED PARKING SPACES
GARAGE PARKING SPACES 122 PARKING SPACES
DRIVEWAY PARKING SPACES 122 PARKING SPACES
TOTAL 244 PARKING SPACES
2. REQUIRED BICYCLE PARKING SPACES 122 .04 = 5
3. PROVIDED BICYCLE PARKING SPACES 5 SPACES

Kimley»Horn
210 WEST PENNSYLVANIA AVENUE, SUITE 100, TOWSON, MD 21204
410-339-6700
WWW.KIMLEY-HORN.COM

NO.	DATE	BY
1	08/30/22	JM
RESPONSE		

KHA PROJECT 068722002
DATE 08 / 30 / 2022
DESIGNED BY MJS
DRAWN BY JM
CHECKED BY MJS

DEVELOPMENT PLAN
PROPOSED CONDITIONS PLAN
REDLINE

GREENSPRING MANOR
(2310 WEST JOPPA ROAD)
PREPARED FOR
ATAPCO PROPERTIES

TAX MAP(S): 0046, 0047, 0048, 0049
ELECTION DISTRICT: 2

SHEET NUMBER
1 OF 1

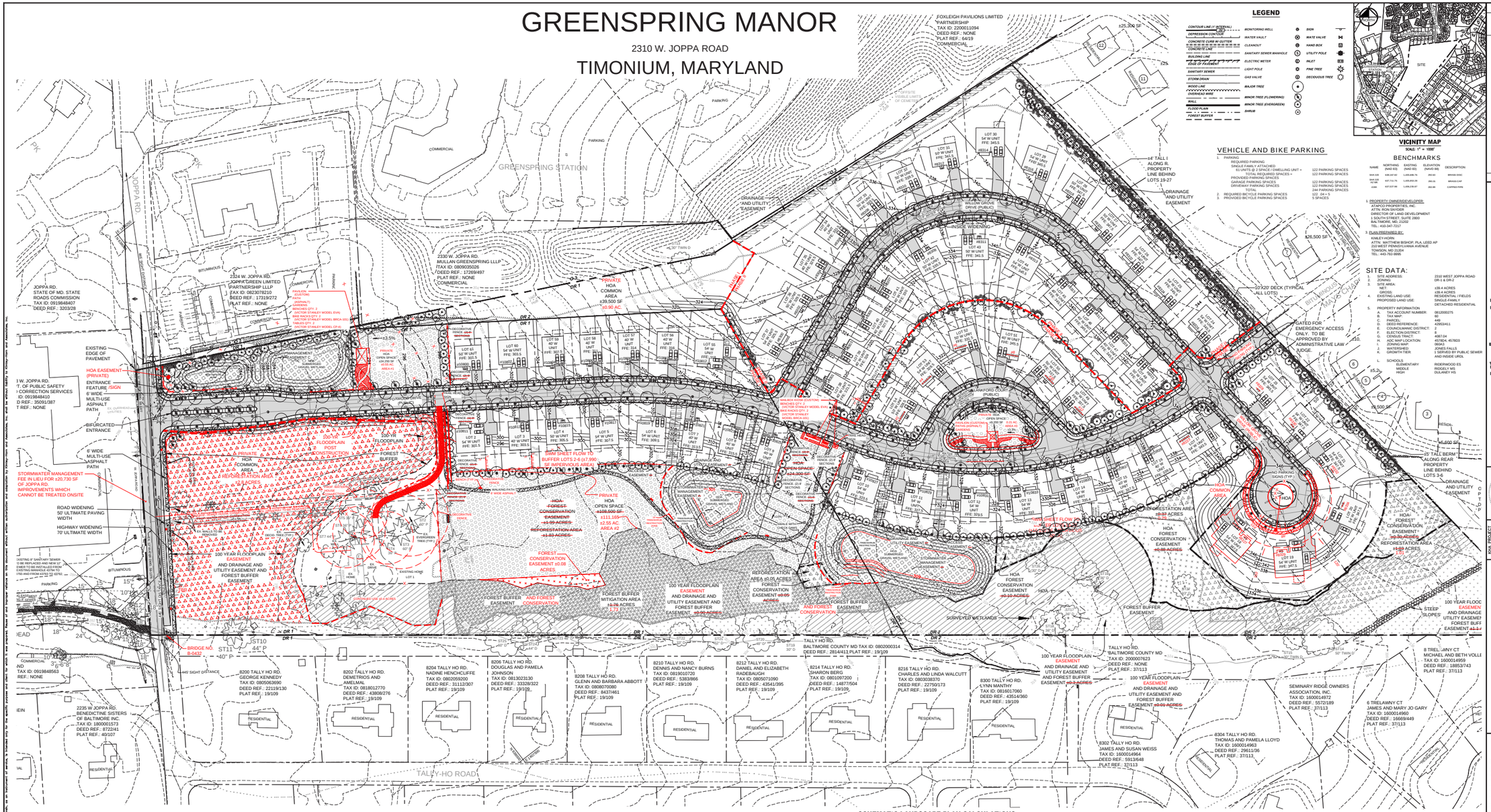
PA## - 08-0922
TRACKING # - May-2021-00001

SCHEMATIC LANDSCAPE PLAN

GREENSPRING MANOR

2310 W. JOPPA ROAD

TIMONIUM, MARYLAND



LEGEND

CONTOUR LINE (1' INTERVAL) / DEPRESSION CONTOUR / CONCRETE CURB W/ GUTTER / CONCRETE LINE / BUILDING LINE / EDGE OF PAVEMENT / SANITARY SEWER / STORM DRAIN / WOOD LINE / OVERHEAD WIRE / WALL / FLOOD PLAIN / FOREST BUFFER / MONITORING WELL / WATER VAULT / CLEANOUT / SANITARY SEWER MANHOLE / ELECTRIC METER / LIGHT POLE / GAS VALVE / MAJOR TREE / MINOR TREE (FLOWERING) / MINOR TREE (EVERGREEN) / SHRUB / SIGN / WATE VALVE / HAND BOX / UTILITY POLE / INLET / FINE TREE / DECIDUOUS TREE

VEHICLE AND BIKE PARKING

1. PARKING
   REQUIRED PARKING
   SINGLE FAMILY ATTACHED
   93 UNITS @ 2 SPACE / DWELLING UNIT = 122 PARKING SPACES
   TOTAL REQUIRED SPACES = 122 PARKING SPACES
   PROVIDED PARKING SPACES
   GARAGE PARKING SPACES 122 PARKING SPACES
   DRIVEWAY PARKING SPACES 122 PARKING SPACES
   TOTAL 244 PARKING SPACES
2. REQUIRED BICYCLE PARKING SPACES 122 . 04 = 5
3. PROVIDED BICYCLE PARKING SPACES 5 SPACES

BENCHMARKS

NAME	NORTHING (NAD 83)	EASTING (NAD 83)	ELEVATION (NAVD 88)	DESCRIPTION
5444	638,047.82	1,439,268.74	292.60	BRASS DISC
MAG NAIL SET	637,713.75	1,439,424.39	292.32	BRASS CAP
5384	637,537.66	1,439,218.97	292.86	CAPPED PIPE

SITE DATA:

1. SITE ADDRESS: 2310 WEST JOPPA ROAD
2. ZONING: DR-1 & DR-2
3. SITE AREA:
   NET: ±39.4 ACRES
   GROSS: ±39.4 ACRES
4. EXISTING LAND USE: RESIDENTIAL / FIELDS
   PROPOSED LAND USE: RESIDENTIAL DETACHED RESIDENTIAL
5. PROPERTY INFORMATION:
   A. TAX ACCOUNT NUMBER: 0812000275
   B. TAX MAP: 60
   C. PARCEL: 446
   D. DEED REFERENCE: 42553/411
   E. ELECTION DISTRICT: 8
   F. CENSUS TRACT: 4067.04
   G. ADC MAP LOCATION: 4578D4, 4578D3
   H. ZONING MAP: 060A3
   I. WATERSHED: JONES FALLS
   J. GROWTH TIER: 1 SERVED BY PUBLIC SEWER AND INSIDE URA
   K. SCHOOLS:
      ELEMENTARY: RIDERWOOD ES
      MIDDLE: RIDGELY MS
      HIGH: DULANEY HS

PROPERTY OWNER/DEVELOPER:

ATAPCO PROPERTIES, INC.
ATTN: RON SNYDER
DIRECTOR OF LAND DEVELOPMENT
1 SOUTH STREET, SUITE 2800
BALTIMORE, MD, 21202
TEL.: 410-347-7217

PLAN PREPARED BY:

KIMLEY-HORN
ATTN: MATTHEW BISHOP, PLA, LEED AP
210 WEST PENNSYLVANIA AVENUE
TOWSON, MD 21204
TEL.: 443-793-9695

SCHEMATIC LANDSCAPE PLAN CALCULATIONS

Baltimore County Planting Unit Calculation	PU Credit Requirement Rate	Quantity	Required Planting Units (PU)
Condition A Adjacent and Interior Roads			
Adjacent Road	1 PU/ 40 LF	500	13
Interior Road	1 PU/ 20 LF	3970	199
Condition I Stormwater Management			
Perimeter of Cut	1 PU/ 15 LF	1900	127
Condition M Rear and Side Yards			
Rear and Side Yards	1 PU/ 15 LF	2355	157
Condition R Open Space			
Open Space	1 PU/ 1,500 SF	60000	40
	Total Required Planting Units (PU)		535

Baltimore County Proposed Planting Unit Calculation	PU Credit Requirement Rate	Quantity	Proposed Planting Units (PU)
Major Trees Proposed	1 PU/ Tree	251	251
Minor Trees Proposed	1 PU/ 2 Trees	135	67.5
Evergreen Trees Proposed	1 PU/ 2 Trees	278	139.0
Shrubs Proposed	1 PU/ 5 Shrubs	400	80.0
	Total Proposed Planting Units (PU)		537.5

SCHEMATIC LANDSCAPE PLAN 1"=50'

SCHEMATIC LANDSCAPE PLAN CERTIFICATION

THIS SCHEMATIC LANDSCAPE PLAN IS SEALED BY A LANDSCAPE ARCHITECT AND CERTIFIED BY MY SIGNATURE BELOW AS BEING IN ACCORDANCE WITH ALL COUNTY AGENCY LANDSCAPE ARCHITECTURAL COMMENTS.

APPLICANT SIGNATURE — 8/18/2021 DATE — MATTHEW BISHOP, PLA, LEED AP PRINT NAME

LANDSCAPE NOTES

1. THERE ARE NO PREVIOUS ZONING CASES ON THE SUBJECT PROPERTY.

PA## - 08-0922
TRACKING # - Maj-2021-00001

Kimley»Horn
210 WEST PENNSYLVANIA AVENUE, SUITE 100, TOWSON, MD 21204
PHONE: 443-793-9695
WWW.KIMLEY-HORN.COM

NO.	DESCRIPTION	DATE	BY
1	REVISIONS		

PDA PROJECT NO. 08-0922
DATE: 08/ 25/ 2021
DESIGNED BY: MAS
DRAWN BY: JPM
CHECKED BY: MAS

SCHEMATIC LANDSCAPE PLAN

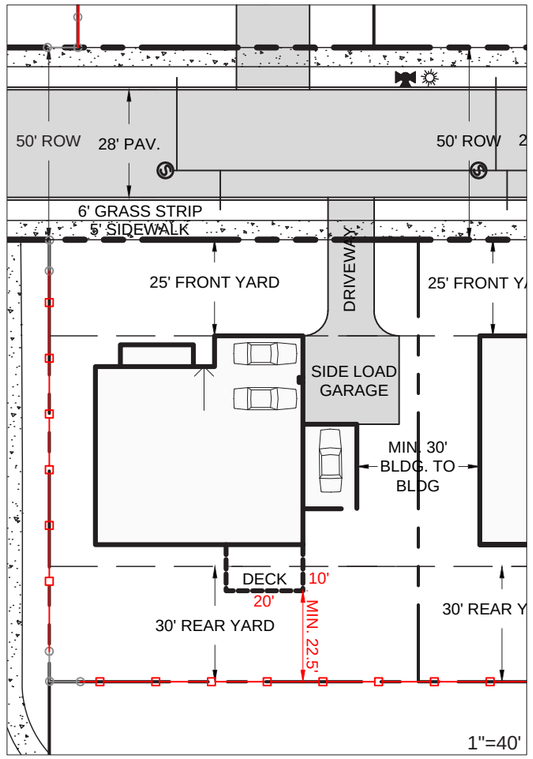
GREENSPRING MANOR
(2310 WEST JOPPA ROAD)
PREPARED FOR
ATAPCO PROPERTIES

TAX MAP#: 60 PARCEL: 446
2ND ELECTION DISTRICT
BALTIMORE COUNTY, MD

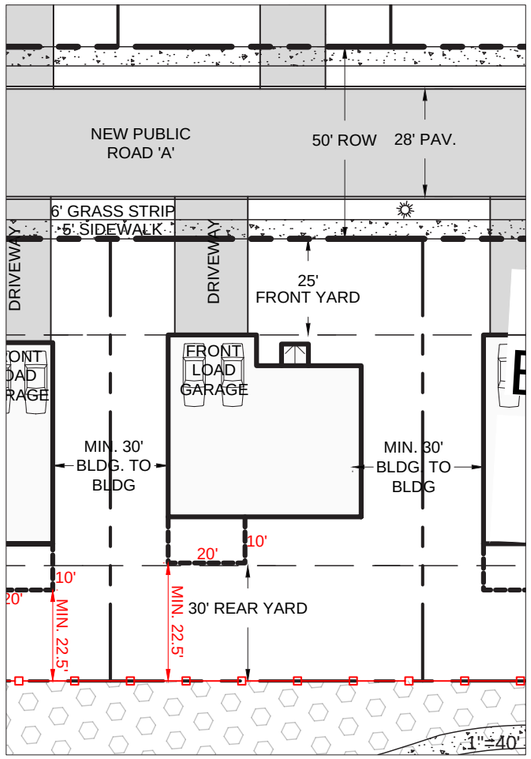
SHEET NUMBER
1 OF 1

TYPICAL LOT LAYOUTS

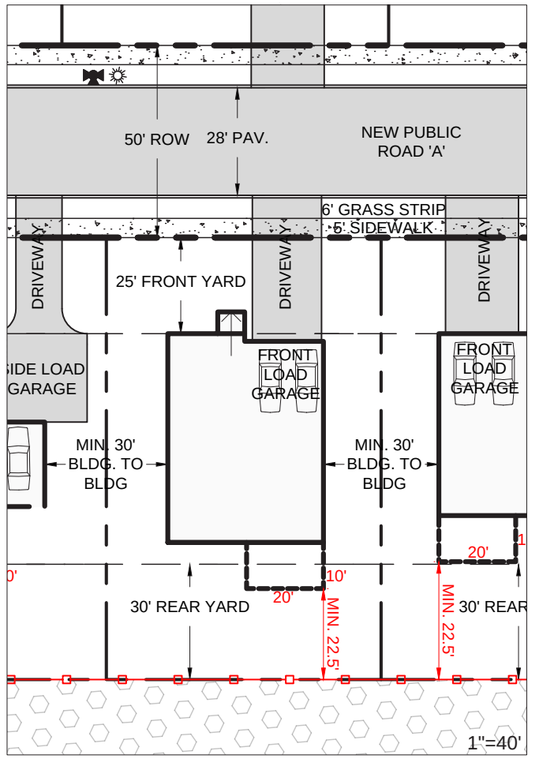
TYPICAL 54' WIDE UNIT LAYOUT



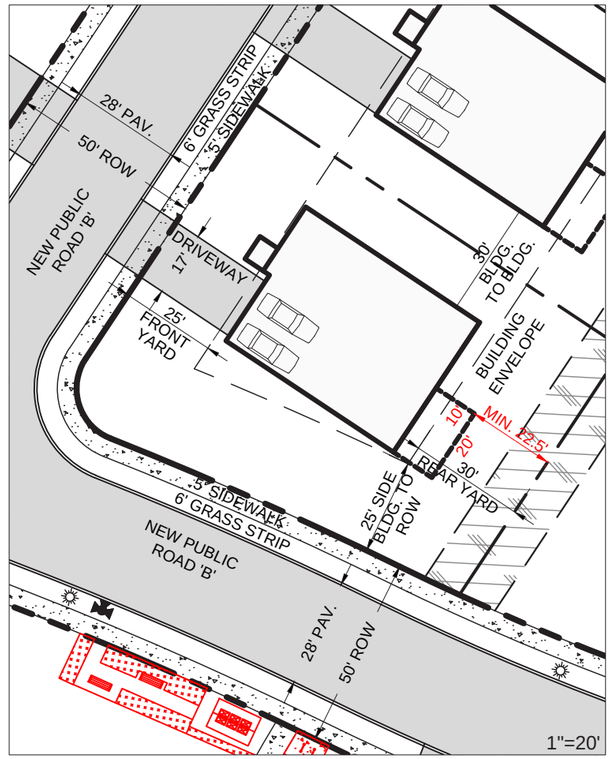
TYPICAL 50' WIDE UNIT LAYOUT



TYPICAL 40' WIDE UNIT LAYOUT



TYPICAL CORNER LOT LAYOUT



1) THE SETBACK REQUIREMENTS ARE PURSUANT TO THE LARGE TRACT TABLE FOUND IN §1B01.2.C(1)(B) OF THE BCZR.
2) ENVELOPES OR TYPICAL DWELLINGS AS SHOWN DICTATE A SPECIFIC LOCATION AND ORIENTATION WHICH IS INTENDED TO ALLOW COMPLIANCE WITH BALTIMORE COUNTY ZONING REGULATIONS AND POLICIES. SHOULD THE LOCATION OR ORIENTATION CHANGE OR CREATE CONFLICTS WITH THE REGULATIONS OR POLICIES, THE LOCATION OR ORIENTATION MUST BE CHANGED TO ALLEVIATE THE CONFLICT.

HIGH VISIBILITY LOTS

GREENSPRING MANOR

2310 W. JOPPA ROAD

DEDICATION TABLE

THE FOLLOWING RIGHTS OF WAY ARE TO BE CONVEYED TO BALTIMORE COUNTY BY THE DEVELOPER/OWNER OF THIS PROPERTY AS A CONDITION OF APPROVAL OF THESE PLANS.

TYPE OF CONVEYANCE	NO.	TOTAL AREA*
ACCESS EASEMENT	2	0.01 AC±
DRAINAGE AND UTILITY EASEMENT	9	~~0.63 AC±~~ 0.62 AC±
FOREST CONSERVATION EASEMENT	3	~~2.51 AC±~~ 2.50 AC±
STORMWATER MANAGEMENT EASEMENT	3	~~0.53 AC±~~ 0.37 AC±
100 YEAR FLOODPLAIN AND DRAINAGE AND UTILITY EASEMENT	5	~~0.63 AC±~~ 0.62 AC±
FOREST BUFFER AND FOREST CONSERVATION EASEMENT	6	~~5.53 AC±~~ 5.52 AC±
FOREST BUFFER EASEMENT	1	0.12 AC±
STORM DRAIN EASEMENT	1	0.01 AC±

** NOTE: TOTAL AREAS SHOWN IN THIS TABLE ARE APPROXIMATE ONLY. REFER TO THE RECORD PLAT OR RIGHT OF WAY DRAWING FOR EXACT AREAS.

ENTRANCE FEATURE AND SIGN



NOT TO SCALE
SIGN FACE AREA: 24 SQUARE FEET

DELINQUENT ACCOUNTS CERTIFICATION:

DIRECTOR OF LAND DEVELOPMENT CERTIFY UNDER OATH THAT THERE ARE NO DELINQUENT ACCOUNTS FOR ANY OTHER DEVELOPMENT WITH RESPECT TO ANY OF THE FOLLOWING: THE APPLICANT, A PERSON WITH FINANCIAL INTEREST IN THE PROPOSED DEVELOPMENT, OR A PERSON RECEIVING COMPENSATION FOR CONTRACTUAL SERVICES ON BEHALF OF THE PROPOSED DEVELOPMENT."

GROUNDWATER MANAGEMENT

1. PRIOR TO RECORD PLAT APPROVAL, THE EXISTING DWELLING MUST BE CONNECTED TO PUBLIC WATER AND SEWER. UPON CONNECTION, THE EXISTING WELL MUST BE BACK-FILLED BY A LICENSES MASTER WELL DRILLER WHO MUST SUBMIT A WELL ABANDONMENT REPORT TO GROUNDWATER MANAGEMENT. THE EXISTING SEPTIC SYSTEM MUST BE PUMPED AND BACK-FILLED OR REMOVED BY A LICENSES SEWAGE DISPOSAL CONTRACTOR. ABANDONMENT REPORTS MUST BE SUBMITTED PRIOR TO RECORD PLAT APPROVAL.

ADJACENT PROPERTY INFORMATION

1. 17 OLD BOXWOOD LANE
PAMELA BOYER
TAX ID: 2000004451
DEED REF.: 11843/569
PLAT REF.: 53/34

2. 15 OLD BOXWOOD LANE
BRIAN AND ROBIN RUBIN
TAX ID: 2000004432
DEED REF.: 44769/273
PLAT REF.: 53/34

3. 27 OLD BOXWOOD LANE
THOMAS AND CAROL BRADLEE
TAX ID: 2000004453
DEED REF.: 40440/243
PLAT REF.: 53/34

4. 29 OLD BOXWOOD LANE
LORRAINE BRONSTEIN
TAX ID: 2000004454
DEED REF.: 23741/496
PLAT REF.: 53/34

5. 31 OLD BOXWOOD LANE
ALVIN AND MARI KALIN
TAX ID: 2000004455
DEED REF.: 30686/144
PLAT REF.: 53/34

6. 23 OLD BOXWOOD LANE
JAMES AND DOROTHY TRUITT
TAX ID: 2000004459
DEED REF.: 28568/25
PLAT REF.: 53/34

7. 76 SEMINARY FARM RD.
FRED AND JAN HALLAHAN
TAX ID: 1900009676
DEED REF.: 24347/183
PLAT REF.: 49/124

8. SEMINARY FARM RD.
THOMAS AND PATRICIA PRICE
TAX ID: 1900009677
DEED REF.: 7540/474
PLAT REF.: 49/124

9. 72 SEMINARY FARM RD.
THOMAS ONEILL JR. AND WILLIAM HALE
TAX ID: 1900009678
DEED REF.: 40440/189
PLAT REF.: 49/124

10. 70 SEMINARY FARM RD.
GARY WOODRUFF
TAX ID: 1900009679
DEED REF.: 31148/40
PLAT REF.: 49/124

11. 68 SEMINARY FARM RD.
HARJIT AND JANMALA SINGH
TAX ID: 1900009680
DEED REF.: 7646/129
PLAT REF.: 49/124

12. 66 SEMINARY FARM RD.
MELVILLE AND BETSY YEARLEY
TAX ID: 1900009681
DEED REF.: 3164/230
PLAT REF.: 49/124

FIRE MARSHAL

1. PROPOSED BUILDINGS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO MEET THE APPLICABLE PROVISIONS OF THE BALTIMORE COUNTY FIRE PREVENTION CODE NO. 3-17
2. LANDSCAPING OR OTHER OBSTRUCTIONS PLACED AROUND STRUCTURES SHALL NOT IMPAIR OR IMPEDE ACCESSIBILITY FOR FIRE DEPARTMENT OPERATIONS. ANY TREE PLANTINGS AROUND THE PERIMETER OF THE BUILDING SHALL BE OF A TYPE THAT WILL NOT INTERFERE WITH EMERGENCY APPARATUS ACCESS WHEN THEY MATURE. NFPA FIRE CODE SECTION 18.2.4.1
3. A CRUSHER RUN ROAD FOR ACCESS TO BUILDINGS AND REQUIRED WATER SUPPLIES SHALL BE AVAILABLE FOR THE USE BY EMERGENCY FIRE APPARATUS AT THE START OF BUILDING CONSTRUCTION AND MAINTAINED DURING THE ENTIRE CONSTRUCTION PERIOD. ROADWAYS IN ACCORDANCE WITH THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO.3-17, SECTION 1.16.4.3.3.5
4. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A RESIDENTIAL SPRINKLER SYSTEM FOR EACH INDIVIDUAL DWELLING.
5. THE SPRINKLER SYSTEM MUST BE INSPECTED BY THE BALTIMORE COUNTY FIRE MARSHAL'S OFFICE PRIOR TO TAKING OCCUPANCY. (SPRINKLER HYDRO / SPRINKLER FINAL).
6. THE PRIVATE FIRE HYDRANTS SHALL BE PAINTED "OSHA RED" TO DISTINGUISH THEM FROM THE PUBLIC (ORANGE) FIRE HYDRANTS IN ACCORDANCE WITH BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17 SECTION 1.16.4.3.3.5 PRIVATE HYDRANT COLOR.
7. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A PRIVATE UNDERGROUND FIRE LINE AND SHALL BE REVIEWED BY THE PLANS REVIEW SECTION OF BALTIMORE COUNTY. A PLUMBING PERMIT SHALL NOT BE USED TO INSTALL AN UNDERGROUND FIRE LINE
8. ALL FIRE HYDRANTS SPACING SHALL BE IN ACCORDANCE WITH THE BALTIMORE COUNTY STANDARD DESIGN MANUAL.
9. THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17, SECTION 1.16.3.1.5, REQUIRES THAT THE ADDRESS NUMBERS FOR RESIDENTIAL PROPERTIES SHALL BE A MINIMUM OF 3 INCHES IN SIZE.

LEGEND

CONTOUR LINE (1' INTERVAL)
DEPRESSION CONTOUR
CONCRETE CURB W/ GUTTER
BUILDING LINE
EDGE OF PAVEMENT
SANITARY SEWER
STORM DRAIN
WOOD LINE
OVERHEAD WIRE
WALL
FLOOD PLAIN
FOREST BUFFER

MONITORING WELL
WATER VAULT
CLEANOUT
SANITARY SEWER MANHOLE
ELECTRIC METER
LIGHT POLE
GAS VALVE
MAJOR TREE
WHOR TREE (FLOWERING)
WHOR TREE (EVERGREEN)
SHRUB

SIGN
WATER VALVE
HAND BOX
UTILITY POLE
INLET
FIRE TREE
DECIDUOUS TREE

VICINITY MAP

SCALE: 1" = 1000'

BENCHMARKS

NAME	NORTHING (NAD 83)	EASTING (NAD 83)	ELEVATION (NAVD 88)	DESCRIPTION
BM# 383	606,447.60	1,459,864.74	358.62	BRASS DISC
BM# 387	607,751.79	1,459,863.26	290.31	BRASS CAP
BM# 388	610,157.94	1,464,229.87	292.89	CAPPED PIPE

LOT AREAS

LOT NO.	SF	ACRE
LOT 1	120,199±	2.760±
LOT 2	11,040±	.253±
LOT 3	8,312±	.189±
LOT 4	9,342±	.214±
LOT 5	16,210±	.216±
LOT 6	9,798±	.224±
LOT 7	8,311±	.190±
LOT 8	8,311±	.190±
LOT 9	7,507±	.172±
LOT 10	12,173±	.279±
LOT 11	12,450±	.285±
LOT 12	12,450±	.285±
LOT 13	12,450±	.285±
LOT 14	12,130±	.279±
LOT 15	8,809±	.202±
LOT 16	8,809±	.202±
LOT 17	13,483±	.309±
LOT 18	15,436±	.354±
LOT 19	18,796±	.431±
LOT 20	15,573±	.357±
LOT 21	16,950±	.389±
LOT 22	13,330±	.306±
LOT 23	13,310±	.305±
LOT 24	14,567±	.322±
LOT 25	11,302±	.260±
LOT 26	12,156±	.279±
LOT 27	9,351±	.229±
LOT 28	11,236±	.253±
LOT 29	17,640±	.404±
LOT 30	21,571±	.495±
LOT 31	13,584±	.311±
LOT 32	11,232±	.258±
LOT 33	11,289±	.260±
LOT 34	12,255±	.281±
LOT 35	13,484±	.309±
LOT 36	13,134±	.301±
LOT 37	14,385±	.329±
LOT 38	9,827±	.225±
LOT 39	8,107±	.186±
LOT 40	8,235±	.188±
LOT 41	9,845±	.226±
LOT 42	11,724±	.269±
LOT 43	11,870±	.272±
LOT 44	8,549±	.272±
LOT 45	8,284±	.190±
LOT 46	7,953±	.182±
LOT 47	7,953±	.182±
LOT 48	10,552±	.242±
LOT 49	11,887±	.273±
LOT 50	9,870±	.226±
LOT 51	11,897±	.273±
LOT 52	13,008±	.298±
LOT 53	12,186±	.280±
LOT 54	11,011±	.259±
LOT 55	14,658±	.336±
LOT 56	9,590±	.220±
LOT 57	8,563±	.196±
LOT 58	8,244±	.189±
LOT 59	8,244±	.189±
LOT 60	9,775±	.224±
LOT 61	8,855±	.203±

SUITABLE OUTFALL STATEMENT

IN THE EXISTING CONDITION, THE SITE CONTAINS A SINGLE-FAMILY HOME AND AGRICULTURAL FIELDS ON APPROXIMATELY 39.5 ACRES. THERE ARE VERY FEW STEEP SLOPES AND NO SOILS CLASSIFIED AS HIGHLY ERODIBLE SOILS. THE SOILS ON SITE ARE IN HYDROLOGIC SOIL GROUPS "B" AND "C" AND ARE MAINLY "B" TYPE SOIL MAP. THE SITE GENERALLY DRAINS FROM THE NORTHWEST TO THE SOUTHEAST. THE SITE LIES WITHIN THE JONES FALLS WATERSHED. THE ENTIRE SITE EVENTUALLY DRAINS TO AN EXISTING CULVERT UNDER JOPPA ROAD WHICH HAS BEEN ANALYZED AS THE PROJECT STUDY POINT.

THE PROPOSED DEVELOPMENT WILL GENERALLY MAINTAIN THE DRAINAGE PATTERNS OF THE EXISTING SITE; HOWEVER, THE PROPOSED DEVELOPMENT EFFORTS WILL RESULT IN CHANGES TO SURFACE RUNOFF CONDITIONS WITHIN RESIDENTIAL AREAS, PROPOSED ROADWAYS, AND WITHIN PROPOSED STORM DRAIN SYSTEMS. THE PROPOSED SITE RUNOFF WILL BE MANAGED THROUGH THE IMPLEMENTATION OF ENVIRONMENTAL SITE DESIGN PRACTICES, SPECIFICALLY ☐ 3 SUBMERGED GRAVEL WETLANDS. THE PROPOSED SITE RUNOFF WILL BE MANAGED AND IS UNDER COUNTY REVIEW. QUANTITY CONTROL FOR INCREASED RUNOFF WILL BE MANAGED WITHIN 2 OF THE 3 PROPOSED SUBMERGED GRAVEL WETLAND AREAS, INCLUDING ON-SITE DETENTION FOR 100-YEAR 6HOUR RUNOFF RATES.

COMBINED HEARING REQUEST

WE ARE REQUESTING A COMBINED DEVELOPMENT PLAN AND SPECIAL VARIANCE HEARING. THE SPECIAL HEARING PETITION IS TO PERMIT BUILDING PERMITS IN AN 'F' LEVEL TRAFFIC SHED AS DELINEATED ON THE 2020 BASIC SERVICES MAP.

ADDITIONAL INFO

WITH RESTRICTIONS:
1. VARIANCES: NONE
2. SPECIAL HEARING: TO PERMIT BUILDING PERMITS IN AN F LEVEL TRAFFIC SHED AS DELINEATED ON THE 2020 BASIC SERVICES MAP
3. WAIVERS: 28 PAVING ON A 50' ROW IN LIEU OF 30' PAVING ON A 50' ROW
4. SPECIAL EXCEPTIONS: NONE
5. OTHER: NONE
6. CONSISTENCY WITH DESIGN MANUALS: YES

ASPHALT TRAIL DETAIL

NOT TO SCALE



VEHICLE AND BIKE PARKING

1. PARKING
REQUIRED PARKING
SINGLE FAMILY ATTACHED
61 UNITS @ 2 SPACE / DWELLING UNIT = 122 PARKING SPACES
122 PARKING SPACES
PROVIDED PARKING SPACES
GARAGE PARKING SPACES 122 PARKING SPACES
DRIVEWAY PARKING SPACES 122 PARKING SPACES
TOTAL 244 PARKING SPACES
2. REQUIRED BICYCLE PARKING SPACES 122 .04 = 5
3. PROVIDED BICYCLE PARKING SPACES 5 SPACES

GREENSPRING MANOR OPEN SPACE AMENITY COST ESTIMATE

GREENSPRING MANOR - OPEN SPACE AMENITY COST ESTIMATE				
Activity Area				
Site Clearing, Grading, Fine Grading, Seed, Mulch	1	EA	$10,000.00	$10,000.00
Subtotal				$10,000.00
Tot Lot Area				
Tot Lot Paving	1,500	SF	$50.00	$75,000.00
Tot Lot Equipment	1	EA	$50,000.00	$50,000.00
Subtotal				$125,000.00
Recreational Activity Area				
Site Clearing, Grading, Fine Grading, Seed, Mulch	1	EA	$10,000.00	$10,000.00
Open Play Area	1	EA	$100,000.00	$100,000.00
Subtotal				$110,000.00
Recreational Activity Area				
Site Clearing, Grading, Fine Grading, Seed, Mulch	1	EA	$10,000.00	$10,000.00
Court Area	1	EA	$100,000.00	$100,000.00
Subtotal				$110,000.00
Activity Space - Entrance Area Node				
Site Clearing, Grading, Fine Grading, Seed, Mulch	1	EA	$5,000.00	$5,000.00
Entry Planting - Shrubs & Trees	1	EA	$10,000.00	$10,000.00
Entry Planting - Ornamental Trees	1	EA	$5,000.00	$5,000.00
Subtotal				$20,000.00
Pavilion				
Pavilion Structure	1	EA	$50,000.00	$50,000.00
Pavilion Furnishings	1	EA	$10,000.00	$10,000.00
Subtotal				$60,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 1				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 2				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 3				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 4				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 5				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 6				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 7				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 8				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 9				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 10				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 11				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 12				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 13				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 14				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 15				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 16				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 17				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 18				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 19				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 20				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 21				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 22				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 23				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 24				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 25				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 26				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 27				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 28				
Site Clearing	1	EA	$500.00	$1,000.00
Site Grading - BB14 - 12 Gap Tree	1	EA	$500.00	$1,000.00
Site Grading - Shrubs & Ground Cover	1	EA	$500.00	$1,000.00
Subtotal				$3,000.00
Site Water				
Water Line Trench and Complete Pad at Bike Rack	400	LF	$25.00	$10,000.00
Subtotal				$10,000.00
Landscaping				
Landscaping	50	EA	$100.00	$5,000.00
Subtotal				$5,000.00
Activity Space - Park Space 29				

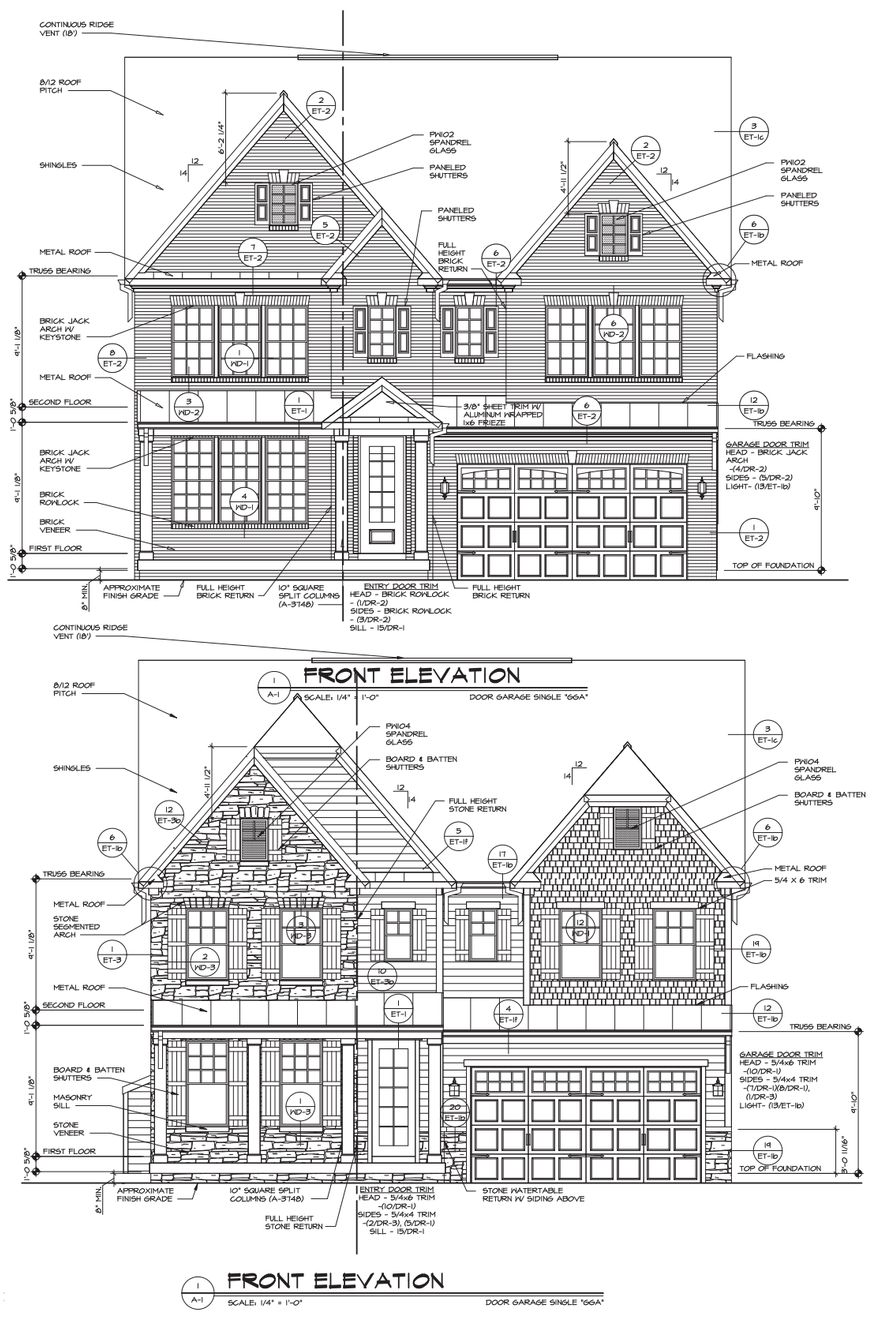
DEVELOPER'S
EXHIBIT
7B

ARCHITECTURE

TYLER



TYLER



REV. NO.	DATE	REMARKS
1	10/14/16	MT - STANDARD DETAILS 3.2
2	10/21/17	HMS - ADDED 3 CAR FRONT ENTRY GARAGE (DWG #18004)

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NVR
NVR, Inc.
9385 Waterview Drive, Suite 100
Frederick, MD 21703

SET NO.: 18600
VERSION:
DRAWN BY: BM
DATE: 2/22/2016
OPTION: ELA

MODEL: TYLER
DRAWING TITLE: FRONT ELEVATION

SHEET NO.: A-1

OPTION DESCRIPTION: ELEVATION A

4

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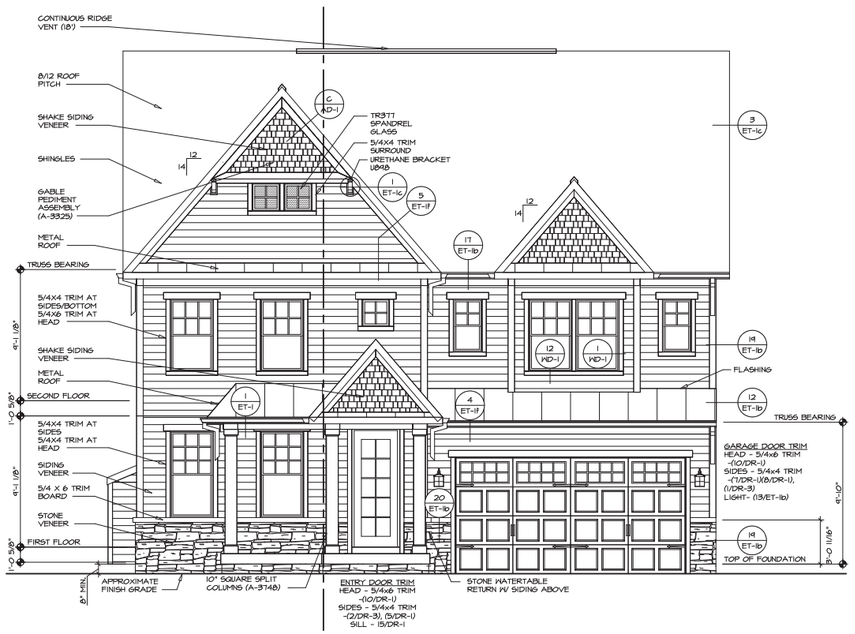

1 A-1 **FRONT ELEVATION**

SCALE: 1/4" = 1'-0"

DOOR GARAGE SINGLE "66A"

NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS

REV. NO.	DATE	REMARKS
1	10/14/16	HT - STANDARD DETAILS 3.0
2	6/5/17	H96 - UPDATED STOOP COLUMNS TO ADD CAPS (PAR 146239)
3	3/29/17	H96 - ADDED 3 CARBON MONOXIDE DETECTORS (PAR 146251)
4	4/6/18	22H - ADDED 54 x 4 TRIM NOTE TO GARAGE (PAR 149201)

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NVR, Inc.
5285 Westview Drive, Suite 100
Frederick, MD 21703

SET NO. 11600
VERSION 01
DRAWN BY BIM
DATE: 2/22/2016
OPTION ELL

SHEET NO. A-1
MODEL TYLER
DRAWING TITLE FRONT ELEVATION
OPTION DESCRIPTION ELEVATION L
7

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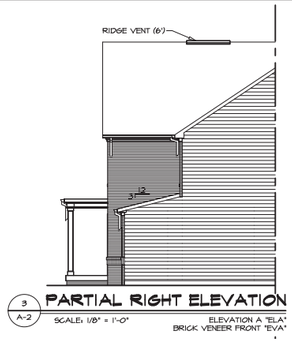
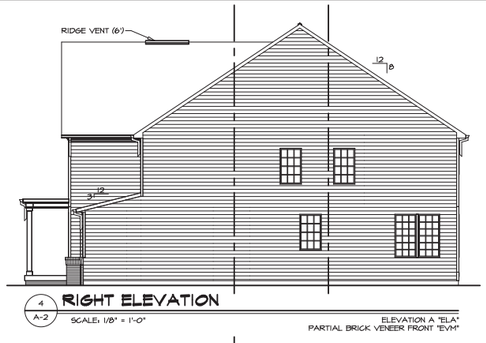
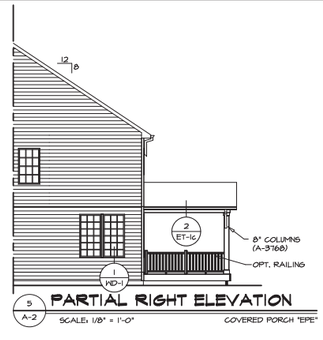
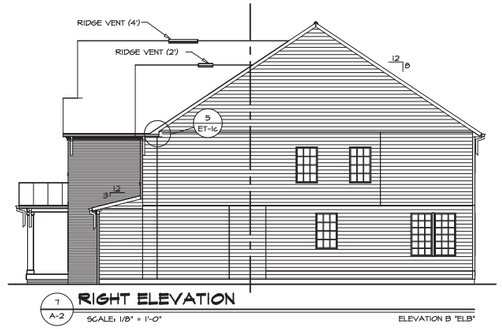
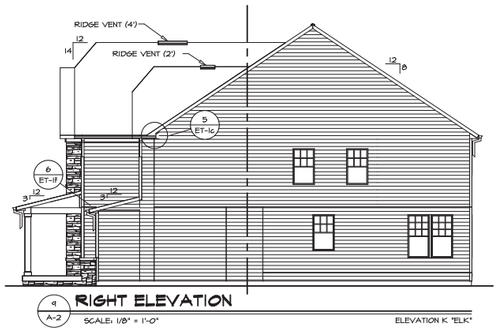
TYLER

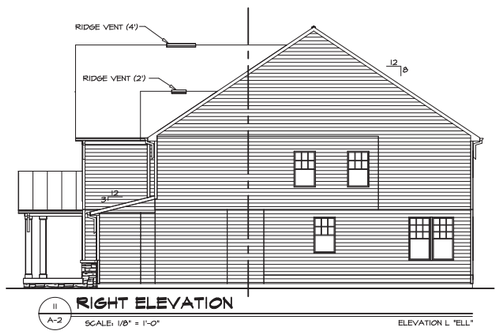


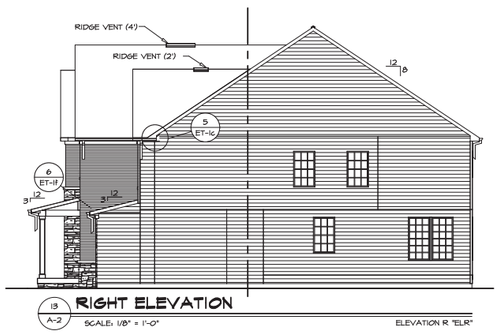












ARCHITECTURAL ELEMENTS
>1,000 SF

	REQUIRED	PROVIDED
LOW VISIBILITY:	5	6
HIGH VISIBILITY:	6	7

1) ALL WINDOWS SHOWN ARE STANDARD (4 POINTS)

2) ALL SIDE ELEVATIONS WILL RECEIVE CEMENTITIOUS SIDING (1 POINT)

3) ALL WINDOWS WILL HAVE A 5/4"X6" TRIM HEADER AND 5/4"X4" SIDES AND LOWER TRIM (1 POINT)

4) HIGH VISIBILITY LOTS WILL HAVE A WATER TABLE (1 POINT)

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.

REV. NO.	DATE	REMARKS
1	10/14/16	MT - STANDARD DETAILS 3.0
2	4/10/17	ALJ - ADDT REVISIONS
3	6/15/17	H56 - UPDATED STOOP COLUMNS ON K, L, & TD ADD CAPS (PAR #46293)
4	10/21/17	H56 - ADDED 3 CAR FRONT ENTRY GARAGE (DHR #1804)

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NVR
NVR, Inc.
5285 Westview Drive, Suite 100
Frederick, MD 21703

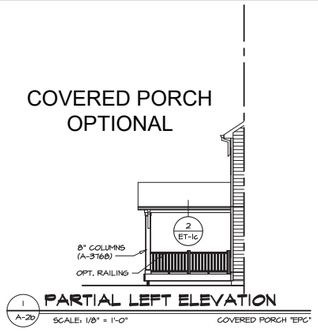
SET NO. 11600
VERSION 01
DRAWN BY BLM
DATE: 2/22/2016
OPTION

MODEL
TYLER
DRAWING TITLE
RIGHT ELEVATION
OPTION DESCRIPTION

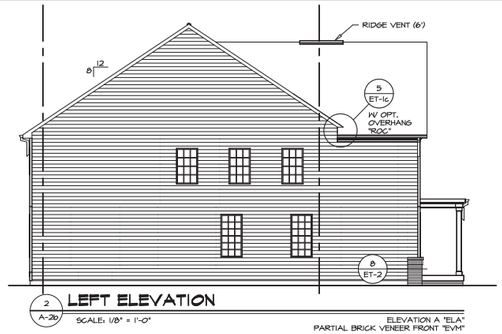
SHEET NO.
A-2

J:\1_PROJECTS\NVHOMES\TYLER_11600_01\Sheets\Master_Set\Elevations\9 A-2 ELV Right.dwg 03/09/21 - 9:55 am

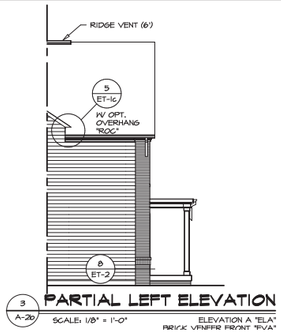
TYLER



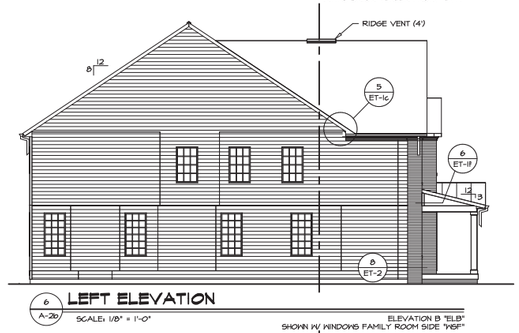
1 A-2b **PARTIAL LEFT ELEVATION**
SCALE: 1/8" = 1'-0" COVERED PORCH "EPC"



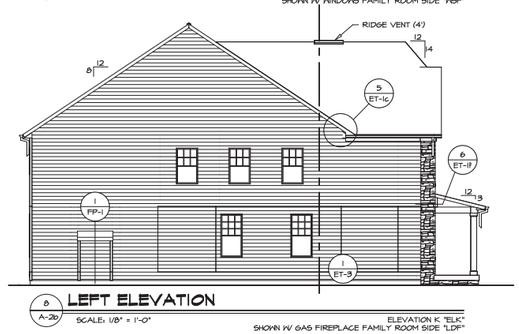
2 A-2b **LEFT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION A "ELA"
PARTIAL BRICK VENEER FRONT "EVM"



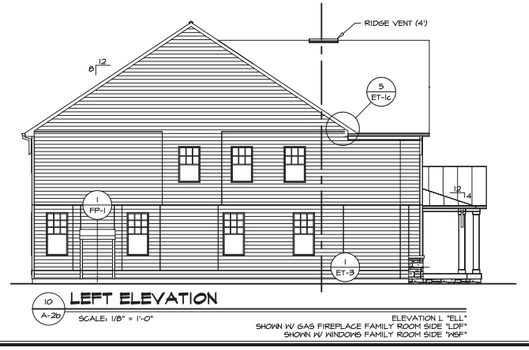
3 A-2b **PARTIAL LEFT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION A "ELA"
BRICK VENEER FRONT "FVA"



6 A-2b **LEFT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION B "ELB"
SHOWN W/ WINDOWS FAMILY ROOM SIDE "WSF"



8 A-2b **LEFT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION K "ELK"
SHOWN W/ GAS FIREPLACE FAMILY ROOM SIDE "LDF"



10 A-2b **LEFT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION L "ELL"
SHOWN W/ GAS FIREPLACE FAMILY ROOM SIDE "LDF"
SHOWN W/ WINDOWS FAMILY ROOM SIDE "WSF"

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.

ARCHITECTURAL ELEMENTS
>1,000 SF

	REQUIRED	PROVIDED
LOW VISIBILITY:	5	7
HIGH VISIBILITY:	6	8

1) MINIMUM 5 WINDOWS PROVIDED (5 POINTS). ADDITIONAL WINDOWS PROVIDED AT BUYERS REQUEST.

2) ALL SIDE ELEVATIONS WILL RECEIVE CEMENTITIOUS SIDING (1 POINT)

3) ALL WINDOWS WILL HAVE A 5/4"X6" TRIM HEADER AND 5/4"X4" SIDES AND LOWER TRIM (1 POINT)

4) HIGH VISIBILITY LOTS WILL HAVE A WATER TABLE (1 POINT)

REV. NO.	DATE	REMARKS
1	10/14/16	HT - STANDARD DETAILS 3.0
2	4/10/17	KLJ - ADDT REVISIONS
3	6/5/17	KBG - UPDATED STOOP COLUMNS ON K, L & T2 ADD LAMPS (PAR 246/23)
4	09/2/20	KBG - ADDED 3 CAFE FRONT ENTRY GARAGE (DOOR 1000)

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NVR, Inc.
5285 Westview Dr., Suite 100
Frederick, MD 21703

SET NO. 11600
VERSION 01
DRAWN BY BIM
DATE: 2/22/2016
OPTION

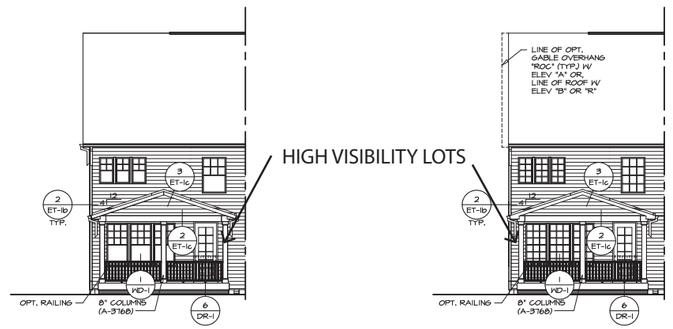
MODEL TYLER
DRAWING TITLE LEFT ELEVATION
SHEET NO. A-2b
OPTION DESCRIPTION
10

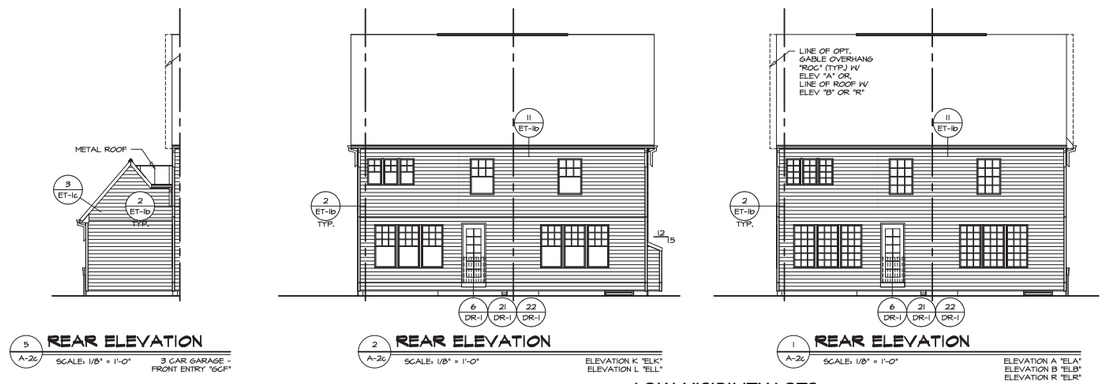
A:\PROJECTS\NVHOMES\TYLER_11600_01\Sheets\Master Set\Elevations\10 A-2b ELVLEFT.dwg 05/09/21 — 9:55 am

NOTES FOR HIGH VISIBILITY REAR ELEVATIONS

1) PORCH WILL BE PROVIDED.

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.





LOW VISIBILITY LOTS

REV. NO.	DATE	REMARKS
2	10/4/16	MT - STANDARD DETAILS 3.0
1	4/10/11	ALJ - ADDT REVISIONS
3	5/4/11	JDS - REVISED FALL PROTECTION TO GENERATE PATH REAR PORCH
4	10/21/11	MRK - ADDED 3 CAR FRONT ENTRY GARAGE (DWR #8004)

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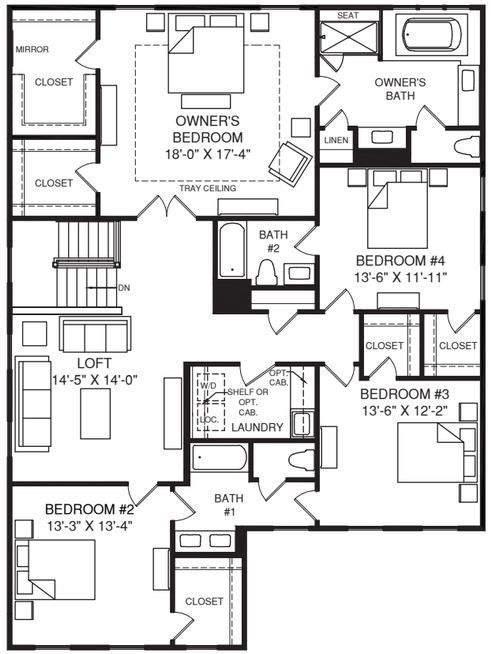
SET NO. 118600
VERSION 0
DRAWN BY BIM
DATE: 2/22/2016
OPTION

MODEL TYLER
DRAWING TITLE REAR ELEVATION
OPTION DESCRIPTION

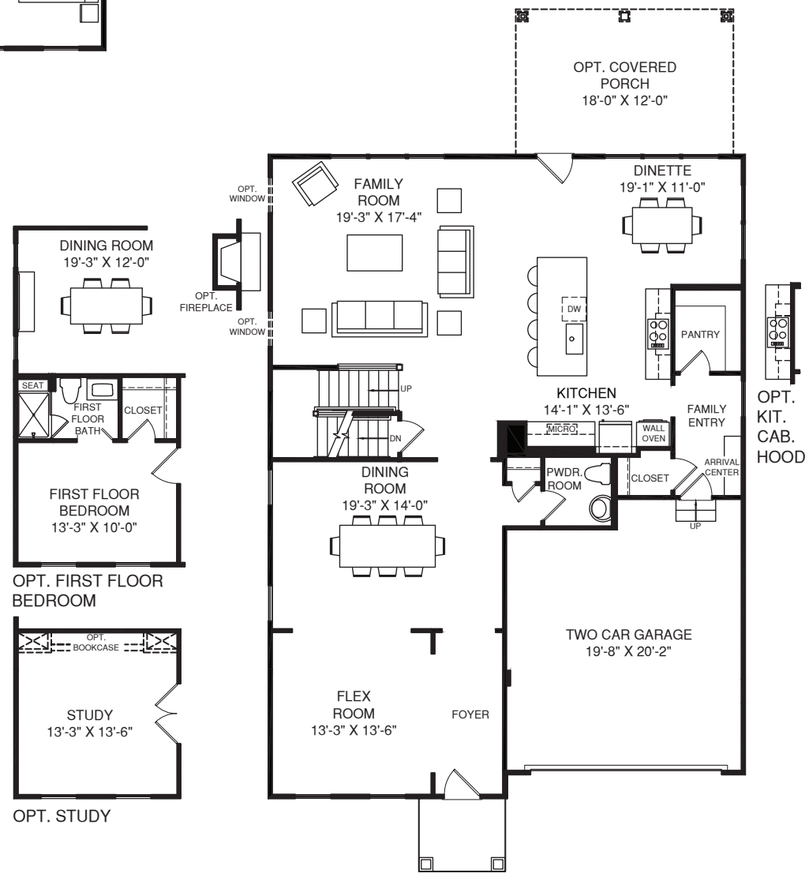
SHEET NO. A-2c

J:\PROJECTS\NVRHOMES\TYLER_118600_01\Sheets\Master Set\Elevations\11_A-2c_ELV_REAR.dwg 03/09/21 - 9:55 am

TYLER



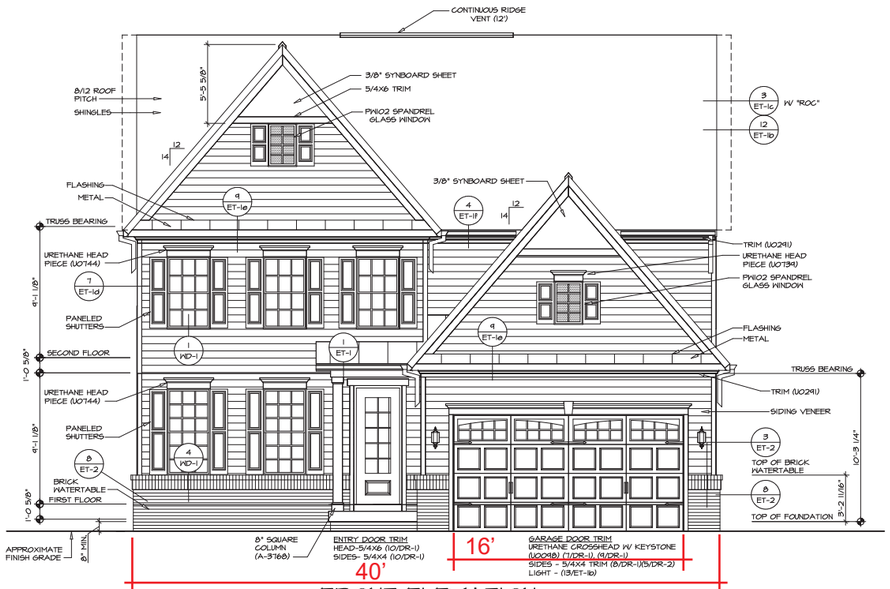
UPPER LEVEL



DANVILLE



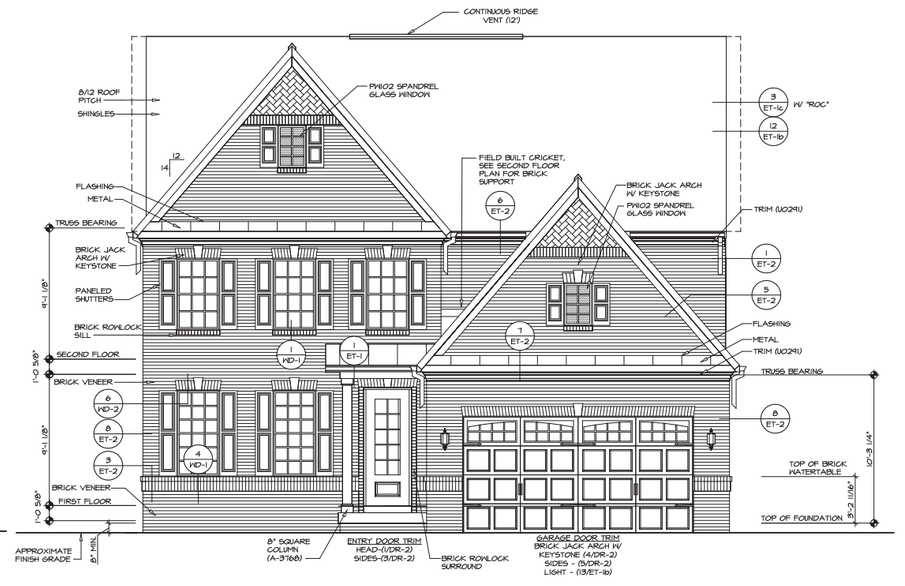
DANVILLE



1 A-1 FRONT ELEVATION

SCALE: 1/4" = 1'-0"

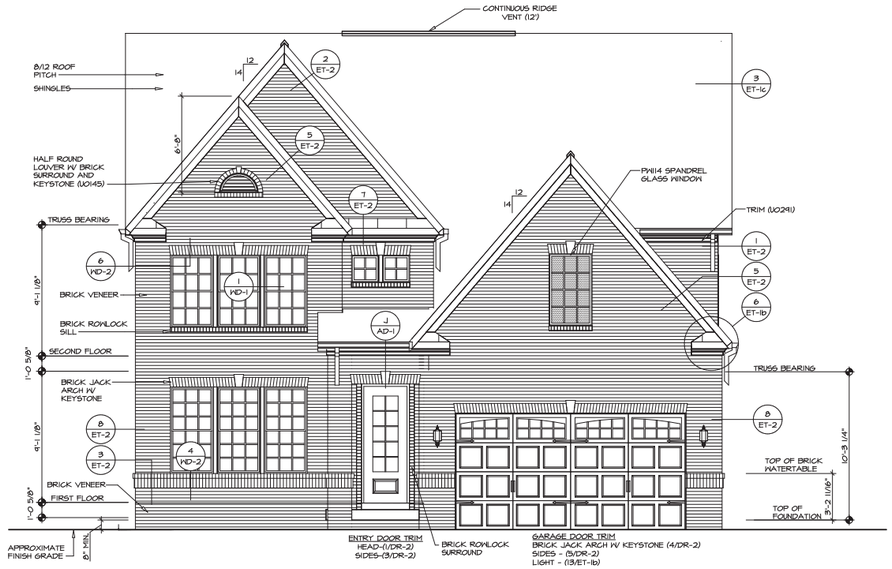
PARTIAL BRICK VENEER "ELA"/"EVM"
DOOR GARAGE SINGLE "66A"



1 A-1 FRONT ELEVATION

SCALE: 1/4" = 1'-0"

FULL BRICK VENEER "ELA"/"EVA"
DOOR GARAGE SINGLE "66A"



1 A-1 FRONT ELEVATION

SCALE: 1/4" = 1'-0"

FULL BRICK VENEER "ELB"
DOOR GARAGE SINGLE "66A"

REV. NO.	DATE	REMARKS
1	10/17/16	DT - STANDARD DETAILS 3.30
2	10/25/17	RKM - ADDED VIEW FOR 3 CAR GARAGE-OPER ROOF

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SET NO. 11800
VERSION 01
DRAWN BY RKVA
DATE: 2/26/16
OPTION ELA EVM

MODEL DANVILLE
DRAWING TITLE FRONT ELEVATION

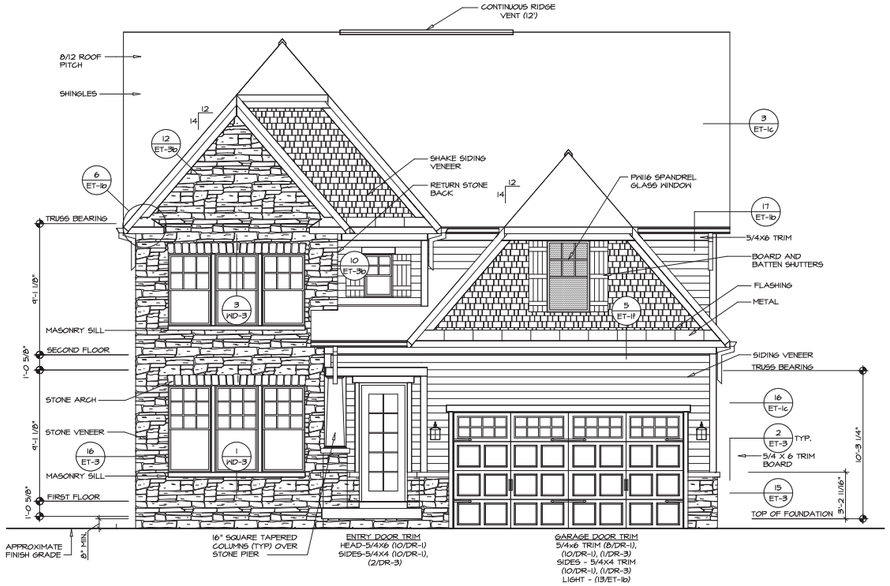
OPTION DESCRIPTION
ELEVATION "A"
PARTIAL BRICK VENEER

SHEET NO. A-1

5

N:\PROJECTS\NVR\DATA\DANVILLE - 11800_01\Sheets\Master Set\Elevations\5 A-1 ELA-EVA Front.dwg 03/09/21 - 7:59 am

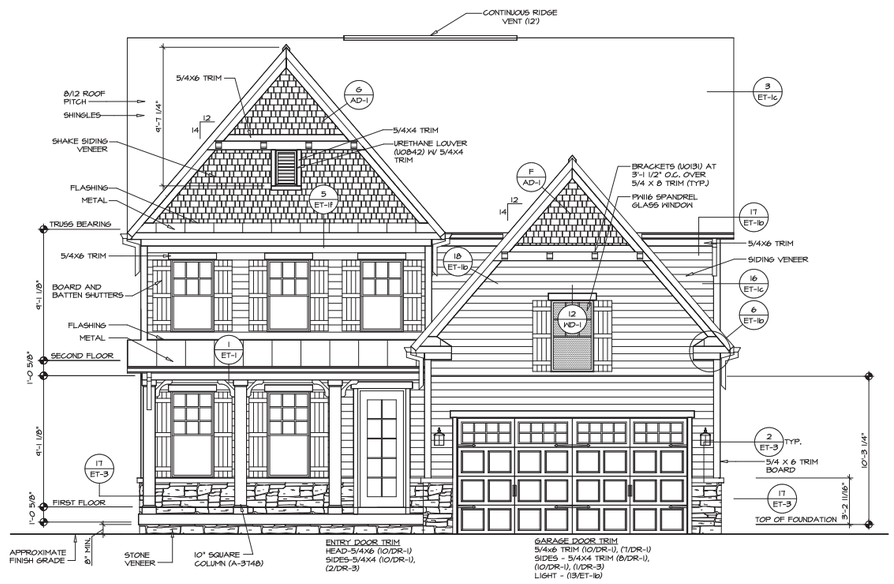
DANVILLE



1 A-1 **FRONT ELEVATION**

SCALE: 1/4" = 1'-0"

PARTIAL STONE VENEER "ELK"
DOOR GARAGE SINGLE "66A"

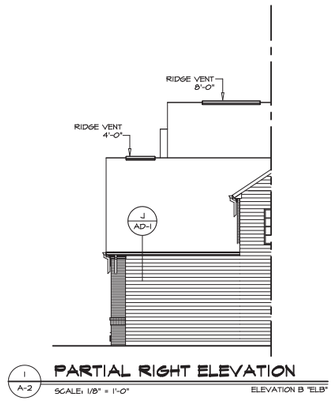


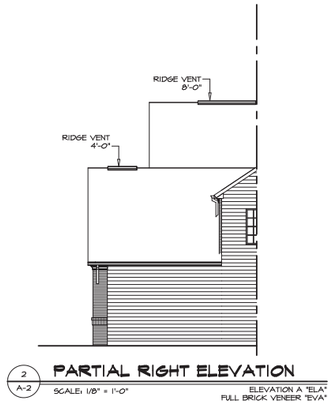
1 A-1 **FRONT ELEVATION**

SCALE: 1/4" = 1'-0"

PARTIAL STONE VENEER "ELK"
DOOR GARAGE SINGLE "66A"

DANVILLE





ARCHITECTURAL ELEMENTS
>1,000 SF

	REQUIRED	PROVIDED
LOW VISIBILITY:	5	7
HIGH VISIBILITY:	6	8

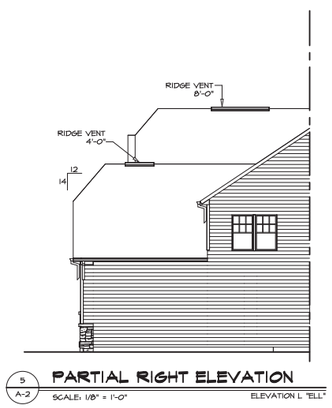
1) MINIMUM 5 WINDOWS PROVIDED (5 POINTS). ADDITIONAL WINDOWS PROVIDED AT BUYERS REQUEST.

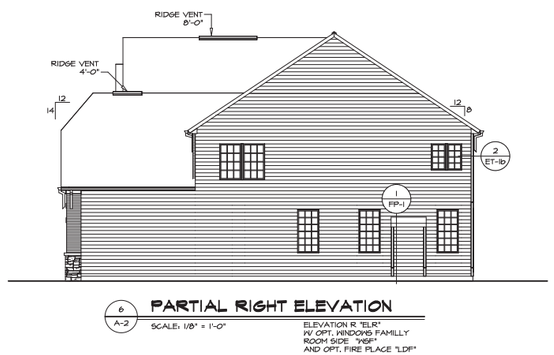
2) ALL SIDE ELEVATIONS WILL RECEIVE CEMENTITIOUS SIDING (1 POINT)

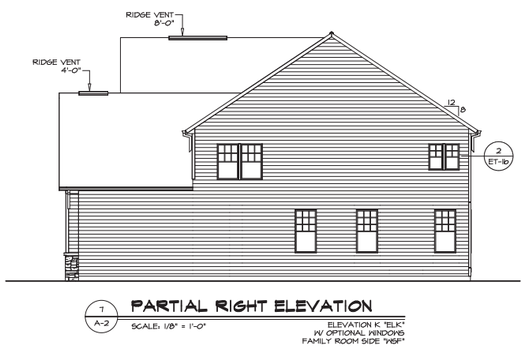
3) ALL WINDOWS WILL HAVE A 5/4"X6" TRIM HEADER AND 5/4"X4" SIDES AND LOWER TRIM (1 POINT)

4) HIGH VISIBILITY LOTS WILL HAVE A WATER TABLE (1 POINT)

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.







REV. NO.	DATE	REMARKS
1	10/17/16	DT - STANDARD DETAILS 3.0
2	10/25/17	RMW - ADDED VIEW FOR 3 CAR GARAGE-DHR #1809

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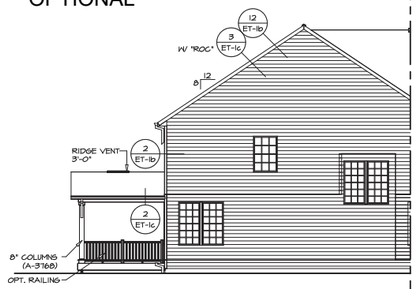
SET NO. 11800
VERSION 01
DRAWN BY RMW
DATE: 3/1/16
OPTION

SHEET NO. A-2
MODEL DANVILLE
DRAWING TITLE RIGHT ELEVATION
OPTION DESCRIPTION
11

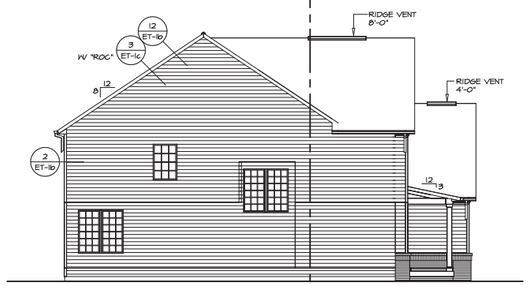
J:\PROJECTS\NVHOMES\DANVILLE_11800_01\Sheets\Master Set\Elevations\11 A-2 ELV_RIGHT.dwg 03/09/21 - 7:40 am

DANVILLE

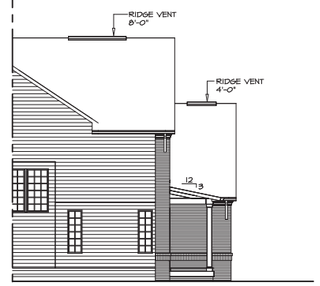
COVERED PORCH
OPTIONAL



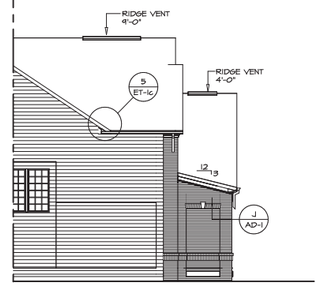
1 A-2b **PARTIAL LEFT ELEVATION**
SCALE: 1/8" = 1'-0" — COVERED PORCH "EPE"



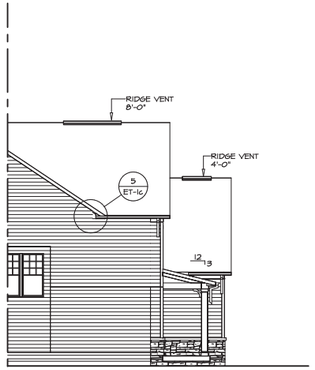
2 A-2b **LEFT ELEVATION**
SCALE: 1/8" = 1'-0" — ELEVATION A "ELA" PARTIAL BRICK VENEER "EVM"



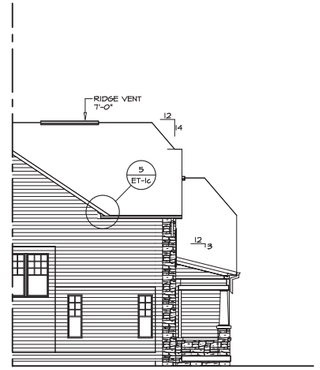
3 A-2b **PARTIAL LEFT ELEVATION**
SCALE: 1/8" = 1'-0" — FULL BRICK VENEER "EVA" DINING ROOM WINDOWS "WBD"



4 A-2b **PARTIAL LEFT ELEVATION**
SCALE: 1/8" = 1'-0" — ELEVATION B "ELB"



5 A-2b **PARTIAL LEFT ELEVATION**
SCALE: 1/8" = 1'-0" — ELEVATION K "ELK"



6 A-2b **PARTIAL LEFT ELEVATION**
SCALE: 1/8" = 1'-0" — ELEVATION L "ELL" DINING ROOM WINDOWS "WBD"

ARCHITECTURAL ELEMENTS
>1,000 SF

	REQUIRED	PROVIDED
LOW VISIBILITY:	5	7
HIGH VISIBILITY:	6	8

1) MINIMUM 5 WINDOWS PROVIDED (5 POINTS). ADDITIONAL WINDOWS PROVIDED AT BUYERS REQUEST.

2) ALL SIDE ELEVATIONS WILL RECEIVE CEMENTITIOUS SIDING (1 POINT)

3) ALL WINDOWS WILL HAVE A 5/4"X6" TRIM HEADER AND 5/4"X4" SIDES AND LOWER TRIM (1 POINT)

4) HIGH VISIBILITY LOTS WILL HAVE A WATER TABLE (1 POINT)

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.

REV. NO.	DATE	REMARKS
1	10/17/16	DT - STANDARD DETAILS 3.0
2	4/20/17	RDS - UPDATED COLUMNS TO ADD CAPS

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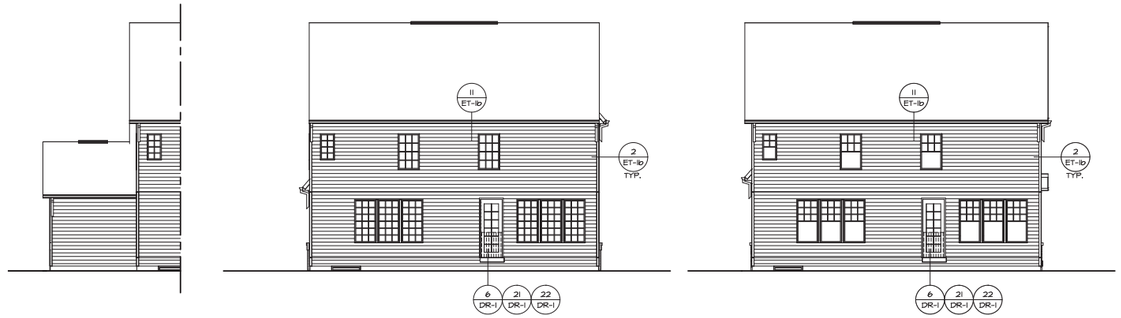
SET NO: 11800
VERSION: 1.0
DRAWN BY: RMM
DATE: 3/1/16
OPTION

SHEET NO. A-2b
MODEL DANVILLE
DRAWING TITLE SIDE AND REAR ELEVATIONS
OPTION DESCRIPTION
12

J:\PROJECTS\NVHOMES\DANVILLE_11800_01\Sheets\Master Set\Elevations\12 A-2b ELV_LEFT.dwg 03/08/21 - 7:40 am

DANVILLE

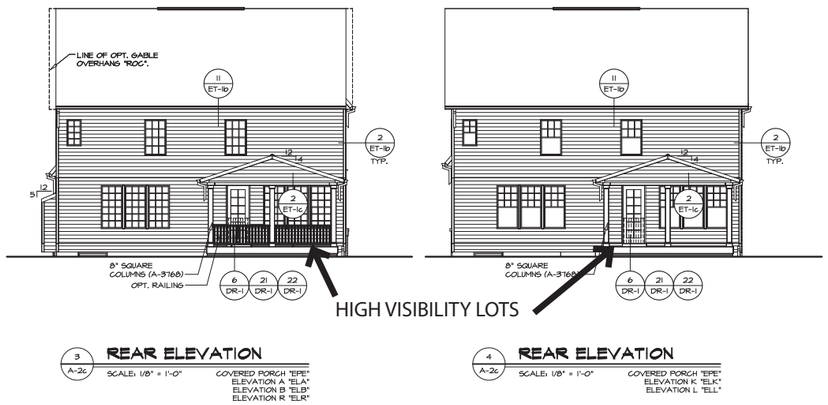
LOW VISIBILITY LOTS



NOTES FOR HIGH VISIBILITY REAR ELEVATIONS

1) PORCH WILL BE PROVIDED.

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.



REMARKS

REV. NO. | DATE

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SET NO. 11800
VERSION 01
DRAWN BY RMW
DATE: 3/2/16
OPTION

SHEET NO. A-2c
MODEL DANVILLE
DRAWING TITLE REAR ELEVATION
OPTION DESCRIPTION
13

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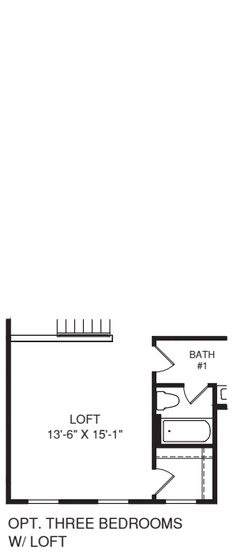
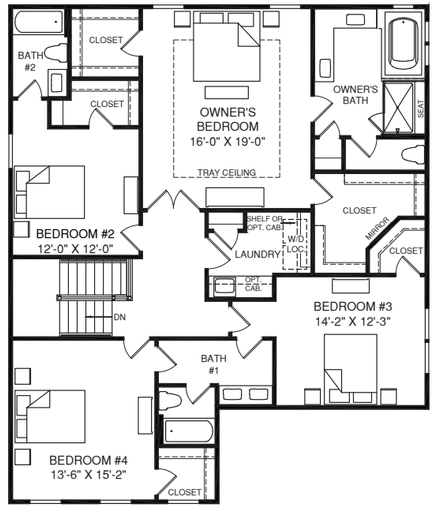
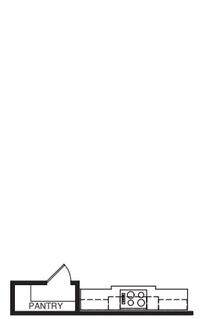
DANVILLE



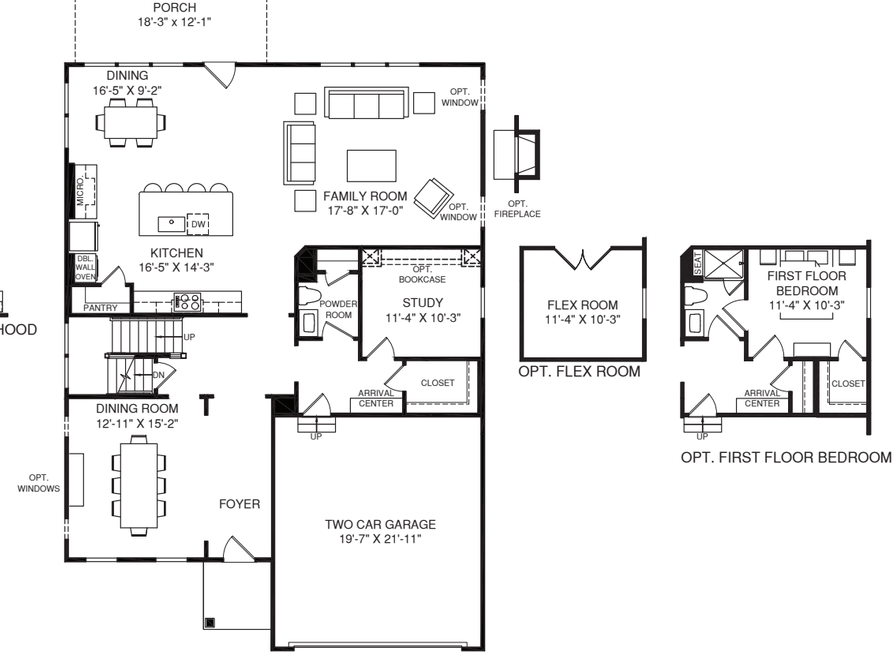
OPT. THREE BEDROOMS
W/ LOFT



UPPER LEVEL



OPT. KITCHEN CABINET HOOD



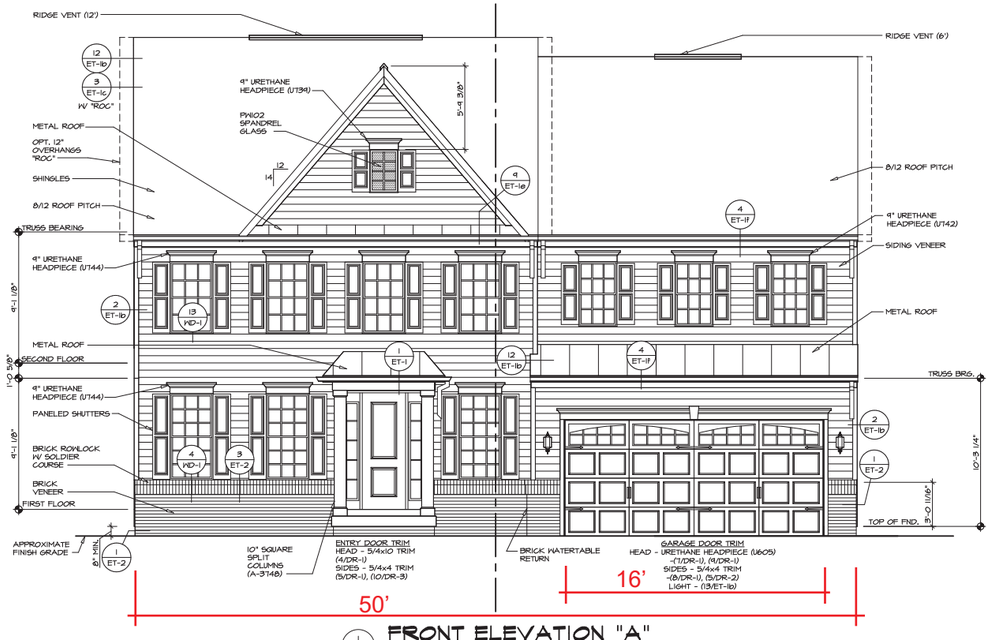
OPT. FLEX ROOM

OPT. FIRST FLOOR BEDROOM

LONGWOOD

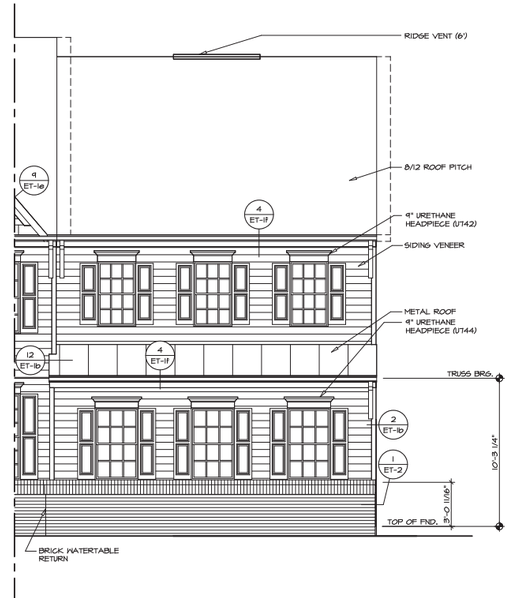


LONGWOOD



1 A-1 **FRONT ELEVATION "A"**

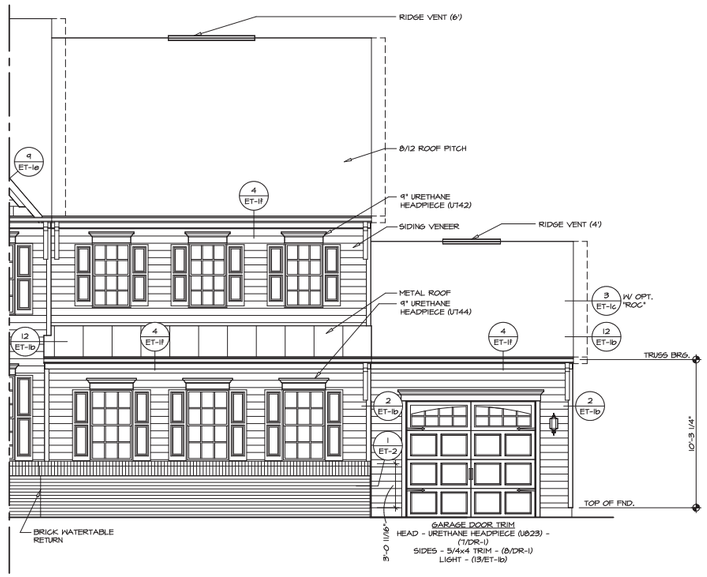
SCALE: 1/4" = 1'-0" 2 CAR GARAGE - FRONT ENTRY "6GB"



2 A-1 **PARTIAL FRONT ELEVATION**

SCALE: 1/4" = 1'-0" 2 CAR GARAGE - SIDE ENTRY "6GC"

NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS



3 A-1 **PARTIAL FRONT ELEVATION**

SCALE: 1/4" = 1'-0" 2 CAR GARAGE - SIDE ENTRY "6GC"
ONE CAR SIDE ATTACHED GARAGE FRONT ENTRY "6AA"

REV. NO.	DATE	REMARKS
1	9/29/16	6TO - REVISED LIGHT FIXTURE AT GARAGE DOOR TO REMOVE TAIL
2	10/24/16	DT - STANDARD DETAILS 3.0
3	7/10/17	E.B. - ADDED "STRUCTURAL" TO FRONT PORCH COLUMN NOTE PER PAR #46728

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SET NO. 16000
VERSION 0
DRAWN BY: NGB
DATE: 4/4/16

MODEL: LONGWOOD
DRAWING TITLE: FRONT ELEVATION

OPTION DESCRIPTION
ELEVATION "A"
PARTIAL BRICK VENEER

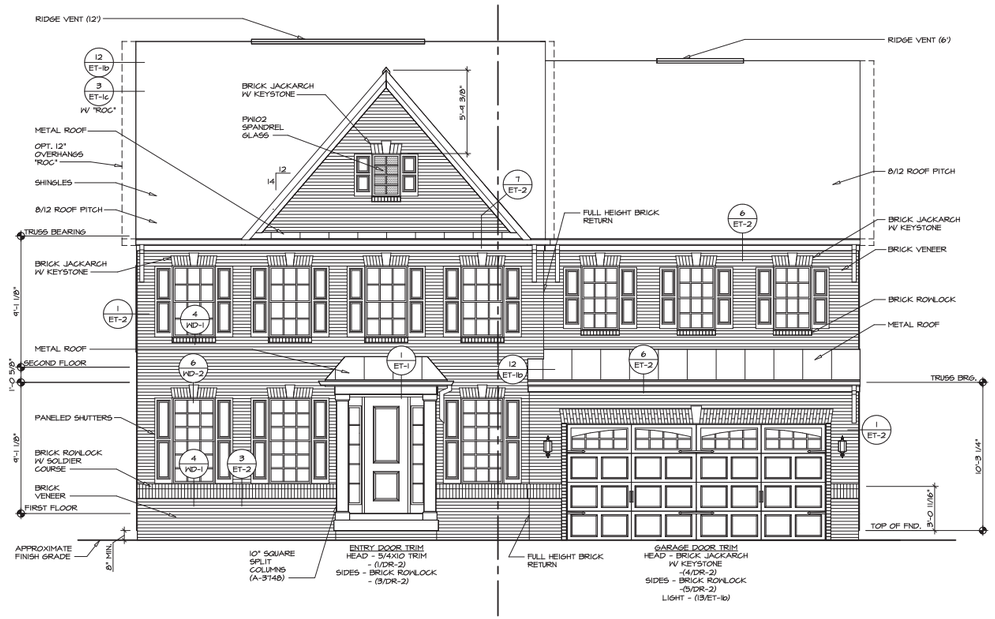
OPTION
ELA
EVM

SHEET NO. A-1

5

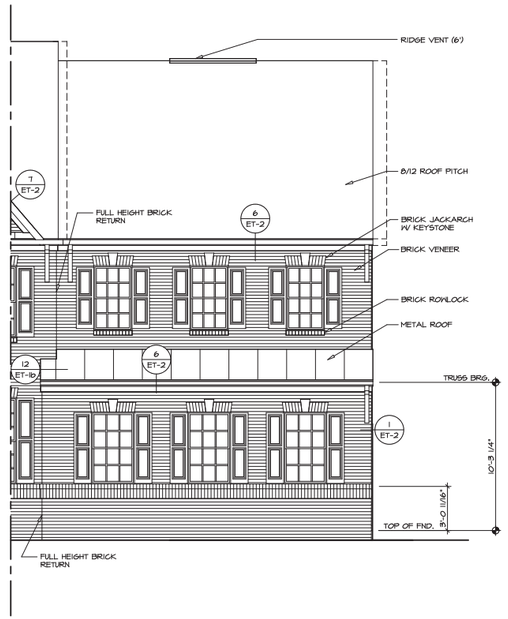
J:\PROJECTS\NVHOMES\LONGWOOD_16000_01\Sheets\Master Set\Elevations\3_A-1_ELA_EVM_FRONT.dwg 12/18/19 - 6:28 am

LONGWOOD



1 A-1 **FRONT ELEVATION "A"**

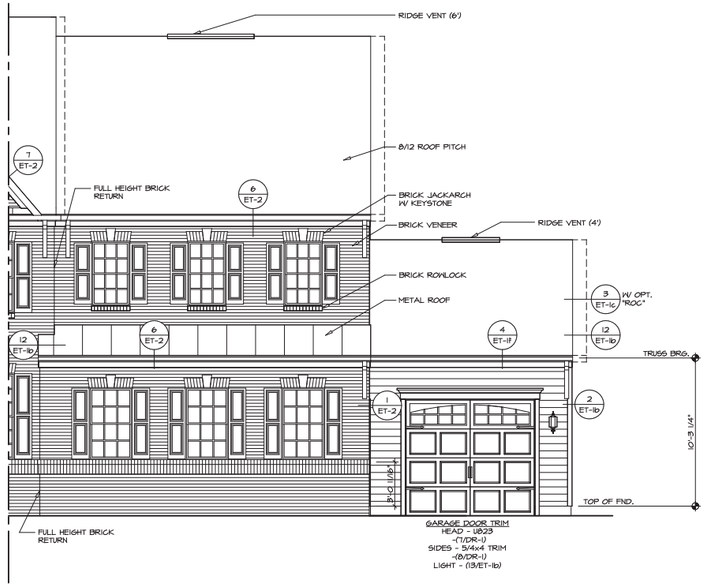
SCALE: 1/4" = 1'-0" 2 CAR GARAGE - FRONT ENTRY "6GB"



2 A-1 **PARTIAL FRONT ELEVATION**

SCALE: 1/4" = 1'-0" 2 CAR GARAGE - SIDE ENTRY "6GC"

NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS



3 A-1 **PARTIAL FRONT ELEVATION**

SCALE: 1/4" = 1'-0" 2 CAR GARAGE - SIDE ENTRY "6GC"
ONE CAR SIDE ATTACHED GARAGE FRONT ENTRY "6AA"

REV. NO.	DATE	REMARKS
1	4/28/16	6X10 - REVISED LIGHT FIXTURE AT GARAGE DOOR TO REMOVE TAIL
2	10/24/16	DT - STANDARD DETAILS 9.3.0
3	7/10/17	EJB - ADDED "STRUCTURAL" TO FRONT PORCH COLUMN NOTE PER PAR #48728

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SHEET NO. A-1

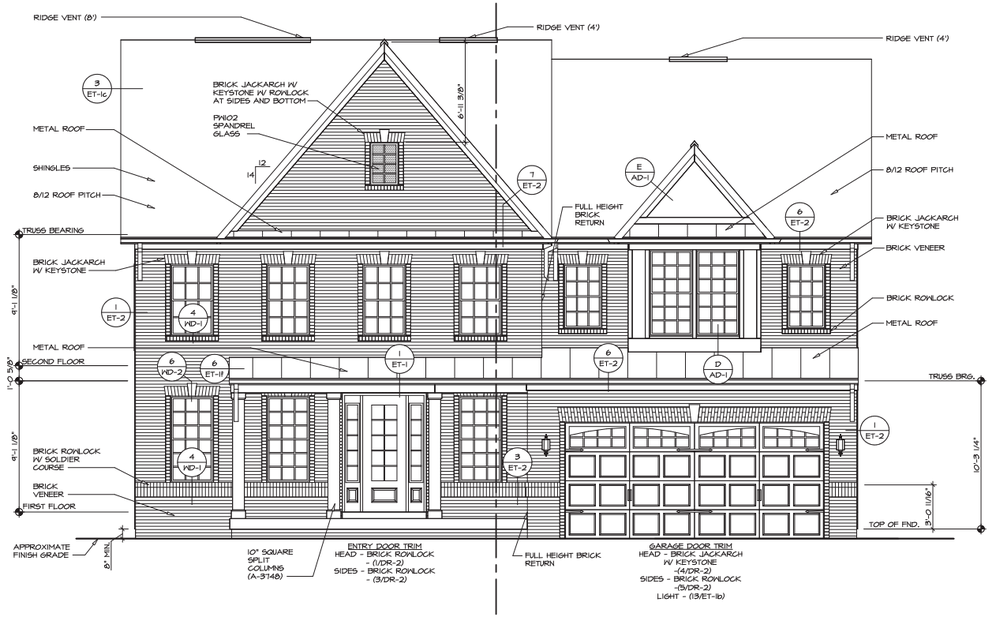
MODEL LONGWOOD
DRAWING TITLE FRONT ELEVATION

OPTION DESCRIPTION
ELEVATION "A"
FULL BRICK VENEER

6

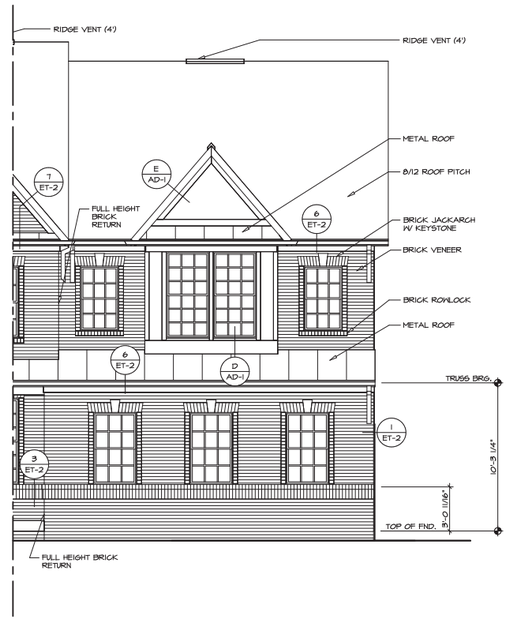
SET NO. 4000
VERSION 01
DRAWN BY NSB
DATE: 4/4/16
OPTION A
EVA

X:\PROJECTS\NYHOMES\LONGWOOD_14000_011\Sheets\Master Set\Elevations\6 A-1 ELA_EVA_FRONT.dgn 12/18/19 - 6:28 am



1 A-1 **FRONT ELEVATION "B"**

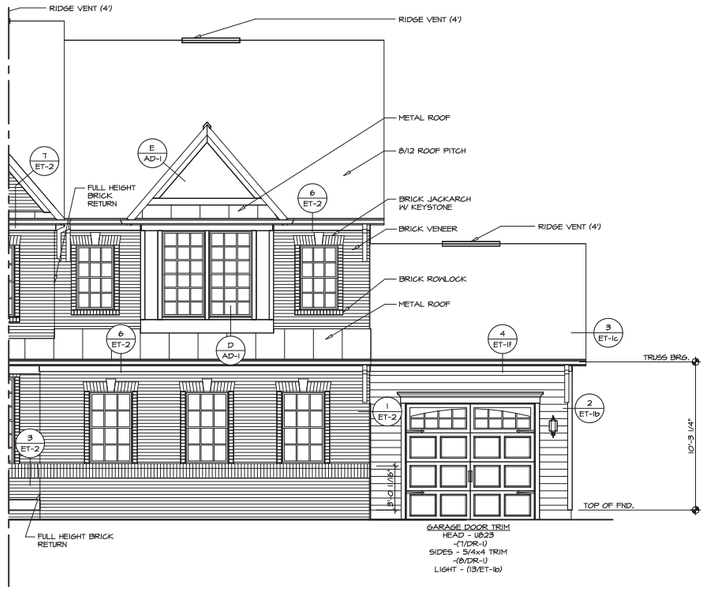
SCALE: 1/4" = 1'-0" 2 CAR GARAGE - FRONT ENTRY "GCB"



2 A-1 **PARTIAL FRONT ELEVATION**

SCALE: 1/4" = 1'-0" 2 CAR GARAGE - SIDE ENTRY "GCC"

NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS



3 A-1 **PARTIAL FRONT ELEVATION**

SCALE: 1/4" = 1'-0" 2 CAR GARAGE - SIDE ENTRY "GCC"
ONE CAR SIDE ATTACHED GARAGE FRONT ENTRY "GAA"

REV. NO.	DATE	REMARKS
1	4/29/16	6/10 - REVISED LIGHT FIXTURE AT GARAGE DOOR TO REMOVE TAIL
2	10/24/16	DT - STANDARD DETAILS 3.0
3	7/10/17	E.B. - ADDED "STRUCTURAL" TO FRONT PORCH COLUMN NOTE PER PAR #46128

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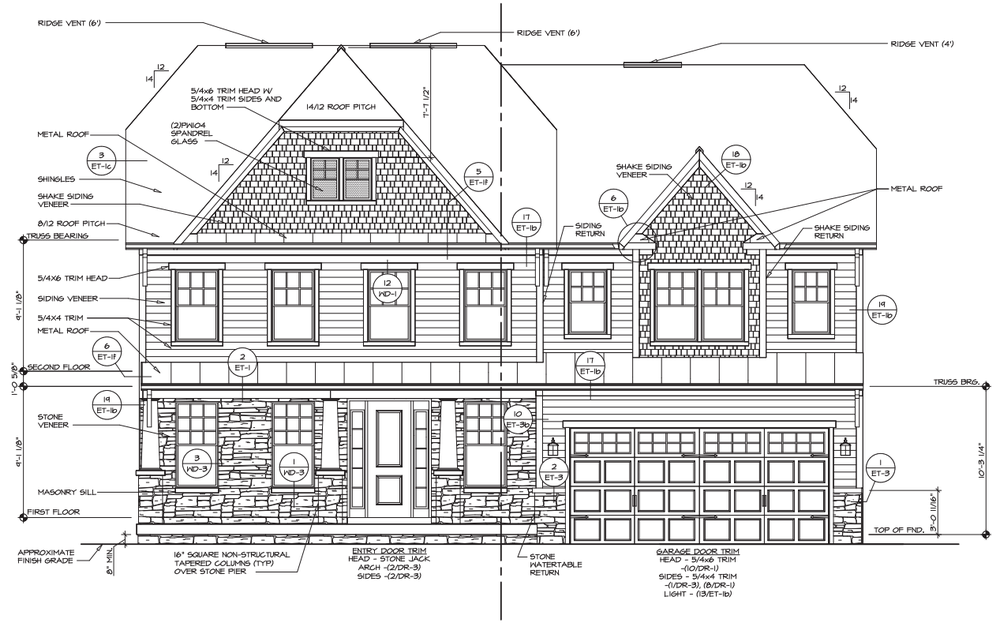
SHEET NO. A-1

MODEL LONGWOOD
DRAWING TITLE FRONT ELEVATIONS
OPTION DESCRIPTION ELEVATION "B"
7

SET NO. 14000
VERSION 0
DRAWN BY NGB
DATE: 4/4/16
OPTION E1.B

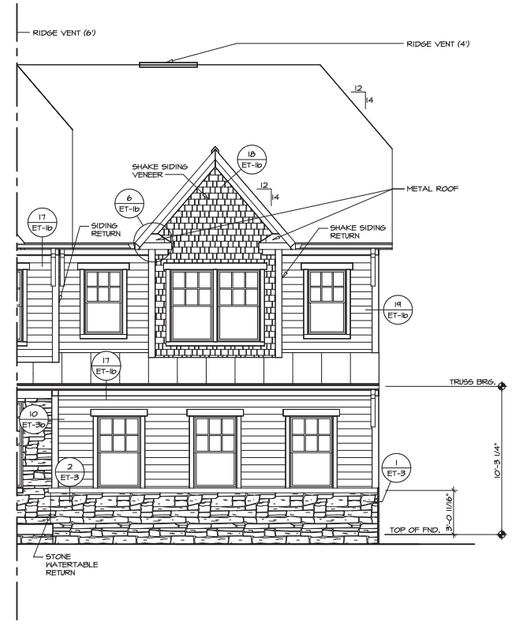
J:\1_PROJECTS\1NYHOMES\LONGWOOD_14000_01\Sheets\Master Set\Elevations\7_A-1_E1.B_FRONT.dwg 09/19/20 - 1:45 pm

LONGWOOD



1 A-1 **FRONT ELEVATION "K"**

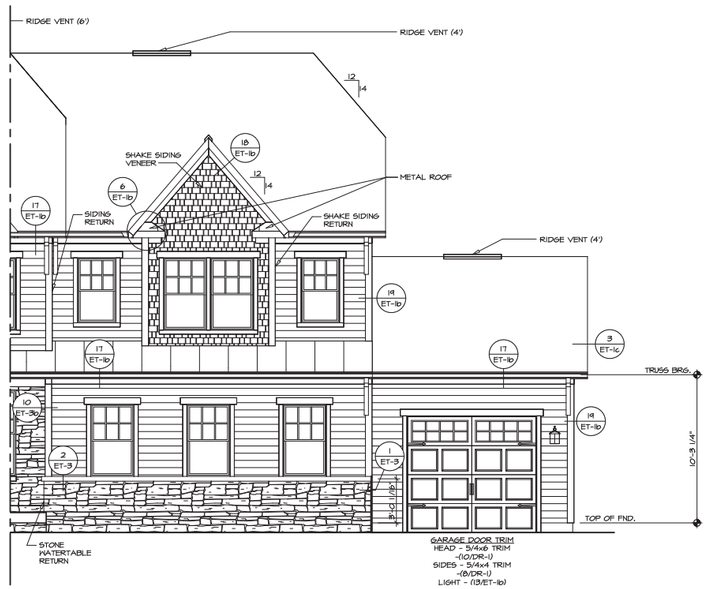
SCALE: 1/4" = 1'-0" 2 CAR GARAGE - FRONT ENTRY "GGB"



2 A-1 **PARTIAL FRONT ELEVATION**

SCALE: 1/4" = 1'-0" 2 CAR GARAGE - SIDE ENTRY "GGC"

NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS



3 A-1 **PARTIAL FRONT ELEVATION**

SCALE: 1/4" = 1'-0" 2 CAR GARAGE - SIDE ENTRY "GGC"
ONE CAR SIDE ATTACHED GARAGE FRONT ENTRY "GAA"

REMARKS
REV. NO. | DATE | REMARKS
1 | 10/24/16 | DT - STANDARD DETAILS 9.0
2 | 7/20/17 | EJB - ADDED "NON-STRUCTURAL" TO FRONT PORCH COLUMN NOTE PER PAR #46728

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SHEET NO. A-1
MODEL LONGWOOD
DRAWING TITLE FRONT ELEVATION
OPTION DESCRIPTION ELEVATION "K"
8
SET NO. 14000
VERSION 01
DRAWN BY NGB
DATE 4/4/16
OPTION ELK

J:\A-PROJECTS\NVHOMES\LONGWOOD_14000_01\Sheets\Master Set\Elevations\8 A-1 ELK FRONT.dwg 12/13/19 8:28 am

LONGWOOD



REV. NO.	DATE	REMARKS
1	10/24/16	DT - STANDARD DETAILS 3.0
2	7/10/17	EJB - ADDED "STRUCTURAL" TO FRONT PORCH COLUMN NOTE PER PAR #46728
3	9/20/17	RDB - UPDATED COLUMNS TO ADD CAPS

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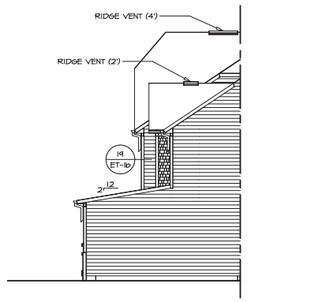
SET NO. 14000
VERSION 01
DRAWN BY NGB
DATE: 4/4/16
OPTION: ELL

MODEL: LONGWOOD
DRAWING TITLE: FRONT ELEVATION
OPTION DESCRIPTION: ELEVATION "L"

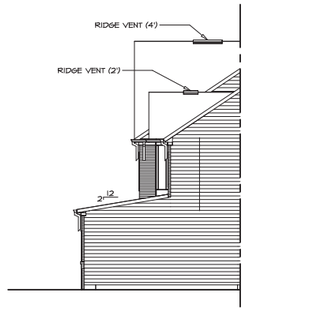
SHEET NO. A-1

9

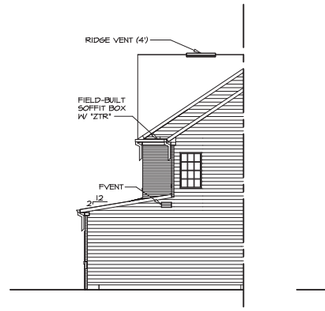
J:\PROJECTS\NVHOMES\LONGWOOD_14000_01\Sheets\Master Set\Elevations\9 A-1 ELL_FRONT.dwg 12/18/19 - 6:29 am



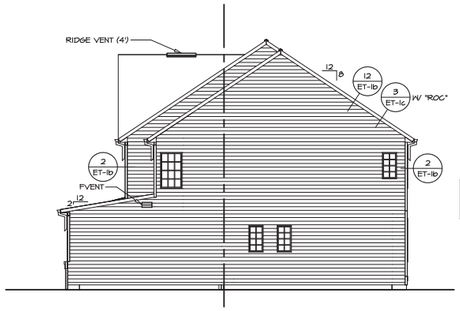
4 / A-2 **PARTIAL RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" — ELEVATION K "ELK"



3 / A-2 **PARTIAL RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" — ELEVATION B "ELB"



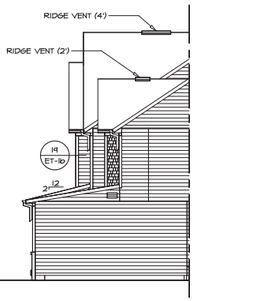
2 / A-2 **PARTIAL RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" — ELEVATION A "ELA"
FULL BRICK VENEER FRONT "EVA"



NOTE: GRILL PATTERN CHANGES WITH ELEVATION K "ELK" OR ELEVATION L "ELL"

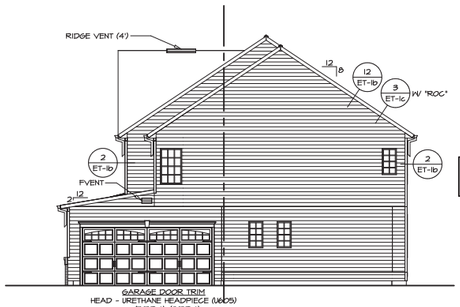
1 / A-2 **RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" — ELEVATION A "ELA"
PARTIAL BRICK VENEER FRONT "EVM"
TWO CAR GARAGE - FRONT ENTRY "GCB"
SHOWN W/ STUDY "MAS" OR OPT. FLEX ROOM "MCF"

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.



6 / A-2 **PARTIAL RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" — ELEVATION L "ELL"

NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS



GARAGE DOOR TRIM
HEAD - URETHANE HEADPIECE (U6D5)
-(1/DR-1), (9/DR-1)
SIDES - 5/4x4 TRIM -(8/DR-1)
LIGHT - (13/ET-1b)

7 / A-2 **RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" — ELEVATION A "ELA"
PARTIAL BRICK VENEER FRONT "EVM"
TWO CAR GARAGE - SIDE ENTRY "GCC"
SHOWN W/ STUDY "MAS" OR OPT. FLEX ROOM "MCF"

NOTE: GRILL PATTERN CHANGES WITH ELEVATION K "ELK" OR ELEVATION L "ELL"

ARCHITECTURAL ELEMENTS
>1,000 SF

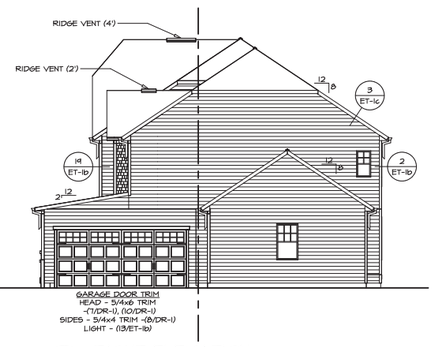
	REQUIRED	PROVIDED
LOW VISIBILITY:	5	6
HIGH VISIBILITY:	6	7

1) MINIMUM 4 WINDOWS PROVIDED (4 POINTS). ADDITIONAL WINDOWS PROVIDED AT BUYERS REQUEST.

2) ALL SIDE ELEVATIONS WILL RECEIVE CEMENTITIOUS SIDING (1 POINT)

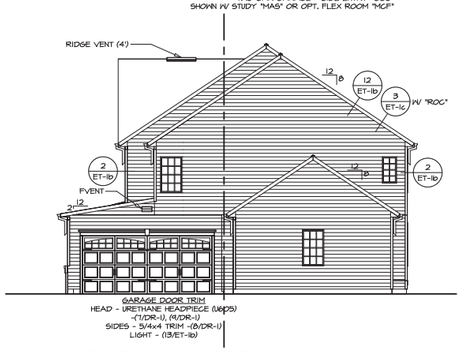
3) ALL WINDOWS WILL HAVE A 5/4"X6" TRIM HEADER AND 5/4"X4" SIDES AND LOWER TRIM (1 POINT)

4) HIGH VISIBILITY LOTS WILL HAVE A WATER TABLE (1 POINT)



GARAGE DOOR TRIM
HEAD - 5/4x6 TRIM
-(1/DR-1), (10/DR-1)
SIDES - 5/4x4 TRIM -(8/DR-1)
LIGHT - (13/ET-1b)

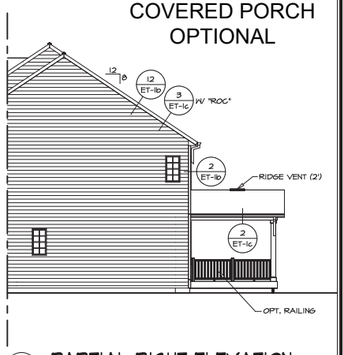
8 / A-2 **RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" — ELEVATION K "ELK"
TWO CAR GARAGE - SIDE ENTRY "GCC"
ONE CAR SIDE ATTACHED GARAGE FRONT ENTRY "GAA"



GARAGE DOOR TRIM
HEAD - URETHANE HEADPIECE (U6D5)
-(1/DR-1), (9/DR-1)
SIDES - 5/4x4 TRIM -(8/DR-1)
LIGHT - (13/ET-1b)

8 / A-2 **RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" — ELEVATION A "ELA"
PARTIAL BRICK VENEER FRONT "EVM"
TWO CAR GARAGE - SIDE ENTRY "GCC"
ONE CAR SIDE ATTACHED GARAGE FRONT ENTRY "GAA"

COVERED PORCH OPTIONAL



9 / A-2 **PARTIAL RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" — REAR COVERED PORCH "EPE"
SHOWN W/ OPT. FIRST FLOOR BEDROOM "BAR"

REV. NO.	DATE	REMARKS
1	10/24/19	TB - STANDARD DETAILS 3.0
2	8/8/11	EJB - ADDED FVENT TO ELA, ELK (PAR 8467960)
3	8/8/11	EJB - ADDED 2'-0" ROOF VENT TO EPE

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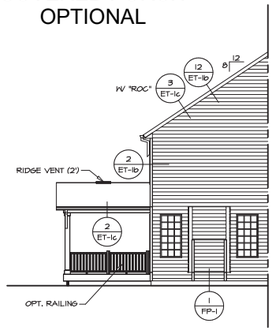
SET NO. 14000
VERSION 01
DRAWN BY NGB
DATE: 4/4/16
OPTION

MODEL LONGWOOD
DRAWING TITLE RIGHT ELEVATION
OPTION DESCRIPTION

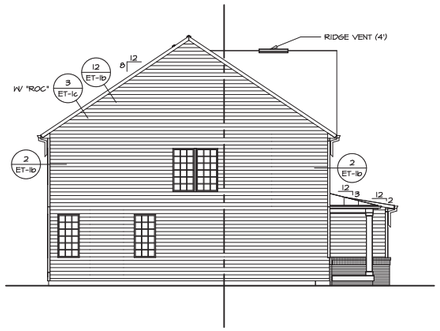
SHEET NO. A-2

A:\PROJECTS\NVR\HOMES\LONGWOOD\14000_01\Sheets\Master Set\Elevations\11 A-2 ELV Right.dwg 12/09/20 - 11:17 pm

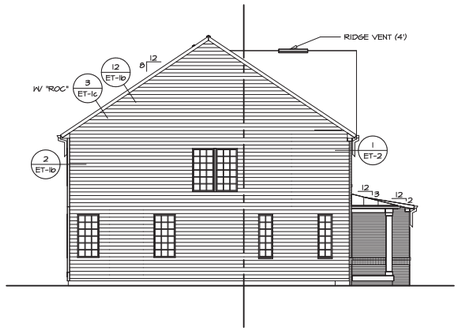
COVERED PORCH
OPTIONAL



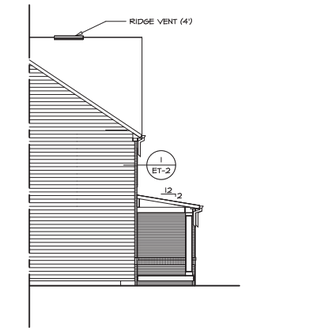
1 A-2b **PARTIAL LEFT ELEVATION**
SCALE: 1/8" = 1'-0" REAR COVERED PORCH "EPE"
GAS FIREPLACE FAMILY ROOM SIDE "LDF"



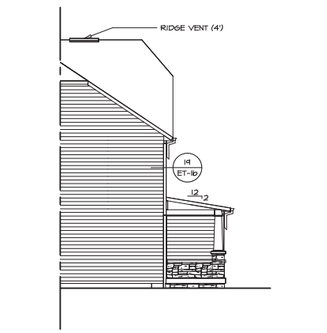
2 A-2b **LEFT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION A "ELA"
PARTIAL BRICK VENEER FRONT "EVM"
TWO CAR GARAGE - FRONT ENTRY "GCB"



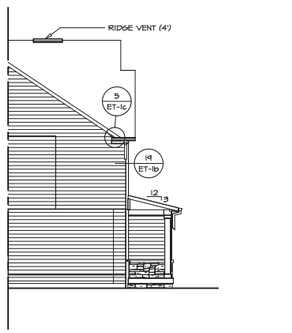
3 A-2b **LEFT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION A "ELA"
FULL BRICK VENEER FRONT "EVA"
WINDOWS DINING ROOM SIDE "WBD"



4 A-2b **PARTIAL LEFT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION B "ELB"



5 A-2b **PARTIAL LEFT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION K "ELK"



6 A-2b **PARTIAL LEFT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION L "ELL"

NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.

ARCHITECTURAL ELEMENTS
>1,000 SF

	REQUIRED	PROVIDED
LOW VISIBILITY:	5	7
HIGH VISIBILITY:	6	8

1) MINIMUM 5 WINDOWS PROVIDED (5 POINTS). ADDITIONAL WINDOWS PROVIDED AT BUYERS REQUEST.

2) ALL SIDE ELEVATIONS WILL RECEIVE CEMENTITIOUS SIDING (1 POINT)

3) ALL WINDOWS WILL HAVE A 5/4"X6"TRIM HEADER AND 5/4"X4" SIDES AND LOWER TRIM (1 POINT)

4) HIGH VISIBILITY LOTS WILL HAVE A WATER TABLE (1 POINT)

REV. NO.	DATE	REMARKS
1	10/24/16	TB - STANDARD DETAILS 3.0
2	8/8/17	EJB - ADDED 2-0" RIDGE VENT TO EPE
3	4/20/17	RDS - UPDATED COLUMNS TO ADD CAPS

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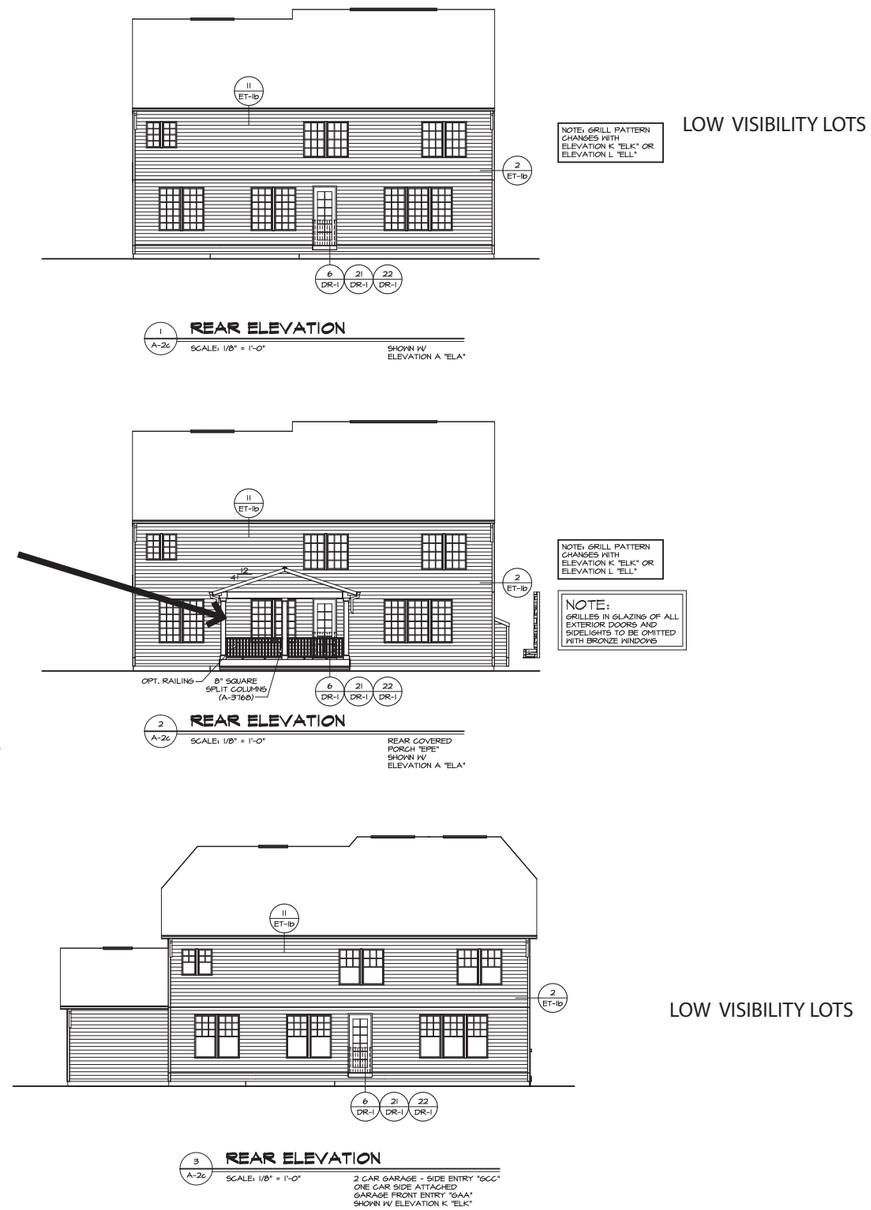
SET NO. 14000
VERSION 0
DRAWN BY: MGB
DATE: 4/4/16
OPTION

MODEL LONGWOOD
DRAWING TITLE LEFT ELEVATION
OPTION DESCRIPTION 12

SHEET NO. A-2b

J:\A PROJECTS\LW HOMES\LONGWOOD_14000_01\Sheets\Master Set\Elevations\12 A-2b ELV LEFT.dwg 12/18/19 — 8:28 am

LONGWOOD



NOTES FOR HIGH VISIBILITY REAR ELEVATIONS

1) PORCH WILL BE PROVIDED.

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.

REV. NO.	DATE	REMARKS
1	10/24/16	TB - STANDARD DETAILS 3.0
2	5/10/17	KAD - ADDED SAFETY RAIL W/ EPE
3	7/10/17	E.B. - ADDED "NON- STRUCTURAL" TO REAR PORCH COLUMN NOTE PER PAR #46728

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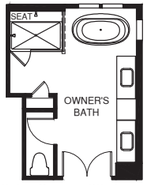
SET NO. 14000
VERSION 01
DRAWN BY NGB
DATE: 4/4/16
OPTION

SHEET NO. A-2c
MODEL LONGWOOD
DRAWING TITLE REAR ELEVATION
OPTION DESCRIPTION
13

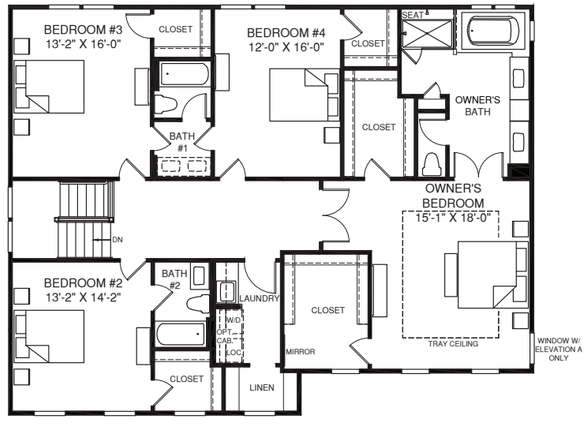
J:\PROJECTS\NVHOMES\LONGWOOD_14000_01\Sheets\Master Set\Elevations\13 A-2c ELV_REAR.dwg 12/18/19 - 6:29 am

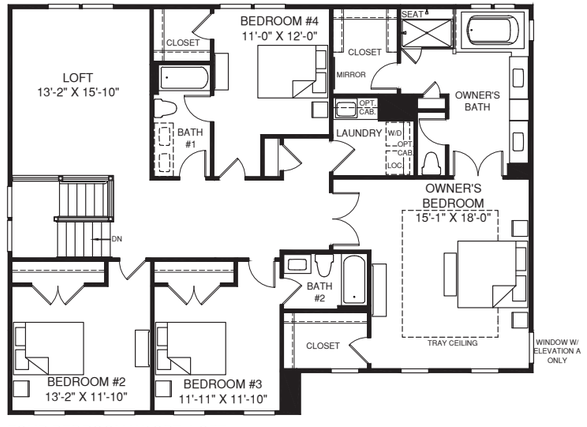
GREENSPRING MANOR

LONGWOOD



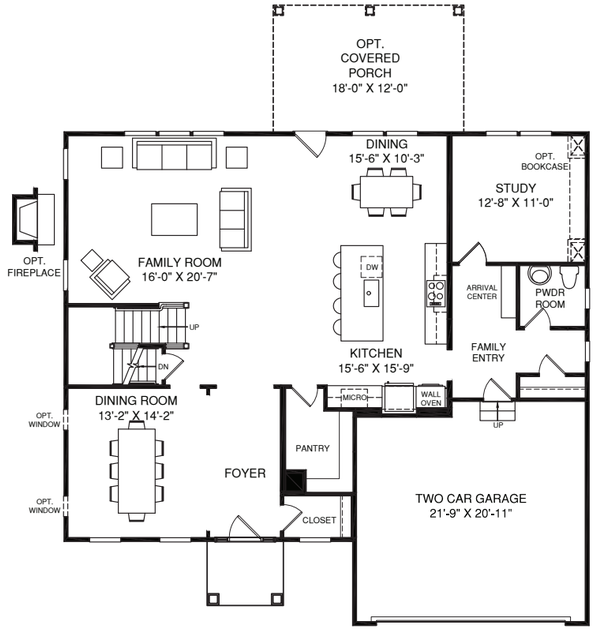
OPT. OWNER'S BATHROOM
FREESTANDING TUB &
ROMAN SHOWER

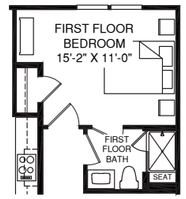




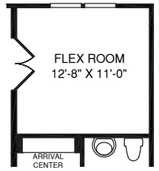
FOUR BEDROOM W/ OPT. LOFT

UPPER LEVEL

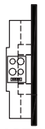




OPT. FIRST FLOOR
BEDROOM



OPT. FLEX ROOM



OPT. KITCHEN
CABINET HOOD

MARYMOUNT



MARYMOUNT



NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS
NOTE:
GARAGE DOOR GLASS DESIGN MAY VARY BY MANUFACTURER
FRONT ELEVATION "A"
SCALE: 1/4" = 1'-0"
TWO-CAR SIDE ENTRY GARAGE "GCC"
GAS FIREPLACE FAMILY ROOM "LDF"
FRONT ELEVATION "A"
SCALE: 1/4" = 1'-0"
TWO-CAR FRONT ENTRY GARAGE "GCB"
SUITE FIRST FLOOR "MSR"
PARTIAL FRONT ELEVATION "A"
SCALE: 1/4" = 1'-0"
ONE-CAR ATTACHED GARAGE "GAA"
(ONLY AVAILABLE W/ TWO-CAR SIDE ENTRY GARAGE "GCC")
54'
16'
NVR
MARYMOUNT
FRONT ELEVATION
ELEVATION "A"
PARTIAL BRICK VENEER
A-1
5



FRONT ELEVATION "A"

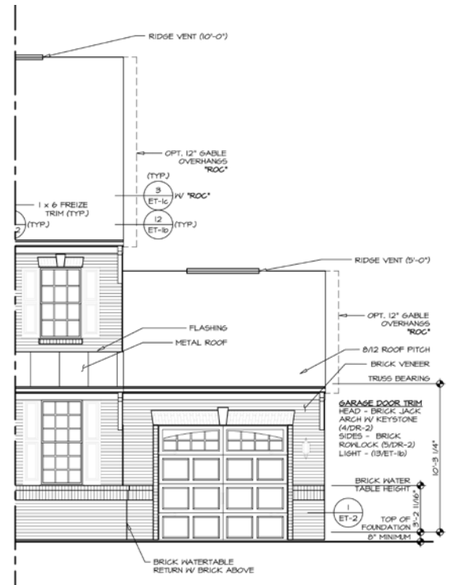
SCALE: 1/4" = 1'-0"

TWO-CAR SIDE ENTRY GARAGE "SGC"
GAS FIREPLACE FAMILY ROOM "LDF"

FRONT ELEVATION "A"

SCALE: 1/4" = 1'-0"

TWO-CAR FRONT ENTRY GARAGE "SGB"
SUITE FIRST FLOOR "MSR"



PARTIAL FRONT ELEVATION "A"

SCALE: 1/4" = 1'-0"

ONE-CAR ATTACHED GARAGE "GAA"
(ONLY AVAILABLE W/ TWO-CAR SIDE ENTRY GARAGE "GCC")

NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS

NOTE:
GARAGE DOOR GLASS DESIGN MAY VARY BY MANUFACTURER

REMARKS
REV. NO. DATE
1 6/4/16 KLC - REVISED OPTION DESCRIPTION FROM "ELB" TO "ELA"
2 12/15/16 MT - STANDARD DETAILS 3.0
3 1/19/16 KEB - REVISED FIREPLACE OPTION AND ANNOTATION (PAGE 42&19)
4 5/9/17 KEB - CHANGE BRICKWORK
5 11/2/17 MT-DHR (TBR)

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SET NO. 12000
VERSION 01
DRAWN BY CAB
DATE: 3/25/2016
OPTION ELA EVA

MODEL MARYMOUNT
DRAWING TITLE FRONT ELEVATION
OPTION DESCRIPTION ELEVATION "A" FULL BRICK VENEER

SHEET NO. A-1
6

X:\PROJECTS\NVRHOMES\MARYMOUNT_12000_01\Sheets\Master Sht\Elevations\6 A-1 ELA_EVA_FBRK.dwg 11/06/19 - 9:08 am

MARYMOUNT



NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS

NOTE:
GARAGE DOOR GLASS DESIGN MAY VARY BY MANUFACTURER

2 A-1 **FRONT ELEVATION "B"**
SCALE: 1/4" = 1'-0" TWO-CAR SIDE ENTRY GARAGE "SGC" 6AS FIREPLACE FAMILY ROOM "LDF"

1 A-1 **FRONT ELEVATION "B"**
SCALE: 1/4" = 1'-0" TWO-CAR FRONT ENTRY GARAGE "SGB" SUITE FIRST FLOOR "MSR"

4 A-1 **PARTIAL FRONT ELEVATION "B"**
SCALE: 1/4" = 1'-0" ONE-CAR ATTACHED GARAGE "SAA" (ONLY AVAILABLE W/ TWO-CAR SIDE ENTRY GARAGE "SGC")

REV. NO.	DATE	REMARKS
1	10/05/16	MT- STANDARD DETAILS & BO
2	11/15/16	SKB - REVISED FIREPLACE OPTION AND ANNOTATION (PAGE #24/13)
3	5/31/17	EJB - OL AGDT REVISIONS
4	11/2/17	MT-DWR (1395)

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SHEET NO. A-1
MODEL MARYMOUNT
DRAWING TITLE FRONT ELEVATION
OPTION DESCRIPTION ELEVATION "B"
7

SET NO. 12000
VERSION 0
DRAWN BY CAD
DATE: 3/25/2016
OPTION ELB

J:\PROJECTS\NVRHOMES\MARYMOUNT_12000_01\Sheets\Master Set\Elevations\7_A-1_ELB_FRONT.dwg 11/06/19 - 9:07 am

MARYMOUNT



NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS

NOTE:
GARAGE DOOR GLASS DESIGN MAY VARY BY MANUFACTURER

REMARKS

REV. NO.	DATE	
1	10/05/06	HT - STANDARD DETAILS 3.0
2	1/05/06	SGB - REVISED FIREPLACE OPTION AND ANNOTATION (PAR# 424139)
3	3/30/11	EJB - CI ADDT REVISIONS
4	10/07	HT-OPEN 1/99

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SET NO. 12000
VERSION 01
DRAWN BY CAB
DATE: 3/25/2016
OPTION ELK

MODEL MARYMOUNT
DRAWING TITLE FRONT ELEVATION
OPTION DESCRIPTION ELEVATION "K"

SHEET NO. A-1

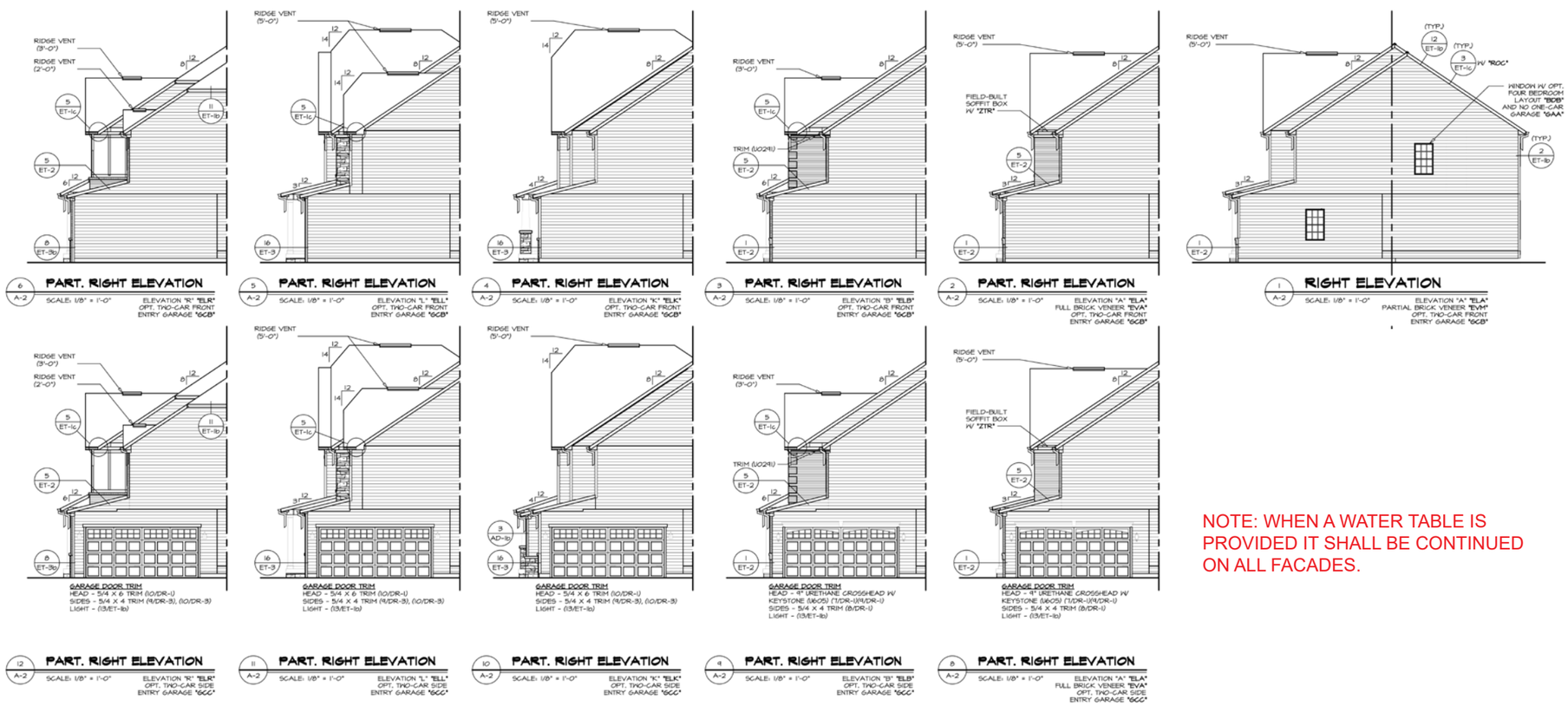
X:\PROJECTS\NVRHOMES\MARYMOUNT_12000_01\Sheets\Master Set\Elevations\8 A-1 ELK_FRONT.dwg 11/06/15 - 9:02 am

MARYMOUNT



NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS
NOTE:
GARAGE DOOR GLASS DESIGN MAY VARY BY MANUFACTURER
FRONT ELEVATION "L"
SCALE: 1/4" = 1'-0"
TWO-CAR SIDE ENTRY GARAGE "GCC"
GAS FIREPLACE FAMILY ROOM "LDF"
FRONT ELEVATION "L"
SCALE: 1/4" = 1'-0"
TWO-CAR FRONT ENTRY GARAGE "GCB"
SUITE FIRST FLOOR "MSR"
PARTIAL FRONT ELEVATION "L"
SCALE: 1/4" = 1'-0"
ONE-CAR ATTACHED GARAGE "GAA"
(ONLY AVAILABLE W/ TWO-CAR SIDE ENTRY GARAGE "GCC")
NVR
MARYMOUNT
FRONT ELEVATION
ELEVATION "L"
A-1

MARYMOUNT



NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.

ARCHITECTURAL ELEMENTS
>1,000 SF

	REQUIRED	PROVIDED
LOW VISIBILITY:	5	5
HIGH VISIBILITY:	6	6

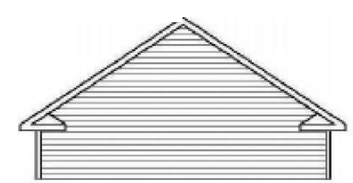
1) MINIMUM 2 WINDOWS PROVIDED (2 POINTS). ADDITIONAL WINDOWS PROVIDED AT BUYERS REQUEST.

2) ALL SIDE ELEVATIONS WILL RECEIVE CEMENTITIOUS SIDING (1 POINT)

3) ALL WINDOWS WILL HAVE A 5/4"X6" TRIM HEADER AND 5/4"X4" SIDES AND LOWER TRIM (1 POINT)

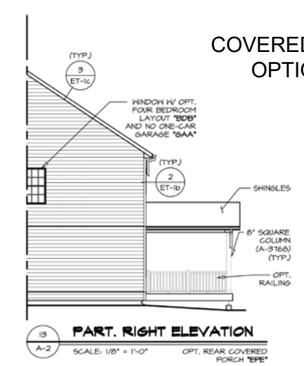
4) 12" ROOF OVERHANG WITH PARTIAL ROOF RETURN WILL BE PROVIDED (1 POINT)

5) HIGH VISIBILITY LOTS WILL HAVE A WATER TABLE (1 POINT)



Partial Roof Return on Each End (Bird Box)

COVERED PORCH OPTIONAL





MARYMOUNT

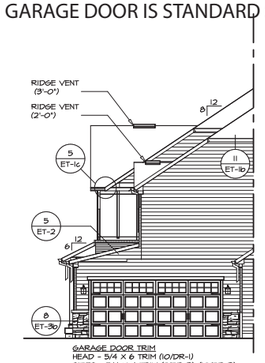
ARCHITECTURAL ELEMENTS
>1,000 SF

	REQUIRED	PROVIDED
LOW VISIBILITY:	5	5
HIGH VISIBILITY:	6	6

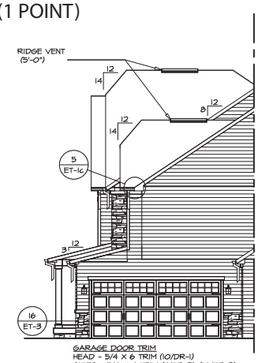
1) MINIMUM 1 WINDOW PROVIDED (1 POINT). ADDITIONAL WINDOWS PROVIDED AT BUYERS REQUEST.
2) ALL SIDE ELEVATIONS WILL RECEIVE CEMENTITIOUS SIDING (1 POINT)
3) ALL WINDOWS WILL HAVE A 5/4"X6" TRIM HEADER AND 5/4"X4" SIDES AND LOWER TRIM (1 POINT)
4) 12" ROOF OVERHANG WITH PARTIAL ROOF RETURN WILL BE PROVIDED (1 POINT)
5) GARAGE DOOR IS STANDARD (1 POINT)
6) HIGH VISIBILITY LOTS WILL HAVE A WATER TABLE (1 POINT)

NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS

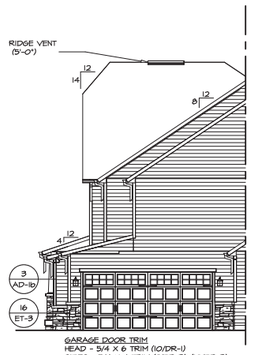
NOTE:
GARAGE DOOR GLASS DESIGN MAY VARY BY MANUFACTURER



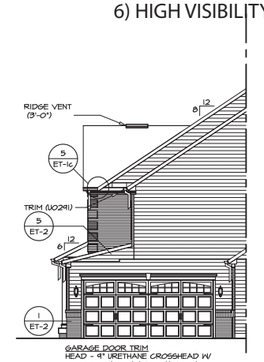
6 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION "R" "ELR"
OPT. TWO-CAR SIDE ENTRY GARAGE "GCC"
OPT. ONE-CAR ATTACHED GARAGE "GAA"



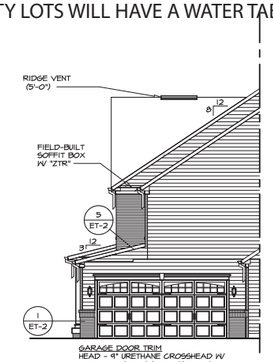
5 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION "L" "ELL"
OPT. TWO-CAR SIDE ENTRY GARAGE "GCC"
OPT. ONE-CAR ATTACHED GARAGE "GAA"



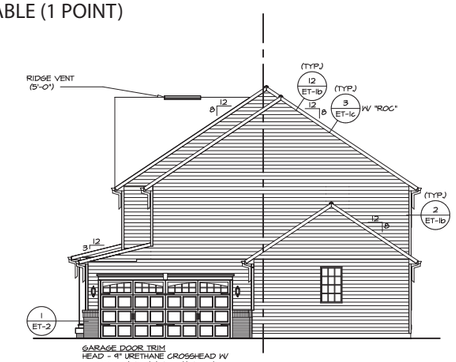
4 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION "K" "ELK"
OPT. TWO-CAR SIDE ENTRY GARAGE "GCC"
OPT. ONE-CAR ATTACHED GARAGE "GAA"



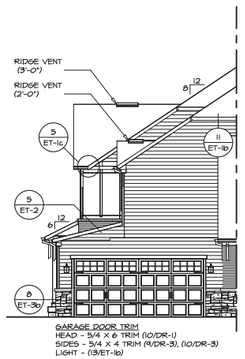
3 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION "B" "ELB"
OPT. TWO-CAR SIDE ENTRY GARAGE "GCC"
OPT. ONE-CAR ATTACHED GARAGE "GAA"



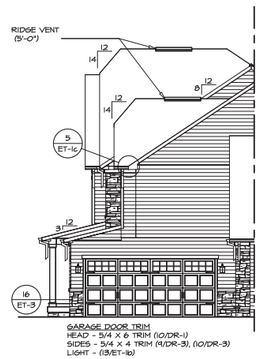
2 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION "A" "ELA"
FULL BRICK VENEER "EVA"
OPT. TWO-CAR SIDE ENTRY GARAGE "GCC"
OPT. ONE-CAR ATTACHED GARAGE "GAA"



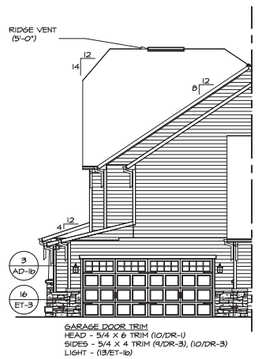
1 A-2 **RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION "A" "ELA"
PARTIAL BRICK VENEER "EVM"
OPT. TWO-CAR SIDE ENTRY GARAGE "GCC"
OPT. ONE-CAR ATTACHED GARAGE "GAA"



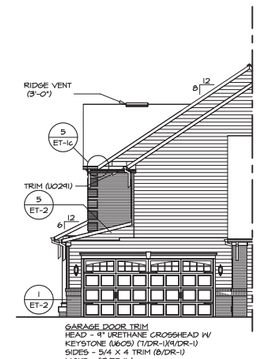
12 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION "R" "ELR"
OPT. TWO-CAR SIDE ENTRY GARAGE "GCC"
OPT. TWO CAR SIDE ATTACHED GARAGE W/ FRONT ENTRY "GAB"



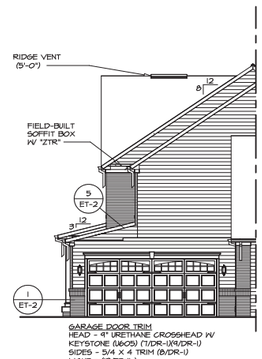
11 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION "L" "ELL"
OPT. TWO-CAR SIDE ENTRY GARAGE "GCC"
OPT. TWO CAR SIDE ATTACHED GARAGE FRONT ENTRY "GAB"



10 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION "K" "ELK"
OPT. TWO-CAR SIDE ENTRY GARAGE "GCC"
OPT. TWO CAR SIDE ATTACHED GARAGE FRONT ENTRY "GAB"



9 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION "B" "ELB"
OPT. TWO-CAR SIDE ENTRY GARAGE "GCC"
OPT. TWO CAR SIDE ATTACHED GARAGE FRONT ENTRY "GAB"



8 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION "A" "ELA"
FULL BRICK VENEER "EVA"
OPT. TWO-CAR SIDE ENTRY GARAGE "GCC"
OPT. TWO CAR SIDE ATTACHED GARAGE FRONT ENTRY "GAB"

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.

REMARKS

REV. NO. | DATE

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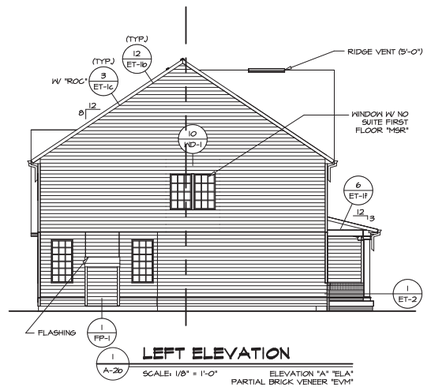
SHEET NO. A-2
MODEL MARYMOUNT
DRAWING TITLE RIGHT ELEVATION
SET NO. 12000
VERSION 01
DRAWN BY HT
DATE: 10/30/17

OPTION	DESCRIPTION
11.2	TWO CAR SIDE ATTACHED GARAGE FRONT ENTRY
GAB	ONE CAR ATTACHED GARAGE
GAA	TWO CAR SIDE
GCC	

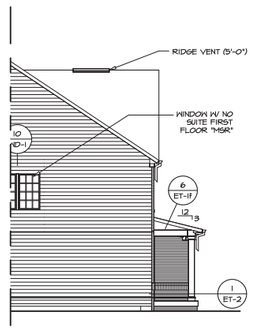
J:\PROJECTS\NYHOMES\MARYMOUNT_12000_01\Sheets\Master Set\Elevations\11.2 A-2 ELV Right GAB GAA.dwg 11/06/19 - 8:08 am

MARYMOUNT

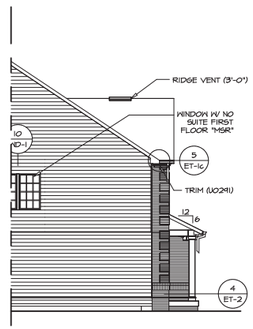
NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS



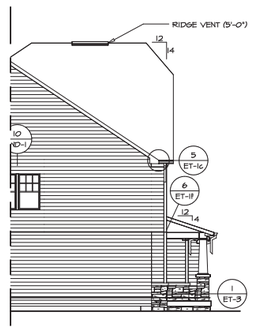
LEFT ELEVATION
SCALE: 1/8" = 1'-0" ELEVATION "A" "ELA"
PARTIAL BRICK VENEER "EVM"



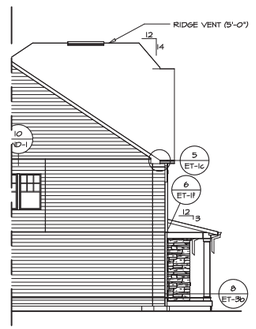
2 A-2b PART. LEFT ELEVATION
SCALE: 1/8" = 1'-0" ELEVATION "A" "ELA"
FULL BRICK VENEER "EVA"



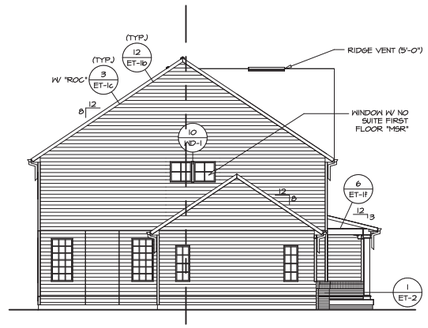
3 A-2b PART. LEFT ELEVATION
SCALE: 1/8" = 1'-0" ELEVATION "B" "ELB"



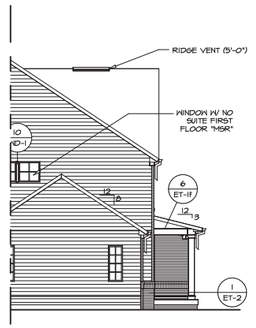
4 A-2b PART. LEFT ELEVATION
SCALE: 1/8" = 1'-0" ELEVATION "K" "ELK"



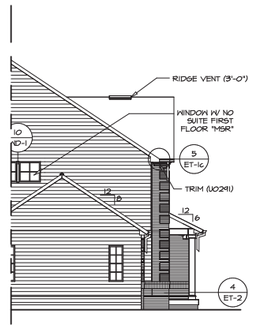
5 A-2b PART. LEFT ELEVATION
SCALE: 1/8" = 1'-0" ELEVATION "L" "ELL"



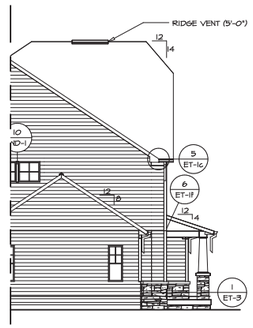
7 A-2b LEFT ELEVATION
SCALE: 1/8" = 1'-0" ELEVATION "A" "ELA"
PARTIAL BRICK VENEER "EVM"
SUITE FIRST FLOOR "MSR"



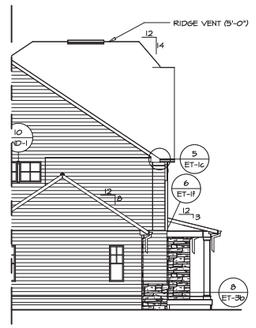
8 A-2b PART. LEFT ELEVATION
SCALE: 1/8" = 1'-0" ELEVATION "A" "ELA"
FULL BRICK VENEER "EVA"
SUITE FIRST FLOOR "MSR"



9 A-2b PART. LEFT ELEVATION
SCALE: 1/8" = 1'-0" ELEVATION "B" "ELB"
SUITE FIRST FLOOR "MSR"

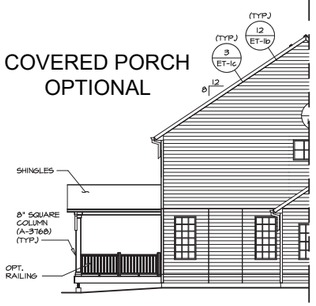


10 A-2b PART. LEFT ELEVATION
SCALE: 1/8" = 1'-0" ELEVATION "K" "ELK"
SUITE FIRST FLOOR "MSR"



11 A-2b PART. LEFT ELEVATION
SCALE: 1/8" = 1'-0" ELEVATION "L" "ELL"
SUITE FIRST FLOOR "MSR"

COVERED PORCH OPTIONAL



13 A-2b PART. LEFT ELEVATION
SCALE: 1/8" = 1'-0" OPT. REAR COVERED PORCH "EPE"

ARCHITECTURAL ELEMENTS
>1,000 SF

	REQUIRED	PROVIDED
LOW VISIBILITY:	5	6
HIGH VISIBILITY:	6	7

1) MINIMUM 3 WINDOWS PROVIDED (3 POINTS). ADDITIONAL WINDOWS PROVIDED AT BUYERS REQUEST.
2) ALL SIDE ELEVATIONS WILL RECEIVE CEMENTITIOUS SIDING (1 POINT)
3) ALL WINDOWS WILL HAVE A 5/4"X6" TRIM HEADER AND 5/4"X4" SIDES AND LOWER TRIM (1 POINT)
4) 12" ROOF OVERHANG WITH PARTIAL ROOF RETURN WILL BE PROVIDED (1 POINT)
5) HIGH VISIBILITY LOTS WILL HAVE A WATER TABLE (1 POINT)

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.

REMARKS

REV. NO.	DATE	
1	10/08/16	HT- STANDARD DETAILS 3.0
2	11/15/16	SKB - REVISED FIREPLACE OPTION AND ANNOTATION (PAR# 42473)
3	3/30/17	KJB - GP PERMIT REVISIONS
4	9/29/17	KJB - ADDED GUTTERS TO ADD CAPS
5	10/30/17	HT-DHR 11919

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Frederick, MD 21703

SET NO.: 2000
VERSION: 01
DRAWN BY: CAB
DATE: 3/30/2016
OPTION

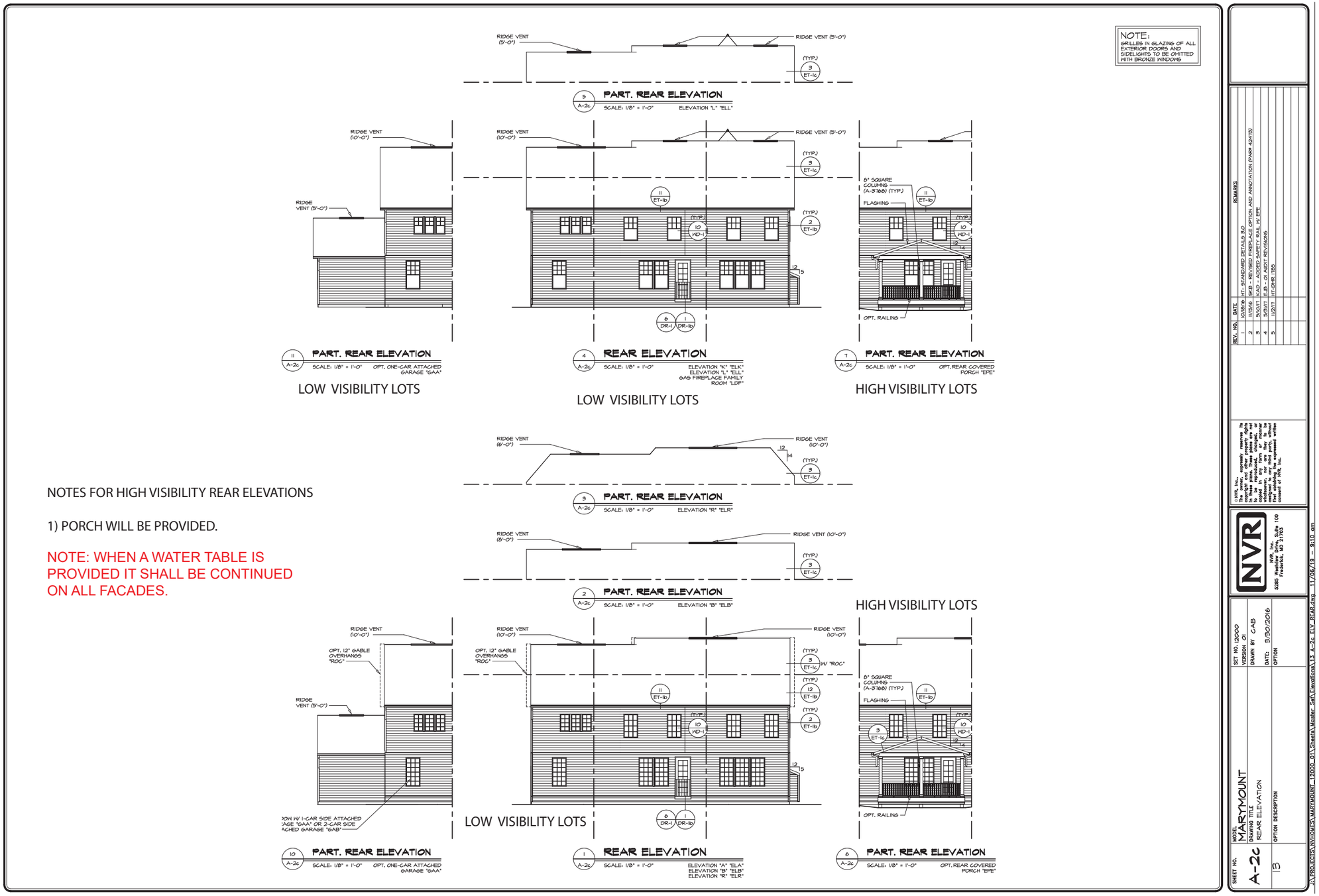
SHEET NO.: A-2b
MODEL: MARYMOUNT
DRAWING TITLE: SIDE AND REAR ELEVATIONS

OPTION DESCRIPTION

12

J:\PROJECTS\TYPICALS\MARYMOUNT_#2000_01\Sheets\Marymount_Set\LElevations\V2.2_2b_ELV_LEFT.dwg 11/08/16 - 9:08 am

MARYMOUNT



NOTES FOR HIGH VISIBILITY REAR ELEVATIONS

1) PORCH WILL BE PROVIDED.

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.

REV. NO.	DATE	REMARKS
1	10/18/16	HT- STANDARD DETAILS 3.0
2	11/15/16	SKB - REVISED FIREPLACE OPTION AND ANNOTATION (PAR# 42473)
3	5/10/17	KAD - ADDED SAFETY RAIL W/ EPE
4	5/31/17	EJB - 01 AUDIT REVISIONS
5	11/21/17	HT-DHR 1785

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SET NO. 12000
VERSION 01
DRAWN BY CAB
DATE: 3/30/2016
OPTION

MODEL: MARYMOUNT
DRAWING TITLE: REAR ELEVATION
OPTION DESCRIPTION
SHEET NO. A-2c
13

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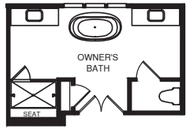
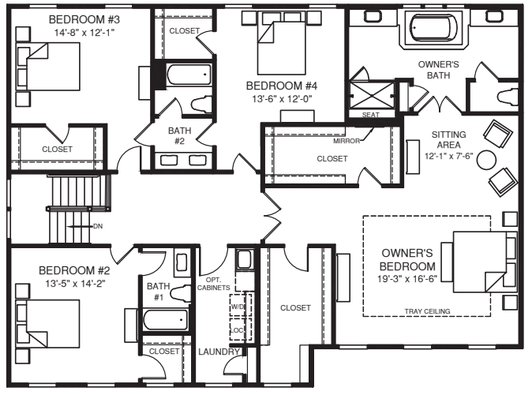
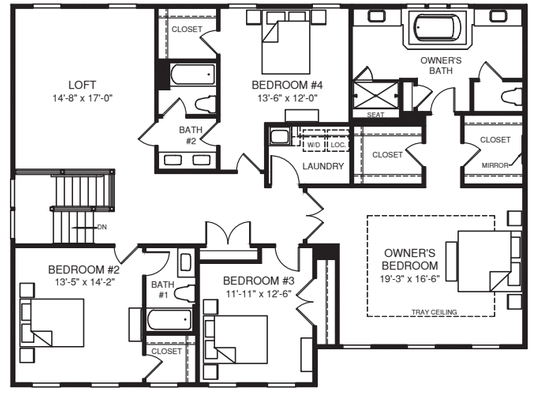
MARYMOUNT



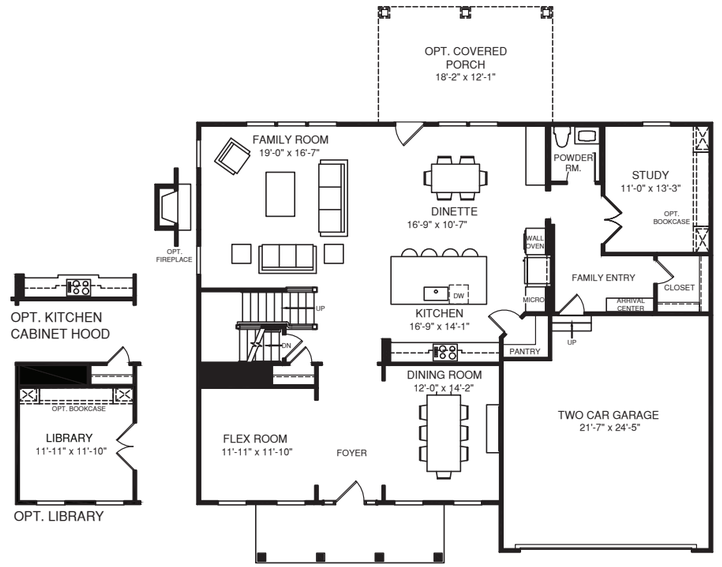
OWNER'S BATH W/ OPT.
FREESTANDING TUB AND
ROMAN SHOWER



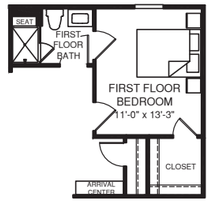


FOUR BEDROOM W/ OPT. LOFT

UPPER LEVEL



OPT. LIBRARY



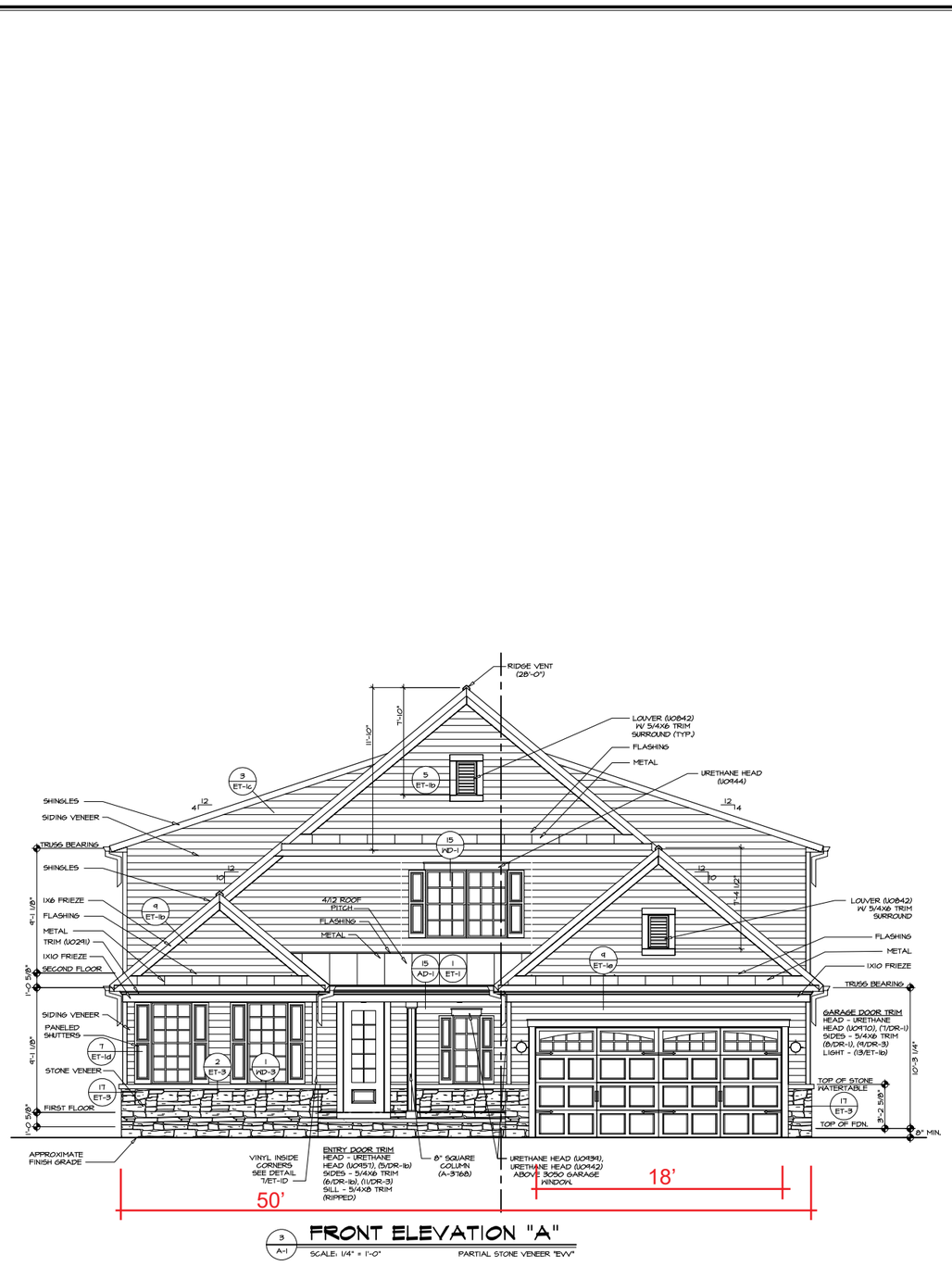
OPT. FIRST FLOOR BEDROOM

DEVELOPER'S EXHIBIT

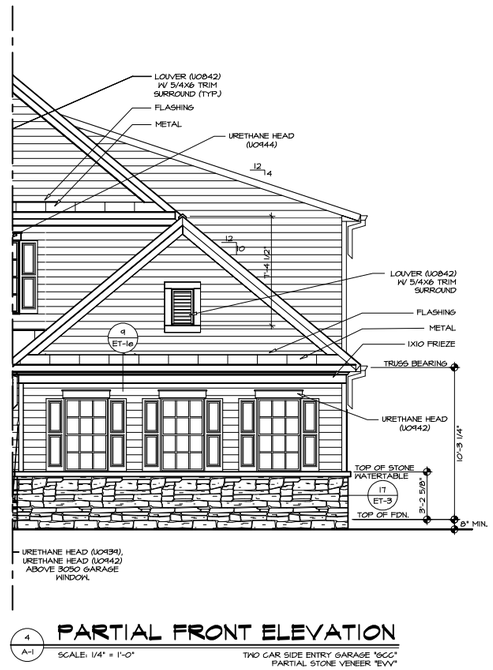
7C

WESTMINSTER





3 A-1 **FRONT ELEVATION "A"**
SCALE: 1/4" = 1'-0" PARTIAL STONE VENEER "EVV"



4 A-1 **PARTIAL FRONT ELEVATION**
SCALE: 1/4" = 1'-0" TWO CAR SIDE ENTRY GARAGE "SCC" PARTIAL STONE VENEER "EVV"

NOTE:
GARAGE DOOR GLASS DESIGN MAY VARY BY MANUFACTURER

NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS

REV. NO.	DATE	REMARKS

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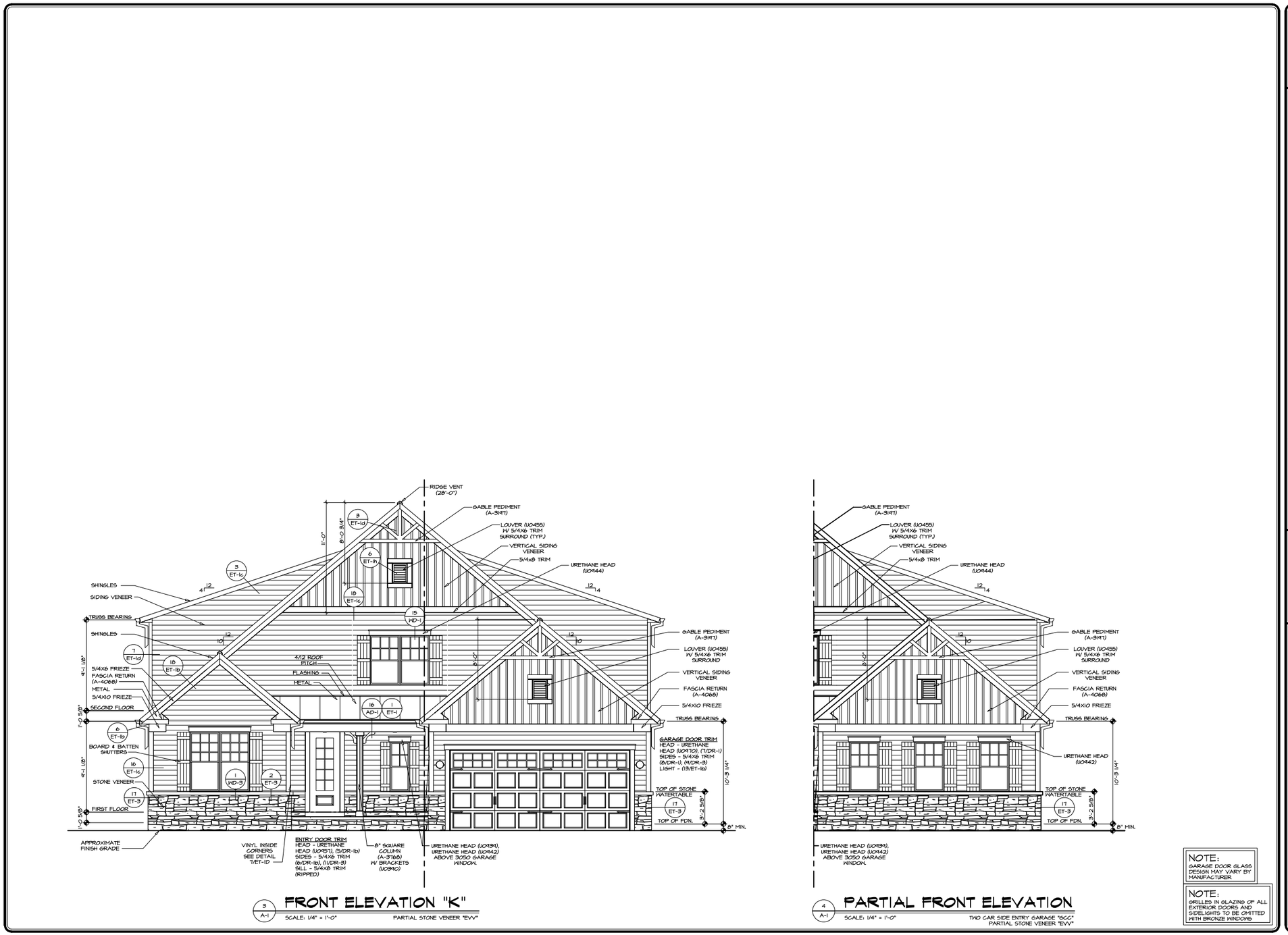
Frederick, MD 21703

SET NO. IB00
VERSION 01
DRAWN BY AKG
DATE: 2/11/14
OPTION ELA

MODEL **WESTMINSTER**
DRAWING TITLE **FRONT ELEVATION**
OPTION DESCRIPTION **ELEVATION A**
SHEET NO. **A-1** 15

J:\PROJECTS\WINCHESTER\ELEVATIONS\IB100_01\Sheets\Master Set\Persistent\3 A-1 IB1_FRONT.dwg 11/03/20 - 1:28 pm

WESTMINSTER



3 A-1 FRONT ELEVATION "K"

SCALE: 1/4" = 1'-0" PARTIAL STONE VENEER "EVV"

4 A-1 PARTIAL FRONT ELEVATION

SCALE: 1/4" = 1'-0" TWO CAR SIDE ENTRY GARAGE "GCC" PARTIAL STONE VENEER "EVV"

NOTE: GARAGE DOOR GLASS DESIGN MAY VARY BY MANUFACTURER

NOTE: GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS

REV. NO.	DATE	REMARKS

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SET NO. 13100
VERSION 01
DRAWN BY AKG
DATE: 2/11/19
OPTION ELK

MODEL WESTMINSTER
DRAWING TITLE FRONT ELEVATION
OPTION DESCRIPTION ELEVATION K

SHEET NO. A-1

6

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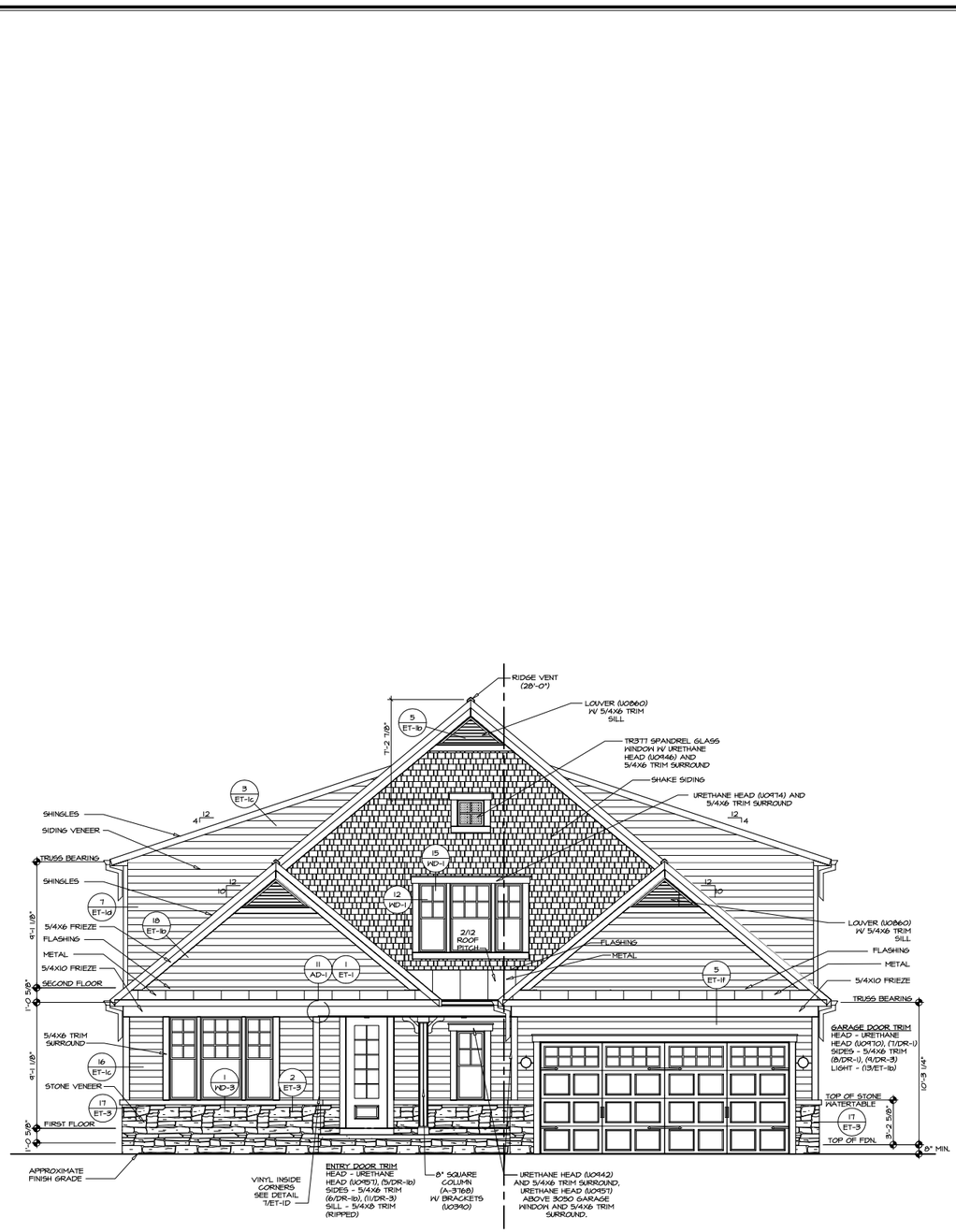
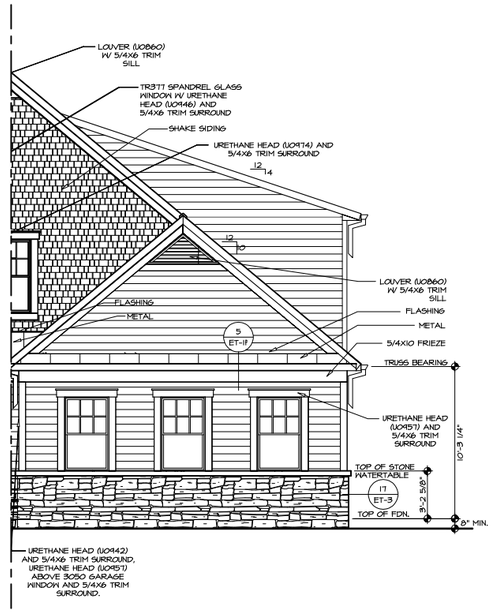


3 A-1 **FRONT ELEVATION "L"**

SCALE: 1/4" = 1'-0" PARTIAL STONE VENEER "EVV"



4 A-1 **PARTIAL FRONT ELEVATION**

SCALE: 1/4" = 1'-0" TWO CAR SIDE ENTRY GARAGE "SCC" PARTIAL STONE VENEER "EVV"

NOTE:
GARAGE DOOR GLASS DESIGN MAY VARY BY MANUFACTURER

NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS

REV. NO.	DATE	REMARKS

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Frederick, MD 21703

SET NO. B100
VERSION 01
DRAWN BY AKG
DATE: 2/11/14
OPTION ELL

MODEL WESTMINSTER
DRAWING TITLE FRONT ELEVATION
OPTION DESCRIPTION ELEVATION L

SHEET NO. A-1

7

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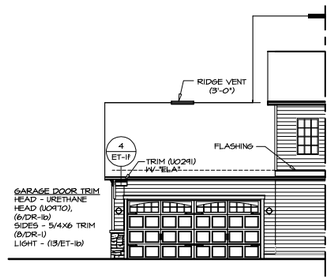
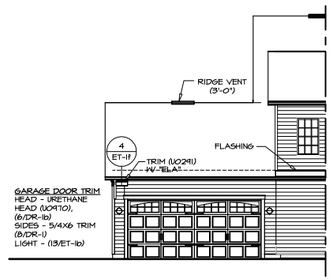
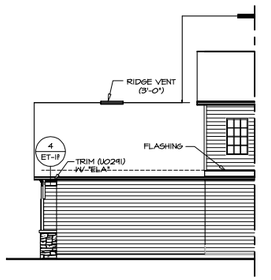
WESTMINSTER



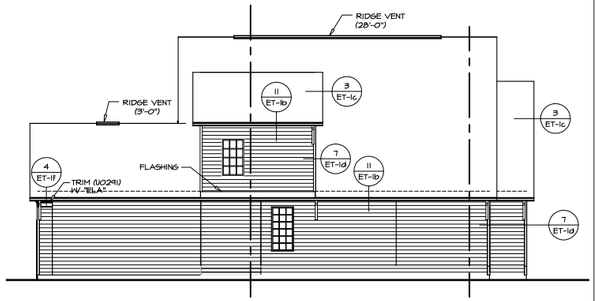
1 A-2 **PARTIAL RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION A "ELA"
ELEVATION K "ELK"
TWO CAR SIDE ENTRY GARAGE "SGC"
PARTIAL STONE VENEER "EVV"



2 A-2 **PARTIAL RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION A "ELA"
ELEVATION K "ELK"
TWO CAR SIDE ENTRY GARAGE "SGC"



3 A-2 **PARTIAL RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION A "ELA"
ELEVATION K "ELK"
PARTIAL STONE VENEER "EVV"

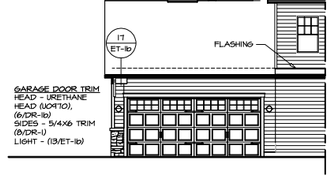


4 A-2 **RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION A "ELA"
ELEVATION K "ELK"

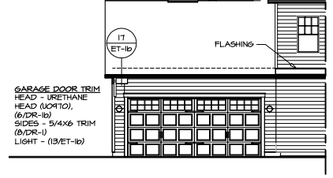
	REQUIRED	PROVIDED	ARCHITECTURAL ELEMENTS
LOW VISIBILITY:	4	4	715 TO 1,000 SF
HIGH VISIBILITY:	5	5	

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.

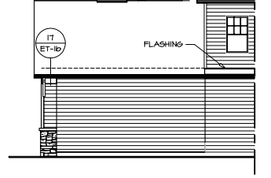
1) MINIMUM 2 WINDOWS PROVIDED (2 POINTS). ADDITIONAL WINDOWS PROVIDED AT BUYERS REQUEST.
2) ALL SIDE ELEVATIONS WILL RECEIVE CEMENTITIOUS SIDING (1 POINT)
3) ALL WINDOWS WILL HAVE A 5/4"X6" TRIM HEADER AND 5/4"X4" SIDES AND LOWER TRIM (1 POINT)
4) HIGH VISIBILITY LOTS WILL HAVE A WATER TABLE (1 POINT)



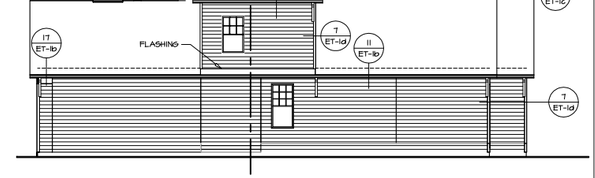
5 A-2 **PARTIAL RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION L "ELL"
TWO CAR SIDE ENTRY GARAGE "SGC"
PARTIAL STONE VENEER "EVV"



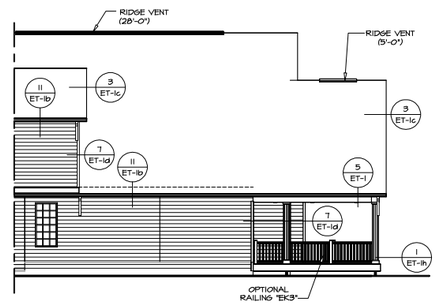
6 A-2 **PARTIAL RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION L "ELL"
TWO CAR SIDE ENTRY GARAGE "SGC"



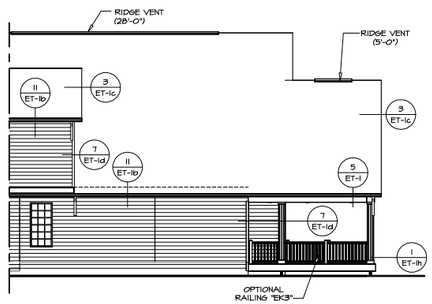
7 A-2 **PARTIAL RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION L "ELL"
PARTIAL STONE VENEER "EVV"



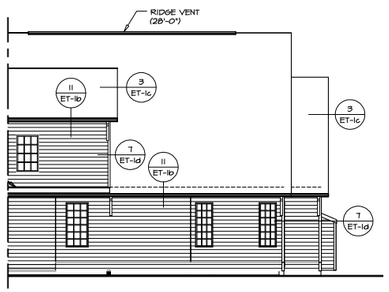
8 A-2 **RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION L "ELL"



9 A-2 **PARTIAL RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
REAR COVERED PORCH "EPE"
GREAT ROOM FIREPLACE "L66"



10 A-2 **PARTIAL RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
REAR COVERED PORCH "EPE"



11 A-2 **PARTIAL RIGHT ELEVATION**
SCALE: 1/8" = 1'-0"
DINING ROOM WINDOWS "W5H"
GREAT ROOM FIREPLACE "L66"

NOTE:
GARAGE DOOR GLASS DESIGN MAY VARY BY MANUFACTURER

NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS

REMARKS

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Frederick, MD 21703

SET NO. 13100
VERSION 01
DRAWN BY AKG
DATE: 2/11/14
OPTION

MODEL WESTMINSTER
DRAWING TITLE RIGHT ELEVATION
OPTION DESCRIPTION

SHEET NO. A-2

8

J:\PROJECTS\WORKING\WESTMINSTER\13100-01\Sheets\WESTMINSTER A-2 ELV.dgn 1/30/2020 - 1:49 pm

ARCHITECTURAL ELEMENTS
715 TO 1,000 SF

	REQUIRED	PROVIDED
LOW VISIBILITY:	4	4
HIGH VISIBILITY:	5	5

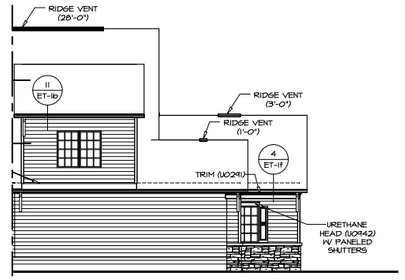
1) MINIMUM 2 WINDOWS PROVIDED (2 POINTS). ADDITIONAL WINDOWS PROVIDED AT BUYERS REQUEST.

2) ALL SIDE ELEVATIONS WILL RECEIVE CEMENTITIOUS SIDING (1 POINT)

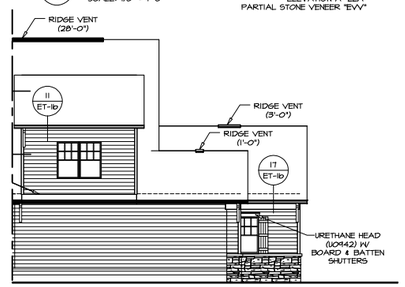
3) ALL WINDOWS WILL HAVE A 5/4"X6" TRIM HEADER AND 5/4"X4" SIDES AND LOWER TRIM (1 POINT)

4) HIGH VISIBILITY LOTS WILL HAVE A WATER TABLE (1 POINT)

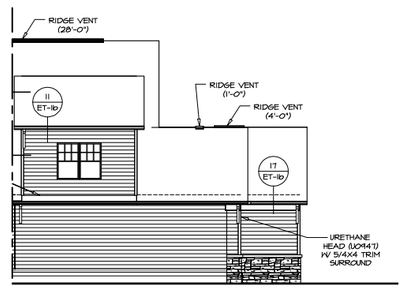
NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.



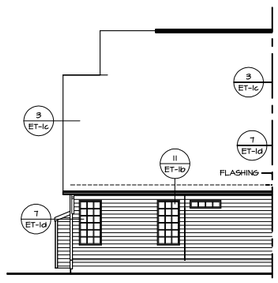
2 A-2b PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"
ELEVATION A "ELA"
PARTIAL STONE VENEER "EVV"



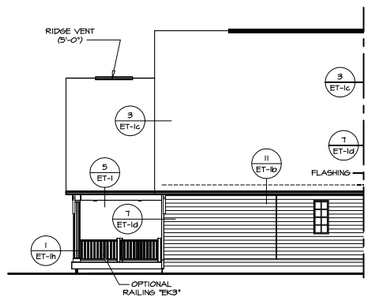
4 A-2b PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"
ELEVATION K "ELK"
PARTIAL STONE VENEER "EVV"



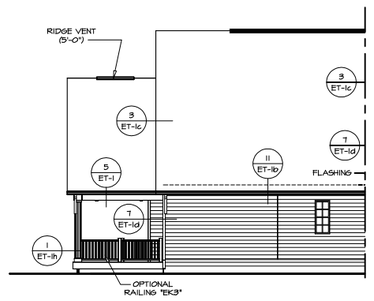
6 A-2b PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"
ELEVATION L "ELL"
PARTIAL STONE VENEER "EVV"



7 A-2b PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"
OWNER'S BEDROOM WINDOWS "WSX"
OWNER'S BATHROOM SPA SHOWER "AMP"
GREAT ROOM FIREPLACE "LGS"



8 A-2b PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"
REAR COVERED PORCH "EPE"



9 A-2b PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0"
REAR COVERED PORCH "EPE"
GREAT ROOM FIREPLACE "LGS"

NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS

REMARKS

REV. NO. | DATE

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Frederick, MD 21703

SET NO. 8100
VERSION 01
DRAWN BY AKG
DATE: 2/11/19
OPTION

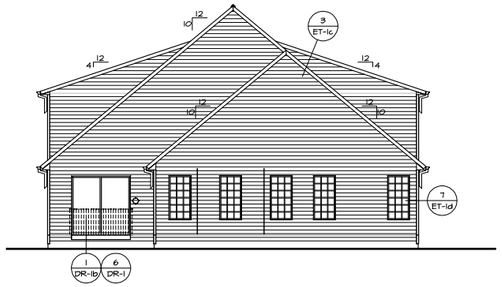
MODEL WESTMINSTER
DRAWING TITLE SIDE AND REAR ELEVATIONS

SHEET NO. A-2b

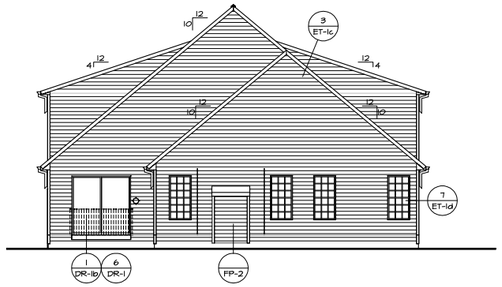
OPTION DESCRIPTION

J:\NVR Homes\NVR Homes\NVR Ministries\8100 - DLS Sheets\Models - Set\Elevations\8100_A-2b_REV_11.dwg - 11/05/20 - 1:28 pm

WESTMINSTER

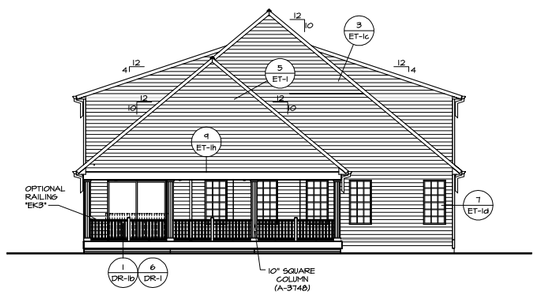


1 A-2c REAR ELEVATION
SCALE: 1/8" = 1'-0"

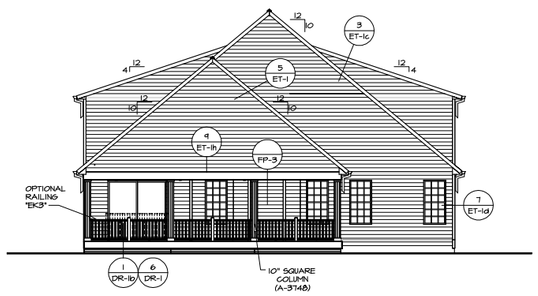


2 A-2c REAR ELEVATION
SCALE: 1/8" = 1'-0"
GREAT ROOM FIREPLACE "LGG"

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.



3 A-2c REAR ELEVATION
SCALE: 1/8" = 1'-0"
REAR COVERED PORCH "EPE"



4 A-2c REAR ELEVATION
SCALE: 1/8" = 1'-0"
REAR COVERED PORCH "EPE"
GREAT ROOM FIREPLACE "LGG"

NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS

REMARKS

REV. NO.	DATE

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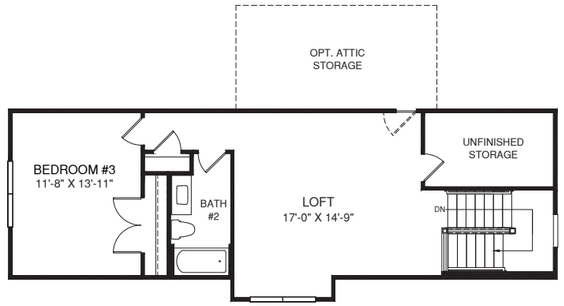
SET NO. 13100
VERSION 01
DRAWN BY AKG
DATE: 2/11/19
OPTION

MODEL WESTMINSTER
DRAWING TITLE REAR ELEVATION
OPTION DESCRIPTION

SHEET NO. A-2c
10

J:\PROJECTS\NVHOMES\WESTMINSTER_13100_01\Sheets\Master_Set\Elevations\10 A-2c ELV REAR.dwg 11/05/20 - 1:30 pm

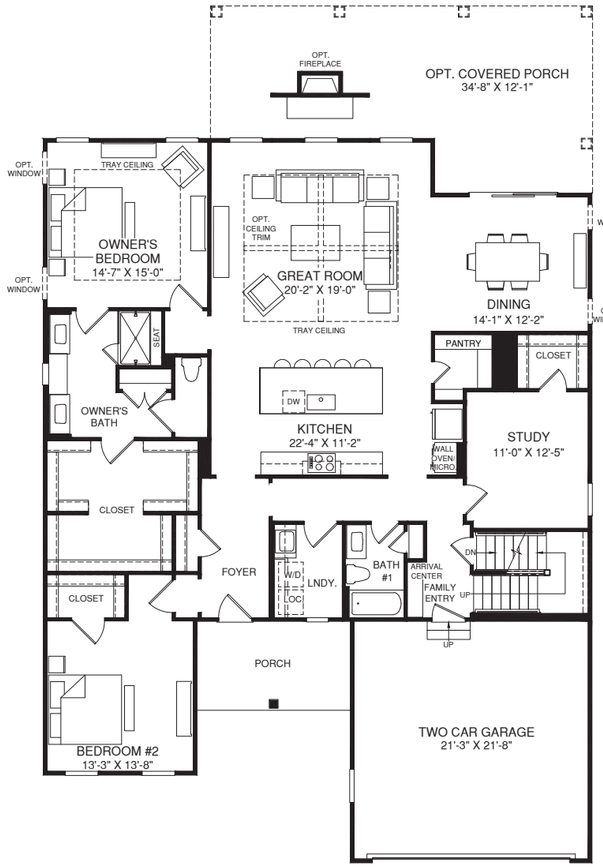
WESTMINSTER





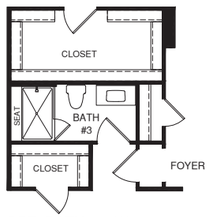
OPT. FOURTH BEDROOM

UPPER LEVEL

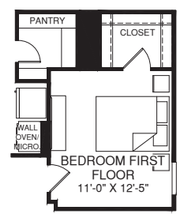




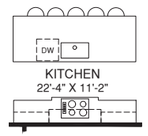
OPT. OWNER'S BATH W/ SPA SHOWER



OPT. BATH # 3 W/ SHOWER



OPT. BEDROOM FIRST FLOOR

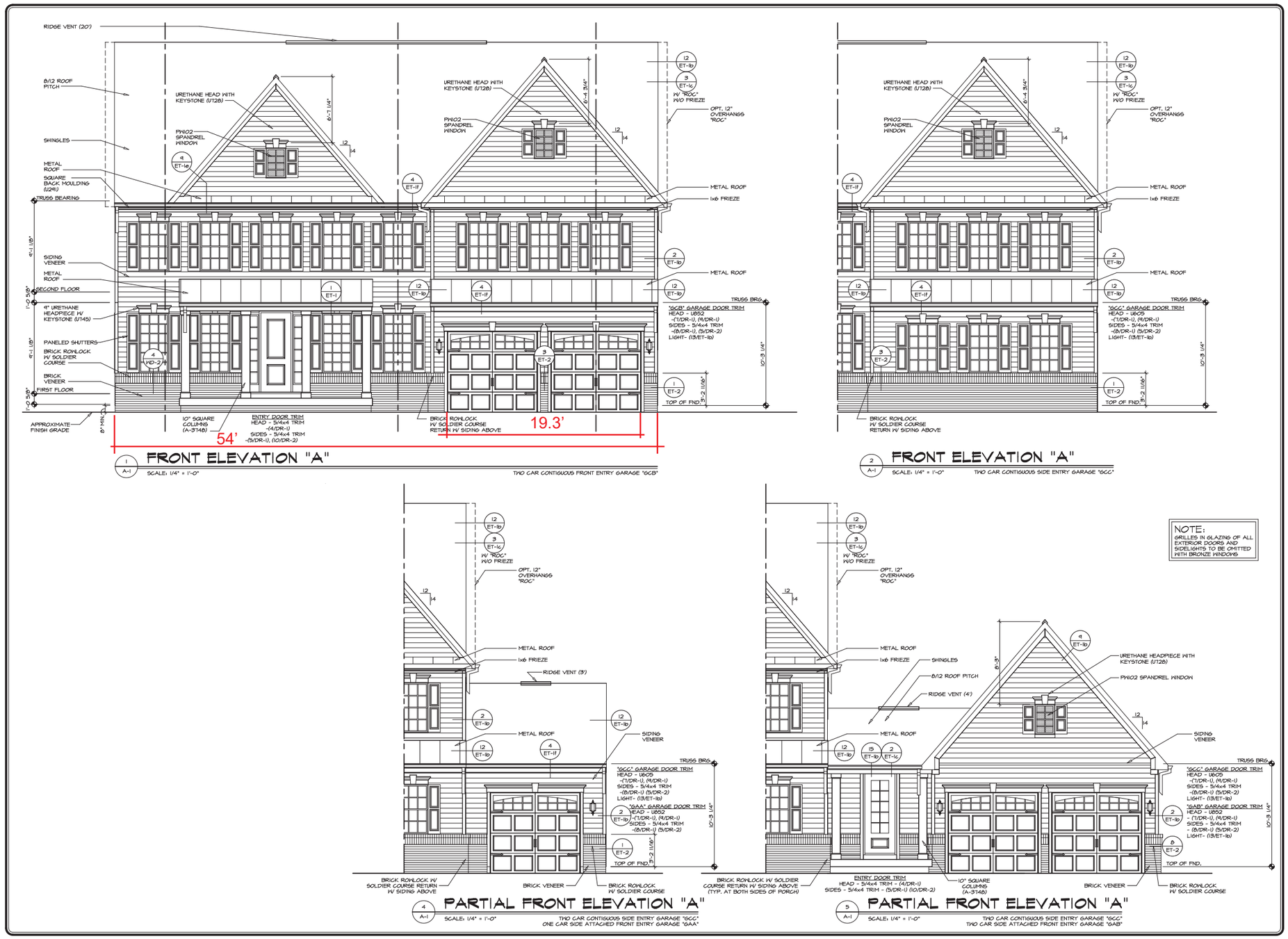


OPT. KITCHEN CABINET HOOD

STRATFORD HALL



STRATFORD HALL



REMARKS

REV. NO.	DATE	
1	01/24/11	NL - STANDARD DETAILS 3.0
2	1/25/11	SPA - ADDITION OF MATCHING VENEERS ON OPT. "HSEC" / "GAAX" / "GAAB" (DYE #1172)

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Frederick, MD 21703

SHEET NO. A-1

MODEL: STRATFORD HALL
DRAWING TITLE: FRONT ELEVATION

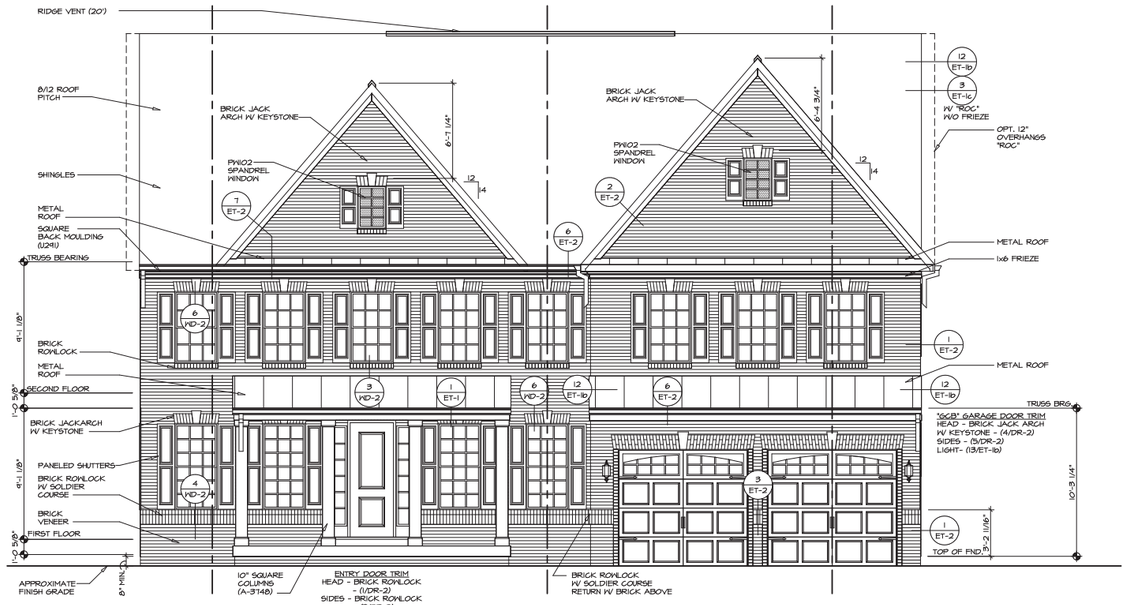
OPTION DESCRIPTION
ELEVATION A
PARTIAL BRICK VENEER FRONT

4

SET NO. 11600
VERSION 01
DRAWN BY BJM
DATE: 9/7/2016
OPTION
ELA
E\M

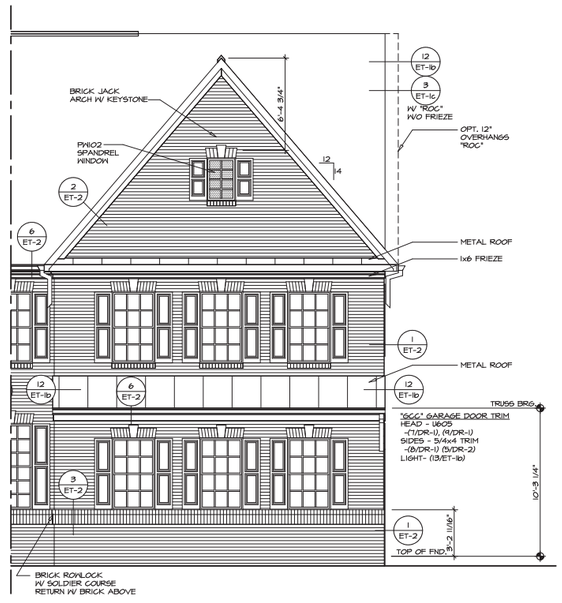
J:\A-PROJECTS\NVHOMES\STRATFORD HALL - 11600_03\Sheets\Master Set\Elevations\A-1 ELA_FRONT - E\M.dwg 03/29/21 - 9:20 pm

STRATFORD HALL



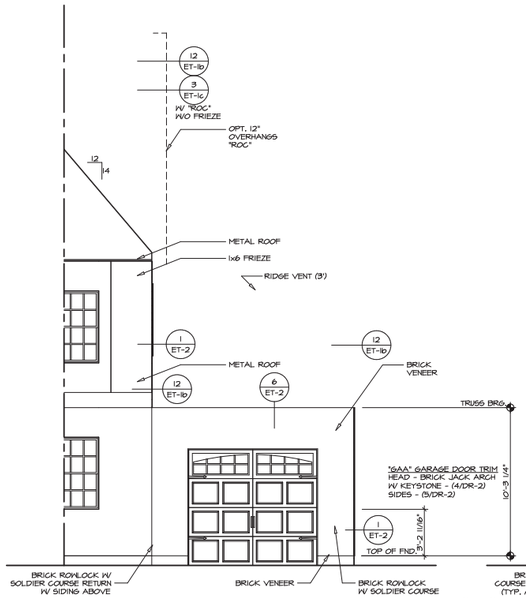
1 A-1 **FRONT ELEVATION "A"**

SCALE: 1/4" = 1'-0" TWO CAR CONTIGUOUS FRONT ENTRY GARAGE "GCB"



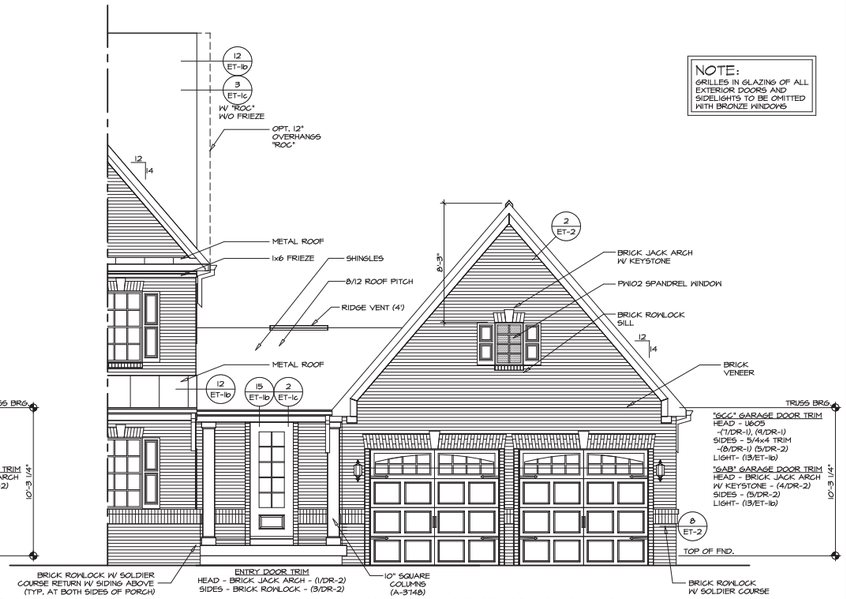
2 A-1 **FRONT ELEVATION "A"**

SCALE: 1/4" = 1'-0" TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "GGC"



4 A-1 **PARTIAL FRONT ELEVATION "A"**

SCALE: 1/4" = 1'-0" TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "GCC" ONE CAR SIDE ATTACHED FRONT ENTRY GARAGE "GAA"



5 A-1 **PARTIAL FRONT ELEVATION "A"**

SCALE: 1/4" = 1'-0" TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "GCC" TWO CAR SIDE ATTACHED FRONT ENTRY GARAGE "GAB"

REV. NO.	DATE	REMARKS
1	01/25/21	NL - STANDARD DETAILS 3.0
2	1/25/21	SPH - ADDITION OF MATCHING VENEERS ON OPT. "HBK" / "GAA" (DWG #1172)
3	8/2/21	ATK - ADDED BRICK ROW LOCK SURROUND AT FRONT ENTRY (PAR ID 47118)

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SET NO. 11600
VERSION 0.0
DRAWN BY BM
DATE: 5/1/2016

OPTION	DESCRIPTION
ELA	ELEVATION A
EVA	BRICK VENEER FRONT

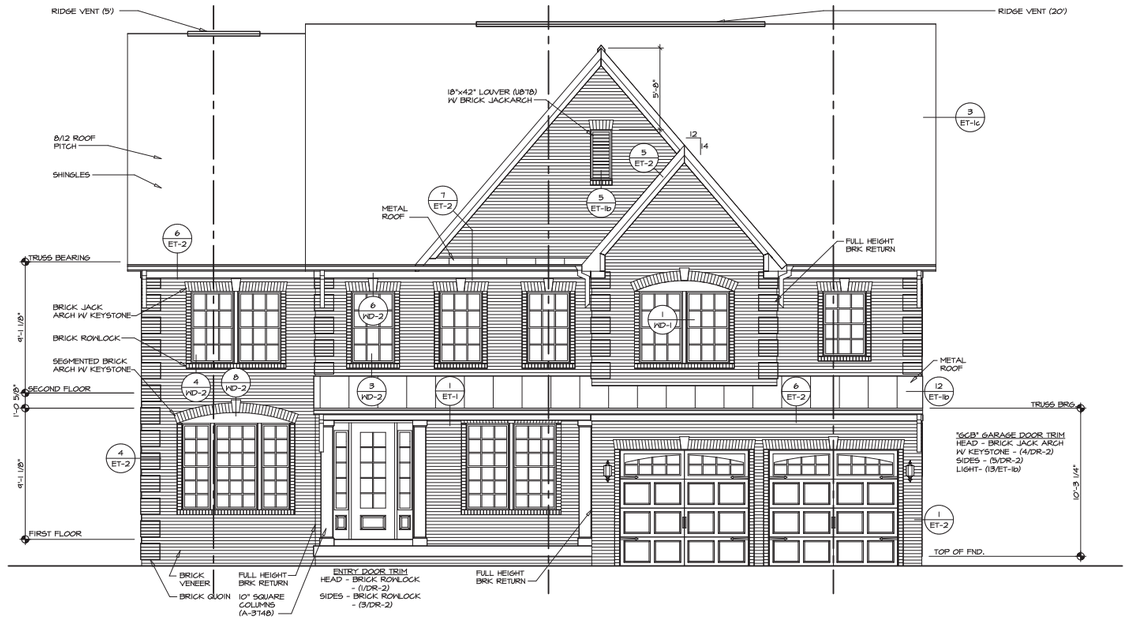
MODEL STRATFORD HALL
DRAWING TITLE FRONT ELEVATION

SHEET NO. A-1

5

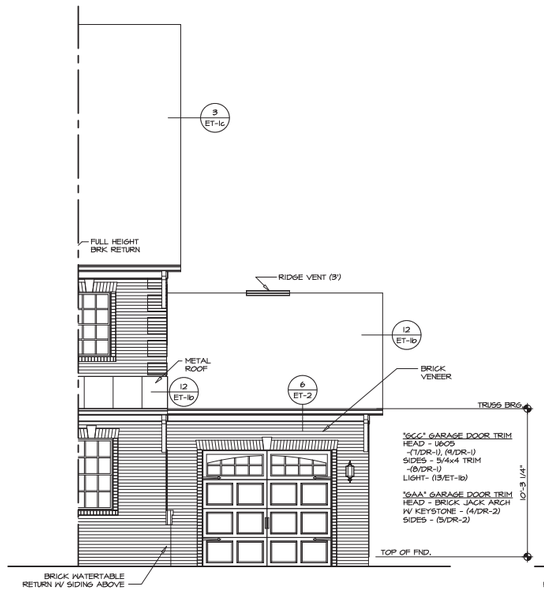
J:\PROJECTS\NVHOMES\STRATFORD_HALL_11600_01\Sheets\Master_Set\Elevations\3_A-1_ELA_FRONT_EVA.dwg 03/29/21 - 5:21 pm

STRATFORD HALL

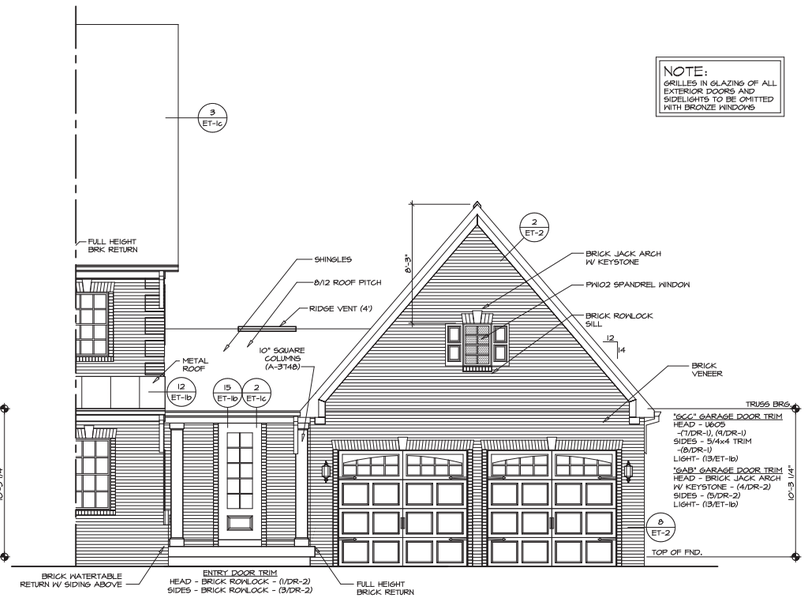


1 A-1 FRONT ELEVATION "B"
SCALE: 1/4" = 1'-0" TWO CAR CONTIGUOUS FRONT ENTRY GARAGE "GCB"

2 A-1 FRONT ELEVATION "B"
SCALE: 1/4" = 1'-0" TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "GCC"



4 A-1 PARTIAL FRONT ELEVATION "B"
SCALE: 1/4" = 1'-0" TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "GCC" ONE CAR SIDE ATTACHED FRONT ENTRY GARAGE "GAA"



5 A-1 PARTIAL FRONT ELEVATION "B"
SCALE: 1/4" = 1'-0" TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "GCC" TWO CAR SIDE ATTACHED FRONT ENTRY GARAGE "GAB"

REMARKS
1 01/28/11 NL - STANDARD DETAILS 3.0
2 7/25/11 9PM - ADDITION OF MATCHING VENEERS ON OPT. "1HBR" / "GAAA" / "GAAB (DWR #1772)

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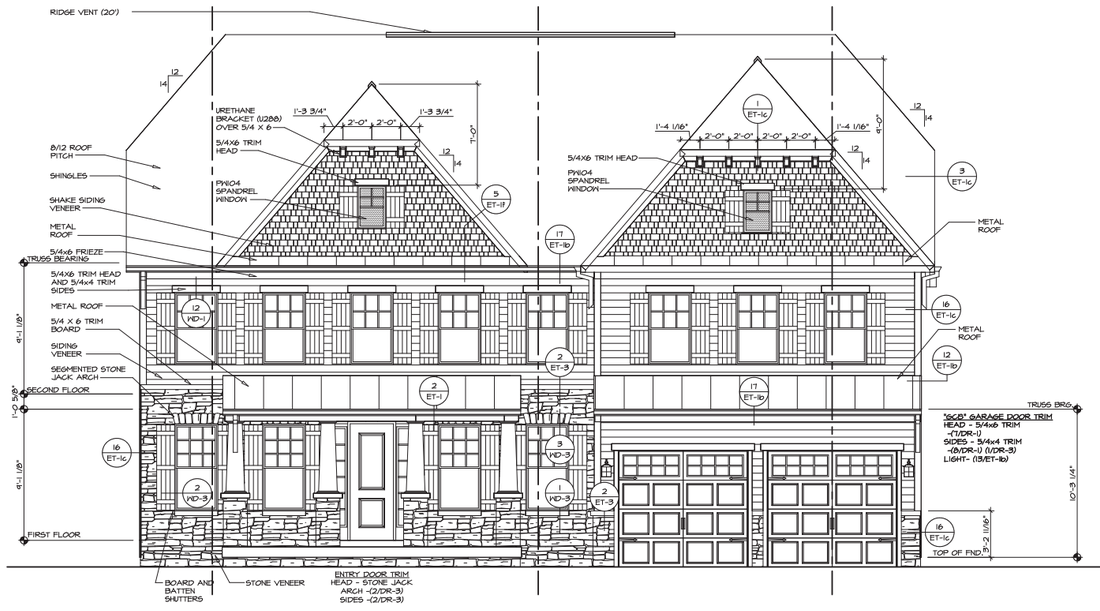
SHEET NO. A-1
MODEL STRATFORD HALL
DRAWING TITLE FRONT ELEVATION
OPTION DESCRIPTION ELEVATION B
6
SET NO.: 11900
VERSION: 01
DRAWN BY: BJM
DATE: 9/7/2016
OPTION: ELB

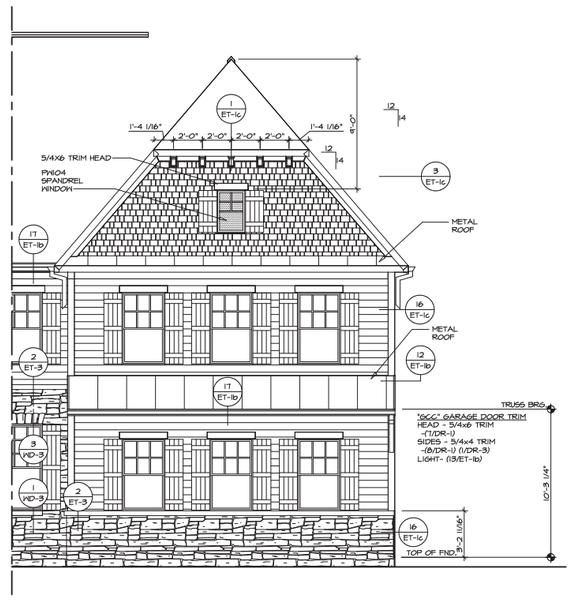
J:\PROJECTS\NVHOMES\STRATFORD HALL 11900.01\Sheets\Master Set\Elevations\6 A-1 ELB FRONT.dwg 03/29/21 - 3:21 pm

STRATFORD HALL



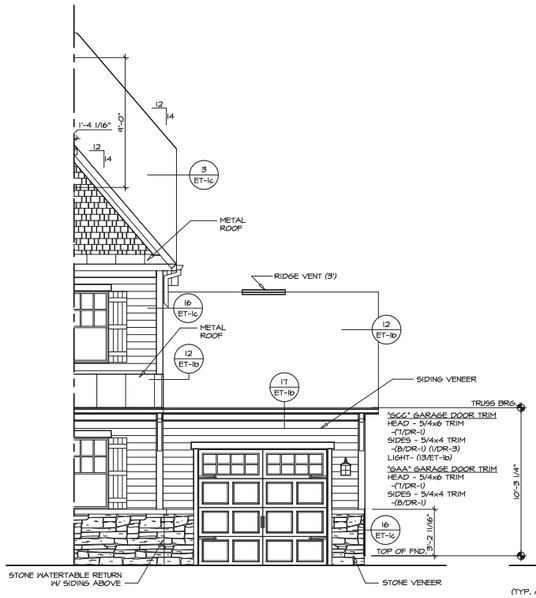
1 A-1 **FRONT ELEVATION "K"**

SCALE: 1/4" = 1'-0" TWO CAR CONTIGUOUS FRONT ENTRY GARAGE "6GB"



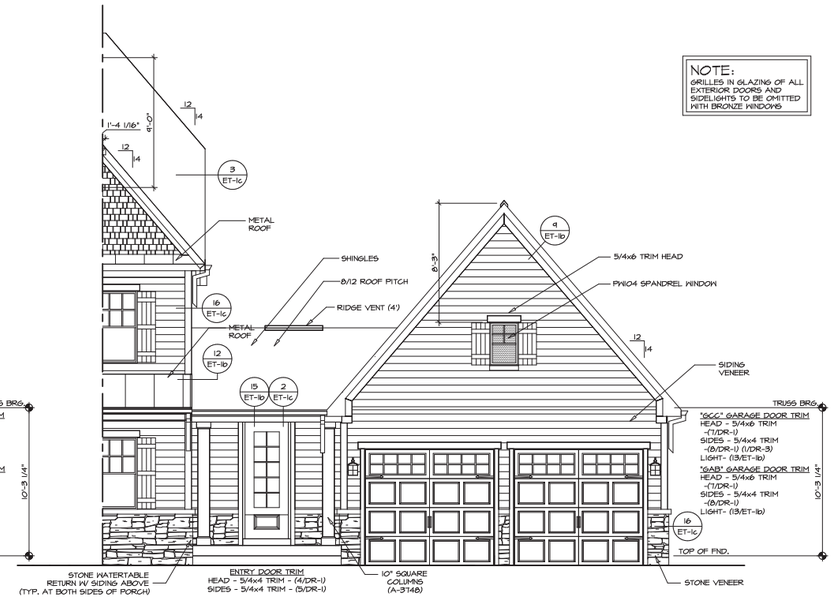
2 A-1 **FRONT ELEVATION "K"**

SCALE: 1/4" = 1'-0" TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "6GG"



4 A-1 **PARTIAL FRONT ELEVATION "K"**

SCALE: 1/4" = 1'-0" TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "6GG" ONE CAR SIDE ATTACHED FRONT ENTRY GARAGE "6AA"



5 A-1 **PARTIAL FRONT ELEVATION "K"**

SCALE: 1/4" = 1'-0" TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "6GG" TWO CAR SIDE ATTACHED FRONT ENTRY GARAGE "6AB"

REV. NO.	DATE	REMARKS
1	07/24/17	NL - STANDARD DETAILS 3.0
2	7/20/17	SPH - ADDITION OF MATCHING VENEERS ON OPT. "1-6BE" / "6AA" / "6AB" (DR# 81772)
3	4/18/17	RDB - UPDATED COLUMNS TO ADD CAPS

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SET NO. 1900
VERSION 0
DRAWN BY BIM
DATE: 3/1/2016
OPTION ELK

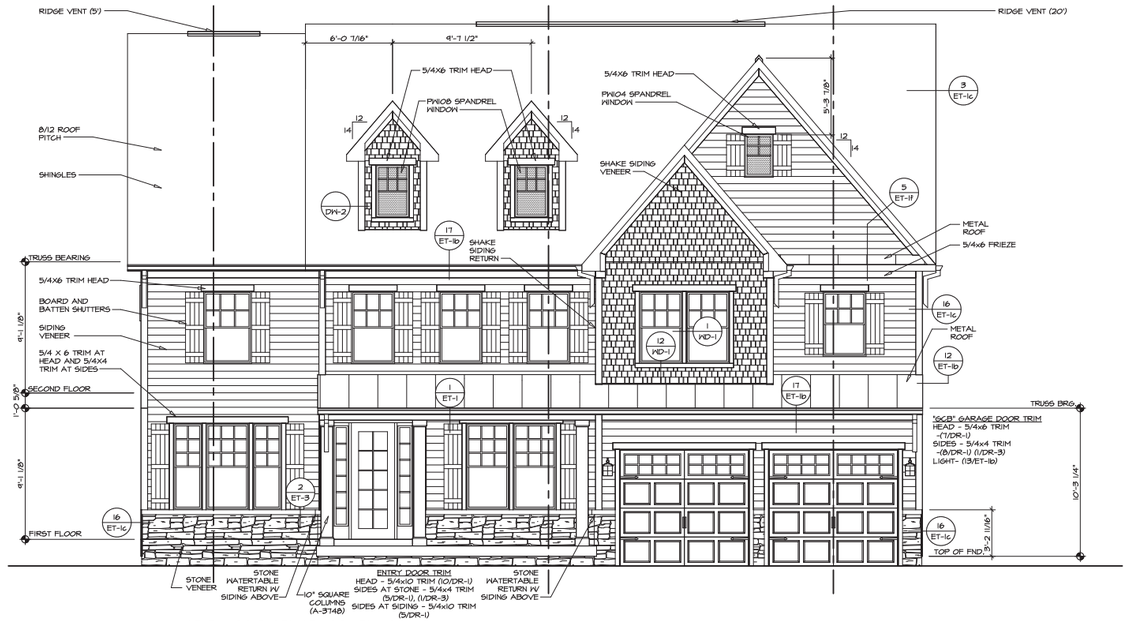
MODEL STRATFORD HALL
DRAWING TITLE FRONT ELEVATION
OPTION DESCRIPTION ELEVATION K

SHEET NO. A-1

7

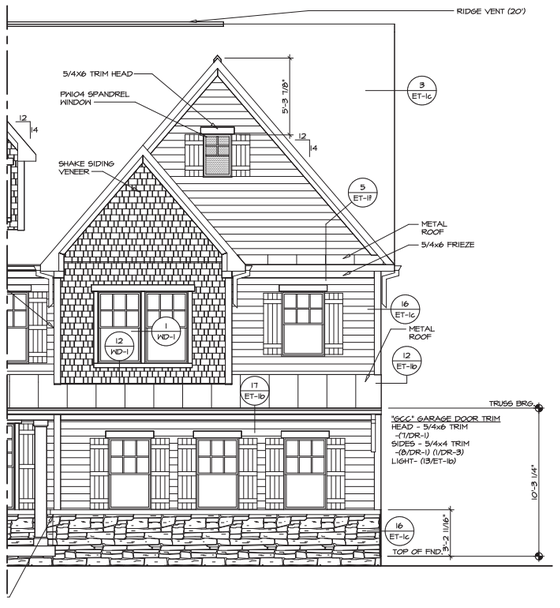
J:\1_PROJECTS\1NVHOMES\STRATFORD HALL_L1900_01\Sheets\Master Set\Elevations\7 A-1 ELK FRONT.dwg 03/29/21 - 5:22 pm

STRATFORD HALL



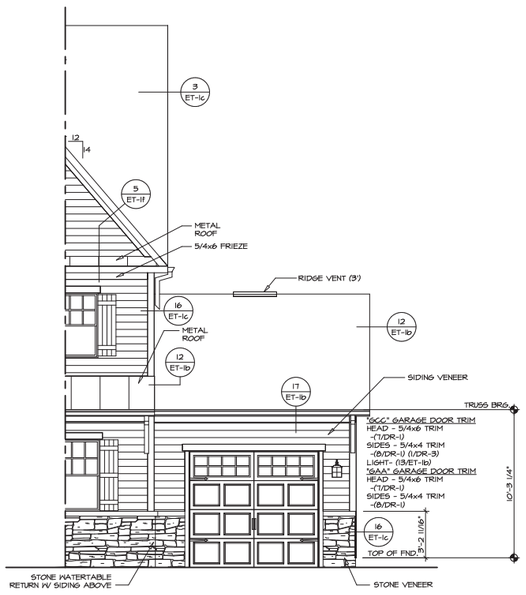
1 A-1 **FRONT ELEVATION "L"**

SCALE: 1/4" = 1'-0" TWO CAR CONTIGUOUS FRONT ENTRY GARAGE "6GB"



2 A-1 **FRONT ELEVATION "L"**

SCALE: 1/4" = 1'-0" TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "6GC"



4 A-1 **PARTIAL FRONT ELEVATION "L"**

SCALE: 1/4" = 1'-0" TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "6GC" ONE CAR SIDE ATTACHED FRONT ENTRY GARAGE "6AA"

NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS

REMARKS

REV. NO.	DATE	
1	01/24/11	NL - STANDARD DETAILS 9.30
2	7/25/11	SPPL - ADDITION OF MATCHING VENEERS ON OPT. "6BE" / "6AA" / "6AB" (DVR #1172)
3	4/18/11	RDB - UPDATED COLUMNS TO ADD CAPS

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SHEET NO. A-1

MODEL STRATFORD HALL
DRAWING TITLE FRONT ELEVATION
OPTION DESCRIPTION ELEVATION L

SET NO. 11900
VERSION 01
DRAWN BY BIM
DATE: 9/7/2016
OPTION ELL

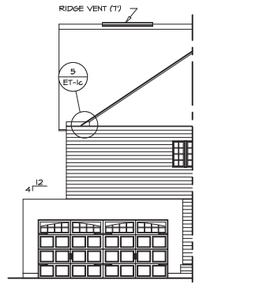
J:\PROJECTS\NVHOMES\STRATFORD HALL_11900_01\Sheets\Working Set\Elevations\A-1 ELL FRONT.dwg 03/30/21 — 5:22 pm

STRATFORD HALL

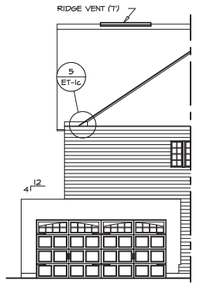
	REQUIRED	PROVIDED	ARCHITECTURAL ELEMENTS
LOW VISIBILITY:	5	6	>1,000 SF
HIGH VISIBILITY:	6	7	

1) MINIMUM 3 WINDOWS PROVIDED (3 POINTS). ADDITIONAL WINDOWS PROVIDED AT BUYERS REQUEST.
2) ALL SIDE ELEVATIONS WILL RECEIVE CEMENTITIOUS SIDING (1 POINT)
3) ALL WINDOWS WILL HAVE A 5/4"X6" TRIM HEADER AND 5/4"X4" SIDES AND LOWER TRIM (1 POINT)
4) 12" ROOF OVERHANG WITH PARTIAL ROOF RETURN WILL BE PROVIDED (1 POINT)
5) HIGH VISIBILITY LOTS WILL HAVE A WATER TABLE (1 POINT)

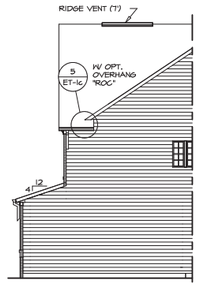
NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS



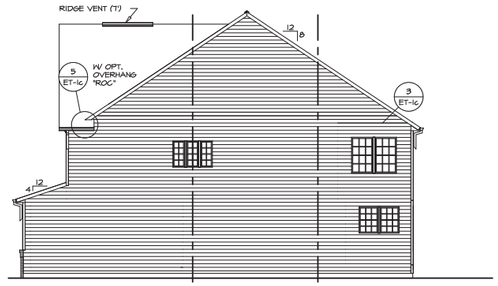
1 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION A "ELA"
BRICK VENEER FRONT "EVA"
TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "GCC"



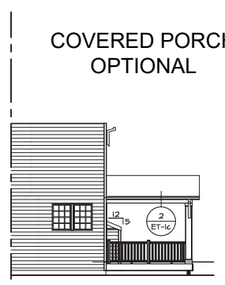
2 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION A "ELA"
PARTIAL BRICK VENEER FRONT "EVM"
TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "GCC"



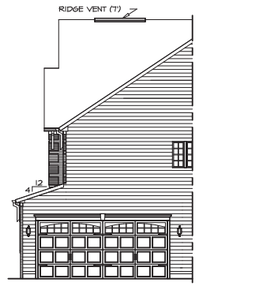
3 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION A "ELA"
BRICK VENEER FRONT "EVA"



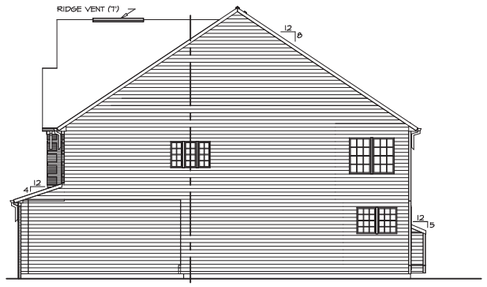
4 A-2 **RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION A "ELA"
PARTIAL BRICK VENEER FRONT "EVM"



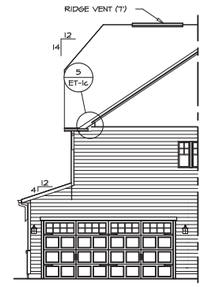
5 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" COVERED PORCH "EPE"
FOUR BEDROOM W/ LOFT "BDH"



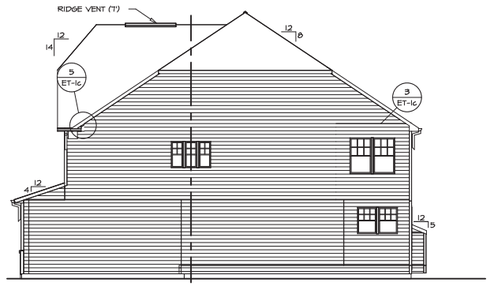
6 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION B "ELB"
TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "GCC"



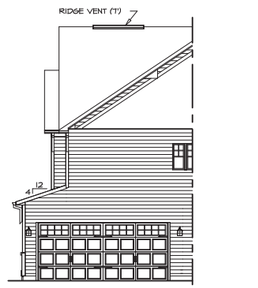
7 A-2 **RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION B "ELB"



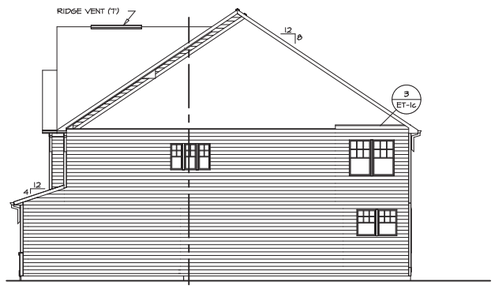
8 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION K "ELK"
TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "GCC"



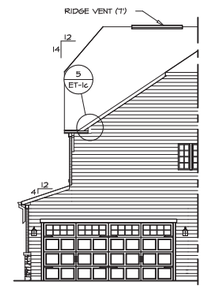
9 A-2 **RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION K "ELK"



10 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION L "ELL"
TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "GCC"



11 A-2 **RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION L "ELL"



12 A-2 **PART. RIGHT ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION R "ELR"
TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "GCC"

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.

REV. NO. | DATE | REMARKS
1 | 02/28/17 | N. - STANDARD DETAILS 3.0

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Frederick, MD 21703

SHEET NO. A-2
MODEL STRATFORD HALL
DRAWING TITLE RIGHT ELEVATION
OPTION DESCRIPTION
SET NO. 11900 0
VERSION 0
DRAWN BY BIM
DATE: 3/1/2016
OPTION
10

J:\1_PROJECTS\1_NVRHOMES\STRATFORD HALL_11900_01\1_Sheets\1_Master Set\1_Elevations\10 A-2 ELV_Right.dwg 03/29/21 - 5:23 pm

STRATFORD HALL

	REQUIRED	PROVIDED	ARCHITECTURAL ELEMENTS
LOW VISIBILITY:	5	6	>1,000 SF
HIGH VISIBILITY:	6	7	

1) MINIMUM 3 WINDOWS PROVIDED (3 POINTS). ADDITIONAL WINDOWS PROVIDED AT BUYERS REQUEST.

2) ALL SIDE ELEVATIONS WILL RECEIVE CEMENTITIOUS SIDING (1 POINT)

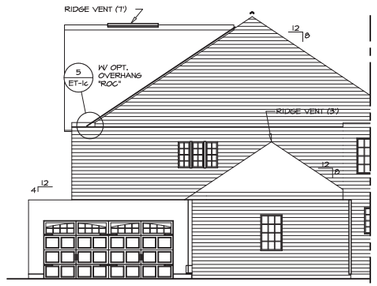
3) ALL WINDOWS WILL HAVE A 5/4"X6" TRIM HEADER AND 5/4"X4" SIDES AND LOWER TRIM (1 POINT)

4) 12" ROOF OVERHANG WITH PARTIAL ROOF RETURN WILL BE PROVIDED (1 POINT)

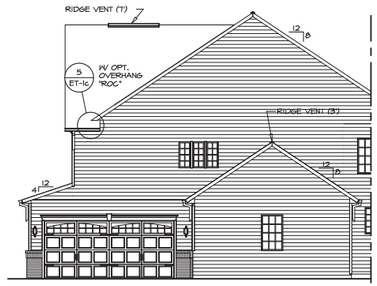
5) HIGH VISIBILITY LOTS WILL HAVE A WATER TABLE (1 POINT)

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.

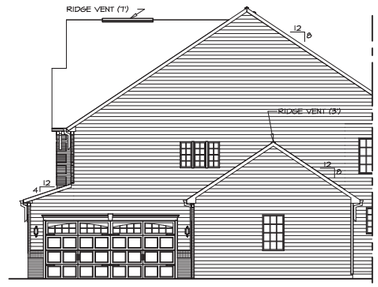
NOTE: GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS



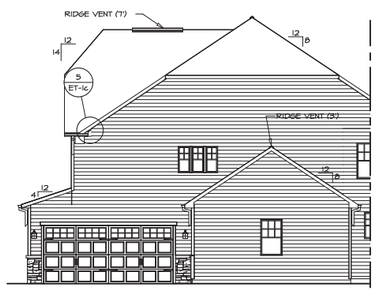
1 A-2b PARTIAL RIGHT ELEVATION
SCALE: 1/8" = 1'-0"
ELEVATION A "ELA"
BRICK VENEER FRONT "EVA"



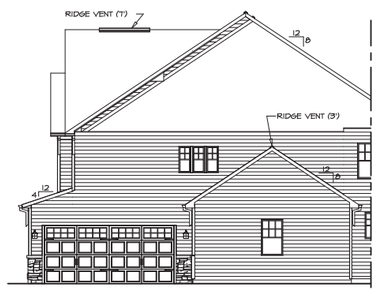
2 A-2b PARTIAL RIGHT ELEVATION
SCALE: 1/8" = 1'-0"
ELEVATION A "ELA"
PARTIAL BRICK VENEER FRONT "EVM"



3 A-2b PARTIAL RIGHT ELEVATION
SCALE: 1/8" = 1'-0"
ELEVATION B "ELB"



4 A-2b PARTIAL RIGHT ELEVATION
SCALE: 1/8" = 1'-0"
ELEVATION K "ELK"



5 A-2b PARTIAL RIGHT ELEVATION
SCALE: 1/8" = 1'-0"
ELEVATION L "ELL"

REV. NO. | DATE | REMARKS
1 | 01/24/17 | NL - STANDARD DETAILS 3.0
2 | 7/25/17 | SPN - ADDITION OF MATCHING VENEER ON OPT. "GAA" (DMR #1772)

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Frederick, MD 21703

SET NO. 11900
VERSION 01
DRAWN BY BJM
DATE: 3/7/2016
OPTION GCC
GAA

SHEET NO. A-2b
MODEL STRATFORD HALL
DRAWING TITLE RIGHT ELEVATION
OPTION DESCRIPTION TWO CAR CONTIGUOUS SIDE ENTRY GARAGE
ONE CAR SIDE ATTACHED FRONT ENTRY GARAGE
11.1

J:\PROJECTS\NVHOMES\STRATFORD HALL_11900_01\Sheets\Master Set\Elevations\11.1 A-2b ELV RIGHT.dwg 03/29/21 - 5:23 pm

STRATFORD HALL

	REQUIRED	PROVIDED	ARCHITECTURAL ELEMENTS
LOW VISIBILITY:	5	9	>1,000 SF
HIGH VISIBILITY:	6	10	

1) MINIMUM 6 WINDOWS PROVIDED (6 POINTS). ADDITIONAL WINDOWS PROVIDED AT BUYERS REQUEST.

2) ALL SIDE ELEVATIONS WILL RECEIVE CEMENTITIOUS SIDING (1 POINT)

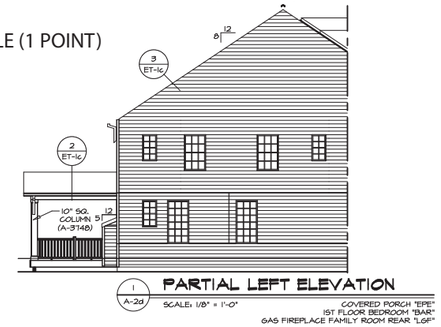
3) ALL WINDOWS WILL HAVE A 5/4"X6" TRIM HEADER AND 5/4"X4" SIDES AND LOWER TRIM (1 POINT)

4) 12" ROOF OVERHANG WITH PARTIAL ROOF RETURN WILL BE PROVIDED (1 POINT)

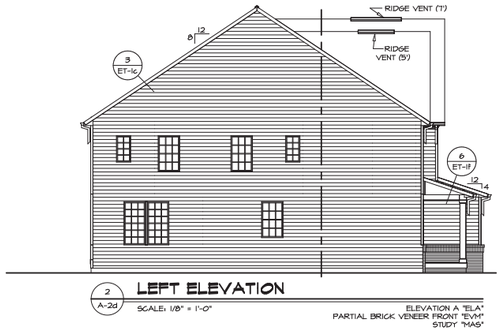
5) HIGH VISIBILITY LOTS WILL HAVE A WATER TABLE (1 POINT)

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.

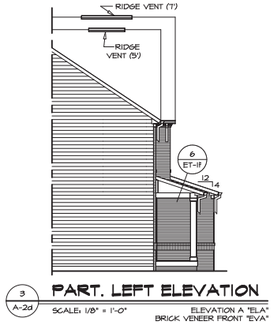
NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS



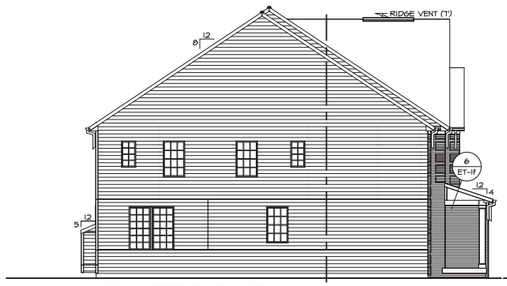
1 A-2d **PARTIAL LEFT ELEVATION**
SCALE: 1/8" = 1'-0"
COVERED PORCH "EPE"
1ST FLOOR BEDROOM "BAR"
GAS FIREPLACE FAMILY ROOM REAR "LGF"



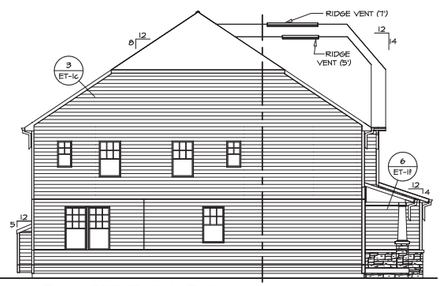
2 A-2d **LEFT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION A "ELA"
PARTIAL BRICK VENEER FRONT "EVM"
STUDY "HAS"



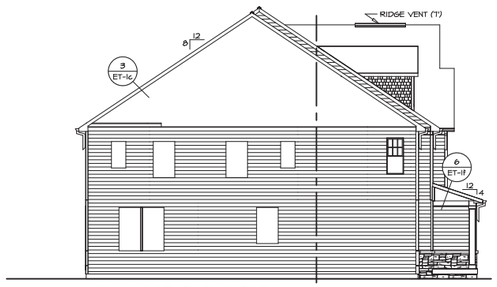
3 A-2d **PART. LEFT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION A "ELA"
BRICK VENEER FRONT "EVA"



4 A-2d **LEFT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION B "ELB"



5 A-2d **LEFT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION K "ELK"
STUDY "HAS"



6 A-2d **LEFT ELEVATION**
SCALE: 1/8" = 1'-0"
ELEVATION L "ELL"

REV. NO.	DATE	REMARKS
1	12/4/17	NL - STANDARD DETAILS 3.10
2	4/18/17	RDB - UPDATED COLUMNS TO ADD CAPS

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SHEET NO. A-2d
MODEL: STRATFORD HALL
DRAWING TITLE: LEFT ELEVATION
SET NO. 1900
VERSION: 0
DRAWN BY: BJM
DATE: 3/1/2016
OPTION DESCRIPTION
OPTION
12.1

J:\1_PROJECTS\1NVHOMES\STRATFORD HALL_11900_01\Sheets\Master Set\Elevations\12.1 A-2d ELV_LEFT.dwg 03/29/21 - 3:24 pm

STRATFORD HALL

	REQUIRED	PROVIDED	ARCHITECTURAL ELEMENTS
LOW VISIBILITY:	5	8	>1,000 SF
HIGH VISIBILITY:	6	9	

1) MINIMUM 5 WINDOWS PROVIDED (5 POINTS). ADDITIONAL WINDOWS PROVIDED AT BUYERS REQUEST.

2) ALL SIDE ELEVATIONS WILL RECEIVE CEMENTITIOUS SIDING (1 POINT)

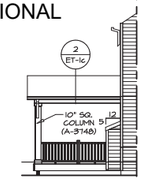
3) ALL WINDOWS WILL HAVE A 5/4"X6" TRIM HEADER AND 5/4"X4" SIDES AND LOWER TRIM (1 POINT)

4) 12" ROOF OVERHANG WITH PARTIAL ROOF RETURN WILL BE PROVIDED (1 POINT)

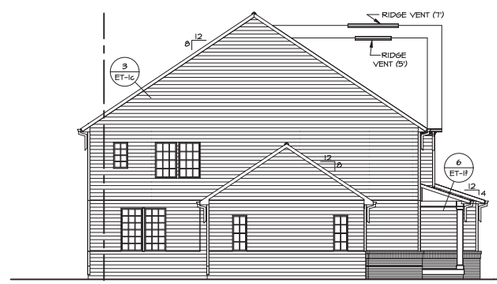
5) HIGH VISIBILITY LOTS WILL HAVE A WATER TABLE (1 POINT)

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.

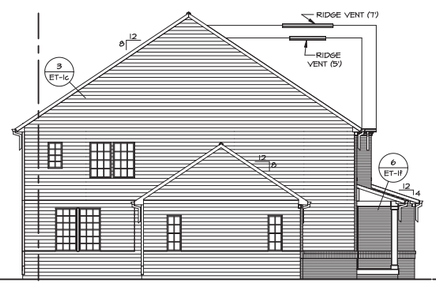
COVERED PORCH OPTIONAL



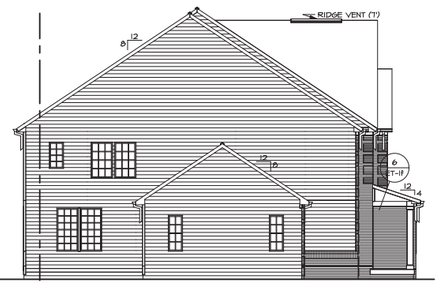
7 A-2e PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0" COVERED PORCH "EPE"



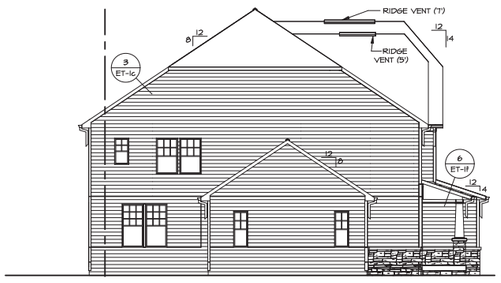
1 A-2e PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0" ELEVATION A "ELA" BRICK VENEER FRONT "EVA"



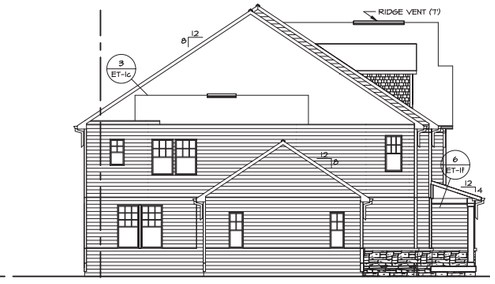
2 A-2e PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0" ELEVATION A "ELA" PARTIAL BRICK VENEER FRONT "EVM"



3 A-2e PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0" ELEVATION B "ELB"



4 A-2e PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0" ELEVATION K "ELK"



5 A-2e PARTIAL LEFT ELEVATION
SCALE: 1/8" = 1'-0" ELEVATION L "ELL"

REV. NO.	DATE	REMARKS
1	12/06/17	N - STANDARD DETAILS 9.0
2	12/06/17	SOFFIT ADDED AT GABLE END, VENEER ON OPT. "MSR" (DWR #1172)
3	4/08/17	RDS - UPDATED COLUMNS TO ADD CAPS

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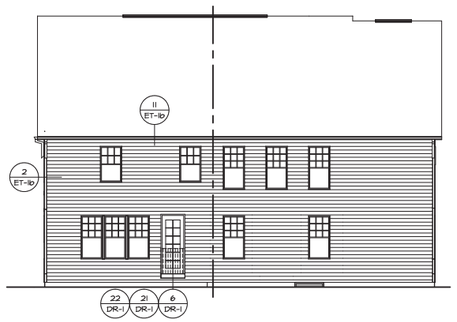
SHEET NO. A-2e
MODEL STRATFORD HALL
DRAWING LEFT ELEVATION
OPTION DESCRIPTION SUITE FIRST FLOOR
12.2

SET NO. 11400
VERSION 01
DRAWN BY ATK
DATE: 01/8/16
OPTION MSR

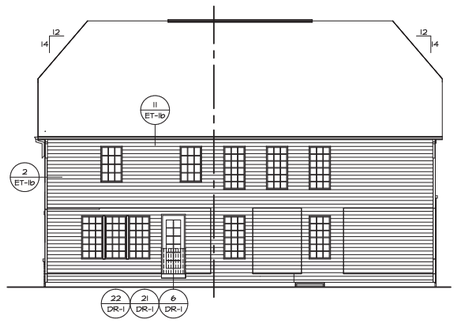
J:\PROJECTS\NVHOMES\STRATFORD HALL_11900_01\Sheets\Master Set\Elevations\12.2_A-2e_ELV_LEFT.dwg 03/29/21 - 5:25 pm

STRATFORD HALL

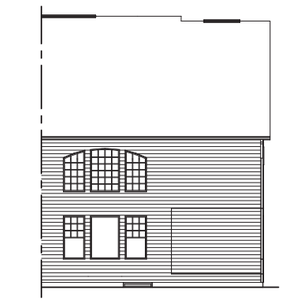
NOTE:
GRILLES IN GLAZING OF ALL EXTERIOR DOORS AND SIDELIGHTS TO BE OMITTED WITH BRONZE WINDOWS



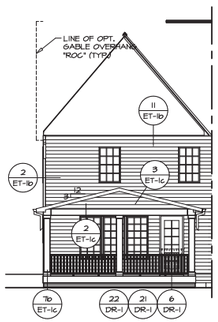
8 A-2f **REAR ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION L "ELL"



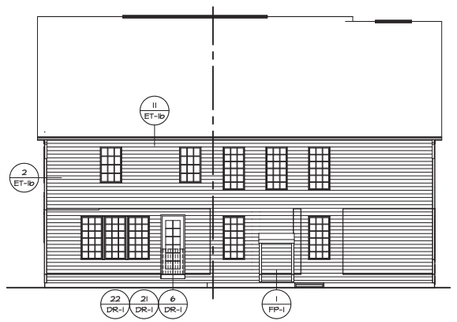
7 A-2f **REAR ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION R "ELR"



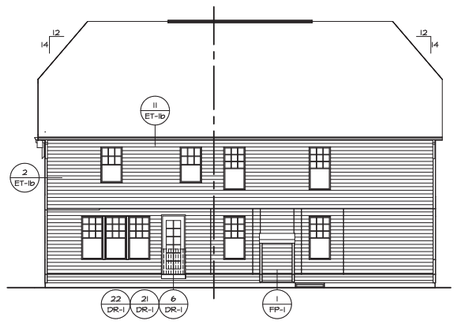
10 A-2f **REAR ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION L OR R "ELL/ELK" OPT. WINDOWS ALT. DESIGN REAR FAMILY ROOM "WXL"



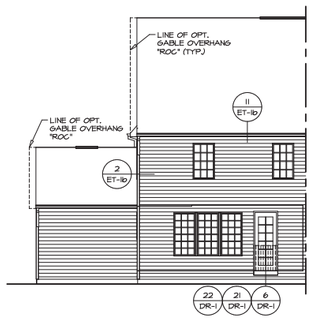
6 A-2f **REAR ELEVATION**
SCALE: 1/8" = 1'-0" COVERED PORCH "EPE"



5 A-2f **REAR ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION B "ELB" SHOWN W/ GAS FIREPLACE FAMILY ROOM REAR "LGF"

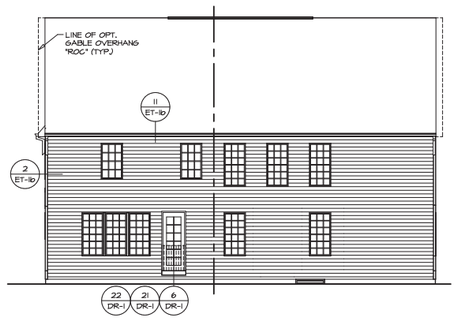


4 A-2f **REAR ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION K "ELK" SHOWN W/ GAS FIREPLACE FAMILY ROOM REAR "LGF" & FIREPLACE STONE VENEER INTERIOR "FSF"



3 A-2f **REAR ELEVATION**
SCALE: 1/8" = 1'-0" TWO CAR CONTIGUOUS SIDE ENTRY GARAGE "SGC" ONE CAR SIDE ATTACHED FRONT ENTRY GARAGE "GAA"

NOTE: WHEN A WATER TABLE IS PROVIDED IT SHALL BE CONTINUED ON ALL FACADES.



1 A-2f **REAR ELEVATION**
SCALE: 1/8" = 1'-0" ELEVATION A "ELA"

REV. NO.	DATE	REMARKS
1	02/24/17	NL - STANDARD DETAILS 3.10
2	5/4/17	KAD - ADDED SAFETY RAIL W/ EPE
3	4/4/18	BRH - ADDED ALT. WINDOW DESIGN FAMILY ROOM REAR (DAE #2937)

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Frederick, MD 21703

SET NO. 11900
VERSION 0
DRAWN BY BIM
DATE: 9/1/2016
OPTION

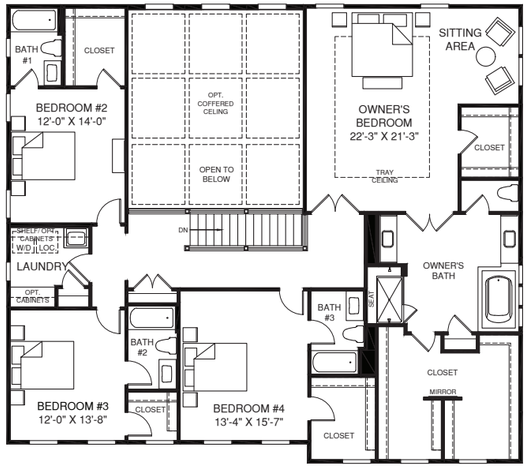
MODEL STRATFORD HALL
DRAWING TITLE REAR ELEVATION
OPTION DESCRIPTION

SHEET NO. A-2f

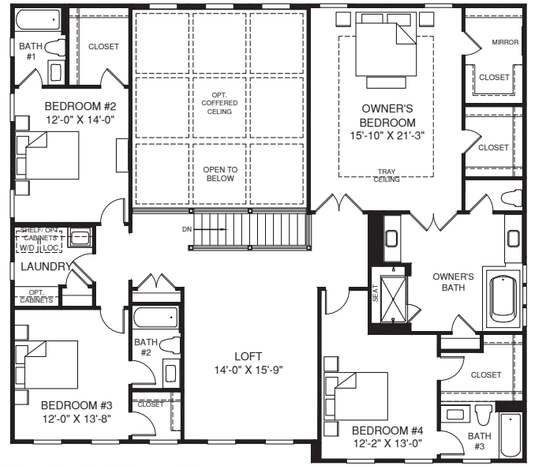
13

J:\PROJECTS\NVHOMES\STRATFORD HALL_11900_01\Sheets\Master Set\Elevations\13 A-2f ELV REAR.dwg 05/28/21 - 5:22 pm

STRATFORD HALL

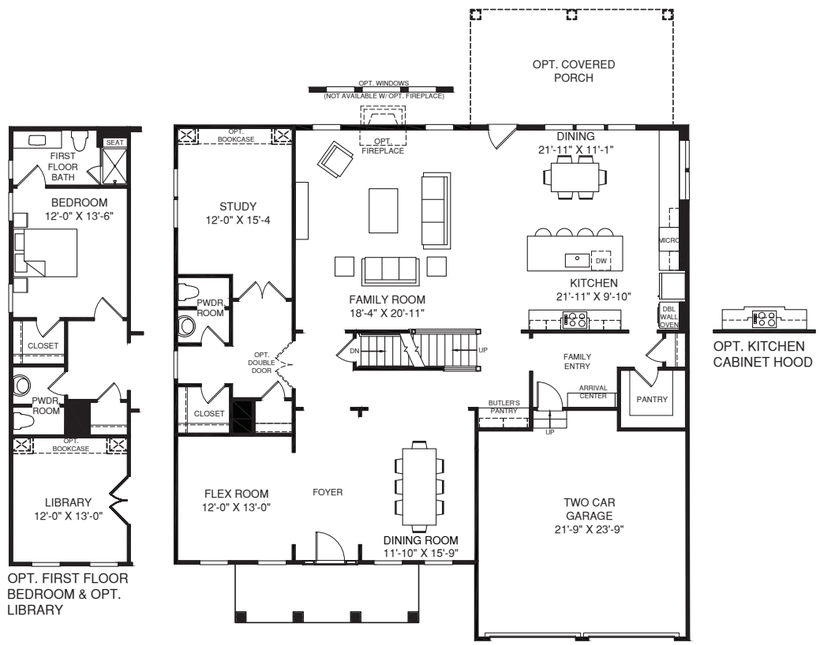


OWNER'S BATH W/ OPT. FREESTANDING TUB & ROMAN SHOWER



OPT. FOUR BEDROOM W/ LOFT

UPPER LEVEL



OPT. KITCHEN CABINET HOOD

OPT. FIRST FLOOR BEDROOM & OPT. LIBRARY

MAIN LEVEL

SITE DETAILS

MONUMENT AND SIGNAGE



OPTION 1



OPTION 2

OPEN SPACE DESIGN



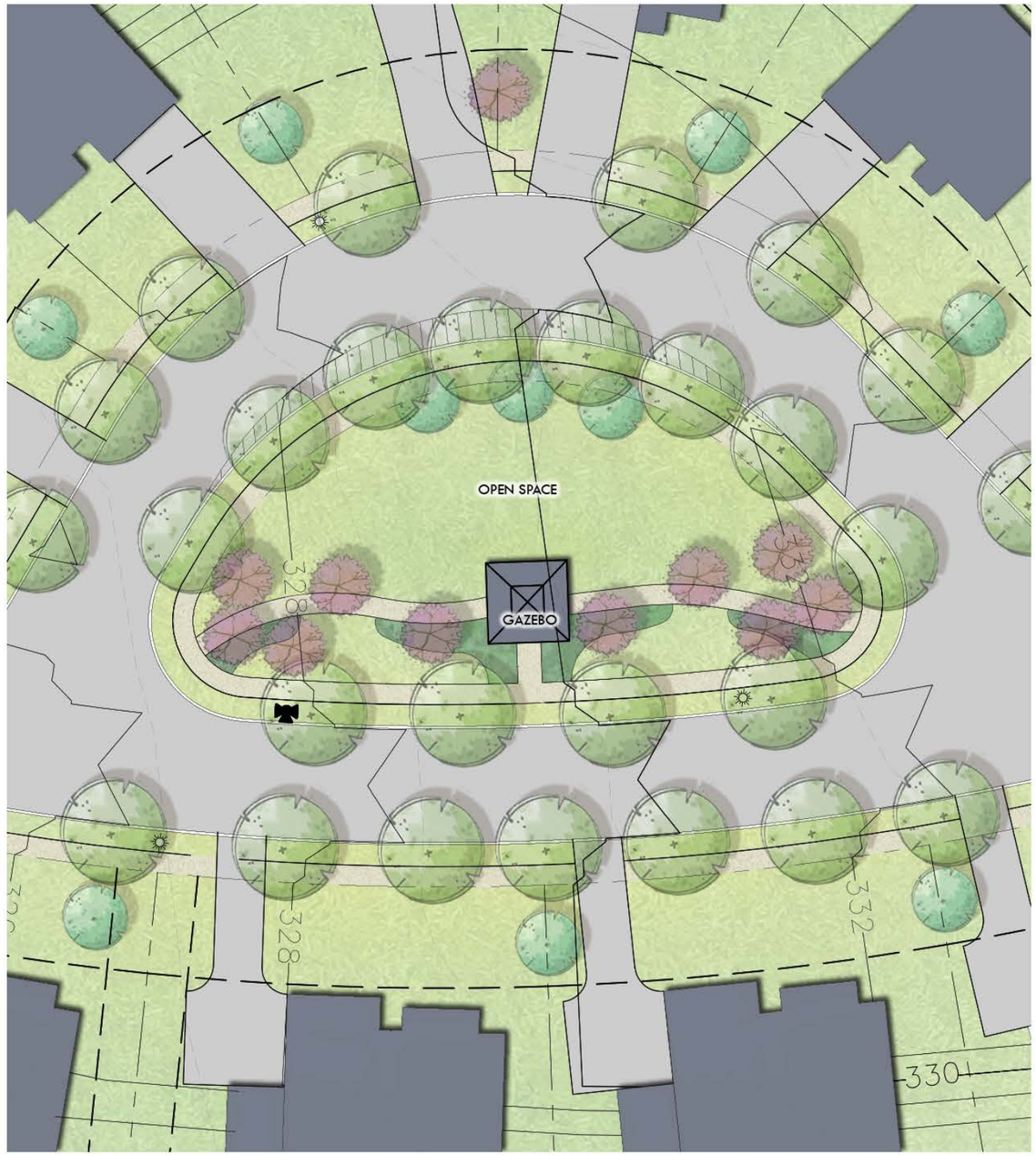
LPDA
LANDSCAPE ARCHITECTURE
LAND PLANNING

GREENSPRING MANOR
TIMONIUM, MARYLAND

ENTRANCE AREA OPEN SPACE
JUNE 2021

OPEN SPACE DESIGN





LPDA
LANDSCAPE ARCHITECTURE
LAND PLANNING

GREENSPRING MANOR
TIMONIUM, MARYLAND

PARK SPACES
JUNE 2021

FENCING MATERIAL



Wooden Split Rail Fence with Vinyl Coated or Galvanized Chainlink
or Box Wire
For Stormwater Management Facility

GAZEBO/SHELTERS





BENCHES



Victor Stanley Model Eva and Eva Backless

BUTTERFLY GARDEN



GROUP MAILBOXES



Residential Group Mailbox



Residential Group Mailbox

TRAIL HEAD MARKERS





BIKE RACKS



Victor Stanley Model BRCA-101

FENCING

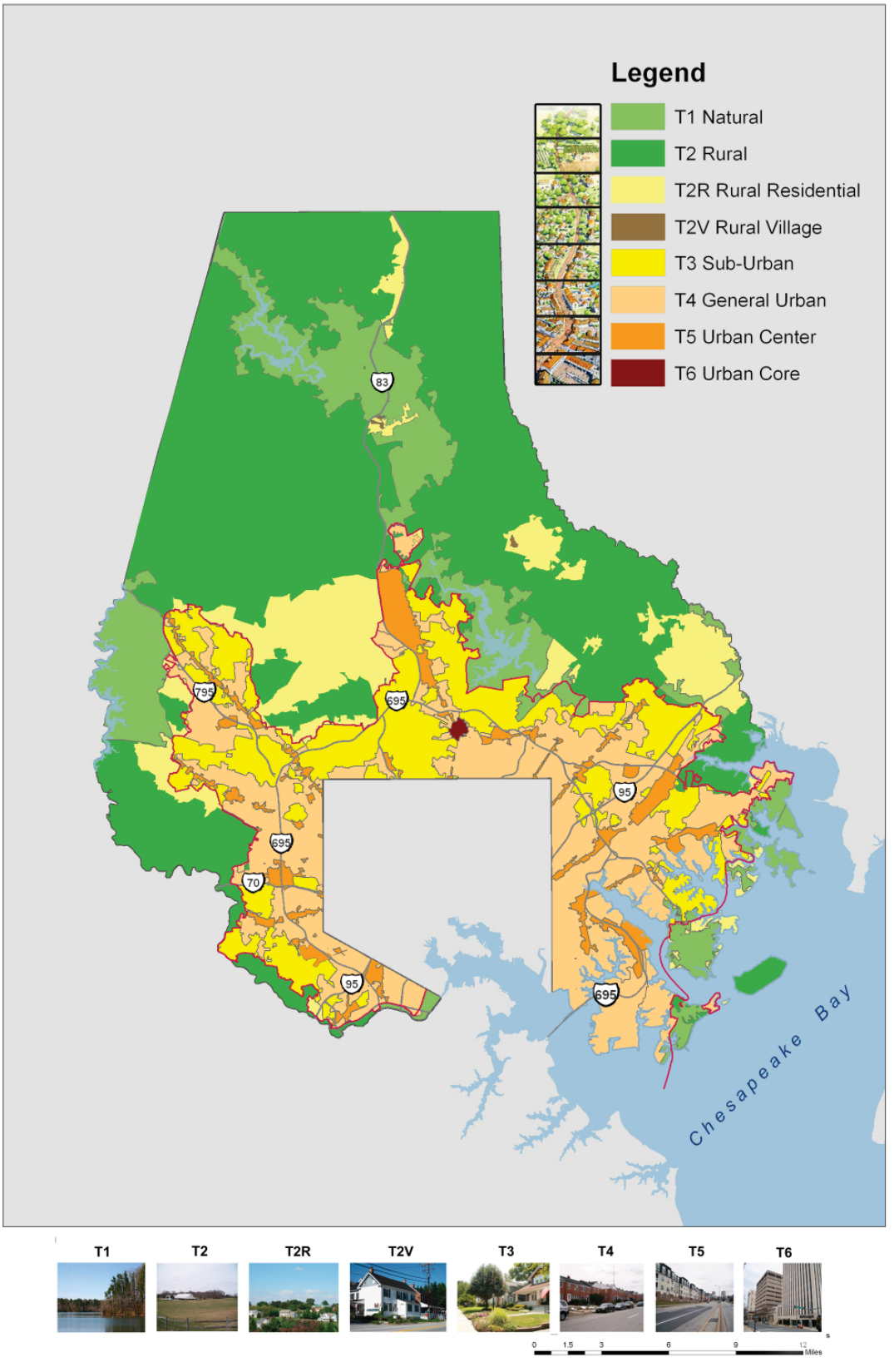


Split rail fence for use between private lots and open spaces.

DEVELOPER'S EXHIBIT
8

Map 5: Proposed Land Use

Proposed Land Use
Baltimore County Smart Coded



commercial establishments, open spaces and their relationship to roadways.

- **T-3 (Sub-Urban Zone)** includes low-density residential areas, adjacent to higher zones that contain mixed use. Home occupations and outbuildings may be allowed. Landscaping is naturalistic and setbacks are relatively deep. Blocks may be large and the roads irregular to accommodate natural conditions.

- **T-4 (General Urban Zone)** is characterized by mixed-use, but is primarily residential urban fabric. It may have a wide range of building types including single-family detached and attached houses, and townhouses. Setbacks and landscaping are variable. Streets with curbs and sidewalks define medium-sized blocks.

- **T-5 (Urban Center Zone)** includes higher density mixed-use buildings that accommodate retail, offices, townhouses, and apartments. It has a tight network of streets, with wide sidewalks, steady street tree planting and buildings set close to the sidewalks.

- **T-6 (Urban Core Zone)** has the highest density and height with the greatest variety of uses, and civic buildings of regional importance. It may have larger blocks; streets have steady street tree planting and buildings set close to the wide sidewalks. Typically only large towns and cities have an Urban Core Zone.

- **T-M (Manufacturing Zone)** includes certain industries and manufacturing processes that should not be combined with other uses. By their function, they require that their operations not be closely integrated with other uses (except those with similar characteristics).

- **T-I (Institutional Zone)** many institutional uses should be incorporated into the T-4 and T-5 transects, such as community centers, branch government offices, libraries, etc. However, certain institutions like medical complexes, educational campuses, and others that benefit from having all their functions in one location may need room to grow. That may make inclusion into a Community Enhancement Area impractical. Such facilities should be close enough to be walkable, and be mutually supportive.

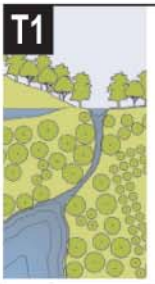
The transect system replaces the conventional separate land use zoning system. The T-zones provide the basis for real neighborhood structure, which relies upon compact, walkable streets, mixed-use, transportation options, and housing diversity. The T-zones vary by the ratio and level of intensity of their natural, built, and social components. Uses may overlap between one T-zone and another. The ability of transects to clarify the compatibility among uses makes them particularly useful in planning the built environment.

They may be coordinated to all scales of planning, from the region through the community scale, down to the individual lot and building. However, any new zoning would be applied at the community scale, and it is important to note that each community will have to establish (calibrate) its own unique development criteria. Furthermore, T-zones should be balanced within a neighborhood structure based on pedestrian sheds (walksheds), so that residents of lower density neighborhoods may still walk to different habitats, such as a main street, or civic space.

Transect-based planning is used throughout the County to provide a solid foundation for all other planning. As Baltimore County moves towards compact, mixed-use, higher-density walkable communities, the successful implementation of transect-based planning will play a key role in further developing the T-4 and T-5 zones.

The Transect Zones and the following graphics for the Transect Zone descriptions and civic spaces were originated and developed by Duany Plater-Zyberk & Co.

Transect Zone Descriptions



T-1 NATURAL

T-1 Natural Zone consists of lands approximating or reverting to a wilderness condition, including lands unsuitable for settlement due to topography, hydrology or vegetation.

General Character:	Natural landscape with some agricultural use
Building Placement:	Not applicable
Frontage Types:	Not applicable
Typical Building Height:	Not applicable
Type of Civic Space:	Parks, Greenways



T-2 RURAL

T-2 Rural Zone consists of sparsely settled lands in open or cultivated states. These include woodland, agricultural land, grassland, and irrigable desert. Typical buildings are farmhouses, agricultural buildings, cabins, and villas.

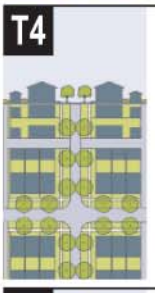
General Character:	Primarily agricultural with woodland & wetland and scattered buildings
Building Placement:	Variable Setbacks
Frontage Types:	Not applicable
Typical Building Height:	1- to 2-Story
Type of Civic Space:	Parks, Greenways



T-3 SUB-URBAN

T-3 Sub-Urban Zone consists of low density residential areas, adjacent to higher zones that some mixed use. Home occupations and outbuildings are allowed. Planting is naturalistic and setbacks are relatively deep. Blocks may be large and the roads irregular to accommodate natural conditions.

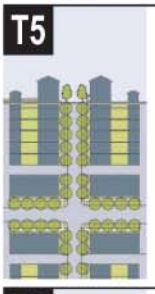
General Character:	Lawns, and landscaped yards surrounding detached single-family houses; pedestrians occasionally
Building Placement:	Large and variable front and side yard Setbacks
Frontage Types:	Porches, fences, naturalistic tree planting
Typical Building Height:	1- to 2-Story with some 3-Story
Type of Civic Space:	Parks, Greenways



T-4 GENERAL URBAN

T-4 General Urban Zone consists of a mixed use but primarily residential urban fabric. It may have a wide range of building types: single, sideyard, and rowhouses. Setbacks and landscaping are variable. Streets with curbs and sidewalks define medium-sized blocks.

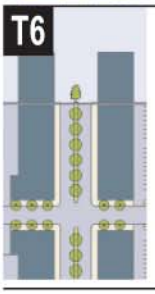
General Character:	Mix of Houses, Townhouses & small Apartment buildings, with scattered Commercial activity; balance between landscape and buildings; presence of pedestrians
Building Placement:	Shallow to medium front and side yard Setbacks
Frontage Types:	Porches, fences, Dooryards
Typical Building Height:	2- to 3-Story with a few taller Mixed Use buildings
Type of Civic Space:	Squares, Greens



T-5 URBAN CENTER

T-5 Urban Center Zone consists of higher density mixed use building that accommodate etail, offices, rowhouses and apartments. It has a tight network of streets, with wide sidewalks, steady street tree planting and buildings set close to the sidewalks.

General Character:	Shops mixed with Townhouses, larger Apartment houses, Offices, workplace, and Civic buildings; predominantly attached buildings; trees within the public right-of-way; substantial pedestrian activit
Building Placement:	Shallow Setbacks or none; buildings oriented to street defining a street wall
Frontage Types:	Stoops, Shopfronts, Galleries
Typical Building Height:	3- to 5-Story with some variation
Type of Civic Space:	Parks, Plazas and Squares, median landscaping



T-6 URBAN CORE

T-6 Urban Core Zone consists of the highest density and height, with the greatest variety of uses, and civic buildings of regional importance. It may have larger blocks; streets have steady street tree planting and buildings are set close to wide sidewalks. Typically only large towns and cities have an Urban Core Zone.

General Character:	Medium to high-Density Mixed Use buildings, entertainment, Civic and cultural uses. Attached buildings forming a continuous street wall; trees within the public right-of-way; highest pedestrian and transit activity
Building Placement:	Shallow Setbacks or none; buildings oriented to street, defining a street wall
Frontage Types:	Stoops, Dooryards, Forecourts, Shopfronts, Galleries, and Arcades
Typical Building Height:	4-plus Story with a few shorter buildings
Type of Civic Space:	Parks, Plazas and Squares; median landscaping

DEVELOPER'S EXHIBIT
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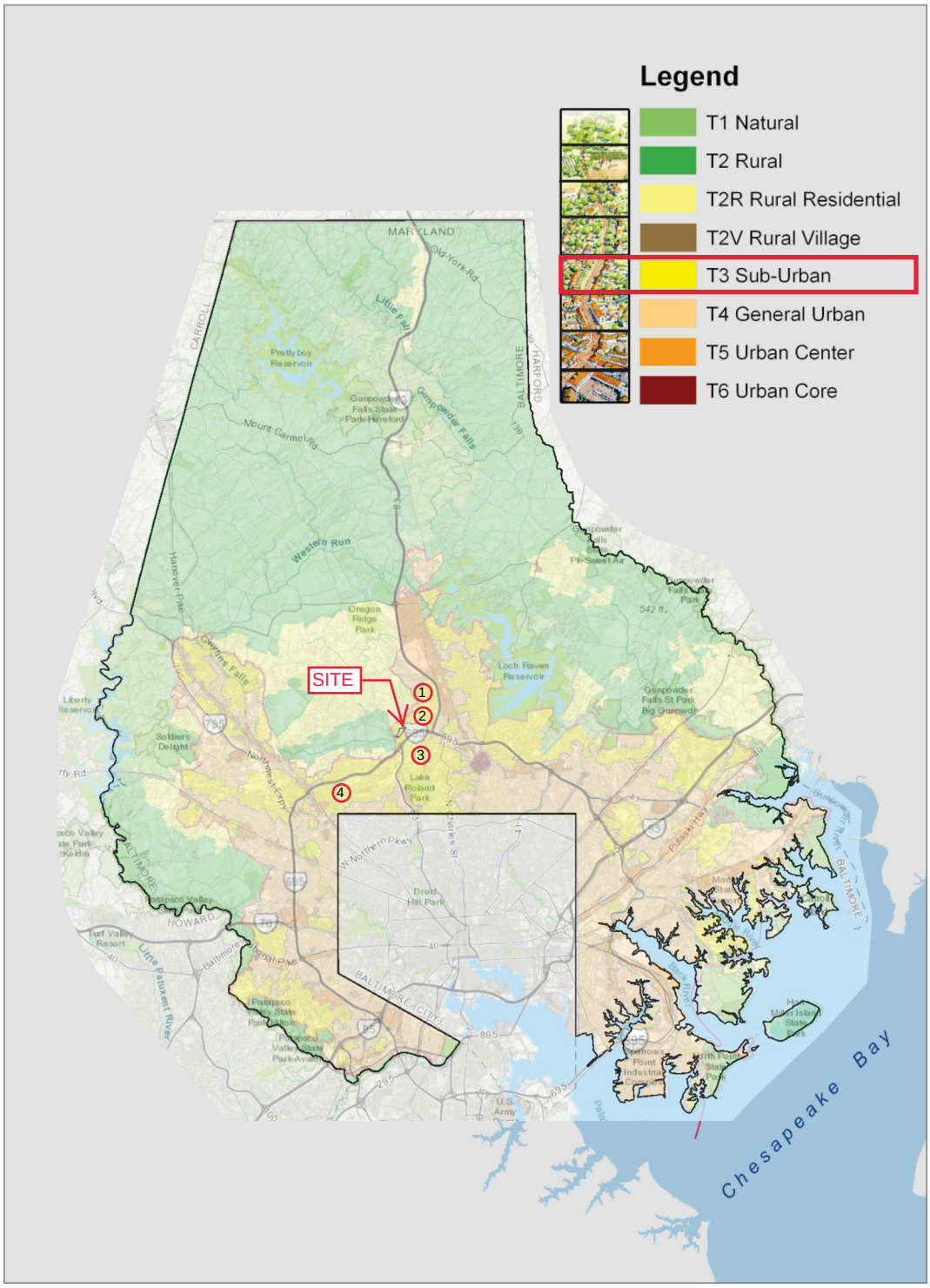
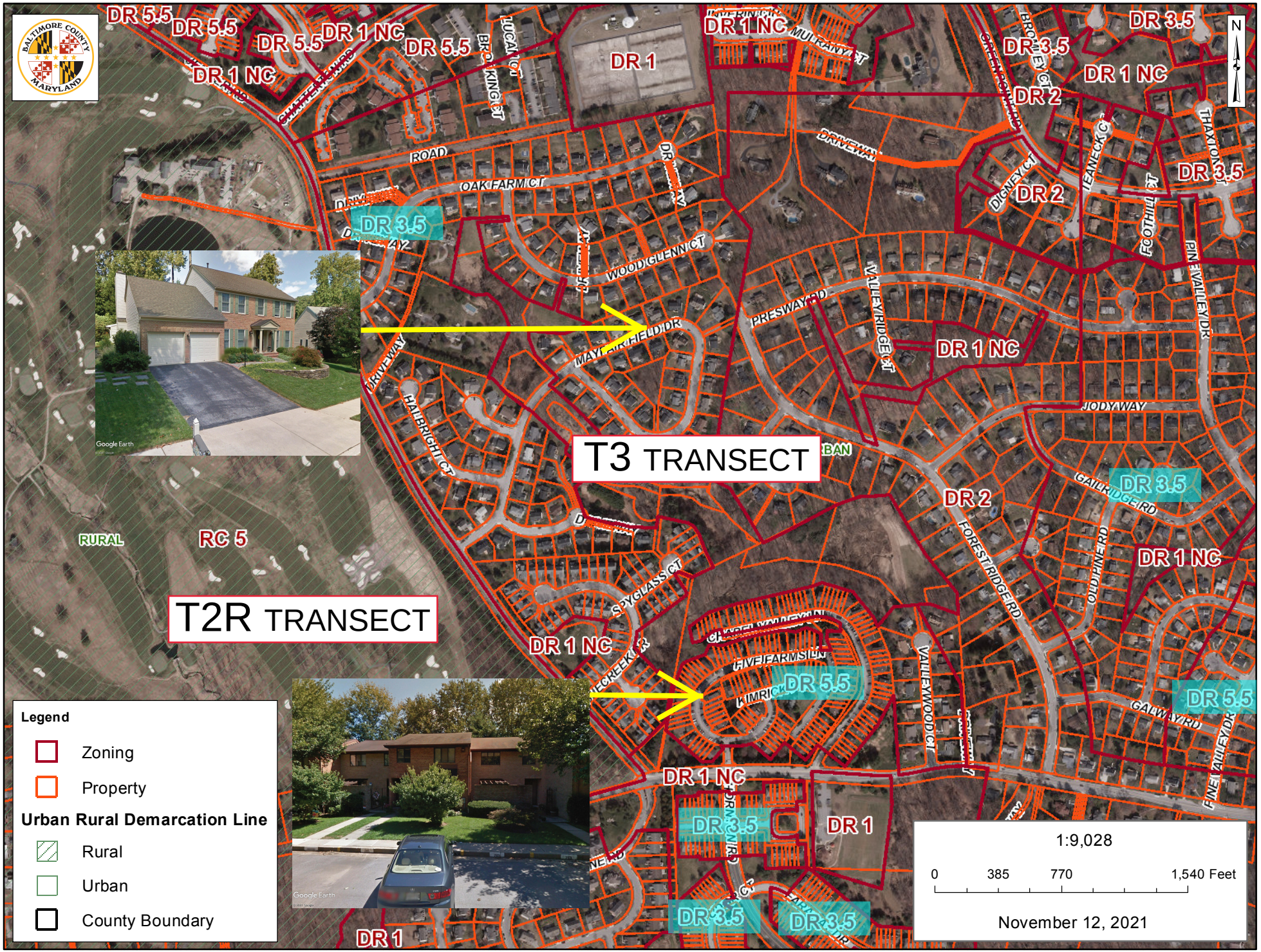
Map 5: Proposed Land Use

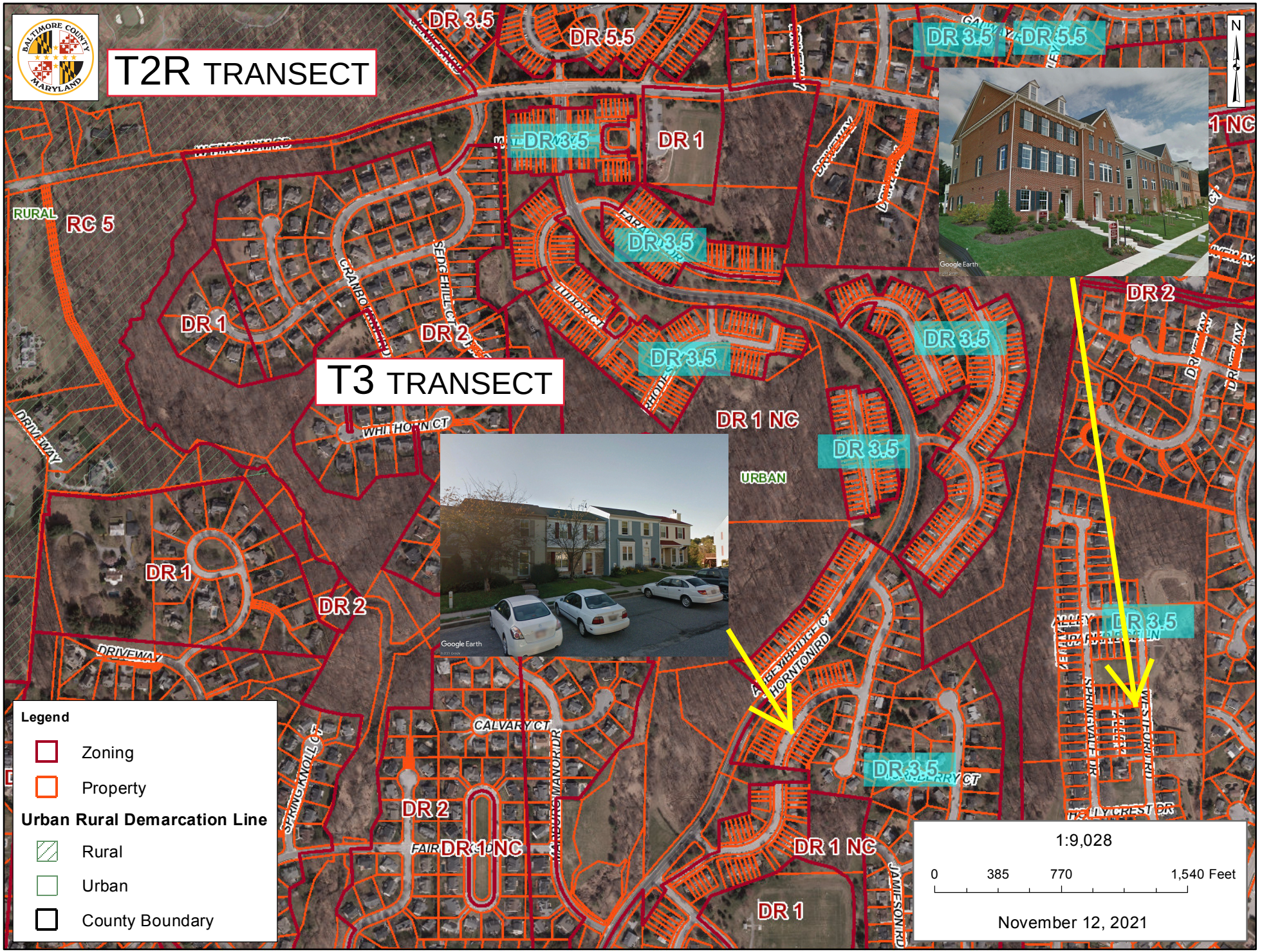
Proposed Land Use
Baltimore County Smart Coded



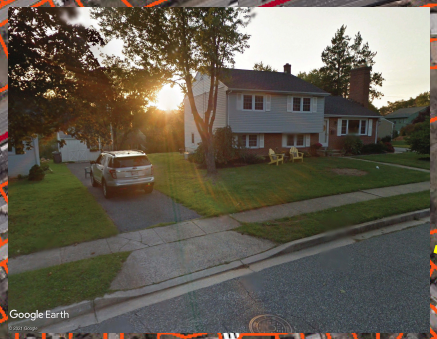
Baltimore County - My Neighborhood



Baltimore County - My Neighborhood



Baltimore County - My Neighborhood





T3 TRANSECT

Legend

- Zoning
- Property

Urban Rural Demarcation Line

- Rural
- Urban
- County Boundary

1:9,028

0 385 770 1,540 Feet

November 12, 2021

Baltimore County - My Neighborhood



DEVELOPER'S EXHIBIT 10

John P. Canoles

Mr. Canoles, co-founder of Eco-Science Professionals, Inc., is a wildlife ecologist with 30 years experience in habitat assessments and inventories. As a principal in the firm, he has managed or participated in over 7,000 projects since 1992. Mr. Canoles is certified by the U.S. Army Corps of Engineers to perform wetland delineations and has worked on wetland delineation projects throughout Maryland, Virginia, West Virginia, Pennsylvania and eastern Ohio. In addition to providing wetland delineations, he has assisted in project planning to ensure efficient compliance with natural resource regulations and prepared/processed wetland/stream permit applications for projects requiring resource impacts. John has also provided wetland mitigation, stream restoration and mitigation certification services for a variety of clients.

Mr. Canoles is recognized by the Maryland Department of Natural Resources as a Qualified Professional to provide Forest Conservation Act services and has managed and participated in projects requiring floral and faunal surveys; Rare, Threatened, and Endangered Species searches; stream assessments; and, habitat evaluations on projects throughout the Mid-Atlantic region, including Chesapeake Bay Critical Area Forest Interior Breeding Bird Surveys and Critical Areas Findings Plans. Mr. Canoles is also licensed by MD DNR as a wildlife cooperator for the control and maintenance of nuisance wildlife.

In addition to pre-development consulting services, Mr. Canoles has assisted clients with non-compliance issues, developed restoration plans, assisted landowners with habitat design and installation projects, provided training to professional organizations and landowner groups, and has provided sworn expert testimony in Baltimore, Howard and Calvert Counties.

EDUCATION and CERTIFICATION

B.S. in Natural Science with Environmental Conservation Concentration, Towson State University 1990.

MD Department of Natural Resources - Licensed Wildlife Cooperator, 2012

United States Corps of Engineers - Provisional Wetland Delineator Certification, August, 1993. Certification # WDCP93MD0610044B2

Forest Conservation Act Information and Training Workshop. MD Department of Natural Resources, November 1992. Qualified Professional, January 1993.

MD Qualified Observer for Forest Interior Breeding Bird Surveys, October 1991.

USFWS Habitat Evaluation Procedures (HEP), Certified, U.S. Fish and Wildlife Service, July 1990.

ADDITIONAL TRAINING

Hydric Soils and Use of Field Indicators of Hydric Soils in the United States. Sponsored by U.S. Army Corps of Engineers, March 2005.

U.S. Army Corps of Engineers 2nd Maryland Consultants Workshop, March 2004.

Gunpowder Watershed Conference. Sponsored by Gunpowder Valley Conservancy, Baltimore County Department of Environmental Protection and Resource Management, and Baltimore Metropolitan Council. March 1999.

ASTM Standards on Environmental Site Assessments for Commercial Real Estate (E 1527-97 and E1528-96). American Society for Testing and Materials Course, Baltimore MD. March 1998.

Hydrogeomorphic Wetland Classification and Assessment Techniques. U. S. Army Corps of Engineers, February 1997.

Soil Stabilization: Soil Bio-Engineering. Cooperative course by Rutgers University and the U.S. Natural Resource Conservation Service, October 1996.

Steep Slope Analysis Training Seminar. Baltimore County Department of Environmental Protection and Resource Management, July 1995.

Native Plants in the Landscape, Millersville University, August 1991.

Anne Arundel County Critical Area Overview and Development Requirements, Anne Arundel County Community College, May 1991.

Stream Restoration Workshop, Ecosystem Recovery Institute & Brightwater Consulting, October 1990.

SELECTED PROJECT EXPERIENCE

Josiah Henson Special Park

Managed and provided field survey project services for the development of a historic park in Montgomery County, Maryland. Standard services included wetland certification, Natural Resource Inventory, Forest Stand Delineation and Forest Conservation Plan services. Project specific services included a detailed vegetative assessment of the property in coordination with the goals for historic preservation of the grounds.

Long Branch Wayne Local Park

Developed a Preliminary Forest Conservation Plan using previously approved existing site condition information for the referenced park project in Montgomery County, MD. Tasks included confirmation of existing site resource information, assessment of tree impacts and development of tree protection and reforestation requirements and design.

Edgely Grove Trail

Provided wetland delineation services and permit application and coordination for a pedestrian trail for the Harford County Department of Recreation and Parks. Services included field delineation of the nontidal wetland limits and Waters of the US on the project site and preparation of a findings report. These findings were integrated into a permit application to allow for wetland, buffer and stream impacts.

Ladew Nature Trail

Provided project management and field services for the development of an interpretive nature trail at the Ladew Topiary Gardens in Harford County, Maryland. The scope of work included field wetland delineation, preparation of a findings report, design of the trail layout, and boardwalk design and construction oversight. Also included in the project was development of interpretive educational stations, an interpretive trail guide and interpretive signage development.

Parklawn Cemetery

Provided project management and field services for the preliminary natural resource assessment of a 108-acre existing cemetery in Montgomery County, Maryland. Services included determination of existing site constraints as they related to natural resources including wetlands, streams, buffers, forest conservation and specimen trees. Upon development of site constraints/conflicts map, provided consultation with project engineer for future cemetery expansion and resources restoration projects.

PRESENTATIONS and PUBLICATIONS

Nature Notes column, Country Chronicle, 1995-present

Mr. Canoles has co-authored over 7000 project reports for natural resource assessments of individual properties throughout the Mid-Atlantic region.

“Invasive Plants -In your garden and in the wild”. Presentation to the Glen Arm Garden Club May 2017.

“Biodiversity and Land Planning”. Presentation to the Manor Conservancy, April 1998 and the York Audubon Society March 1999.

“Backyard Habitat Creation”. Presentation to various garden clubs, community organizations.

"Riparian Forests and Trout Ecology." Gunpowder Tours, Stream Ecology Workshop, January 1993.

"Wetland Regulations and Delineation Manual Overview." Workshop held for Potomac Edison Company, Hagerstown, Maryland. October 1991.

"The Use of Habitat Evaluations Procedures (HEP) in Wetland Mitigation Design." Society of Wetland Scientists Annual Meeting, Ann Arbor, Michigan. July 1991.

VOLUNTEER SERVICE

Oregon Ridge Nature Center Council - past board member and council President
Long Green Valley Conservancy - past board member and President
St. John's - Hydes Home School Association - past board member and President
Cromwell Valley Park Council - current board member
Ladew Topiary Gardens - Consulting Committee/Board of Trustees

DEVELOPER'S EXHIBIT

11



Specimen tree along Joppa Road to be removed. Note trimming of branches around power lines.

DEVELOPER'S EXHIBIT

12

GREENSPRING MANOR

FOREST CONSERVATION VARIANCE APPLICATION

prepared for:

Kimley-Horn
210 W. Pennsylvania Avenue, Suite 100
Towson, Maryland 21204

prepared by:

Eco-Science Professionals, Inc.
P.O. Box 5006
Glen Arm, Maryland 21057
(410) 683-7840

July 29, 2021

BALTIMORE COUNTY
FOREST CONSERVATION REGULATIONS
SPECIAL VARIANCE APPLICATION

Part A. Applicant Information

Applicant(s):

Mr. Ron Snyder
Atapco Properties, Inc.
1 South Street, Suite 2800
Baltimore, Maryland 21202

Telephone: (443) 277-4748

Property Owner(s):

same

Contract Purchaser(s):

Engineer/Other Representative:

Mr. Matt Bishop
Kimley-Horn
210 W. Pennsylvania Ave., Suite 100
Towson, Maryland 21204

Telephone: (443) 792-9995

Principal Contact:

Mr. John Canoles
Eco-Science Professionals, Inc
P.O. Box 5006
Glen Arm, Maryland 21057

Telephone: (410) 683-7840

Part B. Property Information

Property Address/Location: 2310 W Joppa Road, Brooklandville, MD 21022-0285

Tax Account Number(s) 0812000275

Subdivision/Property Name: NA

Tax Map 60 **Parcel No.** 449

Acreage/Lot Size 39 acres

Zoning DR-1 and DR 2

Water: public **Sewer:** public

Part C. Special Variance Type

Indicate the specific section(s) of the Code from which you are requesting a variance :

Title 6 Section 33-6-111 (b) 5 (i) - Retention Priorities, Specimen Trees

D. Project Description

Briefly describe the proposed project or activity.

The applicant is seeking to perform a residential subdivision of the subject property and as part of that effort the County is requiring road widening and sidewalks along the frontage of West Joppa Road. These required improvement will require the removal of an existing specimen tree.

Part E. Existing Resources.

Briefly describe the existing forest resources present onsite, and the condition/quality of these resources.

The subject property is currently maintained as a single family residence. The home and a large lawn are situated in the southeastern corner of the site. The balance of the property is maintained as an active crop field with a small area of forest being present along the eastern edge of the site.

The homestead includes a home and yard area with notable landscaping. Scattered pine groves are present behind the home and Yews are present around the lawn. The driveway

was lined with blue spruce but these trees area all now dead.

At the time of our field review, soybeans had been previously harvested from the crop fields. Some foxtail, thistle and other agriculture weeds were noted within the fields but generally they were open. Hedgerows are present along the eastern and western edges of the field. A portion of the hedgerow along the eastern edge of the field expands into the property to be considered forest. Along the western edge of the site the hedgerow follows along the property line and buffers the site from the adjacent commercial development. The hedgerow, in places does meet the minimum size requirement to be considered forest, but much of the area is made up of invasive species of trees, shrubs and vines. Tree-of-heaven is common along the property boundary along with Oriental bittersweet, Japanese honeysuckle, multiflora rose and bush honeysuckle. Some Russian olive has also begun to colonize the area. These areas are so overgrown by invasive vines that canopy coverage is low in many sections of the hedgerow. Native species present along the field edge include black cherry, black locust and tulip poplar.

The eastern edge of the property varies from having narrow hedgerow that follows close to the property boundary and extends offsite to a small forest patch that expands onto the property. The forest and hedgerow along this portion of the site contains a more native community that the western portion of the suite including slippery elm, sycamore, tulip poplar, red maple, black cherry and white oak. Numerous green ash trees, now dead, are also within this community. The shrub layer of the hedgerow and the forest area heavily impacted by invasive shrubs and vines. Multiflora rose, bush honeysuckle, privet, Japanese honeysuckle and Oriental bittersweet are very common.

The northern property boundary abuts another residential community. In this area the crop field abuts offsite lawn areas that contain scattered landscaping and gardens. In some instances it appears that the adjacent property owners have extended their lawn uses onto the subject property. The southern property boundary abuts the West Joppa Road right of way. Scattered evergreen screen plantings are present along this portion of the site.

A large 100 year floodplain is present on the site. The floodplain includes areas of natural overbank flows and a large backwater flood area that is caused by ponding behind the culvert under West Joppa Road. The floodplain extends across much of the road frontage and around the existing home.

A total of 25 specimen trees were originally identified on the plan. Since that time storm damage has impacted at least one of the trees. The location, size, species and conditions of the specimen trees have been approved as part of the Forest Stand Delineation.

The specimen tree to be impacted by the project is ST 12, a Norway spruce that is located along the shoulder of West Joppa Road. This 43 inch tree is in fair condition and has been impacted by trimming to maintain overhead lines that pass through the canopy.

Part F. Indication of Unwarranted Hardship in Accordance with Section 14-415 (d) of the Code.

Briefly describe how the land in question cannot yield a reasonable return if the requirements from which the special variance is requested is imposed and will deprive the petition of all beneficial use of his property.

The applicant is not seeking the variance based on deprivation of all beneficial uses.

Briefly describe how the plight of the petitioner is due to unique circumstances and not the general conditions in the neighborhood.

The plight of the petitions is due to the fact that the specimen tree to be impacted by the project is within close proximity to the road and will be impacted by required road widening. The location of the tree, the proposed road widening are unrelated to the general conditions of the neighborhood which would best be described as a medium density residential community.

Briefly describe how the special variance will not alter the essential character of the neighborhood.

The essential character of the surrounding neighborhood varies from medium density residential to the east and north to commercial and office to the south and west. The proposed road widening that will require the tree's removal will be in keeping with the standard road requirements for a County road. The proposed residential development that is proposed is in keeping with the adjacent residential properties as it will be developed in accordance with the County zoning and subdivision requirements. Notably, the current property use, as residential and agricultural is not in keeping with the current character of the neighborhood.

Part G. Other Special Variance Criteria Listed in Section 14-415 (e) of the Code

Briefly describe how the proposed project or activity will not adversely affect water quality both during construction and over the long term.

The proposed residential development does not require any wetland or stream impacts. There are no Forest Buffer impacts required for lot development. The project will convert a primarily agricultural property to a residential community that will include stormwater management facilities that will provide more functional water quality protection that the current property use. Further, the project proposes to provide 5.8 acres of reforestation within and adjacent to the floodplain/forest buffer to improve buffer function and water quality benefit.

During construction sediment and erosion controls will implemented to protect water quality. The proposed development plan will incorporate stormwater management facilities to treat run-off generated from impervious surfaces to provide long term protection of water quality.

Briefly describe how the variance does not arise from a conditions or circumstance which is the result of actions taken by the petitioner.

The petitioner took great care to preserve all of the 25 specimen trees spread throughout this property and will not impact any of the existing trees for new home construction or new roads to serve the proposed development. The only tree that will be impacted is the one located close to Joppa Road, where Baltimore County is requiring widening and sidewalk. The County's requirement to widen Joppa Road would be placed on any development of this property and is not specific to the actions being taken or proposed by the petitioner. The tree exists in this location and impacts cannot be avoided.

Briefly describe how the special variance, as granted, would be consistent with the spirit and intent of the Forest Conservation Regulations.

The Forest Conservation Regulations have been designed to balance reasonable development with goals of the forest resource protection. Granting of the special variance would be consistent with the spirit and intent of the Forest Conservation Regulations because the project does not propose to impact any forest and will retain all but one specimen tree on the property. The proposed project also includes 3.4 acres of forest conservation afforestation and 2.4 acres of forest buffer afforestation that will substantially increase forest cover on the site.

The proposed specimen tree impact is unavoidable due to the tree's location within proximity of the existing road and the requirement to widening the road for safety. Further, the specimen tree to be impacted is not native and is currently being trimmed as the result of overhead line maintenance.

In consideration of the unique attributes of the project site and the factors associate this variance request, granting of the variance is consistent with the goals of the regulations.

Part H. Supplemental Information.

Indicate any supplemental information included with the application.

___ Forest Stand Delineation
___ Forest Conservation Worksheet
_X_ Forest Conservation Plan - Preliminary
___ Forest Retention Investigation Report
_X_ Other (explain)

Forest Stand Delineation has been previously approved.

Part I. Additional Information.

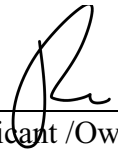
Use this space to explain answers to any of the questions on this form in greater detail, or to provide any other information about the site or project pertinent to this variance request. Attach additional sheets if necessary.

Part J. Signatures

All persons have legal or equitable interest in the property must sign below. Unsigned applications will be returned to the applicant is incomplete.

I/We do solemnly declare and affirm under the penalties of perjury that the contents of this application are true and correct to the best of my/our knowledge, and that the application contains names and addresses of all persons having legal or equitable interest in the property.

Signature(s):



7/29/21

Applicant /Owner Date

Applicant /Owner Date

DEVELOPER'S EXHIBIT

13

JOHN A. OLSZEWSKI, JR.
County Executive

DAVID V. LYKENS, *Director*
Department of Environmental Protection and Sustainability

September 21, 2021

Mr. John P. Canoles
Eco-Science Professionals, Inc.
P.O. Box 5006
Glen Arm, MD 21057

Re: Greenspring Manor at 2310 West Joppa Road
Forest Conservation Variance
Tracking # 02-21-3518

Dear Mr. Canoles:

The Department of Environmental Protection and Sustainability (EPS) received an initial request for a variance from Baltimore County's Forest Conservation Law on July 30, 2021 pursuant to our design meeting of July 28, 2021. Revised plans further refining the water and sewer house connection designs in response to our August 11, 2021 comments were received on August 18, 2021. The variance seeks approval to remove Specimen Tree # 12, a non-native Norway spruce in fair condition, for the widening of West Joppa Road associated with a proposed 61-lot residential subdivision. This 43-inch (diameter at breast height) specimen tree has been heavily trimmed on one side due to its proximity to overhead utility pole wires. The variance application proposes no mitigation for removal of this specimen tree given that it is non-native.

The Director of EPS may grant a special variance to the Forest Conservation law in accordance with criteria outlined in Section 33-6-116 of the Baltimore County Code. There are six (6) criteria listed in Subsection 33-6-116(d) and (e) that shall be used to evaluate the variance request. One (1) of the three criteria under Subsection 33-6-116(d) must be met, and all three (3) of the criteria under Subsection 33-6-116(e) must be met, in order to approve the variance.

The first criterion (Subsection 33-6-116 (d)(1) of the Code) requires that the petitioner show that the land in question cannot yield a reasonable return if the requirement from which the special variance is requested is imposed and will deprive the petitioner of all beneficial use of his property. The applicant is not seeking the variance based on deprivation of all beneficial uses. Furthermore, a long-standing homestead-type residence exists on this property. Therefore, this criterion has not been met.

The second criterion (Subsection 33-6-116 (d)(2) of the Code) requires that the petitioner show that his/her plight is due to unique circumstances and not the general conditions in the neighborhood. Rather than the general conditions in the neighborhood, the petitioner's plight is due to the close proximity of the specimen tree to West Joppa Road, which must be

widened to meet the increased traffic resulting from the proposed 61-lot residential subdivision. Therefore, we find that this criterion has been met.

The third criterion (Subsection 33-6-116 (d)(3) of the Code) requires that the petitioner show that the special variance requested will not alter the essential character of the neighborhood. Removing the single specimen tree would not alter the character of the neighborhood. Furthermore, the tree would likely be removed by Baltimore County at some point due to its declining condition or eventual widening of Joppa Road as a necessary capital improvement project. Therefore, we find that this criterion has been met.

The fourth criterion (Subsection 33-6-116 (e)(1) of the Code) requires that the granting of the special variance will not adversely affect water quality. Removing the tree would not directly impact any wetland or stream. The development project related to this specimen tree removal will meet current water quality management requirements through environmental site design and proposes approximately 5.9 acres of afforestation within the floodplain and forest buffer. Therefore, we find that granting of the special variance will not adversely affect water quality and that this criterion has been met.

The fifth criterion (Subsection 33-6-116 (e)(2) of the Code) requires that the special variance request does not arise from a condition or circumstance which is the result of actions taken by the petitioner. The petitioner has not taken any actions necessitating this variance prior to its request. The tree has existed adjacent to West Joppa Road for years prior to this development proposal, and would likely be removed at some point regardless of the proposed development for the reasons cited above. Therefore, this criterion has been met.

The sixth criterion (Subsection 33-6-116 (e)(3) of the Code) requires that the Director of EPS find that the special variance, as granted, would be consistent with the spirit and intent of Article 33 of the Baltimore County Code. Permitting the removal of one specimen tree for the widening of West Joppa Road associated with a proposed residential subdivision would be consistent with the spirit and intent the Forest Conservation Law given that the development does not propose to impact forest and will retain all but one of the 27 specimen trees onsite. Additionally, 3.5 acres of forest conservation afforestation and 2.4 acres of forest buffer mitigation will be provided in and adjacent to the Forest Buffer Easement to comply with both the Forest Buffer Law and Forest Conservation Law. Therefore, this criterion has been met.

Based on our review, this Department finds that the required criteria have been met. Therefore, the requested variance is hereby approved in accordance with Section 33-6-116 of the Baltimore County Code with the following conditions:

1. Prior to issuance of any Baltimore County permit, high visibility fence shall be installed along the limit of disturbance (LOD) wherever the LOD is within 50 feet of the critical root zone of any specimen tree to remain, any Forest Conservation Easement, or Forest Buffer Easement. Installation of this protective fence shall be detailed on both the sediment control plan and final Forest Conservation Plan.

2. The following note must appear on all subsequent plans for this project:

   "A special variance was granted on September 21, 2021 to Baltimore County's Forest Conservation Law to allow critical impact to one specimen tree for the widening of West Joppa Road. Conditions were placed on this variance, including protection of the remaining specimen trees and forest resources."

It is the intent of this Department to approve this variance subject to the above conditions. Any changes to site layout may require submittal of revised plans and a new variance request. Moreover, a special variance to Baltimore County's Forest Conservation Law will be required for removal of any specimen trees shown to remain on this plan.

Please have the appropriate representative sign the statement on the following page and return a signed copy of this entire letter to this Department within 21 calendar days. Failure to return a signed copy may render this approval null and void, or may result in delays in the processing of plans for this project.

If you have any questions regarding this correspondence, please contact Mr. Michael Kulis at (410) 887-3980.

Sincerely yours,

David V. Lykens
Director

DVL/msk

C. Marian Honeczy, Maryland Dept. of Natural Resources

I/we agree to the conditions enumerated in this approval letter to bring my/our property into compliance with Baltimore County's Forest Conservation Law.

10/5/21

Atapco Representative Date

Russel Powell

Printed Name

DEVELOPER'S EXHIBIT 14

From: Kristoffer Nebre <knebre@baltimorecountymd.gov>
Sent: Tuesday, August 16, 2022 1:39 PM
To: Nick Driban <ndriban@LENHARTTRAFFIC.COM>
Cc: Angelica Daniel <adaniel@baltimorecountymd.gov>; mlenhart <mlenhart@LENHARTTRAFFIC.COM>; Vishnubhai K Desai <vdesai@baltimorecountymd.gov>
Subject: RE: 2310 Joppa Road; MDOT SHA Tracking 20APBA022XX; 36373

Nick,

This proposed development sits in an "F" traffic shed per Baltimore County Basic Service Map for Transportation. The signalized intersections in question are Falls & Joppa and Falls & Greenspring Valley, which are both intersections that are owned and maintained by the State Highway Administration (SHA), along with the traffic signal too being owned and maintained by SHA. The development calls for improvements along Joppa, which have been reviewed and approved by SHA. The letter from Lennart states that the improvements along Joppa enough to accommodate the generated volumes from the proposed site, and that the mitigation from the improvements result in net zero impact along the corridor.

The scope of the intersections in the traffic impact study are SHA intersections. We agree that the proposed development along with the improvements to the intersection would not have a net negative impact on the intersection. With these statements, we request a copy of the traffic impact study and supplemental analysis be stamped and signed by a Professional Engineer. We do not have additional comments to offer. The development sits in a current LOS F traffic shed, and therefore, per Baltimore County Zoning Regulations Manual, 4A02.4.G.1, we defer the findings from Lenhart Traffic and SHA responses be subjected to review from the Zoning Commissioner to determine if this development would be eligible for a waiver based off the zoning regulations.

KRISTOFFER L. NEBRE, P.E.
Engineer III

Baltimore County, Department of Public Works
Bureau of Transportation
111 W. Chesapeake Avenue, Room 312
Towson, Maryland 21204

Ph. 410-887-3554
Fax 410-887-5784

DEVELOPER'S EXHIBIT
15

January 21, 2021

Mr. Mike Lenhart
Lenhart Traffic Consulting, Inc.
645 Baltimore Annapolis Boulevard, Suite 214
Severna Park MD 21146

Dear Mr. Lenhart:

Thank you for the opportunity to review the Revised Traffic Impact Analysis (TIA), and Point-by-Point Response, dated December 9, 2020, prepared by Lenhart Traffic Consulting, Inc. for the proposed 2310 Joppa Road development in Baltimore County. The Maryland Department of Transportation State Highway Administration (MDOT SHA) has completed our review and comments are attached.

2310 Joppa Road Development
MDOT SHA Tracking No: 20APBA022XX
Revised Traffic Impact Analysis (TIA) Revised December 7, 2020
Point-by-Point Response Dated December 9, 2020
Baltimore County

The Revised TIA is approved, and no additional analysis is needed. An access permit will be required for all construction in the MDOT SHA right-of-way. Please see the attachment for the MDOT SHA recommended improvements and further guidance on plan submission requirements. Should another submission be made during the period when MDOT SHA employees are being required to telework, this submission must be made through the MDOT SHA Salesforce electronic submission portal located at the following link, https://mdotsha.force.com/accesspermit/login?ec=302&inst=1B&startURL=%2Faccesspermit. Please reference the MDOT SHA tracking number on any future submissions.

Please keep in mind that you can view the reviewer and project status via MDOT SHA's Access Management Division web page at http://www.roads.maryland.gov/pages/amd.aspx. If you have any questions, or require additional information, please contact Mr. Steve Autry via email at sautry@mdot.maryland.gov.

Sincerely,

Wendy Wolcott

Wendy Wolcott, P.L.A.
Metropolitan District Engineer
MDOT State Highway Administration
District 4 - Baltimore and Harford Counties

Attachment

cc: Mr. Vishnu Desai, Development Plans Review, Baltimore County
Mr. Lloyd Moxley, Development Plans Review, Baltimore County
Mr. Steve Autry, Transportation Engineer, District Four Access Management, MDOT SHA
Ms. Rola Daher, Consultant for MDOT, TFAD, MDOT SHA
Ms. Teresa Eller, Transportation Engineer, District Four Access Management, MDOT SHA
Ms. Sarah Gary, Consultant for MDOT, TFAD, MDOT SHA
Ms. Erin Kuhn, Assistant District Engineer for Traffic, District Four, MDOT SHA
Ms. Tina Saxon, Administrative Assistant, OPPE RIPD, MDOT SHA
Ms. Lisa Shemer, Division Chief, OPPE, TFAD, MDOT SHA
Ms. Lisa Sirota, Regional Planner, RIPD, MDOT SHA
Mr. Errol Stoute, Transportation Engineer, OOTS, MDOT SHA
file/VB/BW36373

2310 Joppa Road Development
MDOT SHA Tracking No: 20APBA022XX
Revised Traffic Impact Analysis (TIA) Revised December 7, 2020
Point-by-Point Response Dated December 9, 2020
Baltimore County

- The proposed 2310 Joppa Road development will be located on the north side of Joppa Road and consists of 62 detached single-family homes. The development will be accessed from a full-movement driveway along Joppa Road.

- The study analyzed the following intersections under existing, background, and future conditions:
  - MD 25 and Falls Road/Joppa Road
  - MD 25 and MD 130/Station Drive
  - MD 25 and MD 131
  - W. Joppa Road and Site Access

Based on the information provided in the Revised Traffic Impact Analysis (TIA), revised December 7, 2020 and Point-by-Point Response, dated December 9, 2020, MDOT SHA provides the following comments:

- Due to proposed changes to the MD 25 (Falls Road)/MD 25A/Joppa Road intersection and the close proximity to the I-695 and I-83 ramps, MDOT SHA contacted the Federal Highway Administration (FHWA) regarding the need for Interstate Access Point Approval (IAPA). The FHWA have confirmed that an IAPA is not required.
- Based on the auto turn template provided, EB Falls Rd. left turn path for lane 1 was not shown in the proposed condition. It appears that it will conflict with concrete median on north leg of the intersection. This will need to be addressed during the design phase.

An access permit would be required for all construction within MDOT SHA right-of-way. All MDOT SHA Policies, Standards, and Specifications must be followed when preparing the access permit plans for review, including, but not limited to the following documents:

- MDOT SHA Access Manual
- MDOT SHA Business Standards and Specifications
- MDOT SHA Accessibility Policy and Guidelines for Pedestrian Facilities
- MDOT SHA Bicycle Policy and Design Guidelines

The Access Management Plan Review Checklist must also be utilized in drafting the MDOT SHA improvement plans. Please include a copy of the completed checklist with each submittal. All of these documents along with additional guidance can be found on our web site at www.roads.maryland.gov under Business Center.

DEVELOPER'S EXHIBIT
16



CONCEPT ONLY
FOR ILLUSTRATIVE PURPOSES

2310 W. JOPPA ROAD

MD 25 AT WEST JOPPA ROAD
EXISTING CONDITIONS

DATE	DRAWN BY	SCALE	SHEET
FEB. 2021	LTC/BCS	1"=50'	1 OF 2

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BOULEVARD, SUITE 214
SEVERNA PARK, MD 21146
TEL: (410) 216-3333
FAX: (443) 782-2288
www.lenharttraffic.com



CONCEPT ONLY
FOR ILLUSTRATIVE PURPOSES

2310 W. JOPPA ROAD

MD 25 AT WEST JOPPA ROAD
CONCEPT GEOMETRIC IMPROVEMENTS

LEGEND

- FULL-DEPTH WIDENING
- REMOVE PAVEMENT
- RE-MARK PAVEMENT
- CONCRETE CURB AND GUTTER

DATE	DRAWN BY	SCALE	SHEET
FEB. 2021	LTC/BCS	1"=50'	2 OF 2

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BOULEVARD, SUITE 214
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MARYLAND DEPARTMENT
OF TRANSPORTATION

STATE HIGHWAY
ADMINISTRATION

Boyd K. Rutherford
Lt. Governor

Gregory Slater
Secretary

Tim Smith, P.E.
Administrator

DEVELOPER'S EXHIBIT
17

August 4, 2021

Mr. Lloyd Moxley
Development Manager
Development/Management/Permits
Inspections & Approvals
County Office Building-Room 123
111 West Chesapeake Avenue
Towson, MD 21204

Dear Mr. Moxley:

Thank you for the opportunity to review the Development Plan for Greenspring Manor located on 2310 Joppa Rd. in Baltimore County. The Maryland Department of Transportation State Highway Administration (MDOT SHA) has reviewed the plan for the project listed below and is pleased to respond:

Greenspring Manor
PAI Number 08-0922
County Tracking Number MAJ-2021-00001
2310 Joppa Rd.
Baltimore County

The MDOT SHA has no objection to the Development Plan approval. We are currently reviewing plans for an Access Permit which is required for the proposed off site road improvements located at Falls Rd (MD 25) & Joppa Rd.. **All submission for this proposed off site road improvement must be made through the MDOT SHA Salesforce electronic submission portal link located at https://mdotsha.force.com/accesspermit/login?ec=302&inst=4v&startURL=%2Faccesspermit .** Please reference the SHA tracking number 20APBA022XX on future submissions. If you have any questions, or require additional information, please contact Mr. Steven Autry at 410-229-2335, by using our toll-free number in Maryland only at 1-800-735-2258 (x2335) or via email at sautry@mdot.maryland.gov.

Sincerely,

Teresa Eller, for

Wendy Wolcott, P.L.A
Metropolitan District Engineer
Maryland Department of Transportation
State Highway Administration
District 4 Baltimore and Harford Counties

cc: Kimley – Horn & Associates, Inc./1801 Porter St, Suite 401/ Baltimore, Maryland 21230
ATAPCO Properties Inc. c/o Ron Snyder/ 1South St., Suite 2800/Baltimore, MD. 21202

DEVELOPER'S EXHIBIT
18

September 13, 2021

Ms. Kristen Lewis
Baltimore County Office of
Permits and Development Management
County Office Building, Room 109
111 West Chesapeake Avenue
Towson, Maryland 21204

Dear Ms. Lewis:

Thank you for the opportunity to review your referral request on the Special Hearing Variance Case number referenced Case No. 2021-0250-SPH. We have no objections to the approval of the Special Variance plan subject to the condition that the developer is required to obtain an Access Permit to construct off site road improvements at the intersection of Falls Rd (MD 25) and West Joppa Rd which is currently under review.

If there are any questions, please contact Mr. Steven Autry at 410-229-2335, or toll free (in Maryland only) at 1-800-735-2258 (x2335), or via email at sautry@mdot.maryland.gov

Sincerely,

Wendy Wolcott, P.L.A.
Metropolitan District Engineer
Maryland Department of Transportation
State Highway Administration
District 4 - Baltimore and Harford Counties

DEVELOPER'S EXHIBIT

19



DEVELOPER'S EXHIBIT
20

March 7, 2022

Mr. Nick Driban:
Lenhart Traffic Consulting, Inc.
645 Baltimore Annapolis Boulevard, Suite 214
Severna Park MD 21146

Dear Mr. Driban:

Thank you for the opportunity to review the Supplemental Analysis for 2310 Joppa Road Traffic Impact Study, dated January 18, 2022, prepared by Lenhart Traffic Consulting, Inc. for the proposed 2310 Joppa Road development in Baltimore County. The Maryland Department of Transportation State Highway Administration (MDOT SHA) has completed our review. The Supplemental Analysis is approved, and no additional analysis is needed.

2310 Joppa Road Development
MDOT SHA Tracking No: 20APBA022XX
Supplemental Analysis for 2310 Joppa Road Traffic Impact Study
Dated January 18, 2022
Baltimore County

MDOT SHA is not recommending the proposed improvements at the intersection of MD 25 and MD 130 based upon the comments and concerns expressed in the attachment. We continue to support the proposed improvements at the intersection of I-83, MD 25, and Joppa Road. This improvement will not only improve operations at this intersection but will reduce travel times along the corridor.

An access permit will be required for all construction in the MDOT SHA right-of-way. To initiate the plan review cycle toward the issuance of the access permit the design engineer must make an electronic submittal using the MDOT Salesforce link at https://mdotsha.force.com/accesspermit/login?ec=302&inst=4v&startURL=%2Faccesspermit. The plan submittal should include hydraulic computations, plans and all supporting documentation. Please utilize the MDOT SHA tracking number when making this submission.

All MDOT SHA Policies, Standards and Specifications must be followed when preparing the above plan submittal including but not limited to the following documents:

MDOT SHA Access Manual
MDOT SHA Business Standards and Specifications
MDOT SHA Bicycle Policy and Design Guidelines
MDOT SHA Accessibility Policy and Guidelines for Pedestrian Facilities

The Access Management Plan Review Checklist must be utilized in drafting the MDOT SHA Improvement Plans. Please include a copy of the completed checklist when making this submittal. All of these documents along with additional guidance can be found on our web site at www.roads.maryland.gov under Business Center.

If you have any questions or require additional information, please contact Ms. Teresa Eller via email at teller@mdot.maryland.gov .

Sincerely,

Wendy Wolcott

Wendy Wolcott, P.L.A.
Metropolitan District Engineer
MDOT State Highway Administration
District 4 - Baltimore and Harford Counties

Attachment

cc: Mr. David Lykens, Department of Environmental Protection and Sustainability, Baltimore County
Mr. Lloyd Moxley, Development Plans Review, Baltimore County
Mr. Steve Autry, Transportation Engineer, District Four Access Management, MDOT SHA
Ms. Rola Daher, Consultant for MDOT, TFAD, MDOT SHA
Ms. Teresa Eller, Regional Engineer, District Four Access Management, MDOT SHA
Ms. Sarah Gary, Consultant for MDOT, TFAD, MDOT SHA
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Ms. Tina Saxon, Administrative Assistant, OPPE RIPD, MDOT SHA
Ms. Lisa Shemer, Division Chief, OPPE, TFAD, MDOT SHA
Ms. Lisa Sirota, Regional Planner, RIPD, MDOT SHA
Mr. William Stroud, Assistant Division Chief, TDSD, MDOT SHA
file/Braddy/36373

2310 Joppa Road Development
MDOT SHA Tracking No: 20APBA022XX
Supplemental Analysis for 2310 Joppa Road Traffic Impact Study
Dated January 18, 2022
Baltimore County

- The proposed 2310 Joppa Road development will be located on the north side of Joppa Road and consists of 62 detached single-family homes. The development will be accessed from a full-movement driveway along Joppa Road.

- The study analyzed the following intersections under existing, background, and future conditions:
  - MD 25 and Falls Road/Joppa Road
  - MD 25 and MD 130/Station Drive
  - MD 25 and MD 131
  - W. Joppa Road and Site Access

Based on the information provided in the Supplemental Analysis for 2310 Joppa Road Traffic Impact Study, dated January 18, 2022, MDOT SHA provides the following comments:

1. The new lane will only hold 2 cars. The lane will get blocked, and people will not want to use the lane because it drops immediately. It does not seem a significant amount of capacity will be added.
2. The lane drop looks too small for the double left turn incoming volumes at MD 25 @ MD 130. A high volume of vehicles would have to merge into the lane drop.
3. Please consider looking at the intersection of MD 25 @ MD 131 (Seminary), which is a critical intersection, or the beltway for mitigation efforts.
4. The left turning path should be able to accommodate for the biggest trucks (WB40/WB50) regardless of the current truck restrictions. The turning path crosses the island even in the cut median, which is highlighted by the green line.
5. The island toward the north is planned to be reduced. However, the island at the south might also need to be reduced because the turning path crosses the shoulder and almost touches the median.

DEVELOPER'S EXHIBIT
21

May 9, 2022

Mr. Mike Lenhart
Lenhart Traffic Consulting, Inc.
645 Baltimore Annapolis Boulevard, Suite 214
Severna Park MD 21146

Dear Mr. Lenhart:

Thank you for the opportunity to review the Traffic Impact Study (TIS), prepared by Lenhart Traffic Consulting, Inc. for the proposed development at 2310 Joppa Road in Baltimore County. The Maryland Department of Transportation State Highway Administration (MDOT SHA) has completed our review of the point-by-point letter for the project listed below, and our comments are also below.

2310 Joppa Road
MDOT SHA Tracking No: 20APBA022XX
Point-by-Point Response Letter Dated April 19, 2022

The proposed 2310 Joppa Road development is to be located on the north side of Joppa Road. The property is currently undeveloped and is proposed to be developed with 62 single-family detached units. The development will be accessed from a full movement driveway along Joppa Road.

As previously stated, MDOT SHA does not approve the proposed improvement at MD 25 and MD 130.

As you know, SimTraffic was used to analyze the queuing and travel time for the MD 25 corridor between Joppa Road and MD 131. Exhibit 8c of the December 9, 2020 submittal shows 95th percentile queuing results. The queue lengths along MD 25 decrease at each intersection from the background to total (with the proposed improvements) conditions.

During the morning peak hour under background conditions, the northbound travel time along MD 25 is 186.3 seconds and the southbound travel time is 216.7 seconds. With the proposed improvements at the intersection of MD 25 and Joppa Road, the travel time decreases to 141.0 seconds in the northbound direction and 208.1 seconds in the southbound direction. During the evening peak hour under background conditions, the northbound travel time along MD 25 is 291.9 seconds and the southbound travel time is 142.9 seconds. With the proposed improvements at the intersection of MD 25 and Joppa Road, the travel time decreases to 260.1 seconds in the northbound direction and 143.7 seconds in the southbound direction.

The analysis contained in the report show that the intersections do not operate with failing levels-of-service. Furthermore, the improvements to MD 25 at Joppa Road will improve the operation of the entire MD 25 corridor from Joppa Road to MD 131.

We excerpted the comments above from your December 9, 2020 submittal in support of our decision to not approve the proposed improvement at MD 25 and MD 130. We continue to support the proposed improvements at the intersection of I-83, MD 25, and Joppa Road.

An access permit will be required for all construction in the MDOT SHA right-of-way. To initiate the plan review cycle toward the issuance of the access permit the design engineer must make an electronic submittal using the MDOT Salesforce link at https://mdotsha.force.com/accesspermit/login?ec=302&inst=4v&startURL=%2Faccesspermit. The plan submittal should include hydraulic computations, plans and all supporting documentation. Please utilize the MDOT SHA tracking number when making this submission. Keep in mind that you can view the reviewer and project status via SHA Access Management Division web page at http://www.roads.maryland.gov/pages/amd.aspx.

All MDOT SHA Policies, Standards and Specifications must be followed when preparing the above plan submittal including but not limited to the following documents:

MDOT SHA Access Manual
MDOT SHA Business Standards and Specifications
MDOT SHA Bicycle Policy and Design Guidelines
MDOT SHA Accessibility Policy and Guidelines for Pedestrian Facilities

The Access Management Plan Review Checklist must be utilized in drafting the MDOT SHA Improvement Plans. Please include a copy of the completed checklist when making this submittal. All of these documents along with additional guidance can be found on our web site at www.roads.maryland.gov under Business Center.

Please note, if this project has not obtained an MDOT SHA access permit and begun construction of the required improvements within five years of this approval, extension of the permit may be subject to the submission of an updated traffic impact analysis in order for MDOT SHA to determine whether the proposed improvements remain valid or if additional improvements will be required of the development. If you have any questions or require additional information, please contact Ms. Teresa Eller via email at teller@mdot.maryland.gov .

Sincerely,

Wendy Wolcott

Wendy Wolcott, P.L.A.
Metropolitan District Engineer
MDOT State Highway Administration
District 4 - Baltimore and Harford Counties

cc: Mr. David Lykens, Department of Environmental Protection and Sustainability, Baltimore County
Mr. Lloyd Moxley, Development Plans Review, Baltimore County
Mr. Kay Adenaiya , TDSD OOT, MDOT SHA
Mr. Steve Autry, Transportation Engineer, District Four Access Management, MDOT SHA
Ms. Rola Daher, Consultant for MDOT, TFAD, MDOT SHA
Ms. Teresa Eller, Transportation Engineer, District Four Access Management, MDOT SHA
Ms. Sarah Gary, Consultant for MDOT, TFAD, MDOT SHA
Ms. Kandese Holford, MDOT SHA Bicycle and Pedestrian Coordinator, MDOT SHA
Ms. Erin Kuhn, Assistant District Engineer for Traffic, District Four, MDOT SHA
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Ms. Lisa Shemer, Division Chief, OPPE, TFAD, MDOT SHA
Ms. Lisa Sirota, Regional Planner, RIPD, MDOT SHA
Mr. William Stroud, Assistant Division Chief, TDSD, MDOT SHA
file/VB/BW36373

DEVELOPER'S EXHIBIT
22

June 10, 2022

Mr. Nick Driban
Lenhart Traffic Consulting, Inc.
645 Baltimore Annapolis Boulevard, Suite 214
Severna Park MD 21146

Dear Mr. Driban.

Thank you for your email regarding the proposed development at 2310 Joppa Road in Baltimore County. This letter provides additional follow-up to our May 9, 2022, letter and our recent meeting regarding the project listed below.

2310 Joppa Road
MDOT SHA Tracking No: 20APBA022XX

In your email, you requested confirmation of the proposed MD 25 corridor retiming, including the intersection of MD 25 and MD 130, to maximize the benefit of the physical improvements proposed to the intersection of MD 25 and Joppa Road. It is standard procedure for the Maryland Department of Transportation State Highway Administration (MDOT SHA) to retime traffic signals when geometric improvements are made. In this case, since the signal at MD 25 and Joppa Road functions in a coordinated system with the signals along MD 25 at MD 130 and at MD 131, the entire system will be retimed to reduce delay at the intersections and maximize throughput along MD 25. The signal timing will be reviewed and updated when the geometric improvements are complete.

As you noted, the proposed improvements to the intersection of MD 25 and Joppa Road, which include an additional lane on each of the side-street approaches, will reduce the amount of green time required for the side streets and allow additional green time to be allocated to the prevailing mainline (north- and southbound) traffic along MD 25 at Joppa Road. The signal timing will also need to be adjusted at the adjacent intersections with MD 130 and MD 131 in order to maintain coordination and accommodate the enhanced platooning of mainline traffic along MD 25 as a result of the Joppa Road intersection improvement.

For the reasons previously stated, MDOT SHA does not approve the geometric improvement that was proposed at MD 25 and MD 130. The analyses contained in the report show that the intersections do not operate with failing levels-of-service. Additionally, the improvements to MD 25 at Joppa Road will improve the operation of the entire MD 25 corridor from Joppa Road to MD 131.

An access permit will be required for all construction in the MDOT SHA right-of-way. To initiate the plan review cycle toward the issuance of the access permit the design engineer must make an electronic submittal using the MDOT Salesforce link at https://mdotsha.force.com/accesspermit/login?ec=302&inst=4v&startURL=%2Faccesspermit. The plan submittal should include hydraulic computations, plans and all supporting documentation. Please utilize the MDOT SHA tracking number when making this submission. Keep in mind that you can view the reviewer and project status via SHA Access Management Division web page at http://www.roads.maryland.gov/pages/amd.aspx.

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Sincerely,

Wendy Wolcott

Wendy Wolcott, P.L.A.
Metropolitan District Engineer
MDOT State Highway Administration
District 4 - Baltimore and Harford Counties

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Ms. Sarah Gary, Consultant for MDOT, TFAD, MDOT SHA
Ms. Kandese Holford, MDOT SHA Bicycle and Pedestrian Coordinator, MDOT SHA
Ms. Erin Kuhn, Assistant District Engineer for Traffic, District Four, MDOT SHA
Ms. Tina Saxon, Administrative Assistant, OPPE RIPD, MDOT SHA
Ms. Lisa Shemer, Division Chief, OPPE, TFAD, MDOT SHA
Ms. Lisa Sirota, Regional Planner, RIPD, MDOT SHA
Mr. William Stroud, Assistant Division Chief, TDSD, MDOT SHA
file//BW36373



DRAINAGE AREA

±133 ACRES

DEVELOPER'S EXHIBIT

23

2 EXISTING STORMWATER MANAGEMENT FACILITIES

3 PROPOSED STORMWATER MANAGEMENT FACILITIES

SCALE: 1"=150'

Kimley»Horn

1801 PORTER ST, SUITE 401, BALTIMORE, MD 21230
PHONE: 443-743-3470
WWW.KIMLEY-HORN.COM

NORTH

KHA PROJECT PROJ #
DATE 09/15/2022
SCALE AS SHOWN
DESIGNED BY ---
DRAWN BY ---
CHECKED BY ---

DRAINAGE AREA EXHIBIT

GREENSPRING MANOR
(2310 WEST JOPPA ROAD)
PREPARED FOR
ATAPCO PROPERTIES

SHEET NUMBER

No.	REVISIONS	DATE	BY

DEVELOPER'S EXHIBIT
24

C. Nick Driban, P.E., PTOE
Senior Traffic Engineer

Mr. Driban has 15 years of experience in traffic engineering for various transportation planning, traffic modeling and simulation, traffic operations and safety analysis, traffic impact study, and data collection projects. Mr. Driban has performed these services for clients around the country and throughout Maryland, including Baltimore County and the Maryland State Highway Administration. In addition, Mr. Driban has provided expert witness testimony on traffic and transportation issues before the Montgomery County Zoning Hearing Examiner, City of Annapolis Board of Appeals, Maryland Tax Court, as well as the Taneytown Board of Zoning Appeals, and has presented testimony on these issues before the Prince George's County Planning Board, Charles County Planning Commission, and St. Mary's County Planning Commission, among others. His relevant experience includes:

SHA Access Management Division - Traffic Engineer

As an employee of the Maryland State Highway Administration's (SHA) Access Management Division, Mr. Driban was responsible for reviewing Traffic Impact Studies (TIS) and development plans throughout the State to determine compliance with the Maryland State Highway *Access Manual*. In this role Mr. Driban coordinated closely with local agency staff. Mr. Driban's primary responsibility was to review all Traffic Impact Studies to confirm that appropriate assumptions were used and provide guidance on required mitigation. Mr. Driban served as the primary point of contact in coordinating TIS reviews throughout SHA, and was responsible for providing comments to and coordinating with developers' engineers. Mr. Driban was also responsible for reviewing plans for new developments to provide recommendations related to access management.

SHA Districts 3, 4, 5, and 7 Traffic Engineering Services - Project Engineer

Mr. Driban has worked on hundreds of tasks to provide traffic engineering services for SHA on an as-needed basis throughout the state of Maryland, including within Baltimore County. He has prepared traffic operations and safety studies, including numerous traffic impact studies for rural, small-town, and urban areas throughout Maryland. Mr. Driban's assignments have included traffic impact studies, crash analysis and safety studies, pedestrian and bicycle facility evaluations, traffic signal warrant studies, access management evaluations, and signal timing and phasing analyses.

Montgomery County DOT Traffic Engineering and Operations Consulting Services - Task Manager

Mr. Driban managed traffic engineering tasks as part of back-to-back on-call contracts, including analyzing and recommending alternatives to improve pedestrian, bicycle, transit and vehicular operations and safety throughout Montgomery County, MD. Mr. Driban was responsible for overseeing traffic volume data collection, highway capacity analyses using an array of traffic software packages, conducting and reviewing traffic impact studies, corridor studies, safety studies, alternatives development, and/or conceptual design on nearly 50 tasks.

FIRM
Lenhart Traffic Consulting

YEARS OF EXPERIENCE
15

EDUCATION
BS, Civil Engineering

REGISTRATIONS
Professional Engineer: Maryland (#40793)

Professional Traffic Operations Engineer (PTOE); Institute of Transportation Engineers (#3442)

SPECIFIC SKILLS
- ✓ Traffic Impact Studies
- ✓ Transportation Safety Studies
- ✓ Traffic Modeling & Simulation Software
- ✓ Bicycle & Pedestrian Facility Design
- ✓ Parking Evaluations
- ✓ Traffic Signal Warrant Analyses
- ✓ ITE Trip Generation Studies
- ✓ Access Permit Coordination
- ✓ Roadway Safety Audits
- ✓ Alternatives Analysis
- ✓ Traffic Signal Timing and Coordination
- ✓ Intersection Safety/Capacity Improvements

DEVELOPER'S EXHIBIT
14

TRAFFIC IMPACT ANALYSIS

FOR

2310 JOPPA ROAD

Prepared by:

LENHART TRAFFIC CONSULTING, INC.

TRAFFIC ENGINEERING & TRANSPORTATION PLANNING



September 14, 2020

Revised: December 7, 2020

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2.2 Existing Lane Configurations
2.3 Existing Traffic Counts
2.4 Existing Traffic Observations

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4.4 Projected Level of Service

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B Level of Service Worksheets (CLV & HCM)

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Section 1 Introduction

1.1 Project Description

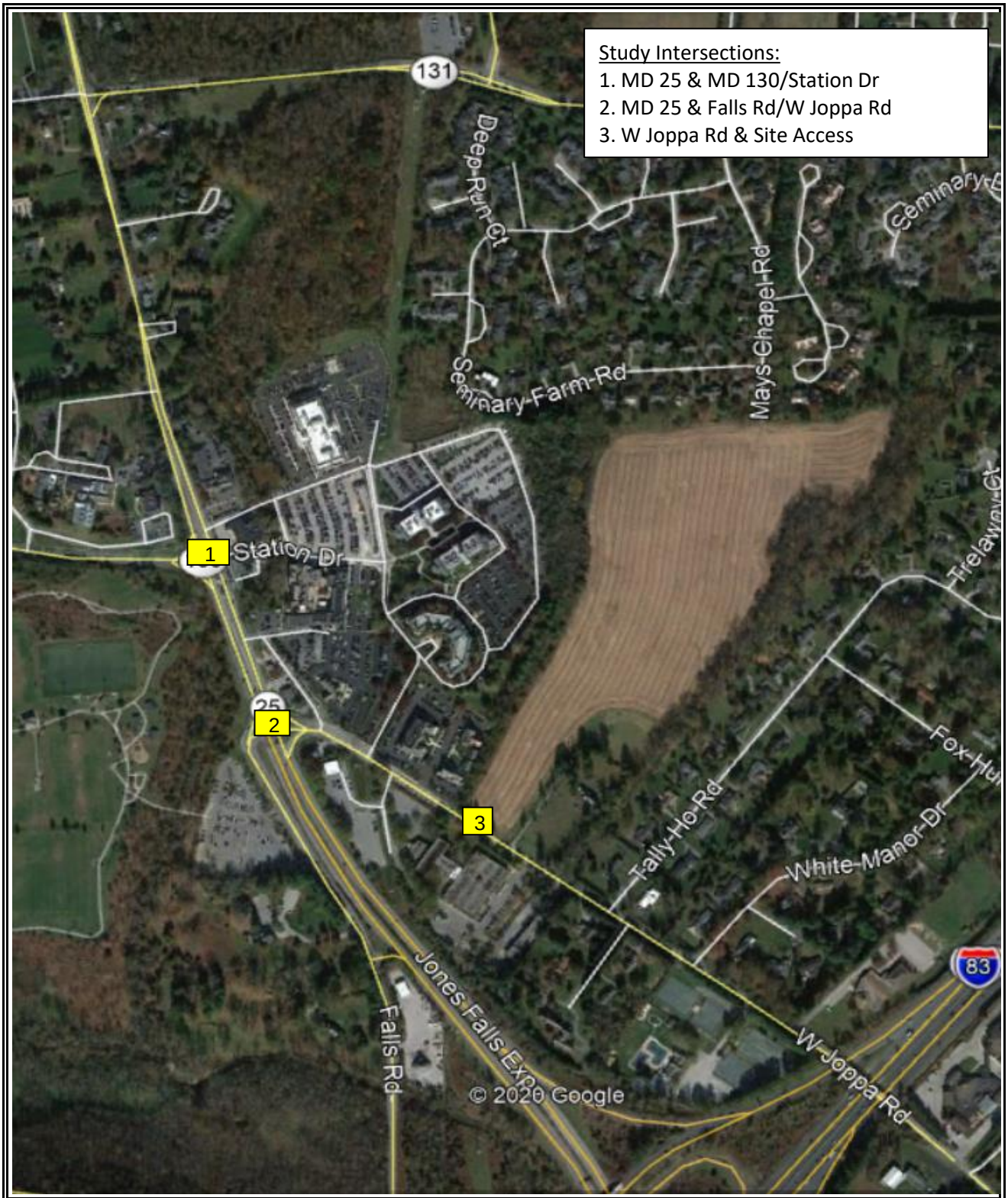
This Traffic Impact Analysis was prepared for the proposed 2310 Joppa Road development to be located on the north side of Joppa Road, as shown on **Exhibit 1**. The property is currently undeveloped and is proposed to be developed with 62 single-family detached units. The development will be accessed from a full-movement driveway along Joppa Road.

This revised Traffic Impact Analysis (TIA) was prepared to propose additional improvements at the intersection of MD 25 & W. Joppa Road / Falls Road. The original Traffic Impact Analysis proposed a modification to the signal phasing along with changes to the existing lane use. This revised TIA proposed to retain the existing signal phasing, but widen the east leg (W. Joppa Road) and the west leg (Falls Road) to provide additional approach lanes on each leg.

1.2 Scope of Study

This traffic study was conducted in accordance with the requirements of Baltimore County. The Baltimore County 2020 Basic Services Transportation Map indicates the site is located within a Level-of-Service (LOS) "F" zone. The intersections of MD 25 & MD 130/Station Drive and MD 25 & Falls Road/Joppa Road are individually shown with a LOS "F".

A special variance can be granted pursuant to Article 4A02.3.G of the Baltimore County Zoning Regulations if the demand or impact of the development proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal.



Traffic Impact Analysis	Site Location Map	**Exhibit 1**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com		

Section 2 Existing Conditions

2.1 Description of Roadway Network

The key roads in the study area are:

- MD 25 is a four lane (two in each direction) roadway with a posted speed limit of 40 MPH.
- Joppa Road is a two lane (one in each direction) roadway with a posted speed limit of 30 MPH.

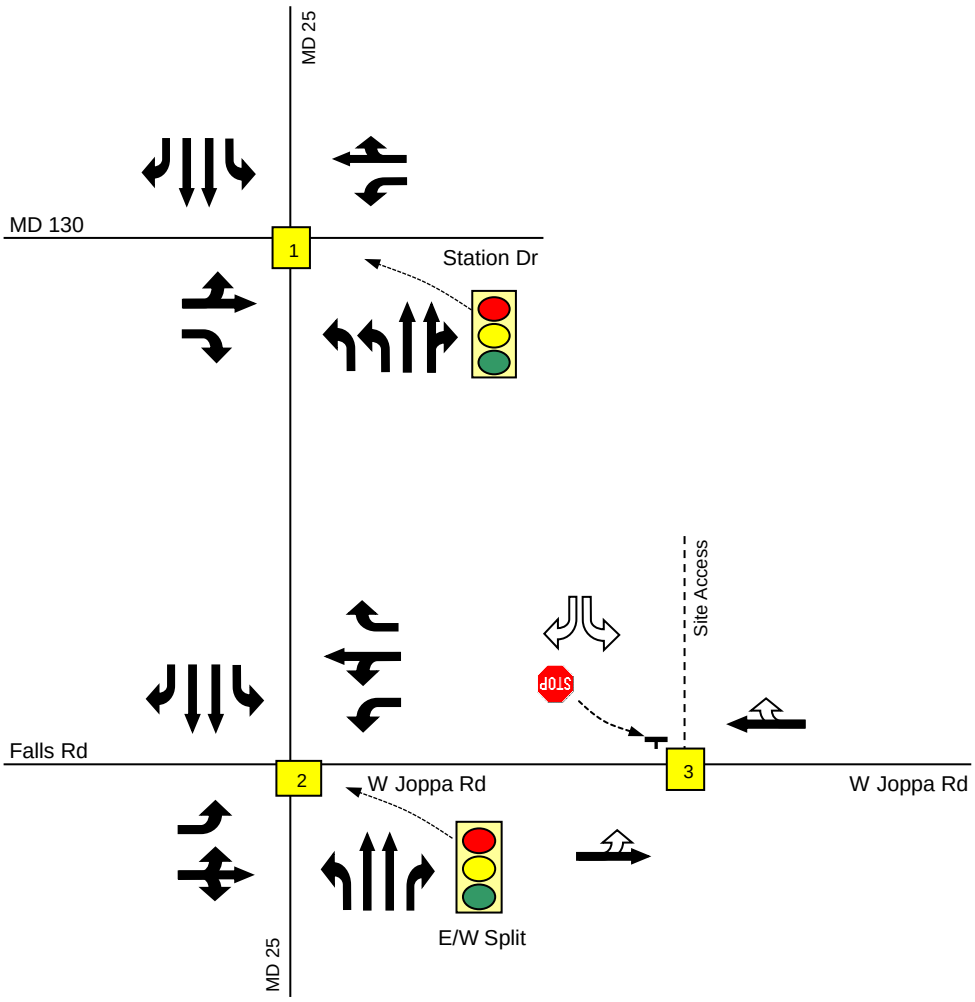
2.2 Existing Lane Configurations

The Existing Lane Use & Traffic Control Devices are shown on **Exhibit 2**.

2.3 Existing Traffic Counts

Peak Hour Traffic counts are shown on **Exhibit 3**. The existing intersections were evaluated using the Critical Lane Volume (CLV) methodology and the results are shown on Exhibit 8.

Baltimore County staff provided a traffic count for the intersection of MD 25 & Falls Road/Joppa Road. This count has been utilized throughout the study and is dated February 19, 2020. A copy of the provided count is included in Appendix A.



Traffic Impact Analysis

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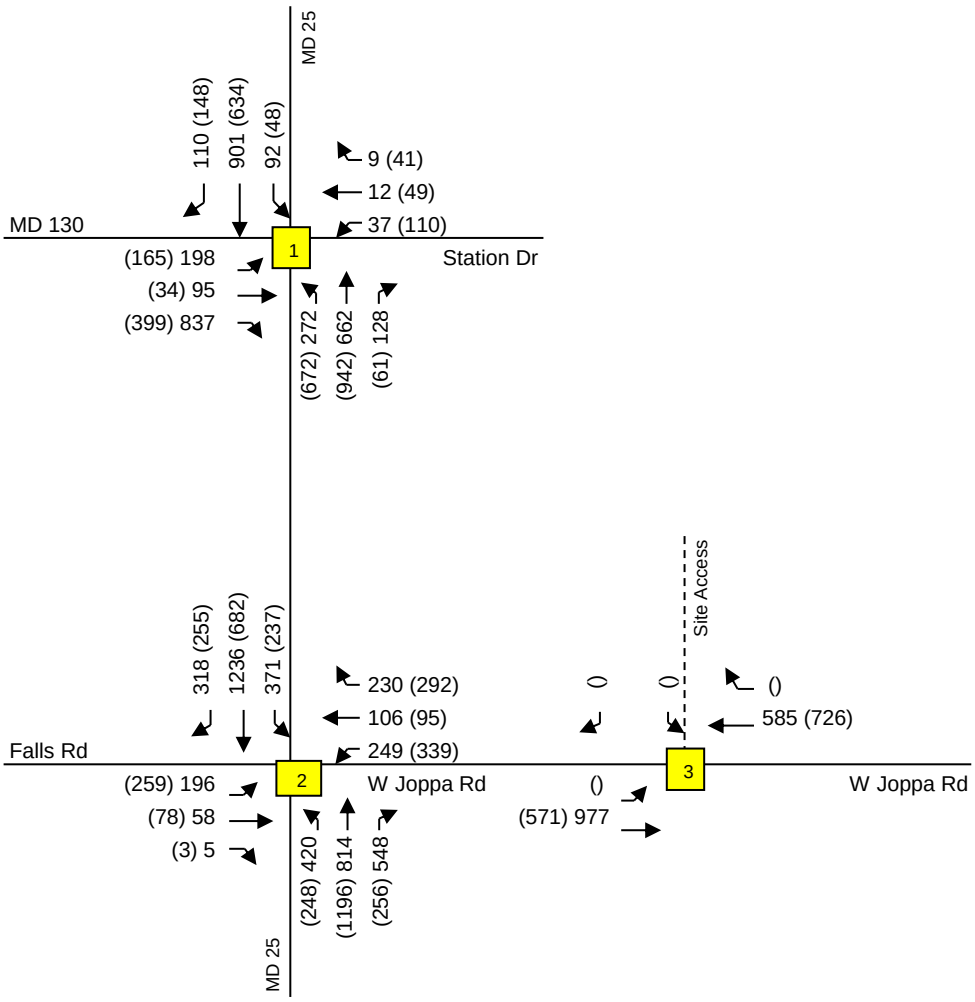
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Lane Use & Traffic Control Devices

Key: Existing - Proposed -

Exhibit 2

Note: The volumes for Intersection 2 were provided by Baltimore County and are dated February 19, 2020.



Traffic Impact Analysis

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SEVERNA PARK, MD 21146
www.lenharttraffic.com

Existing Peak Hour Volumes

Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

Exhibit 3

Section 3 Background Conditions

3.1 Background Developments

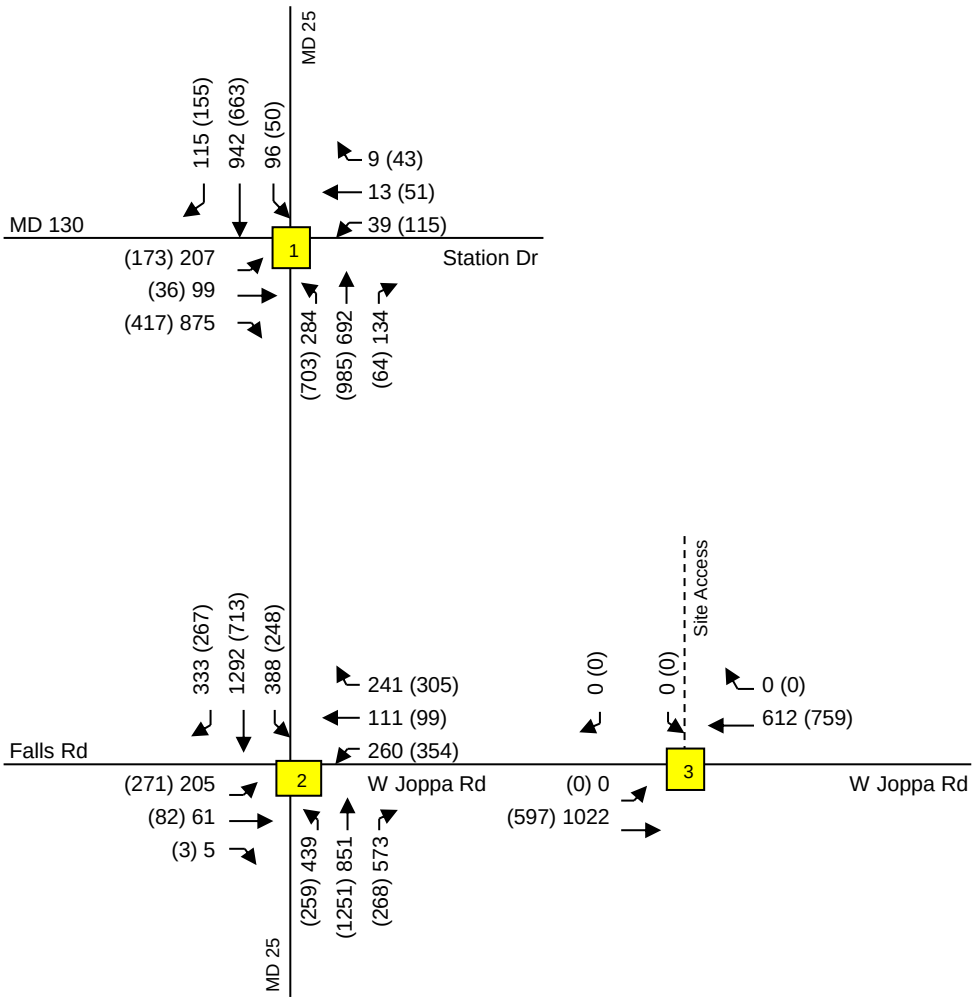
The Baltimore County Land Management Development Mapping Tool was used to identify background developments in the project vicinity, however no approved developments were determined to be within the project vicinity.

3.2 Annual Growth / Background Traffic Volumes

An annual growth rate of 1.5% was applied for three years to the study intersections. **Exhibit 4** shows the resulting background traffic volumes with the growth applied at each study area intersection.

The background peak hour volumes were evaluated using the Critical Lane Volume (CLV) and Highway Capacity Software (HCS) methodology and the results are shown on Exhibit 8

1.5%	Growth Rate
3	Years of Growth
1.0457	Total Growth



Traffic Impact Analysis	Background Peak Hour Volumes	**Exhibit 4**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Key: xx = AM Peak Vol's (xx) = PM Peak Vol's	

Section 4 Total Conditions

4.1 Site Trip Generation

The site is proposed to be developed with 62 single-family detached units. The development will be accessed from a full-movement driveway along Joppa Road. The trip generation for the site is detailed on **Exhibit 5**. Trip generation rates and totals are based on the ITE Trip Generation Manual, 10th Edition.

4.2 Site Trip Distribution & Trip Assignment

The proposed trip assignment for the site is shown on **Exhibit 6**.

4.3 Total Traffic Volumes

The total peak hour volumes are shown on **Exhibit 7**.

4.4 Projected Level of Service

The total traffic volumes shown on Exhibit 7 were evaluated using the methodology and the results are shown on **Exhibit 8a**. As shown, all intersections will operate with a LOS "B" or better with the exception of Intersection 2, which operates with a LOS "E". It should be noted that the proposed improvement (discussed below) will improve the CLV to an LOS "D". CLV worksheets have been included in Appendix B.

The results of the HCM analyses are shown on **Exhibit 8b**. As shown, all intersections will operate with a LOS "D" or better. The HCM worksheets have been included in Appendix B.

Exhibit 8c shows the SimTraffic queuing analysis results. All 95th percentile queues for movements impacted by the development have adequate storage, with the exception of the northbound left along MD 25 at the intersection with MD 130 during the evening peak hour. It should be noted that the proposed development increases the volume for this movement by only 0.14%. The HCS SimTraffic worksheets have been included in Appendix B.

The impact on Intersection 1 should be considered negligible and while the impact on Intersection 2 should also be considered negligible, a potential improvement has been identified that would mitigate the impact of the development and improve the

CLV from background to total conditions at Intersection 2. The improvement consists of widening the east and west legs to include an additional left turn lane at each approach. The road improvements are shown on the attached concept plan on **Exhibits 9a and 9b.**

Trip Generation Rates

Single-Family Detached (ITE-210, Units)

	Trip Distribution (In/Out)
Morning Trips = 0.70 x (Units) + 9.74	25/75
Ln(Evening Trips) = 0.90 x Ln(Units) + 0.51	63/37

Trip Generation Totals

			AM Peak			PM Peak		
			In	Out	Total	In	Out	Total
LU Code 210	Single-Family Detached (ITE-210, Units)	62 units	11	35	46	38	23	61
		Total:	**11**	**35**	**46**	**38**	**23**	**61**

NOTE: Trip Generation Rates obtained from the ITE Trip Generation Manual, 10th Edition

Traffic Impact Analysis

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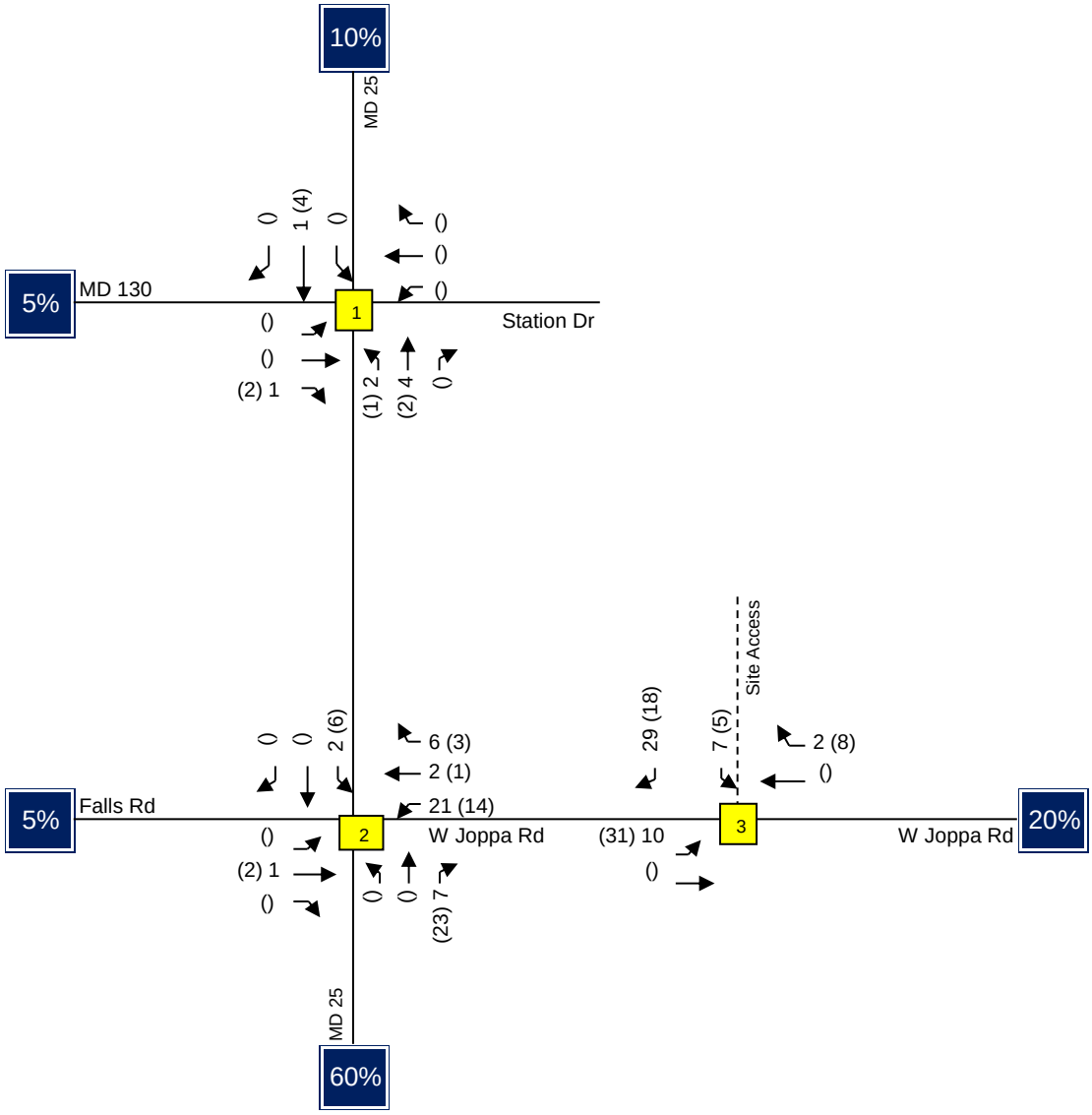
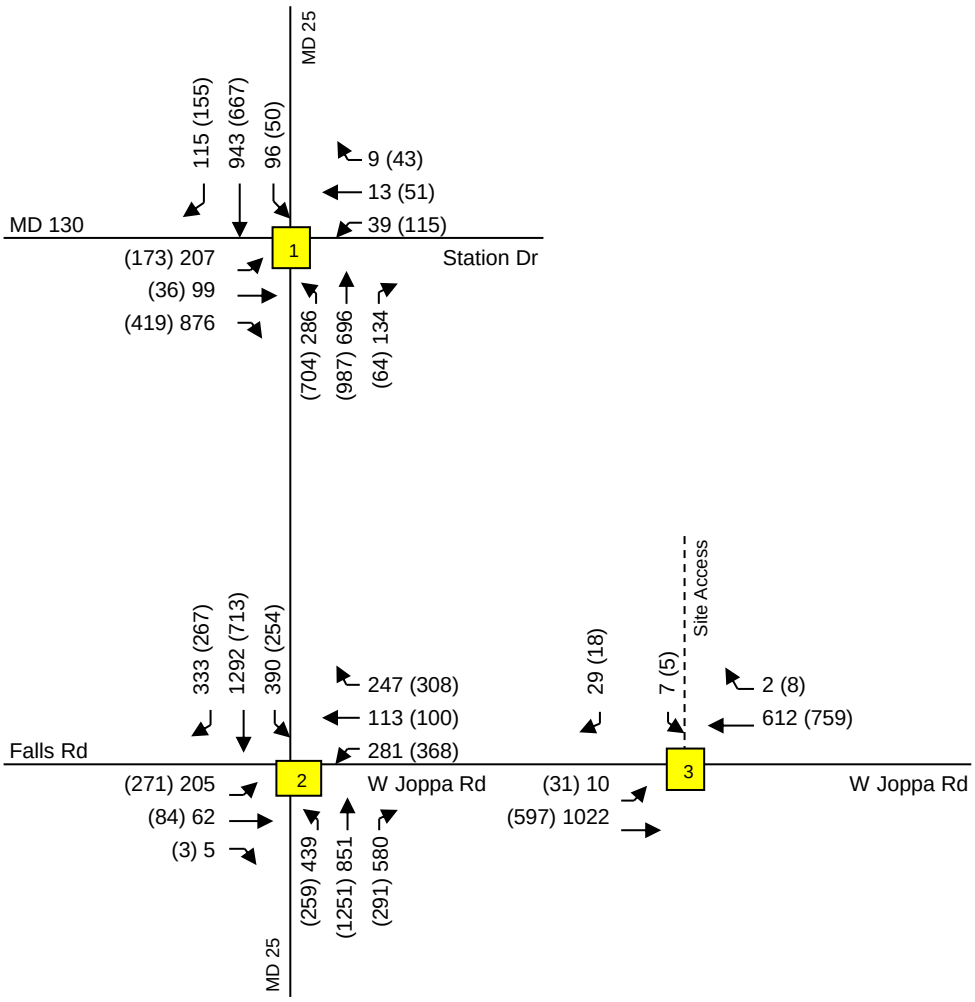
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Trip Generation for Site

Exhibit 6



Traffic Impact Analysis	Trip Assignment for Site	**Exhibit 6**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Key: xx = AM Peak Vol's (xx) = PM Peak Vol's	



Traffic Impact Analysis

Total Peak Hour Volumes

Exhibit 7

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645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
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Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

Level-of-Service Results

Morning Peak Hour	Critical Lane Volume (CLV)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total	CLV Impact	Mitigates
1). MD 25 & MD 130/Station Dr	B / 1009	B / 1054	B / 1057	3	--
2). MD 25 & Falls Rd/W Joppa Rd	E / 1468	E / 1536	E / 1549	13	--
Proposed New Improvements			D / 1428	-121	931%
3). W Joppa Rd & Site Access	N/A	N/A	B / 1088	--	--

Evening Peak Hour	Critical Lane Volume (CLV)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total	CLV Impact	Mitigates
1). MD 25 & MD 130/Station Dr	B / 1078	B / 1128	B / 1130	2	--
2). MD 25 & Falls Rd/W Joppa Rd	D / 1359	D / 1422	D / 1438	16	--
Proposed New Improvements			D / 1307	-131	819%
3). W Joppa Rd & Site Access	N/A	N/A	A / 821	--	--

Level-of-Service Results

Morning Peak Hour	Highway Capacity Manual (HCM)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total	Delay Impact	Mitigates
1). MD 25 & MD 130/Station Dr	C / 21.6	C / 21.8	C / 21.9	0.1	--
2). MD 25 & Falls Rd/W Joppa Rd	D / 49.7	D / 54.8	E / 55.9	1.1	--
Proposed New Improvements			D / 40.9	-15	1364%
3). W Joppa Rd & Site Access	N/A	N/A	A / 0.6	--	--

Evening Peak Hour	Highway Capacity Manual (HCM)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total	Delay Impact	Mitigates
1). MD 25 & MD 130/Station Dr	C / 27.3	C / 27.5	C / 27.4	-0.1	--
2). MD 25 & Falls Rd/W Joppa Rd	D / 44.8	D / 47.7	D / 48.7	1	--
Proposed New Improvements			D / 40.9	-7.8	780%
3). W Joppa Rd & Site Access	N/A	N/A	A / 0.8	--	--

SimTraffic 95th Percentile Queuing Results

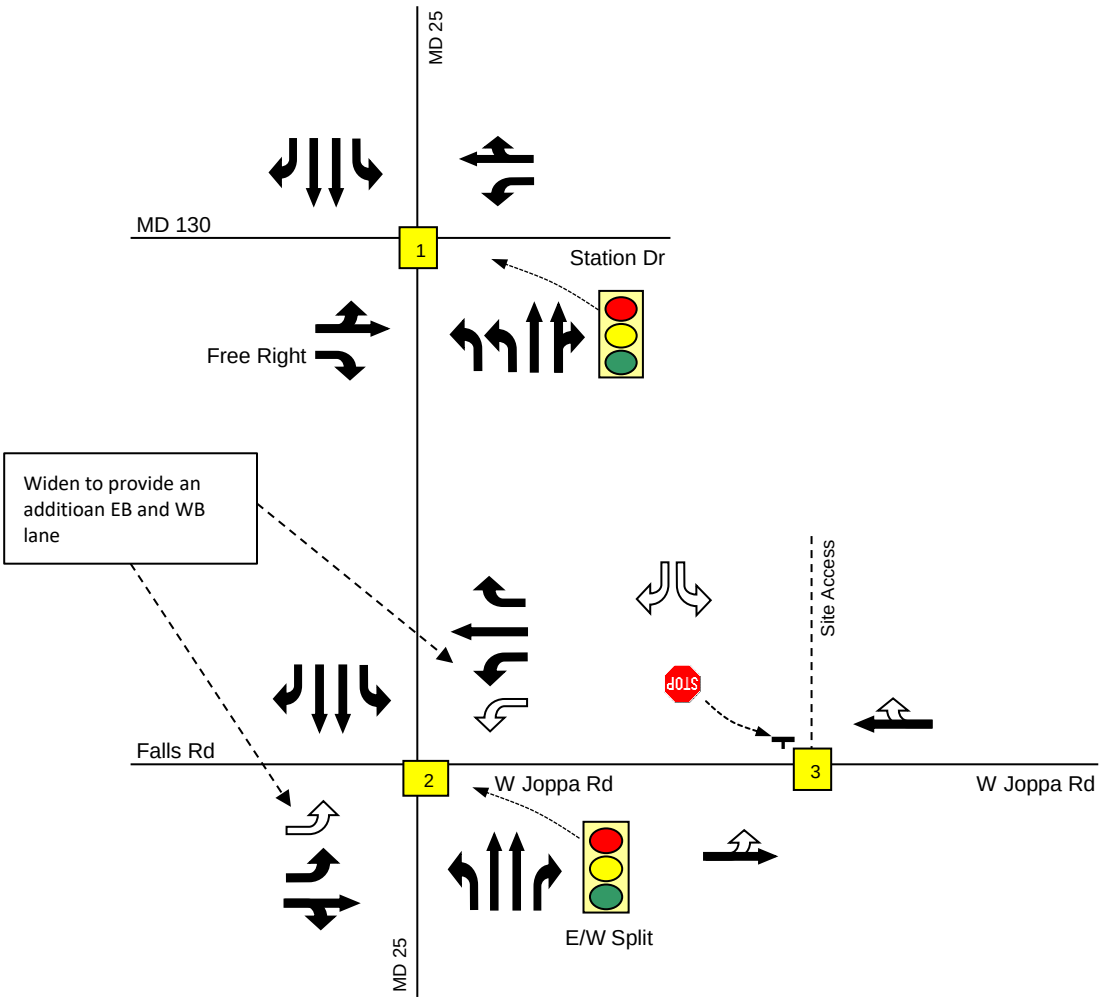
Morning Peak Hour	Storage Length (Feet)	Background (Feet)	Total (Feet)	Total with Imp's (Feet)
1). MD 25 & MD 130/Station Dr				
eastbound left	420	60	60	
westbound left	240	90	105	
northbound left	320	240	235	
southbound left	150	195	185	
2). MD 25 & Falls Rd/W Joppa Rd				
eastbound left	740	190	195	210
westbound left	540	255	270	160
northbound left	630	740	690	535
southbound left	355	440	440	435
3). W Joppa Rd & Site Access	N/A	N/A	N/A	N/A
southbound left				

Evening Peak Hour	Storage Length (feet)	Background (Feet)	Total (Feet)	Total with Imp's (Feet)
1). MD 25 & MD 130/Station Dr				
eastbound left	420	55	55	
westbound left	240	195	195	
northbound left	320	455	445	
southbound left	150	160	155	
2). MD 25 & Falls Rd/W Joppa Rd				
eastbound left	740	200	210	215
westbound left	540	305	295	270
northbound left	630	840	855	435
southbound left	355	310	360	330
3). W Joppa Rd & Site Access	N/A	N/A	N/A	N/A
southbound left				

Notes:

1. Only intersections and approaches containing dedicated storage lanes are shown.

Traffic Impact Analysis	Results of SimTraffic Queuing Analysis	**Exhibit 8c**



Traffic Impact Analysis

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645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Lane Use & Traffic Control Devices

Key: Existing - Proposed -

Exhibit 9a



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SEVERNA PARK, MD 21146
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FAX: (443) 782-2288
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LEGEND

FULL-DEPTH WIDENING | REMOVE PAVEMENT | RE-MARK PAVEMENT | CONCRETE CURB AND GUTTER

2310 W. JOPPA ROAD

MD 25 AT WEST JOPPA ROAD CONCEPT GEOMETRIC IMPROVEMENTS

DATE	DRAWN BY	SCALE	SHEET
DEC. 2020	LTC/BCS	1"=50'	

Section 5 Conclusions / Recommendations

5.1 Results of Analysis

This Traffic Impact Analysis was prepared for the proposed 2310 Joppa Road development to be located on the north side of Joppa Road. The property is currently undeveloped and is proposed to be developed with 62 single-family detached units. The development will be accessed from a full-movement driveway along Joppa Road.

Based on the analyses contained in this report:

- The Baltimore County 2020 Basic Services Transportation Map indicates the site is located within a Level-of-Service (LOS) "F" zone. The intersections of MD 25 & MD 130/Station Drive and MD 25 & Falls Road/Joppa Road are individually shown with a LOS "F".

- The results of the CLV analysis indicate that the study intersections actually operate at a LOS "E" or better.
    - The intersection of MD 25 & MD 130/Station Drive will operate with a LOS "B" during the morning and evening peak hour. The proposed development has an impact of 0.28% on this intersection.
    - The intersection of MD 25 & Falls Road/Joppa Road will operate with a LOS "E" during the morning peak hour and LOS "D" during the evening peak hour. The proposed development has an impact of only 1.13% on this intersection.
        - With the proposed improvement, the intersection of MD 25 & Falls Road/Joppa Road will operate with a LOS "D" during both the morning and evening peak hours.
    - The intersection of Joppa Road & Site Access will operate with a LOS "B".

- The results of the HCS analysis indicate that all intersections will operate with a LOS "D" or better during both the morning and evening peak hours with the proposed improvement. There is a negligible increase in the overall intersection delay at the study intersections from background to total conditions.

Using SHA's Critical Lane Volume methodology, this analysis indicates that the study intersections operate significantly better than the LOS "F" shown in the 2020 Basic Services Transportation Map with or without this development. Additionally, the proposed development has a negligible impact on the intersections along MD 25. However, in order to address the findings of the Basic Services Map, this TIA includes an expanded improvement as discussed in Section 4 above. The road improvements are shown on the attached concept plan on Exhibits 9a and 9b, and include widening the east and west legs of the intersection to provide an additional lane on each approach. These expanded improvements would mitigate 931% of the site impacts in the AM peak hour and 819% of the site impacts in the PM peak hour.

Appendix B to this report also contains Highway Capacity Manual (HCM) reports of the intersections including an evaluation of the proposed improvement. The HCM reports also indicate that the intersections are currently operating at acceptable levels of service ("D" or better). In addition, the HCM analyses of the proposed improvements also indicates a reduction of the overall intersection delays that are 1364% mitigation of the site impacts in the AM peak and 780% mitigation of the site impacts in the PM peak. This is commensurate with the improvements identified in the CLV analyses above.

The applicant will be submitting an application for a Special Variance through Baltimore County to allow this development to proceed based on our proposal for improvements that will substantially over-mitigate the traffic impacts. The code section related to this finding states that, "*The demand or impact of the development proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or the standard is not relevant to the development proposal*." Based on the proposed improvements, the traffic conditions will be better with the approval of the project and the associated improvements, than what would be expected to occur if the project is not approved.

It is also important to note that in reviewing the historical imagery in this area, it appears that no significant improvements have been provided in this area in at least 25 to 30 years, and there are currently no improvements programmed. The attached analyses show that the granting of the special variance would improve traffic conditions based on the CLV and HCM methodology over what would occur otherwise without the granting of the special variance.

Appendix A

Supplemental Information
Turning Movement Counts

Department of Public Works

2020 Basic Services Map
Transportation Zones

Legend

Intersections - Level of Service

- D
- E
- F

Transportation Zones - Level of Service

- D
- E
- F
- Commercial Revitalization Areas
- Towson Urban Center
- Urban Rural Demarcation Line
- County Boundary

Shawan Rd, Beaver Dam Rd & Cuba Rd
Falls Rd, Shawan Rd & Tufton Ave
W Padonia Rd, Deerco Rd & Beaver Dam Rd
York Rd & E/W Padonia Rd
Dulaney Valley Rd & E Timonium Rd
York Rd & E/W Timonium Rd
Jarrettsville Pike, Paper Mill Rd & Sweet Air Rd
Falls Rd & W Seminary Ave
Falls Rd, Greenspring Valley Rd & Station Dr
Jones Falls Expy, Falls Rd & W Joppa Rd
York Rd & E/W Seminary Ave
Charles St, Bellona Ave & Kenilworth Ave
York Rd & Fairmount Ave
Dulaney Valley Rd & Fairmount Ave
Perring Pkwy & E Joppa Rd
Harford Rd & E Joppa Rd
Belair Rd, Joppa Rd & Ebenezer Rd
York Rd & Burke Ave
Hillen Rd & Stevenson Ln
Goucher Blvd & Putty Hill Ave
Perring Pkwy & Putty Hill Ave
Loch Raven Blvd & E Joppa Rd
White Marsh Blvd & Honeygo Blvd
Belair Rd & Rossville Blvd
Pulaski Hwy & Ebenezer Rd
Harford Rd & Taylor Ave
Belair Rd, Fullerton Ave & Taylor Ave
Liberty Rd & Washington Ave
Rolling Rd & Windsor Mill Rd
Pulaski Hwy & Middle River Rd
Pulaski Hwy & Rossville Blvd
Pulaski Hwy & 66th St
Eastern Ave, Rolling Mill Rd & Eastpoint Mall
Baltimore National Pike & N Rolling Rd
Frederick Rd, Ingleside Ave & Bloomsbury Ave
Frederick Rd & S Rolling Rd

THIS MAP HAS BEEN ENACTED UNDER BILL NUMBER 30-20 AND IS PART OF THE BALTIMORE COUNTY ZONING REGULATIONS, 1955, AS AMENDED BY THE BILL ADOPTED 5/4/20. EFFECTIVE 5/18/20.

COUNTY COUNCIL OF BALTIMORE COUNTY

N W E S

SCALE 1 INCH = 4,000 Feet

0 2,000 4,000 8,000 12,000 16,000 20,000 Feet

NOTE: The interpretation of the Basic Services Maps are subject to exceptions provided for in the Baltimore County Zoning Regulations, Article 4A Growth Management, Section 4A02 Basic Services Maps. These exceptions include those mapped in the County's geographic information system (GIS): the Urban and Rural Demarcation Line (URDL), Commercial Revitalization Districts (4A02.4.E.1.i), and the Towson Urban Center (4A02.4.E.1.j). The Towson Urban Center (Downtown Towson District) exists in the Master Plan 2020 in the Land Management Areas feature class.

Feature Class Production Dates

Transportation Zones	2020
Intersections	2020
Commercial Revitalization Districts	2019
Towson Urban Center	2011
Urban Rural Demarcation Line	2012
Roads	2020
County Boundary	2008

Produced by the Baltimore County Department of Public Works

North American Datum 1983 HARN, U.S. Survey Foot

Published June 5, 2020

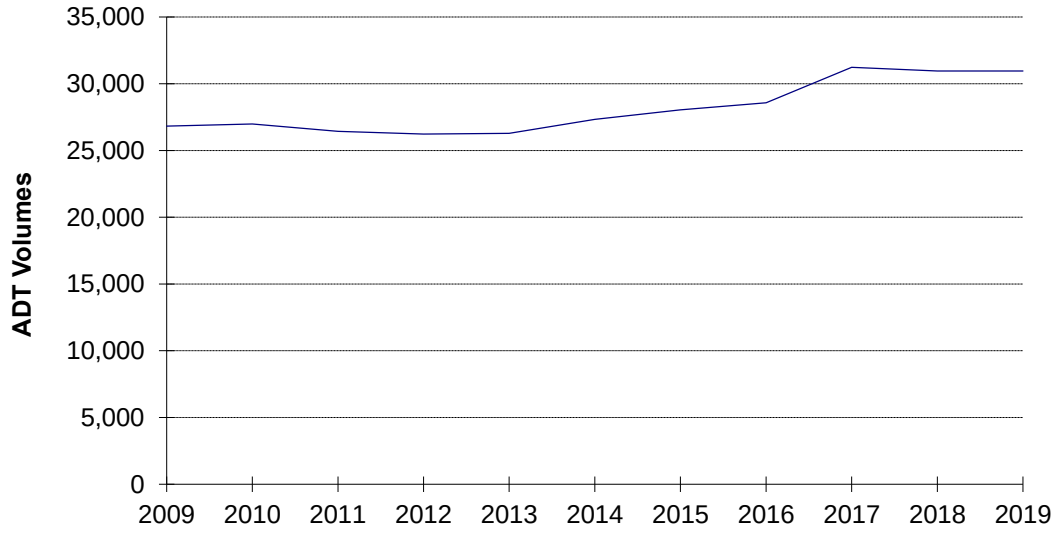
TRAFFIC GROWTH PROJECTION

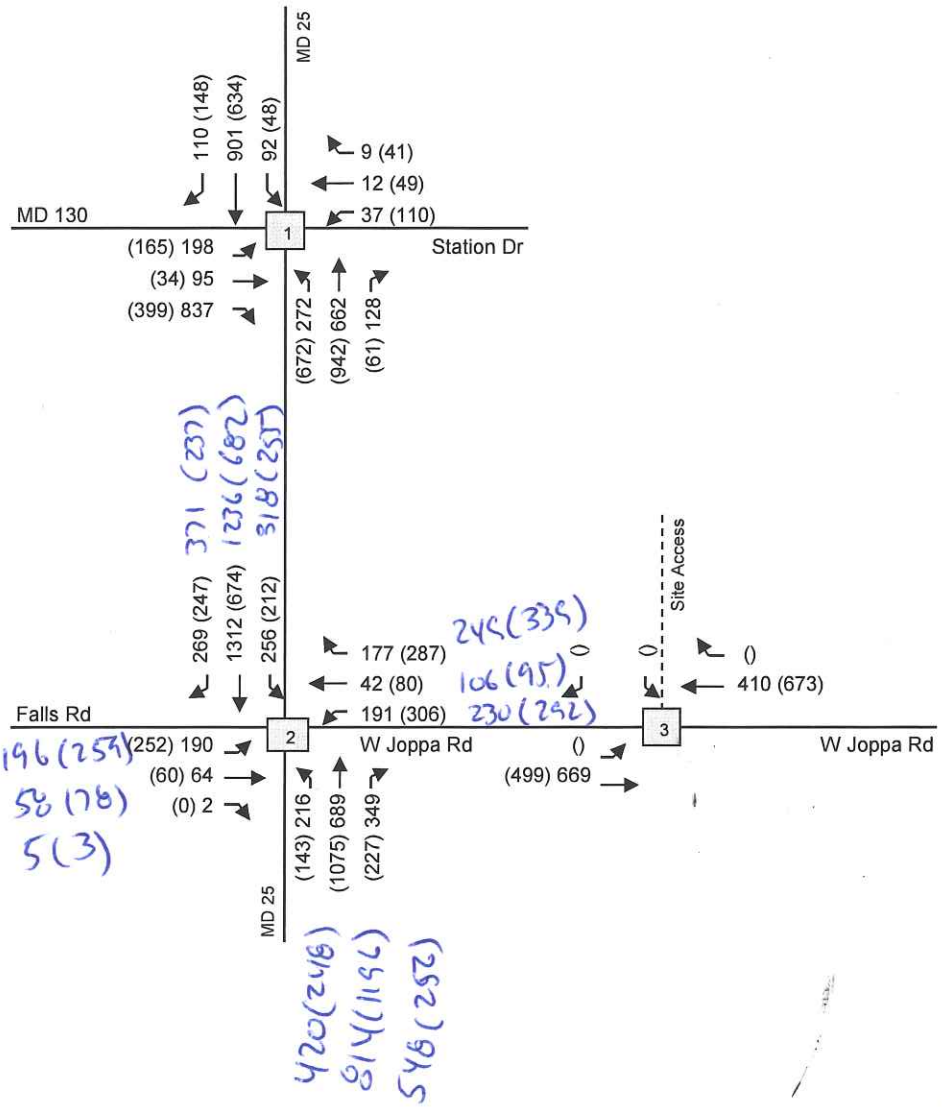
LOCATION: Jones Falls Expy South of MD 130

REPORT DATE: 03-Sep-20

AVERAGE GROWTH:	1.49%
MATHEMATICAL GROWTH:	1.44%

Year	ADT Volume	Vol. increase	% increase	Average %
2009	26,821			
2010	26,982	161	0.60%	0.60%
2011	26,440	-542	-2.01%	-0.70%
2012	26,231	-209	-0.79%	-0.73%
2013	26,282	51	0.19%	-0.50%
2014	27,330	1,048	3.99%	0.40%
2015	28,041	711	2.60%	0.76%
2016	28,572	531	1.89%	0.93%
2017	31,230	2,658	9.30%	1.97%
2018	30,951	-279	-0.89%	1.65%
2019	30,952	1	0.00%	1.49%





Traffic Impact Analysis	Existing Peak Hour Volumes	**Exhibit 3**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Key: xx = AM Peak Vol's (xx) = PM Peak Vol's	

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

MD 25	MD 25	Station Dr	MD 130
From North	From South	From East	From West

Begin Hour	U.Turn	Left	Through	Right	TOTAL	U.Turn	Left	Through	Right	TOTAL	U.Turn	Left	Through	Right	TOTAL	U.Turn	Left	Through	Right	TOTAL	GrandTotal
00:00	0	0	5	0	5	0	3	7	0	10	0	0	0	0	0	0	0	0	3	3	18
00:15	0	0	1	0	1	0	1	9	0	10	0	0	0	0	0	0	0	0	1	1	12
00:30	0	0	0	0	0	0	2	3	0	5	0	0	0	0	0	0	0	0	1	1	6
00:45	0	0	0	0	0	0	4	7	0	11	0	0	0	0	0	0	0	0	0	0	11
01:00	0	0	1	1	2	0	2	6	0	8	0	0	0	0	0	0	0	0	1	1	11
01:15	0	0	0	0	0	0	4	2	0	6	0	0	0	0	0	0	0	0	0	0	6
01:30	0	0	2	1	3	0	0	6	1	7	0	0	0	1	1	0	0	0	2	2	13
01:45	0	0	1	1	2	0	1	5	0	6	0	0	0	0	0	0	0	0	1	1	9
02:00	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	3
02:15	0	0	0	0	0	0	0	2	0	2	0	0	0	1	1	0	0	0	1	1	4
02:30	0	0	2	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
02:45	0	0	3	0	3	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	5
03:00	0	0	1	0	1	0	0	2	0	2	0	0	0	0	0	0	0	0	2	2	5
03:15	0	1	3	0	4	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0	8
03:30	0	0	0	0	0	0	2	3	0	5	0	0	0	0	0	0	0	0	3	3	8
03:45	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	2	2	4
04:00	0	0	5	0	5	0	0	1	1	2	0	0	0	0	0	0	0	0	1	1	8
04:15	0	0	12	0	12	1	1	5	3	10	0	0	0	0	0	0	0	0	8	8	30
04:30	0	1	12	3	16	0	2	1	0	3	0	1	0	1	2	0	0	0	3	3	24
04:45	0	0	10	0	10	0	4	2	0	6	0	1	0	0	1	0	1	1	8	10	27
05:00	0	0	32	4	36	0	2	8	0	10	0	0	0	0	0	0	2	0	3	5	51
05:15	0	2	39	2	43	0	3	8	5	16	0	2	0	0	2	0	2	1	10	13	74
05:30	0	0	54	4	58	0	4	15	0	19	0	0	0	0	0	0	0	0	15	15	92
05:45	0	0	46	1	47	0	13	21	2	36	0	0	0	0	0	0	3	0	31	34	117
06:00	0	2	52	3	57	0	8	20	5	33	0	1	0	0	1	0	2	2	45	49	140
06:15	0	4	96	3	103	0	14	36	6	56	0	2	1	0	3	0	8	2	64	74	236
06:30	0	5	163	3	171	0	26	36	17	79	0	4	2	1	7	0	7	4	118	129	386

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

	MD 25						MD 25						Station Dr						MD 130					
	From North						From South						From East						From West					
06:45	0	22	182	14	218	1	22	67	19	109	0	3	0	1	4	0	15	9	126	150	481
07:00	0	15	239	10	264	0	37	103	17	157	0	3	0	3	6	0	7	10	195	212	639
07:15	1	19	292	21	333	0	40	168	19	227	0	7	2	1	10	0	30	11	204	245	815
07:30	0	24	250	26	300	1	65	176	32	274	0	1	0	1	2	0	31	10	209	250	826
07:45	0	33	208	24	265	0	59	151	31	241	0	10	0	1	11	0	48	19	233	300	817
08:00	0	23	233	26	282	0	66	204	36	306	0	15	4	5	24	0	49	17	179	245	857
08:15	0	16	198	29	243	0	71	162	36	269	0	8	5	2	15	0	52	33	229	314	841
08:30	1	20	262	31	314	0	76	145	25	246	0	4	3	1	8	0	49	26	196	271	839
08:45	1	17	181	25	224	0	51	101	21	173	0	15	2	6	23	0	50	25	205	280	700
09:00	0	22	129	17	168	0	35	72	39	146	0	25	4	2	31	0	33	17	141	191	536
09:15	0	21	114	20	155	1	41	63	40	145	0	21	8	3	32	0	31	13	167	211	543
09:30	2	27	115	14	158	1	27	87	36	151	0	31	5	6	42	0	25	13	114	152	503
09:45	0	16	76	16	108	0	49	70	26	145	0	22	7	6	35	0	22	15	106	143	431
10:00	1	15	89	10	115	1	42	86	27	156	0	39	6	8	53	0	13	8	75	96	420
10:15	0	13	83	13	109	0	32	84	28	144	0	33	3	8	44	0	14	15	54	83	380
10:30	0	11	99	14	124	1	43	80	37	161	0	37	9	4	50	0	14	10	53	77	412
10:45	0	10	85	10	105	1	38	74	42	155	0	21	7	11	39	0	24	6	62	92	391
11:00	0	13	71	15	99	4	48	70	27	149	0	30	3	8	41	0	25	4	37	66	355
11:15	1	15	89	17	122	0	47	105	18	170	0	49	6	3	58	0	22	6	38	66	416
11:30	1	17	93	16	127	0	38	68	31	137	0	21	10	6	37	0	23	6	50	79	380
11:45	1	9	80	25	115	2	48	104	26	180	0	36	7	5	48	0	16	10	58	84	427
12:00	1	15	93	10	119	2	55	115	31	203	0	46	7	6	59	0	25	9	55	89	470
12:15	0	15	81	15	111	0	52	94	25	171	0	41	6	4	51	0	15	14	62	91	424
12:30	0	16	75	15	106	2	65	86	26	179	0	22	3	6	31	0	20	8	75	103	419
12:45	0	19	78	17	114	1	45	96	21	163	0	29	9	6	44	0	20	12	52	84	405
13:00	1	16	66	19	102	0	52	88	24	164	0	17	6	8	31	0	17	10	43	70	367
13:15	1	16	63	20	100	1	38	97	23	159	0	35	7	6	48	0	20	5	44	69	376
13:30	0	13	71	16	100	0	40	90	26	156	0	25	7	1	33	0	15	11	46	72	361
13:45	1	14	80	20	115	1	55	117	19	192	0	19	6	8	33	0	9	8	53	70	410

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

	MD 25						MD 25						Station Dr						MD 130					
	From North						From South						From East						From West					
14:00	0	13	92	23	128	0	51	101	23	175	0	41	4	7	52	0	25	8	58	91	446
14:15	1	17	93	7	118	2	67	111	37	217	0	41	5	11	57	0	18	9	57	84	476
14:30	1	9	83	18	111	1	56	180	17	254	0	37	14	11	62	0	32	7	56	95	522
14:45	0	14	112	18	144	0	101	170	21	292	0	24	12	4	40	0	35	6	69	110	586
15:00	1	11	114	27	153	0	86	149	23	258	0	31	7	10	48	0	31	3	61	95	554
15:15	1	17	130	47	195	0	94	218	20	332	0	30	12	9	51	0	35	7	95	137	715
15:30	0	17	136	27	180	1	151	220	17	389	0	23	23	9	55	0	39	6	95	140	764
15:45	1	16	123	36	176	2	127	186	19	334	0	22	16	4	42	0	37	4	94	135	687
16:00	0	12	121	35	168	1	153	205	17	376	0	36	12	14	62	0	33	6	98	137	743
16:15	1	16	156	39	212	0	123	227	12	362	0	29	16	10	55	0	45	3	96	144	773
16:30	0	14	139	36	189	0	162	199	10	371	0	35	19	11	65	0	45	10	95	150	775
16:45	0	17	129	28	174	1	136	220	15	372	0	35	16	12	63	0	48	6	84	138	747
17:00	1	12	134	41	188	0	192	260	11	463	0	32	17	10	59	0	33	6	102	141	851
17:15	0	11	161	42	214	0	163	210	16	389	0	27	11	14	52	0	52	6	118	176	831
17:30	0	7	210	37	254	0	180	252	19	451	0	16	5	5	26	0	32	16	95	143	874
17:45	0	13	137	31	181	0	138	240	15	393	0	18	7	5	30	0	38	13	68	119	723
18:00	1	17	124	24	166	0	123	217	10	350	0	16	5	6	27	0	21	10	57	88	631
18:15	0	7	108	15	130	0	124	183	16	323	0	11	7	7	25	0	21	11	66	98	576
18:30	0	10	93	15	118	1	82	173	6	262	0	14	5	6	25	0	22	3	54	79	484
18:45	0	8	63	16	87	0	58	130	11	199	0	12	5	5	22	0	8	2	39	49	357
19:00	0	8	68	6	82	1	50	141	9	201	0	12	4	7	23	0	6	2	28	36	342
19:15	1	4	82	14	101	0	54	85	6	145	0	14	3	5	22	0	9	0	21	30	298
19:30	0	4	73	4	81	2	51	87	9	149	0	9	4	5	18	0	4	2	22	28	276
19:45	0	2	77	5	84	0	52	99	6	157	0	4	9	5	18	0	17	2	20	39	298
20:00	0	3	54	3	60	0	39	87	5	131	0	9	7	4	20	0	9	0	22	31	242
20:15	0	7	27	4	38	1	57	80	3	141	0	8	3	2	13	0	4	1	17	22	214
20:30	0	2	37	3	42	0	47	73	7	127	0	9	4	4	17	0	5	1	25	31	217
20:45	0	0	27	2	29	2	37	85	1	125	0	9	2	1	12	0	7	1	13	21	187
21:00	0	0	75	8	83	0	38	87	3	128	0	14	1	0	15	0	3	0	9	12	238

Maryland Department of Transportation
State Highway Administration
Data Services Division

Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

	MD 25					MD 25					Station Dr					MD 130				
	From North					From South					From East					From West				
21:15	0	0	37	3	40	0	32	52	2	86	0	5	1	5	11	0	1	1	12	14	151
21:30	0	1	16	4	21	0	28	49	3	80	0	8	1	2	11	0	2	0	12	14	126
21:45	0	0	25	4	29	0	15	48	0	63	0	4	4	0	8	0	2	0	17	19	119
22:00	0	0	18	2	20	1	16	29	0	46	0	14	4	2	20	0	3	0	11	14	100
22:15	0	0	8	0	8	0	23	35	0	58	0	2	0	1	3	0	1	0	8	9	78
22:30	0	0	9	0	9	0	14	22	1	37	0	2	0	4	6	0	1	0	7	8	60
22:45	0	0	6	1	7	0	9	19	0	28	0	0	0	0	0	0	0	0	9	9	44
23:00	0	1	13	0	14	0	8	27	1	36	0	1	0	2	3	0	0	0	4	4	57
23:15	0	0	6	0	6	0	21	18	0	39	0	1	0	0	1	0	0	0	3	3	49
23:30	0	0	4	0	4	0	7	17	0	24	0	0	0	0	0	0	1	0	1	2	30
23:45	0	0	5	1	6	0	7	13	0	20	0	0	0	0	0	0	0	1	1	2	28
TOTAL	**22**	**807**	**7441**	**1177**	**9447**	**37**	**4446**	**8240**	**1240**	**13963**	**0**	**1331**	**410**	**359**	**2100**	**0**	**1484**	**523**	**5304**	**7311**	**32821**
AMPEAK	**1**	**92**	**901**	**110**	**1104**	**0**	**272**	**662**	**128**	**1062**	**0**	**37**	**12**	**9**	**58**	**0**	**198**	**95**	**837**	**1130**	**3354**
PMPEAK	**1**	**47**	**634**	**148**	**830**	**1**	**671**	**942**	**61**	**1675**	**0**	**110**	**49**	**41**	**200**	**0**	**165**	**34**	**399**	**598**	**3303**

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030037
Date: 2/27/2020 12:00:00 AM
Location: MD 25 at MD 130 (Greenspring Valley Rd)
Interval: 15 Min

County: Baltimore
Town: none
Weather: Cloudy,Cold

Comments:

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

MD 25	MD 25	Station Dr	MD 130
From North	From South	From East	From West

Begin Hour	School Children	Pedestrians	Bicycles	School Childer	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles
00:00	0	0	0	0	0	0	0	0	0	0	0	0
00:15	0	0	0	0	0	0	0	0	0	0	0	0
00:30	0	0	0	0	0	0	0	0	0	0	0	0
00:45	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0
01:15	0	0	0	0	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0
02:15	0	0	0	0	0	0	0	0	0	0	0	0
02:30	0	0	0	0	0	0	0	0	0	0	0	0
02:45	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0
03:15	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0
04:15	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0
05:15	0	0	0	0	0	0	0	0	0	0	0	0
05:30	0	0	0	0	0	0	0	0	0	0	0	0
05:45	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	0	0	0

Maryland Department of Transportation
State Highway Administration
Data Services Division

Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

MD 25	MD 25	Station Dr	MD 130
From North	From South	From East	From West

Begin Hour	School Children	Pedestrians	Bicycles	School Childer	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles
06:45	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0

Maryland Department of Transportation
State Highway Administration
Data Services Division

Turning Movement Summary Report

Station ID: S1999030037
County: Baltimore
Comments:

Date: 2/27/2020 12:00:00 AM
Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd)
Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

MD 25	MD 25	Station Dr	MD 130
From North	From South	From East	From West

Begin Hour	School Children	Pedestrians	Bicycles	School Childer	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles
13:30	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	1	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0
19:00	0	0	0	0	0	0	0	0	0	0	0	0
19:15	0	0	0	0	0	0	0	0	0	0	0	0
19:30	0	0	0	0	0	0	0	0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0	0	0	0	0

Maryland Department of Transportation
State Highway Administration
Data Services Division

Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

MD 25	MD 25	Station Dr	MD 130
From North	From South	From East	From West

Begin Hour	School Children	Pedestrians	Bicycles	School Childer	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles
20:15	0	0	0	0	0	0	0	0	0	0	0	0
20:30	0	0	0	0	0	0	0	0	0	0	0	0
20:45	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0	0	0	0	0
21:15	0	0	0	0	0	0	0	0	0	0	0	0
21:30	0	0	0	0	0	0	0	0	0	0	0	0
21:45	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0
22:15	0	0	0	0	0	0	0	0	0	0	0	0
22:30	0	0	0	0	0	0	0	0	0	0	0	0
22:45	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0
23:15	0	0	0	0	0	0	0	0	0	0	0	0
23:30	0	0	0	0	0	0	0	0	0	0	0	0
23:45	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**
AMPEAK	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PMPEAK	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

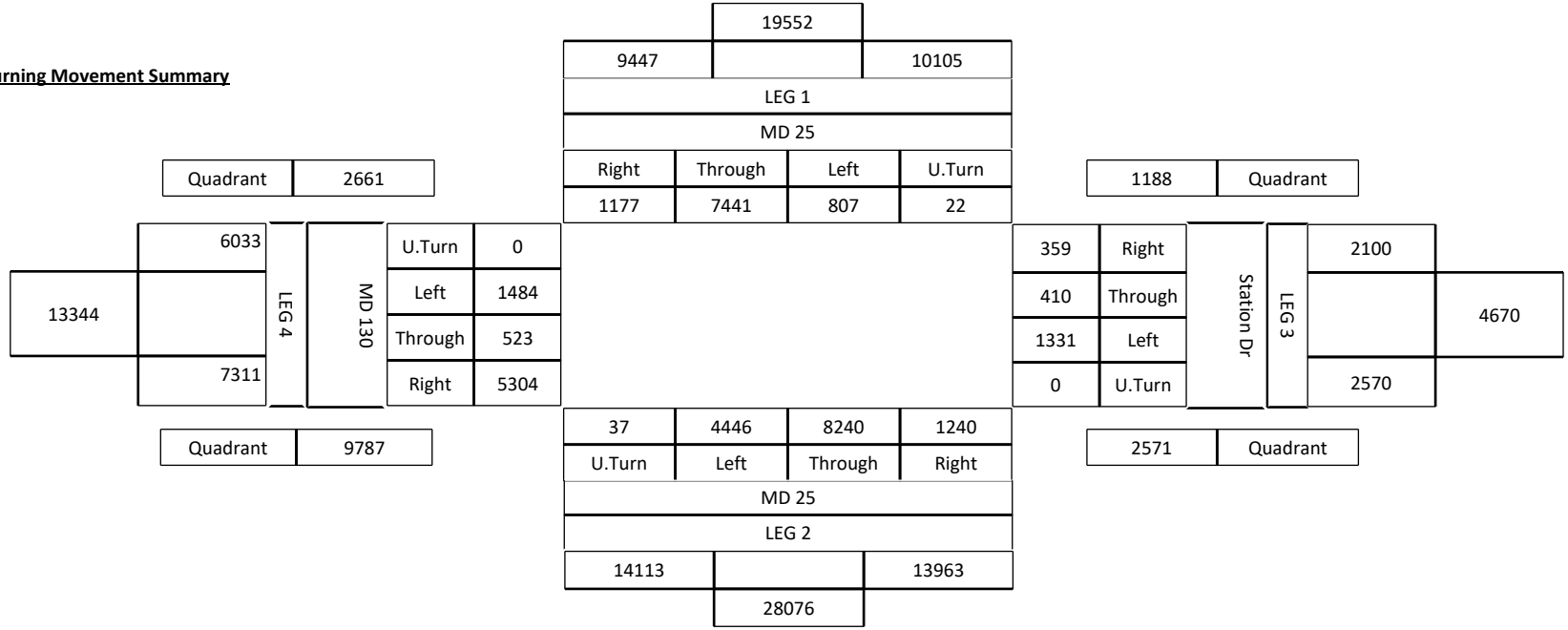
MD 25 — From North

MD 25 — From South

Station Dr — From East

MD 130 — From West

Turning Movement Summary



Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

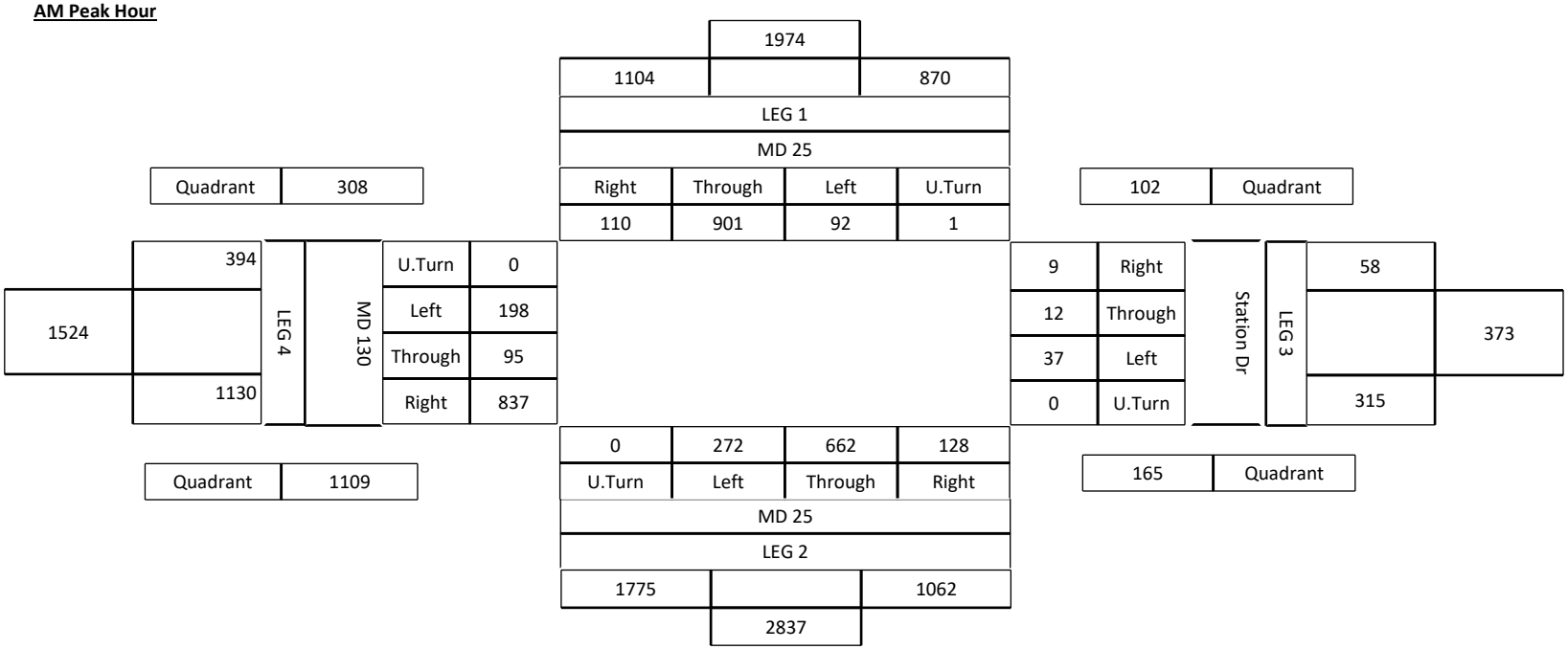
MD 25 — From North

MD 25 — From South

Station Dr — From East

MD 130 — From West

AM Peak Hour



Maryland Department of Transportation
State Highway Administration
Data Services Division

Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

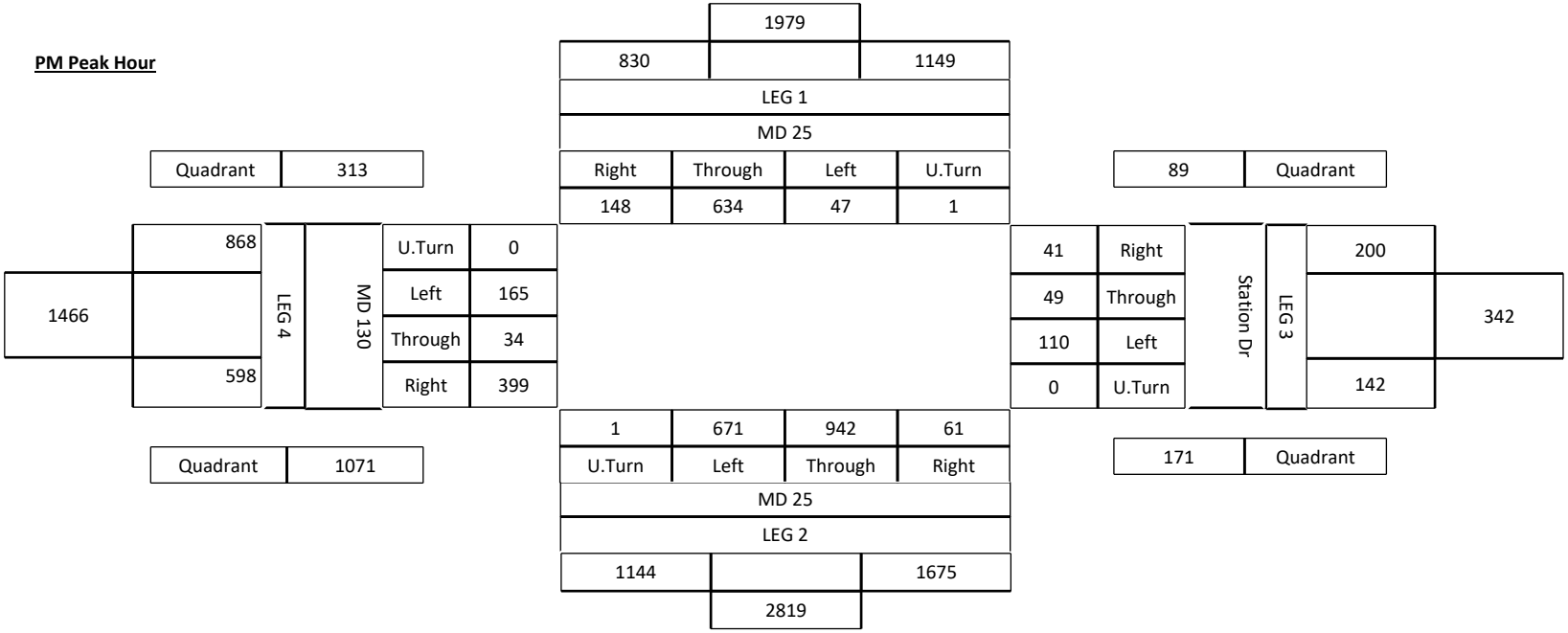
Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

MD 25 | Station Dr | MD 130

From North | From South | From East | From West

PM Peak Hour



Appendix B

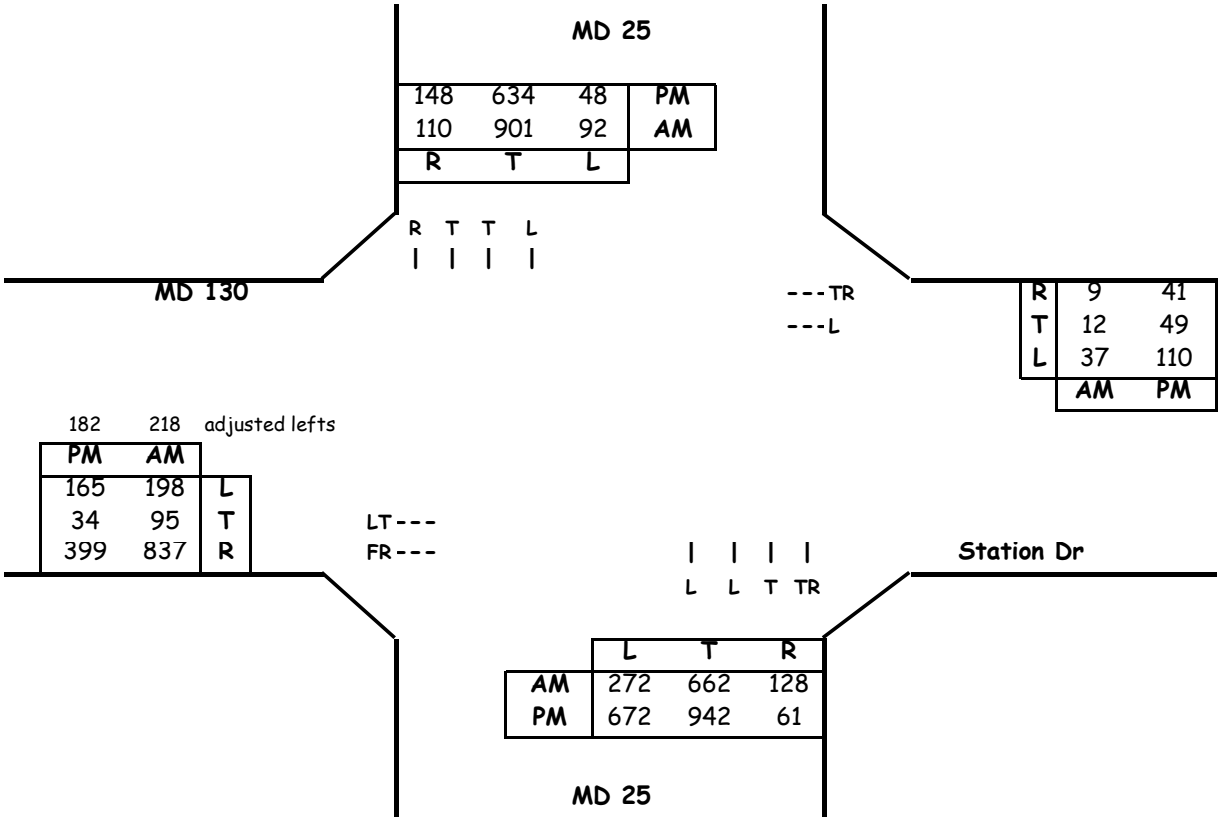
Critical Lane Volume (LOS) Worksheets

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25
Minor Street: Station Dr
Study Period: EXISTING TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	790	0.55	435	92	1	92	659
SB	901	0.55	496	272	0.6	163	
EB	313	1	313	37	1	37	350
WB	21	1	21	198	1	198	

CLV TOTAL= **1009**
Level of Service (LOS)= **B**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1003	0.55	552	48	1	48	752
SB	634	0.55	349	672	0.6	403	
EB	216	1	216	110	1	110	326
WB	90	1	90	165	1	165	

CLV TOTAL= **1078**
Level of Service (LOS)= **B**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

MD 25 &
Station Dr
(EXISTING TRAFFIC)

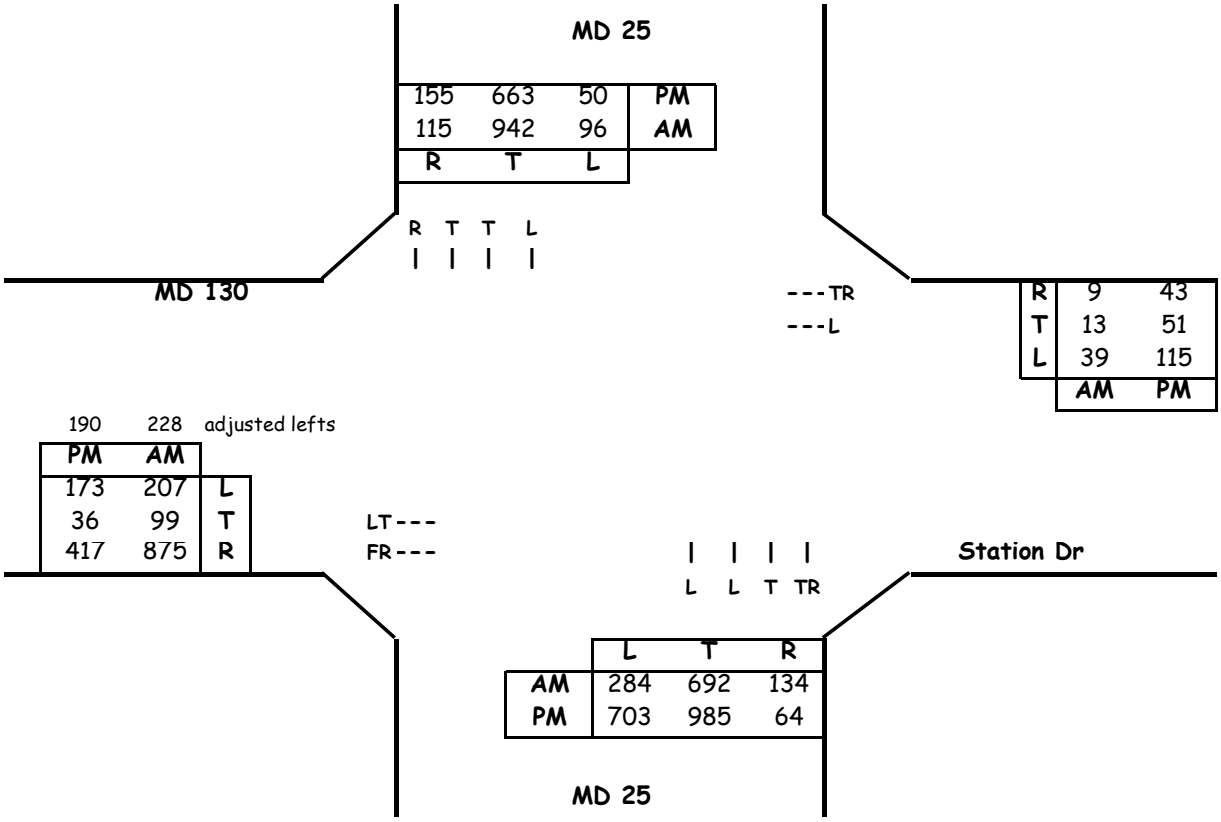
Intersection
1

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25
Minor Street: Station Dr
Study Period: BACKGROUND TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	826	0.55	454	96	1	96	688
SB	942	0.55	518	284	0.6	170	
EB	327	1	327	39	1	39	366
WB	22	1	22	207	1	207	

CLV TOTAL= **1054**
Level of Service (LOS)= **B**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1049	0.55	577	50	1	50	787
SB	663	0.55	365	703	0.6	422	
EB	226	1	226	115	1	115	341
WB	94	1	94	173	1	173	

CLV TOTAL= **1128**
Level of Service (LOS)= **B**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

MD 25 &
Station Dr
(BACKGROUND TRAFFIC)

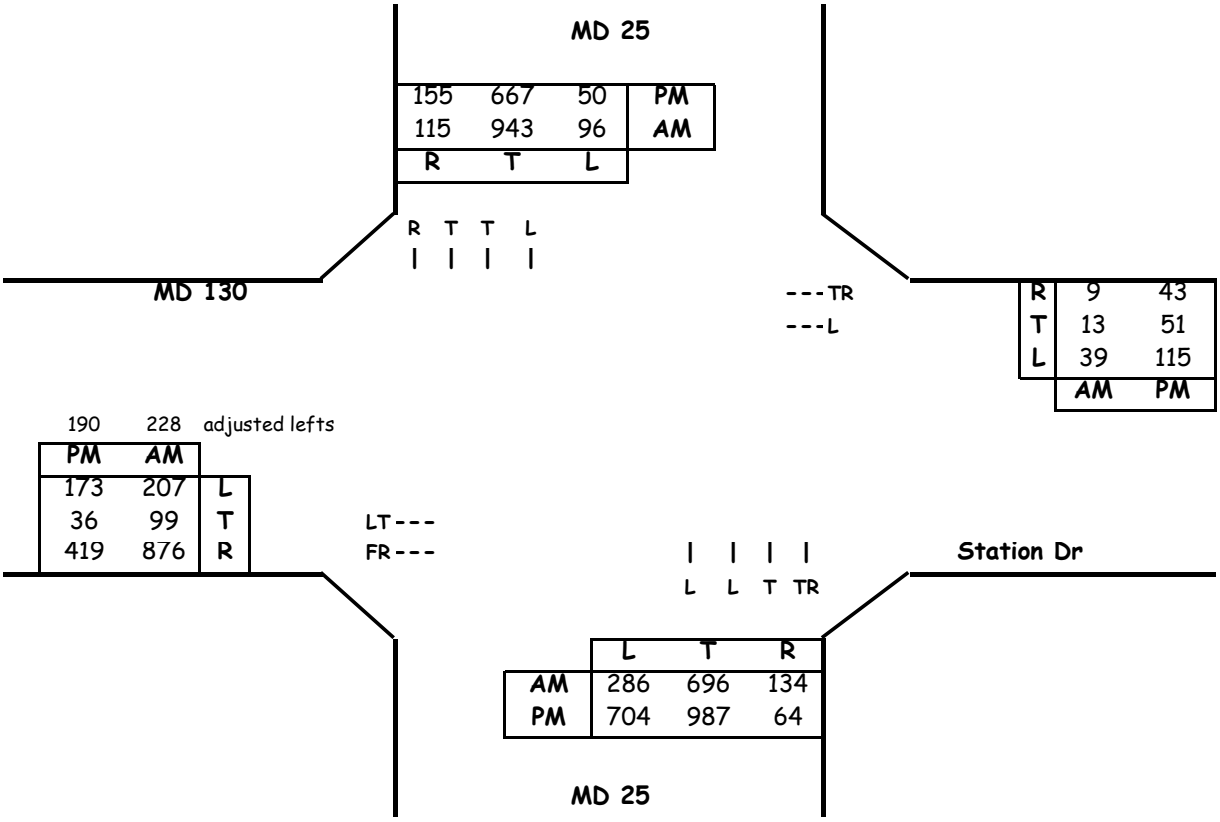
Intersection
1

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25
Minor Street: Station Dr
Study Period: TOTAL TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	830	0.55	457	96	1	96	691
SB	943	0.55	519	286	0.6	172	
EB	327	1	327	39	1	39	366
WB	22	1	22	207	1	207	

CLV TOTAL= **1057**
Level of Service (LOS)= **B**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1051	0.55	578	50	1	50	789
SB	667	0.55	367	704	0.6	422	
EB	226	1	226	115	1	115	341
WB	94	1	94	173	1	173	

CLV TOTAL= **1130**
Level of Service (LOS)= **B**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

MD 25 &
Station Dr
(TOTAL TRAFFIC)

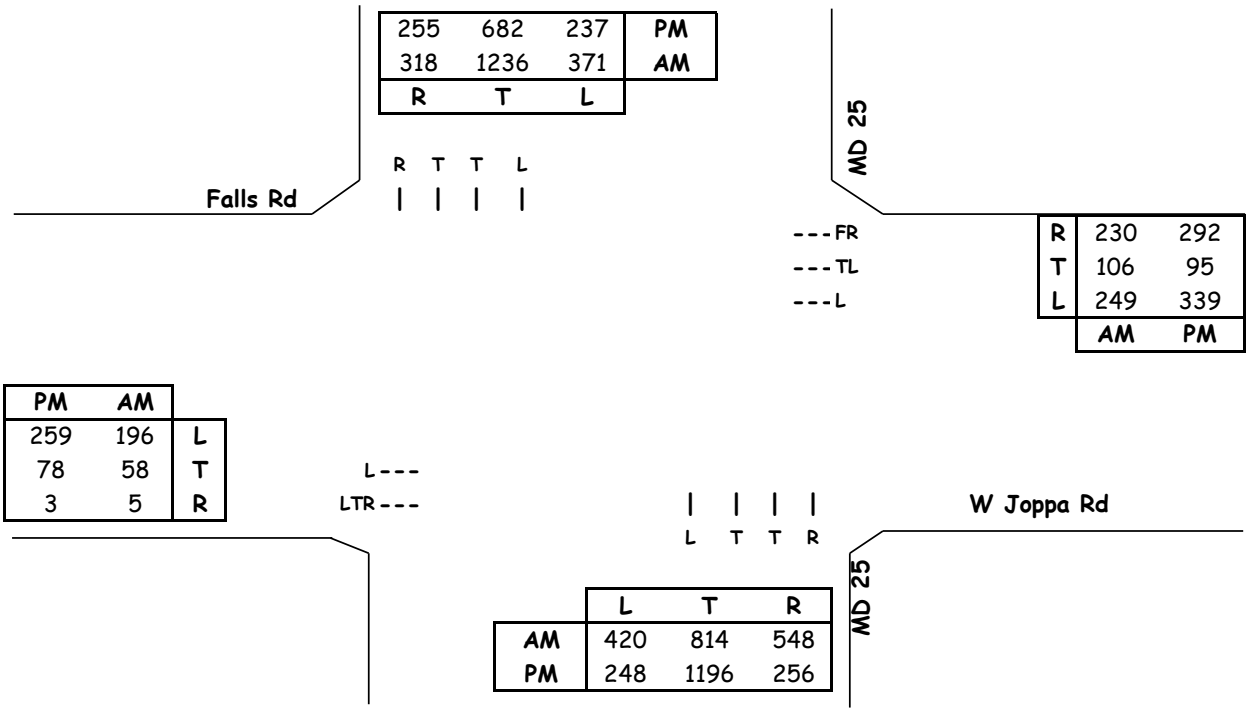
Intersection
1

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: MD 25
Minor Street: W Joppa Rd
Study Period: Existing Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	259	0.60	155				155
WB	355	0.60	213				213
NB	814	0.55	448	371	1.00	371	1100
SB	1236	0.55	680	420	1.00	420	

CLV TOTAL= **1468**
Level of Service (LOS)= **E**

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	340	0.60	204				204
WB	434	0.60	260				260
NB	1196	0.55	658	237	1.00	237	895
SB	682	0.55	375	248	1.00	248	

CLV TOTAL= **1359**
Level of Service (LOS)= **D**

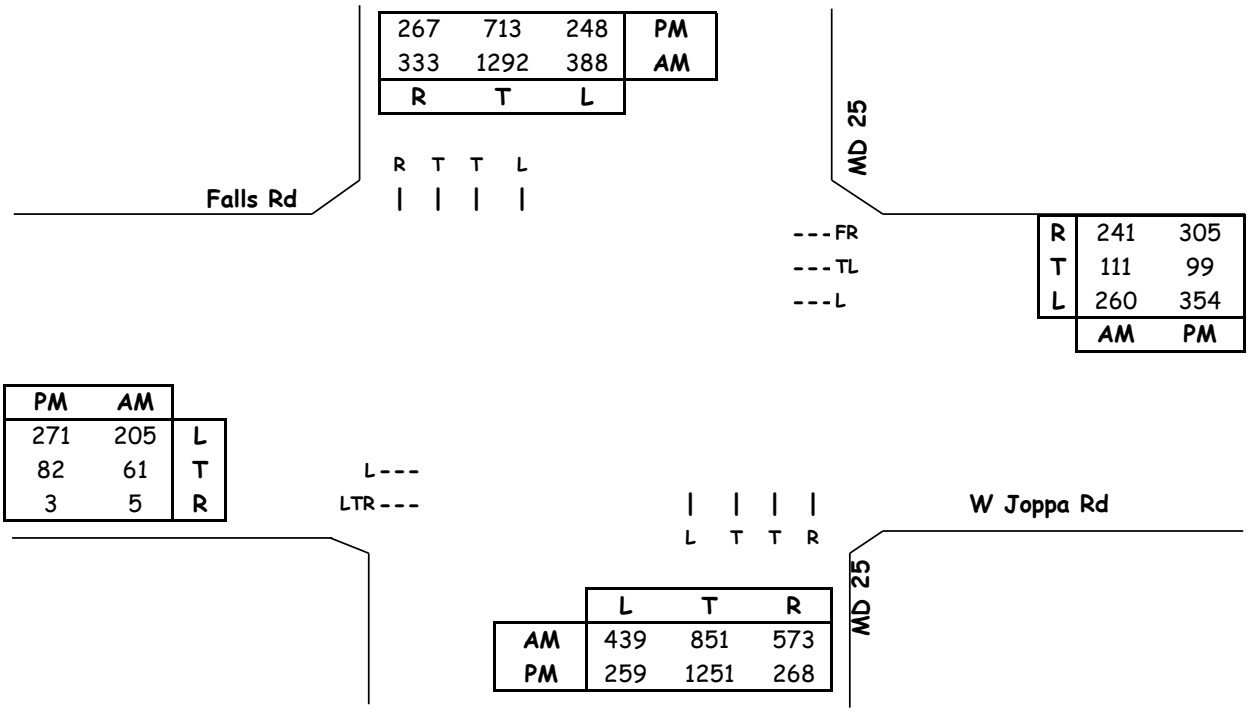
Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning		MD 25 & W Joppa Rd (Existing Traffic)	**Intersection** **2**

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: MD 25
Minor Street: W Joppa Rd
Study Period: Background Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	271	0.60	163				163
WB	371	0.60	223				223
NB	851	0.55	468	388	1.00	388	1150
SB	1292	0.55	711	439	1.00	439	
						CLV TOTAL=	**1536**
						Level of Service (LOS)=	**E**

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	356	0.60	214				214
WB	453	0.60	272				272
NB	1251	0.55	688	248	1.00	248	936
SB	713	0.55	392	259	1.00	259	
						CLV TOTAL=	**1422**
						Level of Service (LOS)=	**D**

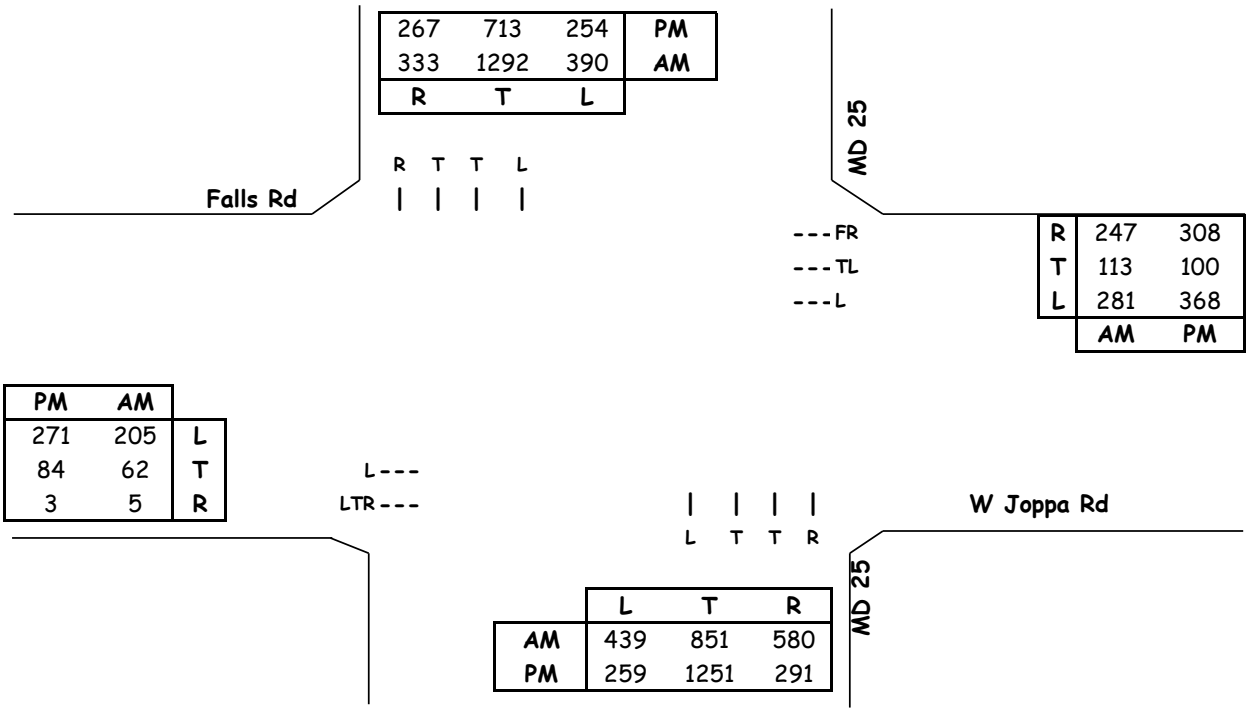
Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning		MD 25 & W Joppa Rd (Background Traffic)	**Intersection** **2**

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: MD 25
Minor Street: W Joppa Rd
Study Period: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	272	0.60	163				163
WB	394	0.60	236				236
NB	851	0.55	468	390	1.00	390	1150
SB	1292	0.55	711	439	1.00	439	
						CLV TOTAL=	**1549**
						Level of Service (LOS)=	**E**

PM Peak Hour

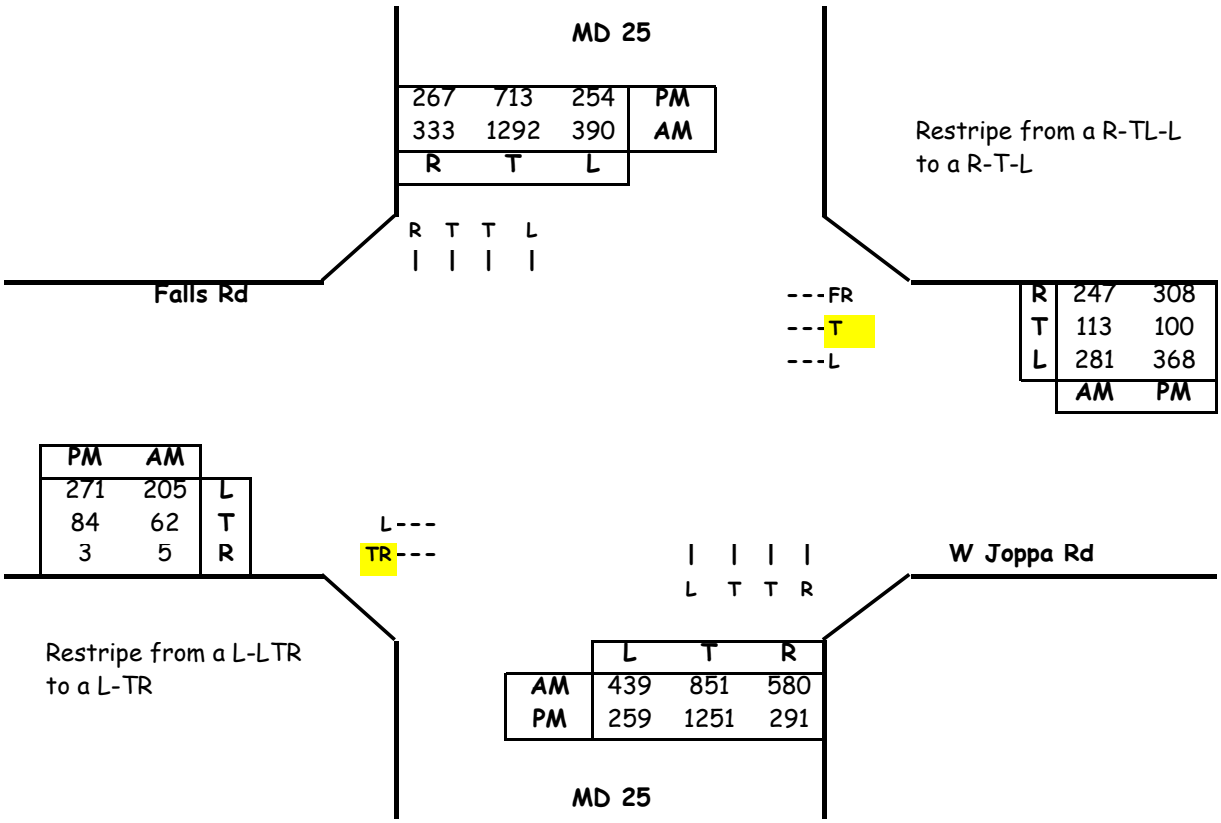
Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	358	0.60	215				215
WB	468	0.60	281				281
NB	1251	0.55	688	254	1.00	254	942
SB	713	0.55	392	259	1.00	259	
						CLV TOTAL=	**1438**
						Level of Service (LOS)=	**D**

Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning		MD 25 & W Joppa Rd (Total Traffic)	**Intersection** **2**

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25 **Analyst:** Lenhart Traffic
Minor Street: W Joppa Rd
Study Period: TOTAL TRAFFIC
With Original Proposed Improvements

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	851	0.55	468	390	1	390	1150
SB	1292	0.55	711	439	1	439	
EB	67	1	67	281	1	281	348
WB	113	1	113	205	1	205	

CLV TOTAL= **1498**
Level of Service (LOS)= **E**

Evening Peak Hour

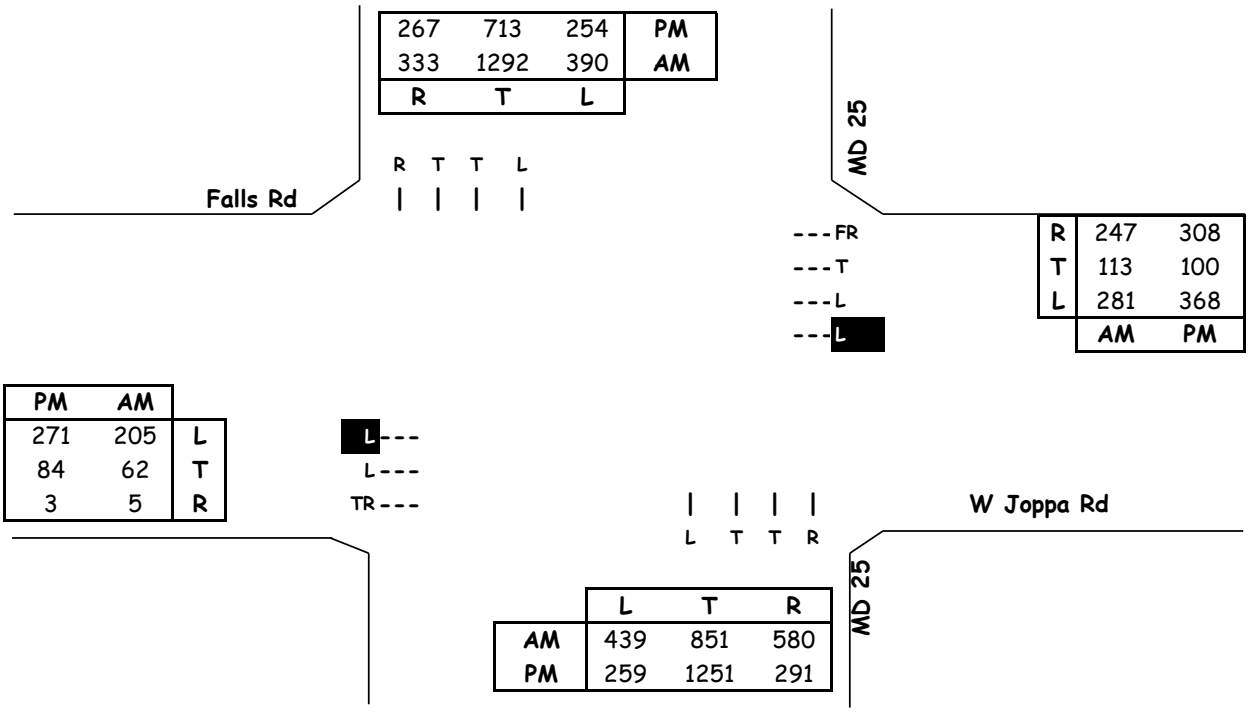
Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1251	0.55	688	254	1	254	942
SB	713	0.55	392	259	1	259	
EB	87	1	87	368	1	368	455
WB	100	1	100	271	1	271	

CLV TOTAL= **1397**
Level of Service (LOS)= **D**

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: MD 25 **Analyst: Lenhart Traffic Consulting**
Minor Street: W Joppa Rd
Study Period: Total Traffic with Expanded Improvements and Intersection Widening

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	205	0.60	123				123
WB	281	0.55	155				155
NB	851	0.55	468	390	1.00	390	1150
SB	1292	0.55	711	439	1.00	439	
						CLV TOTAL=	**1428**
						Level of Service (LOS)=	**D**

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	271	0.60	163				163
WB	368	0.55	202				202
NB	1251	0.55	688	254	1.00	254	942
SB	713	0.55	392	259	1.00	259	
						CLV TOTAL=	**1307**
						Level of Service (LOS)=	**D**

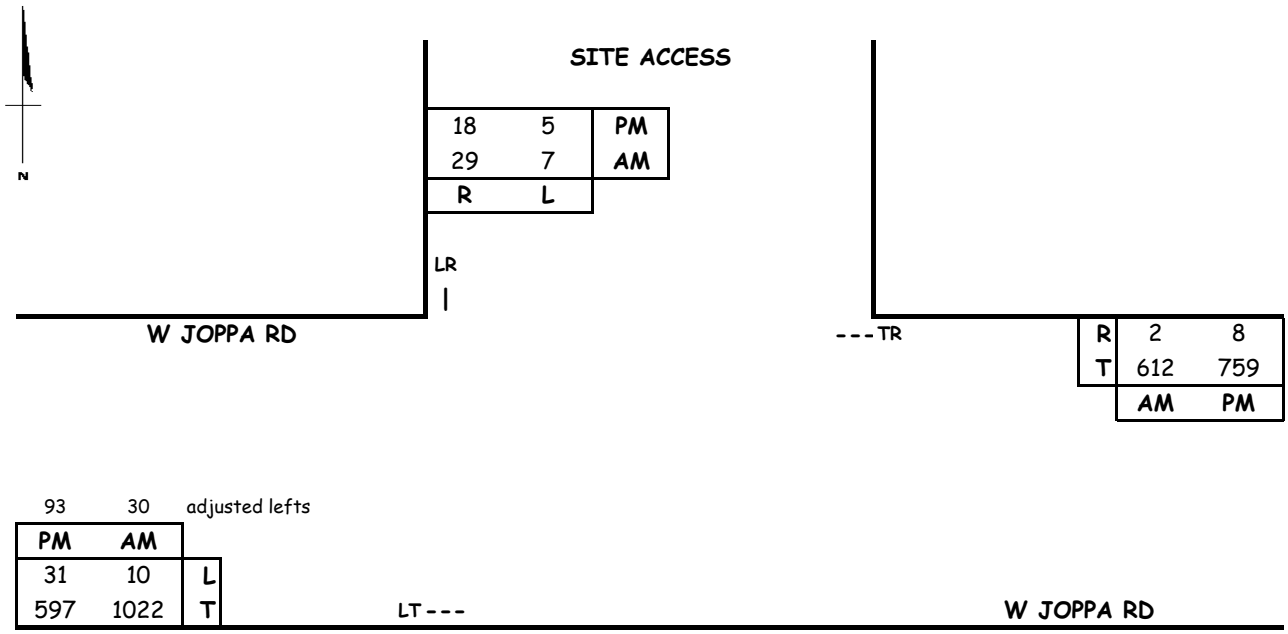
Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning		MD 25 & W Joppa Rd ïic with Expanded Improvements and Intersection	**Intersection** **2**

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Intersection of: Site Access
and: W Joppa Rd
Conditions: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
SB	36	1.00	36				36
EB	1052	1.00	1052				1052
WB	614	1.00	614	10	1.00	10	

CLV TOTAL= **1088**
Level of Service (LOS)= **B**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
SB	23	1.00	23				23
EB	690	1.00	690				798
WB	767	1.00	767	31	1.00	31	

CLV TOTAL= **821**
Level of Service (LOS)= **A**

Critical Lane Volume Analysis LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com		Site Access & W Joppa Rd (Total Traffic)	**Intersection** **3**

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	198	95	837	37	12	9	272	662	128	92	901	110
Future Volume (vph)	198	95	837	37	12	9	272	662	128	92	901	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1738	1583	1770	1741		3433	3453		1770	3539	1583
Flt Permitted	0.59	0.90	1.00	0.65	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1053	1598	1583	1211	1741		3433	3453		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	215	103	910	40	13	10	296	720	139	100	979	120
RTOR Reduction (vph)	0	0	0	0	9	0	0	7	0	0	0	0
Lane Group Flow (vph)	157	161	910	40	14	0	296	852	0	100	979	120
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	32.8	32.8	165.0	10.1	10.1		29.2	102.6		14.6	87.5	165.0
Effective Green, g (s)	34.8	34.8	165.0	12.1	12.1		31.2	105.1		16.6	90.0	165.0
Actuated g/C Ratio	0.21	0.21	1.00	0.07	0.07		0.19	0.64		0.10	0.55	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	297	353	1583	88	127		649	2199		178	1930	1583
v/s Ratio Prot	0.06	0.05			0.01		0.09	0.25		0.06	0.28	
v/s Ratio Perm	0.05	0.04	c0.57	0.03								0.08
v/c Ratio	0.53	0.46	0.57	0.45	0.11		0.46	0.39		0.56	0.51	0.08
Uniform Delay, d1	56.7	56.8	0.0	73.3	71.4		59.4	14.4		70.7	23.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.82	0.58		1.00	1.00	1.00
Incremental Delay, d2	1.7	1.1	1.5	4.4	0.4		1.7	0.4		4.0	1.0	0.1
Delay (s)	58.4	57.9	1.5	77.6	71.9		50.5	8.7		74.7	24.5	0.1
Level of Service	E	E	A	E	E		D	A		E	C	A
Approach Delay (s)		16.2			75.5			19.4			26.3	
Approach LOS		B			E			B			C	

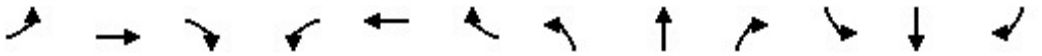
Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	58	5	249	106	230	420	814	548	371	1236	318
Future Volume (vph)	196	58	5	249	106	230	420	814	548	371	1236	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1715		1681	1734	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.98	1.00	0.07	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1715		1681	1734	1583	138	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	213	63	5	271	115	250	457	885	596	403	1343	346
RTOR Reduction (vph)	0	1	0	0	0	215	0	0	0	0	0	0
Lane Group Flow (vph)	138	142	0	190	196	35	457	885	596	403	1343	346
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	17.8	17.8		21.3	21.3	21.3	91.8	61.9	165.0	42.5	74.5	165.0
Effective Green, g (s)	19.8	19.8		23.3	23.3	23.3	95.8	65.4	165.0	44.5	78.0	165.0
Actuated g/C Ratio	0.12	0.12		0.14	0.14	0.14	0.58	0.40	1.00	0.27	0.47	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	201	205		237	244	223	395	1402	1583	477	1672	1583
v/s Ratio Prot	0.08	c0.08		0.11	c0.11		c0.22	0.25		c0.23	0.38	
v/s Ratio Perm						0.02	c0.45		0.38			0.22
v/c Ratio	0.69	0.69		0.80	0.80	0.16	1.16	0.63	0.38	0.84	0.80	0.22
Uniform Delay, d1	69.6	69.7		68.6	68.6	62.2	53.5	40.1	0.0	57.0	37.0	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.04	0.70	1.00
Incremental Delay, d2	9.3	9.7		17.5	17.2	0.3	95.5	2.2	0.7	12.0	3.7	0.3
Delay (s)	79.0	79.4		86.1	85.8	62.6	148.9	42.3	0.7	71.5	29.8	0.3
Level of Service	E	E		F	F	E	F	D	A	E	C	A
Approach Delay (s)		79.2			76.7			54.6			32.9	
Approach LOS		E			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	49.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	99	875	39	13	9	284	692	134	96	942	115
Future Volume (vph)	207	99	875	39	13	9	284	692	134	96	942	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1738	1583	1770	1746		3433	3453		1770	3539	1583
Flt Permitted	0.60	0.90	1.00	0.65	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1057	1592	1583	1202	1746		3433	3453		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	108	951	42	14	10	309	752	146	104	1024	125
RTOR Reduction (vph)	0	0	0	0	9	0	0	7	0	0	0	0
Lane Group Flow (vph)	164	169	951	42	15	0	309	891	0	104	1024	125
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	33.3	33.3	165.0	10.4	10.4		29.5	101.7		15.0	86.7	165.0
Effective Green, g (s)	35.3	35.3	165.0	12.4	12.4		31.5	104.2		17.0	89.2	165.0
Actuated g/C Ratio	0.21	0.21	1.00	0.08	0.08		0.19	0.63		0.10	0.54	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	301	358	1583	90	131		655	2180		182	1913	1583
v/s Ratio Prot	0.07	0.06			0.01		0.09	0.26		0.06	0.29	
v/s Ratio Perm	0.05	0.04	c0.60	0.03								0.08
v/c Ratio	0.54	0.47	0.60	0.47	0.11		0.47	0.41		0.57	0.54	0.08
Uniform Delay, d1	56.5	56.7	0.0	73.1	71.2		59.4	15.1		70.5	24.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.80	0.56		1.00	1.00	1.00
Incremental Delay, d2	2.0	1.2	1.7	4.5	0.5		1.7	0.4		4.3	1.1	0.1
Delay (s)	58.5	57.9	1.7	77.6	71.6		49.3	8.9		74.8	25.6	0.1
Level of Service	E	E	A	E	E		D	A		E	C	A
Approach Delay (s)		16.3			75.4			19.3			27.1	
Approach LOS		B			E			B			C	

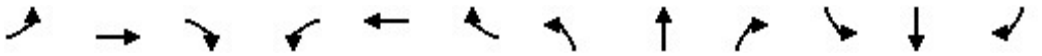
Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	61	5	260	111	241	439	851	573	388	1292	333
Future Volume (vph)	205	61	5	260	111	241	439	851	573	388	1292	333
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1716		1681	1734	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.98	1.00	0.06	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1716		1681	1734	1583	120	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	223	66	5	283	121	262	477	925	623	422	1404	362
RTOR Reduction (vph)	0	1	0	0	0	224	0	0	0	0	0	0
Lane Group Flow (vph)	145	148	0	198	206	38	477	925	623	422	1404	362
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	18.1	18.1		21.7	21.7	21.7	89.2	60.0	165.0	43.7	74.5	165.0
Effective Green, g (s)	20.1	20.1		23.7	23.7	23.7	93.2	63.5	165.0	45.7	78.0	165.0
Actuated g/C Ratio	0.12	0.12		0.14	0.14	0.14	0.56	0.38	1.00	0.28	0.47	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	204	209		241	249	227	379	1361	1583	490	1672	1583
v/s Ratio Prot	0.09	c0.09		0.12	c0.12		c0.24	0.26		c0.24	0.40	
v/s Ratio Perm						0.02	c0.47		0.39			0.23
v/c Ratio	0.71	0.71		0.82	0.83	0.17	1.26	0.68	0.39	0.86	0.84	0.23
Uniform Delay, d1	69.7	69.6		68.6	68.7	62.0	55.3	42.3	0.0	56.6	38.0	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.04	0.70	1.00
Incremental Delay, d2	11.1	10.5		19.7	19.7	0.3	136.1	2.8	0.7	13.2	4.6	0.3
Delay (s)	80.7	80.1		88.3	88.3	62.3	191.4	45.0	0.7	72.1	31.2	0.3
Level of Service	F	F		F	F	E	F	D	A	E	C	A
Approach Delay (s)		80.4			78.1			65.9			34.0	
Approach LOS		F			E			E			C	

Intersection Summary			
HCM 2000 Control Delay	54.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	99	876	39	13	9	286	696	134	96	943	115
Future Volume (vph)	207	99	876	39	13	9	286	696	134	96	943	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1738	1583	1770	1746		3433	3453		1770	3539	1583
Flt Permitted	0.60	0.90	1.00	0.65	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1057	1592	1583	1202	1746		3433	3453		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	108	952	42	14	10	311	757	146	104	1025	125
RTOR Reduction (vph)	0	0	0	0	9	0	0	7	0	0	0	0
Lane Group Flow (vph)	164	169	952	42	15	0	311	896	0	104	1025	125
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	33.3	33.3	165.0	10.4	10.4		29.7	101.7		15.0	86.5	165.0
Effective Green, g (s)	35.3	35.3	165.0	12.4	12.4		31.7	104.2		17.0	89.0	165.0
Actuated g/C Ratio	0.21	0.21	1.00	0.08	0.08		0.19	0.63		0.10	0.54	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	301	358	1583	90	131		659	2180		182	1908	1583
v/s Ratio Prot	0.07	0.06			0.01		0.09	0.26		0.06	0.29	
v/s Ratio Perm	0.05	0.04	c0.60	0.03								0.08
v/c Ratio	0.54	0.47	0.60	0.47	0.11		0.47	0.41		0.57	0.54	0.08
Uniform Delay, d1	56.5	56.7	0.0	73.1	71.2		59.2	15.1		70.5	24.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.80	0.56		1.00	1.00	1.00
Incremental Delay, d2	2.0	1.2	1.7	4.5	0.5		1.7	0.4		4.3	1.1	0.1
Delay (s)	58.5	57.9	1.7	77.6	71.6		49.1	8.9		74.8	25.7	0.1
Level of Service	E	E	A	E	E		D	A		E	C	A
Approach Delay (s)		16.3			75.4			19.2			27.2	
Approach LOS		B			E			B			C	

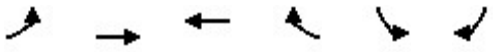
Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	62	2	281	113	247	439	851	580	390	1292	333
Future Volume (vph)	205	62	2	281	113	247	439	851	580	390	1292	333
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1720		1681	1732	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.98	1.00	0.07	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1720		1681	1732	1583	121	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	223	67	2	305	123	268	477	925	630	424	1404	362
RTOR Reduction (vph)	0	0	0	0	0	229	0	0	0	0	0	0
Lane Group Flow (vph)	145	147	0	210	218	39	477	925	630	424	1404	362
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	18.1	18.1		22.2	22.2	22.2	88.1	59.4	165.0	43.8	74.5	165.0
Effective Green, g (s)	20.1	20.1		24.2	24.2	24.2	92.1	62.9	165.0	45.8	78.0	165.0
Actuated g/C Ratio	0.12	0.12		0.15	0.15	0.15	0.56	0.38	1.00	0.28	0.47	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	204	209		246	254	232	374	1349	1583	491	1672	1583
v/s Ratio Prot	c0.09	0.09		0.12	c0.13		c0.24	0.26		c0.24	0.40	
v/s Ratio Perm						0.02	c0.47		0.40			0.23
v/c Ratio	0.71	0.70		0.85	0.86	0.17	1.28	0.69	0.40	0.86	0.84	0.23
Uniform Delay, d1	69.7	69.6		68.7	68.7	61.6	55.3	42.8	0.0	56.6	38.0	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.04	0.70	1.00
Incremental Delay, d2	11.1	10.2		23.8	23.8	0.3	143.2	2.9	0.7	13.3	4.6	0.3
Delay (s)	80.7	79.8		92.5	92.5	62.0	198.6	45.6	0.7	72.0	31.2	0.3
Level of Service	F	E		F	F	E	F	D	A	E	C	A
Approach Delay (s)		80.3			80.7			67.6			34.0	
Approach LOS		F			F			E			C	

Intersection Summary			
HCM 2000 Control Delay	55.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		

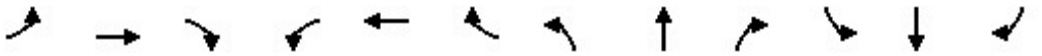
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	700	429	2	7	29
Future Volume (Veh/h)	10	700	429	2	7	29
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	761	466	2	8	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	468				1250	467
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	468				1250	467
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	95
cM capacity (veh/h)	1094				189	596

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	772	468	40
Volume Left	11	0	8
Volume Right	0	2	32
cSH	1094	1700	416
Volume to Capacity	0.01	0.28	0.10
Queue Length 95th (ft)	1	0	8
Control Delay (s)	0.3	0.0	14.6
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	14.6
Approach LOS			B

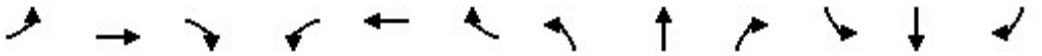
Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	62	2	281	113	247	439	851	580	390	1292	333
Future Volume (vph)	205	62	2	281	113	247	439	851	580	390	1292	333
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1855		3433	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.14	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1855		3433	1863	1583	254	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	223	67	2	305	123	268	477	925	630	424	1404	362
RTOR Reduction (vph)	0	1	0	0	0	239	0	0	0	0	0	0
Lane Group Flow (vph)	223	68	0	305	123	29	477	925	630	424	1404	362
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	11.1	11.1		15.9	15.9	15.9	73.3	71.8	165.0	44.7	72.5	165.0
Effective Green, g (s)	13.1	13.1		17.9	17.9	17.9	75.3	75.3	165.0	46.7	76.0	165.0
Actuated g/C Ratio	0.08	0.08		0.11	0.11	0.11	0.46	0.46	1.00	0.28	0.46	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	272	147		372	202	171	538	1615	1583	500	1630	1583
v/s Ratio Prot	c0.06	0.04		c0.09	0.07		c0.25	0.26		0.24	c0.40	
v/s Ratio Perm						0.02	0.16		0.40			0.23
v/c Ratio	0.82	0.46		0.82	0.61	0.17	0.89	0.57	0.40	0.85	0.86	0.23
Uniform Delay, d1	74.8	72.6		72.0	70.2	66.8	47.7	33.0	0.0	55.8	39.8	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.70	1.00
Incremental Delay, d2	17.3	2.3		13.2	5.1	0.5	16.4	1.5	0.7	11.6	5.5	0.3
Delay (s)	92.1	74.9		85.2	75.3	67.3	64.1	34.5	0.7	56.3	33.5	0.3
Level of Service	F	E		F	E	E	E	C	A	E	C	A
Approach Delay (s)		88.0			76.5			31.0			32.4	
Approach LOS		F			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	34	399	110	49	41	672	942	61	48	634	148
Future Volume (vph)	165	34	399	110	49	41	672	942	61	48	634	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1713	1583	1770	1734		3433	3507		1770	3539	1583
Flt Permitted	0.47	0.64	1.00	0.68	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	832	1140	1583	1273	1734		3433	3507		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	179	37	434	120	53	45	730	1024	66	52	689	161
RTOR Reduction (vph)	0	0	0	0	18	0	0	2	0	0	0	0
Lane Group Flow (vph)	107	109	434	120	80	0	730	1088	0	52	689	161
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	40.8	40.8	165.0	20.5	20.5		45.0	100.2		9.0	63.7	165.0
Effective Green, g (s)	42.8	42.8	165.0	22.5	22.5		47.0	102.7		11.0	66.2	165.0
Actuated g/C Ratio	0.26	0.26	1.00	0.14	0.14		0.28	0.62		0.07	0.40	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	304	355	1583	173	236		977	2182		118	1419	1583
v/s Ratio Prot	c0.04	0.03			0.05		c0.21	0.31		0.03	c0.19	
v/s Ratio Perm	0.05	0.05	0.27	c0.09								0.10
v/c Ratio	0.35	0.31	0.27	0.69	0.34		0.75	0.50		0.44	0.49	0.10
Uniform Delay, d1	48.6	49.2	0.0	68.0	64.5		53.6	17.1		74.0	36.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.76	0.44		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.6	0.4	11.8	1.0		3.2	0.5		2.6	1.2	0.1
Delay (s)	49.3	49.7	0.4	79.8	65.5		44.0	8.0		76.7	37.9	0.1
Level of Service	D	D	A	E	E		D	A		E	D	A
Approach Delay (s)		16.7			73.4			22.5			33.4	
Approach LOS		B			E			C			C	

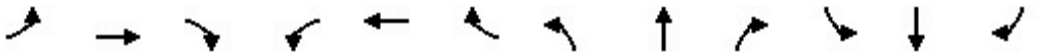
Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	78	3	339	95	292	248	1196	256	237	682	255
Future Volume (vph)	259	78	3	339	95	292	248	1196	256	237	682	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1720		1681	1721	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.97	1.00	0.33	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1720		1681	1721	1583	614	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	282	85	3	368	103	317	270	1300	278	258	741	277
RTOR Reduction (vph)	0	0	0	0	0	265	0	0	0	0	0	0
Lane Group Flow (vph)	183	187	0	232	239	52	270	1300	278	258	741	277
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	21.7	21.7		25.2	25.2	25.2	84.5	67.3	165.0	29.3	79.4	165.0
Effective Green, g (s)	23.7	23.7		27.2	27.2	27.2	88.5	70.8	165.0	31.3	82.9	165.0
Actuated g/C Ratio	0.14	0.14		0.16	0.16	0.16	0.54	0.43	1.00	0.19	0.50	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	241	247		277	283	260	463	1518	1583	335	1778	1583
v/s Ratio Prot	c0.11	0.11		0.14	c0.14		0.07	c0.37		c0.15	0.21	
v/s Ratio Perm						0.03	0.24		0.18			0.17
v/c Ratio	0.76	0.76		0.84	0.84	0.20	0.58	0.86	0.18	0.77	0.42	0.17
Uniform Delay, d1	67.9	67.9		66.8	66.8	59.5	21.2	42.5	0.0	63.4	25.8	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.30	0.42	1.00
Incremental Delay, d2	12.9	12.4		19.3	20.0	0.4	2.0	6.4	0.2	10.3	0.7	0.2
Delay (s)	80.8	80.3		86.1	86.8	59.9	23.2	48.9	0.2	92.5	11.5	0.2
Level of Service	F	F		F	F	E	C	D	A	F	B	A
Approach Delay (s)		80.5			75.8			37.9			25.4	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	44.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	36	417	115	51	43	703	985	64	50	663	155
Future Volume (vph)	173	36	417	115	51	43	703	985	64	50	663	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1713	1583	1770	1734		3433	3507		1770	3539	1583
Flt Permitted	0.47	0.63	1.00	0.68	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	824	1117	1583	1266	1734		3433	3507		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	188	39	453	125	55	47	764	1071	70	54	721	168
RTOR Reduction (vph)	0	0	0	0	19	0	0	2	0	0	0	0
Lane Group Flow (vph)	113	114	453	125	83	0	764	1139	0	54	721	168
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	41.9	41.9	165.0	21.1	21.1		45.0	99.0		9.1	62.6	165.0
Effective Green, g (s)	43.9	43.9	165.0	23.1	23.1		47.0	101.5		11.1	65.1	165.0
Actuated g/C Ratio	0.27	0.27	1.00	0.14	0.14		0.28	0.62		0.07	0.39	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	311	361	1583	177	242		977	2157		119	1396	1583
v/s Ratio Prot	c0.04	0.03			0.05		c0.22	0.32		0.03	c0.20	
v/s Ratio Perm	0.06	0.05	0.29	c0.10								0.11
v/c Ratio	0.36	0.32	0.29	0.71	0.34		0.78	0.53		0.45	0.52	0.11
Uniform Delay, d1	47.9	48.5	0.0	67.7	64.1		54.3	18.1		74.0	38.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.74	0.43		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.6	0.5	12.5	1.0		3.3	0.5		2.7	1.4	0.1
Delay (s)	48.6	49.1	0.5	80.2	65.1		43.5	8.3		76.8	39.4	0.1
Level of Service	D	D	A	F	E		D	A		E	D	A
Approach Delay (s)		16.6			73.4			22.4			34.5	
Approach LOS		B			E			C			C	

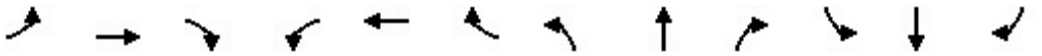
Intersection Summary			
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	271	82	3	354	99	305	259	1251	268	248	713	267
Future Volume (vph)	271	82	3	354	99	305	259	1251	268	248	713	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1720		1681	1721	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.97	1.00	0.31	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1720		1681	1721	1583	569	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	295	89	3	385	108	332	282	1360	291	270	775	290
RTOR Reduction (vph)	0	0	0	0	0	265	0	0	0	0	0	0
Lane Group Flow (vph)	192	195	0	243	250	67	282	1360	291	270	775	290
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	22.1	22.1		25.8	25.8	25.8	83.8	65.5	165.0	30.1	77.3	165.0
Effective Green, g (s)	24.1	24.1		27.8	27.8	27.8	87.8	69.0	165.0	32.1	80.8	165.0
Actuated g/C Ratio	0.15	0.15		0.17	0.17	0.17	0.53	0.42	1.00	0.19	0.49	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	245	251		283	289	266	450	1479	1583	344	1733	1583
v/s Ratio Prot	c0.11	0.11		0.14	c0.15		0.08	c0.38		c0.15	0.22	
v/s Ratio Perm						0.04	0.26		0.18			0.18
v/c Ratio	0.78	0.78		0.86	0.87	0.25	0.63	0.92	0.18	0.78	0.45	0.18
Uniform Delay, d1	67.9	67.9		66.7	66.8	59.6	22.0	45.4	0.0	63.2	27.5	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.29	0.43	1.00
Incremental Delay, d2	15.0	14.0		21.9	22.6	0.5	2.9	10.7	0.3	10.9	0.8	0.2
Delay (s)	83.0	81.8		88.5	89.4	60.1	24.8	56.1	0.3	92.4	12.7	0.2
Level of Service	F	F		F	F	E	C	E	A	F	B	A
Approach Delay (s)		82.4			77.3			43.1			26.1	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	47.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

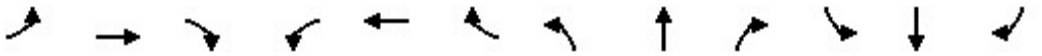
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	36	419	115	51	43	704	987	64	50	667	155
Future Volume (vph)	173	36	419	115	51	43	704	987	64	50	667	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1713	1583	1770	1734		3433	3507		1770	3539	1583
Flt Permitted	0.47	0.63	1.00	0.68	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	824	1117	1583	1266	1734		3433	3507		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	188	39	455	125	55	47	765	1073	70	54	725	168
RTOR Reduction (vph)	0	0	0	0	19	0	0	2	0	0	0	0
Lane Group Flow (vph)	113	114	455	125	83	0	765	1141	0	54	725	168
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	41.9	41.9	165.0	21.1	21.1		45.0	99.0		9.1	62.6	165.0
Effective Green, g (s)	43.9	43.9	165.0	23.1	23.1		47.0	101.5		11.1	65.1	165.0
Actuated g/C Ratio	0.27	0.27	1.00	0.14	0.14		0.28	0.62		0.07	0.39	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	311	361	1583	177	242		977	2157		119	1396	1583
v/s Ratio Prot	c0.04	0.03			0.05		c0.22	0.33		0.03	c0.20	
v/s Ratio Perm	0.06	0.05	0.29	c0.10								0.11
v/c Ratio	0.36	0.32	0.29	0.71	0.34		0.78	0.53		0.45	0.52	0.11
Uniform Delay, d1	47.9	48.5	0.0	67.7	64.1		54.3	18.1		74.0	38.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.73	0.43		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.6	0.5	12.5	1.0		3.3	0.5		2.7	1.4	0.1
Delay (s)	48.6	49.1	0.5	80.2	65.1		43.2	8.3		76.8	39.4	0.1
Level of Service	D	D	A	F	E		D	A		E	D	A
Approach Delay (s)		16.6			73.4			22.3			34.6	
Approach LOS		B			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

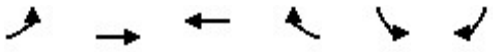
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	271	84	3	368	100	308	259	1251	291	254	713	267
Future Volume (vph)	271	84	3	368	100	308	259	1251	291	254	713	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1721		1681	1720	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.97	1.00	0.31	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1721		1681	1720	1583	572	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	295	91	3	400	109	335	282	1360	316	276	775	290
RTOR Reduction (vph)	0	0	0	0	0	265	0	0	0	0	0	0
Lane Group Flow (vph)	192	197	0	252	257	70	282	1360	316	276	775	290
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	22.2	22.2		26.0	26.0	26.0	83.1	64.8	165.0	30.5	77.0	165.0
Effective Green, g (s)	24.2	24.2		28.0	28.0	28.0	87.1	68.3	165.0	32.5	80.5	165.0
Actuated g/C Ratio	0.15	0.15		0.17	0.17	0.17	0.53	0.41	1.00	0.20	0.49	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	246	252		285	291	268	449	1464	1583	348	1726	1583
v/s Ratio Prot	0.11	c0.11		c0.15	0.15		0.08	c0.38		c0.16	0.22	
v/s Ratio Perm						0.04	0.25		0.20			0.18
v/c Ratio	0.78	0.78		0.88	0.88	0.26	0.63	0.93	0.20	0.79	0.45	0.18
Uniform Delay, d1	67.8	67.9		66.9	66.9	59.5	22.4	46.0	0.0	63.1	27.7	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.28	0.43	1.00
Incremental Delay, d2	14.8	14.5		26.0	25.5	0.5	2.9	11.8	0.3	11.4	0.8	0.2
Delay (s)	82.6	82.4		92.9	92.4	60.0	25.2	57.8	0.3	92.4	12.8	0.2
Level of Service	F	F		F	F	E	C	E	A	F	B	A
Approach Delay (s)		82.5			79.7			43.8			26.4	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	48.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

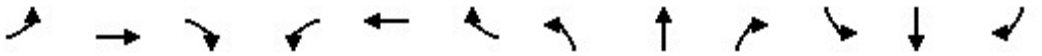
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	31	522	704	8	5	18
Future Volume (Veh/h)	31	522	704	8	5	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	567	765	9	5	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	774				1404	770
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	774				1404	770
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				97	95
cM capacity (veh/h)	842				147	401

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	601	774	25
Volume Left	34	0	5
Volume Right	0	9	20
cSH	842	1700	298
Volume to Capacity	0.04	0.46	0.08
Queue Length 95th (ft)	3	0	7
Control Delay (s)	1.1	0.0	18.2
Lane LOS	A		C
Approach Delay (s)	1.1	0.0	18.2
Approach LOS			C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	271	84	3	368	100	308	259	1251	291	254	713	267
Future Volume (vph)	271	84	3	368	100	308	259	1251	291	254	713	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1854		3433	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.22	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1854		3433	1863	1583	404	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	295	91	3	400	109	335	282	1360	316	276	775	290
RTOR Reduction (vph)	0	1	0	0	0	263	0	0	0	0	0	0
Lane Group Flow (vph)	295	93	0	400	109	72	282	1360	316	276	775	290
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	16.5	16.5		22.1	22.1	22.1	72.9	72.9	165.0	32.0	87.2	165.0
Effective Green, g (s)	18.5	18.5		24.1	24.1	24.1	74.9	76.4	165.0	34.0	90.7	165.0
Actuated g/C Ratio	0.11	0.11		0.15	0.15	0.15	0.45	0.46	1.00	0.21	0.55	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	384	207		501	272	231	346	1638	1583	364	1945	1583
v/s Ratio Prot	c0.09	0.05		c0.12	0.06		0.10	c0.38		c0.16	0.22	
v/s Ratio Perm						0.05	0.27		0.20			0.18
v/c Ratio	0.77	0.45		0.80	0.40	0.31	0.82	0.83	0.20	0.76	0.40	0.18
Uniform Delay, d1	71.2	68.5		68.1	63.9	63.0	31.8	38.6	0.0	61.6	21.4	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.82	0.40	1.00
Incremental Delay, d2	8.9	1.6		8.7	1.0	0.8	14.0	5.0	0.3	8.5	0.6	0.2
Delay (s)	80.1	70.0		76.8	64.9	63.8	45.8	43.7	0.3	59.1	9.1	0.2
Level of Service	F	E		E	E	E	D	D	A	E	A	A
Approach Delay (s)		77.7			70.1			37.0			17.5	
Approach LOS		E			E			D			B	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	L	TR	L	L	T	TR	L	T	T
Maximum Queue (ft)	46	404	94	99	70	272	260	266	174	174	354	352
Average Queue (ft)	34	239	6	39	22	146	100	113	69	110	182	184
95th Queue (ft)	56	367	65	89	56	238	195	209	148	193	308	305
Link Distance (ft)		620	620		508			713	713		352	352
Upstream Blk Time (%)											0	0
Queuing Penalty (veh)											1	1
Storage Bay Dist (ft)	20			250		250	250			150		
Storage Blk Time (%)	55	59				1	0	0		5	12	6
Queuing Penalty (veh)	111	61				2	0	0		25	11	6

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	SB
Directions Served	R
Maximum Queue (ft)	225
Average Queue (ft)	32
95th Queue (ft)	160
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	200
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	EB	EB	B12	B12	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	LTR	T	T	L	LT	R	L	T	T	R	L
Maximum Queue (ft)	185	163	65	58	293	313	201	625	1736	1677	1006	400
Average Queue (ft)	133	115	8	7	163	200	45	589	1136	1053	327	318
95th Queue (ft)	190	167	40	37	251	288	135	738	2090	2035	1142	436
Link Distance (ft)	107	107	961	961		2685			1964	1964	1964	
Upstream Blk Time (%)	23	18							10	3	0	
Queuing Penalty (veh)	0	0							0	0	0	
Storage Bay Dist (ft)					350		350	600				300
Storage Blk Time (%)					0	0	0	59	0			22
Queuing Penalty (veh)					0	1	0	253	1			144

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	735	797	765
Average Queue (ft)	391	429	188
95th Queue (ft)	703	800	652
Link Distance (ft)	713	713	713
Upstream Blk Time (%)	0	3	2
Queuing Penalty (veh)	2	17	12
Storage Bay Dist (ft)			
Storage Blk Time (%)	6		
Queuing Penalty (veh)	22		

Intersection: 3: Joppa Rd. & Sijte Access

Movement	EB	WB
Directions Served	LT	TR
Maximum Queue (ft)	567	174
Average Queue (ft)	289	92
95th Queue (ft)	505	148
Link Distance (ft)	2685	1085
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	L	TR	L	L	T	TR	L	T	T
Maximum Queue (ft)	48	442	137	115	77	271	231	314	157	174	315	323
Average Queue (ft)	34	250	6	48	17	140	91	122	65	106	184	187
95th Queue (ft)	57	383	66	104	52	232	184	240	143	181	306	296
Link Distance (ft)		620	620		508			713	713		352	352
Upstream Blk Time (%)								0				0
Queuing Penalty (veh)								0				0
Storage Bay Dist (ft)	20			250		250	250			150		
Storage Blk Time (%)	56	53				1	0	0		4	11	6
Queuing Penalty (veh)	114	55				2	0	0		18	11	7

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	SB
Directions Served	R
Maximum Queue (ft)	225
Average Queue (ft)	32
95th Queue (ft)	159
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	200
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	EB	EB	B12	B12	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	LTR	T	T	L	LT	R	L	T	T	R	L
Maximum Queue (ft)	183	158	104	70	300	324	225	625	1999	1958	1347	400
Average Queue (ft)	132	108	14	6	181	213	48	610	1391	1315	517	324
95th Queue (ft)	194	162	58	34	269	300	159	688	2265	2257	1697	440
Link Distance (ft)	107	107	961	961		2685			1964	1964	1964	
Upstream Blk Time (%)	26	15							22	9	1	
Queuing Penalty (veh)	0	0							0	0	0	
Storage Bay Dist (ft)					350		350	600				300
Storage Blk Time (%)						0	0	72	0			22
Queuing Penalty (veh)						0	0	305	1			144

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	726	809	775
Average Queue (ft)	382	457	265
95th Queue (ft)	686	841	794
Link Distance (ft)	713	713	713
Upstream Blk Time (%)	0	3	3
Queuing Penalty (veh)	1	20	17
Storage Bay Dist (ft)			
Storage Blk Time (%)	5		
Queuing Penalty (veh)	19		

Intersection: 3: Joppa Rd. & Sijte Access

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	44	53
Average Queue (ft)	3	23
95th Queue (ft)	20	50
Link Distance (ft)	2685	591
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	L	TR	L	L	T	TR	L	T	T
Maximum Queue (ft)	49	434	214	134	80	242	235	232	187	174	358	330
Average Queue (ft)	37	242	15	50	24	148	97	120	71	108	191	196
95th Queue (ft)	55	389	99	101	62	230	196	212	153	188	316	308
Link Distance (ft)		620	620		508			708	708		352	352
Upstream Blk Time (%)											0	0
Queuing Penalty (veh)											1	0
Storage Bay Dist (ft)	20			250		250	250			150		
Storage Blk Time (%)	64	59				0	0	0		4	12	7
Queuing Penalty (veh)	129	61				1	0	0		18	11	8

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	SB	B5
Directions Served	R	T
Maximum Queue (ft)	225	11
Average Queue (ft)	34	0
95th Queue (ft)	167	8
Link Distance (ft)		1612
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	EB	EB	EB	B12	B12	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	TR	T	T	L	L	T	R	L	T	T
Maximum Queue (ft)	183	158	150	155	120	253	264	224	135	543	505	482
Average Queue (ft)	152	97	65	33	9	133	150	115	35	342	245	219
95th Queue (ft)	215	153	122	115	58	205	222	199	103	527	431	392
Link Distance (ft)	107	107	107	949	949			2685			1957	1957
Upstream Blk Time (%)	47	11	4									
Queuing Penalty (veh)	0	0	0									
Storage Bay Dist (ft)						350	350		350	600		
Storage Blk Time (%)										1		
Queuing Penalty (veh)										3		

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	T	T	R
Maximum Queue (ft)	379	400	748	803	771
Average Queue (ft)	183	344	419	515	237
95th Queue (ft)	335	462	735	897	738
Link Distance (ft)	1957		708	708	708
Upstream Blk Time (%)			0	4	2
Queuing Penalty (veh)			2	25	13
Storage Bay Dist (ft)		300			
Storage Blk Time (%)		25	8		
Queuing Penalty (veh)		161	31		

Intersection: 3: Joppa Rd. & Sijte Access

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	34	58
Average Queue (ft)	3	24
95th Queue (ft)	18	49
Link Distance (ft)	2685	585
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	L	TR	L	L	T	TR	L	T	T	R
Maximum Queue (ft)	50	311	232	227	325	399	742	782	174	319	354	225
Average Queue (ft)	38	156	106	88	284	297	321	254	69	197	205	66
95th Queue (ft)	53	274	192	170	362	453	645	633	158	294	312	218
Link Distance (ft)		620		508			713	713		352	352	
Upstream Blk Time (%)							1	1		0	0	
Queuing Penalty (veh)							8	11		0	2	
Storage Bay Dist (ft)	20		250		250	250			150			200
Storage Blk Time (%)	62	45	0		23	9	8		0	20	12	0
Queuing Penalty (veh)	76	39	0		111	46	57		1	10	18	0

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	EB	EB	B12	B12	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	LTR	T	T	L	LT	R	L	T	T	R	L
Maximum Queue (ft)	181	157	142	117	334	365	326	625	1580	1574	1229	341
Average Queue (ft)	162	121	48	13	194	228	137	454	1128	1043	185	209
95th Queue (ft)	200	171	123	58	302	334	284	838	2051	1999	916	307
Link Distance (ft)	107	107	961	961		2632			1964	1964	1964	
Upstream Blk Time (%)	44	18							7	1	0	
Queuing Penalty (veh)	0	0							0	0	0	
Storage Bay Dist (ft)					350		350	600				300
Storage Blk Time (%)					0	0	0	0	38			3
Queuing Penalty (veh)					0	2	0	0	98			10

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	340	399	389
Average Queue (ft)	104	126	45
95th Queue (ft)	226	282	191
Link Distance (ft)	713	713	713
Upstream Blk Time (%)	0	0	0
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Joppa Rd. & Site Access

Movement	
Directions Served	
Maximum Queue (ft)	
Average Queue (ft)	
95th Queue (ft)	
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: MD 25 & St. Pauls/Seminary Rd.

Movement	EB	EB	WB	WB	NB	NB	NB	B5	B5	SB	SB
Directions Served	LT	R	L	TR	L	T	R	T		L	TR
Maximum Queue (ft)	259	166	413	442	124	416	373	420	236	174	460
Average Queue (ft)	130	48	278	133	39	227	105	56	13	99	231
95th Queue (ft)	224	111	416	299	106	373	254	282	124	192	404
Link Distance (ft)	466			966		1612		352	352		1466
Upstream Blk Time (%)								1	0		
Queuing Penalty (veh)								5	1		
Storage Bay Dist (ft)		250	400		100		375			150	
Storage Blk Time (%)	1	0	2		0	28	0			0	15
Queuing Penalty (veh)	1	0	5		0	201	0			1	23

Intersection: 14: Bend

Movement	WB	WB
Directions Served	T	
Maximum Queue (ft)	718	659
Average Queue (ft)	370	153
95th Queue (ft)	908	587
Link Distance (ft)	620	620
Upstream Blk Time (%)	5	1
Queuing Penalty (veh)	25	4
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 756

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	L	TR	L	L	T	TR	L	T	T	R
Maximum Queue (ft)	51	292	212	160	324	399	720	782	174	339	361	225
Average Queue (ft)	37	138	112	81	266	278	286	220	68	197	201	64
95th Queue (ft)	54	242	193	145	355	443	586	556	151	299	312	212
Link Distance (ft)		620		508			713	713		352	352	
Upstream Blk Time (%)							1	1		0	1	
Queuing Penalty (veh)							7	10		1	3	
Storage Bay Dist (ft)	20		250		250	250			150			200
Storage Blk Time (%)	59	46			17	5	8		0	21	11	0
Queuing Penalty (veh)	72	40			82	26	58		0	10	16	0

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	B5
Directions Served	T
Maximum Queue (ft)	6
Average Queue (ft)	0
95th Queue (ft)	4
Link Distance (ft)	1612
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	EB	EB	B12	B12	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	LTR	T	T	L	LT	R	L	T	T	R	L
Maximum Queue (ft)	183	163	174	94	326	446	307	625	1923	1894	1509	384
Average Queue (ft)	159	120	53	18	198	237	132	474	1253	1187	350	240
95th Queue (ft)	206	180	144	74	291	364	257	852	2114	2075	1370	358
Link Distance (ft)	107	107	961	961		2632			1964	1964	1964	
Upstream Blk Time (%)	44	24							11	3	0	
Queuing Penalty (veh)	0	0							0	0	0	
Storage Bay Dist (ft)					350		350	600				300
Storage Blk Time (%)					0	1	0	0	46			9
Queuing Penalty (veh)					0	4	0	0	120			31

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	418	532	376
Average Queue (ft)	104	137	47
95th Queue (ft)	248	333	213
Link Distance (ft)	713	713	713
Upstream Blk Time (%)	0	0	0
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)	0		
Queuing Penalty (veh)	0		

Intersection: 3: Joppa Rd. & Site Access

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	184	52
Average Queue (ft)	26	17
95th Queue (ft)	110	44
Link Distance (ft)	2632	505
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	L	TR	L	L	T	TR	L	T	T
Maximum Queue (ft)	50	333	11	213	205	325	400	731	777	174	300	324
Average Queue (ft)	37	161	0	110	84	289	321	383	300	76	193	200
95th Queue (ft)	53	283	8	188	172	362	464	709	654	164	292	296
Link Distance (ft)		620	620		508			708	708		352	352
Upstream Blk Time (%)								2	1			0
Queuing Penalty (veh)								15	11			0
Storage Bay Dist (ft)	20			250		250	250			150		
Storage Blk Time (%)	58	45			1	26	10	17		0	19	10
Queuing Penalty (veh)	71	39			1	126	49	121		1	10	16

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	SB
Directions Served	R
Maximum Queue (ft)	225
Average Queue (ft)	59
95th Queue (ft)	205
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	200
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	EB	EB	EB	B12	B12	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	TR	T	T	L	L	T	R	L	T	T
Maximum Queue (ft)	195	143	145	197	159	282	286	171	288	570	1038	984
Average Queue (ft)	170	87	78	62	14	169	184	86	128	315	659	599
95th Queue (ft)	211	144	139	164	82	251	265	156	253	728	1089	1009
Link Distance (ft)	107	107	107	949	949			2632			1957	1957
Upstream Blk Time (%)	55	6	7									
Queuing Penalty (veh)	0	0	0									
Storage Bay Dist (ft)						350	350		350	600		
Storage Blk Time (%)										0	18	
Queuing Penalty (veh)										0	46	

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	T	T	R
Maximum Queue (ft)	213	340	342	412	390
Average Queue (ft)	38	214	85	116	38
95th Queue (ft)	160	321	208	279	183
Link Distance (ft)	1957		708	708	708
Upstream Blk Time (%)			0	0	0
Queuing Penalty (veh)			0	0	0
Storage Bay Dist (ft)		300			
Storage Blk Time (%)		3	0		
Queuing Penalty (veh)		11	0		

Intersection: 3: Joppa Rd. & Site Access

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	157	40
Average Queue (ft)	26	17
95th Queue (ft)	98	43
Link Distance (ft)	2632	499
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Arterial Level of Service: NB MD 25

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Joppa Rd.	2	75.4	109.8	0.4	13
Greenspring Station	1	9.4	20.2	0.1	27
	5	2.7	11.1	0.1	26
Seminary Rd.	10	18.2	45.3	0.3	25
Total		105.7	186.3	0.9	19

Arterial Level of Service: SB MD 25

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
St. Pauls	10	83.2	113.9	0.3	10
	5	7.7	36.2	0.3	32
Greenspring Valley R	1	18.8	25.5	0.1	11
Falls Rd.	2	29.7	41.0	0.1	13
Total		139.3	216.7	0.8	14

Arterial Level of Service: NB MD 25

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Joppa Rd.	2	159.0	185.5	0.4	7
Greenspring Station	1	22.7	34.1	0.1	16
	5	6.4	14.8	0.1	20
Seminary Rd.	10	26.3	57.5	0.3	20
Total		214.4	291.9	0.9	11

Arterial Level of Service: SB MD 25

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
St. Pauls	10	21.9	47.4	0.3	22
	5	5.1	33.7	0.3	34
Greenspring Valley R	1	33.6	40.5	0.1	7
Falls Rd.	2	9.9	21.4	0.1	25
Total		70.5	142.9	0.8	21

Arterial Level of Service: NB MD 25

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Joppa Rd.	2	33.6	60.9	0.4	23
Greenspring Station	1	13.6	24.5	0.1	22
	5	3.1	11.6	0.1	25
Seminary Rd.	10	17.0	44.1	0.3	26
Total		67.4	141.0	0.9	24

Arterial Level of Service: SB MD 25

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
St. Pauls	10	73.8	99.5	0.3	10
	5	8.2	36.7	0.3	31
Greenspring Valley R	1	20.6	27.3	0.1	11
Falls Rd.	2	33.3	44.6	0.1	12
Total		135.9	208.1	0.8	15

Arterial Level of Service: NB MD 25

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Joppa Rd.	2	115.0	142.1	0.4	10
Greenspring Station	1	30.2	41.6	0.1	13
	5	9.2	17.7	0.1	16
Seminary Rd.	10	26.8	58.7	0.3	20
Total		181.2	260.1	0.9	13

Arterial Level of Service: SB MD 25

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
St. Pauls	10	23.8	49.3	0.3	21
	5	5.4	33.8	0.3	34
Greenspring Valley R	1	34.1	41.0	0.1	7
Falls Rd.	2	8.2	19.6	0.1	28
Total		71.5	143.7	0.8	21

DEVELOPER'S EXHIBIT

25

TRAFFIC IMPACT ANALYSIS

FOR

2310 JOPPA ROAD

Prepared by:

LENHART TRAFFIC CONSULTING, INC.

TRAFFIC ENGINEERING & TRANSPORTATION PLANNING



September 14, 2020

Revised: December 7, 2020

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Section 1 Introduction

1.1 Project Description

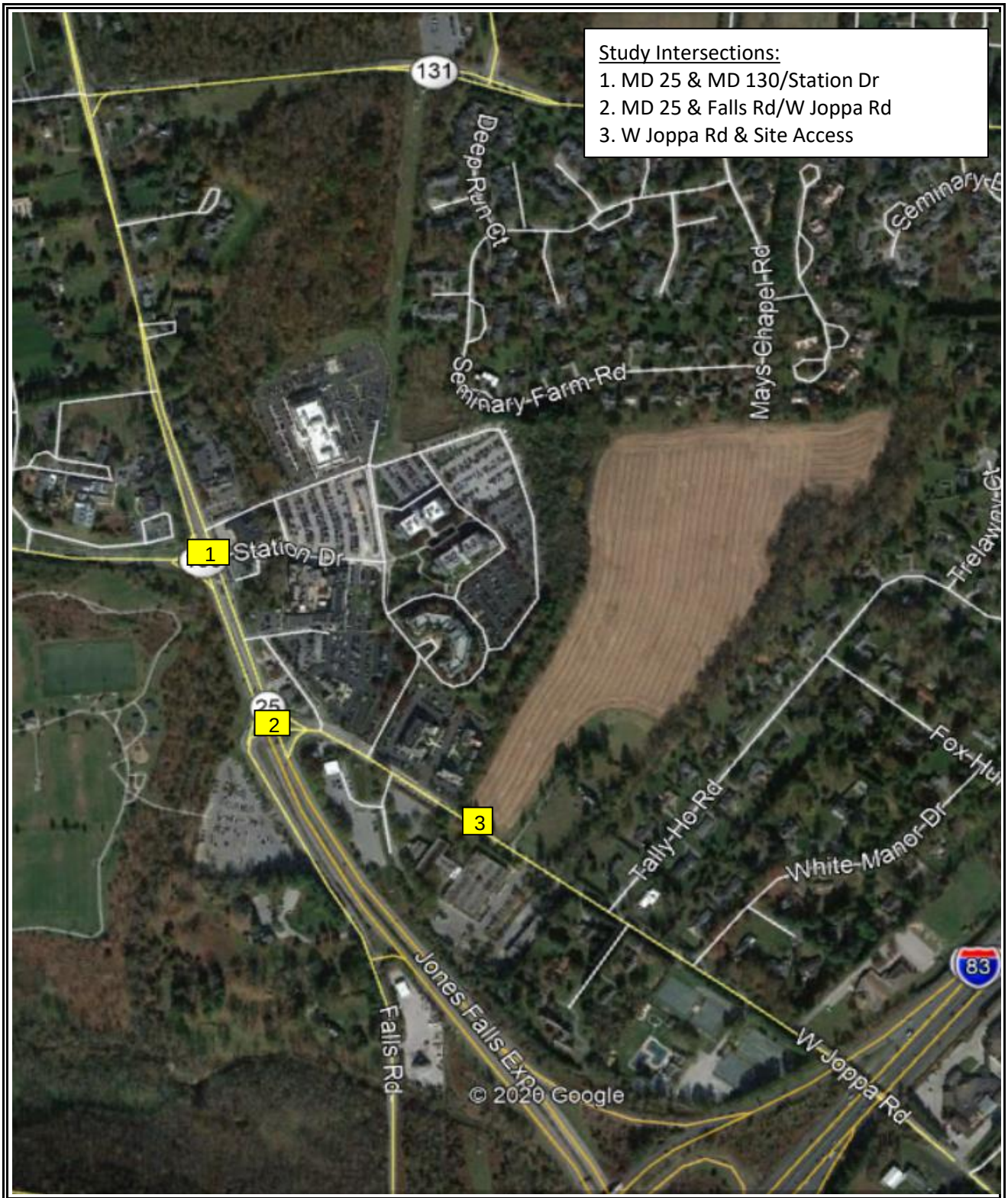
This Traffic Impact Analysis was prepared for the proposed 2310 Joppa Road development to be located on the north side of Joppa Road, as shown on **Exhibit 1**. The property is currently undeveloped and is proposed to be developed with 62 single-family detached units. The development will be accessed from a full-movement driveway along Joppa Road.

This revised Traffic Impact Analysis (TIA) was prepared to propose additional improvements at the intersection of MD 25 & W. Joppa Road / Falls Road. The original Traffic Impact Analysis proposed a modification to the signal phasing along with changes to the existing lane use. This revised TIA proposed to retain the existing signal phasing, but widen the east leg (W. Joppa Road) and the west leg (Falls Road) to provide additional approach lanes on each leg.

1.2 Scope of Study

This traffic study was conducted in accordance with the requirements of Baltimore County. The Baltimore County 2020 Basic Services Transportation Map indicates the site is located within a Level-of-Service (LOS) "F" zone. The intersections of MD 25 & MD 130/Station Drive and MD 25 & Falls Road/Joppa Road are individually shown with a LOS "F".

A special variance can be granted pursuant to Article 4A02.3.G of the Baltimore County Zoning Regulations if the demand or impact of the development proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal.



Traffic Impact Analysis	Site Location Map	**Exhibit 1**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com		

Section 2 Existing Conditions

2.1 Description of Roadway Network

The key roads in the study area are:

- MD 25 is a four lane (two in each direction) roadway with a posted speed limit of 40 MPH.
- Joppa Road is a two lane (one in each direction) roadway with a posted speed limit of 30 MPH.

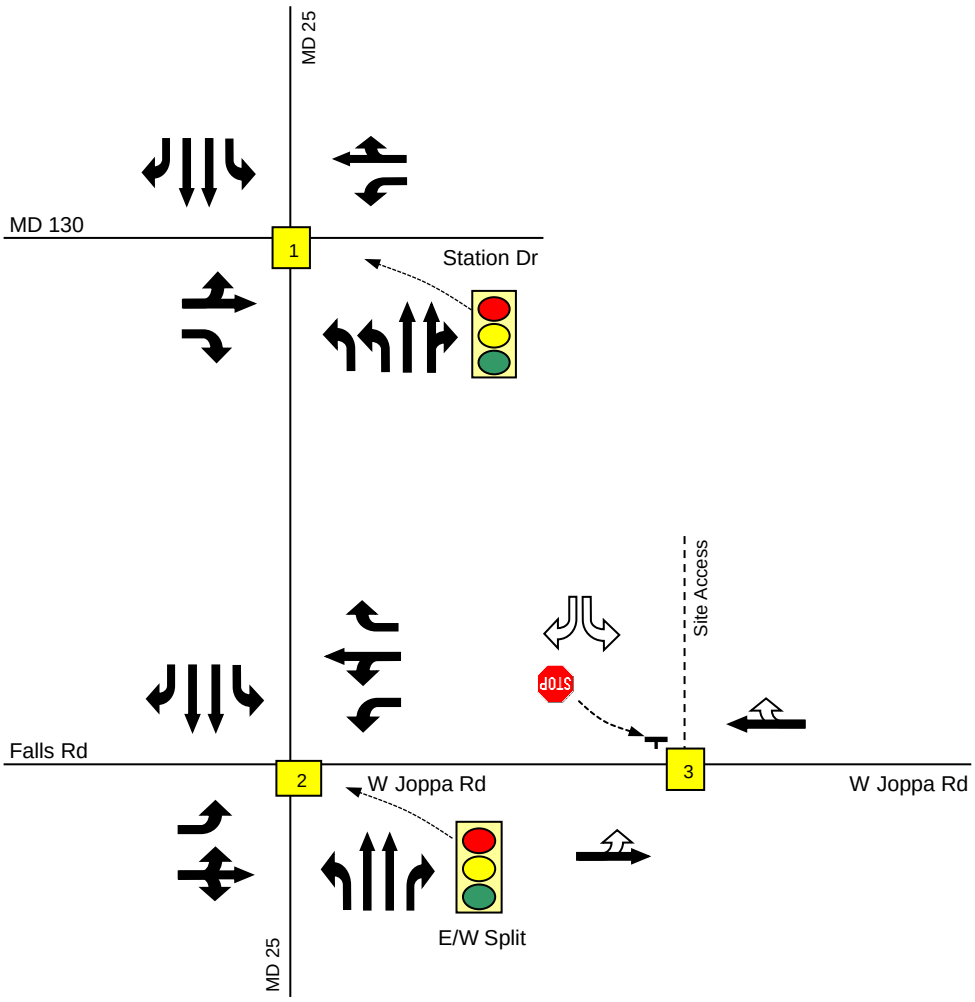
2.2 Existing Lane Configurations

The Existing Lane Use & Traffic Control Devices are shown on **Exhibit 2**.

2.3 Existing Traffic Counts

Peak Hour Traffic counts are shown on **Exhibit 3**. The existing intersections were evaluated using the Critical Lane Volume (CLV) methodology and the results are shown on Exhibit 8.

Baltimore County staff provided a traffic count for the intersection of MD 25 & Falls Road/Joppa Road. This count has been utilized throughout the study and is dated February 19, 2020. A copy of the provided count is included in Appendix A.



Traffic Impact Analysis

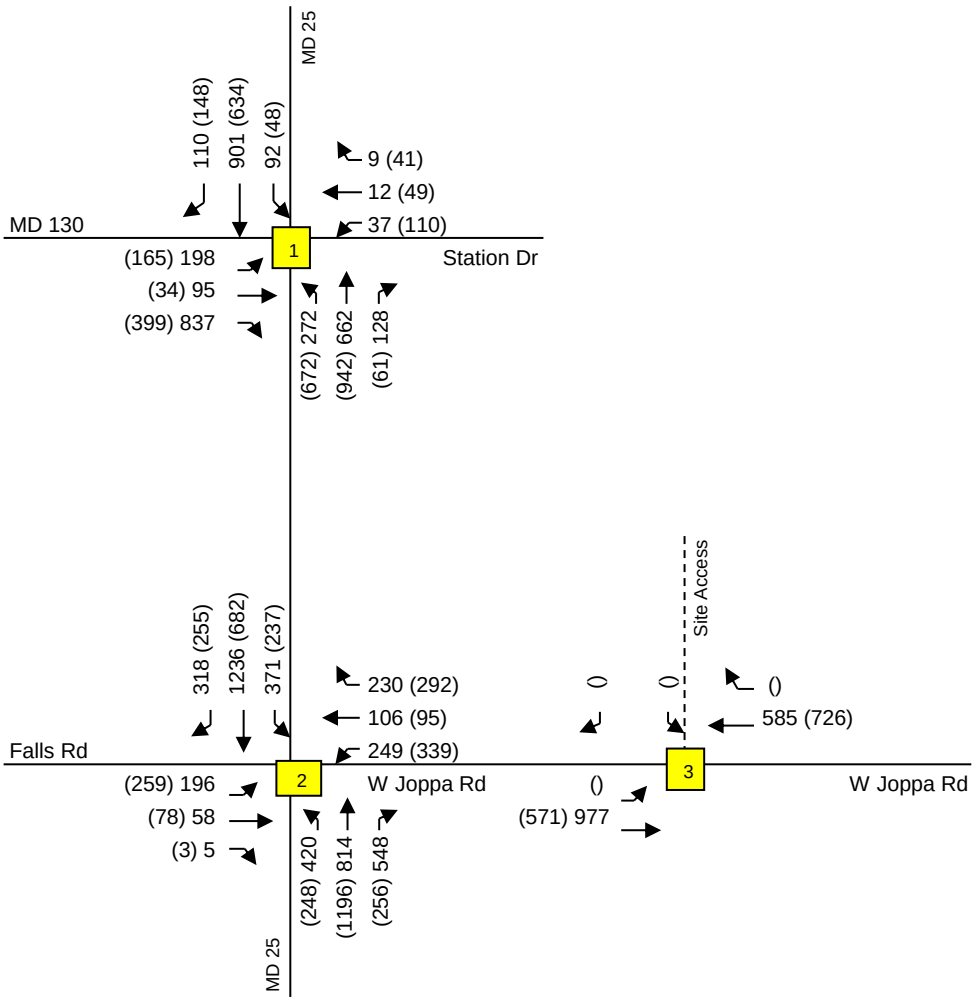
LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Lane Use & Traffic Control Devices

Key: Existing - Proposed -

Exhibit 2

Note: The volumes for Intersection 2 were provided by Baltimore County and are dated February 19, 2020.



Traffic Impact Analysis

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Existing Peak Hour Volumes

Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

Exhibit 3

Section 3 Background Conditions

3.1 Background Developments

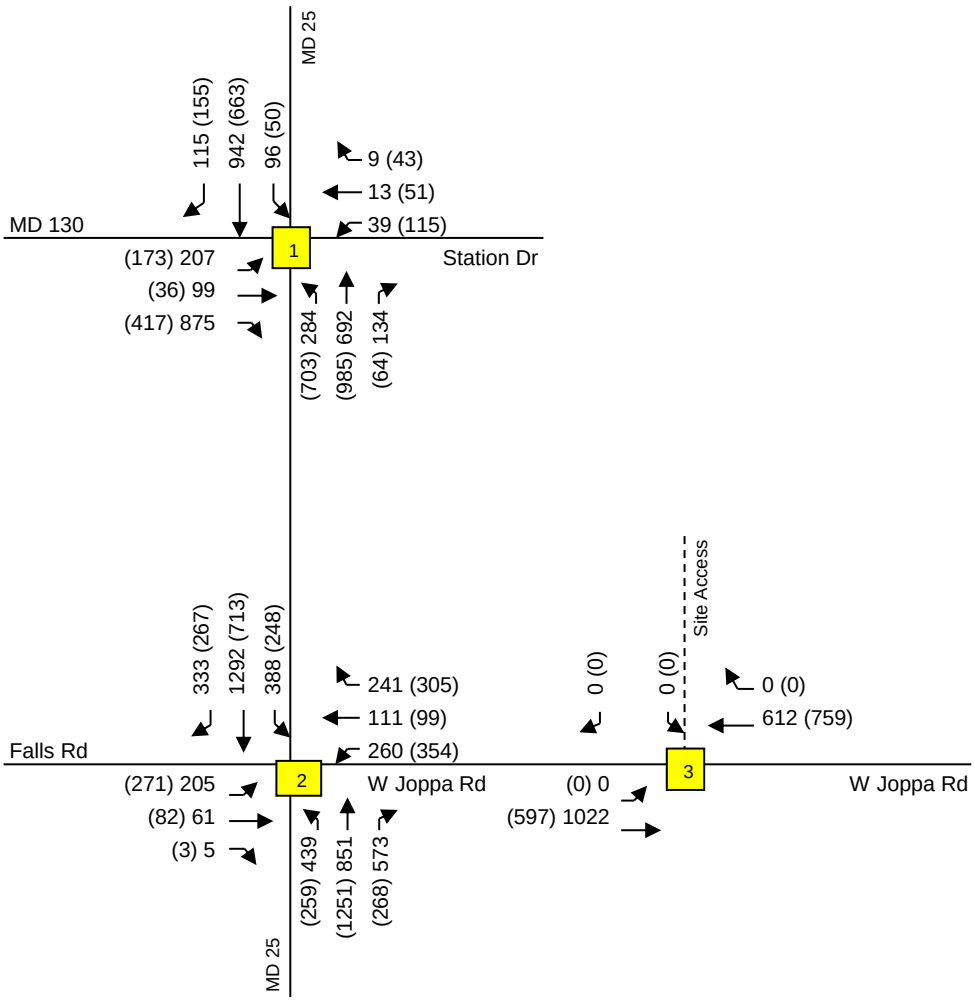
The Baltimore County Land Management Development Mapping Tool was used to identify background developments in the project vicinity, however no approved developments were determined to be within the project vicinity.

3.2 Annual Growth / Background Traffic Volumes

An annual growth rate of 1.5% was applied for three years to the study intersections. **Exhibit 4** shows the resulting background traffic volumes with the growth applied at each study area intersection.

The background peak hour volumes were evaluated using the Critical Lane Volume (CLV) and Highway Capacity Software (HCS) methodology and the results are shown on Exhibit 8

1.5%	Growth Rate
3	Years of Growth
1.0457	Total Growth



Traffic Impact Analysis	Background Peak Hour Volumes	**Exhibit 4**
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Section 4 Total Conditions

4.1 Site Trip Generation

The site is proposed to be developed with 62 single-family detached units. The development will be accessed from a full-movement driveway along Joppa Road. The trip generation for the site is detailed on **Exhibit 5**. Trip generation rates and totals are based on the ITE Trip Generation Manual, 10th Edition.

4.2 Site Trip Distribution & Trip Assignment

The proposed trip assignment for the site is shown on **Exhibit 6**.

4.3 Total Traffic Volumes

The total peak hour volumes are shown on **Exhibit 7**.

4.4 Projected Level of Service

The total traffic volumes shown on Exhibit 7 were evaluated using the methodology and the results are shown on **Exhibit 8a**. As shown, all intersections will operate with a LOS "B" or better with the exception of Intersection 2, which operates with a LOS "E". It should be noted that the proposed improvement (discussed below) will improve the CLV to an LOS "D". CLV worksheets have been included in Appendix B.

The results of the HCM analyses are shown on **Exhibit 8b**. As shown, all intersections will operate with a LOS "D" or better. The HCM worksheets have been included in Appendix B.

Exhibit 8c shows the SimTraffic queuing analysis results. All 95th percentile queues for movements impacted by the development have adequate storage, with the exception of the northbound left along MD 25 at the intersection with MD 130 during the evening peak hour. It should be noted that the proposed development increases the volume for this movement by only 0.14%. The HCS SimTraffic worksheets have been included in Appendix B.

The impact on Intersection 1 should be considered negligible and while the impact on Intersection 2 should also be considered negligible, a potential improvement has been identified that would mitigate the impact of the development and improve the

CLV from background to total conditions at Intersection 2. The improvement consists of widening the east and west legs to include an additional left turn lane at each approach. The road improvements are shown on the attached concept plan on **Exhibits 9a and 9b.**

Trip Generation Rates

Single-Family Detached (ITE-210, Units)

	Trip Distribution (In/Out)
Morning Trips = 0.70 x (Units) + 9.74	25/75
Ln(Evening Trips) = 0.90 x Ln(Units) + 0.51	63/37

Trip Generation Totals

			AM Peak			PM Peak		
			In	Out	Total	In	Out	Total
LU Code 210	Single-Family Detached (ITE-210, Units)	62 units	11	35	46	38	23	61
		Total:	**11**	**35**	**46**	**38**	**23**	**61**

NOTE: Trip Generation Rates obtained from the ITE Trip Generation Manual, 10th Edition

Traffic Impact Analysis

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SEVERNA PARK, MD 21146
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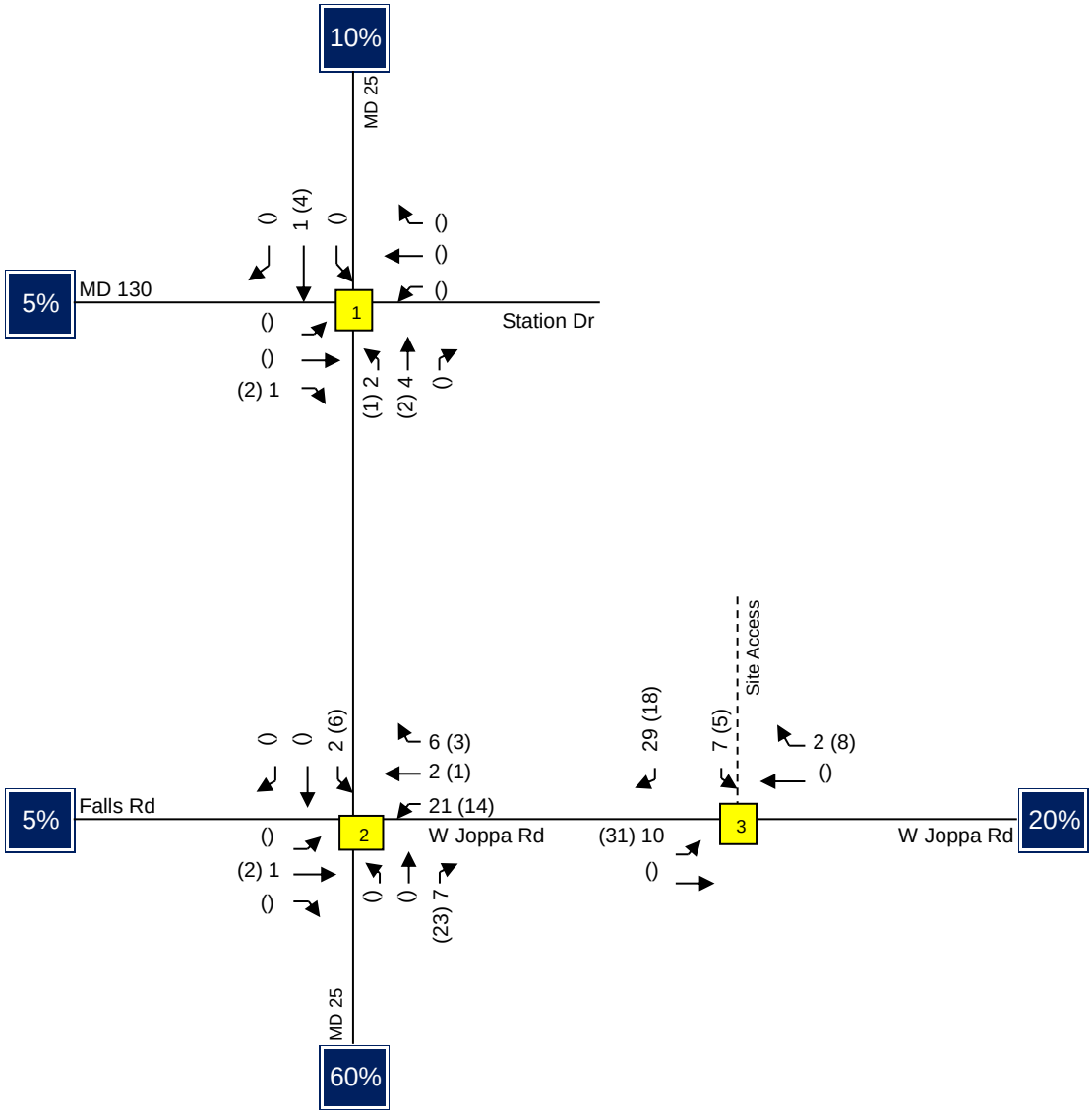
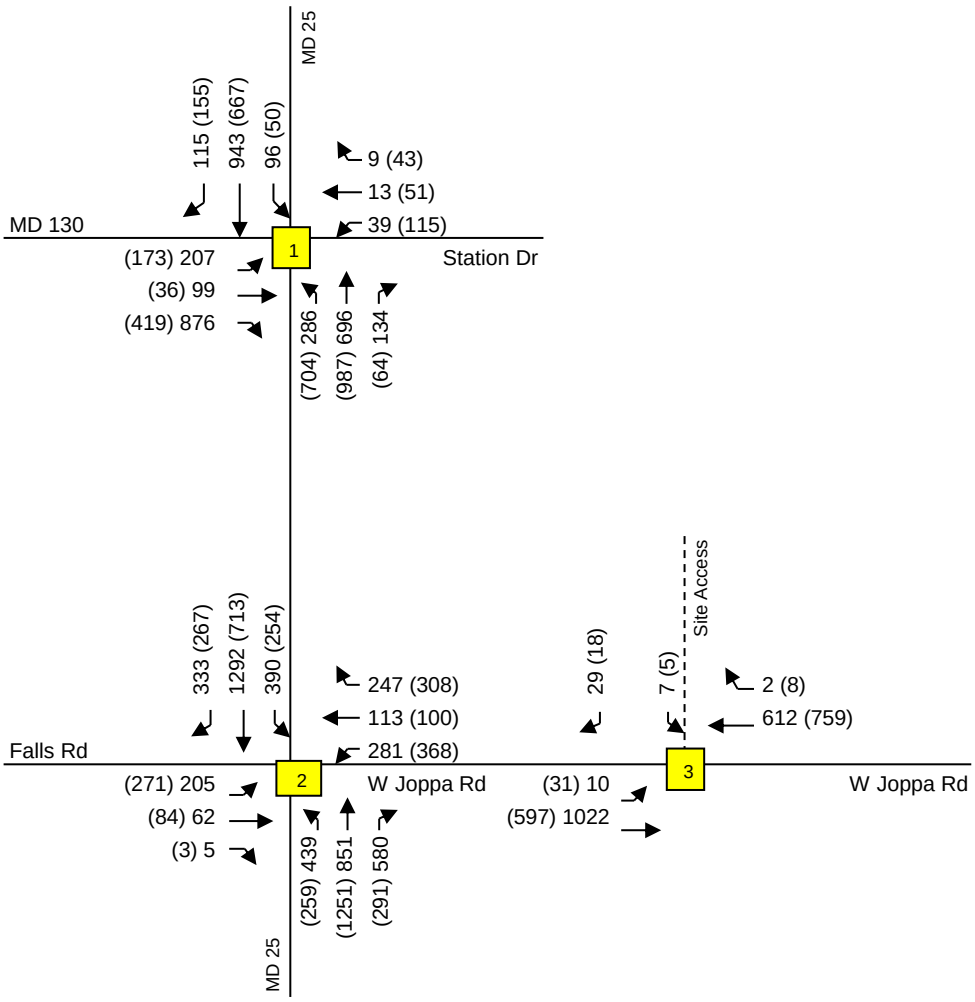
Trip Generation for Site

Exhibit 6



Traffic Impact Analysis	Trip Assignment for Site	**Exhibit 6**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Key: xx = AM Peak Vol's (xx) = PM Peak Vol's	



Traffic Impact Analysis

Total Peak Hour Volumes

Exhibit 7

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Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

Level-of-Service Results

Morning Peak Hour	Critical Lane Volume (CLV)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total	CLV Impact	Mitigates
1). MD 25 & MD 130/Station Dr	B / 1009	B / 1054	B / 1057	3	--
2). MD 25 & Falls Rd/W Joppa Rd	E / 1468	E / 1536	E / 1549	13	--
Proposed New Improvements			D / 1428	-121	931%
3). W Joppa Rd & Site Access	N/A	N/A	B / 1088	--	--

Evening Peak Hour	Critical Lane Volume (CLV)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total	CLV Impact	Mitigates
1). MD 25 & MD 130/Station Dr	B / 1078	B / 1128	B / 1130	2	--
2). MD 25 & Falls Rd/W Joppa Rd	D / 1359	D / 1422	D / 1438	16	--
Proposed New Improvements			D / 1307	-131	819%
3). W Joppa Rd & Site Access	N/A	N/A	A / 821	--	--

Level-of-Service Results

Morning Peak Hour	Highway Capacity Manual (HCM)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total	Delay Impact	Mitigates
1). MD 25 & MD 130/Station Dr	C / 21.6	C / 21.8	C / 21.9	0.1	--
2). MD 25 & Falls Rd/W Joppa Rd	D / 49.7	D / 54.8	E / 55.9	1.1	--
Proposed New Improvements			D / 40.9	-15	1364%
3). W Joppa Rd & Site Access	N/A	N/A	A / 0.6	--	--

Evening Peak Hour	Highway Capacity Manual (HCM)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total	Delay Impact	Mitigates
1). MD 25 & MD 130/Station Dr	C / 27.3	C / 27.5	C / 27.4	-0.1	--
2). MD 25 & Falls Rd/W Joppa Rd	D / 44.8	D / 47.7	D / 48.7	1	--
Proposed New Improvements			D / 40.9	-7.8	780%
3). W Joppa Rd & Site Access	N/A	N/A	A / 0.8	--	--

SimTraffic 95th Percentile Queuing Results

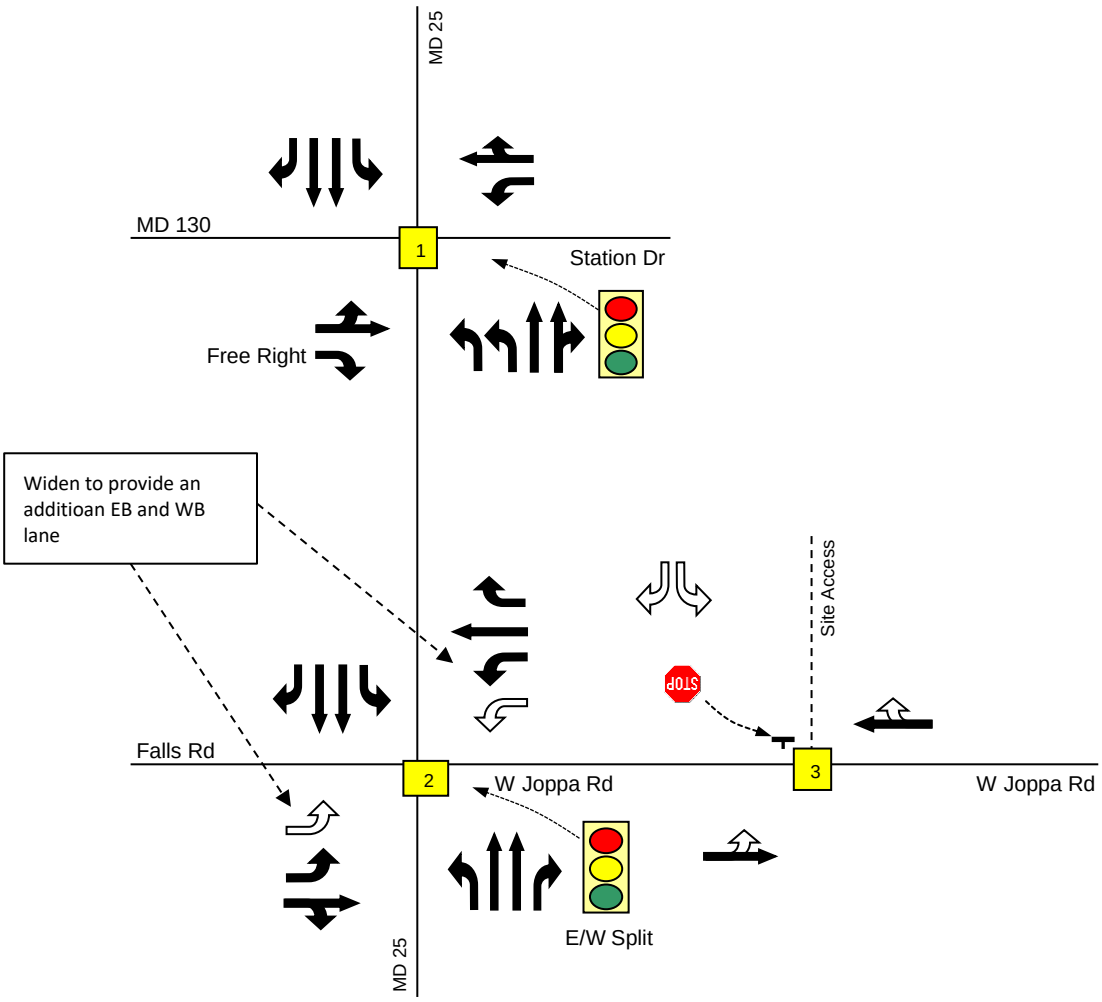
Morning Peak Hour	Storage Length (Feet)	Background (Feet)	Total (Feet)	Total with Imp's (Feet)
1). MD 25 & MD 130/Station Dr				
eastbound left	420	60	60	
westbound left	240	90	105	
northbound left	320	240	235	
southbound left	150	195	185	
2). MD 25 & Falls Rd/W Joppa Rd				
eastbound left	740	190	195	210
westbound left	540	255	270	160
northbound left	630	740	690	535
southbound left	355	440	440	435
3). W Joppa Rd & Site Access	N/A	N/A	N/A	N/A
southbound left				

Evening Peak Hour	Storage Length (feet)	Background (Feet)	Total (Feet)	Total with Imp's (Feet)
1). MD 25 & MD 130/Station Dr				
eastbound left	420	55	55	
westbound left	240	195	195	
northbound left	320	455	445	
southbound left	150	160	155	
2). MD 25 & Falls Rd/W Joppa Rd				
eastbound left	740	200	210	215
westbound left	540	305	295	270
northbound left	630	840	855	435
southbound left	355	310	360	330
3). W Joppa Rd & Site Access	N/A	N/A	N/A	N/A
southbound left				

Notes:

1. Only intersections and approaches containing dedicated storage lanes are shown.

Traffic Impact Analysis	Results of SimTraffic Queuing Analysis	**Exhibit 8c**



Traffic Impact Analysis

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Lane Use & Traffic Control Devices

Key: Existing - Proposed -

Exhibit 9a



LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BOULEVARD, SUITE 214
SEVERNA PARK, MD 21146
TEL: (410) 216-3333
FAX: (443) 782-2288
www.lenharttraffic.com

LEGEND

FULL-DEPTH WIDENING | REMOVE PAVEMENT | RE-MARK PAVEMENT | CONCRETE CURB AND GUTTER

2310 W. JOPPA ROAD

MD 25 AT WEST JOPPA ROAD CONCEPT GEOMETRIC IMPROVEMENTS

DATE	DRAWN BY	SCALE	SHEET
DEC. 2020	LTC/BCS	1"=50'	

Section 5 Conclusions / Recommendations

5.1 Results of Analysis

This Traffic Impact Analysis was prepared for the proposed 2310 Joppa Road development to be located on the north side of Joppa Road. The property is currently undeveloped and is proposed to be developed with 62 single-family detached units. The development will be accessed from a full-movement driveway along Joppa Road.

Based on the analyses contained in this report:

- The Baltimore County 2020 Basic Services Transportation Map indicates the site is located within a Level-of-Service (LOS) "F" zone. The intersections of MD 25 & MD 130/Station Drive and MD 25 & Falls Road/Joppa Road are individually shown with a LOS "F".

- The results of the CLV analysis indicate that the study intersections actually operate at a LOS "E" or better.
    - The intersection of MD 25 & MD 130/Station Drive will operate with a LOS "B" during the morning and evening peak hour. The proposed development has an impact of 0.28% on this intersection.
    - The intersection of MD 25 & Falls Road/Joppa Road will operate with a LOS "E" during the morning peak hour and LOS "D" during the evening peak hour. The proposed development has an impact of only 1.13% on this intersection.
        - With the proposed improvement, the intersection of MD 25 & Falls Road/Joppa Road will operate with a LOS "D" during both the morning and evening peak hours.
    - The intersection of Joppa Road & Site Access will operate with a LOS "B".

- The results of the HCS analysis indicate that all intersections will operate with a LOS "D" or better during both the morning and evening peak hours with the proposed improvement. There is a negligible increase in the overall intersection delay at the study intersections from background to total conditions.

Using SHA's Critical Lane Volume methodology, this analysis indicates that the study intersections operate significantly better than the LOS "F" shown in the 2020 Basic Services Transportation Map with or without this development. Additionally, the proposed development has a negligible impact on the intersections along MD 25. However, in order to address the findings of the Basic Services Map, this TIA includes an expanded improvement as discussed in Section 4 above. The road improvements are shown on the attached concept plan on Exhibits 9a and 9b, and include widening the east and west legs of the intersection to provide an additional lane on each approach. These expanded improvements would mitigate 931% of the site impacts in the AM peak hour and 819% of the site impacts in the PM peak hour.

Appendix B to this report also contains Highway Capacity Manual (HCM) reports of the intersections including an evaluation of the proposed improvement. The HCM reports also indicate that the intersections are currently operating at acceptable levels of service ("D" or better). In addition, the HCM analyses of the proposed improvements also indicates a reduction of the overall intersection delays that are 1364% mitigation of the site impacts in the AM peak and 780% mitigation of the site impacts in the PM peak. This is commensurate with the improvements identified in the CLV analyses above.

The applicant will be submitting an application for a Special Variance through Baltimore County to allow this development to proceed based on our proposal for improvements that will substantially over-mitigate the traffic impacts. The code section related to this finding states that, "*The demand or impact of the development proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or the standard is not relevant to the development proposal*." Based on the proposed improvements, the traffic conditions will be better with the approval of the project and the associated improvements, than what would be expected to occur if the project is not approved.

It is also important to note that in reviewing the historical imagery in this area, it appears that no significant improvements have been provided in this area in at least 25 to 30 years, and there are currently no improvements programmed. The attached analyses show that the granting of the special variance would improve traffic conditions based on the CLV and HCM methodology over what would occur otherwise without the granting of the special variance.

Appendix A

Supplemental Information
Turning Movement Counts

Department of Public Works

2020 Basic Services Map
Transportation Zones

Legend

Intersections - Level of Service

- D
- E
- F

Transportation Zones - Level of Service

- D
- E
- F
- Commercial Revitalization Areas
- Towson Urban Center
- Urban Rural Demarcation Line
- County Boundary

Shawan Rd, Beaver Dam Rd & Cuba Rd
Falls Rd, Shawan Rd & Tufton Ave
W Padonia Rd, Deerco Rd & Beaver Dam Rd
York Rd & E/W Padonia Rd
Dulaney Valley Rd & E Timonium Rd
York Rd & E/W Timonium Rd
Jarrettsville Pike, Paper Mill Rd & Sweet Air Rd
Falls Rd & W Seminary Ave
Falls Rd, Greenspring Valley Rd & Station Dr
Jones Falls Expy, Falls Rd & W Joppa Rd
York Rd & E/W Seminary Ave
Charles St, Bellona Ave & Kenilworth Ave
York Rd & Fairmount Ave
Dulaney Valley Rd & Fairmount Ave
Perring Pkwy & E Joppa Rd
Harford Rd & E Joppa Rd
Belair Rd, Joppa Rd & Ebenezer Rd
York Rd & Burke Ave
Hillen Rd & Stevenson Ln
Goucher Blvd & Putty Hill Ave
Perring Pkwy & Putty Hill Ave
Loch Raven Blvd & E Joppa Rd
White Marsh Blvd & Honeygo Blvd
Belair Rd & Rossville Blvd
Pulaski Hwy & Ebenezer Rd
Harford Rd & Taylor Ave
Belair Rd, Fullerton Ave & Taylor Ave
Liberty Rd & Washington Ave
Rolling Rd & Windsor Mill Rd
Pulaski Hwy & Middle River Rd
Pulaski Hwy & Rossville Blvd
Pulaski Hwy & 66th St
Eastern Ave, Rolling Mill Rd & Eastpoint Mall
Baltimore National Pike & N Rolling Rd
Frederick Rd, Ingleside Ave & Bloomsbury Ave
Frederick Rd & S Rolling Rd

THIS MAP HAS BEEN ENACTED UNDER BILL NUMBER 30-20 AND IS PART OF THE BALTIMORE COUNTY ZONING REGULATIONS, 1955, AS AMENDED BY THE BILL ADOPTED 5/4/20. EFFECTIVE 5/18/20.

COUNTY COUNCIL OF BALTIMORE COUNTY

N W E S

SCALE 1 INCH = 4,000 Feet

0 2,000 4,000 8,000 12,000 16,000 20,000 Feet

NOTE: The interpretation of the Basic Services Maps are subject to exceptions provided for in the Baltimore County Zoning Regulations, Article 4A Growth Management, Section 4A02 Basic Services Maps. These exceptions include those mapped in the County's geographic information system (GIS): the Urban and Rural Demarcation Line (URDL), Commercial Revitalization Districts (4A02.4.E.1.i), and the Towson Urban Center (4A02.4.E.1.j). The Towson Urban Center (Downtown Towson District) exists in the Master Plan 2020 in the Land Management Areas feature class.

Feature Class Production Dates

Transportation Zones	2020
Intersections	2020
Commercial Revitalization Districts	2019
Towson Urban Center	2011
Urban Rural Demarcation Line	2012
Roads	2020
County Boundary	2008

Produced by the Baltimore County Department of Public Works

North American Datum 1983 HARN, U.S. Survey Foot

Published June 5, 2020

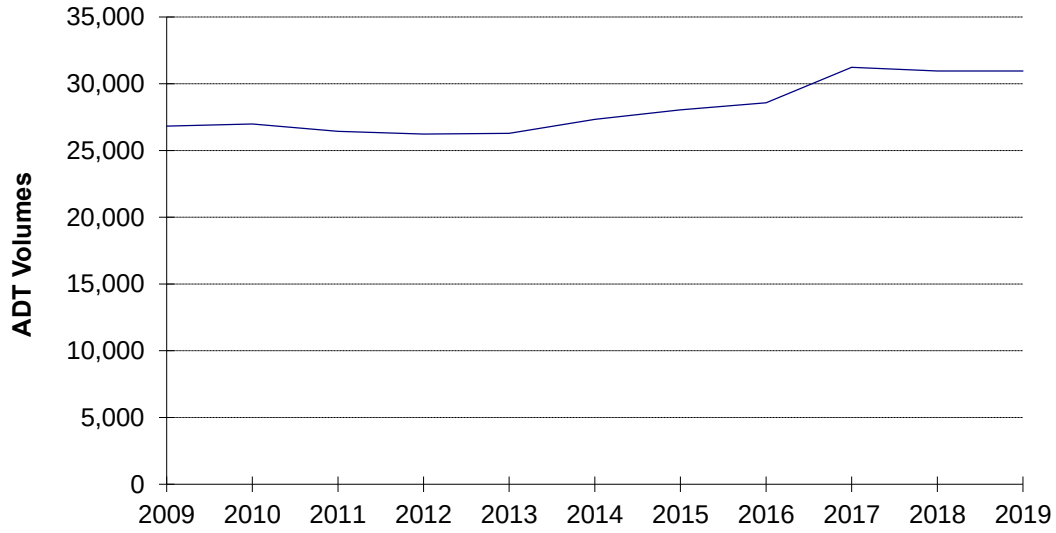
TRAFFIC GROWTH PROJECTION

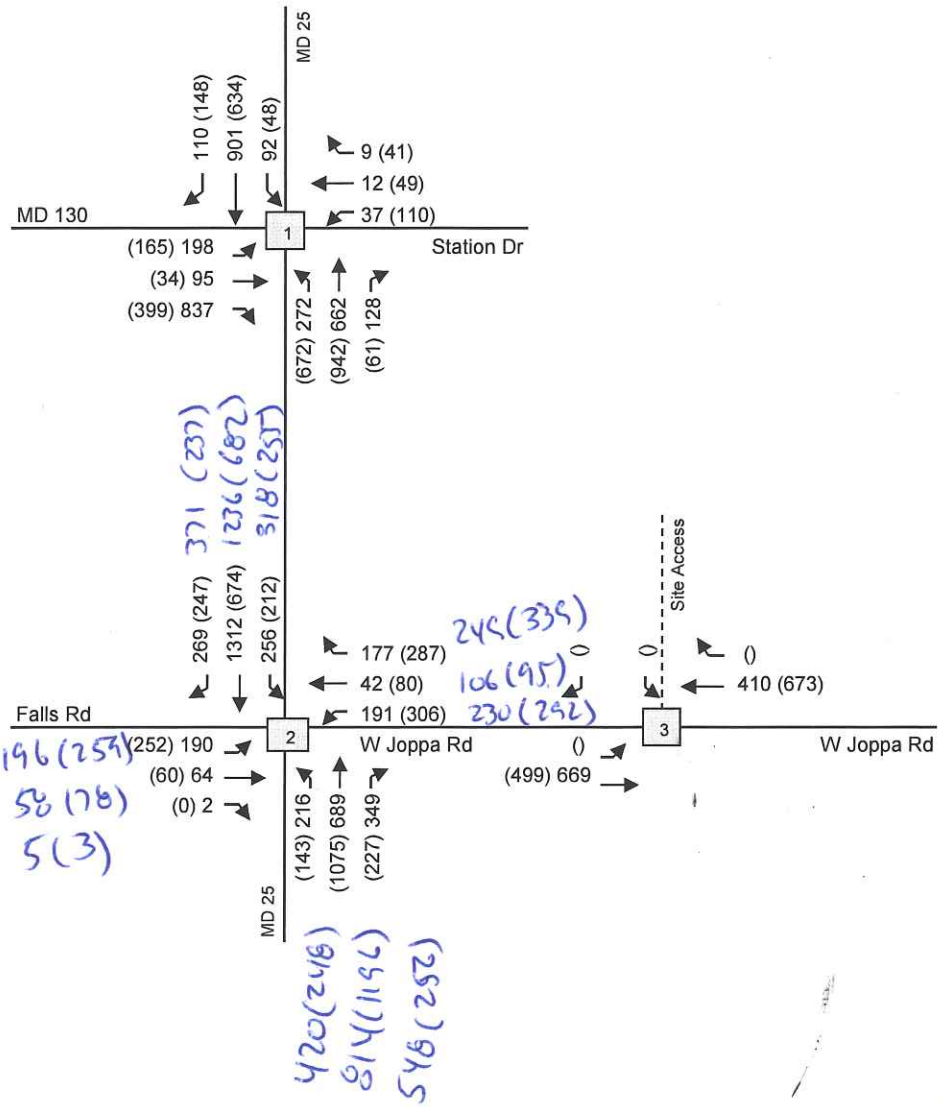
LOCATION: Jones Falls Expy South of MD 130

REPORT DATE: 03-Sep-20

AVERAGE GROWTH:	1.49%
MATHEMATICAL GROWTH:	1.44%

Year	ADT Volume	Vol. increase	% increase	Average %
2009	26,821			
2010	26,982	161	0.60%	0.60%
2011	26,440	-542	-2.01%	-0.70%
2012	26,231	-209	-0.79%	-0.73%
2013	26,282	51	0.19%	-0.50%
2014	27,330	1,048	3.99%	0.40%
2015	28,041	711	2.60%	0.76%
2016	28,572	531	1.89%	0.93%
2017	31,230	2,658	9.30%	1.97%
2018	30,951	-279	-0.89%	1.65%
2019	30,952	1	0.00%	1.49%





Traffic Impact Analysis	Existing Peak Hour Volumes	**Exhibit 3**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Key: xx = AM Peak Vol's (xx) = PM Peak Vol's	

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

MD 25	MD 25	Station Dr	MD 130
From North	From South	From East	From West

Begin Hour	U.Turn	Left	Through	Right	TOTAL	U.Turn	Left	Through	Right	TOTAL	U.Turn	Left	Through	Right	TOTAL	U.Turn	Left	Through	Right	TOTAL	GrandTotal
00:00	0	0	5	0	5	0	3	7	0	10	0	0	0	0	0	0	0	0	3	3	18
00:15	0	0	1	0	1	0	1	9	0	10	0	0	0	0	0	0	0	0	1	1	12
00:30	0	0	0	0	0	0	2	3	0	5	0	0	0	0	0	0	0	0	1	1	6
00:45	0	0	0	0	0	0	4	7	0	11	0	0	0	0	0	0	0	0	0	0	11
01:00	0	0	1	1	2	0	2	6	0	8	0	0	0	0	0	0	0	0	1	1	11
01:15	0	0	0	0	0	0	4	2	0	6	0	0	0	0	0	0	0	0	0	0	6
01:30	0	0	2	1	3	0	0	6	1	7	0	0	0	1	1	0	0	0	2	2	13
01:45	0	0	1	1	2	0	1	5	0	6	0	0	0	0	0	0	0	0	1	1	9
02:00	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	3
02:15	0	0	0	0	0	0	0	2	0	2	0	0	0	1	1	0	0	0	1	1	4
02:30	0	0	2	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
02:45	0	0	3	0	3	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	5
03:00	0	0	1	0	1	0	0	2	0	2	0	0	0	0	0	0	0	0	2	2	5
03:15	0	1	3	0	4	0	0	3	1	4	0	0	0	0	0	0	0	0	0	0	8
03:30	0	0	0	0	0	0	2	3	0	5	0	0	0	0	0	0	0	0	3	3	8
03:45	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	2	2	4
04:00	0	0	5	0	5	0	0	1	1	2	0	0	0	0	0	0	0	0	1	1	8
04:15	0	0	12	0	12	1	1	5	3	10	0	0	0	0	0	0	0	0	8	8	30
04:30	0	1	12	3	16	0	2	1	0	3	0	1	0	1	2	0	0	0	3	3	24
04:45	0	0	10	0	10	0	4	2	0	6	0	1	0	0	1	0	1	1	8	10	27
05:00	0	0	32	4	36	0	2	8	0	10	0	0	0	0	0	0	2	0	3	5	51
05:15	0	2	39	2	43	0	3	8	5	16	0	2	0	0	2	0	2	1	10	13	74
05:30	0	0	54	4	58	0	4	15	0	19	0	0	0	0	0	0	0	0	15	15	92
05:45	0	0	46	1	47	0	13	21	2	36	0	0	0	0	0	0	3	0	31	34	117
06:00	0	2	52	3	57	0	8	20	5	33	0	1	0	0	1	0	2	2	45	49	140
06:15	0	4	96	3	103	0	14	36	6	56	0	2	1	0	3	0	8	2	64	74	236
06:30	0	5	163	3	171	0	26	36	17	79	0	4	2	1	7	0	7	4	118	129	386

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

	MD 25						MD 25						Station Dr						MD 130					
	From North						From South						From East						From West					
06:45	0	22	182	14	218	1	22	67	19	109	0	3	0	1	4	0	15	9	126	150	481
07:00	0	15	239	10	264	0	37	103	17	157	0	3	0	3	6	0	7	10	195	212	639
07:15	1	19	292	21	333	0	40	168	19	227	0	7	2	1	10	0	30	11	204	245	815
07:30	0	24	250	26	300	1	65	176	32	274	0	1	0	1	2	0	31	10	209	250	826
07:45	0	33	208	24	265	0	59	151	31	241	0	10	0	1	11	0	48	19	233	300	817
08:00	0	23	233	26	282	0	66	204	36	306	0	15	4	5	24	0	49	17	179	245	857
08:15	0	16	198	29	243	0	71	162	36	269	0	8	5	2	15	0	52	33	229	314	841
08:30	1	20	262	31	314	0	76	145	25	246	0	4	3	1	8	0	49	26	196	271	839
08:45	1	17	181	25	224	0	51	101	21	173	0	15	2	6	23	0	50	25	205	280	700
09:00	0	22	129	17	168	0	35	72	39	146	0	25	4	2	31	0	33	17	141	191	536
09:15	0	21	114	20	155	1	41	63	40	145	0	21	8	3	32	0	31	13	167	211	543
09:30	2	27	115	14	158	1	27	87	36	151	0	31	5	6	42	0	25	13	114	152	503
09:45	0	16	76	16	108	0	49	70	26	145	0	22	7	6	35	0	22	15	106	143	431
10:00	1	15	89	10	115	1	42	86	27	156	0	39	6	8	53	0	13	8	75	96	420
10:15	0	13	83	13	109	0	32	84	28	144	0	33	3	8	44	0	14	15	54	83	380
10:30	0	11	99	14	124	1	43	80	37	161	0	37	9	4	50	0	14	10	53	77	412
10:45	0	10	85	10	105	1	38	74	42	155	0	21	7	11	39	0	24	6	62	92	391
11:00	0	13	71	15	99	4	48	70	27	149	0	30	3	8	41	0	25	4	37	66	355
11:15	1	15	89	17	122	0	47	105	18	170	0	49	6	3	58	0	22	6	38	66	416
11:30	1	17	93	16	127	0	38	68	31	137	0	21	10	6	37	0	23	6	50	79	380
11:45	1	9	80	25	115	2	48	104	26	180	0	36	7	5	48	0	16	10	58	84	427
12:00	1	15	93	10	119	2	55	115	31	203	0	46	7	6	59	0	25	9	55	89	470
12:15	0	15	81	15	111	0	52	94	25	171	0	41	6	4	51	0	15	14	62	91	424
12:30	0	16	75	15	106	2	65	86	26	179	0	22	3	6	31	0	20	8	75	103	419
12:45	0	19	78	17	114	1	45	96	21	163	0	29	9	6	44	0	20	12	52	84	405
13:00	1	16	66	19	102	0	52	88	24	164	0	17	6	8	31	0	17	10	43	70	367
13:15	1	16	63	20	100	1	38	97	23	159	0	35	7	6	48	0	20	5	44	69	376
13:30	0	13	71	16	100	0	40	90	26	156	0	25	7	1	33	0	15	11	46	72	361
13:45	1	14	80	20	115	1	55	117	19	192	0	19	6	8	33	0	9	8	53	70	410

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

	MD 25						MD 25						Station Dr						MD 130					
	From North						From South						From East						From West					
14:00	0	13	92	23	128	0	51	101	23	175	0	41	4	7	52	0	25	8	58	91	446
14:15	1	17	93	7	118	2	67	111	37	217	0	41	5	11	57	0	18	9	57	84	476
14:30	1	9	83	18	111	1	56	180	17	254	0	37	14	11	62	0	32	7	56	95	522
14:45	0	14	112	18	144	0	101	170	21	292	0	24	12	4	40	0	35	6	69	110	586
15:00	1	11	114	27	153	0	86	149	23	258	0	31	7	10	48	0	31	3	61	95	554
15:15	1	17	130	47	195	0	94	218	20	332	0	30	12	9	51	0	35	7	95	137	715
15:30	0	17	136	27	180	1	151	220	17	389	0	23	23	9	55	0	39	6	95	140	764
15:45	1	16	123	36	176	2	127	186	19	334	0	22	16	4	42	0	37	4	94	135	687
16:00	0	12	121	35	168	1	153	205	17	376	0	36	12	14	62	0	33	6	98	137	743
16:15	1	16	156	39	212	0	123	227	12	362	0	29	16	10	55	0	45	3	96	144	773
16:30	0	14	139	36	189	0	162	199	10	371	0	35	19	11	65	0	45	10	95	150	775
16:45	0	17	129	28	174	1	136	220	15	372	0	35	16	12	63	0	48	6	84	138	747
17:00	1	12	134	41	188	0	192	260	11	463	0	32	17	10	59	0	33	6	102	141	851
17:15	0	11	161	42	214	0	163	210	16	389	0	27	11	14	52	0	52	6	118	176	831
17:30	0	7	210	37	254	0	180	252	19	451	0	16	5	5	26	0	32	16	95	143	874
17:45	0	13	137	31	181	0	138	240	15	393	0	18	7	5	30	0	38	13	68	119	723
18:00	1	17	124	24	166	0	123	217	10	350	0	16	5	6	27	0	21	10	57	88	631
18:15	0	7	108	15	130	0	124	183	16	323	0	11	7	7	25	0	21	11	66	98	576
18:30	0	10	93	15	118	1	82	173	6	262	0	14	5	6	25	0	22	3	54	79	484
18:45	0	8	63	16	87	0	58	130	11	199	0	12	5	5	22	0	8	2	39	49	357
19:00	0	8	68	6	82	1	50	141	9	201	0	12	4	7	23	0	6	2	28	36	342
19:15	1	4	82	14	101	0	54	85	6	145	0	14	3	5	22	0	9	0	21	30	298
19:30	0	4	73	4	81	2	51	87	9	149	0	9	4	5	18	0	4	2	22	28	276
19:45	0	2	77	5	84	0	52	99	6	157	0	4	9	5	18	0	17	2	20	39	298
20:00	0	3	54	3	60	0	39	87	5	131	0	9	7	4	20	0	9	0	22	31	242
20:15	0	7	27	4	38	1	57	80	3	141	0	8	3	2	13	0	4	1	17	22	214
20:30	0	2	37	3	42	0	47	73	7	127	0	9	4	4	17	0	5	1	25	31	217
20:45	0	0	27	2	29	2	37	85	1	125	0	9	2	1	12	0	7	1	13	21	187
21:00	0	0	75	8	83	0	38	87	3	128	0	14	1	0	15	0	3	0	9	12	238

Maryland Department of Transportation
State Highway Administration
Data Services Division

Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

	MD 25					MD 25					Station Dr					MD 130				
	From North					From South					From East					From West				
21:15	0	0	37	3	40	0	32	52	2	86	0	5	1	5	11	0	1	1	12	14	151
21:30	0	1	16	4	21	0	28	49	3	80	0	8	1	2	11	0	2	0	12	14	126
21:45	0	0	25	4	29	0	15	48	0	63	0	4	4	0	8	0	2	0	17	19	119
22:00	0	0	18	2	20	1	16	29	0	46	0	14	4	2	20	0	3	0	11	14	100
22:15	0	0	8	0	8	0	23	35	0	58	0	2	0	1	3	0	1	0	8	9	78
22:30	0	0	9	0	9	0	14	22	1	37	0	2	0	4	6	0	1	0	7	8	60
22:45	0	0	6	1	7	0	9	19	0	28	0	0	0	0	0	0	0	0	9	9	44
23:00	0	1	13	0	14	0	8	27	1	36	0	1	0	2	3	0	0	0	4	4	57
23:15	0	0	6	0	6	0	21	18	0	39	0	1	0	0	1	0	0	0	3	3	49
23:30	0	0	4	0	4	0	7	17	0	24	0	0	0	0	0	0	1	0	1	2	30
23:45	0	0	5	1	6	0	7	13	0	20	0	0	0	0	0	0	0	1	1	2	28
TOTAL	**22**	**807**	**7441**	**1177**	**9447**	**37**	**4446**	**8240**	**1240**	**13963**	**0**	**1331**	**410**	**359**	**2100**	**0**	**1484**	**523**	**5304**	**7311**	**32821**
AMPEAK	**1**	**92**	**901**	**110**	**1104**	**0**	**272**	**662**	**128**	**1062**	**0**	**37**	**12**	**9**	**58**	**0**	**198**	**95**	**837**	**1130**	**3354**
PMPEAK	**1**	**47**	**634**	**148**	**830**	**1**	**671**	**942**	**61**	**1675**	**0**	**110**	**49**	**41**	**200**	**0**	**165**	**34**	**399**	**598**	**3303**

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030037
Date: 2/27/2020 12:00:00 AM
Location: MD 25 at MD 130 (Greenspring Valley Rd)
Interval: 15 Min

County: Baltimore
Town: none
Weather: Cloudy,Cold

Comments:

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

MD 25	MD 25	Station Dr	MD 130
From North	From South	From East	From West

Begin Hour	School Children	Pedestrians	Bicycles	School Childer	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles
00:00	0	0	0	0	0	0	0	0	0	0	0	0
00:15	0	0	0	0	0	0	0	0	0	0	0	0
00:30	0	0	0	0	0	0	0	0	0	0	0	0
00:45	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0
01:15	0	0	0	0	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0
02:15	0	0	0	0	0	0	0	0	0	0	0	0
02:30	0	0	0	0	0	0	0	0	0	0	0	0
02:45	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0
03:15	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0
04:15	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0
05:15	0	0	0	0	0	0	0	0	0	0	0	0
05:30	0	0	0	0	0	0	0	0	0	0	0	0
05:45	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	0	0	0

Maryland Department of Transportation
State Highway Administration
Data Services Division

Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

MD 25	MD 25	Station Dr	MD 130
From North	From South	From East	From West

Begin Hour	School Children	Pedestrians	Bicycles	School Childer	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles
06:45	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0

Maryland Department of Transportation
State Highway Administration
Data Services Division

Turning Movement Summary Report

Station ID: S1999030037
County: Baltimore
Comments:

Date: 2/27/2020 12:00:00 AM
Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd)
Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

MD 25	MD 25	Station Dr	MD 130
From North	From South	From East	From West

Begin Hour	School Children	Pedestrians	Bicycles	School Childer	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles
13:30	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	1	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0
19:00	0	0	0	0	0	0	0	0	0	0	0	0
19:15	0	0	0	0	0	0	0	0	0	0	0	0
19:30	0	0	0	0	0	0	0	0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0	0	0	0	0

Maryland Department of Transportation
State Highway Administration
Data Services Division

Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

MD 25	MD 25	Station Dr	MD 130
From North	From South	From East	From West

Begin Hour	School Children	Pedestrians	Bicycles	School Childer	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles
20:15	0	0	0	0	0	0	0	0	0	0	0	0
20:30	0	0	0	0	0	0	0	0	0	0	0	0
20:45	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0	0	0	0	0
21:15	0	0	0	0	0	0	0	0	0	0	0	0
21:30	0	0	0	0	0	0	0	0	0	0	0	0
21:45	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0
22:15	0	0	0	0	0	0	0	0	0	0	0	0
22:30	0	0	0	0	0	0	0	0	0	0	0	0
22:45	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0
23:15	0	0	0	0	0	0	0	0	0	0	0	0
23:30	0	0	0	0	0	0	0	0	0	0	0	0
23:45	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**
AMPEAK	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PMPEAK	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

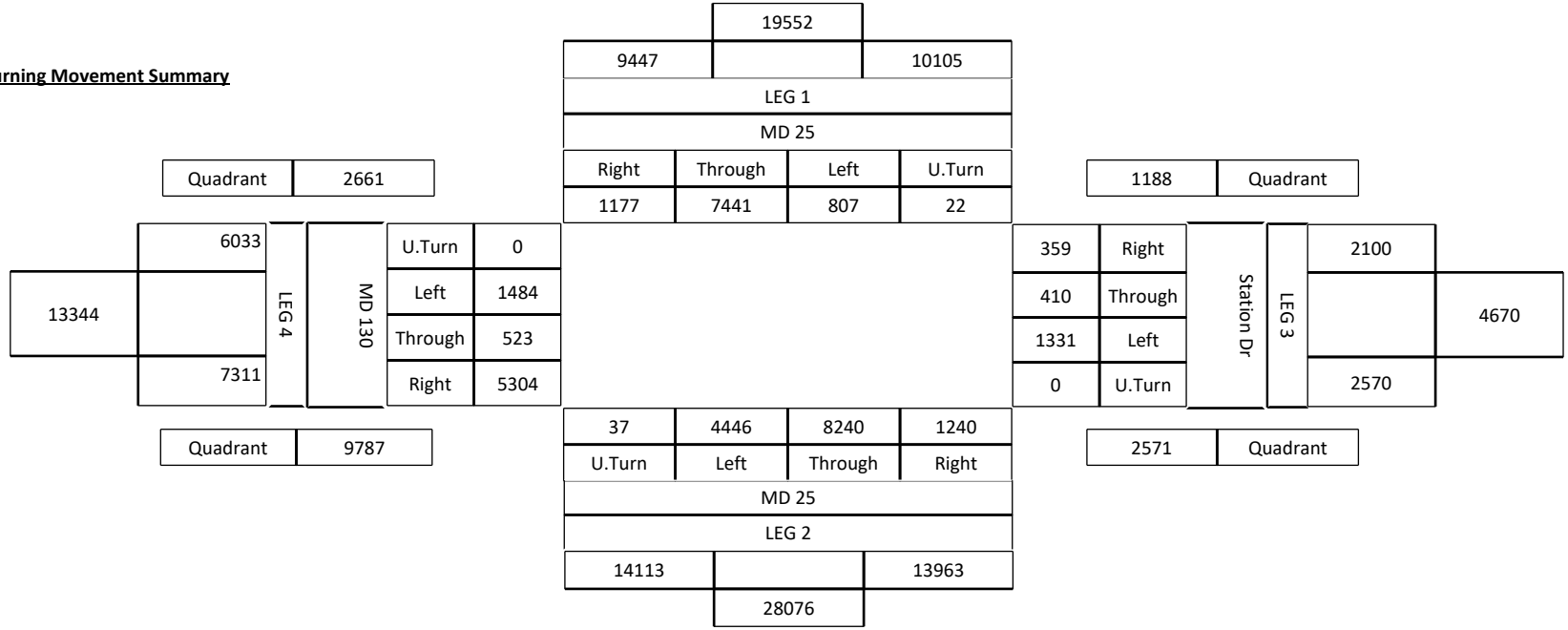
MD 25 — From North

MD 25 — From South

Station Dr — From East

MD 130 — From West

Turning Movement Summary



Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

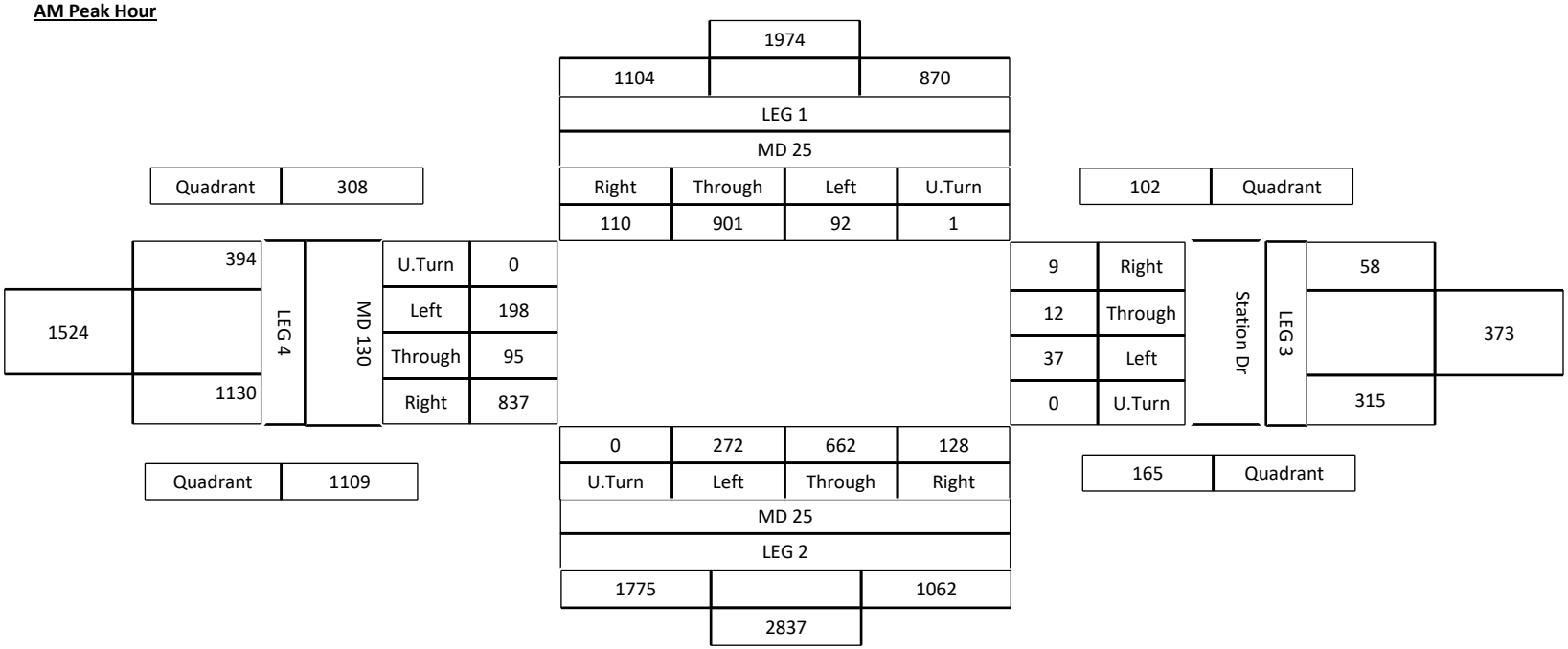
MD 25 — From North

MD 25 — From South

Station Dr — From East

MD 130 — From West

AM Peak Hour



Maryland Department of Transportation
State Highway Administration
Data Services Division

Turning Movement Summary Report

Station ID: S1999030037 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 130 (Greenspring Valley Rd) Weather: Cloudy,Cold

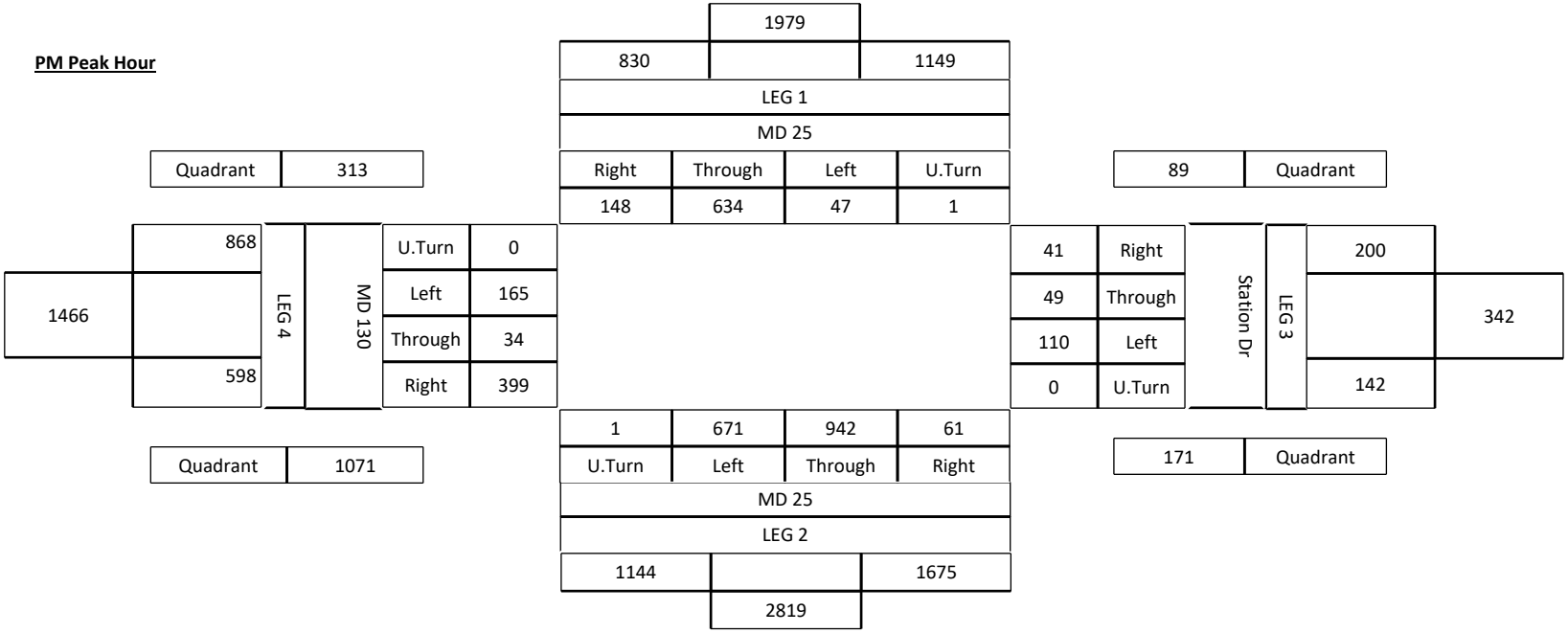
Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:45	08:30	3354	D	0.86	12:00PM-19:00PM	16:45	17:30	3303	B	0.67

MD 25 | Station Dr | MD 130

From North | From South | From East | From West

PM Peak Hour



Appendix B

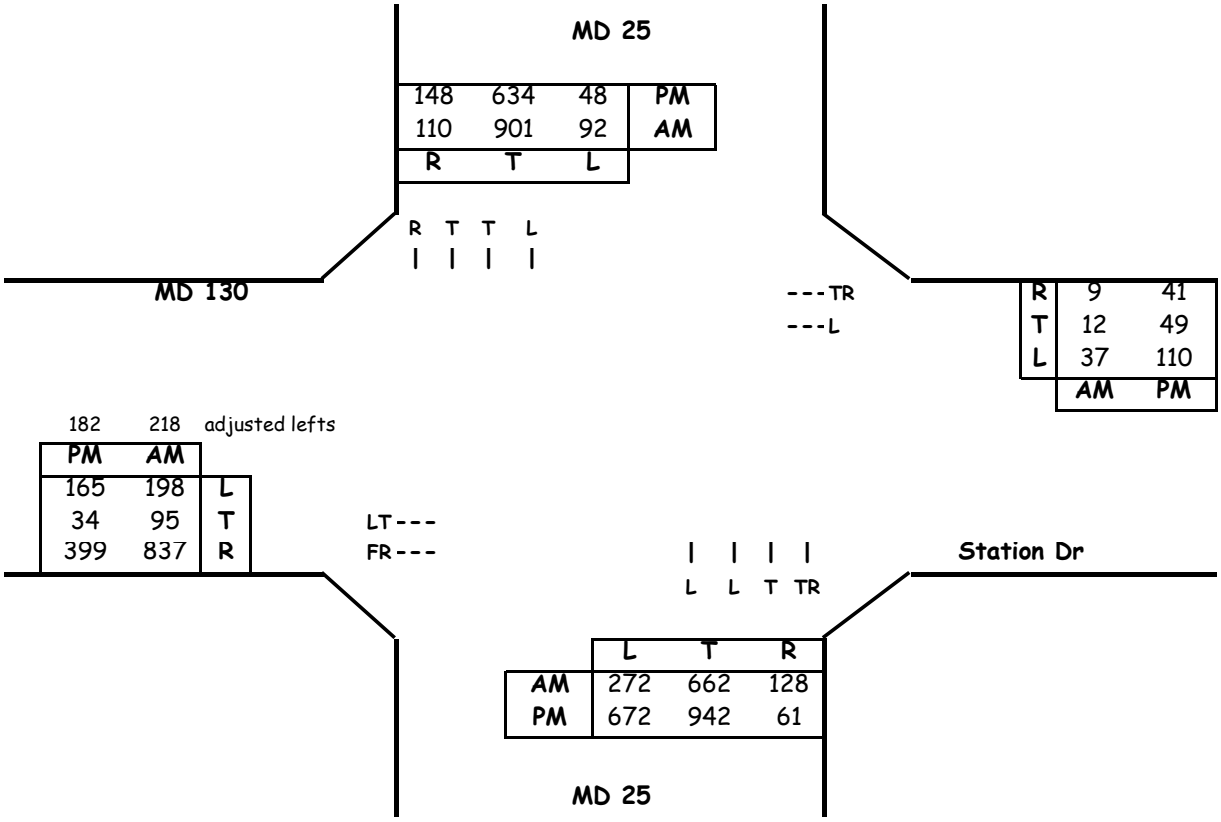
Critical Lane Volume (LOS) Worksheets

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25
Minor Street: Station Dr
Study Period: EXISTING TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	790	0.55	435	92	1	92	659
SB	901	0.55	496	272	0.6	163	
EB	313	1	313	37	1	37	350
WB	21	1	21	198	1	198	

CLV TOTAL= **1009**
Level of Service (LOS)= **B**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1003	0.55	552	48	1	48	752
SB	634	0.55	349	672	0.6	403	
EB	216	1	216	110	1	110	326
WB	90	1	90	165	1	165	

CLV TOTAL= **1078**
Level of Service (LOS)= **B**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

MD 25 &
Station Dr
(EXISTING TRAFFIC)

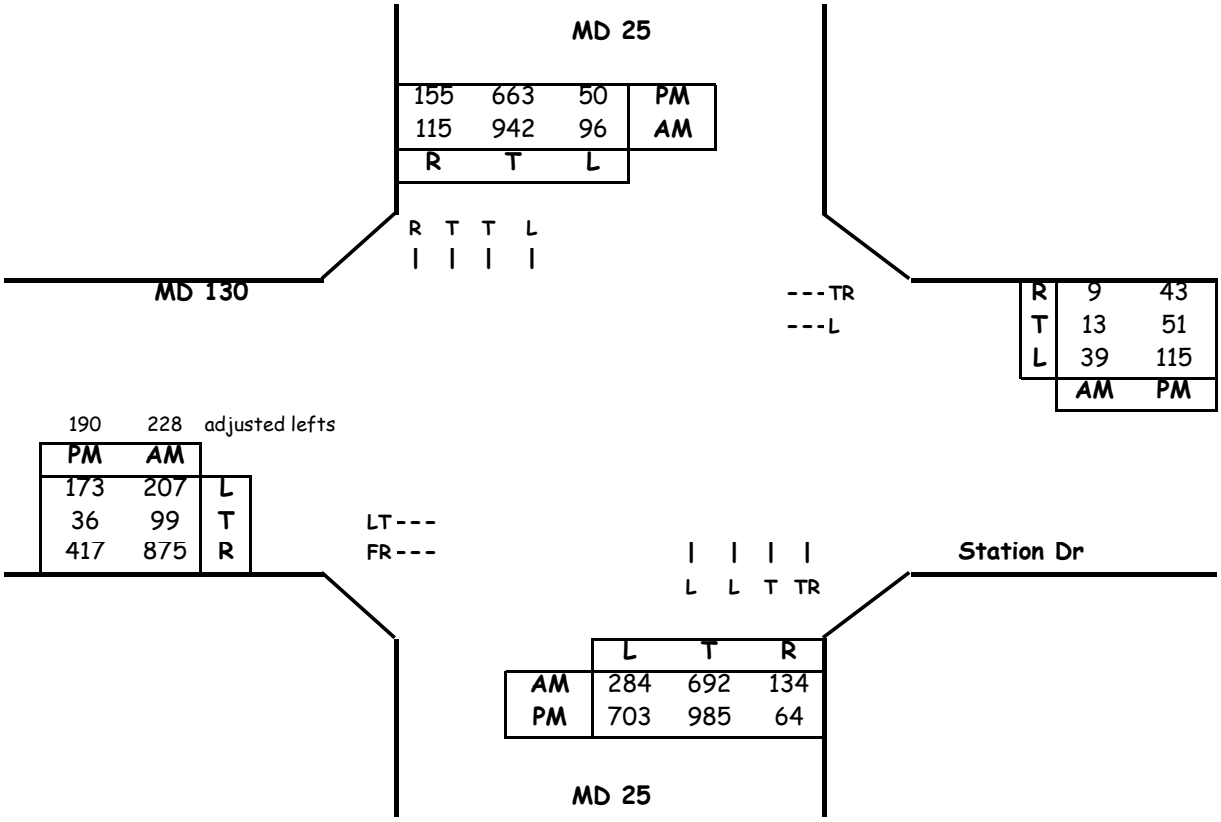
Intersection
1

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25
Minor Street: Station Dr
Study Period: BACKGROUND TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	826	0.55	454	96	1	96	688
SB	942	0.55	518	284	0.6	170	
EB	327	1	327	39	1	39	366
WB	22	1	22	207	1	207	

CLV TOTAL= **1054**
Level of Service (LOS)= **B**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1049	0.55	577	50	1	50	787
SB	663	0.55	365	703	0.6	422	
EB	226	1	226	115	1	115	341
WB	94	1	94	173	1	173	

CLV TOTAL= **1128**
Level of Service (LOS)= **B**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

MD 25 &
Station Dr
(BACKGROUND TRAFFIC)

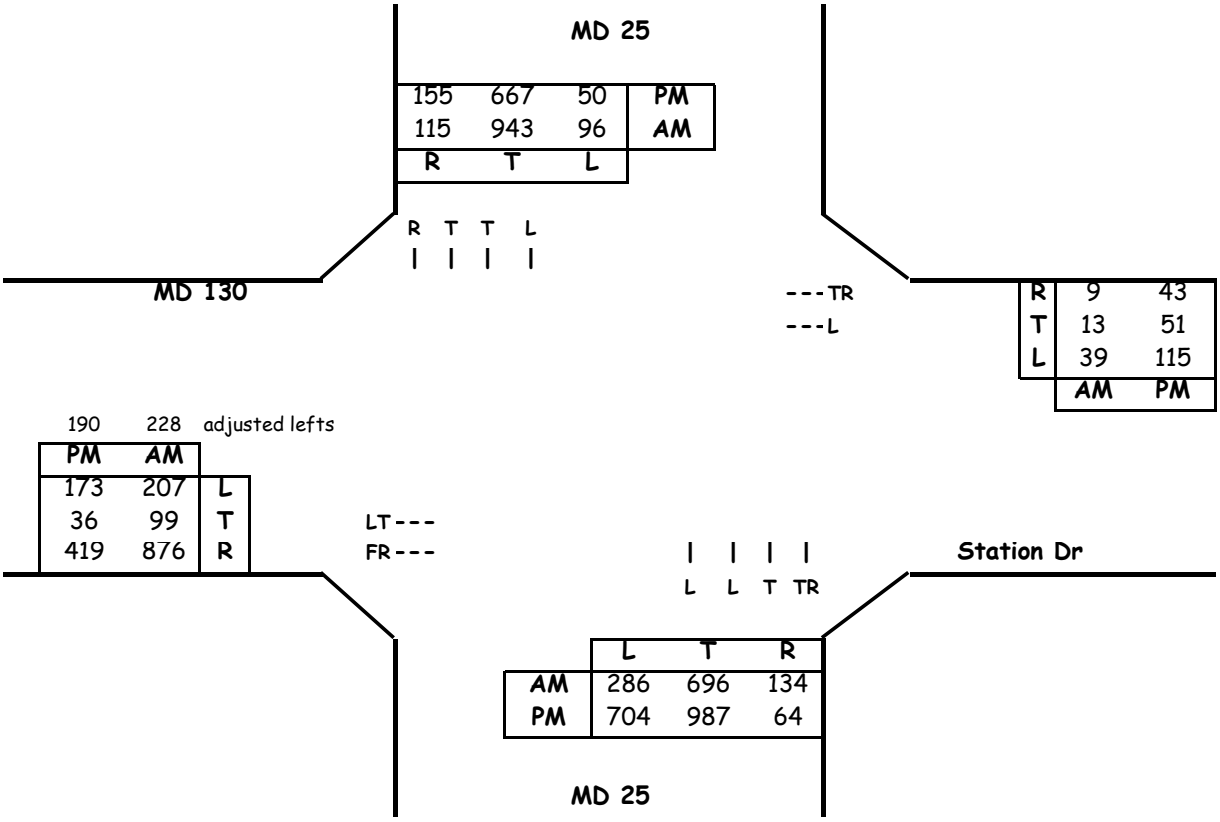
Intersection
1

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25
Minor Street: Station Dr
Study Period: TOTAL TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	830	0.55	457	96	1	96	691
SB	943	0.55	519	286	0.6	172	
EB	327	1	327	39	1	39	366
WB	22	1	22	207	1	207	

CLV TOTAL= **1057**
Level of Service (LOS)= **B**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1051	0.55	578	50	1	50	789
SB	667	0.55	367	704	0.6	422	
EB	226	1	226	115	1	115	341
WB	94	1	94	173	1	173	

CLV TOTAL= **1130**
Level of Service (LOS)= **B**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

MD 25 &
Station Dr
(TOTAL TRAFFIC)

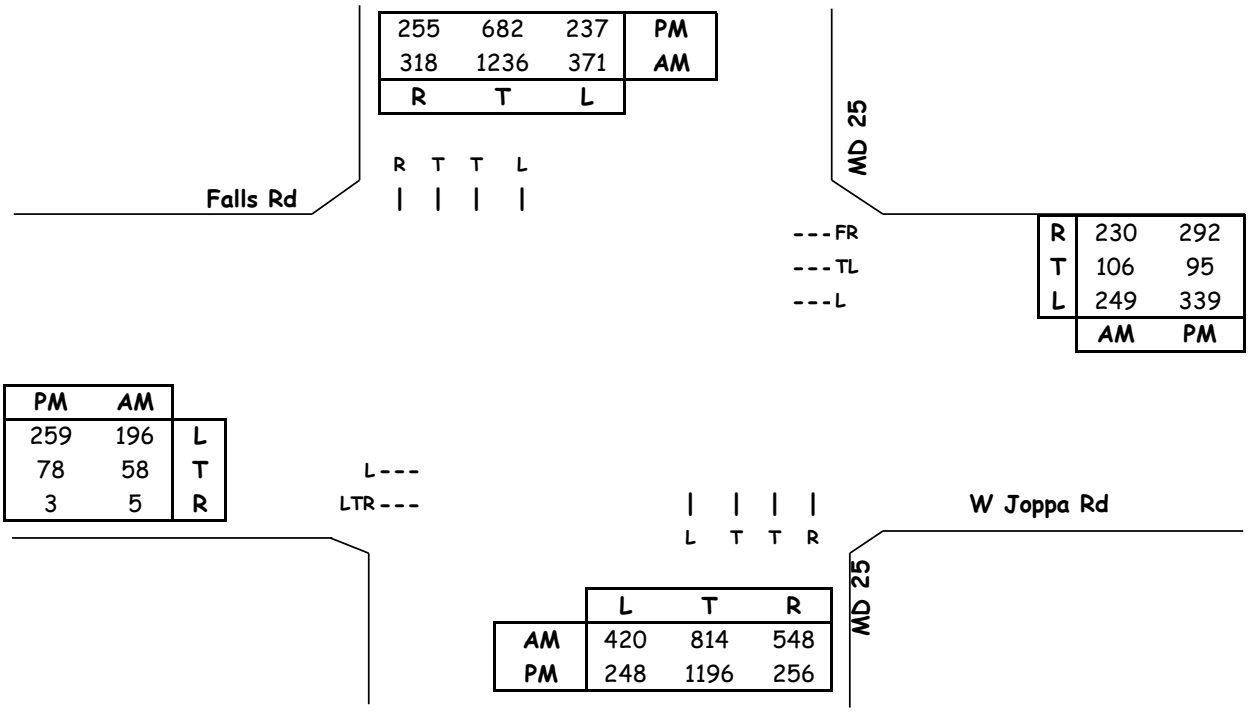
Intersection
1

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: MD 25
Minor Street: W Joppa Rd
Study Period: Existing Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	259	0.60	155				155
WB	355	0.60	213				213
NB	814	0.55	448	371	1.00	371	1100
SB	1236	0.55	680	420	1.00	420	

CLV TOTAL= **1468**
Level of Service (LOS)= **E**

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	340	0.60	204				204
WB	434	0.60	260				260
NB	1196	0.55	658	237	1.00	237	895
SB	682	0.55	375	248	1.00	248	

CLV TOTAL= **1359**
Level of Service (LOS)= **D**

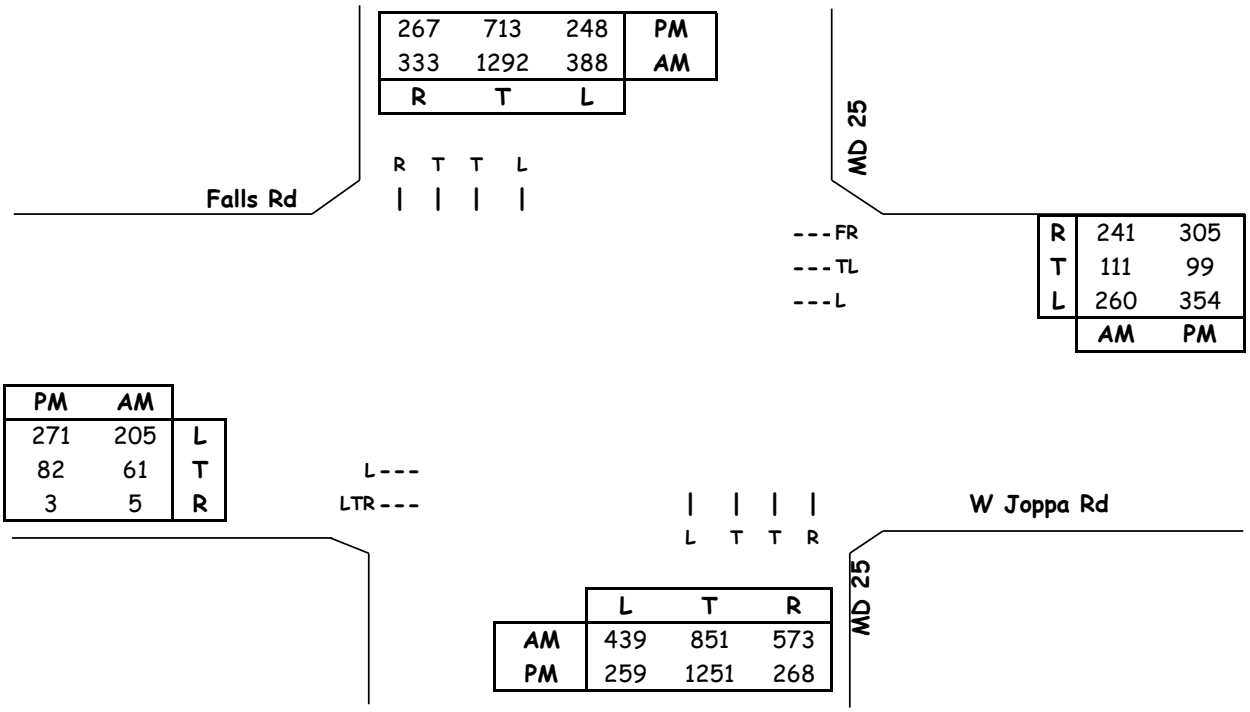
Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning		MD 25 & W Joppa Rd (Existing Traffic)	**Intersection** **2**

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: MD 25
Minor Street: W Joppa Rd
Study Period: Background Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	271	0.60	163				163
WB	371	0.60	223				223
NB	851	0.55	468	388	1.00	388	1150
SB	1292	0.55	711	439	1.00	439	
						CLV TOTAL=	**1536**
						Level of Service (LOS)=	**E**

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	356	0.60	214				214
WB	453	0.60	272				272
NB	1251	0.55	688	248	1.00	248	936
SB	713	0.55	392	259	1.00	259	
						CLV TOTAL=	**1422**
						Level of Service (LOS)=	**D**

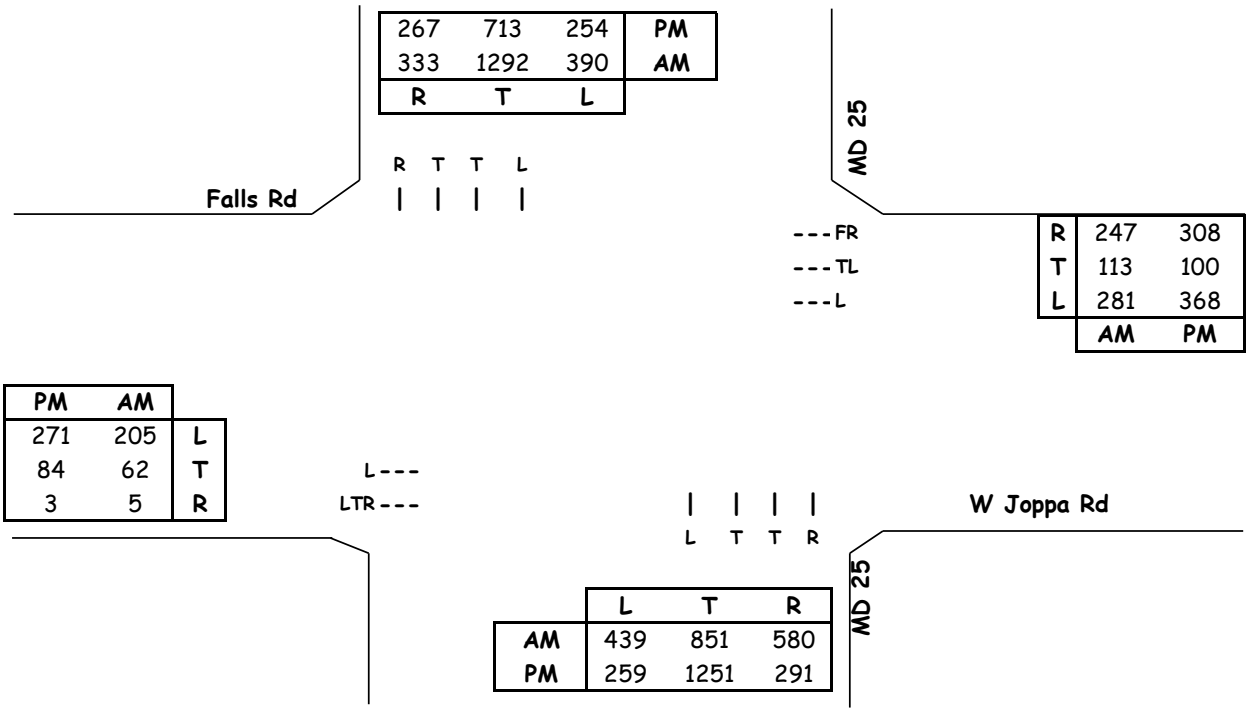
Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning		MD 25 & W Joppa Rd (Background Traffic)	**Intersection** **2**

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: MD 25
Minor Street: W Joppa Rd
Study Period: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	272	0.60	163				163
WB	394	0.60	236				236
NB	851	0.55	468	390	1.00	390	1150
SB	1292	0.55	711	439	1.00	439	
						CLV TOTAL=	**1549**
						Level of Service (LOS)=	**E**

PM Peak Hour

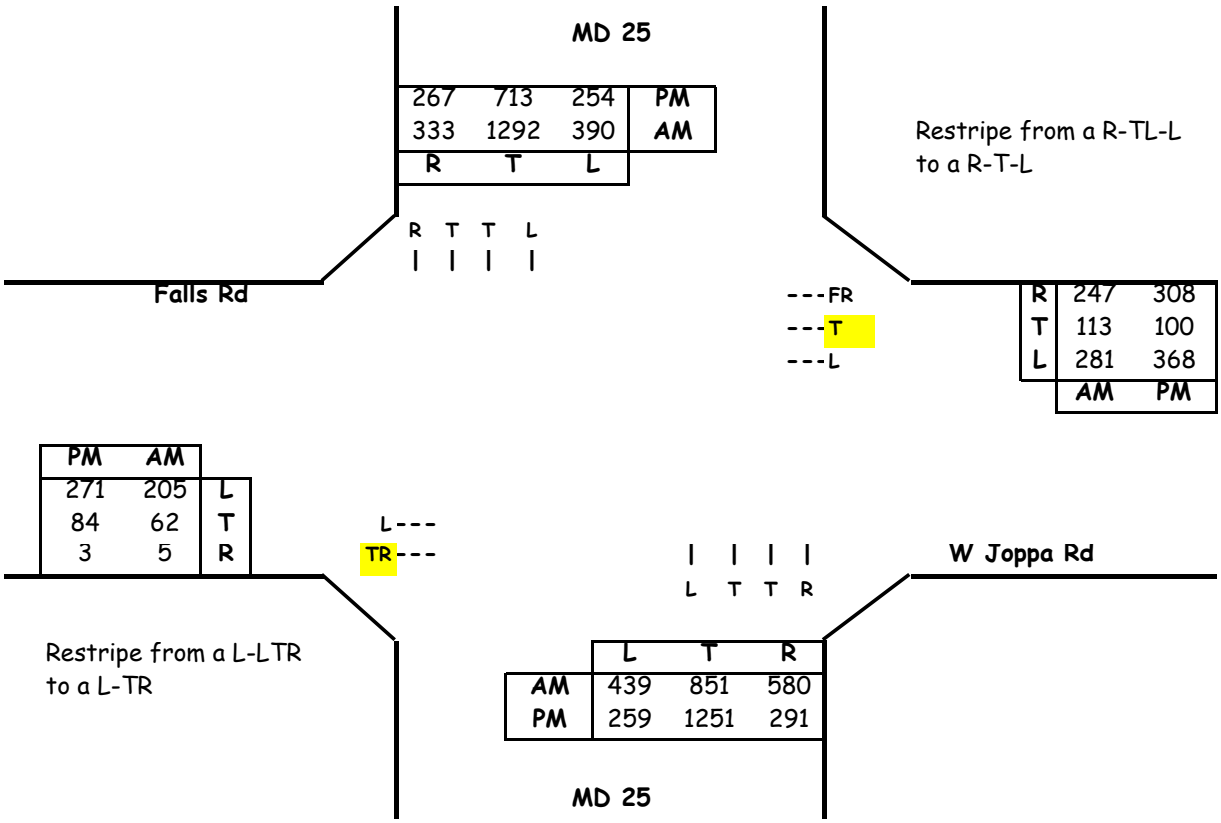
Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	358	0.60	215				215
WB	468	0.60	281				281
NB	1251	0.55	688	254	1.00	254	942
SB	713	0.55	392	259	1.00	259	
						CLV TOTAL=	**1438**
						Level of Service (LOS)=	**D**

Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning		MD 25 & W Joppa Rd (Total Traffic)	**Intersection** **2**

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25 **Analyst:** Lenhart Traffic
Minor Street: W Joppa Rd
Study Period: TOTAL TRAFFIC
With Original Proposed Improvements

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	851	0.55	468	390	1	390	1150
SB	1292	0.55	711	439	1	439	
EB	67	1	67	281	1	281	348
WB	113	1	113	205	1	205	

CLV TOTAL= **1498**
Level of Service (LOS)= **E**

Evening Peak Hour

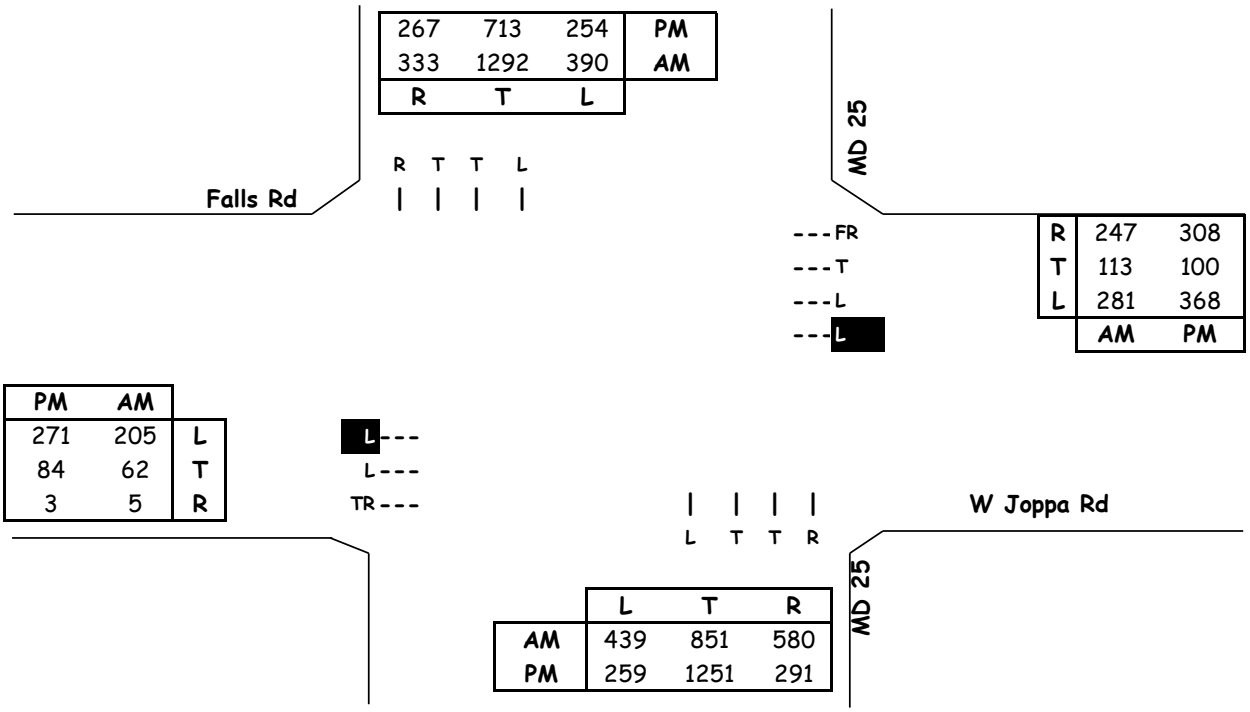
Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1251	0.55	688	254	1	254	942
SB	713	0.55	392	259	1	259	
EB	87	1	87	368	1	368	455
WB	100	1	100	271	1	271	

CLV TOTAL= **1397**
Level of Service (LOS)= **D**

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: MD 25 **Analyst: Lenhart Traffic Consulting**
Minor Street: W Joppa Rd
Study Period: Total Traffic with Expanded Improvements and Intersection Widening

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	205	0.60	123				123
WB	281	0.55	155				155
NB	851	0.55	468	390	1.00	390	1150
SB	1292	0.55	711	439	1.00	439	
						CLV TOTAL=	**1428**
						Level of Service (LOS)=	**D**

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	271	0.60	163				163
WB	368	0.55	202				202
NB	1251	0.55	688	254	1.00	254	942
SB	713	0.55	392	259	1.00	259	
						CLV TOTAL=	**1307**
						Level of Service (LOS)=	**D**

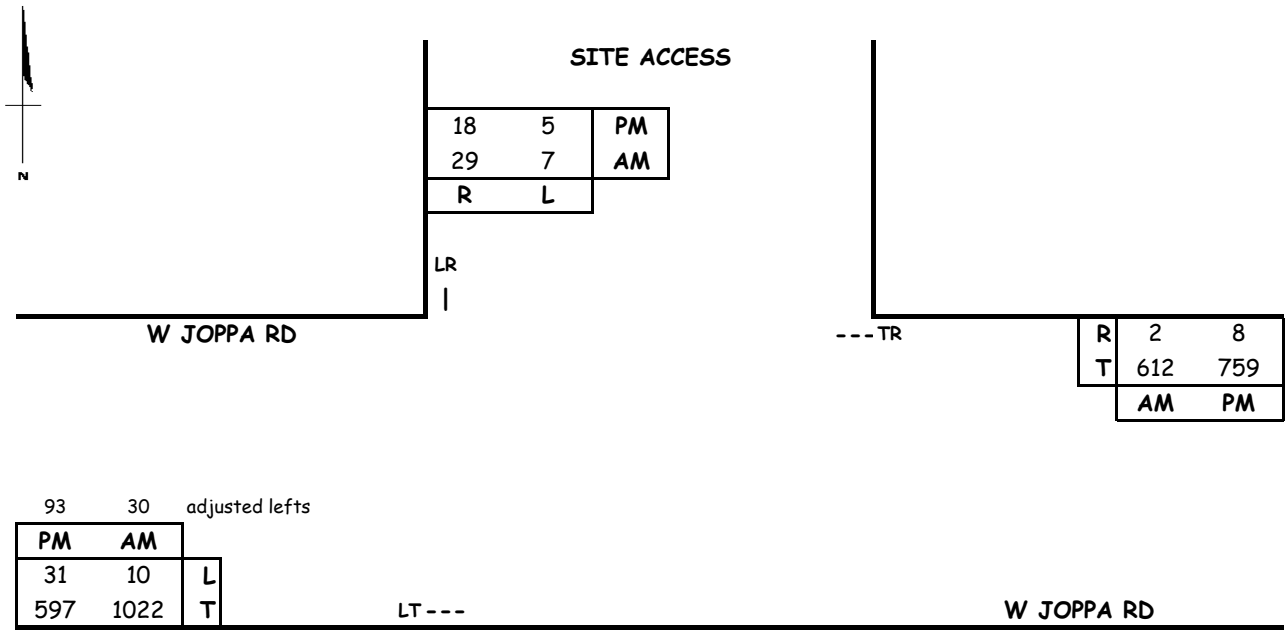
Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning		MD 25 & W Joppa Rd ïic with Expanded Improvements and Intersection	**Intersection** **2**

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Intersection of: Site Access
and: W Joppa Rd
Conditions: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
SB	36	1.00	36				36
EB	1052	1.00	1052				1052
WB	614	1.00	614	10	1.00	10	

CLV TOTAL= **1088**
Level of Service (LOS)= **B**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
SB	23	1.00	23				23
EB	690	1.00	690				798
WB	767	1.00	767	31	1.00	31	

CLV TOTAL= **821**
Level of Service (LOS)= **A**

Critical Lane Volume Analysis LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com		Site Access & W Joppa Rd (Total Traffic)	**Intersection** **3**

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	198	95	837	37	12	9	272	662	128	92	901	110
Future Volume (vph)	198	95	837	37	12	9	272	662	128	92	901	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1738	1583	1770	1741		3433	3453		1770	3539	1583
Flt Permitted	0.59	0.90	1.00	0.65	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1053	1598	1583	1211	1741		3433	3453		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	215	103	910	40	13	10	296	720	139	100	979	120
RTOR Reduction (vph)	0	0	0	0	9	0	0	7	0	0	0	0
Lane Group Flow (vph)	157	161	910	40	14	0	296	852	0	100	979	120
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	32.8	32.8	165.0	10.1	10.1		29.2	102.6		14.6	87.5	165.0
Effective Green, g (s)	34.8	34.8	165.0	12.1	12.1		31.2	105.1		16.6	90.0	165.0
Actuated g/C Ratio	0.21	0.21	1.00	0.07	0.07		0.19	0.64		0.10	0.55	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	297	353	1583	88	127		649	2199		178	1930	1583
v/s Ratio Prot	0.06	0.05			0.01		0.09	0.25		0.06	0.28	
v/s Ratio Perm	0.05	0.04	c0.57	0.03								0.08
v/c Ratio	0.53	0.46	0.57	0.45	0.11		0.46	0.39		0.56	0.51	0.08
Uniform Delay, d1	56.7	56.8	0.0	73.3	71.4		59.4	14.4		70.7	23.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.82	0.58		1.00	1.00	1.00
Incremental Delay, d2	1.7	1.1	1.5	4.4	0.4		1.7	0.4		4.0	1.0	0.1
Delay (s)	58.4	57.9	1.5	77.6	71.9		50.5	8.7		74.7	24.5	0.1
Level of Service	E	E	A	E	E		D	A		E	C	A
Approach Delay (s)		16.2			75.5			19.4			26.3	
Approach LOS		B			E			B			C	

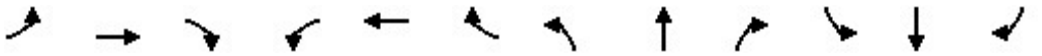
Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	58	5	249	106	230	420	814	548	371	1236	318
Future Volume (vph)	196	58	5	249	106	230	420	814	548	371	1236	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1715		1681	1734	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.98	1.00	0.07	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1715		1681	1734	1583	138	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	213	63	5	271	115	250	457	885	596	403	1343	346
RTOR Reduction (vph)	0	1	0	0	0	215	0	0	0	0	0	0
Lane Group Flow (vph)	138	142	0	190	196	35	457	885	596	403	1343	346
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	17.8	17.8		21.3	21.3	21.3	91.8	61.9	165.0	42.5	74.5	165.0
Effective Green, g (s)	19.8	19.8		23.3	23.3	23.3	95.8	65.4	165.0	44.5	78.0	165.0
Actuated g/C Ratio	0.12	0.12		0.14	0.14	0.14	0.58	0.40	1.00	0.27	0.47	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	201	205		237	244	223	395	1402	1583	477	1672	1583
v/s Ratio Prot	0.08	c0.08		0.11	c0.11		c0.22	0.25		c0.23	0.38	
v/s Ratio Perm						0.02	c0.45		0.38			0.22
v/c Ratio	0.69	0.69		0.80	0.80	0.16	1.16	0.63	0.38	0.84	0.80	0.22
Uniform Delay, d1	69.6	69.7		68.6	68.6	62.2	53.5	40.1	0.0	57.0	37.0	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.04	0.70	1.00
Incremental Delay, d2	9.3	9.7		17.5	17.2	0.3	95.5	2.2	0.7	12.0	3.7	0.3
Delay (s)	79.0	79.4		86.1	85.8	62.6	148.9	42.3	0.7	71.5	29.8	0.3
Level of Service	E	E		F	F	E	F	D	A	E	C	A
Approach Delay (s)		79.2			76.7			54.6			32.9	
Approach LOS		E			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	49.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	99	875	39	13	9	284	692	134	96	942	115
Future Volume (vph)	207	99	875	39	13	9	284	692	134	96	942	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1738	1583	1770	1746		3433	3453		1770	3539	1583
Flt Permitted	0.60	0.90	1.00	0.65	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1057	1592	1583	1202	1746		3433	3453		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	108	951	42	14	10	309	752	146	104	1024	125
RTOR Reduction (vph)	0	0	0	0	9	0	0	7	0	0	0	0
Lane Group Flow (vph)	164	169	951	42	15	0	309	891	0	104	1024	125
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	33.3	33.3	165.0	10.4	10.4		29.5	101.7		15.0	86.7	165.0
Effective Green, g (s)	35.3	35.3	165.0	12.4	12.4		31.5	104.2		17.0	89.2	165.0
Actuated g/C Ratio	0.21	0.21	1.00	0.08	0.08		0.19	0.63		0.10	0.54	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	301	358	1583	90	131		655	2180		182	1913	1583
v/s Ratio Prot	0.07	0.06			0.01		0.09	0.26		0.06	0.29	
v/s Ratio Perm	0.05	0.04	c0.60	0.03								0.08
v/c Ratio	0.54	0.47	0.60	0.47	0.11		0.47	0.41		0.57	0.54	0.08
Uniform Delay, d1	56.5	56.7	0.0	73.1	71.2		59.4	15.1		70.5	24.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.80	0.56		1.00	1.00	1.00
Incremental Delay, d2	2.0	1.2	1.7	4.5	0.5		1.7	0.4		4.3	1.1	0.1
Delay (s)	58.5	57.9	1.7	77.6	71.6		49.3	8.9		74.8	25.6	0.1
Level of Service	E	E	A	E	E		D	A		E	C	A
Approach Delay (s)		16.3			75.4			19.3			27.1	
Approach LOS		B			E			B			C	

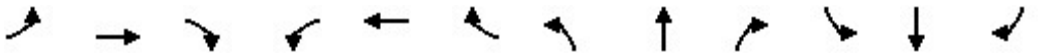
Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	61	5	260	111	241	439	851	573	388	1292	333
Future Volume (vph)	205	61	5	260	111	241	439	851	573	388	1292	333
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1716		1681	1734	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.98	1.00	0.06	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1716		1681	1734	1583	120	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	223	66	5	283	121	262	477	925	623	422	1404	362
RTOR Reduction (vph)	0	1	0	0	0	224	0	0	0	0	0	0
Lane Group Flow (vph)	145	148	0	198	206	38	477	925	623	422	1404	362
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	18.1	18.1		21.7	21.7	21.7	89.2	60.0	165.0	43.7	74.5	165.0
Effective Green, g (s)	20.1	20.1		23.7	23.7	23.7	93.2	63.5	165.0	45.7	78.0	165.0
Actuated g/C Ratio	0.12	0.12		0.14	0.14	0.14	0.56	0.38	1.00	0.28	0.47	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	204	209		241	249	227	379	1361	1583	490	1672	1583
v/s Ratio Prot	0.09	c0.09		0.12	c0.12		c0.24	0.26		c0.24	0.40	
v/s Ratio Perm						0.02	c0.47		0.39			0.23
v/c Ratio	0.71	0.71		0.82	0.83	0.17	1.26	0.68	0.39	0.86	0.84	0.23
Uniform Delay, d1	69.7	69.6		68.6	68.7	62.0	55.3	42.3	0.0	56.6	38.0	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.04	0.70	1.00
Incremental Delay, d2	11.1	10.5		19.7	19.7	0.3	136.1	2.8	0.7	13.2	4.6	0.3
Delay (s)	80.7	80.1		88.3	88.3	62.3	191.4	45.0	0.7	72.1	31.2	0.3
Level of Service	F	F		F	F	E	F	D	A	E	C	A
Approach Delay (s)		80.4			78.1			65.9			34.0	
Approach LOS		F			E			E			C	

Intersection Summary			
HCM 2000 Control Delay	54.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	99	876	39	13	9	286	696	134	96	943	115
Future Volume (vph)	207	99	876	39	13	9	286	696	134	96	943	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1738	1583	1770	1746		3433	3453		1770	3539	1583
Flt Permitted	0.60	0.90	1.00	0.65	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1057	1592	1583	1202	1746		3433	3453		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	108	952	42	14	10	311	757	146	104	1025	125
RTOR Reduction (vph)	0	0	0	0	9	0	0	7	0	0	0	0
Lane Group Flow (vph)	164	169	952	42	15	0	311	896	0	104	1025	125
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	33.3	33.3	165.0	10.4	10.4		29.7	101.7		15.0	86.5	165.0
Effective Green, g (s)	35.3	35.3	165.0	12.4	12.4		31.7	104.2		17.0	89.0	165.0
Actuated g/C Ratio	0.21	0.21	1.00	0.08	0.08		0.19	0.63		0.10	0.54	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	301	358	1583	90	131		659	2180		182	1908	1583
v/s Ratio Prot	0.07	0.06			0.01		0.09	0.26		0.06	0.29	
v/s Ratio Perm	0.05	0.04	c0.60	0.03								0.08
v/c Ratio	0.54	0.47	0.60	0.47	0.11		0.47	0.41		0.57	0.54	0.08
Uniform Delay, d1	56.5	56.7	0.0	73.1	71.2		59.2	15.1		70.5	24.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.80	0.56		1.00	1.00	1.00
Incremental Delay, d2	2.0	1.2	1.7	4.5	0.5		1.7	0.4		4.3	1.1	0.1
Delay (s)	58.5	57.9	1.7	77.6	71.6		49.1	8.9		74.8	25.7	0.1
Level of Service	E	E	A	E	E		D	A		E	C	A
Approach Delay (s)		16.3			75.4			19.2			27.2	
Approach LOS		B			E			B			C	

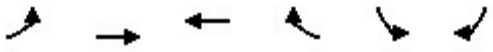
Intersection Summary			
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	62	2	281	113	247	439	851	580	390	1292	333
Future Volume (vph)	205	62	2	281	113	247	439	851	580	390	1292	333
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1720		1681	1732	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.98	1.00	0.07	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1720		1681	1732	1583	121	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	223	67	2	305	123	268	477	925	630	424	1404	362
RTOR Reduction (vph)	0	0	0	0	0	229	0	0	0	0	0	0
Lane Group Flow (vph)	145	147	0	210	218	39	477	925	630	424	1404	362
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	18.1	18.1		22.2	22.2	22.2	88.1	59.4	165.0	43.8	74.5	165.0
Effective Green, g (s)	20.1	20.1		24.2	24.2	24.2	92.1	62.9	165.0	45.8	78.0	165.0
Actuated g/C Ratio	0.12	0.12		0.15	0.15	0.15	0.56	0.38	1.00	0.28	0.47	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	204	209		246	254	232	374	1349	1583	491	1672	1583
v/s Ratio Prot	c0.09	0.09		0.12	c0.13		c0.24	0.26		c0.24	0.40	
v/s Ratio Perm						0.02	c0.47		0.40			0.23
v/c Ratio	0.71	0.70		0.85	0.86	0.17	1.28	0.69	0.40	0.86	0.84	0.23
Uniform Delay, d1	69.7	69.6		68.7	68.7	61.6	55.3	42.8	0.0	56.6	38.0	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.04	0.70	1.00
Incremental Delay, d2	11.1	10.2		23.8	23.8	0.3	143.2	2.9	0.7	13.3	4.6	0.3
Delay (s)	80.7	79.8		92.5	92.5	62.0	198.6	45.6	0.7	72.0	31.2	0.3
Level of Service	F	E		F	F	E	F	D	A	E	C	A
Approach Delay (s)		80.3			80.7			67.6			34.0	
Approach LOS		F			F			E			C	

Intersection Summary			
HCM 2000 Control Delay	55.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		

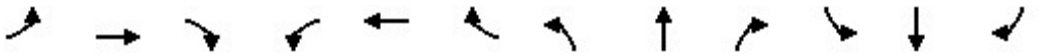
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	700	429	2	7	29
Future Volume (Veh/h)	10	700	429	2	7	29
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	761	466	2	8	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	468				1250	467
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	468				1250	467
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	95
cM capacity (veh/h)	1094				189	596

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	772	468	40
Volume Left	11	0	8
Volume Right	0	2	32
cSH	1094	1700	416
Volume to Capacity	0.01	0.28	0.10
Queue Length 95th (ft)	1	0	8
Control Delay (s)	0.3	0.0	14.6
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	14.6
Approach LOS			B

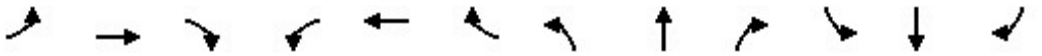
Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	62	2	281	113	247	439	851	580	390	1292	333
Future Volume (vph)	205	62	2	281	113	247	439	851	580	390	1292	333
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1855		3433	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.14	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1855		3433	1863	1583	254	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	223	67	2	305	123	268	477	925	630	424	1404	362
RTOR Reduction (vph)	0	1	0	0	0	239	0	0	0	0	0	0
Lane Group Flow (vph)	223	68	0	305	123	29	477	925	630	424	1404	362
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	11.1	11.1		15.9	15.9	15.9	73.3	71.8	165.0	44.7	72.5	165.0
Effective Green, g (s)	13.1	13.1		17.9	17.9	17.9	75.3	75.3	165.0	46.7	76.0	165.0
Actuated g/C Ratio	0.08	0.08		0.11	0.11	0.11	0.46	0.46	1.00	0.28	0.46	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	272	147		372	202	171	538	1615	1583	500	1630	1583
v/s Ratio Prot	c0.06	0.04		c0.09	0.07		c0.25	0.26		0.24	c0.40	
v/s Ratio Perm						0.02	0.16		0.40			0.23
v/c Ratio	0.82	0.46		0.82	0.61	0.17	0.89	0.57	0.40	0.85	0.86	0.23
Uniform Delay, d1	74.8	72.6		72.0	70.2	66.8	47.7	33.0	0.0	55.8	39.8	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.70	1.00
Incremental Delay, d2	17.3	2.3		13.2	5.1	0.5	16.4	1.5	0.7	11.6	5.5	0.3
Delay (s)	92.1	74.9		85.2	75.3	67.3	64.1	34.5	0.7	56.3	33.5	0.3
Level of Service	F	E		F	E	E	E	C	A	E	C	A
Approach Delay (s)		88.0			76.5			31.0			32.4	
Approach LOS		F			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	34	399	110	49	41	672	942	61	48	634	148
Future Volume (vph)	165	34	399	110	49	41	672	942	61	48	634	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1713	1583	1770	1734		3433	3507		1770	3539	1583
Flt Permitted	0.47	0.64	1.00	0.68	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	832	1140	1583	1273	1734		3433	3507		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	179	37	434	120	53	45	730	1024	66	52	689	161
RTOR Reduction (vph)	0	0	0	0	18	0	0	2	0	0	0	0
Lane Group Flow (vph)	107	109	434	120	80	0	730	1088	0	52	689	161
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	40.8	40.8	165.0	20.5	20.5		45.0	100.2		9.0	63.7	165.0
Effective Green, g (s)	42.8	42.8	165.0	22.5	22.5		47.0	102.7		11.0	66.2	165.0
Actuated g/C Ratio	0.26	0.26	1.00	0.14	0.14		0.28	0.62		0.07	0.40	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	304	355	1583	173	236		977	2182		118	1419	1583
v/s Ratio Prot	c0.04	0.03			0.05		c0.21	0.31		0.03	c0.19	
v/s Ratio Perm	0.05	0.05	0.27	c0.09								0.10
v/c Ratio	0.35	0.31	0.27	0.69	0.34		0.75	0.50		0.44	0.49	0.10
Uniform Delay, d1	48.6	49.2	0.0	68.0	64.5		53.6	17.1		74.0	36.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.76	0.44		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.6	0.4	11.8	1.0		3.2	0.5		2.6	1.2	0.1
Delay (s)	49.3	49.7	0.4	79.8	65.5		44.0	8.0		76.7	37.9	0.1
Level of Service	D	D	A	E	E		D	A		E	D	A
Approach Delay (s)		16.7			73.4			22.5			33.4	
Approach LOS		B			E			C			C	

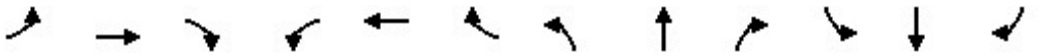
Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	78	3	339	95	292	248	1196	256	237	682	255
Future Volume (vph)	259	78	3	339	95	292	248	1196	256	237	682	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1720		1681	1721	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.97	1.00	0.33	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1720		1681	1721	1583	614	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	282	85	3	368	103	317	270	1300	278	258	741	277
RTOR Reduction (vph)	0	0	0	0	0	265	0	0	0	0	0	0
Lane Group Flow (vph)	183	187	0	232	239	52	270	1300	278	258	741	277
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	21.7	21.7		25.2	25.2	25.2	84.5	67.3	165.0	29.3	79.4	165.0
Effective Green, g (s)	23.7	23.7		27.2	27.2	27.2	88.5	70.8	165.0	31.3	82.9	165.0
Actuated g/C Ratio	0.14	0.14		0.16	0.16	0.16	0.54	0.43	1.00	0.19	0.50	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	241	247		277	283	260	463	1518	1583	335	1778	1583
v/s Ratio Prot	c0.11	0.11		0.14	c0.14		0.07	c0.37		c0.15	0.21	
v/s Ratio Perm						0.03	0.24		0.18			0.17
v/c Ratio	0.76	0.76		0.84	0.84	0.20	0.58	0.86	0.18	0.77	0.42	0.17
Uniform Delay, d1	67.9	67.9		66.8	66.8	59.5	21.2	42.5	0.0	63.4	25.8	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.30	0.42	1.00
Incremental Delay, d2	12.9	12.4		19.3	20.0	0.4	2.0	6.4	0.2	10.3	0.7	0.2
Delay (s)	80.8	80.3		86.1	86.8	59.9	23.2	48.9	0.2	92.5	11.5	0.2
Level of Service	F	F		F	F	E	C	D	A	F	B	A
Approach Delay (s)		80.5			75.8			37.9			25.4	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	44.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	36	417	115	51	43	703	985	64	50	663	155
Future Volume (vph)	173	36	417	115	51	43	703	985	64	50	663	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1713	1583	1770	1734		3433	3507		1770	3539	1583
Flt Permitted	0.47	0.63	1.00	0.68	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	824	1117	1583	1266	1734		3433	3507		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	188	39	453	125	55	47	764	1071	70	54	721	168
RTOR Reduction (vph)	0	0	0	0	19	0	0	2	0	0	0	0
Lane Group Flow (vph)	113	114	453	125	83	0	764	1139	0	54	721	168
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	41.9	41.9	165.0	21.1	21.1		45.0	99.0		9.1	62.6	165.0
Effective Green, g (s)	43.9	43.9	165.0	23.1	23.1		47.0	101.5		11.1	65.1	165.0
Actuated g/C Ratio	0.27	0.27	1.00	0.14	0.14		0.28	0.62		0.07	0.39	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	311	361	1583	177	242		977	2157		119	1396	1583
v/s Ratio Prot	c0.04	0.03			0.05		c0.22	0.32		0.03	c0.20	
v/s Ratio Perm	0.06	0.05	0.29	c0.10								0.11
v/c Ratio	0.36	0.32	0.29	0.71	0.34		0.78	0.53		0.45	0.52	0.11
Uniform Delay, d1	47.9	48.5	0.0	67.7	64.1		54.3	18.1		74.0	38.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.74	0.43		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.6	0.5	12.5	1.0		3.3	0.5		2.7	1.4	0.1
Delay (s)	48.6	49.1	0.5	80.2	65.1		43.5	8.3		76.8	39.4	0.1
Level of Service	D	D	A	F	E		D	A		E	D	A
Approach Delay (s)		16.6			73.4			22.4			34.5	
Approach LOS		B			E			C			C	

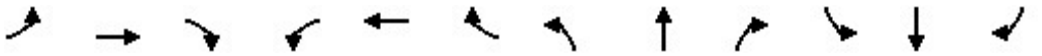
Intersection Summary			
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	271	82	3	354	99	305	259	1251	268	248	713	267
Future Volume (vph)	271	82	3	354	99	305	259	1251	268	248	713	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1720		1681	1721	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.97	1.00	0.31	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1720		1681	1721	1583	569	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	295	89	3	385	108	332	282	1360	291	270	775	290
RTOR Reduction (vph)	0	0	0	0	0	265	0	0	0	0	0	0
Lane Group Flow (vph)	192	195	0	243	250	67	282	1360	291	270	775	290
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	22.1	22.1		25.8	25.8	25.8	83.8	65.5	165.0	30.1	77.3	165.0
Effective Green, g (s)	24.1	24.1		27.8	27.8	27.8	87.8	69.0	165.0	32.1	80.8	165.0
Actuated g/C Ratio	0.15	0.15		0.17	0.17	0.17	0.53	0.42	1.00	0.19	0.49	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	245	251		283	289	266	450	1479	1583	344	1733	1583
v/s Ratio Prot	c0.11	0.11		0.14	c0.15		0.08	c0.38		c0.15	0.22	
v/s Ratio Perm						0.04	0.26		0.18			0.18
v/c Ratio	0.78	0.78		0.86	0.87	0.25	0.63	0.92	0.18	0.78	0.45	0.18
Uniform Delay, d1	67.9	67.9		66.7	66.8	59.6	22.0	45.4	0.0	63.2	27.5	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.29	0.43	1.00
Incremental Delay, d2	15.0	14.0		21.9	22.6	0.5	2.9	10.7	0.3	10.9	0.8	0.2
Delay (s)	83.0	81.8		88.5	89.4	60.1	24.8	56.1	0.3	92.4	12.7	0.2
Level of Service	F	F		F	F	E	C	E	A	F	B	A
Approach Delay (s)		82.4			77.3			43.1			26.1	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	47.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

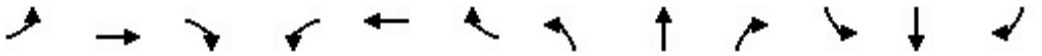
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	36	419	115	51	43	704	987	64	50	667	155
Future Volume (vph)	173	36	419	115	51	43	704	987	64	50	667	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1713	1583	1770	1734		3433	3507		1770	3539	1583
Flt Permitted	0.47	0.63	1.00	0.68	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	824	1117	1583	1266	1734		3433	3507		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	188	39	455	125	55	47	765	1073	70	54	725	168
RTOR Reduction (vph)	0	0	0	0	19	0	0	2	0	0	0	0
Lane Group Flow (vph)	113	114	455	125	83	0	765	1141	0	54	725	168
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	41.9	41.9	165.0	21.1	21.1		45.0	99.0		9.1	62.6	165.0
Effective Green, g (s)	43.9	43.9	165.0	23.1	23.1		47.0	101.5		11.1	65.1	165.0
Actuated g/C Ratio	0.27	0.27	1.00	0.14	0.14		0.28	0.62		0.07	0.39	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	311	361	1583	177	242		977	2157		119	1396	1583
v/s Ratio Prot	c0.04	0.03			0.05		c0.22	0.33		0.03	c0.20	
v/s Ratio Perm	0.06	0.05	0.29	c0.10								0.11
v/c Ratio	0.36	0.32	0.29	0.71	0.34		0.78	0.53		0.45	0.52	0.11
Uniform Delay, d1	47.9	48.5	0.0	67.7	64.1		54.3	18.1		74.0	38.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.73	0.43		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.6	0.5	12.5	1.0		3.3	0.5		2.7	1.4	0.1
Delay (s)	48.6	49.1	0.5	80.2	65.1		43.2	8.3		76.8	39.4	0.1
Level of Service	D	D	A	F	E		D	A		E	D	A
Approach Delay (s)		16.6			73.4			22.3			34.6	
Approach LOS		B			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

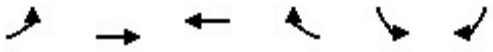
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	271	84	3	368	100	308	259	1251	291	254	713	267
Future Volume (vph)	271	84	3	368	100	308	259	1251	291	254	713	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1721		1681	1720	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.97	1.00	0.31	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1721		1681	1720	1583	572	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	295	91	3	400	109	335	282	1360	316	276	775	290
RTOR Reduction (vph)	0	0	0	0	0	265	0	0	0	0	0	0
Lane Group Flow (vph)	192	197	0	252	257	70	282	1360	316	276	775	290
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	22.2	22.2		26.0	26.0	26.0	83.1	64.8	165.0	30.5	77.0	165.0
Effective Green, g (s)	24.2	24.2		28.0	28.0	28.0	87.1	68.3	165.0	32.5	80.5	165.0
Actuated g/C Ratio	0.15	0.15		0.17	0.17	0.17	0.53	0.41	1.00	0.20	0.49	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	246	252		285	291	268	449	1464	1583	348	1726	1583
v/s Ratio Prot	0.11	c0.11		c0.15	0.15		0.08	c0.38		c0.16	0.22	
v/s Ratio Perm						0.04	0.25		0.20			0.18
v/c Ratio	0.78	0.78		0.88	0.88	0.26	0.63	0.93	0.20	0.79	0.45	0.18
Uniform Delay, d1	67.8	67.9		66.9	66.9	59.5	22.4	46.0	0.0	63.1	27.7	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.28	0.43	1.00
Incremental Delay, d2	14.8	14.5		26.0	25.5	0.5	2.9	11.8	0.3	11.4	0.8	0.2
Delay (s)	82.6	82.4		92.9	92.4	60.0	25.2	57.8	0.3	92.4	12.8	0.2
Level of Service	F	F		F	F	E	C	E	A	F	B	A
Approach Delay (s)		82.5			79.7			43.8			26.4	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	48.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

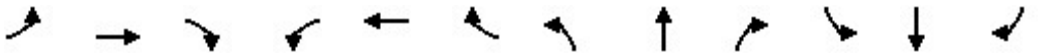
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	31	522	704	8	5	18
Future Volume (Veh/h)	31	522	704	8	5	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	34	567	765	9	5	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	774				1404	770
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	774				1404	770
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				97	95
cM capacity (veh/h)	842				147	401

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	601	774	25
Volume Left	34	0	5
Volume Right	0	9	20
cSH	842	1700	298
Volume to Capacity	0.04	0.46	0.08
Queue Length 95th (ft)	3	0	7
Control Delay (s)	1.1	0.0	18.2
Lane LOS	A		C
Approach Delay (s)	1.1	0.0	18.2
Approach LOS			C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	271	84	3	368	100	308	259	1251	291	254	713	267
Future Volume (vph)	271	84	3	368	100	308	259	1251	291	254	713	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1854		3433	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.22	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1854		3433	1863	1583	404	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	295	91	3	400	109	335	282	1360	316	276	775	290
RTOR Reduction (vph)	0	1	0	0	0	263	0	0	0	0	0	0
Lane Group Flow (vph)	295	93	0	400	109	72	282	1360	316	276	775	290
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	16.5	16.5		22.1	22.1	22.1	72.9	72.9	165.0	32.0	87.2	165.0
Effective Green, g (s)	18.5	18.5		24.1	24.1	24.1	74.9	76.4	165.0	34.0	90.7	165.0
Actuated g/C Ratio	0.11	0.11		0.15	0.15	0.15	0.45	0.46	1.00	0.21	0.55	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	384	207		501	272	231	346	1638	1583	364	1945	1583
v/s Ratio Prot	c0.09	0.05		c0.12	0.06		0.10	c0.38		c0.16	0.22	
v/s Ratio Perm						0.05	0.27		0.20			0.18
v/c Ratio	0.77	0.45		0.80	0.40	0.31	0.82	0.83	0.20	0.76	0.40	0.18
Uniform Delay, d1	71.2	68.5		68.1	63.9	63.0	31.8	38.6	0.0	61.6	21.4	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.82	0.40	1.00
Incremental Delay, d2	8.9	1.6		8.7	1.0	0.8	14.0	5.0	0.3	8.5	0.6	0.2
Delay (s)	80.1	70.0		76.8	64.9	63.8	45.8	43.7	0.3	59.1	9.1	0.2
Level of Service	F	E		E	E	E	D	D	A	E	A	A
Approach Delay (s)		77.7			70.1			37.0			17.5	
Approach LOS		E			E			D			B	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	L	TR	L	L	T	TR	L	T	T
Maximum Queue (ft)	46	404	94	99	70	272	260	266	174	174	354	352
Average Queue (ft)	34	239	6	39	22	146	100	113	69	110	182	184
95th Queue (ft)	56	367	65	89	56	238	195	209	148	193	308	305
Link Distance (ft)		620	620		508			713	713		352	352
Upstream Blk Time (%)											0	0
Queuing Penalty (veh)											1	1
Storage Bay Dist (ft)	20			250		250	250			150		
Storage Blk Time (%)	55	59				1	0	0		5	12	6
Queuing Penalty (veh)	111	61				2	0	0		25	11	6

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	SB
Directions Served	R
Maximum Queue (ft)	225
Average Queue (ft)	32
95th Queue (ft)	160
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	200
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	EB	EB	B12	B12	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	LTR	T	T	L	LT	R	L	T	T	R	L
Maximum Queue (ft)	185	163	65	58	293	313	201	625	1736	1677	1006	400
Average Queue (ft)	133	115	8	7	163	200	45	589	1136	1053	327	318
95th Queue (ft)	190	167	40	37	251	288	135	738	2090	2035	1142	436
Link Distance (ft)	107	107	961	961		2685			1964	1964	1964	
Upstream Blk Time (%)	23	18							10	3	0	
Queuing Penalty (veh)	0	0							0	0	0	
Storage Bay Dist (ft)					350		350	600				300
Storage Blk Time (%)					0	0	0	59	0			22
Queuing Penalty (veh)					0	1	0	253	1			144

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	735	797	765
Average Queue (ft)	391	429	188
95th Queue (ft)	703	800	652
Link Distance (ft)	713	713	713
Upstream Blk Time (%)	0	3	2
Queuing Penalty (veh)	2	17	12
Storage Bay Dist (ft)			
Storage Blk Time (%)	6		
Queuing Penalty (veh)	22		

Intersection: 3: Joppa Rd. & Sijte Access

Movement	EB	WB
Directions Served	LT	TR
Maximum Queue (ft)	567	174
Average Queue (ft)	289	92
95th Queue (ft)	505	148
Link Distance (ft)	2685	1085
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	L	TR	L	L	T	TR	L	T	T
Maximum Queue (ft)	48	442	137	115	77	271	231	314	157	174	315	323
Average Queue (ft)	34	250	6	48	17	140	91	122	65	106	184	187
95th Queue (ft)	57	383	66	104	52	232	184	240	143	181	306	296
Link Distance (ft)		620	620		508			713	713		352	352
Upstream Blk Time (%)								0				0
Queuing Penalty (veh)								0				0
Storage Bay Dist (ft)	20			250		250	250			150		
Storage Blk Time (%)	56	53				1	0	0		4	11	6
Queuing Penalty (veh)	114	55				2	0	0		18	11	7

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	SB
Directions Served	R
Maximum Queue (ft)	225
Average Queue (ft)	32
95th Queue (ft)	159
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	200
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	EB	EB	B12	B12	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	LTR	T	T	L	LT	R	L	T	T	R	L
Maximum Queue (ft)	183	158	104	70	300	324	225	625	1999	1958	1347	400
Average Queue (ft)	132	108	14	6	181	213	48	610	1391	1315	517	324
95th Queue (ft)	194	162	58	34	269	300	159	688	2265	2257	1697	440
Link Distance (ft)	107	107	961	961		2685			1964	1964	1964	
Upstream Blk Time (%)	26	15							22	9	1	
Queuing Penalty (veh)	0	0							0	0	0	
Storage Bay Dist (ft)					350		350	600				300
Storage Blk Time (%)						0	0	72	0			22
Queuing Penalty (veh)						0	0	305	1			144

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	726	809	775
Average Queue (ft)	382	457	265
95th Queue (ft)	686	841	794
Link Distance (ft)	713	713	713
Upstream Blk Time (%)	0	3	3
Queuing Penalty (veh)	1	20	17
Storage Bay Dist (ft)			
Storage Blk Time (%)	5		
Queuing Penalty (veh)	19		

Intersection: 3: Joppa Rd. & Sijte Access

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	44	53
Average Queue (ft)	3	23
95th Queue (ft)	20	50
Link Distance (ft)	2685	591
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	L	TR	L	L	T	TR	L	T	T
Maximum Queue (ft)	49	434	214	134	80	242	235	232	187	174	358	330
Average Queue (ft)	37	242	15	50	24	148	97	120	71	108	191	196
95th Queue (ft)	55	389	99	101	62	230	196	212	153	188	316	308
Link Distance (ft)		620	620		508			708	708		352	352
Upstream Blk Time (%)											0	0
Queuing Penalty (veh)											1	0
Storage Bay Dist (ft)	20			250		250	250			150		
Storage Blk Time (%)	64	59				0	0	0		4	12	7
Queuing Penalty (veh)	129	61				1	0	0		18	11	8

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	SB	B5
Directions Served	R	T
Maximum Queue (ft)	225	11
Average Queue (ft)	34	0
95th Queue (ft)	167	8
Link Distance (ft)		1612
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	EB	EB	EB	B12	B12	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	TR	T	T	L	L	T	R	L	T	T
Maximum Queue (ft)	183	158	150	155	120	253	264	224	135	543	505	482
Average Queue (ft)	152	97	65	33	9	133	150	115	35	342	245	219
95th Queue (ft)	215	153	122	115	58	205	222	199	103	527	431	392
Link Distance (ft)	107	107	107	949	949			2685			1957	1957
Upstream Blk Time (%)	47	11	4									
Queuing Penalty (veh)	0	0	0									
Storage Bay Dist (ft)						350	350		350	600		
Storage Blk Time (%)										1		
Queuing Penalty (veh)										3		

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	T	T	R
Maximum Queue (ft)	379	400	748	803	771
Average Queue (ft)	183	344	419	515	237
95th Queue (ft)	335	462	735	897	738
Link Distance (ft)	1957		708	708	708
Upstream Blk Time (%)			0	4	2
Queuing Penalty (veh)			2	25	13
Storage Bay Dist (ft)		300			
Storage Blk Time (%)		25	8		
Queuing Penalty (veh)		161	31		

Intersection: 3: Joppa Rd. & Sijte Access

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	34	58
Average Queue (ft)	3	24
95th Queue (ft)	18	49
Link Distance (ft)	2685	585
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	L	TR	L	L	T	TR	L	T	T	R
Maximum Queue (ft)	50	311	232	227	325	399	742	782	174	319	354	225
Average Queue (ft)	38	156	106	88	284	297	321	254	69	197	205	66
95th Queue (ft)	53	274	192	170	362	453	645	633	158	294	312	218
Link Distance (ft)		620		508			713	713		352	352	
Upstream Blk Time (%)							1	1		0	0	
Queuing Penalty (veh)							8	11		0	2	
Storage Bay Dist (ft)	20		250		250	250			150			200
Storage Blk Time (%)	62	45	0		23	9	8		0	20	12	0
Queuing Penalty (veh)	76	39	0		111	46	57		1	10	18	0

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	EB	EB	B12	B12	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	LTR	T	T	L	LT	R	L	T	T	R	L
Maximum Queue (ft)	181	157	142	117	334	365	326	625	1580	1574	1229	341
Average Queue (ft)	162	121	48	13	194	228	137	454	1128	1043	185	209
95th Queue (ft)	200	171	123	58	302	334	284	838	2051	1999	916	307
Link Distance (ft)	107	107	961	961		2632			1964	1964	1964	
Upstream Blk Time (%)	44	18							7	1	0	
Queuing Penalty (veh)	0	0							0	0	0	
Storage Bay Dist (ft)					350		350	600				300
Storage Blk Time (%)					0	0	0	0	38			3
Queuing Penalty (veh)					0	2	0	0	98			10

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	340	399	389
Average Queue (ft)	104	126	45
95th Queue (ft)	226	282	191
Link Distance (ft)	713	713	713
Upstream Blk Time (%)	0	0	0
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Joppa Rd. & Site Access

Movement	
Directions Served	
Maximum Queue (ft)	
Average Queue (ft)	
95th Queue (ft)	
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: MD 25 & St. Pauls/Seminary Rd.

Movement	EB	EB	WB	WB	NB	NB	NB	B5	B5	SB	SB
Directions Served	LT	R	L	TR	L	T	R	T		L	TR
Maximum Queue (ft)	259	166	413	442	124	416	373	420	236	174	460
Average Queue (ft)	130	48	278	133	39	227	105	56	13	99	231
95th Queue (ft)	224	111	416	299	106	373	254	282	124	192	404
Link Distance (ft)	466			966		1612		352	352		1466
Upstream Blk Time (%)								1	0		
Queuing Penalty (veh)								5	1		
Storage Bay Dist (ft)		250	400		100		375			150	
Storage Blk Time (%)	1	0	2		0	28	0			0	15
Queuing Penalty (veh)	1	0	5		0	201	0			1	23

Intersection: 14: Bend

Movement	WB	WB
Directions Served	T	
Maximum Queue (ft)	718	659
Average Queue (ft)	370	153
95th Queue (ft)	908	587
Link Distance (ft)	620	620
Upstream Blk Time (%)	5	1
Queuing Penalty (veh)	25	4
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 756

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	LT	L	TR	L	L	T	TR	L	T	T	R
Maximum Queue (ft)	51	292	212	160	324	399	720	782	174	339	361	225
Average Queue (ft)	37	138	112	81	266	278	286	220	68	197	201	64
95th Queue (ft)	54	242	193	145	355	443	586	556	151	299	312	212
Link Distance (ft)		620		508			713	713		352	352	
Upstream Blk Time (%)							1	1		0	1	
Queuing Penalty (veh)							7	10		1	3	
Storage Bay Dist (ft)	20		250		250	250			150			200
Storage Blk Time (%)	59	46			17	5	8		0	21	11	0
Queuing Penalty (veh)	72	40			82	26	58		0	10	16	0

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	B5
Directions Served	T
Maximum Queue (ft)	6
Average Queue (ft)	0
95th Queue (ft)	4
Link Distance (ft)	1612
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	EB	EB	B12	B12	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	LTR	T	T	L	LT	R	L	T	T	R	L
Maximum Queue (ft)	183	163	174	94	326	446	307	625	1923	1894	1509	384
Average Queue (ft)	159	120	53	18	198	237	132	474	1253	1187	350	240
95th Queue (ft)	206	180	144	74	291	364	257	852	2114	2075	1370	358
Link Distance (ft)	107	107	961	961		2632			1964	1964	1964	
Upstream Blk Time (%)	44	24							11	3	0	
Queuing Penalty (veh)	0	0							0	0	0	
Storage Bay Dist (ft)					350		350	600				300
Storage Blk Time (%)					0	1	0	0	46			9
Queuing Penalty (veh)					0	4	0	0	120			31

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	SB	SB	SB
Directions Served	T	T	R
Maximum Queue (ft)	418	532	376
Average Queue (ft)	104	137	47
95th Queue (ft)	248	333	213
Link Distance (ft)	713	713	713
Upstream Blk Time (%)	0	0	0
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)	0		
Queuing Penalty (veh)	0		

Intersection: 3: Joppa Rd. & Site Access

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	184	52
Average Queue (ft)	26	17
95th Queue (ft)	110	44
Link Distance (ft)	2632	505
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	L	TR	L	L	T	TR	L	T	T
Maximum Queue (ft)	50	333	11	213	205	325	400	731	777	174	300	324
Average Queue (ft)	37	161	0	110	84	289	321	383	300	76	193	200
95th Queue (ft)	53	283	8	188	172	362	464	709	654	164	292	296
Link Distance (ft)		620	620		508			708	708		352	352
Upstream Blk Time (%)								2	1			0
Queuing Penalty (veh)								15	11			0
Storage Bay Dist (ft)	20			250		250	250			150		
Storage Blk Time (%)	58	45			1	26	10	17		0	19	10
Queuing Penalty (veh)	71	39			1	126	49	121		1	10	16

Intersection: 1: MD 25 & Greenspring Valley Rd./Greenspring Station

Movement	SB
Directions Served	R
Maximum Queue (ft)	225
Average Queue (ft)	59
95th Queue (ft)	205
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	200
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	EB	EB	EB	B12	B12	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	TR	T	T	L	L	T	R	L	T	T
Maximum Queue (ft)	195	143	145	197	159	282	286	171	288	570	1038	984
Average Queue (ft)	170	87	78	62	14	169	184	86	128	315	659	599
95th Queue (ft)	211	144	139	164	82	251	265	156	253	728	1089	1009
Link Distance (ft)	107	107	107	949	949			2632			1957	1957
Upstream Blk Time (%)	55	6	7									
Queuing Penalty (veh)	0	0	0									
Storage Bay Dist (ft)						350	350		350	600		
Storage Blk Time (%)										0	18	
Queuing Penalty (veh)										0	46	

Intersection: 2: MD 25 & Falls Rd./Joppa Rd.

Movement	NB	SB	SB	SB	SB
Directions Served	R	L	T	T	R
Maximum Queue (ft)	213	340	342	412	390
Average Queue (ft)	38	214	85	116	38
95th Queue (ft)	160	321	208	279	183
Link Distance (ft)	1957		708	708	708
Upstream Blk Time (%)			0	0	0
Queuing Penalty (veh)			0	0	0
Storage Bay Dist (ft)		300			
Storage Blk Time (%)		3	0		
Queuing Penalty (veh)		11	0		

Intersection: 3: Joppa Rd. & Site Access

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	157	40
Average Queue (ft)	26	17
95th Queue (ft)	98	43
Link Distance (ft)	2632	499
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Arterial Level of Service: NB MD 25

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Joppa Rd.	2	75.4	109.8	0.4	13
Greenspring Station	1	9.4	20.2	0.1	27
	5	2.7	11.1	0.1	26
Seminary Rd.	10	18.2	45.3	0.3	25
Total		105.7	186.3	0.9	19

Arterial Level of Service: SB MD 25

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
St. Pauls	10	83.2	113.9	0.3	10
	5	7.7	36.2	0.3	32
Greenspring Valley R	1	18.8	25.5	0.1	11
Falls Rd.	2	29.7	41.0	0.1	13
Total		139.3	216.7	0.8	14

Arterial Level of Service: NB MD 25

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Joppa Rd.	2	159.0	185.5	0.4	7
Greenspring Station	1	22.7	34.1	0.1	16
	5	6.4	14.8	0.1	20
Seminary Rd.	10	26.3	57.5	0.3	20
Total		214.4	291.9	0.9	11

Arterial Level of Service: SB MD 25

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
St. Pauls	10	21.9	47.4	0.3	22
	5	5.1	33.7	0.3	34
Greenspring Valley R	1	33.6	40.5	0.1	7
Falls Rd.	2	9.9	21.4	0.1	25
Total		70.5	142.9	0.8	21

Arterial Level of Service: NB MD 25

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Joppa Rd.	2	33.6	60.9	0.4	23
Greenspring Station	1	13.6	24.5	0.1	22
	5	3.1	11.6	0.1	25
Seminary Rd.	10	17.0	44.1	0.3	26
Total		67.4	141.0	0.9	24

Arterial Level of Service: SB MD 25

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
St. Pauls	10	73.8	99.5	0.3	10
	5	8.2	36.7	0.3	31
Greenspring Valley R	1	20.6	27.3	0.1	11
Falls Rd.	2	33.3	44.6	0.1	12
Total		135.9	208.1	0.8	15

Arterial Level of Service: NB MD 25

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
Joppa Rd.	2	115.0	142.1	0.4	10
Greenspring Station	1	30.2	41.6	0.1	13
	5	9.2	17.7	0.1	16
Seminary Rd.	10	26.8	58.7	0.3	20
Total		181.2	260.1	0.9	13

Arterial Level of Service: SB MD 25

Cross Street	Node	Delay (s/veh)	Travel time (s)	Dist (mi)	Arterial Speed
St. Pauls	10	23.8	49.3	0.3	21
	5	5.4	33.8	0.3	34
Greenspring Valley R	1	34.1	41.0	0.1	7
Falls Rd.	2	8.2	19.6	0.1	28
Total		71.5	143.7	0.8	21

DEVELOPER'S EXHIBIT

26

MD 25 (Falls Road) Corridor Travel Times

[between Joppa Road & MD 131 (Seminary Avenue)]

Morning Peak Period	Background Conditions	Total Conditions (With Dev & Imp's)	Percent Improvement
NB Travel Time	186 Seconds	141 Seconds	24%
SB Travel Time	216 Seconds	208 Seconds	4%
			Avg AM Corridor Improvement = 14%

Evening Peak Period	Background Conditions	Total Conditions (With Dev & Imp's)	Percent Improvement
NB Travel Time	291 Seconds	260 Seconds	10%
SB Travel Time	143 Seconds	143 Seconds	0%
			Avg PM Corridor Improvement = 5%

Notes: 1. Per the Maryland State Highway Administration, "The intersections of MD 25 at Joppa Road, MD 25 at MD 130, and MD 25 at MD 131 operate together in a system. All three intersections should be analyzed using the existing system timing. Existing Synchro Files can be obtained from OOTS."

2. Synchro files were obtained from OOTS and were utilized to evaluate the corridor as a whole, with and without the proposed improvements at the intersection of MD 25 & Joppa Road. The results, above, were submitted to SHA and reviewed as part of the approved Traffic Impact Study, dated December 7, 2020.



Traffic Impact Analysis

Neighborhood Access

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

= Access Point

DEVELOPER'S EXHIBIT
27

DEVELOPER'S EXHIBIT
28

W. SEMINARY RD.

FALLS RD.

MAYS CHAPEL RD.

- 6,100 LINEAR FEET
- 8 SPEED HUMPS
- 7 TURNS

GREENSPRING STATION

MEADOWOOD PARK

TALLY HO RD.

W. JOPPA RD.

I-695

SCALE: 1"=150'

NORTH

Kimley»Horn

1801 PORTER ST., SUITE 401, BALTIMORE, MD 21230
PHONE: 443-743-3470
WWW.KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY

KHA PROJECT #
DATE
09/12/2022
SCALE AS SHOWN
DESIGNED BY
DRAWN BY
CHECKED BY

ROAD NETWORK EXHIBIT (NOT GATED)

GREENSPRING MANOR
(2310 WEST JOPPA ROAD)
PREPARED FOR
ATAPCO PROPERTIES

SHEET NUMBER

DEVELOPER'S EXHIBIT
29

From: Kristoffer Nebre <knebre@baltimorecountymd.gov>
Sent: Tuesday, August 16, 2022 1:39 PM
To: Nick Driban <ndriban@LENHARTTRAFFIC.COM>
Cc: Angelica Daniel <adaniel@baltimorecountymd.gov>; mlenhart <mlenhart@LENHARTTRAFFIC.COM>; Vishnubhai K Desai <vdesai@baltimorecountymd.gov>
Subject: RE: 2310 Joppa Road; MDOT SHA Tracking 20APBA022XX; 36373

Nick,

This proposed development sits in an "F" traffic shed per Baltimore County Basic Service Map for Transportation. The signalized intersections in question are Falls & Joppa and Falls & Greenspring Valley, which are both intersections that are owned and maintained by the State Highway Administration (SHA), along with the traffic signal too being owned and maintained by SHA. The development calls for improvements along Joppa, which have been reviewed and approved by SHA. The letter from Lennart states that the improvements along Joppa enough to accommodate the generated volumes from the proposed site, and that the mitigation from the improvements result in net zero impact along the corridor.

The scope of the intersections in the traffic impact study are SHA intersections. We agree that the proposed development along with the improvements to the intersection would not have a net negative impact on the intersection. With these statements, we request a copy of the traffic impact study and supplemental analysis be stamped and signed by a Professional Engineer. We do not have additional comments to offer. The development sits in a current LOS F traffic shed, and therefore, per Baltimore County Zoning Regulations Manual, 4A02.4.G.1, we defer the findings from Lenhart Traffic and SHA responses be subjected to review from the Zoning Commissioner to determine if this development would be eligible for a waiver based off the zoning regulations.

KRISTOFFER L. NEBRE, P.E.
Engineer III

Baltimore County, Department of Public Works
Bureau of Transportation
111 W. Chesapeake Avenue, Room 312
Towson, Maryland 21204

Ph. 410-887-3554
Fax 410-887-5784

DEVELOPER'S EXHIBIT 30

From: Michael Filsinger <mfilsinger@baltimorecountymd.gov>
Sent: Friday, January 15, 2021 12:40 PM
To: Rosenblatt, Adam M. <AMRosenblatt@Venable.com>; Greg Carski <gcarski@baltimorecountymd.gov>
Subject: RE: Updated TIA for Falls Rd.

Caution: External Email

Adam,

Hope this is what you are looking for:

While the proposed development is located within a failing traffic shed, the proposed improvements associated with the traffic impact study will mitigate the increased traffic generated by the proposed development. Any questions, let us know.

Mike Filsinger, P.E., Chief
Division of Traffic Engineering

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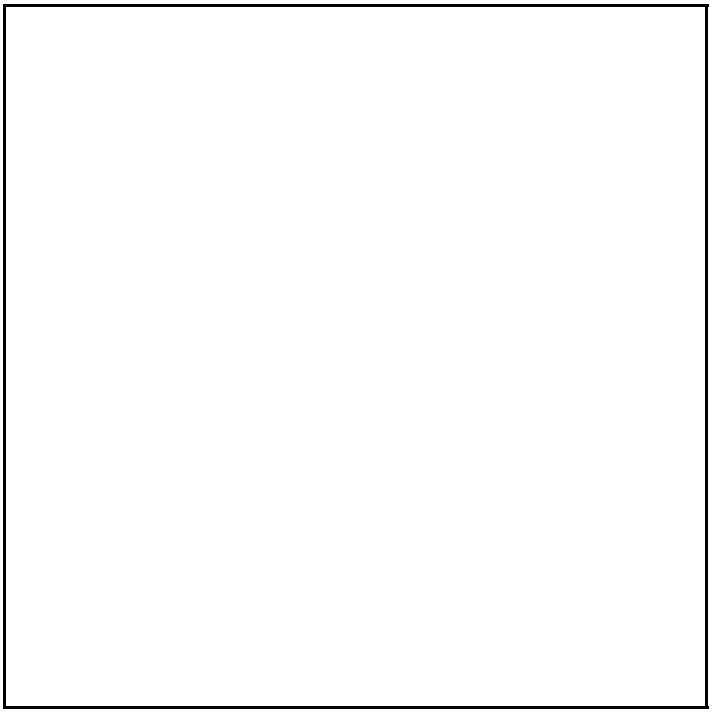

DEVELOPER'S EXHIBIT
31

From: Blandy Becker
To: Rosenblatt, Adam M.
Cc: Snyder, Ron; Oxley, Bruce; Powell, Russel V.; dean@merrittinc.net; pmcgee5@verizon.net
Subject: Re: Site plan and presentation
Date: Wednesday, November 17, 2021 9:53:43 AM

Yes, thank you! I just realized I missed your email below this one too. Feeling very slammed these days.

BLANDY BECKER, REALTOR, ABR
Long & Foster Real Estate, Inc.
16 Greenmeadow Drive, Ste. 300
Timonium, Maryland 21093
410-375-5777 (cell)
410-453-0500 (office)
blandy@lnf.com
www.blandybeckerrealtor.com

Oh, by the way... if you know of someone interested in buying or selling Real Estate, please feel free to share my contact information or call me with theirs. I'll be happy to follow up and take great care of them!

On Wed, Nov 17, 2021 at 9:41 AM Rosenblatt, Adam M. <AMRosenblatt@venable.com> wrote:

> Just wanted to make sure you all knew the hearing has been postponed. We will touch base after it is rescheduled.
>
> Have a nice Thanksgiving.
>
> Adam M. Rosenblatt, Esq. | Venable LLP
> t 410.494.6271 | f 410.821.0147 | m 410.294.9430
> 210 W. Pennsylvania Avenue, Suite 500, Towson, MD 21204
>
> AMRosenblatt@Venable.com | www.Venable.com
>
> ---
>
> **From:** Rosenblatt, Adam M.
> **Sent:** Thursday, November 4, 2021 10:14 AM
> **To:** 'Blandy Becker' <blandy.becker@gmail.com>
> **Cc:** Snyder, Ron <rsnyder@atapco.com>; Bruce Oxley <boxley@atapco.com>; Powell, Russel V. <rpowell@atapco.com>; dean@merrittinc.net; pmcgee5@verizon.net

Subject: RE: Site plan and presentation

Hi everyone,

With our hearing now approaching we wanted to follow up with each of you to see if you would like to meet one more time (likely virtually) or have any additional questions or comments about the plan. If possible we would like to get on your calendars for some time next week so we can talk through any issues and make sure we are doing everything we can to address any concerns you may have.

If you are available and would like to meet please let us know and we will get something scheduled.

Thank you for continuing to work with us throughout this process.

Adam M. Rosenblatt, Esq. | Venable LLP
t 410.494.6271 | f 410.821.0147 | m 410.294.9430
210 W. Pennsylvania Avenue, Suite 500, Towson, MD 21204

AMRosenblatt@Venable.com | www.Venable.com

From: Blandy Becker <blandy.becker@gmail.com>
Sent: Wednesday, August 4, 2021 11:18 AM
To: Rosenblatt, Adam M. <AMRosenblatt@Venable.com>
Cc: Snyder, Ron <rsnyder@atapco.com>; Bruce Oxley <boxley@atapco.com>; Powell, Russel V. <rpowell@atapco.com>; dean@merrittinc.net; pmcgee5@verizon.net
Subject: Re: Site plan and presentation

Caution: External Email

Thanks, I'll share with my community. It does make more sense for traffic flow onto Joppa.

BLANDY BECKER, REALTOR, ABR

Long & Foster Real Estate, Inc.

16 Greenmeadow Drive, Ste. 300

Timonium, Maryland 21093

410-375-5777 (cell)

410-453-0500 (office)

blandy@lnf.com

www.blandybeckerrealtor.com

Oh, by the way... if you know of someone interested in buying or selling Real Estate, please feel free to share my contact information or call me with theirs. I'll be happy to follow up and take great care of them!

On Wed, Aug 4, 2021 at 11:10 AM Rosenblatt, Adam M. <AMRosenblatt@venable.com> wrote:

> Hi everyone,
>
> Hope all is well. I wanted to let you know that the environmental department asked us to eliminate the existing driveway to the Lankford home and to instead connect a driveway to our proposed public road into Greenspring Manor. I am attaching a redline plan showing the proposed change because we want to make sure you all have the latest version of the plan. I am not sure this has any significant impact on the issues that are important to you, but feel free to reach out with any questions or comments about the plan.
>
> Thank you all very much.
>
> Adam M. Rosenblatt, Esq. | Venable LLP
> t 410.494.6271 | f 410.821.0147 | m 410.294.9430
> 210 W. Pennsylvania Avenue, Suite 500, Towson, MD 21204
>
> AMRosenblatt@Venable.com | www.Venable.com
>
> ---
>
> **From:** Blandy Becker <blandy.becker@gmail.com>
> **Sent:** Monday, June 28, 2021 2:29 PM
> **To:** Rosenblatt, Adam M. <AMRosenblatt@Venable.com>

Cc: Snyder, Ron <rsnyder@atapco.com>; Bruce Oxley <boxley@atapco.com>; Powell, Russel V. <rpowell@atapco.com>; dean@merrittinc.net; pmcgee5@verizon.net
Subject: Re: Site plan and presentation

Caution: External Email

I went on vacation a couple days after our meeting. I sent something out to the neighbors before I left and will follow up this week. Just back today trying to dig out.

Thank you for checking!

BLANDY BECKER, REALTOR, ABR

Long & Foster Real Estate, Inc.

16 Greenmeadow Drive, Ste. 300

Timonium, Maryland 21093

410-375-5777 (cell)

410-453-0500 (office)

blandy@lnf.com

www.blandybeckerrealtor.com

Oh, by the way... if you know of someone interested in buying or selling Real Estate, please feel free to share my contact information or call me with theirs. I'll be happy to follow up and take great care of them!

On Mon, Jun 28, 2021 at 2:03 PM Rosenblatt, Adam M. <AMRosenblatt@venable.com> wrote:

> All,
>
> Just checking to see if you have any comments or requested changes regarding

landscaping/buffering for Tally Ho. Please email or call any time.

Adam M. Rosenblatt, Esq. | Venable LLP
t 410.494.6271 | f 410.821.0147 | m 410.294.9430
210 W. Pennsylvania Avenue, Suite 500, Towson, MD 21204

AMRosenblatt@Venable.com | www.Venable.com

From: Rosenblatt, Adam M.
Sent: Wednesday, June 16, 2021 2:28 PM
To: Snyder, Ron <rsnyder@atapco.com>; Bruce Oxley <boxley@ATAPCO.COM>; Powell, Russel V. <rpowell@ATAPCO.COM>; 'Blandy Becker' <blandy.becker@gmail.com>; 'dean@merrittinc.net' <dean@merrittinc.net>; pmcgee5@verizon.net
Subject: Site plan and presentation

All,

I am attaching the site plan and presentation we just discussed. Please keep in touch and let us know about landscaping or any other questions or comments.

Thank you very much.

Adam M. Rosenblatt, Esq. | Venable LLP
t 410.494.6271 | f 410.821.0147 | m 410.294.9430
210 W. Pennsylvania Avenue, Suite 500, Towson, MD 21204

AMRosenblatt@Venable.com | www.Venable.com

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DEVELOPER'S EXHIBIT 32

From: Blandy Becker
To: Rosenblatt, Adam M.
Cc: Snyder, Ron; Oxley, Bruce; Powell, Russel V.; dean@merrittinc.net; pmcgee5@verizon.net
Subject: Re: Meeting to discuss Greenspring Manor?
Date: Monday, August 8, 2022 9:14:54 AM
Attachments: image001.png

Sorry for the delay, I was away! Thanks for reaching out. Unless there's anything new you want to share, my schedule is jammed with another quick vacation and then college drop offs...my August feels insanely jammed up.

BLANDY BECKER, REALTOR ®

Cummings & Co. Realtors

108 W. Timonium Road

Timonium, MD 21093

410-375-5777 (cell)

410-823-0033 (office)

blandy@beckerhomesales.com

On Fri, Aug 5, 2022 at 10:20 AM Rosenblatt, Adam M. <AMRosenblatt@venable.com> wrote:

> Hi everyone,
>
> Hope all is well. We wanted to let you know that the Hearing Officer's Hearing for Greenspring Manor is set to begin on September 1, 2022 at 10:00 a.m. It will be a virtual meeting via WebEx.
>
> It has been a long time since we talked and we would like to offer to have a meeting with you to explain what has happened over the past year and answer any questions you may have about the project.
>
> If you would like to meet with us please let me know and we will find a date and time that works for all of you. I can send a Zoom or WebEx invite to make it easier for everyone.

We look forward to hearing from you.

Adam M. Rosenblatt, Esq. | Venable LLP
t 410.494.6271 | f 410.821.0147 | m 410.294.9430
210 W. Pennsylvania Avenue, Suite 500, Towson, MD 21204

AMRosenblatt@Venable.com | www.Venable.com

-----Original Appointment-----
From: Rosenblatt, Adam M.
Sent: Monday, June 7, 2021 8:55 AM
To: Rosenblatt, Adam M.; Snyder, Ron; Bruce R. Oxley; Powell, Russel V.; Blandy Becker; dean@merrittinc.net; pmcgee5@verizon.net
Subject: Zoom to discuss Greenspring Manor
When: Wednesday, June 16, 2021 1:00 PM-2:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: https://venable.zoom.us/j/4104946271?pwd=Z0VTejMwL1FwY05YQ1pIQzZVZzFJZz09

Hi there,

Rosenblatt, Adam M. is inviting you to a scheduled Zoom meeting.

Join Zoom Meeting

Phone one-tap:	US: +13017158592,,4104946271# or +12678310333,,4104946271#
Meeting URL:	https://venable.zoom.us/j/4104946271?pwd=Z0VTejMwL1FwY05YQ1pIQzZVZzFJZz09
Meeting ID:	410 494 6271
Password:	140815

Join by Telephone

For higher quality, dial a number based on your current location.

Dial:	US: +1 301 715 8592 or +1 267 831 0333 or 888 788 0099 (Toll Free) or 877 853 5247 (Toll Free)
Meeting ID:	410 494 6271

International numbers
Or join by internal extension x14000

Join from an H.323/SIP room system

H.323:	162.255.37.11 (US West) 162.255.36.11 (US East) 115.114.131.7 (India Mumbai) 115.114.115.7 (India Hyderabad) 213.19.144.110 (Amsterdam Netherlands) 213.244.140.110 (Germany) 103.122.166.55 (Australia Sydney) 103.122.167.55 (Australia Melbourne) 64.211.144.160 (Brazil) 69.174.57.160 (Canada Toronto) 65.39.152.160 (Canada Vancouver) 207.226.132.110 (Japan Tokyo) 149.137.24.110 (Japan Osaka)
Meeting ID:	410 494 6271
Password:	140815
SIP:	4104946271@zoomcrc.com
Password:	140815

Skype for Business (Lync)

https://venable.zoom.us/skype/4104946271

****
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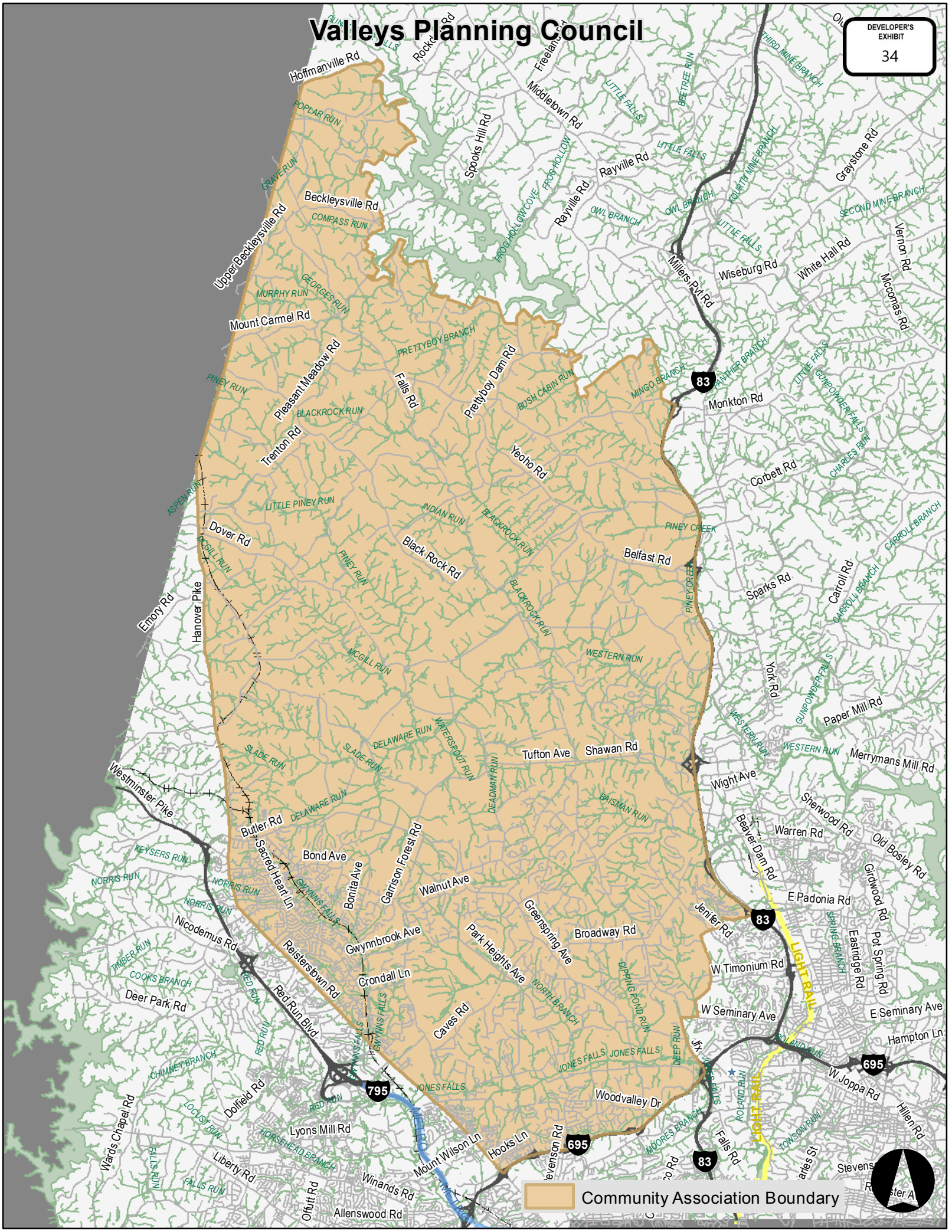
Neighbor Aerial

DEVELOPER'S EXHIBIT
33



Valleys Planning Council

DEVELOPER'S EXHIBIT 34



EXHIBIT

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Baltimore County, Maryland

MASTER PLAN 2020



Goals of Master Plan 2020

To promote policies and actions resulting in a safe, sustainable environment for future generations, the County Council in partnership with the citizens of Baltimore County, Maryland hereby adopt this Master Plan 2020.

Goal One: Continue the Success of Growth Management

- Direct the future growth within the Urban-Rural Demarcation Line (URDL)
- Protect and enhance Community Conservation Areas
- Promote redevelopment with an emphasis on ailing commercial or industrial properties
- Develop compact, mixed-use, transit-oriented, and walkable neighborhoods
- Advance economic well-being by promoting a high quality labor force
- Provide a mixture of housing types for an emerging diversity of residents
- Support quality public schools to enhance communities
- Prioritize infrastructure improvements via the Capital Improvement Program to endorse sustainable development
- Protect the character and economic vitality of the rural communities

Goal Two: Improve the Built Environment

- Provide adequate open space and recreational opportunities and increase connections to nature by linking open spaces and parks
- Invest in public grounds by tree planting, buffer conservation and habitat restoration
- Expand and deliver multi-modal transportation services
- Reduce pollutant loadings of runoff with enhanced stormwater management
- Meet desire for green communities by providing regulatory incentives
- Ensure integration between regulations and sustainability programs such as LEED

Goal Three: Strengthen Resource Conservation and Protection

- Protect health of the natural environment and maintain a valuable biodiversity
- Restore ecosystems and encourage fair, efficient use of natural resources
- Preserve cultural assets to establish a tangible sense of community
- Nurture farming activities and importance of the agricultural industry
- Conserve rural characteristics and scenic vistas

can be found within the *Towson Urban Area* section of the plan.

Owings Mills Growth Area – The last of the originally designated growth areas. See the *Owing Mills Growth Area* section for more information.

Middle River Redevelopment Area – The newest designated growth area. Details are provided in the *Middle River Redevelopment Area* section in the plan.

Employment Center – These areas generally consist of a variety of commercial uses predominantly employment-oriented, some with retail and housing. They may contain heavy industrial uses as well. These areas include CEAs, CRDs, and strip commercial areas. The preservation of family-supporting wage employment is the primary goal.

Proposed Land Use

The Proposed Land Use Map provides general recommendations for land use, based upon the policies provided in *Master Plan 2020*. The map is conceptual and general, and is intended to reflect land use patterns and support the land use objectives of *Master Plan 2020*, rather than identify land use of individual properties or parcels. The use of transects, and "T-zones", is designed to support compact mixed-use communities, while maintaining the stability of existing community conservation areas (Map 5). The proposed land use map will provide general direction for county land use decisions, and may be amended as needed.

Transect-Based Planning for the Built Environment

A "transect" of nature, first conceived by Alexander Von Humboldt at the close of the 18th century, is a geographical cross-section of a region intended to reveal a sequence of environments. Originally, it was used to analyze natural ecologies, showing varying characteristics through different zones such as shores, wetlands, plains and uplands. It helps study the many elements that contribute to habitats where certain plants and animals thrive in symbiotic relationships to the minerals and microclimate.

This same system can be used to demonstrate different human habitats. Some individuals prefer living on farms while others prefer living in cities. Before the automobile, American development patterns were walkable, and transects within towns and city neighborhoods reflected a variety of development patterns and uses. These degrees of urbanism are represented in a rural-to-urban transect has been developed which provides six "Transect Zones" (T-zones) for application on the proposed land use map.

The transect, as a framework, identifies a range of habitats from the most natural to the most urban (Map 5). Its continuum, when subdivided, lends itself to the creation of zoning categories. These categories include standards that encourage diversity. The standards overlap, reflecting the successional pattern of development and natural ecosystems. The transect thereby integrates environmental and zoning methodologies, enabling the design of compact, mixed-use, walkable communities that support the viability of natural ones.

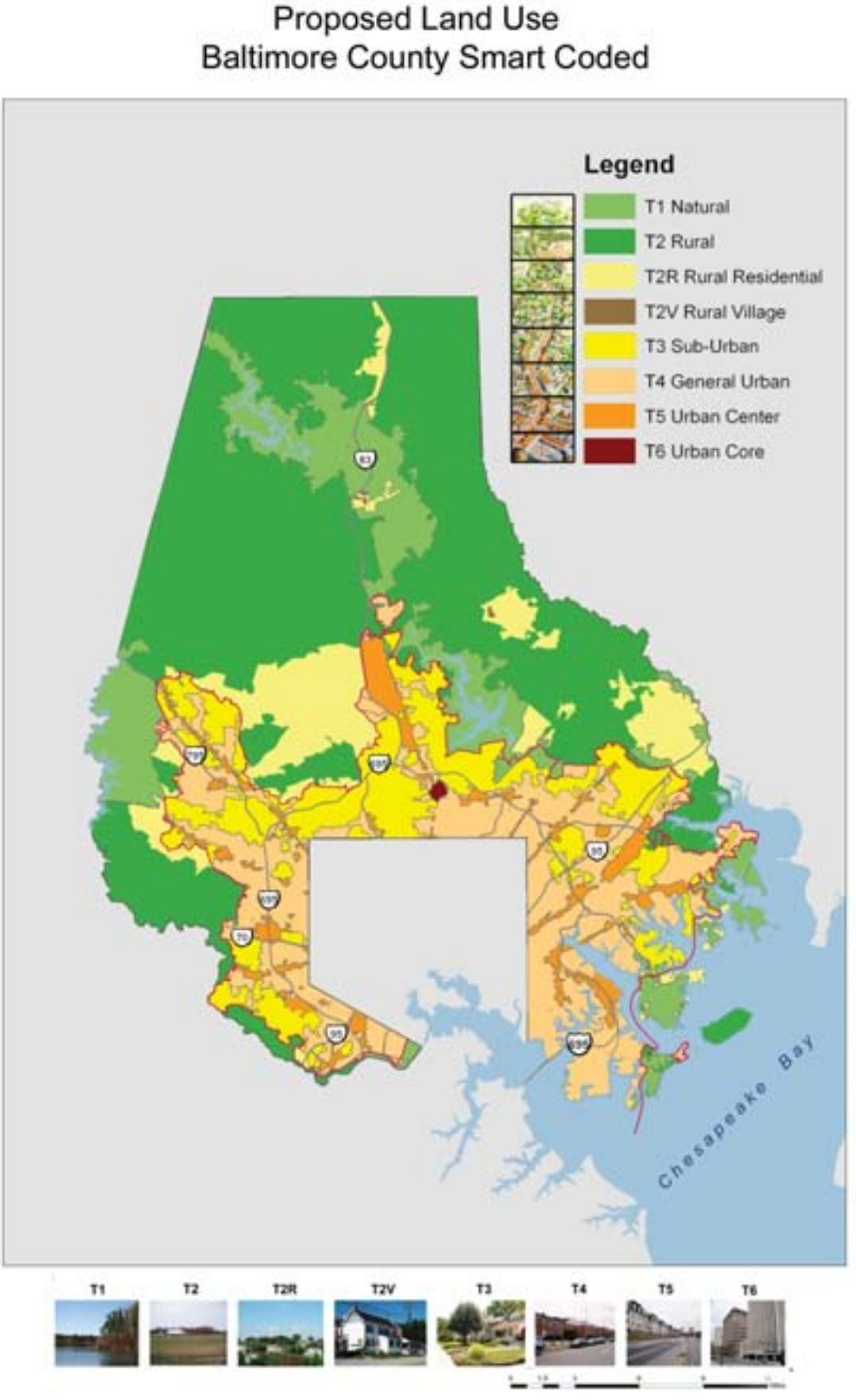
- **T-1 (Natural Zone)** contains lands approximating a natural condition, including lands unsuitable for settlement due to topography, hydrology, or vegetation.

- **T-2 (Rural Zone)** consists of sparsely settled lands in an open or cultivated state. These include woodlands, agricultural lands, and grasslands. Typical buildings may include farmhouses and agricultural buildings.

- **T-2 R (Rural Residential Zone)** consists of large lot single-family detached housing. Plantings are informal. All setbacks are generally 50+ feet. Lots are deep to accommodate a larger backyard. Density varies between 2 to 5 acres per dwelling.

- **T-2 V (Rural Village Zone)** takes into account the rural villages of Hereford and Jacksonville. This zone has a mix of smaller scale retail/office and some residential uses. T-2 V preserves the rural village character featuring an attractive and traditional pattern of houses,

Map 5: Proposed Land Use



commercial establishments, open spaces and their relationship to roadways.

- **T-3 (Sub-Urban Zone)** includes low-density residential areas, adjacent to higher zones that contain mixed use. Home occupations and outbuildings may be allowed. Landscaping is naturalistic and setbacks are relatively deep. Blocks may be large and the roads irregular to accommodate natural conditions.

- **T-4 (General Urban Zone)** is characterized by mixed-use, but is primarily residential urban fabric. It may have a wide range of building types including single-family detached and attached houses, and townhouses. Setbacks and landscaping are variable. Streets with curbs and sidewalks define medium-sized blocks.

- **T-5 (Urban Center Zone)** includes higher density mixed-use buildings that accommodate retail, offices, townhouses, and apartments. It has a tight network of streets, with wide sidewalks, steady street tree planting and buildings set close to the sidewalks.

- **T-6 (Urban Core Zone)** has the highest density and height with the greatest variety of uses, and civic buildings of regional importance. It may have larger blocks; streets have steady street tree planting and buildings set close to the wide sidewalks. Typically only large towns and cities have an Urban Core Zone.

- **T-M (Manufacturing Zone)** includes certain industries and manufacturing processes that should not be combined with other uses. By their function, they require that their operations not be closely integrated with other uses (except those with similar characteristics).

- **T-I (Institutional Zone)** many institutional uses should be incorporated into the T-4 and T-5 transects, such as community centers, branch government offices, libraries, etc. However, certain institutions like medical complexes, educational campuses, and others that benefit from having all their functions in one location may need room to grow. That may make inclusion into a Community Enhancement Area impractical. Such facilities should be close enough to be walkable, and be mutually supportive.

The transect system replaces the conventional separate land use zoning system. The T-zones provide the basis for real neighborhood structure, which relies upon compact, walkable streets, mixed-use, transportation options, and housing diversity. The T-zones vary by the ratio and level of intensity of their natural, built, and social components. Uses may overlap between one T-zone and another. The ability of transects to clarify the compatibility among uses makes them particularly useful in planning the built environment.

They may be coordinated to all scales of planning, from the region through the community scale, down to the individual lot and building. However, any new zoning would be applied at the community scale, and it is important to note that each community will have to establish (calibrate) its own unique development criteria. Furthermore, T-zones should be balanced within a neighborhood structure based on pedestrian sheds (walksheds), so that residents of lower density neighborhoods may still walk to different habitats, such as a main street, or civic space.

Transect-based planning is used throughout the County to provide a solid foundation for all other planning. As Baltimore County moves towards compact, mixed-use, higher-density walkable communities, the successful implementation of transect-based planning will play a key role in further developing the T-4 and T-5 zones.

The Transect Zones and the following graphics for the Transect Zone descriptions and civic spaces were originated and developed by Duany Plater-Zyberk & Co.

making process. This on-site work allows easy access to agencies, stakeholders, and information. Preparation for a Charrette begins months before the Charrette date.

Zoning and Development Regulations

The Baltimore County Zoning Regulations (BCZR) and Baltimore County Code (BCC) are the ordinances by which land use and development are implemented. The Comprehensive Manual of Development Policies (CMDP), Zoning Commissioners Policy Manual (ZCPM) clarify and support the BCZR and BCC. Development is also subject to the requirements of the Local Open Space Manual, Landscape Manual, Public Works Design Manual and Environmental Standards and Requirements Manual.

The use of any given parcel of ground within the County is generally determined by its zoning classification. Zoning classifications correspond to specific regulations within the BCZR that set uses, intensities, areas and setbacks. Through the Comprehensive Zoning Map Process, the Cycle Zoning Process and the Out of Cycle Zoning Process zoning classifications on individual properties are reassessed and either reclassified or left to stand. The Proposed Land Use Map provides general recommendations for future land use within the context of the goals of the Master Plan and aids in rezoning considerations required by the various aforementioned zoning processes.

Baltimore County's annual budget is established through two major funding sources, the General Operating Budget and the Capital Improvement Program (CIP). The costs of providing public services such as education and public safety are identified within the General Operating Budget, which is funded primarily through county property tax and income tax revenue. Expenditures for capital projects fall to the CIP. These funding requirements are generated by the construction and maintenance of the county's physical facilities and public infrastructure to include water and sewer lines, roads, storm drains, bridges, solid waste disposal, government buildings, park facilities and schools. Monies funding the CIP are primarily raised through county bond revenue.

The CIP is an essential program by which to achieve the goals of the Master Plan 2020. How CIP resources are committed impacts significantly on redevelopment strategies committed to sustainable mixed-use communities. The capacity of the infrastructure is critical to accommodating redevelopment. CIP funding is largely targeted within the URDL/PFA.

Advanced technology permits detailed observation of the environment of this region that increases comprehensive understanding of the impacts of human activity on our natural resources. Guidance on the federal level was provided by President Obama in May of 2009. "Executive Order 13508 Chesapeake Bay Protection and Restoration" commits the broad authorities of the Federal Government toward restoring the Bay. In 2009, the Environmental Protection Agency (EPA) established an accountability framework to ensure the restoration of the Bay as required by Executive Order 13508. This accountability framework compels jurisdictions to develop and implement appropriate Watershed Implementation Plans, attain two-year milestones of progress and provide timely and complete information to an effective accountability system for monitoring pollutant reductions. The EPA framework contains potential federal actions in the event that a jurisdiction fails to meet expectations. In response, the State of Maryland has now brought into law measures that oblige Baltimore County to assess how development is allowed to proceed. The Annotated Code of Maryland, Article 66B as amended, sets forth twelve visions for land use. The County specifically responds to these visions in this Master Plan and must be diligent in making them a reality. More so than any preceding



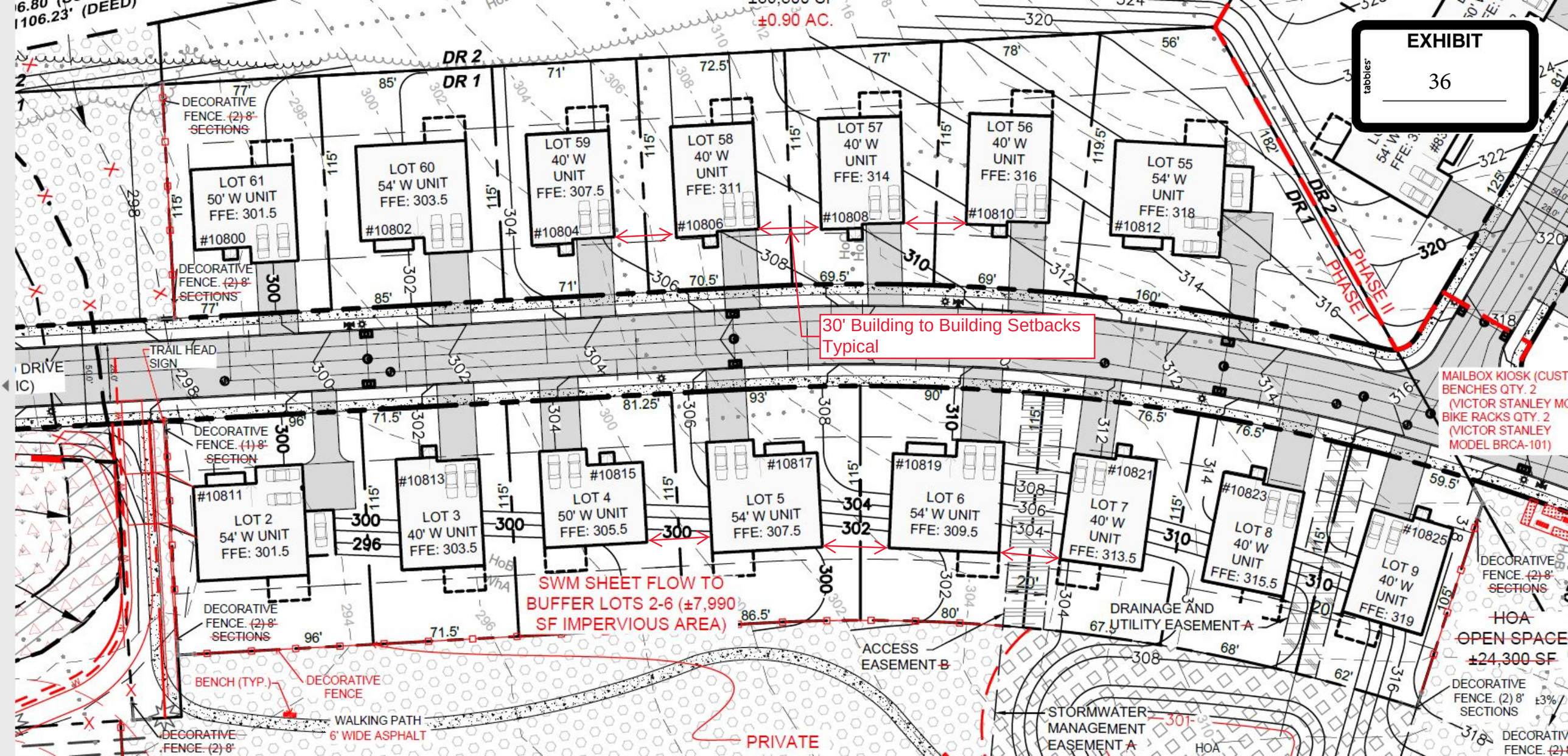
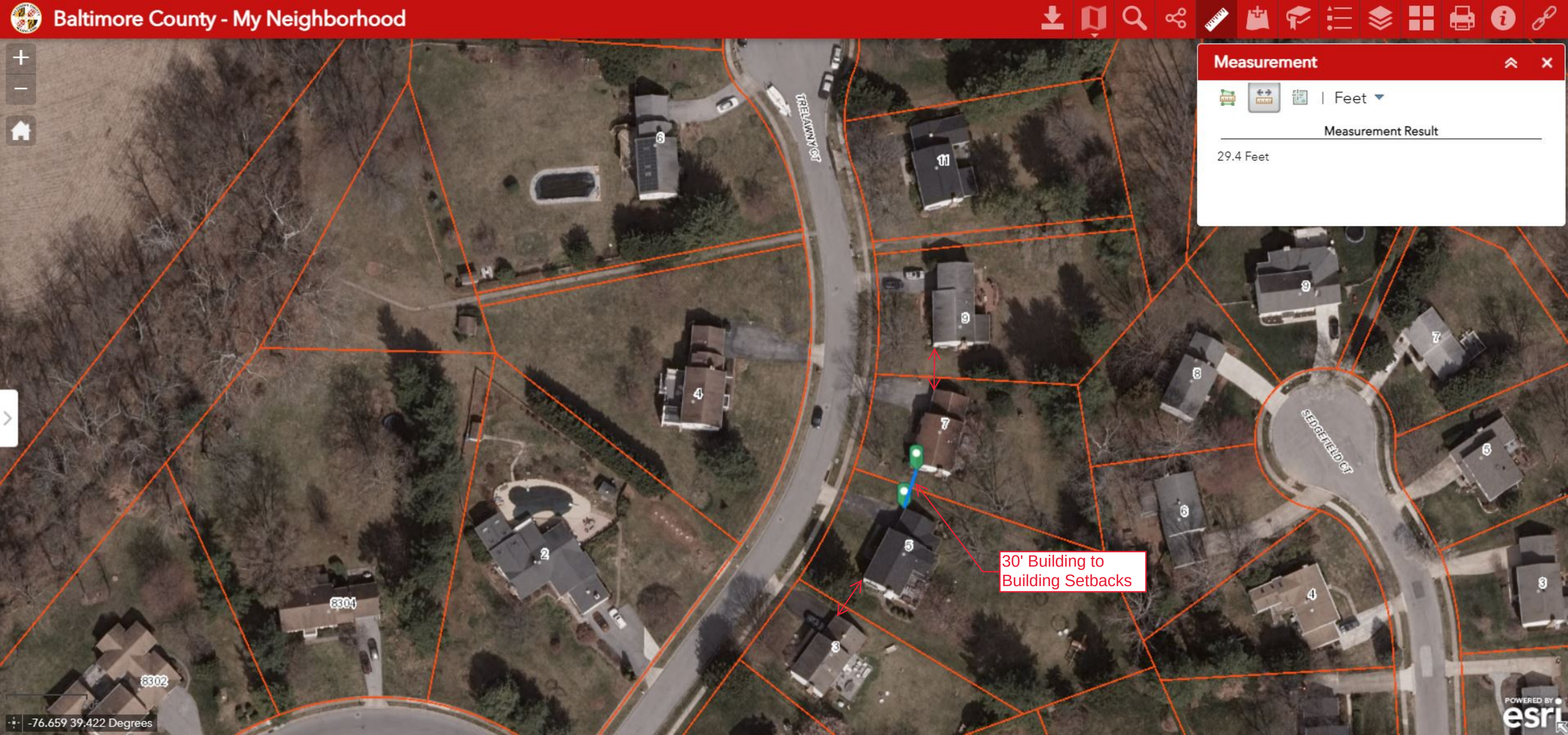
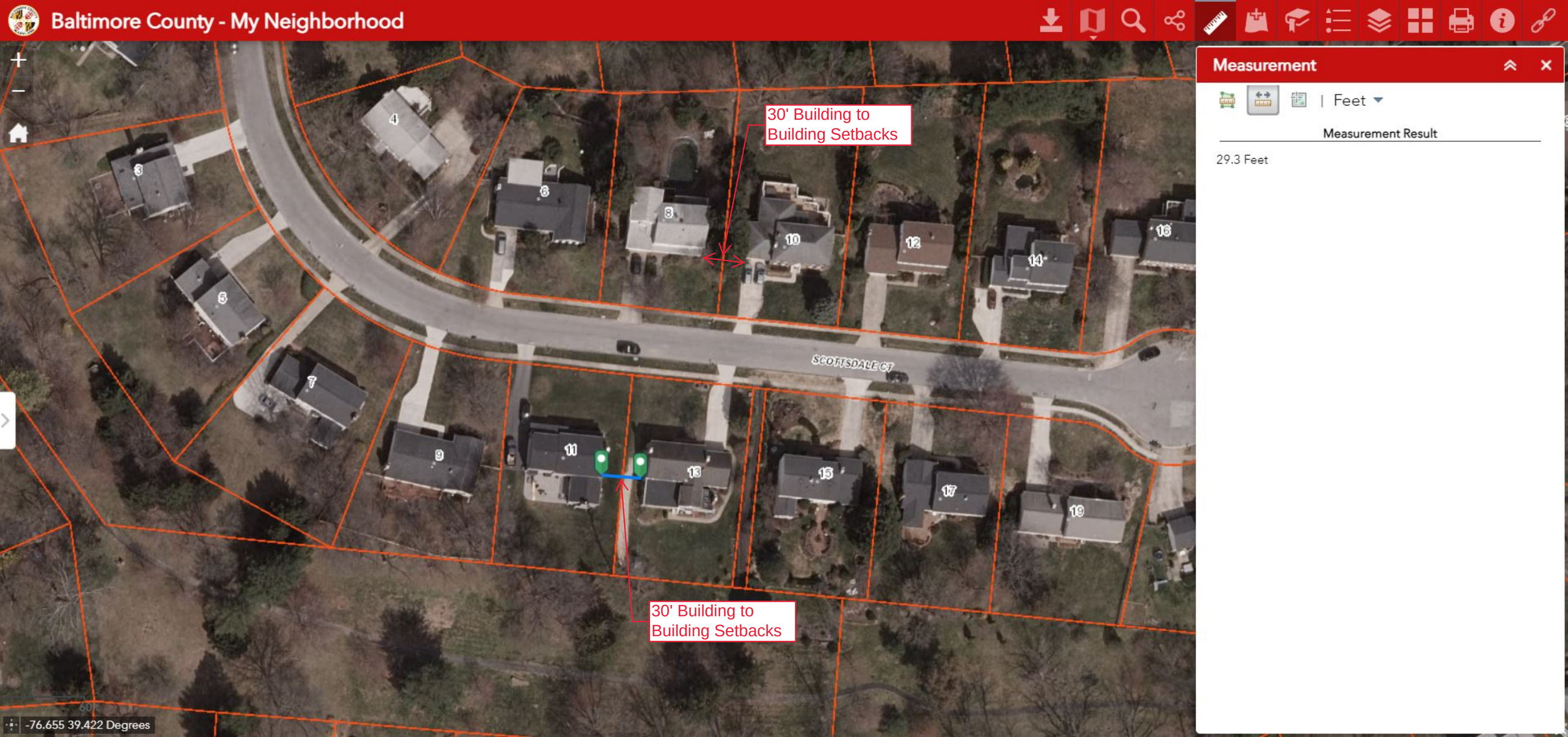
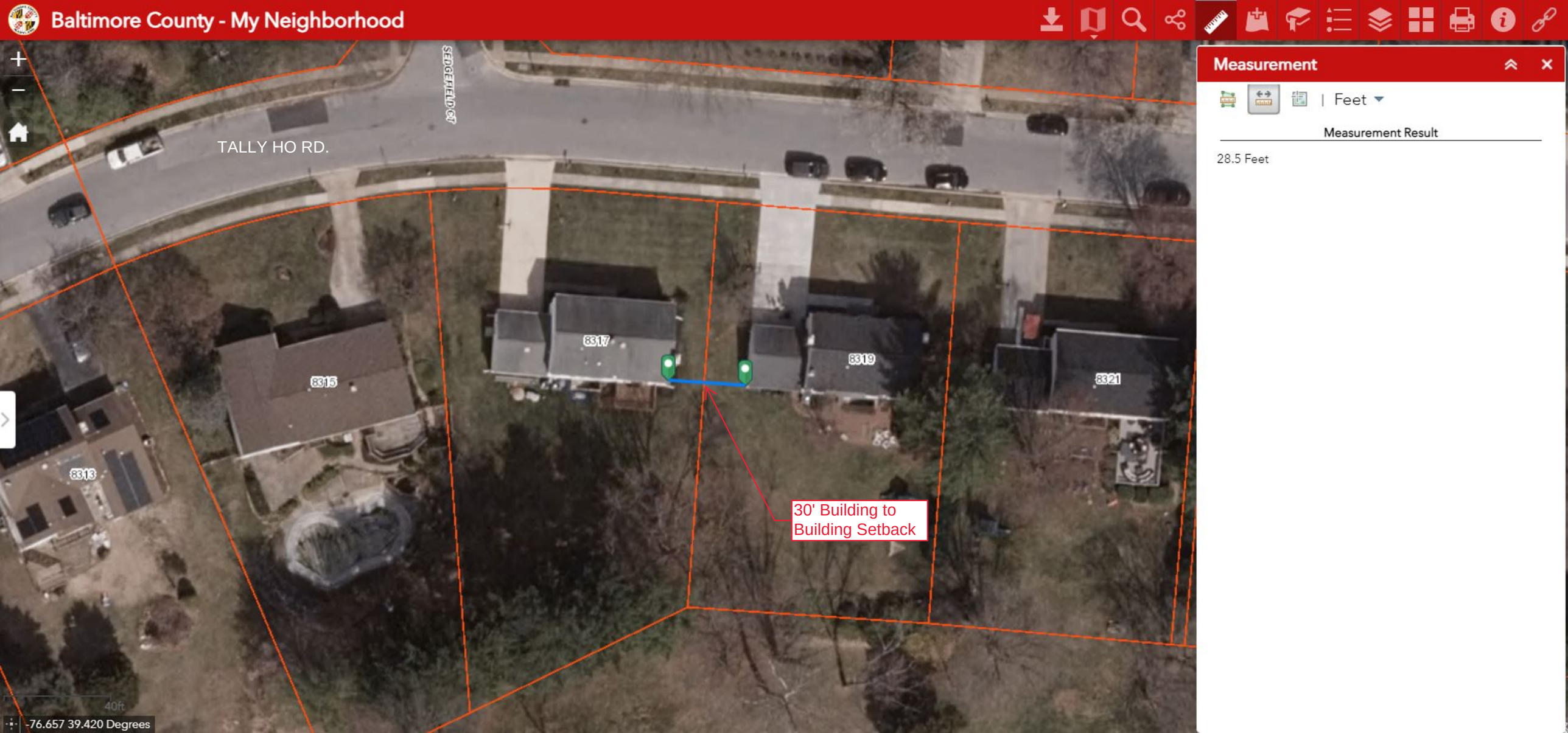


EXHIBIT
36
DR 1
DR 2
PHASE I
PHASE II
LOT 61
50' W UNIT
FFE: 301.5
#10800
LOT 60
54' W UNIT
FFE: 303.5
#10802
LOT 59
40' W
UNIT
FFE: 307.5
#10804
LOT 58
40' W
UNIT
FFE: 311
#10806
LOT 57
40' W
UNIT
FFE: 314
#10808
LOT 56
40' W
UNIT
FFE: 316
#10810
LOT 55
54' W
UNIT
FFE: 318
#10812
LOT 2
54' W UNIT
FFE: 301.5
#10811
LOT 3
40' W UNIT
FFE: 303.5
#10813
LOT 4
50' W UNIT
FFE: 305.5
#10815
LOT 5
54' W UNIT
FFE: 307.5
#10817
LOT 6
54' W UNIT
FFE: 309.5
#10819
LOT 7
40' W
UNIT
FFE: 313.5
#10821
LOT 8
40' W
UNIT
FFE: 315.5
#10823
LOT 9
40' W
UNIT
FFE: 319
#10825
±0.90 AC.
30' Building to Building Setbacks Typical
SWM SHEET FLOW TO BUFFER LOTS 2-6 (±7,990 SF IMPERVIOUS AREA)
DECORATIVE FENCE. (2) 8' SECTIONS
DECORATIVE FENCE. (1) 8' SECTION
TRAIL HEAD SIGN
BENCH (TYP.)
DECORATIVE FENCE
WALKING PATH 6' WIDE ASPHALT
ACCESS EASEMENT B
DRAINAGE AND UTILITY EASEMENT A
STORMWATER MANAGEMENT EASEMENT A
HOA OPEN SPACE ±24,300 SF
MAILBOX KIOSK (CUST
BENCHES QTY. 2
(VICTOR STANLEY MC
BIKE RACKS QTY. 2
(VICTOR STANLEY
MODEL BRCA-101)
PRIVATE


Baltimore County - My Neighborhood
Measurement
Feet
Measurement Result
29.4 Feet
TRELAWNY CT
SEDGEFIELD CT
30' Building to
Building Setbacks
-76.659 39.422 Degrees
POWERED BY esri


Baltimore County - My Neighborhood
Measurement
Feet
Measurement Result
29.3 Feet
30' Building to Building Setbacks
30' Building to Building Setbacks
SCOTTSDALE CT
-76.655 39.422 Degrees


Baltimore County - My Neighborhood
TALLY HO RD.
SEDGEFIELD CT
8313
8315
8317
8319
8321
30' Building to
Building Setback
Measurement
Feet
Measurement Result
28.5 Feet
40ft
-76.657 39.420 Degrees

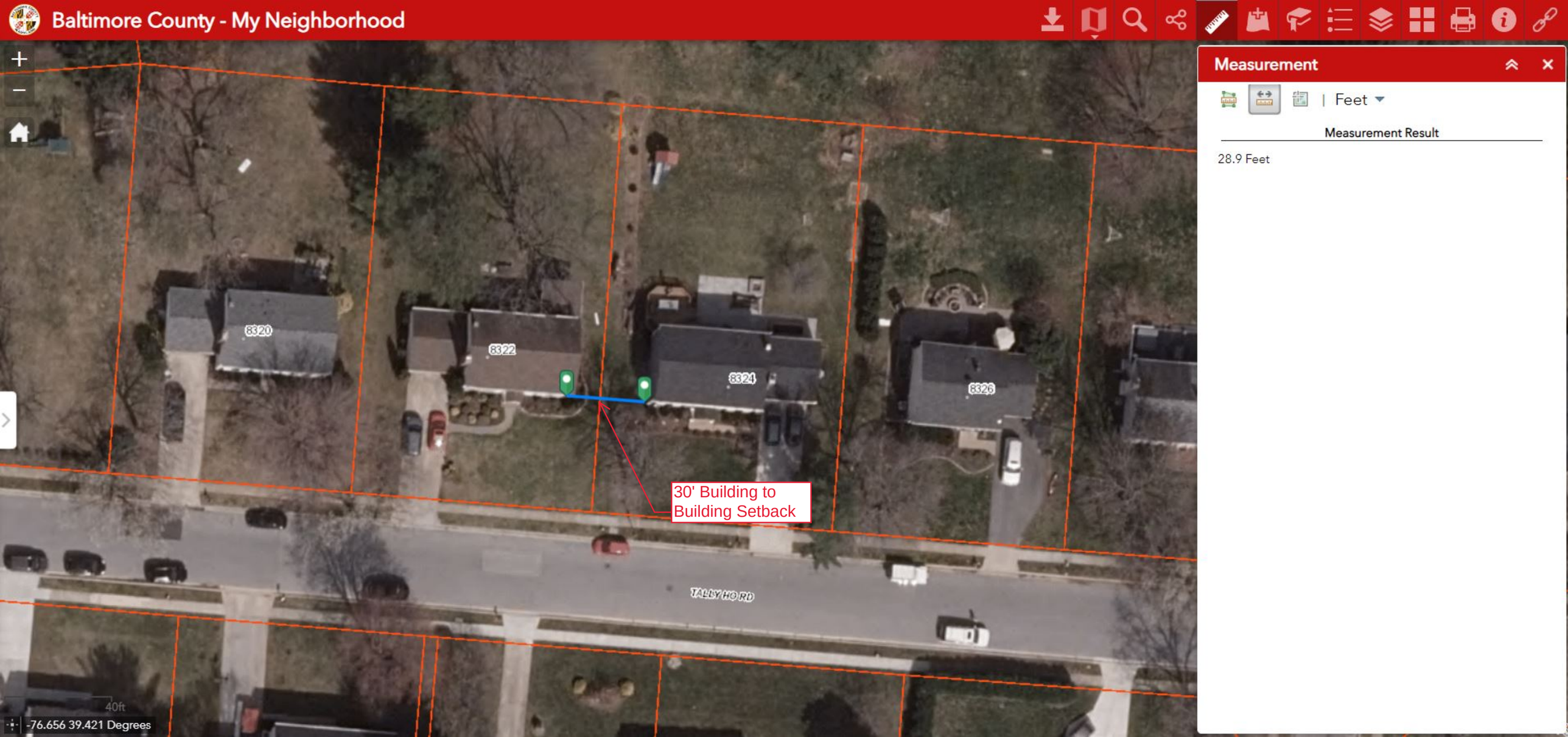

Baltimore County - My Neighborhood
Measurement
Feet
Measurement Result
28.9 Feet
8320
8322
8324
8326
TALLY HO RD
30' Building to
Building Setback
40ft
-76.656 39.421 Degrees

EXHIBIT
tabbies
37

IN RE: **DEVELOPMENT PLAN HEARING & PETITIONS FOR SPECIAL HEARING & VARIANCE** 8th Election District 3rd Council District **(1400 W. Seminary Avenue)**	*	BEFORE THE OFFICE OF ADMINISTRATIVE HEARINGS FOR BALTIMORE COUNTY
TORCH HILL **aka 1400 W. Seminary Avenue** **Alvin B. Buzzy Krongard** *Owner/Applicant*	*	**CASE NOS. 08-0919 AND 2021-0274-SPHA**
1400 W. Seminary Avenue Developer	*	

* * * * * * *

ADMINISTRATIVE LAW JUDGE'S ("ALJ")
COMBINED DEVELOPMENT PLAN AND ZONING OPINION & ORDER

This matter comes before the Office of Administrative Hearings ("OAH") for a public hearing on a development proposal submitted in accordance with Article 32, Title 4, of the Baltimore County Code ("BCC"). Alvin B. Krongard, Owner/Applicant (herein known as "Developer") submitted for approval a 2-sheet redlined Development Plan (the "Redlined Development Plan") and a 2-sheet greenlined Development Plan (the "Greenlined Development Plan") prepared by Stacy A. McArthur of D.S. Thaler & Associates, Inc., known as the "Torch Hill Project" (the "Property"). The Developer proposes to develop ± 42.44 acres of land with 31 new single family detached dwellings, as well as retaining the existing dwelling which fronts on Seminary Avenue.

Along with the development plan, the Developer has filed a Petition for Special Variance from Baltimore County Zoning Regulations ("BCZR"), §4A02.4.G, to allow the Torch Hill Project within the Falls Rd. and Seminary Rd. traffic shed. Developer has also requested Variance relief

from the BCZR, §1B01.2.C.b, to permit a front yard setback of zero (0) ft. in lieu of the required 25 ft for the existing home.

In accordance with BCC, §32-4-201 *et seq.*, a Concept Plan Conference ("CPC") was held on August 11, 2020. A Community Input Meeting ("CIM") was held on September 17, 2020. A Development Plan Conference ("DPC") was held on November 3, 2021.

The development and zoning cases were considered as a combined hearing as permitted by BCC, §32-4-230. Details of the proposed development are more fully depicted on the Redlined Development Plan and the Greenlined Development Plan. (Dev. Exs. 1, 2). On June 7, 2022, in compliance with the regulations, the Property was posted with the Notice of Hearing Officer's Hearing ("HOH") development hearing, and Notice of Zoning hearing, and then reposted and certified on July 5, 2022. A public virtual WebEx hearing in lieu of an in-person public hearing was conducted on July 7, 2022, July 8, 2022 and August 22, 2022.

Testifying on behalf of the Developer was Stacy McArthur and John Motsco, PE, both of DS Thaler, the engineering firm which prepared the Redlined Development Plan and Greenlined Development Plan. Mickey Cornelius of the Traffic Group also testified. Christopher Mudd, Esquire, Patsy Malone, Esquire and Venable LLP represented the Developer. Michael McCann, Esquire represented the Protestant, Falls Rd. Improvement Association. Counsel for both Parties filed Memorandum in Lieu of Closing Argument on September 30, 2022.

AGENCY WITNESSES

Numerous representatives of the various Baltimore County agencies who reviewed the Plan and attended the hearing, including the following individuals from the Department of Permits, Approvals and Inspections ("PAI"): Jerry Chen, the Project Manager; James Hermann on behalf of Development Plans Review ("DPR") and Department of Recreation and Parks ("R&P");

LaChelle Imwiko from Real Estate Compliance ("REC"); and Shawn Crawford from the Office of Zoning Review ("OZR"). Also appearing on behalf of the County was Steve Ford from the Department of Environmental Protection and Sustainability ("DEPS"), and Marta Kulchytska and Jenifer Nugent from the Department of Planning ("DOP").

Shawn Crawford verified both the DPC comments dated November 3, 2021 and the Final (HOH) comments dated April 4, 2022 from OZR. (County Exs. 1A, 1B). Mr. Crawford testified that the OZR DPC comment about whether the 2 separate parcels comprising the Property would both be used was resolved by the removal of 1 parcel on the Redlined Development Plan. He also verified that misalignment of the zoning line and the lot line was rectified by the approval of a lot line adjustment from the Development Review Committee ("DRC"). Since all issues from OZR had been resolved, Mr. Crawford recommended approval of the Redlined Development Plan.

Mr. Hermann, the Baltimore County Landscape Architect, testified that he approved the Schematic Landscape Plan on April 25, 2022 and as a result, DPR could recommend approval of the Redlined Development Plan from a landscaping perspective. (County Ex. 2). He added that a Final Landscape Plan would be filed in Phase II of the development process. In regard to Open Space requirements, Mr. Hermann stated that for the 32 total proposed units, the required Open Space under BCC, §32-6-108 is 32,000 sf or 0.734 acres (1,000 sf per unit). (County Ex. 3). The Developer will provide 32,006 sf (0.735 acres) of Open Space onsite as shown on the Redlined Development Plan which will be owned and maintained by a private HOA. There are no Master Plan Greenways affected by this Project. As a result, on behalf of R&P, Mr. Hermann could recommend approval of the Redlined Development Plan.

Mr. Patel testified on behalf of DPR and the Department of Public Works & Transportation ("DPWT") in regard to roadways, sidewalks, storm drains, water and sanitary sewer systems.

DPR's general and site-specific comments were provided in the DPC comments dated November 1, 2021. (County Ex. 4A). Mr. Patel testified that adequate sewer capacity exists in the 8 inch sewers which serve this Property to accommodate the projected flow for 32 homes in the Torch Hill Project. With regard to the Developer's request for a sidewalk waiver along Seminary Ave., the Director of DPWT granted the waiver because there was no existing infrastructure to which any sidewalks could connect. (County Ex. 4B). However, the Director denied the sidewalk waiver along the new public roads within the development, finding that connectivity would be important for residents. (*Id.*). Given that the waiver of sidewalks had been addressed, DPR and DPWT recommended approval of the Redlined Development Plan. (*Id.*). When asked about the position of Traffic Planning and Traffic Engineering Section of DPWT regarding the impact of the Torch Hill Project on the 'F' intersection at Seminary Avenue and Falls Rd., Mr. Patel was not able to provide specific information. However, he did verify that Kristoffer Nebre handled the review for DPWT.

Ms. Imwiko testified for REC and stated that site specific comments which were raised as a result of the DPC, including labeling of easements and other changes, were made on the Redlined Development Plan. (County Ex. 6A). As a result, REC recommended approval of the Redlined Plan. (County Ex. 6B).

Steve Ford testified on behalf of 3 departments within DEPS: (1) Ground Water Management ("GWM"); (2) Stormwater Management ("SWM"); and (3) Environmental Impact Review ("EIR"). GWM provided a comment dated October 6, 2021 to clarify Note 15 on the Development Plan to state that the existing sewage holding tank which serves the existing home (tenant house), will be pumped and abandoned when the home is connected to the public sewer system. (County Ex. 7). On behalf of SWM, Andrew Fish, PE approved the Concept SWM Plan

on July 13, 2021 as confirmed by a SWM comment dated April 21, 2022. (County Ex. 8).

EIR provided DPC comments dated November 3, 2021 referencing the review of a Forest Buffer Variance, Forest Conservation Variances and an Alternatives Analysis as well as redesign of SWM Facility #1. (County Ex. 9A). Subsequently, EIR provided a HOH comment dated April 26, 2022, which requested a change to Note #17 and to clarify the ownership of the Forest Buffer Easement and Forest Conservation Easements. (County Ex. 9B). Mr. Ford acknowledged that those changes were made on the Greenlined Development Plan.

Finally, Mr. Ford verified that the Director of DEPS had approved the Developer's request to remove 16 of 90 specimen trees as set forth in the Director's letter dated April 15, 2022. (County Ex. 10). Mr. Ford testified that the Application for Special Variance met the required factors in BCC, §33-6-116(d) and (e) and that the Developer would be meeting its obligation to mitigate the 12 native trees in fair or better condition by planting 24,750 sf (0.57 acres) of forest onsite in the open meadow portion of the Forest Buffer Easement.

Testifying on behalf of DOP were Ms. Kulchytska and Ms. Nugent. DOP provided a HOH Report dated April 26, 2022 which provided DOP's detailed review of the Redlined Development Plan. (County Ex. 11A). In response to DOP's DPC comments (County Ex. 11F), the Developer provided a point-by-point response and made DOP's requested changes to the Development Plan. (County Ex. 11D). In particular, DOP reviewed and approved a School Impact Analysis ("SIA") with a filing date of September 14, 2021. (County Ex. 11B). Ms. Kulchytska explained that the projected enrollment for Riderwood Elementary School, Ridgely Middle School and Dulaney High School were under the State Rated Capacity ("SRC") at 96.89%, 102.80% and 97.28% respectfully. Ms. Kulchytska also stated that DOP reviewed the Redlined Pattern Book dated April 21, 2022 and found that it provided the architectural elevations of the models to be constructed

and that it met all of the requirements of the Residential Performance Standards in BCZR, §260.

Prior to the Director of DPWT granting in part, and denying in part, the Developer's request for a sidewalk waiver, the Director of DOP had provided a letter of support for both requests dated November 1, 2021. (County Ex. 11C). Ms. Kulchystka acknowledged that Seminary Avenue is a scenic route and that the Developer had provided DOP with a Scenic Route Report which demonstrated both the existing and proposed view shed from Seminary Avenue. She stated that DOP was satisfied with the Report. (Dev. Ex. 8).

Finally, the DOP HOH Report addressed the Special Variance Petition as required under BCZR, §4A02.4.G.2 and stated that DOP deferred the request to the DPWT as it was due to the F-rated intersection at Seminary Avenue and Falls Rd. and to the right-of-way widening as requested by DPWT. (County Ex, 11A, p. 2). Upon inquiry, Ms. Nugent explained that the DOP's policy is to defer such decisions to DPWT as the department with expertise in reviewing traffic impact studies and improvements to intersections. Ms. Nugent added that the DOP Director had reached out to DPWT in regard to Special Variance but was not successful in obtaining an answer.

At the request of the undersigned, on Day 3 of the HOH, Kristopher Nebre, PE, Engineer III of Bureau of Traffic Engineering and Traffic and his supervisor, Angelica Daniels, Bureau Chief of Traffic Engineering and Transportation Planning testified. As an Engineer III in Traffic Engineering and Traffic Planning Section of DPWT, Mr. Nebre's duties include handling traffic control inquiries from citizens, reviewing traffic signal construction plans and reviewing traffic impact studies.

By way of background, Ms. Daniels acknowledged that one of the responsibilities of Transportation Planning is to provide technical assistance to the DOP and to evaluate and recommend specific projects in anticipation of future transportation, land use and economic

development needs. (See Balto. County Website, Public Works, Traffic Engineering). Except for the eastbound private road coming out of St. Paul's Schools, Ms. Daniels explained that Falls Rd. and Seminary Avenue are State roads, and the signal at Falls/Seminary intersection is also owned by the State. (County Exs. 5A). As a result, the State, not the County, has jurisdiction to undertake work to physically improve those roadways and/or to make changes to the signal timing or, the State could approve plans by a developer to improve the roadways.

Mr. Nebre explained that the County uses the 'loaded cycle methodology' ("LCM") under the Highway Capacity Manual (1965). He stated that the County is the only jurisdiction in the United States which still uses that method to rate intersections. Under the LCM, the Traffic Engineering/Planning section employs a team of people to perform traffic counts at intersections during a two-hour period to evaluate each approach during both morning and afternoon peak hours. A traffic cycle becomes 'loaded' if on a green light, the last vehicle in line at the light does not get through the intersection. Stated in percentages, failing movements drive the assigned rating; an 'F' rated intersection has a load factor of 86-100%. (See County Website, DPWT). For intersections rated D, E and F, Mr. Nebre explained that DPWT conducts annual traffic counts to reevaluate the ratings each year. For intersections rated A, B and C, the counts are conducted every 3 years. Although he does not determine the boundaries for traffic sheds, he verified that the Property is only included in the traffic shed for Falls/Seminary intersection, and not the traffic sheds for Falls/Greenspring Valley or Falls/Joppa Rd., both of which are also failing intersections.

In regard to Falls/Seminary intersection, based on the actual traffic counts conducted by the County under the LCM, it was rated as an 'F' intersection. Mr. Nebre stated that it has been an 'F' intersection since he began working in the County in 2009. He clarified that the approaches causing the 'F' rating was westbound in the peak morning hours (86%), and eastbound in the

afternoon (90%) coming from St. Paul's Schools.

Mr. Nebre reviewed the Traffic Impact Analysis ("TIA") prepared by Mr. Cornelius. (Dev. Ex. 14). Mr. Nebre was able to explain his email dated December 22, 2021 wherein he requested more information from Mr. Cornelius as to how the level of service at the intersection would be improved from a loaded cycle standpoint and his comment about the proposed condition eastbound 'remov[ing] green time." (Dev. Ex. 17). In regard to the level of service, Mr. Nebre explained that he wanted to understand what the traffic impact from the Torch Hill Project would be on the intersection and that if the proposed improvement would make the intersection better, that would be positive. In regard to the eastbound traffic, Mr. Nebre recalled that the Developer was proposing signal changes for the eastbound traffic out of St. Paul's Schools but that, in his view, those proposed changes would reduce the amount of time the signal would remain green. He added that ultimately, any signal timing changes would need to be approved by the State Highway Administration ("SHA").

Mr. Nebre explained that the 'district standard' under BCZR, §4A02.4.G.1.a is to determine whether the traffic generated by a proposed development will have any negative impact on the intersection. If improvements to the roadway is proposed, the issue is whether the proposed improvement would accommodate the additional traffic generated by the development such that it would have a net zero impact on the intersection.

Mr. Nebre testified that, for the westbound approach, the Developer here has proposed to lengthen the left turn lane 190 ft. Mr. Nebre agreed that 190 ft. would accommodate 8 additional vehicles. He noted that SHA approved the proposed left turn lane extension on October 19, 2021. (County Ex. 5B). On behalf of DPWT, Mr. Nebre agreed that the proposed left turn lane extension will not make the Falls/Seminary intersection any worse such that the net impact from traffic

generated by Torch Hill development at the intersection would be zero. He also acknowledged receiving Mr. Cornelius' letter dated March 4, 2022 to which he responded by email dated April 28, 2022. (County Ex. 5A, 5C). He testified that, even with the proposed left turn lane extension, the Falls/Seminary intersection may still be rated a level of service of 'F' but that it will be reevaluated each year.

DEVELOPER'S CASE

Stacy McArthur was admitted as an expert in landscape architecture, in BCZR, and in BCC Titles 32 and 33 including specimen trees ("STs"). (Dev. Ex. 4). Ms. McArthur testified that, in the past 35 years, she has worked on at least 100 development projects. For this project, she began her work in May of 2020 and has been to the Property many times. She explained the development proposal in detail as shown on both the Redlined Development Plan and the Greenlined Development Plan. (Dev. Exs. 1, 2). She also created the Pattern Book. (Dev. Ex. 3).

Using an aerial geographic information system, ("GIS") photograph, she explained that the Property is inside the Urban Rural Demarcation Line ("URDL") and will connect to public water and sewer. (Dev. Ex. 5). The aerial photograph shows that the Property is irregularly-shaped, most unimproved parcel located on the corner of Seminary Ave. and Mays Chapel Rd. (*Id.*). Mature trees in an existing forest provide a natural screening along Seminary Ave. and will be protected in a Forest Conservation Easement. (Dev. Ex. 6). An existing residential structure which is proposed to remain, fronts on Seminary Ave., and is accessed by a driveway. The existing driveway is proposed to be removed, grass will be planted, and a new public road will be constructed on the western side of the home to provide access to the development.

Ms. McArthur described the Property as 42.44 acres. It is zoned Density Residential ("DR" 1) which allows for 42 units. However, a covenant was entered into with Meadows at Greenspring

community wherein it was agreed that the maximum number of units would be 32. The Redlined Development Plan shows the changes/additions/corrections requested by the County agencies during the review process. (Dev. Ex. 1). The Greenlined Development Plan includes the Redlined Development Plan in its entirety, and corrects, at the request of DEPS, that the Forest Buffer and Forest Conservation areas will be owned by a private homeowner's association and that Lot 22 extends into the Forest Buffer and Forest Conservation Easements. (Dev. Ex. 2). The only other addition to the Greenlined Development Plan was a note requested by DOP that the Pattern Book will be updated when a builder is selected. (Dev. Ex. 2).

A colored rendering of the Torch Hill Project was provided. She testified that it was consistent with the Greenlined Development Plan. (Dev. Ex. 7). It shows 16 acres of the Forest Buffer and Forest Conservation areas will be preserved by recorded easements. There will be mitigation plantings through reforestation onsite. The layout uses the existing stream crossing. Some lots will extend into the environmental areas. Two (2) SWM devices will be installed to control both water quality and water quantity. Parking for the homes will be provided via garages, driveways and on-street parking. On the western side, between the Property and Mays Chapel Rd. is a strip of land which will be protected by a Land Preservation Trust Easement. (Dev. Exs. 1, 2). Between Lots 4 and 5, there is a wetland area which will remain.

Ms. McArthur opined that the Torch Hill Project meets all of the Residential Performance standards in BCZR, §260 *et seq*. including: retaining existing quality vegetation; integrating the existing home into the development; coordinating building design and layout with existing topography; retaining the existing landscape buffer and adding trees, shrubs and vegetation; and providing for a smooth transition between neighborhoods. She further opined that the Torch Hill Project meets all development regulations in the BCC.

One setback Variance is being requested for the 2-story existing home on Seminary Avenue. She explained that the existing house was constructed between 1940-1950. If required to meet the front yard setback of 25 ft. applicable to the DR zone, the Petitioner would suffer a practical difficulty because the house would have to be demolished.

Ms. McArthur prepared an initial Forest Conservation Variance Application dated August of 2021 stating that 90 STs were on-site and requesting that eleven (11) of those STs be removed. (Dev. Ex. 9). After review by DEPS, the site layout was modified in order to retain additional forest and/or STs. Specifically, in order to retain the forested area north of Lot 22, STs would need to be removed. In addition, a retaining wall near Lot 1 was proposed to be constructed but will require the removal of STs. In order to use and incorporate the existing stream crossing into the design layout, STs would need to be removed in that location. On Lot 5, retention of the wetland area permitted the retention of a ST. As a result of the changes to the site layout, an Amended Forest Conservation Variance Application was filed in February, 2022 requesting that 16 STs of the 90 STs be removed. She indicated that, all attempts would be made not to damage the critical root zones ("CRZ") of 4 of those 16 STs.

Analyzing the factors required under BBC, §33-6-116(d) and (e), she testified that while BCC, §33-6-116(d)(1) is not applicable, the variance request satisfies both (d)(2) and (3) because the 90 STs are scattered throughout the Property which provides a unique circumstance not attributable to the general condition of the neighborhood, and the STs are not consolidated in any particular forest area. The removal of 16 STs will not alter the essential character of the existing neighborhood as the neighborhood is already built-out.

In regard to BCC, §33-6-116(e)(1), the Forest Buffer and Forest Conservation areas to remain will provide better water quality than the 16 scattered STs, 4 of which are in poor condition;

the request to remove the STs is due to limited developable areas and modification of original site layout, neither of which arose from a condition or circumstance caused by the Developer. Finally, within the spirit and intent of Article 33, only 12 of the 16 trees are in fair condition or better and 4.1 acres of reforestation and ST mitigation plantings will be provided on-site.

On cross examination, Ms. McArthur acknowledged that floodplains and wetlands exist in the middle of the Property. A floodplain study was accepted for filing by the County. An Alternatives Analysis was approved by DEPS in January, 2022 and covered all Forest Buffer, floodplain and wetland impacts.

Mickey Cornelius, PE was accepted as an expert in traffic engineering and in the BCZR. (Dev. Ex. 12). Using County records, Mr. Cornelius researched the traffic shed for this Property as depicted by County Basic Services Map and confirmed that it is within the failing traffic shed for Falls Rd/Seminary, but not within the traffic shed for Greenspring Valley/Falls Rd. or Joppa Rd./Falls Rd. (Dev. Ex. 13). He explained that the Property falls within that the County-determined traffic shed because 50% of the trips generated by the 32 homes will proceed through that failing intersection. He also acknowledged that Falls/Seminary intersection has been rated as an 'F' intersection on the Basic Services Map since at least 2000. There has been no initiative to improve it. (Dev. Ex. 33).

At the request of the County and SHA, while not customarily required for a 32-lot development generating 50 or less peak hour trips, but because the Property is located within a failing traffic shed, Mr. Cornelius prepared a TIA. (Dev. Ex. 14). The TIA was approved by SHA by letter dated October 19, 2021. (County Ex. 5B). In seeking DPWT's approval, Mr. Cornelius wrote to Mr. Nebre providing additional information as requested. (County Ex. 5C). Mr. Cornelius followed-up by email to Mr. Nebre on March 16, 2022, to which Mr. Nebre responded in an email

dated April 28, 2022. (County Ex. 5A).

As part of the TIA, the County insisted that 7 intersections be studied, not just Falls/Seminary. (Dev. Ex. 16). Mr. Cornelius explained that in rating intersections, the County uses the 'loaded cycle methodology' and is purportedly the only jurisdiction in the country to do so. He explained that this method requires observing and counting the number of vehicles which are able to proceed through an intersection on a green light. Unfortunately, he stated that this method is limited because it cannot predict future traffic conditions (i.e. from a proposed development). (Dev. Ex. 14, p. 7). Conversely, SHA applies the Critical Lane Volume ("CLV") and Highway Capacity Manual ("HCM") methodologies. Under both CLV and HCM analysis, the Falls/Seminary intersection is rated as a 'D' intersection during the peak morning hours, and 'C' during evening peak hours. (Dev. Ex. 14, pp. 14-15).

The trip generation rates from the Institute of Transportation Engineers ("ITE"), Trip Generation Manual (10th Edition), during projected peak hour trips for 32 single family detached homes, is 28 trips in the morning peak hour, and 34 trips in the evening peak hour. (Dev. Ex. 14, p. 9). Background traffic conditions were calculated to allow for 1.5% annual traffic growth along Falls Rd. He indicated that Seminary Ave. has not experienced a traffic growth over the past 10 years. (*Id.*). Mr. Cornelius testified that 40% of the projected trips from Torch Hill Project would travel east on Seminary Ave., with 60% traveling west. He stated that this results in less than one (1) vehicle per signal cycle being added to the Falls/Seminary intersection.

Mr. Cornelius opined that based on the TIA, the failing traffic movement was westbound on Seminary Ave approaching the intersection. The eastbound road at that intersection comes from St. Paul's Schools and is privately owned. To accommodate the additional vehicles from the Torch Hill Project headed westbound, the Developer proposes to extend the left turn lane 190 ft.

He explained that 190 ft. is the length needed to accommodate 8 additional vehicles. (Dev. Ex. 15). [1] Mr. Cornelius stated that there is sufficient right-of-way to meet the proposed improvement. He added that the queues will be reduced by 500 ft. (Dev. Ex. 14, p. 18).

In regard to the request for Special Variance, Mr. Cornelius explained that the 'district standard' set forth in BCZR, §4A02.4.G.1.a, is to show that there will be no impact from the development on the 'F' rated intersection. In his opinion, without the proposed left-turn lane extension, the 31 new homes would have only a negligible impact in that Torch Hill Project will only generate 1 vehicles every 5 minutes in the morning peak hours, and 1 vehicle every 8 minutes in evening peak hours. With the proposed left turn lane extension, there will be no impact on the intersection. As a result, in his opinion, the Special Variance should be granted.

John Motsco, PE was accepted as an expert professional engineer, in the BCZR and in the BCC. He explained that the Torch Hill Project would be served by connecting to the public gravity-fed sewer system at manhole 59915 which is located between proposed Lots 27 and 28. He testified that DPWT confirmed via email dated September 2, 2021 that capacity existed for the 32 proposed homes. (Dev. Ex. 19).

PROTESTANT'S CASE

The first witness to testify for the Protestants was Randall Grachek, PE an environmental engineer employed by NewFields, Inc. Although he is not licensed as a professional engineer in the State of Maryland, Mr. Grachek was previously accepted as an expert before the OAH in Case No.: CBA-20-006, *In the Matter of CPC Falls Road, LLC (CPC Falls Road Project/Bluestem)* ("*Bluestem*"). As such, in this case, he was likewise admitted as a professional engineer, in waste water engineering, in the evaluation of sewer systems and their capacity. (Prot. Ex. 2).

[1] The TIA states extension is 150 ft. until it was discovered by the engineers that the roadway could accommodate another 40 ft.

Mr. Grachek explained that Baltimore County has a gravity-fed sewer system with three (3) main trunks lines (Jones Fall; Roland-Run; Towson Run) which flow into the interceptor line under Lake Roland and then out to Baltimore City waste water treatment plants. While he has not visited the Property since the *Bluestem* case, upon his review of the sewer maps provided by the County, the sewage from the proposed project will end up in the Lake Roland interceptor. (Prot. Exs. 4, 5). The County data obtained by Protestant's counsel for the Roland Run interceptor was for 2019 and designates each service area by number, provides the acreage, as well as both the numbers for the upstream and downstream manholes and the coefficient for each pipe. (Prot. Ex. 6).

As in the *Bluestem* case, Mr. Grachek referred to a complaint filed on July 26, 2005 by the Environmental Protection Agency ("EPA") against Baltimore County in the United States District Court of the District of Maryland, Northern Division, Case No.: 1:05-cv-02028-AMD, regarding the discharge of tens of millions of gallons of untreated wastewater containing raw sewage into navigable waters and waters of the State beginning in 1997. (Prot. Ex. 8). Those waters included Towson Run, Lake Roland and the Jones Falls. The lawsuit resulted in a Consent Decree ("CD") dated September 21, 2005 in which the County was provided a legal framework and direction to eliminate sanitary sewer overflows ("SSOs"), the term used to describe when a sewer pipe reaches overcapacity causing sewage to flow into waterways. (Prot. Ex. 7). Mr. Grachek explained that, under the CD, the County was charged with conducting a full evaluation of the system, inspecting it to determine the condition of the pipes, and modeling it with different weather events to determine whether the pipes were at overcapacity. Toward that end, the County hired consulting engineering firm Rummel, Klepper & Kahl, LLP ("RKK") to perform the study. RKK evaluated, inspected, and modeled the system using software to input data showing where the pipes were at

capacity during both dry and wet weather events. (Prot. Ex. 9, 10). It showed 541 defects in a single trunk line (Sewer ID 6888-6887). (Prot. Ex. 18). Specifically, RKK studied 5 different storm events: (1) 2-Year, 6-hour storm; (2) 2-year, 24-hour storm; (3) 10-year, 6-hour storm; (4) 10-year, 24-hour storm; and (5) 20-year, 24-hour storm. (Prot. Ex. 10). RKK prepared a Long Term Capacity Report dated November, 2012 ("RKK-LTC 2012 Report").

Mr. Grachek clarified that he did not review the RKK modeling but assumed it was correct. He also did not personally investigate or perform his own evaluation of the sewer system but relied upon the results in the RKK-LTC 2012 Report. Mr. Grachek emphasized that the RKK-LTC 2012 Report recommended that the County take corrective action, depending on the storm event, which actions included installing *relief sewers* as shown by the red lines on the maps attached thereto. For the 10-year, 6-hour event, the 10-year, 24-hour event, and the 20-year, 24-hour event, he stated that the RKK-LTC 2012 Report specifically *required* that a relief sewer be installed between manholes ("MH") 6950 and 22009 of various lengths in linear feet, depending on the storm. (Prot. Ex. 10, p. 14). He explained that a relief sewer pipe is a storage unit which may include an underground vault or additional parallel piping designed to temporarily manage water during these storm events. The relief sewer recommended to be installed between MH 6950-22009 is in Essex Farm Park (the "Essex Farm Relief Sewer"). (Prot. Ex. 11).

He explained that the RKK-LTC 2012 Report also recommended upsizing a 10-inch pipe to an 18-inch pipe as shown by a pink line on the maps attached thereto. (Prot. Ex. 10, p. 14). Finally, the RKK-LTC 2012 Report at Table 6.1 recommended that, in conjunction with installation of the relief sewer, certain manholes be sealed as reflected by yellow circles on the maps. (Prot. Ex. 10, p. 14). He also showed a 2019 photograph of manhole 6888 with its lid ajar which in his view, is due to the surcharge pushing out the manhole cover. (Prot. Ex. 17).

Mr. Grachek researched on My Neighborhood GIS to determine whether the Essex Farm Relief Sewer proposed in the RKK-LTC 2012 Report had been installed and he discovered that it had not. He reviewed an email dated April 29, 2022 from the Chief, Sewer Design Section of DPWT, which also confirmed that the Essex Farm Relief Sewer had not been installed by the County. (Prot. Ex. 16). Mr. Grachek acknowledged that he only investigated whether the Essex Farm Relief Sewer had been installed; he did not know whether the County had performed any other improvements pursuant to the CD. He did not request nor did he review any Certificates of Completion for work performed by the County.

Additionally, he also reviewed a 2019 evaluation by the County of the sewer pipes and opined that the County failed to consider the degradation of each pipe in evaluating their capacity, as shown by the fact that the manning coefficient on the chart remained at .013 for each pipe. (Prot. Ex. 6). He explained that the manning coefficient relates to how rough or smooth the inside of each pipe is. With this data, he opined that the County did not evaluate the pipes for wet weather events. He further opined that this data shows that the Lake Roland interceptor pipe is not a good design, is at overcapacity, will always leak, and in his opinion, must be replaced. Mr. Grachek did not conduct any investigation or evaluation of the sewer system himself, nor did he do any modeling.

Mr. Grachek also reviewed the County's water sampling results from Lake Roland and noted that the sampling from May 23, 2022 indicated that E coli levels were greater than 2,420. (Prot. Ex. 20). He stated that the Code of Maryland Regulations ("COMAR") sets the geometric mean standard at 126. (Prot. Ex. 19). While acknowledging that E coli levels were only 43 on June 1, 2022, and 13.8 on June 15, 2022, he opined that the 2,420 result on May 23, 2012, could only have been the direct result of sewage leaking into Lake Roland from the interceptor. He

believed these levels prompted the County to erect 'Stream Sense' signs at Lake Roland in 2019 warning residents about SSOs. (Prot. Ex. 21).

For the Torch Hill Project, he stated that for the 32 proposed units, the sewage system could be designed using one of two methods: (1) 90 gal/per day per resident; or (2) 150 gal per bedroom per day. He calculated a normal flow from the Torch Hill Project would be 12,000-14,000 gal per day. He then opined if the sewage flow from the Torch Hill Project was the only additional flow into the existing sewer system, it would not have a negative impact. However, he added that if there were many developments over time, and no improvements were made, it would overburden the system which already has known defects. Accordingly, in his opinion, based on industry standards, he would not add flow to this system which is already discharging. He agreed that his opinion is based on the 2012 results in the RKK-LTC 2012 Report.

The next witness to testify was Beth Miller, a member of the executive committee for Green Towson Alliance, a group created in 2015 to monitor development in the County. Ms. Miller investigated development applications within the Jones Falls Sewershed since 2012. She created a chart listing developments which were proposed to be developed, were under construction and were existing. (Prot. Ex. 24). The chart was last updated on September 14, 2020. It lists the estimated sewage for each development based on square feet of the particular project.

DEVELOPER'S REBUTTAL CASE

Mickey Cornelius provided rebuttal testimony that the document provided by Protestant entitled *Methodology Used To Determine Geographic Limits of Traffic Areas Around Deficient Intersections* (Prot. Ex. 1) is from an unknown source and it does not provide the 'district standard' in BCZR, §4A02.4.G.1.a. Mr. Cornelius stated that the district standard in BCZR, §4A02.4.G.1.a is not the LCM but whether the development results in a net zero impact to the failing intersection.

Protestant's document is used to determine traffic sheds around failing intersection. The traffic shed here was verified on maps maintained by DPWT.

John Motsco, PE also testified in rebuttal to respond to Mr. Grachek's testimony concerning the capacity of the County sewer system in the Jones Falls Sewershed. Mr. Motsco stated that Mr. Grachek relied heavily on the RKK-LTC 2012 Report as the basis for his opinion that each one of sewer repairs recommended therein was required to be performed by the County. (Prot. Ex. 10). Mr. Motsco explained that the RKK-LTC 2012 Report contains a list of suggested repairs and was only Step 2 of the Consent Decree process. Mr. Motsco stated that those suggested repairs were only a non-binding, guide based on extreme weather events, and were not required to be performed under the CD for the Jones Falls Sewershed. (Prot. Ex. 7). He explained that the actual required repairs were approved by both EPA and Maryland Department of Environment ("MDE"), and are contained in the Sewershed Repair, Replacement and Rehabilitation ("SRRR") Plan dated December, 2012 (the "2012 SRRR Plan"). (Prot. Ex. 9). Additionally, a Performance Assessment Report dated May 26, 2021 was prepared by RJN Group, Inc. and details the 2012 SRRR Plan work performed by the County ("the 2021 Performance Assessment Report"). (Pet. Ex. 25).

Using Map 6-1 entitled *Sewer, Manhole and Hydraulic Corrective Action Recommendations* which was attached to the 2012 SRRR Plan, Mr. Motsco explained that Map 6-1 depicts the required sewer repairs for the Jones Falls Sewer Shed, and shows by way of a light blue line, the direction of sewage flow from Manhole 59915 to which the Torch Hill Project would connect, as it travels south through the sewer system. (Pet. Ex. 22). The yellow-shaded area on Map 6-1 contains sub-sewer sheds which were determined by the RKK-LTC 2012 Report to exhibit excessive inflow and infiltration ("I&I") as a result of storm water entering the sewer

system. Additionally, he stated that a valve at Texas Station was found to be leaking 100,000 gallons per day of raw sewage into the Jones Falls Watershed. The repairs for that sub-sewer shed area included relining sewer pipes and reconstructing/relining manholes. The sewage from Torch Hill Project will not go through the yellow sub-sewer sheds which is upstream from the Property. All of the required improvements within the yellow sub-sewer sheds comprising approximately 100,000 linear feet have been performed as confirmed by the Certificates of Substantial Completion. (Pet. Ex. 23). Mr. Motsco opined that those improvements, as well as the repair of the Texas Station valve, would increase sewer system capacity downstream during wet weather events, thereby reducing the potential for SSOs.

The area of Essex Farms Park on Map 6-1 is located at the junction of meter basins BC11, BC07 and BC06. Under the 2012 SRRR Plan, the extent of the required repair is only a lining for that sewer pipe (not a relief sewer) and that lining has not been installed. Within the Torch Hill sewage path (blue line on Map 6-1 of the 2012 SRRR Plan), the improvements proposed were only linings and reconstructions under SRRR Plan; no relief sewers or upsizing of pipe sizes were required to be performed in the sewage path. Based on the County Quarterly Reports and Performance Assessment Report, he stated 'almost all' sewer work within the Torch Hill sewage path (blue line) has been performed. (Dev. Ex. 22).

For the Torch Hill Project, Mr. Motsco testified that the maximum sewage peak flow would be 10,000-15,000 gallons per day. Taking into account the Texas Station valve repair alone, he opined that the sewer system has more than enough capacity to accommodate the sewage flow from this Project. The basis for his opinion was the County's confirmation via email from David Bayer of DPWT dated September 2, 2021, that the connection to Manhole 59915 has adequate capacity to service the 32 proposed homes. (Pet. Ex. 19).

Mr. Motsco also explained the Performance Assessment Report for the Jones Falls Sewershed prepared by RJN Group, Inc. dated May 26, 2021 was Step 4 of the CD process (the "2021 Performance Assessment Report"). (Dev. Ex. 25). The 2021 Performance Assessment Report monitored and analyzed the performance of the 2012 SRRR Plan required improvements to determine if they were successful. The conclusion reached was that the work was performed and that the overall system capacity has been improved.

In regard to the photograph of Manhole 6888 which Mr. Grachek opined needed repair. Using My Neighborhood Maps, Mr. Motsco located MH 6888, went into the field to take a photograph of it, along with a photograph showing that it was cast in February of 2020. (Dev. Ex. 24). Using his recent photographs, Mr. Motsco testified that the Protestant's photograph from 2019 did not reflect the current condition of the MH as it had obviously been repaired.

In regard to E coli readings in Lake Roland, he testified that E coli comes from many sources, including animals, and that a determination cannot be made that the results came from the sewer system. He determined there were 5 testing locations in Lake Roland which was consistent with the 5 testing results on Baltimore County website as produced by the Protestants. (Dev. Ex. 26). Upon further investigation, he stated that the County, through Environmental Health Services ("EHS"), regularly conducts water sampling at all of its recreational areas including bathing beaches and public swimming pools to warn public of health risks. (Dev. Ex. 27).

In Mr. Motsco's opinion, the source of contamination for E coli cannot be directly attributable to the sewer system. E coli comes from both human and animal sources. The sampling results do not distinguish between those sources because the purpose of the sampling is to warn people if <u>any</u> E Coli exists. He described Lake Roland as an area of high community use and has a dog park in the area where sampling occurs. In regard to the Stream Sense sign photos relied

upon by Mr. Grachek, Mr. Motsco did not observe any Stream Sense sign at Lake Roland when he was there the day before his rebuttal testimony. (Dev. Ex. 29). Mr. Grachek has not visited Lake Roland since 2019. Baltimore County provides notice to the public of water advisories and closings but no such advisory or closing was noted on the County website for Lake Roland. (Dev. Ex. 30).

Mr. Motsco testified that the Jones Falls Sewershed comprises 40 square miles, with 67,000 people living within its boundaries, but only 1/3 of that area was served by public sewer. (Dev. Ex. 28). That leaves 2/3 of the Jones Falls Sewershed area (45,000 people) who served by private septic systems as shown by the hatching on the map of the private septic systems outside of the URDL. (Dev. Ex. 28). With regard to the sewage issues, he opined that the Torch Hill Project complies with all rules, laws and regulations; he did not see any non-compliance warranting disapproval of the Greenlined Development Plan.

In cross examination, Mr. Motsco stated that he had not reviewed the County's sewer capacity analysis for individual developments. (Prot. Ex. 6). While he acknowledged that the County evaluates sewer capacity for each development based on dry weather conditions, this analyses is not inconsistent with the CD. (*Id.*). The CD directed the County to analyze the sewer system in both dry and wet weather, but did not require upgrading or improving the system based on a particular wet weather model (storm event). Mr. Motsco agreed that the goal of CD was to eliminate SSOs through the repair and maintenance of the existing sewer system. Under the 2012 SRRR Plan, there was no need to make improvements to provide for excess capacity because water should not have been leaking into the system in the first place. He reiterated that, under the CD, the County was given the freedom to use their judgment in deciding what repairs/replacements would be performed. In his view, the County has met all requirements of the CD for Jones Falls

Sewershed not just the 4 meter basins/sub-sewer sheds upstream from Essex Farm Park. He added that there is one (1) active SSO at Marnat Rd. located at City/County line caused by an undersized main. This defect must be corrected by the City. Regardless, the Torch Hill Project does not drain through Marnat Rd.

Mr. Motsco agreed that the Essex Farm relief sewer recommended in the RKK-LTC 2012 Report has not been installed because it was not required under the 2012 SRRR Plan to be installed. The maps attached to the 2021 Performance Assessment Report confirm that all necessary repairs and rehabilitation for the Jones Falls Sewer Shed. The Certificates of Substantial Completion were not provided for all Sewer Sheds in Jones Falls but only for 4 meter basins (BC02, BC03, BC04, BC09) which were available on County website. Yet, Mr. Motsco opined that because 100,000 ft of sewer relinings and rehabilitation within those 4 sub-sewersheds/meter basins has been completed, and the repair of the Texas Station valve where previously ¼ million gallons of sewage was passing through that valve had been corrected, those improvements alone would offset any increase in flow from Torch Hill Project. In his view, there would be capacity within the sewer system for this Project. He added that the active SSOs below the Property have "not been active as of late" which in his opinion, is an indication that the repairs upstream have worked. He emphasized that the County was given freedom to determine which areas of the system needed immediate repairs and which repairs should be repaired in the future. He confirmed that the County chose the 2-year and 10 year - 6-hour storm events as its storm models and designed the repairs with those 2 storm events in mind.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

The BCC provides that the "Hearing Officer *shall* grant approval of a development plan that complies with these development regulations and applicable policies, rules and regulations."

BCC § 32-4-229 (emphasis added). In *People's Counsel v. Elm Street Development, Inc.*, 172 Md. App. 690 (2007), the Court of Special Appeals held that if the county agencies recommend approval of a development plan, it is "then up to [protestants] to provide evidence rebutting the Director's recommendations." *Id.* at 703. It should also be noted that in Baltimore County "the development process is indeed an ongoing process, and the hearing officer's affirmation of the plan is just the first step." *Monkton Preservation Association, et al. v. Gaylord Brooks Realty Corp.*, 107 Md. App. 573, 585 (1996). Indeed, the County agencies will continue to review the Developer's evolving plans and construction activities through every phase of the development process to insure compliance with all County laws and regulations.

I. Sewer Capacity.

A. The *Bluestem* Case.

A review of the *Bluestem* Development Plan Opinion and Order by ALJ Beverungen dated August 30, 2019 is necessary here given Mr. Grachek's testimony in both cases and given that the the capacity of the Jones Falls Sewer Shed was the definitive reason for the denial of that development plan by both the ALJ, and as affirmed by the Board of Appeals.

In the *Bluestem* Opinion, the ALJ recited that Mr. Grachek had reviewed "certain documents, primarily the many reports prepared by RKK" and, based on his review of "those documents," Mr. Grachek opined that "it was not acceptable to add any more sewage to the system since it is over capacity at the present time." (*Bluestem*, p. 12). In making his fact findings, the ALJ only references the "evaluation" and "study" conducted by RKK which is the RKK-LTC 2012 Report. Although available at the time of the *Bluestem* hearing, the ALJ does not specifically mention the SRRR 2012 Plan. Relying on the RKK-LTC 2012 Report, the ALJ emphasized that "the Lake Roland interceptor had 541 defects, more than any other pipe segment in the Jones Falls

watershed." (*Bluestem*, p. 23). ALJ Beverungen wrote that RKK "recommended Baltimore County install relief sewers for the Lake Roland & Jones Falls interceptors, which could help to address the overcapacity issues in this area." (*Bluestem*, p. 23).

Assuming the ALJ was provided with both the RKK-LTC 2012 Report, and the SRRR 2012 Plan, it is certain that he did not have the benefit of the 2021 Performance Assessment Report given that it had not yet been created when the Opinion was written. Importantly, the ALJ mentioned in *Bluestem*, that he was not provided with any evidence of repair, replacement or rehabilitation of the sewer system defects by the County:

> There is no evidence in the record to suggest Baltimore County had undertaken such measures, and Mr. Grachek opined 'the systemic problems identified does not warrant additional sewage being added to the systemic problem, even if it were just a little bit'.

(*Bluestem*, p. 23). The *Bluestem* opinion quotes Mr. Grachek's testimony wherein: "he [did] not believe the improvements recommended by RKK have been completed." (*Bluestem*, p. 12). Also informing the ALJ's decision in *Bluestem* was the lack of rebuttal evidence to counter Mr. Grachek's testimony:

> The Developer did not contradict any of the substantial evidence presented on this point by Protestants and it did not present testimony from an engineer or sanitarian to the effect that the existing sewer is sufficient to accommodate existing and proposed demand. Instead the Developer cites the fact the subject property is not identified as deficient on the County's basic services map. I believe such reliance is misplaced.

The *Bluestem* Opinion makes clear that no evidence was provided as to planned or completed repairs, replacements and rehabilitation in the Jones Falls Sewershed. (Prot. Ex. 9, p. 6-18). (Prot. Ex. 29, p. iii). Based on the 2012 SRRR Plan and 2021 Performance Assessment Report we know

that work required to be performed had been performed prior to the *Bluestem* Opinion.

B. 2005 Consent Decree.

At the center of debate between the Parties here is whether the RKK-LTC 2012 Report controls the repairs, replacement and/or rehabilitation of the sewer system, or whether the 2012 SRRR Plan dictates the plan of repair. Mr. Grachek conceded here that he did not know what improvements had been completed by the County since *Bluestem* in 2019; he had only researched whether the Essex Farm relief sewer had been installed at between manholes 6950 and 22009. Because of this, he concluded here, as in *Bluestem*, that the Torch Hill Project should not be approved because the sewer system is still at overcapacity. Conversely, Mr. Motsco opined that the repair, replacement and/or rehabilitation by the County, not only in the area upstream of Essex Farm (i.e. BC02, BC03, BC04 and BC09) but all of the required structural improvements have provided the necessary capacity downstream in the system. Putting aside the expert testimony for a moment and considering only the documents, a review of the CD, the RKK-LTC 2012 Report, 2012 SRRR Plan, and the 2021 Performance Assessment Report actually sheds light on the issue.

CD provides the framework for the County to follow in evaluating, inspecting, modeling and repairing/replacing/rehabilitating the deficiencies found in all 32 Sewersheds in the County. (Prot. Ex. 7). The express purpose of the CD was to "eliminate[e] Sanitary Sewer Overflows ("SSOs"). (Prot. Ex. 7, pp. 3-4; p. 8). SSOs are defined in the CD as "any spill, release, or discharge from the Collection System, including all Building Backups." (Prot. Ex. 7, pp.7-8). The effective date of the CD is the date entered by the Court, or September 21, 2005. (Prot. Ex. 7, p. 5). [2] Both the EPA and the MDE were parties to the CD and were given authority to review the

[2] The CD was signed by Honorable Andre M. Davis on September 20, 2005 which ordered that the Clerk enter the executed CD in the docket and to close the case subject to the Court's continuing jurisdiction to enforce the CD. (See Case No.: 08-0919 file). The copy provided by the Protestant as Protestant Ex. 7 is not signed by the Court.

County's performance by and through quarterly reporting and as otherwise directed therein. (Prot. Ex. 7, pp. 8, 11, 14, 15, 16, 22, 23, 60, 67).

The requirement for the County to prepare the 2012 SRRR Plan is set forth in Section 10.A of the CD. That Section states that upon the County's completion of the sewer system inspection, and after consideration of the monitoring data, the 2012 SRRR Plan would be prepared for the Jones Falls which would serve two (2) purposes:

> (1) describe the deficiencies identified through the sewer system inspection; and
>
> (2) provide for the performance of repair, replacement, rehabilitation or other corrective action necessary to address those deficiencies.

(CD, Section 10.A).

For all 32 Sewersheds, the County had until early 2020 to complete implementation of the SRRR Plans. (Id.). Pursuant to CD - Sections 10.B and 10.D, both the EPA and MDE were required to approve the 2012 SRRR Plan for the Jones Falls Sewershed. Toward that end, Section 10.B of the CD *expressly* states that each SRRR Plan "shall provide for future repair, replacement, and rehabilitation" of the sewer system for each Sewershed by no later than 4 years after EPA and MDE approve each SRRR Plan. That Section further provides that the County had the discretion to 'prioritize' the work to be performed in each Sewershed based on an evaluation of the rehabilitation activities that are expected to contribute most effectively to the prevention of SSOs.

Under the CD, each SRRR Plan was required to: "Identify all corrective actions taken (including the date completed), or to be taken, by Baltimore County (including but not limited to preventative maintenance, repair, replacement, or rehabilitation) to address the deficiencies identified during inspection of the relevant Sewershed." (CD, Section 10.C.iii). The CD further directs that, *while taking into consideration the RKK-LTC 2012 Report analysis performed for*

each Sewershed, the 2012 SRRR Plan for each Sewershed would propose a plan and schedule for implementing rehabilitation and other corrective action determined necessary to correct deficiencies identified during inspection. (CD, Section 10.C.vi).

The CD also permitted the County to determine the range of storm events applicable for each Sewershed. (CD, Section 10.C.viii, ix). Notwithstanding that the RKK-LTC 2012 Report which simulated five (5) different storms and made repair/replacement recommendations based on each storm event, under Section 9.C.ii(b) of the CD, the County chose the 2 yr. and 10 yr./6 hr. storms because they were *more representative* of actual storm events experienced in Baltimore County. (Prot. Ex. 9, p. 6-12, 6-13). This storm selection matters because both the selected repairs, replacements and/rehabilitations, and the performance testing of completed repairs, were based on those 2 model-predicted storm events, and not all 5 storm events in the RKK-LTC 2012 Report.

Moreover, CD Section 10.D unequivocally states that **each approved SRRR Plan shall be incorporated into, and become enforceable under, the CD**. Conversely, the CD, Section 9.C describes each Long-Term Capacity Report as prepared for each Sewershed as an *evaluation* (or study as described in *Bluestem*) comparable to another evaluation (i.e. the 'Inflow/Infiltration Evaluation'). Because the LTC Report is an evaluation/study needed to prepare the SRRR Plan, it was required to be completed prior to the date by which the SRRR Plan for each Sewershed was due, and the County was required to summarize and incorporate the results of each LTC evaluation into each SRRR Plan. (CD, Section 9.C). As background information and data, the RKK-LTC 2012 Report is one of the many appendices of the 2012 SRRR Plan (Appendix L). Conversely, the 2012 SRRR Plan is not an appendix to the RKK-LTC 2012 Report.

When describing each LTC Report as an *evaluation*, CD, Section 9.C.ii directs the County to use "the data and information collected and analyzed" [i.e. inspection (CD, Section 8) and

rainfall/flow monitoring (CD, Section 9] to evaluate whether the projects the County proposes to complete pursuant to CD, Section 10 (i.e. SRRR Plans) will "ensure adequate long-term transmission capacity in the Collection System."

As above, by its express language, the CD unambiguously differentiates between the RKK-LTC 2012 Report and the 2012 SRRR Plan, the former is the precursor evaluation/study containing data collected, and the latter is the actual plan of repair. Given that both documents were written by RKK, and are dated within 1 month of each other, it would make no sense that both provided the approved plan of repair for the Jones Falls Sewershed. It is significant for discussion here that the **2012 SRRR Plan is incorporated into and enforceable as part of the CD**, and was approved by the EPA and MDE as to not only the repairs proposed to be completed, but the time line in which the repairs must be completed. The RKK-LTC 2012 Report is only incorporated into the CD by virtue of it being one of the many appendices to the 2012 SRRR Plan.

C. 2012 SRRR Plan.

Turning next to the language in the 2012 SRRR Plan, it is consistent with the language in the CD, and describes the same 2 purposes for the 2012 SRRR Plan as follows:

> (1) describe the deficiencies in the sewer system (as identified in the RKK-LTC 2012 Report); and
>
> (2) recommend repair, replacements, rehabilitation or other corrective action necessary to address those deficiencies.

(Prot. Ex.9, p. ES-1). The 2012 SRRR Plan specifically acknowledged that model-predicted corrective actions suggested in the RKK-LTC 2012 Report were 'recommendations' and were 'defined' after 'sewer and manhole inspections, smoke and dyed-water testing, and night-time flow isolation investigations.' Some were superseded as follows:

> Some identified structural and condition related corrective actions to correct defects were superseded by the hydraulic

> corrective action recommendations, and these defects will be corrected when the hydraulic corrective actions are completed.

(Prot. Ex. 9, p. ES-1). Both the capacity improvements and the structural condition improvements are shown graphically on Map 6-1 attached to the 2012 SRRR Plan. (Prot. Ex. 9).

After the I&I analysis was conducted, the results were that BC02, BC03, BC04 and BC09 meter basins or sub-sewersheds were exhibiting a high degree of I&I into the sewer system and were contributing to the SSOs. (Prot. Ex.9, p. 6-3). Those meter basins are depicted in yellow-shaded area on Map 6-1 of the 2012 SRRR Plan. Additionally, meter basins BC05, BC07, BC14 and BC16 also revealed excessive I&I flowing into the sewer system. (*Id.*). Because of the high degree of I&I, those meter basins received priority, comprehensive repair and rehabilitation to eliminate the I&I as depicted on the legend on Map 6-1 of the 2012 SRRR Plan. (*Id.*).

Notably, the sewage from those repaired meter basins flows through the Essex Farm area (between BC07 and BC11) where the RKK-LTC 2012 Report recommended a relief sewer be installed (MH 6950-22009) to accommodate more sewage capacity. While it is undisputed that this relief sewer was not installed, the 2012 SRRR Plan (Section 6 – *Corrective Action Recommendation Plan*) does not list it as a required repair/replacement. In fact, Section 6 of the 2012 SRRR Plan explains that detailed corrective actions were *selected* by the County, and approved by EPA and MDE, after the manhole, sewer and capacity deficiencies were inspected.

By way of example, while the RKK-LTC 2012 Report recommended sealing five (5) manholes, the 2012 SRRR Plan more specifically detailed that manholes would be either cleaned; frame seals would be added; inflows would be inserted; manhole linings inserted; manholes would be replaced; frame and cover for manhole would be replaced; and/or the frame and cover of the manhole would be reset. (Prot. Ex. 9, p. 6-7). For sanitary sewer improvements, the 2012 SRRR

Plan directed that the specific improvements were: sewer linings would be inserted; insitu (in place) repairs made; point repairs made (excavate and replace); lateral connection repairs would be made; and/or a combination of these repairs if needed to repair a defect. The exact repairs for both manholes and sewers were also provided by meter basin number in Table 6-5.3 of the 2012 SRRR Plan. (Prot. Ex. 9, p. 6-9). Additionally, it was decided under the 2012 SRRR Plan that improvements for the four (4) pumping stations in the Jones Falls Sewershed would take place, as well as improvements to the force mains within those pumping stations. (Prot. Ex. 9, pp. 6-10, 6-11).

In regard to planned sewer capacity improvements for which a relief sewer is designed, the 2012 SRRR Plan details that capacity in the system would be *improved by virtue of the sewer linings, sealings, manhole linings, and manhole sealings*. (Prot. Ex. 9, p. 6-11, 6-12). The County determined, and the EPA and MDE both approved, that the most logical approach to addressing model-predicted SSOs was to complete the comprehensive I&I reduction *rehabilitation* of the manholes and sewers:

> 1. Complete comprehensive I&I reduction rehabilitation of public manholes and sewers within SSA's exhibiting excessive I&I or other areas that contribute to model predicted SSOs determined by model simulations using the 10-Year/6-hour SCS Type II storm event.
>
> 2. Complete select capacity improvements based on a model simulation of the 10-Year /6-hour SCS Type II storm event.

(Prot. Ex. 9, p. 6-16). Based on this language, it is clear that the County concluded that the specific improvements listed above for the sewers and manholes were the capacity improvements needed upstream from the Essex Farm sewer pipes to comprehensively reduce I&I. The planned capacity improvements were listed by meter basins and include BC02, BC03, BC04 and BC09. (Prot. Ex. 9, p. 6-16).

The 2012 SRRR Plan also confirmed that the timeline for completing the improvements for the Jones Falls Sewershed as contained in the 2012 SRRR Plan, was within 6 years of the EPA/MDE approval as follows:

> 6.15 *Corrective Action Implementation Schedule (CD Ref. P.10.Cvi)*
>
> The recommended improvements to the Jones Falls Sewershed's collection system which are contained in this SRRR Plan are estimated to be completed within six (6) years of the EPA and MDE's approval of this Plan per Paragraph 10.B of the CD.

(Prot. Ex. 9, p. 6-17). The EPA and MDE approved the 2012 SRRR Plan in 2013. (Prot. Ex. 29, p. iii). Those planned improvements, which were already completed as of December of 2012 (the date of the 2012 SRRR Plan), were depicted on Map 6-1. (Prot. Ex. 9, p. 6-18). Consequently, the deadline for completing the 2012 SRRR Plan improvements was 2019.

Lastly, the language in the 2012 SRRR Plan states that remedial work to eliminate SSOs at the 3 County non-pumping stations had been complete. The only active SSO is Marnat Rd. station because the remaining work has not been completed by Baltimore City; the defect in that sewer pipe is on property located in the City. (Prot. Ex. 9, pp. ES-2; 2-2).

D. 2021 Performance Assessment Report.

The 2021 Performance Assessment Report prepared by RJN Group, Inc. ("RJN") provides further evidence that the 2012 SRRR Plan, not the RKK-LTC 2012 Report, provides the detail of the approved work for the Jones Falls Sewershed. It points out that there were actually two (2) relief sewers constructed in the Jones Falls Sewershed, neither of which was for Essex Farms:

> Section 6 of the 2013 SRRR Plan provides detail of the work planned in the Jones Falls Sewershed. Targeted rehabilitation to correct structural defects was completed throughout the Sewershed. Comprehensive rehabilitation to eliminate sources of I&I was completed in SRRR meter basins BC02, BC03, BC04 and BC09.

> Rehabilitation construction in the four meter basins (BC02, BC03, BC04 and BC09) targeted for comprehensive rehabilitation for I&I reduction was performed from 2015 through 2019. Comprehensive rehabilitation construction for I&I reduction in basins BC02 and BC03 began in November 2015 and was completed in September 2018, in basin BC04 construction began in May 2016 and was completed in September of 2019. Two relief sewers were also constructed in Jones Falls to increase the capacity of the system, one near Coppermine Terrace and the other relief sewer was constructed within Towson Town Boulevard and will be put in serving in the future.

The 2021 Performance Assessment Report also informs that the relief sewer for Coppermine Terrace has been completed. (Prot. Ex. 29, p. 12). This 'planned' relief sewer was shown to be effective in eliminating capacity deficiencies and would prevent future SSOs. (Prot. Ex. 29, p. 12). This lens further support for the conclusion that Essex Farm Relief Sewer was not selected as an improvement under the 2012 SRRR Plan.

Moreover, the results of the 2021 Performance Assessment confirmed that the completed rehabilitation projects which occurred between 2015 through 2019, were effective in reducing groundwater infiltration. (Prot. Ex. 29, p. iii). RJN addressed the effectiveness of the repair, replacement and rehabilitation projects as follows:

> 4.0 *Effectiveness of Repair, Replacement and Rehabilitation Projects*
>
> This section evaluates the effectiveness of corrective actions completed in the Jones Falls Sewershed to address capacity and structural issues outlined in the Jones Falls SRRR Plan. The evaluation was performed based on a review of County-provided post-construction inspection records, improvements implemented based on the 2013 SRRR Plan (Section 6.0), and model simulation results using the updated hydraulic model recalibrated based on pre- and post-rehabilitation flow monitoring data.

RJN noted specifically that rehabilitation on public manholes, laterals and sewers within areas that

exhibited excessive I&I reduced model-predicted SSOs. RJN confirmed that the rehabilitation work for I&I removal in BC02, BC03, BC04 and BC09 was completed. (Prot. Ex. 29, pp. 12-13). Certificates of Completion were also provided for the comprehensive work in the area of BC02, BC03, BC04 and BC09 showing that all of that work has been completed upstream of the Essex Farm Park. (Dev. Ex. 23).

From the legend on Map 2 of the 2021 Performance Assessment entitled *Jones Falls Sewershed Repair, Replacement and Rehabilitation Plan, Rehabilitation Completed*, rehabilitation work on manholes and sewers was completed in the Essex Farm area including the following:

* manhole lining (red circle);
* lining and reset frame and cover (teal box, red circle); and
* lining and internal frame seal (orange box, red circle). [3]

It is important to note that the 2021 Performance Assessment Report does not only assess the completed work in BC02, BC03, BC04 and BC09 but also provides the results of pre- and post-rehabilitation flow monitoring which was reviewed by RJN to assess the effectiveness of all of the planned repair, replacement and rehabilitation work including both the pumping stations repairs and non-pumping stations repairs/closures. (Prot. Ex. 29, p. 2). This included an analysis of both dry and wet-weather modeling, and an evaluation of the frequency and causes of SSOs in the Jones Falls Sewershed between 2010-2020. The conclusion was that, after rehabilitation, I&I was reduced in BC02, BC04 and BC09. Any infiltration still shown in BC03 was determined to be caused by private septic systems within the MD Fairgrounds and appeared only with seasonal usage. (Prot. Ex. 29, p. 9). RJN concluded that a valve upstream of BC03 contributed to those results.

Wet weather flow capacity assessment was also conducted by simulating the County-

[3] The electronic copy of Map 2 is clearer than the hard copy contained in the Protestant's Exhibits.

selected 2-year and 10-year, 6-hour storm events. Comparing the pre-rehabilitation models for all 5 storm events in the RKK-LTC 2012 Report showing predicted SSOs, with the post-rehabilitation condition for the 2 and 10-year, 6-hour storm events, the conclusion in the 2021 Performance Assessment Report was that the rehabilitation work decreased both the occurrence and volume of SSOs as follows:

> During wet weather flow conditions in basins where comprehensive rehabilitation was completed, the Jones Falls pre-habilitation condition model predicts eight (8) SSOs for the 2-year, 6-hour, 21 SSOs for the 2-year, 24-hour storms, 23 SSOs for the 10-year, 6-hour storm, 34 SSOs for the 10-year, 24-hour storm, and 39 overflows for the 20-year, 24-hour design storm. (Table 4-1A).
>
> Table 4-1B shows the predicted number of overflows in each meter basin under the post-rehabilitation condition. According to the results, the rehabilitation projects have decreased the occurrence as well as the volume of SSOs in the meter basins where rehabilitation work was completed. The model predicts no overflow for the 2-year, 6-hour, three (3) SSOs for the 2-year, 24 hour storms, four (4) SSOs for the 10-year, 6-hour storm, eleven (11) SSOs for the 10-year, 24 hour storm, and twelve (12) overflows for the 20-year, 24 hour design storm.
>
> Table 4-2 shows the percentage of predicted overflow volume reduced in predicted SSO locations, for each meter basin under the five different storm conditions. For the post-rehabilitation condition, the predicted overflow is reduced between 70% and 100% when compared to the pre-rehabilitation condition.

(Prot. Ex. 29, p. 14). Of specific relevance here is that for the County selected 2 year, 6-hour storm event, the completed work has reduced the SSOs from 8 to zero. Under the 10-year, 6 hour model-predicted storm event, the completed work has reduced SSOs from 23 to 4.

Contrary to Protestant's argument that Map 3 of the 2021 Performance Assessment predicts SSOs along the sewage path from the Torch Hill Project (as drawn by Protestants in yellow) in fact, using the legend on Map 3, no SSOs are shown in red along the sewage path for the 2-year,

6-hour storm. Additionally, no SSOs are shown in yellow along the sewage path for the 10-year, 6-hour storm. [4] The fact that SSOs appear during the model-predicted 2-year, 24-hour storm (orange) (near BC07 into and underneath Lake Roland) or for the 10-year, 24-hour storm (green), is not relevant here because neither of those 2 storm events are the storm events which apply to the County. (See CD, Section 9.C.ii(b)). As a result, Map 3 does not support the Protestant's cause.

On Maps 2 and 3 of the 2021 Performance Assessment, the sewage path from the Torch Hill Project (shown by yellow line created by the Protestants) is consistent with the Developer's sewage flow path indicated by a blue line drawn by the Developer on the Map 6-1 of the 2012 SRRR Plan. (Dev. Ex. 22). [5] On neither of these sewage paths does the sewage from Torch Hill flow; it does not flow eastward and upstream between MHs 6950 and 22009 in the Essex Farm area. At best, the Torch Hill sewage will pass the convergence area of BC06, BC07 and BC11 and then head downstream. But again, the completed repair, replacement and rehabilitation of the upstream sub-sewersheds was approved by EPA and MDE to accommodate any capacity issue between MHs 6950 and 22009.

Mr. Motsco testified that, based on his review of County's Quarterly Reports and the 2021 Performance Assessment Report, 'almost all' of the 2012 SRRR Plan improvements have been completed in the blue sewage path line, including reconstructions and linings to further reduce I&I. (Dev. Ex. 22). However, acknowledged that all of the sewer linings downstream of the Torch

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[4] The hard copy of Map 3 shows the yellow line drawn by the Protestant's for the Torch Hill Project sewage flow. The electronic copy of Map 3 does not have the yellow line/path but is much clearer and easier to read than the hard copy.

[5] The hard copy of Maps 2 and 3 show the yellow line drawn by the Protestant's for the Torch Hill Project sewage flow. The electronic copy of Maps 2 and 3 does not have the yellow line/path but is much clearer and easier to read than the hard copy.

Hill Project, as required under the 2012 SRRR Plan, and which are located in the direct path of sewage flow from the Torch Hill Project, have not been completed. Mr. Motsco confirmed that the remaining downstream improvements only include linings; there are no upgrades in the sizing of pipes, or relief sewers, required downstream of the Torch Hill Project.

Given that the completion date for the 2012 SRRR Plan improvements was 2019, it was not made clear during the hearing why all the improvements have not been completed. It is concerning to the undersigned that the downstream linings (whether for sewers or manhole or both) as required under the 2012 SRRR Plan - *in the direct sewage path for Torch Hill Project* - have not been installed. If linings have been planned, that means the sewers and/or manholes were determined to have defects, and those linings are necessary to correct those defects. While the Developer did not make clear how many downstream linings still need to be installed, or where those downstream linings need to be installed, the point is that the downstream linings need to be installed before any additional sewage from 32 homes in Torch Hill is added to the system. While it may be that 'almost all' of the required work for the Jones Falls Sewershed has been completed, and that DPWT confirmed that sewer capacity exists for the proposed 32 homes, I find that this particular unfinished work is necessary to correct any defects which still exist in the sewage path. (Dev. Ex. 19). Accordingly, prior to connecting the Project to the public sewer system, the completion of all work required under the 2012 SRRR Plan (whether linings for sewers, manholes or both) and which is within the sewage path from Torch Hill Project as shown by the blue line on Developer's Ex: 22, shall be completed as a condition of the Order.

E. E coli in Lake Roland.

Protestant contends that the County's E coli results for Lake Roland are the direct result of sewage leaking from Lake Roland interceptor. Mr. Grachek is not supportive of the Lake Roland

interceptor design and believes it must be replaced. The basis for his opinion is that on May 23, 2022, the County collected water samples from Lake Roland and tested for E coli as it does for other County recreational waterways. The E coli results for May 23, 2022 were in excess of 2420 geo metric means which was far in excess of the COMAR 26.08.02.03-3.A(1)(a) geo metric mean of 126. (Prot. Exs. 19, 20). Between April – June of 2022, the testing results for Lake Roland do show additional dates where the results were both above and below 126. For example, the results on dates immediately following May 23, 2022 shows the geo metric mean was only 13.8 on June 15, 2022, and was only 33.171 on June 1, 2022 – both far below the 126 threshold. If E coli levels are caused by the Lake Roland interceptor, than the geo metric mean would consistently be at higher levels; it would not spike to high and then low levels from week to week. For the results to vary from above the 126 geo metric mean to below, the logical conclusion is that result depends on the extent of the use of Lake Roland Park, which includes a dog park. There was no definitive evidence that the Lake Roland interceptor is leaking, particularly in light of the 2021 Performance Assessment Report which concluded that the approved repairs were effective. To contend that these E coli results are solely from human waste is mere speculation since no testing has made that determination.

There is further information directly countering this point. Mr. Grachek identified the Lake Roland interceptor by MH numbers: 6888 (upstream) and 6887 (downstream) which are both located in flow meter basin TSJF01. (Prot. Ex. 18). He emphasized here, as in *Bluestem*, that Appendix E of the 2012 SRRR Plan (entitled Table 4-3.4 – *Summary of Sewer Defects by Sewer Segment, Jones Falls SRRR – Collection System Investigation*) showed 541 defects for those MH numbers in meter basin TSJF01. (Prot. Ex. 18). This was further support for his position that the Lake Roland interceptor is leaking and must be replaced because it is at overcapacity. However,

the 2012 SRRR Plan explains that Appendix E (Prot. Ex. 18) was the result of manhole inspections using specialized pole mounted manhole camera. (Prot. Ex. 9, p. 4-2). Map 4-1 entitled *Sewer and Manhole Inspections Completed* shows that the Lake Roland interceptor was inspected and reviewed. Appendix E clarifies that in Manholes 6888-6887, 536 of the 541 defects were due to a defective pipe, surface or lining, but that none of the 541 were classified as 'major defects.' (Prot. Ex. 18, p. 22). If the interceptor was leaking, it would be a 'major defect.'

The 2012 SRRR Plan at Table 6-4.2 further reads that with flow meter basin TSJF01, 4 of the manholes were in poor condition and 1 manhole required immediate attention. (Prot. Ex. 9, pp. 6-5, 6-6). Likewise, the sewer segments in flow meter basin TSJF01 at Table 6-4.5 show that of the 28 sewer segments reviewed, 6 were in poor condition and 10 required immediate attention. (Prot. Ex. 9, pp. 6-5, 6-6). Importantly, the 2012 SRRR Plan listed both manhole improvements and sanitary sewer improvements in Appendix O of the 2012 SRRR Plan. (Prot. Ex. 9. p. 6-7). Appendix O was not provided in the Protestant's exhibits. Summarily, the specific sewer segments and manhole repairs for flow meter basin TSJF01 are also listed in Table 6-5.3 of the 2012 SRRR Plan and included:

* 15 in-situ (in place repair);
* 3,226 linear feet of sewer linings;
* 2 point repair;
* 14 lateral connection repair;
* replacing 1 manhole frame and cover;
* installing 4 frame manhole seals; and
* installing 5 manhole linings.

(Prot. Ex. 9, p. 6-9). What is more, according to the legend on Map 2 of the 2021 Performance Assessment Report the work in flow meter basin TSJF01 has been completed. While the Protestant contends that Lake Roland interceptor must be replaced, the legend on Map 2 of the 2021 Performance Assessment Report confirms that no rehabilitation work was recommended in BC31

which is the flow meter basin where Lake Roland and the Lake Roland interceptor is located. (Prot. Ex. 29).

For the reasons set forth herein, subject to the conditions set forth in the Order, I find the sewer system has the capacity to accommodate 32 homes from Torch Hill Project and as such it meets requirements, rules, regulations and County policies set forth in BCZR, §4A02.3.G; BCC, §32-4-102(b); DPW Design Manual Sanitary Sewer; and PAI, Development Plans Review Manual.

II. Special Variance – 'F' Rated Intersection Falls Rd. and Seminary Avenue.

The only witnesses to testify in regard to traffic and the "F' rated intersection of Falls Rd. and Seminary Ave. were Developer's traffic engineer, Mickey Cornelius; Angelica Daniels, Bureau Chief, Traffic Engineering and Transportation Planning of DPWT; and Kristopher Nebre, PE, Engineer III, Traffic Engineering and Transportation Planning of DPWT. The Protestant did not present any lay person testimony or expert testimony in regard to traffic issues. There were no citizens or property owners who testified about traffic.

As a starting point, it is undisputed that both Falls Rd. (MD Rt. 25) and Seminary Ave. (MD Rt. 131) are owned and maintained by the State of Maryland. Additionally, the signal at the intersection of Falls Rd/Seminary Ave. is also owned and maintained by the State of Maryland. Using the CLV and HCM methodologies - both of which are used by SHA - the Falls/Seminary intersection is rated as a 'D' intersection during the peak morning hours, and 'C' during evening peak hours. (Dev. Ex. 14, pp. 14-15). Given that the State does not rate the intersection as failing, the State has not, and likely will not, improved the intersection. Although the County has rated the intersection with an 'F' level of service for over 20 years, Ms. Daniels made clear that the County will not incur the cost to improve a State road. As a practical matter, any improvements

made to this intersection would have to be paid for with private funds by a developer.

BCZR, §4A02.4.G.2 requires the DOP to provide the ALJ with a report prior to consideration of the Special Variance. In this case, DOP did provide the HOH Report but deferred the issue to DPWT due to their expertise with traffic issues. (County Ex. 11A). At the beginning of the hearing, DPR, who typically represents DPWT, was not able to answer questions about traffic or the Special Variance Petition. In the interests of transparency, and to provide needed answers to questions on a central issue in the case, the undersigned requested the testimony from DPWT, notwithstanding the presumption that BCC, §32-4-226(c) and (d) presume that no comment from a County agency means the agency is not opposed to a development plan. Both Ms. Daniels and Mr. Nebre were able to provide answers to questions in regard to the applicable traffic shed, the 'F' rated intersection of Falls/Seminary, the County's use of the loaded cycle methodology, and whether the proposed left-turn lane extension will provide a zero net impact on the intersection. When Ms. Daniels confirmed that one of the duties of Traffic Planning and Traffic Engineering Section of DPWT is to provide technical assistance to the DOP, the deferral by DOP in its HOH Report to DPWT for the Special Variance issue made complete sense.

In regard to the Special Variance provision in BCZR, §4A02.4.G, it requires that the Special Variance Petition not violate the provision's purpose. That purpose is set forth in BCZR, §4A02.4.D.1 as follows:

D. Transportation.

> 1. Intent. The transportation standards and maps are intended to regulate nonindustrial development where it has been determined that the capacity of arterial and arterial collector intersections is less than the capacity necessary to accommodate traffic both from established uses and from uses likely to be built pursuant to this article.

I disagree with the Protestant's argument that the standard to apply in a Special Variance case under BCZR, §4A02.4.G is the LCM. This argument mixes the standard applied by the County to *rate* an intersection, from the standard to apply when a Petition is requested for what is essentially *a waiver or exception* (i.e. Special Variance) from the prohibition on issuing a building permit. The purpose for determining the 'level of service' is to assign a letter grade (i.e. a 'rating') to an intersection, and the purpose of rating an intersection, is to control the issuance of building permits at the outset. The 'F' letter rating is a 'red flag' on the file. The Special Variance, on the other hand, focuses on what impact the particular development will have on the intersection *rated* as *failing*, so that it can be determined whether or not the building permit restriction can be lifted for a project. If the impact from the development is net zero (due to a proposed improvement to the roadway and/or a TIA which calculates the impact as zero), then a waiver of the building permit moratorium can be granted.

And Mr. Nebre was clear in his testimony that in reviewing the TIA he was focused on the impact that the development would have on the intersection of Falls/Seminary to determine whether capacity would exist for the proposed and existing traffic in light of the improvement. He did not need to focus on the LCM rating as the *intersection had already been rated.* He added that if, the proposed improvements could also make the intersection function better, than that would be a good thing. Mr. Nebre is not a professional expert and is not accustomed to testifying in Court. I found his testimony to be objective and credible.

I also find that, based on the testimony of Mr. Nebre and Mr. Cornelius, after the proposed 190 ft. left turn lane extension (Dev. Ex. 15) is constructed, the capacity of the arterial and arterial collector intersections in this traffic shed will not be less than the capacity necessary to accommodate traffic from both established uses and from the Torch Hill Project. Said another

way, I find that, *after* the left turn lane extension is constructed, the demand or impact from the Torch Hill Project (i.e. the trips to be generated plus the existing trips) will result in a net zero impact to the intersection. The uncontroverted evidence was that the failing movement which generated the 'F' level of service rating is the westbound direction and specifically, vehicles queued to turn left on Falls Rd. Because the left-turn lane is too short to accommodate the amount of traffic, it restricts the movement of other traffic heading straight into St. Paul's Schools or right onto Falls Rd. The proposed 190 ft. left-turn lane extension is targeted to address the westbound direction and will accommodate the traffic generated from Torch Hill Project as determined by the TIA. Any delay from the private road eastbound from St. Paul's Schools will be handled by SHA with the signal light adjustment.

Contrary to Protestant's argument, until the County decides that it will no longer apply the LCM methodology, the LCM will still be used by the County to *rate* intersections; this case does not change that. To be sure, LCM is a conservative way to rate intersections and is limited to observations made by traffic counters during a 2-hour window; it does not predict future traffic conditions. Although conservative and limited, in hindsight, the LCM is not a bad thing for the County in regulating development; it stops the permit process until the roadway can be improved. When DPWT conducts annual traffic counts on Falls/Seminary, the level of service may remain at an 'F' rating. If it does, the surrounding community only stands to gain because any future development projects would be required to go through the same process as the Developer here.

But whether Falls/Seminary's *rating* improves or stays the same, the Special Variance does not require a finding that the County's level of service rating will be improved, only that the intersection will be able to accommodate the traffic generated by the Torch Hill Project. This is consistent with the purpose of the Transportation Basic Services Map (above) which is <u>whether</u>

capacity will exist at the intersection to accommodate both existing traffic and that generated by Torch Hill. It is also consistent with the required finding in BCZR, §4A02.4.G.1.a that the demand or impact from traffic generated by Torch Hill, will be less than that presumed by the district standard. In this case, I find that the proposed 190 ft. left-turn lane extension, along with the signal timing changes which SHA will perform, will not only increase capacity, but will reduce delays at the intersection.

Lastly, I also find the Petition for Special Variance will not adversely affect a person whose application was filed prior to the Petitioner's application in accordance with Section 4A02.3.G.2.b, as there was no evidence that any applications for reserve capacity use certificates are on file. The Developer here is not seeking a reserve capacity use certificate here. As a result, that provision is not applicable in this case.

III. Setback Variance.

The Petition for Variance from BCZR, §1B01.2.C.b seeks to allow a 0 ft front yard setback for an existing home which fronts on Seminary Ave. and was constructed in the 1940s-1950s. (Dev. Ex. 6, photos 15 and 16). When the DOP requested that the home remain, it was incorporated into the site layout. The existing home is part of the scenic route on Seminary Avenue as shown in the Scenic Route Study which was approved by DOP. (Dev. Ex. 8).

A variance request involves a two-step process, summarized as follows:

(1) It must be shown the property is unique in a manner which makes it unlike surrounding properties, and that uniqueness or peculiarity must necessitate variance relief; and
(2) If variance relief is denied, Petitioner will experience a practical difficulty or hardship.

Cromwell v. Ward, 102 Md. App. 691 (1995). I find that the Property is uniquely shaped and sized unlike other properties in the area. I also find that the Petitioner would suffer a

practical difficulty and unreasonable hardship if the existing 1940s-1950s home were required to be demolished because it cannot meet current front yard setbacks. I also find that the requested variance relief can be granted in strict harmony with the spirit and intent of the BCZR and without injury to the health, safety or general welfare, particularly in light of the request from DOP to retain the home as well as the lack of opposition from any adjacent property owner.

IV. Forest Conservation Variance.

On April 15, 2022, the Director of DEPS recommended approval of the Developer's request to remove sixteen (16) of the ninety (90) STs as set forth on the Plan to Accompany Forest Conservation Variance Application dated August, 2021 and then as revised in February, 2022. (Dev. Exs. 9, 10, 11). As originally filed, only eleven (11) STs were requested to be removed. In response to DEPS' request to conserve larger tracts of forest contiguous to the Forest Buffer, the number of STs increased to 16. However, it should be noted that, in removing these STs, 16 acres of the 32 acres (38%) will be permanently preserved by environmental easements. Of the 16 STs to be removed, four (4) are in poor or very poor condition. Of the twelve (12) remaining, mitigation will be provided on-site with tree planting. Pursuant to BCC, §33-6-116(g)(1) and (2), I will grant the Forest Conservation Variance to remove 16 STs as shown on the plan to accompany the Revised Application for Forest Conservation Variance dated February, 2022, and I adopt the reasons set forth in DEPS' Director approval of the Forest Conservation Variance dated April 15, 2022 (Dev. Ex. 11), with the condition that the Developer shall use all reasonable measures and protections during construction to save four (4) of the sixteen (16) STs and prevent impacts to their critical root zones (CRZs).

V. Residential Performance Standards, BCZR, §260.

The Developer submitted a Redlined Pattern Book which was reviewed and approved by the DOP on April 21, 2022. (Dev. Ex. 3). No modifications or waivers of standards have been requested as part of this Greenlined Development Plan. In considering the recommendation of DOP, and my review of the Redlined Pattern Book, I find that the Residential Performance Standards set forth in BCZR, §260 *et seq.* have been met.

VI. School Impact Analysis (SIA).

The Adequate Public Facilities Ordinance found in BCC, §32-6-103(e)(1)(2) states that development approval may not be granted in existing overcrowded school districts (defined as a district where enrollment exceeds 115% of the state-rated capacity ("SRC")), or if the development plan is projected to generate additional school population that would result in the school district becoming an overcrowded school district. An exception is set forth in BCC, §32-6-103(f)(3) which permits the development if any school in the district adjacent to the overcrowded school district has sufficient capacity to render the overcrowded school less than 115% of the state-rated capacity.

In this case, the School Impact Analysis ("SIA") as submitted by the Developer and approved by the DOP, confirms that that the projected full time equivalent enrollment ("FTE") for Riderwood Elementary School (98.09%), Ridgely Middle School (103.36%) and Dulaney High School (97.83%) are each school is below the 115% of the State Rated Capacity ("SRC"). As such, none of the schools are considered to be 'overcrowded.' As a result, I find that the Greenlined Development Plan meets Adequate Public Facilities Ordinance found in BCC, §32-6-103(e)(1)(2) and (f)(3).

VII. Open Space.

Under the Adequate Public Facilities Ordinance in BCC, §32-6-108 for the 32 proposed homes, the Open Space is 32,000 sf (1,000 sf per unit). The uncontroverted evidence is that the Developer is proposing to provide 32,006 sf or 0.735 acres of private, Open Space – all of which is onsite - as shown on the Greenlined Development Plan. (County Ex. 3). Accordingly, I find that this requirement has been satisfied.

Conclusion

For a development project to be approved under the Basic Services Map, both sewage and traffic generated by the proposed development must be accounted for in the existing system/infrastructure, or by improvements to that system/infrastructure. The impact that a proposed development will have on the segments of the sewer system and on the particular transportation infrastructure to which it will feed, will determine whether each of these public systems have the capacity, and can therefore accommodate, the additional sewage and traffic generated by the development. After considering the testimony and evidence presented, the exhibits offered at the hearing, and confirmation from the various County agencies that the Greenlined Development Plan satisfies those agencies' requirements, I find that the Developer has satisfied its burden of proof and, therefore, is entitled to approval of the Greenlined Development Plan, subject to the conditions in the Order. I further find that the Special Hearing relief to approve the Special Variance under BCZR, §4A02.4.G to allow the Torch Hill Project within the Falls Rd and Seminary traffic shed should also be granted for the reasons set forth herein. Additionally, I will grant Variance relief from §1B01.2.C.b for a front yard setback of 0 ft. in lieu of the required 25 ft. for the existing residential structure to avoid its demolition and to preserve the scenic view from Seminary Ave.

THEREFORE, IT IS ORDERED by this Administrative Law Judge/Hearing Officer for Baltimore County, this **13th** day of **October 2022,** that the Torch Hill Project as set forth on the attached Greenlined Development Plan (Dev. Ex. 2) which is incorporated herein and made a part hereof, be, and it is hereby, **APPROVED.**

IT IS FURTHER ORDERED that the Petition for Special Hearing under BCZR, §500.7 and pursuant to §4A02.4.G, to allow the construction of 31 single-family residences within the Falls Rd. and Seminary Rd. traffic shed, be, and it is hereby, **GRANTED**.

IT IS FURTHER ORDERED that Variance relief from BCZR, §1B01.2.C.b, to permit a front yard setback of zero (0) ft. in lieu of the required 25 ft. for an existing residential structure on the Property, be, and it is hereby, **GRANTED.**

IT IS FURTHER ORDERED, that the Forest Conservation Variance to remove the sixteen (16) specimen trees as listed on the Revised Plan to Accompany the Forest Conversation Variance (Dev. Ex. 10), which Revised Plan is attached hereto and incorporated herein and made a part hereof in its entirety, be, and it is hereby **GRANTED**, with the condition that the Developer shall use all reasonable measures and protections during construction to save four (4) of the sixteen (16) STs and prevent impacts to their critical root zones (CRZs).

The relief above is granted herein shall be subject to, and conditioned upon, the following:

1. Developer's Exhibit 22, Map 6-1 of the 2012 SRRR Plan, depicting the sewage flow from the Torch Hill Project which is attached hereto, shall be incorporated into and made a part of this Order. Prior to connecting to Torch Hill Project to the public sewer system, all repair, replacement and/or rehabilitation work required under the 2012 SRRR Plan (whether for sewers, manholes or both) and which is within the sewage path from Torch Hill Project as shown by the blue line on Developer's Ex: 22, shall be completed by the County, its authorized representative and/or the developer, as a condition of the Order. Upon completion, the County shall provide written confirmation of the same.

2. Developer's Exhibit 15 which is attached hereto, incorporated herein and made a part of this Order. Prior to building permits being issued, the Developer will construct the 190 ft. left turn lane extension on Seminary Avenue as depicted on Dev. Ex. 15 and/or as otherwise directed by SHA upon its review and approval of construction drawings for the turning lane extension.

Any appeal of this Order shall be taken in accordance with Baltimore County Code, §32-4-281.

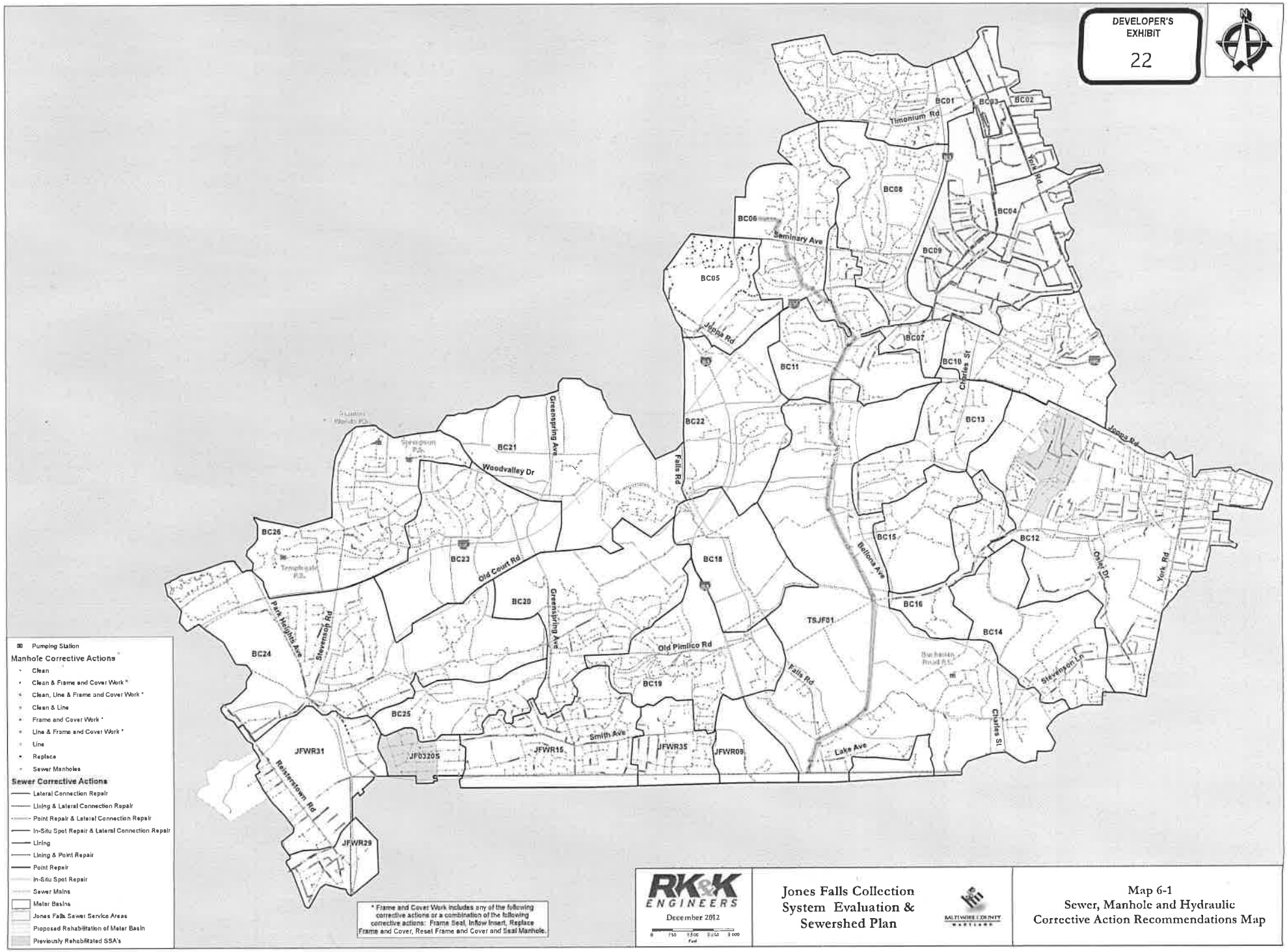
Maureen E. Murphy

MAUREEN E. MURPHY
Administrative Law Judge
for Baltimore County

MEM:dlm

DEVELOPER'S EXHIBIT

22



RK&K ENGINEERS

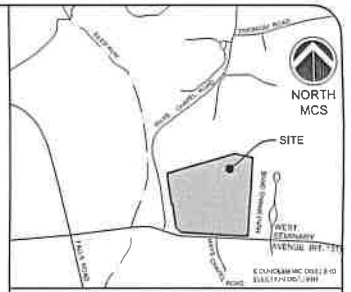
December 2012

Jones Falls Collection System Evaluation & Sewershed Plan

BALTIMORE COUNTY MARYLAND

Map 6-1
Sewer, Manhole and Hydraulic Corrective Action Recommendations Map

DEVELOPER'S EXHIBIT
15



VICINITY MAP SCALE: 1"=1,000'

CONCEPTUAL LANE MARKING AT SEMINARY AVENUE

NOTE: EX SD PER SHA ROADWAY PLAN
CONTRACT NO. 700-SHA-BA0575177
DRAWING NO. PS-01 OF PS-24
SHEET NO. 06 OF 83

FALLS ROAD (ROUTE 25)

WEST SEMINARY AVENUE (ROUTE 131) (PUBLIC)

190' L.F.
ADDITIONAL STACKING DISTANCE FOR LEFT TURN LANE

170'

500' L.F.
LEFT TURN STACKING LANE

NOTE:
DATA SHOWN IS COMPRISED OF BALTIMORE COUNTY GIS AND FIELD RUN TOPO FOR SEMINARY, FIELD TOPO IS LIMITED TO SEMINARY AVE ROAD WIDTH AND LANE MARKINGS.

SCALE: 1"=40'

NORTH MCS

TORCH HILL

COUNCILMANIC DIST.: 3RD
ELECTION DIST.: 8TH
REGIONAL PLANNING DISTRICT: LUTHERVILLE
PROJECT MANAGER: JERRY CHEN
PAI NUMBER: 060819
MAJ-2020-00008

DSThaler & ASSOC., LLC
CIVIL AND ENVIRONMENTAL ENGINEERS SURVEYORS
LANDSCAPE ARCHITECTS & LAND PLANNERS
7115 AMBASSADOR ROAD
P.O. BOX 47428
BALTIMORE, MARYLAND 21244-7428
410-944-3647
www.dsthaler.com

DATE: 7/1/2022
SCALE: AS SHOWN
C.I.: 7
PROJ. NO.: 0417


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EXHIBIT
41

Kimley»Horn

RESUME

Nicholas J. Leffner, PE
Associate
Kimley-Horn and Associates, Inc.
215 Washington Ave, Suite 500
Towson, MD 21204

Civil Engineer

Education: Bachelor of Science, Civil Engineering
Virginia Polytechnic Institute and State University, Blacksburg, VA

Registration: Registered Professional Engineer in Maryland (#44113)

Professional Organizations: Urban Land Institute (ULI)

Professional Experience:

Civil Engineer, Bowman Consulting Group, Ltd. – 6 years

- Provided design, entitlement, and permitting consulting services to support a variety of land development engineering projects, including, residential, commercial, retail, industrial, institutional, and mixed-use projects.
- Prepared conceptual, final, and construction document level design plans, computations, and reports for a variety of civil engineering related disciplines; including, site planning/feasibility, site design grading and drainage, utilities, roadways, stormwater management, soil erosion and sediment control, and construction phase services.

Civil Engineer/Project Manager, Kimley-Horn and Associates, Inc. – 8 years (present)

- Serves as a civil engineering consultant and project manager of multi-disciplinary consulting team for a variety of land development projects
- Responsible for the design, entitlement, permitting, and construction phase services for a variety of land development projects; including, residential, commercial, retail, industrial, institutional, mixed-use, and energy (solar and battery storage) projects.

Project Experience:

Maryland – State owned lands, Federal owned lands, Alleghany County, Anne Arundel County, Baltimore City, Baltimore County, Calvert County, Caroline County, Cecil County, Charles County, Dorchester County, Frederick County, Harford County, Howard County, Montgomery County, Prince George's County, St. Mary's County, Queen Anne's County, Washington County, Worchester County

Other – Federal owned lands, Delaware, Kansas, New Jersey, New York, Oklahoma, Pennsylvania, South Carolina, Virginia, Washington D.C.

PHASE II
PHASE I

#8301
LOT 38
40' W UNIT
FFE: 321.5

DRAINAGE AND UTILITY EASEMENT A

LOT 54
50' W UNIT
FFE: 328.5
#2 ~~#10824~~

#4 #10826

LANKFORD COURT
(PUBLIC)

8" SEWER
18" STORM DRAIN
8" WATER

INSIDE WIDENING
PRIVATE HOA
OPEN SPACE
±9,350 SF
±0.21 AC.
AREA #3
±3.3%

PAVILION (CUSTOM)
PATHS (ASPHALT)
GARDENS

SIDEWALK

MAILBOX KIOSK (CUSTOM)
BENCHES QTY. 2
(VICTOR STANLEY MODEL EVA)
BIKE RACKS QTY. 2
(VICTOR STANLEY
MODEL BRCA-101)

TRAIL HEAD
SIGN

#10819
LOT 6
54' W UNIT
FFE: 309.5

#10821
LOT 7
40' W
UNIT
FFE: 313.5

#10823
LOT 8
40' W
UNIT
FFE: 315.5

#10825
LOT 9
40' W
UNIT
FFE: 319

DECORATIVE
FENCE. ~~(2) 8'~~
~~SECTIONS~~

~~HOA~~
~~OPEN SPACE~~
~~±24,300 SF~~

DECORATIVE
FENCE. (2) 8'
SECTIONS

DECORATIVE
FENCE. (2) 8'
SECTIONS

DECORATIVE
FENCE. ~~(2) 8'~~
~~SECTIONS~~

±3%

±10%

DRAINAGE AND
~~67~~ UTILITY EASEMENT ~~A~~

ACCESS
EASEMENT ~~B~~

STORMWATER
MANAGEMENT
EASEMENT ~~A~~

HOA
SUBMERGED
GRAVEL WETLAND

15'
TREE/SHRUB
RESTRICTION
ZONE

25'
TREE/SHRUB
RESTRICTION
ZONE

SWALE WITH
CHECK DAMS

STORM
DRAIN PIPE

100 YEAR FLOODPLAIN
EASEMENT
AND DRAINAGE AND
UTILITY EASEMENT AND
FOREST BUFFER
EASEMENT ~~±0.90 ACRES~~

REFORESTATION
AREA ±0.05 ACRES
FOREST
CONSERVATION
EASEMENT ~~±0.05~~
~~ACRES~~

AND FOREST
CONSERVATION

FOREST BUFFER
EASEMENT

DRAINAGE AND
UTILITY EASEMENT B

ACCESS
EASEMENT C

HOA
SUBMERGED
GRAVEL WETLAND

STORMWATER
MANAGEMENT
EASEMENT B

HOA
FOREST
CONSERVATION
EASEMENT
~~±0.10 ACRES~~

#10827
LOT 10
54' W
UNIT
FFE: 323.5

#10829
LOT 11
54' W
UNIT
FFE: 327.5

#10831
LOT 12
54' W
UNIT
FFE: 329.5

#10833
LOT 13
54' W
UNIT
FFE: 333

ST22
33" D

ST21
52" D

ST20
48" D

ST19
30" D

ST26
30" D

DR 1
DR 1

DR 2
DR 2

PUBLIC ROAD A

TALLY HO RD.
BALTIMORE COUNTY MD TAX ID: 0802000314
DEED REF.: 2814/413 PLAT REF.: 19/109

EXHIBIT
42

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Boulevard • Baltimore MD 21230
410-537-3000 • 1-800-633-6101

Martin O'Malley
Governor

Anthony G. Brown
Lieutenant Governor

Robert M. Summers, Ph.D.
Secretary

SEP - 6 2013

CERTIFIED MAIL
Tom Kiefer, Acting Chief
Bureau of Utilities
Baltimore County Department of Public Works
111 West Chesapeake Avenue
Towson, Maryland 21204

Re: Sewershed Repair, Replacement and Rehabilitation Plans

Dear Mr. Kiefer:

The Maryland Department of the Environment (MDE), Water Management Administration has reviewed the Sewershed Repair, Replacement, and Rehabilitation (SRRR) Plans submitted by Baltimore County for the Patapsco, Stemmers Run, Tributary 27, Gwynns Falls, Herring Run, Jones Falls, Dead Run, West Lowlevel and Tributary 48 paragraphs 8.C.i(c) and 10.B.and C of Consent Decree 1:05-cv-02028-AMD/JCD-06-0210. The Department acknowledges that the above noted SRRR Plans meet the requirements of the Consent Decree. This letter expresses MDE's comments only and not those of the Environmental Protection Agency (EPA), which may be provided by separate correspondence from the EPA.

The Department appreciates your attention to this matter. If you have any questions, please do not hesitate to contact Mr. David Lyons, Deputy Director, Compliance Program, at (410) 537-3510.

Sincerely,

Jay G. Sakai, Director
Water Management Administration

JGS:jrg

cc: Deane Bartlett, EPA Region III
Andrew Seligman, EPA Region III
Nancy Young, OAG, MDE

EXHIBIT
43

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

DEC 9 2013

CERTIFIED MAIL
RETURN RECEPT REQUESTED

Mr. Tom Kiefer, Chief
Baltimore County Department of Public Works
Bureau of Utilities
11112 Gilroy Road, Suite 104
Hunt Valley, Maryland 21204

Re: Sewershed Repair, Replacement and Rehabilitation Plans

Dear Mr. Kiefer:

The United States Environmental Protection Agency (EPA) has reviewed the Sewershed Repair, Replacement and Rehabilitation (SRRR) Plans submitted by Baltimore County for the Patapsco, Stemmers Run, Tributary 27, Gwynns Falls, Herring Run, Jones Falls, Dead Run, West Low Level and Tributary 48 pursuant to Paragraphs 8.C.i.(c), 10.B, and 10.C of Consent Decree 1:05-cv-02028-AMD. The EPA acknowledges the above SRRR Plans meet the requirements of the Consent Decree.

Please be advised this letter expresses EPA's comments only and not those of the Maryland Department of the Environment (MDE).

Thank you for your cooperation in this matter. If you have any questions, please contact me at 215-814-2097.

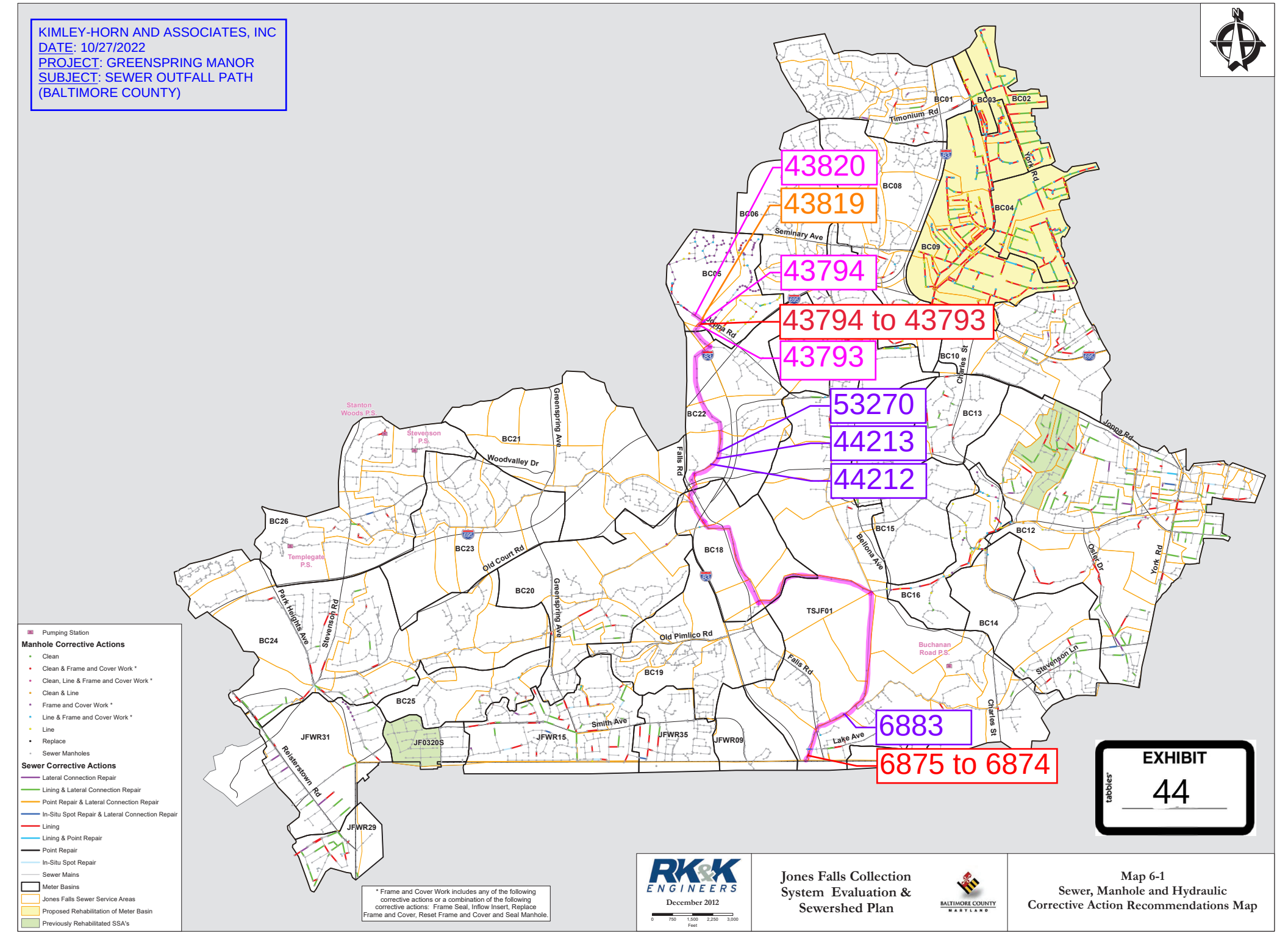
Sincerely,

Andrew F. Seligman, Environmental Scientist
Water Protection Division

cc: Nancy Young, AAG, MDE
Julie Gowe, MDE
Jay Sakai, NDE

Printed on 100% recycled/recyclable paper with 100% post-consumer fiber and process chlorine free.
Customer Service Hotline: 1-800-438-2474

KIMLEY-HORN AND ASSOCIATES, INC
DATE: 10/27/2022
PROJECT: GREENSPRING MANOR
SUBJECT: SEWER OUTFALL PATH
(BALTIMORE COUNTY)



- Pumping Station

Manhole Corrective Actions

- Clean
- Clean & Frame and Cover Work *
- Clean, Line & Frame and Cover Work *
- Clean & Line
- Frame and Cover Work *
- Line & Frame and Cover Work *
- Line
- Replace
- Sewer Manholes

Sewer Corrective Actions

- Lateral Connection Repair
- Lining & Lateral Connection Repair
- Point Repair & Lateral Connection Repair
- In-Situ Spot Repair & Lateral Connection Repair
- Lining
- Lining & Point Repair
- Point Repair
- In-Situ Spot Repair
- Sewer Mains
- Meter Basins
- Jones Falls Sewer Service Areas
- Proposed Rehabilitation of Meter Basin
- Previously Rehabilitated SSA's

* Frame and Cover Work includes any of the following corrective actions or a combination of the following corrective actions: Frame Seal, Inflow Insert, Replace Frame and Cover, Reset Frame and Cover and Seal Manhole.

RK&K ENGINEERS
December 2012
0 750 1,500 2,250 3,000 Feet

Jones Falls Collection System Evaluation & Sewershed Plan

BALTIMORE COUNTY MARYLAND

Map 6-1
Sewer, Manhole and Hydraulic Corrective Action Recommendations Map

From: D'Andrea Walker <dwalker2@baltimorecountymd.gov>
Sent: Tuesday, May 30, 2023 12:42 PM
To: Conner, Charles R. <CRConner@Venable.com>
Subject: Fwd: Sewer Asset Confirmations

Caution: External Email

FYI… here is his review.

Get Outlook for iOS

From: Dave Bayer <dbayer@baltimorecountymd.gov>
Sent: Tuesday, May 30, 2023 12:22:40 PM
To: D'Andrea Walker <dwalker2@baltimorecountymd.gov>; Lisa Eicholtz <leicholtz@baltimorecountymd.gov>
Subject: RE: Sewer Asset Confirmations

Good afternoon D'Andrea.
I reviewed the Excel Spreadsheet (EX44) that Mr. Conner had provided you on 5/23/2023 (attached).

Results from my review:

Corrective Action Status

MH 43820: Manhole Lining was not needed so that work was eliminated. An Inflow insert was installed 9/29/2014
MH 43819: Manhole Lining was not needed, so that work was eliminated.
MH 53270: A Watertight Frame and Cover was installed 3/12/2017.
MH 44213: A rain pan was installed 6/3/2019.
MH 44212: A rain pan was installed 6/3/2019.
MH 6883: A brick collar was installed around the Manhole and the outside of the Manhole was parged (sealed).

Segment 6875-6874: Lining completed 12/19/2019.

Segment 43794-43793: Segment Lining was approved 12/6/2019
MH 43794: Manhole Lining and Frame and Cover Replacement deleted per RFI 15
MH 43793: Manhole Lining deleted per RFI 14.

Hope this helps.

David



David A. Bayer, P.E.

Sewer Design Section
Bureau of Engineering & Construction
Baltimore County
Department of Public Works
County Office Building, Room 200
111 W. Chesapeake Avenue
Towson, Maryland 21204

dbayer@baltimorecountymd.gov
410-887-3781

Exceptional Customer Service
Safe and Efficient Operations
Sustainable Infrastructure

	A	B	C	D	E	F	G	H
1	ASSET	Type	SOURCE	DEPARTMENT	CORRECTIVE ACTIONS	Completion Date	REVIEW NOTES	STATUS
2								
3	43820	Manhole	EXHIBIT	Baltimore County DPW&T	Manhole lining was not needed, work eliminated. Insert flow installed.	9/29/2014		Completed
4	43819	Manhole	EXHIBIT	Baltimore County DPW&T	Manhole lining was not needed, so work was eliminated.	N/A		Completed
5	43794	Manhole	EXHIBIT					
6	43794-43793	Segment	EXHIBIT					
7	43793	Manhole	EXHIBIT					
8	53270	Manhole	EXHIBIT	Baltimore County DPW&T	Watertight Frame and Cover was installed.	3/12/2017		Completed
9	44213	Manhole	EXHIBIT	Baltimore County DPW&T	A rain pan was installed.	6/3/2019		Completed
10	44212	Mahole	EXHIBIT	Baltimore County DPW&T	A rain pan was installed.	6/3/2019		Completed
11	6883	Manhole	EXHIBIT	Baltimore County DPW&T	Brick collar installed around manhole and outside was sealed.			Completed
12	6875-6874	Segment	EXHIBIT	Baltimore County DPW&T	Lined under JF Package 2.			Completed
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38								



JOHN A. OLSZEWSKI, JR.
County Executive

D'ANDREA L. WALKER, *Director*
Department of Public Works

INTERNAL MEMO

RE: BASIC SERVICE MAPS – SEWER FACTS

DATE: May 1, 2023

Deficient vs. Area of Special Concern

- Areas of Special Concern have active Sewer System Overflow Structures (SSOs)
- There are no thresholds for AoSC. These are areas identified for the use of the County and developers to alert them that additional scrutiny will occur. Historically they are areas upstream of the constructed SSOs.
- Deficient Treatment Facility Areas follow the State guidelines requiring 20% reserve capacity at Treatment plants, not in piping, at the plant.
- Jones Falls - To eliminate the AoSCs, eliminate/close the SSO at Marnat Ave and add capacity in Brooklandville.

RKK vs. Hazen Reports

- RKK issued in 2012
  - SRRR Plan (Sewershed Repair, Replacement and Rehabilitation)
  - Recommended, EPA and MDE Approved – most logical approach to addressing SSOs was the complete comprehensive Inflow and Infiltration (I&I) reduction rehabilitation
- Hazen ongoing – final due end of 2023, quarterly reports on County DPWT website (3 year project)
  - Performance Assessment Report – purpose was 50 year planning after 2025
  - Maintenance recommendations
  - 26 flow monitors monitoring 24/7 in all weather conditions
  - Assessment of high rainfall dependent areas
  - Sewershed selected because of large unsewered area and diverse mix of residential, commercial, industrial

Storm Analysis

- Consent Decree allows choice of storm analysis, DOES NOT REQUIRE certain storms
- DPWT choose 2year/6hour and 10year/6 hour as most representative of storms the area gets
- Opposing testimony continues to mention 2,10,20year – 24hour storms, these are NOT REQUIRED by EPA/MDE, they are HURICANE LEVEL and this was upheld/acknowledged in ALJ Ruling 10/2022 for Torch Hill Development.
- This weekend – using Towson rain gage on Stevenson Lane – no storm level ratings were met
  - Friday 4/28/23 8a-midnight (16hr storm) 0.42" rain
    - To meet a 1 year/12 hour storm would have needed 2.4" of rain
  - Sunday 4/30/23 – 8a-12p (4hrs) 0.26" rain
    - To meet a 1 year/3hour storm event it would have needed to be 1.6" during the 4 hours.

Jones Falls Sewer Shed Projects

- Both Consent Decree and Non-Consent Decree projects = $44M+ initiated since 2013
- 2017 Blue Water Baltimore stated "The Jones Falls saw the greatest improvement with 7 out of 13 sites posting scores of 80% of higher…. Results likely not due to weather…. Baltimore County… implementing repairs to sewer system"
- Completed Projects

EXHIBIT
tabbies
46

    - Jones Falls Basic BC04 Sewer Rehab $1.6M complete 2017
    - Jones Falls Basin BC02-03 Sewer Rehab $2.5M complete 2016
    - Jones Falls Large Diameter Sewer Rehab $4.7M complete 2019
    - Jones Falls Basin BC09 Sewer Rehab $3.2M complete 2019
    - Jones Falls Sewer Structural Rehab Package 2 $5.3M complete 2019
    - Jones Falls Sewer Structural Rehab Package 1 $4.5M completed 2019
- Sewer Capacity vs. Inflow &Infiltration
    - EPA/MDE approved the approach of I&I (Inflow/Infiltration) Consent Decree Plan. This is reflected in the projects for rehab/relining of the sewer to reduce the inflow/infiltration into the system during all weather.

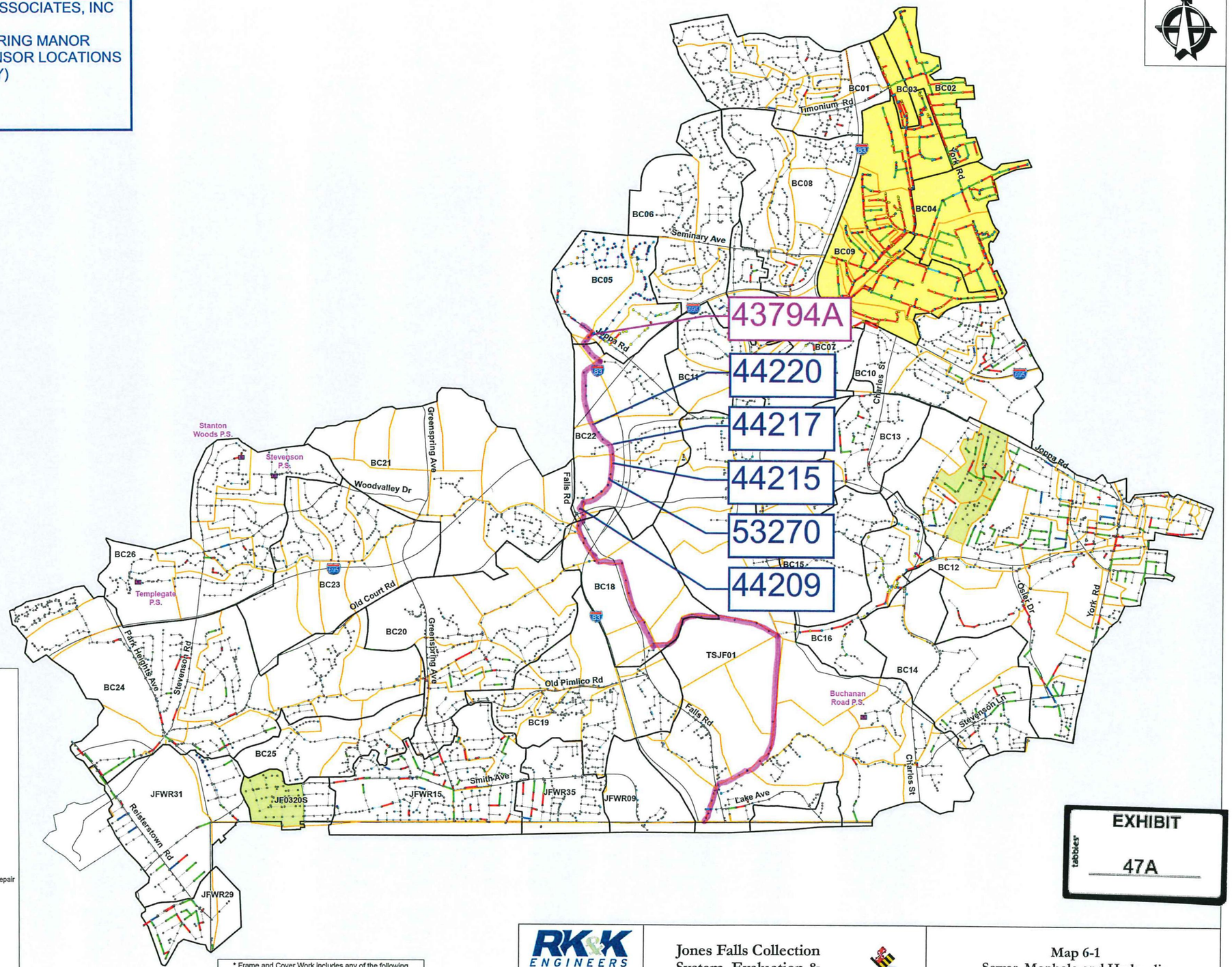
Individual Development Analysis

- Laundry Mat vs. Gas Station – sewer/water usage dependent, not square footage dependent
- Each development is assessed individually by DPWT Engineers for sewer/water use

Sewer System Overflow Structures (SSOs)

- There were 44 constructed SSOs structures at start of Consent Decree throughout the County
- Baltimore County has eliminated 34.
- Of the remaining 10, 4 require completion of City capacity improvement projects to eliminate. The other 6 are associated with active County construction projects.
- City Delayed - County SSO structures
    - 113 Marnat Road (Pikesville at City line)
    - 116 Nunnery Lane, 117 Briarwood Road, and 118 Overbrook road (Catonsville at City line)
- SSO's with Active County Projects
    - 41 Aiken Ave, 129 Queen Anne Drive (Parkville at City Line) – part of Herring Run project
    - 22 Alter Road, 23A Southern Cross Drive, 23B Southern Cross, 24 Patterson Ave (Lochern at City Line) – part of Powder Mill Relief Sewer project

KIMLEY-HORN AND ASSOCIATES, INC
DATE: 3/23/2023
PROJECT: GREENSPRING MANOR
SUBJECT: LEVEL SENSOR LOCATIONS (BALTIMORE COUNTY)



Pumping Station

Manhole Corrective Actions
- Clean
- Clean & Frame and Cover Work *
- Clean, Line & Frame and Cover Work *
- Clean & Line
- Frame and Cover Work *
- Line & Frame and Cover Work *
- Line
- Replace
- Sewer Manholes

Sewer Corrective Actions
- Lateral Connection Repair
- Lining & Lateral Connection Repair
- Point Repair & Lateral Connection Repair
- In-Situ Spot Repair & Lateral Connection Repair
- Lining
- Lining & Point Repair
- Point Repair
- In-Situ Spot Repair
- Sewer Mains
- Meter Basins
- Jones Falls Sewer Service Areas
- Proposed Rehabilitation of Meter Basin
- Previously Rehabilitated SSA's

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RK&K ENGINEERS
December 2012
0 750 1,500 2,250 3,000 Feet

Jones Falls Collection System Evaluation & Sewershed Plan

BALTIMORE COUNTY MARYLAND

Map 6-1
Sewer, Manhole and Hydraulic Corrective Action Recommendations Map

EXHIBIT
47A
tabbies

From: Dave Bayer
Sent: Wednesday, March 8, 2023 2:30 PM
To: Matt.Bishop@kimley-horn.com
Cc: Powell, Russel V. <rpowell@ATAPCO.COM>; Rosenblatt, Adam M. <AMRosenblatt@Venable.com>; Oxley, Bruce <boxley@ATAPCO.COM>; Snyder, Ron <rsnyder@atapco.com>
Subject: RE: Greenspring Manor

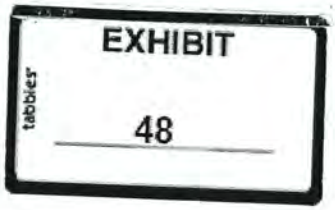
Closest Meter I have in the area of your Subdivision is in MH 43794A (see attached), which doesn't capture the flow from your subdivision.
I have five (5) level sensors downstream of your subdivision at the following locations:
MH 44209,
53270,
44215,
44217,
44220.

David

EXHIBIT
47 B
tabbies

Quarterly Report

January 1, 2019
Through
March 31, 2019



Pursuant to Paragraph 19, of the Consent Decree between Baltimore County and the United States Environmental Protection Agency, Department of Justice and the Maryland Department of the Environment

Pursuant to Paragraph 19 of the Consent Decree between Baltimore County (County) and The United States Environmental Protection Agency (EPA), the Department of Justice (DOJ), and the Maryland Department of the Environment (MDE), this document constitutes the required Quarterly Report for the period **January 1, 2019** through **March 31, 2019**.

The quarterly report discusses activities and progress of Baltimore County during the last quarter towards compliance with the requirements set forth in the Consent Decree including:

i. Non-Pump Station and Pump Station SSO Structure discharges
ii. Construction Project Status
iii. Collection system inspection progress
iv. SRRR plan implementation progress
v. FOG program modification and development progress
vi. Supplemental Environmental Projects status, and
vii. Compliance with certification of completion and other issues of the Consent Decree

i(a). Non-Pump Station and Pump Station SSO Structure Discharges

Discharges from Sanitary Sewer Overflow Structures took place at the locations and dates during the reporting period as detailed in **Attachment A**.

A summary of flow metering information for Non-Pump Station SSO Structures is included as **Attachment A1.**

ii. Construction Project Status

Attachment B presents the status of Paragraph 7 – Non-Pump Station SSO Structure Elimination projects and Paragraph 13.F - Pump Station Rehabilitation Repair and Replacement projects that are in construction during the reporting quarter.

iii. Collection System Inspection

Continued implementation of the inspection of the collection system, pursuant to Paragraphs 8 and 15 of the Consent Decree.

Paragraph 15.B.i.b inspections status is summarized in Attachment C; 0.3 miles were inspected\attempted to be inspected during the reporting period with 12 manholes and other appurtenances also inspected\attempted to be inspected. Baltimore County anticipates completing inspection of the gravity sewer lines identified in Paragraph 15.B.i.b by September 20, 2020.

Continued compliance with all gravity line CCTV inspections within the required 10 working days of the occurrence of an overflow for each SSO that occurred during this reporting period. **Attachment D** details the County's inspection response to each of the overflow that occurred during the reporting period.

iv. SRRR Plans

SRRR Plan Implementation/Progress:

The SRRR Plans contain numerous projects in a variety of locations and stages of planning, design and construction. **Attachment E** includes a list of each sewershed and a summary status of Plan implementation. The implementation of the recommended improvement projects is proceeding; however, acquisition of required rights-of-way and regulatory permits may require a significant period of time thereby resulting in possible delay to complete the construction work.

The County's recommendations in some of the SRRR Plans for meter basins that exhibited excessive I/I and design-storm simulated model-predicted SSOs included the comprehensive rehabilitation of all pipe segments and manholes, increased hydraulic capacity and/or testing and repair of sewer house connections and laterals. Some of the recommended repairs were revised based on design preparation and review of improvement projects. Additionally, some miscellaneous sewer/manhole/lateral repairs that were included in the SRRR Plans may be revised based on a review of the original and updated inspection data.

v. FOG Program

The County has completed implementation of the FOG Program Modification Plan.

vi. SEP Status

Completed.

vii. Compliance Issues

In accordance with Paragraph 19, Item B.vii, the following is a summary of Consent Decree compliance issues.

(a) Consent Decree projects or requirements certified as complete during the reporting period:

None.

(b) Consent Decree requirements due to be completed during the reporting period, but not completed:

None.

(c) Problems that may prevent the County from meeting future Consent Decree compliance deadlines:

Cockeysville SRRR Plan

On 3/15/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.

Bird River SRRR Plan

On 3/15/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.

Bengies SRRR Plan

On 3/15/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.

Elimination of Non-Pump Station SSO Structures 22, 23A, 23B, 24

To expedite completion of the downstream hydraulic improvements, the County has split the design project into two projects: Powder Mill Interceptor Relief Sewer Phase I and Phase II. The County is preparing final design documents for the first project and is awaiting City permits for the second design project. The first design project is anticipated to be advertised in the first half of 2019.

Elimination of Non-Pump Station SSO Structures 41 and 129

The County is continuing negotiations and finalizing easement agreements with four property owners to accommodate construction of the East Branch Herring Run Relief Sewer (reference potential delay notification dated March 3, 2017).

Elimination of Non-Pump Station SSO Structures 113, 116, 117 and 118

The County continues coordinating with the City to complete the needed hydraulic improvements to the City's collection system. The County and City engineering staff did not have a coordination meeting during the reporting period; however, the DPW directors met to discuss ways to better collaborate. All County and City data requests were addressed during the period. The County intends to meet with the City to discuss potential options to expedite the City's hydraulic improvement project(s) and expand their study area for a more regional approach.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

Thomas Kiefer, PE
Chief, Bureau of Engineering and Construction

Control Document No. 252

Attachment A

Discharges from Overflow Structures

During the January 1, 2019 – March 31, 2019 Period

Pump Station Overflow Structures:

Name	Kings Point
Address	9701 Plowline Road
Date Of Discharge	2/24/2019
Duration Of Overflow	24 Minutes
Date Of Relevant Weather Conditions	2/24/2019
Description Of Relevant Weather Conditions	Dry
Gallons Discharged	6,000
Receiving Waters	Mardella Branch
Identified Cause	VFD Interruption
Details Of Corrective Action Taken Or Planned	Reset VFD

Non-Pump Station Overflow Structures – Metered:

Name	Alter Road
SSO ID	22
Address	Alter Street & Southern Cross Drive
Date Of Discharge	3/21/2019
Duration Of Overflow	3 Hrs. 58 Min.
Date Of Relevant Weather Conditions	3/21-22/2019
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	10,709
Receiving Waters	Maidens Choice Creek
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Right of way acquisition required for sewer relief project. County to submit a formal SSO elimination time extension request when a date has been identified.

Name	Southern Cross Drive
SSO ID	23A
Address	Southern Cross Drive & Parsons Avenue
Date Of Discharge	3/21/2019
Duration Of Overflow	9 Hrs. 43 Min.
Date Of Relevant Weather Conditions	3/21-22/2019
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	69,322
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Right of way acquisition required for sewer relief project. County to submit a formal SSO elimination time extension request when a date has been identified.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date Of Discharge	3/21/2019
Duration Of Overflow	9 Hrs. 19 Min.
Date Of Relevant Weather Conditions	3/21-22/2019
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	68,236
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Right of way acquisition required for sewer relief project. County to submit a formal SSO elimination time extension request when a date has been identified.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date Of Discharge	3/21/2019
Duration Of Overflow	12 Hrs. 19 Min.
Date Of Relevant Weather Conditions	3/21-22/2019
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	339,095
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Right of way acquisition required for sewer relief project. County to submit a formal SSO elimination time extension request when a date has been identified.

Name	Aiken Avenue
SSO ID	41
Address	7829 Aiken Avenue & Taylor Avenue
Date Of Discharge	3/21/2019
Duration Of Overflow	2 Hrs. 23 Min.
Date Of Relevant Weather Conditions	3/21-22/2019
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	17,087
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Right of way acquisition required for sewer relief project. SSO elimination time extension request approved on 4/16/2018.

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Drive & Hillcrest Avenue
Date Of Discharge	3/21/2019
Duration Of Overflow	2 Hrs. 51 Min.
Date Of Relevant Weather Conditions	3/21-22/2019
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	36,724
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Right of way acquisition required for sewer relief project. SSO elimination time extension request approved on 4/16/2018.

Name	Overbrook Road
SSO ID	118
Address	Overbrook Road & Medwick Garth
Date Of Discharge	3/21/2019
Duration Of Overflow	1 Hrs. 28 Min.
Date Of Relevant Weather Conditions	3/21-22/2019
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	34,966
Receiving Waters	Maidens Choice Creek
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	City hydraulic improvements needed to eliminate overflow. County is coordinating with the City to complete needed improvements.

Attachment A1: Summary of Non-Pumping Station Overflow Structure Monitoring

Date of Rain Event		3/21-22/2019
Rain (inches)		3.28
SSO Name	**SSO ID**	
Alter Road	22	10,709
Southern Cross Drive	23A	69,322
Southern Cross	23B	68,236
Patterson Avenue	24	339,095
Alken Avenue	41	17,087
Queen Anne Drive	129	36,724
Overbrook Road	118	34,966

Attachment B

Construction Projects Status

During the January 1, 2019 – March 31, 2019 Period

Attachment B: Construction/Rehabilitation Projects Progress – Non-Pump Station SSO Structures

Project Name	Date of Construction Notice to Proceed	Sewershed Name	Consent Decree SSO Elimination Deadline	SSO Eliminated	Status
)wder Mill Interceptor Relief Sewer Phase I (SSOs 22, 23A, 23B, 24) – 201-0077-7093	-	Gwynns Falls	TBD	No	This project is in the right of way (ROW stage; on 4/16/2018, EPA approved th County's SSO extension of time reque
)wder Mill Interceptor Relief Sewer Phase II (SSOs 22, 23A, 23B, 24) – 201-0077-7093	-	Gwynns Falls	TBD	No	This project is in the right of way (ROW stage; on 4/16/2018, EPA approved th County's SSO extension of time reque
East Branch Herring Run li Sewer (SSO 41 & 129) 201-0077-7103	-	Herring Run	TBD	No	This project is in the right-of-way acquisition stage; on 4/16/2018, EPA approved the County's SSO extension time request

tachment B: Construction/Rehabilitation Projects Progress – Pump Station Rehabilitation, Repair and Replacement Consent Decree Paragraph No. 13

Project Name	Consent Decree Deadline	Anticipated Meeting CD Deadline	Comments
Quad Avenue	3/20/2020	Yes	Construction
Old Battle Grove	3/20/2020	Yes	Construction
Waldman Avenue	3/20/2020	Yes	Construction
Thompson Boulevard	3/20/2020	Yes	Construction
Peninsula Boulevard	3/20/2020	Yes	Construction
Harewood Park	3/20/2020	Yes	Construction
Campus Hill	3/20/2020	Yes	Construction
Rettman's Lane	3/20/2020	Yes	Construction
Lodge Forest Manor	3/20/2020	Yes	Design. Potential delay notification submitted on 11/9/2017.
Stansbury Manor	3/20/2020	Yes	Design. Potential delay notification submitted on 11/9/2017.
Blenhurst	3/20/2020	Yes	Construction
Rosebank	3/20/2020	Yes	Construction
Beachwood Road	3/20/2020	Yes	Construction. Potential delay notification submitted on 9/17/2018.
Oliver Beach	3/20/2020	Yes	Construction. Potential delay notification submitted on 9/17/2018.
Hyde Park	6/1/2021	Yes	Design
Bauernschmidt Manor	6/1/2021	Yes	Design
Turkey Point	6/1/2022	Yes	Design
Millers Island	6/1/2022	Yes	Design
Corsica	6/1/2023	Yes	Planned
Fort Howard	6/1/2023	Yes	Planned
Pennwood Terrace	6/1/2023	Yes	Planned

Attachment C

Collection System Inspection Status

During the January 1, 2019 – March 31, 2019 Period

Attachment C: Collection System Inspection Status

Paragraph 15.B.i (b)
Completion scheduled for September 20, 2020
Currently On-Time

Miles Remaining Beginning of Quarter	Miles Inspected and/or Attempted this Quarter	Miles Attempted but not Completed to Date	Miles Remaining
7.5	0.3	2.9	7.1
Appurtenances to be Inspected Beginning of Quarter	Appurtenances Inspected and/or Attempted this Quarter	Appurtenances Attempted but not Completed to Date	Appurtenances Remaining
93	12	330	57

Note: All values are based on the current version of the County's GIS

Attachment D

CCTV in Response to an SSO

During the January 1, 2019 – March 31, 2019 Period

Attachment D: CCTV response to an SSO (8.C.v)

Date of SSO	Location	CCTV Inspection Date	Exemption
1/4/2019	2408 Stonewall Ct.		B
1/9/2019	3708 Breton Way (Templegate PS)		B
1/9/2019	2692 Virginia Ave.		B
1/9/2019	8318 Bufflehead Dr.		B
1/26/2019	1252 Narcissus Ave.	1/29/2019	
2/7/2019	6909 Lachlan Circle		B
2/8/2019	7710 Babikow Rd.		B
2/10/2019	5127 Terrace Dr.	2/13/2019	
2/12/2019	8116 Philadelphia Rd.	2/19/2019	
2/18/2019	132 Buttonwood Ct.	2/19/2019	
3/15/2019	7510 Kenlea Ave.	3/18/2019	
3/18/2019	7315 Berkshire Rd.	3/21/2019	
3/20/2019	52 Oak Shadows Ct.	3/23/2019	
3/21/2019	Alter Street & Southern Cross Drive		D
3/21/2019	Southern Cross Drive & Parsons Avenue		D
3/21/2019	3909 Southern Cross Drive		D
3/21/2019	3902 Patterson Avenue		D
3/21/2019	7829 Aiken Avenue & Taylor Avenue		D
3/21/2019	Queen Anne Drive & Hillcrest Avenue		D
3/21/2019	Overbrook Road & Medwick Garth		D
3/28/2019	8227 Fischer Road		B

Allowable Exemptions:

A. The cause of the SSO was a blockage in a County-owned lateral adjacent to the gravity line segment and the County cleans the County-owned lateral; or
B. The cause of the SSO was a blockage in the gravity line segment and visible directly from the manhole; or
C. The County has previously CCTV inspected the line segment(s) due to an earlier blockage and the County is in the process of developing or implementing corrective action; or
D. The location is an identified overflow structure and is being monitored pursuant to Paragraph 7.C and the County is involved in a process designed to eliminate the overflow structure

Attachment E

Status of SRRR Plan Implementation

During the January 1, 2019 – March 31, 2019 Period

Attachment E: Status of SRRR Plan Implementation

Sewershed	Consent Decree Deadline	On Schedule to Complete SRRR Plan Implementation
Bengies	9/29/2020	Yes. On 3/15/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Bird River	9/29/2020	Yes. On 3/15/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Bread & Cheese	9/29/2020	Yes
Cockeysville	9/29/2020	Yes. On 3/15/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Dead Run	9/6/2017	Completed
Delmar	4/18/2022	Yes
Duck Creek	4/18/2022	Yes
Dundalk	4/18/2022	Yes
East Point	4/18/2022	Yes
Essex	4/18/2022	Yes
Gray Manor	4/18/2022	Yes
Gunpowder	4/18/2026	Yes
Gwynns Falls	9/6/2018	Completed
Herring Run	9/6/2018	Completed
Jones Falls	9/6/2019	Yes. On 11/17/2015 and 5/17/2018, the County submitted potential delay notifications for two sewer structural repair and rehabilitation projects.
Long Quarter	4/18/2024	Yes
Orems	9/29/2020	Yes. On 11/16/2018 the County submitted a potential delay notification for a force main replacement project.
Patapsco	9/6/2021	Yes. On 10/28/2018 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Redhouse Run	4/18/2024	Yes
Stemmers Run	9/6/2024	Yes
Texas	4/18/2022	Yes
Tributary 26	2/11/2020	Completed
Tributary 27	9/6/2017	Completed
Tributary 43	2/11/2020	Completed
Tributary 48	9/6/2017	Completed
Tributary 78	2/11/2020	Completed
West Low Level	9/6/2017	Completed
Whitemarsh	4/18/2024	Yes



Quarterly Report

April 1, 2019
Through
June 30, 2019

Pursuant to Paragraph 19, of the Consent Decree between Baltimore County and the United States Environmental Protection Agency, Department of Justice and the Maryland Department of the Environment

Pursuant to Paragraph 19 of the Consent Decree between Baltimore County (County) and The United States Environmental Protection Agency (EPA), the Department of Justice (DOJ), and the Maryland Department of the Environment (MDE), this document constitutes the required Quarterly Report for the period **April 1, 2019** through **June 30, 2019.**

The quarterly report discusses activities and progress of Baltimore County towards compliance with the requirements set forth in the Consent Decree including:

i. Non-Pump Station and Pump Station SSO Structure discharges
ii. Construction Project Status
iii. Collection system inspection progress
iv. SRRR plan implementation progress
v. FOG program modification and development progress
vi. Supplemental Environmental Projects status, and
vii. Compliance with certification of completion and other issues of the Consent Decree

i(a). Non-Pump Station and Pump Station SSO Structure Discharges

Discharges from Sanitary Sewer Overflow Structures took place at the locations and dates during the reporting period as detailed in **Attachment A.**

A summary of flow metering information for Non-Pump Station SSO Structures is included as **Attachment A1.**

ii. Construction Project Status

Attachment B presents the status of Paragraph 7 – Non-Pump Station SSO Structure Elimination projects and Paragraph 13.F - Pump Station Rehabilitation Repair and Replacement projects that are in design and construction during the reporting quarter.

iii. Collection System Inspection

Continued implementation of the inspection of the collection system, pursuant to Paragraph 15 of the Consent Decree.

Paragraph 15.B.i.b inspection status is summarized in **Attachment C.** Baltimore County anticipates completing inspection of the gravity sewer lines identified in Paragraph 15.B.i.b by September 20, 2020.

Continued compliance with all gravity line CCTV inspections within the required 10 working days of the occurrence of an overflow for each SSO that occurred during this reporting period. **Attachment D** details the County's inspection response to each of the overflow that occurred during the reporting period.

iv. SRRR Plan Implementation/Progress

The SRRR Plans contain numerous projects in a variety of locations and stages of planning, design and construction. **Attachment E** includes a list of each sewershed and a summary status of Plan implementation. The implementation of the recommended improvement projects is proceeding; however, acquisition of required rights-of-way and regulatory permits may require a significant period of time thereby resulting in possible delay to complete the construction work.

The County's recommendations in some of the SRRR Plans for meter basins that exhibited excessive I/I and design-storm simulated model-predicted SSOs included the comprehensive rehabilitation of all pipe segments and manholes, increased hydraulic capacity and/or testing and repair of sewer house connections and laterals. Some of the recommended repairs were revised based on design preparation and review of improvement projects. Additionally, some miscellaneous sewer/manhole/lateral repairs that were included in the SRRR Plans may be revised based on a review of the original and updated inspection data.

v. FOG Program

The County has completed implementation of the FOG Program Modification Plan.

vi. SEP Status

Completed.

vii. Compliance Issues

In accordance with Paragraph 19, Item B.vii, the following is a summary of Consent Decree compliance issues.

(a) Consent Decree projects or requirements certified as complete during the reporting period:

Kings Point Pump Station Action Plan

On April 8, 2019 the County submitted a response to prevent further SSOs due to loss of power for the Kings Point Pump Station

West Low Level Sewershed

On June 6, 2019 the County submitted the Performance Assessment Report for West Low Level Run Sewershed.

Dead Run Sewershed

On June 6, 2019 the County submitted the Performance Assessment Report for Dead Run Sewershed.

(b) Consent Decree requirements due to be completed during the reporting period, but not completed:

None.

(c) Problems that may prevent the County from meeting future Consent Decree compliance

deadlines:

Patapsco SRRR Plan

On April 22, 2019 the County submitted a potential delay notification for the Basin 33 Phase 2 Relief Sewer project.

Gray Manor SRRR Plan

On June 6, 2019 the County submitted a potential delay notification for the Gray Manor Relief Sewers project.

Beachwood Pump Station

On May 7, 2019 the County submitted a time extension request for the Beachwood Pump Station rehabilitation project.

Elimination of Non-Pump Station SSO Structures 22, 23A, 23B, 24

Contract 18180SX0 was awarded on 7/8/2019. This is the first phase of the relief sewer. The County is discussing the Right of Entry requirements with Baltimore City Department of Recreation and Parks.

Elimination of Non-Pump Station SSO Structures 41 and 129

Contract 14117SX0 will be advertised in early August 2019.

Elimination of Non-Pump Station SSO Structures 113, 116, 117 and 118

The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

Thomas Kiefer, PE
Chief, Bureau of Engineering and Construction

Control Document No. 264

Attachment A

Discharges from Overflow Structures

During the April 1, 2019 – June 30, 2019 Period

Pump Station Overflow Structures:

Name	Randallstown
Address	5425 Old Court Road
Date Of Discharge	6/2/2019
Duration Of Overflow	20 Minutes
Date Of Relevant Weather Conditions	6/2/2019
Description Of Relevant Weather Conditions	Dry
Gallons Discharged	9,800
Receiving Waters	Bens Run
Identified Cause	Electrical Power failure
Details Of Corrective Action Taken Or Planned	Reset VFD

Non-Pump Station Overflow Structures – Metered:

Name	Southern Cross Drive
SSO ID	23A
Address	Southern Cross Drive & Parsons Avenue
Date Of Discharge	5/10/2019
Duration Of Overflow	7 Hrs. 15 Min.
Date Of Relevant Weather Conditions	5/10-13/2019
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	25,285
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Phase I, Contract 18180SX0 was awarded 7/8/2019. County to submit a formal SSO elimination time extension request when a date has been identified.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date Of Discharge	5/10/2019
Duration Of Overflow	7 Hrs. 17 Min.
Date Of Relevant Weather Conditions	5/10-13/2019
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	19,744
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Phase I, Contract 18180SX0 was awarded 7/8/2019. County to submit a formal SSO elimination time extension request when a date has been identified.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date Of Discharge	5/10/2019
Duration Of Overflow	7 Hrs. 35 Min.
Date Of Relevant Weather Conditions	5/10-13/2019
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	74,933
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Phase I, Contract 18180SX0 was awarded 7/8/2019. County to submit a formal SSO elimination time extension request when a date has been identified.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date Of Discharge	5/12/2019
Duration Of Overflow	1 Hrs. 25 Min.
Date Of Relevant Weather Conditions	5/10-13/2019
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	53,522
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Phase I, Contract 18180SX0 was awarded 7/8/2019. County to submit a formal SSO elimination time extension request when a date has been identified.

Name	Overbrook Road
SSO ID	118
Address	Overbrook Road & Medwick Garth
Date Of Discharge	5/10-11/2019
Duration Of Overflow	8 Hrs. 2 Min.
Date Of Relevant Weather Conditions	5/10-13/2019
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	12,392
Receiving Waters	Maidens Choice Creek
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	City hydraulic improvements needed to eliminate overflow. County is coordinating with the City to complete needed improvements.

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Drive & Hillcrest Avenue
Date Of Discharge	5/10/2019
Duration Of Overflow	1 Hrs. 13 Min.
Date Of Relevant Weather Conditions	5/10-13/2019
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	998
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Contract 14117SX0 will be advertised in early August 2019. SSO elimination time extension request approved on 4/16/2018.

Attachment A1: Summary of Non-Pumping Station Overflow Structure Monitoring

Date of Rain Event		5/10-13/2019
Rain (inches)		1.88
SSO Name	**SSO ID**	
Alter Road	22	-
Southern Cross Drive	23A	25,285
Southern Cross	23B	19,744
Patterson Avenue	24	128,455 (74,933 + 53,522
Aiken Avenue	41	-
Queen Anne Drive	129	998
Overbrook Road	118	12,392

Attachment B

Construction Projects Status

During the April 1, 2019 – June 30, 2019 Period

Attachment B: Construction/Rehabilitation Projects Progress – Non-Pump Station SSO Structures

Project Name	Date of Construction Notice to Proceed	Sewershed Name	Consent Decree SSO Elimination Deadline	SSO Eliminated	Status
owder Mill Interceptor Relief Sewer Phase I (SSOs 22, 23A, 23B, 24)	-	Gwynns Falls	TBD	No	Contract 18180SX0 was awarded on 7/8/2019; EPA approved the County's SSO extension of time request on 4/16/2018
owder Mill Interceptor Relief Sewer Phase II (SSOs 22, 23A, 23B, 24)	-	Gwynns Falls	TBD	No	This project is waiting for Right of Entr from Baltimore City Department of Recreation and Parks; EPA approved County's SSO extension of time reque on 4/16/2018
Branch Herring Run Sewer (SSO 41 & 129)	-	Herring Run	TBD	No	Contract 14117SX0 will be advertised early August 2019; on 4/16/2018, EPA approved the County's SSO extension time request

:tachment B: Construction/Rehabilitation Projects Progress – Pump Station Rehabilitation, Repair and Replacement Consent Decree Paragraph No. 13

Project Name	Consent Decree Deadline	Anticipated Meeting CD Deadline	Comments
Harewood Park	3/20/2020	Yes	Construction
Campus Hill	3/20/2020	Yes	Construction
Rettman's Lane	3/20/2020	Yes	Construction
Lodge Forest Manor	3/20/2020	Yes	Design. Potential delay notification submitted on 11/9/2017.
Stansbury Manor	3/20/2020	Yes	Design. Potential delay notification submitted on 11/9/2017.
Blenhurst	3/20/2020	Yes	Construction
Rosebank	3/20/2020	Yes	Construction
Beachwood Road	3/20/2020	Yes	Construction. Potential delay notification submitted on 9/17/2018. Extension Request submitted 5/7/2019.
Oliver Beach	3/20/2020	Yes	Construction. Potential delay notification submitted on 9/17/2018.
Hyde Park	6/1/2021	Yes	Design
Bauernschmidt Manor	6/1/2021	Yes	Construction
Turkey Point	6/1/2022	Yes	Design
Millers Island	6/1/2022	Yes	Design
Corsica	6/1/2023	Yes	Design
Fort Howard	6/1/2023	Yes	Design
Pennwood Terrace	6/1/2023	Yes	Design

Attachment C

Collection System Inspection Status

During the April 1, 2019 – June 30, 2019 Period

Attachment C: Collection System Inspection Status

Paragraph 15.B.i (b)
Completion scheduled for September 20, 2020
Currently On-Time

Miles Remaining Beginning of Quarter	Miles Inspected and/or Attempted this Quarter	Miles Attempted but not Completed to Date	Miles Remaining
7.0	0.2	2.1	6.8
Appurtenances to be Inspected Beginning of Quarter	Appurtenances Inspected and/or Attempted this Quarter	Appurtenances Attempted but not Completed to Date	Appurtenances Remaining
39	0	353	39

Note: All values are based on the current version of the County's GIS

Attachment D

CCTV in Response to an SSO

During the April 1, 2019 – June 30, 2019 Period

Attachment D: CCTV response to an SSO (8.C.v)

Date of SSO	Location	CCTV Inspection Date	Exemption
5/7/2019	3415 Edcrest Road	5/9/2019	
5/10-11/2019	Overbrook Road & Medwick Garth		D
5/10/2019	3902 Patterson Avenue		D
5/12/2019	3902 Patterson Avenue		D
5/10/2019	Queen Anne Drive & Hillcrest Avenue		D
5/10/2019	3909 Southern Cross Drive		D
5/10/2019	Southern Cross Drive & Parsons Avenue		D
5/9-11/2019	8116 Philadelphia Road	5/10/2019	
5/20/2019	2328 West Joppa Road	5/24/2019	
5/20/2019	9533 Orbitan Court	5/22/2019	
5/23/2019	1119 Overbrook Road	5/29/2019	
5/28-29-2019	825 Silver Creek Road		B
6/4/2019	11025 York Road		A
6/9/2019	204 5th Avenue	6/14/2019	

Allowable Exemptions:

A. The cause of the SSO was a blockage in a County-owned lateral adjacent to the gravity line segment and the County cleans the County-owned lateral; or
B. The cause of the SSO was a blockage in the gravity line segment and visible directly from the manhole; or
C. The County has previously CCTV inspected the line segment(s) due to an earlier blockage and the County is in the process of developing or implementing corrective action; or
D. The location is an identified overflow structure and is being monitored pursuant to Paragraph 7.C and the County is involved in a process designed to eliminate the overflow structure

Attachment E

Status of SRRR Plan Implementation

During the April 1, 2019 – June 30, 2019 Period

Attachment E: Status of SRRR Plan Implementation

Sewershed	Consent Decree Deadline	On Schedule to Complete SRRR Plan Implementation
Bengies	9/29/2020	Yes. On 3/15/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Bird River	9/29/2020	Yes. On 3/15/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Bread & Cheese	9/29/2020	Post Hoc: On 7/10/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Cockeysville	9/29/2020	Yes. On 3/15/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Dead Run	9/6/2017	Completed
Delmar	4/18/2022	Yes
Duck Creek	4/18/2022	Yes
Dundalk	4/18/2022	Yes
East Point	4/18/2022	Yes
Essex	4/18/2022	Yes
Gray Manor	4/18/2022	Yes. On 6/19/2019 the County submitted a potential delay notification for a relief sewer project.
Gunpowder	4/18/2026	Yes
Gwynns Falls	9/6/2018	Completed; On 04/08/2016 and 01/23/2018, the County submitted potential delay notifications for a relief sewer and a structural rehabilitation project.
Herring Run	9/6/2018	Completed; On 11/03/2015, 08/15/2017 and 03/08/2018, the County submitted potential delay notifications for two relief sewers and a structural rehabilitation project.
Jones Falls	9/6/2019	Yes. On 11/17/2015 and 5/17/2018, the County submitted potential delay notifications for two sewer structural repair and rehabilitation projects. Post Hoc: On 7/12/2019 the County submitted a time extension requests for the two delayed projects.
Long Quarter	4/18/2024	Yes
Orems	9/29/2020	Yes. On 11/16/2018 the County submitted a potential delay notification for a force main replacement project.
Patapsco	9/6/2021	Yes. On 4/22/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Redhouse Run	4/18/2024	Yes
Stemmers Run	9/6/2024	Yes

Sewershed	Consent Decree Deadline	On Schedule to Complete SRRR Plan Implementation
Texas	4/18/2022	Post Hoc: On 7/10/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Tributary 26	2/11/2020	Completed
Tributary 27	9/6/2017	Completed
Tributary 43	2/11/2020	Completed
Tributary 48	9/6/2017	Completed
Tributary 78	2/11/2020	Completed
West Low Level	9/6/2017	Completed
White Marsh	4/18/2024	Yes



Quarterly Report

July 1, 2019
Through
September 30, 2019

Pursuant to Paragraph 19, of the Consent Decree between Baltimore County and the United States Environmental Protection Agency, Department of Justice and the Maryland Department of the Environment

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Pursuant to Paragraph 19 of the Consent Decree between Baltimore County (County) and The United States Environmental Protection Agency (EPA), the Department of Justice (DOJ), and the Maryland Department of the Environment (MDE), this document constitutes the required Quarterly Report for the period **July 1, 2019** through **September 30, 2019**.

The quarterly report discusses activities and progress of Baltimore County towards compliance with the requirements set forth in the Consent Decree including:

i. Non-Pump Station and Pump Station SSO Structure discharges
ii. Construction Project Status
iii. Collection system inspection progress
iv. SRRR plan implementation progress
v. FOG program modification and development progress
vi. Supplemental Environmental Projects status, and
vii. Compliance with certification of completion and other issues of the Consent Decree

i. Non-Pump Station and Pump Station SSO Structure Discharges

Discharges from Sanitary Sewer Overflow Structures took place at the locations and dates during the reporting period as detailed in **Attachment A**.

A summary of flow metering information for Non-Pump Station SSO Structures is included as **Attachment A1.**

ii. Construction Project Status

Attachment B presents the status of Paragraph 7 – Non-Pump Station SSO Structure Elimination projects and Paragraph 13.F - Pump Station Rehabilitation Repair and Replacement projects that are in design and construction during the reporting quarter.

iii. Collection System Inspection

Continued implementation of the inspection of the collection system, pursuant to Paragraph 15 of the Consent Decree.

Paragraph 15.B.i.b inspection status is summarized in **Attachment C**. Baltimore County anticipates completing inspection of the gravity sewer lines identified in Paragraph 15.B.i.b by September 20, 2020.

Continued compliance with all gravity line CCTV inspections within the required 10 working days of the occurrence of an overflow for each SSO that occurred during this reporting period. **Attachment D** details the County's inspection response to each of the overflow that occurred during the reporting period.

iv. SRRR Plan Implementation/Progress

The SRRR Plans contain numerous projects in a variety of locations and stages of planning, design and construction. **Attachment E** includes a list of each sewershed and a summary

status of Plan implementation. The implementation of the recommended improvement projects is proceeding; however, acquisition of required rights-of-way and regulatory permits may require a significant period of time thereby resulting in possible delay to complete the construction work.

The County's recommendations in some of the SRRR Plans for meter basins that exhibited excessive I/I and design-storm simulated model-predicted SSOs included the comprehensive rehabilitation of all pipe segments and manholes, increased hydraulic capacity and/or testing and repair of sewer house connections and laterals. Some of the recommended repairs were revised based on design preparation and review of improvement projects. Additionally, some miscellaneous sewer/manhole/lateral repairs that were included in the SRRR Plans may be revised based on a review of the original and updated inspection data.

v. FOG Program

The County has completed implementation of the FOG Program Modification Plan.

vi. SEP Status

Completed.

vii. Compliance Issues

In accordance with Paragraph 19, Item B.vii, the following is a summary of Consent Decree compliance issues.

a. Consent Decree projects or requirements certified as complete during the reporting period:

   Jones Falls SRRR Plan

   On September 6, 2019, the County completed implementation of the Jones Falls SRRR Plan. There are 186 assets (i.e. sewers and manholes), which represent approximately 11-percent of the total assets with repair recommendations, that remain outstanding and are awaiting completion of the necessary construction/maintenance work. On 11/17/2015 and 5/17/2018, the County submitted potential delay notifications for two sewer structural repair and rehabilitation projects. On 7/12/2019 the County submitted time extension requests for the delayed projects.

b. Consent Decree requirements due to be completed during the reporting period, but not completed:

   None.

c. Problems that may prevent the County from meeting future Consent Decree compliance deadlines:

Bread and Cheese SRRR Plan

On July 10, 2019 the County submitted a potential delay notification for the Bread and Cheese Sewershed Rehabilitation Project.

Texas SRRR Plan

On July 10, 2019 the County submitted a potential delay notification for the Cockeysville and Texas Sewershed Rehabilitation Project.

Elimination of Non-Pump Station SSO Structures 22, 23A, 23B, 24

Notice to proceed for Phase I contract was 9/3/2019. County to submit a formal SSO elimination time extension request when a date has been identified. Right of Way and Environmental Permits required for Phase II contract.

Elimination of Non-Pump Station SSO Structures 41 and 129

Sewer relief construction project awarded on 10/3/2019.

Elimination of Non-Pump Station SSO Structures 113, 116, 117 and 118

The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

_____

Thomas Kiefer, PE
Chief, Bureau of Engineering and Construction

Control Document No. 272

Attachment A - Discharges from Overflow Structures

Pump Station Overflow Structures

None

Non-Pump Station Overflow Structures – Metered

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date of Discharge	7/4/2019
Duration of Overflow	42 Min.
Date of Relevant Weather Conditions	7/4/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	431
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Notice to proceed for Phase I contract was 9/3/2019. County to submit a formal SSO elimination time extension request when a date has been identified. Right of Way and Environmental Permits required for Phase II contract.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date of Discharge	7/8/2019
Duration of Overflow	1 Hrs. 36 Min.
Date of Relevant Weather Conditions	7/8/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	12,288
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Notice to proceed for Phase I contract was 9/3/2019. County to submit a formal SSO elimination time extension request when a date has been identified. Right of Way and Environmental Permits required for Phase II contract.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	7/8/2019
Duration of Overflow	2 Hrs. 49 Min.
Date of Relevant Weather Conditions	7/8/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	40,770
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Notice to proceed for Phase I contract was 9/3/2019. County to submit a formal SSO elimination time extension request when a date has been identified. Right of Way and Environmental Permits required for Phase II contract.

Name	Southern Cross Drive
SSO ID	23A
Address	Southern Cross Drive & Parsons Avenue
Date of Discharge	7/11/2019
Duration of Overflow	2 Hrs. 25 Min.
Date of Relevant Weather Conditions	7/11/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	1,956
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Notice to proceed for Phase I contract was 9/3/2019. County to submit a formal SSO elimination time extension request when a date has been identified. Right of Way and Environmental Permits required for Phase II contract.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date of Discharge	7/11/2019
Duration of Overflow	2 Hrs. 31 Min.
Date of Relevant Weather Conditions	7/11/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	2,457
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Notice to proceed for Phase I contract was 9/3/2019. County to submit a formal SSO elimination time extension request when a date has been identified. Right of Way and Environmental Permits required for Phase II contract.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	7/11/2019
Duration of Overflow	1 Hrs. 13 Min.
Date of Relevant Weather Conditions	7/11/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	22,701
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Notice to proceed for Phase I contract was 9/3/2019. County to submit a formal SSO elimination time extension request when a date has been identified. Right of Way and Environmental Permits required for Phase II contract.

Name	Aiken Avenue
SSO ID	41
Address	7829 Aiken Avenue & Taylor Avenue
Date of Discharge	7/11/2019
Duration of Overflow	2 Hrs. 47 Min.
Date of Relevant Weather Conditions	7/11/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	69,357
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Sewer relief construction project awarded on 10/3/2019.

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Drive & Hillcrest Avenue
Date of Discharge	7/11/2019
Duration of Overflow	3 Hrs. 11 Min.
Date of Relevant Weather Conditions	7/11/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	57,850
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Sewer relief construction project awarded on 10/3/2019.

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Drive & Hillcrest Avenue
Date of Discharge	8/22/2019
Duration of Overflow	31 Min.
Date of Relevant Weather Conditions	8/22/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	567
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	Sewer relief construction project awarded on 10/3/2019.

Name	Marnat Road
SSO ID	113
Address	Marnat Road & Hatton Road
Date of Discharge	7/11/2019
Duration of Overflow	2 Hrs. 1 Min.
Date of Relevant Weather Conditions	7/11/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	3,236
Receiving Waters	Jones Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	City hydraulic improvements needed to eliminate overflow. County is coordinating with the City to complete needed improvements.

Attachment A1: Summary of Non-Pumping Station Overflow Structure Monitoring

Date of Rain Event		7/4/2019	7/8/2019	7/11/2019	8/22/2019
Rain (inches)		0.45	2.18	2.55	1.33
SSO Name	**SSO ID**	**Overflow Volume (gallons)**			
Southern Cross Drive	23A			1,956	
Southern Cross	23B	431	12,288	2,457	
Patterson Avenue	24		40,770	22,701	
Aiken Avenue	41			69,357	
Queen Anne Drive	129			57,850	567
Marnat Road	113			3,236	

Attachment B - Construction Projects Status

Non-Pump Station SSO Structures

Project Name	Date of Construction Notice to Proceed	Sewershed Name	Consent Decree SSO Elimination Deadline	SSO Eliminated	Status
Powder Mill Interceptor Relief Sewer Phase I – SXO 18180 (SSOs 22, 23A, 23B, 24)	-	Gwynns Falls	TBD	No	Contract notice to proceed was 9/3/2019. EPA approved the County's SSO extension of time request on 4/16/2018
Powder Mill Interceptor Relief Sewer Phase II (SSOs 22, 23A, 23B, 24)	-	Gwynns Falls	TBD	No	This project requires Right of Entry and permit approval from Baltimore City Department of Recreation and Parks. EPA approved the County's SSO extension of time request on 4/16/2018
East Branch Herring Run Relief Sewer (SSO 41 & 129)	-	Herring Run	TBD	No	EPA approved the County's SSO extension of time request

Pump Station Rehabilitation, Repair and Replacement

Project Name	Consent Decree Deadline	Anticipated Meeting CD Deadline	Comments
Harewood Park	3/20/2020	Yes	Construction
Campus Hill	3/20/2020	Yes	Construction
Rettman's Lane	3/20/2020	Yes	Construction. Substantially complete 8/22/2019
Lodge Forest Manor	3/20/2020	Yes	Design. Potential delay notification submitted on 11/9/2017.
Stansbury Manor	3/20/2020	Yes	Design. Potential delay notification submitted on 11/9/2017.
Blenhurst	3/20/2020	Yes	Construction
Rosebank	3/20/2020	Yes	Construction
Beachwood Road	3/20/2020	Yes	Construction. Time Extension Request submitted 5/7/2019.
Oliver Beach	3/20/2020	Yes	Construction. Potential delay notification submitted on 9/17/2018.
Hyde Park	6/1/2021	Yes	Design
Bauernschmidt Manor	6/1/2021	Yes	Construction
Turkey Point	6/1/2022	Yes	Design
Millers Island	6/1/2022	Yes	Design
Corsica	6/1/2023	Yes	Design
Fort Howard	6/1/2023	Yes	Design
Pennwood Terrace	6/1/2023	Yes	Design

Attachment C - Collection System Inspection Status

Paragraph 15.B.i (b)
Completion scheduled for September 20, 2020
Currently On-Schedule

Miles Remaining Beginning of Quarter	Miles Inspected and/or Attempted this Quarter	Miles Attempted but not Completed to Date	Miles Remaining
7.0	0.2	2.1	6.8
Appurtenances to be Inspected Beginning of Quarter	Appurtenances Inspected and/or Attempted this Quarter	Appurtenances Attempted but not Completed to Date	Appurtenances Remaining
39	0	31	39

Note: All values are based on the current version of the County's GIS

Attachment D - CCTV in Response to an SSO

Date of SSO	Location	CCTV Inspection Date	Exemption
7/4/2019	3909 Southern Cross Drive		D
7/8/2019	3909 Southern Cross Drive		D
7/8/2019	3902 Patterson Avenue		D
7/11/2019	Southern Cross Drive & Parsons Avenue		D
7/11/2019	3909 Southern Cross Drive		D
7/11/2019	3902 Patterson Avenue		D
7/11/2019	7829 Aiken Avenue & Taylor Avenue		D
7/11/2019	Queen Anne Drive & Hillcrest Avenue		D
7/11/2019	Marnat Road & Hatton Road		D
8/9/2019	1000 Lakeside Drive	8/13/2019	
8/22/2019	Queen Anne Drive & Hillcrest Avenue		D
9/3/2019	7929 Eastern Avenue	9/11/2019	

Allowable Exemptions:

A. The cause of the SSO was a blockage in a County-owned lateral adjacent to the gravity line segment and the County cleans the County-owned lateral
B. The cause of the SSO was a blockage in the gravity line segment and visible directly from the manhole
C. The County has previously CCTV inspected the line segment(s) due to an earlier blockage and the County is in the process of developing or implementing corrective action
D. The location is an identified overflow structure and is being monitored pursuant to Paragraph 7.C and the County is involved in a process designed to eliminate the overflow structure

Attachment E - Status of SRRR Plan Implementation

Sewershed	Consent Decree Deadline	On Schedule to Complete SRRR Plan Implementation
Bengies	9/29/2020	Yes. On 3/15/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Bird River	9/29/2020	Yes. On 3/15/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Bread & Cheese	9/29/2020	On 7/10/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Cockeysville	9/29/2020	Yes. On 3/15/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Dead Run	9/6/2017	Completed
Delmar	4/18/2022	Yes
Duck Creek	4/18/2022	Yes
Dundalk	4/18/2022	Yes
East Point	4/18/2022	Yes
Essex	4/18/2022	Yes
Gray Manor	4/18/2022	Yes. On 6/19/2019 the County submitted a potential delay notification for a relief sewer project.
Gunpowder	4/18/2026	Yes
Gwynns Falls	9/6/2018	Completed; On 04/08/2016 and 01/23/2018, the County submitted potential delay notifications for a relief sewer and a structural rehabilitation project.
Herring Run	9/6/2018	Completed; On 11/03/2015, 08/15/2017 and 03/08/2018, the County submitted potential delay notifications for two relief sewers and a structural rehabilitation project.
Jones Falls	9/6/2019	Completed. On 11/17/2015 and 5/17/2018, the County submitted potential delay notifications for two sewer structural repair and rehabilitation projects. On 7/12/2019 the County submitted a time extension requests for the two delayed projects.
Long Quarter	4/18/2024	Yes
Orems	9/29/2020	Yes. On 11/16/2018 the County submitted a potential delay notification for a force main replacement project.
Patapsco	9/6/2021	Yes. On 10/28/2018 and 4/22/2019 the County submitted a potential delay notifications for sewer structural repair and rehabilitation projects.
Redhouse Run	4/18/2024	Yes
Stemmers Run	9/6/2024	Yes
Texas	4/18/2022	On 7/10/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Tributary 26	2/11/2020	Completed
Tributary 27	9/6/2017	Completed
Tributary 43	2/11/2020	Completed
Tributary 48	9/6/2017	Completed
Tributary 78	2/11/2020	Completed
West Low Level	9/6/2017	Completed
Whitemarsh	4/18/2024	Yes



Quarterly Report

October 1, 2019 Through December 31, 2019

PURSUANT TO PARAGRAPH 19, OF THE CONSENT DECREE BETWEEN BALTIMORE COUNTY AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, DEPARTMENT OF JUSTICE AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT



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Pursuant to Paragraph 19 of the Consent Decree between Baltimore County (County) and The United States Environmental Protection Agency (EPA), the Department of Justice (DOJ), and the Maryland Department of the Environment (MDE), this document constitutes the required Quarterly Report for the period **October 1, 2019** through **December 31, 2019.**

The quarterly report discusses activities and progress of Baltimore County towards compliance with the requirements set forth in the Consent Decree including:

i. Non-Pump Station and Pump Station SSO Structure discharges
ii. Construction Project Status
iii. Collection system inspection progress
iv. SRRR plan implementation progress
v. FOG program modification and development progress
vi. Supplemental Environmental Projects status, and
vii. Compliance with certification of completion and other issues of the Consent Decree

i. Non-Pump Station and Pump Station SSO Structure Discharges

Discharges from Sanitary Sewer Overflow Structures took place at the locations and dates during the reporting period as detailed in **Attachment A**.

A summary of flow metering information for Non-Pump Station SSO Structures is included as **Attachment A1.**

ii. Construction Project Status

Attachment B presents the status of Paragraph 7 – Non-Pump Station SSO Structure Elimination projects and Paragraph 13.F - Pump Station Rehabilitation Repair and Replacement projects that are in design and construction during the reporting quarter.

iii. Collection System Inspection

Continued implementation of the inspection of the collection system, pursuant to Paragraph 15 of the Consent Decree.

Paragraph 15.B.i.b inspection status is summarized in **Attachment C**. Baltimore County anticipates completing inspection of the gravity sewer lines identified in Paragraph 15.B.i.b by September 20, 2020.

Continued compliance with all gravity line CCTV inspections within the required 10 working days of the occurrence of an overflow for each SSO that occurred during this reporting period. **Attachment D** details the County's inspection response to each of the overflow that occurred during the reporting period.

iv. SRRR Plan Implementation/Progress

The SRRR Plans contain numerous projects in a variety of locations and stages of planning, design and construction. **Attachment E** includes a list of each sewershed and a summary status of Plan implementation. The implementation of the recommended improvement projects is proceeding; however, acquisition of required rights-of-way and regulatory permits

may require a significant period of time thereby resulting in possible delay to complete the construction work.

The County's recommendations in some of the SRRR Plans for meter basins that exhibited excessive I/I and design-storm simulated model-predicted SSOs included the comprehensive rehabilitation of all pipe segments and manholes, increased hydraulic capacity and/or testing and repair of sewer house connections and laterals. Some of the recommended repairs were revised based on design preparation and review of improvement projects. Additionally, some miscellaneous sewer/manhole/lateral repairs that were included in the SRRR Plans may be revised based on a review of the original and updated inspection data.

v. FOG Program

The County has completed implementation of the FOG Program Modification Plan.

vi. SEP Status

Completed.

vii. Compliance Issues

In accordance with Paragraph 19, Item B.vii, the following is a summary of Consent Decree compliance issues.

a. Consent Decree projects or requirements certified as complete during the reporting period:

   None.

b. Consent Decree requirements due to be completed during the reporting period, but not completed:

   None.

c. Problems that may prevent the County from meeting future Consent Decree compliance deadlines:

   <u>Blenhurst Pump Station Rehabilitation</u>

   On November 15, 2019, the County submitted a Potential Delay Notification for completing the improvements to the Blenhurst Pump Station.

   <u>Delmar SRRR Plan</u>

   On November 22, 2019 the County submitted a potential delay notification for the Glen Echo Relief Sewer Project.

   <u>Dundalk SRRR Plan</u>

   On November 22, 2019 the County submitted a potential delay notification for the Dundalk Sewer Rehabilitation Project.

East Point SRRR Plan

On November 26, 2019 the County submitted a potential delay notification for the East Point Force Main Replacement Project.

Essex SRRR Plan

On December 10, 2019 the County submitted a potential delay notification for the Essex Force Main Replacement Project.

Long Quarter SRRR Plan

On November 27, 2019 the County submitted a potential delay notification for the Long Quarter Force Main Replacement Project.

Orems SRRR Plan

On November 22, 2019 the County submitted a potential delay notification for the Orems Basin 03 Relief Sewer Project.

Elimination of Non-Pump Station SSO Structures 22, 23A, 23B, 24

On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Elimination of Non-Pump Station SSO Structures 41 and 129

On 10/3/2019 the County awarded the construction project. The County will submit a second SSO elimination time extension when a date has been identified.

Elimination of Non-Pump Station SSO Structures 113, 116, 117 and 118

The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

_____

Thomas Kiefer, PE
Chief, Bureau of Engineering and Construction

Control Document No. 292

Attachment A - Discharges from Overflow Structures

Pump Station Overflow Structures

Pump Station Name	Oak Forest
Address	407 Seminole Avenue
Date Of Discharge	10/31/2019
Duration Of Overflow	44 Min.
Date Of Relevant Weather Conditions	10/31/2019
Description Of Relevant Weather Conditions	Rain
Gallons Discharged	670
Receiving Waters	Tributary to Patapsco River
Identified Cause	VFD mistakenly set to 50 Hz. Pump was not able to run at full capacity.
Details Of Corrective Action Taken or Planned	VFD reset to 60 Hz.

Pump Station Name	Frederick Road
Address	1809 Frederick Road
Date Of Discharge	10/31/2019
Duration Of Overflow	40 Min.
Date Of Relevant Weather Conditions	10/31/2019
Description Of Relevant Weather Conditions	Rain
Gallons Discharged	18,156
Receiving Waters	Tributary to Patapsco River
Identified Cause	Heavy rains inundated wastewater collection system that caused high flows to the pump station.
Details Of Corrective Action Taken or Planned	Heavy rains subsided.

Pump Station Name	Frederick Road
Address	1809 Frederick Road
Date Of Discharge	11/5/2019
Duration Of Overflow	11 Hrs 15 Min.
Date Of Relevant Weather Conditions	11/5/2019
Description Of Relevant Weather Conditions	Rain
Gallons Discharged	125,856
Receiving Waters	Tributary to Patapsco River
Identified Cause	Check valve on Pump 3 stuck open due to due to debris. Force main drained back causing all pumps to lock out at the station.
Details Of Corrective Action Taken or Planned	Removed debris in the check valve.

Non-Pump Station Overflow Structures – Metered

Name	Southern Cross Drive
SSO ID	23A
Address	Southern Cross Drive & Parsons Avenue
Date of Discharge	10/27/2019
Duration of Overflow	3 Hrs. 20 Min.
Date of Relevant Weather Conditions	10/27/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	1,072
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date of Discharge	10/27/2019
Duration of Overflow	3 Hrs. 46 Min.
Date of Relevant Weather Conditions	10/27/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	4,290
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	10/27/2019
Duration of Overflow	42 Min.
Date of Relevant Weather Conditions	10/27/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	13,262
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Marnat Road
SSO ID	113
Address	Marnat Road & Hatton Road
Date of Discharge	10/27/2019
Duration of Overflow	47 Min.
Date of Relevant Weather Conditions	10/27/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	1,842
Receiving Waters	Jones Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	City hydraulic improvements needed to eliminate overflow. County is coordinating with the City to complete needed improvements.

Name	Alter Road
SSO ID	22
Address	Alter Street & Southern Cross Drive
Date Of Discharge	10/31/2019 – 11/1/2019
Duration Of Overflow	3 Hrs. 16 Min.
Date Of Relevant Weather Conditions	10/31/2019 – 11/1/2019
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	33,344
Receiving Waters	Maidens Choice Creek
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Southern Cross Drive
SSO ID	23A
Address	Southern Cross Drive & Parsons Avenue
Date of Discharge	10/31/2019 – 11/1/2019
Duration of Overflow	4 Hrs. 51 Min.
Date of Relevant Weather Conditions	10/31/2019 – 11/1/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	42,951
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date of Discharge	10/31/2019 – 11/1/2019
Duration of Overflow	5 Hrs. 0 Min.
Date of Relevant Weather Conditions	10/31/2019 – 11/1/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	49,502
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	10/31/2019 – 11/1/2019
Duration of Overflow	4 Hrs. 45 Min.
Date of Relevant Weather Conditions	10/31/2019 – 11/1/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	200,675
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Aiken Avenue
SSO ID	41
Address	7829 Aiken Avenue & Taylor Avenue
Date of Discharge	10/31/2019
Duration of Overflow	1 Hrs. 39 Min.
Date of Relevant Weather Conditions	10/31/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	22,539
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 10/3/2019 the County awarded the construction project. The County will submit a second SSO elimination time extension when a date has been identified.

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Drive & Hillcrest Avenue
Date of Discharge	10/31/2019
Duration of Overflow	2 Hrs. 9 Min.
Date of Relevant Weather Conditions	10/31/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	34,760
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 10/3/2019 the County awarded the construction project. The County will submit a second SSO elimination time extension when a date has been identified.

Name	Marnat Road
SSO ID	113
Address	Marnat Road & Hatton Road
Date of Discharge	10/31/2019
Duration of Overflow	2 Hrs. 40 Min.
Date of Relevant Weather Conditions	10/31/2019
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	27,037
Receiving Waters	Jones Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

Name	Overbrook Road
SSO ID	118
Address	Overbrook Road & Medwick Garth
Date Of Discharge	10/31/2019 – 11/1/2019
Duration Of Overflow	2 Hrs. 36 Min.
Date Of Relevant Weather Conditions	10/31/2019 – 11/1/2019
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	120,256
Receiving Waters	Maidens Choice Creek
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

Attachment A1: Summary of Non-Pumping Station Overflow Structure Monitoring

Date of Rain Event		10/27/2019	10/31/2019 – 11/1/2019
Rain (inches)		1.96	1.83
SSO Name	SSO ID		
Alter Road	22		33,344
Southern Cross Drive	23A	1,072	42,951
Southern Cross	23B	4,290	49,502
Patterson Avenue	24	13,262	200,675
Aiken Avenue	41		22,539
Queen Anne Drive	129		34,760
Overbrook Road & Medwick Garth	118		120,256
Marnat Road	113	1,842	27,037

Attachment B - Construction Projects Status

Non-Pump Station SSO Structures

Project Name	Date of Construction Notice to Proceed	Sewershed Name	Consent Decree SSO Elimination Deadline	SSO Eliminated	Status
Powder Mill Interceptor Relief Sewer Phase I – SXO 18180 (SSOs 22, 23A, 23B, 24)	9/3/2019	Gwynns Falls	TBD	No	EPA approved the County's SSO extension of time request on 4/16/2018
Powder Mill Interceptor Relief Sewer Phase II (SSOs 22, 23A, 23B, 24)	-	Gwynns Falls	TBD	No	This project requires Right of Entry and permit approval from Baltimore City Department of Recreation and Parks. EPA approved the County's SSO extension of time request on 4/16/2018
East Branch Herring Run Relief Sewer (SSO 41 & 129)	1/21/2020	Herring Run	TBD	No	EPA approved the County's SSO extension of time request on 4/16/2018

Pump Station Rehabilitation, Repair and Replacement

Project Name	Consent Decree Deadline	Anticipated Meeting CD Deadline	Comments
Harewood Park	3/20/2020	Yes	Construction
Campus Hill	3/20/2020	Yes	Construction
Lodge Forest Manor	3/20/2020	Yes	Design. Potential delay notification submitted on 11/9/2017.
Stansbury Manor	3/20/2020	Yes	Design. Potential delay notification submitted on 11/9/2017.
Blenhurst	3/20/2020	No	Construction. Potential delay notification submitted on 11/15/2019.
Rosebank	3/20/2020	Yes	Construction
Beachwood Road	3/20/2020	Yes	Construction. Time extension request submitted 5/7/2019.
Oliver Beach	3/20/2020	Yes	Construction. Potential delay notification submitted on 9/17/2018.
Hyde Park	6/1/2021	Yes	Design
Bauernschmidt Manor	6/1/2021	Yes	Construction
Turkey Point	6/1/2022	Yes	Design
Millers Island	6/1/2022	Yes	Design
Corsica	6/1/2023	Yes	Design
Fort Howard	6/1/2023	Yes	Design
Pennwood Terrace	6/1/2023	Yes	Design

Attachment C - Collection System Inspection Status

Paragraph 15.B.i (b)
Completion scheduled for September 20, 2020
Currently On-Schedule

Miles Remaining Beginning of Quarter	Miles Inspected and/or Attempted this Quarter	Miles Attempted but not Completed to Date	Miles Remaining
4.1	2.0	2.0	2.1
Appurtenances to be Inspected Beginning of Quarter	**Appurtenances Inspected and/or Attempted this Quarter**	**Appurtenances Attempted but not Completed to Date**	**Appurtenances Remaining**
136	97	40	19

Note: All values are based on the current version of the County's GIS

Attachment D - CCTV in Response to an SSO

Date of SSO	Location	CCTV Inspection Date	Exemption
10/15/2019	4155 Glen Park Road	10/24/2019	
10/15/2019	6806 Bensel Avenue		A
10/27/2019	Southern Cross Drive & Parsons Avenue		D
10/27/2019	3909 Southern Cross Drive		D
10/27/2019	3902 Patterson Avenue		D
10/27/2019	Marnat Road & Hatton Road		D
10/29/2019	823 Scotts Hill Road	10/29/2019	
10/30/2019	104 Back River Neck Road		B
10/31/2019	Alter Street and Southern Cross Drive		D
10/31/2019	7829 Aiken Avenue & Taylor Avenue		D
10/31/2019	Marnat Road & Hatton Road		D
10/31/2019	Queen Anne Drive & Hillcrest Avenue		D
10/31/2019	Southern Cross Drive & Parsons Avenue		D
10/31/2019	3909 Southern Cross Drive		D
10/31/2019	3902 Patterson Avenue		D
10/31/2019	Overbrook Road and Medwick Garth		D
11/26/2019	4830 Butler Road	12/3/2019	
11/27/2019	8103 Beachwood Road	11/27/2019	
12/5/2019	8211 Fischer Road		B
12/7/2019	10620 Harford Road	12/9/2019	
12/18/2019	5415 Montbel Avenue	12/16/2019	
12/27/2019	5965 Schering Road	12/31/2019	

Allowable Exemptions:

A. The cause of the SSO was a blockage in a County-owned lateral adjacent to the gravity line segment and the County cleans the County-owned lateral
B. The cause of the SSO was a blockage in the gravity line segment and visible directly from the manhole
C. The County has previously CCTV inspected the line segment(s) due to an earlier blockage and the County is in the process of developing or implementing corrective action
D. The location is an identified overflow structure and is being monitored pursuant to Paragraph 7.C and the County is involved in a process designed to eliminate the overflow structure

Attachment E - Status of SRRR Plan Implementation

Sewershed	Consent Decree Deadline	On Schedule to Complete SRRR Plan Implementation
Bengies	9/29/2020	Yes. On 3/15/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Bird River	9/29/2020	Yes. On 3/15/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Bread & Cheese	9/29/2020	On 7/10/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Cockeysville	9/29/2020	Yes. On 3/15/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Dead Run	9/6/2017	Completed
Delmar	4/18/2022	Yes. On 11/22/2019 the County submitted a potential delay notification for a relief sewer project.
Duck Creek	4/18/2022	Yes
Dundalk	4/18/2022	Yes. On 11/22/2019 the County submitted a potential delay notification for a sewer structural repair and rehabilitation project.
East Point	4/18/2022	Yes. On 11/22/2019 the County submitted a potential delay notification for a force main replacement project.
Essex	4/18/2022	Yes. On 12/10/2019 the County submitted a potential delay notification for a force main replacement project.
Gray Manor	4/18/2022	Yes. On 6/19/2019 the County submitted a potential delay notification for a relief sewer project.
Gunpowder	4/18/2026	Yes
Gwynns Falls	9/6/2018	Completed; On 04/08/2016 and 01/23/2018, the County submitted potential delay notifications for a relief sewer and a structural rehabilitation project.
Herring Run	9/6/2018	Completed; On 11/03/2015, 08/15/2017 and 03/08/2018, the County submitted potential delay notifications for two relief sewers and a structural rehabilitation project.
Jones Falls	9/6/2019	Completed. On 11/17/2015 and 5/17/2018, the County submitted potential delay notifications for two sewer structural repair and rehabilitation projects. On 7/12/2019 the County submitted a time extension requests for the two delayed projects.
Long Quarter	4/18/2024	Yes. On 11/26/2019 the County submitted a potential delay notification for a force main replacement project.
Orems	9/29/2020	Yes. On 11/16/2018 the County submitted a potential delay notification for a force main replacement project. On 11/22/2019 the County submitted a potential delay notification for a relief sewer project.
Patapsco	9/6/2021	Yes. On 10/28/2018 and 4/22/2019 the County submitted a potential delay notifications for sewer structural repair and rehabilitation projects.
Redhouse Run	4/18/2024	Yes
Stemmers Run	9/6/2024	Yes
Texas	4/18/2022	On 7/10/2019 the County submitted a potential delay notification for sewer structural repair and rehabilitation projects.
Tributary 26	2/11/2020	Completed

Sewershed	Consent Decree Deadline	On Schedule to Complete SRRR Plan Implementation
Tributary 27	9/6/2017	Completed
Tributary 43	2/11/2020	Completed
Tributary 48	9/6/2017	Completed
Tributary 78	2/11/2020	Completed
West Low Level	9/6/2017	Completed
Whitemarsh	4/18/2024	Yes

Annual Report

January 1, 2019
Through
December 31, 2019



Pursuant to Paragraph 20, of the Consent Decree between Baltimore County and the United States Environmental Protection Agency, Department of Justice and the Maryland Department of the Environment

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Pursuant to Paragraph 20 of the Consent Decree entered between Baltimore County and the United States Environmental Protection Agency (EPA) and the Maryland Department of the Environment (MDE), this document constitutes the required Annual Report for the period **January 1, 2019** through **December 31, 2019**.

The annual report is a periodic review of Baltimore County activities related to the accomplishment of the Consent Decree general and specific requirements. The report is required to address:

i. Sanitary Sewer Overflow (SSO) structure elimination progress
ii. Rainfall and Flow Monitoring Plan compliance
iii. Evaluation of the rainfall and flow monitoring data
iv. Fats, Oils and Grease (FOG) Program updates
v. Illegal Storm Water discharges
vi. Pump Station Status
vii. Collection System Model Implementation Status
viii. Supplemental Collection System Inspection Progress
ix. Sewer Cleaning Progress
x. Collection System Inventory Progress
xi. Emergency Response Plan
xii. Building Backup Report
xiii. Annual Update to the SSO characterization report

i. Sanitary Sewer Overflow (SSO) Structure Elimination Progress

(a) Summarize progress in implementing approved schedules for the elimination of Non-Pump Station SSO structures

The listing of relief points is shown in Attachment A. Below is the status of the SSO elimination projects:

- 38 original SSOs (per CD Appendix A-2)
- 9 SSOs identified after CD effective date
- 3 SSOs reclassified as pump station SSOs
- 34 SSOs eliminated
- 10 SSOs scheduled for elimination

No SSO structures were eliminated during the reporting period.

Elimination of Non-Pump Station SSO Structures 22, 23A, 23B, 24

The original Consent Decree deadline for SSO elimination was March 22, 2017; however, on February 14, 2017, the County submitted a time extension request due to completing a required Phase II archaeological investigations for the Maryland Historical Trust and resulting delay in obtaining permit approval from the U.S. Army Corps of Engineers (ACOE). The requested SSO elimination date was undefined since the determination from the archaeological investigation may have required realignment and re-design of the new relief sewer. Subsequently, the County obtained ACOE's permit and, to expedite project completion, the County separated the project into two construction contract.

On September 3, 2019, the County issued the notice to proceed for the Phase I construction project, which is on-going. The Phase II construction project requires right-of-way acquisition

and environmental permits. After the right-of-way easements have been acquired, the environmental permits obtained and the Phase II construction project notice to proceed has been issued, the County will submit a second SSO elimination time extension with a definitive date to eliminate the SSO structures.

Elimination of Non-Pump Station SSO Structures 41 and 129

The original Consent Decree deadline for SSO elimination was March 20, 2018; however on October 4, 2017 the County submitted a time extension request due to private property easement acquisition. As stated in the time extension request, the requested SSO elimination date was undefined since the time to negotiate and acquire the easements was unknown. Subsequently, the right-of-entry agreements were finalized and the County completed design work. On October 3, 2019 the County awarded the construction project and will submit a second SSO elimination time extension after the contractor has submitted their construction baseline schedule.

Elimination of Non-Pump Station SSO Structures 113, 116, 117 and 118

The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City. A summary of the County's 2019 SSO elimination and/or flow monitoring activity is provided in Attachment A.

A summary of all County and EPA/MDE communication in 2019 related to SSO structures is shown below:

Date of Correspondence	From	To	Control ID	SSO ID	SSO Name	Subject
1/16/2019	County	EPA/ MDE	236	23A, 23B, 24, 41, 129	Southern Cross Drive, Southern Cross, Patterson Avenue, Aiken Avenue, Queen Anne Drive	Request to Waive Stipulated Penalties for Overflow Discharges on 12/21/2018
4/8/2019	County	EPA/ MDE	249	118, 22, 23A, 23B, 24, 41, 129	Overbrook Road, Alter Road, Southern Cross Drive, Southern Cross, Patterson Avenue, Aiken Avenue, Queen Anne Drive	Request to Waive Stipulated Penalties for Overflow Discharges on 3/21/2019
5/15/2019	County	EPA/ MDE	240	22, 23A, 23B, 24, 41, 129, 113, 116, 117, 118	Alter Road, Southern Cross Drive, Southern Cross, Patterson Avenue, Aiken Avenue, Queen Anne Drive, Marnat Road, Nunnery Lane, Briarwood Road, Overbrook Road	2019 Q1 Report
5/24/2019	County	EPA/ MDE	256	118, 23A, 23B, 24, 129	Alter Road, Southern Cross Drive, Southern Cross, Patterson Avenue, Queen Anne Drive	Request to Waive Stipulated Penalties for Overflow Discharges on 5/10-12/2019
8/5/2019	County	EPA/ MDE	270	113, 23A, 23B, 24, 41, 129	Marnat Road, Southern Cross Drive, Southern Cross, Patterson Avenue, Aiken Avenue, Queen Anne Drive	Request to Waive Stipulated Penalties for Overflow Discharges on 7/11/2019
8/13/2019	County	EPA/ MDE	264	22, 23A, 23B, 24, 41, 129, 113, 116, 117, 118	Alter Road, Southern Cross Drive, Southern Cross, Patterson Avenue, Aiken Avenue, Queen Anne Drive, Marnat Road, Nunnery Lane, Briarwood Road, Overbrook Road	2019 Q2 Report
9/11/2019	County	EPA/ MDE	271	129	Queen Anne Drive	Request to Waive Stipulated Penalties for Overflow Discharges on 8/22/2019
11/13/2019	County	EPA/ MDE	272	22, 23A, 23B, 24, 41, 129, 113, 116, 117, 118	Alter Road, Southern Cross Drive, Southern Cross, Patterson Avenue, Aiken Avenue, Queen Anne Drive, Marnat Road,	2019 Q3 Report

Date of Correspondence	From	To	Control ID	SSO ID	SSO Name	Subject
					Nunnery Lane, Briarwood Road, Overbrook Road	
11/20/2019	County	EPA/ MDE	281	113, 23A, 23B, 24	Marnat Road Southern Cross Drive, Southern Cross, Patterson Avenue	Request to Waive Stipulated Penalties for Overflow Discharges on 10/27/2019
11/21/2019	County	EPA/ MDE	282	113, 118, 22, 23A, 23B, 24, 41, 129	Marnat Road, Overbrook Road, Alter Road, Southern Cross Drive, Southern Cross, Patterson Avenue, Aiken Avenue, Queen Anne Drive	Request to Waive Stipulated Penalties for Overflow Discharges on 10/31/2019

(b) Summarize post-monitoring data after the elimination of a Non-Pump Station SSO structure

Flow monitoring activities will continue in accordance with Paragraph 7.C.v of the Consent Decree. Once sufficient flow monitoring data has been collected, the County will complete the hydraulic evaluation in accordance with Paragraph 7.C.v of the Consent Decree.

(c) Progress in implementing plans developed in response to certain discharges from Pump Station SSO structure(s)

The following pump stations discharged to their overflow structures:

Pump Station	Sewershed	Date of Overflow	Corrective Action
Kings Point	Patapsco	2/24/2019	Force Majeure
Randallstown	Gwynns Falls	6/2/2019	Force Majeure
Oak Forest	Patapsco	10/31/2019	Reset VFD settings & change O&M plan
Frederick Road	Patapsco	10/31/2019	Design project to reduce I&I
Frederick Road	Patapsco	11/5/2019	Repair check valves

According to CD Paragraph 7.C.vi, the County is required to submit an action plan and schedule for certain discharges from Pump Station SSO Structures that are caused by an event other than complete loss of pumping capacity of the pump station.

On March 25, 2019, the County submitted to EPA/MDE a letter stating that the February 24, 2019 SSO at the Kings Point Pump Station was caused by high winds that caused intermittent power fluctuations on both independent power feeds. The power fluctuations resulted in a variable frequency drive (VFD) fault and pump shutdown. The independent feeds are the approved backup power plan for that pump station; therefore, the County considers this to be a force majeure event for which an action plan and schedule was not required.

On June 25, 2019, the County submitted to EPA/MDE a letter stating that the June 2, 2019 SSO that occurred at the Randallstown Pump Station was the result of power fluctuation of the station's electrical feed that caused an overvoltage fault of the VFDs of both pumps. The power fluctuation was not long enough to automatically transfer power to the on-site generator and the generator is the approved backup power; therefore, the County considers the power fluctuation to be a force majeure event for which an action plan and schedule was not required.

On December 18, 2019, the County submitted to EPA/MDE an action plan for the October 31, 2019 SSO at the Oak Forest Pump Station. As stated in the action plan, a post-SSO forensic investigation determined that the VFD for one of the pumps was mistakenly set to 50 Hertz, which

limited the pump's hydraulic capacity; therefore, the pump station was not operating at full capacity when wet weather flow was being conveyed to the station. The County revised the monthly preventive maintenance inspection to include confirming the VFD settings at all pump stations; therefore, the County developed and has implemented the action plan.

On January 10, 2020 the County submitted to EPA/MDE an action plan for the October 31, 2019 SSO at the Frederick Road Pump Station. As stated in the action plan, the County is in the design phase for a sewer rehabilitation improvement project to reduce wet weather flow to the pump station. The project is included in the EPA/MDE-approved Patapsco Sewershed Sewer Repair, Rehabilitation and Replacement Plan. On October 28, 2018 the County submitted to EPA/MDE a potential delay notification for the improvement project due to private property right of way acquisition obstacles. After completing the improvement project, the County will complete post-construction flow monitoring and an inflow/infiltration analysis to determine the project's effectiveness in reducing wet weather flow and to revise the existing hydraulic model.

On January 10, 2020 the County submitted to EPA/MDE an action plan for the November 5, 2019 SSO at the Frederick Road Pump Station. As stated in the action plan, a post-SSO forensic investigation determined that an air pocket located inside a valve precluded the valve from closing, which allowed the force main to drain back. To avoid a similar future incident, the County replaced the gaskets and bolts of all the check valves and revised the pump lockout timer from 15 seconds to 10 minutes; therefore, the County has implemented the action plan.

ii. Rainfall and Flow Monitoring Plan Compliance

(a) Summarize results of annual evaluation of numbers and placement of rain gauges and flow monitors

In accordance with Paragraph 9.B.i, the County continued to collect rainfall data as necessary to allow the characterization of flow from sewershed service areas, the characterization of known SSOs, the development or improvement of hydraulic models for the sewersheds, and evaluate the effectiveness of measures implemented to reduce I/I and to increase system capacity.

(b) Report any changes to the locations of gauges or flow monitors

A summary of the flow monitoring locations as of December 31, 2019 is provided in Attachment B. Maps of flow monitoring and rain gauge locations are provided in Attachments 1 and 2.

(c) Report on any deviations from the approved plan

None.

iii. Evaluation of Rainfall and Flow Monitoring Data

(a) Inflow/infiltration (I/I) evaluation progress (due 60 days prior to date of SRRR plan submittal)

This task is complete.

(b) Long-term capacity/peak flow management evaluation (due 60 days prior to date of SRRR plan submittal)

This task is complete.

iv. Fats, Oils and Grease (FOG) Program Updates

(a) Provide the results of the annual evaluation of the effectiveness of the modified FOG control program

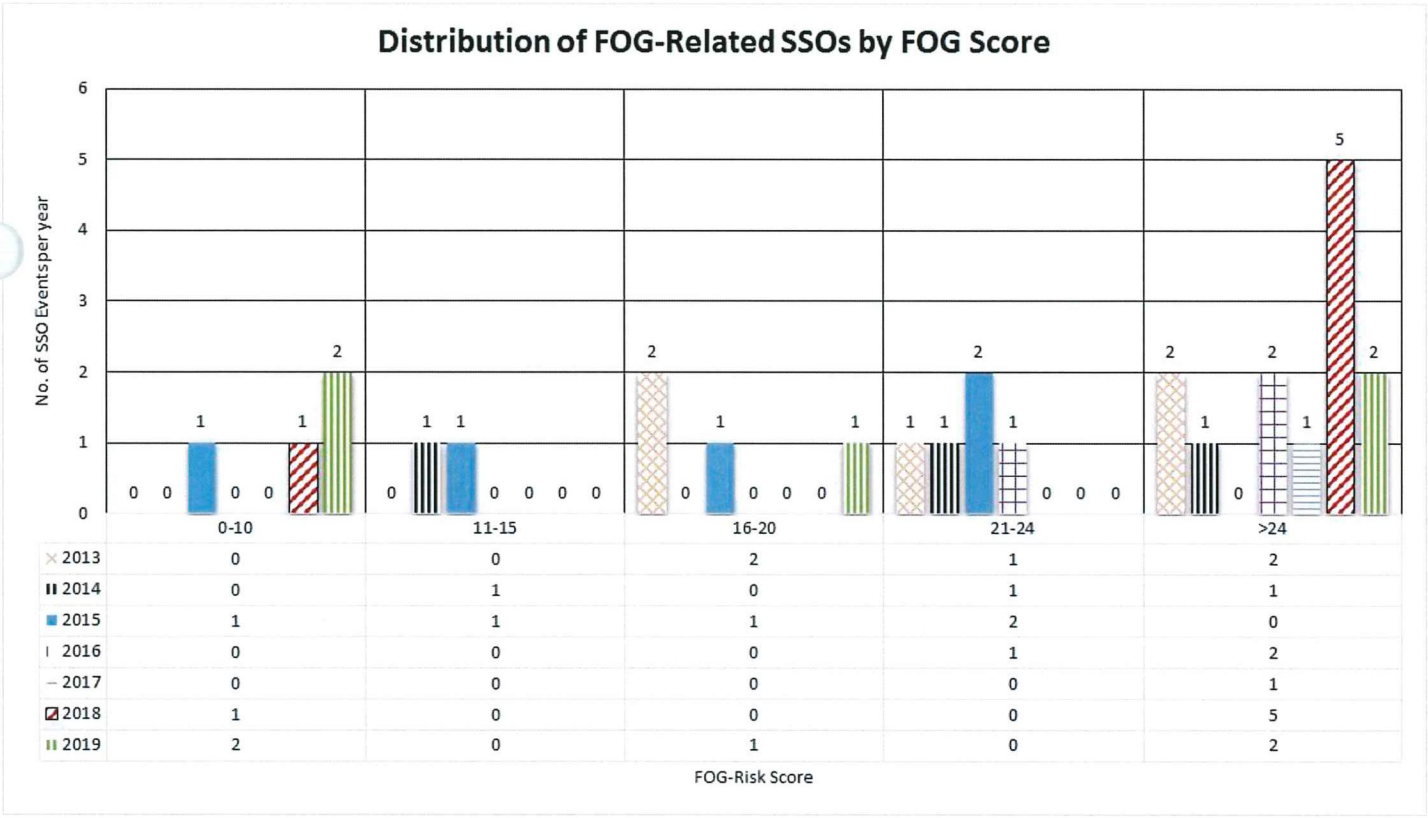
In accordance with Paragraph 11.I of the Consent Decree, the County continues to use the food service facility inspection results and the performance indicators to evaluate the effectiveness of the modified FOG Program. The evaluation results are summarized in Paragraph (c) below.

(b) Provide an updated database and map of grease generating facilities

A map and database of grease generating facilities are provided in Attachment 3.

(c) Evaluate the effectiveness of the modified FOG program

The evaluation of the modified FOG program attempted to determine a correlation between the number of SSO discharges and the proximity and FOG discharge risk score of FOG-generating facilities. Below are the analysis results:



	0-10	11-15	16-20	21-24	>24
2013	0	0	2	1	2
2014	0	1	0	1	1
2015	1	1	1	2	0
2016	0	0	0	1	2
2017	0	0	0	0	1
2018	1	0	0	0	5
2019	2	0	1	0	2

The graph indicates that facilities with a FOG discharge risk score of >16 may have a higher incidence of localized grease-related sewer overflows. The County will further analyze the data to confirm this possible correlation.

v. Illegal Stormwater Discharges

During the reporting period, the County identified 23 illegal stormwater connections. A summary of the actions taken in response to each instance is provided in Appendix C.

vi. Pumping Station Status

(a) Report on the required annual evaluation of the backup power program

Baltimore County completed the evaluation of the effectiveness of its existing Pump Station backup power program, including the use of portable generators as backup power for multiple stations, in preventing SSOs relating to power outages.

During the reporting period, the fleet of six (6) portable generators that supplement on-site backup power at the County's stations was adequate to meet the emergency power needs. The percent of Pump Stations which are now equipped with on-site backup emergency power has been increased to ninety five percent (95%).

On March 24, 2019 a storm event at the Kings Point Pump Station resulted in a power loss from both independent electrical services. The power outage was caused by high winds, which damaged the two independent electrical feeds. The dual independent electrical feeds were installed at the station as an MDE-accepted back-up power source and; therefore, the portable generator used to mitigate the overflow is not included in the annual evaluation.

On June 2, 2019 electrical feed power fluctuations at the Randallstown Pump station caused an overvoltage fault of the VFDs of both pumps resulting in a SSO discharge of 9, 500 gallons. The power fluctuation was not long enough to automatically transfer power to the on-site generator. Since the power fluctuation is considered a force majeure event, this event was not considered as a deficiencies in the back –up power evaluation.

(b) Report on the development and implementation of any plans related to overflows due to power outages at pumping stations

None. The back-up power evaluation did not indicate any deficiencies in the portable generator fleet, therefore no remedial plan is required.

(c) Pump station inspection deficiencies list

A report on the deficiencies discovered during the inspections of our pumping stations is provided in Attachment D.

(d) Pump station deficiencies discovered during Engineering Evaluation/Condition Assessments

This task is complete.

(e) Summarize the progress in implementing a pump station information management system

This task is complete.

vii. Collection System Model Implementation Status

This task is complete.

viii. Supplemental Collection System Inspection Progress

For Paragraph 15.B.i.b inspections, the progress made during this reporting period is detailed in Attachment E. In summary, approximately 4.6 miles of sewer and 74 manholes and other appurtenances were inspected during the specified period. It is anticipated that required collection system inspections will be completed by the September 20, 2020 compliance deadline.

ix. Sewer Cleaning Progress

The County has completed the initial Consent Decree requirements and is executing the maintenance cleaning program as described in the MDE/EPA-approved Operation and Maintenance Plan.

x. Collection System Inventory Progress

This task is complete.

xi. Emergency Response Plan

On July 2, 2019 the County submitted to EPA/MDE the updated plan.

xii. Building Backup Report

Maps of Building Backups since the last submission are provided in Attachment 4.

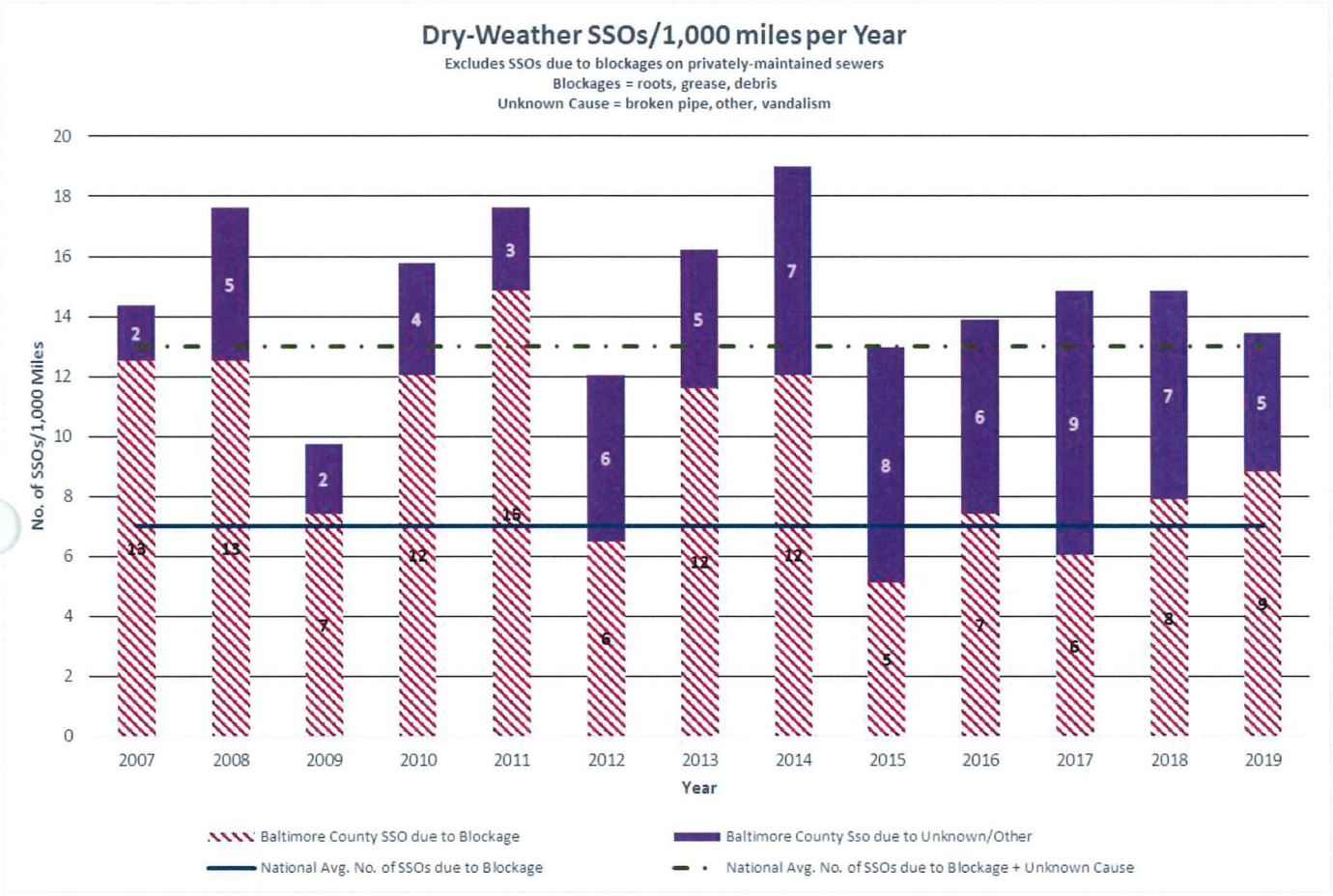
There were 80 reported building backups (including occurrences with zero gallon volumes) during the reporting period, as summarized in Attachment F. A summary of reported building backup history is provided below:

Year	Total Number of Reported Backups (ea)	Percent Increase/Decrease from Previous Year (%)
2006	113	---
2007	48	-57.5
2008	77	60.4
2009	44	-42.9
2010	90	104.5
2011	241	167.8
2012	139	-42.3
2013	217	56.1
2014	346	59.5
2015	143	-58.6
2016	136	-4.9
2017	71	-47.8
2018	345	386
2019	80	-76.8

xiii. Annual Update of SSO Characterization Report

In accordance with Paragraph 7.B.ii of the Consent Decree, the updated SSO characterization maps are provided in Attachment 5.

Based on the data available in EPA's report to Congress titled "Impacts and Control on CSOs and SSOs", dated August 2004, there are, on average, approximately 7 dry-weather SSOs due to pipeline blockages per 1,000 miles per year and an additional 6 dry-weather SSOs with unknown causes per 1,000 miles per year. Below is a summary per year of Baltimore County's dry-weather SSOs due to a pipeline blockage.



As shown in the above graph, since 2015, the number of SSOs per year due roots, grease and debris is approximately equal to the national average; however, in the same time period, the number of SSOs per year due to unknown/other causes, such as broken pipe, vandalism, etc. has significantly increased compared to the prior 7 year (2007-2014). Since 2015 the total number of SSOs per year has approximately doubled due to unknown/other causes.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

_____

Thomas Kiefer, PE
Chief, Bureau of Engineering and Construction

Attachments:
1) Flow Meter Site Location Maps
2) Rain Gauge Site Location Maps
3) Maps and Database of Grease Generating Facilities
4) Basement Backup Characterization Maps
5) SSO Characterization Maps

Control Document No. 299

Attachment A – Non-Pump Station Overflow Structure

Non-Pump Station Overflow Structures

Name	Address	SSO ID	Grid	Key-sheet	Active	Assigned SSA	Date Removed	End of Post-Elimination Monitoring	Notes
Croydon Rd	Off Liberty Road	106	33C04	LNE	No	83-23-03-01	7/2/2015	1/2/2017	Post-elimination flow monitoring underway
Overbrook & Banbury	748 Overbrook Road	36	27E11	NSW	No	33-16-10-00	7/2/2015	1/2/2017	Post-elimination flow monitoring underway
Anneslie Rd	740 Anneslie Road	37	27D11	NSW	No	33-16-10-00	7/2/2015	1/2/2017	Post-elimination flow monitoring underway
Abbie Place	Subet & Abbie Place	20	33A02	LNE	No	83-28-02-00	6/29/2016	12/29/2017	CD Elimination Deadline 9/20/2016; Post-elimination flow monitoring underway
Bagley Ave	7845 Bagely Ave.	130	28D11	NSE	No	01-05-31-02	6/14/2016	12/14/2017	CD Elimination Deadline 6/30/2016; Post-construction flow monitoring underway
Alter Road	Alter Road & Southern Cross	22	33G02	KNW	Yes	83-06-05-07	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. Right-of-way and environmental permits are required for Phase II construction. (Powder Mill Interceptor Relief Sewer)		Original CD elimination deadline was 3/22/2017. Extension request, with undefined SSO elimination date submitted on 2/14/2017. Second time extension request with definitive SSO elimination date will be submitted after right-of-way acquisition, environmental permits obtained and construction notice to proceed is issued.
Southern Cross Dr	Southern Cross Drive & Parsons Avenue	23A	33G01	KNW	Yes	83-06-05-07			
Southern Cross	3909 Southern Cross Drive	23B	33G01	KNW	Yes	83-06-05-10			
Patterson Ave	3902 Patterson Avenue	24	33G03	KNW	Yes	83-06-05-03			
Aiken Avenue	7829 Aiken Ave Near Taylor	41	28A10	NSE	Yes	33-93-03-00	On 10/3/2019 the County awarded the construction		Original CD elimination deadline was 3/20/2018.

Name	Address	SSO ID	Grid	Key-sheet	Active	Assigned SSA	Date Removed	End of Post-Elimination Monitoring	Notes
Queen Anne Dr	Queen Anne Dr.@Hillcrest Ave.	129	28A10	NSE	Yes	33-92-00-00	project. (East Branch Herring Run Relief Sewer)		Extension request with undefined SSO elimination date submitted on 10/4/2017. Second time extension request with defined SSO elimination date will be submitted after County receives construction baseline schedule.
Marnat Rd	Marnat & Hatton Rd	113	25J11	OSW	Yes	45-10-22-01	Construction complete prior to 9/20/2016 Consent Decree deadline. City improvements required to eliminate SSO structures.		Original CD elimination deadline was 9/20/2016. Extension requests with undefined SSO elimination date submitted on 6/22/2016. Second time extension with a defined SSO elimination date will be submitted after the County receives from the City the proposed downstream sewer improvements and associated construction schedule. Continuing post-construction flow monitoring.
Nunnery Lane	North of Frederick Road	116	41G02	GNW	Yes	81-52-00-00			
Briarwood Rd	North of Frederick Rd	117	41G02	GNW	Yes	81-54-00-00			
Overbrook Rd	Overbrook Near Medwick Garth	118	41H02	GNW	Yes	81-50-01-00			

Attachment B – Flow Monitor Summary

Sewershed	Manhole ID	Comments
Dead Run	3838	Westhills Pkwy
Dead Run	8666	Dogwood Rd (Flo-Dar)
Dead Run	10632	Charring Cross
Dead Run	18080	Tallow Ct
Dead Run	21472	Craigmont
Dead Run	30666	Glen Spring
Dead Run	30669	Rolling Rd
Dead Run	45442	Parallel Dr
Dead Run	901956	Moorehead Rd.
Dead Run	8670	
Dead Run	13314	
Dead Run	15239	
Dead Run	15247	
Dead Run	8675	
Dead Run	8686	
Dead Run	18054	
Dead Run	17330	
Dead Run	17324	
Dead Run	41070	
Dead Run	23207	
Dead Run	10230	
Dead Run	18074	
Dead Run	30667	
Dead Run	18081	
Dead Run	57869	
Essex	3216	
Gwynns Falls	9010	Abbie Pl.
Gwynns Falls	10954	Montbel
Gwynns Falls	11060	Southern Cross Dr. @ Alter
Gwynns Falls	16432	Patterson
Gwynns Falls	16837	Southern Cross "A" U/S
Gwynns Falls	17280	Croydon Rd.
Gwynns Falls	17802	Southern Cross "A" live
Gwynns Falls	19152	Kelox @ Talles
Gwynns Falls	31241	Pembroke Rd
Gwynns Falls	47179	Purnell Dr
Gwynns Falls	71240	Sussex Rd @ Liberty Rd
Gwynns Falls	901891	Southern Cross Dr. "B"
Gwynns Falls	8070 city	Northern Pkwy @ Liberty Rd
Herring Run	694	Queen Anne & Hillcrest
Herring Run	722	Banbury
Herring Run	726	Anneslie Rd.
Herring Run	6566	Perring Pkwy
Herring Run	6572	Intcpt @ Raq club
Herring Run	6584	Berrywood 12"
Herring Run	11481	Aiken Ave.
Herring Run	32117	Falkirk
Herring Run	32927	Intcpt S. of Taylor

Sewershed	Manhole ID	Comments
Herring Run	71591	Walker Ave
Jones Falls	793	Marnet SSO
Jones Falls	2403	Charles St. Ave
Jones Falls	6883	Jones Falls Intercepter
Jones Falls	7289	Gerard Ave
Jones Falls	9862	Northbrook & Hatton
Jones Falls	9863	Slade & Northbrook
Jones Falls	16379	Jones Falls Intercepter
Jones Falls	43819	Joppa Rd
Jones Falls	44223	Falls Rd, RO Valley Inn
Longquarter	12292	Medbury
Longquarter	45483	Shetland Hills
Patapsco	1335	IFO 12 Dutton Ct
Patapsco	1396	Southwest Blvd at MARC station
Patapsco	3374	IFO 1309 Elm Ave
Patapsco	3454	IFO 1308 Midvale Ave
Patapsco	6330	Patapsco S.P. Closest to the stream
Patapsco	8435	IFO 5601 Ashbourne
Patapsco	8959	IFO 2610 Willow Ave
Patapsco	9725	Parking Lot @ 5820 SW Blvd
Patapsco	10141	New York & Baltimore ST
Patapsco	12881	Michigan & Baltimore North
Patapsco	12883	Vermont & Baltimore
Patapsco	13969	R/O 1011 Linden Ave
Patapsco	15064	BGE R/W off Hammonds Ferry Rd
Patapsco	15963	Oak Forest PS
Patapsco	18569	Oella Ave & Waters Ave
Patapsco	34917	R/W South of Cedar Ave
Patapsco	39362	Inwood Shop storage lot
Patapsco	49168	Patapsco S.P. Fartherest from the stream (Flo-Dar)
Patapsco	63915	Patapsco SP (Herbert Run)
Patapsco	900335	IFO 5625 Ashbourne
Rehouse Run	38847	Chesaco Park PS
Stemmers Run	2149	Daniels Rd R/W
Stemmers Run	17620	Daniels Rd R/W
Stemmers Run	23123	End Of Essex
Stemmers Run	72137	Garnet Rd R/W
Stemmers Run	72138	Garnet Rd R/W
Stemmers Run	902030	Dubois Ave
Texas	29635	
Texas	38747	
Texas	38002	
Texas	36713	
Texas	48822	
Texas	35448	
West Low Level	296	Edmondson Ave
West Low Level	347	Hillside Rd

Sewershed	Manhole ID	Comments
West Low Level	352	Edmondson Ridge Rd
West Low Level	371	Overbrook Rd. @ Medwick Garth U/S
West Low Level	410	Frederick Rd @ Nunnery Ln
West Low Level	7368	Nunnery Ln. U/S
West Low Level	7783	Woodlawn Ave
West Low Level	7792	Stoney Lane
West Low Level	34894	Edmonson Ave.
West Low Level	902029	Briarwood Alley
West Low Level	902029	Briarwood Alley
West Low Level	22346	
West Low Level	275	
West Low Level	9860	
West Low Level	352	
West Low Level	8059	
West Low Level	7790	
West Low Level	18635	

Attachment C – List of Illegal Stormwater Discharges

Illegal Stormwater Discharges
Discovered During Inspection Process

Date of Observation	Sewer ID	Street	Problem Description	Repair Date
01/04/19	1269-1268	N BEECHWOOD AVE	CLEAN OUT CAP; MISSING	02/18/20
01/04/19	1284-1269	N BEECHWOOD AVE	STORM DRAIN; INLET	02/18/20
01/04/19	1290-1287	N BEECHWOOD AVE	CLEAN OUT CAP; MISSING	02/18/20
01/04/19	17495-17494	N BEECHWOOD AVE	STAND PIPE; PIPE	02/18/20
06/14/19	10646-10645	WHITLOCK RD	REPLACE CLEAN OUT CAP	07/18/19
06/14/19	10646-10645	WHITLOCK RD	CLEAN OUT CAP; BROKEN NUT	02/20/20
05/29/19	3838-TCM14	WEST HILLS PKWY	STAND PIPE; FERRULE	02/18/20
05/29/19	3837-3836	WEST HILLS PKWY	CLEAN OUT CAP; BROKEN NUT	02/18/20
05/29/19	10638-10634	WEST HILLS PKWY	STAND PIPE; FERRULE	02/18/20
05/29/19	10646-10645	WEST HILLS PKWY	CLEAN OUT CAP; BROKEN NUT	02/18/20
05/29/19	10645-10644	WEST HILLS PKWY	STAND PIPE; FERRULE	02/18/20
05/29/19	10637-10636	WEST HILLS PKWY	CLEAN OUT CAP; BROKEN NUT	02/18/20
05/29/19	10637-10636	WEST HILLS PKWY	CLEAN OUT CAP; BROKEN NUT	02/18/20
05/29/19	10636-10635	WEST HILLS PKWY	CLEAN OUT CAP; MISSING	02/18/20
05/29/19	10632-14322	WEST HILLS PKWY	CLEAN OUT CAP; MISSING	02/18/20
05/29/19	10649-10632	WEST HILLS PKWY	CLEAN OUT CAP; MISSING	02/18/20
05/29/19	10649-10632	WEST HILLS PKWY	CLEAN OUT CAP; MISSING	02/18/20
03/27/19	3838-TCM14	WEST HILLS PKWY	STAND PIPE; FERRULE	02/21/20
07/16/19	1269-1268	BEECHWOOD AVE	CLEAN OUT CAP; MISSING	02/21/20
05/29/19	10649-10632	WEST HILLS PKWY	CLEAN OUT CAP; MISSING	02/18/20
05/29/19	3820-3819	WEST HILLS PKWY	STAND PIPE; FERRULE	02/18/20
05/29/19	3835-3836	WEST HILLS PKWY	CLEAN OUT CAP; MISSING	02/18/20
06/17/19	10637-10636	CHANNING RD	CLEAN OUT CAP; BROKEN NUT	02/20/20

Attachment D – List of Deficiencies found during the Inspection of Pumping Stations

Station	Sewershed	Date	Equipment	Problem	Nature of Repair	Completed date	Priority	Reason for Delay if Open>6 Months
Duck Creek	Duck Creek	1/2/2019	Generator	Generator won't start	Replaced batteries	1/14/2019	3	
White Marsh (New)	White Marsh	1/4/2019	VFD 4	VFD fault	Replaced VFD	2/28/2019	2	
Windlass	Stemmers Run	1/15/2019	Pump 3	Malfunctioning hacker valve	Replaced cylinder seals	2/27/2019	2	
Stemmers Run (New)	Stemmers Run	1/21/2019	Pump 1	Broken impeller and wear ring	Installed new impeller and wear rings	1/23/2019	2	
Gray Manor	Gray Manor	2/1/2019	Auxiliary suction #3	Coupling came off of shaft	Installed new motor	9/5/2019	2	Delay in ordering, manufacturer lead time and drawing approval
Gray Manor	Gray Manor	2/1/2019	Aux suction valve Pump 1	Cylinder needs replacement			2	New cylinder arrived but damaged during shipping. Waiting on replacement cylinder
West Inverness	Gray Manor	2/6/2019	Pump 2	Malfunctioning pressure ring	Removed air and added oil to pressure ring	2/10/2019	2	
Baurenschmidt	Duck Creek	2/7/2019	Pump 2	RAD clutch burned up	Will pull generator to site when station has a power failure.	2/28/2019	2	
Stemmers Run (New)	Stemmers Run	2/14/2019	Pump 4	Broken impeller	Replaced impeller and wear rings	2/19/2019	2	
Texas	Texas	2/26/2019	Surge Relief Valve	Clogged valve	Unchoked valve and adjusted	3/12/2019	2	
Windlass	Stemmers Run	2/27/2019	Pump 2	Malfunctioning hacker valve	Replaced cylinder seals	3/3/2019	2	
Texas	Texas	3/1/2019	Pump 5	VFD ground fault	Repaired pump	5/9/2019	2	
Cape May	Duck Creek	3/7/2019	Generator	Bad bearings	Will operate on automatic when there is a power failure	4/23/2019	2	
Dundalk	Dundalk	3/7/2019	Spare Pump	Shaft locked up	Repaired pump	8/1/2019	3	
Randallstown	Gwynns Falls	3/8/2019	Pump 2	Seal failure	Installed repaired pump and put back online	6/28/2019	3	
Masseth Avenue	Delmar	3/11/2019	Influent grinder	Shorted motor	Replaced motor	9/5/2019	2	

Station	Sewershed	Date	Equipment	Problem	Nature of Repair	Completed date	Priority	Reason for Delay if Open>6 Months
Forge Acres	Bird River	3/18/2019	Pump 1	Failed cone valve cylinder seal	Replaced seals	4/10/2019	2	
Temple Gate	Bread & Cheese	3/19/2019	Generator	Gas leak on piping feeding the generator	Repaired leak	3/20/2019	3	
Old Battle Grove	Gray Manor	4/6/2019	Pump 2	Pump won't stay running	Replaced VFD phase monitor	4/8/2019	3	
Forge Acres	Bird River	4/14/2019	Pump 3	Failed cone valve cylinder	Repaired cylinder	4/29/2019	2	
Corsica Road	Duck Creek	5/1/2019	Pump 2	Pump needs to be rebuilt	Repaired pump	8/1/2019	3	
Bear Creek	Gray Manor	5/3/2019	Generator	Primer leaking	Replaced fuel pump	5/9/2019	2	
Loveton Estates	Cockeysville	5/30/2019	Pump 2	Failed seal	Repaired pump	7/16/2019	3	
Red House Run	Red House Run	6/13/2019	Pump 1	Replace VFD	Replaced VFD	2/25/2020	2	Delay in ordering and manufacturer lead time
Orems Road	Orems	6/18/2019	Pump 2	Bad bearing	Repaired motor	8/12/2019	3	
Forge Acres	Bird River	6/28/2019	Cone Valve 1	Malfunctioning cone valve	Repaired valve and replaced cylinder seals	8/5/2019	3	
Stemmers Run (New)	Stemmers Run	7/1/2019	VFD 3	Replace VFD			2	VFD series is discontinued. Creating capital project
Red House Run	Red House Run	7/9/2019	VFD 3	Replace VFD	Replaced VFD	2/25/2020	2	Delay in ordering and manufacturer lead time
Beachwood Estates	Gray Manor	7/9/2019	Pump 2	Bad bearings	Repaired pump	9/11/2019	2	
Randallstown	Gwynns Falls	7/14/2019	Pump 2	Failed seal	Repaired pump	9/12/2019	3	
Ravens Complex	Gwynns Falls	8/11/2019	Pump 1	Not pumping to capacity	Repaired pump	9/18/2019	3	
Gray Manor	Gray Manor	8/28/2019	Emergency H/W tuning fork	Malfunctioning sensor and tuning fork	Replaced tuning fork	9/24/2019	2	

Station	Sewershed	Date	Equipment	Problem	Nature of Repair	Completed date	Priority	Reason for Delay if Open>6 Months
Ravens Complex	Gwynns Falls	8/31/2019	Primary controller	Replace controller	Replaced controller	9/4/2019	3	
Long Quarter	Long Quarter	9/15/2019	VFD 1	Faulting VFD	Installed new DMO board	10/4/2019	2	
Beachwood Estates	Gray Manor	11/3/2019	Pump 1	Bad bearings	Replaced pump	2/3/2020	2	
Millers Island	Delmar	11/4/2019	Pump 2	Replace VFD	Replaced VFD	11/13/2019	3	
Greenhill Cove	Gray Manor	11/4/2019	Generator	Gas leak	Repaired leak	11/6/2019	2	
Dundalk	Dundalk	11/5/2019	Pump 1	Seal failure			2	Repair shop is waiting on replacement parts from manufacturer
Orems Road	Orems	11/8/2019	Cone valve 3	Malfunctioning valve	Repaired leak	11/14/2019	2	
Greenhill Cove	Greenhill Cove	11/12/2019	Pump 1	Bad bearings	Repaired pump	1/7/2020	2	
Helena Avenue	Helena Avenue	11/12/2019	Generator	Radiator leaking	Replaced radiator	12/11/2019	2	
Hawthorne 1	Hawthorne 1	11/18/2019	Generator	Leaking radiator	Replaced radiator	12/17/2019	2	
Cedar Beach	Cedar Beach	11/18/2019	Generator	Leaking radiator	Replaced radiator	1/2/2020	2	
Gunpowder	Gunpowder	11/27/2019	VFD 4	Malfunctioning cooling fan	Replaced fan control card	12/11/2019	2	
Long Quarter	Long Quarter	12/3/2019	Pump 3 suction gate	Missing sealing gasket			2	In process of ordering a replacement sluice gate.
Long Quarter	Long Quarter	12/3/2019	Pump 3	Malfunctioning pressure ring			2	This can't be repaired until suction gate is repaired.
Stemmers Run (New)	Stemmers Run (New)	12/11/2019	Cone valve 4	Malfunctioning valve	Replaced PLC	12/12/2019	2	

Station	Sewershed	Date	Equipment	Problem	Nature of Repair	Completed date	Priority	Reason for Delay if Open>6 Months
Dundalk	Dundalk	12/13/2019	Pump 4	Failed seal			2	Pump was sent to repair shop
Long Quarter	Long Quarter	12/20/2019	Aux suction valve Pump 1	Malfunctioning positioner			2	Ordering new position indicator

The pump station deficiencies listed below were outstanding in the 2017 and 2018 Annual Reports. The repair status and/or reason for repair delay are provided below.

Station	Sewershed	Date	Equipment	Problem	Nature of Repair	Completed date	Priority	Reason for Delay if Open>6 Months
Old Stemmers Run	Stemmers Run	5/2/2017	Pump 1 VFD	Failed VFD	VFD section is blown up	2	2/28/19	VFD series is discontinued. Delay in ordering and installation replacement.
Old Stemmers Run	Stemmers Run	12/6/2017	Pump 2 VFD	Failed VFD	VFD output section is bad and soft start needs parts	2	2/28/19	VFD series is discontinued. Delay in ordering and installation replacement.
Gray Manor	Gray Manor	2/20/2018	Pump 3 VFD	Failed VFD	Replaced VFD	2	3/6/19	VFD series is discontinued. Delay in ordering and installation replacement.
Ravens Complex	Gwynns Falls	8/2/2018	Generator	Generator does not produce correct voltage under load	Replaced generator	3	1/23/19	
White Marsh (New)	White Marsh	9/19/2018	Pump 2	Sleeve spinning on shaft	Repaired shaft	2	5/9/19	The impellers had an 18-24-week lead time.
Kings Point	Gwynns Falls	9/22/2018	Pump 2	Pressure ring problem	Rebuilt pressure ring	2	6/4/19	Delay in finding the root cause of problem.
Stantonwood	Jones Falls	10/14/2018	Pump 2	Pump has seal failure	Repaired pump	2	2/8/19	Only explosion proof certified manufacturer could complete repair.
White Marsh (New)	White Marsh	12/7/2018	Pump 2	Multilin was removed and put into VFD 4	Replaced Multilin	2	4/16/19	Model is discontinued. Delay in ordering replacement.
Masseth Avenue	Delmar	12/29/2018	Pump 2	VFD is shorted	Replaced VFD	2	1/3/19	
Dundalk	Dundalk	12/29/2018	Pump 4	Will not rotate	Repaired pump	2	9/4/19	Delay in manufacturer lead time
Marlyn Avenue	Essex	12/29/2018	Pump 2	Will not rotate	Repaired pump	2	3/19/19	

Attachment E – Detail of Footage Inspected per 15.B.i.b

Paragraph 15.B.i (b): CCTV Inspection
Completion scheduled for September 20, 2020

Miles Remaining to be inspected Beginning of Year	Miles Inspected and/or Attempted this Year	Miles Attempted but not Completed to Date	Miles Remaining
7.5 (1)	5.4	2.0	2.1(2)
Appurtenances to be Inspected Beginning of Year	Appurtenances Inspected and/or Attempted this Year	Appurtenances Attempted but not Completed to Date	Appurtenances Remaining
93 (1)	74	40	19(2)

(1) From 2019 first Quarterly Report
(2) From 2019 fourth Quarterly Report

Attachment F – Building Backups

Building Backups

ADDRESS	ZIP CODE	DATE	WORK ORDER	CAUSE	VOLUME
1205 WAKEFORD CIR	21239	7-Jan-19	20193675203	CLEANING	1
7397 EDSWORTH RD	21222	8-Jan-19	20193697701	DEFECTIVE PIPE	53.6
6206 HADDON AVE	21212	12-Jan-19	20193720201	ROOTS	465
1025 MARLEIGH CIR	21204	18-Jan-19	20193759601	GREASE	1072
3007 DELAWARE AVE	21227	20-Jan-19	20193765301	ROOTS	15
8704 SILVER KNOLL DR	21128	24-Jan-19	20193804701	GREASE	3397
6903 MORNINGTON RD	21222	29-Jan-19	20193848401	ROOTS	15
1866 YAKONA RD	21234	2-Feb-19	20193876501	ROOTS	28
2005 S HAWTHORNE RD	21220	7-Feb-19	20193954801	GREASE	12047
1230 KAHLER AVE	21237	12-Feb-19	20193986801	GREASE	1436
504 VIRGINIA AVE	21221	13-Feb-19	20194002602	UNKNOWN/OTHER	UNKNOWN [1]
814 HATHERLEIGH RD	21212	15-Feb-19	20194026001	DEFECTIVE PIPE	UNKNOWN [1]
6521 MAPLEWOOD RD	21212	16-Feb-19	20194027801	DEFECTIVE PIPE	236
7612 PARKWOOD RD	21222	24-Feb-19	20194073801	GREASE	993
1 HATHAWAY RD	21093	26-Feb-19	20195410601	CLEANING	2
6601 YORK RD	21212	28-Feb-19	20195410701	CLEANING	0.5
6608 LAUREL DR	21207	9-Mar-19	20194218401	ROOTS	8
8 ARTHUR AVE	21228	18-Mar-19	20194271305	CLEANING	1
2517 CREIGHTON AVE	21234	20-Mar-19	20195416901	CLEANING	1
8235 DEL HAVEN RD	21222	21-Mar-19	20194307401	DEBRIS	7
2413 WINDSOR RD	21234	21-Mar-19	20182234760	HIGH WATER	30
1723 HILLTOP AVE	21221	21-Mar-19	20194304101	GREASE	126
7335 BERKSHIRE RD	21224	21-Mar-19	20194307701	DEBRIS	UNKNOWN [1]
2415 WINDSOR RD	21234	21-Mar-19	20182234759	HIGH WATER	UNKNOWN [1]
8503 LA SALLE RD	21286	5-Apr-19	20194469101	GREASE	71
6105 HAMILTON AVE	21237	11-Apr-19	20194509103	CLEANING	233
6106 HAMILTON AVE	21237	11-Apr-19	20194509101	DEBRIS	1132
6909 HOMEWAY	21222	12-Apr-19	20194523401	ROOTS	31
1609 SAILAWAY CIR	21221	17-Apr-19	20194562901	DEBRIS	2
8414 WINANDS RD	21208	21-Apr-19	20194659601	RAGS	5
3417 OLD COURT RD	21208	23-Apr-19	20194687002	UNKNOWN/OTHER	23
5 MANOR PL	21237	29-Apr-19	20194720701	UNKNOWN/OTHER	11
1301 DORCHESTER AVE	21207	5-May-19	20194796301	ROOTS	5
3007 DELAWARE AVE	21227	5-May-19	20194796901	GREASE	15
7341 YORKTOWNE DR	21204	10-May-19	20194847901	CLEANING	2
5 MANOR PL	21237	11-May-19	20194854601	CLEANING	5
6507 MAPLEWOOD RD	21212	11-May-19	20194853101	GREASE	11175

ADDRESS	ZIP CODE	DATE	WORK ORDER	CAUSE	VOLUME
2917 EASTERN BLVD	21220	19-May-19	20194913601	DEBRIS	94
2919 BACK RIVER BRG	21220	19-May-19	20194913602	UNKNOWN/OTHER	UNKNOWN [1]
626 STEVENSON LN	21286	20-May-19	20194925201	ROOTS	1
6900 BELAIR RD	21206	28-May-19	20194981901	UNKNOWN/OTHER	UNKNOWN [1]
7938 32ND ST	21237	6-Jun-19	20195112801	ROOTS	UNKNOWN [1]
8202 SAGRAMORE RD	21237	13-Jun-19	20195163801	CLEANING	1.5
1330 REISTERSTOWN RD	21208	24-Jun-19	20195242701	STONES/ROCKS	97
4 EASTSHIP RD	21222	5-Jul-19	20195378701	ROOTS	15
6623 QUEENS FERRY RD	21239	5-Jul-19	20195377001	GREASE	UNKNOWN [1]
3001 TEXAS AVE	21234	11-Jul-19	20195435101	HIGH WATER	15
3013 TEXAS AVE	21234	11-Jul-19	20195427201	HIGH WATER	98
1821 WILDWOOD AVE	21234	11-Jul-19	20195426701	HIGH WATER	196
3101 TEXAS AVE	21234	11-Jul-19	20195426601	HIGH WATER	466
2601 IVY PL	21234	11-Jul-19	20195426901	HIGH WATER	10098
3017 TEXAS AVE	21234	11-Jul-19	20195427101	UNKNOWN/OTHER	UNKNOWN [1]
229 FALLSBROOK RD	21093	30-Jul-19	20195656901	CLEANING	0.5
8046 PHILADELPHIA RD	21237	1-Aug-19	20195657101	CLEANING	1
5533 WINDSOR MILL RD	21207	6-Aug-19	20195666501	ROOTS	36
4751 BELLE FORTE RD	21208	9-Aug-19	20195694901	GREASE	34
2912 LIBERTY PKWY	21222	9-Aug-19	20195692701	GREASE	47
4781 BONNIE BRAE RD	21208	9-Aug-19	20195694903	GREASE	67
6763 GRACELAND AVE	21224	13-Aug-19	20195711001	UNKNOWN/OTHER	15
1828 ABERDEEN RD	21234	15-Aug-19	20195735802	ROOTS	23
706 49TH ST	21224	20-Aug-19	20195730003	CLEANING	UNKNOWN [1]
511 ANNESLIE RD	21212	23-Aug-19	20195793401	RAGS	UNKNOWN [1]
519 ANNESLIE RD	21212	23-Aug-19	20195796101	RAGS	UNKNOWN [1]
518 ANNESLIE RD	21212	23-Aug-19	20195796201	RAGS	UNKNOWN [1]
35 ADMIRAL BLVD	21222	27-Aug-19	20195826801	GREASE	UNKNOWN [1]
39 ADMIRAL BLVD	21222	27-Aug-19	20195826901	GREASE	UNKNOWN [1]
10 QUAILS NEST CT	21236	30-Aug-19	20195951501	CLEANING	UNKNOWN [1]
815 GOUCHER BLVD	21286	27-Sep-19	20196075801	GREASE	87
2407 HAMMONDS FERRY RD	21227	28-Sep-19	20196082101	ROOTS	UNKNOWN [1]
2 WESTBURY RD	21093	29-Sep-19	20196083401	GREASE	UNKNOWN [1]
7579 WESTFIELD RD	21222	3-Oct-19	20196165101	GREASE	UNKNOWN [1]
1313 BIDDLE CT	21228	9-Oct-19	20196201401	ROOTS	UNKNOWN [1]
4155 GLEN PARK RD	21236	15-Oct-19	20196234701	GREASE	UNKNOWN [1]

ADDRESS	ZIP CODE	DATE	WORK ORDER	CAUSE	VOLUME
22 STILLWAY CT	21030	18-Oct-19	20196259701	GREASE	UNKNOWN [1]
20 STILLWAY CT	21030	19-Oct-19	20196261301	GREASE	UNKNOWN [1]
823 SCOTTS HILL DR	21208	28-Oct-19	20196324201	GREASE	UNKNOWN [1]
823 SCOTTS HILL DR	21208	28-Oct-19	20196324202	RAGS	UNKNOWN [1]
6722 BROOKMONT DR	21207	31-Oct-19	20196358902	HIGH WATER	UNKNOWN [1]
6003 UPDALE CT	21207	31-Oct-19	20196359101	HIGH WATER	UNKNOWN [1]
7107 WINDSOR MILL RD	21244	7-Nov-19	20196444901	UNKNOWN/OTHER	UNKNOWN [1]

(1) County not granted access to verify quantities.

Quarterly Report

January 1, 2020
Through
March 31, 2020



PURSUANT TO PARAGRAPH 19, OF THE CONSENT DECREE BETWEEN BALTIMORE COUNTY AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, DEPARTMENT OF JUSTICE AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

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Pursuant to Paragraph 19 of the Consent Decree between Baltimore County (County) and The United States Environmental Protection Agency (EPA), the Department of Justice (DOJ), and the Maryland Department of the Environment (MDE), this document constitutes the required Quarterly Report for the period **January 1, 2020** through **March 31, 2020.**

The quarterly report discusses activities and progress of Baltimore County towards compliance with the requirements set forth in the Consent Decree including:

i. Non-Pump Station and Pump Station SSO Structure discharges
ii. Construction Project Status
iii. Collection system inspection progress
iv. SRRR plan implementation progress
v. FOG program modification and development progress
vi. Supplemental Environmental Projects status, and
vii. Compliance with certification of completion and other issues of the Consent Decree

i. Non-Pump Station and Pump Station SSO Structure Discharges

Discharges from Sanitary Sewer Overflow Structures took place at the locations and dates during the reporting period as detailed in **Attachment A**.

A summary of flow metering information for Non-Pump Station SSO Structures is included as **Attachment A1.**

ii. Construction Project Status

Attachment B presents the status of Paragraph 7 – Non-Pump Station SSO Structure Elimination projects and Paragraph 13.F - Pump Station Rehabilitation Repair and Replacement projects that are in design and construction during the reporting quarter.

iii. Collection System Inspection

Continued implementation of the inspection of the collection system, pursuant to Paragraph 15 of the Consent Decree.

Paragraph 15.B.i.b inspection status is summarized in **Attachment C**. Baltimore County anticipates completing inspection of the gravity sewer lines identified in Paragraph 15.B.i.b by September 20, 2020.

Continued compliance with all gravity line CCTV inspections within the required 10 working days of the occurrence of an overflow for each SSO that occurred during this reporting period. **Attachment D** details the County's inspection response to each of the overflow that occurred during the reporting period.

iv. SRRR Plan Implementation/Progress

The SRRR Plans contain numerous projects in a variety of locations and stages of planning, design and construction. **Attachment E** includes a list of each sewershed and a summary status of Plan implementation. The implementation of the recommended improvement projects is proceeding; however, acquisition of required rights-of-way and regulatory permits

may require a significant period of time thereby resulting in possible delay to complete the construction work.

The County's recommendations in some of the SRRR Plans for meter basins that exhibited excessive I/I and design-storm simulated model-predicted SSOs included the comprehensive rehabilitation of all pipe segments and manholes, increased hydraulic capacity and/or testing and repair of sewer house connections and laterals. Some of the recommended repairs were revised based on design preparation and review of improvement projects. Additionally, some miscellaneous sewer/manhole/lateral repairs that were included in the SRRR Plans may be revised based on a review of the original and updated inspection data.

v. FOG Program

The County has completed implementation of the FOG Program Modification Plan.

vi. SEP Status

Completed.

vii. Compliance Issues

In accordance with Paragraph 19, Item B.vii, the following is a summary of Consent Decree compliance issues.

a. Consent Decree projects or requirements certified as complete during the reporting period:

   Beachwood Road Pump Station Rehabilitation

   Rehabilitation of the Beachwood Road Pump Station certified complete on February 5, 2020

   Rosebank Pump Station Rehabilitation

   Rehabilitation of the Rosebank Pump Station certified complete on March 13, 2020.

b. Consent Decree requirements due to be completed during the reporting period, but not completed:

   Oliver Beach Pump Station Rehabilitation

   On March 10, 2020, the County submitted a 60-day Time Extension Request for completing improvements to the Oliver Beach Pump Station due to re-bidding the construction contract.

   Blenhurst Pump Station Rehabilitation

   On January 27, 2020, the County submitted a 90-day Time Extension request for completing the improvements to the Blenhurst Pump Station due to relocating an underground electric service.

Lodge Forest Manor Pump Station Rehabilitation

On January 30, 2020 the County submitted a 5-year Time Extension request for completing improvements to the Lodge Forest Manor Pump Station. The time extension request assumed approximately 3 years to complete property acquisition negotiations with the Maryland Department of Natural Resources and 2 years to complete construction work.

Stansbury Manor Pump Station Rehabilitation

On January 30, 2020 the County submitted a 5-year Time Extension request for completing improvements to the Stansbury Manor Pump Station. The time extension request assumes approximately 3 years to complete property acquisition negotiations with the Maryland Aviation Administration and 2 years to complete construction work.

Harewood Park Pump Station Rehabilitation

On February 19, 2020 the County submitted a 90-day Time Extension Request for completing improvements to the Harewood Park Pump Station due to poor contractor performance.

c. Problems that may prevent the County from meeting future Consent Decree compliance deadlines:

COVID-19 Pandemic

The COVID-19 Coronavirus pandemic has affected all local, state and federal activities. As a result of the pandemic, Baltimore County has indefinitely suspended advertising construction contracts and receiving contract bids. County employees and engineering consultants continue to remotely work on active projects and construction contractors continue their work to complete previously awarded sewer improvement contracts; however, the pandemic may delay response from private property owners regarding right-of way and/or right-of-entry negotiations. Additionally, the pandemic may result in unforeseen supply chain constrictions for active construction contracts.

Duck Creek SRRR Plan

On February 5, 2020 the County submitted a Potential Delay Notification for the Duck Creek Sewer Rehabilitation Project due to an expanding the design and construction project scope of work.

Elimination of Non-Pump Station SSO Structures 22, 23A, 23B, 24

On September 3, 2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Elimination of Non-Pump Station SSO Structures 41 and 129

On October 3, 2019 the County awarded the construction project. The County will submit a second SSO elimination time extension when a date has been identified.

Elimination of Non-Pump Station SSO Structures 113, 116, 117 and 118

The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

_____

Thomas Kiefer, PE
Chief, Bureau of Engineering and Construction

Control Document No. 292

Attachment A - Discharges from Overflow Structures

Pump Station Overflow Structures

None.

Non-Pump Station Overflow Structures – Metered

Name	Alter Road
SSO ID	22
Address	Alter Street & Southern Cross Drive
Date of Discharge	1/25/2020
Duration of Overflow	1 Hrs. 44 Min.
Date of Relevant Weather Conditions	1/25/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	2,247
Receiving Waters	Maidens Choice Creek
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Southern Cross Drive
SSO ID	23A
Address	Southern Cross Drive & Parsons Avenue
Date of Discharge	1/25/2020
Duration of Overflow	3 Hrs. 27 Min.
Date of Relevant Weather Conditions	1/25/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	22,427
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date of Discharge	1/25/2020
Duration of Overflow	3 Hrs. 3 Min.
Date of Relevant Weather Conditions	1/25/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	23,637
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	1/25/2020
Duration of Overflow	3 Hrs. 52 Min.
Date of Relevant Weather Conditions	1/25/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	115,592
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Drive & Hillcrest Avenue
Date of Discharge	1/25/2020
Duration of Overflow	2 Hrs. 10 Min.
Date of Relevant Weather Conditions	1/25/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	16,656
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 10/3/2019 the County awarded the construction project. The County will submit a second SSO elimination time extension when a date has been identified.

Name	Marnat Road
SSO ID	113
Address	Marnat Road & Hatton Road
Date of Discharge	1/25/2020
Duration of Overflow	4 Hrs. 18 Min.
Date of Relevant Weather Conditions	1/25/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	19,833
Receiving Waters	Jones Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

Attachment A1: Summary of Non-Pumping Station Overflow Structure Monitoring

Date of Rain Event		1/25/2020
Rain (inches)		1.55 - 1.84
SSO Name	**SSO ID**	
Alter Road	22	2,247
Southern Cross Drive	23A	22,427
Southern Cross	23B	23,637
Patterson Avenue	24	115,592
Aiken Avenue	41	
Queen Anne Drive	129	16,656
Overbrook Road & Medwick Garth	118	
Marnat Road	113	19,833

Attachment B - Construction Projects Status

Non-Pump Station SSO Structures

Project Name	Date of Construction Notice to Proceed	Sewershed Name	Consent Decree SSO Elimination Deadline	SSO Eliminated	Status
Powder Mill Interceptor Relief Sewer Phase I – SXO 18180 (SSOs 22, 23A, 23B, 24)	9/3/2019	Gwynns Falls	TBD	No	Original CD elimination deadline was 3/22/2017. Extension request, with undefined SSO elimination date submitted on 2/14/2017. Second time extension request with definitive SSO elimination date will be submitted after right-of-way acquisition, environmental permits obtained and construction notice to proceed is issued.
Powder Mill Interceptor Relief Sewer Phase II (SSOs 22, 23A, 23B, 24)	-	Gwynns Falls	TBD	No	Original CD elimination deadline was 3/22/2017. Extension request, with undefined SSO elimination date submitted on 2/14/2017. Second time extension request with definitive SSO elimination date will be submitted after right-of-way acquisition, environmental permits obtained and construction notice to proceed is issued.
East Branch Herring Run Relief Sewer (SSO 41 & 129)	10/3/2020	Herring Run	TBD	No	Original CD elimination deadline was 3/20/2018. Extension request with undefined SSO elimination date submitted on 10/4/2017. Second time extension request with defined SSO elimination date will be submitted after County receives construction baseline schedule.

Pump Station Rehabilitation, Repair and Replacement

Project Name	Consent Decree Deadline	Anticipated Meeting CD Deadline	Comments
Harewood Park	3/20/2020	No	Construction
Lodge Forest Manor	3/20/2020	No	Design. Time Extension Request submitted on 1/30/2020.
Stansbury Manor	3/20/2020	No	Design. Time Extension Request submitted on 1/30/2020.
Blenhurst	3/20/2020	No	Construction. Time Extension Request submitted on 1/27/2020.
Rosebank	3/20/2020	Yes	Substantially Complete on 3/13/2020.
Beachwood Road	3/20/2020	Yes	Substantially Complete on 2/6/2020.
Oliver Beach	3/20/2020	Yes	Construction
Hyde Park	6/1/2021	Yes	Design
Bauernschmidt Manor	6/1/2021	Yes	Construction
Turkey Point	6/30/2022	Yes	Design
Millers Island	6/30/2022	Yes	Design
Corsica	6/30/2023	Yes	Design
Fort Howard	6/30/2023	Yes	Design
Pennwood Terrace	6/30/2023	Yes	Design

Attachment C - Collection System Inspection Status

Paragraph 15.B.i (b)
Completion scheduled for September 20, 2020
Currently On-Schedule

Miles Remaining Beginning of Quarter	Miles Inspected and/or Attempted this Quarter	Miles Attempted but not Completed to Date	Miles Remaining
2.3	0.8	2.0	3.5
Appurtenances to be Inspected Beginning of Quarter	**Appurtenances Inspected and/or Attempted this Quarter**	**Appurtenances Attempted but not Completed to Date**	**Appurtenances Remaining**
19	46	0	4

Note: All values are based on the current version of the County's GIS

Attachment D - CCTV in Response to an SSO

Date of SSO	Location	CCTV Inspection Date	Exemption
1/8/2020	1907 Harrison Road	1/8/2020	
1/23/2020	3015 Delaware Avenue	1/28/2020	
1/25/2020	Alter Street and Southern Cross Drive		D
1/25/2020	Southern Cross Drive & Parsons Avenue		D
1/25/2020	3909 Southern Cross Drive		D
1/25/2020	3902 Patterson Avenue		D
1/25/2020	Queen Anne Drive & Hillcrest Avenue		D
1/25/2020	Marnat Road & Hatton Road		D
2/3/2020	3320 Eastern Blvd.		A
2/4/2020	9405 Perry Hall Blvd.	2/18/2020	
2/24/2020	8900 Citation Road		A
3/13/2020	1009 Old Eastern Avenue		A
3/27/2020	2416 Lampost Lane		B

Allowable Exemptions:

A. The cause of the SSO was a blockage in a County-owned lateral adjacent to the gravity line segment and the County cleans the County-owned lateral
B. The cause of the SSO was a blockage in the gravity line segment and visible directly from the manhole
C. The County has previously CCTV inspected the line segment(s) due to an earlier blockage and the County is in the process of developing or implementing corrective action
D. The location is an identified overflow structure and is being monitored pursuant to Paragraph 7.C and the County is involved in a process designed to eliminate the overflow structure

Attachment E - Status of SRRR Plan Implementation

Sewershed	Consent Decree Deadline	On Schedule to Complete SRRR Plan Implementation
Bengies	9/29/2020	Yes. On 3/15/2019 the County submitted a Potential Delay Notification for sewer structural repair and rehabilitation projects.
Bird River	9/29/2020	Yes. On 3/15/2019 the County submitted a Potential Delay Notification for sewer structural repair and rehabilitation projects.
Bread & Cheese	9/29/2020	On 7/10/2019 the County submitted a Potential Delay Notification for sewer structural repair and rehabilitation projects.
Cockeysville	9/29/2020	Yes. On 3/15/2019 the County submitted a Potential Delay Notification for a sewer structural repair and rehabilitation projects.
Dead Run	9/6/2017	Completed
Delmar	4/18/2022	Yes. On 11/22/2019 the County submitted a Potential Delay Notification for a relief sewer project.
Duck Creek	4/18/2022	Yes. On 2/5/2020 the County submitted a Potential Delay Notification for a sewer rehabilitation project.
Dundalk	4/18/2022	Yes. On 11/22/2019 the County submitted a Potential Delay Notification for a sewer structural repair and rehabilitation project.
East Point	4/18/2022	Yes. On 11/22/2019 the County submitted a Potential Delay Notification for a force main replacement project.
Essex	4/18/2022	Yes. On 12/10/2019 the County submitted a Potential Delay Notification for a force main replacement project.
Gray Manor	4/18/2022	Yes. On 6/19/2019 the County submitted a Potential Delay Notification for a relief sewer project.
Gunpowder	4/18/2026	Yes
Gwynns Falls	9/6/2018	Completed; On 04/08/2016 and 01/23/2018, the County submitted Potential Delay Notifications for a relief sewer and a structural rehabilitation project.
Herring Run	9/6/2018	Completed; On 11/03/2015, 08/15/2017 and 03/08/2018, the County submitted Potential Delay Notifications for two relief sewers and a structural rehabilitation project.
Jones Falls	9/6/2019	Completed.
Long Quarter	4/18/2024	Yes. On 11/26/2019 the County submitted a Potential Delay Notification for a force main replacement project.
Orems	9/29/2020	Yes. On 11/16/2018 the County submitted a Potential Delay Notification for a force main replacement project. On 11/22/2019 the County submitted a Potential Delay Notification for a relief sewer project.
Patapsco	9/6/2021	Yes. On 10/28/2018 and 4/22/2019 the County submitted a Potential Delay Notifications for sewer structural repair and rehabilitation projects.
Redhouse Run	4/18/2024	Yes
Stemmers Run	9/6/2024	Yes
Texas	4/18/2022	On 7/10/2019 the County submitted a Potential Delay Notification for sewer structural repair and rehabilitation projects.
Tributary 26	2/11/2020	Completed
Tributary 27	9/6/2017	Completed

Sewershed	Consent Decree Deadline	On Schedule to Complete SRRR Plan Implementation
Tributary 43	2/11/2020	Completed
Tributary 48	9/6/2017	Completed
Tributary 78	2/11/2020	Completed
West Low Level	9/6/2017	Completed
Whitemarsh	4/18/2024	Yes



Quarterly Report

April 1, 2020
Through
June 30, 2020

PURSUANT TO PARAGRAPH 19, OF THE CONSENT DECREE BETWEEN BALTIMORE COUNTY AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, DEPARTMENT OF JUSTICE AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

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Pursuant to Paragraph 19 of the Consent Decree between Baltimore County (County) and The United States Environmental Protection Agency (EPA), the Department of Justice (DOJ), and the Maryland Department of the Environment (MDE), this document constitutes the required Quarterly Report for the period **April 1, 2020** through **June 30, 2020**.

The quarterly report discusses activities and progress of Baltimore County towards compliance with the requirements set forth in the Consent Decree including:

i. Non-Pump Station and Pump Station SSO Structure discharges
ii. Construction Project Status
iii. Collection system inspection progress
iv. SRRR plan implementation progress
v. FOG program modification and development progress
vi. Supplemental Environmental Projects status, and
vii. Compliance with certification of completion and other issues of the Consent Decree

i. Non-Pump Station and Pump Station SSO Structure Discharges

Discharges from Sanitary Sewer Overflow Structures took place at the locations and dates during the reporting period as detailed in **Attachment A**.

A summary of flow metering information for Non-Pump Station SSO Structures is included as **Attachment A1.**

ii. Construction Project Status

Attachment B presents the status of Paragraph 7 – Non-Pump Station SSO Structure Elimination projects and Paragraph 13.F - Pump Station Rehabilitation Repair and Replacement projects that are in design and construction during the reporting quarter.

iii. Collection System Inspection

Continued implementation of the inspection of the collection system, pursuant to Paragraph 15 of the Consent Decree.

Paragraph 15.B.i.b inspection status is summarized in **Attachment C**. Baltimore County anticipates completing inspection of the gravity sewer lines identified in Paragraph 15.B.i.b by September 20, 2020. Approximately 1.9 miles of inspected gravity sewer lines require follow up investigative and/or assessment work.
Continued compliance with all gravity line CCTV inspections within the required 10 working days of the occurrence of an overflow for each SSO that occurred during this reporting period. **Attachment D** details the County's inspection response to each of the overflow that occurred during the reporting period.

iv. SRRR Plan Implementation/Progress

The SRRR Plans contain numerous projects in a variety of locations and stages of planning, design and construction. **Attachment E** includes a list of each sewershed and a summary status of Plan implementation. The implementation of the recommended improvement projects is proceeding; however, acquisition of required rights-of-way and regulatory permits

may require a significant period of time thereby resulting in possible delay to complete the construction work.

The County's recommendations in some of the SRRR Plans for meter basins that exhibited excessive I/I and design-storm simulated model-predicted SSOs included the comprehensive rehabilitation of all pipe segments and manholes, increased hydraulic capacity and/or testing and repair of sewer house connections and laterals. Some of the recommended repairs were revised based on design preparation and review of improvement projects. Additionally, some miscellaneous sewer/manhole/lateral repairs that were included in the SRRR Plans may be revised based on a review of the original and updated inspection data.

v. FOG Program

The County has completed implementation of the FOG Program Modification Plan.

vi. SEP Status

Completed.

vii. Compliance Issues

In accordance with Paragraph 19, Item B.vii, the following is a summary of Consent Decree compliance issues.

a. Consent Decree projects or requirements certified as complete during the reporting period:

On May 28, 2020, the County certified substantial completion for the Oliver Beach Pump Station rehabilitation project. Substantial completion, as defined in Paragraph IV, Item CC of the Consent Decree means, the date, as certified by the Engineer in charge of a construction project, when the construction project or specified part thereof is sufficiently completed, in accordance with the contract documents, such that the project or specified part thereof can be used to accomplish the purposes for which it was intended.The original Consent Decree deadline for completing the Oliver Beach Pump Station rehabilitation project was May 19, 2020; however, the contractor's failed pump test on May 6, 2020 delayed testing and project completion certification until May 28, 2020.

b. Consent Decree requirements due to be completed during the reporting period, but not completed:

<u>Herring Run SRRR</u>

On May 4, 2020, the County submitted a Potential Delay Notification for the Performance Assessment Report for the Herring Run SRRR Plan due to the COVID pandemic.

On June 10, 2020, the County submitted a 120-day Time Extension Request for the Performance Assessment Report for the Herring Run SRRR Plan due to the consultant engineering's staff issues and COVID related inefficiencies. The requested deadline is October 6, 2020.

Gwynns Falls SRRR

On May 4, 2020, the County submitted a Potential Delay Notification for the Performance Assessment Report for the Gywnns Falls SRRR Plan due to impacts from the COVID pandemic.

On June 10, 2020, the County submitted a 120-day Time Extension Request for the Performance Assessment Report for the Gywnns Falls SRRR Plan due to the engineering consultant's staff issues and COVID related inefficiencies. The requested deadline was October 6, 2020.

Oliver Beach Pump Station Rehabilitation

The substantial completion date for the Oliver Beach Pump Station rehabilitation project was May 28, 2020. The County previously submitted a 60-day Time Extension Request on March 10, 2020 for completing improvements. A pump test was performed on April 30, 2020; however, the pump performance report submitted by the contractor was reviewed and was returned to the contractor indicating non-compliance on May 6, 2020. The pumps were fitted with larger impellers and a second pump test was conducted on May 19, 2020, which showed compliance with the Contract specifications. SCADA communications testing was then able to commence on May 20, 2020 and was completed on May 27, 2020. The County accepted Beneficial Occupancy of the station on May 28, 2020.

Blenhurst Pump Station Rehabilitation

On June 15, 2020, the County submitted a 90-day Time Extension Request for completing the improvements to the Blenhurst Pump Station due to poor contractor performance. The requested deadline was September 20, 2020.

Lodge Forest Manor Pump Station Rehabilitation

On May 13, 2020, the County submitted a follow-up letter to the January 30, 2020 Time Extension Request for the Lodge Forest Pump Station Project. The requested deadline was March 20, 2025.

Stansbury Manor Pump Station Rehabilitation

On May 13, 2020, the County submitted a follow-up letter to the January 30, 2020 Time Extension Request for the Stansbury Manor Pump Station Project. The requested deadline was March 20, 2025.

Harewood Park Pump Station Rehabilitation

On June 15, 2020, the County submitted a 60-day Time Extension Request for completing the improvements to the Harewood Park Pump Station due to poor contractor performance. The requested deadline was August 20, 2020.

c. Problems that may prevent the County from meeting future Consent Decree compliance deadlines:

Bread and Cheese SRRR Plan

On May 28, 2020, the County submitted an 18-month Time Extension Request for the Bread and Cheese Sewer Rehabilitation Project due to rights-of-entry negotiations and acquisitions. The requested deadline was March 6, 2022.

On June 24, 2020, in response to EPAs e-mail dated June 1, 2020, the County submitted a follow-up letter to the May 28, 2020 Time Extension Request for the Bread and Cheese Sewer Rehabilitation Project.

Various Deadlines

On April 30, 2020, the County submitted a Potential Delay Notification due to COVID, which may result in suspending construction contract advertisements, delayed responses from private property owners regarding right-of-way/entry negotiations and unforeseen supply chain constrictions for active construction projects.

Duck Creek SRRR Plan

On May 15, 2020, the County submitted a follow-up letter for the February 5, 2020 Potential Delay Notification for the Duck Creek Sewer Rehabilitation Project due to an expanding design and construction project scope of work.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

Thomas Kiefer, PE
Acting Director, Department of Public Works

Control Document No. 323

Attachment A - Discharges from Overflow Structures

Pump Station Overflow Structures

None.

Non-Pump Station Overflow Structures – Metered

Name	Southern Cross Drive
SSO ID	23A
Address	Southern Cross Drive & Parsons Avenue
Date of Discharge	4/13/2020
Duration of Overflow	1 Hrs. 17 Min.
Date of Relevant Weather Conditions	4/13/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	1,582
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date of Discharge	4/13/2020
Duration of Overflow	1 Hrs. 19 Min.
Date of Relevant Weather Conditions	4/13/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	3,045
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	4/13/2020
Duration of Overflow	1 Hrs. 13 Min.
Date of Relevant Weather Conditions	4/13/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	20,359
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Drive & Hillcrest Avenue
Date of Discharge	4/13/2020
Duration of Overflow	5 Hrs. 35 Min.
Date of Relevant Weather Conditions	4/13/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	59,526
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023.

Name	Aiken Avenue
SSO ID	41
Address	7829 Aiken Avenue & Taylor Avenue
Date of Discharge	4/13/2020
Duration of Overflow	2 Hrs. 2 Min.
Date of Relevant Weather Conditions	4/13/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	25,221
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023.

Name	Marnat Road
SSO ID	113
Address	Marnat Road & Hatton Road
Date of Discharge	4/13/2020
Duration of Overflow	1 Hrs. 3 Min.
Date of Relevant Weather Conditions	4/13/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	2,270
Receiving Waters	Jones Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	4/30/2020
Duration of Overflow	3 Hrs. 31 Min.
Date of Relevant Weather Conditions	4/30/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	36,418
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	6/22/2020
Duration of Overflow	1 Hrs. 4 Min.
Date of Relevant Weather Conditions	6/22/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	2,083
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Marnat Road
SSO ID	113
Address	Marnat Road & Hatton Road
Date of Discharge	6/22/2020
Duration of Overflow	1 Hrs. 5 Min.
Date of Relevant Weather Conditions	6/22/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	920
Receiving Waters	Jones Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

Attachment A1: Summary of Non-Pumping Station Overflow Structure Monitoring

Date of Rain Event		4/13/2020	4/30/2020	6/22/2020
Rain (inches)		2.49	2.49-2.99	1.18-1.53
SSO Name	SSO ID			
Alter Road	22			
Southern Cross Drive	23A	1,582		
Southern Cross	23B	3,045		
Patterson Avenue	24	20,359	36,418	2,083
Aiken Avenue	41	25,211		
Queen Anne Drive	129	59,526		
Overbrook Road & Medwick Garth	118			
Marnat Road	113	2,270		920

Attachment B - Construction Projects Status

Non-Pump Station SSO Structures

Project Name	Date of Construction Notice to Proceed	Sewershed Name	Original Consent Decree Elimination Date	Consent Decree SSO Elimination Date	SSO Eliminated	Status
Powder Mill Interceptor Relief Sewer Phase I – 18180 SXO (SSOs 22, 23A, 23B, 24)	9/3/2019	Gwynns Falls	3/22/2017	TBD	No	A Time Extension Request with an undefined elimination date was submitted on 2/14/2017. A second Time Extension Request with a definitive SSO elimination date will be submitted after right-of-way acquisition, environmental permits obtained and construction notice to proceed is issued for Phase II construction. During the quarterly reporting period, approximately 2,500 linear feet of new relief pipe has been installed.
Powder Mill Interceptor Relief Sewer Phase II (SSOs 22, 23A, 23B, 24)	-	Gwynns Falls	3/22/2017	TBD	No	A Time Extension Request with an undefined SSO elimination date was submitted on 2/14/2017. A second time extension request with definitive SSO elimination date will be submitted after right-of-way acquisition, environmental permits obtained and construction notice to proceed is issued for Phase II construction.
East Branch Herring Run Relief Sewer – 14117 SX0 (SSO 41 & 129)	10/3/2020	Herring Run	3/20/2018	8/3/2023 (requested)	No	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023. No pipe has been installed during the quarterly reporting period. The contractor is excavating shafts to tunnel under Perring Parkway.
Elimination of SSOs 116, 117, and 118	-	West Low Level	9/20/2016	TBD	No	On 6/22/2016, the County submitted a Time Extension Request with an undefined SSO elimination date. A second Time Extension Request with a definitive SSO elimination date will be submitted after the City shares with the County their proposed downstream corrective actions and construction schedule. The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.
Elimination of SSO 113	-	Jones Falls	9/20/2016	TBD	No	

Pump Station Rehabilitation, Repair and Replacement

Project Name	Original Consent Decree Deadline	Project Phase	Time Extension Request Submittal Date	Requested Deadline Date	Reason for Delay
Blenhurst	6/20/2020	Construction	6/15/2020	9/20/2020	Contractor performance
Harewood Park	6/20/2020	Construction	6/15/2020	8/20/2020	Contractor performance
Lodge Forest Manor	3/20/2020	Design (RoW)	1/30/2020	3/20/2025	DNR easement acquisition
Oliver Beach	5/19/2020	Completed	Completed on 5/28/2020		Failed pump test on 5/6/2020. Second test accepted on 5/28/2020
Stansbury Manor	3/20/2020	Design (Permit)	1/30/2020	3/20/2025	MAA property acquisition
Baurenschmidt Manor	6/1/2021	Construction			
Hyde Park	6/1/2021	Construction			
Millers Island	6/1/2022	Design (Permit)			
Turkey Point	6/1/2022	Design (Permit)			
Corsica	6/1/2023	Design			
Fort Howard	6/1/2023	Design			
Penwood Terrace	6/1/2023	Design			

Attachment C - Collection System Inspection Status

Paragraph 15.B.i (b)
Completion scheduled for September 20, 2020
Currently On-Schedule

Miles Remaining Beginning of Quarter	Miles Inspected and/or Attempted this Quarter	Miles Attempted and requiring additional work	Miles Remaining
1.8	1.2	1.9	0.6
Appurtenances to be Inspected Beginning of Quarter	**Appurtenances Inspected and/or Attempted this Quarter**	**Appurtenances Attempted and requiring additional work**	**Appurtenances Remaining**
22	20	0	2

Note: All values are based on the current version of the County's GIS

Attachment D - CCTV in Response to an SSO

Date of SSO	Location	CCTV Inspection Date	Exemption
4/3/2020	7929 Eastern Avenue	4/3/2020	
4/13/2020	7829 Aiken Avenue		D
4/13/2020	Southern Cross Drive & Parsons Avenue		D
4/13/2020	3909 Southern Cross Drive		D
4/13/2020	3902 Patterson Avenue		D
4/13/2020	Queen Anne Drive & Hillcrest Avenue		D
4/13/2020	Marnat Road & Hatton Road		D
4/15/2020	Platinum Avenue		B
4/27/2020	401 Colindale Street	4/29/2020	
4/30/2020	3902 Patterson Avenue		D
5/1/2020	3710 Patapsco Avenue		B
5/25/2020	7510 Remoor Road	5/27/2020	
6/9/2020	2005 Golupski Road		B
6/9/2020	11 Chandor Court	6/18/2020	
6/12/2020	I-70 ramp to 695	6/17/2020	
6/22/2020	3902 Patterson Avenue		D
6/22/2020	Marnat Road & Hatton Road		D

Allowable Exemptions:

A. The cause of the SSO was a blockage in a County-owned lateral adjacent to the gravity line segment and the County cleans the County-owned lateral
B. The cause of the SSO was a blockage in the gravity line segment and visible directly from the manhole
C. The County has previously CCTV inspected the line segment(s) due to an earlier blockage and the County is in the process of developing or implementing corrective action
D. The location is an identified overflow structure and is being monitored pursuant to Paragraph 7.C and the County is involved in a process designed to eliminate the overflow structure

Attachment E - Status of SRRR Plan Implementation

Sewershed	Original Consent Decree Deadline	Date of Potential Delay Notification	Reason for Delay	Comments
Bird River	9/29/2020	3/15/2019	Right of entry acquisition	
Bread & Cheese	9/29/2020	5/28/2020 (Time extension request)	Right of entry acquisition. (Requested date = 3/6/2022)	
Bengies	9/29/2020	3/15/2019	Right of entry acquisition	
Cockeysville	9/29/2020	3/15/2019	Right of entry acquisition	
Orems	9/29/2020	11/22/2019	Right of entry acquisition	
Patapsco	9/6/2021	10/28/2018	Right of entry acquisition	
Delmar	4/18/2022	11/22/2019	Right of entry acquisition	
Duck Creek	4/18/2022	2/5/2020	Expanded project scope	
Dundalk	4/18/2022	11/22/2019	Right of entry acquisition	
East Point	4/18/2022	11/22/2019	Right of entry acquisition	
Essex	4/18/2022	12/10/2019	Right of entry acquisition/permits	
Gray Manor	4/18/2022	6/19/2019	Consultant performance	
Texas	4/18/2022	7/10/2019	Right of entry acquisition	
Longquarter	4/18/2024	11/26/2019	Right of entry acquisition	
Redhouse Run	4/18/2024			
Whitemarsh	4/18/2024			
Stemmers Run	9/6/2024			
Gunpowder	4/18/2026			
Substantially completed SRRR Plan implementations [1]				
Dead Run	9/6/2017			On September 6, 2017, the County certified substantial completion for the implementation of the Dead Run Sewershed SRRR Plan with the exception of 1 asset for which work has now been completed.
Gwynns Falls	9/6/2018			On September 6, 2018, the County certified substantial completion for the implementation of the Gwynns Falls Sewershed SRRR Plan with

Sewershed	Original Consent Decree Deadline	Date of Potential Delay Notification	Reason for Delay	Comments
				the exception of 23 repairs for which a potential delay was submitted to EPA and MDE. On April 8, 2016 and the County submitted a potential delay notification for the Powder Mill Relief Sewer and Lower Powder Mill Sewer Rehabilitation project due to delays associated with environmental permit acquisition and on January 23, 2018 the County submitted a potential delay notification for the Gwynns Falls Structural Sewer Rehabilitation ESA project due to delays associated with acquiring right of entry agreements. To date, 6 repairs remain outstanding and will be completed concurrently with the Powder Mill Interceptor Phase1 project, which is currently in construction. On February 14, 2017, the County submitted a time extension request for the Powder Mill Interceptor Phase 1 project, which is associated with elimination of SSOs 22, 23A, 23B and 24.
Herring Run	9/6/2018			On September 6, 2018, the County certified substantial completion for the implementation of the Herring Run Sewershed SRRR Plan with the exception of 95 repairs for which a potential delay notification was submitted to EPA and MDE. On August 15, 2017 the County submitted a potential delay notification for the Herring Run Structural Rehabilitation Phase 2 project due to delays associated with right of way acquisition and on March 8, 2018 the County submitted a potential delay notification for the Herring Run Basins 17 & 33 project due to delays associated with acquiring right of entry agreements. As discussed at the July 23, 2020 EPA/MDE coordination meeting, the County will submit a time extension request for both projects.
Jones Falls	9/6/2019			On September 6, 2019, the County certified substantial completion for the implementation of the Jones Falls Sewershed SRRR Plan with the exception of 186 assets for which a time extension was either requested or approved by EPA and MDE.

Sewershed	Original Consent Decree Deadline	Date of Potential Delay Notification	Reason for Delay	Comments
				On July 12, 2019 the County submitted time extension requests for two projects that are located in the Jones Falls Sewershed due to delays associated with acquiring right of entry agreements (Jones Falls Large Diameter Sewer Rehabilitation project) and environmental permits (Jones Falls Structural Sewer Rehabilitation Package 2 project). The requested deadline for both projects was November 6, 2019; however, to date, neither EPA nor MDE have approved the time extension request. Both projects were substantially completed on November 4, 2019.
Tributary 26	2/11/2020			Substantially completed
Tributary 27	9/6/2017			Substantially completed
Tributary 43	2/11/2020			Substantially completed
Tributary 48	9/6/2017			Substantially completed
Tributary 78	2/11/2020			Substantially completed
West Low Level	9/6/2017			Substantially completed

[1] Substantial completion, as defined in Paragraph IV, Item CC of the Consent Decree means, the date, as certified by the Engineer in charge of a construction project, when the construction project or specified part thereof is sufficiently completed, in accordance with the contract documents, such that the project or specified part thereof can be used to accomplish the purposes for which it was intended.



Quarterly Report

July 1, 2020
Through
September 30, 2020

PURSUANT TO PARAGRAPH 19, OF THE CONSENT DECREE BETWEEN BALTIMORE COUNTY AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, DEPARTMENT OF JUSTICE AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

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Pursuant to Paragraph 19 of the Consent Decree between Baltimore County (County) and The United States Environmental Protection Agency (EPA), the Department of Justice (DOJ), and the Maryland Department of the Environment (MDE), this document constitutes the required Quarterly Report for the period **June 1, 2020** through **September 30, 2020.**

The quarterly report discusses activities and progress of Baltimore County towards compliance with the requirements set forth in the Consent Decree including:

i. Non-Pump Station and Pump Station SSO Structure discharges
ii. Construction project status
iii. Collection system inspection
iv. SRRR plan implementation/progress
v. FOG program
vi. Supplemental Environmental Project status, and
vii. Compliance issues

i. Non-Pump Station and Pump Station SSO Structure Discharges

Discharges from Sanitary Sewer Overflow Structures took place at the locations and dates during the reporting period as detailed in **Attachment A**.

A summary of flow metering information for Non-Pump Station SSO Structures is included as **Attachment A1.**

ii. Construction Project Status

Attachment B presents the status of Paragraph 7 – Non-Pump Station SSO Structure Elimination projects and Paragraph 13F - Pump Station Rehabilitation Repair and Replacement projects that are in design and construction during the reporting quarter.

iii. Collection System Inspection

The County has completed all gravity sewer line inspections required under Paragraph 8 and 15 of the Consent Decree. The County continues compliance with all gravity line CCTV inspections within the required 10 working days of the occurrence of an overflow for each SSO that occurred during this reporting period. **Attachment C** details the County's inspection response to each of the overflow that occurred during the reporting period.

iv. SRRR Plan Implementation/Progress

The SRRR Plans contain numerous projects in a variety of locations and stages of planning, design and construction. **Attachment D** includes a list of each sewershed and a summary status of Plan implementation. The implementation of the recommended improvement projects is proceeding; however, acquisition of required rights-of-way and regulatory permits may require a significant period of time thereby resulting in possible delay to complete the construction work.

The County's recommendations in some of the SRRR Plans for meter basins that exhibited excessive I/I and design-storm simulated model-predicted SSOs included the comprehensive rehabilitation of all pipe segments and manholes, increased hydraulic capacity and/or testing and repair of sewer house connections and laterals. Some of the recommended repairs were

revised based on design preparation and review of improvement projects. Additionally, some miscellaneous sewer/manhole/lateral repairs that were included in the SRRR Plans may be revised based on a review of the original and updated inspection data.

v. FOG Program

The County has completed implementation of the FOG Program Modification Plan.

vi. Supplemental Environmental Project Status

Completed.

vii. Compliance Issues

In accordance with Paragraph 19, Item B.vii, the following is a summary of Consent Decree compliance issues.

a. Consent Decree projects or requirements certified as complete during the reporting period:

Herring Run Performance Assessment

On June 10, 2020, the County submitted a 120-day Time Extension Request for the Herring Run Performance Assessment Report due to the engineering consultant's staff issues and COVID related inefficiencies. The requested deadline was October 6, 2020; however, the County successfully submitted the Performance Assessment Report for the Herring Run SRRR Plan on September 3, 2020 ahead of the deadline.

Gwynns Falls Performance Assessment

On June 10, 2020, the County submitted a 120-day Time Extension Request for the Gwynns Falls Performance Assessment Report due to the engineering consultant's staff issues and COVID related inefficiencies. The requested deadline was October 6, 2020. On October 6, 2020, the County successfully met that deadline and submitted the Performance Assessment Report for the Gwynns Falls SRRR Plan.

Bengies SRRR Plan

On September 29, 2020, the County completed implementation of the Bengies SRRR Plan except for one project for which a potential delay notification has been submitted. This project is detailed in the appendix and remains outstanding while the County is awaiting completion of right of entry (ROE) acquisition. On March 15, 2019, the County submitted to EPA and MDE a potential delay notification due to the time needed to acquire ROE agreements. The County continues coordinating with the property owners and will submit a time extension request when all ROE agreements have been acquired and the County has issued the construction contract NTP.

Bird River SRRR Plan

On September 29, 2020, the County completed implementation of the Bird River SRRR Plan. There are 3 assets (i.e. sewers and manholes), which represents approximately 60 percent of the total assets with repair recommendations that remain

outstanding and are awaiting completion of right of entry (ROE) acquisition. On March 15, 2019, the County submitted to EPA and MDE a potential delay notification due to the time needed to acquire ROE agreements. The County continues coordinating with the property owners and will submit a time extension request when all ROE agreements have been acquired and the County has issued the construction contract Notice to Proceed.

Bread and Cheese SRRR Plan

On September 29, 2020, the County completed implementation of the Bread and Cheese SRRR Plan except for one project for which a potential delay notification has been submitted. This project is detailed in the appendix and remains outstanding while the County is awaiting completion of right of entry (ROE) acquisition. On June 24, 2020, in response to EPA's e-mail dated June 1, 2020, the County submitted a follow-up letter to the May 28, 2020 Time Extension Request for the Bread and Cheese Sewer Rehabilitation Project. The County continues coordinating with the property owners and will submit a time extension request when all ROE agreements have been acquired and the County has issued the construction contract NTP.

Valve vault NS1039, which the Bread and Cheese SRRR Plan included a recommendation to rehabilitate, is located at the terminus of the Bread and Cheese force main. The County has not rehabilitated the vault and is confirming with the City of Baltimore to have the vault rehabilitated as part of a City sewer capital improvement project.

Cockeysville SRRR Plan

On September 29, 2020, the County completed implementation of the Cockeysville SRRR Plan except for one project for which a potential delay notification has been submitted. This project is detailed in the appendix and remains outstanding while the County is awaiting completion of right of entry (ROE) acquisition. On March 15, 2019, the County submitted to EPA and MDE a potential delay notification due to the time needed to acquire ROE agreements. The County continues coordinating with the property owners and will submit a time extension request when all ROE agreements have been acquired and the County has issued the construction contract NTP.

Orems SRRR Plan

On September 29, 2020, the County completed implementation of the Orem SRRR Plan, with the exception of construction of the Orems Basin 03 Relief Sewer Project. EPA/MDE was notified on November 22, 2019 of a Potential Delay for this project due to easement acquisition. The County is currently working with the Real Estate Compliance office to determine an accurate Time Extension for completion of this project.

The County has elected to replace the existing Stansbury Manor Force Main with a new force main to increase the reliability and sustainability of the County's wastewater pumping system. The County will therefore replace the existing air release valve with the installation of the new forcemain and the cleaning recommended force main in the Orems sewershed SRRR Plan becomes moot.

Harewood Park Pump Station Rehabilitation

On August 25, 2020, the County certified substantial completion for the Harewood Park Pump Station rehabilitation project. Substantial completion, as defined in Paragraph IV, Item CC of the Consent Decree means, the date, as certified by the Engineer in charge of a construction project, when the construction project or specified part thereof is sufficiently completed, in accordance with the contract documents, such that the project or specified part thereof can be used to accomplish the purposes for which it was intended.

The original Consent Decree deadline for completing the Harewood Park Pump Station rehabilitation project was March 20, 2020; however, on February 19, 2020, the County submitted to EPA and MDE a 90-day time of performance extension request due to poor contractor performance. The requested deadline was June 20, 2020. On June 15, 2020, the County submitted to EPA and MDE a second time of performance extension request due to poor contractor performance. The second requested deadline was August 20, 2020. Substantial completion was delayed 5 days due to a last minute mechanical issue with one of the new pumps during commissioning.

Completion Certification – Paragraph 15

On September 20, 2020, Baltimore County completed the closed circuit television (CCTV) inspection of the gravity sewer lines as required in Paragraph 15Bib of the Consent Decree. All manholes that are part of or immediately adjacent to the inspected gravity sewer line segments were also inspected. Some variance from the approved Inspection Plan of the actual CCTV inspection footage and number of manholes inspected was due to refinements and corrections to the initial 2004 data that was used to develop the Inspection Plan.

b. Consent Decree requirements due to be completed during the reporting period, but not completed:

Blenhurst Pump Station Rehabilitation

The original Consent Decree deadline for completing the Blenhurst Pump Station rehabilitation project was March 20, 2020; however, on January 27, 2020, the County submitted to EPA and MDE a 90-day time of performance extension request to relocate an existing and unmarked underground electrical service feed. The requested deadline was June 20, 2020. On June 15, 2020, the County submitted to EPA and MDE a second time of performance extension request due to poor contractor performance. The requested deadline was September 20, 2020. The contractor recently informed the County that a non-operable supply fan must be replaced before certifying substantial completion. On October 1, 2020, the County submitted a third time of performance extension request to replace the non-operable supply fan. The request deadline was November 20, 2020.

c. Problems that may prevent the County from meeting future Consent Decree compliance deadlines:

None.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

Thomas Kiefer, PE
Acting Director, Department of Public Works

Control Document No. 332

Attachment A - Discharges from Overflow Structures

Pump Station Overflow Structures

Pump Station Name	Oak Forest
Address	407 Seminole Avenue
Date Of Discharge	8/12/2020
Duration Of Overflow	2 Hrs. 45 Min.
Date Of Relevant Weather Conditions	8/12/2020
Description Of Relevant Weather Conditions	Rain
Gallons Discharged	34,800
Receiving Waters	Tributary to Patapsco River
Identified Cause	Heavy rains inundated wastewater collection system that caused high flows to the pump station.
Details Of Corrective Action Taken or Planned	Heavy rains subsided.

Pump Station Name	Frederick Road
Address	1809 Frederick Road
Date Of Discharge	8/12/2020
Duration Of Overflow	1 Hrs.
Date Of Relevant Weather Conditions	8/12/2020
Description Of Relevant Weather Conditions	Rain
Gallons Discharged	25,800
Receiving Waters	Tributary to Patapsco River
Identified Cause	Heavy rains inundated wastewater collection system that caused high flows to the pump station.
Details Of Corrective Action Taken or Planned	Heavy rains subsided.

Pump Station Name	McTavish
Address	50 University Avenue
Date Of Discharge	8/12/2020
Duration Of Overflow	2 Hrs.
Date Of Relevant Weather Conditions	8/12/2020
Description Of Relevant Weather Conditions	Rain
Gallons Discharged	14,700
Receiving Waters	West Branch
Identified Cause	Heavy rains inundated wastewater collection system that caused high flows to the pump station.
Details Of Corrective Action Taken or Planned	Heavy rains subsided.

Non-Pump Station Overflow Structures – Metered

Name	Aiken Avenue
SSO ID	41
Address	7829 Aiken Avenue & Taylor Avenue
Date of Discharge	7/6/2020
Duration of Overflow	1 Hr. 17 Mins.
Date of Relevant Weather Conditions	7/6/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	19,251
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023.

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Drive & Hillcrest Avenue
Date of Discharge	7/6/2020
Duration of Overflow	1 Hr. 6 Mins.
Date of Relevant Weather Conditions	7/6/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	16,623
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023.

Name	Aiken Avenue
SSO ID	41
Address	7829 Aiken Avenue & Taylor Avenue
Date of Discharge	7/22/2020
Duration of Overflow	1 Hr. 35 Min.
Date of Relevant Weather Conditions	7/22/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	27,436
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023.

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Drive & Hillcrest Avenue
Date of Discharge	7/22/2020
Duration of Overflow	2 Hrs. 4 Mins.
Date of Relevant Weather Conditions	7/22/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	30,869
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023.

Name	Aiken Avenue
SSO ID	41
Address	7829 Aiken Avenue & Taylor Avenue
Date of Discharge	7/24/2020
Duration of Overflow	1 Hrs. 48 Min.
Date of Relevant Weather Conditions	7/24/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	31,588
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023.

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Drive & Hillcrest Avenue
Date of Discharge	7/24/2020
Duration of Overflow	2 Hrs. 19 Min.
Date of Relevant Weather Conditions	7/24/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	35,063
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023.

Name	Alter Road
SSO ID	22
Address	Alter Street & Southern Cross Drive
Date Of Discharge	8/4/2020
Duration Of Overflow	46 Min.
Date Of Relevant Weather Conditions	8/4/2020
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	1,855
Receiving Waters	Maidens Choice Creek
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Southern Cross Drive
SSO ID	23A
Address	Southern Cross Drive & Parsons Avenue
Date of Discharge	8/4/2020
Duration of Overflow	1 Hrs. 59 Min.
Date of Relevant Weather Conditions	8/4/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	11,950
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date of Discharge	8/4/2020
Duration of Overflow	3 Hrs. 3 Min.
Date of Relevant Weather Conditions	8/4/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	10,362
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	8/4/2020
Duration of Overflow	2 Hrs. 17 Min.
Date of Relevant Weather Conditions	8/4/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	42,588
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Drive & Hillcrest Avenue
Date of Discharge	8/4/2020
Duration of Overflow	5 Hrs. 15 Min.
Date of Relevant Weather Conditions	8/4/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	136,281
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023.

Name	Aiken Avenue
SSO ID	41
Address	7829 Aiken Avenue & Taylor Avenue
Date of Discharge	8/4/2020
Duration of Overflow	4 Hrs. 17 Min.
Date of Relevant Weather Conditions	8/4/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	96,650
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023.

Name	Marnat Road
SSO ID	113
Address	Marnat Road & Hatton Road
Date of Discharge	8/4/2020
Duration of Overflow	1 Hrs. 47 Min.
Date of Relevant Weather Conditions	8/4/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	5,420
Receiving Waters	Jones Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

Name	Overbrook Road
SSO ID	118
Address	Overbrook Road & Medwick Garth
Date Of Discharge	8/4/2020
Duration Of Overflow	2 Hrs. 49 Min.
Date Of Relevant Weather Conditions	8/4/2020
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	96,176
Receiving Waters	Maidens Choice Creek
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

Name	Southern Cross Drive
SSO ID	23A
Address	Southern Cross Drive & Parsons Avenue
Date of Discharge	8/12/2020
Duration of Overflow	1 Hrs. 52 Min.
Date of Relevant Weather Conditions	8/12/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	252
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date of Discharge	8/12/2020
Duration of Overflow	1 Hrs. 43 Min.
Date of Relevant Weather Conditions	8/12/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	285
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	8/12/2020
Duration of Overflow	6 Mins.
Date of Relevant Weather Conditions	8/12/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	581
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Overbrook Road
SSO ID	118
Address	Overbrook Road & Medwick Garth
Date Of Discharge	8/12/2020
Duration Of Overflow	2 Hrs. 1 Min.
Date Of Relevant Weather Conditions	8/12/2020
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	15,380
Receiving Waters	Maidens Choice Creek
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

Name	Overbrook Road
SSO ID	118
Address	Overbrook Road & Medwick Garth
Date Of Discharge	8/15/2020
Duration Of Overflow	49 Min.
Date Of Relevant Weather Conditions	8/15/2020
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	15,880
Receiving Waters	Maidens Choice Creek
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

Attachment A1: Summary of Non-Pumping Station Overflow Structure Monitoring

Date of Rain Event		7/6/2020	7/22/2020	7/24/2020	8/4/2020	8/12/2020	8/15/2020
Rain (inches)		3.96	0.93	1.87	2.46-2.78	1.97-2.65	1.01
SSO Name	**SSO ID**						
Alter Road	22				1,855		
Southern Cross Drive	23A				11,950	252	
Southern Cross	23B				10,362	285	
Patterson Avenue	24				42,588	581	
Aiken Avenue	41	19,251	27,436	31,588	96,650		
Queen Anne Drive	129	16,623	30,869	35,063	136,281		
Overbrook Road & Medwick Garth	118				96,176	150,380	150,880
Marnat Road	113				5,420		

Attachment B - Construction Projects Status

Non-Pump Station SSO Structures

Project Name	Date of Construction Notice to Proceed	Sewershed Name	Original Consent Decree Elimination Date	Consent Decree SSO Elimination Date	SSO Eliminated	Status
Powder Mill Interceptor Relief Sewer Phase I – 18180 SXO (SSOs 22, 23A, 23B, 24)	9/3/2019	Gwynns Falls	3/22/2017	TBD	No	A Time Extension Request with an undefined elimination date was submitted on 2/14/2017. A second Time Extension Request with a definitive SSO elimination date will be submitted after right-of-way acquisition, environmental permits obtained and construction notice to proceed is issued for Phase II construction. During the quarterly reporting period, approximately 2,500 linear feet of new relief pipe has been installed.
Powder Mill Interceptor Relief Sewer Phase II (SSOs 22, 23A, 23B, 24)	-	Gwynns Falls	3/22/2017	TBD	No	A Time Extension Request with an undefined SSO elimination date was submitted on 2/14/2017. A second time extension request with definitive SSO elimination date will be submitted after right-of-way acquisition, environmental permits obtained and construction notice to proceed is issued for Phase II construction.
East Branch Herring Run Relief Sewer – 14117 SX0 (SSO 41 & 129)	2/5/2020	Herring Run	3/20/2018	8/3/2023 (requested)	No	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023. Approximately 190 linear feet of tunnel has been installed.
Elimination of SSOs 116, 117, and 118	-	West Low Level	9/20/2016	TBD	No	On 6/22/2016, the County submitted a Time Extension Request with an undefined SSO elimination date. A second Time Extension Request with a definitive SSO elimination date will be submitted after the City shares with the County their proposed downstream corrective actions and construction schedule. The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.
Elimination of SSO 113	-	Jones Falls	9/20/2016	TBD	No	

Pump Station Rehabilitation, Repair and Replacement

Project Name	Original Consent Decree Deadline	Project Phase	Time Extension Request Submittal Date	Requested Deadline Date	Reason for Delay
Blenhurst	6/20/2020	Construction	10/1/2020	11/20/2020	Relocating unmarked electrical service feed, contractor performance and pump station mechanical issue.
Lodge Forest Manor	3/20/2020	Design (RoW)	1/30/2020	3/20/2025	DNR easement acquisition
Stansbury Manor	3/20/2020	Design (Permit)	1/30/2020	3/20/2025	MAA property acquisition
Baurenschmidt Manor	6/1/2021	Construction			
Hyde Park	6/1/2021	Construction			
Millers Island	6/1/2022	Contractor Selection			
Turkey Point	6/1/2022	Contractor Selection			
Corsica	6/1/2023	Design			
Fort Howard	6/1/2023	Design			
Penwood Terrace	6/1/2023	Design (Permit)			

Attachment C - CCTV in Response to an SSO

Date of SSO	Location	CCTV Inspection Date	Exemption
7/6/2020	402 Railroad Avenue	7/17/2020	
7/6/2020	104 Back River Neck Road		B
7/6/2020	Queen Anne Drive & Hillcrest Avenue		D
7/6/2020	7829 Aiken Avenue		D
7/22/2020	Queen Anne Drive & Hillcrest Avenue		D
7/22/2020	7829 Aiken Avenue		D
7/24/2020	Queen Anne Drive & Hillcrest Avenue		D
7/24/2020	7829 Aiken Avenue		D
8/4/2020	Alter Street and Southern Cross Drive		D
8/4/2020	Southern Cross Drive & Parsons Avenue		D
8/4/2020	3909 Southern Cross Drive		D
8/4/2020	3902 Patterson Avenue		D
8/4/2020	7829 Aiken Avenue		D
8/4/2020	Queen Anne Drive & Hillcrest Avenue		D
8/4/2020	Marnat Road & Hatton Road		D
8/4/2020	Overbrook Road and Medwick Garth		D
8/4/2020	2221 Lodge Farm Road		B
8/4/2020	2235 Lincoln Avenue		B
8/4/2020	7436 Blevins Avenue		B
8/4/2020	7990 St. Monica Drive		B
8/12/2020	Overbrook Road and Medwick Garth		D
8/12/2020	Southern Cross Drive & Parsons Avenue		D
8/12/2020	3909 Southern Cross Drive		D
8/12/2020	3902 Patterson Avenue		D
8/15/2020	Overbrook Road and Medwick Garth		D
8/22/2020	2340 Research Avenue	8/24/2020	
8/23-24/2020	8609 Goldenwood Road		B
8/27/2020	9219 Harford Road	8/27/2020	
9/9/2020	407 Chestnut Avenue	9/10/2020	
9/14/2020	709 Marone Way	9/14/2020	

Allowable Exemptions:

A. The cause of the SSO was a blockage in a County-owned lateral adjacent to the gravity line segment and the County cleans the County-owned lateral
B. The cause of the SSO was a blockage in the gravity line segment and visible directly from the manhole
C. The County has previously CCTV inspected the line segment(s) due to an earlier blockage and the County is in the process of developing or implementing corrective action
D. The location is an identified overflow structure and is being monitored pursuant to Paragraph 7.C and the County is involved in a process designed to eliminate the overflow structure

Attachment D - Status of SRRR Plan Implementation

Sewershed	Original Consent Decree Deadline	Date of Potential Delay Notification	Reason for Delay	Comments
Patapsco	9/6/2021	10/28/2018	Right of entry acquisition	
Delmar	4/18/2022	11/22/2019	Right of entry acquisition	
Duck Creek	4/18/2022	2/5/2020	Expanded project scope	
Dundalk	4/18/2022	11/22/2019	Right of entry acquisition	
East Point	4/18/2022	11/22/2019	Right of entry acquisition	
Essex	4/18/2022	12/10/2019	Right of entry acquisition/permits	
Gray Manor	4/18/2022	6/19/2019	Consultant performance	
Texas	4/18/2022	7/10/2019	Right of entry acquisition	
Longquarter	4/18/2024	11/26/2019	Right of entry acquisition	
Redhouse Run	4/18/2024			
Whitemarsh	4/18/2024			
Kemmers Run	9/6/2024			
Gunpowder	4/18/2026			
Substantially completed SRRR Plan implementations [1]				
Bird River	9/29/2020	3/15/2019	Right of entry acquisition	There are 3 assets (i.e. sewer and manholes, which represents approximately 60 percent of the total assets with repair recommendations, that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed.
Bread & Cheese	9/29/2020	5/28/2020 (Time extension request)	Right of entry acquisition. (Requested date = 3/6/2022)	There are 127 asset (i.e. sewer and manholes, which represents approximately 100 percent of the total assets with repair recommendations, that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed.

Sewershed	Original Consent Decree Deadline	Date of Potential Delay Notification	Reason for Delay	Comments
Bengies	9/29/2020	3/15/2019	Right of entry acquisition	There are 96 assets (i.e. sewer and manholes, which represents approximately 100 percent of the total assets with repair recommendations, that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed.
Cockeysville	9/29/2020	3/15/2019	Right of entry acquisition	There are 12 assets (i.e. sewer and manholes, which represents approximately 57 percent of the total assets with repair recommendations, that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed.
Dead Run	9/6/2017			Substantially completed
Gwynns Falls	9/6/2018			On September 6, 2018, the County certified substantial completion for the implementation of the Gwynns Falls Sewershed SRRR Plan with the exception of 23 repairs for which a potential delay was submitted to EPA and MDE. To date, 6 repairs remain outstanding and will be completed concurrent with the Powder Mill Interceptor Phase1 project, which is currently in construction.
Herring Run	9/6/2018			There are 93 assets (i.e. sewer and manholes, which represents approximately 6 percent of the total assets with repair recommendations, that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed.
Jones Falls	9/6/2019			There are 10 assets (i.e. sewer and manholes, which represents approximately 0.6 percent of the total assets with repair

Sewershed	Original Consent Decree Deadline	Date of Potential Delay Notification	Reason for Delay	Comments
				recommendations, that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed.
Orems	9/29/2020	11/22/2019	Right of entry acquisition	The County is currently working with the Real Estate Compliance office to determine an accurate Time Extension for completion of the Orems Basin 03 Relief Sewer project.
Tributary 26	2/11/2020			Substantially completed
Tributary 27	9/6/2017			Substantially completed
Tributary 43	2/11/2020			Substantially completed
Tributary 48	9/6/2017			Substantially completed
Tributary 78	2/11/2020			Substantially completed
West Low Level	9/6/2017			Substantially completed

[1] Substantial completion, as defined in Paragraph IV, Item CC of the Consent Decree means, the date, as certified by the Engineer in charge of a construction project, when the construction project or specified part thereof is sufficiently completed, in accordance with the contract documents, such that the project or specified part thereof can be used to accomplish the purposes for which it was intended.

Quarterly Report

October 1, 2020 Through December 31, 2020

PURSUANT TO PARAGRAPH 19, OF THE CONSENT DECREE BETWEEN BALTIMORE COUNTY AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, DEPARTMENT OF JUSTICE AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

EXHIBIT
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Pursuant to Paragraph 19 of the Consent Decree between Baltimore County (County) and The United States Environmental Protection Agency (EPA), the Department of Justice (DOJ), and the Maryland Department of the Environment (MDE), this document constitutes the required Quarterly Report for the period **October 1, 2020** through **December 31, 2020.**

The quarterly report discusses activities and progress of Baltimore County towards compliance with the requirements set forth in the Consent Decree including:

i. Non-Pump Station and Pump Station SSO Structure discharges
ii. Construction project status
iii. Collection system inspection
iv. SRRR plan implementation/progress
v. FOG program
vi. Supplemental Environmental Project status, and
vii. Compliance issues

i. Non-Pump Station and Pump Station SSO Structure Discharges

Discharges from Sanitary Sewer Overflow Structures took place at the locations and dates during the reporting period as detailed in **Attachment A**.

A summary of flow metering information for Non-Pump Station SSO Structures is included as **Attachment A1.**

ii. Construction Project Status

Attachment B presents the status of Paragraph 7 – Non-Pump Station SSO Structure Elimination projects and Paragraph 13F - Pump Station Rehabilitation Repair and Replacement projects that are in design and construction during the reporting quarter.

iii. Collection System Inspection

The County has completed all gravity sewer line inspections required under Paragraphs 8 and 15 of the Consent Decree. The County continues compliance with all gravity line CCTV inspections within the required 10 working days of the occurrence of an overflow for each SSO that occurred during this reporting period. **Attachment C** details the County's inspection response to each of the overflow that occurred during the reporting period.

iv. SRRR Plan Implementation/Progress

The SRRR Plans contain numerous projects in a variety of locations and stages of planning, design and construction. **Attachment D** includes a list of each sewershed and a summary status of Plan implementation. The implementation of the recommended improvement projects is proceeding; however, acquisition of required rights-of-way and regulatory permits may require a significant period of time thereby resulting in possible delay to complete the construction work.

The County's recommendations in some of the SRRR Plans for meter basins that exhibited excessive I/I and design-storm simulated model-predicted SSOs included the comprehensive rehabilitation of all pipe segments and manholes, increased hydraulic capacity and/or testing and repair of sewer house connections and laterals. Some of the recommended repairs were

revised based on design preparation and review of improvement projects. Additionally, some miscellaneous sewer/manhole/lateral repairs that were included in the SRRR Plans may be revised based on a review of the original and updated inspection data.

v. FOG Program

The County has completed implementation of the FOG Program Modification Plan.

vi. Supplemental Environmental Project Status

Completed.

vii. Compliance Issues

In accordance with Paragraph 19, Item B.vii, the following is a summary of Consent Decree compliance issues.

a. Consent Decree projects or requirements certified as complete during the reporting period:

Blenhurst Pump Station Rehabilitation

The original Consent Decree deadline for completing the Blenhurst Pump Station rehabilitation project was March 20, 2020; however, on January 27, 2020, the County submitted to EPA and MDE a 90-day time of performance extension request to relocate an existing and unmarked underground electrical service feed. The requested deadline was June 20, 2020. On June 15, 2020, the County submitted to EPA and MDE a second time of performance extension request due to poor contractor performance. The requested deadline was September 20, 2020. On October 1, 2020, the County submitted a third time of performance extension request to replace a non-operable supply fan. The request deadline was November 20, 2020.

The Blenhurst Pump Station was recorded as substantially complete on October 14, 2020.

Gwynns Falls Performance Assessment

On June 10, 2020, the County submitted a 120-day Time Extension Request for the Gwynns Falls Performance Assessment Report due to the engineering consultant's staffing issues and COVID related inefficiencies. The requested deadline was October 6, 2020. On October 6, 2020, the County submitted the Performance Assessment Report for the Gwynns Falls SRRR Plan.

Frederick Road Pump Station Action Plan

On October 6, 2020, the County submitted the Frederick Road Pump Station Action Plan as a result of the pump station SSO that occurred on August 12, 2020.

Oak Forest Pump Station Action Plan

On October 19, 2020, the County submitted the Oak Forest Pump Station Action Plan as a result of the pump station SSO that occurred on August 12, 2020. On December

15, 2020, the County submitted a follow-up letter to rescind the October 19, 2020 Action Plan due the existence of a previously submitted plan as a result of an SSO that occurred at the Oak Forest Pump Station on April 28-30, 2014 and referred to that July 23, 2014 Action Plan.

b. Consent Decree requirements due to be completed during the reporting period, but not completed:

None.

c. Problems that may prevent the County from meeting future Consent Decree compliance deadlines:

None.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

_____

Jeffrey S. Peluso, PE
Acting Chief, Bureau of Engineering and Construction

Control Document No. 344

Attachment A - Discharges from Overflow Structures

Pump Station Overflow Structures

Name	New Stemmers Run
SSO ID	42397
Address	830 Race Road
Date Of Discharge	11/30/2020
Duration Of Overflow	2 Hrs. 15 Min.
Date Of Relevant Weather Conditions	11/30/2020
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	2,100,000
Receiving Waters	Northeast Creek
Identified Cause	MH #13378 cover and rings removed by lining contractor. Heavy rains caused Northeast Creek to rise causing creek bank to collapse letting the creek water enter manhole and station to overflow.
Details of Corrective Action Taken or Planned	Rain stopped. Station was pumping to capacity until overflow stopped.

Name	Old Stemmers Run
SSO ID	902157
Address	1100 Hengemihle Avenue
Date Of Discharge	11/30/2020
Duration Of Overflow	4 Hrs. 30 Min.
Date Of Relevant Weather Conditions	11/30/2020
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	1,602,000
Receiving Waters	Northeast Creek
Identified Cause	MH #13378 cover and rings removed by lining contractor. Heavy rains caused Northeast Creek to rise causing creek bank to collapse letting the creek water enter manhole and station to overflow.
Details of Corrective Action Taken or Planned	Rain stopped. Station was pumping to capacity until overflow stopped.

Name	Orems
SSO ID	20909
Address	1356 Canberra Drive
Date Of Discharge	11/30/2020
Duration Of Overflow	1 Hrs. 15 Min.
Date Of Relevant Weather Conditions	11/30/2020
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	636,000
Receiving Waters	Middle River
Identified Cause	Station was inundated with rain water from storm, suspected stream infiltration
Details of Corrective Action Taken or Planned	Station pumped down and overflow stopped

Non-Pump Station Overflow Structures – Metered

Name	Southern Cross Drive
SSO ID	23A
Address	Southern Cross Drive & Parsons Avenue
Date of Discharge	10/29/2020
Duration of Overflow	0 Hrs. 37 Mins.
Date of Relevant Weather Conditions	10/29/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	4,735
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date of Discharge	10/29/2020
Duration of Overflow	0 Hrs. 42 Mins.
Date of Relevant Weather Conditions	10/29/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	9,379
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	10/29/2020
Duration of Overflow	1 Hr. 4 Mins.
Date of Relevant Weather Conditions	10/29/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	12,301
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Marnat Road
SSO ID	113
Address	Marnat Road & Hatton Road
Date of Discharge	10/29/2020
Duration of Overflow	0 Hrs. 30 Mins.
Date of Relevant Weather Conditions	10/29/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	1,345
Receiving Waters	Jones Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

Name	Aiken Avenue
SSO ID	41
Address	7829 Aiken Avenue & Taylor Avenue
Date of Discharge	11/30/2020
Duration of Overflow	0 Hr. 32 Mins.
Date of Relevant Weather Conditions	11/30/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	3,495
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023.

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Drive & Hillcrest Avenue
Date of Discharge	11/30/2020
Duration of Overflow	2 Hr. 4 Mins.
Date of Relevant Weather Conditions	11/30/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	9,544
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023.

Name	Alter Road
SSO ID	22
Address	Alter Street & Southern Cross Drive
Date Of Discharge	12/24/2020-12/25/2020
Duration Of Overflow	4 Hrs. 47 Mins.
Date Of Relevant Weather Conditions	12/24/2020-12/25/2020
Description Of Relevant Weather Conditions	Rain
Net Gallons Discharged	2,614
Receiving Waters	Maidens Choice Creek
Identified Cause	Insufficient wet-weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Southern Cross Drive
SSO ID	23A
Address	Southern Cross Drive & Parsons Avenue
Date of Discharge	12/24/2020-12/25/2020
Duration of Overflow	5 Hrs. 49 Mins.
Date of Relevant Weather Conditions	12/24/2020-12/25/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	42,133
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet-weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date of Discharge	12/24/2020-12/25/2020
Duration of Overflow	5 Hrs. 46 Mins.
Date of Relevant Weather Conditions	12/24/2020-12/25/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	36,463
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	12/24/2020-12/25/2020
Duration of Overflow	7 Hrs. 22 Mins.
Date of Relevant Weather Conditions	12/24/2020-12/25/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	168,674
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet-weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. The County will submit a second SSO elimination time extension when a date has been identified. Right-of-way and environmental permits are required for Phase II construction.

Attachment A1: Summary of Non-Pumping Station Overflow Structure Monitoring

Date of Rain Event		10/29/2020	11/30/2020	12/24-25/2020
Rain (inches)		2.27-2.41	1.66	1.67
SSO Name	SSO ID			
Alter Road	22			2,614
Southern Cross Drive	23A	4,735		42,133
Southern Cross	23B	9,379		36,463
Patterson Avenue	24	12,301		168,674
Aiken Avenue	41		3,495	
Marnat Road	113	1,345		
Queen Anne Drive	129		9,544	

Attachment B - Construction Projects Status

Non-Pump Station SSO Structures

Project Name	Date of Construction Notice to Proceed	Sewershed Name	Original Consent Decree Elimination Date	Consent Decree SSO Elimination Date	SSO Eliminated	Status
Powder Mill Interceptor Relief Sewer Phase I – 18180 SXO (SSOs 22, 23A, 23B, 24)	9/3/2019	Gwynns Falls	3/22/2017	TBD	No	A Time Extension Request with an undefined elimination date was submitted on 2/14/2017. A second Time Extension Request with a definitive SSO elimination date will be submitted after right-of-way acquisition, environmental permits obtained and construction notice to proceed is issued for Phase II construction. This project is 90% complete, achieving functional use on 1/26/2021.
Powder Mill Interceptor Relief Sewer Phase II (SSOs 22, 23A, 23B, 24)	-	Gwynns Falls	3/22/2017	TBD	No	A Time Extension Request with an undefined SSO elimination date was submitted on 2/14/2017. A second time extension request with definitive SSO elimination date will be submitted after right-of-way acquisition, environmental permits obtained and construction notice to proceed is issued for Phase II construction.
East Branch Herring Run Relief Sewer – 14117 SX0 (SSO 41 & 129)	2/5/2020	Herring Run	3/20/2018	8/3/2023 (requested)	No	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023. This project is 27% complete.
Elimination of SSOs 116, 117, and 118	-	West Low Level	9/20/2016	TBD	No	On 6/22/2016, the County submitted a Time Extension Request with an undefined SSO elimination date. A second Time Extension Request with a definitive SSO elimination date will be submitted after the City shares with the County their proposed downstream corrective actions and construction schedule. The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.
Elimination of SSO 113	-	Jones Falls	9/20/2016	TBD	No	

Pump Station Rehabilitation, Repair and Replacement

Project Name	Original Consent Decree Deadline	Project Phase	Time Extension Request Submittal Date	Requested Deadline Date	Reason for Delay
Blenhurst	9/20/2020	Complete	10/1/2020	11/20/2020	Contractor performance and pump station mechanical issue.
Lodge Forest Manor	3/20/2020	Design (RoW)	1/30/2020	3/20/2025	DNR easement acquisition is complete. Permitting is ongoing.
Stansbury Manor	3/20/2020	Design (Permit)	1/30/2020	3/20/2025	MAA property acquisition agreement will be presented to the Baltimore County Board of Public Works on 2/21/2021.
Baurenschmidt Manor	6/1/2021	Construction			
Hyde Park	6/1/2021	Construction			
Millers Island	6/1/2022	Contractor Selection			
Turkey Point	6/1/2022	Contractor Selection			
Corsica	6/1/2023	Design			
Fort Howard	6/1/2023	Design			
Penwood Terrace	6/1/2023	Design (Permit)			

Attachment C - CCTV in Response to an SSO

Date of SSO	Location	CCTV Inspection Date	Exemption
10/28/2020	1 Nunnery Lane	10/28/2020	
10/29/2020	Marnat Road & Hatton Road		D
10/29/2020	3902 Patterson Avenue		D
10/29/2020	3909 Southern Cross Drive		D
10/29/2020	Southern Cross Drive & Parsons Avenue		D
11/13/2020	2613 Gwynndale Ave	11/17/2020	
11/22/2020	5305 Hazelwood Avenue	12/1/2020	
11/30/2020	7829 Aiken Avenue		D
11/30/2020	Queen Anne Drive & Hillcrest Avenue		D
12/1/2020	3333 Garnet Rd.	12/10/2020	
12/17/2020	6440 Baltimore National Pike	12/18/2020	
12/24-25/2020	Alter Street and Southern Cross Drive		D
12/24-25/2020	3902 Patterson Avenue		D
12/24-25/2020	3909 Southern Cross Drive		D
12/24-25/2020	Southern Cross Drive & Parsons Avenue		D

Allowable Exemptions:

A. The cause of the SSO was a blockage in a County-owned lateral adjacent to the gravity line segment and the County cleans the County-owned lateral
B. The cause of the SSO was a blockage in the gravity line segment and visible directly from the manhole
C. The County has previously CCTV inspected the line segment(s) due to an earlier blockage and the County is in the process of developing or implementing corrective action
D. The location is an identified overflow structure and is being monitored pursuant to Paragraph 7.C and the County is involved in a process designed to eliminate the overflow structure

Attachment D - Status of SRRR Plan Implementation

Sewershed	Original Consent Decree Deadline	Date of Potential Delay Notification	Reason for Delay	Comments
Patapsco	9/6/2021	10/28/2018	Right of entry acquisition	
Delmar	4/18/2022	11/22/2019	Right of entry acquisition	
Duck Creek	4/18/2022	2/5/2020	Expanded project scope	
Dundalk	4/18/2022	11/22/2019	Right of entry acquisition	
East Point	4/18/2022	11/22/2019	Right of entry acquisition	
Essex	4/18/2022	12/10/2019	Right of entry acquisition/permits	
Gray Manor	4/18/2022	6/19/2019	Consultant performance	
Texas	4/18/2022	7/10/2019	Right of entry acquisition	
Longquarter	4/18/2024	11/26/2019	Right of entry acquisition	
Redhouse Run	4/18/2024			
Whitemarsh	4/18/2024			
Stemmers Run	9/6/2024			
Gunpowder	4/18/2026			
Substantially completed SRRR Plan implementations [1]				
Bird River	9/29/2020	3/15/2019	Right of entry acquisition	There are 3 assets (i.e. sewer and manholes) which represents approximately 60 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Bread & Cheese	9/29/2020 (Requested date: 3/6/2022)	5/28/2020 (Time extension request)	Right of entry acquisition	There are 127 asset (i.e. sewer and manholes) which represents approximately 100 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry

Sewershed	Original Consent Decree Deadline	Date of Potential Delay Notification	Reason for Delay	Comments
				agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system. Valve vault NS1039, which is located at the terminus of the Bread and Cheese force main, will be rehabilitated under a City of Baltimore sewer improvement project.
Bengies	9/29/2020	3/15/2019	Right of entry acquisition	There are 96 assets (i.e. sewer and manholes) which represents approximately 100 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Cockeysville	9/29/2020	3/15/2019	Right of entry acquisition	There are 12 assets (i.e. sewer and manholes) which represents approximately 57 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system. Due to the nature of the work, the lining of the Cockeysville forcemain at the Texas Pump Stations has been separated as a stand alone project from the main Cockeysville Rehabilitation project. A Time Extension will be provided for this project.
Dead Run	9/6/2017			Substantially completed
Gwynns Falls	9/6/2018	2/14/2017	Right of way acquisition	On September 6, 2018, the County certified substantial completion for the implementation of the Gwynns Falls Sewershed SRRR Plan with the exception of 23 structural repairs for which a potential delay was

Sewershed	Original Consent Decree Deadline	Date of Potential Delay Notification	Reason for Delay	Comments
				submitted to EPA and MDE. The outstanding structural repairs have no effect on the performance of the collection system. To date, 6 repairs remain outstanding and will be completed concurrent with the Powder Mill Interceptor Phase1 project, which is currently in construction.
Herring Run	9/6/2018	8/15/2017 3/6/2018	Right of entry acquisition	There are 93 assets (i.e. sewer and manholes) which represents approximately 6 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Jones Falls	9/6/2019			There are 10 assets (i.e. sewer and manholes) which represents approximately 0.6 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Orems	9/29/2020	11/22/2019	Right of entry acquisition	Design is complete for the Orems Basin 3 Relief Sewer and the construction bid opening is scheduled for 2/25/2021. An accurate Time Extension request will be submitted once the County receives a Schedule from the successful contractor.
Tributary 26	2/11/2020			Substantially completed
Tributary 27	9/6/2017			Substantially completed
Tributary 43	2/11/2020			Substantially completed
Tributary 48	9/6/2017			Substantially completed
Tributary 78	2/11/2020			Substantially completed

Sewershed	Original Consent Decree Deadline	Date of Potential Delay Notification	Reason for Delay	Comments
West Low Level	9/6/2017			Substantially completed

[1] Substantial completion, as defined in Paragraph IV, Item CC of the Consent Decree means, the date, as certified by the Engineer in charge of a construction project, when the construction project or specified part thereof is sufficiently completed, in accordance with the contract documents, such that the project or specified part thereof can be used to accomplish the purposes for which it was intended.

Annual Report

January 1, 2020
Through
December 31, 2020

Pursuant to Paragraph 20, of the Consent Decree between Baltimore County and the United States Environmental Protection Agency, Department of Justice and the Maryland Department of the Environment

EXHIBIT
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Pursuant to Paragraph 20 of the Consent Decree entered between Baltimore County and the United States Environmental Protection Agency (EPA) and the Maryland Department of the Environment (MDE), this document constitutes the required Annual Report for the period **January 1, 2020** through **December 31, 2020**.

The annual report is a periodic review of Baltimore County activities related to the accomplishment of the Consent Decree general and specific requirements. The report is required to address:

i. Sanitary Sewer Overflow (SSO) structure elimination progress
ii. Rainfall and Flow Monitoring Plan compliance
iii. Evaluation of the rainfall and flow monitoring data
iv. Fats, Oils and Grease (FOG) Program updates
v. Illegal storm water discharges
vi. Pump station status
vii. Collection system model implementation status
viii. Supplemental collection system inspection progress
ix. Sewer cleaning progress
x. Collection system inventory progress
xi. Emergency Response Plan
xii. Building Backup Report
xiii. Annual update to the SSO characterization report

i. Sanitary Sewer Overflow (SSO) structure elimination progress

(a) Summarize progress in implementing approved schedules for the elimination of Non-Pump Station SSO structures

The listing of relief points is shown in Attachment A. Below is the status of the SSO elimination projects:

- 38 original SSOs (per CD Appendix A-2)
- 9 SSOs identified after CD effective date
- 3 SSOs reclassified as pump station SSOs
- 34 SSOs eliminated
- 10 SSOs scheduled for elimination

No SSO structures were eliminated during the reporting period.

Elimination of Non-Pump Station SSO Structures 22, 23A, 23B, 24

The original Consent Decree deadline for SSO elimination was March 22, 2017; however, on February 14, 2017, the County submitted a time extension request due to completing a required Phase II archaeological investigation for the Maryland Historical Trust and resulting delay in obtaining permit approval from the U.S. Army Corps of Engineers (ACOE). The requested SSO elimination date was undefined since the determination from the archaeological investigation may have required realignment and re-design of the new relief sewer. Subsequently, the County obtained ACOE's permit and, to expedite project completion, the County separated the project into two (2) construction contracts.

On September 3, 2019, the County issued the notice to proceed for the Phase I construction project, which is on-going. The Phase II construction project requires right-of-way acquisition and environmental permits. After the right-of-way easements have been acquired, the environmental permits obtained and the Phase II construction project notice to proceed has been issued, the County will submit a second SSO elimination time extension with a definitive date to eliminate the SSO structures.

Elimination of Non-Pump Station SSO Structures 41 and 129

The original Consent Decree deadline for SSO elimination was March 20, 2018; however on October 4, 2017 the County submitted a time extension request due to private property easement acquisition. As stated in the time extension request, the requested SSO elimination date was undefined since the time to negotiate and acquire the easements was unknown. Subsequently, the right-of-entry agreements were finalized and the County completed design work. On October 3, 2019 the County awarded the construction project On April 27, 2020 the County submitted a Time Extension Request to eliminate the overflow structures by August 3, 2023.

Elimination of Non-Pump Station SSO Structures 113, 116, 117 and 118

The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City. A summary of County/City coordination meetings and action items pertinent to SSO elimination is provided in the table below.

Meeting Date	Meeting action item
9/29/2020	Status of County SSO elimination activities
11/5/2020	None
11/23/2020	None
12/3/2020	City to revise hydraulic model for SSO 113 City improvements.
2/1/2021	None
2/4/2021	City to incorporate County's proposed SSO 113 relief sewer and develop possible City improvements.

A summary of all County and EPA/MDE communication in 2020 related to SSO structures is shown below:

Date of Correspondence	From	To	Control ID	SSO ID	SSO Name	Subject
2/11/2020	County	EPA/ MDE	293	113, 22, 23A, 23B, 24, 129	Marnat Road, Alter Road, Southern Cross Drive, Southern Cross, Patterson Avenue, Queen Anne Drive	Request to Waive Stipulated Penalties for Overflow Discharges on 1/25/2020
4/30/2020	County	EPA/ MDE	305	113, 22, 23A, 23B, 24, 41, 129	Marnat Road, Alter Road, Southern Cross Drive, Southern Cross, Patterson Avenue, Aiken Avenue, Queen Anne Drive	Request to Waive Stipulated Penalties for Overflow Discharges on 4/13/2020
5/7/2020	County	EPA/ MDE	306	24	Patterson Avenue	Request to Waive Stipulated Penalties for Overflow Discharges on 4/30/2020
4/27/2020	County	EPA/ MDE	311	41, 129	Aiken Avenue, Queen Anne Drive	Time Extension Request
7/6/2020	County	EPA/ MDE	318	113, 24	Marnat Road, Patterson Avenue	Request to Waive Stipulated Penalties for Overflow Discharges on 6/22/2020
7/17/2020	County	EPA/ MDE	320	41, 129	Aiken Avenue, Queen Anne Drive	Request to Waive Stipulated Penalties for Overflow Discharges on 7/6/2020

Date of Correspondence	From	To	Control ID	SSO ID	SSO Name	Subject
8/5/2020	County	EPA/ MDE	324	41, 129	Aiken Avenue, Queen Anne Drive	Request to Waive Stipulated Penalties for Overflow Discharges on 7/22/2020 and 7/24/2020
8/18/2020	County	EPA/ MDE	325	113, 118, 22, 23A, 23B, 24, 41, 129	Marnat Road, Overbrook Road, Alter Road, Southern Cross Drive, Southern Cross, Patterson Avenue, Aiken Avenue, Queen Anne Drive	Request to Waive Stipulated Penalties for Overflow Discharges on 8/4/2020
8/20/2020	County	EPA/ MDE	327	118, 22, 23A, 23B	Overbrook Road, Alter Road, Southern Cross Drive, Southern Cross	Request to Waive Stipulated Penalties for Overflow Discharges on 8/13/2020 and 8/16/2020
11/19/2020	County	EPA/ MDE	337	113, 22, 23A, 23B	Marnat Road, Alter Road, Southern Cross Drive, Southern Cross	Request to Waive Stipulated Penalties for Overflow Discharges on 10/29/2020
12/23/2020	County	EPA/ MDE	340	41, 129	Aiken Avenue, Queen Anne Drive	Request to Waive Stipulated Penalties for Overflow Discharges on 11/30/2020

A summary of the County's 2020 SSO elimination and/or flow monitoring activity is provided in Attachment A.

(b) Summarize post-monitoring data after the elimination of a Non-Pump Station SSO structure

Flow monitoring activities will continue in accordance with Paragraph 7.C.v of the Consent Decree. Once sufficient flow monitoring data has been collected, the County will complete the hydraulic evaluation in accordance with Paragraph 7.C.v of the Consent Decree.

(c) Progress in implementing plans developed in response to certain discharges from Pump Station SSO structure(s)

The following pump stations discharged to their overflow structures:

Pump Station	Sewershed	Date of Overflow
Oak Forest	Patapsco	8/12/2020
Frederick Road	Patapsco	8/12/2020
McTavish	Patapsco	8/12/2020
Old Stemmers Run	Stemmers Run	11/30/2020
New Stemmers Run	Stemmers Run	11/30/2020
Orems	Orems	11/30/2020

According to CD Paragraph 7.C.vi, the County is required to submit an action plan and schedule for certain discharges from Pump Station SSO Structures that are caused by an event other than complete loss of pumping capacity of the pump station.

On October 19, 2020, the County submitted the Oak Forest Pump Station Action Plan as a result of the pump station SSO that occurred on August 12, 2020. On December 15, 2020, the County submitted a follow-up letter to rescind the proposed action plan and refer to the July 23, 2014 Action Plan for the Oak Forest Pump Station.

On October 6, 2020 the County submitted to EPA/MDE an action plan for the August 12, 2020 SSO at the Frederick Road Pump Station. As stated in the action plan, the County is in the design phase for a sewer rehabilitation improvement project to reduce wet weather flow to the pump station. The project is included in the EPA/MDE-approved Patapsco Sewershed Sewer

Repair, Rehabilitation and Replacement Plan. On October 28, 2018, the County submitted to EPA/MDE a potential delay notification for the improvement project due to private property right of way acquisition obstacles. The County will submit a time of performance extension request with a final finish date for the project after right-of-entry acquisition is completed and the County has issued the construction contract notice to proceed.

On August 20, 2020, the County submitted to EPA/MDA a waiver request letter for the sanitary sewer overflow that occurred on August 12, 2020 due to excessive wet weather flow at the McTavish Pump Station. As the excessive rain was a force majeure event, an action plan and schedule to prevent further SSO discharge arising from the same cause (pursuant to Paragraph 7.C.vi of the Consent Decree) is not needed for the McTavish Pump Station.

On January 19, 2021, the County submitted to EPA/MDE a letter stating that a post-SSO investigation of the November 30, 2020 SSO discharge that occurred at the Old Stemmers Run Pump Station was caused by a contractor who was working for the County and did not re-install an upstream manhole cover. During a rain event that occurred later in the day, an adjacent rising stream flowed into the open manhole and overwhelmed the pump station capacity. Since the SSO was caused by contractor negligence, no action plan, is required for the Old Stemmers Run Pump Station.

On January 19, 2021, the County submitted to EPA/MDE a letter stating that a post-SSO investigation of the November 30, 2020 SSO discharge that occurred at the New Stemmers Run Pump Station was caused by a contractor who was working for the County and did not re-install an upstream manhole cover. During a rain event that occurred later in the day, an adjacent rising stream flowed into the open manhole and overwhelmed the pump station capacity. Since the SSO was caused by contractor negligence, no action plan is required for the New Stemmers Run Pump Station.

On February 19, 2021, the County submitted to EPA/MDE an action plan for the November 30, 2020 SSO that occurred at the Orems Road Pump Station. As stated in the action plan, the County installed a flow monitor upstream of the station to confirm that stream water inflow from an open manhole cover has been eliminated.

ii. Rainfall and Flow Monitoring Plan Compliance

(a) Summarize results of annual evaluation of numbers and placement of rain gauges and flow monitors

In accordance with Paragraph 9.B.i, the County continued to collect rainfall data as necessary to allow the characterization of flow from sewershed service areas, the characterization of known SSOs, the development or improvement of hydraulic models for the sewersheds, and evaluate the effectiveness of measures implemented to reduce I/I and to increase system capacity.

(b) Report any changes to the locations of gauges or flow monitors

A summary of the flow monitoring locations as of December 31, 2020 is provided in Attachment B. Maps of flow monitoring and rain gauge locations are provided in Attachments 1 and 2.

(c) Report on any deviations from the approved plan

None.

iii. Evaluation of Rainfall and Flow Monitoring Data

(a) Inflow/infiltration (I/I) evaluation progress (due 60 days prior to date of SRRR plan submittal)

This task is complete.

(b) Long-term capacity/peak flow management evaluation (due 60 days prior to date of SRRR plan submittal)

This task is complete.

iv. Fats, Oils and Grease (FOG) Program Updates

(a) Provide the results of the annual evaluation of the effectiveness of the modified FOG control program

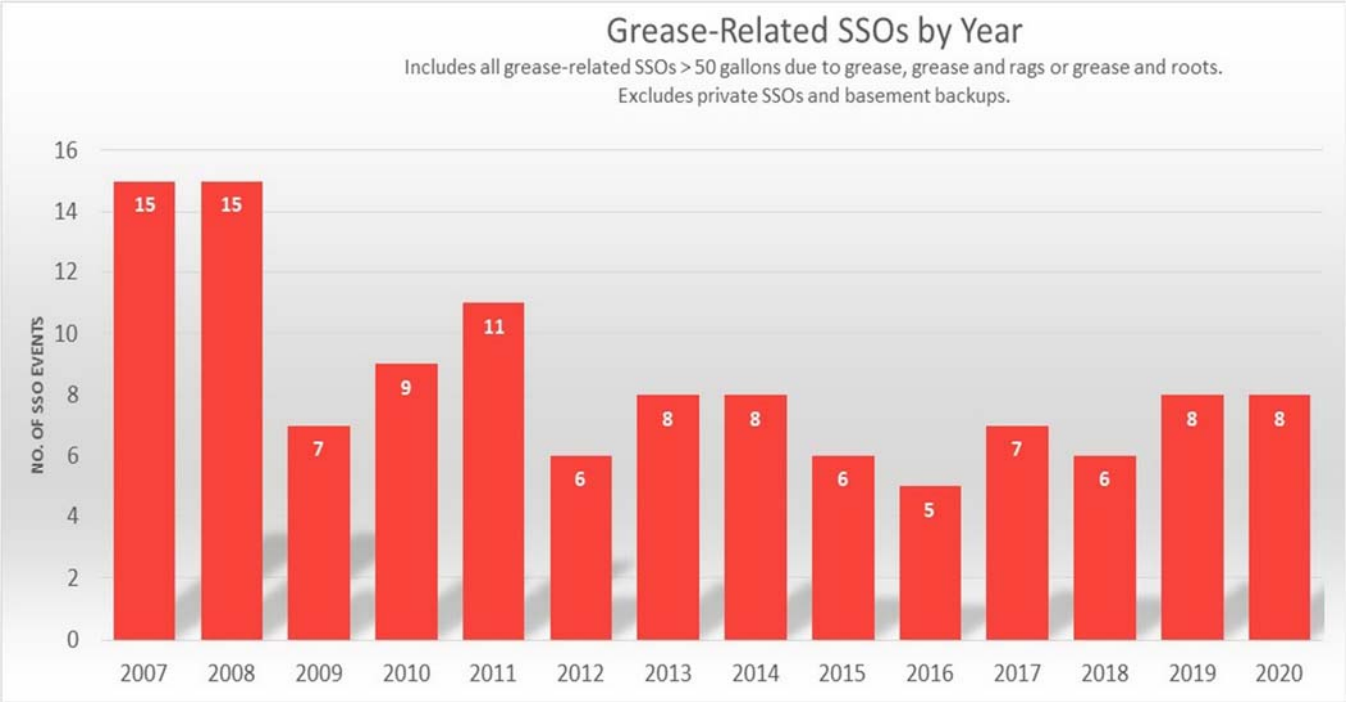
In accordance with Paragraph 11.I of the Consent Decree, the County continues to use the food service facility inspection results and the performance indicators to evaluate the effectiveness of the modified FOG Program. The evaluation results are summarized in Paragraph (c) below.

(b) Provide an updated database and map of grease generating facilities

A map and database of grease generating facilities are provided in Attachment 3.

(c) Evaluate the effectiveness of the modified FOG program

The evaluation of the modified FOG program attempted to determine a trend in the annual number of reportable FOG-related SSO discharges. Below are the analysis results:



The graph indicates a 47-percent decrease in the number of reportable FOG-related SSOs between 2007 and 2020. Since 2010, when the County implemented the modified FOG program, the number of reportable FOG-related SSOs has remained relatively stable; however, the County believes that there is an insignificant number of FOG-related SSOs to establish any trend.

v. Illegal stormwater discharges

During the reporting period, the County identified 23 illegal stormwater connections. A summary of the actions taken in response to each instance is provided in Appendix C.

vi. Pumping station status

(a) Report on the required annual evaluation of the backup power program

Baltimore County completed the evaluation of the effectiveness of its existing Pump Station backup power program, including the use of portable generators as backup power for multiple stations, in preventing SSOs relating to power outages.

During the reporting period, the fleet of six (6) portable generators that supplement on-site backup power at the County's stations was adequate to meet the emergency power needs. The percent of Pump Stations which are now equipped with on-site backup emergency power has been increased to ninety five percent (95%).

(b) Report on the development and implementation of any plans related to overflows due to power outages at pumping stations

None. The back-up power evaluation did not indicate any deficiencies in the portable generator fleet; therefore, no remedial plan is required.

(c) Pump station inspection deficiencies list

A report on the deficiencies discovered during the inspections of the County's pumping stations is provided in Attachment D.

(d) Pump station deficiencies discovered during Engineering Evaluation/Condition Assessments

This task is complete.

(e) Summarize the progress in implementing a pump station information management system

This task is complete.

vii. Collection System Model Implementation Status

This task is complete.

viii. Supplemental Collection System Inspection Progress

This task is complete.

ix. Sewer Cleaning Progress

This task is complete.

x. Collection System Inventory Progress

This task is complete.

xi. Emergency Response Plan

The County is updating the Emergency Response Plan and will submit to EPA/MDE the revised plan, when finalized.

xii. Building Backup Report

Maps of Building Backups since the last submission are provided in Attachment 4.

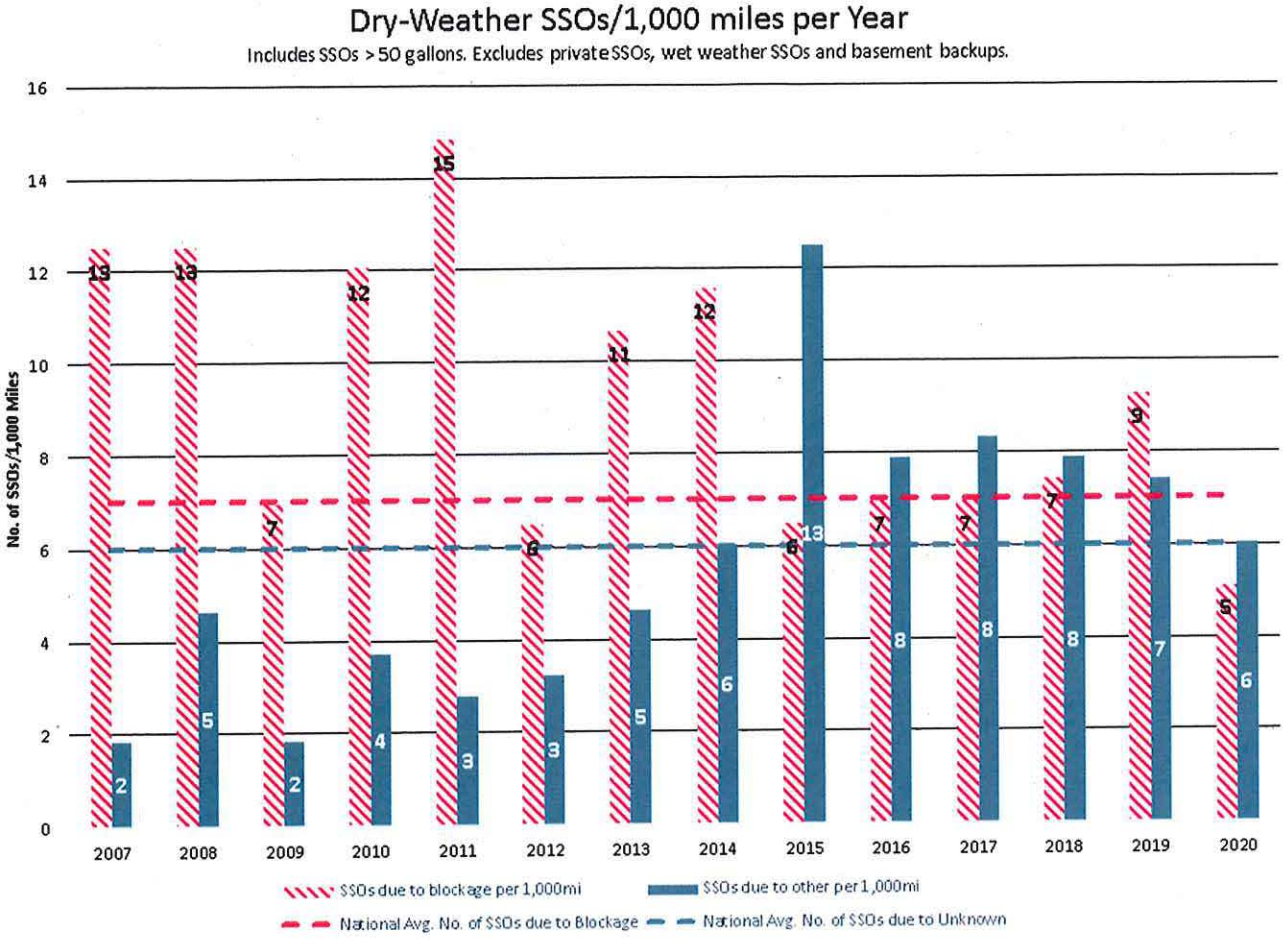
There were 119 reported building backups (including occurrences with zero gallon volumes) during the reporting period, as summarized in Attachment E. A summary of reported building backup history is provided below:

Year	Total Number of Reported Backups (ea.)	Percent Increase/Decrease from Previous Year (%)
2006	113	---
2007	48	-57.5
2008	77	60.4
2009	44	-42.9
2010	90	104.5
2011	241	167.8
2012	139	-42.3
2013	217	56.1
2014	346	59.5
2015	143	-58.6
2016	136	-4.9
2017	71	-47.8
2018	345	386
2019	80	-76.8
2020	119	48.75

xiii. Annual Update of SSO Characterization Report

In accordance with Paragraph 7.B.ii of the Consent Decree, the updated SSO characterization maps are provided in Attachment 5.

Based on the data available in EPA's report to Congress titled "Impacts and Control on CSOs and SSOs", dated August 2004, there are, on average, approximately 7 dry-weather SSOs due to pipeline blockages per 1,000 miles per year and an additional 6 dry-weather SSOs with unknown causes per 1,000 miles per year. Below is a summary per year of Baltimore County's dry-weather SSOs due to a pipeline blockage.



As shown in the above graph, since 2015, the number of SSOs per year due roots, grease and debris is approximately equal to the national average; however, in the same time period, the number of SSOs per year due to unknown/other causes, such as broken pipe, vandalism, etc. has increased compared to the prior 7 year (2007-2014).

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

Jeffrey S. Peluso, PE
Acting Chief, Bureau of Engineering and Construction

Attachments available at FTP location:

1. Flow Meter Site Location Maps
2. Rain Gauge Site Location Maps
3. Maps and Database of Grease Generating Facilities
4. Basement Backup Characterization Maps
5. SSO Characterization Maps

Control Document No. 346

Attachment A – Non-Pump Station Overflow Structure

Non-Pump Station Overflow Structures

Name	Address	SSO ID	Grid	Key-sheet	Active	Assigned SSA	Date Removed	End of Post-Elimination Monitoring	Notes
Alter Road	Alter Road & Southern Cross	22	33G02	KNW	Yes	83-06-05-07	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. Right-of-way and environmental permits are required for Phase II construction. (Powder Mill Interceptor Relief Sewer)		Original CD elimination deadline was 3/22/2017. Extension request, with undefined SSO elimination date submitted on 2/14/2017. Second time extension request with definitive SSO elimination date will be submitted after right-of-way acquisition, environmental permits obtained and construction notice to proceed is issued.
Southern Cross Dr	Southern Cross Drive & Parsons Avenue	23A	33G01	KNW	Yes	83-06-05-07			
Southern Cross	3909 Southern Cross Drive	23B	33G01	KNW	Yes	83-06-05-10			
Patterson Ave	3902 Patterson Avenue	24	33G03	KNW	Yes	83-06-05-03			
Aiken Avenue	7829 Aiken Ave Near Taylor	41	28A10	NSE	Yes	33-93-03-00	On 10/3/2019, the County awarded the construction project. (East Branch Herring Run Relief Sewer)		Original CD elimination deadline was 3/20/2018. On April 27, 2020, the County submitted a second Time Extension Request to eliminate the overflow structures by August 3, 2023.
Queen Anne Dr	Queen Anne Dr.& Hillcrest Ave.	129	28A10	NSE	Yes	33-92-00-00			
Marnat Rd	Marnat & Hatton Rd	113	25J11	OSW	Yes	45-10-22-01	City improvements required to eliminate SSO structures.		Original CD elimination deadline was 9/20/2016. Extension requests with undefined SSO elimination date submitted on 6/22/2016. Second time extension with a defined SSO elimination date will be submitted after the County receives from the City the proposed downstream sewer improvements and associated construction schedule. Continuing post-construction flow monitoring.
Nunnery Lane	North of Frederick Road	116	41G02	GNW	Yes	81-52-00-00			
Briarwood Rd	North of Frederick Rd	117	41G02	GNW	Yes	81-54-00-00			
Overbrook Rd	Overbrook Near Medwick Garth	118	41H02	GNW	Yes	81-50-01-00			

Attachment B – Flow Monitor Summary

Sewershed	Manhole ID	Comments
West Low Level	371	Overbook at Medwick Garth
Jones Falls	707	RO 6078 Falls Rd
Patapsco	3376	IFO 5562 Ashbourne Rd
West Low Level	7368	Nunnery Ln_ultrasonic SSO
Redhouse Run	38847	Chesaco Park PS
Jones Falls	45222	Old Falls Rd at Light Rail
Jones Falls	47403	Lakeside Dr and Old Falls
Patapsco	901976	McTavish Pump Station Overflow
West Low Level	902029	SSO 117 Briarwood Alley
Patapsco	10141	New York & Baltimore ST
Dead Run	10632	Charring Cross
Gywnns Falls	10954	Montbel
Gywnns Falls	11060	Southern Cross Dr @ Alter
Gywnns Falls	11060	Southern Cross Dr @ Alter
Herring Run	11481	Aiken Avenue
Herring Run	11481	Aiken Avenue
Patapsco	12881	Michigan & Baltimore West
Patapsco	12881	Michigan & Baltimore North
Patapsco	12883	Vermont & Baltimore
Patapsco	15963	Oak Forest PS
Jones Falls	16379	Jones Falls Interceptor
Gywnns Falls	16432	Patterson
Gywnns Falls	16432	Patterson
Gywnns Falls	16837	Southern Cross "A" U/S
Gywnns Falls	16837	Southern Cross "A" U/S
Gywnns Falls	17802	Southern Cross "A"
Patapsco	1907	Frederick Rd PS Overflow
Stemmers Run	2199	IFO 3021 Texas Ave
West Low Level	296	Edmondson Ave
Herring Run	32117	Falkirk
Delmar	3216	Side of 700 Platinum Ave
Herring Run	32927	Interceptor south of Taylor Avenue
Patapsco	3374	IFO 1309 Elm Ave
West Low Level	347	IFO 2 HILLSIDE RD
West Low Level	34894	Edmonson Ave.
West Low Level	371	Overbrook Rd. @ Medwick Garth
Dead Run	3838	Westhills Parkway
West Low Level	410	Frederick Rd @ Nunnery Ln
Jones Falls	43819	Joppa Rd
Jones Falls	44223	Falls Rd, RO Valley Inn
Gywnns Falls	47179	Purnell Dr
Herring Run	6566	Perring Parkway
Herring Run	6572	Interceptor @ Racquet Club
Herring Run	6584	Berrywood 12"
Jones Falls	6883	Jones Falls Interceptor
Jones Falls	6886	Dogwood Rd (Flo-Dar)
Herring Run	694	Queen Anne & Hillcrest
Herring Run	694	Queen Anne & Hillcrest SSO

Sewershed	Manhole ID	Comments
Herring Run	71591	Walker Ave
West Low Level	7368	Nunnery Ln.
Jones Falls	793	Marnat
Jones Falls	793	Marnat
Gywnns Falls	8070	Powder Mill City
Patapsco	8435	IFO 5601 Ashbourne
Dead Run	8666	Dogwood Road
Patapsco	900335	IFO 5625 Ashbourne
Gywnns Falls	901891	Southern Cross Dr. "B"
Gywnns Falls	901891	Southern Cross Dr. "B"
West Low Level	902029	Briarwood Alley
Patapsco	SV1178	Elm Rd and Oakland Ave

Attachment C – List of Illegal Stormwater Discharges

Illegal Stormwater Discharges
Discovered During Inspection Process

Date of Observation	Street	Sewer ID	Problem Description	Repair Date
11/17/2020	7310 HUGHES AVE	LP285847	Foundation Drain	TBD[1]
7/30/2020	216 OSBORNE AVE	LL233889	Sump Pump	TBD[1]
9/1/2020	8807 CHESAPEAKE AVE	LP231102	Area Drain	TBD[1]
11/17/2020	7235 HUGHES AVE	LP230126	MCC-Missing/Broken Cleanout Cap	TBD[1]
8/27/2020	2816 12TH ST	LP289517	Yard Sump Pump	10/6/20
11/17/2020	7229 HUGHES AVE, MD, 21219	LP230122	Broken Cleanout	TBD[1]
11/18/2020	7304 BAY FRONT RD, MD, 21219	34334-34331	DR-Roof Leader/Drain	TBD[1]
9/1/2020	2801 12TH STREET	LP347448	DR-Roof Leader/Drain	TBD[1]
11/17/2020	7353 GEISE AVE, MD, 21219	LP633213	Foundation Drain	TBD[1]
11/17/2020	7205 HUGHES AVE	LP230137	Lateral Access Point-Repair	12/24/2020
11/20/2020	2133 LINCOLN AVE, MD, 21219	LP230567	Lateral Access Point-Repair	1/6/2021
11/20/2020	2201 LINCOLN AVE, MD, 21219	LP230569	Lateral Access Point-Repair	12/23/2020
11/20/2020	2203 LINCOLN AVE	LP230571	Lateral Access Point-Repair	12/23/2020
11/19/2020	2207 LINCOLN AVE, MD, 21219	LP230080	Lateral Access Point-Repair	12/23/2020
11/19/2020	7317 BETZ AVE, MD, 21219	LP283647	Lateral Access Point-Repair	12/23/2020
11/19/2020	2124 LINCOLN AVE, MD, 21219	LP230069	Lateral Access Point-Repair	12/23/2020
11/19/2020	2126 LINCOLN AVE, MD, 21219	LP230071	Lateral Access Point-Repair	12/23/2020
11/19/2020	2127 LINCOLN AVE	LP460530	Lateral Access Point-Repair	12/23/2020
11/19/2020	2121 LINCOLN AVE, MD, 21219	LP230066	Lateral Access Point-Repair	1/6/2021
11/19/2020	7414 NORTH DAKOTA AVE, 21219	LP230081	Lateral Access Point-Replace Cap	11/19/2020
11/19/2020	7410 ELLEN AVE	LP230083	Lateral Access Point-Replace Cap	11/19/2020
11/19/2020	7414 ELLEN AVE, MD, 21219	LP230084	Lateral Access Point-Repair	12/24/2020
11/19/2020	7430 ELLEN AVE, 21219	LP230441	Lateral Access Point-Repair	12/24/2020
11/18/2020	7433 BAY FRONT RD, MD, 21219	LP230559	Lateral Access Point-Repair	12/24/2020
11/18/2020	2007 HEADLAND BLVD, MD, 21219	LP230562	Lateral Access Point-Repair	12/24/2020
11/18/2020	2007 HEADLAND BLVD, MD, 21219	LP230562	Lateral Access Point-Repair	12/30/2020
11/18/2020	7318 BAY FRONT RD, MD, 21219	LP230253	Lateral Access Point-Replace Cap	11/18/2020

Date of Observation	Street	Sewer ID	Problem Description	Repair Date
11/18/2020	7318 BAY FRONT RD, MD, 21219	LP348822	Lateral Access Point-Repair	12/24/2020
11/18/2020	7314 BAY FRONT RD, MD, 21219	LP230255	Lateral Access Point-Repair	12/24/2020
11/18/2020	7206 BAY FRONT RD.	LP230598	Lateral Access Point-Replace Cap	11/18/2020
11/18/2020	7204 BAY FRONT RD, MD, 21219	LP230597	Lateral Access Point-Repair	12/24/2020
11/18/2020	7220 BAY FRONT RD, MD, 21219	LP230262	Lateral Access Point-Replace Cap	11/18/2020
11/18/2020	2111 ALMA AVE	LP303305	Lateral Access Point-Repair	12/24/2020
11/18/2020	2116 ALMA AVE, MD, 21219	LP354697	Lateral Access Point-Replace Cap	11/18/2020
11/18/2020	7304 NORTH DAKOTA AVE, MD, 21219	34324-34323	Lateral Access Point-Replace Cap	11/18/2020
11/18/2020	7319 NORTH DAKOTA AVE, MD, 21219	LP284174	Lateral Access Point-Repair	12/24/2020
11/18/2020	7317 NORTH DAKOTA AVE	LP284545	Lateral Access Point-Repair	12/23/2020
11/18/2020	7319 NORTH DAKOTA AVE, MD, 21219	LP284174	Lateral Access Point-Repair	11/18/2020
11/17/2020	7349 GEISE AVE, MD, 21219	LP230221	Lateral Access Point-Replace Cap	11/17/2020
11/17/2020	7349 GEISE AVE, MD, 21219	LP230221	Lateral Access Point-Replace Cap	11/17/2020
11/17/2020	7354 GEISE AVE	LP230218	Lateral Access Point-Smoke Defect	11/17/2020
11/17/2020	7354 GEISE AVE	LP230218	Lateral Access Point-Repair	12/30/2020
11/17/2020	7353 GEISE AVE, MD, 21219	LP633213	Lateral Access Point-Replace Cap	11/17/2020
11/17/2020	7324 GEISE AVE, MD, 21219	LP282674	Lateral Access Point-Replace Cap	11/17/2020
11/17/2020	7325 GEISE AVE	LP285123	Lateral Access Point-Repair	12/30/2020
11/17/2020	7323 GEISE AVE, MD, 21219	LP288607	Lateral Access Point-Replace Cap	11/17/2020
11/17/2020	7321 GEISE AVE, MD, 21219	LP230239	Lateral Access Point-Replace Cap	11/17/2020
11/17/2020	7315 GEISE AVE, MD, 21219	LP283749	Lateral Access Point-Repair	12/30/2020
11/17/2020	7310 HUGHES AVE	LP285847	Lateral Access Point-Replace Cap	11/17/2020
11/17/2020	7306 HUGHES AVE	LP230424	Lateral Access Point-Repair	12/24/2020
11/17/2020	2310 MURRAY AVE, MD, 21219	LP230245	Lateral Access Point-Replace Cap	11/17/2020
11/17/2020	7237 HUGHES AVE, MD, 21219	LP230129	Lateral Access Point-Replace Cap	11/17/2020
7/29/2020	213 MELVIN AVE	NA	Lateral Access Point-Repair	11/11/2020
7/29/2020	1014 MAXWELTON DR	LL324663	Lateral Access Point-Replace Cap	11/25/2020
7/29/2020	232 N BEAUMOUNT AVE	8391-8185	Lateral Access Point-Replace Cap	11/6/2020
7/28/2020	322 MELVIN AVE, MD, 21228	NA	Lateral Access Point-Replace Cap	11/6/2020
7/28/2020	312 MELVIN AVE	NA	Lateral Access Point-Replace Cap	11/5/2020

Date of Observation	Street	Sewer ID	Problem Description	Repair Date
7/28/2020	315 MELVIN AVE, MD, 21228	NA	Lateral Access Point-Replace Cap	11/5/2020
7/29/2020	301 SUTER RD	LL196523	Lateral Access Point-Replace Cap	11/5/2020
7/30/2020	320 OSBORNE AVE	LL284035	Lateral Access Point-Replace Cap	11/6/2020
7/30/2020	322 OSBORNE AVE	LL284036	Lateral Access Point-Replace Cap	11/6/2020
7/30/2020	306 OSBORNE AVE.	LL234301	Lateral Access Point-Replace Cap	11/6/2020
7/30/2020	222 OSBORNE AVE	LL235420	Lateral Access Point-Replace Cap	11/6/2020
7/30/2020	224 OSBORNE AVE	LL236209	Lateral Access Point-Replace Cap	11/6/2020
7/30/2020	227 OSBORNE AVE	LL235146	Lateral Access Point-Replace Cap	11/6/2020
7/28/2020	329 MELVIN AVE	NA	Lateral Access Point-Replace Cap	11/6/2020
7/28/2020	333 MELVIN AVE	NA	Lateral Access Point-Replace Cap	11/6/2020
7/28/2020	328 MELVIN AVE	NA	Lateral Access Point-Replace Cap	11/6/2020
7/28/2020	321 MELVIN AVE	NA	Lateral Access Point-Replace Cap	11/6/2020
7/28/2020	306 MELVIN AVE	NA	Lateral Access Point-Replace Cap	11/6/2020
7/28/2020	328 SUTER RD	LL231454	Lateral Access Point-Replace Cap	11/6/2020
7/28/2020	332 SUTER RD	LL234068	Lateral Access Point-Replace Cap	11/6/2020
7/28/2020	332 SUTER RD	LL234068	Lateral Access Point-Replace Cap	11/6/2020
7/28/2020	331 SUTER RD	LL284035	Lateral Access Point-Replace Cap	11/5/2020
7/29/2020	308 SUTER RD	LL196540	Lateral Access Point-Replace Cap	11/5/2020
7/29/2020	312 SUTER RD	LL196536	Lateral Access Point-Replace Cap	11/5/2020
9/1/2020	9017 CHESAPEAKE AVE	LP231079	Lateral Access Point-Repair	10/14/2020
8/25/2020	2805 4TH ST, MD, 21219	LP229279	Lateral Access Point-Replace Cap	10/7/2020
8/25/2020	2805 4TH STREET	LP229279	Lateral Access Point-Replace Cap	11/25/2020
8/25/2020	9100 HINTON AVE	LP229283	Lateral Access Point-Repair	9/30/2020
8/25/2020	9102 HINTON AVE	LP354952	Lateral Access Point-Repair	9/30/2020
8/25/2020	2810 3RD STREET	LP229278	Lateral Access Point-Repair	11/25/2020
8/25/2020	2807 1ST STREET	LP229253	Lateral Access Point-Repair	12/15/2020
8/25/2020	9131 CUCKOLD PT. ROAD	LP229242	Lateral Access Point-Replace Cap	11/25/2020
8/25/2020	9127 CUCKOLD PT. ROAD	LP229243	Lateral Access Point-Repair	11/25/2020
8/25/2020	9208 HINTON AVE	LP311832	Lateral Access Point-Replace Cap	11/25/2020
8/25/2020	2821 BAY DRIVE	LP345000	Lateral Access Point-Repair	11/25/2020

Date of Observation	Street	Sewer ID	Problem Description	Repair Date
9/1/2020	8909 CHESAPEAKE AVE	LP231099	Lateral Access Point-Replace Cap	11/25/2020
9/1/2020	9007 CHESAPEAKE AVE	LP231070	Lateral Access Point-Repair	11/25/2020
9/1/2020	8821 CHESAPEAKE AVE	NA	Lateral Access Point-Replace Cap	9/23/2020
9/1/2020	8812 CHESAPEAKE AVE	LP308449	Lateral Access Point-Replace Cap	9/23/2020
9/1/2020	8812 CHESAPEAKE AVE	NA	Lateral Access Point-Repair	11/25/2020
9/1/2020	9101 MILLERS ISLAND BLVD	LP231115	Lateral Access Point-Replace Cap	9/23/2020
9/1/2020	8802 MILLERS ISLAND RD	LP280305	Lateral Access Point-Repair	11/25/2020
8/27/2020	8910 CUCKOLD POINT RD	LL324490	Lateral Access Point-Replace Cap	9/23/2020
8/27/2020	8914 HINTON AVE	LP229208	Lateral Access Point-Repair	12/24/2020
8/27/2020	8912 HINTON AVE	LP229312	Lateral Access Point-Repair	9/30/2020
8/27/2020	8817 HINTON AVE	LP231067	Lateral Access Point-Replace Cap	9/23/2020
8/27/2020	2807 9TH ST	LP229221	Lateral Access Point-Replace Cap	9/23/2020
8/27/2020	2810 11TH ST	46938-46937	Lateral Access Point-Replace Cap	9/23/2020
8/27/2020	8811 HINTON AVE	LP323775	Lateral Access Point-Repair	12/2/2020
8/27/2020	2806 11TH ST	LP231050	Lateral Access Point-Repair	9/23/2020
8/27/2020	2816 12TH ST	LP289517	Backfill Sinkhole	12/15/2020
8/27/2020	2816 12TH ST	LP289517	Lateral Access Point-Repair	11/25/2020
8/27/2020	2814 12TH ST	LP332868	Lateral Access Point-Replace Cap	9/23/2020
8/27/2020	8804 HINTON AVE	LP231044	Lateral Access Point-Repair	12/24/2020
7/30/2020	222 GLENMORE AVE	LL234994	Lateral Access Point-Replace Cap	11/6/2020
7/29/2020	212 MELVIN AVE	10656-10657	Lateral Access Point-Replace Cap	11/6/2020
7/29/2020	220 SUTER RD, MD, 21228	NA	Lateral Access Point-Repair	12/24/2020
7/29/2020	214 SUTER RD	30918-6708	Lateral Access Point-Repair	12/24/2020
7/29/2020	217 SUTER RD	30918-6708	Lateral Access Point-Repair	12/24/2020
7/30/2020	225 OSBORNE AVE	LL233335	Lateral Access Point-Repair	12/24/2020
7/29/2020	207 N BEAUMONT AVE	LL236323	Lateral Access Point-Repair	12/24/2020
7/29/2020	201 SUTER RD	LL233124	Lateral Access Point-Repair	12/24/2020
7/29/2020	302 SUTER RD	LL196529	Lateral Access Point-Repair	1/6/2021
7/29/2020	307 SUTER RD	6537-6708	Lateral Access Point-Repair	12/24/2020
7/29/2020	310 SUTER RD	LL196538	Lateral Access Point-Repair	12/24/2020

Date of Observation	Street	Sewer ID	Problem Description	Repair Date
7/29/2020	304 N BEAUMONT AVE	LL286477	Lateral Access Point-Repair	12/24/2020
7/30/2020	312 OSBORNE AVE	LL298682	Lateral Access Point-Repair	12/24/2020
7/29/2020	216 MELVIN AVE	NA	Lateral Access Point-Repair	12/24/2020
7/28/2020	354 SUTER RD	LL235622	Lateral Access Point-Repair	12/24/2020
7/28/2020	343 SUTER RD, MD, 21228	NA	Lateral Access Point-Repair	12/24/2020
7/28/2020	336 MELVIN AVE, MD, 21228	NA	Lateral Access Point-Repair	12/24/2020
7/30/2020	220 GLENMORE AVE	LL234800	Lateral Access Point-Repair	12/24/2020
7/29/2020	214 SUTER RD	30918-6708	Lateral Line-Smoke Defect	7/29/2020
7/29/2020	219 MELVIN AVE, MD, 21228	NA	Lateral Access Point-Replace Cap	11/6/2020

(1) County coordinating with property owner to confirm stormwater discharge.

Attachment D – List of Deficiencies found during the Inspection of Pumping Stations

Station	Sewershed	Date	Equipment	Problem	Nature of Repair	Completed date	Priority	Reason for Delay if Open>6 Months
Lynch Point	Delmar	2/10/2020	Pump 1	Seal failure	Repaired pump	7/8/2020	2	
Red House Run	Red House Run	3/8/2020	VFD 3	VFD malfunction	Installed new VFD	7/13/2020	2	
Stemmers Run Old	Stemmers Run	3/12/2020	Pump 1	Motor malfunction	Added oil to motor	10/27/2020	2	
Dundalk	Dundalk	5/8/2020	Pump 1	Pump malfunction	Installed new sensor	7/28/2020	2	
Stansbury Manor	Orems	5/11/2020	Pump 2	Replace front heads	Installed new front head	7/28/2020	2	
Red House Run	Red House Run	5/16/2020	VFD 2	VFD malfunction	Installed new VFD	7/13/2020	2	
Orems Road	Orems	5/31/2020	Pump 4	Wear rings need to be replaced	Replaced wear rings	9/15/2020	2	
Randallstown	Gwynns Falls	6/13/2020	Generator	Won't start	Tightened all connections	8/10/2020	2	
Montrose	Gwynns Falls	6/17/2020	Generator	Starter bolts sheared off	Thru-bolted the starter to the mounting plate	6/22/2020	2	
Lodge Forest Manor	Delmar	6/26/2020	Pump 1	Hole in discharge pipe	Installed correct bolts	6/29/2020	1	
Patapsco	Patapsco	7/24/2020	VFD 3	VFD malfunction	Cleared fault	8/1/2020	2	
Gunpowder	Gunpowder	7/27/2020	VFD 3	Circuit board defective	Installed new VFD	11/21/2020	2	
Marlyn Avenue	Essex	8/3/2020	Pump 2	Pump malfunction			3	Waiting for pump manufacturer to repair pump.
Dundalk	Dundalk	8/4/2020	Pump 4	Pump malfunction			3	Pump to be repaired after Pump1 is repaired.
Greenhill Cove	Gray Manor	8/7/2020	Pump 1	Pump malfunction	Repaired pump	10/5/2020	3	
Marlyn Avenue	Essex	8/8/2020	Pump 1	Pump malfunction	Repaired pump	11/10/2020	3	
Windlass Run	Bird River	9/25/2020	Cone Valve 1	Jammed in open position	Repaired bypass cylinder	10/13/2020	2	
Back River Neck	Duck Creek	9/30/2020	Pump 2	Pump malfunction	Replaced pump	12/3/2020	2	
Holly Neck	Duck Creek	10/7/2020	Pump 1	Vacuum dome cracked	Replaced vacuum dome	10/8/2020	2	
Duck Creek	Duck Creek	10/27/2020	Pump 1	VFD malfunction	Replaced fans in VFD	11/10/2020	2	
New Stemmers Run	Stemmers Run	11/13/2020	Pump 4	Pump malfunction	Replaced actuator control board inside	11/15/2020	2	
Rettmans Lane	Gray Manor	11/18/2020	Pump 1	Pump malfunction			2	
Dundalk	Dundalk	11/25/2020	Pump 1	Pump malfunction			3	
Stantonwood	Jones Falls	12/24/2020	Pump 1	Motor malfunction			2	

The pump station deficiencies listed below were outstanding in the 2019 Annual Report. The repair status and/or reason for repair delay are provided below.

Station	Sewershed	Date	Equipment	Problem	Nature of Repair	Completed date	Priority	Reason for Delay if Open>6 Months
Gray Manor	Gray Manor	2/1/2019	Aux suction valve Pump 1	Cylinder needs replacement			2	New cylinder arrived but damaged during shipping. Waiting for manufacturer to finalize correct repair.
Stemmers Run (New)	Stemmers Run	7/1/2019	VFD 3	Replace VFD			2	VFD series is discontinued. Replacement work requires mechanical/electrical re-engineering. Engineer is finalizing design.
Dundalk	Dundalk	11/5/2019	Pump 1	Seal failure	Repaired pump	3/8/2020	2	
Long Quarter	Long Quarter	12/3/2019	Pump 3 suction gate	Missing sealing gasket			2	Sluice gate manufactured, to be delivered April 2021
Long Quarter	Long Quarter	12/3/2019	Pump 3	Pressure ring malfunction			2	Can't be repaired until suction gate is repaired.
Dundalk	Dundalk	12/13/2019	Pump 4	Seal failure	Repaired pump	Q1 2020	2	Pump was sent to repair shop
Long Quarter	Long Quarter	12/20/2019	Aux suction valve Pump 1	Positioner malfunction			2	Repair to be completed when station is on bypass for other repairs.

Attachment E – Building Backups

Building Backups

ADDRESS	ZIP CODE	DATE	WORK ORDER	CAUSE	VOLUME (gallons)
8328 PHILADELPHIA RD	21237	2-Jan-20	20206896602	UNKNOWN/ OTHER	2
10300 GREENSIDE DR	21030	3-Jan-20	20206911103	UNKNOWN/ OTHER	745
7105 OXFORD RD	21212	6-Jan-20	20208219401	CLEANING	0
1908 HARRISON RD	21222	7-Jan-20	20206931804	UNKNOWN/ OTHER	11220
9704 AMES CT	21133	10-Jan-20	20206960401	DEBRIS	10210
3405 MARYVALE RD	21244	15-Jan-20	20207385001	CLEANING	1
2029 READ RD	21207	17-Jan-20	20207009701		84.15
3510 LYNNE HAVEN DR	21244	22-Jan-20	MDVP-03601	CLEANING	2
1689 KIRKWOOD RD	21207	25-Jan-20	20207058703	ROOTS	541
119 WOODLAND AVE	21222	25-Jan-20	20207057405	GREASE	466
117 WOODLAND AVE	21222	25-Jan-20	20207057404	GREASE	UNKNOWN(1)
202 WOODLAND AVE	21222	25-Jan-20	20207057401	GREASE	1496
4520 RASPE AVE	21206	25-Jan-20	20207058101	RAGS	37
1112 HARWALL RD	21207	28-Jan-20	20207088103	GREASE	2
1110 HARWALL RD	21207	28-Jan-20	20207088101	GREASE	1
1691 KIRKWOOD RD	21207	28-Jan-20	20207083101	ROOTS	0
8052 MILTON AVE	21244	29-Jan-20	20208221201		UNKNOWN(1)
3730 PARKFIELD RD	21208	4-Feb-20	20207166801	ROOTS	UNKNOWN(1)
3727 PARKFIELD RD	21208	4-Feb-20	20207166701	ROOTS	590
3728 PARKFIELD RD	21208	4-Feb-20	20207164902	ROOTS	931
1213 DEANWOOD RD	21234	8-Feb-20	20207195101	ROOTS	3
7908 HARFORD RD	21234	15-Feb-20	20207250303	GREASE	55
7910 HARFORD RD	21234	15-Feb-20	20207250301	GREASE	60
801 MIDDLESEX RD	21221	16-Feb-20	20207252101	GREASE	28
8766 PHILADELPHIA RD	21237	20-Feb-20	20207279501	GREASE	0
2 RESERVOIR CIR	21208	28-Feb-20	20207339401	GREASE	20
3402 MERLE DR	21244	10-Mar-20	20207439702	DEFECTIVE PIPE	1
4109 BEDFORD RD	21207	10-Mar-20	20207435601	CLEANING	7.5
2031 READ RD	21207	19-Mar-20	20207497201	UNKNOWN/ OTHER	UNKNOWN(1)

ADDRESS	ZIP CODE	DATE	WORK ORDER	CAUSE	VOLUME (gallons)
9414 OLD HARFORD RD	21234	27-Mar-20	20207577701	UNKNOWN/ OTHER	UNKNOWN(1)
7813 DANIELS AVE	21234	28-Mar-20	20207579601	ROOTS	UNKNOWN(1)
88 TRANSVERSE AVE	21220	31-Mar-20	20207599101	GREASE	UNKNOWN(1)
410 HOPKINS RD	21212	6-Apr-20	20207676001	UNKNOWN/ OTHER	UNKNOWN(1)
3411 LAMBROS RD	21234	6-Apr-20	20207671401	UNKNOWN/ OTHER	UNKNOWN(1)
5910 EDMONDSON AVE	21228	7-Apr-20	20207683801	UNKNOWN/ OTHER	UNKNOWN(1)
2610 LIBERTY PKWY	21222	7-Apr-20	20207683601	GREASE	UNKNOWN(1)
7101 WILLOWDALE AVE	21206	13-Apr-20	20207714701	HIGH WATER	UNKNOWN(1)
8824 LAKEWOOD RD	21234	13-Apr-20	20207711601	ROOTS	UNKNOWN(1)
7804 SHEPHERD AVE	21234	13-Apr-20	20207714401	HIGH WATER	UNKNOWN(1)
5930 CARROLL ST	21207	13-Apr-20	20208239901	UNKNOWN/ OTHER	UNKNOWN(1)
2104 LAWNWOOD CIR	21207	13-Apr-20	20207718801	HIGH WATER	UNKNOWN(1)
1427 GLENDALE RD	21239	16-Apr-20	20208241301	CLEANING	UNKNOWN(1)
4520 RASPE AVE	21206	25-Apr-20	20207864001	DEBRIS	UNKNOWN(1)
2972 SOLLERS POINT RD	21222	29-Apr-20	20207895201	UNKNOWN/ OTHER	UNKNOWN(1)
2508 GLENCOE RD	21234	1-May-20	20207911601	UNKNOWN/ OTHER	UNKNOWN(1)
814 KINGSTON RD	21212	3-May-20	20207929601	ROOTS	UNKNOWN(1)
3722 DOWNEY DALE DR	21133	4-May-20	20207940202	UNKNOWN/ OTHER	UNKNOWN(1)
LOUTH RD	21222	6-May-20	20207876202	CLEANING	UNKNOWN(1)
404 FOX VIEW CT	21136	11-May-20	20207989301	ROOTS	UNKNOWN(1)
313 WAVELAND RD	21228	11-May-20	20207998202	CLEANING	UNKNOWN(1)
1302 IDYLWOOD RD	21208	15-May-20	20208034402	CLEANING	UNKNOWN(1)
1309 IDYLWOOD RD	21208	15-May-20	20208034401	CLEANING	UNKNOWN(1)
32 GARNET AVE	21228	20-May-20	20208063501	GREASE	UNKNOWN(1)
3918 ZURICH RD	21133	20-Jun-20	20208366602		UNKNOWN(1)
12204 LONG LAKE DR	21117	1-Jul-20	771300	ROOTS	1
9415 PERRY HALL BLVD	21236	1-Jul-20	771456	GREASE	UNKNOWN(1)
9413 PERRY HALL BLVD BALTIMORE	21236	1-Jul-20	775384	NULL	
1538 SULPHUR SPRING RD	21227	6-Jul-20	776195		UNKNOWN(1)
9705 UXBRIDGE RD	21234	24-Jul-20	775230		UNKNOWN(1)
4 SLAVIN CT	21236	24-Jul-20	775231		UNKNOWN(1)
8113 CANDLE LN	21237	25-Jul-20	775307	PRIVATE	UNKNOWN(1)

ADDRESS	ZIP CODE	DATE	WORK ORDER	CAUSE	VOLUME (gallons)
8000 CHARLESMONT RD	21222	4-Aug-20	775037	HIGH WATER	UNKNOWN(1)
8000 CHARLESMONT RD	21222	4-Aug-20	775041	HIGH WATER	UNKNOWN(1)
8003 CHARLESMONT RD	21222	4-Aug-20	775042	HIGH WATER	UNKNOWN(1)
7531 NORTH POINT RD	21219	4-Aug-20	775043	HIGH WATER	5
10 WILBUR RD	21221	4-Aug-20	775044	HIGH WATER	5
4103 COLONIAL RD	21208	4-Aug-20	775047	HIGH WATER	5
7529 NORTH POINT RD	21219	4-Aug-20	775048	HIGH WATER	5
7527 NORTH POINT RD	21219	4-Aug-20	775050	HIGH WATER	5
7316 WALDMAN AVE	21219	4-Aug-20	775051	HIGH WATER	1121
116 FOREST DR	21228	4-Aug-20	775090	UNKNOWN/ OTHER	UNKNOWN(1)
7620 ROSS RD	21219	4-Aug-20	775092	HIGH WATER	497
3315 MAYFAIR RD	21207	4-Aug-20	775109	UNKNOWN/ OTHER	UNKNOWN(1)
3300 FAIRVIEW RD	21207	4-Aug-20	775120	HIGH WATER	13
2315 ESTATE AVE	21219	4-Aug-20	775138	HIGH WATER	1
7333 HUGHES AVE	21219	4-Aug-20	775141	HIGH WATER	0
7304 WALDMAN AVE	21219	4-Aug-20	775143	HIGH WATER	186
2621 EDGEMERE AVE	21215	4-Aug-20	775169	HIGH WATER	1676
7600 NORTH POINT RD	21219	4-Aug-20	775347	UNKNOWN/ OTHER	UNKNOWN(1)
211 COLGATE AVE	21222	4-Aug-20	775349	HIGH WATER	50
7326 WALDMAN AVE	21219	4-Aug-20	800463	HIGH WATER	UNKNOWN(1)
1572 WILLIAMS AVE	21221	4-Aug-20	800465	HIGH WATER	UNKNOWN(1)
3102 RIVER DRIVE RD	21219	5-Aug-20	775116	HIGH WATER	UNKNOWN(1)
2417 WINDSOR RD	21234	6-Aug-20	775253	HIGH WATER	UNKNOWN(1)
8003 CHARLESMONT RD,	21222	6-Aug-20	775346	HIGH WATER	UNKNOWN(1)
2111 CAMERON DR	21222	7-Aug-20	775417	GREASE	5
2901 WELLS AVE	21219	12-Aug-20	776010	UNKNOWN/	UNKNOWN(1)
41 OVERBROOK RD	21228	12-Aug-20	776569	HIGH WATER	15
913 ELM RIDGE AVE	21229	19-Aug-20	776713	ROOTS	UNKNOWN(1)
913 ELM RIDGE AVE	21229	19-Aug-20	776714	UNKNOWN/ OTHER	UNKNOWN(1)
9600 ANTLER CIR	21133	20-Aug-20	776848	UNKNOWN/ OTHER	UNKNOWN(1)
4818 BUXTON CIR	21117	28-Aug-20	777689	UNKNOWN/ OTHER	UNKNOWN(1)
938 FAIRMOUNT AVE	21204	5-Sep-20	778650	GREASE	UNKNOWN(1)

ADDRESS	ZIP CODE	DATE	WORK ORDER	CAUSE	VOLUME (gallons)
1205 CIRCLE DR,	21227	11-Sep-20	779608	UNKNOWN/ OTHER	UNKNOWN(1)
7931 34TH ST	21237	12-Sep-20	779641	UNKNOWN/ OTHER	
204 RIVERTHORN RD	21220	12-Sep-20	779644	UNKNOWN/ OTHER	
810 LOYOLA DR	21204	17-Sep-20	780193	ROOTS	15
8113 CANDLE LN, MD	21237	18-Sep-20	774137	HIGH WATER	UNKNOWN(1)
BAYBRIAR RD & MORNINGTON RD	21222	30-Sep-20	789800	DEBRIS	UNKNOWN(1)
6502 KRIEL ST	21207	2-Oct-20	791463	GREASE	UNKNOWN(1)
11 WELLS AVE	21222	5-Oct-20	794273	RAGS	30
1701 ROLAND AVE	21204	12-Oct-20	798842	UNKNOWN/ OTHER	N/A
35 EASTFORD CT	21234	12-Oct-20	798843	UNKNOWN/ OTHER	30
133 ELINOR AVE	21236	13-Oct-20	798947	DEFECTIVE PIPE	3
806 EASTERN BLVD	21221	18-Nov-20	803535	UNKNOWN/ OTHER	10 EST.
7312 BETZ AVE	21219	18-Nov-20	803536	UNKNOWN/ OTHER	UNKNOWN(1)
41 OVERBROOK RD	21228	30-Nov-20	805128	CLEANING	1
41 OVERBROOK RD	21228	30-Nov-20	805131	CLEANING	1
41 OVERBROOK RD	21228	30-Nov-20	805133	CLEANING	UNKNOWN(1)
1501 NEIGHBORS AVE	21237	30-Nov-20	806070	UNKNOWN/OTHER	
1538 SULPHUR SPRING RD	21227	9-Dec-20	806780	UNKNOWN/ OTHER	
3100 CAMBRIDGE DR	21244	14-Dec-20	806803	UNKNOWN/ OTHER	
6440 BALTIMORE NATIONAL PIKE	21228	17-Dec-20	807024	UNKNOWN/ OTHER	
11 LIBERTY PKWY	21222	17-Dec-20	807075	UNKNOWN/ OTHER	
11 LIBERTY PKWY	21222	19-Dec-20	807145	UNKNOWN/ OTHER	
4109 COLBY RD	21208	24-Dec-20	807600	UNKNOWN/ OTHER	
8400 LOCH RAVEN BLVD	21286	25-Dec-20	807613	UNKNOWN/ OTHER	
4250 CAYUGA RD.	21133	25-Dec-20	807622	UNKNOWN/ OTHER	
4254 CAYUGA RD.	21133	25-Dec-20	807623	UNKNOWN/ OTHER	

(1) County not granted access to verify quantities.

Quarterly Report

January 1, 2021
Through
March 31, 2021

PURSUANT TO PARAGRAPH 19, OF THE CONSENT DECREE BETWEEN BALTIMORE COUNTY AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, DEPARTMENT OF JUSTICE AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

EXHIBIT
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Pursuant to Paragraph 19 of the Consent Decree between Baltimore County (County) and The United States Environmental Protection Agency (EPA), the Department of Justice (DOJ), and the Maryland Department of the Environment (MDE), this document constitutes the required Quarterly Report for the period **January 1, 2021** through **March 31, 2021.**

The quarterly report discusses activities and progress of Baltimore County towards compliance with the requirements set forth in the Consent Decree including:

i. Non-Pump Station and Pump Station SSO Structure discharges
ii. Construction project status
iii. Collection system inspection
iv. SRRR plan implementation/progress
v. FOG program
vi. Supplemental Environmental Project status, and
vii. Compliance issues

i. Non-Pump Station and Pump Station SSO Structure Discharges

Discharges from Sanitary Sewer Overflow Structures took place at the locations and dates during the reporting period as detailed in **Attachment A**.

A summary of flow metering information for Non-Pump Station SSO Structures is included as **Attachment A1.**

ii. Construction Project Status

Attachment B presents the status of Paragraph 7 – Non-Pump Station SSO Structure Elimination projects and Paragraph 13F - Pump Station Rehabilitation Repair and Replacement projects that are in design and construction during the reporting quarter.

iii. Collection System Inspection

The County has completed all gravity sewer line inspections required under Paragraphs 8 and 15 of the Consent Decree. The County continues compliance with all gravity line CCTV inspections within the required 10 working days of the occurrence of an overflow for each SSO that occurred during this reporting period. **Attachment C** details the County's inspection response to each of the overflow that occurred during the reporting period.

iv. SRRR Plan Implementation/Progress

The SRRR Plans contain numerous projects in a variety of locations and stages of planning, design and construction. **Attachment D** includes a list of each sewershed and a summary status of Plan implementation. The implementation of the recommended improvement projects is proceeding; however, acquisition of required rights-of-way and regulatory permits may require a significant period of time thereby resulting in possible delay to complete the construction work.

The County’s recommendations in some of the SRRR Plans for meter basins that exhibited excessive I/I and design-storm simulated model-predicted SSOs included the comprehensive rehabilitation of all pipe segments and manholes, increased hydraulic capacity and/or testing and repair of sewer house connections and laterals. Some of the recommended repairs were

revised based on design preparation and review of improvement projects. Additionally, some miscellaneous sewer/manhole/lateral repairs that were included in the SRRR Plans may be revised based on a review of the original and updated inspection data.

v. FOG Program

The County has completed implementation of the FOG Program Modification Plan.

vi. Supplemental Environmental Project Status

Completed.

vii. Compliance Issues

In accordance with Paragraph 19, Item B.vii, the following is a summary of Consent Decree compliance issues.

a. Consent Decree projects or requirements certified as complete during the reporting period:

Old Stemmers Run Pump Station Action Plan
On January 19, 2021, the County submitted to EPA/MDE a letter stating that a post-SSO investigation of the November 30, 2020 SSO discharge that occurred at the Old Stemmers Run Pump Station was caused by a contractor who was working for the County and did not re-install an upstream manhole cover. During a rain event that occurred later in the day, an adjacent rising stream flowed into the open manhole and overwhelmed the pump station capacity. Since the SSO was caused by contractor negligence, no action plan, is required for the Old Stemmers Run Pump Station.

New Stemmers Run Pump Station Action Plan
On January 19, 2021, the County submitted to EPA/MDE a letter stating that a post-SSO investigation of the November 30, 2020 SSO discharge that occurred at the New Stemmers Run Pump Station was caused by a contractor who was working for the County and did not re-install an upstream manhole cover. During a rain event that occurred later in the day, an adjacent rising stream flowed into the open manhole and overwhelmed the pump station capacity. Since the SSO was caused by contractor negligence, no action plan is required for the New Stemmers Run Pump Station.

Orems Road Pump Station Action Plan
On February 19, 2021, the County submitted to EPA/MDE an action plan for the November 30, 2020 SSO that occurred at the Orems Road Pump Station. As stated in the action plan, the County installed a flow monitor upstream of the station to confirm that stream water inflow from an open manhole cover had been eliminated.

b. Consent Decree requirements due to be completed during the reporting period, but not completed:

None.

c. Problems that may prevent the County from meeting future Consent Decree compliance deadlines:

Stansbury Manor Pump Station Rehabilitation

On March 31, 2021, the County submitted a revised time extension request to complete improvements to the Stansbury Manor Pump Station. Based on communication from the Maryland Aviation Administration, the requested revised consent decree deadline is April 20, 2024.

Delmar SRRR Plan

On March 31, 2021 the County submitted a potential delay notification for the Delmar Sewer Rehabilitation project. The potential delay is due to the time required to acquire rights of entry and regulatory permits.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

Jeffrey S. Peluso, PE
Acting Chief, Bureau of Engineering and Construction

Control Document No. 347

Attachment A - Discharges from Overflow Structures

Pump Station Overflow Structures

None.

Non-Pump Station Overflow Structures – Metered

Name	Alter Road
SSO ID	22
Address	Alter Street & Southern Cross Drive
Date of Discharge	3/24/2021
Duration of Overflow	3 Hrs. 26 Mins.
Date of Relevant Weather Conditions	3/24/2021
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	3,568
Receiving Waters	Maidens Choice Creek
Identified Cause	Insufficient wet-weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. Right-of-way and environmental permits are required for Phase II construction. The County will submit a second SSO elimination time extension when a date has been identified.

Name	Southern Cross Drive
SSO ID	23A
Address	Southern Cross Drive & Parsons Avenue
Date of Discharge	3/24/2021
Duration of Overflow	4 Hrs. 05 Mins.
Date of Relevant Weather Conditions	3/24/2021
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	32,199
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. Right-of-way and environmental permits are required for Phase II construction. The County will submit a second SSO elimination time extension when a date has been identified.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date of Discharge	3/24/2021
Duration of Overflow	4 Hrs. 00 Mins.
Date of Relevant Weather Conditions	3/24/2021
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	36,144
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. Right-of-way and environmental permits are required for Phase II construction. The County will submit a second SSO elimination time extension when a date has been identified.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	3/24/2021
Duration of Overflow	4 Hr. 53 Mins.
Date of Relevant Weather Conditions	3/24/2021
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	93,853
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. Right-of-way and environmental permits are required for Phase II construction. The County will submit a second SSO elimination time extension when a date has been identified.

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Dr & Hillcrest Ave
Date of Discharge	3/24/2021
Duration of Overflow	1 Hrs. 40 Mins.
Date of Relevant Weather Conditions	3/24/2021
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	16,505
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	County submitted time extension request to eliminate overflow structure by 8/3/2023.

Attachment A1: Summary of Non-Pumping Station Overflow Structure Monitoring

Date of Rain Event		3/24/2021
Rain (inches)		1.77” to 1.89“
SSO Name	**SSO ID**	
Alter Road	22	3,568
Southern Cross Drive	23A	32,199
Southern Cross	23B	36,144
Patterson Avenue	24	93,853
Aiken Avenue	41	
Marnat Road	113	
Queen Anne Drive	129	16,505

Attachment B - Construction Projects Status

Non-Pump Station SSO Structures

Project Name	Date of Construction Notice to Proceed	Sewershed Name	Original Consent Decree Elimination Date	Consent Decree SSO Elimination Date	SSO Eliminated	Status
Powder Mill Interceptor Relief Sewer Phase I – 18180 SXO (SSOs 22, 23A, 23B, 24)	9/3/2019	Gwynns Falls	3/22/2017	TBD	No	A Time Extension Request with an undefined elimination date was submitted on 2/14/2017. A second Time Extension Request with a definitive SSO elimination date will be submitted after right-of-way acquisition, environmental permits obtained and construction notice to proceed is issued for Phase II construction. This project is 90% complete, achieving functional use on 1/26/2021.
Powder Mill Interceptor Relief Sewer Phase II (SSOs 22, 23A, 23B, 24)	-	Gwynns Falls	3/22/2017	TBD	No	A Time Extension Request with an undefined SSO elimination date was submitted on 2/14/2017. A second time extension request with definitive SSO elimination date will be submitted after right-of-way acquisition, environmental permits obtained and construction notice to proceed is issued for Phase II construction.
East Branch Herring Run Relief Sewer – 14117 SX0 (SSO 41 & 129)	2/5/2020	Herring Run	3/20/2018	8/3/2023 (requested)	No	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023. This project is 42% complete.
Elimination of SSOs 116, 117, and 118	-	West Low Level	9/20/2016	TBD	No	On 6/22/2016, the County submitted a Time Extension Request with an undefined SSO elimination date. A second Time Extension Request with a definitive SSO elimination date will be submitted after the City shares with the County their proposed downstream corrective actions and construction schedule. The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.
Elimination of SSO 113	-	Jones Falls	9/20/2016	TBD	No	

Pump Station Rehabilitation, Repair and Replacement

Project Name	Original Consent Decree Deadline	Project Phase	Time Extension Request Submittal Date	Requested Deadline Date	Reason for Delay
Lodge Forest Manor	3/20/2020	Design (RoW)	1/30/2020	3/20/2025	DNR easement acquisition.
Stansbury Manor	3/20/2020	Design (Permit)	3/29/2021	4/20/2024	MAA property acquisition.
Baurenschmidt Manor	6/1/2021	Construction			
Hyde Park	6/1/2021	Construction			
Millers Island	6/1/2022	Construction			
Turkey Point	6/1/2022	Construction			
Penwood Terrace	6/1/2023	Contractor Selection			
Corsica	6/1/2023	Design			
Fort Howard	6/1/2023	Design			

Attachment C - CCTV in Response to an SSO

Date of SSO	Location	CCTV Inspection Date	Exemption
1/12/2021	Pawnee and Wampler Roads	1/15/2021	
1/12/2021	5414 Montbel Avenue		B
2/10/2021	1235 Brigadoon Trail	2/10/2021	
2/28/2021	1242 Sulphur Spring Road	3/10/2021	
3/5/2021	1362 Sudvale Road		B
3/17/2021	1101 Linden Avenue	3/19/2021	
3/24/2021	Alter Street and Southern Cross Drive		D
3/24/2021	Southern Cross Drive & Parsons Avenue		D
3/24/2021	3909 Southern Cross Drive		D
3/24/2021	3902 Patterson Avenue		D
3/24/2021	Queen Anne Drive & Hillcrest Avenue		D

Allowable Exemptions:

A. The cause of the SSO was a blockage in a County-owned lateral adjacent to the gravity line segment and the County cleans the County-owned lateral
B. The cause of the SSO was a blockage in the gravity line segment and visible directly from the manhole
C. The County has previously CCTV inspected the line segment(s) due to an earlier blockage and the County is in the process of developing or implementing corrective action
D. The location is an identified overflow structure and is being monitored pursuant to Paragraph 7.C and the County is involved in a process designed to eliminate the overflow structure

Attachment D - Status of SRRR Plan Implementation

Sewershed	Original Consent Decree Deadline	Date of Potential Delay Notification	Reason for Delay	Comments
Patapsco	9/6/2021	10/28/2018	Right of entry acquisition	
Delmar	4/18/2022	11/22/2019	Right of entry acquisition	
Duck Creek	4/18/2022	2/5/2020	Expanded project scope	
Dundalk	4/18/2022	11/22/2019	Right of entry acquisition	
East Point	4/18/2022	11/22/2019	Right of entry acquisition	
Essex	4/18/2022	12/10/2019	Right of entry acquisition/permits	
Gray Manor	4/18/2022	6/19/2019	State and Local Permitting	
Texas	4/18/2022	7/10/2019	Right of entry acquisition	
Longquarter	4/18/2024	11/26/2019	Right of entry acquisition	
Redhouse Run	4/18/2024			
Whitemarsh	4/18/2024			
Stemmers Run	9/6/2024			
Gunpowder	4/18/2026			
Substantially completed SRRR Plan implementations [1]				
Bird River	9/29/2020	3/15/2019	Right of entry acquisition	There are 3 assets (i.e. sewer and manholes) which represents approximately 60 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Bread & Cheese	9/29/2020 (Requested date: 3/6/2022)	5/28/2020 (Time extension request)	Right of entry acquisition	There are 127 asset (i.e. sewer and manholes) which represents approximately 100 percent of the total assets with structural repair recommendations that remain outstanding. Bid Opening for this project was January 7, 2021. Notice to Proceed is expected in late April 2021.

Sewershed	Original Consent Decree Deadline	Date of Potential Delay Notification	Reason for Delay	Comments
				The County will submit to EPA and MDE a time of performance extension request when the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Bengies	9/29/2020	3/15/2019	Right of entry acquisition	There are 96 assets (i.e. sewer and manholes) which represents approximately 100 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Cockeysville	9/29/2020	3/15/2019	Right of entry acquisition	There are 12 assets (i.e. sewer and manholes) which represents approximately 57 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Dead Run	9/6/2017			Substantially completed
Gwynns Falls	9/6/2018	2/14/2017	Right of way acquisition	On September 6, 2018, the County certified substantial completion for the implementation of the Gwynns Falls Sewershed SRRR Plan with the exception of 23 structural repairs for which a potential delay was submitted to EPA and MDE. The outstanding structural repairs have no effect on the performance of the collection system. To date, 6 repairs remain outstanding and will be completed concurrent with the Powder Mill Interceptor Phase1 project, which is currently in construction.
Herring Run	9/6/2018	8/15/2017 3/6/2018	Right of entry acquisition	There are 93 assets (i.e. sewer and manholes) which represents approximately 6 percent of the total assets with structural repair

Sewershed	Original Consent Decree Deadline	Date of Potential Delay Notification	Reason for Delay	Comments
				recommendations that remain outstanding and are awaiting completion of right of entry acquisition. Two of these properties have entered the condemnation process. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Jones Falls	9/6/2019			There are 10 assets (i.e. sewer and manholes) which represents approximately 0.6 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Orems	9/29/2020	11/22/2019	Right of entry acquisition	Design is complete for the Orems Basin 3 Relief Sewer and the construction bid opening is scheduled for 4/20/2021. An accurate Time Extension request will be submitted once the County receives a schedule from the successful contractor.
Tributary 26	2/11/2020			Substantially completed
Tributary 27	9/6/2017			Substantially completed
Tributary 43	2/11/2020			Substantially completed
Tributary 48	9/6/2017			Substantially completed
Tributary 78	2/11/2020			Substantially completed
West Low Level	9/6/2017			Substantially completed

[1] Substantial completion, as defined in Paragraph IV, Item CC of the Consent Decree means, the date, as certified by the Engineer in charge of a construction project, when the construction project or specified part thereof is sufficiently completed, in accordance with the contract documents, such that the project or specified part thereof can be used to accomplish the purposes for which it was intended.

JOHN A. OLSZEWSKI, JR.
County Executive

D'ANDREA WALKER, *Acting Director*
Department of Public Works and Transportation

August 13, 2021

Ms. Amanda Pruzinsky
United States Environmental Protection Agency
Office of Enforcement and Compliance, SPDES Branch
1650 Arch Street, 3WP42
Philadelphia PA 19103-2029

Chief, Enforcement Division, Compliance Program
Water Management Administration
Maryland Department of Environment
1800 Washington Boulevard
Baltimore MD 21230

QUARTERLY REPORT – SECOND QUARTER 2021
CONSENT DECREE CIVIL NO: AMD 05-2028
(Reference DOJ Case No. 90-5-1-1-4402/2)

Enclosed you will find our submittal of the referenced Quarterly Report. This is to advise that we have submitted this report by the due date as required by Chapter VI, REPORTING REQUIREMENTS, Section 19. A. of the Decree.

Please advise us of any questions you may have regarding this report.

Sincerely,

Lisa K. Cuchola

for Jeffrey S. Peluso, PE
Chief, Bureau of Engineering and Construction

JP:mk

Enclosure: Quarterly Report



Quarterly Report

April 1, 2021
Through
June 30, 2021

PURSUANT TO PARAGRAPH 19, OF THE CONSENT DECREE BETWEEN BALTIMORE COUNTY AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, DEPARTMENT OF JUSTICE AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

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ii. Construction project status
iii. Collection system inspection
iv. SRRR plan implementation/progress
v. FOG program
vi. Supplemental Environmental Project status, and
vii. Compliance issues

i. Non-Pump Station and Pump Station SSO Structure Discharges

Discharges from Sanitary Sewer Overflow Structures took place at the locations and dates during the reporting period as detailed in **Attachment A**.

A summary of flow metering information for Non-Pump Station SSO Structures is included as **Attachment A1.**

ii. Construction Project Status

Attachment B presents the status of Paragraph 7 – Non-Pump Station SSO Structure Elimination projects and Paragraph 13F - Pump Station Rehabilitation Repair and Replacement projects that are in design and construction during the reporting quarter.

iii. Collection System Inspection

The County has completed all gravity sewer line inspections required under Paragraphs 8 and 15 of the Consent Decree. The County continues compliance with all gravity line CCTV inspections within the required 10 working days of the occurrence of an overflow for each SSO that occurred during this reporting period. **Attachment C** details the County's inspection response to each of the overflow that occurred during the reporting period.

iv. SRRR Plan Implementation/Progress

The SRRR Plans contain numerous projects in a variety of locations and stages of planning, design and construction. **Attachment D** includes a list of each sewershed and a summary status of Plan implementation. The implementation of the recommended improvement projects is proceeding; however, acquisition of required rights-of-way and regulatory permits may require a significant period of time thereby resulting in possible delay to complete the construction work.

The County's recommendations in some of the SRRR Plans for meter basins that exhibited excessive I/I and design-storm simulated model-predicted SSOs included the comprehensive rehabilitation of all pipe segments and manholes, increased hydraulic capacity and/or testing and repair of sewer house connections and laterals. Some of the recommended repairs were

revised based on design preparation and review of improvement projects. Additionally, some miscellaneous sewer/manhole/lateral repairs that were included in the SRRR Plans may be revised based on a review of the original and updated inspection data.

v. FOG Program

The County has completed implementation of the FOG Program Modification Plan.

vi. Supplemental Environmental Project Status

Completed.

vii. Compliance Issues

In accordance with Paragraph 19, Item B.vii, the following is a summary of Consent Decree compliance issues.

a. Consent Decree projects or requirements certified as complete during the reporting period:

Jones Falls Performance Assessment Report

On June 3, 2021, the County submitted the Performance Assessment Report for the Jones Falls SRRR Plan.

Texas Pump Station Action Plan

On May 26, 2021, pump shutdown at the Texas Pump Station resulted in an SSO discharge of 213,000 gallons. A post-SSO analysis indicated intermittent power disruption of the primary pump station electrical feed, which caused the pumps to shut down and resulted in the SSO discharge. It is suspected that the power disruption was of such short duration that the station automatic transfer switch did not activate the secondary power feed. Since the separate and redundant power supply is the County- and MDE-approved backup power for this pump station, a plan to prevent further SSOs at the Texas Pump Station due to power outages is not needed.

Lodge Forest Pump Station Action Plan

As summarized in the County's June 22, 2021 plan to prevent further SSOs at the Lodge Forest Pump Station, on June 14, 2021, pump shutdown at the Lodge Forest Pump Station resulted in a sanitary sewer overflow (SSO) discharge of 83,000 gallons. County staff where alerted to possible station equipment failure and were dispatched to the station to inspect the equipment. When they arrived at the station, it appeared that the station's electrical power was functioning; however, none of the variable frequency drives (VFD) would operate. A crew chief was dispatched to the station and determined that the generator breaker located in the master control center had tripped; thereby preventing the generator from powering the station. The generator breaker was manually reset and the VFDs began operating as normal. A post-SSO analysis indicated that a possible power surge of the electrical feed disrupted power to the pump station and one of the three phases was faulted. The phase failure prevented the VFD's from operating until the generator breaker was reset so that the generator could power the station.

The County could not replicate the generator breaker trip and no other stations have experienced similar generator breaker tripping issues. As a preventive measure, the County will complete additional electrical training for pump station crews to improve station shutdown response. Since the station has a County- and MDE-approved backup power source and the generator breaker fault that resulted in the June 14, 2021 SSO could not be replicated and has not been experienced at other stations, a plan to prevent further SSOs at the Lodge Forest Pump Station due to power outages is not needed.

b. Consent Decree requirements due to be completed during the reporting period, but not completed:

None.

c. Problems that may prevent the County from meeting future Consent Decree compliance deadlines:

Lodge Forest Pump Station Rehabilitation

On June 4, 2021, the County submitted a revised time extension request to complete improvements to the Lodge Forest Pump Station. Based on communication from the Maryland Aviation Administration, the requested revised consent decree deadline is October 20, 2023.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

for Jeffrey S. Peluso, PE
Chief, Bureau of Engineering and Construction

Control Document No. 363

Attachment A - Discharges from Overflow Structures

Pump Station Overflow Structures

Name	Texas
Address	10320 York Road
Date Of Discharge	05/26/2021
Duration Of Overflow	42 Min.
Date Of Relevant Weather Conditions	05/26/2021
Description Of Relevant Weather Conditions	Rain
Gallons Discharged	213,000
Receiving Waters	Beaver Dam Run
Identified Cause	Power surges during storm caused all VFDs to fail resulting in pumps locking out.
Details Of Corrective Action Taken or Planned	VFDs were reset and put back online.

Name	Lodge Forest
Address	2315 Lodge Forest Road
Date Of Discharge	06/14/2021
Duration Of Overflow	1 Hr. 20 Mins.
Date Of Relevant Weather Conditions	06/14/2021
Description Of Relevant Weather Conditions	Rain
Gallons Discharged	83,000
Receiving Waters	North Point Creek
Identified Cause	Disruption of the primary pump station electrical feed and backup generator breaker was tripped.
Details Of Corrective Action Taken or Planned	The generator breaker was reset.

Non-Pump Station Overflow Structures – Metered

Name	Aiken Avenue
SSO ID	41
Address	7829 Aiken Avenue & Taylor Avenue
Date of Discharge	6/10/2020
Duration of Overflow	3 Hr.
Date of Relevant Weather Conditions	6/10/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	46,525
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023.

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Drive & Hillcrest Avenue
Date of Discharge	6/10/2020
Duration of Overflow	3 Hrs. 7 Mins.
Date of Relevant Weather Conditions	6/10/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	78,101
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	County submitted time extension request to eliminate overflow structure by 8/3/2023.

Name	Aiken Avenue
SSO ID	41
Address	7829 Aiken Avenue & Taylor Avenue
Date of Discharge	6/11/2020
Duration of Overflow	4 Hr. 57 Mins.
Date of Relevant Weather Conditions	6/11/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	43,688
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023.

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Drive & Hillcrest Avenue
Date of Discharge	6/11/2020
Duration of Overflow	5 Hrs. 34 Mins.
Date of Relevant Weather Conditions	6/11/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	67,196
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	County submitted time extension request to eliminate overflow structure by 8/3/2023.

Attachment A1: Summary of Non-Pumping Station Overflow Structure Monitoring

Date of Rain Event		6/10/2021	6/11/2021
Rain (inches)		1.63"	2.20"
SSO Name	SSO ID		
Alter Road	22		
Southern Cross Drive	23A		
Southern Cross	23B		
Patterson Avenue	24		
Aiken Avenue	41	46,525	43,688
Marnat Road	113		
Queen Anne Drive	129	78,101	67,196

Attachment B - Construction Projects Status

Non-Pump Station SSO Structures

Project Name	Date of Construction Notice to Proceed	Sewershed Name	Original Consent Decree Elimination Date	Consent Decree SSO Elimination Date	SSO Eliminated	Status
Powder Mill Interceptor Relief Sewer Phase I – 18180 SXO (SSOs 22, 23A, 23B, 24)	9/3/2019	Gwynns Falls	3/22/2017	TBD	No	A Time Extension Request with an undefined elimination date was submitted on 2/14/2017. A second Time Extension Request with a definitive SSO elimination date will be submitted after right-of-way acquisition, environmental permits obtained and construction notice to proceed is issued for Phase II construction. This project is achieved functional use on 1/26/2021.
Powder Mill Interceptor Relief Sewer Phase II (SSOs 22, 23A, 23B, 24)	-	Gwynns Falls	3/22/2017	TBD	No	A Time Extension Request with an undefined SSO elimination date was submitted on 2/14/2017. A second time extension request with definitive SSO elimination date will be submitted after right-of-way acquisition, environmental permits obtained and construction notice to proceed is issued for Phase II construction.
East Branch Herring Run Relief Sewer – 14117 SX0 (SSO 41 & 129)	2/5/2020	Herring Run	3/20/2018	8/3/2023 (requested)	No	On 4/27/2020 the County submitted a Time Extension Request to eliminate the overflow structure by 8/3/2023. This project is 42% complete.
Elimination of SSOs 116, 117, and 118	-	West Low Level	9/20/2016	TBD	No	On 6/22/2016, the County submitted a Time Extension Request with an undefined SSO elimination date. A second Time Extension Request with a definitive SSO elimination date will be submitted after the City shares with the County their proposed downstream corrective actions and construction schedule. The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.
Elimination of SSO 113	-	Jones Falls	9/20/2016	TBD	No	

Pump Station Rehabilitation, Repair and Replacement

Project Name	Original Consent Decree Deadline	Project Phase	Time Extension Request Submittal Date	Requested Deadline Date	Reason for Delay
Lodge Forest Manor	3/20/2020	Design (RoW)	1/30/2020	3/20/2025	DNR easement acquisition.
Stansbury Manor	3/20/2020	Design (Permit)	3/31/2021	4/20/2024	MAA property acquisition.
Hyde Park	6/1/2021	Construction			
Millers Island	6/1/2022	Construction			
Turkey Point	6/1/2022	Construction			
Penwood Terrace	6/1/2023	Construction			
Corsica	6/1/2023	Design			
Fort Howard	6/1/2023	Design			

Attachment C - CCTV in Response to an SSO

Date of SSO	Location	CCTV Inspection Date	Exemption
4/27/2021	626 Hasting Road	5/5/2021	
5/14/2021	500 Compass Road	5/14/2021	
6/10/2021	7829 Aiken Avenue & Taylor Avenue		D
6/10/2021	Queen Anne Drive & Hillcrest Avenue		D
6/11/2021	7829 Aiken Avenue & Taylor Avenue		D
6/11/2021	Queen Anne Drive & Hillcrest Avenue		D
6/11/2021	2407 Cub Hill Road		B
6/23/2021	10803 Falls Road		B

Allowable Exemptions:

A. The cause of the SSO was a blockage in a County-owned lateral adjacent to the gravity line segment and the County cleans the County-owned lateral
B. The cause of the SSO was a blockage in the gravity line segment and visible directly from the manhole
C. The County has previously CCTV inspected the line segment(s) due to an earlier blockage and the County is in the process of developing or implementing corrective action
D. The location is an identified overflow structure and is being monitored pursuant to Paragraph 7.C and the County is involved in a process designed to eliminate the overflow structure

Attachment D - Status of SRRR Plan Implementation

Sewershed	Original Consent Decree Deadline	Date of Potential Delay Notification	Reason for Delay	Comments
Patapsco	9/6/2021	10/28/2018	Right of entry acquisition	
Delmar	4/18/2022	11/22/2019	Right of entry acquisition	
Duck Creek	4/18/2022	2/5/2020	Expanded project scope	
Dundalk	4/18/2022	11/22/2019	Right of entry acquisition	
East Point	4/18/2022	11/22/2019	Right of entry acquisition	
Essex	4/18/2022	12/10/2019	Right of entry acquisition/permits	
Gray Manor	4/18/2022	6/19/2019	State and Local Permitting	
Texas	4/18/2022	7/10/2019	Right of entry acquisition	
Longquarter	4/18/2024	11/26/2019	Right of entry acquisition	
Redhouse Run	4/18/2024			
Whitemarsh	4/18/2024			
Stemmers Run	9/6/2024			
Gunpowder	4/18/2026			
Substantially completed SRRR Plan implementations [1]				
Bird River	9/29/2020	3/15/2019	Right of entry acquisition	There are 3 assets (i.e. sewer and manholes) which represents approximately 60 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.

Bread & Cheese	9/29/2020 (Requested date: 3/6/2022)	5/28/2020 (Time extension request)	Right of entry acquisition	There are 127 asset (i.e. sewer and manholes) which represents approximately 100 percent of the total assets with structural repair recommendations that remain outstanding. Notice to Proceed was February 27, 2021. The outstanding structural repairs have no effect on the performance of the collection system.
Bengies	9/29/2020	3/15/2019	Right of entry acquisition	There are 96 assets (i.e. sewer and manholes) which represents approximately 100 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Cockeysville	9/29/2020	3/15/2019	Right of entry acquisition	There are 12 assets (i.e. sewer and manholes) which represents approximately 57 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Dead Run	9/6/2017			Substantially completed; termination certification submitted May 18, 2021.
Gwynns Falls	9/6/2018	2/14/2017	Right of way acquisition	On September 6, 2018, the County certified substantial completion for the implementation of the Gwynns Falls Sewershed SRRR Plan with the exception of 23 structural repairs for which a potential delay was submitted to EPA and MDE. The outstanding structural repairs have no effect on the performance of the collection system. To date, 6 repairs remain outstanding and were completed with the Powder Mill Interceptor Phase 1 project, which achieved functional use on January 26, 2021.

Herring Run	9/6/2018	8/15/2017 3/6/2018	Right of entry acquisition	There are 93 assets (i.e. sewer and manholes) which represents approximately 6 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. Two of these properties have entered the condemnation process. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Jones Falls	9/6/2019		Right of entry acquisition	There are 10 assets (i.e. sewer and manholes) which represents approximately 0.6 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Orems	9/29/2020	11/22/2019	Right of entry acquisition	Design is complete for the Orems Basin 3 Relief Sewer. Contract 21144SX0 was awarded May 25, 2021. An accurate Time Extension request will be submitted once the County receives a schedule from the successful contractor.
Tributary 26	2/11/2020			Substantially completed; termination certification submitted May 18, 2021.
Tributary 27	9/6/2017			Substantially completed; termination certification submitted May 18, 2021.
Tributary 43	2/11/2020			Substantially completed; termination certification submitted May 18, 2021.
Tributary 48	9/6/2017			Substantially completed; termination certification submitted May 18, 2021.
Tributary 78	2/11/2020			Substantially completed; termination certification submitted May 18, 2021.
West Low Level	9/6/2017			Substantially completed

[1] Substantial completion, as defined in Paragraph IV, Item CC of the Consent Decree means, the date, as certified by the Engineer in charge of a construction project, when the construction project or specified part thereof is sufficiently completed, in accordance with the contract documents, such that the project or specified part thereof can be used to accomplish the purposes for which it was intended.

Quarterly Report

July 1, 2021
Through
September 30, 2021

PURSUANT TO PARAGRAPH 19, OF THE CONSENT DECREE BETWEEN BALTIMORE COUNTY AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, DEPARTMENT OF JUSTICE AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

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Pursuant to Paragraph 19 of the Consent Decree between Baltimore County (County) and The United States Environmental Protection Agency (EPA), the Department of Justice (DOJ), and the Maryland Department of the Environment (MDE), this document constitutes the required Quarterly Report for the period **July 1, 2021** through **September 30, 2021.**

The quarterly report discusses activities and progress of Baltimore County towards compliance with the requirements set forth in the Consent Decree including:

i. Non-Pump Station and Pump Station SSO Structure discharges
ii. Construction project status
iii. Collection system inspection
iv. SRRR plan implementation/progress
v. FOG program
vi. Supplemental Environmental Project status, and
vii. Compliance issues

i. Non-Pump Station and Pump Station SSO Structure Discharges

Discharges from Sanitary Sewer Overflow Structures took place at the locations and dates during the reporting period as detailed in **Attachment A**.

A summary of flow metering information for Non-Pump Station SSO Structures is included as **Attachment A1.**

ii. Construction Project Status

Attachment B presents the status of Paragraph 7 – Non-Pump Station SSO Structure Elimination projects and Paragraph 13F - Pump Station Rehabilitation Repair and Replacement projects that are in design and construction during the reporting quarter.

iii. Collection System Inspection

The County has completed all gravity sewer line inspections required under Paragraphs 8 and 15 of the Consent Decree. The County continues compliance with all gravity line CCTV inspections within the required 10 working days of the occurrence of an overflow for each SSO that occurred during this reporting period. **Attachment C** details the County's inspection response to each of the overflow that occurred during the reporting period.

iv. SRRR Plan Implementation/Progress

The SRRR Plans contain numerous projects in a variety of locations and stages of planning, design and construction. **Attachment D** includes a list of each sewershed and a summary status of Plan implementation. The implementation of the recommended improvement projects is proceeding; however, acquisition of required rights-of-way and regulatory permits may require a significant period of time thereby resulting in possible delay to complete the construction work.

The County’s recommendations in some of the SRRR Plans for meter basins that exhibited excessive I/I and design-storm simulated model-predicted SSOs included the comprehensive rehabilitation of all pipe segments and manholes, increased hydraulic capacity and/or testing and repair of sewer house connections and laterals. Some of the recommended repairs were

revised based on design preparation and review of improvement projects. Additionally, some miscellaneous sewer/manhole/lateral repairs that were included in the SRRR Plans may be revised based on a review of the original and updated inspection data.

v. FOG Program

The County has completed implementation of the FOG Program Modification Plan.

vi. Supplemental Environmental Project Status

Completed.

vii. Compliance Issues

In accordance with Paragraph 19, Item B.vii, the following is a summary of Consent Decree compliance issues.

a. Consent Decree projects or requirements certified as complete during the reporting period:

Red House Run Pump Station Action Plan

On July 17, 2021, a storm event caused power loss to the primary and secondary electrical feeds of the Red House Run Pump Station, thereby resulting in a 900,000 gallon discharge. Since the power loss to the primary and secondary pump station electrical feeds was caused by a storm event that is beyond the control of the County, a plan to prevent further SSOs at the Red House Run Pump Station due to power outages is not needed.

Gray Manor Pump Station Action Plan

On July 17, 2021, a storm event caused power loss to the primary and secondary electrical feeds of the Gray Manor Pump Station, thereby resulting in a 724,000 gallon discharge. Since the power loss to the primary and secondary pump station electrical feeds was caused by a storm event that is beyond the control of the County, a plan to prevent further SSOs at the Gray Manor Pump Station due to power outages is not needed.

Corsica Pump Station Action Plan

On July 17, 2021, a storm event caused power loss to the primary electrical feed of the Corsica Pump Station, which resulted in a 60,000 gallon discharge. The MDE- and County-approved backup electrical source for the station is a portable generator. When alerted of the power loss, a pump station crew was mobilized to the station with a portable generator; however, the power was restored and the station was operating normally by the time the crew arrived at the station. The action plan to prevent further SSOs at the Corsica Pump Station due to power outages is to install an on-site generator. Design work for the generator was included in the County's Corsica Pump Station rehabilitation construction project (County Contract 21162 SXO), which will be advertised on August 27, 2021 and bid opening is scheduled for October 28, 2021. The portable generator will remain the secondary power source until the permanent on-site generator is installed and the rehabilitation project is certified as complete.

New White Marsh Pump Station Action Plan

On August 7 and 11, 2021, power losses to the primary electrical feed of the New White Marsh Pump Station resulted in 772,000 and 901,000 gallon discharges, respectively. The MDE- and County-approved backup electrical source for the station is a secondary electrical feed; however, the station equipment did not automatically transfer to the secondary feed. A post-SSO investigation of the station's electrical system found that all of the station primary electrical breakers opened, which prevented the automatic transfer switch to transfer electrical power from the secondary feed. The County tested the breakers and programmable logic controllers (PLCs); however, all equipment was properly operating. As a precaution, County staff remained at the pump station during business hours to monitor station operation throughout the day. To simulate the power loss event, the County requested the Baltimore Gas & Electric company to stop the primary electrical service to the station. During the simulation, County crews identified a possible issue with the PLCs and further investigation and visual confirmation of equipment failure identified faulty PLCs; therefore, the action plan is to:

1. Replace the PLCs, which was completed on September 3, 2021
2. Have County staff remain at the pump station for 1 week after the PLC replacement is completed to confirm that the station is operating as normal

Texas Pump Station Action Plan

On August 19, 2021, the County submitted a revised Action Plan.

On May 26, 2021, pump shutdown at the Texas Pump Station resulted in an SSO discharge of 213,000 gallons. A post-SSO analysis indicated intermittent power disruption of the primary pump station electrical feed, which caused the four variable frequency drives (VFDs) to fault and shut down the pumps thereby resulting in the SSO discharge. The VFDs are set to automatically reset if they fault; however, due to a VFD's high consequence of failure, some VFD faults, such as those experienced on May 26, 2021, must be manually reset so that County crews can visually inspect the equipment before restarting the drives. It is suspected that the power disruption was of such short duration that the station's automatic transfer switch did not activate the secondary power feed. The County completed post-SSO equipment testing but could not replicate this type of power disruption to confirm the root cause of the VFD faults and the station has not experienced previous power disruptions that did not activate the secondary power feed. Since the separate and redundant power supply is the County- and MDE-approved backup power for this pump station and the County could not confirm the root cause of the power disruption, a plan to prevent further SSOs at the Texas Pump Station due to power outages is not needed.

Lodge Forest Pump Station Action Plan

On August 13, 2021, the County submitted a revised Action Plan.

On June 14, 2021, pump shutdown at the Lodge Forest Pump Station resulted in an SSO discharge of 83,000 gallons. When they arrived at the station, the County staff manually reset the master control center emergency generator breaker and returned the station to normal operation. A post-SSO analysis indicated that a possible power

surge of the electrical feed disrupted power to the station. The station's emergency generator automatically started; however, it is suspected that the power surge tripped the generator breaker in the master control center, which prevented power to the pumps and resulted in the SSO discharge. Since the emergency generator supply is the County- and MOE-approved backup power for this pump station, a plan to prevent further SSOs at the Lodge Forest Pump Station due to power outages is not needed.

b. Consent Decree requirements due to be completed during the reporting period, but not completed:

Patapsco SRRR

On September 2, 2021, The County submitted a time extension request for the Patapsco SRRR Plan Implementation. The Consent Decree deadline for completion certification of the Patapsco SRRR Plan is September 6, 2021 and the requested deadline is October 6, 2024.

Implementation certification of the Patapsco SRRR Plan is contingent upon completion of the projects listed below:

Project	Requested Time Extension Deadline	Project Status
Patapsco Basin 7 Sewer Rehabilitation	April 6, 2024	Design
Patapsco Basin 10 Sewer Rehabilitation	January 6, 2023	Design
Patapsco Cedar Branch North Fork Relief Sewer	September 6, 2022	Notice to Proceed (17150 SX0) issued on 8/18/2022
Patapsco Structural Improvements	October 6, 2024	Design

The Patapsco Structural Improvements project is the last project to be completed in the Patapsco sewershed; therefore, the County requests a 37-month time extension to certify implementation completion of the Patapsco SRRR Plan.

On September 6, 2021, the County completed implementation of all sewer and manhole cleaning/inspection maintenance work that was identified in the Patapsco SRRR Plan.

c. Problems that may prevent the County from meeting future Consent Decree compliance deadlines:

On September 2, 2021, the County submitted a potential delay notification for the Essex Sewer Replacement Project. The potential delay is due to the additional design time needed to complete supplemental field investigations and an alternatives analysis and to revise the project scope of work accordingly.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

Lisa K Eicholtz

Lisa K. Eicholtz, PE
Chief, Bureau of Engineering and Construction

Control Document No. 382

Attachment A - Discharges from Overflow Structures

Pump Station Overflow Structures

Name	Red House Run
Address	1100 68th Street and Lake Drive
Date Of Discharge	07/17/2021
Duration Of Overflow	5 Hrs. 40 Mins.
Date Of Relevant Weather Conditions	07/17/2021
Description Of Relevant Weather Conditions	Wet
Gallons Discharged	900,000
Receiving Waters	Back River
Identified Cause	Pump Station lost the primary and secondary electrical service feeder
Details Of Corrective Action Taken or Planned	One feeder was restored and the pumps started and pumped down the wetwell and the overflow stopped.

Name	Gray Manor
Address	7825 Trappe Road
Date Of Discharge	07/17/2021
Duration Of Overflow	5 Hrs. 55 Mins.
Date Of Relevant Weather Conditions	07/17/2021
Description Of Relevant Weather Conditions	Wet
Gallons Discharged	724,000
Receiving Waters	Bear Creek
Identified Cause	Pump Station lost the primary and secondary electrical service feeder
Details Of Corrective Action Taken or Planned	One feeder was restored and the pumps started and pumped down the wetwell and the overflow stopped.

Name	Corsica Road
Address	2208 Corsica Road
Date Of Discharge	07/17/2021
Duration Of Overflow	11 Hrs.
Date Of Relevant Weather Conditions	07/17/2021
Description Of Relevant Weather Conditions	Wet
Gallons Discharged	60,000
Receiving Waters	Barren Point
Identified Cause	Pump Station lost electrical service power to the pump station. Crews were not able to get a generator to site.
Details Of Corrective Action Taken or Planned	Once electrical service power was restored, the pumps started and pumped down the wetwell and the overflow stopped.

Pump Station Overflow Structures (Continued)

Name	White Marsh
Address	1235 Reames Road
Date Of Discharge	08/07/2021
Duration Of Overflow	70 mins.
Date Of Relevant Weather Conditions	08/07/2021
Description Of Relevant Weather Conditions	Dry
Gallons Discharged	772,000
Receiving Waters	White Marsh Run
Identified Cause	Primary electrical service feeder was lost at the station and switchgear did not switch to secondary feeder.
Details Of Corrective Action Taken or Planned	Crew arrived onsite and manually closed in the breaker for the secondary feeder. The pumps turned on and stopped the overflow.

Name	White Marsh
Address	1235 Reames Road
Date Of Discharge	08/11/2021
Duration Of Overflow	1 Hr.
Date Of Relevant Weather Conditions	08/11/2021
Description Of Relevant Weather Conditions	Dry
Gallons Discharged	901,000
Receiving Waters	White Marsh Run
Identified Cause	Primary electrical service feeder was lost at the station and switchgear did not switch to secondary feeder.
Details Of Corrective Action Taken or Planned	Crew arrived onsite and manually closed in the breaker for the secondary feeder. The pumps turned on and stopped the overflow.

Non-Pump Station Overflow Structures – Metered

Name	Overbrook Road
SSO ID	118
Address	Overbrook Road & Medwick Garth
Date of Discharge	9/1/2021
Duration of Overflow	3 Hrs. 9 Mins.
Date of Relevant Weather Conditions	9/1/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	12,389
Receiving Waters	Maiden's Choice Creek
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Drive & Hillcrest Avenue
Date of Discharge	9/1/2021
Duration of Overflow	1 Hrs. 7 Mins.
Date of Relevant Weather Conditions	9/1/2020
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	5,015
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	County submitted time extension request to eliminate overflow structure by 8/3/2023.

Attachment A1: Summary of Non-Pumping Station Overflow Structure Monitoring

Date of Rain Event		9/1/2021
Rain (inches)		1.8”-2.4”
SSO Name	**SSO ID**	
Alter Road	22	
Southern Cross Drive	23A	
Southern Cross	23B	
Patterson Avenue	24	
Overbrook Road & Medwick Garth	118	12,389
Marnat Road	113	
Aiken Avenue	41	
Queen Anne Drive	129	5,015

Attachment B - Construction Projects Status

Non-Pump Station SSO Structures

Project Name	Date of Construction Notice to Proceed	Sewershed Name	Original Consent Decree Elimination Date	Current Consent Decree SSO Elimination Date	SSO Eliminated	Status
Powder Mill Interceptor Relief Sewer Phase I – 18180 SXO (SSOs 22, 23A, 23B, 24)	9/3/2019	Gwynns Falls	3/22/2017	TBD	No	On 1/26/21 the project achieved functional use. The Phase II project must be completed before eliminating the SSO structures.
Powder Mill Interceptor Relief Sewer Phase II (SSOs 22, 23A, 23B, 24)	-	Gwynns Falls	3/22/2017	TBD	No	On 2/14/2017, the County submitted a time extension request with an undefined elimination date. A second time extension request with a definitive elimination date will be submitted after right-of-way acquisition and environmental permits are obtained and construction notice to proceed is issued for the Phase II project. Baltimore City is attempting to acquire an easement within the City that is needed for construction.
East Branch Herring Run Relief Sewer – 14117 SX0 (SSO 41 & 129)	2/5/2020	Herring Run	3/20/2018	8/3/2023	No	On 4/27/2020 the County submitted a time extension request to eliminate the overflow structure by 8/3/2023. The extension request approval letter from the Maryland Department of Environment incorrectly identified the new deadline as 11/5/2019. On 9/23/2021, the County submitted a correction of records letter to confirm the new approved deadline of 8/3/2023. This project is 68% complete.
Elimination of SSOs 116, 117, and 118	-	West Low Level	9/20/2016	TBD	No	On 6/22/2016, the County submitted a time extension request with an undefined SSO elimination date. A second time extension request with a definitive SSO elimination date will be submitted after the City shares with the County their proposed downstream corrective actions and construction schedule. The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.
Elimination of SSO 113	-	Jones Falls	9/20/2016	TBD	No	

Pump Station Rehabilitation, Repair and Replacement

Project Name	Original Consent Decree Deadline	Project Phase	Time Extension Request Submittal Date	Requested Deadline Date	Reason for Delay
Lodge Forest Manor	3/20/2020	Design (RoW)	6/3/2021	10/20/2023	DNR easement acquisition.
Stansbury Manor	3/20/2020	Construction (Bid date 9/30/2021)	3/31/2021	4/20/2024	MAA property acquisition.
Millers Island	6/1/2022	Construction			
Turkey Point	6/1/2022	Construction			
Penwood Terrace	6/1/2023	Construction			
Corsica	6/1/2023	Design			
Fort Howard	6/1/2023	Design			

Attachment C - CCTV in Response to an SSO

Date of SSO	Location	CCTV Inspection Date	Exemption
7/2/2021	1940 Winder Road	7/8/2021	
7/14/2021	1 Red Barn Court	7/15/2021	
7/21/2021	4980 Mercantile Rd		B
9/1/2021	1745 Ellinwood Road	9/3/2021	
9/1/2021	Queen Anne Drive & Hillcrest Avenue		D
9/1/2021	Overbrook Road and Medwick Garth		D

Allowable Exemptions:

A. The cause of the SSO was a blockage in a County-owned lateral adjacent to the gravity line segment and the County cleans the County-owned lateral
B. The cause of the SSO was a blockage in the gravity line segment and visible directly from the manhole
C. The County has previously CCTV inspected the line segment(s) due to an earlier blockage and the County is in the process of developing or implementing corrective action
D. The location is an identified overflow structure and is being monitored pursuant to Paragraph 7.C and the County is involved in a process designed to eliminate the overflow structure

Attachment D - Status of SRRR Plan Implementation

Status of SRRR Plan Implementation				
Sewershed	**Original Consent Decree Deadline**	**Date of Potential Delay Notification**	**Reason for Delay**	**Comments**
Patapsco	9/6/2021 Requested Date: 10/6/2024	9/2/2021 (Time extension request)	Right of entry acquisition	On September 6, 2021, The County submitted a time extension request for the Patapsco SRRR Plan Implementation. The Consent Decree deadline for completion certification of the Patapsco SRRR Plan is September 6, 2021 and the requested deadline is October 6, 2024.
Delmar	4/18/2022	11/22/2019	Right of entry acquisition	
Duck Creek	4/18/2022	2/5/2020	Expanded project scope	
Dundalk	4/18/2022	11/22/2019	Right of entry acquisition	
East Point	4/18/2022	11/22/2019	Right of entry acquisition	
Essex	4/18/2022	12/10/2019	Right of entry acquisition/permits	
Gray Manor	4/18/2022	6/19/2019	State and Local Permitting	
Texas	4/18/2022	7/10/2019	Right of entry acquisition	
Longquarter	4/18/2024	11/26/2019	Right of entry acquisition	
Redhouse Run	4/18/2024			
Whitemarsh	4/18/2024			
Stemmers Run	9/6/2024			
Gunpowder	4/18/2026			

Substantially Completed SRRR Plan implementations [1]				
Sewershed	**Original Consent Decree Deadline**	**Date of Potential Delay Notification**	**Reason for Delay**	**Comments**
Bird River	9/29/2020	3/15/2019	Right of entry acquisition	There are 3 assets (i.e. sewer and manholes) which represents approximately 60 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Bread & Cheese	9/29/2020 Requested date: 3/6/2022	5/28/2020 (Time extension request)	Right of entry acquisition	There are 127 asset (i.e. sewer and manholes) which represents approximately 100 percent of the total assets with structural repair recommendations that remain outstanding. Notice to Proceed was February 27, 2021. The outstanding structural repairs have no effect on the performance of the collection system.
Bengies	9/29/2020	3/15/2019	Right of entry acquisition	There are 96 assets (i.e. sewer and manholes) which represents approximately 100 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Cockeysville	9/29/2020	3/15/2019	Right of entry acquisition	There are 12 assets (i.e. sewer and manholes) which represents approximately 57 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.

Substantially Completed SRRR Plan implementations [1]				
Dead Run	9/6/2017			Substantially completed; termination certification submitted May 18, 2021.
Gwynns Falls	9/6/2018	2/14/2017	Right of way acquisition	On September 6, 2018, the County certified substantial completion for the implementation of the Gwynns Falls Sewershed SRRR Plan with the exception of 23 structural repairs for which a potential delay was submitted to EPA and MDE. The outstanding structural repairs have no effect on the performance of the collection system. To date, 6 repairs remain outstanding and were completed with the Powder Mill Interceptor Phase 1 project, which achieved functional use on January 26, 2021.
Herring Run	9/6/2018	8/15/2017 3/6/2018	Right of entry acquisition	There are 93 assets (i.e. sewer and manholes) which represents approximately 6 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. Two of these properties have entered the condemnation process. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Jones Falls	9/6/2019		Right of entry acquisition	There are 10 assets (i.e. sewer and manholes) which represents approximately 0.6 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Orems	9/29/2020	9/7/2021 (Time extension request)	Right of entry acquisition	Design is complete for the Orems Basin 3 Relief Sewer. Contract 21144SX0 was awarded May 25, 2021. A time extension request was submitted on September 7, 2021.
Tributary 26	2/11/2020			Substantially completed; termination certification submitted May 18, 2021.

Substantially Completed SRRR Plan implementations [1]				
Tributary 27	9/6/2017			Substantially completed; termination certification submitted May 18, 2021.
Tributary 43	2/11/2020			Substantially completed; termination certification submitted May 18, 2021.
Tributary 48	9/6/2017			Substantially completed; termination certification submitted May 18, 2021.
Tributary 78	2/11/2020			Substantially completed; termination certification submitted May 18, 2021.
West Low Level	9/6/2017			Substantially completed

[1] Substantial completion, as defined in Paragraph IV, Item CC of the Consent Decree means, the date, as certified by the Engineer in charge of a construction project, when the construction project or specified part thereof is sufficiently completed, in accordance with the contract documents, such that the project or specified part thereof can be used to accomplish the purposes for which it was intended.

JOHN A. OLSZEWSKI, JR.
County Executive

D'ANDREA WALKER, *Acting Director*
Department of Public Works and Transportation

February 15, 2022

Ms. Amanda Pruzinsky
United States Environmental Protection Agency
Office of Enforcement and Compliance, SPDES Branch
1650 Arch Street, 3WP42
Philadelphia PA 19103-2029

Chief, Enforcement Division, Compliance Program
Water Management Administration
Maryland Department of Environment
1800 Washington Boulevard
Baltimore MD 21230

QUARTERLY REPORT – FOURTH QUARTER 2021
CONSENT DECREE CIVIL NO: AMD 05-2028
(Reference DOJ Case No. 90-5-1-1-4402/2)

Enclosed you will find our submittal of the referenced Quarterly Report. This is to advise that we have submitted this report by the due date as required by Chapter VI, REPORTING REQUIREMENTS, Section 19. A. of the Decree.

Please advise us of any questions you may have regarding this report.

Sincerely,

Lisa K. Eicholtz

Lisa K. Eicholtz, PE
Bureau Chief, Engineering and Construction

LK:rtr

Enclosure: Quarterly Report



Quarterly Report

October 1, 2021
Through
December 31, 2021

PURSUANT TO PARAGRAPH 19, OF THE CONSENT DECREE BETWEEN BALTIMORE COUNTY AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, DEPARTMENT OF JUSTICE AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

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Pursuant to Paragraph 19 of the Consent Decree between Baltimore County (County) and The United States Environmental Protection Agency (EPA), the Department of Justice (DOJ), and the Maryland Department of the Environment (MDE), this document constitutes the required Quarterly Report for the period **October 1, 2021** through **December 31, 2021.**

The quarterly report discusses activities and progress of Baltimore County towards compliance with the requirements set forth in the Consent Decree including:

i. Non-Pump Station and Pump Station SSO Structure discharges
ii. Construction project status
iii. Collection system inspection
iv. SRRR plan implementation/progress
v. FOG program
vi. Supplemental Environmental Project status, and
vii. Compliance issues

i. Non-Pump Station and Pump Station SSO Structure Discharges

Discharges from Sanitary Sewer Overflow Structures took place at the locations and dates during the reporting period as detailed in **Attachment A**.

A summary of flow metering information for Non-Pump Station SSO Structures is included as **Attachment A1.**

ii. Construction Project Status

Attachment B presents the status of Paragraph 7 – Non-Pump Station SSO Structure Elimination projects and Paragraph 13F - Pump Station Rehabilitation Repair and Replacement projects that are in design and construction during the reporting quarter.

iii. Collection System Inspection

The County has completed all gravity sewer line inspections required under Paragraphs 8 and 15 of the Consent Decree. The County continues compliance with all gravity line CCTV inspections within the required 10 working days of the occurrence of an overflow for each SSO that occurred during this reporting period. **Attachment C** details the County's inspection response to each of the overflow that occurred during the reporting period.

iv. SRRR Plan Implementation/Progress

The SRRR Plans contain numerous projects in a variety of locations and stages of planning, design and construction. **Attachment D** includes a list of each sewershed and a summary status of Plan implementation. The implementation of the recommended improvement projects is proceeding; however, acquisition of required rights-of-way and regulatory permits may require a significant period of time thereby resulting in possible delay to complete the construction work.

The County's recommendations in some of the SRRR Plans for meter basins that exhibited excessive I/I and design-storm simulated model-predicted SSOs included the comprehensive rehabilitation of all pipe segments and manholes, increased hydraulic capacity and/or testing and repair of sewer house connections and laterals. Some of the recommended repairs were

revised based on design preparation and review of improvement projects. Additionally, some miscellaneous sewer/manhole/lateral repairs that were included in the SRRR Plans may be revised based on a review of the original and updated inspection data.

v. FOG Program

The County has completed implementation of the FOG Program Modification Plan.

vi. Supplemental Environmental Project Status

Completed.

vii. Compliance Issues

In accordance with Paragraph 19, Item B.vii, the following is a summary of Consent Decree compliance issues.

a. Consent Decree projects or requirements certified as complete during the reporting period:

Frederick Road Pump Station Action Plan

On November 4, 2021, the County submitted an action plan for the pump stations SSO due to loss of power.

On October 29, 2021, power loss to the primary electrical feed of the Frederick Road Pump Station resulted in a 43,000 gallon discharge. The MDE- and County-approved backup electrical source for the station is an on-site generator; however, the generator did not start when the primary electrical feed lost power. The power to the primary feed was restored within 16 minutes and the pump station resumed operation. A post-SSO investigation indicated an issue with the generator's start up system; however, after the primary electrical feed power was restored, the County successfully test started the generator and completed a second successful test start the next day. Similar start up issues have not previously occurred at the pump station including during the weekly pump station preventive maintenance inspections. As a precaution, County staff replaced the generator start up battery; however, the successful post-SSO generator test starts indicate that there was no issue with the battery. Since the power loss to the primary pump station electrical feed was caused by a storm that is beyond the control of the County and the County could not replicate the generator start up issue and has not previously experienced similar issues at the pump station, a plan to prevent further SSOs at the Frederick Road Pump Station due to power outages is not needed.

Springdale A Pump Station

On December 21, 2021, the County submitted an action plan for the pump stations SSO due to loss of power.

On December 13, 2021 power loss of the motor control center at the Springdale A Pump Station resulted in a 13,110-gallon discharge (reference enclosed SSO report). The MDE- and County-approved backup electrical source for the station is an on-site generator. A post-SSO investigation of the station determined that the electrical

terminal for Pump Motor 2 overheated and caused a small localized fire, which damaged other wiring and tripped the station's motor control center primary and secondary electrical feeds. Once they arrived on site, the pump station crew connected a mobile generator to restore power and stop the overflow. The most recent preventive maintenance inspection, which was completed on November 3, 2021 did not identify any issue with Pump Starter 2, the associated electrical wiring or terminal or Motor 2 and there has been no similar electrical issue at the station. The action plan is to remove the destroyed terminal, replace all damaged control wiring and install new wiring from Pump Starter 2 to Motor 2. The new wiring was installed and all critical wiring repairs were completed on December 14, 2021. The station is now operating as normal.

b. Consent Decree requirements due to be completed during the reporting period, but not completed:

None.

c. Problems that may prevent the County from meeting future Consent Decree compliance deadlines:

On December 7, 2021, the County submitted a potential delay notification for the Texas Forcemain cathodic protection project. The Texas Force Main Cathodic Protection project requires highly specialized technical expertise to complete, which significantly limits contractor/consultant availability. Therefore, the County required additional time than originally anticipated to develop and advertise a contract to procure the specialized services.

On December 7, 2021, the County submitted a Time of Performance Extension request for the Corsica Forcemain project. The Corsica Force Main Replacement project is located in an area of the County with multiple existing buried infrastructure systems. Additional design time and buried infrastructure field investigations were needed to locate and avoid potential utility conflicts.

On December 7, 2021, the County submitted a Time of Performance Extension request for the Delmar Sewershed Rehabilitation project. Private property rights-of-entry negotiation and acquisition was required for the Delmar Sewershed Sewer Rehabilitation Project, which has delayed completion of the design work. Additionally, the project has been delayed due to the time required to receive a permit from the Department of Natural Resources (DNR) for work in North Point State Park. The County received the permit on March 15, 2021. Acquisitions are now complete and the project has been advertised and notice to proceed for construction was issued on October 12, 2021.

On December 7, 2021, the County submitted a Time of Performance Extension request for the Gwynns Falls ESA project. The Gwynns Falls Structural Sewer Rehabilitation in Environmental Sensitive Areas project is delayed due to rights-of-entry negotiation and acquisition. To mitigate the delay, the County separated the Gwynns Falls SRRR improvement projects; two of which are substantially complete; however, the Gwynns Falls Structural Sewer Rehabilitation in Environmental Sensitive Areas project has outstanding right-of-entry acquisitions. The County issued 15-day Notification letters to property owners of the outstanding right-of-entry agreements

regarding work to be performed. No responses were received so the County will move ahead with construction. To expedite this work, the County will utilize an on-call Contractor to complete the work. The work is expected to be completed by March 6, 2022.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

Lisa K. Eicholtz, PE
Bureau Chief, Engineering and Construction

Control Document No. 408

Attachment A - Discharges from Overflow Structures

Pump Station Overflow Structures

Pump Station Name	Frederick Road
Address	1809 Frederick Road
Date Of Discharge	10/29/2021
Duration Of Overflow	16 Mins.
Date Of Relevant Weather Conditions	10/29/2021
Description Of Relevant Weather Conditions	Rain
Gallons Discharged	43,000
Receiving Waters	Tributary to Patapsco River
Identified Cause	Standby generator faulted during BGE power failure
Details Of Corrective Action Taken or Planned	Generator batteries were low. Replaced batteries.

Pump Station Name	Springdale A
Address	10508 Gateridge Road
Date Of Discharge	12/13/2021
Duration Of Overflow	1 Hrs. 9 Mins.
Date Of Relevant Weather Conditions	12/13/2021
Description Of Relevant Weather Conditions	Dry
Gallons Discharged	13,110
Receiving Waters	Lock Raven water shed
Identified Cause	Electrical failure
Details Of Corrective Action Taken or Planned	Electricians were able to bypass controls to get one pump operating and stop the overflow.

Non-Pump Station Overflow Structures – Metered

Name	Alter Road
SSO ID	22
Address	Alter Street & Southern Cross Drive
Date of Discharge	10/29/2021
Duration of Overflow	3 Hrs. 58 Mins.
Date of Relevant Weather Conditions	10/29/2021
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	13,087
Receiving Waters	Maidens Choice Creek
Identified Cause	Insufficient wet-weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. Right-of-way and environmental permits are required for Phase II construction. The County will submit a second SSO elimination time extension when a date has been identified.

Name	Southern Cross Drive
SSO ID	23A
Address	Southern Cross Drive & Parsons Avenue
Date of Discharge	10/29/2021
Duration of Overflow	5 Hrs. 32 Mins.
Date of Relevant Weather Conditions	10/29/2021
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	51,095
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. Right-of-way and environmental permits are required for Phase II construction. The County will submit a second SSO elimination time extension when a date has been identified.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date of Discharge	10/29/2021
Duration of Overflow	5 Hrs. 18 Mins.
Date of Relevant Weather Conditions	10/29/2021
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	48,889
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. Right-of-way and environmental permits are required for Phase II construction. The County will submit a second SSO elimination time extension when a date has been identified.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	10/29/2021
Duration of Overflow	6 Hr. 34 Mins.
Date of Relevant Weather Conditions	10/29/2021
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	223,283
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 9/3/2019, the County issued the notice to proceed for the Phase I construction project. Right-of-way and environmental permits are required for Phase II construction. The County will submit a second SSO elimination time extension when a date has been identified.

Name	Overbrook Road
SSO ID	118
Address	Overbrook Road & Medwick Garth
Date of Discharge	10/29/2021
Duration of Overflow	3 Hrs. 39 Mins.
Date of Relevant Weather Conditions	10/29/2021
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	119,190
Receiving Waters	Maiden's Choice Creek
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

Attachment A1: Summary of Non-Pumping Station Overflow Structure Monitoring

Date of Rain Event		10/29/2021
Rain (inches)		2.94"-3.5"
SSO Name	SSO ID	
Alter Road	22	13,087
Southern Cross Drive	23A	51,095
Southern Cross	23B	48,889
Patterson Avenue	24	223,283
Overbrook Road & Medwick Garth	118	119,190
Marnat Road	113	
Aiken Avenue	41	
Queen Anne Drive	129	

Attachment B - Construction Projects Status

Non-Pump Station SSO Structures

Project Name	Date of Construction Notice to Proceed	Sewershed Name	Original Consent Decree Elimination Date	Current Consent Decree SSO Elimination Date	SSO Eliminated	Status
Powder Mill Interceptor Relief Sewer Phase I (SSOs 22, 23A, 23B, 24) Contract 18180 SX0	9/3/2019	Gwynns Falls	3/22/2017	TBD	No	On 1/26/21 the project achieved functional use. The Phase II project (Contract 20018 SX0) must be completed before eliminating the SSO structures.
Powder Mill Interceptor Relief Sewer Phase II (SSOs 22, 23A, 23B, 24) Contract 20018 SX0	-	Gwynns Falls	3/22/2017	TBD	No	On 2/14/2017, the County submitted a time extension request with an undefined elimination date. A second time extension request with a definitive elimination date will be submitted after right-of-way acquisition and environmental permits are obtained and construction notice to proceed is issued for Contract 20018 SX0. Baltimore City is attempting to acquire an easement within the City that is needed for construction.
East Branch Herring Run Relief Sewer – 14117 SX0 (SSO 41 & 129)	2/5/2020	Herring Run	3/20/2018	8/3/2023	No	On 4/27/2020 the County submitted a time extension request to eliminate the overflow structure by 8/3/2023. The extension request approval letter from the Maryland Department of Environment incorrectly identified the new deadline as 11/5/2019. On 9/23/2021, the County submitted a correction of records letter to confirm the new approved deadline of 8/3/2023. On January 4, 2022, the County submitted a Time Extension Request to eliminate the overflow structure by December 4, 2023. The time extension is necessary due to unanticipated construction site conditions. This project is 85% complete.
Elimination of SSOs 116, 117, and 118	-	West Low Level	9/20/2016	TBD	No	On 6/22/2016, the County submitted a time extension request with an undefined SSO elimination date. A second time extension request with a definitive SSO elimination date will be submitted after the City shares with the County their proposed downstream corrective actions and construction schedule. The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.
Elimination of SSO 113	-	Jones Falls	9/20/2016	TBD	No	

Pump Station Rehabilitation, Repair and Replacement

Project Name	Original Consent Decree Deadline	Project Phase	Time Extension Request Submittal Date	Requested Deadline Date	Reason for Delay
Millers Island	6/1/2022	Construction			
Turkey Point	6/1/2022	Construction			
Penwood Terrace	6/1/2023	Construction			
Stansbury Manor	3/20/2020	Construction (NTP 1/27/2022)	3/31/2021	4/20/2024	MAA property acquisition.
Corsica	6/1/2023	Construction			
Fort Howard	6/1/2023	Construction			
Lodge Forest Manor	3/20/2020	Bid Ready (Bid Opening 12/16/2021)	6/3/2021	10/20/2023	DNR easement acquisition.

Attachment C - CCTV in Response to an SSO

Date of SSO	Location	CCTV Inspection Date	Exemption
10/22/2021	2 Railroad Avenue	10/27/2021	
10/29/2021	Alter Street and Southern Cross Drive		D
10/29/2021	Southern Cross Drive & Parsons Avenue		D
10/29/2021	3909 Southern Cross Drive		D
10/29/2021	3902 Patterson Avenue		D
10/29/2021	Overbrook Road and Medwick Garth		D
12/8/2021	5127 Clifford Road	12/9/2021	
12/8/2021	5001 Washington Boulevard		B
12/13/2021	4855 Carmella Drive	12/13/2021	
12/13/2021	3015 Delaware Avenue	12/21/2021	
12/16/2021	7008 Rockridge Road	12/17/2021	

Allowable Exemptions:

A. The cause of the SSO was a blockage in a County-owned lateral adjacent to the gravity line segment and the County cleans the County-owned lateral
B. The cause of the SSO was a blockage in the gravity line segment and visible directly from the manhole
C. The County has previously CCTV inspected the line segment(s) due to an earlier blockage and the County is in the process of developing or implementing corrective action
D. The location is an identified overflow structure and is being monitored pursuant to Paragraph 7.C and the County is involved in a process designed to eliminate the overflow structure

Attachment D - Status of SRRR Plan Implementation

Status of SRRR Plan Implementation				
Sewershed	**Original Consent Decree Deadline**	**Date of Potential Delay Notification**	**Reason for Delay**	**Comments**
Patapsco	9/6/2021 Requested Date: 10/6/2024	9/2/2021 (Time extension request)	Right of entry acquisition	On September 6, 2021, The County submitted a time extension request for the Patapsco SRRR Plan Implementation. The Consent Decree deadline for completion certification of the Patapsco SRRR Plan is September 6, 2021 and the requested deadline is October 6, 2024. Implementation certification of the Patapsco SRRR Plan is contingent upon completion of the projects listed below: Patapsco Basin 7 Sewer Rehabilitation; April 6, 2024 Patapsco Basin 10 Sewer Rehabilitation; January 6, 2023 Patapsco Cedar Branch North Fork Relief Sewer; September 6, 2022; Notice to Proceed (17150 SX0) issued on 8/18/2022 Patapsco Structural Improvements; October 6, 2024
Delmar	4/18/2022	11/22/2019	Right of entry acquisition	On December 7, 2021, the County submitted a Time of Performance Extension request for the Delmar Sewershed Rehabilitation project. Private property rights-of-entry negotiation and acquisition was required for the Delmar Sewershed Sewer Rehabilitation Project, which has delayed completion of the design work. Additionally, the project has been delayed due to the time required to receive a permit from the Department of Natural Resources (DNR) for work in North Point State Park. The County received the permit on March 15, 2021. Acquisitions are now complete and the project has been advertised and notice to proceed for construction was issued on October 12, 2021.
Duck Creek	4/18/2022	2/5/2020	Expanded project scope	On December 7, 2021, the County submitted a Time of Performance Extension request for the Corsica Forcemain project. The Corsica Force Main Replacement project is located in an area of the County with multiple existing buried infrastructure systems. Additional design time and buried infrastructure field investigations were needed to locate and avoid potential utility conflicts.
Dundalk	4/18/2022	11/22/2019	Right of entry acquisition	
East Point	4/18/2022	11/22/2019	Right of entry acquisition	Post hoc: Potential Delay submitted January 4, 2021.
Essex	4/18/2022	12/10/2019	Right of entry acquisition/permits	
Gray Manor	4/18/2022	6/19/2019	State and Local Permitting	Post hoc: Potential Delay submitted for the Gray Manor Force Main Finite Element Assessment and Inspection. Project requires highly specialized

Status of SRRR Plan Implementation				
Sewershed	**Original Consent Decree Deadline**	**Date of Potential Delay Notification**	**Reason for Delay**	**Comments**
				equipment and technical expertise to complete, which significantly limits contractor/consultant availability.
Texas	4/18/2022	7/10/2019	Right of entry acquisition	On December 7, 2021, the County submitted a potential delay notification for the Texas Forcemain cathodic protection project. The Texas Force Main Cathodic Protection project requires highly specialized technical expertise to complete, which significantly limits contractor/consultant availability. Therefore, the County required additional time than originally anticipated to develop and advertise a contract to procure the specialized services.
Longquarter	4/18/2024	11/26/2019	Right of entry acquisition	
Redhouse Run	4/18/2024			
Whitemarsh	4/18/2024			
Stemmers Run	9/6/2024			
Gunpowder	4/18/2026			

Substantially Completed SRRR Plan implementations [1]				
Sewershed	**Original Consent Decree Deadline**	**Date of Potential Delay Notification**	**Reason for Delay**	**Comments**
Bird River	9/29/2020	3/15/2019	Right of entry acquisition	There are 3 assets (i.e. sewer and manholes) which represents approximately 60 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Bread & Cheese	9/29/2020 Requested date: 3/6/2022	5/28/2020 (Time extension request)	Right of entry acquisition	There are 127 asset (i.e. sewer and manholes) which represents approximately 100 percent of the total assets with structural repair recommendations that remain outstanding. Notice to Proceed was February 27, 2021. The outstanding structural repairs have no effect on the performance of the collection system.
Bengies	9/29/2020	3/15/2019	Right of entry acquisition	There are 96 assets (i.e. sewer and manholes) which represents approximately 100 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Cockeysville	9/29/2020	3/15/2019	Right of entry acquisition	There are 12 assets (i.e. sewer and manholes) which represents approximately 57 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Dead Run	9/6/2017			Substantially completed; termination certification submitted May 18, 2021.
Gwynns Falls	9/6/2018	2/14/2017	Right of way acquisition	On September 6, 2018, the County certified substantial completion for the implementation of the Gwynns Falls Sewershed SRRR Plan with the exception

				of 23 structural repairs for which a potential delay was submitted to EPA and MDE. The outstanding structural repairs have no effect on the performance of the collection system. To date, 6 repairs remain outstanding and were completed with the Powder Mill Interceptor Phase 1 project, which achieved functional use on January 26, 2021. On December 7, 2021, the County submitted a Time of Performance Extension request for the Gwynns Falls ESA project. The Gwynns Falls Structural Sewer Rehabilitation in Environmental Sensitive Areas project is delayed due to rights-of-entry negotiation and acquisition. To mitigate the delay, the County separated the Gwynns Falls SRRR improvement projects; two of which are substantially complete; however, the Gwynns Falls Structural Sewer Rehabilitation in Environmental Sensitive Areas project has outstanding right-of-entry acquisitions. The County issued 15-day Notification letters to property owners of the outstanding right-of-entry agreements regarding work to be performed. No responses were received so the County will move ahead with construction. To expedite this work, the County will utilize an on-call Contractor to complete the work. The work is expected to be completed by March 6, 2022.
Herring Run	9/6/2018	8/15/2017 3/6/2018	Right of entry acquisition	There are 93 assets (i.e. sewer and manholes) which represents approximately 6 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. Two of these properties have entered the condemnation process. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.
Jones Falls	9/6/2019		Right of entry acquisition	There are 10 assets (i.e. sewer and manholes) which represents approximately 0.6 percent of the total assets with structural repair recommendations that remain outstanding and are awaiting completion of right of entry acquisition. The County will submit to EPA and MDE a time of performance extension request when all right of entry agreements have been acquired and the County has issued the construction contract notice to proceed. The outstanding structural repairs have no effect on the performance of the collection system.

Orems	9/29/2020	9/7/2021 (Time extension request)	Right of entry acquisition	Design is complete for the Orems Basin 3 Relief Sewer. Contract 21144SX0 was awarded May 25, 2021. A time extension request was submitted on September 7, 2021. Post hoc: An updated time extension request was submitted on January 28, 2022.
Tributary 26	2/11/2020			Substantially completed; termination certification submitted May 18, 2021.
Tributary 27	9/6/2017			Substantially completed; termination certification submitted May 18, 2021.
Tributary 43	2/11/2020			Substantially completed; termination certification submitted May 18, 2021.
Tributary 48	9/6/2017			Substantially completed; termination certification submitted May 18, 2021.
Tributary 78	2/11/2020			Substantially completed; termination certification submitted May 18, 2021.
West Low Level	9/6/2017			Substantially completed

[1] Substantial completion, as defined in Paragraph IV, Item CC of the Consent Decree means, the date, as certified by the Engineer in charge of a construction project, when the construction project or specified part thereof is sufficiently completed, in accordance with the contract documents, such that the project or specified part thereof can be used to accomplish the purposes for which it was intended.

Annual Report

January 1, 2021
Through
December 31, 2021

Pursuant to Paragraph 20, of the Consent Decree between Baltimore County and the United States Environmental Protection Agency, Department of Justice and the Maryland Department of the Environment

EXHIBIT
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Pursuant to Paragraph 20 of the Consent Decree entered between Baltimore County and the United States Environmental Protection Agency (EPA) and the Maryland Department of the Environment (MDE), this document constitutes the required Annual Report for the period **January 1, 2021** through **December 31, 2021**.

The annual report is a periodic review of Baltimore County activities related to the accomplishment of the Consent Decree general and specific requirements. The report is required to address:

i. Sanitary Sewer Overflow (SSO) structure elimination progress
ii. Rainfall and Flow Monitoring Plan compliance
iii. Evaluation of rainfall and flow monitoring data
iv. Fats, Oils and Grease (FOG) Program updates
v. Illegal storm water discharges
vi. Pump station status
vii. Collection system model implementation status
viii. Supplemental collection system inspection progress
ix. Sewer cleaning progress
x. Collection system inventory progress
xi. Emergency Response Plan
xii. Building Backup Report
xiii. Annual update to the SSO characterization report

i. Sanitary Sewer Overflow (SSO) structure elimination progress

(a) Summarize progress in implementing approved schedules for the elimination of Non-Pump Station SSO structures

The listing of relief points is shown in Attachment A. Below is the status of the SSO elimination projects:

- 38 original SSOs (per CD Appendix A-2)
- 9 SSOs identified after CD effective date
- 3 SSOs reclassified as pump station SSOs
- 34 SSOs eliminated
- 10 SSOs scheduled for elimination

No SSO structures were eliminated during the reporting period.

Elimination of Non-Pump Station SSO Structures 22, 23A, 23B, 24

The original Consent Decree deadline for SSO elimination was March 22, 2017; however, on February 14, 2017, the County submitted a time of performance extension request due to completing a required Phase II archaeological investigation for the Maryland Historical Trust and resulting delay in obtaining permit approval from the U.S. Army Corps of Engineers (ACOE). The requested SSO elimination date was undefined since the determination from the archaeological investigation may have required realignment and re-design of the new relief sewer. Subsequently, the County obtained ACOE's permit and, to expedite project completion, the County separated the project into two (2) construction contracts.

On September 3, 2019, the County issued the notice to proceed for the Phase I construction project (18180 SX0). The project achieved functional use on January 26, 2021. The Phase II construction project requires right-of-way acquisition and environmental permits. After the right-of-way easements have been acquired, the environmental permits obtained and the Phase II construction project notice to proceed has been issued, the County will submit a second time of performance extension with a definitive date to eliminate the SSO structures.

Elimination of Non-Pump Station SSO Structures 41 and 129

The original Consent Decree deadline for SSO elimination was March 20, 2018; however on October 4, 2017 the County submitted a time of performance extension request due to private property easement acquisition. As stated in the time extension request, the requested SSO elimination date was undefined since the time to negotiate and acquire the easements was unknown. Subsequently, the right-of-entry agreements were finalized and the County completed design work. On October 3, 2019 the County awarded the construction project On January 4, 2022 the County submitted a second time of performance extension to eliminate the overflow structures by December 4, 2023.

Post hoc: On January 4, 2022, the County submitted a third time of performance extension due to unanticipated site conditions. The requested SSO elimination date was August 3, 2023.

Elimination of Non-Pump Station SSO Structures 113, 116, 117 and 118

The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

A summary of all County and EPA/MDE communication in during the reporting period related to SSO structures is shown below:

Date of Correspondence	From	To	Control ID	SSO ID	SSO Name	Subject
1/19/2021	County	EPA/ MDE	343	22, 23A, 23B, 24	Alter Road, Southern Cross Drive, Southern Cross, Patterson Avenue	Request to waive stipulated penalties for 12/24/2020 discharges
4/12/2021	County	EPA/ MDE	350	22, 23A, 23B, 24, 129	Alter Road, Southern Cross Drive, Southern Cross, Patterson Avenue, Queen Anne Drive	Request to waive stipulated penalties for 3/24/2021 discharges
6/23/2021	County	EPA/ MDE	359	41, 129	Aiken Avenue, Queen Anne Drive	Request to waive stipulated penalties for 6/11/2021 discharges
9/21/2021	County	EPA/ MDE	380	118, 129	Overbrook Road, Queen Anne Drive	Request to waive stipulated penalties for 9/1/2021 discharges
9/23/2021	County	EPA/ MDE	381	41, 129	Aiken Avenue, Queen Anne Drive	Correction of record for time of performance extension request
11/12/2021	County	EPA/ MDE	387	All		Response to 2018 SSO penalty invoice
11/29/2021	County	EPA/ MDE	388	22, 23A, 24A, 24 and 118	Alter Road, Southern Cross Drive, Southern Cross, Patterson Avenue, Overbrook Road	Request to waive stipulated penalties for 10/29/2021 discharges

A summary of the County's SSO elimination and/or flow monitoring activities that were performed during the reporting period is provided in Attachment A.

(b) Summarize post-monitoring data after the elimination of a Non-Pump Station SSO structure

Flow monitoring activities will continue in accordance with Paragraph 7.C.v of the Consent Decree. Once sufficient flow monitoring data has been collected, the County will complete the hydraulic evaluation in accordance with Paragraph 7.C.v of the Consent Decree.

(c) Progress in implementing plans developed in response to certain discharges from Pump Station SSO structure(s)

New Stemmers Run Pump Station Action Plan
On November 30, 2020, a 2.1 million-gallon SSO discharge occurred at the New Stemmers Run Pump Station. A post-SSO field investigation determines that a contractor who was working for the County did not re-install an upstream manhole cover and, during a rain event that occurred later in the day, rising stream water flowed into the open manhole and overwhelmed the pump station. Since the SSO was caused by contractor negligence, no action plan is required.

Old Stemmer Run Pump Station Action Plan
On November 30, 2020, a 1.6 million-gallon SSO discharged occurred at the Old Stemmers Run Pump Station. A post-SSO field investigation determined that a contractor who was working for the County did not re-install an upstream manhole cover and, during a rain event that occurred later in the day, rising stream water flowed into the open manhole and overwhelmed the pump station. Since the SSO was caused by contractor negligence, no action plan is required.

Orems Road Pump Station Action Plan
On November 30, 2020, a 636,000-gallon SSO discharge occurred at the Orems Road Pump Station. A post-SSO investigation found a partially open manhole that may have resulted in the SSO discharge. The action plan was to install a temporary flow monitor upstream of the Orems Pump Station and review the recorded data to confirm that stream water inflow from an open manhole has been eliminated. The action plan has been implemented and the County is recording and reviewing the flow monitor data.

ii. Rainfall and Flow Monitoring Plan Compliance

(a) Summarize results of annual evaluation of numbers and placement of rain gauges and flow monitors

In accordance with Paragraph 9.B.i, the County continued to collect rainfall data as necessary to allow the characterization of flow from sewershed service areas, the characterization of known SSOs, the development or improvement of hydraulic models for the sewersheds, and evaluate the effectiveness of measures implemented to reduce I/I and to increase system capacity.

(b) Report any changes to the locations of gauges or flow monitors

A summary of the flow monitoring locations as of December 31, 2021 is provided in Attachment B. Maps of flow monitoring and rain gauge locations are provided in Map Attachments 1 and 2.

(c) Report on any deviations from the approved plan

None.

iii. Evaluation of Rainfall and Flow Monitoring Data

(a) Inflow/infiltration (I/I) evaluation progress (due 60 days prior to date of SRRR plan submittal)

This task is complete.

(b) Long-term capacity/peak flow management evaluation (due 60 days prior to date of SRRR plan submittal)

This task is complete.

iv. Fats, Oils and Grease (FOG) Program Updates

(a) Provide the results of the annual evaluation of the effectiveness of the modified FOG control program

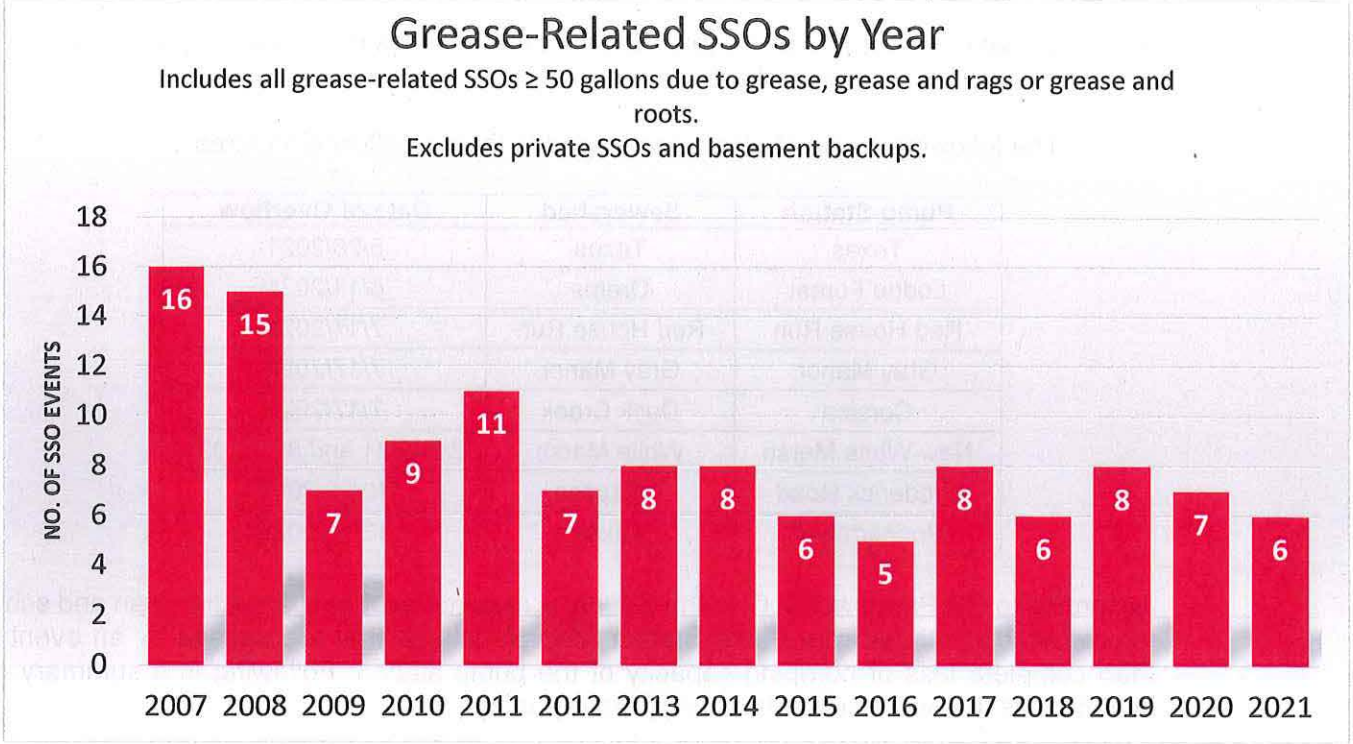
In accordance with Paragraph 11.I of the Consent Decree, the County continues to use the food service facility (FSF) inspection results and the performance indicators to evaluate the effectiveness of the modified FOG Program. The results of the modified FOG control program effectiveness are summarized in Paragraph (c) below. The County continues to use the FSF inspection results to identify and prioritize future inspection locations and frequency.

(b) Provide an updated database and map of grease generating facilities

A map and database of grease generating facilities with grease related sewer overflows are provided in Map Attachment 3.

(c) Evaluate the effectiveness of the modified FOG program

The evaluation of the modified FOG program attempted to determine a trend in the annual number of reportable FOG-related SSO discharges. Below are the analysis results:



The graph indicates a 63-percent decrease in the number of reportable FOG-related SSOs between 2007 and 2021. Since 2010, when the County implemented the modified FOG program, the number of reportable FOG-related SSOs has remained relatively stable; however, the County believes that there is an insignificant number of FOG-related SSOs to establish a trend.

v. Illegal stormwater discharges

During the reporting period, the County identified 8 potential illegal stormwater connections pending confirmation. There are also 6 potential illegal stormwater connections from previous reporting periods. A summary of the actions taken in response to each instance is provided in Appendix C.

vi. Pumping station status

(a) Report on the required annual evaluation of the backup power program

Baltimore County completed the evaluation of the effectiveness of its existing Pump Station backup power program, including the use of portable generators as backup power for multiple stations, in preventing SSOs relating to power outages.

During the reporting period, the fleet of six (6) portable generators that supplement on-site backup power at the County's stations was adequate to meet the emergency power needs. The percent of Pump Stations which are now equipped with on-site backup emergency power is ninety five percent (95%).

(b) Report on the development and implementation of any plans related to overflows due to power outages at pumping stations

The following pump stations discharged to their overflow structures:

Pump Station	Sewershed	Date of Overflow
Texas	Texas	5/26/2021
Lodge Forest	Orems	6/14/2021
Red House Run	Red House Run	7/17/2021
Gray Manor	Gray Manor	7/17/2021
Corsica	Duck Creek	7/17/2021
New White Marsh	White Marsh	8/7/2021 and 8/11/2021
Frederick Road	Patapsco	10/29/2021
Springdale A	Texas	12/13/0021

According to CD Paragraph 7.C.vi, the County is required to submit an action plan and schedule for certain discharges from Pump Station SSO Structures that are caused by an event other than complete loss of pumping capacity of the pump station. Following is a summary of the action plans that were submitted during the reporting period.

Texas Pump Station Action Plan

On August 19, 2021, the County submitted a revised Action Plan.

On May 26, 2021, pump shutdown at the Texas Pump Station resulted in an SSO discharge of 213,000 gallons. A post-SSO analysis indicated intermittent power disruption of the primary pump station electrical feed, which caused the four variable frequency drives (VFDs) to fault and shut down the pumps thereby resulting in the SSO discharge. The VFDs are set to automatically reset if they fault; however, due to a VFD's high consequence of failure, some VFD faults, such as those experienced on May 26, 2021, must be manually reset so that County crews can visually inspect the equipment before restarting the drives. It is suspected that the power disruption was of such short duration that the station's automatic transfer switch did not activate the secondary power feed. The County completed post-SSO equipment testing but could not replicate this type of power disruption to confirm the root cause of the VFD faults and the station has not experienced previous power disruptions that did not activate the secondary power feed. Since the separate and redundant power supply is the County- and MDE-approved backup power for this pump station and the County could not confirm the root cause of the power disruption, a plan to prevent further SSOs at the Texas Pump Station due to power outages is not needed.

Lodge Forest Pump Station Action Plan

On August 13, 2021, the County submitted a revised Action Plan.

On June 14, 2021, pump shutdown at the Lodge Forest Pump Station resulted in an SSO discharge of 83,000 gallons. When they arrived at the station, the County staff manually reset the master control center emergency generator breaker and returned the station to normal operation. A post-SSO analysis indicated that a possible power surge of the electrical feed disrupted power to the station. The station's emergency generator automatically started; however, it is suspected that the power surge tripped the generator breaker in the master control center, which prevented power to the pumps and resulted in the SSO discharge. Since the emergency generator supply is the County- and MDE-approved backup power for this pump station, a plan to prevent further SSOs at the Lodge Forest Pump Station due to power outages is not needed.

Red House Run Pump Station Action Plan

On July 17, 2021, a storm event caused power loss to the primary and secondary electrical feeds of the Red House Run Pump Station, thereby resulting in a 900,000 gallon discharge. Since the power loss to the primary and secondary pump station electrical feeds was caused by a storm event that is beyond the control of the County, a plan to prevent further SSOs at the Red House Run Pump Station due to power outages is not needed.

Gray Manor Pump Station Action Plan

On July 17, 2021, a storm event caused power loss to the primary and secondary electrical feeds of the Gray Manor Pump Station, thereby resulting in a 724,000 gallon discharge. Since the power loss to the primary and secondary pump station electrical feeds was caused by a storm event that is beyond the control of the County, a plan to prevent further SSOs at the Gray Manor Pump Station due to power outages is not needed.

Corsica Pump Station Action Plan

On July 17, 2021, a storm event caused power loss to the primary electrical feed of the Corsica Pump Station, which resulted in a 60,000 gallon discharge. The MDE- and County-approved backup electrical source for the station is a portable generator. When alerted of the power loss, a pump station crew was mobilized to the station with a portable generator; however, the power was restored and the station was operating normally by the time the crew arrived at the station. The action plan to prevent further SSOs at the Corsica Pump Station due to power outages is to install an on-site generator. Design work for the generator was included in the County's Corsica Pump Station rehabilitation construction project (County Contract 21162 SXO), which is in construction with a Notice to proceed date of January 27, 2022. The portable generator will remain the secondary power source until the permanent on-site generator is installed and the rehabilitation project is certified as complete.

New White Marsh Pump Station Action Plan

On August 7 and 11, 2021, power losses to the primary electrical feed of the New White Marsh Pump Station resulted in 772,000 and 901,000 gallon discharges, respectively. The MDE- and County-approved backup electrical source for the station is a secondary electrical feed; however, the station equipment did not automatically transfer to the secondary feed. A post-SSO investigation of the station's electrical system found that all of the station primary electrical breakers opened, which prevented the automatic transfer switch to transfer electrical power from the secondary feed. The County tested the breakers and programmable logic controllers (PLCs); however, all equipment was properly operating. As a precaution, County staff remained at the pump station during business hours to monitor station operation throughout the day. To simulate the power loss event, the County requested the Baltimore Gas & Electric company to stop the primary electrical service to the station. During the simulation, County crews identified a possible issue with the PLCs and further investigation and visual confirmation of equipment failure identified faulty PLCs; therefore, the action plan is to:

1. Replace the PLCs, which was completed on September 3, 2021
2. Have County staff remain at the pump station for 1 week after the PLC replacement is completed to confirm that the station is operating as normal

Frederick Road Pump Station Action Plan

On October 29, 2021, power loss to the primary electrical feed of the Frederick Road Pump Station resulted in a 43,000 gallon discharge. The MDE- and County-approved backup electrical source for the station is an on-site generator; however, the generator did not start when the

primary electrical feed lost power. The power to the primary feed was restored within 16 minutes and the pump station resumed operation. A post-SSO investigation indicated an issue with the generator's start up system; however, after the primary electrical feed power was restored, the County successfully test started the generator and completed a second successful test start the next day. Similar start up issues have not previously occurred at the pump station including during the weekly pump station preventive maintenance inspections. As a precaution, County staff replaced the generator start up battery; however, the successful post-SSO generator test starts indicate that there was no issue with the battery. Since the power loss to the primary pump station electrical feed was caused by a storm that is beyond the control of the County and the County could not replicate the generator start up issue and has not previously experienced similar issues at the pump station, a plan to prevent further SSOs at the Frederick Road Pump Station due to power outages is not needed.

Springdale A Pump Station

On December 13, 2021 power loss of the motor control center at the Springdale A Pump Station resulted in a 13,110-gallon discharge. The MDE- and County-approved backup electrical source for the station is an on-site generator. A post-SSO investigation of the station determined that the electrical terminal for Pump Motor 2 overheated and caused a small localized fire, which damaged other wiring and tripped the station's motor control center primary and secondary electrical feeds. Once they arrived on site, the pump station crew connected a mobile generator to restore power and stop the overflow. The most recent preventive maintenance inspection, which was completed on November 3, 2021 did not identify any issue with Pump Starter 2, the associated electrical wiring or terminal or Motor 2 and there has been no similar electrical issue at the station. The action plan is to remove the destroyed terminal, replace all damaged control wiring and install new wiring from Pump Starter 2 to Motor 2. The new wiring was installed and all critical wiring repairs were completed on December 14, 2021. The station is now operating as normal.

Due to the power outages experienced at multiple pump stations during the reporting period, the County is coordinating with Baltimore Gas & Electric Company to develop a post-SSO investigation process. The purpose of the investigation process is to better understand and improve the resiliency and sustainability of the pump station electrical power feeds.

(c) Pump station inspection deficiencies list

A report on the deficiencies discovered during the inspections of the County's pumping stations is provided in Attachment D.

(d) Pump station deficiencies discovered during Engineering Evaluation/Condition Assessments

This task is complete.

(e) Summarize the progress in implementing a pump station information management system

This task is complete.

vii. Collection System Model Implementation Status

This task is complete.

viii. Supplemental Collection System Inspection Progress

This task is complete.

ix. Sewer Cleaning Progress

This task is complete.

x. Collection System Inventory Progress

This task is complete.

xi. Emergency Response Plan

On April 28, 2021 the County submitted to EPA/MDE the 2021 Emergency Response Plan.

Post hoc: In response to EPA's review comments that were received on February 2, 2022, the County will submit to EPA/MDE the updated 2022 Emergency Response Plan, when finalized.

xii. Building Backup Report

Maps of Building Backups since the last submission are provided in Map Attachment 4.

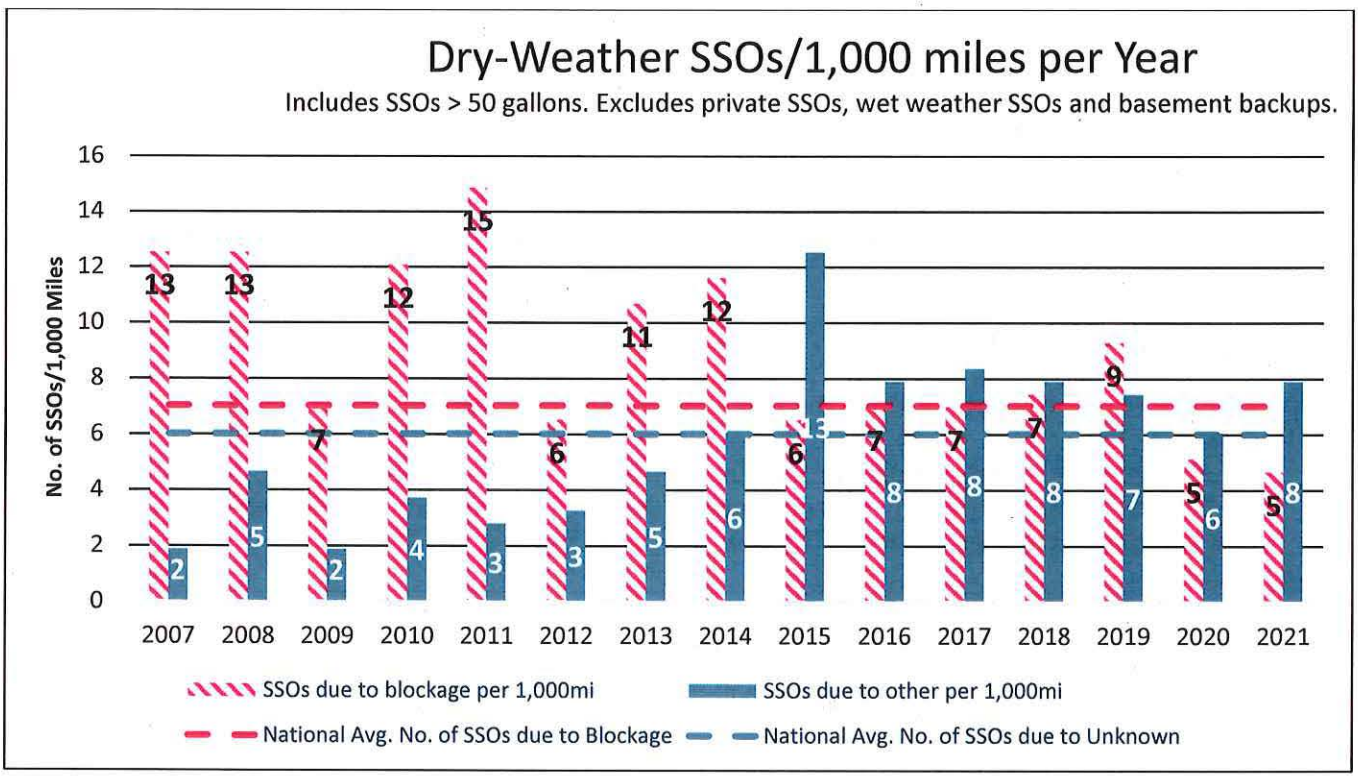
There were 63 reported building backups (including occurrences with zero gallon volumes) during the reporting period, as summarized in Map Attachment E. A summary of reported building backup history is provided below:

Year	Total Number of Reported Backups (ea.)	Percent Increase/Decrease from Previous Year (%)
2006	113	---
2007	48	-57.5
2008	77	60.4
2009	44	-42.9
2010	90	104.5
2011	241	167.8
2012	139	-42.3
2013	217	56.1
2014	346	59.5
2015	143	-58.6
2016	136	-4.9
2017	71	-47.8
2018	345	386
2019	80	-76.8
2020	119	48.75
2021	63	-47.1

xiii. Annual Update of SSO Characterization Report

In accordance with Paragraph 7.B.ii of the Consent Decree, the updated SSO characterization maps are provided in Map Attachment 5.

Based on the data available in EPA's report to Congress titled "Impacts and Control on CSOs and SSOs", dated August 2004, there are, on average, approximately 7 dry-weather SSOs due to pipeline blockages per 1,000 miles per year and an additional 6 dry-weather SSOs with unknown causes per 1,000 miles per year. Below is a summary per year of Baltimore County's dry-weather SSOs due to a pipeline blockage.



As shown in the above graph, since 2015, the number of SSOs per year due to roots, grease and debris is approximately equal to the national average; however, in the same time period, the number of SSOs per year due to unknown/other causes, such as broken pipe, vandalism, etc. has increased compared to the prior 7 year (2007-2014) time frame.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

Lisa K. Eicholtz, PE
Bureau Chief, Engineering and Construction

Attachments available at FTP location:

1. Flow Meter Site Location Maps
2. Rain Gauge Site Location Maps
3. Maps and Database of Grease Generating Facilities
4. Basement Backup Characterization Maps
5. SSO Characterization Maps

Control Document No. 421

Attachment A – Non-Pump Station Overflow Structure

Non-Pump Station Overflow Structures

Name	Address	SSO ID	Grid	Key-sheet	Active	Assigned SSA	Date Removed	End of Post-Elimination Monitoring	Notes
Alter Road	Alter Road & Southern Cross	22	33G02	KNW	Yes	83-06-05-07			Original CD elimination deadline was 3/22/2017. Extension request, with undefined SSO elimination date submitted on 2/14/2017. Powder Mill Interceptor Relief Sewer Phase 1 construction project is complete. Second time extension request with definitive SSO elimination date will be submitted after right-of-way acquisition, environmental permits obtained and construction notice to proceed is issued for Phase 2.
Southern Cross Dr	Southern Cross Drive & Parsons Avenue	23A	33G01	KNW	Yes	83-06-05-07			
Southern Cross	3909 Southern Cross Drive	23B	33G01	KNW	Yes	83-06-05-10			
Patterson Ave	3902 Patterson Avenue	24	33G03	KNW	Yes	83-06-05-03			
Aiken Avenue	7829 Aiken Ave Near Taylor	41	28A10	NSE	Yes	33-93-03-00			Original CD elimination deadline was 3/20/2018. East Branch Herring Run Relief Sewer construction project in construction. Time extension request submitted on 1/4/2022 to eliminate the overflow structures by December 4, 2023.
Queen Anne Dr	Queen Anne Dr.& Hillcrest Ave.	129	28A10	NSE	Yes	33-92-00-00			
Marnat Rd	Marnat & Hatton Rd	113	25J11	OSW	Yes	45-10-22-01			Original CD elimination deadline was 9/20/2016. Extension requests with undefined SSO elimination date submitted on 6/22/2016. Second time extension with a defined SSO elimination date will be submitted after the County receives from the City the proposed downstream sewer improvements and associated construction schedule. Continuing post-construction flow monitoring.
Nunnery Lane	North of Frederick Road	116	41G02	GNW	Yes	81-52-00-00			
Briarwood Rd	North of Frederick Rd	117	41G02	GNW	Yes	81-54-00-00			
Overbrook Rd	Overbrook Near Medwick Garth	118	41H02	GNW	Yes	81-50-01-00			

Attachment B – Flow Monitor Summary

Sewershed	Manhole ID	Comments
West Low Level	371	Overbook at Medwick Garth
Jones Falls	707	RO 6078 Falls Rd
Patapsco	3376	IFO 5562 Ashbourne Rd
West Low Level	7368	Nunnery Ln_ultrasonic SSO
Redhouse Run	38847	Chesaco Park PS
Jones Falls	45222	Old Falls Rd at Light Rail
Jones Falls	47403	Lakeside Dr and Old Falls
Patapsco	901976	McTavish Pump Station Overflow
West Low Level	902029	SSO 117 Briarwood Alley
Patapsco	10141	New York & Baltimore ST
Dead Run	10632	Charring Cross
Gywnns Falls	10954	Montbel
Gywnns Falls	11060	Southern Cross Dr @ Alter
Gywnns Falls	11060	Southern Cross Dr @ Alter
Herring Run	11481	Aiken Avenue
Herring Run	11481	Aiken Avenue
Patapsco	12881	Michigan & Baltimore West
Patapsco	12881	Michigan & Baltimore North
Patapsco	12883	Vermont & Baltimore
Patapsco	15963	Oak Forest PS
Jones Falls	16379	Jones Falls Interceptor
Gywnns Falls	16432	Patterson
Gywnns Falls	16432	Patterson
Gywnns Falls	16837	Southern Cross "A" U/S
Gywnns Falls	16837	Southern Cross "A" U/S
Gywnns Falls	17802	Southern Cross "A"
Patapsco	1907	Frederick Rd PS Overflow
Stemmers Run	2199	IFO 3021 Texas Ave
West Low Level	296	Edmondson Ave
Herring Run	32117	Falkirk
Delmar	3216	Side of 700 Platinum Ave
Herring Run	32927	Interceptor south of Taylor Avenue
Patapsco	3374	IFO 1309 Elm Ave
West Low Level	347	IFO 2 HILLSIDE RD
West Low Level	34894	Edmonson Ave.
West Low Level	371	Overbrook Rd. @ Medwick Garth
Dead Run	3838	Westhills Parkway
West Low Level	410	Frederick Rd @ Nunnery Ln
Jones Falls	43819	Joppa Rd
Jones Falls	44223	Falls Rd, RO Valley Inn
Gywnns Falls	47179	Purnell Dr
Herring Run	6566	Perring Parkway
Herring Run	6572	Interceptor @ Racquet Club
Herring Run	6584	Berrywood 12"
Jones Falls	6883	Jones Falls Interceptor
Jones Falls	6886	Dogwood Rd (Flo-Dar)
Herring Run	694	Queen Anne & Hillcrest
Herring Run	694	Queen Anne & Hillcrest SSO

Sewershed	Manhole ID	Comments
Herring Run	71591	Walker Ave
West Low Level	7368	Nunnery Ln.
Jones Falls	793	Marnat
Jones Falls	793	Marnat
Gywnns Falls	8070	Powder Mill City
Patapsco	8435	IFO 5601 Ashbourne
Dead Run	8666	Dogwood Road
Patapsco	900335	IFO 5625 Ashbourne
Gywnns Falls	901891	Southern Cross Dr. "B"
Gywnns Falls	901891	Southern Cross Dr. "B"
West Low Level	902029	Briarwood Alley
Patapsco	SV1178	Elm Rd and Oakland Ave

Attachment C – List of Illegal Stormwater Discharges

Illegal Stormwater Discharges
Discovered During Inspection Process

Date of Observation	Street	Sewer ID	Problem Description	Repair Date
7/30/2020	216 OSBORNE AVE	LL233889	Sump Pump	3/31/21
9/1/2020	8807 CHESAPEAKE AVE	LP231102	Area Drain	4/13/21
9/1/2020	2801 12TH STREET	LP347448	DR-Roof Leader/Drain	4/26/21
11/17/2020	7319 GEISE AVE	LP230237	Foundation Drain	5/7/21
11/17/2020	7310 HUGHES AVE	LP285847	Foundation Drain	4/27/21
11/18/2020	7304 BAY FRONT RD	34334-34331	DR-Roof Leader/Drain	4/22/21
11/16/2021	3302 SMITH AVE	9872-9871	Sump Pump	
11/16/2021	3311 SMITH AVE	9873-9872	Plumbing in Building	
11/16/2021	7606 LORRY LANE	14055-14054	Plumbing in Building	
11/17/2021	3204 HATTON ROAD	NA	Basement Drain	
11/17/2021	3210 NORTHBROOK ROAD	LP3246406	Plumbing in Building	
11/17/2021	3309 NORTHBROOK ROAD	NA	DR Roof Leader/Drain	
11/17/2021	3301 MARNAT RD	NA	Basement Drain	
11/18/2021	3225 MARNAT RD	794-793	Plumbing in Building	

Attachment D – List of Deficiencies found during the Inspection of Pumping Stations

Station	Sewer-shed	Date	Equipment	Problem	Nature of Repair	Completed date	Priority	Reason for Delay if Open > 6 Months
Windlass Run	Bird River	1/4/2021	Pump 3	Leaking bypass cylinder	Repaired cylinder	1/27/2021	2	
Beach-wood Estates	Gray Manor	1/10/2021	Generator	Leaking radiator	New sensor installed	3/16/2021	2	
Back River Neck	Duck Creek	1/27/2021	Pump 1	Replace pump	New pump installed	2/8/2021	2	
Patapsco	Patapsco	2/7/2021	Cone Valve Pump 1	Inoperable	Debris removed from valve	2/8/2021	2	
Windlass Run	Bird River	2/9/2021	Cone Valve Pump 1	Leaking cylinder	Cylinder repaired	3/9/2021	2	
Harewood Park	Bengies	2/15/2021	Check Valve Pump 1	Check valve slams	Made valve adjustments	2/16/2021	2	
Vogts Lane	Duck Creek	2/16/2021	Pump 2	Bad bearings	Repaired shaft	2/17/2021	2	
Dundalk	Dundalk	2/17/2021	Pump 4	Bad bearings	Repaired pump	6/2/2021	2	
Springdale 1	Texas	2/24/2021	Motor 1	Bad bearings	Bearings replaced	3/19/2021	2	
Orems Road	Orems	2/27/2021	Grinder #2	Bad bearings	Installed new grinder	3/2/2021	2	
Windlass Run	Bird River	3/9/2021	Cone valve 2	Leaking cylinder	Cylinder rebuilt	3/22/2021	2	
Old Stemmers Run	Stemmers Run	3/10/2021	Pump 3	Bad wear ring	Wear ring replaced	3/23/2021	2	
Stansbury Manor	Orems	3/10/2021	Pump 1	Bad front head	Front head replaced	3/11/2021	1	
Bauern-schmidt	Duck Creek	3/15/2021	Generator	Inoperable generator	Reset the controller	3/19/2021	1	
Texas	Texas	4/9/2021	Pump 5	Damaged impeller and wear ring	Repaired pump	6/22/2021	2	
Delmar	Delmar	4/16/2021	Switchgear	Replace UPS	Installed new UPS	4/21/2021	2	
Vogts Lane	Duck Creek	4/19/2021	Pump 1	Bad drive shaft	Repaired drive shafts installed	4/25/2021	2	

Station	Sewer-shed	Date	Equipment	Problem	Nature of Repair	Completed date	Priority	Reason for Delay if Open > 6 Months
Forge Acres	Bird River	4/25/2021	Pump 2	Broken valve	Rebuilt valve	4/26/2021	2	
Merrymans Branch	Texas	4/29/2021	Motor 1	Bad bearings	Bearings replaced	5/20/2021	2	
Hawthorne 1	Orems	5/3/2021	Pump 1	Seal failure	Repaired pump	6/23/2021	2	
Texas	Texas	5/3/2021	Pump 3	Seal failure	Repaired pump	11/9/2021	2	Delay in receiving vendor parts
Corsica	Duck Creek	5/18/2021	Pump 2	Bad bearings	Repaired shafts	5/24/2021	2	
Richlyn Manor	White-marsh	5/18/2021	Generator	Replace water pump	Replaced radiator and water pump installed	9/7/2021	2	
Lynhurst	Gray Manor	6/7/2021	Generator	Frequency alarm	Replaced speed sensor	6/10/2021	2	
Patapsco	Patapsco	6/10/2021	VFD 4	Replace IGBT	Replaced IGBT	7/2/2021	2	
Veronica	Delmar	6/19/2021	Pump 1	Damaged power and sensor cables	Repaired pump	6/21/2021	2	
New Stemmers Run	Stemmers Run	7/6/2021	Motor 4	Oil leak	Motor installed	8/23/2021	2	
Chesaco Park	Red House Run	7/17/2021	Automatic Transfer Switch	ATS inoperable	Replaced ATS switch	7/20/2021	2	
Gray Manor	Gray Manor	7/17/2021	Back up PLC	PLC inoperable	Replaced analog cards	7/19/2021	2	
Gray Manor	Gray Manor	7/17/2021	Switchgear	Inoperable tie breaker	Installed new power sensing relay	7/30/2021	3	
Red House Run	Red House Run	7/17/2021	VFD 3	Inoperable VFD	Repaired VFD	8/9/2021	2	
Hyde Park	Duck Creek	7/26/2021	ATS Switch	Inoperable power transfer	Replaced micro-switches	8/9/2021	3	
Woodland Avenue	Patapsco	7/28/2021	VFD 1	Inoperable VFD	Installed new VFD	9/24/2021	2	
Prices Cove	Duck Creek	8/24/2021	Generator	Damaged generator	Repaired generator	11/2/2021	3	
Dundalk	Dundalk	9/1/2021	Pump 4	Seal failure	Repaired pump	11/19/2021	2	

Station	Sewer-shed	Date	Equipment	Problem	Nature of Repair	Completed date	Priority	Reason for Delay if Open > 6 Months
Greenhill Cove	Gray Manor	9/1/2021	Pump 1	Leaking pump	Replace pump		2	
Texas	Texas	9/14/2021	Pump 5	Inoperable Flygt MAS-711 Monitoring System	Replace MAS unit		2	
Old Stemmers Run	Stemmers Run	9/15/2021	Motor 1	Bad bearings	Replaced bearings	11/8/2021	2	
Gray Manor	Gray Manor	9/17/2021	Pump 3	Damaged cone valve	Replace hydraulic cylinder		2	
Bengies	Bengies	9/23/2021	Pump 1	Damaged drive shaft	Replaced bearings	11/9/221	2	
Stanton Wood	Jones Falls	9/27/2021	Pump 1	Seal failure	Replace pump		2	
Woodland Avenue	Patapsco	10/15/2021	Generator	Main breaker trips	Added generator coolant	10/21/2021	2	
Texas	Texas	10/20/2021	Pump 5	VFD fault	Waiting to schedule a site visit to investigate the issue		2	
Texas	Texas	10/26/2021	Pump 4	Pump coolant leak	Repair pump		2	
Lynch Point	Delmar	10/26/2021	Pump 2	Pump shut down	Replace pump after Pump1 repaired		2	
Veronica	Delmar	10/26/2021	Pump 1	Pump shut down	Repaired pump	11/9/2021	2	
Lynch Point	Delmar	10/30/2021	Pump 1	Pump shut down	Repair pump		2	
Duck Creek	Duck Creek	11/4/2021	Pump 3	Broken mechanical seal	Replace seal		2	
Frederick Road	Patapsco	11/4/2021	VFD 3	VFD fault	Replace VFD	11/18/2021	2	
Long Quarter	Long Quarter	11/7/2021	VFD 2	VFD fault	Replace pressure sensor		2	
Texas	Texas	11/24/2021	Pump 3	Motor going out	Repaired motor	12/2/2021	3	
Frederick Road	Patapsco	12/1/2021	Pump 3	Bad O-ring seal	Repaired pump	12/8/2021	2	

The pump station deficiencies listed below were outstanding in the 2019 Annual Report:

Station	Sewershed	Date	Equipment	Problem	Nature of Repair	Completed date	Priority	Reason for Delay if Open>6 Months
Gray Manor	Gray Manor	2/1/2019	Aux suction valve Pump 1	Replace cylinder	Replaced cylinder	5/20/2021	2	Incorrect equipment ordered. Correct equipment ordered and installed
New Stemmers Run	Stemmers Run	7/1/2019	VFD 3	Damaged VFD	Replace VFD		2	VFD series discontinued. Requires mechanical/ electrical reengineering.
Long Quarter	Long Quarter	12/3/2019	Pump 3 suction gate	Missing sealing gasket	Replaced sluice gate	9/13/2021	2	Needed contractor to bypass station and delay in receiving vendor parts
Long Quarter	Long Quarter	12/3/2019	Pump 3	Bad pressure ring	Repaired pressure ring	9/13/2021	2	Waited for station bypass to complete repair
Long Quarter	Long Quarter	12/20/2019	Aux suction valve Pump 1	Bad positioner	Replaced cylinder	5/21/2021	2	Delay from vendor in receiving new cylinder

The pump station deficiencies listed below were outstanding in the 2020 Annual Report:

Station	Sewershed	Date	Equipment	Problem	Nature of Repair	Completed date	Priority	Reason for Delay if Open>6 Months
Marlyn Avenue	Essex	8/3/2020	Pump 2	Pump shut down	Repaired pump	2/2/2021	3	
Dundalk	Dundalk	8/4/2020	Pump 4	Pump shut down	Repaired pump	1/28/2021	3	
Rettmans Lane	Gray Manor	11/18/2020	Pump 1	Bad mechanical seal	Repaired pump	3/3/2021	2	
Dundalk	Dundalk	11/25/2020	Pump 1	Bad bearing	Repaired pump	4/7/2021	3	
Duck Creek	Duck Creek	12/16/2020	Pump 5	Bad bearing	Replaced bearing	2/10/2021	2	
Stanton-wood	Jones Falls	12/24/2020	Pump 1	Water in motor	Replaced pump	6/10/2021	2	

Attachment E – Building Backups

Building Backups

ADDRESS	ZIP CODE	DATE	WORK ORDER	CAUSE	VOLUME (gallons)
515 ALLEGHENY AVE	21204	4-Jan-21	808193	ROOTS	62
3482 MCSHANE WAY	21222	7-Jan-21	808821	CLEANING	OTHER [1]
1303 GLENMONT RD	21239	12-Jan-22	899095	UNKNOWN/OTHER	UNKNOWN/OTHER[1]
99 WILLOW SPRING RD	21222	14-Jan-21	809611	CLEANING	UNKNOWN/OTHER[1]
97 WILLOW SPRING RD	21222	14-Jan-21	809614	CLEANING	UNKNOWN/OTHER[1]
3418 JOPPA RD	21234	9-Feb-21	811735	DEBRIS	8
355 UPPERLANDING RD	21221	17-Feb-21	812699	CLEANING	1
2214 PLEASANT DR	21228	22-Feb-21	813230	ROOTS	UNKNOWN/OTHER[1]
7614 LHIRONDELLE CLUB RD	21204	23-Feb-21	813370	GREASE	UNKNOWN/OTHER[1]
7819 CHESTNUT AVE	21234	1-Mar-21	814140	GREASE	UNKNOWN/OTHER[1]
4200 WILKENS AVE	21229	20-Mar-21	816564	GREASE	UNKNOWN/OTHER[1]
308 TOWNLEIGH RD	21136	2-Apr-21	818136	CLEANING	5
967 HOMBERG AVE	21221	14-Apr-21	819584	CLEANING	1
24 MCCORMICK AVE	21206	24-Apr-21	890349	CLEANING	UNKNOWN/OTHER[1]
19 EASTSHIP RD	21222	1-May-21	821713	GREASE	40
1660 MERRITT BLVD	21222	17-May-21	823795	HIGH WATER	4 feet of water in basement
2528 CHESHAIRE DR	21244	17-May-21	823790	GREASE	50
1122 GREEN ACRE RD	21286	28-May-21	825400	CLEANING	UNKNOWN/OTHER[1]
9602 BROOKBEND RD	21236	28-May-21	825394	CLEANING	OTHER [1]
1821 WILDWOOD AVE	21234	10-Jun-21	826860	HIGH WATER	UNKNOWN/OTHER[1]
2500 WENTWORTH RD	21234	10-Jun-21	826883	HIGH WATER	1355.9
2509 HILLCREST AVE	21234	10-Jun-21	826884	HIGH WATER	737.6
7837 HIGHPOINT RD	21234	10-Jun-21	826885	HIGH WATER	1092
3011 1/2 TEXAS AVE	21234	10-Jun-21	826887	HIGH WATER	7.5
3007 TEXAS AVE	21234	10-Jun-21	826889	HIGH WATER	30
8448 OAKLEIGH RD	21234	11-Jun-21	826986	HIGH WATER	UNKNOWN/OTHER[1]
2500 WYCLIFFE RD	21234	11-Jun-21	826988	HIGH WATER	UNKNOWN/OTHER[1]
2600 MANOR AVE	21219	15-Jun-21	827460	HIGH WATER	UNKNOWN/OTHER[1]
2600 MANOR AVE	21219	17-Jun-21	829526	HIGH WATER	UNKNOWN/OTHER[1]
3702 KINGS POINT RD	21133	13-Jun-21	827048	GREASE	UNKNOWN/OTHER[1]
1878 YAKONA RD	21234	29-Jun-21	832583	RAGS	UNKNOWN/OTHER[1]
18 HOLMEHURST AVE	21228	6-Jul-21	833307	ROOTS	40
6403 CRESTWOOD RD	21239	8-Jul-21	833803	CLEANING	OTHER [1]
2004 OAKLAND RD	21220	10-Jul-21	833995	ROOTS	UNKNOWN/OTHER[1]
1200 64TH ST	21237	21-Jul-21	837944	GREASE	UNKNOWN/OTHER[1]
1907 MADISON RD	21222	27-Jul-21	874798	GREASE	OTHER [1]
1902 MADISON RD	21222	27-Jul-21	838489	GREASE	UNKNOWN[1]

ADDRESS	ZIP CODE	DATE	WORK ORDER	CAUSE	VOLUME (gallons)
5514 MEDWICK GRTH N	21228	29-Jul-21	838692	DEBRIS	UNKNOWN/OTHER[1]
5512 MEDWICK GRTH N	21228	29-Jul-21	838719	DEBRIS	UNKNOWN/OTHER[1]
10615 REISTERSTOWN RD	21117	31-Jul-21	838829	GREASE	25
312 S TAYLOR AVE	21221	1-Sep-21	842053	HIGH WATER	UNKNOWN/OTHER[1]
7736 NORTH POINT RD	21219	1-Sep-21	842042	HIGH WATER	UNKNOWN/OTHER[1]
7600 NORTH POINT RD	21219	1-Sep-21	842044	HIGH WATER	UNKNOWN/OTHER[1]
7531 NORTH POINT RD	21219	1-Sep-21	842048	HIGH WATER	UNKNOWN/OTHER[1]
3 FOREST DR	21228	15-Sep-21	869237	RAGS	31
2024 EDMONDSON AVE	21228	15-Sep-21	870292	ROOTS	248
6312 LA GRANGE LN	21212	7-Aug-21	839630	ROOTS	10
1122 LINDEN AVE	21227	12-Aug-21	840319	ROOTS	5
1118 LINDEN AVE	21227	12-Aug-21	840320	ROOTS	UNKNOWN/OTHER[1]
1114 LINDEN AVE	21227	12-Aug-21	840321	ROOTS	5
3015 TEXAS AVE	21234	17-Aug-21	840677	CLEANING	1
1114 CORD ST	21220	30-Aug-21	841758	CLEANING	OTHER[1]
29 VINCENT AVE	21221	1-Oct-21	875074	CLEANING	OTHER[1]
214 COVE RD	21221	5-Oct-21	875987	CLEANING	OTHER[1]
1932 CHURCH RD	21222	15-Oct-21	878631	CLEANING	0.5
212 COVE RD	21221	19-Oct-21	879476	RAGS	UNKNOWN/OTHER[1]
216 COVE RD	21221	19-Oct-21	879480	RAGS	UNKNOWN/OTHER[1]
214 COVE RD	21221	26-Oct-21	880637	RAGS	29.9
216 COVE RD	21221	26-Oct-21	880638	RAGS	15.7
8203 FISCHER RD	21222	26-Oct-21	881169	CLEANING	8
218 WORTHMONT RD	21228	9-Nov-21	885026	CLEANING	OTHER[1]
1648 RIVERWOOD RD	21221	15-Nov-21	885638	GREASE	UNKNOWN/OTHER[1]
1404 GLENWILDE RD	21228	7-Dec-21	891663	CLEANING	UNKNOWN/OTHER[1]

(1) County not granted access to verify quantities.



Quarterly Report

January 1, 2022
Through
March 31, 2022

PURSUANT TO PARAGRAPH 19, OF THE CONSENT DECREE BETWEEN BALTIMORE COUNTY AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, DEPARTMENT OF JUSTICE AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

EXHIBIT
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i. Executive Summary

The County's corrective action recommendation plan is being implemented, is ongoing and continuing. This report documents progress made during the reporting period. Baltimore County (County) accomplished the following milestones for Consent Decree-related projects:

- Contract advertisements:
  - Bengies and Bird River Structural Improvements construction (21169 SXO)
  - Inspection/assessment contract for the Gray Manor Force Main Finite Element Assessment and Inspection
  - Cockeysville Force Main and Texas Pump Station Influent (21163 SXO)
  - Gray Manor Sewershed Relief Sewers (20130 SXO)
- Contract awards:
  - Essex Sewer Replacement construction (21136 SXO)
  - Assessment contract for the Texas Force Main Cathodic Protection
- Construction notice to proceed issuance:
  - Herring Run Relief Sewer, Basins 17 and 33 (16131 SXO)
  - Stansbury Manor Pumping Station Replacement (21135 SXO)
  - Corsica Pump Station Improvement (21162 SXO)
  - Fort Howard Pump Station Improvement (20175 SXO)
  - Lodge Forest Manor Pump Station Improvement (21003 SXO)

Additionally, the County continued the following work for Consent Decree-related projects:

- Construction for the:
  - Bread and Cheese Sewer Rehabilitation
  - Essex Structural Rehabilitation
  - Gray Manor Sewer Structural Rehabilitation
  - East Branch Herring Run Relief Sewer (14117 SXO)
  - Millers Island Pump Station Improvement
  - Turkey Point Pump Station Improvement
  - Penwood Terrace Pump Station Improvement
  - Essex Structural Sewer Rehabilitation
  - Gray Manor Sewer Rehabilitation
  - Gunpowder Sewer Structural Repairs–On Road
  - Cedar Branch North Fork Relief Sewer (17150 SXO)
  - Patapsco Basin 10 Sewer Rehabilitation
- Design work for the:
  - Cockeysville and Texas Structural Sewer Rehabilitation
  - Gray Manor Interceptor Rehabilitation
  - Stansbury Manor Force Main Replacement
  - Powder Mill Phase II and Phase III
  - Glen Echo Interceptor Relief Sewer
  - Duck Creek Structural Rehabilitation

    - Corsica Force Main Replacement
    - Dundalk Sewershed Sewer Rehabilitation
    - Eastpoint Force Main Relocation
    - Gunpowder Pump Station to White Marsh Pump Station System Improvements
    - Gunpowder Relief Sewer
    - Gunpowder Sewer Structural Repairs-Off Road
    - Herring Run Sewer Structural Rehabilitation Phase II
    - Long Quarter Force Main Replacement
    - Long Quarter South Interceptor Rehabilitation
    - Long Quarter North Sewer Rehabilitation
    - Long Quarter South Sewer Rehabilitation
    - Patapsco Basin 7 Rehabilitation-Road/Off Road
    - Patapsco Sewershed Structural Rehabilitation
    - Redhouse Run Interceptor Relief Sewer
    - Redhouse Run Rehabilitation Phase 2
    - Redhouse Run Rehabilitation Phase 3
    - Stemmers Run Basin SR05 and SR06 Sewer Rehabilitation
    - Stemmers Run Basins 02B and 3 Rehabilitation/Off-Road
    - Whitemarsh Sewer Structural Rehabilitation (West)
    - Whitemarsh Structural Sewer Rehabilitation (East)
- Procuring a contractor for the:
    - Gwynns Falls Structural Lining in Environmentally Sensitive Areas
    - Redhouse Run Pipeline Rehabilitation Phase 1
- Advertisement preparation for the:
    - Trappe Road Sewer Main Replacement projects

ii. Introduction

Pursuant to Paragraph 19 of the Consent Decree between the County (County) and The United States Environmental Protection Agency (EPA), the Department of Justice (DOJ), and the Maryland Department of the Environment (MDE), this document constitutes the required Quarterly Report for the period **January 1, 2021** through **March 31, 2022.** The Quarterly Report includes historical information, work progress and contracts in place during the reporting period.

The quarterly report documents activities and progress of Baltimore County towards compliance with the requirements set forth in the Consent Decree including:

- Non-Pump Station and Pump Station SSO Structure discharges
- Construction project status
- Collection system inspection
- SRRR plan implementation/progress
- FOG program
- Supplemental Environmental Project status, and
- Compliance issues
- Cleaning
- Performance Assessment Preparation

iii. Non-Pump Station and Pump Station SSO Structure Discharges

Discharges from Sanitary Sewer Overflow Structures took place at the locations and dates during the reporting period as detailed in **Attachment A**.

A summary of flow metering information for Non-Pump Station SSO Structures is included as **Attachment A1.**

iv. Construction Project Status

Attachment B presents the status of Paragraph 7 – Non-Pump Station SSO Structure Elimination projects and Paragraph 13F - Pump Station Rehabilitation Repair and Replacement projects that are in design and construction during the reporting quarter.

v. Collection System Inspection

The County has completed all gravity sewer line inspections required under Paragraphs 8 and 15 of the Consent Decree. The County continues compliance with all gravity line CCTV inspections within the required 10 working days of the occurrence of an overflow for each SSO that occurred during this reporting period. **Attachment C** details the County's inspection response to each of the overflow that occurred during the reporting period.

vi. SRRR Plan Implementation/Progress

The SRRR Plans contain numerous capital improvement projects in a variety of locations and stages of planning, design and construction. **Attachment D** includes a list of each sewershed and a summary status of Plan implementation. The implementation of the recommended improvement projects is proceeding; however, acquisition of required rights-of-way and regulatory permits may require a significant period of time thereby resulting in possible delays to complete the construction work.

The County's recommendations in some of the SRRR Plans for meter basins that exhibited excessive I/I and design-storm simulated model-predicted SSOs included the comprehensive rehabilitation of all pipe segments and manholes, increased hydraulic capacity and/or testing and repair of sewer house connections and laterals. Some of the recommended repairs were revised based on design preparation and review of improvement projects. Additionally, some miscellaneous sewer/manhole/lateral repairs that were included in the SRRR Plans may be revised based on a review of the original and updated inspection data.

vii. FOG Program

The County has completed implementation of the FOG Program Modification Plan.

viii. Supplemental Environmental Project Status

Completed.

ix. Compliance Summary

In accordance with Paragraph 19, Item B.vii, the following is a summary of Consent Decree compliance project achievements:

a. **Consent Decree projects or requirements certified as complete during the reporting period:**

Cedar Beach/Back River Neck Force Main Transition Manhole Rehabilitation

Project certified as substantially completed on March 31, 2022.

Chesaco Park Force Main Repair Valve Vault Waterproofing

Project certified as substantially completed on February 28, 2022.

Delmar Force Main - Valve Vault Waterproofing

Project certified as substantially completed on March 1, 2022.

Eastpoint Relief Sewer

Project certified as substantially completed on January 14, 2022.

Essex and Duck Creek (Bridge) Force Main Exterior Cleaning

Project certified as substantially completed on January 4, 2022.

Miller Island Force Main Valve Vault Waterproofing

Project certified as substantially completed on March 1, 2022.

Turkey Point Force Main Valve Vault Waterproofing

Project certified as substantially completed on February 28, 2022.

Willow Avenue Force Main Valve Vault Waterproofing

Project certified as substantially completed on March 1, 2022.

Substantial completion, as defined in Paragraph IV, Item CC of the Consent Decree means, the date, as certified by the Engineer in charge of a construction project, when the construction project or specified part thereof is sufficiently completed, in accordance with the contract documents, such that the project or specified part thereof can be used to accomplish the purposes for which it was intended.

b. Consent Decree requirements due to be completed during the reporting period, but not completed:

Bengies and Bird River Structural Improvements Project (Contract 21169 SXO)

On February 10, 2022, the County submitted a time of performance extension request for the Bengies and Bird River Structural Improvements Project. The Consent Decree deadline for completing the project was September 29, 2020. As described in the County's March 15, 2019 potential delay notification, private property rights-of-entry negotiation and acquisition were required for the project, which has delayed completion of the design work. Acquisitions are now complete and the contract had a bid opening on April 25, 2022. The requested deadline to complete the project is September 6, 2023.

Bread and Cheese Sewer Rehabilitation Project

On March 3, 2022, the County submitted a second time of performance extension request for the Bread and Cheese Sewer Rehabilitation Project. The Consent Decree deadline for completing the project was September 29, 2020. As stated in the original May 28, 2020 time of performance extension request, the County acquired the last right of entry agreement and began procuring a contract

to complete the construction work. During construction, the contractor identified 54 sewers that were originally planned to have miscellaneous in-situ spot repairs. The original scope of work was expanded to include the rehabilitation of the entire length of the 54 sewers. The expanded scope of work slightly delayed completion of the project; therefore, the County has requested an additional 3 months to complete the project. The new requested deadline is June 6, 2022.

Cockeysville and Texas Structural Sewer Rehabilitation Project (Contract 21294 SXO)

On February 8, 2022, the County submitted a time of performance extension request for the Cockeysville (and Texas) Structural Sewer Rehabilitation project. The Consent Decree deadline for completing the project was September 29, 2020. As stated in the County's March 15, 2019 potential delay notification letter, private property rights-of-entry negotiation and acquisition were required for the project, which has delayed completion of the design work. Acquisitions are now completed and the projected will be advertised as soon as the permits have been acquired. The requested deadline is October 6, 2023.

Gwynns Falls Structural Lining in Environmentally Sensitive Areas Project

On March 3, 2022, the County submitted a second time of performance extension request for the Gwynns Falls Structural Lining in Environmentally Sensitive Areas project. The Consent Decree deadline for completing the project was September 6, 2018. As stated in the original December 7, 2021 time of performance extension request, the County issued 15-day notification letters to the property owners with the outstanding right-of-entry agreements. No responses were received; therefore, the County began procuring an on-call contractor to complete the construction work. The work was expected to be completed by May 6, 2022; however, contractor procurement has taken longer than originally anticipated, which has delayed completion of the construction work. The County is processing the construction contract procurement documents and, after complete, will issue notice to proceed to the on-call contractor. The new requested deadline is October 6, 2022.

Herring Run Relief Sewer, Basins 17 and 33 Project (Contract 16131 SXO)

On February 28, 2022, the County submitted a time of performance extension request for the Herring Run Relief Sewer, Basins 17 and 33 project. The Consent Decree deadline for completing the project was September 6, 2018. As described in the County's May 7, 2014 potential delay notification, the project may experience delays due to private property rights-of-entry negotiation and acquisition. The County has completed all right-of-entry negotiations except for one property that is now being acquired through the County's condemnation process and anticipated to be completed in November 2022. The County issued notice to proceed for construction work for on February 11, 2022 while condemnation is ongoing. The relief sewer will be constructed upstream and downstream of the planned condemned property. Once condemnation is

finalized, the County will complete construction of the portion of the relief sewer that is being delayed by condemnation. The requested deadline is September 6, 2023.

Orems Basin 03 Relief Sewer Project (Contract 21144 SXO)

On January 28, 2022, the County submitted a second time of performance extension request for the Orems Basin 03 Relief Sewer project. The Consent Decree deadline to complete the project was September 29, 2020. As stated in the original September 7, 2021 time of performance extension request, the construction contract notice to proceed for the project was issued on August 2, 2021. However, on October 12, 2021, the contractor informed the County that pipe material procurement may delay project completion. Despite the contractor's continued efforts to resolve the procurement issue, the County submitted the second time of performance extension request. During the 4th quarter of 2021, the low bidder defaulted on the contract. The bond holder is arranging with a contractor to complete this contract. The new requested deadline is June 22, 2022.

c. Problems that may prevent the County from meeting future Consent Decree compliance deadlines:

i) Aiken Avenue and Queen Anne Drive SSO Elimination (Contract 14117 SXO)

On January 4, 2022, the County submitted a time of performance extension request to eliminate the Aiken Avenue (SSO 41) and Queen Anne Drive (SSO 129) sanitary sewer overflow structures. The Consent Decree deadline to complete the eliminations is August 3, 2023. The time extension request is needed due to unanticipated construction site conditions. The requested deadline is December 4, 2023.

ii) Long Quarter Force Main Testing Project

On January 18, 2022, the County submitted a potential delay notification for the Long Quarter Force Main Testing project. The Consent Decree deadline to complete the project is April 18, 2024. The project requires highly specialized equipment and technical expertise to complete, which significantly limits contractor/consultant availability. Therefore, the County required additional time than originally anticipated to develop and advertise a contract to procure the specialized services. The County will submit a time of performance request for the project, if needed.

iii) Turkey Point Pump Station Improvement Project (Contract 19159 SXO)

The Consent Decree deadline to complete the Turkey Point Pump Station Improvement Project is June 1, 2022. In March 2022, the County was informed by the construction contractor that supply chain issues will delay delivery of the

pump station's permanent backup generator and; therefore, substantial completion of the project. The pump station is anticipated to be operational by the June 1, 2022 deadline and will be powered by the primary electrical feed service; however, any electrical service disruption will be mitigated by a temporary backup generator until the permanent generator is installed, tested and the County issues substantial completion of the project. Since the pump station will be operational by the June 1, 2022 Consent Decree deadline, a time of performance extension request is not needed.

iv) Cockeysville SRRR Plan Implementation

Cockeysville Force Main Lining Project (Contract 21163 SXO)

On January 28, 2022, the County submitted a time of performance extension request for the Cockeysville Force Main Lining project. The Consent Decree deadline to complete the project was September 29, 2020. As described in the County's March 15, 2019 potential delay notification, the project requires additional time to complete the design work including adding to the project other sewer structural repair work, which is located in the same sewer service area. The County believes that expanding the design and construction scope of work maximizes the County's financial and contractor resource efficiencies; however, the expanded scope of work further delayed the project. The contract has a bid opening scheduled for May 3, 2022. The requested deadline is April 6, 2023.

v) Delmar SRRR Plan Implementation

Delmar SRRR Plan Implementation Certification

On March 29, 2022, the County submitted a time of performance extension request for the Delmar SRRR Plan Implementation certification. The Consent Decree deadline for certification is April 18, 2022; however, certification is contingent upon completion of the outstanding improvement projects that are located in the Delmar Sewershed. The requested deadline is September 18, 2024.

The following projects are currently in design:

- Glen Echo Interceptor Relief Sewer – reference project summary below.

The following projects are currently in construction:

- Delmar Sewershed Sewer Rehabilitation – time of performance extension request submitted on December 7, 2021. The requested deadline is January 10, 2023.
- Lodge Forest Manor Force Main Transition Manhole Rehabilitation – work completed on March 22, 2022.

Glen Echo Interceptor Relief Sewer Project

On March 2, 2022, the County submitted a time of performance extension request for the Glen Echo Interceptor Relief Sewer. The Consent Decree deadline to complete the project is April 18, 2022. As described in the County's January 18, 2022 potential delay notification, the project has been delayed due to the time required to negotiate and acquire private property easements. After five (5) years of communication with the Maryland Department of Natural Resources (DNR), the County was recently informed that DNR is not the property owner. Since the property owner(s) are unknown, the County is proceeding with condemnation. The requested deadline is September 18, 2024.

Lodge Forest Manor Force Main Cleaning Project

On March 24, 2022 the County submitted a time of performance extension request for the Lodge Forest Manor Force Main Cleaning project. The Consent Decree deadline to complete the project is April 18, 2022. As stated in the County's September 2, 2021 potential delay notification, the County will complete supplemental inspection/testing of the Lodge Force Manor force main to confirm that force main cleaning is necessary. The supplemental inspection/testing will be performed after the County completes the Lodge Forest Manor Pump Station Improvement Project. On June 3, 2021, the County submitted a time of performance extension request for the Lodge Forest Manor Pump Station Improvement project to extend the Consent Decree deadline for the project to October 20, 2023. The County will complete supplemental inspection/testing of the Lodge Forest Manor force main to assess the condition of the force main. The supplemental inspection/testing will be performed after the County completes the Lodge Forest Manor Pump Station Improvement Project. The requested deadline to complete the Lodge Forest Manor Force Main Cleaning project is March 18, 2024.

vi) Duck Creek SRRR Plan Implementation

Duck Creek SRRR Plan Implementation Certification

On March 29, 2022, the County submitted a time of performance extension request for the Duck Creek SRRR Plan Implementation certification. The Consent Decree deadline for certification is April 18, 2022; however, certification is contingent upon completion of the outstanding improvement projects that are located in the Duck Creek Sewershed. The requested deadline is May 18, 2024.

The following project is currently in design:

- Duck Creek Structural Rehabilitation – reference project summary below

Duck Creek Structural Rehabilitation Project

On February 1, 2022, the County submitted a time of performance extension request for the Duck Creek Structural Rehabilitation project. The Consent Decree

deadline to complete the project is April 18, 2022. As described in the County's February 5, 2020 potential delay notification, the project requires extra time to complete design work due to the addition of sewer structural repair work to the project, which is located in the same service area. The County believes that expanding the design and construction scope of work maximizes the County's financial and contractor resource efficiencies; however, the expanded scope of work delayed the project. The requested deadline is May 18, 2024.

vii) Dundalk SRRR Plan Implementation

Dundalk SRRR Plan Implementation Certification

On March 29, 2022, the County submitted a time of performance extension request for the Dundalk SRRR Plan Implementation certification. The Consent Decree deadline for certification is April 18, 2022; however, certification is contingent upon completion of the outstanding improvement projects that are located in the Dundalk Sewershed. The requested deadline is September 18, 2027.

The following project is currently in design:

- Dundalk Sewershed Sewer Rehabilitation – reference project summary below

Dundalk Sewershed Sewer Rehabilitation Project

On March 3, 2022, the County submitted a time of performance extension request for the Dundalk Sewershed Sewer Rehabilitation project. The Consent Decree deadline to complete the project is April 18, 2022. As described in the County's November 22, 2019 potential delay notification, multiple private property rights-of-entry must be negotiated and acquired for the project, which has delayed completion of the project. Design work is complete; however, there are remaining outstanding right-of-entry acquisitions. The requested deadline is January 18, 2027.

viii) Eastpoint SRRR Plan Implementation

Eastpoint SRRR Plan Implementation Certification

On March 29, 2022, the County submitted a time of performance extension request for the Eastpoint SRRR Plan Implementation certification. The Consent Decree deadline for certification is April 18, 2022; however, certification is contingent upon completion of the outstanding improvement projects that are located in the Eastpoint Sewershed. The requested deadline is June 18, 2024.

The following project is currently in design:

- Eastpoint Force Main Relocation – reference project summary below

The following project is currently in construction:

- Eastpoint Sewershed Sewer Rehabilitation – reference project summary below

Eastpoint Force Main Relocation Project

On February 10, 2022, the County submitted a time of performance extension request for the Eastpoint Force Main Relocation project. The Consent Decree deadline to complete the project is April 18, 2022. The project requires additional time to complete the design work and acquire anticipated regulatory permits. The requested deadline is June 18, 2024.

Eastpoint Sewershed Sewer Rehabilitation Project (Contract 18141 SXO)

On March 3, 2022, the County submitted a time of performance extension request for the Eastpoint Sewershed Sewer Rehabilitation Project. The Consent Decree deadline to complete the project is April 18, 2022. As described in the County's January 4, 2022 potential delay notification, private property right-of-entry negotiation and acquisition were required for the project, which delayed completion of the design work. Acquisitions are now complete. Notice to proceed was issued on December 1, 2021. The requested deadline is August 25, 2022.

ix) Essex SRRR Plan Implementation

Essex SRRR Plan Implementation Certification

On March 29, 2022, the County submitted a time of performance extension request for the Essex SRRR Plan Implementation certification. The Consent Decree deadline for certification is April 18, 2022; however, certification is contingent upon completion of the outstanding improvement projects that are located in the Essex Sewershed. The requested deadline is April 18, 2023.

The following projects are currently in construction:

- Essex Sewer Replacement – reference project summary below
- Essex Structural Sewer Rehabilitation – reference project summary below
- Marlyn Manor Force Main Transition Manhole Rehabilitation – work completed on March 22, 2022

Essex Sewer Replacement Project (Contract 21136 SXO)

On February 10, 2022, the County submitted a time of performance extension request for the Essex Sewer Replacement project. The Consent Decree deadline to complete the project is April 18, 2022. As stated in the County's September 2, 2021 potential delay notification, additional time is needed to complete supplemental field investigations and alternatives analysis and to revise the project scope of work accordingly. Design work is complete. Notice to proceed was issued on February 4, 2022. The requested deadline is April 18, 2023.

Essex Structural Sewer Rehabilitation Project (Contract 18110 SXO)

On March 29, 2022, the County submitted a time of performance extension request for the Essex Structural Rehabilitation Project. The Consent Decree deadline to complete the project is April 18, 2022. Notice to proceed for the project was issued on August 2, 2021. On March 8, 2022, the contractor provided an updated project scheduled which informed the County that construction completion is anticipated on August 30, 2022 due to COVID-related delays and pipe material procurement issues. The requested deadline to complete the project is October 18, 2022.

Essex Force Main Replacement Projects

The Essex SRRR Plan included a recommendation to increase the size of the Essex (Submarine) and Essex (Bridge) force mains. In 2020, the force mains were relocated to accommodate the City of Baltimore Back River Wastewater Treatment Plant Headworks Project. The size of approximately half of both force mains was increased on that date. The force main work that has been completed is expected to change hydraulic conditions, reducing the likelihood of model-predicted sanitary sewer overflows at the Essex Pump Station. Additionally, the significant amount of recently-completed sewer rehabilitation work that is located in the pump station tributary area is expected to reduce the amount of flow to the Essex Pump Station, which may preclude further work on either force main. The County will analyze the actual and model-predicted hydraulic conditions of the Essex Pump Station and both force mains as part of the Essex Sewershed Performance Assessment to confirm that no additional force main work is needed.

x) Gray Manor SRRR Plan Implementation

Gray Manor SRRR Plan Implementation Certification

On March 29, 2022, the County submitted a time of performance extension request for the Gray Manor SRRR Plan Implementation certification. The Consent Decree deadline for certification is April 18, 2022; however, certification is contingent upon completion of the outstanding improvement projects that are located in the Gray Manor Sewershed. The requested deadline is July 18, 2025.

The following project is currently in design:

- Gray Manor Interceptor Rehabilitation – reference project summary below

The following projects are currently in construction:

- Gray Manor Structural Sewer Rehabilitation – reference project summary below
- Old Battle Grove Force Main Transition Manhole Rehabilitation – work completed on March 22, 2022

The following projects are currently awaiting contract award:

- Gray Manor Force Main Finite Element Assessment (FEA) and Inspection – reference project summary below

The following projects have a contract awarded and are pending assignment to a consultant:

- Gray Manor Sewershed Relief Sewers – reference project summary below

Gray Manor Interceptor Rehabilitation Project

On March 2, 2022, the County submitted a time of performance extension request for the Gray Manor Interceptor Rehabilitation Project. The Consent Decree deadline to complete the project is April 18, 2022. Completing the design work has been delayed due to private property right-of-entry agreement acquisition and expanding the project's scope of work by moving some structural repair work from the Gray Manor Sewer Structural Rehabilitation project. The requested deadline is July 18, 2025.

Gray Manor Sewer Structural Rehabilitation Project (19003 SXO)

Notice to proceed was issued on January 4, 2021. On January 27, 2022, the County submitted a time of performance extension request for the Gray Manor Sewer Structural Rehabilitation project. The Consent Decree deadline to complete the project is April 18, 2022. The project requires additional time to clean and prepare the sewers for rehabilitation work. The cleaning efforts are taking longer to complete than anticipated due to excessive tuberculation that is suspected to originate from an upstream industrial discharger. The requested deadline is July 18, 2022.

Gray Manor Force Main Finite Element Assessment (FEA) and Inspection Project

On March 10, 2022, the County submitted a time of performance extension request for the Gray Manor Force Main FEA and Inspection project. The Consent Decree deadline to complete the project is April 18, 2022. As stated in the County's January 18, 2022 potential delay notification, additional time is needed to develop and advertise a contract to procure the specialized services for the project. The County has advertised a contract for inspection services and anticipates award in spring 2022. The first assignment under the contract will be an inspection and FEA of the Gray Manor force main. The requested deadline is February 18, 2023.

Gray Manor Sewershed Relief Sewers Project (Contract 20130 SXO)

On March 16, 2022, the County submitted a time of performance extension request for the Gray Manor Sewershed Relief Sewers project. The project has since been separated into three projects – (1) Lynch Road Sewer Replacement project, (2) North Point Boulevard Replacement project and (3) Trappe Road

Sewer Main Replacement project. The Consent Decree deadline to complete the projects is April 18, 2022. Design is complete for all three projects and the County is tentatively scheduled to advertise the construction contracts in March 2022. The projects have been delayed due to the time required to obtain the required environmental permits. The requested deadline for three relief sewer contracts is June 18, 2023.

xi) Orems SRRR Plan Implementation

Stansbury Manor Force Main Replacement

On March 16, 2022, the County submitted a time of performance extension request for the Stansbury Manor Force Main Replacement project. The Consent Decree deadline to complete the project was September 29, 2020. The project has been delayed due to the time required to obtain right-of-way access with various property owners. Contaminated soil along the preferred force main alignment was recently discovered. This requires that the alignment be re-designed. The requested deadline is March 9, 2025.

xii)Texas SRRR Plan Implementation

Texas SRRR Plan Implementation Certification

On March 29, 2022, the County submitted a time of performance extension request for the Texas SRRR Plan Implementation certification. The Consent Decree deadline for certification is April 18, 2022; however, certification is contingent upon completion of the outstanding improvement projects that are located in the Texas Sewershed. The requested deadline is October 6, 2022.

The following projects are currently in design:

- Cockeysville and Texas Structural Rehabilitation – reference project summary below

The following projects have a contract awarded and are pending assignment to a consultant:

- Texas Force Main Cathodic Protection – reference project summary below

Cockeysville and Texas Structural Rehabilitation Project (Contract 21294 SXO)

On February 28, 2022, the County submitted a time of performance extension request for the (Cockeysville and) Texas Structural Rehabilitation project. The Consent Decree deadline to complete the project is April 18, 2022. As stated in the County's July 10, 2019 potential delay notification letter, private property rights-of-entry negotiation and acquisition were required for the project, which has delayed completion of the design work. Once the remaining permits are acquired, the project will be advertised. Advertisement is expected in May 2022. The requested deadline is October 6, 2023.

Texas Force Main Cathodic Protection Project

On February 22, 2022, the County submitted a time of performance extension request for the Texas Force Main Cathodic Protection project. The Consent Decree deadline to complete the project is April 18, 2022. As stated in the County's December 7, 2021 potential delay notification, the project requires highly specialized technical expertise to complete the work; therefore, the County advertised and recently awarded a contract to procure the specialized services needed for this analysis. One of the first studies to be assigned under the new contract is to evaluate the cathodic protection requirements for the Texas Force Main. The requested deadline is April 18, 2023.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

Lisa K. Eicholtz, PE
Bureau Chief, Engineering and Construction

Control Document No. 430

Attachment A - Discharges from Overflow Structures

Pump Station Overflow Structures

None

Non-Pump Station Overflow Structures – Metered

None

Attachment A1: Summary of Non-Pumping Station Overflow Structure Monitoring

Date of Rain Event		None
Rain (inches)		0
SSO Name	SSO ID	
Alter Road	22	0
Southern Cross Drive	23A	0
Southern Cross	23B	0
Patterson Avenue	24	0
Overbrook Road & Medwick Garth	118	0
Marnat Road	113	0
Aiken Avenue	41	0
Queen Anne Drive	129	0

Attachment B - Construction Non-Pump Station SSO Capital Project Status

Non-Pump Station SSO Structures

Project Name	Date of Construction Notice to Proceed	Sewershed Name	Original Consent Decree Elimination Date	Current Consent Decree SSO Elimination Date	SSO Eliminated	Status
Powder Mill Interceptor Relief Sewer Phase I (SSOs 22, 23A, 23B, 24) Contract 18180 SX0	9/3/2019	Gwynns Falls	3/22/2017	TBD	No	On 1/26/21 the project achieved functional use. The Phase II project (Contract 20018 SX0) and Phase 3 project must be completed before eliminating the SSO structures.
Powder Mill Interceptor Relief Sewer Phase II (SSOs 22, 23A, 23B, 24) Contract 20018 SX0	-	Gwynns Falls	3/22/2017	TBD	No	On 2/14/2017, the County submitted a time extension request with an undefined elimination date. A second time extension request with a definitive elimination date will be submitted after right-of-way acquisition and environmental permits are obtained and construction notice to proceed is issued for Contract 20018 SX0. Easement acquisition was unsuccessful so it is being redesigned.
East Branch Herring Run Relief Sewer – 14117 SX0 (SSO 41 & 129)	2/5/2020	Herring Run	3/20/2018	8/3/2023	No	On 4/27/2020 the County submitted a time extension request to eliminate the overflow structure by 8/3/2023. The extension request approval letter from the Maryland Department of Environment incorrectly identified the new deadline as 11/5/2019. On 9/23/2021, the County submitted a correction of records letter to confirm the new approved deadline of 8/3/2023. On 1/4/2022, the County submitted a Time Extension Request to eliminate the overflow structure by 12/4/2023. The time extension is necessary due to unanticipated construction site conditions. This project is approximately 85% complete.
Elimination of SSOs 116, 117, and 118	-	West Low Level	9/20/2016	TBD	No	On 6/22/2016, the County submitted a time extension request with an undefined SSO elimination date. A second time extension request with a definitive SSO elimination date will be submitted after the City shares with the County their proposed downstream corrective actions and construction schedule. The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.
Elimination of SSO 113	-	Jones Falls	9/20/2016	TBD	No	

Pump Station Rehabilitation, Repair and Replacement

Project Name	Contract No.	Original Consent Decree Deadline	Project Phase	Construction Notice to Proceed Date
Millers Island	19175 SXO	6/1/2023	Construction	1/6/2021
Turkey Point	19159 SXO	6/1/2022	Construction	1/16/2021
Penwood Terrace	20040 SXO	6/1/2023	Construction	5/3/2021
Stansbury Manor	21135 SXO	3/20/2020	Construction	1/27/2022
Corsica	21162 SXO	6/1/2023	Construction	1/27/2022
Fort Howard	20175 SXO	6/1/2023	Construction	1/26/2022
Lodge Forest Manor	21003 SXO	3/20/2020	Construction	3/23/2022

Attachment C - CCTV in Response to an SSO

Date of SSO	Location	CCTV Inspection Date	Exemption
1/3/2022	1 Greenridge Road	1/3/2022	-
1/12/2022	Franklin Square Boulevard and Lionhead Court	1/18/2022	-
2/11/2022	8913 Grove Road	2/18/2022	-
2/23/2022	1221 Idylwood Road	2/24/2022	-
2/24/2022	2107 East Boundary Avenue	2/24/2022	-

Allowable Exemptions:

A. The cause of the SSO was a blockage in a County-owned lateral adjacent to the gravity line segment and the County cleans the County-owned lateral.
B. The cause of the SSO was a blockage in the gravity line segment and visible directly from the manhole.
C. The County has previously CCTV inspected the line segment(s) due to an earlier blockage and the County is in the process of developing or implementing corrective action.
D. The location is an identified overflow structure and is being monitored pursuant to Paragraph 7.C and the County is involved in a process designed to eliminate the overflow structure

Attachment D - Status of SRRR Plan Implementation

Sewershed	Project Name	SRRR Completion Consent Decree Deadline	Date of Potential Delay Notification	Date of Time Extension Request	Requested Deadline	Construction Contract ID	Construction Notice to Proceed Date
Bengies	Bengies and Bird River Structural Repairs	9/29/2020	3/15/2019	2/10/2022	9/6/2023	21169 SX0	7/18/2022
Bird River	Bengies and Bird River Structural Repairs	9/29/2020	3/15/2019	2/10/2022	9/6/2023	21169 SX0	7/18/2022
Bread & Cheese	Bread & Cheese Sewer Rehabilitation	9/29/2020	7/10/2019	3/3/2022	6/6/2022	17178SX0	3/9/2021
Cockeysville	Cockeysville (and Texas) Structural Repairs	9/29/2020	3/15/2019	2/8/2022	10/6/2023	21294 SXO	7/28/2022
Cockeysville	Cockeysville Force Main & Texas PS Influent	9/29/2020	3/15/2019	1/28/2022	4/6/2023	-	10/5/2022
Delmar	Glen Echo Interceptor Relief Sewer	4/18/2022	11/22/2019	3/2/2022	9/18/2024	-	8/9/2023
Delmar	Delmar Sewershed Sewer Rehabilitation	4/18/2022	3/31/2021	12/7/2021	1/10/2023	18034 SX0	8/26/2021
Duck Creek	Duck Creek Structural Rehabilitation	4/18/2022	2/5/2020	2/1/2022	5/18/2024	-	4/26/2023
Duck Creek	Corsica Force Main Replacement	4/18/2022	8/11/2021	12/7/2021	8/18/2023	-	10/27/2022
Dundalk	Dundalk Sewershed Sewer Rehabilitation	4/18/2022	11/22/2019	3/3/2022	1/18/2027	-	12/15/2022
Eastpoint	Eastpoint FM Relocation - Task 02	4/18/2022	11/22/2019	2/10/2022	6/18/2024	-	11/10/2023
Eastpoint	Eastpoint Sewershed Sewer Rehabilitation	4/18/2022	1/4/2022	3/3/2022	8/25/2022	18141 SX0	12/01/2021
Essex	Essex Sewer Replacement	4/18/2022	9/2/2021	2/10/2022	4/18/2023	21136 SX0	2/4/2022
Essex	Essex Structural Sewer Rehabilitation (Task 10)	4/18/2022	9/14/2021	3/29/2022	10/18/2022	18110 SX0	1/15/2021
Gray Manor	Gray Manor Structural Sewer Rehabilitation	4/18/2022	None	1/27/2022	7/18/2022	19003SX0	1/14/2021
Gray Manor	Gray Manor Interceptor Rehab - Task 12	4/18/2022	None	3/2/2022	7/18/2025	21202 SX0	11/22/2022
Gray Manor	Lynch Road Sewer Replacement	4/18/2022	6/19/2019	3/16/2022	6/18/2023	20130 SX0	10/3/2022
Gray Manor	North Point Boulevard Sewer Replacement	4/18/2022	6/19/2019	3/16/2022	6/18/2023	20193 SX0	10/3/2022
Gray Manor	Trappe Road Sewer Main	4/18/2022	6/19/2019	3/16/2022	6/18/2023	20130 SX0	10/3/2022

Sewershed	Project Name	SRRR Completion Consent Decree Deadline	Date of Potential Delay Notification	Date of Time Extension Request	Requested Deadline	Construction Contract ID	Construction Notice to Proceed Date
Gunpowder	Gunpowder PS to WM PS System Improvement (GP FM Replacement)/Co wpens Relief	4/18/2026	-	-	-	-	12/5/2023
Gunpowder	Gunpowder Relief Sewer	4/18/2026	-	-	-	-	2/26/2024
Gunpowder	Gunpowder Sewer Structural Repairs-Off Road	4/18/2026	-	-	-	-	5/25/2023
Gunpowder	Gunpowder Sewer Structural Repairs-On Road	4/18/2026	-	-	-	19198 SXO	4/05/2021
Gunpowder	Jennifer Branch Relief Sewer	4/18/2026	-	-	-	-	6/6/2023
Gwynns Falls	Gwynns Falls ESA	9/6/2018	1/23/2018	5/6/2022	10/6/2022	16059 SX0	12/17/2021
Gwynns Falls	Lower Powder Mill Sewer Rehabilitation	9/6/2018	-	-	-	16169 SX0	1/21/2021
Gwynns Falls	Powder Mill Relief Sewer Phase II	9/6/2018	-	-	-	-	3/11/2024
Herring Run	Herring Run Relief Sewer, Basin 17 & 33	9/6/2018	3/8/2018	2/28/2022	9/2/2023	16131 SX0	3/16/2022
Herring Run	Herring Run Sewer Structural Rehabilitation Phase II	9/6/2018	8/15/2017	4/8/2022	11/6/2025	-	4/7/2023
Long Quarter	Long Quarter Force Main Replacement	4/18/2024	11/26/2019	-	-	-	1/2/2024
Long Quarter	Long Quarter South Interceptor Rehabilitation	4/18/2024	-	-	-	-	2/26/2024
Long Quarter	Long Quarter North Sewer Rehab	4/18/2024	-	-	-	-	1/4/2023
Long Quarter	Long Quarter South Sewer Rehab	4/18/2024	-	-	-	-	2/20/2023
Orems	Orems Basin 03 Relief Sewer	9/29/2020	11/22/2019	1/28/2022	6/22/2022	21144SX0	8/2/2021
Orems	Stansbury Manor Force Main Replacement	9/29/2020	11/16/2018	3/16/2022	3/9/2025	-	10/27/2023
Patapsco	Cedar Branch North Fork Relief Sewer	9/6/2021	4/22/2019	9/2/2021	9/6/2022	17150SX0	8/13/2021
Patapsco	Patapsco Basin 7 Rehabilitation-Roads/Off Road	9/6/2021	10/28/2018	9/2/2021	4/6/2024	-	11/8/2022
Patapsco	Patapsco Basin10 Sewer Rehabilitation	9/6/2021	10/28/2018	9/2/2021	1/6/2023	16037 SX0	8/18/2021

Sewershed	Project Name	SRRR Completion Consent Decree Deadline	Date of Potential Delay Notification	Date of Time Extension Request	Requested Deadline	Construction Contract ID	Construction Notice to Proceed Date
Patapsco	Patapsco Sewershed Structural Rehabilitation	9/6/2021	10/28/2018	9/2/2021	10/6/2024	-	3/10/2023
Redhouse Run	Redhouse Run EQ Tank	4/18/2024	-	-	-	-	11/8/2023
Redhouse Run	Redhouse Run Interceptor Relief Sewer	4/18/2024	-	-	-	-	5/5/2023
Redhouse Run	Redhouse Run Pipeline Rehab Phase 1	4/18/2024	-	-	-	21002 SX0	7/13/2022
Redhouse Run	Redhouse Run Pipeline Rehab Phase 2	4/18/2024	-	-	-	-	2/27/2023
Redhouse Run	Redhouse Run Pipeline Rehab Phase 3	4/18/2024	-	-	-	-	10/27/2023
Stemmers Run	Stemmers Run Basin SR05 and SR06 Sewer Rehabilitation	9/6/2024	-	-	-	19002 SX0	1/26/2023
Stemmers Run	Stemmers Run Basins 02B and 3 Rehab./Off-Road	9/6/2024	-	-	-	-	12/29/2022
Texas	Texas Force Main Cathodic Protection	4/18/2022	12/7/2021	2/28/2022	4/18/2023	-	
Texas	(Cockeysville and) Texas Structural Repairs	4/18/2022	7/10/2019	2/8/2022	10/6/2023	21294 SXO	7/29/2022
White Marsh	White Marsh Sewer Structural Rehabilitation (West)	4/18/2024	-	-	-	-	3/13/2023
White Marsh	Whitemarsh (old) FM Repair	4/18/2024	-	-	-	-	6/29/2023
White Marsh	Whitemarsh Structural Sewer Rehab - East	4/18/2024	-	-	-	-	9/11/2023

Substantially Completed SRRR Plan implementations	
Sewershed	**Comments [1]**
Delmar	Lodge Forest Manor Force Main Transition Manhole Rehabilitation completed 3/22/2022.
Essex	Marlyn Manor Force Main Transition Manhole Rehabilitation completed 3/22/2022.
Gray Manor	Old Battle Grove Force Main Transition Manhole Rehabilitation completed 3/22/2022.
Patapsco	PA-SPI004 On-Call Task Order completed 3/22/2022. PA-SPI006 On-Call Task Order completed 3/22/2022. PA-SPI007 On-Call Task Order completed 3/30/2022.

[1] Refer to active SRRR Plan projects table for project status.

JOHN A. OLSZEWSKI, JR.
County Executive

D'ANDREA L. WALKER, *Acting Director*
Department of Public Works & Transportation

August 11, 2022

Mr. Peter Gold
United States Environmental Protection Agency
Office of Enforcement and Compliance, SPDES Branch
1650 Arch Street, 3WP42
Philadelphia PA 19103-2029

Chief, Enforcement Division, Compliance Program
Water Management Administration
Maryland Department of Environment
1800 Washington Boulevard
Baltimore MD 21230

QUARTERLY REPORT – SECOND QUARTER 2022
CONSENT DECREE CIVIL NO: AMD 05-2028
(Reference DOJ Case No. 90-5-1-1-4402/2)

Enclosed you will find our submittal of the referenced Quarterly Report. This is to advise that we have submitted this report by the due date as required by Chapter VI, REPORTING REQUIREMENTS, Section 19. A. of the Decree.

Please advise us of any questions you may have regarding this report.

Sincerely,

Lisa K Eicholtz

Lisa K. Eicholtz, PE
Bureau Chief, Engineering and Construction

LKE:rtr

Enclosure: Quarterly Report

Quarterly Report

April 1, 2022
Through
June 30, 2022

PURSUANT TO PARAGRAPH 19, OF THE CONSENT DECREE BETWEEN BALTIMORE COUNTY AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, DEPARTMENT OF JUSTICE AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

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i. Executive Summary

The County continues implementing the corrective action recommendation. This report documents progress made during the reporting period. Baltimore County (County) accomplished the following milestones for Consent Decree-related projects:

- Contract advertisements:
  - Corsica Force Main Replacement (21082 SX0)
  - Cockeysville and Texas Structural Repairs (21294 SX0)
- Contract awards:
  - Orems Basin 03 Relief Sewer (21140 SX0)

Additionally, the County continued the following work for Consent Decree-related projects:

- Construction for:
  - Cedar Branch North Fork Relief Sewer
  - Corsica Pump Station Improvement
  - Delmar Sewershed Sewer Rehabilitation
  - East Branch Herring Run Relief Sewer (SSOs 41 & 129)
  - Eastpoint Sewershed Sewer Rehabilitation
  - Essex Sewer Replacement
  - Essex Structural Sewer Rehabilitation
  - Fort Howard Pump Station Improvement
  - Gray Manor Structural Sewer Rehabilitation
  - Gunpowder Sewer Structural Repairs-On Road
  - Herring Run Relief Sewer, Basin 17 & 33
  - Lodge Forest Manor Pump Station Improvement
  - Lower Powder Mill Sewer Rehabilitation
  - Millers Island Pump Station Improvement
  - Patapsco Basin10 Sewer Rehabilitation
  - Penwood Terrace Pump Station Improvement
  - Redhouse Run Pipeline Rehabilitation Phase 1
  - Stansbury Manor Pumping Station Replacement
  - Turkey Point Pump Station Improvement
- Procuring a contractor for:
  - Bengies and Bird River Structural Repairs (Bengies)
  - Bengies and Bird River Structural Repairs (Bird River)
  - Cockeysville and Texas Structural Repairs (Cockeysville)
  - Cockeysville and Texas Structural Repairs (Texas)
  - Cockeysville Force Main & Texas Pump Station Influent
  - Corsica Force Main Replacement
  - Gray Manor Force Main FEA & Inspection
  - Gwynns Falls Structural Lining in Environmentally Sensitive Areas
  - Lynch Road Sewer Replacement
  - North Point Boulevard Sewer Replacement
  - Orems Basin 03 Relief Sewer

    - Texas Force Main Cathodic Protection
    - Trappe Road Sewer Main Replacement projects
- Design work for:
    - Duck Creek Structural Rehabilitation
    - Dundalk Sewershed Sewer Rehabilitation
    - Eastpoint Force Main Relocation
    - Glen Echo Interceptor Relief Sewer
    - Gray Manor Interceptor Rehabilitation
    - Gunpowder Relief Sewer
    - Gunpowder Structural Sewer Repairs - Off Road
    - Gunpowder PS to WM PS System Improvement (GP FM Replacement) Cowpens Relief
    - Herring Run Sewer Structural Rehabilitation Phase II
    - Jennifer Branch Relief Sewer
    - Long Quarter North Sewer Rehabilitation
    - Long Quarter South Sewer Rehabilitation
    - Long Quarter Force Main Replacement
    - Patapsco Basin 7 Rehabilitation – Roads/Off Road
    - Patapsco Sewershed Structural Rehabilitation
    - Powder Mill Relief Sewer Phase III
    - Redhouse Run Interceptor Relief Sewer
    - Redhouse Run Pipeline Rehab Phase 2
    - Redhouse Run Pipeline Rehab Phase 3
    - Stansbury Manor Force Main Replacement
    - Stemmers Run Basins 02B and 3 Rehabilitation Off Road
    - Stemmers Run Basin SR05 and SR06 Sewer Rehabilitation
    - White Marsh Sewer Structural Rehabilitation – West
    - White Marsh Structural Sewer Rehabilitation – East
- Assessment work is planned for:
    - Redhouse Run Equalization Tank

ii. Introduction

Pursuant to Paragraph 19 of the Consent Decree between the County (County) and The United States Environmental Protection Agency (EPA), the Department of Justice (DOJ), and the Maryland Department of the Environment (MDE), this document constitutes the required Quarterly Report for the period **April 1, 2021** through **June 30, 2022.** The Quarterly Report includes historical information, work progress and contracts in place during the reporting period.

The quarterly report documents activities and progress of Baltimore County towards compliance with the requirements set forth in the Consent Decree including:

- Non-Pump Station and Pump Station SSO Structure discharges
- Construction project status
- Collection system inspection
- SRRR plan implementation/progress
- FOG program
- Supplemental Environmental Project status, and
- Compliance issues
- Cleaning
- Performance Assessment Preparation

iii. Non-Pump Station and Pump Station SSO Structure Discharges

Discharges from Sanitary Sewer Overflow Structures took place at the locations and dates during the reporting period as detailed in **Attachment A**.

A summary of flow metering information for Non-Pump Station SSO Structures is included as **Attachment A1.**

iv. Construction Project Status

Attachment B presents the status of Paragraph 7 – Non-Pump Station SSO Structure Elimination projects and Paragraph 13F - Pump Station Rehabilitation Repair and Replacement projects that are in design and construction during the reporting quarter.

v. Collection System Inspection

The County has completed all gravity sewer line inspections required under Paragraphs 8 and 15 of the Consent Decree. The County continues compliance with all gravity line CCTV inspections within the required 10 working days of the occurrence of an overflow for each SSO that occurred during this reporting period. **Attachment C** details the County's inspection response to each of the overflow that occurred during the reporting period.

vi. SRRR Plan Implementation/Progress

The SRRR Plans contain numerous capital improvement projects in a variety of locations and stages of planning, design and construction. **Attachment D** includes a list of each sewershed and a summary status of Plan implementation. The implementation of the recommended improvement projects is proceeding; however, acquisition of required rights-of-way and regulatory permits may require a significant period of time thereby resulting in possible delays to complete the construction work.

The County's recommendations in some of the SRRR Plans for meter basins that exhibited excessive I/I and design-storm simulated model-predicted SSOs included the comprehensive rehabilitation of all pipe segments and manholes, increased hydraulic capacity and/or testing and repair of sewer house connections and laterals. Some of the recommended repairs were revised based on design preparation and review of improvement projects. Additionally, some miscellaneous sewer/manhole/lateral repairs that were included in the SRRR Plans may be revised based on a review of the original and updated inspection data.

i) Bengies SRRR Plan Implementation

ii) Bengies and Bird River Structural Repairs Project (21169 SX0)

On February 10, 2022, the County submitted a time of performance extension request for the Bengies and Bird River Structural Improvements Project. The Consent Decree deadline for completing the project was September 29, 2020. As described in the County's March 15, 2019 potential delay notification, private property rights-of-entry negotiation and acquisition were required for the project, which has delayed completion of the design work. Acquisitions are now complete and the contract had a bid opening on April 25, 2022. The requested deadline to complete the project is September 6, 2023.

iii) Bird River SRRR Plan Implementation

iv) Bengies and Bird River Structural Repairs Project (21169 SX0)

On February 10, 2022, the County submitted a time of performance extension request for the Bengies and Bird River Structural Improvements Project. The Consent Decree deadline for completing the project was September 29, 2020. As described in the County's March 15, 2019 potential delay notification, private property rights-of-entry negotiation and acquisition were required for the project, which has delayed completion of the design work. Acquisitions are now complete and the contract had a bid opening on April 25, 2022. The requested deadline to complete the project is September 6, 2023.

v) **Cockeysville SRRR Plan Implementation**

vi) **Cockeysville and Texas Structural Sewer Rehabilitation Project (Contract 21294 SX0)**

Private property acquisitions are now complete and the project bid opening occurred on July 21, 2022. The requested deadline is October 6, 2023.

vii) **Cockeysville Force Main & Texas Pump Station Influent Project (Contract 21163 SX0)**

The project award phase began on April 25, 2022. The requested deadline is April 6, 2023.

viii) **Delmar SRRR Plan Implementation**

ix) **Delmar Sewershed Sewer Rehabilitation Project (18034 SX0)**

The County is proceeding with construction and the requested deadline is January 10, 2023.

x) **Glen Echo Interceptor Relief Sewer Project (20196 SX0)**

The County is proceeding with property condemnation and the requested deadline is September 18, 2024.

xi) **Lodge Forest Manor Force Main Cleaning Project**

The County will complete supplemental inspection/testing of the Lodge Force Manor force main to confirm that force main cleaning is necessary. The supplemental inspection/testing will be performed after the County completes the Lodge Forest Manor Pump Station Improvement Project. The requested deadline is March 18, 2024.

xii) **Lodge Forest Manor Pump Station Improvement Project (21003 SX0)**

The project is currently in construction. The requested deadline is October 20, 2023.

xiii) **Millers Island Pump Station Improvement Project (19175 SX0)**

The project is currently in construction. The consent decree deadline is June 1, 2023.

xiv) **Penwood Terrace Pump Station Improvement Project (20040 SX0)**

The project is currently in construction. The consent decree deadline is June 1, 2023.

xv) Fort Howard Pump Station Improvement Project (20175 SX0)

The project is currently in construction. The consent decree deadline is June 1, 2023.

xvi) Duck Creek SRRR Plan Implementation

xvii) Corsica Force Main Replacement Project (21082 SX0)

The project award phase began on June 9, 2022. The requested deadline is August 18, 2023.

xviii) Corsica Pump Station Improvement Project (21162 SX0)

The project is currently in construction. The consent decree deadline is June 1, 2023.

xix) Duck Creek Structural Rehabilitation Project

The County expanded the design and construction scope of work to maximize the financial and contractor resource efficiencies; however, the expanded scope of work delayed the project. The requested deadline is May 18, 2024.

xx) Turkey Point Pump Station Improvement Project (Contract 19159 SX0)

On June 22, 2022, the County was informed by their engineering consultant that the contractor submitted insufficient information to accept material testing requirements for the project; therefore, the pump station was not activated for functional use. The requested deadline is October 6, 2022.

xxi) Dundalk SRRR Plan Implementation

xxii) Dundalk Sewershed Sewer Rehabilitation Project

Design work is complete; however, there are remaining outstanding right-of-entry acquisitions. The requested deadline is January 18, 2027.

xxiii) Eastpoint SRRR Plan Implementation

xxiv) Eastpoint Force Main Relocation Project

The County is completing design work and acquiring anticipated regulatory permits. The requested deadline is June 18, 2024.

xxv) Eastpoint Sewershed Sewer Rehabilitation Project (Contract 18141 SX0)

The contractor is completing sewer pre-construction closed circuit television inspection and cleaning work; however, due to the contractor's current work load

which has limited their availability, construction work has been delayed. The requested deadline is April 18, 2023.

xxvi) Essex SRRR Plan Implementation

xxvii) Essex Sewer Replacement Project (Contract 21136 SX0)

Notice to Proceed was issued on February 4, 2022. The requested deadline is April 18, 2023.

xxviii) Essex Structural Sewer Rehabilitation Project (Contract 18110 SX0)

Notice to proceed for the project was issued on August 2, 2021. On March 8, 2022, the contractor provided an updated project scheduled which informed the County that construction completion is anticipated on August 30, 2022 due to COVID-related delays and pipe material procurement issues. The requested deadline to complete the project is October 18, 2022.

xxix) Gray Manor SRRR Plan Implementation

xxx) Gray Manor Force Main Finite Element Assessment (FEA) and Inspection Project

The County has advertised a contract for inspection services and anticipates award in Fall 2022. The first assignment under the contract will be an inspection and FEA of the Gray Manor force main. The requested deadline is February 18, 2023.

xxxi) Gray Manor Interceptor Rehabilitation Project (21202 SX0)

Completing the design work has been delayed due to private property right-of-entry agreement acquisition and expanding the project's scope of work by moving some structural repair work from the Gray Manor Sewer Structural Rehabilitation project. The requested deadline is July 18, 2025.

xxxii) Gray Manor Sewer Structural Rehabilitation Project (19003 SX0)

Construction notice to proceed was issued on January 4, 2021. The pre-construction sewer cleaning efforts are taking longer to complete than anticipated due to excessive tuberculation that is suspected to originate from an upstream industrial discharger. The new requested deadline is November 18, 2022.

xxxiii) Gray Manor Sewershed Relief Sewers Project (Contract 20130 SX0, 20193 SX0)

The project has been separated into three projects:

xxxiii.i. Lynch Road Sewer Replacement Project (20130 SX0):

The project was advertised on April 11, 2022

xxxiii.ii. North Point Boulevard Replacement Project (20193 SX0):

The project was advertised on June 8, 2022

xxxiii.iii. Trappe Road Sewer Main Replacement Project (20130 SX0):

The project bid opening occurred on May 26, 2022.

The requested deadline for the three relief sewer contracts is June 18, 2023.

xxxiv) Gunpowder SRRR Plan Implementation

xxxv) Gunpowder PS to WM PS System Improvement (GP FM Replacement) Cowpens Relief Project

The County is proceeding with design and the Consent Decree deadline is April 18, 2026.

xxxvi) Gunpowder Relief Sewer Project

The County is proceeding with design and the Consent Decree deadline is April 18, 2026.

xxxvii) Gunpowder Sewer Structural Repairs-Off Road Project

The County is proceeding with design and the Consent Decree deadline is April 18, 2026.

xxxviii) Gunpowder Sewer Structural Repairs-On Road Project (19198 SX0)

The County is proceeding with construction and the Consent Decree deadline is April 18, 2026.

xxxix) Jennifer Branch Relief Sewer Project

The County is proceeding with design and the Consent Decree deadline is April 18, 2026.

xl) Gwynns Falls SRRR Plan Implementation

xli) Gwynns Falls Structural Sewer Rehabilitation in Environmentally Sensitive Areas Project (16059 SX0)

On December 7, 2021 the County submitted a time extension request to extend the deadline to March 6, 2022 due to the time required to negotiate and acquire private property right-of-entry agreements and on March 3, 2022, the County submitted a

second time extension request to extend the deadline to May 6, 2022 due to the unexpected time delay to procure a construction contractor. Contractor procurement has taken longer than originally anticipated, which has delayed the completion of the construction work. The new requested deadline is October 6, 2022.

xlii) Lower Powder Mill Sewer Rehabilitation Project (16169 SX0)

The County is proceeding with construction.

xliii) Powder Mill Relief Sewer Phase II Project (20118 SX0)

The project will be advertised in September of 2022.

xliv) Powder Mill Relief Sewer Phase III Project

The County is completing design work.

xlv) <u>Herring Run SRRR Plan Implementation</u>

Herring Run Relief Sewer, Basin 17 & 33 Project (16131 SX0)

One property is now in the condemnation process and anticipated to be completed in November 2022. The project is currently in construction and the requested deadline to complete the project is September 6, 2023.

xlvi) Herring Run Sewer Structural Rehabilitation Phase II

As described in the County's August 15, 2017 potential delay notification, private property rights-of-entry negotiation and acquisition were required for the project. To mitigate the delay, the County separated the project into two phases. Phase I was completed prior to the September 6, 2018 Consent Decree deadline. The County has completed all right-of-entry negotiations except for one property that is now being acquired through the County's condemnation process and anticipated to be completed in November 2022. The requested deadline to complete the project is November 6, 2025.

xlvii) East Branch Herring Run Relief Sewer, SSO 41 & 129 (14117 SX0)

On April 27, 2020 the County submitted a time extension request to eliminate the overflow structure by August 3, 2023. The extension request approval letter from the Maryland Department of Environment incorrectly identified the new deadline as November 5, 2019. On September 23, 2021, the County submitted a correction of records letter to confirm the new approved deadline of August 3, 2023. On January 4, 2022, the County submitted a Time Extension Request to eliminate the overflow structure by December 4, 2023. The time extension is necessary due to unanticipated construction site conditions. This project is approximately 85% complete.

xlviii) Long Quarter SRRR Plan Implementation

xlix) Long Quarter Force Main Replacement Project

As described in the County's November 26, 2019 potential delay notification, private property rights-of-entry negotiation and acquisition were required for the project, which has delayed completion of the design work. The project is currently in design and the Consent Decree deadline is April 18, 2024.

l) Long Quarter North Sewer Rehabilitation Project

The County is proceeding with design and the Consent Decree deadline is April 18, 2024.

li) Long Quarter South Sewer Rehabilitation Project

The County is proceeding with design and the Consent Decree deadline is April 18, 2024.

lii) Orems SRRR Plan Implementation

liii) Orems Basin 03 Relief Sewer Project (Contract 21144 SX0)

During the 4th quarter of 2021, the low bidder defaulted on the contract. A new contractor was identified to complete the construction work. Notice to Proceed was issued on July 1, 2022. The new requested deadline is May 29, 2023.

liv) Stansbury Manor Force Main Replacement Project

On March 16, 2022, the County submitted a time of performance extension request for the Stansbury Manor Force Main Replacement project. The Consent Decree deadline to complete the project was September 29, 2020. The project has been delayed due to the time required to obtain right-of-way access with various property owners. Contaminated soil along the preferred force main alignment was recently discovered. This requires that the alignment be re-designed. The project is currently in design and the requested deadline is March 9, 2025.

lv) Stansbury Manor Pumping Station Replacement

The project is currently in construction. The requested deadline is April 20, 2024.

lvi) Patapsco SRRR Plan Implementation

lvii) Cedar Branch North Fork Relief Sewer Project (17150 SX0)

On September 2, 2021, the County submitted a time of performance extension request. The Consent Decree deadline for completing the project was September 6, 2020. As described in the County's April 22, 2019 potential delay notification, private

property easement acquisitions were required for the project, which has delayed completion of the design work. Acquisitions were completed and the contract awarded. Notice to proceed was issue on August 18, 2021 and the project is currently in construction. The requested deadline to complete the project is September 6, 2023.

lviii) Patapsco Basin 7 Sewer Rehabilitation Project (17107 SX0)

On September 2, 2021, the County submitted a time of performance extension request. The Consent Decree deadline for completing the project was September 6, 2020. As described in the County's March 28, 2018 potential delay notification, private property right-of-entry acquisitions were required for the project, which has delayed completion of the design work. Following multiple attempts to contact property owners the County issued to each property owner a 15-day notification letter and requested response by July 29, 2021. The County has not received responses and, therefore, assumes owner consent and plans to advertise the contract in September 2022. The requested deadline to complete the project is April 6, 2024.

lix) Patapsco Basin 10 Sewer Rehabilitation Project (16037 SX0)

On September 2, 2021, the County submitted a time of performance extension request. The Consent Decree deadline for completing the project was September 6, 2020. As described in the County's March 28, 2018 potential delay notification, private property right-of-entry acquisitions were required for the project, which has delayed completion of the design work. All entry agreements have been acquired and the County has advertised and awarded the contract, which was issued notice to proceed on July 26, 2021 and is currently in construction. The requested deadline to complete the project is January 6, 2023.

lx) Patapsco Sewershed Structural Rehabilitation Project (19007 SX0)

On September 2, 2021, the County submitted a time of performance extension request. The Consent Decree deadline for completing the project was September 6, 2020. As described in the County's October 28, 2018 potential delay notification, private property right-of-entry acquisitions were required for the project, which has delayed completion of the design work. The County issued to each property owner a 15-day notification letter and requested response by October 21, 2021. Right-of-entry negotiations are ongoing. The requested deadline to complete the project is October 6, 2024.

lxi) <u>Redhouse Run SRRR Plan Implementation</u>

lxii) Redhouse Run Equalization Tank

The County will complete additional investigation/assessment to determine if the project is needed.

lxiii) Redhouse Run Interceptor Relief Sewer Project

The County is proceeding with design and the Consent Decree deadline is April 18, 2024.

lxiv) Redhouse Run Pipeline Rehab Phase 1 Project (21002 SX0)

Construction notice to proceed was issued on March 22, 2022 and Construction began on May 2, 2022. The Consent Decree deadline is April 18, 2024.

lxv) Redhouse Run Pipeline Rehab Phase 2 Project (21021 SX0)

Design is complete and the project had a bid opening date on July 28, 2022. The Consent Decree deadline is April 18, 2024.

lxvi) Redhouse Run Pipeline Rehab Phase 3 Project

The County is proceeding with design and is currently in right-of-entry negotiations and acquisitions. The Consent Decree deadline is April 18, 2024.

lxvii) Stemmers Run SRRR Plan Implementation

lxviii) Stemmers Run Basin SR05 and SR06 Sewer Rehabilitation Project (19002 SX0)

The County is proceeding with design and is currently in right-of-entry negotiations and acquisitions. The Consent Decree deadline is September 6, 2024.

lxix) Stemmers Run Basins SR02B and 3 Rehabilitation/Off-Road Project (14207 SX0)

The County is proceeding with design and the Consent Decree deadline is September 6, 2024.

lxx) Texas SRRR Plan Implementation

lxxi) Cockeysville and Texas Structural Sewer Rehabilitation Project (Contract 21294 SX0)

The project bid opening was on July 21, 2022. The requested deadline is October 6, 2023.

lxxii) Texas Force Main Cathodic Protection Project

The County advertised and recently awarded a contract to procure the specialized services needed for this analysis. One of the first studies to be assigned under the new contract is to evaluate the cathodic protection requirements for the Texas Force Main. The requested deadline is April 18, 2023.

lxxiii) White Marsh SRRR Plan Implementation

lxxiv) White Marsh (Old) Force Main Repair Project

The White Marsh (Old) Force Main Repair project is in the award process for the force main assessment on-call contract and will assign the work to the consultant.

lxxv) White Marsh Sewer Structural Rehabilitation (West) Project

The County is proceeding with design and is currently in right-of-entry negotiations and acquisitions. The Consent Decree deadline is April 18, 2024.

lxxvi) White Marsh Sewer Structural Rehabilitation (East) Project

The County is proceeding with design and is currently in right-of-way negotiations and acquisitions. The Consent Decree deadline is April 18, 2024.

vii. FOG Program

The County has completed implementation of the FOG Program Modification Plan.

viii. Supplemental Environmental Project Status

Completed.

ix. Compliance Summary

In accordance with Paragraph 19, Item B.vii, the following is a summary of Consent Decree compliance project achievements:

a. Consent Decree projects or requirements certified as complete during the reporting period:

None.

b. Consent Decree requirements due to be completed during the reporting period, but not completed:

i) Cockeysville and Texas Structural Sewer Rehabilitation Project (Contract 21294 SX0)

On February 8, 2022, the County submitted a time of performance extension request for the Cockeysville and Texas Structural Sewer Rehabilitation project. The Consent Decree deadline for completing the project was April 18, 2022. Private property rights-of-entry negotiation and acquisition were required for the project and bid opening occurred on July 21, 2022. The requested deadline is October 6, 2023.

ii) Orems Basin 03 Relief Sewer Project (Contract 21144 SX0)

On May 11, 2022, the County submitted a third time of performance extension request for the Orems Basin 03 Relief Sewer project. The Consent Decree deadline to complete the project was September 29, 2020. On September 7, 2021, the County submitted a time extension request to extend the deadline to December 22, 2021 due to delays resulting from property easement negotiation and acquisition and on January 28, 2022, the County submitted a second time extension request to extend the deadline to June 22, 2022 due to delays in procuring pipe material. During the 4th quarter of 2021, the low bidder defaulted on the contract. A new contractor has been identified to complete the construction work and Notice to Proceed was issued on July 1, 2022. The new requested deadline is May 29, 2023.

iii) Delmar SRRR Plan Implementation Certification

On March 29, 2022, the County submitted a time of performance extension request for the Delmar SRRR Plan Implementation certification. The Consent Decree deadline for certification was April 18, 2022; however, certification is contingent upon completion of the outstanding improvement projects that are located in the Delmar Sewershed. The requested deadline is September 18, 2024.

iv) Glen Echo Interceptor Relief Sewer Project (20196 SX0)

On March 2, 2022, the County submitted a time of performance extension request for the Glen Echo Interceptor Relief Sewer. The Consent Decree deadline to complete the project was April 18, 2022. As described in the County's January 18, 2022 potential delay notification, the project was delayed due to the time required to negotiate and acquire private property easements. After five (5) years of communication with the Maryland Department of Natural Resources (DNR), the County was recently informed that DNR is not the property owner. Since the property owner(s) are unknown, the County is proceeding with condemnation. The requested deadline is September 18, 2024.

v) Lodge Forest Manor Force Main Cleaning Project

On March 24, 2022 the County submitted a time of performance extension request for the Lodge Forest Manor Force Main Cleaning project. The Consent Decree deadline to complete the project was April 18, 2022. As stated in the County's September 2, 2021 potential delay notification, the County will complete supplemental inspection/testing of the Lodge Force Manor force main to confirm that force main cleaning is necessary. The supplemental inspection/testing will be performed after the County completes the Lodge Forest Manor Pump Station Improvement Project. The requested deadline to complete the Lodge Forest Manor Force Main Cleaning project is March 18, 2024.

vi) Duck Creek SRRR Plan Implementation

On March 29, 2022, the County submitted a time of performance extension request for the Duck Creek SRRR Plan Implementation certification. The Consent Decree deadline for certification was April 18, 2022; however, certification is contingent upon completion of the outstanding improvement projects that are located in the Duck Creek Sewershed. The requested deadline is May 18, 2024.

vii) Duck Creek Structural Rehabilitation Project

On February 1, 2022, the County submitted a time of performance extension request for the Duck Creek Structural Rehabilitation project. The Consent Decree deadline to complete the project was April 18, 2022. As described in the County's February 5, 2020 potential delay notification, the project required extra time to complete design work due to the addition of sewer structural repair work to the project, which is located in the same service area. The requested deadline is May 18, 2024.

viii) Corsica Force Main Replacement Project (21082 SX0)

On December 7, 2021, the County submitted a time of performance extension request for the Corsica Force Main Replacement project. The Consent Decree deadline to complete the project was April 18, 2022. As described in the County's August 11, 2021 potential delay notification, the project required extra time to complete design work due to existing utility conflicts, critical area compliance, and coordination with other consultants working on the Corsica Pump Station upgrade design. The project is currently in the award phase and the bid opening occurred on June 9, 2022. The requested deadline is August 18, 2023.

ix) Turkey Point Pump Station Improvement Project (Contract 19159 SX0)

On July 5, 2022, the County submitted a time of performance extension request to complete the Turkey Point Pump Station Improvement project. The Consent Decree deadline to complete the project was June 6, 2022. On June 22, 2022, the County was informed by their engineering consultant that the contractor submitted insufficient information to accept material testing requirements for the project; therefore, the pump station was not activated for functional use. The requested deadline is October 6, 2022.

x) Dundalk SRRR Plan Implementation Certification

On March 29, 2022, the County submitted a time of performance extension request for the Dundalk SRRR Plan Implementation certification. The Consent Decree deadline for certification was April 18, 2022; however, certification is contingent upon completion of the outstanding improvement projects that are located in the Dundalk Sewershed. The requested deadline is September 18, 2027.

xi) Dundalk Sewershed Sewer Rehabilitation Project

On March 3, 2022, the County submitted a time of performance extension request for the Dundalk Sewershed Sewer Rehabilitation project. The Consent Decree deadline to complete the project was April 18, 2022. As described in the County's November 22, 2019 potential delay notification, multiple private property rights-of-entry must be negotiated and acquired for the project, which has delayed completion of the project. Design work is complete; however, there are remaining outstanding right-of-entry acquisitions. The requested deadline is January 18, 2027.

xii) Eastpoint SRRR Plan Implementation Certification

On March 29, 2022, the County submitted a time of performance extension request for the Eastpoint SRRR Plan Implementation certification. The Consent Decree deadline for certification was April 18, 2022; however, certification is contingent upon completion of the outstanding improvement projects that are located in the Eastpoint Sewershed. The requested deadline is June 18, 2024.

xiii) Eastpoint Force Main Relocation Project

On February 10, 2022, the County submitted a time of performance extension request for the Eastpoint Force Main Relocation project. The Consent Decree deadline to complete the project was April 18, 2022. The project requires additional time to complete the design work and acquire anticipated regulatory permits. The requested deadline is June 18, 2024.

xiv) Eastpoint Sewershed Sewer Rehabilitation Project (Contract 18141 SX0)

On March 3, 2022, the County submitted a time of performance extension request to extend the deadline to August 25, 2022 due to the time needed to acquire private property rights-of-entry. On June 23, 2022 the County submitted a second time of performance extension request. The new requested deadline to complete the project is April 18, 2023. On December 1, 2021, the County issued the notice to proceed for the project. The contractor is completing sewer pre-construction closed circuit television inspection and cleaning work; however, due to the contractor's

current work load which has limited their availability, construction work has been delayed.

xv) Essex SRRR Plan Implementation Certification

On March 29, 2022, the County submitted a time of performance extension request for the Essex SRRR Plan Implementation certification. The Consent Decree deadline for certification was April 18, 2022; however, certification is contingent upon completion of the outstanding improvement projects that are located in the Essex Sewershed. The requested deadline is April 18, 2023.

xvi) Essex Sewer Replacement Project (Contract 21136 SX0)

On February 10, 2022, the County submitted a time of performance extension request for the Essex Sewer Replacement project. The Consent Decree deadline to complete the project was April 18, 2022. As stated in the County's September 2, 2021 potential delay notification, additional time was needed to complete supplemental field investigations and alternatives analysis and to revise the project scope of work accordingly. Design work is complete and the construction notice to proceed was issued on February 4, 2022. The requested deadline is April 18, 2023.

xvii) Essex Structural Sewer Rehabilitation Project (Contract 18110 SX0)

On March 29, 2022, the County submitted a time of performance extension request for the Essex Structural Rehabilitation Project. The Consent Decree deadline to complete the project was April 18, 2022. On March 8, 2022, the contractor provided an updated project schedule, which informed the County that construction completion is anticipated on August 30, 2022 due to COVID-related delays and pipe material procurement issues. The requested deadline to complete the project is October 18, 2022.

xviii) Gray Manor SRRR Plan Implementation Certification

On March 29, 2022, the County submitted a time of performance extension request for the Gray Manor SRRR Plan Implementation certification. The Consent Decree deadline for certification was April 18, 2022; however, certification is contingent upon completion of the outstanding improvement projects that are located in the Gray Manor Sewershed. The requested deadline is July 18, 2025.

xix) Gray Manor Interceptor Rehabilitation Project

On March 2, 2022, the County submitted a time of performance extension request for the Gray Manor Interceptor Rehabilitation Project. The Consent Decree deadline to complete the project was April 18, 2022. Completing the design work was delayed due to private property right-of-

entry agreement acquisition and expanding the project's scope of work by moving some structural repair work from the Gray Manor Sewer Structural Rehabilitation project. The requested deadline is July 18, 2025.

xx) Gray Manor Sewer Structural Rehabilitation Project (19003 SX0)

On January 27, 2022, the County submitted a time of performance extension request for this project to extend the deadline to July 18, 2022 due to the additional time needed to clean and prepare the sewers for rehabilitation work. On June 22, 2022, the County submitted a second time of performance extension request as more time than originally requested was needed to clean and prepare the sewers for sewer rehabilitation work. The cleaning efforts are taking longer to complete than anticipated due to excessive tuberculation that is suspected to originate from an upstream industrial discharger. The new requested deadline is November 18, 2022.

xxi) Gray Manor Force Main Finite Element Assessment (FEA) and Inspection Project

On March 10, 2022, the County submitted a time of performance extension request for the Gray Manor Force Main FEA and Inspection project. The Consent Decree deadline to complete the project was April 18, 2022. As stated in the County's January 18, 2022 potential delay notification, additional time is needed to develop and advertise a contract to procure the specialized services for the project. The County has advertised a contract for inspection services and anticipates award in spring 2022. The first assignment under the contract will be an inspection and FEA of the Gray Manor force main. The requested deadline is February 18, 2023.

xxii) Gray Manor Sewershed Relief Sewers Project

On March 16, 2022, the County submitted a time of performance extension request for the Gray Manor Sewershed Relief Sewers project. The project has since been separated into three projects:

xxii.i. <u>Lynch Road Sewer Replacement Project (20130 SX0):</u>

The project was advertised on April 11, 2022

xxii.ii. <u>North Point Boulevard Replacement Project (20193 SX0):</u>

The project was advertised on June 8, 2022

xxii.iii. <u>Trappe Road Sewer Main Replacement Project (20130 SX0):</u>

The project bid opening occurred on May 26, 2022.

The requested deadline for the three relief sewer contracts is June 18, 2023.

xxiii) Texas SRRR Plan Implementation Certification

On March 29, 2022, the County submitted a time of performance extension request for the Texas SRRR Plan Implementation certification. The Consent Decree deadline for certification is April 18, 2022; however, certification is contingent upon completion of the outstanding improvement projects that are located in the Texas Sewershed. The requested deadline is October 6, 2022.

xxiv) Cockeysville and Texas Structural Rehabilitation Project (Contract 21294 SX0)

On February 28, 2022, the County submitted a time of performance extension request for the (Cockeysville and) Texas Structural Rehabilitation project. The Consent Decree deadline to complete the project was April 18, 2022. As stated in the County's July 10, 2019 potential delay notification letter, private property rights-of-entry negotiation and acquisition were required for the project, which has delayed completion of the design work. The remaining permits have been acquired, project advertisement is complete and the bid opening started on July 21, 2022. The requested deadline is October 6, 2023.

xxv) Texas Force Main Cathodic Protection Project

On February 22, 2022, the County submitted a time of performance extension request for the Texas Force Main Cathodic Protection project. The Consent Decree deadline to complete the project was April 18, 2022. As stated in the County's December 7, 2021 potential delay notification, the project requires highly specialized technical expertise to complete the work; therefore, the County advertised and recently awarded a contract to procure the specialized services needed for this analysis. One of the first studies to be assigned under the new contract is to evaluate the cathodic protection requirements for the Texas Force Main. The requested deadline is April 18, 2023.

c. Problems that may prevent the County from meeting future Consent Decree compliance deadlines:

i) Herring Run Structural Sewer Rehabilitation Phase II

As described in the County's August 15, 2017 potential delay notification, private property rights-of-entry negotiation and acquisition were required for the project. To mitigate the delay, the County separated the project into two phases. Phase I was completed prior to the September 6, 2018 Consent

Decree deadline. The County has completed all right-of-entry negotiations except for one property that is now being acquired through the County's condemnation process and anticipated to be completed in November 2022. On April 8, 2022 the County submitted a time of performance extension request, the requested deadline to complete the project is November 6, 2025.

ii) Gwynns Falls Structural Sewer Rehabilitation in Environmentally Sensitive Areas Project (16059 SX0)

On December 7, 2021 the County submitted a time extension request to extend the deadline to March 6, 2022 due to the time required to negotiate and acquire private property right-of-entry agreements and on March 3, 2022, the County submitted a second time extension request to extend the deadline to May 6, 2022 due to the unexpected time delay to procure a construction contractor. Contractor procurement has taken longer than originally anticipated, which has delayed the completion of the construction work. On May 6, 2022 the County submitted a third time extension request, the new requested deadline is October 6, 2022.

iii) Orems Basin 03 Relief Sewer Project (Contract 21144 SX0)

During the 4th quarter of 2021, the low bidder defaulted on the contract. A new contractor was identified to complete the construction work and Notice to Proceed was issued on July 1, 2022. On May 11, 2022 the County submitted a time of performance extension request, the new requested deadline is May 29, 2023.

iv) Gray Manor Sewer Structural Rehabilitation Project (19003 SX0)

Construction notice to proceed was issued on January 4, 2021. The pre-construction sewer cleaning efforts are taking longer to complete than anticipated due to excessive tuberculation that is suspected to originate from an upstream industrial discharger. On June 22, 2022 the County submitted a time of performance extension request, the new requested deadline is November 18, 2022.

v) Eastpoint Sewershed Sewer Rehabilitation Project (Contract 18141 SX0)

The contractor is completing sewer pre-construction closed circuit television inspection and cleaning work; however, due to the contractor's current workload, which has limited their availability, construction work has been delayed. On June 23, 2022 the County submitted a time of performance extension request, the requested deadline is April 18, 2023.

vi) Aiken Avenue and Queen Anne Drive SSO Elimination (Contract 14117 SX0)

On May 17, 2022, the County submitted a second time of performance extension request to eliminate the Aiken Avenue (SSO 41) and Queen Anne Drive (SSO 129) sanitary sewer overflow structures. The Consent Decree deadline to complete the eliminations was August 3, 2023. The first and second time extension requests were due to unanticipated construction site conditions. The requested deadline was December 4, 2023, the second request is to extend the deadline to March 3, 2024.

vii) Long Quarter Force Main Testing Project

On January 18, 2022, the County submitted a potential delay notification for the Long Quarter Force Main Testing project. The Consent Decree deadline to complete the project is April 18, 2024. The project requires highly specialized equipment and technical expertise to complete, which significantly limits contractor/consultant availability. Therefore, the County required additional time than originally anticipated to develop and advertise a contract to procure the specialized services. The County will submit a time of performance request for the project, if needed.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

_____

Lisa K. Eicholtz, PE
Bureau Chief, Engineering and Construction

Control Document No. 445

Attachment A - Discharges from Overflow Structures

Pump Station Overflow Structures

Name	Turkey Point
Address	726 Back River Neck Road
Date of Discharge	5/4/2022
Duration of Overflow	11 minutes
Date of Relevant Weather Conditions	5/4/2022
Description of Relevant Weather Conditions	Rain
Gallons Discharged	1,623
Receiving Waters	Back River at Muddy Gut
Identified Cause	Bypass system failed
Details of Corrective Action Taken or Planned	Bypass pumps turned back on. Pump enclosures were locked. Additional alarms added.

Non-Pump Station Overflow Structures – Metered

Name	Aiken Avenue
SSO ID	41
Address	7829 Aiken Avenue & Taylor Avenue
Date of Discharge	6/8/2022
Duration of Overflow	6 minutes
Date of Relevant Weather Conditions	6/8/2022
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	585
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 4/27/2020 the County submitted a time extension request to eliminate overflow structure by 8/3/2023.

Name	Overbrook Road
SSO ID	118
Address	Overbrook Road & Medwick Garth
Date of Discharge	6/8/2022
Duration of Overflow	15 minutes
Date of Relevant Weather Conditions	6/8/2022
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	10,001
Receiving Waters	Maiden's Choice Creek
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.

Attachment A1: Summary of Non-Pumping Station Overflow Structure Monitoring

Date of Rain Event		6/8/2022
Rain (inches)		1.03-1.93
SSO Name	SSO ID	
Alter Road	22	0
Southern Cross Drive	23A	0
Southern Cross	23B	0
Patterson Avenue	24	0
Overbrook Road & Medwick Garth	118	10,001
Marnat Road	113	0
Aiken Avenue	41	585
Queen Anne Drive	129	0

Attachment B - Construction Non-Pump Station SSO Capital Project Status

Non-Pump Station SSO Structures

Project Name	Date of Construction Notice to Proceed	Sewershed Name	Original Consent Decree Elimination Date	Current Consent Decree SSO Elimination Date	SSO Eliminated	Status
Powder Mill Interceptor Relief Sewer Phase I (SSOs 22, 23A, 23B, 24) Contract 18180 SX0	9/3/2019	Gwynns Falls	3/22/2017	TBD	No	On 1/26/2021 the project achieved functional use. The Phase II project (Contract 20018 SX0) and Phase 3 project must be completed before eliminating the SSO structures.
Powder Mill Interceptor Relief Sewer Phase II (SSOs 22, 23A, 23B, 24) Contract 20018 SX0	-	Gwynns Falls	3/22/2017	TBD	No	On 2/14/2017, the County submitted a time extension request with an undefined elimination date. A second time extension request with a definitive elimination date will be submitted after right-of-way acquisition and environmental permits are obtained and construction notice to proceed is issued for Contract 20018 SX0. Easement acquisition was unsuccessful so the project is being redesigned.
East Branch Herring Run Relief Sewer – 14117 SX0 (SSO 41 & 129)	2/5/2020	Herring Run	3/20/2018	8/3/2023 (Requested)	No	On 4/27/2020 the County submitted a time extension request to eliminate the overflow structure by 8/3/2023. The extension request approval letter from the Maryland Department of Environment incorrectly identified the new deadline as 11/5/2019. On 9/23/2021, the County submitted a correction of records letter to confirm the new approved deadline of 8/3/2023. On 1/4/2022, the County submitted a Time Extension Request to eliminate the overflow structure by 12/4/2023. The time extension is necessary due to unanticipated construction site conditions. This project is approximately 85% complete.
Elimination of SSOs 116, 117, and 118	-	West Low Level	9/20/2016	TBD	No	On 6/22/2016, the County submitted a time extension request with an undefined SSO elimination date. A second time extension request with a definitive SSO elimination date will be submitted after the City shares with the County their proposed downstream corrective actions and construction schedule. The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.
Elimination of SSO 113	-	Jones Falls	9/20/2016	TBD	No	

Pump Station Rehabilitation, Repair and Replacement

Project Name	Contract No.	Consent Decree Deadline	Project Phase	Construction Notice to Proceed Date
Millers Island	19175 SX0	6/1/2023	Construction	1/6/2021
Turkey Point	19159 SX0	6/1/2022	Construction	1/16/2021
Penwood Terrace	20040 SX0	6/1/2023	Construction	5/3/2021
Stansbury Manor	21135 SX0	3/20/2020	Construction	1/27/2022
Corsica	21162 SX0	6/1/2023	Construction	1/27/2022
Fort Howard	20175 SX0	6/1/2023	Construction	1/26/2022
Lodge Forest Manor	21003 SX0	10/20/2023 (Requested)	Construction	3/23/2022

Attachment C - CCTV in Response to an SSO

Date of SSO	Location	CCTV Inspection Date	Exemption
4/8/2022	11025 York Rd	4/11/2022	-
5/13/2022	8103 Beachwood Rd	5/16/2022	-
5/26/2022	69 Cedar Ave	6/1/2022	-

Allowable Exemptions:

A. The cause of the SSO was a blockage in a County-owned lateral adjacent to the gravity line segment and the County cleans the County-owned lateral.
B. The cause of the SSO was a blockage in the gravity line segment and visible directly from the manhole.
C. The County has previously CCTV inspected the line segment(s) due to an earlier blockage and the County is in the process of developing or implementing corrective action.
D. The location is an identified overflow structure and is being monitored pursuant to Paragraph 7.C and the County is involved in a process designed to eliminate the overflow structure

Attachment D - Status of SRRR Plan Implementation

Sewershed	Project Name	SRRR Completion Consent Decree Deadline	Date of Potential Delay Notification	Date of Time Extension Request	Requested Deadline	Construction Contract ID	Construction Notice to Proceed Date
Bengies	Bengies and Bird River Structural Repairs	9/29/2020	3/15/2019	2/10/2022	9/6/2023	21169 SX0	7/18/2022
Bird River	Bengies and Bird River Structural Repairs	9/29/2020	3/15/2019	2/10/2022	9/6/2023	21169 SX0	7/18/2022
Cockeysville	Cockeysville (and Texas) Structural Repairs	9/29/2020	3/15/2019	2/8/2022	10/6/2023	21294 SX0	7/28/2022
Cockeysville	Cockeysville Force Main & Texas PS Influent	9/29/2020	3/15/2019	1/28/2022	4/6/2023	21163 SX0	10/5/2022
Delmar	Glen Echo Interceptor Relief Sewer	4/18/2022	11/22/2019	3/2/2022	9/18/2024	20196 SX0	8/9/2023
Delmar	Delmar Sewershed Sewer Rehabilitation	4/18/2022	3/31/2021	12/7/2021	1/10/2023	18034 SX0	8/26/2021
Delmar	Lodge Forest Manor Force Main Cleaning	4/18/2022	9/2/2021	3/24/2022	3/18/2024	-	-
Delmar	Fort Howard Pump Station Improvement*	6/1/2023	-	-	-	20175 SX0	-
Delmar	Lodge Forest Manor Pump Station Improvement*	3/20/2020	-	-	10/20/2023	21003 SX0	-
Delmar	Millers Island Pump Station Improvement*	6/1/2023	-	-	-	19175 SX0	-
Delmar	Penwood Terrace Pump Station Improvement*	6/1/2023	-	-	-	20040 SX0	-
Duck Creek	Duck Creek Structural Rehabilitation	4/18/2022	2/5/2020	2/1/2022	5/18/2024	-	4/26/2023
Duck Creek	Corsica Force Main Replacement	4/18/2022	8/11/2021	12/7/2021	8/18/2023	-	10/27/2022
Duck Creek	Turkey Point Pump Station Improvement*	6/1/2022	-	7/5/2022	10/6/2022	19159 SX0	-
Duck Creek	Corsica Pump Station Improvement*	6/1/2023	-	-	-	21162 SX0	1/27/2022
Dundalk	Dundalk Sewershed Sewer Rehabilitation	4/18/2022	11/22/2019	3/3/2022	1/18/2027	18317 SX0	12/15/2022
Eastpoint	Eastpoint FM Relocation - Task 02	4/18/2022	11/22/2019	2/10/2022	6/18/2024	-	11/10/2023
Eastpoint	Eastpoint Sewershed Sewer Rehabilitation	4/18/2022	1/4/2022	6/23/2022	4/18/2023	18141 SX0	12/01/2021
Essex	Essex Sewer Replacement	4/18/2022	9/2/2021	2/10/2022	4/18/2023	21136 SX0	2/4/2022
Essex	Essex Structural Sewer Rehabilitation (Task 10)	4/18/2022	9/14/2021	3/29/2022	10/18/2022	18110 SX0	1/15/2021

Sewershed	Project Name	SRRR Completion Consent Decree Deadline	Date of Potential Delay Notification	Date of Time Extension Request	Requested Deadline	Construction Contract ID	Construction Notice to Proceed Date
Gray Manor	Gray Manor Force Main FEA & Inspection	4/18/2022	1/18/2022	3/10/2022	2/18/2023	-	-
Gray Manor	Gray Manor Structural Sewer Rehabilitation	4/18/2022	None	6/22/2022	11/18/2022	19003 SX0	1/14/2021
Gray Manor	Gray Manor Interceptor Rehab - Task 12	4/18/2022	None	3/2/2022	7/18/2025	21202 SX0	11/22/2022
Gray Manor	Lynch Road Sewer Replacement	4/18/2022	6/19/2019	3/16/2022	6/18/2023	20130 SX0	10/3/2022
Gray Manor	North Point Boulevard Sewer Replacement	4/18/2022	6/19/2019	3/16/2022	6/18/2023	20193 SX0	10/3/2022
Gray Manor	Trappe Road Sewer Main	4/18/2022	6/19/2019	3/16/2022	6/18/2023	20130 SX0	10/3/2022
Gunpowder	Gunpowder PS to WM PS System Improvement (GP FM Replacement)/Cowpens Relief	4/18/2026	-	-	-	-	12/5/2023
Gunpowder	Gunpowder Relief Sewer	4/18/2026	-	-	-	-	2/26/2024
Gunpowder	Gunpowder Sewer Structural Repairs-Off Road	4/18/2026	-	-	-	-	5/25/2023
Gunpowder	Gunpowder Sewer Structural Repairs-On Road	4/18/2026	-	-	-	19198 SX0	4/05/2021
Gunpowder	Jennifer Branch Relief Sewer	4/18/2026	-	-	-	-	6/6/2023
Gwynns Falls	Gwynns Falls ESA	9/6/2018	1/23/2018	5/6/2022	10/6/2022	16059 SX0	12/17/2021
Gwynns Falls	Lower Powder Mill Sewer Rehabilitation	9/6/2018	-	-	-	16169 SX0	1/21/2021
Gwynns Falls	Powder Mill Relief Sewer Phase II	3/22/2017	-	-	-	20018 SX0	3/11/2024
Gwynns Falls	Powder Mill Relief Sewer Phase III	3/22/2017	-	2/14/2017	-	-	-
Herring Run	Herring Run Relief Sewer, Basin 17 & 33	9/6/2018	3/8/2018	2/28/2022	9/2/2023	16131 SX0	3/16/2022
Herring Run	Herring Run Sewer Structural Rehabilitation Phase II	9/6/2018	8/15/2017	4/8/2022	11/6/2025	-	4/7/2023
Long Quarter	Long Quarter Force Main Replacement	4/18/2024	11/26/2019	-	-	-	1/2/2024
Long Quarter	Long Quarter North Sewer Rehab	4/18/2024	-	-	-	-	1/4/2023

Sewershed	Project Name	SRRR Completion Consent Decree Deadline	Date of Potential Delay Notification	Date of Time Extension Request	Requested Deadline	Construction Contract ID	Construction Notice to Proceed Date
Long Quarter	Long Quarter South Sewer Rehab	4/18/2024	-	-	-	-	2/20/2023
Orems	Orems Basin 03 Relief Sewer	9/29/2020	11/22/2019	5/11/2022	5/29/2023	21144SX0	8/2/2021
Orems	Stansbury Manor Force Main Replacement	9/29/2020	11/16/2018	3/16/2022	3/9/2025	-	10/27/2023
Patapsco	Cedar Branch North Fork Relief Sewer	9/6/2021	4/22/2019	9/2/2021	9/6/2022	17150 SX0	8/13/2021
Patapsco	Patapsco Basin 7 Rehabilitation-Roads/Off Road	9/6/2021	10/28/2018	9/2/2021	4/6/2024	17107 SX0	11/8/2022
Patapsco	Patapsco Basin10 Sewer Rehabilitation	9/6/2021	10/28/2018	9/2/2021	1/6/2023	16037 SX0	8/18/2021
Patapsco	Patapsco Sewershed Structural Rehabilitation	9/6/2021	10/28/2018	9/2/2021	10/6/2024	19007 SX0	10/6/2024
Redhouse Run	Redhouse Run Equalization Tank	4/18/2024	-	-	-	-	-
Redhouse Run	Redhouse Run Interceptor Relief Sewer	4/18/2024	-	-	-	-	5/5/2023
Redhouse Run	Redhouse Run Pipeline Rehab Phase 1	4/18/2024	-	-	-	21002 SX0	7/13/2022
Redhouse Run	Redhouse Run Pipeline Rehab Phase 2	4/18/2024	-	-	-	21021 SX0	2/27/2023
Redhouse Run	Redhouse Run Pipeline Rehab Phase 3	4/18/2024	-	-	-	-	10/27/2023
Stemmers Run	Stemmers Run Basin SR05 and SR06 Sewer Rehabilitation	9/6/2024	-	-	-	19002 SX0	1/26/2023
Stemmers Run	Stemmers Run Basins 02B and 3 Rehab./Off-Road	9/6/2024	-	-	-	14207 SX0	12/29/2022
Texas	Texas Force Main Cathodic Protection	4/18/2022	12/7/2021	2/28/2022	4/18/2023	-	-
Texas	(Cockeysville and) Texas Structural Repairs	4/18/2022	7/10/2019	2/8/2022	10/6/2023	21294 SX0	7/29/2022
White Marsh	White Marsh Sewer Structural Rehabilitation (West)	4/18/2024	-	-	-	-	3/13/2023
White Marsh	Whitemarsh (old) FM Repair	4/18/2024	-	-	-	-	6/29/2023

Sewershed	Project Name	SRRR Completion Consent Decree Deadline	Date of Potential Delay Notification	Date of Time Extension Request	Requested Deadline	Construction Contract ID	Construction Notice to Proceed Date
White Marsh	Whitemarsh Structural Sewer Rehab - East	4/18/2024	-	-	-	-	9/11/2023

*Project required under Paragraph 13. Project is not required as part of the SRRR Plan.

JOHN A. OLSZEWSKI, JR.
County Executive

D'ANDREA WALKER, *Acting Director*
Department of Public Works and Transportation

November 15, 2022

Mr. Peter Gold
United States Environmental Protection Agency
Office of Enforcement and Compliance, SPDES Branch
1650 Arch Street, 3WP42
Philadelphia PA 19103-2029

Chief, Enforcement Division, Compliance Program
Water Management Administration
Maryland Department of Environment
1800 Washington Boulevard
Baltimore MD 21230

QUARTERLY REPORT – THIRD QUARTER 2022
CONSENT DECREE CIVIL NO: AMD 05-2028
(Reference DOJ Case No. 90-5-1-1-4402/2)

Enclosed you will find our submittal of the referenced Quarterly Report. This is to advise that we have submitted this report by the due date as required by Chapter VI, REPORTING REQUIREMENTS, Section 19. A. of the Decree.

Please advise us of any questions you may have regarding this report.

Sincerely,

Lisa K. Eicholtz, PE
Bureau Chief, Engineering and Construction

LK:rtr

Enclosure: Quarterly Report



Q3 2022
Quarterly Consent Decree Report

July 1, 2022
Through
September 30, 2022

Baltimore County, MD
Department of Public Works and Transportation

PURSUANT TO PARAGRAPH 19, OF THE CONSENT DECREE BETWEEN BALTIMORE COUNTY AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, DEPARTMENT OF JUSTICE AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

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i. Executive Summary

The County's Corrective Action Recommendation Plans are ongoing and the County continues implementing the corrective action recommendation. This report documents progress made during the reporting period. In addition to the planning, design and construction work on capital projects, the asset management work continues. Notable accomplishments during Q3 of 2022 are listed below for Consent Decree related projects, including:

Contract advertisements:

- Patapsco Basin 7 Rehabilitation (Off-Road) (17107 SX0)
- Powder Mill Relief Sewer Phase 2 (20118 SX0)

Completed projects:

- Essex Structural Sewer Rehabilitation (Task 10)
- Lower Powder Mill Sewer Rehabilitation
- Cedar Branch North Fork Relief Sewer Project
- Turkey Point Pump Station Improvement

Construction work for:

- Cockeysville Force Main & Texas Pump Station Influent
- Corsica Pump Station Improvement
- Delmar Sewershed Sewer Rehabilitation
- East Branch Herring Run Relief Sewer
- Eastpoint Sewershed Sewer Rehabilitation
- Essex Sewer Replacement
- Fort Howard Pump Station Improvement
- Gray Manor Structural Sewer Rehabilitation
- Gunpowder Sewer Structural Repairs (On-Road)
- Gwynns Falls Task S Structural Lining in ESA
- Herring Run Relief Sewer, Basin 17 & 33
- Lodge Forest Manor Pump Station Improvement
- Millers Island Pump Station Improvement
- Orems Basin 03 Relief Sewer
- Patapsco Basin 10 Sewer Rehabilitation
- Penwood Terrace Pump Station Improvement
- Redhouse Run Pipeline Rehabilitation Phase 1
- Stansbury Manor Pumping Station Replacement

Procuring a contractor for:

- Bengies and Bird River Structural Repairs (Bengies)
- Bengies and Bird River Structural Repairs (Bird River)
- Cockeysville and Texas Structural Repairs (21294 SX0, Cockeysville Sewershed)

- Cockeysville and Texas Structural Repairs (21294 SX0, Texas Sewershed)
- Corsica Force Main Replacement
- Lynch Road Sewer Replacement (21092 SX0)
- North Point Boulevard Sewer Replacement (21093 SX0)
- Patapsco Basin 7 Rehabilitation (Off-Road)
- Redhouse Run Pipeline Rehabilitation Phase 2 (21021 SX0)
- Trappe Road Sewer Main Replacement (20130 SX0)

Design work for:

- Duck Creek Structural Rehabilitation
- Dundalk Sewershed Sewer Rehabilitation
- Eastpoint Force Main Relocation
- Glen Echo Interceptor Relief Sewer
- Gray Manor Interceptor Rehabilitation
- Gunpowder Relief Sewer
- Gunpowder Structural Sewer Repairs (Off-Road)
- Gunpowder PS to WM PS System Improvement (GP FM Replacement) Cowpens Relief
- Herring Run Sewer Structural Rehabilitation Phase II
- Jennifer Branch Relief Sewer
- Long Quarter North Sewer Rehabilitation
- Long Quarter South Sewer Rehabilitation
- Long Quarter South Interceptor Rehabilitation
- Long Quarter Force Main Replacement
- Patapsco Sewershed Structural Rehabilitation
- Powder Mill Relief Sewer Phase II
- Powder Mill Relief Sewer Phase III
- Redhouse Run Interceptor Relief Sewer
- Redhouse Run Pipeline Rehab Phase 3
- Stansbury Manor Force Main Replacement
- Stemmers Run Basins 02B and 3 Rehabilitation Off Road
- Stemmers Run Basin SR05 and SR06 Sewer Rehabilitation
- White Marsh Sewer Structural Rehabilitation (West)
- White Marsh Structural Sewer Rehabilitation (East)

Assessment work is planned for:

- Redhouse Run Equalization Tank

ii. Introduction

Pursuant to Paragraph 19 of the Consent Decree between the County (County) and The United States Environmental Protection Agency (EPA), the Department of Justice (DOJ), and the Maryland Department of the Environment (MDE), this document constitutes the required Quarterly Report on the projects active during Q3 of 2022, for the period **July 1, 2022** through **September 30, 2022.** This Quarterly Report includes historical information, work progress and contracts in place during the reporting period.

This quarterly report documents activities and progress of Baltimore County towards compliance with the requirements set forth in the Consent Decree and documents only activity from the quarter being reported including:

- Non-Pump Station and Pump Station SSO Structure discharges
- Construction project status
- Collection system inspection
- SRRR plan implementation/progress
- FOG program
- Supplemental Environmental Project status, and
- Compliance issues
- Cleaning
- Performance Assessment Preparation

iii. Non-Pump Station and Pump Station SSO Structure Discharges

Discharges from Sanitary Sewer Overflow Structures took place at the locations and dates during the reporting period as detailed in **Attachment A**.

A summary of flow metering information for Non-Pump Station SSO Structures is included as **Attachment A1.**

iv. Construction Project Status

Attachment B presents the status of Paragraph 7 – Non-Pump Station SSO Structure Elimination projects and Paragraph 13F - Pump Station Rehabilitation Repair and Replacement projects that are in design and construction during the reporting quarter.

v. Collection System Inspection

The County has completed all gravity sewer line inspections required under Paragraphs 8 and 15 of the Consent Decree. The County continues compliance with all gravity line CCTV inspections within the required 10 working days of the occurrence of an overflow for each SSO that occurred during this reporting period. **Attachment C** details the County's inspection response to each of the overflow that occurred during the reporting period.

vi. SRRR Plan Implementation/Progress

The SRRR Plans contain numerous capital improvement projects in a variety of locations and stages of planning, design and construction. **Attachment D** includes a list of each sewershed and a summary status of Plan implementation. The implementation of the recommended improvement projects is proceeding; however, acquisition of required rights-of-way and regulatory permits may require a significant period of time thereby resulting in possible delays to complete the projects. There have been delays in receiving water and/or sewerage construction permits from MDE.

The County's recommendations in some of the SRRR Plans for meter basins that exhibited excessive I/I and design-storm simulated model-predicted SSOs included the comprehensive rehabilitation of all pipe segments and manholes, increased hydraulic capacity and/or testing and repair of sewer house connections and laterals. Some of the recommended repairs were revised based on design preparation and review of improvement projects. Additionally, some sewer/manhole/lateral repairs that were included in the SRRR Plans may be revised based on a review of the original and updated inspection data. The County is using data from their asset management program to revise the scope of work for some SRRR-related projects.

When reporting on construction projects, the County uses the definition of substantial completion contained in the Consent Decree.

Bengies SRRR Plan Implementation

Bengies and Bird River Structural Repairs Project (21169 SX0): On October 11, 2022, the County resubmitted a time of performance extension request for the Bengies and Bird River Structural Improvements Project in response to the EPA's denial response received on August 18, 2022. The Consent Decree deadline for completing the project was September 29, 2020. The County has acquired all rights-of-entry agreements or sent to the property owners the 15-day right-of-entry notification letter, with the exception of two properties. In March 2021 the County implemented their standard operating procedures for sewer right-of-way and right-of-entry acquisitions and has followed the procedures since implementation; however, the Bengies and Bird River Structural Improvements Project began before implementation of the operating procedures. To expedite project completion the County advertised the construction contract on March 7, 2022 before receiving formal clearance from the County's Real Estate Compliance group and is planning to complete the work related to the two outstanding right-of-entry properties if/when the County obtains the right-of-entry agreements. The requested deadline to complete the project is November 6, 2023.

Bird River SRRR Plan Implementation

Bengies and Bird River Structural Repairs Project (21169 SX0): On October 11, 2022, the County resubmitted a time of performance extension request for the Bengies and Bird River Structural Improvements Project in response to the EPA's denial response received on August 18, 2022. The Consent Decree deadline for completing the project was September 29, 2020. The County has acquired all rights-of-entry agreements or sent to the property owners the 15-day right-of-entry notification letter,

with the exception of two properties. In March 2021 the County implemented their standard operating procedures for sewer right-of-way and right-of-entry acquisitions and has followed the procedures since implementation; however, the Bengies and Bird River Structural Improvements Project began before implementation of the operating procedures. To expedite project completion the County advertised the construction contract on March 7, 2022 before receiving formal clearance from the County's Real Estate Compliance group and is planning to complete the work related to the two outstanding right-of-entry properties if/when the County obtains the right-of-entry agreements. The requested deadline to complete the project is November 6, 2023.

Cockeysville SRRR Plan Implementation

Cockeysville and Texas Structural Sewer Rehabilitation Project (Contract 21294 SX0): On July 21, 2022, the County received construction bids and is in the process of awarding the construction contract. The requested deadline is October 6, 2023.

Cockeysville Force Main & Texas Pump Station Influent Project (Contract 21163 SX0): On August 10, 2022, the County issues the construction Notice to Proceed. The requested deadline is April 6, 2023.

Delmar SRRR Plan Implementation

Delmar Sewershed Sewer Rehabilitation Project (18034 SX0): On October 11, 2022, the County issues the construction Notice to Proceed. The requested deadline is January 10, 2023.

Glen Echo Interceptor Relief Sewer Project (20196 SX0): The County is proceeding with property condemnation and the requested deadline is September 18, 2024.

Lodge Forest Manor Force Main Cleaning Project: The County will complete supplemental inspection/testing of the Lodge Force Manor force main to confirm that force main cleaning is necessary. The supplemental inspection/testing will be performed after the County completes the Lodge Forest Manor Pump Station Improvement Project. The requested deadline is March 18, 2024.

Duck Creek SRRR Plan Implementation

Corsica Force Main Replacement Project (21082 SX0): The County is processing the award of the construction contract. The requested deadline is August 18, 2023.

Duck Creek Structural Rehabilitation Project (18317 SX0): The County expanded the design and construction scope of work to maximize the financial and contractor resource efficiencies; however, the expanded scope of work delayed the project. The requested deadline is May 18, 2024.

Dundalk SRRR Plan Implementation

Dundalk Sewershed Sewer Rehabilitation Project: Design work is complete; however, there are outstanding right-of-entry acquisitions. The requested deadline is January 18, 2027.

Eastpoint SRRR Plan Implementation

Eastpoint Force Main Relocation Project: The County is completing design work and acquiring anticipated regulatory permits. The requested deadline is June 18, 2024.

Eastpoint Sewershed Sewer Rehabilitation Project (Contract 18141 SX0): Construction work continues and the requested deadline is April 18, 2023.

Essex SRRR Plan Implementation

Essex Sewer Replacement Project (Contract 21136 SX0): Construction work continues and the requested deadline is April 18, 2023.

Essex Structural Sewer Rehabilitation Project (Contract 18110 SX0): Construction work continues. *Post hoc: the project was completed on October 18, 2022.*

Gray Manor SRRR Plan Implementation

Gray Manor Force Main Finite Element Assessment (FEA) and Inspection Project: On September 1, 2022, the County awarded a contract for force main inspection/assessment services. The County anticipates issuing Notice to Proceed for the Gray Manor Force Main Finite Element Assessment and Inspection Project in late October 2022. The requested deadline is February 18, 2023. *Post hoc: On October 27, 2022, the County issues the Notice to Proceed for the project.*

Gray Manor Interceptor Rehabilitation Project (21202 SX0): Completing the design work has been delayed due to private property right-of-entry agreement acquisition and expanding the project's scope of work by moving some structural repair work from the Gray Manor Sewer Structural Rehabilitation project. All right-of-entry agreement acquisitions have been finalized and advertisement of the construction contract is anticipated for February 2023. The requested deadline is July 18, 2025.

Gray Manor Structural Sewer Rehabilitation Project (19003 SX0): On January 27, 2022, the County submitted a time of performance extension request for this project to extend the deadline to July 18, 2022 due to the additional time needed to clean and prepare the sewers for rehabilitation work. On June 22, 2022, the County submitted a second time of performance extension request as more time than originally requested was needed to clean and prepare the sewers for sewer rehabilitation work. The cleaning efforts are taking longer to complete than anticipated due to excessive tuberculation that is suspected to originate from an upstream industrial discharger. The new requested deadline is November 18, 2022. *Post-hoc: Construction was completed on November 2, 2022.*

Gray Manor Sewershed Relief Sewers Project: The project has been separated into three projects. The County is processing award of the construction contracts. The requested deadline for the three relief sewer contracts is June 18, 2023:

- **Lynch Road Sewer Replacement Project (21092 SX0)**
- **North Point Boulevard Replacement Project (21093 SX0)**
- **Trappe Road Sewer Main Replacement Project (20130 SX0)**

Gunpowder SRRR Plan Implementation

Gunpowder PS to WM PS System Improvement (GP FM Replacement) Cowpens Relief Project: The County is proceeding with design and the Consent Decree deadline is April 18, 2026.

Gunpowder Relief Sewer Project: The County is continuing design work. The Consent Decree deadline is April 18, 2026.

Gunpowder Sewer Structural Repairs-Off Road Project: The County is continuing design work. The Consent Decree deadline is April 18, 2026.

Gunpowder Sewer Structural Repairs-On Road Project (19198 SX0): The County is continuing design work. The Consent Decree deadline is April 18, 2026.

Jennifer Branch Relief Sewer Project: The County is continuing design work. The Consent Decree deadline is April 18, 2026.

Gwynns Falls SRRR Plan Implementation

Gwynns Falls Structural Sewer Rehabilitation in Environmentally Sensitive Areas Project (16059 SX0): On December 7, 2021 the County submitted a time extension request to extend the deadline to March 6, 2022 due to the time required to negotiate and acquire private property right-of-entry agreements. On March 3, 2022, the County submitted a second time extension request to extend the deadline to May 6, 2022 due to the unexpected time delay to procure a construction contractor and on May 6, 2022 the County submitted a third time extension request to extend the deadline to October 6, 2022 due to the unexpected time delay to procure a construction contractor.

Since January 2022 the County has been processing the necessary funding approval requests to issue the construction contractor's Notice to Proceed. The County anticipated the funding to be approved and Notice to Proceed issued in May 2022; however, the County's planned replacement of their internal accounting system delayed the process. In September 2022 the County issued the Notice to Proceed. The new requested deadline is April 6, 2023.

Herring Run SRRR Plan Implementation

Herring Run Relief Sewer, Basin 17 & 33 Project (16131 SX0): Construction work continues and the requested deadline to complete the project is September 6, 2023.

Herring Run Sewer Structural Rehabilitation Phase II: As described in the County's August 15, 2017 potential delay notification, private property rights-of-entry negotiation and acquisition were required for the project. To mitigate the delay, the County separated the project into two phases. Phase I was completed prior to the September 6, 2018 Consent Decree deadline. The County has completed all right-of-entry negotiations except for one property that is now being acquired through the County's condemnation process and anticipated to be completed in November 2022. The requested deadline to complete the project is November 6, 2025.

Long Quarter SRRR Plan Implementation

Long Quarter Force Main Replacement Project: As described in the County's November 26, 2019 potential delay notification, private property rights-of-entry negotiation and acquisition were required for the project, which has delayed completion of the design work. The project is currently in design and the Consent Decree deadline is April 18, 2024.

Long Quarter North Sewer Rehabilitation Project: Right-of-entry acquisition work continues and the Consent Decree deadline is April 18, 2024.

Long Quarter South Sewer Rehabilitation Project: Right-of-entry acquisition work continues and the Consent Decree deadline is April 18, 2024.

Long Quarter South Interceptor Rehabilitation Project: Design work continues and the Consent Decree deadline is April 18, 2024.

Orems SRRR Plan Implementation

Orems Basin 03 Relief Sewer Project (21144 SX0): During the 4th quarter of 2021, the construction contractor defaulted on the contract and a new contractor was identified to complete the construction work. On July 1, 2022, the County issues Notice to Proceed to the new contractor. Construction recommenced on August 15, 2022 and the new requested deadline is May 29, 2023.

Stansbury Manor Force Main Replacement Project: On March 16, 2022, the County submitted a time of performance extension request for the Stansbury Manor Force Main Replacement project. The Consent Decree deadline to complete the project was September 29, 2020. The project has been delayed due to the time required to obtain right-of-way access with various property owners. Contaminated soil along the preferred force main alignment was recently discovered. This requires that the alignment be re-designed. The project is currently in design and the requested deadline is March 9, 2025.

Patapsco SRRR Plan Implementation

Cedar Branch North Fork Relief Sewer Project (17150 SX0): The project was completed on September 8, 2022.

Patapsco Basin 7 Sewer Rehabilitation Project (17107 SX0): On September 2, 2021, the County submitted a time of performance extension request. The Consent Decree deadline for completing the project was September 6, 2020. As described in the County's March 28, 2018 potential delay notification, private property right-of-entry acquisitions were required for the project, which has delayed completion of the design work. Following multiple attempts to contact property owners the County issued to each property owner a 15-day notification letter and requested response by July 29, 2021. The County has not received responses and, therefore, assumes owner consent and the project was advertised on September 23, 2022. The requested deadline to complete the project is April 6, 2024.

Patapsco Basin 10 Sewer Rehabilitation Project (16037 SX0): On September 2, 2021, the County submitted a time of performance extension request. The Consent Decree deadline for completing the project was September 6, 2020. As described in the County's March 28, 2018 potential delay notification, private property right-of-entry acquisitions were required for the project, which has delayed completion of the design work. All right-of-entry agreements have been acquired and, on July 26, 2021, the County issues the construction contract Notice to Proceed. The requested deadline to complete the project is January 6, 2023.

Patapsco Sewershed Structural Rehabilitation Project (19007 SX0): On September 2, 2021, the County submitted a time of performance extension request. The Consent Decree deadline for completing the project was September 6, 2020. As described in the County's October 28, 2018 potential delay notification, private property right-of-entry acquisitions were required for the project, which has delayed completion of the design work. Right-of-entry negotiations are ongoing. The requested deadline to complete the project is October 6, 2024.

Redhouse Run SRRR Plan Implementation

Redhouse Run Equalization Tank: The County will complete additional investigation/assessment to determine if the project is needed.

Redhouse Run Interceptor Relief Sewer Project: Design work continues, including coordination with the EPA 68th Street Superfund site mitigation plan. The Consent Decree deadline is April 18, 2024.

Redhouse Run Pipeline Rehab Phase 1 Project (21002 SX0): On March 22, 2022, the County issues the construction Notice to Proceed and construction work began on May 2, 2022. The Consent Decree deadline is April 18, 2024.

Redhouse Run Pipeline Rehab Phase 2 Project (21021 SX0): On July 28, 2022, the County received construction bids and is processing award of the construction contract. The Consent Decree deadline is April 18, 2024.

Redhouse Run Pipeline Rehab Phase 3 Project: Right-of-entry negotiations continue and the Consent Decree deadline is April 18, 2024.

Stemmers Run SRRR Plan Implementation

Stemmers Run Basin SR05 and SR06 Sewer Rehabilitation Project (19002 SX0): Right-of-entry negotiations continue and the Consent Decree deadline is September 6, 2024.

Stemmers Run Basins SR02B and 3 Rehabilitation/Off-Road Project (14207 SX0): Design work continues and the Consent Decree deadline is September 6, 2024.

Texas SRRR Plan Implementation

Cockeysville and Texas Structural Sewer Rehabilitation Project (Contract 21294 SX0): On July 21, 2022, the County received bids for the construction project and is processing award of the contract. The requested deadline is October 6, 2023.

Texas Force Main Cathodic Protection Project: The County recently awarded a contract to procure the specialized services needed for this project. The County anticipates issuing the project Notice to Proceed in December 2022. The requested deadline is April 18, 2023.

White Marsh SRRR Plan Implementation

White Marsh (Old) Force Main Repair Project: On September 1, 2022, the County awarded a contract for force main inspection/assessment services. The County anticipates providing Notice to Proceed for the White Marsh (old) Force Main Repair project in early 2023. The Consent Decree deadline is April 18, 2024.

White Marsh Sewer Structural Rehabilitation (West) Project: Right-of-entry negotiations continue and the Consent Decree deadline is April 18, 2024.

White Marsh Sewer Structural Rehabilitation (East) Project: Right-of-entry negotiations continue and the Consent Decree deadline is April 18, 2024.

vii. FOG Program

The County has completed implementation of the FOG Program Modification Plan.

viii. Supplemental Environmental Project Status

Completed.

ix. Compliance Summary

In accordance with Paragraph 19, Item B.vii, the following is a summary of Consent Decree compliance project achievements:

i) Consent Decree projects or requirements certified as complete during the reporting period:

Cedar Branch North Fork Relief Sewer (17150 SX0): The project was completed on September 8, 2022.

Essex Structural Sewer Rehabilitation Project (Contract 18110 SX0): The project was completed on November 18, 2022.

Lower Powder Mill Sewer Rehabilitation Project (16169 SX0): The project was completed on August 10, 2022.

Turkey Point Pump Station Improvement Project (Contract 19159 SX0): The project was completed on September 7, 2022.

ii) Consent Decree requirements due to be completed during the reporting period, but not completed:

Gray Manor Structural Sewer Rehabilitation Project (19003 SX0): On June 2, 2022 the County submitted a time extension with a requested date of November 11, 2022. The project was completed on November 2, 2022.

iii) Problems that may prevent the County from meeting future Consent Decree compliance deadlines:

Corsica Pump Station Improvement Project (21162 SX0): As noted in the letter of potential delay submitted on July 11, 2022 on July 6, 2022, the pump station contractor informed the County (reference enclosed correspondence) that additional time will be required to complete the construction work due to manufacturing delays for the variable frequency drives, which are a critical component of the motor control center unit. The County is coordinating with the contractor and will submit a time of performance extension request, if needed.

Redhouse Run Pipeline Rehab Phase 3 Project: As described in the letter of potential delay dated September 13, 2022, the construction work requires private property right-of-entry acquisitions and there are currently 178 outstanding acquisitions. The time to negotiate and acquire the rights-of-entry may delay completion of the project. The County has and will continue negotiating with the property owners and will submit a time of performance extension request, if needed.

Stemmers Run Basin SR05 and SR06 Sewer Rehabilitation Project: As described in the letter of potential delay dated September 13, 2022, the construction work required 73 right-of-entry acquisitions and permit approvals. One outstanding right-of-entry property owner has denied the County's request.

To expedite contract advertisement, the County designated the proposed work that is located at this property as contingent so that design work can be finalized and necessary permits obtained to finalize the design. The County will continue coordinating with the property owner to acquire the needed right-of-entry. The time spent to negotiate and acquire the right-of-entry has delayed completion of the design. The County will submit a time of performance extension request, if the described actions above prevent completion of the project prior to the Consent Decree deadline.

Gwynns Falls Structural Sewer Rehabilitation in Environmentally Sensitive Areas Project (16059 SX0): On December 7, 2021 the County submitted a time extension request to extend the deadline to March 6, 2022 due to the time required to negotiate and acquire private property right-of-entry agreements and on March 3, 2022, the County submitted a second time extension request to extend the deadline to May 6, 2022 due to the unexpected time delay to procure a construction contract and on May 6, 2022 the County submitted a third time extension request to extend the deadline to October 6, 2022 due to the unexpected time delay to procure a construction contractor. The new requested deadline is April 6, 2023.

Orems Basin 03 Relief Sewer Project (Contract 21144 SX0): During the 4th quarter of 2021, the low bidder defaulted on the contract. A new contractor was identified to complete the construction work and Notice to Proceed was issued on July 1, 2022. The project is currently under construction. On May 11, 2022 the County submitted a time of performance extension request, the new requested deadline is May 29, 2023.

I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete.

_____

Lisa K. Eicholtz, PE
Bureau Chief, Engineering and Construction

Control Document No. 469

Attachment A - Discharges from Overflow Structures

Pump Station Overflow Structures

No pump station overflows occurred during this reporting period.

Non-Pump Station Overflow Structures – Metered

Name	Aiken Avenue
SSO ID	41
Address	7829 Aiken Avenue & Taylor Avenue
Date of Discharge	7/2/2022
Duration of Overflow	23 minutes
Date of Relevant Weather Conditions	7/2/2022
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	124
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 5/17/2022, the County submitted a Time of Performance Extension request to eliminate the overflow structure by 3/3/2024.

Name	Southern Cross Drive
SSO ID	23A
Address	Southern Cross Drive & Parsons Avenue
Date of Discharge	7/2/2022
Duration of Overflow	1 minute
Date of Relevant Weather Conditions	7/2/2022
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	589
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	The Notice to Proceed for Phase I construction contract was issued on 9/3/2019. County to submit a second SSO elimination time extension request when a date has been identified. Right of Way and environmental permits required for Phase II contract.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date of Discharge	7/2/2022
Duration of Overflow	2 minutes
Date of Relevant Weather Conditions	7/2/2022
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	896
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	Construction for Phase 1 of the relief sewer is complete and the County will construct Phase 2 and 3 after right-of-way acquisition and environmental permits obtained. The County will submit a time of performance extension request for the elimination of the SSO structure when a definitive date has been determined.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	7/2/2022
Duration of Overflow	5 minutes
Date of Relevant Weather Conditions	7/2/2022
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	82
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	Construction for Phase 1 of the relief sewer is complete and the County will construct Phase 2 and 3 after right-of-way acquisition and environmental permits obtained. The County will submit a time of performance extension request for the elimination of the SSO structure when a definitive date has been determined.

Name	Aiken Avenue
SSO ID	41
Address	7829 Aiken Avenue & Taylor Avenue
Date of Discharge	7/5–6/2022
Duration of Overflow	17 hours 45 minutes
Date of Relevant Weather Conditions	7/5/2022
Description of Relevant Weather Conditions	Dry
Net Gallons Discharged	25,399
Receiving Waters	Herring Run
Identified Cause	Airline and rope for a plug in adjacent, out of service line drifted down the active pipe and caused debris to collect and block the sewer main.
Details of Corrective Action Taken or Planned	Ran line with nozzle to relieve blockage.

Name	Alter Road
SSO ID	22
Address	Alter Road & Southern Cross Drive
Date of Discharge	7/16/2022
Duration of Overflow	50 minutes
Date of Relevant Weather Conditions	7/16/2022
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	3,442
Receiving Waters	Maiden's Choice Creek
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	The Notice to Proceed for Phase I construction contract was issued on 9/3/2019. County to submit a second SSO elimination time extension request when a date has been identified. Right of Way and environmental permits required for Phase II contract.

Name	Southern Cross Drive
SSO ID	23A
Address	Southern Cross Drive & Parsons Avenue
Date of Discharge	7/16/2022
Duration of Overflow	35 minutes
Date of Relevant Weather Conditions	7/16/2022
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	1,337
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity
Details of Corrective Action Taken or Planned	On 5/17/2022, the County submitted a Time of Performance Extension request to eliminate the overflow structure by 3/3/2024.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date of Discharge	7/16/2022
Duration of Overflow	51 minutes
Date of Relevant Weather Conditions	7/16/2022
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	6,905
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	The Notice to Proceed for Phase I construction contract was issued on 9/3/2019. County to submit a second SSO elimination time extension request when a date has been identified. Right of Way and environmental permits required for Phase II contract.

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	7/16/2022
Duration of Overflow	1 hour 32 minutes
Date of Relevant Weather Conditions	7/16/2022
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	30,681
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	Construction for Phase 1 of the relief sewer is complete and the County will construct Phase 2 and 3 after right-of-way acquisition and environmental permits obtained. The County will submit a time of performance extension request for the elimination of the SSO structure when a definitive date has been determined

Name	Queen Anne Drive
SSO ID	129
Address	Queen Anne Drive & Hillcrest Avenue
Date of Discharge	8/4/2022
Duration of Overflow	3 minutes
Date of Relevant Weather Conditions	8/4/2022
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	8,359
Receiving Waters	Herring Run
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 4/27/2020 the County submitted a time extension request to eliminate overflow structure by 8/3/2023.

Name	Southern Cross Drive
SSO ID	23A
Address	Southern Cross Dr. & Parsons Ave.
Date of Discharge	9/12/2022
Duration of Overflow	40 minutes
Date of Relevant Weather Conditions	9/12/2022
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	6,912
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 5/17/2022, the County submitted a Time of Performance Extension request to eliminate the overflow structure by 3/3/2024.

Name	Southern Cross
SSO ID	23B
Address	3909 Southern Cross Drive
Date of Discharge	9/12/2022
Duration of Overflow	55 minutes
Date of Relevant Weather Conditions	9/12/2022
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	9,628
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	On 5/17/2022, the County submitted a time of performance extension request to eliminate the overflow structure by 3/3/2024

Name	Patterson Avenue
SSO ID	24
Address	3902 Patterson Avenue
Date of Discharge	9/12/2022
Duration of Overflow	1 hour 51 minutes
Date of Relevant Weather Conditions	9/12/2022
Description of Relevant Weather Conditions	Rain
Net Gallons Discharged	7,153
Receiving Waters	Gwynns Falls
Identified Cause	Insufficient wet weather hydraulic capacity.
Details of Corrective Action Taken or Planned	Construction for Phase 1 of the relief sewer is complete and the County will construct Phase 2 and 3 after right-of-way acquisition and environmental permits obtained. The County will submit a time of performance extension request for the elimination of the SSO structure when a definitive date has been determined

Attachment A1: Summary of Non-Pumping Station Overflow Structure Monitoring

Date of Rain Event		7/2/2022	7/16/2022	8/4/2022	9/12/2022
Rain (inches)		0.67-1.67	2.3	1.34	0.95
SSO Name	SSO ID				
Alter Road	22		3,442		
Southern Cross Drive	23A	589	1,337		6,912
Southern Cross	23B	896	6,905		9,628
Patterson Avenue	24	82	30,681		7,153
Overbrook Road & Medwick Garth	118				
Marnat Road	113				
Aiken Avenue	41	124			
Queen Anne Drive	129			8,359	

Attachment B - Construction Status for Elimination of SSO Structures and Pump Station Projects

Non-Pump Station SSO Structures

Project Name	Date of Construction Notice to Proceed	Sewershed Name	Original Consent Decree Elimination Date	Current Consent Decree SSO Elimination Date	SSO Eliminated	Status
Powder Mill Interceptor Relief Sewer Phase I (SSOs 22, 23A, 23B, 24) Contract 18180 SX0	9/3/2019	Gwynns Falls	3/22/2017	TBD	No	On 1/26/2021 the project achieved functional use. The Phase II project (Contract 20018 SX0) and Phase 3 project must be completed before eliminating the SSO structures.
Powder Mill Interceptor Relief Sewer Phase II (SSOs 22, 23A, 23B, 24) Contract 20018 SX0	-	Gwynns Falls	3/22/2017	TBD	No	On 2/14/2017, the County submitted a time extension request with an undefined elimination date. A second time extension request with a definitive elimination date will be submitted after right-of-way acquisition and environmental permits are obtained and construction Notice to Proceed is issued for Contract 20018 SX0. Easement acquisition was unsuccessful so the project is being redesigned.
Powder Mill Interceptor Relief Sewer Phase III (SSOs 22, 23A, 23B, 24)	-	Gwynns Falls	3/22/2017	TBD	No	On 5/12/2022, the County issued Design Notice to Proceed. The design consultant is currently in preparation of the preliminary design memo.
East Branch Herring Run Relief Sewer – 14117 SX0 (SSO 41 & 129)	2/5/2020	Herring Run	3/20/2018	3/3/2024 (Requested)	No	On 4/27/2020 the County submitted a time extension request to eliminate the overflow structure by 8/3/2023. The extension request approval letter from the Maryland Department of Environment incorrectly identified the new deadline as 11/5/2019. On 9/23/2021, the County submitted a correction of records letter to confirm the new approved deadline of 8/3/2023. On 1/4/2022, the County submitted a Time Extension Request to eliminate the overflow structure by 12/4/2023. The time extension was necessary due to unanticipated construction site conditions. On May 17, 2022 the County submitted a subsequent Time Extension Request, as the unexpected site conditions continue to delay completion of the construction project. This project is approximately 95% complete.

Project Name	Date of Construction Notice to Proceed	Sewershed Name	Original Consent Decree Elimination Date	Current Consent Decree SSO Elimination Date	SSO Eliminated	Status
Elimination of SSOs 116, 117, and 118	-	West Low Level	9/20/2016	TBD	No	On 6/22/2016, the County submitted a time extension request with an undefined SSO elimination date. A second time extension request with a definitive SSO elimination date will be submitted after the City shares with the County their proposed downstream corrective actions and construction schedule. The County continues to meet and coordinate with Baltimore City to complete the needed hydraulic improvements to the downstream collection system, which is maintained by the City.
Elimination of SSO 113	-	Jones Falls	9/20/2016	TBD	No	

Pump Station Rehabilitation, Repair and Replacement

Project Name	Contract No.	Consent Decree Deadline	Project Phase	Construction Notice to Proceed Date
Millers Island	19175 SX0	6/1/2023	Construction	1/6/2021
Penwood Terrace	20040 SX0	6/1/2023	Construction	5/3/2021
Stansbury Manor	21135 SX0	4/20/2024	Construction	1/27/2022
Corsica	21162 SX0	6/1/2023	Construction	1/27/2022
Fort Howard	20175 SX0	6/1/2023	Construction	1/26/2022
Lodge Forest Manor	21003 SX0	10/20/2023	Construction	3/23/2022

Attachment C - CCTV in Response to an SSO

Date of SSO	Location	CCTV Inspection Date	Exemption
7/2/2022	7829 Aiken Avenue & Taylor Avenue		D
7/2/2022	Southern Cross Drive & Parsons Avenue		D
7/2/2022	3909 Southern Cross Drive		D
7/2/2022	3902 Patterson Avenue		D
7/5-6/2022	7829 Aiken Avenue & Taylor Avenue	7/8/2022	
7/16/2022	Alter Road & Southern Cross Drive		D
7/16/2022	Southern Cross Drive & Parsons Avenue		D
7/16/2022	3909 Southern Cross Drive		D
7/16/2022	3902 Patterson Avenue		D
8/4/2022	Queen Anne Drive & Hillcrest Avenue		D
8/18/2022	7980 Eastern Avenue	8/19/2022	
9/12/2022	Southern Cross Drive & Parsons Avenue		D
9/12/2022	3909 Southern Cross Drive		D
9/12/2022	3902 Patterson Avenue		D

Allowable Exemptions:

A. The cause of the SSO was a blockage in a County-owned lateral adjacent to the gravity line segment and the County cleans the County-owned lateral.
B. The cause of the SSO was a blockage in the gravity line segment and visible directly from the manhole.
C. The County has previously CCTV inspected the line segment(s) due to an earlier blockage and the County is in the process of developing or implementing corrective action.
D. The location is an identified overflow structure and is being monitored pursuant to Paragraph 7.C and the County is involved in a process designed to eliminate the overflow structure

Attachment D - Status of SRRR Plan Implementation

Sewershed	Project Name	SRRR Completion Consent Decree Deadline	Date of Potential Delay Notification	Date of Time Extension Request	Requested Deadline	Construction Contract ID	Construction Notice to Proceed Date
Bengies	Bengies and Bird River Structural Repairs	9/29/2020	3/15/2019	10/11/2022	11/6/2023	21169 SX0	7/18/2022
Bird River	Bengies and Bird River Structural Repairs	9/29/2020	3/15/2019	10/11/2022	11/6/2023	21169 SX0	7/18/2022
Cockeysville	Cockeysville (and Texas) Structural Repairs	9/29/2020	3/15/2019	2/8/2022	10/6/2023	21294 SX0	7/28/2022
Cockeysville	Cockeysville Force Main & Texas PS Influent	9/29/2020	3/15/2019	1/28/2022	4/6/2023	21163 SX0	10/5/2022
Delmar	Glen Echo Interceptor Relief Sewer	4/18/2022	11/22/2019	3/2/2022	9/18/2024	20196 SX0	8/9/2023
Delmar	Delmar Sewershed Sewer Rehabilitation	4/18/2022	3/31/2021	12/12/2021	1/10/2023	18034 SX0	8/26/2021
Delmar	Lodge Forest Manor Force Main Cleaning	4/18/2022	9/2/2021	3/24/2022	3/18/2024	-	-
Duck Creek	Duck Creek Structural Rehabilitation	4/18/2022	2/5/2020	2/1/2022	5/18/2024	18317 SX0	4/26/2023
Duck Creek	Corsica Force Main Replacement	4/18/2022	8/11/2021	12/7/2021	8/18/2023	21082 SX0	10/27/2022
Dundalk	Dundalk Sewershed Sewer Rehabilitation	4/18/2022	11/22/2019	3/3/2022	1/18/2027	18317 SX0	12/15/2022
Eastpoint	Eastpoint FM Relocation - Task 02	4/18/2022	11/22/2019	2/10/2022	6/18/2024	-	11/10/2023
Eastpoint	Eastpoint Sewershed Sewer Rehabilitation	4/18/2022	1/4/2022	6/23/2022	4/18/2023	18141 SX0	12/01/2021
Essex	Essex Sewer Replacement	4/18/2022	9/2/2021	2/10/2022	4/18/2023	21136 SX0	2/4/2022
Essex	Essex Structural Sewer Rehabilitation (Task 10)	4/18/2022	9/14/2021	3/29/2022	10/18/2022	18110 SX0	1/15/2021
Gray Manor	Gray Manor Force Main FEA & Inspection	4/18/2022	1/18/2022	3/10/2022	2/18/2023	-	-
Gray Manor	Gray Manor Structural Sewer Rehabilitation	4/18/2022	None	6/22/2022	11/18/2022	19003 SX0	1/14/2021
Gray Manor	Gray Manor Interceptor Rehab - Task 12	4/18/2022	None	3/2/2022	7/18/2025	21202 SX0	11/22/2022
Gray Manor	Lynch Road Sewer Replacement	4/18/2022	6/19/2019	3/16/2022	6/18/2023	21092 SX0	10/3/2022
Gray Manor	North Point Boulevard Sewer Replacement	4/18/2022	6/19/2019	3/16/2022	6/18/2023	21093 SX0	10/3/2022
Gray Manor	Trappe Road Sewer Main	4/18/2022	6/19/2019	3/16/2022	6/18/2023	20130 SX0	10/3/2022

Sewershed	Project Name	SRRR Completion Consent Decree Deadline	Date of Potential Delay Notification	Date of Time Extension Request	Requested Deadline	Construction Contract ID	Construction Notice to Proceed Date
Gunpowder	Gunpowder PS to WM PS System Improvement (GP FM Replacement)/Co wpens Relief	4/18/2026	-	-	-	-	12/5/2023
Gunpowder	Gunpowder Relief Sewer	4/18/2026	-	-	-	-	2/26/2024
Gunpowder	Gunpowder Sewer Structural Repairs-Off Road	4/18/2026	-	-	-	-	5/25/2023
Gunpowder	Gunpowder Sewer Structural Repairs-On Road	4/18/2026	-	-	-	19198 SX0	4/05/2021
Gunpowder	Jennifer Branch Relief Sewer	4/18/2026	-	-	-	-	6/6/2023
Gwynns Falls	Gwynns Falls ESA	9/6/2018	1/23/2018	10/6/2022	4/6/2023	16059 SX0	12/17/2021
Herring Run	Herring Run Relief Sewer, Basin 17 & 33	9/6/2018	3/8/2018	2/28/2022	9/6/2023	16131 SX0	3/16/2022
Herring Run	Herring Run Sewer Structural Rehabilitation Phase II	9/6/2018	8/15/2017	4/8/2022	11/6/2025	-	4/7/2023
Long Quarter	Long Quarter Force Main Replacement	4/18/2024	11/26/2019	-	-	-	1/2/2024
Long Quarter	Long Quarter North Sewer Rehab	4/18/2024	-	-	-	-	1/4/2023
Long Quarter	Long Quarter South Sewer Rehab	4/18/2024	-	-	-	-	2/20/2023
Orems	Orems Basin 03 Relief Sewer	9/29/2020	11/22/2019	5/11/2022	5/29/2023	21140 SX0	8/2/2021
Orems	Stansbury Manor Force Main Replacement	9/29/2020	11/16/2018	3/16/2022	3/9/2025	-	10/27/2023
Patapsco	Patapsco Basin 7 Rehabilitation-Roads/Off Road	9/6/2021	10/28/2018	9/2/2021	4/6/2024	17107 SX0	11/8/2022
Patapsco	Patapsco Basin10 Sewer Rehabilitation	9/6/2021	10/28/2018	9/2/2021	1/6/2023	16037 SX0	8/18/2021
Patapsco	Patapsco Sewershed Structural Rehabilitation	9/6/2021	10/28/2018	9/2/2021	10/6/2024	19007 SX0	10/6/2024
Redhouse Run	Redhouse Run Equalization Tank	4/18/2024	-	-	-	-	-
Redhouse Run	Redhouse Run Interceptor Relief Sewer	4/18/2024	-	-	-	-	5/5/2023
Redhouse Run	Redhouse Run Pipeline Rehab Phase 1	4/18/2024	-	-	-	21002 SX0	7/13/2022

Sewershed	Project Name	SRRR Completion Consent Decree Deadline	Date of Potential Delay Notification	Date of Time Extension Request	Requested Deadline	Construction Contract ID	Construction Notice to Proceed Date
Redhouse Run	Redhouse Run Pipeline Rehab Phase 2	4/18/2024	-	-	-	21020 SX0	2/27/2023
Redhouse Run	Redhouse Run Pipeline Rehab Phase 3	4/18/2024	-	-	-	-	10/27/2023
Stemmers Run	Stemmers Run Basin SR05 and SR06 Sewer Rehabilitation	9/6/2024	9/13/2022	-	-	19002 SX0	1/26/2023
Stemmers Run	Stemmers Run Basins 02B and 3 Rehab./Off-Road	9/6/2024	-	-	-	14207 SX0	12/29/2022
Texas	Texas Force Main Cathodic Protection	4/18/2022	12/7/2021	2/28/2022	4/18/2023	-	-
Texas	(Cockeysville and) Texas Structural Repairs	4/18/2022	7/10/2019	2/8/2022	10/6/2023	21294 SX0	7/29/2022
White Marsh	White Marsh Sewer Structural Rehabilitation (West)	4/18/2024	-	-	-	-	3/13/2023
White Marsh	Whitemarsh (old) FM Repair	4/18/2024	-	-	-	-	6/29/2023
White Marsh	Whitemarsh Structural Sewer Rehab - East	4/18/2024	-	-	-	-	9/11/2023

From: Lisa Eicholtz <leicholtz@baltimorecountymd.gov>
Sent: Friday, September 4, 2020 1:17 PM
To: Bishop, Matt <Matt.Bishop@kimley-horn.com>
Cc: Dave Bayer <dbayer@baltimorecountymd.gov>
Subject: RE: West Joppa Road - Sewer Capacity

Matt,

We've reviewed your request and determined the following 8" sewer segments do not have adequate capacity to accommodate the proposed 62 home subdivision at 2310 West Joppa Road:

Upstream MH	Downstream MH	Length	Diameter	Status
43794	43793	137.96	8"	
43793	43792	192.31	8"	
43792	43791	87.36	8"	Part of Hopkins project
43791	43790	60.00	8"	Part of Hopkins project
43790	43789	316.80	8"	Part of Hopkins project
43789	43788	232.57	8"	Part of Hopkins project
43788	43787	159.01	8"	Part of Hopkins project
43787	43786	76.00	8"	Part of Hopkins project

As noted in the table shown above, six of the segments are included in the Hopkins project which has not been constructed. As we discussed on the phone, my understanding is that there is an outstanding right-of-way issue that is holding up the project. Vishnu Desai from Development Plan Review may be able to offer more information on the status of that sewer replacement project.

Dave Bayer of Sewer Design had a copy of the drawing showing the work that was to be completed by Hopkins. The drawing is attached for your reference.

Thank you,

Lisa

Lisa Eicholtz, PE
Baltimore County
Department of Public Works
111 W. Chesapeake Ave
Towson, MD 21204
410-887-3781

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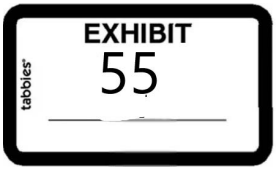

From: Bishop, Matt [mailto:Matt.Bishop@kimley-horn.com]
Sent: Wednesday, August 26, 2020 5:59 PM
To: Lisa Eicholtz <leicholtz@baltimorecountymd.gov>
Subject: West Joppa Road - Sewer Capacity

CAUTION: This message from Matt.Bishop@kimley-horn.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Good afternoon Lisa,

As discussed we are in the middle of a feasibility study for the property located at 2310 West Joppa Road. Would you please let me know if there is adequate capacity in the downstream sewer system for 62 new single-family detached homes? We anticipate that the new sewer main for all of the new homes will tie into the existing sewer main located in West Joppa Road at or near Manhole #43819 as shown on the attached plan.

If you need any additional information please let me know.

Thank you,

Matt Bishop, PLA, LEED AP
Kimley-Horn | 1801 Porter Street, Suite 401, Baltimore, MD 21230
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WATER SAMPLING

Baltimore County has almost 200 miles of tidal coastline as well as public and privately owned and operated tidal and fresh water recreational bathing beaches. In addition, the availability of these recreational water resources supports a significant number of related activities such as commercial and recreational fishing, skiing, camping and boating.

Environmental Health Services (EHS) conducts recreational water sampling, provides water sampling in support of sewer overflow investigations and regulates bathing beaches and public swimming pools for the health and safety of the public.

Feedback

WATER QUALITY AND WATER CONTACT

Close All

— RECREATIONAL WATER QUALITY

Environmental Health Services (EHS) routinely conducts bacteriological sampling of many areas in an effort to provide information to the public on water quality and promote the safe use of these resources. View a map of the associated water sampling areas and locations.

This sampling utilizes the bacteriological indicator organism Enterococci for salt water and Escherichia coli (E. coli) for fresh water. These organisms are found in the intestines of all warm-blooded animals and are important chiefly because, when found in higher concentrations in conjunction with a known or suspected source of sewage contamination, the probable presence of other more pathogenic organisms is indicated.

MENU

A history of sampling helps to provide some of the background information needed to e long-term trends in water quality. Water conditions change constantly. It should d that any single sample or group of samples represents a “snap shot in time” and not be used without other supporting information to characterize the water quality of a particular river, lake or bay.

Water users should remember that all natural waters support many different microorganisms. Some of these organisms are pathogenic to humans; however, most are not. Water users should note that murky or debris-strewn water, which often occurs after violent storms or heavy rains, is a general indication of poor water quality. Excessive storm water runoff after heavy rains can carry pet waste, agricultural waste or fecal contaminants from brief sewage overflows as well as various chemicals including those associated with commercial and residential lawn care.

Swimmers, skiers, boaters or any one whose activities will bring them into close contact with natural waters should always take into consideration their own observations before entering the water. Natural waters should never be considered safe for ingestion.

WATER CONTACT ALERT

Should sampling by the County measure elevated bacteriological levels due to a known or suspected sewage overflow, that would make water activities unsafe or unhealthy at a particular location, a water contact alert will be issued. In the event that these conditions affect a public bathing beach, that beach will be closed. The Water Contact Alert will be posted and a press release will be issued to major media outlets. Signage may also be posted at points of greatest access to the affected body of water.

In open waters, the public will be advised to minimize water contact and the health risks associated with sewage contaminated waters will be explained. After a water contact alert has been issued, the conditions, which may have contributed to poor water quality, will be investigated. After those conditions have abated, sampling will resume to determine when the water quality has improved to an acceptable level. The water contact alert will then be lifted.

WATER QUALITY ADVISORIES

When monitoring in open areas of water indicates a widespread, abnormal rise in the concentration of bacteria and there is no known or suspected sewer overflow, a Water Quality Advisory may be issued. These conditions are typically associated with storm water runoff. Water Quality Advisories are non-regulatory and usually temporary in nature.

Feedback

MENU

Advisories are issued to provide recommended precautions for recreational water users
olicable public health recommendations will be noted on this web site.
ionary signage is not typically posted for Water Quality Advisories, however a press
may be issued if conditions are widespread and severe.

WATER QUALITY SIGNAGE

In an effort to inform the public regarding specific health related precautions, various types of signage may be found in and around access points to both fresh and tidal waters.

- Water Contact Alert—No Recreational Activities
- Recreational Water Quality Advisory
- Health Advisory—Back River
- Health Advisory—Baltimore Harbor
- Stream Sense
- Stream Sense Sign Locations

WATER SAMPLING PROCEDURES

Close

Feedback

OVERVIEW

Baltimore County is required by the United States Environmental Protection Agency (USEPA) and the Maryland Department of the Environment (MDE) to take routine bacteriological samples at public bathing beaches. Baltimore County also samples in larger areas of open water subject to frequent recreational use. Various chemical parameters such as temperature, salinity, and pH are also routinely measured.

Bathing beach monitoring consists of five samples taken in a pattern designed to represent the designated swimming area at the facility. Sample runs are made every two weeks for tidal water bathing beaches and monthly at fresh water bathing beaches.

Non-regulated open areas in tidal waters typically subject to recreational uses such as boating, fishing, skiing, or wind surfing that involve only occasional full body contact and occasional accidental ingestion of water are also sampled on a bi-weekly basis.

MENU

Sampling for tidal waters is typically conducted from early April through November, weather permitting. Sampling at fresh water beaches is performed from Memorial Day through Labor Day. Additional sampling may be initiated in response to unusual conditions or events that could negatively impact water quality and public health.

STANDARDS

Recreational water quality standards are used to determine the relative risk of illness for swimmers. Beach closures and associated Water Contact Alerts are based on consideration of the geometric mean of results for that beach or area and any known or suspected sewage contamination. The association of sewage contamination with elevated indicator organism concentrations is particularly important because sewage carries a significant array of human pathogens, greatly increasing the possibility of contracting a water borne illness. Elevated, naturally occurring bacteria concentrations due to water fowl, marsh decomposition, or normal ground surface runoff are, in general, not considered to have as great a public health significance.

The USEPA/MDE bacteriological standard for consideration of beach closure at tidal beaches is a geometric mean of 235 MPN, Enterococci. The USEPA/MDE bacteriological standard for fresh water beaches is a geometric mean of 126 MPN, E. coli.

Feedback

WATER QUALITY CHARACTERIZATION FOR OPEN WATER

The results for open recreational waters are considered individually and as a geometric mean. The geometric mean beach closure standards for Enterococci and E. coli are used for comparison purposes only in conjunction with information regarding known or suspected sewage contamination to evaluate the need for a Water Contact Alert.

In cases where there is no suspected sewage overflow, there are no mandated standards for evaluation. The County, therefore, considers sampling results, other sources of possible contamination, sampling history, and environmental factors to determine the need for increased concern, investigation, or public notification regarding water quality.

This evaluation also reflects the manner in which the public uses these waters. The majority of activities, which routinely occur in these areas, seldom involve the participation of very young children or immune-compromised individuals. In addition, activities do not typically consist of constant, complete repeated immersion in, or ingestion of water. This reduces both the opportunity for exposure and pathways for bacteria to enter the body. Occasional, reduced water quality in these areas therefore poses less of a risk to the general recreational population.

MENU

EXPLORE WATER SAMPLING

- PROGRAM DETAILS
- WATER SAMPLING RESULTS
- ALERTS, ADVISORIES AND CLOSURES

CONTACT US

ENVIRONMENTAL HEALTH SERVICES

Drumcastle Government Center
6401 York Road, Third Floor
Baltimore, Maryland 21212

HOURS

Monday through Friday
8:30 a.m. to 4:30 p.m.

EMAIL

ehs@baltimorecountymd.gov

PHONE

410-887-FOOD (3663)

TTY: 711

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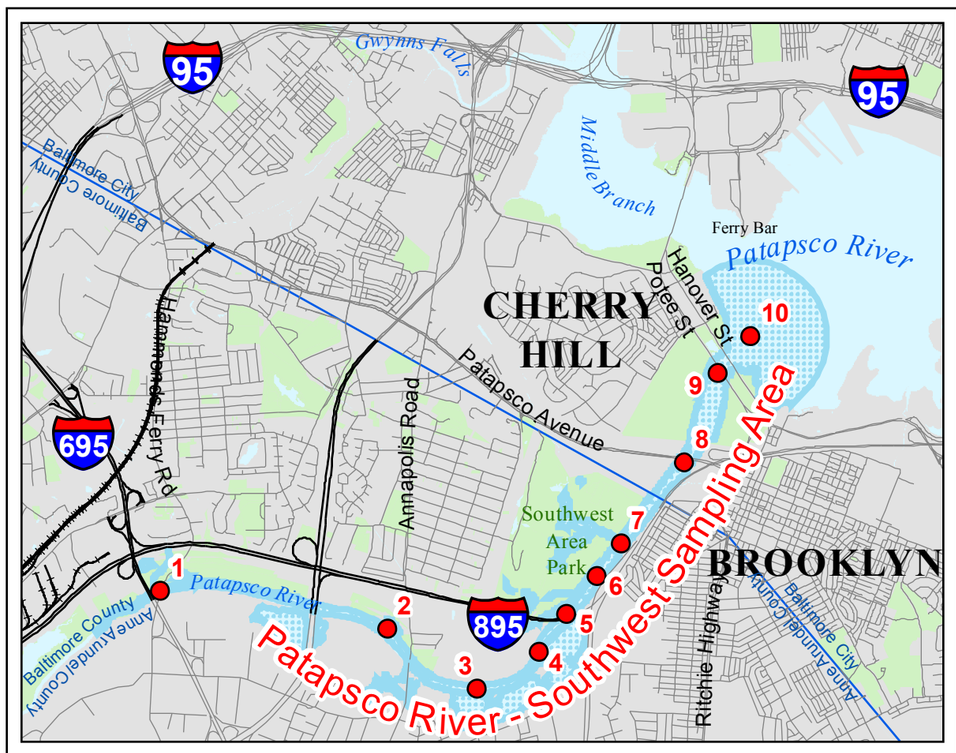
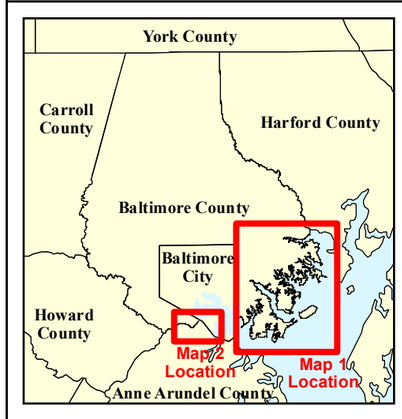
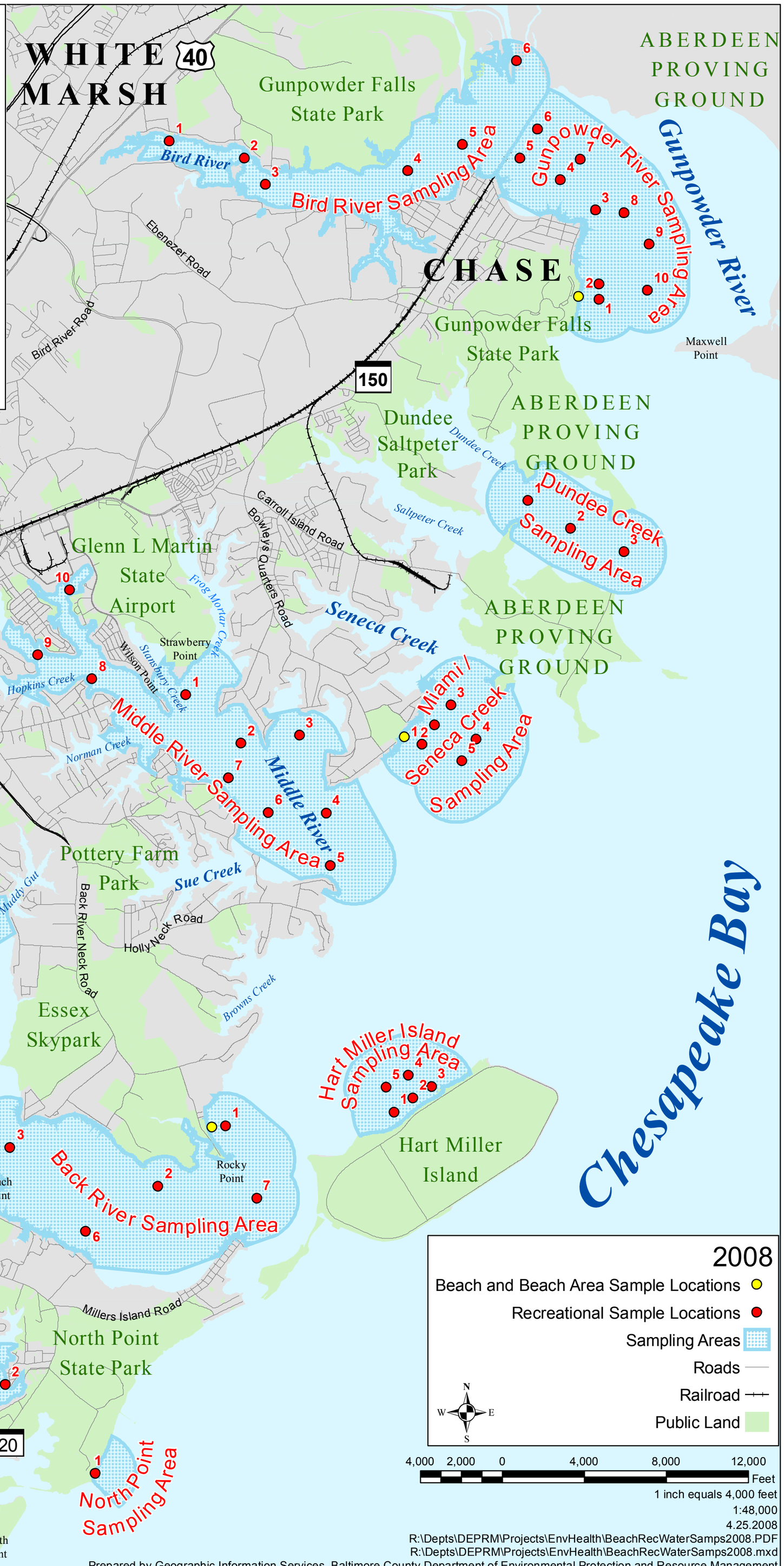
Feedback

Chesapeake Bay Area
Beach, Beach Area, and Recreational Water Sample Locations
Baltimore County, Maryland









2008

Beach and Beach Area Sample Locations

Recreational Sample Locations

Sampling Areas

Roads

Railroad

Public Land

N W E S

4,000 2,000 0 4,000 8,000 12,000 Feet

1 inch equals 4,000 feet

1:48,000

4.25.2008

R:\Depts\DEPRM\Projects\EnvHealth\BeachRecWaterSamps2008.PDF

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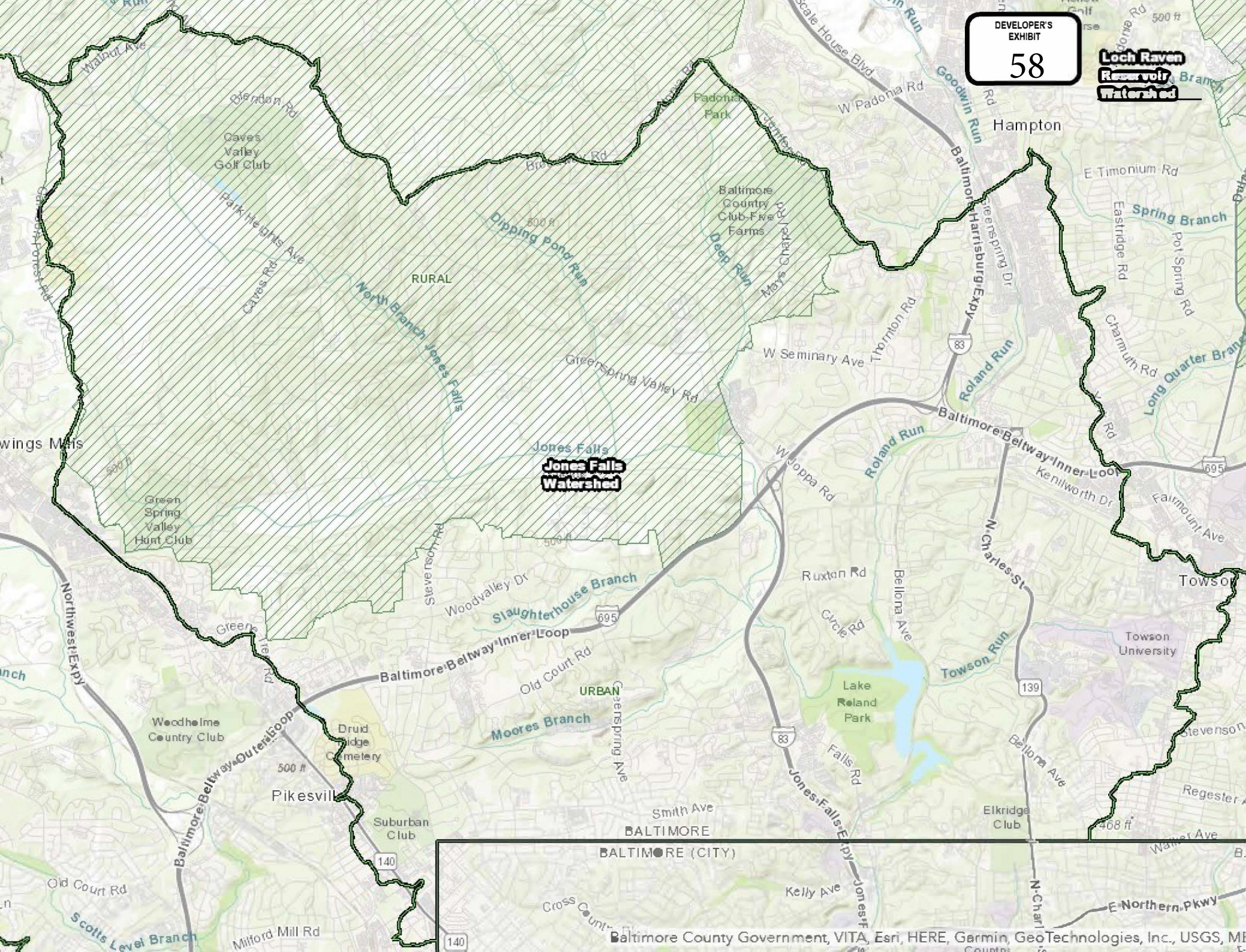
Prepared by Geographic Information Services, Baltimore County Department of Environmental Protection and Resource Management


DEVELOPER'S EXHIBIT
58
Loch Raven Reservoir Watershed
Jones Falls Watershed
Hampton
Towson
Pikesville
BALTIMORE
BALTIMORE (CITY)
RURAL
URBAN
Caves Valley Golf Club
Baltimore Country Club-Five Farms
Green Spring Valley Hunt Club
Woodholme Country Club
Druid Ridge Cemetery
Suburban Club
Lake Roland Park
Towson University
Elkridge Club
Padonia Park
Jones Falls
North Branch Jones Falls
Dipping Pond Run
Deep Run
Roland Run
Towson Run
Slaughterhouse Branch
Moores Branch
Baltimore Beltway Inner Loop
Baltimore Beltway Outer Loop
Northwest Expy
Jones Falls Expy
Baltimore Harrisburg Expy
Goodwin Run
Spring Branch
Long Quarter Branch
Scotts Level Branch
Baltimore County Government, VITA, Esri, HERE, Garmin, GeoTechnologies, Inc., USGS, ME

https://www.baltimorecountymd.gov/departments/environment/watersheds/jonesmain.html

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ENVIRONMENTAL PROTECTION AND SUSTAINABILITY

- Environmental Protection and Sustainability Overview
- Alerts and Advisories
- Directions
- Building Process
- Education
- Forests and Trees
- Regulations
- Report Pollution
- Streams and Water
- Variances
- Well and Septic

MOST REQUESTED SERVICES

- Animal Services
- County Code
- Find Your Zoning
- Jobs
- Jury Duty
- Pay Parking, Red Light or Speed Camera Tickets

Jones Falls Watershed

Watershed Management Program
Phone: 410-887-5683
Fax: 410-887-4804
Email: watersheds@baltimorecountymd.gov

About



The Jones Falls watershed encompasses 40 square miles including rural segments of Baltimore County at its upper reaches. The headwaters of the Jones Falls begin in Greenspring Valley and the stream meanders east through several farms, country clubs and private schools, until it reaches Lake Roland. At Lake Roland the river merges with the eastern tributaries and then continues southward over the dam and through Baltimore City. It finally emerges from a tunnel in Baltimore City's Inner Harbor. More than 200,000 residents live in the Jones Falls watershed, 67,000 of whom live in the County.

This watershed is divided by the County's urban rural demarcation line (URDL) with rural countryside at the headwaters to the west and highly urbanized areas to the east. The URDL separates areas in the County that receive public water and sewer infrastructure, with those that rely on private well and septic systems. Areas inside the URDL can accommodate development, including employment, retail and residences while the areas outside are reserved for agricultural, natural resource protection and low density rural residential development.

Nearly two-thirds of this watershed is located in rural Baltimore County, which is predominantly cropland and low-density development outside the URDL. The most heavily developed areas are in the eastern and southern portions of the watershed where nearly one-third of the land area is covered by impervious surfaces such as parking lots, sidewalks and driveways.

This watershed offers an abundance of recreational opportunities including Lake Roland Park. Lake Roland features many paths and trails for hiking, birding and biking. It is home to many private and public golf courses and country clubs and medical and educational institutions including Towson University, Sheppard Pratt, Greater Baltimore Medical Center and University of Maryland St. Joseph Medical Center. Portions of the Jones Falls support a healthy, self-sustaining brown trout population.

FOLLOW CLEAN GREEN BALTIMORE COUNTY



Clean Green Baltimore County provides residents and businesses with the latest news and information on county initiatives, services and resources that support sustainable living.

Follow

ENVIRONMENTAL REPORTER

Use the Environmental Reporter Web Application to help the County track private tree plantings, private rain barrel installations and midges.

DID THIS PAGE HELP?

*Fields marked with * are required.*

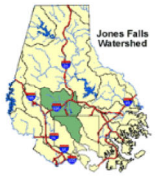
Page Rating *

- ○ Excellent
- ○ Good
- ○ Average
- ○ Poor
- ○ Very Poor

+ GWYNNS FALLS

— JONES FALLS

View a map of the Jones Falls watershed and individual SWAP areas—Lower Jones Falls (H), Northeastern Jones Falls (M), and Upper Jones Falls (G).



LOCATION

Encompassing 40 square miles, nearly two-thirds of this watershed is located in rural Baltimore County. More than 200,000 residents live in the Jones Falls watershed, 67,000 of whom live in the County. Headwaters begin in Greenspring Valley and meander east to Lake Roland where it merges with the eastern tributaries and continues southward over the dam and through Baltimore City where it emerges from a tunnel in the Inner Harbor.

FEATURES

This watershed is divided by the County's URDL, with rural countryside at the headwaters to the west and highly urbanized areas to the east. The most heavily developed areas are in the eastern and southern portions of the watershed where nearly one-third of the land area is covered by impervious surfaces such as parking lots, sidewalks and driveways. Other features include:

- Lake Roland Park
- Farmland
- Private and public golf courses/schools, and country clubs
- Medical and educational institutions, including:
  - Towson University
  - Sheppard Pratt
  - Greater Baltimore Medical Center
  - University of Maryland St. Joseph Medical Center
- Portions of the Jones Falls support a healthy, self-sustaining brown trout population

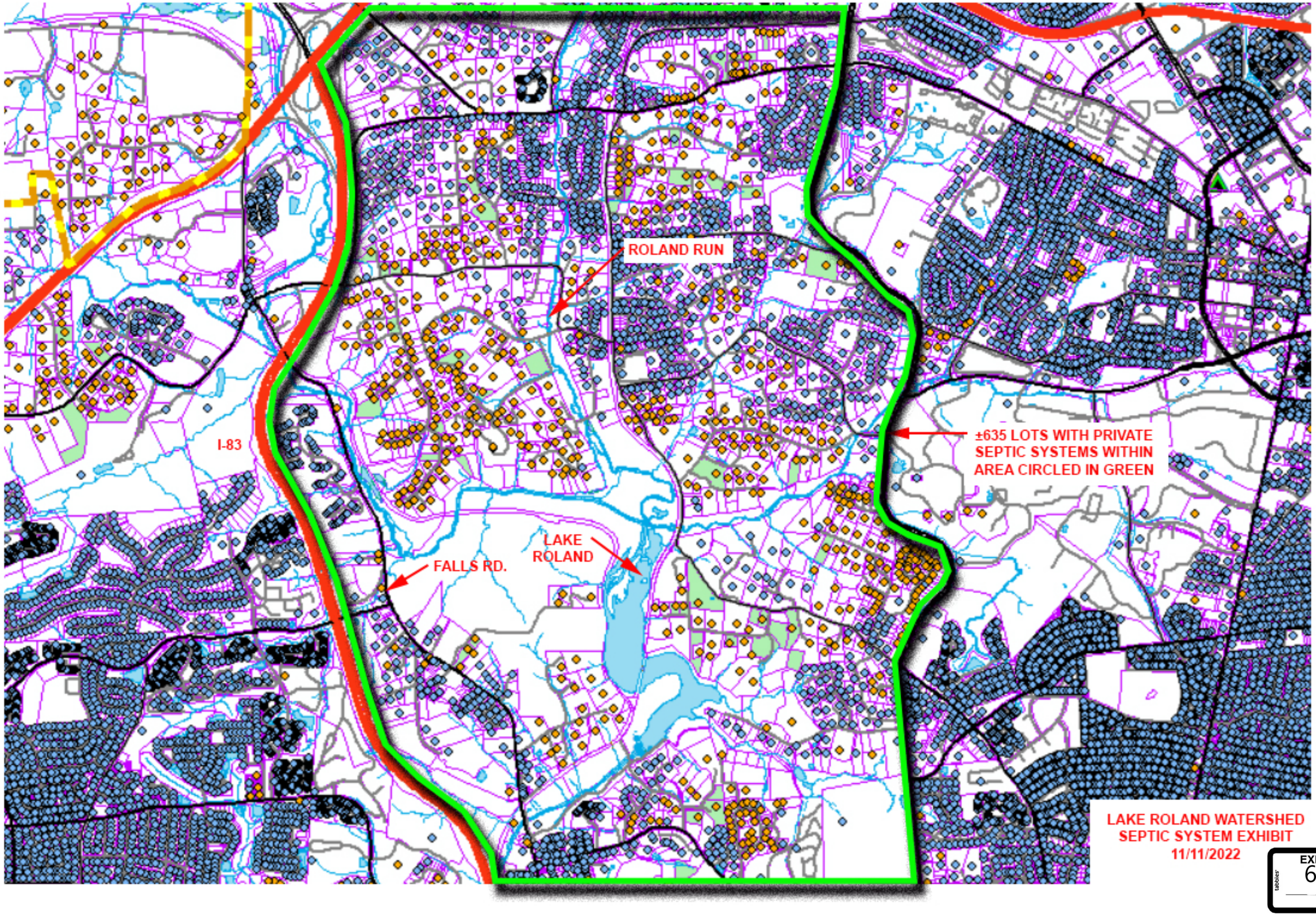
REPORTS

- Lower Jones Falls SWAP
- Northeastern Jones Falls SWAP Volume 1 and Volume 2
- Upper Jones Falls SWAP Volume 1 and Volume 2

TMDLS

- Bacteria
- Polychlorinated Biphenyls (PCBs)
- Sediment
- Trash (Gwynns Falls and Jones Falls)

EXHIBIT
59
tabbies



LAKE ROLAND WATERSHED
SEPTIC SYSTEM EXHIBIT
11/11/2022

EXHIBIT
60

Agricultural Uses

Jones Fall Watershed

Watercourse

Watercourse

Lake Roland

AGRICULTURAL USES LOCATED WITHIN THE JONES FALLS WATERSHED

EXHIBIT 61

1:24,000

0 2,600 5,200 10,400 Feet

March 3, 2023

MENU

BALTIMORE COUNTY
GOVERNMENT

Search for agencies, services

TRANSLATE

County offices are closed on Monday, May 29, for Memorial Day.

HOME > DEPARTMENTS > HEALTH > ENVIRONMENTAL HEALTH SERVICES > WATER SAMPLING PROGRAM > WATER ALERTS, ADVISORIES AND CLOSINGS

WATER ALERTS, ADVISORIES AND CLOSINGS

Feedback

RECREATIONAL WATER AND PUBLIC BEACHES

May 26, 2023 2:47 PM



CURRENT ALERTS/ADVISORIES

WATER CONTACT ALERTS CURRENTLY IN EFFECT:

None.

BEACH AREA CLOSURES:

None.

WATER QUALITY ADVISORIES CURRENTLY IN EFFECT:

None.

ALERT/ADVISORY PROCEDURES

Feedback

The Baltimore County Department of Health, Environmental Health Services (EHS) closely monitors and samples beach areas for water quality, posts sampling results, and issues beach closure notices, Water Contact Alerts and Water Quality Advisories.

When recreational water conditions exceed standards and sewage contamination is suspected or evident sampling will occur and the results will be posted online, Water Contact Alerts are issued or public bathing beaches are closed. Contaminated conditions can be produced by storm water run-off from severe storms, sanitary sewage overflows, or marine accidents. After the storms have passed, local wind and tide conditions can result in the intermittent re-intensification of those conditions for extended periods in tidal waters. When water quality parameters are generally elevated or abnormal, but no sewage contamination is present, a Water Quality Advisory will be issued.

Recreational water users are reminded:

- Be observant for cloudy or discolored water in streams, rivers, or the bay, and of waters that are laden with debris. Water quality may have been negatively impacted.
- Do not drink stream water.
- Avoid contact with potentially contaminated water if you have open cuts or bandaged wounds. If accidental contact with contaminated water occurs, wash any damaged skin areas as soon as possible.
- Minimize hand to mouth contact and be sure to wash your hands thoroughly before eating.

EXPLORE WATER SAMPLING

Feedback

PROGRAM DETAILS

WATER SAMPLING RESULTS

ALERTS, ADVISORIES AND CLOSURES

CONTACT US

ENVIRONMENTAL HEALTH SERVICES

Drumcastle Government Center
6401 York Road, Third Floor

Baltimore, Maryland 21212

HOURS

Monday through Friday

8:30 a.m. to 4:30 p.m.

EMAIL

ehs@baltimorecountymd.gov

PHONE

410-887-FOOD (3663)

TTY: 711

Feedback

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GOVERNMENT

400 Washington Avenue, Towson Maryland 21204

BALTCO 311

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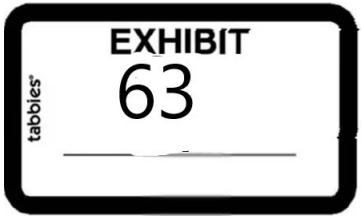
Feedback

STREAM SENSE SIGN LOCATIONS IN BALTIMORE COUNTY

SIGN LOCATION	BODY OF WATER	ZIP CODE
328 Riverside Drive	Back River	21221
Located at the Ashland Presbyterian Church, off Ashland Rd. in the lower parking lot	Western Run	21030
Bridge located at Southern Cross Dr.	Powder Mill Run	21207
Located at the end of Marott Dr. at the stream	Tributary to Powder Mill Run	21207
Located at the Powder Mill Run Park parking lot off Patterson Ave.	Powder Mill Run	21207
Located at the end of Labyrinth Rd. at the stream bank in Western Run Park, Baltimore City	Western Run	21215
Located on a stream bank trail off Stonecroft Rd. in Baltimore City	Maidens Choice Run	21229
Located below Boswell Rd. and above Chedworth La., at the sidewalk off Frederick Ave., Baltimore City	Maidens Choice Run	21229
Located at Harford Park off Wyclff Rd., at the stream bank behind the tennis court.	Herring Run	21234
1809 Frederick Road	Tributary to Patapsco River	21228
407 Seminal Avenue	Tributary to Patapsco River	21228
Northeast alley at cul-de-sac on Briarwood Road	Tributary to Patapsco River	21228



THE BALTIMORE SUN

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OP-ED

A war on pollution, not rural Maryland

By Karen Hosler
Baltimore Sun • Jan 17, 2012 at 1:50 pm

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Don't be surprised if longtime "poop warriors" along theChesapeake Bay'sthickly populated Western Shore are not sympathetic to claims that builders in still-rural parts of the watershed should have unlimited use of septic tanks.

Those backyard sewage disposal devices send pollutants into the ground, where they can leach into waterways and sometimes drinking water supplies. In Maryland, at least, they are the fastest-growing source of bay pollution, so the long practice of one-by-one septic tank approvals, common throughout the bay area, doesn't make sense to those at the cleanup end.

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"What we really need to be doing is taking a much more holistic view of the complete picture," said Ronald Bowen, public works director for Anne Arundel County. "How is it we can continue to co-exist, continue to grow economically, while at the same time working toward addressing the sins of the past?"

Maryland Gov.Martin O'Malley, who is waging an uphill battle to curb the use of septic tanks for new development, uses the county's plight to make his case. He says the sorry state of Anne Arundel's dirty rivers — where nearly one third of the pollution comes from septic tanks — provides a powerful warning to still-pristine areas.

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The same picture for 36 years, but it still gets to you.

By Taco Relish

"That's the future of this Chesapeake Bay if we don't get a handle on the proliferation of massive septic housing developments," Mr. O'Malley told reporters. "The chunk of pollution that will come from a growing population increasingly relying on septic systems, rather than wastewater treatment plants, will outstrip the progress that we are making in other areas."

To meet federal bay pollution cleanup requirements, Mr. Bowen proposes to retire half of the 40,000 septic tanks serving homes along his county's 530 miles of sensitive shoreline. The price tag of $760 million includes several techniques, such as the creation of new cluster treatment plants that serve only one community.

Mr. Bowen also needs $270 million to upgrade the county's seven sewage treatment plants and more than $1 billion to restore stream beds and otherwise deal with storm water runoff. Altogether, that's almost twice the annual county budget. Like most other watershed counties with similar needs, Anne Arundel doesn't have the money.

Mr. O'Malley hopes to help local governments meet at least some of these costs by persuading the state legislature to raise the "flush tax" on sewer and septic users.

Of course, no one's happy about tax or fee increases. But proposed curbs on septic tank use are also drawing fire for a different reason. Rural legislators assert their constituents have a right to seek profits from land development. They contend that curbs on septic tanks are a backdoor tactic to serve another O'Malley goal — limiting growth.

Those legislators don't seem troubled by the environmental damage that results from continued rural development and a reliance on septic tanks. Nor do they seem concerned that every taxpayer will share in the price of roads, schools and the other services new development needs.

It's easy to understand the complaint of bayside homeowners with failing septic systems who are suddenly confronted with a bill of $20,000 or more to connect to a sewer system or put in a new, state-of-the-art septic tank. But remember, the cost of septic tank pollution to the rest of us in terms of harmful bacteria in the water supply — we're talking about us now, not fish — is perhaps beyond calculation.

"If we want to continue the quality of life we have here ... it's going to be more expensive," said Robert Summers, Maryland's secretary of the environment. But without a clean water supply, "we have no economy."

Like Maryland, Virginia and Pennsylvania both have programs to encourage property owners to upgrade their septic waste technology to the newest nitrogen- and phosphorus-removing systems.

"I think it's momentous," said Allen Knapp, director of onsite sewage and water services for the Virginia Department of Health. "Instead of just issuing permits, we are now trying to achieve a potential outcome: a cleaner environment."

But Maryland is the most densely populated of the bay watershed states, and it seems to have made the most use of septic systems to serve summer cottages and now mini-mansions along the bay.

"There is nothing easy about what we're trying to do," Mr. Bowen said.

So, that's the dilemma. Most of us are selfish and short-sighted. We want what we want right now and choose not to think about the future. But just for the sake of argument, wouldn't it be a lot better to avoid the problem while we still can than to expect future generations to try to fix it?

Maybe that's too much to ask.

Karen Hosler, a former editorial writer for The Baltimore Sun, is a reporter, commentator and talk show host in Baltimore. This article is distributed by the Bay Journal News Service.

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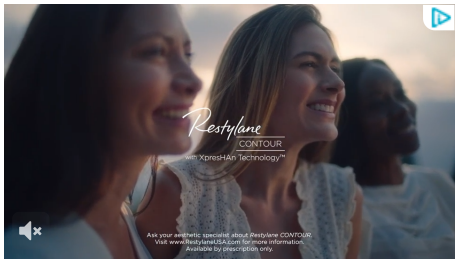

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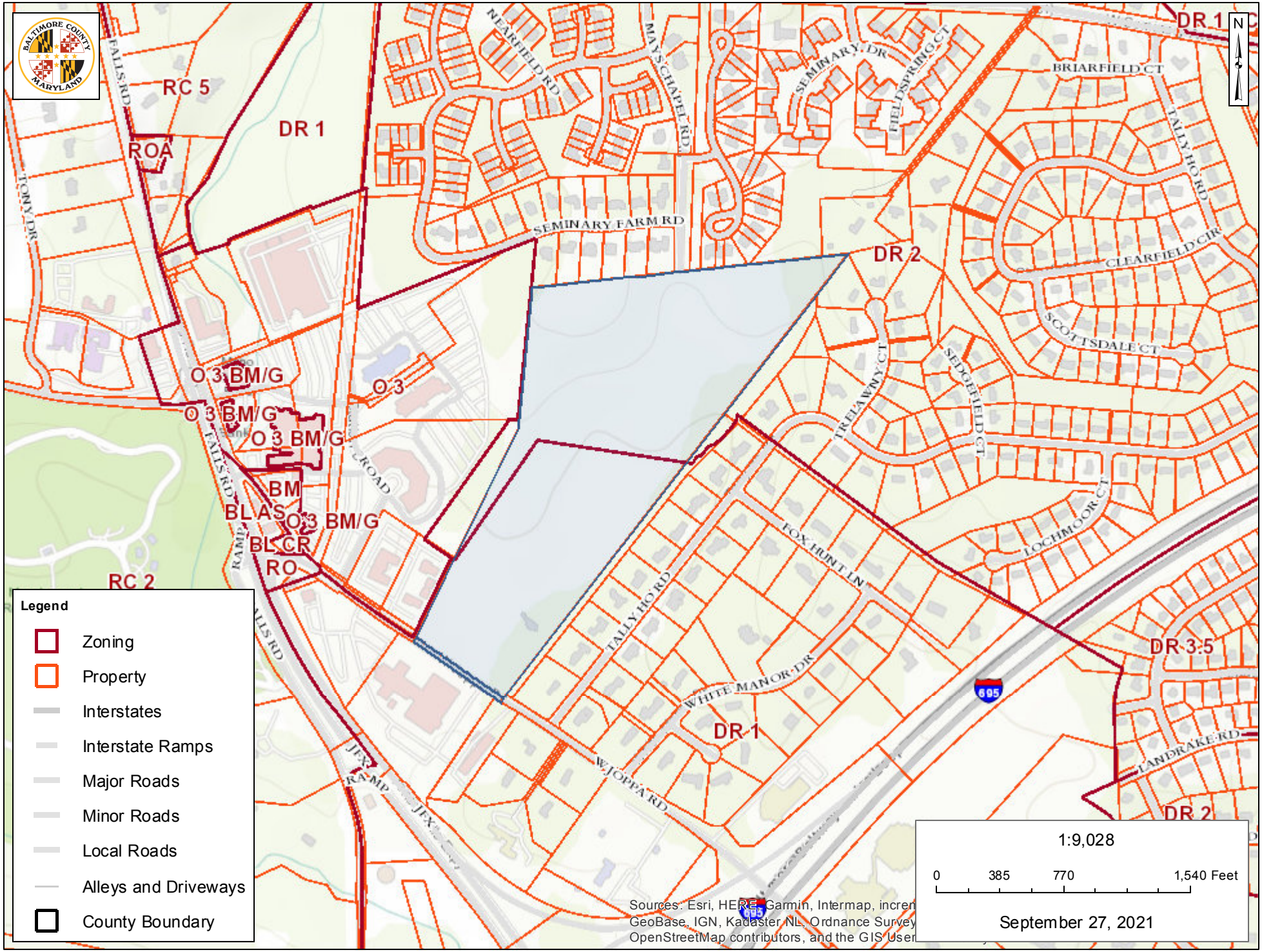
Baltimore County - My Neighborhood



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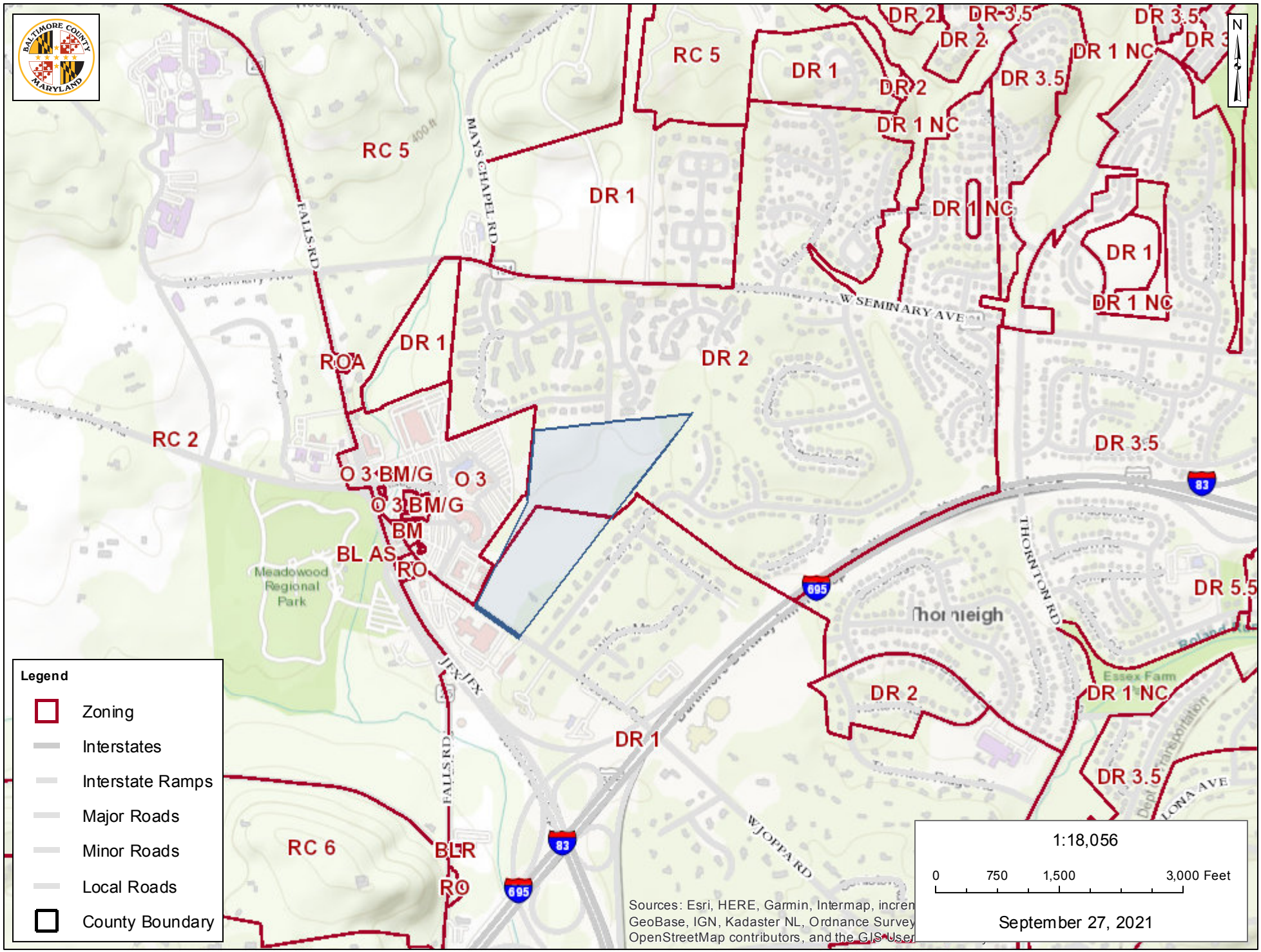

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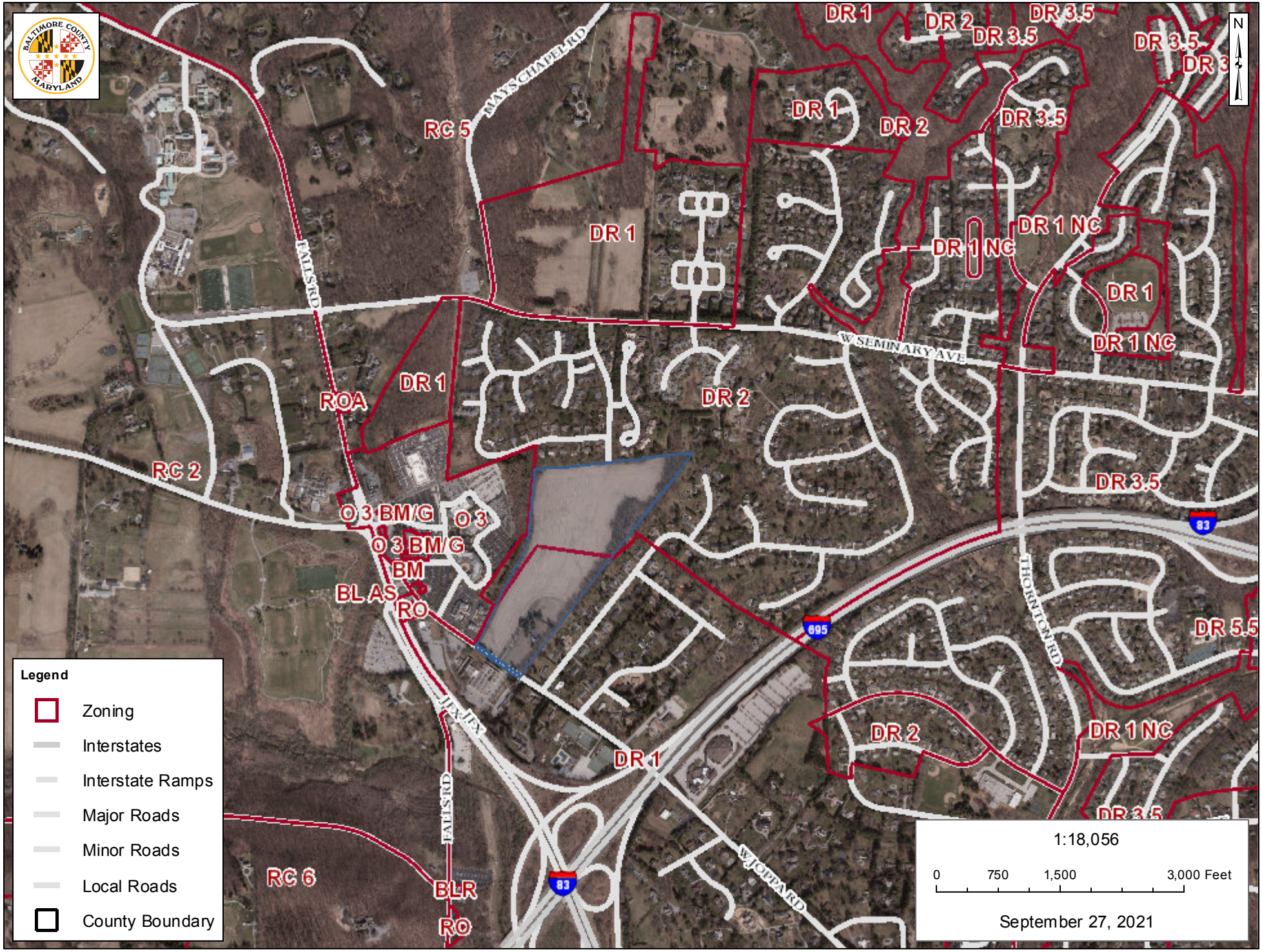


Baltimore County - My Neighborhood



Real Property Data Search ( )
Search Result for BALTIMORE COUNTY

View Map | View GroundRent Redemption | View GroundRent Registration

Special Tax Recapture: None

Account Identifier: **District -** 08 **Account Number -** 0812000275

Owner Information

Owner Name: GREENSPRING JOPPA FALLS LLC
Use: RESIDENTIAL
Principal Residence: NO
Mailing Address: C/O ATAPCO PROPERTIES INC
STE 2800 ONE SOUTH ST
BALTIMORE MD 21202-
Deed Reference: /44365/ 00161

Location & Structure Information

Premises Address: 2310 W JOPPA RD
BROOKLANDVILLE 21022-0285
Legal Description: 33.51 AC
NS W JOPPA RD
250FT NW TALLY-HO RD

Map:	Grid:	Parcel:	Neighborhood:	Subdivision:	Section:	Block:	Lot:	Assessment Year:	Plat No:
0060	0020	0449	8070135.04	0000				2023	Plat Ref:

Town: None

Primary Structure Built	Above Grade Living Area	Finished Basement Area	Property Land Area	County Use
1937	3,864 SF		33.5100 AC	04

Stories	Basement	Type	Exterior	Quality	Full/Half Bath	Garage	Last Notice of Major Improvements
2	YES	STANDARD UNIT	STONE/	6	2 full/ 2 half	1 Attached	

Value Information

	Base Value	Value As of 01/01/2020	Phase-in Assessments As of 07/01/2022	As of 07/01/2023
Land:	5,711,000	5,711,000		
Improvements	417,700	417,700		
Total:	6,128,700	6,128,700	6,128,700	
Preferential Land:	0			

Transfer Information

Seller: LANKFORD DOROTHEA B
Date: 03/22/2021
Price: $8,000,000
Type: ARMS LENGTH MULTIPLE
Deed1: /44365/ 00161
Deed2:

Seller: LANKFORD DOROTHEA B PERSONSL REPRESENTATIVE OF THE ESTATE OF ALLAN M LANKFORD
Date: 06/10/2020
Price: $0
Type: NON-ARMS LENGTH OTHER
Deed1: /42953/ 00411
Deed2:

Seller: LANKFORD NORRIS B
Date: 06/10/2020
Price: $0
Type: ARMS LENGTH MULTIPLE
Deed1: /42953/ 00404
Deed2:

Exemption Information

Partial Exempt Assessments:	Class	07/01/2022	07/01/2023
County:	000	0.00	
State:	000	0.00	
Municipal:	000	0.00|	0.00|

Special Tax Recapture: None

Homestead Application Information

Homestead Application Status: No Application

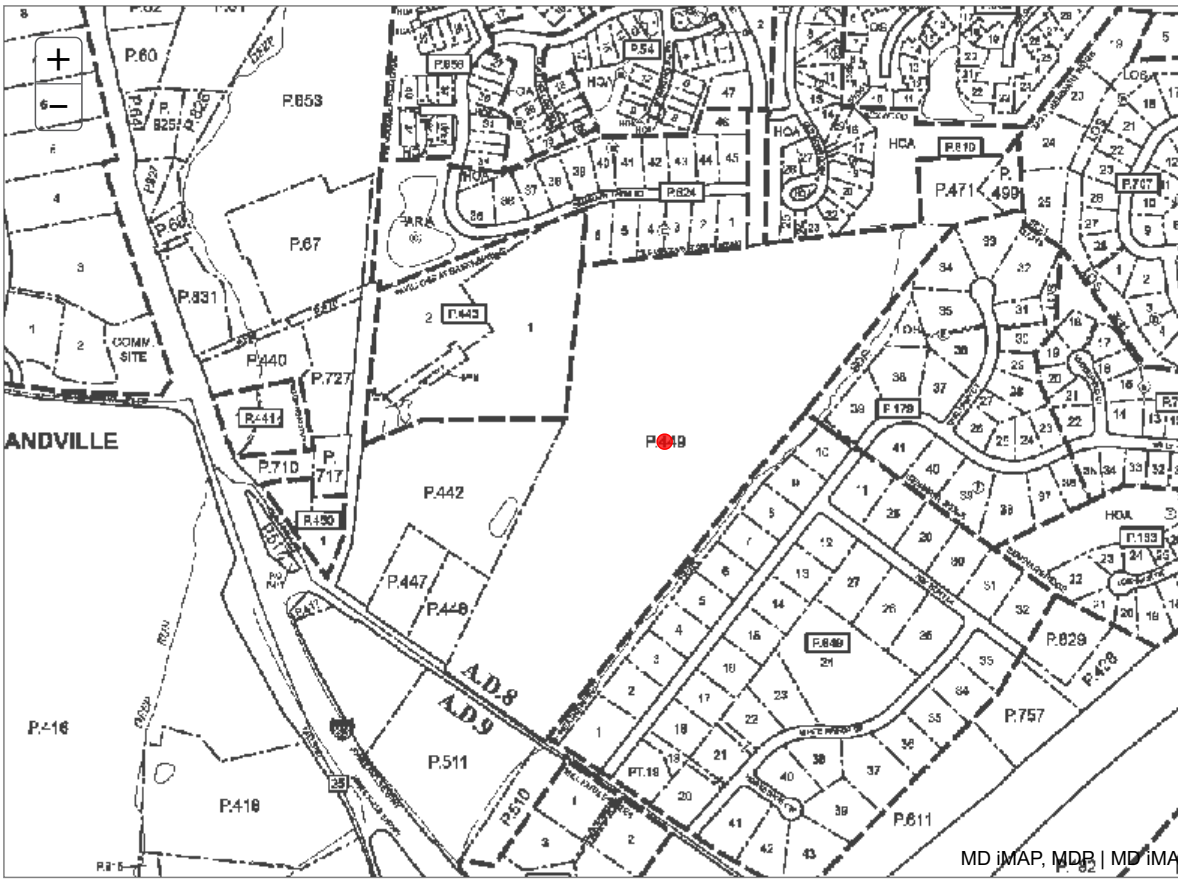
Homeowners' Tax Credit Application Information

Homeowners' Tax Credit Application Status: No Application **Date:**

Baltimore County

New Search (https://sdat.dat.maryland.gov/RealProperty)

District: 08 Account Number: 0812000275



The information shown on this map has been compiled from deed descriptions and plats and is not a property survey. The map should not be used for legal descriptions. Users noting errors are urged to notify the Maryland Department of Planning Mapping, 301 W. Preston Street, Baltimore MD 21201.

If a plat for a property is needed, contact the local Land Records office where the property is located. Plats are also available online through the Maryland State Archives at **www.plats.net (http://www.plats.net)**.

Property maps provided courtesy of the Maryland Department of Planning.

For more information on electronic mapping applications, visit the Maryland Department of Planning web site at **http://planning.maryland.gov/Pages/OurProducts/OurProducts.aspx (http://planning.maryland.gov/Pages/OurProducts/OurProducts.aspx)**.

GREENSPRING MANOR

2310 W. JOPPA ROAD

DEDICATION TABLE

THE FOLLOWING RIGHTS OF WAY ARE TO BE CONVEYED TO BALTIMORE COUNTY BY THE DEVELOPER/OWNER OF THIS PROPERTY AS A CONDITION OF APPROVAL OF THESE PLANS.

TYPE OF CONVEYANCE	NO.	TOTAL AREA**
ACCESS EASEMENT	2	0.10 AC
DRAINAGE AND UTILITY EASEMENT	9-10	0.66 AC+/-5.94 AC.
FOREST CONSERVATION EASEMENT	5-4	3.32 AC+/-13 AC.
STORMWATER MANAGEMENT EASEMENT	1	2.15 AC+/-2.15 AC.
100 YEAR FLOODPLAIN AND DRAINAGE AND UTILITY EASEMENT	5	5.10 AC+/-5.10 AC.
FOREST BUFFER EASEMENT	6	3.28 AC+/-3.54 AC.
HIGHWAY WIDENING	1	0.54 AC.

** NOTE: TOTAL AREAS SHOWN IN THIS TABLE ARE APPROXIMATE ONLY. REFER TO THE RECORD PLAT OR RIGHT OF WAY DRAWING FOR EXACT AREAS.

ENTRANCE FEATURE AND SIGN



NOT TO SCALE
SIGN FACE AREA: 24 SQUARE FEET

DELINQUENT ACCOUNTS CERTIFICATION:

I, _____, DIRECTOR OF LAND DEVELOPMENT CERTIFY UNDER OATH THAT THERE ARE NO DELINQUENT ACCOUNTS FOR ANY OTHER DEVELOPMENT WITH RESPECT TO ANY OF THE FOLLOWING: THE APPLICANT, A PERSON WITH FINANCIAL INTEREST IN THE PROPOSED DEVELOPMENT, OR A PERSON WHO SHALL PERFORM CONTRACTUAL SERVICES ON BEHALF OF THE PROPOSED DEVELOPMENT.

GROUNDWATER MANAGEMENT

PRIOR TO RECORD PLAT APPROVAL THE EXISTING DWELLING MUST BE CONNECTED TO PUBLIC WATER AND SEWER. UPON CONNECTION, THE EXISTING WELL MUST BE BACK-FILLED BY A LICENSED MASTER WELL DRILLER WHO MUST SUBMIT A WELL ABANDONMENT REPORT TO GROUNDWATER MANAGEMENT. THE EXISTING SEPTIC SYSTEM MUST BE PUMPED AND BACK-FILLED OR REMOVED BY A LICENSED SEWAGE DISPOSAL CONTRACTOR. ABANDONMENT REPORTS MUST BE SUBMITTED PRIOR TO RECORD PLAT APPROVAL.

ADJACENT PROPERTY INFORMATION

1. 13 OLD BOXWOOD LANE
PAMELA BOYER
TAX ID: 2000004431
DEED REF.: 11943/3699
PLAT REF.: 53/34

2. 15 OLD BOXWOOD LANE
BRIAN AND ROBIN RUBIN
TAX ID: 2000004432
DEED REF.: 4478/0173
PLAT REF.: 53/34

3. 17 OLD BOXWOOD LANE
THOMAS AND CAROL BRADLEE
TAX ID: 2000004433
DEED REF.: 40440/243
PLAT REF.: 53/34

4. 19 OLD BOXWOOD LANE
LORRAINE BRONSTEIN TRUSTEE
TAX ID: 2000004434
DEED REF.: 23741/666
PLAT REF.: 53/34

5. 21 OLD BOXWOOD LANE
ALVIN AND MARI KALIN
TAX ID: 2000004435
DEED REF.: 30686/144
PLAT REF.: 53/34

6. 23 OLD BOXWOOD LANE
JAMES AND DOROTHY TRUITT
TAX ID: 2000004436
DEED REF.: 29568/25
PLAT REF.: 53/34

7. 76 SEMINARY FARM RD.
FRED AND JAN HALLAHAN
TAX ID: 1900006676
DEED REF.: 24347/683
PLAT REF.: 49/124

8. SEMINARY FARM RD.
THOMAS AND PATRICIA PRYETT
TAX ID: 1900006677
DEED REF.: 7840/474
PLAT REF.: 49/124

9. 72 SEMINARY FARM RD.
ROBERT, JOSEPH, JR. AND WILLIAM HALL
TAX ID: 1900006678
DEED REF.: 45037/169
PLAT REF.: 49/124

10. 70 SEMINARY FARM RD.
GARY WOODRUFF
TAX ID: 1900006679
DEED REF.: 31148/40
PLAT REF.: 49/124

11. 68 SEMINARY FARM RD.
HARJIT AND JAMALA SINGH
TAX ID: 1900006680
DEED REF.: 7640/129
PLAT REF.: 49/124

12. 66 SEMINARY FARM RD.
MELVILLE AND BETSY YEARLEY
TAX ID: 1900006681
DEED REF.: 3164/230
PLAT REF.: 49/124

10753 FALLS RD.
FOXLEIGH PAVILIONS LIMITED PARTNERSHIP
TAX ID: 2200011094
DEED REF.: NONE
PLAT REF.: 64/19
COMMERCIAL

FIRE MARSHAL

1. PROPOSED BUILDINGS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO MEET THE APPLICABLE PROVISIONS OF THE BALTIMORE COUNTY FIRE PREVENTION CODE NO. 3-17.
2. LANDSCAPING OR OTHER OBSTRUCTIONS PLACED AROUND STRUCTURES SHALL NOT IMPAIR OR IMPEDE ACCESSIBILITY FOR FIRE DEPARTMENT OPERATIONS. ANY TREES PLANTED WITHIN 10 FEET OF THE PERIMETER OF THE BUILDING SHALL BE OF A TYPE THAT WILL NOT INTERFERE WITH EMERGENCY OPERATIONS AND MUST BE APPROVED BY THE FIRE CODE OFFICIAL.
3. A FIREFIGHTER RUN ROAD FOR ACCESS TO BUILDINGS AND ADEQUATE WATER SUPPLIES SHALL BE AVAILABLE FOR THE USE BY EMERGENCY FIRE APPARATUS AND CAPABLE OF HANDLING EMERGENCY APPARATUS WEIGHING 70,000 LBS. WHEN CONSTRUCTION OF ANY BUILDING IS UNDERWAY, ROOF, IN ACCORDANCE WITH THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO.3-17, SECTION 1.116.4.3.1.3.
4. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A RESIDENTIAL SPRINKLER SYSTEM FOR EACH INDIVIDUAL DWELLING.
5. THE SPRINKLER SYSTEM MUST BE INSPECTED BY THE BALTIMORE COUNTY FIRE MARSHAL'S OFFICE PRIOR TO TAKING OCCUPANCY. (SPRINKLER HYDRO / SPRINKLER FINAL)
6. THE PRIVATE FIRE HYDRANTS SHALL BE PAINTED "OSHA RED" TO DISTINGUISH THEM FROM THE PUBLIC (ORANGE) FIRE HYDRANTS IN ACCORDANCE WITH BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17 SECTION 1: 18.5.10.5 PRIVATE HYDRANT COLOR.
7. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A PRIVATE UNDERGROUND FIRE LINE AND SHALL BE REVIEWED BY THE PLANS REVIEW SECTION OF BALTIMORE COUNTY. A PLUMBING PERMIT SHALL NOT BE USED TO INSTALL AN UNDERGROUND FIRE LINE.
8. ALL FIRE HYDRANTS SPACING SHALL BE IN ACCORDANCE WITH THE BALTIMORE COUNTY STANDARD DESIGN MANUAL.
9. THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17, SECTION 1:10.11.1.5, REQUIRES THAT THE ADDRESS NUMBERS FOR RESIDENTIAL PROPERTIES SHALL BE A MINIMUM OF 3 INCHES IN SIZE.

GREENSPRING MANOR - OPEN SPACE AMENITY COST ESTIMATE

				9/2/2021
Walking Path				
Mile Asphalt Walking Path	4,800	LF	$5.00	$24,000.00
			Walking Trail Sub-Total	$24,000.00
Fencing				
4ft Split Rail Fence	900	LF	$25.00	$22,500.00
			Fence Total	$22,500.00
Tot-Lot Open Space				
Sign and Post	2	EA	$250.00	$500.00
			Sign and Post Total	$500.00
Entrance Masonry and Fencing			Quantity (Units)	Cost
Entry Masonry Columns (2ft square x 8ft high)				
Entry Veneer Entrance Sign	2	EA	$40,000.00	$80,000.00
			Subtotal	$80,000.00
Free Standing Columns and Fencing				
6ft Tall Wood Fence	10	EA	$5,000.00	$50,000.00
6ft Tall Pool Fence	438	LF	$25.00	$10,950.00
			Subtotal	$60,950.00
			Entrance Feature Total	$140,950.00
Amenity Space - Entrance Area Park				
Tree Varieties				
Victor Stanley - BRCA - 10 Bike Rack	2	EA	$800.00	$1,200.00
Victor Stanley - EVA-32 Benches Bench	2	EA	$1,000.00	$2,000.00
Victor Stanley - CR-3 Picnic Table w/ Pavilion	1	EA	$5,000.00	$5,000.00
			Subtotal	$8,200.00
Pavilion				
Customized Pavilion	1	EA	$30,000.00	$30,000.00
			Subtotal	$30,000.00
Hardscape				
Concrete Sidewalk and Concrete Pad at Bike Rack	900	SF	$10.00	$9,000.00
			Subtotal	$9,000.00
Landscaping				
Ornamental Plantings	732	SF	$10.00	$10,980.00
			Subtotal	$10,980.00
			Entrance Area Park Total	$57,980.00
Amenity Space - Park Space 1				
Tree Varieties				
Victor Stanley - BRCA - 10 Bike Rack	2	EA	$800.00	$1,200.00
Victor Stanley - EVA-32 Benches Bench	2	EA	$1,000.00	$2,000.00
Victor Stanley - CR-3 Picnic Table w/ Pavilion	1	EA	$5,000.00	$5,000.00
			Subtotal	$8,200.00
Hardscape				
Concrete Sidewalk and Concrete Pad at Bike Rack	488	SF	$10.00	$4,880.00
			Subtotal	$4,880.00
Landscaping				
Ornamental Plantings	293	SF	$10.00	$2,930.00
Ornamental tree	2	EA	$350.00	$700.00
			Subtotal	$3,630.00
			Park Space 1 Total	$16,710.00
Amenity Space - Park Space 2				
Tree Varieties				
Victor Stanley - CR-3 Picnic Table w/ Grates	2	EA	$2,516.00	$5,032.00
			Subtotal	$5,032.00
Pavilion				
Customized Gazebo	1	EA	$20,000.00	$20,000.00
			Subtotal	$20,000.00
Hardscape				
Concrete Sidewalk and Concrete Pad at Bike Rack	783	SF	$10.00	$7,830.00
			Subtotal	$7,830.00
Landscaping				
Ornamental Plantings	900	SF	$10.00	$12,000.00
Ornamental tree	4	EA	$350.00	$1,400.00
			Subtotal	$13,400.00
			Park Space 2 Total	$46,262.00
			Total Amenity Cost	**$260,952.00**

Note: Tax, freight, and installation not included

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VICINITY MAP

SCALE: 1" = 1000'



BENCHMARKS

NAME	NORTHING (NAD 83)	EASTING (NAD 83)	ELEVATION (NAVD 88)	DESCRIPTION
BHA 320	638,167.0000	1,405,888.76	292.63	BRASS DISC
BHA 320 AZ MK	637,711.75	1,405,853.28	290.31	BRASS CAP
4194	637,537.08	1,406,230.87	292.89	CAPPED PIPE

LOT AREAS

LOT NO.	SF	ACRE
LOT 1	130,099+/-	3.986+/-
LOT 2	11,040+/-	.253+/-
LOT 3	8,222+/-	.188+/-
LOT 4	9,343+/-	.214+/-
LOT 5	10,315+/-	.236+/-
LOT 6	9,790+/-	.224+/-
LOT 7	8,311+/-	.190+/-
LOT 8	8,311+/-	.190+/-
LOT 9	7,507+/-	.172+/-
LOT 10	12,173+/-	.279+/-
LOT 11	12,453+/-	.285+/-
LOT 12	12,453+/-	.285+/-
LOT 13	12,453+/-	.285+/-
LOT 14	12,193+/-	.279+/-
LOT 15	8,809+/-	.202+/-
LOT 16	8,809+/-	.202+/-
LOT 17	13,483+/-	.309+/-
LOT 18	15,499+/-	.355+/-
LOT 19	18,799+/-	.431+/-
LOT 20	16,373+/-	.376+/-
LOT 21	16,950+/-	.389+/-
LOT 22	11,593+/-	.266+/-
LOT 23	13,315+/-	.305+/-
LOT 24	14,067+/-	.323+/-
LOT 25	11,363+/-	.260+/-
LOT 26	12,154+/-	.279+/-
LOT 27	9,851+/-	.226+/-
LOT 28	12,336+/-	.283+/-
LOT 29	17,640+/-	.404+/-
LOT 30	21,571+/-	.495+/-
LOT 31	13,584+/-	.311+/-
LOT 32	11,252+/-	.258+/-
LOT 33	11,369+/-	.260+/-
LOT 34	12,256+/-	.281+/-
LOT 35	13,484+/-	.309+/-
LOT 36	13,154+/-	.301+/-
LOT 37	14,360+/-	.329+/-
LOT 38	9,827+/-	.225+/-
LOT 39	8,107+/-	.186+/-
LOT 40	8,226+/-	.188+/-
LOT 41	9,845+/-	.226+/-
LOT 42	11,724+/-	.269+/-
LOT 43	11,872+/-	.221+/-
LOT 44	8,549+/-	.272+/-
LOT 45	8,299+/-	.190+/-
LOT 46	7,953+/-	.182+/-
LOT 47	7,953+/-	.182+/-
LOT 48	10,552+/-	.242+/-
LOT 49	11,066+/-	.254+/-
LOT 50	9,876+/-	.226+/-
LOT 51	11,887+/-	.273+/-
LOT 52	13,098+/-	.298+/-
LOT 53	12,195+/-	.280+/-
LOT 54	11,011+/-	.208+/-
LOT 55	14,656+/-	.336+/-
LOT 56	9,090+/-	.208+/-
LOT 57	8,563+/-	.196+/-
LOT 58	8,244+/-	.189+/-
LOT 59	8,244+/-	.189+/-
LOT 60	9,775+/-	.224+/-
LOT 61	8,855+/-	.203+/-

SUITABLE OUTFALL STATEMENT

IN THE EXISTING CONDITION, THE SITE CONTAINS A SINGLE-FAMILY HOME AND AGRICULTURAL FIELDS ON APPROXIMATELY 39.5 ACRES. THERE ARE VERY FEW STEEP SLOPES AND NO SOILS CLASSIFIED AS HIGHLY ERODIBLE ON THE SITE. THE SOILS ON THE SITE CONSIST OF SOIL GROUPS 1A(G) B, C, AND D. SEE APPENDIX A FOR THE SOIL MAP. THE SITE GENERALLY DRAINS FROM THE NORTHWEST TO THE SOUTHEAST. THE SITE IS WITHIN THE JONES FALLS WATERSHED. THE ENTIRE SITE EVENTUALLY DRAINS TO AN EXISTING CULVERT UNDER JOPPA ROAD WHICH HAS BEEN ANALYZED AS THE PROJECT STUDY POINT.

THE PROPOSED DEVELOPMENT WILL GENERALLY MAINTAIN THE DRAINAGE PATTERNS OF THE EXISTING SITE; HOWEVER, THE PROPOSED DEVELOPMENT EFFORTS WILL RESULT IN CHANGES TO SURFACE RUNOFF CONDITIONS WITHIN RESIDENTIAL AREAS, PROPOSED ROADWAYS, AND WITHIN PROPOSED STORM DRAIN SYSTEMS. THE PROPOSED SITE RUNOFF WILL BE MANAGED THROUGH THE IMPLEMENTATION OF ENVIRONMENTAL SITE DESIGN PRACTICES, SPECIFICALLY 4 SUBMERGED GRAVEL WETLANDS. A SEPARATE FLOODPLAIN STUDY HAS BEEN PREPARED AND IS UNDER COUNTY REVIEW. QUANTITY CONTROL FOR INCREASED RUNOFF WILL BE MANAGED WITHIN 2 OF THE 3 PROPOSED SUBMERGED GRAVEL WETLAND AREAS, INCLUDING ON-SITE DETENTION FOR 100-YEAR PEAK RUNOFF RATES.

COMBINED HEARING REQUEST

WE ARE REQUESTING A COMBINED DEVELOPMENT PLAN AND SPECIAL VARIANCE HEARING. THE SPECIAL HEARING PETITION IS TO PERMIT BUILDING PERMITS IN AN F LEVEL TRAFFIC SHED AS DELINEATED ON THE 2020 BASIC SERVICES MAP.

ADDITIONAL INFO

ANTICIPATED ACTIONS:
1. VARIANCES: NONE
2. SPECIAL VARIANCE: TO PERMIT BUILDING PERMITS IN AN F LEVEL TRAFFIC SHED AS DELINEATED ON THE 2020 BASIC SERVICES MAP
3. SPECIAL VARIANCE: TO PAVING ON A 50' ROW IN LIEU OF 30' PAVING ON A 50' ROW
4. SPECIAL EXCEPTIONS: NONE
5. OTHER: NONE
6. CONSISTENCY WITH DESIGN MANUALS: YES

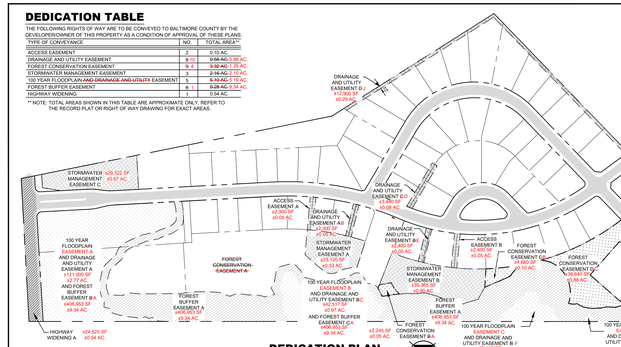
1301 W. SEMINARY AVE.
LINDA NICHOLS
TAX ID: 1800005977
DEED REF.: 14491/9416
PLAT REF.: NONE

LEGEND

CONTOUR LINE (1' INTERVAL)
DEPRESSION CONTOUR
CONCRETE CURB W/ GUTTER
CONCRETE LINE
BUILDING LINE
EDGE OF PAVEMENT
SANITARY SEWER
STORM DRAIN
WOOD LINE
OVERHEAD WIRE
WALL
FLOOD PLAIN
FOREST BUFFER
MONITORING WELL
WATER VAULT
CLEANOUT
SANITARY SEWER MANHOLE
ELECTRIC METER
LIGHT POLE
GAS VALVE
MAJOR TREE
MINOR TREE (FLOWERING)
MINOR TREE (EVERGREEN)
SHRUB
SIGN
WATE VALVE
HAND BOX
UTILITY POLE
INLET
PINE TREE
DECIDUOUS TREE

DEDICATION PLAN

1"=150'


STORMWATER MANAGEMENT EASEMENT A
ACCESS EASEMENT A ±0.05 AC.
DRAINAGE AND UTILITY EASEMENT A ±0.09 AC.
DRAINAGE AND UTILITY EASEMENT B/1 ±0.40 AC
ACCESS EASEMENT B ±0.06 AC.
DRAINAGE AND UTILITY EASEMENT C ±0.08 AC.
FOREST CONSERVATION EASEMENT A ±44,660 SF ±1.10 AC.
FOREST CONSERVATION EASEMENT A ±38,643 SF ±.89 AC.
FOREST CONSERVATION EASEMENT E/3 ±13,200 SF ±0.30 AC.
DRAINAGE AND UTILITY EASEMENT E/1 ±3,585 SF ±0.08 AC.
100 YEAR FLOODPLAIN EASEMENT A AND DRAINAGE AND UTILITY EASEMENT A ±121,060 SF ±2.77 AC.
AND FOREST BUFFER EASEMENT B/A ±406,953 SF ±9.34 AC.
HIGHWAY WIDENING A ±24,525 SF ±0.54 AC.
STORMWATER ±29,322 SF MANAGEMENT ±0.67 AC. EASEMENT C
100 YEAR FLOODPLAIN EASEMENT B AND DRAINAGE AND UTILITY EASEMENT B ±123,120 SF ±2.83 AC.
AND FOREST BUFFER EASEMENT B ±406,953 SF ±9.34 AC.
100 YEAR FLOODPLAIN EASEMENT C AND DRAINAGE AND UTILITY EASEMENT B/1 ±0.30 AC.
AND FOREST BUFFER EASEMENT C ±406,953 SF ±9.34 AC.
100 YEAR FLOODPLAIN EASEMENT D AND DRAINAGE AND UTILITY EASEMENT B/2 ±0.23 AC.
AND FOREST BUFFER EASEMENT D ±406,953 SF ±9.34 AC.
100 YEAR FLOODPLAIN EASEMENT E AND DRAINAGE AND UTILITY EASEMENT B/3 ±0.12 AC.
AND FOREST BUFFER EASEMENT E ±406,953 SF ±9.34 AC.
100 YEAR FLOODPLAIN EASEMENT F AND DRAINAGE AND UTILITY EASEMENT B/4 ±0.12 AC.
AND FOREST BUFFER EASEMENT F ±406,953 SF ±9.34 AC.
FOREST BUFFER MITIGATION AREA ±1.76 ACRES
FOREST BUFFER EASEMENT
FOREST CONSERVATION EASEMENT ±0.08 ACRES
REFORESTATION AREA ±0.05 ACRES
FOREST CONSERVATION EASEMENT ±0.45 ACRES
FOREST BUFFER EASEMENT
FOREST CONSERVATION EASEMENT ±0.88 ACRES
HOA FOREST CONSERVATION EASEMENT ±0.30 ACRES
REFORESTATION AREA ±0.37 ACRES
HOA FOREST CONSERVATION EASEMENT ±1.03 ACRES
FOREST CONSERVATION EASEMENT ±0.10 ACRES
HOA
FOREST BUFFER EASEMENT
FOREST BUFFER EASEMENT
FOREST BUFFER EASEMENT

BALTIMORE COUNTY, MARYLAND
INTER-OFFICE MEMORANDUM

TO: C. Pete Gutwald
Director, Permits, Approvals and Inspections

DATE: 3/1/2021

FROM: Steve Lafferty
Director, Department of Planning

SUBJECT: CONCEPT PLAN CONFERENCE
Project Name: Greenspring Manor
PAI #VIII-0922

GENERAL INFORMATION:

Applicant Name: Atapco Properties, INC.
1 South Street, Suite 2800
Location: Baltimore, MD, 21202
Council District: Second
Growth Tier: I
Zoning: DR 1, DR 2
Acres: 39.4 gross acres ±

Surrounding Zoning and Land Use:

North:	DR 2	Residential
South:	DR 1	Residential
East:	DR 1, DR 2	Residential
West:	O3	Office

Project Proposal:

The project proposes 61 single-family homes to be built on 39.4 ±acres of land zoned DR 1 and DR 2. The site is mostly wooded and has environmental floodplains and wetlands. There is currently one existing house, which is to remain.

Project History:

The project exhibits no development history at this time.

Other Anticipated Actions and Additional Review Items:

☐ Variance	☒ Complete Streets*	☒ School Impact Analysis
☐ Special Exception	☐ Scenic Route	☐ PUD
☒ Special Hearing- F Level Intersection, Basic Services	☐ Compatibility	☐ Design Review Panel
☐ RTA Modification	☒ Section 260 Standards*	☐ Referral to Planning Board
☐ Waiver	☒ Pattern Book*	☐ Other –

* Information about the requirements for these items is located on the Baltimore County web page at www.baltimorecountymd.gov/devrev

MEETINGS

Post Submission Community Input Meeting:		Pre-Concept Plan Conference:	
Concept Plan Conference:	3/9/2021	Community Input Meeting:	
Development Plan Conference:		Administrative Law Judge's Hearing:	

ANALYSIS

Master Plan:
The *Master Plan 2020* "Land Management Area Plan" designation for the subject site is Community Conservation Area. (CCA). Baltimore County's CCAs encompass the County's more densely populated, established communities. Nearly 75% of the County's residents live in CCAs, where there are a wide range of housing choices, small-town scale commercial centers and employment centers.
The CCA land management area designation is intended to protect and invest in these older communities, and revitalize their commercial hubs.

The "Proposed Land Use, Baltimore County Smart Coded" designation is T3 Sub-Urban. The T-3 transect is characterized by low-density residential areas, adjacent to higher zones that contain mixed-use. Landscaping is naturalistic and setbacks are relatively deep. Blocks may be large and the roads irregular to accommodate natural conditions.

School Impact:
This development is subject to Section 32-6-103 of the Baltimore County Code, Adequate Public Facilities. A school impact analysis is required with development plan submittal. Information is available at the following web site:

www.baltimorecountymd.gov/Agencies/planning/devrevandlanduse/adequatepublicschoolfacilities.html

The proposal is within the boundaries of the following schools:

Riderwood Elementary School
Ridgley Middle School
Dulaney High School

EVALUATION AND RECOMMENDATION

The receipt of additional information from the Community Input Meeting or other sources may generate further comments at the Development Plan Conference.

Special Variance Request:

The applicant has requested the county to permit its development in an F level traffic shed as delineated on the 2020 Basic Services Map. This includes the intersection of West Joppa Road and Falls Road/I-83. The development access is within this failing traffic shed. The Department has received the applicant's memorandum regarding the traffic study analysis conducted in September 2020 which proposes improvements to mitigate the traffic in order to obtain a variance from the Basic Serves requirement.

The Department of Planning considers this site to be overdeveloped. Many of the lot sizes are not compatible to the surrounding neighborhoods. The number of lots should be decreased to allow for larger lots and would help achieve a design that could accommodate future improvements and yard space without the need for relief. As designed, the proposed development does not achieve the vision of the Master Plan 2020 nor the Comprehensive Manual of Development Policies. The Master Plan 2020 recommends low-density residential development adjacent to higher zones consisting of mixed-uses. The site also would require extensive grading. The site should be redesigned to minimize cut and fill while using the natural features of the land pursuant to the Comprehensive Manual of Development Policies as well as Section 260 of the BCZR.

Residential Performance Standards:

The Baltimore County Zoning Regulations (BCZR) § 260 requires the Director of the Department of Planning to provide a finding to the Hearing Officer for all residential development of four lots or more in Baltimore County that is located within the Urban/Rural Demarcation Line. The applicant is to provide to the Department of Planning a pattern book for review. The development must be consistent with the spirit and intent of the entirety of §260 of the BCZR.

Additional Comments on the Plan:

1. Redesign the overall layout with uniform lot sizes that are more compatible with the surrounding developments and more compatible with the description of the Master Plan 2020 T3 Transect designation. Design road alignments in relation to existing topography. Minimize cutting and filling and avoid mass grading of large tracts of land where possible pursuant to the CMDP, Residential Guidelines, page 43. Coordinate building design, site layout, and grading so that grade transitions are gradual and respect the existing topography pursuant to the Baltimore County Zoning Regulations section 260.2.A.3.
2. Remove lot 7 or reallocate it within the redesign of the site plan to avoid the awkward siting of this home.
3. Show front building orientations for all proposed dwellings.
4. Provide a landscape and lighting plan to the County Landscape Architect for review and approval. Proposed lighting should be designed at a pedestrian scale and not create light spillage onto adjacent properties.
5. Add a note to the plan stating that the maximum height for a dwelling in a DR 1/DR 2 zone is 50 feet.
6. Confirm with the Office of Zoning Review whether additional on street parking for overflow will be required.
7. Confirm by note on the plan that a minimum private yard area of 500 contiguous square feet with

a minimum 15-foot dimension is provided for each proposed lot to ensure adequate yard space pursuant to the Comprehensive Manual of Development Policies (CMDP) page 33.

8. The Department of Planning will require the proposed cul-de-sacs to be designed pursuant to Baltimore County Zoning Regulation section 260.4.B. Landscaped islands will be required unless an unforeseen hardship exists notwithstanding the proposed layout design.
9. Provide all architectural designs to the Department of Planning for review and approval. The architecture should be included in the required pattern book and show all proposed housing types. The proposed architecture should indicate proposed dimensions, materials, and colors to be used.
10. All proposed signage should be included in the pattern book and comply with section 450 of the Baltimore County Zoning Regulations. Signage should include proposed sign type, dimensions, materials, and colors.
11. Indicate in the required pattern book that Lots 2, 6, 8,15,36,46,47,52,53 and 61 are high visibility lots. It should be demonstrated in the required pattern book how these lots meet the higher quality of design pursuant to the Baltimore County Manual of Regulations Section 260.6. The pattern book should include square footage for the side facades with element count requirements.
12. The plan states that the proposed 52,000 sf HOA space will be an active recreation field. Cleary indicate whether this will be an open multi-use field, sports field, tot lot, or other open space. Clarify whether the proposed open space within the 100-year floodplain is acceptable per county open space standards.
13. Confirm with the Department of Environmental Protection and Sustainability that all wetland, floodplain and forest buffer setbacks are being met.
14. Make a clear distinction on the plan between the labeled forest buffer and forest conservation easement areas.
15. Indicate if there are any specimen trees on the site. These trees should be preserved to the fullest extent possible.
16. Any fencing around the storm water management ponds should be of high quality materials as approved by the Baltimore County Landscape Architect.
17. It is a policy of the Department of Planning that the homeowner should be able to have an open projection (i.e. rear decks) of at least 10' without requiring individual zoning relief.
18. Changes in building location or orientation, or proposed driveway location, at the time of building permit may require a determination from the zoning office of a possible amendment to the Final Development Plan (FDP). If, at the building permit stage, it is anticipated that dwelling footprints may be reversed, or that the location of garages may change from front- to side-loaded, or vice versa, a detailed alternative typical lot layout plan should be included in the pattern book.

Prepared by: Brett M. Williams

Brett M. Williams

Division Chief: Jenifer G. Nugent

Jenifer G. Nugent

SL/JGN/MK/BMW/

BALTIMORE COUNTY, MARYLAND
INTER-OFFICE MEMORANDUM

TO: C. Pete Gutwald
Director, Permits, Approvals and Inspections

DATE: 8/11/2021

FROM: Steve Lafferty
Director, Department of Planning

SUBJECT: DEVELOPMENT PLAN CONFERENCE
Project Name: Greenspring Manor
PAI #VIII-0922

GENERAL INFORMATION:

Applicant Name: Atapco Properties, INC.
1 South Street, Suite 2800
Baltimore, MD, 21202

Location:

Council District: Second

Growth Tier: I

Zoning: DR 1, DR 2

Acres: 39.4 gross acres ±

Surrounding Zoning and Land Use:

North:	DR 2	Residential
South:	DR 1	Residential
East:	DR 1, DR 2	Residential
West:	O3	Office

Project Proposal:

The project proposes 61 single-family homes to be built on 39.4 ±acres of land zoned DR 1 and DR 2. The site is mostly wooded and has environmental floodplains and wetlands. There is currently one existing house, which is to remain.

Project History:

The project exhibits no development history at this time.

Other Anticipated Actions and Additional Review Items:

☐ Variance	☒ Complete Streets*	☒ School Impact Analysis
☐ Special Exception	☐ Scenic Route	☐ PUD
☒ Special Hearing- F Level Intersection, Basic Services	☐ Compatibility	☐ Design Review Panel
☐ RTA Modification	☒ Section 260 Standards*	☐ Referral to Planning Board
☐ Waiver	☒ Pattern Book*	☐ Other

* Information about the requirements for these items is located on the Baltimore County web page at www.baltimorecountymd.gov/devrev

MEETINGS

Concept Plan Conference:	3/9/2021	Community Input Meeting:	4/27/2021
Development Plan Conference:	8/11/2021	Administrative Law Judge's Hearing:	TBD

ANALYSIS

Master Plan:
The *Master Plan 2020* "Land Management Area Plan" designation for the subject site is Community Conservation Area. (CCA). Baltimore County's CCAs encompass the County's more densely populated, established communities. Nearly 75% of the County's residents live in CCAs, where there are a wide range of housing choices, small-town scale commercial centers and employment centers.
The CCA land management area designation is intended to protect and invest in these older communities, and revitalize their commercial hubs.

The "Proposed Land Use, Baltimore County Smart Coded" designation is T3 Sub-Urban. The T-3 transect is characterized by low-density residential areas, adjacent to higher zones that contain mixed-use. Landscaping is naturalistic and setbacks are relatively deep. Blocks may be large and the roads irregular to accommodate natural conditions.

The Department of Planning considers this site proposal consistent with the spirit and intent of the vision of the Master Plan 2020, the Comprehensive Manual of Development Policies (CMDP) and the Baltimore County Zoning Regulations (BCZR). The Master Plan 2020 recommends low-density residential development adjacent to higher zones consisting of mixed-uses. The proposal has been redesigned to meet bulk regulations and accommodate future improvements and yard space to comply with the CMDP and BCZR without the need for relief. The lot sizes are compatible to the surrounding neighborhoods and do not adversely impact the established community. The proposal minimizes extensive grading and cut and fill, to the fullest extent possible, while using the natural features of the land pursuant to the Comprehensive Manual of Development Policies as well as Section 260 of the BCZR.

School Impact:
This development is subject to Section 32-6-103 of the Baltimore County Code, Adequate Public Facilities. The Department of Planning has reviewed the School Impact Analysis submitted on July 9, 2021 an offers the following comments:

- On all forms, the PAI number ought to be entered.
- On all forms, the official filing date should be July 9, 2021.
- On Form 1, there are 22 committed seats in the Riderwood Elementary School district. https://resources.baltimorecountymd.gov/Documents/Planning/apfo/committedseats.pdf
- On Form 3, the projected number of pupils (high school) is seven (7) instead of eight (8). Pupil yields from approved development in the past four (4) years ought to be selected and calculated against the official filing date of the referenced development plan.
- The above inaccuracies affect final results on Form 4.

SIA Approval Finding:

The Department of Planning finds that the subject Development Plan meets the requirements of BCC § 32-6-103 at the time of the filing date, July 9, 2021. The School Impact Analysis performed by the Department of Planning indicates that the projected enrollment for Riderwood Elementary School, Ridgely Middle School, and Dulaney High School is below 115% of the state rated capacity respectively. The projected number of students as a percentage of the state rated capacity is:

- Riderwood ES: 98.57%
- Ridgely MS: 103.55%
- Dulaney HS: 97.88%

EVALUATION AND RECOMMENDATION

The Department of Planning has reviewed the Development Plan submitted on July 9, 2021 and offers the following Comments.

Special Variance Request:

The applicant has requested the County to permit its development in an F level traffic shed as delineated on the 2020 Basic Services Map. This includes the intersection of West Joppa Road and Falls Road/I-83. The development access is within this failing traffic shed. The Department has received the applicant's memorandum regarding the traffic study analysis conducted in September 2020, which proposes improvements to mitigate the traffic in order to obtain a variance from the Basic Serves requirement.

With regard to the Special Variance request, the Department of Planning will defer and rely upon the expert judgement of the Department of Public Works and the final decision of the Administrative Law Judge.

Residential Performance Standards:

The Baltimore County Zoning Regulations (BCZR) § 260 requires the Director of the Department of Planning to provide a finding to the Hearing Officer for all residential development of four lots or more in Baltimore County that is located within the Urban/Rural Demarcation Line. The Department of Planning has reviewed the pattern book submit on July 9, 2021 and recommends approval pending the following comments below are addressed.

Additional Comments:

1. Clearly delineate and label on the plan all HOA open space areas.
2. To the extent possible, on all housing types that propose a water table, this treatment should be continued on all dwelling facades for continuity and to create a balance.
3. Show on the plan and in the pattern book the locations of all proposed signage.
4. Illustrate on the plan and in the pattern book the locations of all proposed trails, paths, and site amenities, such as the gazebo. Also, provide details and locations of all proposed trash receptacles.
5. Indicate in the required pattern book that Lots 2, 9, 10, 17, 23, 24, 37, 38, 48, 49, 54, 55 and 61 are high visibility lots. It should be demonstrated in the required pattern book how these lots meet the higher quality of design pursuant to the Baltimore County Manual of Regulations Section 260.6. The pattern book should include square footage for the side facades with element count requirements.
6. It is the position of the Department of Planning to ensure that every development in Baltimore County is aligned with the vision and goals of the Master Plan 2020, Comprehensive Manual of Development Polices and all applicable Community Plans. The vision of the Master Plan 2020 is to provide a network design that exemplifies walkability, a greater pedestrian experience, enhanced circulation, connectivity etc. The proposed Public Road "A" is proposed to provide connectivity to the adjacent community via sidewalks and a paved road that is gated and accessible by emergency vehicles only.
7. It is a policy of the Department of Planning that the homeowner should be able to have an open projection (i.e. rear decks) of at least 10' without requiring individual zoning relief.
8. Changes in building location or orientation, or proposed driveway location, at the time of building permit may require a determination from the zoning office of a possible amendment to the Final Development Plan (FDP). If, at the building permit stage, it is anticipated that dwelling footprints may be reversed, or that the location of garages may change from front- to side-loaded, or vice versa, a detailed alternative typical lot layout plan should be included in the pattern book.

Prepared by:

Brett M. Williams

Brett M. Williams

Division Chief:

Jenifer G. Nugent

SL/JGN/MK/BMW/

BALTIMORE COUNTY, MARYLAND

SUBJECT: CONCEPT PLAN COMMENTS Date of Comments: March 5, 2021

TO: Jerry S. Chen Online via Webex; CPC DATE: March 9, 2021 @ 10:00 A.M.

FROM: PAI – ZONING REVIEW PAI No. 08-0922

PROJECT NAME: Greenspring Manor PLAN DATE: 2/15/2021

LOCATION: 2310 W. Joppa Road DISTRICTS: 08 ED / 02 CD

PROPOSAL: 61 Single-family detached dwelling units ZONING: DR-1 and DR-2

The plan has been reviewed by the staff at this level of detail and has been found to be in general compliance with the Baltimore County Zoning Regulations (BCZR) for Concept Plan approval. The following comments are offered as guide during the Concept Plan phase:

In General:

1. The existing lot area is split zoned as DR-1 and DR-2.
2. The Office of Zoning has "No Objections" to the concept of creating 61 lots with the proposal of 16 units within the 16.8 acres of DR-1 zoned property and with the proposal of 45 units within the 22.6 Acres of DR-2 zoned property.
3. Provide Owner's telephone number along with the Owner's name and address.
4. State on the plan print that the density calculation is pursuant to §1B02.2 of the BCZR.
5. The setback requirements are pursuant to the large tract table found in §1B01.2.C(1)(b) of the BCZR. Please state this section in the plan notes and on the typical lot plan layouts.
6. The minimum setback requirements in the BCZR for the proposed lots are confirmed as:
   Front yard = 25 ft. minimum
   Side yard = 30 ft. minimum between buildings or 25 ft. to a public ROW or 25 ft. to a tract boundary line
   Rear yard = 30 ft. minimum to a property line
   Front yard open porch = 18.75 ft. minimum

7. Verify and add to the notes on the plan print:
   "This property as shown on the plan has been held intact since 1971. The developer's engineer has confirmed that no part of the gross area of this property shown on the plan has ever been utilized, recorded or represented as density or area to support any off-site dwellings."

   If any adjacently owned property has been subdivided after this date, show this area as part of the overall tract boundary and adjust density calculations accordingly.

Existing Buildings and Plan Print:

8. Confirm and note on the plan print and in the notes all existing buildings to be razed, when razing will occur, and indicate who will be responsible for razing.

9. Note on the plan print and in the notes all existing buildings to remain and their uses.

10. Note on the plan the proposed Lot 1 setbacks for the existing residence. Show the front orientation of the existing residence on Lot 1.

Proposed Building and Plan Print:

11. Once established, show the height on all proposed dwellings in feet or stories in compliance with §1B02.2 of the BCZR or add to notes: "Maximum building height will not exceed is 50' in the DR Zones."

12. Show front orientation of all proposed dwelling units with arrows.

13. In regard to the typical lot layouts, provide this note:
    "Envelopes or typical dwellings as shown dictate a specific location and orientation which is intended to allow compliance with Baltimore County Zoning Regulations and policies. Should the location or orientation change or create conflicts with the regulations or policies, the location or orientation must be changed to alleviate the conflict."

14. Once established, label and dimension all access, HOA, and drainage and utility easements and clarify how they affect the residential lot where they occur. Provide a table if necessary.

15. Lot 7 shows an HOA label. Confirm and clarify if this is an HOA area or easement area.

16. Dimension the proposed ROW widths along with the paved road ROW areas.

17. Label and show the location of the bicycle parking.

18. Label and show any visitor or overflow parking that is not within the residential lots.

19. Confirm and label the forest conservation easement areas on Lots 28, 29, 30, 31, 32, 33, 60 and 61. If the forest conservation easement area has restrictions that affect the use of these lots for accessory structures, fencing, additions, and/or open projections, then clearly state those restrictions in the notes and list the lots that are affected by a protected easement area.

20. If any signs are proposed, the proposed location of all signs must be shown on the plan print and enough detail of proposed signs must be shown to determine location, size, area, underlying lot ownership and compliance with Section 450 of the BCZR.

21. If the property is the subject of a zoning hearing, list the case number, the decision and any conditions. Show the zoning case order on the plan. If no zoning history exists, add the note: "There is no zoning history for the property."

Final Requirements
A Final Development Plan (FDP) will be required and the above information may generate additional comments.

Final zoning approval is contingent firstly upon all plan comments being addressed on the Development Plan; secondly upon the final resolution of all comments; thirdly upon the outcome of any requested zoning hearings; and finally upon the inclusion of the FDP requirements and all notes and details specified above being included on the zoning FDP.

General Observations – these comments are offered based upon the current flurry of requests for building permits, additions, and zoning hearings.

1. Rear yard decks are currently being requested at 12-14 ft. deep minimum to allow for passage around a 3 ft. wide table and chairs.
2. Alterations to include:
   a. Dedicated home office space for at least 1 adult;
   b. Increased storage space to prevent renting space off-site;
   c. In-law living quarters;
   d. Swimming pool in the rear yard.

Rosalie Johnson

Rosalie Johnson, Zoning Planner 3/5/2021
Zoning Review

THE FOREGOING IS MERELY AN INFORMAL OPINION. IT IS NOT AN EXPERT OR LEGAL OPINION. IT IS NOT INTENDED TO BE RELIED ON AS EXPERT OR LEGAL ADVICE, AND IS NOT LEGALLY OR FACTUALLY BINDING ON BALTIMORE COUNTY OR ANY OF ITS OFFICIALS, AGENTS, OR EMPLOYEES. BALTIMORE COUNTY EXPRESSLY DISCLAIMS ANY AND ALL LIABILITY ARISING OUT OF, OR IN ANY WAY CONNECTED WITH THE INFORMATION PROVIDED IN THIS DOCUMENT, OR ANY INTERPRETATION THEREOF.

BALTIMORE COUNTY, MARYLAND

SUBJECT: CONCEPT PLAN COMMENTS — Date of Comments: August 10, 2021

TO: Jerry S. Chen — DPC DATE: August 11, 2021 @ 10:00 A.M.

FROM: PAI – ZONING REVIEW — PAI No. 08-0922

PROJECT NAME: Greenspring Manor — PLAN DATE: 9-9/2021

LOCATION: 2310 W. Joppa Road — DISTRICTS: 08 ED / 02 CD

PROPOSAL: 61 Single-family detached dwelling units — ZONING: DR-1 and DR-2

The following comments are offered as guide during the Development Plan phase:

1. Correction from Zoning: Please revise Zoning Note #4 to state that the density calculation is pursuant to §1B01.2.C.1(b) of the BCZR.
2. List in the Zoning Notes which lots are affected by an access easement. Add to the Zoning Notes that "Access Easements may not be fenced."
3. State in the Zoning notes and on typical lot layouts that "Typical open deck dimension of 10 ft. x 20 ft. shall provide the minimum rear deck setback of 22.5 ft." Show a dimension to decks on typical lot layouts.
4. Label and show the location of the bicycle parking on the plan print.
5. If any signs are proposed, the proposed location of all signs must be shown on the plan print and enough detail of proposed signs must be shown to determine location, size, area, underlying lot ownership and compliance with Section 450 of the BCZR.

A Final Development Plan (FDP) will be required. Final zoning approval is contingent firstly upon all plan comments being addressed on the Development Plan; secondly upon the final resolution of all comments; thirdly upon the outcome of any requested zoning hearings; and finally upon the inclusion of the FDP requirements and all notes and details specified above being included on the zoning FDP.

Rosalie Johnson

Rosalie Johnson, Zoning Planner, Zoning Review 8/10/2021

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BALTIMORE COUNTY, MARYLAND

SUBJECT: Development Plan Review Comments
For CPC March 9, 2021

DATE: March 8, 2020

FROM: Vishnu K. Desai, Supervisor
Bureau of Development Plans Review
Department of Permits, Approvals and Inspections

PROJECT NAME: GREENSPRING MANOR

P.A.I. NO.: 08-0922

LOCATION: 2310 WEST JOPPA RD

DISTRICT: 8C2

We reviewed the subject plans received dated February 15, 2021 and have the following comments.

LANDSCAPE COMMENTS:

1. A Schematic Landscape Plan must be approved prior to Development Plan approval.
2. An approved Final Landscape Plan, cost estimate and security are required prior to permit approval.

SITE-SPECIFIC COMMENTS:

1. A Public Works Agreement is required for this project.
2. Provide additional details to the vicinity map like road network, road names and property boundaries.
3. Add Metropolitan District designations for sewer and water.
4. Add the Delinquent Account certification to the plan.
5. Provide additional labeling of the existing contours throughout the plan.
6. Provide note on the plan indicating if there are or are not wetlands on site. In accordance with *Baltimore County Code, Section 32-4-414*, dredging, filling or construction in any wetland is prohibited.
7. If the proposed Development is to be developed or designed in two (2) phases, please delineate phasing on the Development Plan.
8. Show the proposed first floor elevations.

9. West Joppa Road is an existing road, which shall ultimately be improved as a 50-foot street cross-section on a 70-foot right-of-way.
10. All proposed streets in this subdivision shall be improved with a 28-foot curb and gutter cross-section on a 50-foot right-of-way and shall be the Developer's full responsibility. Please label both the width of the road section and right-of-way on the plan.
11. The proposed cul-de-sac shall meet County standards, see Plate R-D, which requires a 60-foot turning radius.
12. **"No Parking"** signs shall be posted prohibiting parallel parking within the turnaround areas/cul-de-sac.
13. All sidewalks shall be a minimum of 5-feet wide and shall be installed in conformance with Baltimore County standards and to current Americans with Disabilities act (ADA) guidelines.
14. Developer shall extend proposed Public Road 'A' to connect to Mays Chapel Rd to the north via a 28-foot curb & gutter road section within a 50-foot right-of-way. The 50-foot right-of-way to be provided will replace the Emergency Access Easement shown on the plan.
15. Minimum width for all Drainage & Utility easements shall be 20-feet.
16. Engineer to show all existing sewer manhole numbers adjacent to the site on the plan.
17. The Developer shall provide a minimum 10-foot drainage and utility easement along all bordering property lines which are not adjacent to road right-of-way or storm drain reservations or where private easements or environmental easements border the property line.
18. The following existing 8" sewer segments do not have adequate capacity to accommodate the proposed 61 home subdivision at 2310 West Joppa Road, known as Greenspring Manor

Upstream MH	Downstream MH	Length	Diameter	Status
43794	43793	137.96	8"	
43793	43792	192.31	8"	
43792	43791	87.36	8"	Part of Hopkins project
43791	43790	60.00	8"	Part of Hopkins project
43790	43789	316.80	8"	Part of Hopkins project
43789	43788	232.57	8"	Part of Hopkins project
43788	43787	159.01	8"	Part of Hopkins project
43787	43786	76.00	8"	Part of Hopkins project

Six of the segments noted above were to be addressed by the Johns Hopkins at Green Spring Station development prior to issuance of their use and occupancy permit. PAI did not enforce this requirement and the project was completed without the necessary sewer system improvements being completed.

The Greenspring Manor development may not connect to public sewer until the agreement with Johns Hopkins at Green Spring Station is enforced and all sewer improvements are completed, including the additional improvements to segments 43794-73793 and 43793-73792 noted in the above table.

19. Developer is responsible for acquisition of off-site easements for downstream sewer improvements.
20. All existing or proposed public utilities within W. Joppa Road and Mays Chapel Road shall be clearly labeled, type of utility and size. Provide the reference drawing numbers if the utility is existing.
21. Water and sanitary sewer service connections shall be shown on the Development Plan.
22. All site runoff must be conveyed to a suitable outfall without imposing adverse impacts to the receiving watercourse.
23. The existing storm drain system needs to be checked for adequacy and upgraded or provide stormwater management as needed.
24. Submit existing storm drain outfall study for review and approval.
25. Provide 100-year floodplain study for review and approval.
26. In accordance with *Baltimore County Code, Section 32-4-414*, filling within a floodplain is prohibited.
27. Developer shall investigate for adequate fire flow at the site and extend minimum 8-water main in all proposed roads serving the site.
28. Show all proposed Fire Hydrants along the proposed roads within the development. Coordinate with *Fire Protection Section* in regards to possible fire hydrants along Mays Chapel Road extension. Fire hydrant spacing and locations are subject to review and approval by the *Fire Protection Section* of the *Fire Department*.
29. Developer shall provide a **fee simple strip frontage on public road** for all meter services connected to public water main.
30. Developer shall investigate and provide pressure-reducing valve (PRV) when the static pressure exceeds 80-psi.
31. Developer's engineer has submitted a traffic impact study to Traffic Engineering Section. While the proposed development is located within a failing traffic shed, the proposed improvements associated with the traffic impact study will mitigate the increased traffic generated by the proposed development.
32. This site is in a traffic deficient area with an 'F' level of service. Therefore, no building or grading permits will be issued unless allowed by the Administrative Law Judge at a Special Hearing. A traffic impact analysis will be required along with expert witness testimony at the Hearing. Approval of this development plan does not guarantee or warrant that a permit will be issued.

33. Sight lines are to be drawn from the centerline of the proposed access at a point ten feet behind the extension of the main road curb line to the centerline of the nearest approach lane on the main road.
34. The Developer shall be responsible for having all proposed street names in any new development approved by the Street Name and Address Section of the Department of Permits, Approvals and Inspections.
35. The Transportation Planning unit recommends that a multi-use path be constructed along the frontage of the property instead of the proposed sidewalk, as stated in Baltimore County's Western Bicycle and Pedestrian Master Plan.
36. Show proposed streetlights spaced per Baltimore County standards.
37. Prior to Development Plan approval, Development Plans Review (DPR, 410-887-3751) shall be contacted to schedule a field visit

* * * * *

The Development Plan when submitted will not be approved until all of the above comments, at a minimum, are properly addressed.

VKD: efc
cc: file

BALTIMORE COUNTY, MARYLAND

SUBJECT: Development Plan Review Comments
For DPC August 11, 2021

DATE: August 10, 2021

FROM: Vishnu Desai, Supervisor
Bureau of Development Plans Review
Department of Permits, Approvals and Inspections

PROJECT NAME: GREENSPRING MANOR

P.A.I. NO.: 08-0922

LOCATION: 2310 W. JOPPA ROAD

DISTRICT: 8C2

We reviewed the subject plans dated July 28, 2021 and have the following comments.

GENERAL COMMENTS:

All construction shall be accomplished in accordance with Baltimore County Standard Specifications and Details for Construction *(February, 2000, as amended)* and Baltimore City Standard Details.

Security shall be posted prior to the issuance of building permits unless the posting of said security is deferred. The security shall be posted prior to the recording of the plat.

A *Public Works Agreement* must be executed by the owner and Baltimore County for the required public ***(and/or private)*** improvements.

In accordance with *Baltimore County Code, Section 32-4-414*, dredging, filling or construction in any wetland is prohibited.

Any manmade embankment over 10-feet vertically shall be designed and/or approved by a soils engineer. The following note is to be placed on the sediment control plans and grading plans before approval will be given:

- *"All manmade embankments have been designed and/or certified for stability by a soils engineer".*

The Developer shall be responsible for damages to the County's facilities, such as water meters, manholes, curbs and gutters and inlets within his subdivision and for any damages caused by his construction equipment outside of his subdivision. Occupancy permits will be withheld until such damages have been corrected.

The contours on the plan reveal rather excessive grading. The Developer's engineer is cautioned not to exceed the maximum set by Baltimore County standards. Benching requirements shall be in accordance with *Section 41.02, Item 3* of the *1983 Maryland Standards and Specifications for Soil Erosion and Sediment Control.* Retaining walls that are proposed along road rights-of-way shall be located away from the right-of-way a distance that is at least equal to the height of the wall.

Offsite rights-of-way are necessary for roads, storm drains or other utilities. The Developer is hereby advised that the final plat and/or building permits will not be approved until the offsite right-of-way is acquired.

The Developer and his engineer shall be responsible for investigating the need for and obtaining the necessary permits for the facilities serving this site that may require a "*Corps of Engineer's Permit*," a "*Water Resources Permit*," a "*Water Quality Certification*," and any other federal or state permits.

The Developer shall not allow any cable television cables to be installed in this subdivision without the required County permits being obtained. Baltimore County will not assume any rights-of-way, easements, or maintenance of any public improvements, where such cables have been installed without a permit until the cables are satisfactorily located.

When an *Irrevocable Letter of Credit* is posted as security and the County's ability to draw on or otherwise call the *Letter of Credit* is negatively impacted for any reason (*bank default, receivership, etc.*), it shall be the sole responsibility of the Developer to obtain a replacement *Letter of Credit* under the same terms and conditions.

The Developer shall be responsible for having all proposed street names in any new development approved by the *Street Name and Address Section* of the *Department of Permits, Approvals and Inspections* prior to his engineer placing these names on the final record plat and/or construction drawings. All street name changes made after plat recordation must be approved by the *Street Name and Address Section* and the record plat and construction drawings revised accordingly. The method for changing street names after a plat has been recorded will vary by project, and guidance will be provided by the *Street Name and Address Section.*

Test pits within County roads require a utility cut permit obtained from the *Bureau of Highways and Equipment Maintenance.*

The coordinate system used on all County drawings must be based on the North American Datum of 1983 (NAD 83) with the readjustment date shown in parenthesis. A couple examples are: NAD 83(1991) and NAD 83(2007). The elevation system of all drawings must be based on the North American Vertical Datum of 1988 (NAVD 88).

All drainage and utility easements containing a sewer or storm drain shall be a minimum of twenty (20) feet wide.

HIGHWAY COMMENTS:

WEST JOPPA ROAD is an existing road, which shall ultimately be improved as a 50-foot street cross-section on a 70-foot right-of-way.

The Developer's responsibilities along the existing road frontage of the development shall be as follows:

a) The submission of detailed construction drawings to extend a minimum distance of 200 feet beyond the limits of the subdivision or as may be required to establish line and grade.

b) The submission of full cross sections is deemed necessary for design and/or construction purposes. The sections are to be taken at 25-foot intervals and are to be shown on standard cross-section paper at 1"=5' horizontal to 1"=5' vertical scale.

c) The preparation of the right-of-way plat for, and the dedication of, any widening and slope easements at no cost to the County.

d) The preparation of the right-of-way plats for any offsite road right-of-way required to make the necessary improvements.

e) The grading of the widening and the existing road to the established grade. Where adjacent properties are adversely affected by the improvements, the Developer shall be financially responsible for the necessary repairs to these properties.

f) The relocation of any utilities or poles as required by the road improvements.

g) The construction of combination curb and gutter in its ultimate location and a maximum of 28.5 feet of paving adjacent thereto along the frontage of the property. The paving thickness shall conform with Baltimore County standards.

All streets in this subdivision shall be improved with a 28-foot combination curb and gutter cross-section on a 50-foot right-of-way and shall be the Developer's full responsibility.

The paving thickness shall conform to Baltimore County standards and requirements.

It shall be the responsibility of the Developer's engineer to clarify all rights-of-way within the property and to initiate such action that may be necessary to abandon, widen or extend said

rights-of-way. The Developer shall be responsible for the submission of all necessary plats and for all costs of acquisition and/or abandonment of these rights-of-way.

Prior to the recording of this plat, a road closing hearing is required, and the road must be formally closed by the County Executive.

The Developer is responsible for the grading of the widening to the proposed cross section based on the grade of the existing road. Where adjacent properties are adversely affected by the improvements, the Developer shall be financially responsible for the necessary repairs to these properties.

Cul-de-sacs shall be improved with a/an 60-foot paving radius with combination curb and gutter on a/an 71-foot diameter right-of-way and shall be Developer's full responsibility. The Cul-de sacs shall conform to Baltimore County Standard R-E.

The contours on the plan reveal rather excessive grades. The Developer's engineer is cautioned not to exceed the maximum set by Baltimore County standards in the establishment of street grades.

The sharp curves must conform to Baltimore County standards for minimum length of curve, minimum radii and widening.

The Developer shall provide an in-fee right-of-way at no cost to Baltimore County to permit County maintenance forces to perform any necessary work in the SWM and/or storm drain reservation. This right-of-way shall be a minimum of 20 feet wide and shall have a grade less than 10% from the roadway to the reservation.

Guardrails are required along the public road and/or the storm drain reservation and shall be the Developer's responsibility. The guardrails shall be constructed in accordance with Baltimore County standards.

Monumental entrances shall consist of two 20-foot lanes divided by an 8-foot median with minimum 25-foot radii curb returns and shall be constructed in accordance with Baltimore County standards for concrete entrances.

Driveways shall be constructed in accordance with Baltimore County standards with depressed curb and 7-inch concrete aprons within the right-of-way.

The Developer shall grade to the ultimate cross section those areas where the driveways intersect West Joppa Road, so as to provide proper sight distance.

All driveway entrances shall conform to Standard Plates R-15, R-15A, or R-15B.

In accordance with *Baltimore County Code, Section 32-4-408*, streetlights are required along all road frontages of subdivisions. The Developer will be responsible for the full cost of installation of the cable, poles and fixtures. Along new roads, the County will assume the cost of the power

when the roads have been accepted for County maintenance. Along existing roads, the County will assume the cost of power after installation.

"**No Parking**" signs shall be posted prohibiting parallel parking on 24-foot-wide streets and within the turnaround area.

Ramps shall be provided for physically handicapped persons at all street intersections. The ramps shall have detectable warning areas and shall be constructed in accordance with Standard Details R-36A or R-36B.

Sidewalks are required on both sides of the streets within this subdivision and/or along the frontage of all existing streets including state roads. The walks shall be a minimum of **5**-feet wide and shall be installed to conform to Baltimore County standards and to current Americans with Disabilities (ADA) guidelines.

Screening shall be placed so as to prevent headlights within the parking areas from interfering with the traffic on the adjacent road.

Security must be posted prior to the issuance of a building permit to insure completion of any private improvement. Upon satisfactory completion of the private improvements and certification by a Professional Engineer that said improvements have been constructed in accordance with County standards and specifications, the security will be refunded.

STORM DRAIN AND SEDIMENT CONTROL COMMENTS:

The Developer is responsible for the total actual cost of drainage facilities required to carry the storm water runoff through the property to be developed to a suitable outfall. The Developer's cost responsibilities include the acquiring of easements and right-of-way both onsite and offsite and the deeding in-fee of said right-of-way at no cost to the County. Preparation of all construction, right-of-way and easement drawings, engineering and surveys, and payment of all actual construction costs including the County overhead both within and outside the development are also the responsibilities of the Developer.

Onsite drainage facilities serving only areas within the site are considered private. Therefore, construction and maintenance shall be the Developer's responsibility. However, a drainage area map, scale 1"=200', including all facilities and drainage areas involved, shall be shown on a plan and submitted to Baltimore County for review.

The Developer must provide necessary drainage facilities (*temporary or permanent*) to prevent creating any nuisances or damages to adjacent properties, especially by the concentration of surface waters. Correction of any problem that may result due to improper grading or improper installation of drainage facilities will be the full responsibility of the Developer.

Development of this property through stripping, grading and stabilization could result in a sediment pollution problem, damaging private and public holdings downstream of the property. A grading permit is, therefore, necessary for all grading, including the stripping of topsoil.

In accordance with *Baltimore County Code 33-5,* a grading plan shall be approved and a *Performance Bond* posted prior to issuance of a grading permit. A sediment control plan is required. The number of square feet of land disturbed shall be indicated on the sediment control drawing.

The Developer shall be responsible to stabilize the sidewalk areas and supporting slopes on all road rights-of-way following completion of the initial grading of the boxed-out subgrade. The stabilization shall be accomplished within the nearest period of optimum seeding as established in the *Baltimore County Sediment Control Manual.* Minimum acceptable stabilization measures will be as specified in the *Baltimore County Sediment Control Manual* under "*Critical Area Stabilization (With Semi-Permanent Seedings).*" Failure by the Developer to accomplish the stabilization as aforementioned will result in the termination of all processing phases of this development.

Floodplain studies will be necessary to be reviewed and approved prior to the recording of any record plat or issuance of any grading or building permits.

The Developer must furnish the *Bureau of Development Plans Review* with a *floodplain study* prepared by and sealed by a Professional Engineer. The study will be done in accordance with the latest version of the "Recommendations for Watershed Studies, Flood Plain Studies and Waterway Crossing Studies".

The 100-year floodplain shall be dedicated to Baltimore County in-fee or as an easement, at no cost to the County.

The rear of buildings may not be constructed within 20 feet of the floodplain as established for a 100-year flood level with a 1-foot freeboard. *See Plate DF-1 and DF-2 in the Baltimore County Design Manual.*

In conformance with *Federal Flood Insurance* requirements, the first floor or basement floor must be at least 1-foot above the floodplain elevation in all construction.

In accordance with *Baltimore County Code, Section 32-4-414*, filling within a floodplain is prohibited.

The Developer is responsible for the cost of temporary structures and measures required in the event of sectional development.
Temporary construction easements of adequate width are necessary adjacent to all offsite right-of-way or easements where utility construction is planned. They should be indicated on the right-of-way plats and construction drawings.

The record plat/building permit shall be withheld until offsite right-of-way and utility construction as required has been cleared and the contract for the utilities has been awarded.

The Developer shall provide a minimum 10-foot drainage and utility easement along all bordering property lines which are not adjacent to road right-of-way or storm drain reservations.

Where a new bridge or culvert adjoins a development or drainage reservation adjacent to a development, the Developer on each side is responsible for one-half the total Developer's responsibility as established by the method described in the preceding paragraph.

Where an existing bridge and/or culvert required replacement, widening or reconstruction, such work will be accomplished within the framework of the *Capital Improvement Program.* When a Developer wishes to proceed with a development requiring rebuilding or relocation of an existing bridge and/or culvert and funds have not been provided in the current *Capital Budget*, he may contribute the funds necessary or must delay development of that portion of the subdivision that would be adversely affected by the existing structure.

WATER AND SANITARY SEWER COMMENTS:

A preliminary print of this property has been referred to the *Baltimore City Water Division* for review and comment in regards to adequacy of water pressure in this development. If Baltimore City has any comment, it will be forwarded.

The Developer is responsible for any public water main extension and/or public sanitary sewer required to serve this property. He is responsible for the preparation and the cost of construction drawings and right-of-way plats required. He is further responsible for conveying any required right-of-way to Baltimore County at no cost to the County.

The Developer is responsible for the entire cost of any relocation of the existing public water main and/or sanitary sewer, including the preparation and the cost of construction drawings and right-of-way plats required, all right-of-way acquisition and/or release costs and recordation charges.

The Developer is responsible for the cost of capping or plugging any existing house connections not used to serve the proposed site.

The Developer will be given credit for one system connection charge for each existing house that is now connected into the public services.

Permission to connect to (*or to connect additional sanitary fixtures to*) the existing public sanitary sewer may be obtained from the *Department of Permits, Approvals and Inspections.*

Water and sanitary sewer service connections shall be installed by a utility contractor prior to the road improvements and shall be included in the *Public Works Agreement.*

The total water and/or sanitary sewer system connection charge is determined, and payable, upon application for the plumbing permit, or prior to the execution of a utility or right-of-way agreement.

The determination of the water system connection charges will be predicated on the established relationship using a 5/8-inch water meter at a cost of $575.00 per living unit. The sewer system connection charge, likewise, is based on a 5/8-inch water meter at a cost of $875.00 per living unit. Note: The same rate applies for 1-inch meters for sprinkler service.

Water mains outside of public right-of-way serving a proposed site improvement are considered private and shall be the Developer's full responsibility for construction and maintenance.

Fire hydrant spacing and location are subject to review and approval by the *Fire Protection Section* of the *Fire Department.*

Public sanitary sewers serving the individual lots/properties within the subdivision shall be located within the public roads serving those lots/properties, where practicable.

TRAFFIC ENGINEERING COMMENTS:

Confirm and then add this note to the development plan:

- *"Bureau of Traffic Engineering and Transportation Planning" has confirmed that the subject site* ***is/is not*** *within a traffic deficient area.*

Sight lines are to be drawn from the centerline of the proposed access at a point ten feet behind the extension of the main road curb line to the centerline of the nearest approach lane on the main road.

All subsequent plans, including record plats, must note that the areas between the sight line and the curb line must be cleared, graded, and kept free of any obstructions.

LANDSCAPE COMMENTS:

Schematic Landscape Plan(s) must be approved prior to Development Plan approval.

An approved Final Landscape Plan, cost estimate and security are required prior to permit approval.

SITE-SPECIFIC COMMENTS:

1. West Joppa Road is an existing road, which shall ultimately be improved as a 50-foot street cross-section on a 70-foot right-of-way.
2. The proposed cul-de-sac shall conform to County Standard Detail, Plate R-E, which requires a 60-foot turning radius.
3. Since the number of (off-site) units are over 100, Mays Chapel Road needs to be a full access road and not an emergency access road.
4. Remove the road label "Public Road A", if the road name is Foxwood Road. Please be consistent with road names and make sure all roads are labeled.

5. **"No Parking"** signs shall be posted prohibiting parallel parking along Mays Chapel Road extension and the cul-de-sac.
6. All designs and drawings shall be prepared in accordance with the latest design manual.
7. Provide additional labeling of the proposed contours on the plan, contours along the internal road network.
8. Note # 10 under the DPR notes indicates the proposed Development is to be developed/ designed in two (2) phases; please delineate phasing on the Development Plan. Also, provide a note detailing specific improvements completed under each phase of work.
9. All existing public utilities within West Joppa Road and Mays Chapel Road shall be clearly labeled, type of utility and size. Provide label all the utility as existing or proposed, if it is an existing utility provide the County reference drawing number.
10. Show proposed streetlights spaced per Baltimore County standards. Also, lights need to be provided along West Joppa Road as part of the frontage improvements, if there are no existing street lights.
11. Engineer should consider relocating the existing private drive and connecting it to Foxwood Drive beyond the Floodplain limits.
12. The Transportation Planning unit recommends that a multi-use path be constructed along the frontage of the property instead of the proposed sidewalk, as stated in Baltimore County's Western Bicycle and Pedestrian Master Plan.
13. Show all proposed Fire Hydrants along the proposed roads within the development. Coordinate with *Fire Protection Section* in regards to possible fire hydrants along Mays Chapel Road extension. Fire hydrant spacing and locations are subject to review and approval by the *Fire Protection Section* of the *Fire Department*.
14. Developer shall provide a **fee simple strip frontage on public road** for all meter services connected to public water main.
15. Developer shall investigate and provide pressure-reducing valve (PRV) when static pressure exceeds 80-psi.
16. Engineer to show and label all existing sewer manhole numbers adjacent to the site on the Development Plan.
17. All site runoff must be conveyed to a suitable outfall without imposing adverse impacts to the receiving watercourse.
18. The existing storm drain system needs to be checked for adequacy and upgraded or provide stormwater management as needed.
19. In accordance with *Baltimore County Code, Section 32-4-414*, filling within a floodplain is prohibited.
20. The following eight -8" sewer segments do not have adequate capacity to accommodate the proposed 61 home subdivision at 2310 West Joppa Road, known as Greenspring Manor. Six of the segments noted are to be addressed by another developer. To date, these improvements have not been completed. This developer is required to complete the other two segments noted with a ☆. Issuance of Use and Occupancy permits for the residential units from the Greenspring Manor development should be subject to completion of the system improvements noted above, including those by the other developer. Currently the other developer is obligated to complete this by August 2023.

Upstream MH	Downstream MH	Length	Diameter	
43794	43793	137.96	8"	★
43793	43792	192.31	8"	★
43792	43791	87.36	8"	
43791	43790	60.00	8"	
43790	43789	316.80	8"	
43789	43788	232.57	8"	
43788	43787	159.01	8"	
43787	43786	76.00	8"	

21. Developer is responsible for acquisition of off-site easements for downstream sewer improvements they are required to complete.
22. Jones Falls is an inter-jurisdictional watershed. 100-year stormwater management is required.
23. The existing culvert crossing on Joppa Road, located at the southwest edge of the development, is Baltimore County Bridge No. B-0432. Reference is made to existing Drawings No. 1988-0930 through 0933_003. This feature should be labeled as Bridge No. B-0432 on all plan details. Any modifications to this structure should be in accordance Baltimore County's DPW&T Design Manual, Section 10-Structures. Please note, the freeboard requirement for bridge structures is prescribed in Section 7.IV.B.2.
24. Any proposed bridge structures (those with effective span lengths of 8' or greater) within the development that will be dedicated to the County for ownership and maintenance should meet the above referenced criteria.
25. Submit suitable storm drain outfall study for review and approval.
26. A revised Floodplain Study was submitted to DPR and is under review.
27. The developer has submitted to the County an updated traffic study, showing an increased scope of work that includes three 3 intersections along Falls Road from Seminary Avenue to Joppa Road. DPW&T has not completed their review of the updated Traffic Impact Study.
28. This site is in a traffic deficient area with an 'F' level of service. Therefore, no building or grading permits shall be issued unless allowed by the Administrative Law Judge at a Special Hearing. Approval of this development plan does not guarantee or warrant that a permit will be issued.

* * * * *

VKD: efc
cc: file

JOHN A. OLSZEWSKI, JR.
County Executive

D'ANDREA L. WALKER, *Acting Director*
Department of Public Works

Baltimore County Department of Public Works & Transportation

Development Review – Agenda and Approval

Date: 8/12/2021

DEVELOPMENT NAME	Greenspring Manor
ADDRESS OR ROAD INTERSECTION	Brooklandville - 2310 West Joppa Road and connecting through to Mays Chapel Road
SUBMISSION (DPC, CPC, Variance)	Culvert Freeboard (June 2021 rec.) Flood Plain (July 2021 rec.)
RESPONSE DUE TO PAI	Friday 8/6/2021
MISCELLANEOUS COMMENTS	These comments are coming in after the DPC. We are asking PAI to take these into consideration.

DPTW ENGINEERING DISCIPLINE REVIEW, DISCUSSION & APPROVAL: *By initialing next to each design section you are documenting that all issues from previous submission comments for your discipline have been resolved. If there are outstanding issues, those issues have been documented in response to the current review. If there are coordination issues between disciplines or that require a variance you are discussing them at this meeting and determining next steps.*

Highways	
Stormwater	
Sanitary Sewer	
Water	
Structures	
Traffic	
Solid Waster	

Comments:

Traffic

We have received and reviewed the Greenspring Station Development - Supplemental Traffic Impact Study. We offer the following comments:

A TIS needs to present an unbiased view of traffic conditions pre/post development. This study was clearly written with the bias not to provide the required connection to Mays Chapel Rd. This connection is required by DPWT due to amount of homes (over 100) in The Meadows of Green Spring community. It should be a traffic impact study not a "sensitivity analysis".

The report does not note that the proposed development is in LOS F Traffic Shed. It also fails to mention the 3 LOS F rated intersections along Falls Rd.

The analysis clearly shows a reduction of critical lane volumes at the subject intersections along Falls, due to the bypass traffic generated from the extension of Mays Chapel acting as permanent connecting road from Seminary to Joppa, and with the increased capacity from the proposed improvements by the developer at Falls & Joppa. The benefits of the connection to Falls Rd is glossed over.

Furthermore, the conclusion stated on the cover letter says that the Mays Chapel connection is not recommended. It then is stated that Falls Rd is designed to handle significant volumes more than Mays Chapel which is obviously true. However, this development is currently in an 'F' traffic shed, which by definition is at capacity and cannot handle anymore volume. The initial report which did not have the Mays Chapel bypass accounted for, already showed an increase of CLV at Falls & Greenspring Valley at full build out conditions. The supplemental report does not address Falls & Seminary with the scenario of no bypass with full build out. In accordance to the ordinances tied with the basic service map, this development should have some improvements to result in 0 net critical volume trips added to the affected 'F' intersections along Falls Rd.

Public Works ZAC Comments

Lajuanda Whitaker

From: Terry Curtis
Sent: Monday, September 20, 2021 11:17 AM
To: PAI Zoning Advisory Committee
Cc: Anthony Russell; Kristoffer Nebre; Peoples Counsel
Subject: ZAC Agenda Case #2021-0250-SPH - W. Joppa Rd#2310

Good morning,

During my review of the ZAC Agenda for the distribution meeting of September 13, 2021, I reviewed a Special Hearing for case number 2021-0250-SPH for 2310 West Joppa Road. This request is to allow the development of the subject property within the Falls Road and Joppa Road and Greenspring Valley Road traffic sheds.

The Department of Public Works and Transportation (DPWT) Bureau of Traffic Engineering and Transportation Planning feels this request must be denied based on the following reasons. We have received and reviewed the Greenspring Station Development - Supplemental Traffic Impact Study. We offer the following comments:

1) A Traffic Impact Study needs to present an unbiased view of traffic conditions pre/post development. This study was clearly written with the bias not to provide the **required** connection to Mays Chapel Road. This connection is **required** by DPWT by regulation due to amount of homes(over 100) in The Meadows of Green Spring community. It should be a traffic impact study not a "sensitivity analysis".
2) The report does not note that the proposed development is in LOS F Traffic Shed. It also fails to mentioned the 3 LOS F rated intersections along Falls Road.
3) The analysis clearly shows a reduction of critical lane volumes at the subject intersections along Falls, due to the bypass traffic generated from the extension of Mays Chapel acting as permanent connecting road from Seminary to Joppa, and with the increased capacity from the proposed improvements by the developer at Falls & Joppa. The benefits of the connection to Falls Rd is glossed over.
4) Furthermore, the conclusion stated on the cover letter says that the Mays Chapel connection is <u>not</u> recommended. It then is stated that Falls Road is designed to handle significant volumes more than Mays Chapel which is obviously true. However, this development is currently in an 'F' traffic shed, which by definition is at capacity and cannot handle anymore volume. The initial report which did not have the Mays Chapel bypass accounted for, already showed an increase of CLV at Falls & Greenspring Valley at full build out conditions. The supplemental report does not address Falls & Seminary with the scenario of no bypass with full build out. In accordance to the ordinances tied with the basic service map, this development should have some improvements to result in 0 net critical volume trips added to the affected 'F' intersections along Falls Rd.

If you have any questions please feel free to contact me anytime.

Terry Curtis, Jr.
Engineer III
Department of Public Works and Transportation
111 West Chesapeake Avenue
Room 205
Towson, Maryland 21204
410-887-3117
tcurtis@baltimorecountymd.gov

Exceptional Customer Service
Safe and Efficient Operations
Reliable Infrastructure

JOHN A. OLSZEWSKI, JR.
County Executive

C. PETE GUTWALD, *Director*
Department of Permits, Approvals & Inspections

COMMUNITY INPUT MEETING MINUTES

Project Name:	**Greenspring Manor**	**Date: April 27, 2021**
Location:	**Webex Event**	**PAI No.: 08-0922**
Law Firm:	**Venable, LLP**	**District: 8c2**
Engineer Firm:	**Kimley-Horn**	
Attendees:	**93 citizens from the community**	
	Mr. Matthew Bishop, Kimley Horn	
	Mr. Adam Rosenblatt, Esq., Venable, LLP	
	Mr. Ron Synder, Atapco	
	Mr. Bruce Oxley, Atapco	
	Mr. James Malico, Kimley Horn	
	Mr. Brian Biddle, Lenhart Traffic Consulting, Inc.	
	Mr. Jerry Chen, Project Manager, Balt. Co., PAI	

Mr. Chen opened the meeting at 7:00 pm and introduced himself. He stated that the meeting's purpose was for the developer to discuss the concept plan and stated the plan was not finalized. He stated that the Community Input Meeting [CIM] was to allow the public to review the concept plan and ask the developer questions. He further stated he will be taking minutes of the meeting. He stated the minutes are not a dictation but a summary of questions, answers, and explanations.

Mr. Chen discussed the County's development process and stated the following: a Concept Plan Conference [CPC] was held on March 9, 2021; at this conference, county agencies had reviewed the concept plan and provided written comments; the next stage of the development process is the CIM; after CIM, the developer has up to 12 months to submit a highly engineered and detailed development plan to the county for review; when this plan is submitted, a Development Plan Conference [DPC] is scheduled; reviewing agencies will review the plan and provide written comments at the DPC; a public hearing called the Developer's Plan Hearing [DPH] is scheduled before an Administrative Law Judge [ALJ]; the public will be able to provide testimony and statements at the DPH; within 15 days of the conclusion of the public hearing, the ALJ will provide a written order; and the public or applicant will have 30 days to appeal the Final Order to the Board of Appeals. He stated all attendees will receive future notifications of the DPC and DPH, a copy of the CIM minutes, and the final development plan through USPS mail or email. He concluded his statements and turned the meeting to the developer's attorney Mr. Adam Rosenblatt and the developer's engineer Mr. Matthew Bishop.

Mr. Bishop stated the following: The site is 39.4 acres in size; property is zoned DR-1 and DR-2; proposing 61 single family homes on quarter-acre lots; topography of the site is rolling land; site has minimal forest and does not have stormwater management; proposing three (3) stormwater facilities that will meet 100-year floodplain requirements; minimal forest to be removed in the installation of the stormwater management facilities; will be reforestation, landscaping, screening, and a berm along neighboring communities, roadside, and entrance; will be passive amenities; proposing one entrance to development; new homes to be connected to public utilities; sites with well and septic will be abandoned and properly removed; new roads will be public; the three homeowners association open space areas will

be connected by walking paths; on-site stream will be not be changed and plantings along stream will be installed to increase water filtration; there will be forest buffer and forest conservations easements; and there will be vehicle parking along one side of the road. Mr. Bishop concluded his comments.

Mr. Rosenblatt used a PowerPoint presentation (see CIM Exhibit #2) and stated the following: proposing 3 types of upscale NVR homes of modern design with multiple car garages varying in widths of 40 feet, 50 feet, and 54 feet; homes will be built using higher grade materials; lot sizes are consistent with surrounding communities; estimated price point of homes of $900,000.00 to $1,000,000.00 USD; road improvements to Falls Road and W. Joppa Road intersection which will comprise of adding additional turn lanes in each direction, realigning lanes for improved efficiencies, and signalization adjustments at the developer's expense; connection of Mays Chapel Road will be emergency use only with bollards installed; developer to have continued discussions with Department of Public Works [DPW] to keep this access as emergency use only; Riderwood Elementary and Ridgely Middle School are under capacity per state records; at developer's expense the 300 feet of existing 8-inch sewer line to be upgraded to 12-inch line; county and the developer are working with John Hopkins to resolved offsite sewer improvements; development will exceed open space requirements; and the developer will continue to maintain communication with neighboring associations. This concluded Mr. Rosenblatt's comments.

Mr. Chen read aloud the advanced statements and questions from the community which was sent by email to Development Management.

Submission:	See CIM Exhibit #1 (collectively) - Constituent statements and questions [67 entries].
Submission:	See CIM Exhibit #2 - Developer's PowerPoint presentation [10 pages].
Question:	Has a traffic study been performed?
Mr. Rosenblatt:	Yes.
Question:	Given that the proposal is for 61 homes. How can the currently stressed sewage system possibly handle the increased demand for such services? How can the environment handle the additional runoff created by this proposed development?
Mr. Rosenblatt:	The developer will be upgrading the sewer system from an 8-inch line to 12-inch line. We will be installing three stormwater management facilities to handle runoff. Currently, there is no stormwater management at this site.
Question:	The intersection of Joppa Road and Falls Road at the northern terminus of I-83 is so overcrowded that it is already categorized as a "failed intersection." With 61 new homes proposed in the immediate vicinity, how can this intersection possibly handle the increased traffic flow? Has a traffic study been commissioned and performed and if so by whom? What are the results of that study?
Mr. Rosenblatt:	A traffic study has been performed by Lenhart Traffic. The developer will be upgrading the intersection of Falls Road and W. Joppa Road.
Question:	The intersection of Seminary Avenue and Falls Road is a designated failed intersection. Given that westbound traffic on Seminary Avenue is bogged down particularly in morning rush hours as people attempt to access southbound Falls Road to head toward either the I-83 or I-695, will not the addition of many more drivers and vehicles at this intersection and the intersection of Joppa and Falls further stress the flow of traffic beyond the already maxed out capacity? This is particularly problematic due to the proposed development of the Krongard property on the north side of Seminary, near to Mays Chapel Road.
Mr. Rosenblatt:	The upgrade road improvements should alleviate the current situation.

Question:	What study has been done to create a new intersection at Seminary Avenue and Mays Chapel Road? With the additional flow of traffic, will it need a traffic light?
Mr. Rosenblatt:	No.
Question:	What will happen to the existing driveway?
Mr. Rosenblatt:	To remain.
Question:	Who is responsible for the wetlands once the project is completed?
Mr. Bishop:	The homeowners association will be responsible. The county will routinely inspect for compliance.
Question:	It's known that the Hopkins Project severely affected the sewer system and what has been done to increase this service?
Mr. Rosenblatt:	We are actively working with DPW and Hopkins to resolve this issue.
Question:	What type of trucks will use Tally Ho Road for construction?
Mr. Rosenblatt:	Unsure.
Question:	What will be done to curb noise and runoff during construction?
Mr. Rosenblatt:	We will do our best to reduce construction noise. The runoff will be controlled by sediment control devices.
Question:	Why doesn't the new proposed Road A connect into Mays Chapel Road?
Mr. Rosenblatt:	The current meetings and interactions with the community do not want the connection.
Question:	Mays Chapel Road was designed to extend to Joppa Road! Why isn't it in the plan?
Mr. Rosenblatt:	Current sentiment is to not extend it.
Question:	What will be done to mitigate traffic for Falls Road/Greenspring Valley Road and Falls Road /Seminary Avenue?
Mr. Rosenblatt:	We agreed to road improvements which will mitigate traffic congestion.
Question:	Will all the trees between the cornfield and the surrounding houses in Heatherfield and Seminary Ridge be preserved? Will additional trees be added as a buffer?
Matt Bishop:	We are adding trees and landscaping to the site along the community border, roadside, entrance, and stream buffer area.
Question:	Can heavy equipment construction traffic be restricted from using Tally Ho Road as a cut-through?
Mr. Rosenblatt:	Not sure.
Question:	Who will be responsible for the maintenance of submerged gravel wetlands and extended detention after the developer has left?
Mr. Bishop:	The homeowners association.
Statement:	The driveway for the exhorting house should be tied into Public Road A in the community and not directly across Joppa Road. This will eliminate another curb cut and make Joppa Road traffic safer for vehicles/pedestrians/bikes.
Question:	What will be done to mitigate the failing traffic intersections at Falls Road?
Mr. Rosenblatt:	As previously explained, the developer will be making improvements at that intersection.

Question:	What administrative or regulatory variances does developer intend to request in connection with the proposed development? Have any of these variances requests been filed? How will Baltimore County and/or the developer provide notice to interesting neighborhoods and property owners of any variance requests?
Mr. Rosenblatt:	No variances are being requested.
Question:	Is Baltimore County requiring the connection of Mays Chapel Road from Seminary Avenue to Joppa Road? If so, what is the basis for this? What is the developer's position and the position of neighboring properties on this issue?
Mr. Rosenblatt:	We are keeping it as an emergency use access only as requested.
Question:	Has the county or the developer prepared formal traffic studies showing the traffic impacts of the proposed development? If so, when will these be released to the public?
Mr. Rosenblatt:	We have performed a traffic study.
Question:	What if any trees will be removed in connection with the proposed development? What trees will be added as part of the proposed development?
Mr. Bishop:	Minimal amount of forest will be removed in the installation of the stormwater management facilities. We will be adding trees to the site.
Question:	What landscaping will be removed in connection with the proposed development? What landscaping will be added as part of the proposed development?
Mr. Bishop:	As mentioned before landscaping will be part of the development which will be approved by the county.
Question:	Please describe the order classification of the stream between the proposed development and Seminary Ridge and Heatherfield? What effect does this classification have on the developer's responsibilities? Please describe setback requirements.
Mr. Bishop:	Not aware of the order classification but we will add plantings along the stream to increase filtration as well as a buffer easement for protection.
Question:	Are you aware of the historic Cockey Family Cemetery that is immediately adjacent to Building Lots 28, 29, 30, and 31. It is a large graveyard, reportedly containing thirty to forty graves. Based upon the experience with the Cockey Family Cemetery, formerly at 400 W. Padonia Road, Lutherville-Timonium, MD 21093, there is a likelihood that unmarked graves are present on these Building Lots. How will the developer care for these graves?
Mr. Rosenblatt:	We are aware of the cemetery and it is off-site from this parcel. It is 100 feet from the property line and it won't be impacted.

Mr. Chen concluded the advance questions and statements from the public and moved to the next agenda item which was online chat questions and statements.

Question:	I am wondering if the developer has considered creating a series of neighborhood walking paths as we have in Seminary Ridge. It would be nice to see a keeping of that park-like concept and would feel less overwhelming to us as neighbors perhaps.
Mr. Bishop:	On site walk paths will be installed to connect the open space areas.

Statement:	Sewer capacity is inadequate. Period. The intersections are failing. Period. No more development.
Statement:	While many participants are suggesting that Mays Chapel Road be opened up to Seminary Road. What these people may not be aware of is that section of Mays Chapel is too narrow for 2 lanes of traffic as it is, ~20-22 ft. without any sidewalks. This would put all members of this community who walk, with or without their pets, in imminent danger. While I agree with much of the residents on Tally Ho Road are saying, at least they have sidewalks, stop signs, and a 50% wider road. Mays Chapel should stay closed.
Statement:	Great point. Our neighborhoods have taken the brunt of the county's inability to plan and say "no" to a developer.
Question:	Will the road out of the development be a right turn only, or will the residents there have to turn left across a widened Joppa Road?
Mr. Rosenblatt:	No restrictions.
Statement:	As you've correctly pointed out, the exact reason as to why your planned development has chosen to not open up Mays Chapel Road to the north, is the exact reason why a lot of homeowners on Seminary Ridge are expressing concern.
Statement:	Nothing in your plans/discussion so far addresses Tally Ho Road.
Question:	When was the traffic study conducted (during Covid times?) and was one conducted on Tally Ho Road?
Mr. Rosenblatt:	Traffic study was not performed during Covid times.
Question:	What are the plans for the old state highway's property? I feel this will have an effect on the area/traffic/etc., as well.
Mr. Rosenblatt:	Unaware of any state highway property.
Question:	Did this property not perk? Is this property similar to the size of Westwicke community?
Mr. Rosenblatt:	Plans are to connect to public water and sewer which will improve environmental conditions at this site.
Question:	The Michael Wyatt letter requesting who performed a traffic study and will it be released publicly.
Mr. Rosenblatt:	The traffic study was performed by Lenhart Traffic Consulting, Inc.
Question:	Will the Falls Road and Joppa Road intersection remain "failing" if the proposed improvements are made?
Mr. Rosenblatt:	The improvements will not change the rating.
Question:	What did you say the lot sizes would be? Neighboring properties are 24,000-30,000 square foot lots.
Mr. Rosenblatt:	A quarter acre.
Question:	Is the stream a brown trout stream?
Mr. Bishop:	Not sure.
Question:	Will the improvements to Joppa Road include any accommodation for pedestrians and/or bicyclists?
Mr. Bishop:	We are proposing a walking/biking path adjacent to Joppa Road.

Question:	Will the monument to the youth's death on Joppa Road be preserved at the entrance?
Mr. Rosenblatt:	We will look into that.
Question:	Help me understand when the Mays Chapel Road emergency use access would be used in an emergency situation? Jerome Jay Drive connection in Michaelsford Road originally started as emergency access however currently a through road. 2) How does that happen? 3) Was the 2310 W. Joppa Road property originally in a land trust? 4) With 60 additional homes how will the additional 120 cars (2/home) impact the three failing intersections in the immediate area?
Mr. Rosenblatt:	Bollards will be in place and emergency personnel will be able to remove the bollards when needed.
Question:	Who will be paying for the traffic improvements? How much will that cost?
Mr. Rosenblatt:	The developer.
Statement:	I believe that the area would prefer less density instead of the "42% green area" that you are touting. A density of 45 homes would make neighbors happier!!
Question:	How long do you anticipate the planning and approval process to take? If approved how long do you anticipate the full development to take? Will you address the Falls/Joppa Road intersection before developing houses?
Mr. Rosenblatt:	It can take a long period of time from approvals to construction. We are processing both the offsite intersection improvement plan and the offsite sewer improvement plan concurrently with our development plan so that the work can be accomplished before the neighborhood is completed.
Question:	Is there a market for one million dollar homes on such small lots?
Mr. Rosenblatt:	Yes.
Question:	How many trips per day in and out of Joppa Road were planned for?
Mr. Rosenblatt:	I don't have that data.
Question:	What county agency will make the final decision on this proposed project?
Mr. Rosenblatt:	This project will have to go to a public hearing for final approval.
Question:	The sketch of the improvements to the intersection only expanded through the Mooney Office. Would it extend further past Station Road?
Mr. Bishop:	No.
Question:	Is the right of way along the existing Mays Chapel Road wide enough for 2 lanes, if in fact, the existing paving is not already?
Mr. Bishop:	Yes.
Question:	Why not build the highly needed downsize community on this site? Less actual density!
Mr. Rosenblatt:	This is the developer's proposal.
Question:	How do the current plans on expanding the Joppa/Falls Road intersection impact left turns out of Green Spring Station and the gas station?
Mr. Rosenblatt:	It will not impact the turning movement. Improvements are closer to the intersection of Falls Road and Joppa Road.

Question:	What is the dotted line marked "UaD / ChB" that transects the Historic Cockey Family Cemetery?
Mr. Bishop:	The markings indicate soil designations.
Question:	How will the newly added 4-foot berm on the North East boundary affect present stormwater runoff?
Mr. Bishop:	We will design the berm so that it will not negatively impact stormwater leaving the neighboring offsite properties.
Question:	Will all the expenses of installing the septic and water be passed on to the landowners?
Mr. Rosenblatt:	No.
Statement:	In 1997, over 100 unmarked (surprise) graves were unearthed adjacent to the Cockey Family Cemetery at 400 W. Padonia Road, which had approximately 30 marked graves.
Question:	Has the fire department been consulted on the potential added call load? Station 14 is a small station and the neighboring station is a volunteer station which is not always attended.
Mr. Rosenblatt:	The fire department is a county agency that provides comments to all development projects.
Question:	Will the snowball stand run by kids be affected by the widening of this intersection?
Mr. Rosenblatt:	No. All road improvements will be performed in the road right of way.
Question:	No PUD to disclose for the new homeowners?
Mr. Rosenblatt:	This is not a PUD development.
Question:	Ridgeley Middle School is over capacity per 2018 report https://draa.bcps.org/UserFiles/Servers/Server_9046340/File/Department/Office%20of%20Strategic%20Planning/SC2018%20FINAL%20013019.pdf. This contradicts what Mr. Rosenblatt stated on page 33.
Mr. Rosenblatt:	The current enrollment numbers for Ridgely show it is at 102% State Rated Capacity (SRC). County law does not consider a school overcrowded until it is over 115% SRC. We comply with county law and will not require an adjacent capacity to develop this project.
Question:	Is there an EPA study going to be done regarding this development?
Mr. Bishop:	Not required.
Question	Mr. Chen. Should all concerned homeowners contact District 2 Baltimore Councilman Mr. Izzy Patoka to further press our concerns?
Mr. Chen:	Any constituent may reach out to their elected officials to express their concerns about any matters in the county.
Question:	Was a roundabout considered for the development access
Mr. Rosenblatt:	No.
Question:	Am I hearing that you are assuming cars traveling west on Seminary Avenue will not be turning on Tally Ho Road but rather proceeding to Falls Road and then to Joppa Road, making a left into the new development?
Mr. Rosenblatt:	I can't make any assumptions.

Question:	Per the traffic study, what improvements would need to be made for the intersection at Falls Road and Joppa Road to have a passing grade?
Mr. Rosenblatt:	As stated we will be adding additional turn lanes in both directions, new alignment of markings, and signalization adjustments to the new traffic pattern.
Question:	Will you consider the number of homes affected, and their vicinity (bordering) when deciding whether to open the road to May Chapel Road?
Mr. Rosenblatt:	After hearing comments about opening Mays Chapel Road connection, I will have to express this sentiment in future meetings with the county and communities that are opposed of this connection.
Question:	Will there be any private water and sewer development fees or assessments imposed by the developer to the homeowners?
Mr. Rosenblatt:	This has not been determined. County law does permit developers to charge front foot assessments.
Question:	Am I hearing correctly the only intersection the developer is improving is at Joppa Road and Falls Road and NOT to the other 2 failing intersections? Greenspring Manor traffic turning right on Falls Road will add traffic load to those intersections which are already failing?
Mr. Rosenblatt:	Yes.
Statement:	The County uses the loaded cycle method vs MDOT LOS and CLV as always the County Basic Services Map always trumps a traffic study.
Statement:	The president of the Heatherfield Community Association is Pat McGee. You may contact me, as I am on the board, Dean Merritt, Esq. - dean@merrittinc.net
Question:	What would it take for the developer NOT to move forward with this project?
Mr. Rosenblatt:	This is the project that is being proposed.

At this point, there were no further questions, Mr. Chen thanked the attendees and closed the meeting.

Respectfully submitted,

Jerry Chen, Project Manager
Development Management
410-887-3321
jchen@baltimorecountymd.gov

Attachments

cc: Honorable Izzy Patoka, All attendees who signed the attendance sheet; Mr. Matthew Bishop,—Kimley-Horn; Mr. Adam Rosenblatt, Esq.—Venable, LLP; County Reviewing Agencies: DOP, PAI-DPR, Zoning, R&P, DEPS, EDC, CDC, BD OF ED, FIRE.

Jerry S Chen

From: Matthew Miller <matthewjmiller127@gmail.com>
Sent: Sunday, April 25, 2021 11:51 AM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from matthewjmiller127@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Hello,

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Sincerely,

-Matt Miller
10 Lochmoor Ct, Lutherville-Timonium, MD 21093
Seminary Ridge Community
--
Matt Miller
Cell: 484-269-4347

CIM EXHIBIT 1

Jerry S Chen

From: Andie Yellott <andie.yellott@gmail.com>
Sent: Sunday, April 25, 2021 12:11 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from andie.yellott@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

To Whom It May Concern,

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Sincerely,

Andie Yellott, 8421 Tally Ho Road, Lutherville, MD 21093
Seminary Ridge Neighborhood

Jerry S Chen

From: Liz F. <ebferree@gmail.com>
Sent: Sunday, April 25, 2021 1:28 PM
To: CIM Input
Subject: Green spring Manor CIM

CAUTION: This message from ebferree@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Elizabeth Ferree
1204 Clearfield Circle
Seminary Ridge

Jerry S Chen

From: Joshua Waranch <jwaranch@gmail.com>
Sent: Sunday, April 25, 2021 1:31 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from jwaranch@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

To Whom It May Concern:

We are extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Josh and Ellen Waranch
8414 Tally Ho Rd
Seminary Ridge Neighborhood Homeowner

Jerry S Chen

From: Lindsay Major Ringgold <lindsaymajorringgold@gmail.com>
Sent: Sunday, April 25, 2021 2:33 PM
To: CIM Input
Subject: Greenspring Manor CIM.

CAUTION: This message from lindsaymajorringgold@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Hello,
I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Thank you,
James & Lindsay Ringgold (residents since 2013)
Seminary Ridge
1234 Clearfield Circle
Lutherville, MD 21093

--
Lindsay Major Ringgold

Jerry S Chen

From: Suzanne Fowble <zaneyg@hotmail.com>
Sent: Sunday, April 25, 2021 3:09 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from zaneyg@hotmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Suzanne Fowble
9 Lochmoor Court, Lutherville, MD 21093
Seminary Ridge neighborhood

Jerry S Chen

From: mike volley <mikevolley@outlook.com>
Sent: Sunday, April 25, 2021 3:20 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from mikevolley@outlook.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Thanks,

Mike Volley
8 Trelawny Ct. - Seminary Ridge Neighborhood
(m) 443-802-9094

Jerry S Chen

From: Rachel <hughes.house@comcast.net>
Sent: Sunday, April 25, 2021 5:48 PM
To: CIM Input
Subject: Greenspring Manor CIM.

CAUTION: This message from hughes.house@comcast.net originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Todd and Rachel Hughes
8 Briarfield Court
Lutherville Md 21093

Sent from my iPhone

Jerry S Chen

From: Christina Z <christinaz1086@gmail.com>
Sent: Sunday, April 25, 2021 6:29 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from christinaz1086@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Christina Arnold
Seminary Ridge Neighborhood
1203 Clearfield Circle
Lutherville, MD 21093

Jerry S Chen

From: Jacqueline Heil <jheil2121@gmail.com>
Sent: Sunday, April 25, 2021 11:03 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from jheil2121@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road, including my family.

Thank you,

Jacqueline Heil
Seminary Ridge
8326 Tally Ho Rd

Jerry S Chen

From: Ying Wei Lum <yingweilum@gmail.com>
Sent: Monday, April 26, 2021 8:32 AM
To: CIM Input
Cc: laurenmbehan@gmail.com
Subject: Greenspring Manor CIM

CAUTION: This message from yingweilum@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Dear Sir/Madam,

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Sincerely,

Ying-Wei & Lauren Lum
8308 Tally Ho Road,
Lutherville, MD 21093

Jerry S Chen

From: Catherine Miller <Catherine@thebalcerzakgroup.com>
Sent: Monday, April 26, 2021 9:54 AM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from Catherine@thebalcerzakgroup.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

To Whom It May Concern -

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Catherine Miller
8203 White Manor Drive
Lutherville, MD 21093
Heatherfield Neighborhood



THE BALCERZAK GROUP

Catherine Miller
Realtor / Sales Partner
The Balcerzak Group of AB & Co Realtors
410-215-5255
Catherine@TheBalcerzakGroup.com
TheBalcerzakGroup.com

Jerry S Chen

From: Alice Hubbard <alhubat@aol.com>
Sent: Monday, April 26, 2021 12:10 PM
To: CIM Input
Subject: Greenspring Manor CIM Question

CAUTION: This message from alhubat@aol.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Dear Sirs: As I have a conflict on April 27 at 7pm., I will not be able to attend the CIM mtg.

I live on Tally Ho Road

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities.
After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads.
I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road. Our neighborhood has previously reached out to the county to help us find ways to reduce traffic speed on Tally Ho Road.

Alice Hubbard
8418 Tally Ho Road
Lutherville, MD 21093

Alice Hubbard alhubat@aol.com 443-625-9371

Jerry S Chen

From: Charles Hubbard <cghubbard@verizon.net>
Sent: Monday, April 26, 2021 12:27 PM
To: CIM Input
Subject: Re: Cim input mtg Greenspring Manor development

CAUTION: This message from cghubbard@verizon.net originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Dear Sirs: As I have a conflict on April 27 at 7pm., I will not be able to attend the CIM mtg.

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities.
After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads.
I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road. Our neighborhood has previously reached out to the county to help us find ways to reduce traffic speed on Tally Ho Road.

Chuck Hubbard
8418 Tally Ho Road
Lutherville, MD 21093

Jerry S Chen

From: Peter Wertheimer <pwertheimer1@gmail.com>
Sent: Monday, April 26, 2021 12:55 PM
To: CIM Input; Seminary Ridge Owners Association
Subject: Greenspring Manor CIM

CAUTION: This message from pwertheimer1@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Peter & Courtney Wertheimer
8 Sedgefield Ct, Lutherville-Timonium, MD 21093

Seminary Ridge Owners Association

--
Best regards,
Peter Wertheimer
443-829-2930
pwertheimer1@gmail.com

Jerry S Chen

From: Dean Merritt <dean@merrittinc.net>
Sent: Monday, April 26, 2021 1:01 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from dean@merrittinc.net originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our many homeowners on Tally Ho Road.

Sincerely,

Dean E. Merritt, Esq.

3 Horseshoe Cir

Lutherville, MD 21093

Heatherfield Neighborhood

Jerry S Chen

From: Glenn Abbott <abbottgs8686@gmail.com>
Sent: Monday, April 26, 2021 2:28 PM
To: CIM Input
Subject: "Greenspring Manor CIM"

CAUTION: This message from abbottgs8686@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho.

Glenn & Barbara Abbott

8208 Tally Ho Rd, Lutherville-Timonium, MD 21093

Heatherfield

Jerry S Chen

From: MP G <marypittgeorge@gmail.com>
Sent: Monday, April 26, 2021 2:44 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from marypittgeorge@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Mary Pitt George

8214 White Manor Dr, Lutherville, MD 21093

Heatherfield


ReplyForward

Jerry S Chen

From: Tom Lloyd <tlloyd4@jhmi.edu>
Sent: Monday, April 26, 2021 2:54 PM
To: CIM Input; Pamela Lloyd (thelloydfamily4@verizon.net)
Subject: Greenspring Manor CIM

CAUTION: This message from prvs=743bcf68c=tlloyd4@jhmi.edu originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Dear Baltimore County,

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Sincerely,

Tom and Pam Lloyd
8304 Tally Ho Rd.
Seminary Ridge

Jerry S Chen

From: Heningham Kennedy <kennedyhen@gmail.com>
Sent: Monday, April 26, 2021 3:59 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from kennedyhen@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

To: Baltimore County

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Respectfully submitted,

Mrs Heningham G KENNEDY

8200 Tally Ho Rd (homeowner)

Lutherville, MD 21093

Sent from my iPhone

Jerry S Chen

From: Manthy Hotmail <lynnsmanthy@hotmail.com>
Sent: Sunday, April 25, 2021 8:15 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from lynnsmanthy@hotmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities.

After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am also concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Rd.

Regards,
Lynn Manthy
Heatherfield
8300 Tally Ho Rd.

Sent from my iPhone

Jerry S Chen

From: Heningham Kennedy <kennedyhen@gmail.com>
Sent: Monday, April 26, 2021 4:01 PM
To: CIM Input
Subject: Re: Greenspring Manor CIM

CAUTION: This message from kennedyhen@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

PS- I am a Heatherfield Community resident.
Respectfully, Mrs Heningham G KENNEDY

Sent from my iPhone

On Apr 26, 2021, at 3:58 PM, Heningham Kennedy <kennedyhen@gmail.com> wrote:

To: Baltimore County

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Respectfully submitted,

Mrs Heningham G KENNEDY

8200 Tally Ho Rd (homeowner)

Lutherville, MD 21093

Sent from my iPhone

Jerry S Chen

From: Michelle Love <michellelove@verizon.net>
Sent: Monday, April 26, 2021 5:05 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from michellelove@verizon.net originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

To whom it may concern,
I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.
Sincerely,
Michelle Love
2211 Fox Hunt Lane
Lutherville Md 21093
Heatherfield

Sent from my iPhone

Jerry S Chen

From: Mary Raley <mary@toddraley.com>
Sent: Monday, April 26, 2021 8:50 PM
To: CIM Input
Subject: Greenspring Manor CIM.

CAUTION: This message from mary@toddraley.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Mary and Todd Raley
8341 Tally Ho Road
Lutherville, Maryland 21093

Jerry S Chen

From: kellyfinney <kellyfinney@comcast.net>
Sent: Monday, April 26, 2021 9:15 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from kellyfinney@comcast.net originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

To Whom It May Concern:

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our neighborhood on Tally Ho.

Kelly Finney
8408 Tally Ho Road
Lutherville, Md. 21093
Seminary Ridge

Jerry S Chen

From: JimCurran <jimcurransr@gmail.com>
Sent: Monday, April 26, 2021 9:26 PM
To: CIM Input
Cc: JimCurran; Patricia Curran
Subject: Greenspring Manor CIM

CAUTION: This message from jimcurransr@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the development and the impact on our roads, intersection, sewage, schools and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am especially concerned with the lack of connectivity on Mays Chapel Road between Seminary and Joppa Roads especially with the failing traffic shed at Falls and Seminary, Falls and Greenspring and Falls and Joppa Roads. As a homeowner on Tally Ho Road I have no doubt that Greenspring Manor homeowners traveling west on Seminary Road will opt to take Tally Ho Rd to Joppa and then take a right on Joppa to the development entrance rather than dealing with the three failing intersections mentioned above. It appears to me that Mays Chapel Road was originally intended to continue to on to Joppa Road given the continuation of the name and the simple barricade that exists now. Much has been documented about the traffic volume on Tally Ho Road now. Thank you for your consideration.

Jim & Patty Curran
8417 Tally Ho Road
Seminary Ridge

Sent from Mail for Windows 10

Jerry S Chen

From: Carl Friedman <carlsfriedman@gmail.com>
Sent: Monday, April 26, 2021 11:09 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from carlsfriedman@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Carl S. Friedman
1230 Clearfield Circle
Lutherville, MD 20193
(Seminary Ridge)

Jerry S Chen

From: Jennifer Stefano <jenstefano2@gmail.com>
Sent: Tuesday, April 27, 2021 6:27 AM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from jenstefano2@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Dear Sir/Madam,

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Avenue, especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods and especially to me, as a homeowner on Tally Ho Road.

Thank you for your consideration of this matter.

Sincerely,

Jennifer Stefano
8345 Tally Ho Rd
Lutherville, MD 21093
Seminary Ridge

Jerry S Chen

From: Beth Schutz <elizabethmiller49@gmail.com>
Sent: Tuesday, April 27, 2021 12:18 PM
To: CIM Input
Subject: GREENSPRING MANOR CIM

CAUTION: This message from elizabethmiller49@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road

Elizabeth Schutz, 8317 Tally Ho Road, Seminary Ridge

Jerry S Chen

From: Zachary Lazarus <zdlazarus@gmail.com>
Sent: Sunday, April 25, 2021 12:00 PM
To: CIM Input
Subject: Green spring Manor CIM

CAUTION: This message from zdlazarus@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

County leaders,

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

We live on the corner of Tally Ho and Lochmoor and already witness heavy traffic and people speeding through stop signs.

The community doesn't need more homes in this area without the appropriate infrastructure and roads to support.

Zac and Monica Lazarus
1 Lochmoor Court
Lutherville-Timonium, MD 21093

Sent from my iPhone

Jerry S Chen

From: Diane Friedman <special.events4all@gmail.com>
Sent: Tuesday, April 27, 2021 5:42 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from special.events4all@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Subject: Greenspring Manor CIM

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Sincerely, Diane F. Friedman

Diane F. Friedman
1230 Clearfield Circle
Lutherville, MD 20193
(Seminary Ridge)

Jerry S Chen

From: Diane Schneider <dianes0501@yahoo.com>
Sent: Sunday, April 25, 2021 4:29 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from dianes0501@yahoo.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

We are extremely concerned about the density of the development and the impact on our roads, intersections, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, we are even more concerned with the lack of a connection on Mays Chapel Road between Joppa Road and Seminary Road. We believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods with the increased traffic routing through our neighborhoods to avoid the failing intersections on Falls Road (at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads).

Thank you for listening and considering our concerns in the plan.

Sincerely,

Ed and Diane Schneider
9 Scottsdale Ct.
Seminary Ridge

Jerry S Chen

From: Joshua Becker <joshbecker5@gmail.com>
Sent: Sunday, April 25, 2021 9:04 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from joshbecker5@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

As a neighbor of Seminary Ridge, I am extremely concerned about the density of Greenspring Manor development and the impact on our roads, intersections, sewage structure, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Ave especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to my neighbors on Tally Ho Road. Please explain why the county would not connect May Chapel Road between Seminary and Joppa. If the connection can not be made, can you consider only allowing right hand turns onto Joppa Road from the neighborhood.

Thank you for your consideration,

Josh Becker
1205 Clearfield Circle
Lutherville, MD 21093

Jerry S Chen

From: Jess Clayton <jmclayton1217@gmail.com>
Sent: Tuesday, April 27, 2021 9:26 AM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from jmclayton1217@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Hello,

I am extremely concerned about the density of the pending Greenspring Manor development and the impact on our roads, intersections, sewage, schools and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Avenue, especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring and Falls & Joppa Roads.

Additionally, there have been numerous studies done on these intersections over the years and these intersections have been shown to be some of the worst, most congested intersections in Baltimore County - and this is without an additional development causing further influx and congestion. We have already seen large increases in traffic throughout Tally Ho Road, with cars attempting to bypass the congestion in these intersections which has significantly impacted the Seminary Ridge and Heatherfield neighborhoods over the past few years. There has not only been an increase in traffic but also speeding, lack of stopping at our stop signs and following proper traffic protocols - that makes it a safety issue in addition to a congestion issue impacting our neighborhood.

I believe that this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods, especially to the homeowners on Tally Ho Road.

Thank you for your time,
Jessica Clayton
14 Lochmoor Court
Seminary Ridge

--

Jessica Clayton, D.Ac. L.Ac.
Doctor of Acupuncture and Owner
443.286.0138
jess@oasisofharmonywellness.com
Oasis of Harmony Wellness, LLC.
1014 Dulaney Valley Road
Towson, Maryland 21204
www.oasisofharmonywellness.com

Jerry S Chen

From: Shannon Hoffman <shannon9528@gmail.com>
Sent: Sunday, April 25, 2021 12:01 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from shannon9528@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Jamming 61 homes into that space is absurd, not in keeping with the essence of the surrounding community. It will place undue strain on the environment and infrastructure. Development in this area must be carefully considered and not create a burden to those who have invested in their homes and neighborhood.

Shannon Hoffman

6 Scottsdale Ct, Lutherville-Timonium, MD 21093

Seminary Ridge

Seminary Ridge Owners Association
Heatherfield Neighborhood Association

April 25, 2021

RE: Greenspring Manor Concept Plant and CIS Meeting Input

To Whom it May Concern,

The Seminary Ridge Owners Association is comprised of 167 homes. The Heatherfield neighborhood has 47 additional homes. Both neighborhoods connect via Tally Ho Road allowing access from West Seminary Avenue to West Joppa Road. Both Neighborhoods border the proposed new development at Greenspring Manor.

Our neighborhoods are extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, we are even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. We believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

We have 81 homes on Tally Ho Road in the Seminary Ridge and Heatherfield neighborhoods. There are currently only 4 homes on Mays Chapel Road between Seminary Avenue and Joppa Road. Tally Ho Road already has a traffic and speed issue with a significant number of drivers who run our stop signs at speeds over 25 miles per hour. Drivers who are not homeowners in Seminary Ridge or Heatherfield use Tally Ho Road to access to I-695 and I-83 avoiding the failing traffic shed at Falls Road. We have seen the added lanes the Greenspring Manor developer plans to add at the intersections on Falls, but we do not feel that will have any impact on the traffic that uses Tally Ho Road.

We have been working with Baltimore County Traffic Engineer and the Planning Department because of traffic and speed on Tally Ho Road. We believe that if Mays Chapel Road is not opened for Greenspring Manor, the future homeowners will use Tally Ho Road daily to avoid the failing intersections. We have also been informed that another development with approximately 40 homes is in the planning stages on West Seminary Avenue directly across from Mays Chapel Road.

Connecting Mays Chapel Road between Joppa and Seminary would divert some of the cut through traffic on Tally Ho as well as ensure the new homeowners have access to Seminary without using Tally Ho Road. This would keep our communities safe without having any major impact to the homeowners on Mays Chapel Road. Please consider opening Mays Chapel Road as we do not see any reason why it would not connect.

Thank you in advance for your time & consideration.

Sincerely,

Blandy Becker, President Seminary Ridge Owners Association
Pat McGee, President Heatherfield Community Association

Jerry S Chen

From: kinglouis3@verizon.net
Sent: Monday, April 26, 2021 5:33 PM
To: CIM Input
Cc: jennybluebell@verizon.net
Subject: Greenspring Manor CIM

CAUTION: This message from kinglouis3@verizon.net originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

RE: Greenspring Manor CIM

To whom it may concern:
We are opposed to the high building density. The home building lots and their setbacks should be no smaller than the adjacent lots on Tally Ho Road, in Heatherfield.

Respectfully submitted, Louis and Jennifer Witt

Louis and Jennifer Witt
8305 Tally Ho Road
Lutherville, MD. 21093
(Seminary Ridge)

Jerry S Chen

From: pmcgee5@verizon.net
Sent: Sunday, April 25, 2021 10:40 AM
To: seminaryridgecommunityemail@gmail.com; CIM Input
Cc: dean@merrittinc.net
Subject: Re: GREENSPRING MANOR CIM - STATEMENT OF CONCERN

CAUTION: This message from pmcgee5@verizon.net originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Thank you for drafting the letter, I believe it states the position of both communities clearly and it supports the position well.

pmcgee5@verizon.net

Pat McGee

-----Original Message-----
From: Seminary Ridge Owners Association <seminaryridgecommunityemail@gmail.com>
To: ciminput@baltimorecountymd.gov
Cc: dean@merrittinc.net; pmcgee5@verizon.net
Sent: Sun, Apr 25, 2021 9:10 am
Subject: GREENSPRING MANOR CIM - STATEMENT OF CONCERN

To Whom It May Concern,

Please see the attached letter from the Seminary Ridge Owners Association and the Heatherfield Community Association regarding the Greenspring Manor development. Our neighborhoods border the proposed development of Greenspring Manor. Together, we are 214 homes. We look forward to having our concerns addressed at the meeting on Tuesday, April 27, 2021. If you have any questions for us before then, please let us know.

Thank you in advance for your assistance.

--
Sincerely,

Blandy Becker, President SROA
The Seminary Ridge Owners Association
http://seminary-ridge.org/

Jerry S Chen

From: Debbie Brodsky <brodsky984@yahoo.com>
Sent: Sunday, April 25, 2021 2:24 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from brodsky984@yahoo.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Dear whom it may concern:

I have a blind pedestrian in my family and I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities.

After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads.

I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

My blind son needs to be able to cross Tally Ho safely, and the stop sign at the bottom of Briarfield Ct already is tricky as people cutting through the neighborhood do not slow down.

Thanks for your serious consideration.

Debbie Brodsky
7 Briarfield Ct. - Seminary Ridge

Here is a Visual for you to see where Mays CHapel Road should connect between Seminary Ave and Joppa Road:

Jerry S Chen

From: eugeneschramm@aol.com
Sent: Sunday, April 25, 2021 5:11 PM
To: CIM Input
Subject: Villas at Pot Spring CIM Question

CAUTION: This message from eugeneschramm@aol.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

The area around Joppa Rd and Tallyho was a driving problem when there were only trees there (eventually taken down). What with trees, houses, fences the traffic only becomes more of traffic problem.

Jerry S Chen

From: RYAN DREW <jrcdrew2@aol.com>
Sent: Sunday, April 25, 2021 5:58 PM
To: CIM Input
Subject: Villas at Pot Spring CIM Question

CAUTION: This message from jrcdrew2@aol.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Greetings,

My name is Jill Drew and I live in the Heatherfield neighborhood.

I am not a supporter of any development in this area. I have lived here for 12 years and have watched the area become increasingly more congested with each passing year.

Car crashes at the Falls Road intersection are a constant and it is my understanding that it is a known failed intersection.

I am concerned about an increase in traffic on Tally Ho Road. Many people have young children that play outside as well as people that park and walk in this neighborhood. I am not interested in Tally Ho becoming more of a cut thru than it already is. It is my understanding that there is a road that is already in place that would provide straight access. It should NOT be up to our neighborhood to absorb the traffic pattern when an access already exists and just needs to be opened up.

Widening Joppa and all of the other things mean nothing to me, a resident of Tally Ho. We have enough traffic as it is. There is a more appropriate pattern and it should be utilized.

Thank you for listening to my concerns.

Kind Regards,

Jill Drew
503 705 8750

Sent from my iPhone

Jerry S Chen

From: RYAN DREW <jrcdrew2@aol.com>
Sent: Sunday, April 25, 2021 6:25 PM
To: CIM Input
Subject: Villas at Pot Spring CIM Question

CAUTION: This message from jrcdrew2@aol.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

If the new project is approved how about make a right turn only onto Joppa. That way, less traffic to Tally Ho.
Thank you,
Jill Drew

Sent from my iPhone

Jerry S Chen

From: Tina C. Beliveau <tinacastronovo@gmail.com>
Sent: Sunday, April 25, 2021 6:40 PM
To: CIM Input
Subject: Greenspring Manor CIM
Attachments: image.png

CAUTION: This message from tinacastronovo@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

To Whom It May Concern:

I am a resident living on Tally Ho Road and am emailing because I am opposed to the plans for the Greenspring Manor Development.

Specifically: we already have a HUGE through traffic and speeding issue on Tally Ho Road, affecting the safety of all residents of the Seminary Ridge and Heatherfield communities.

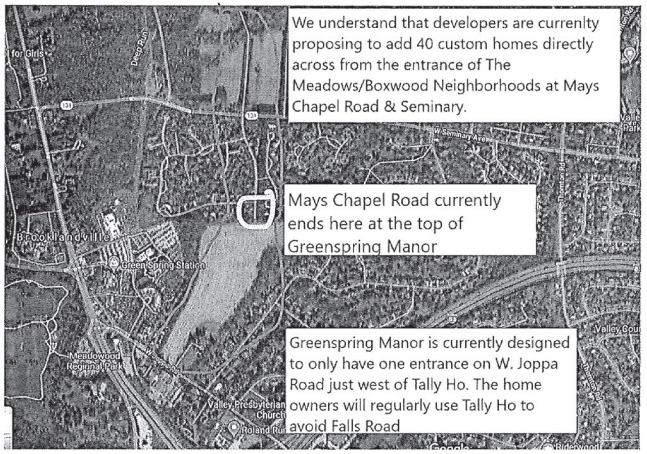
Any new residences bordering our neighborhood will exacerbate a well-known, dangerous problem that has plagued this neighborhood for over 25+ years. It is my understanding that there is not currently a plan in place to connect Mays Chapel Road to be a "through" street for the residents of this new neighborhood between Joppa and Seminary - which means even ***more*** people will be using Tally Ho as a cut-through than they already are (up to 200 cars per day by our calculations).

This is a completely unacceptable plan as it stands. Mays Chapel must be opened up as a fully connecting street between Joppa and Seminary if this new neighborhood is approved. There are many other traffic impacts related to all of the failing intersections that surround this proposed development, but the safety and speeding issue on Tally Ho is of specific concern to me as a homeowner and stakeholder for our property values.

The attached photo shows a visual of the issue as well.

Thank you,

Tina Beliveau - owner at 8344 Tally Ho Road, 21093, Seminary Ridge



Sent from my iPhone

Jerry S Chen

From: Barbara C Schumann <bcschumann@comcast.net>
Sent: Sunday, April 25, 2021 9:10 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from bcschumann@comcast.net originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the high density of this development and the impact on our roads, intersections, sewage, schools, communities and more potential flooding that used to be common on Joppa Rd at that specific area. I am also very concerned that the Concept Plan shows only one entry/exit to the planned development, i.e. Joppa Rd ignoring Baltimore County plans to eventually have Mays Chapel continue to Joppa Rd.

We don't need any more homes in that area which cannot handle the current population. Tally Ho Rd is already a main thoroughfare for many commuters to avoid the havoc on Falls Rd. between Joppa and Seminary.
The proposed new lanes won't affect the wait for the lights at the intersection, it will only add more traffic and more destruction of the natural beauty in this area.

Barbara Schumann

1227 Clearfield Cir., Lutherville, MD

Seminary Ridge

Jerry S Chen

From: Doug Sachse <dsachse@dtslawoffices.com>
Sent: Sunday, April 25, 2021 9:31 PM
To: CIM Input
Subject: Greenspring Manor CIM.

CAUTION: This message from dsachse@dtslawoffices.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I have been a resident of Seminary Ridge since 1984. During that time, I have watched several very nice housing project spring up very near my own neighborhood, but each time little or no care was taken to insure that there was not an unreasonable increase in the density of traffic flow on Tally-Ho Road or that the neighborhood schools (Riderwood and Ridgely) did not become over crowded. In fact, at one point in time, stops signs were place on every cross intersection on Tally-Ho Road in an attempt to slow the speed and density of the traffic on Tally-Ho Road. All the stop signs remain, but as they really are not working, recently there has been a survey to see if "calming speed humps" would be useful. It is a tragedy waiting to happen.

As a result, I am extremely concerned about the density of the Greenspring Manor CIM development and the impact on our roads, intersections, sewage, schools, and communities. It took many years to finally extend Tally-Ho from Joppa to Seminary and an equal amount of time for Thornton Road to be extended from Seminary to Timonium Road. It was if no one thought ahead. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the serious traffic overcrowding and density at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. As in the past, this will have a serious and detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods. It really should NOT be allowed to happen again. Time to plan ahead. Thanks.

Doug Sachse
9 Sedgefield Court (Seminary Ridge)
Lutherville, MD 21093
410-984-8643

Jerry S Chen

From: Caroline Smith <cpowell514@gmail.com>
Sent: Monday, April 26, 2021 10:01 AM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from cpowell514@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

To Whom It May Concern,

My name is Caroline Smith and I live at 1 Sedgefield Court in the Seminary Ridge neighborhood in Lutherville. I am extremely concerned about the density of the Greenspring Manor development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods especially to our homeowners on Tally Ho Road.

Thank you,

Caroline Smith

Jerry S Chen

From: Kristen Thomas <kristen.seabrease@gmail.com>
Sent: Monday, April 26, 2021 10:58 AM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from kristen.seabrease@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Hi,

As a mom of two young boys (age 2 and 4), I am already extremely concerned about the traffic and speeding vehicles on Tally Ho Rd. I can't tell you how many times I have seen cars speed through the stop sign right in front of my house (I live at 8415 Tally Ho) without even slowing down. I have called the Baltimore County Police several times, especially during rush hour traffic when cars use Tally Ho as a through road to avoid the intersection at Falls Rd. The police come and sometimes park on Tally Ho, but the effect is always short lived. As a resident of Tally Ho, we already have a serious problem with this traffic. The addition of this new development will directly impact the safety of my children and many other children who live in this neighborhood and play on these neighborhood sidewalks. I am very disappointed that the proposed greenspring manor neighborhood will not be utilizing Mays Chapel Rd as a through street from Seminary to Joppa. I am completely opposed to this safety hazard and I hope you will take this into serious consideration.

I am also extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road especially with the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield

Kristen Seabrease, Seminary Ridge

Jerry S Chen

From: Mark Mercer <markbmercer@gmail.com>
Sent: Monday, April 26, 2021 1:08 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from markbmercer@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

I am extremely concerned about the density of the proposed development and the impact on our already crumbling area infrastructure -- roads, intersections, water and sewage systems, and schools. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, I am even more concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road. The failing traffic shed encompassing Falls and Seminary, Falls and Greenspring, and Falls and Joppa Roads will be only more overburdened by the traffic engendered by this development. The lane widening and additional lanes proposed around the Falls and Joppa intersection are not nearly enough to relieve the problem this development presents. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods, especially as a homeowner on Tally Ho Road. We will see more through traffic, as drivers seek to avoid the failing intersections along Falls. The current level of through traffic and its average speed is already a topic of great concern in our community; the proposed Greenspring Manor development will only exacerbate the issue, and ultimately require more county intervention.

While I do not object to this parcel being used for housing, I think it would make more sense both to reduce the number of houses allowed on the parcel -- from the current proposed 61 to perhaps 45 -- and to require the developer to connect Mays Chapel Road to a road in the development, creating a new through road corridor that would allow traffic from the new community to have access to Seminary Avenue without resorting to Falls Road or Tally Ho Road. This would also provide some relief for the current through traffic issue on Tally Ho Road -- a gesture that would indicate that the planners and developers involved are concerned about existing communities and wish to be good neighbors.

I know you will consider carefully these and other thoughtful suggestions from the communities facing impacts from the proposed development, and I thank you for that consideration.

Yours truly,

Mark Mercer

8322 Tally Ho Road
410.913.0626

Jerry S Chen

From: Michael Ichniowski <michich23@hotmail.com>
Sent: Monday, April 26, 2021 1:59 PM
To: CIM Input
Subject: Greenspring Manor CIM

CAUTION: This message from michich23@hotmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

To: Baltimore County Development Manager for Greenspring Manor

We are very concerned about the negative impacts to our home and neighborhood that will result from the Greenspring Manor development as currently proposed. We live on Tally Ho Road, as do many families with young children, whose safety will be at increased risk from the increase in traffic on our road. The disruption created by construction of this high-density development, along with the necessary infrastructure to provide sewage, water and utility service will be problematic as well. The already stressed intersection at Joppa and Falls Road will only get worse, both during construction and when more than 60 new families move into this area. Adding lanes to the involved roads won't do anything to relieve congestion at this intersection, which will still have to pass through a single traffic light. It is also clear that this development will result in increased traffic on Tally Ho Road since there is no plan to connect Mays Chapel Road between Seminary Avenue and Joppa Road. This will limit ingress and egress from the development to Joppa Road, which will necessitate having traffic from the development to Seminary Avenue run through our neighborhood along Tally Ho Road.

I would also point out that the area of Joppa Road in front of Greenspring Manor is prone to flooding after moderate rain, which would need to be mitigated in construction of this development. There are also streams in this area running to Jones Falls which would be subject to runoff from the paved surfaces of this development; I would hope this has been considered, due to the unavoidable negative impact this would have on the ecological balance of these streams.

Thank you for your time and attention.

Sincerely,
Michael and Mary Lois Ichniowski
Seminary Ridge
8333 Tally Ho Road
Lutherville, MD 21093

Jerry S Chen

From: Jim & Mary Jo Gary <bfjmj1@gmail.com>
Sent: Monday, April 26, 2021 6:24 PM
To: CIM Input
Subject: "Greenspring Manor CIM Statement

CAUTION: This message from bfjmj1@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Hello All,
As a homeowner in Seminary Ridge who lives on Trelawny (adjacent to the proposed development), I find it hard to believe that we will move ahead on expansion even though we have overcrowded schools and three failing intersections (Falls at each of Joppa, Seminary and Greenspring) which would be impacted by more traffic. It's also clear that the developers of Green Spring Station STILL have NOT fulfilled their infrastructure upgrades asked for by the county (increased water lines etc). Also any traffic study done since the start of the pandemic in April 2020 is faulty since the public and private schools have not been attending in person schooling (which increases the traffic numerous times during the day), many of which cut through our neighborhood to escape the failing Falls road intersections.

I strongly suggest that this development be denied due to the above reasons.

Thanks you for your time,
James Gary
6 Trelawny Court

Jerry S Chen

From: Peter Engler <taska1@msn.com>
Sent: Monday, April 26, 2021 7:58 PM
To: CIM Input
Subject: Subject: Greenspring Manor CIM

CAUTION: This message from taska1@msn.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

To Whom it Concerns:

I have read about the proposed Greenspring Manor residential development just west of the Seminary Ridge and Heatherfield neighborhoods. For nearly 58 years I have been a resident in this area, first moving into Village Green upon its origination in the early to mid 1960's, living in Thornleigh during the 1980's-1990's, and have since resided in Seminary Ridge since 2001. During this time I have witnessed and experienced the many changes in the area, some positive and others not so pleasant, such as Light Rail construction and the all day running of the trains basically just beyond my backyard fence In Jeffers Court (plus I was robbed twice within 2 years of the Light Rail opening when it was denied that crime increase would be an issue), the endless clanking of the trucks and cars upon the seams in the Charles St overpass, and the opening of neighborhoods to through traffic to Timonium Road via Longford North and Wellington Valley. While the proposed Greenspring Manor is a desirable location, what I have learned in my nearly 60 years in this area is that Baltimore County has consistently underplanned the future in the protection and vitality of the surrounding neighborhoods. Traffic has been steered into these neighborhoods as opposed to planning bypass type workarounds that do not have traffic finding the paths of least resistance. These neighborhood roads and the more major surrounding arteries of Joppa Road West and West Seminary are now simply already over-congested and dangerous for the safety of the families, and especially the children, to be utilized as quieter and safe places to reside as intended. I implore the County to consider that if a bypass cannot be established (and I recognize Falls Road and I83 are very close to being this bypass scenario - which unfortunately is already woefully inadequate) that any proceeding in further development surrounding Seminary Ridge, Heatherfield, Village Green, etc. include requirements that these new developments be required to have full cut through access to the larger non-neighborhood thoroughfares to minimize the increase in cut through traffic to the already existing neighborhoods that are already paying a heavy price by what was "planned" (allowed) to happen to them previously.

Notwithstanding the above, like many of my neighbors I do also share the significant concerns regarding infrastructure needs, from roads to sewer lines and utilities. I simply feel that if the County cannot address the safety and vitality of the surrounding neighborhoods as its first concern, then it really misses the point and abdicated its responsibilities.

Respectfully,

Peter J Engler (and family)
1252 Clearfield Circle
Lutherville, MD 21093

Jerry S Chen

From: Alan Kimmel <AKimmel@pphealthplan.com>
Sent: Monday, April 26, 2021 8:16 PM
To: CIM Input
Subject: Greenspring Manor CIM.

CAUTION: This message from AKimmel@pphealthplan.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

My family and I have been residents of the Heatherfield development for 40 years. Living on Tally Ho Road close to Joppa Road, we have observed a steady increase in traffic on Tally Ho and on Joppa Road. I have always expected some level of development of the property in question but never dreamed that 61 residences would be squeezed into that space. I am extremely concerned about the density of the development and the impact on our roads, intersections, sewage, schools, and communities. I have reviewed the Concept Plan Rendering for the Greenspring Manor Development and am even more concerned due to the lack of connectivity between Mays Chapel Road at Seminary Road south to Joppa Road. This is especially compelling due to the failing traffic shed at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. I believe this will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods, especially to homeowners, like us, on Tally Ho Road. Please strongly consider reducing the density of the development and creating access of Mays Chapel Road straight through to Joppa to reduce the heavy burden on Tally ho.

Alan & Judy Kimmel
8213 Tally Ho Road
Lutherville, Maryland 21093

Jerry S Chen

From: Brian Sheahan <Coach@gebsmith.com>
Sent: Tuesday, April 27, 2021 8:31 AM
To: CIM Input
Cc: Carol Sheahan
Subject: Greenspring Manor CIM

CAUTION: This message from Coach@gebsmith.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Please note that my wife and I have lived on Tally Ho Road for almost 30 years. We are extremely concerned about the proposed Greenspring Manor development project and the impact it will have on our roads, intersections, sewage, schools, and communities. After reviewing the Concept Plan Rendering for the Greenspring Manor Development, we are especially concerned with the lack of connectivity on Mays Chapel Road between Joppa Road and Seminary Road. Simply put, there already exists major traffic problems at Falls & Seminary, Falls & Greenspring, and Falls & Joppa Roads. As a result, a dramatic increase in traffic will be seen on Tally Ho Road as more drivers use it as a cut through between Seminary and Joppa Roads to avoid the backups on Falls Road. This will have a detrimental impact on both the Seminary Ridge and Heatherfield neighborhoods; especially to us as homeowners on Tally Ho Road. We have a young grandchild and the inevitable increase in traffic is also a safety concern as many kids play in the creek across the street from our house.

Brian Sheahan
8406 Tally Ho Road
Lutherville, MD 21093

Jerry S Chen

From: John Lavin <jglavin99@yahoo.com>
Sent: Sunday, April 25, 2021 8:33 PM
To: CIM Input
Subject: Greenspring Manor CIM Question

CAUTION: This message from jglavin99@yahoo.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Ladies and gentlemen,

As a resident of the nearby Seminary Ridge community, I wonder how it would be possible to build a community of 60+ homes in a currently congested area with only one entrance/exit road? This community will significantly increase traffic in the area and that issue can only be addressed by providing at least two (2) options for entering or leaving the development.

Please consider requiring the developer to add another entrance/exit.

John Lavin

Jerry S Chen

From: Irwin Weiss <irwin@irwinweiss.com>
Sent: Monday, April 26, 2021 8:40 AM
To: CIM Input
Subject: Greenspring Manor CIM Questions

CAUTION: This message from irwin@irwinweiss.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

With regard to the proposed development "Greenspring Manor", I have the following questions:

1) Given that the proposal is for 61 homes, how can the currently stressed sewage system possibly handle the increased demand for such services, and how can the environment handle the additional runoff created by this proposed development?

2)The intersection of Joppa Road and Falls Road at the northern terminus of the JFX is so overcrowded that it is categorized already as a "failed intersection." With 61 new homes proposed in the immediate vicinity, how can this intersection possibly handle the increased traffic flow? Has a traffic study been commissioned and performed, and if so, by whom, and what are the results of that study?

3) The intersection of Seminary Avenue and Falls Road is also a "failed intersection." Given that westbound traffic on Seminary is bogged down particularly in morning rush hours as people attempt to access southbound Falls Road to head toward either the JFX or to access I-695, will not the addition of many more drivers and vehicles at this intersection and the intersection of Joppa and Falls further stress the flow of traffic beyond the already maxed out capacity? This is particularly problematic due to the proposed development of the Krongard property on the north side of Seminary, near to Mays Chapel Road.

4) What study has been done as to the proposal to create a new intersection at Seminary Avenue and Mays Chapel? Will the additional flow of traffic there present the need for a traffic light?

Irwin E. Weiss, Esq.
11 Fieldspring Court
Lutherville, MD 21093
410-821-0001 (office)

Jerry S Chen

From: Heningham Kennedy <kennedyhen@gmail.com>
Sent: Monday, April 26, 2021 3:54 PM
To: CIM Input
Subject: "Greenspring Manor CIM"

CAUTION: This message from kennedyhen@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

The following matters are a supplement to the already described huge concerns about the inadequate number of egresses (near Tally Ho Rd on W. Joppa should not be the only egress) for residents of the proposed Greenspring Manor development:

1)The enormous ramifications of the great increase in the routine car trips of new residents there on the surrounding old country roads. The backed-up, overloaded small country roads would be clogged with daily traffic radiating out from the already failed big Falls Road intersection (West Joppa, I-83, old Falls Rd south, the Greenspring Valley Rd, Falls Road north) in every Cardinal Direction. To the likely point of daily gridlock.
Examples of already overloaded spots:
To the East:
•the Riderwood Bridge on Joppa Rd intersecting with Bellona Avenue •Ruxton Village •Ruxton Bridge •Charles Street Extension area including Joppa Rd to TOWSON
To the South:
•Hillside Rd and Stevenson Village
•Ruxton Rd and Old Court Rd intersection at Falls Rd •Rockland Village •Lake Avenue and Falls Rd intersection
To the West:
•Greenspring Valley Rd
affecting 2 schools Maryvale and Greenspring Montessori Schools •Greenspring Avenue north and south •Park Heights Avenue •Quarry Lake development
To the North:
•old Falls Rd north including the 2 St Paul's schools at intersection of Falls Rd and Seminary •Broadway Rd East to Padonia Rd •all of old Falls Rd to up-county

A great number of long-settled and newer communities would be disturbed and disrupted by clogged traffic.

2)A second area of concern are the Health Ramifications of this proposed development ... in what is acknowledged as a 100-year old floodplain. Air quality, insect attraction and sewage problems are all likely:

• Increased automobile exhaust results in increased polluted particulate matter throughout the air that we breathe (and especially in a low-lying topography such as this proposal has) •the attractive nuisance of water retention ponds to flying insects, such as mosquitos, and the diseases that they can carry such as the Zika virus etc is very undesirable •and of course, seepage of sewer liquids into the underground water table and into our local streams negatively affecting every living thing around us and possibly the cleanliness of our Loch-Raven sourced drinking water is very possible

I grew up in Riderwood and have always cherished the quality of life here in Baltimore County. As a contented homeowner here, I urge Baltimore County to fully consider the many negative ramifications of increasing housing density by approving this proposal, which can result in so many future problems for so many of your contented residents,

Respectfully submitted,

Mrs Heningham G KENNEDY
8200 Tally Ho Road (homeowner)
Heatherfield Community
Lutherville, MD 21093

Sent from my iPhone

Jerry S Chen

From: Roby <roby2442@gmail.com>
Sent: Monday, April 26, 2021 7:41 PM
To: CIM Input
Subject: Green spring manor CIM Question

CAUTION: This message from roby2442@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

To whom it math concern,

I would like to ask the following questions as per the development plans at green spring manor.

1. What will happen to the existing driveway?
2. Who is responsible for the wetlands once the project is completed?
3. What about sewer? It's know that the Hopkins project severely effected the sewer system and what has been done to increase this service?
4. What type of trucks will use Tally ho for construction?
5. What will be done to curb noise and runoff during construction?

Thanks,

Mark

Mark Andrew Robinson
Cell- 410-375-9083

Sent from my iPhone. Please disregard spelling errors, abbreviations, etc.

Jerry S Chen

From: Roby <roby2442@gmail.com>
Sent: Monday, April 26, 2021 7:54 PM
To: CIM Input
Subject: Green spring manor

CAUTION: This message from roby2442@gmail.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Good Eveing,

I have a few more questions.

1. Why doesn't the new proposed road A connect into Mays chapel?
2. Mays chapel was designed to extend to Joppa! Why isn't it in the plan?
3. What will be done to mitigate traffic for falls/green valley road and falls/seminary?
4. Will all the trees between the corn field and the surrounding houses in Heatherfied and Seminary ridge be preserved?Will additional trees be added as buffer?
5. Can heavy equipment construction traffic be restricted from using Tally Ho as a cut through?
6. Who will be responsible for maintence of submerged gravel wetlands and extended detention wetvpomf after the developer is going?
7. The driveway for the exhorting house should be tied into public road A in the community and not directly across Joppa road. This will eliminate another curb cut and make Joppa traffic safer for vehicles/pedestrians/bikes?

8. What do a being done to mitigate the failing traffic intersections at falls road?

Thanks,

Mark

Mark Andrew Robinson
Cell- 410-375-9083

Sent from my iPhone. Please disregard spelling errors, abbreviations, etc.

Jerry S Chen

From: Michael Wyatt <mwyatt@wyattgunning.com>
Sent: Tuesday, April 27, 2021 3:43 PM
To: Jerry S Chen
Subject: Greenspring Manor-CIM

Importance: High

CAUTION: This message from mwyatt@wyattgunning.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Mr. Chen: I was in court all day yesterday in Garrett Co. and was unable to focus on this matter until today. I am registered to attend tonight CIM and would like the following addressed:

1. What administrative or regulatory variances does Developer intend to request in connection with the proposed development? Have any of these variances requests been filed and if so, which ones? How will Baltimore County and/or the developer provide notice to interested neighborhoods and property owners of these variance requests?
2. Is Baltimore County requiring the connection of Mays Chapel Road from Seminary Avenue to Joppa Road? If so, what is the basis for this? What is developer's position and the position of neighboring properties on this issue?
3. Has Baltimore County or the Developer prepared formal traffic studies showing the traffic impacts of the proposed development? If so, when will these be released to the public?
4. What if any trees will be removed in connection with the proposed development? What trees will be added as part of the proposed development?
5. What landscaping will be removed in connection with the proposed development? What landscaping will be added as part of the proposed development?
6. Please describe the order classification of the stream between the proposed development and Seminary Ridge and Heatherfield? What effect does this classification have on developer's responsibilities? Please describe setback requirements.

Thank you.

Michael T. Wyatt
Wyatt & Gunning LLC
100 W. Pennsylvania Ave.
Suite 10
Towson, MD 21204
Ph: 410-296-5960
Fax: 410-296-3443
Cell: 410-804-7098

wyattgunning.com

Jerry S Chen

From: kinglouis3@verizon.net
Sent: Monday, April 26, 2021 5:28 PM
To: CIM Input
Cc: jennybluebell@verizon.net
Subject: Greenspring Manor CIM

CAUTION: This message from kinglouis3@verizon.net originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

To whom it may concern:
Are you aware of the historic Cockey Family Cemetery that is immediately adjacent to Building Lots 28, 29. 30, and 31. It is a large graveyard, reportedly containing thirty to forty graves.

Based upon the experience with the Cockey Family Cemetery, formerly at 400 W Padonia Rd, Lutherville-Timonium, MD 21093, there is a likelihood that unmarked graves are present on these Building Lots.

How will the developer care for these graves?
Respectfully submitted, Louis Witt

Louis Witt
8305 Tally Ho Road
Lutherville, MD. 21093
(Seminary Ridge)

References:

Historic Graves of Maryland and the District of Columbia, with the Inscriptions Appearing on the Tombstones in Most of the Counties of the State and in Washington and Georgetown, by Helen W. Ridgely, Scholar's Choice, 2019, pp. 141–143.

Historic Graves of Maryland and the District of Columbia, with the Inscriptions Appearing on the Tombstones in Most of the Counties of the State and in Washington and Georgetown, by Helen W. Ridgely, Scholar's Choice, 2019, pp. 141–143.

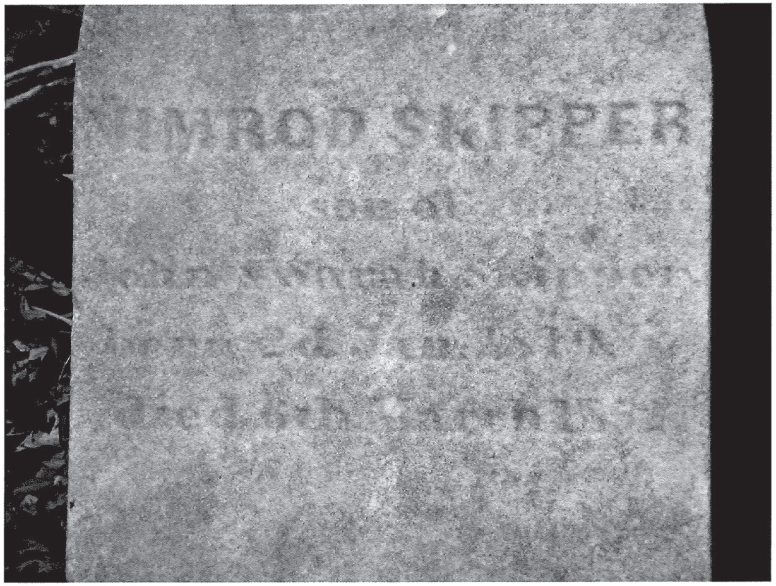
Maryland Historic Trust, Nield, Wayne L., *Stephen Cockey House, Inventory Form for State Historic Sites Survey*, BA-1665, Maryland Historical Trust, 1978, p. 6. *MAGI-0316654204.*


Reed
SAMUEL JOHN REED
FEB 2 1827 — SEP 26 1894
AND HIS WIFE
MARY ANN PARSONS
FEB 4 1836 — MAY 22 1897
ALSO INFANT DAUGHTER
MARY ANN
AUG 19 1857 — AUG 24 1861

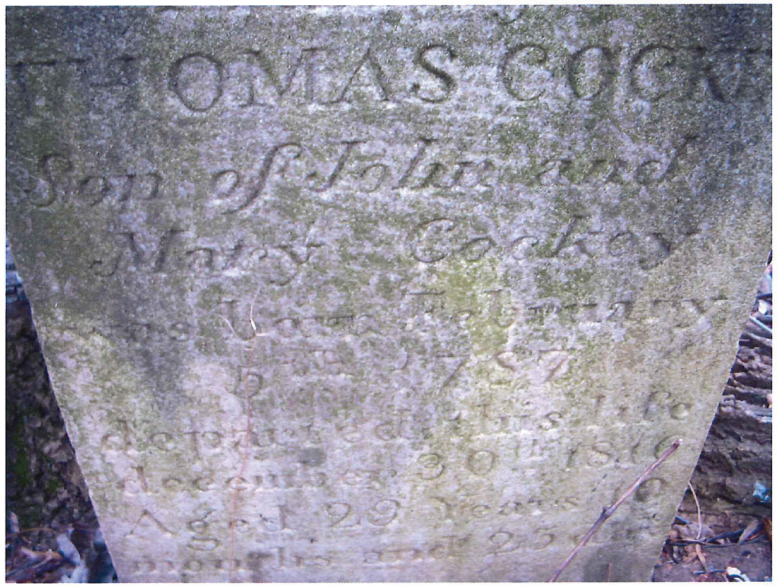

SAMUEL JOHN REED
FEB 2 1827 — SEP 26 1894
AND HIS WIFE
MARY ANN PARSONS
FEB 4 1836 — MAY 22 1897
ALSO INFANT DAUGHTER
MARY ANN
AUG 19 1857 — AUG 24 1861




SKIPPER


NIMROD SKIPPER





GREENSPRING MANOR- Seminary Farms



CIM EXHIBIT 2

GREENSPRING MANOR

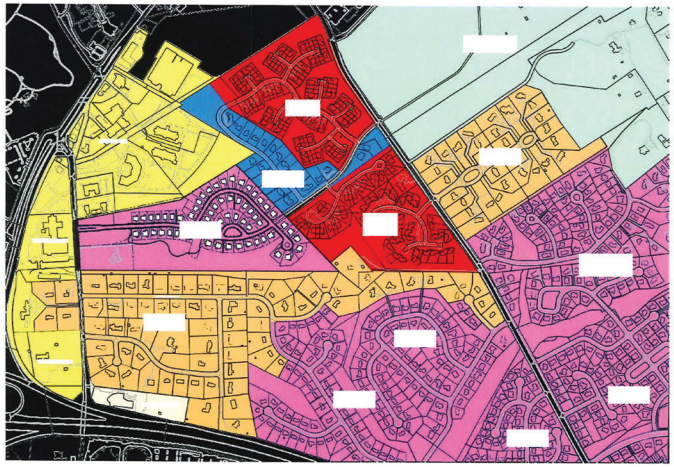
Project Product Hits Sweet Spot Within Overall Community



- Project lots are currently averaging 11-12,000 sf-¼ acre lots.
- Surrounding communities vary from 6,500-50,000 sf.
- Modern design, perfect for move down and new home buyers for this market.

GREENSPRING MANOR

Surrounding Communities By Lot Size



- RED areas:
  6,500 -12,500 sf
- PURPLE areas:
  10,000 -30,000sf
  Average 13,500 sf
- TAN areas:
  31,500 –50,000 sf

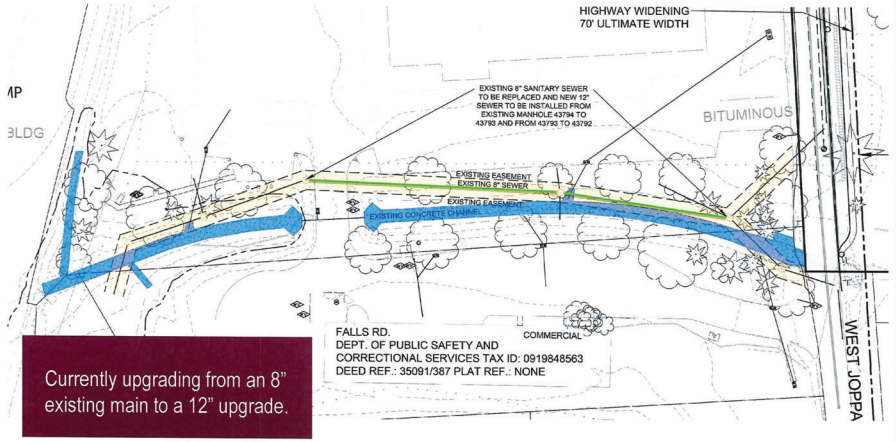
GREENSPRING MANOR

CURRENT SCENARIO

- 42% of the project is retained in open space. Only clearing 2% of project for SWM purposes.
- Project retains 100 yr flood with high water quality unlike open farm field.
- Offsite intersection improvements compensates for 700% projects traffic and makes a immense improvement over current conditions, some improvement to adjoining MD 130/131 intersections. Currently have approval and support from SHA and Baltimore County DPW.
- Working with Johns Hopkins to resolve offsite sewer that has been an issue for the community for some time.
- Existing home is retained on its own parcel, being connected to public services, existing well and septic system being remediated.
- Excellent buffer from Joppa Road to homes with open space at bifurcated entrance.
- Good landscape architecture and passive amenities.
- Joppa Road- deceleration lane and left turn bypass provided at entrance and emergency rear connection proposed for minimal impact to current traffic scenario.

GREENSPRING MANOR

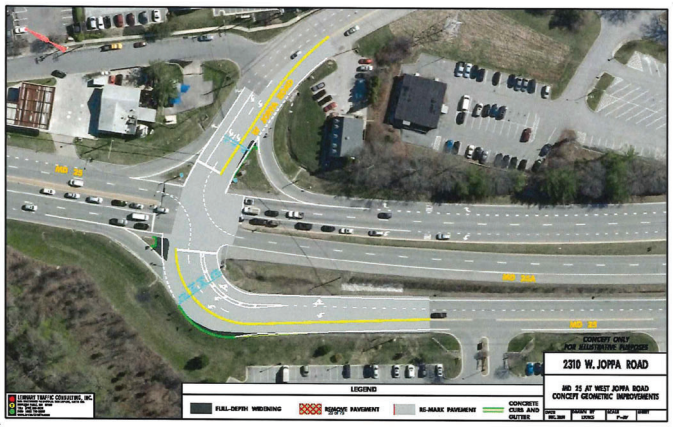
Offsite Sewer Improvements



Currently upgrading from an 8" existing main to a 12" upgrade.

GREENSPRING MANOR

Offsite Intersection Improvements



- Adding additional turning lanes in each direction.
- Realigning lanes for improved efficiencies.
- Signalization will be adjusted and modified for new traffic patterns.
- Will be able to keep improvements within current state right-of way.
- Compensates 700% of our traffic with large improvement to intersection efficiency.
- Improves intersections at MD 130 and 131 by 14% AM and 5% PM peak demands.

GREENSPRING MANOR

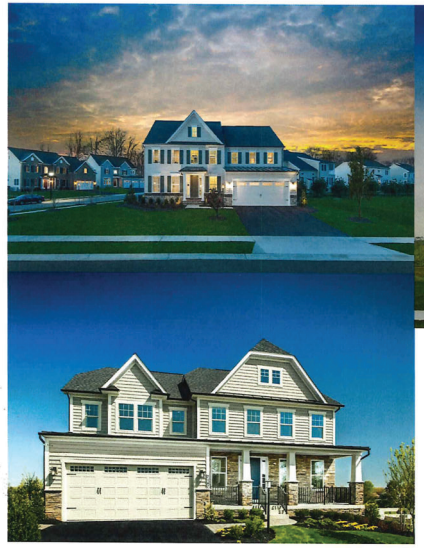




NVR product 54’

- 2 and 3 car garages

GREENSPRING MANOR





NVR product
50’

GREENSPRING MANOR



NVR product
40’



Baltimore County, Maryland

MASTER PLAN 2020



From the Baltimore County Executive and the Baltimore County Council

Master Plan 2020 is the guiding document that directs future development in Baltimore County over the next ten years and beyond. This plan embodies this County's broad goals of protecting the environment, preserving agriculture, and ensuring safe and attractive places to live and work. It combines the expertise and skill of Baltimore County's public servants with input from the people of our communities to help determine both where and how land development will occur throughout the next decade.

Master Plan 2020 is based on the concept of *sustainability*. We cannot meet our present needs and simultaneously preserve resources for future generations without implementing sustainable practices throughout Baltimore County. By reducing greenhouse gases in our air and pollutants in our streams and wetlands, we will improve not only the health of our entire County, but also the quality of life in all of our communities. We must maintain Baltimore County's tradition of smart growth by promoting policies that encourage compact, walkable, well-designed redevelopment of underused properties along commercial corridors and close to public transit. And by continuing to promote economic development in our historic neighborhoods and maintaining our highly skilled and well trained workforce, we can keep attracting and strengthening businesses that provide a wide variety of jobs for all our residents.

Many residents provided valuable assistance in the development of *Master Plan 2020*. The numerous comments and suggestions received at the public input meetings, from advisory committees, through the mail and emails, and through telephone calls and personal conversations, were greatly appreciated and critical to this plan's completion.

Master Plan 2020 is an effort to create and maintain safe and sustainable communities to achieve a sensible balance of economy, equity, and a healthy environment for people to reside, pursue careers, raise families, and enjoy the amenities of Baltimore County. This is an exciting opportunity for Baltimore County to continue working as partners with all its residents, businesses, and adjacent jurisdictions to develop a new direction for a brighter and healthier future.

S.G. Samuel Moxley, District 1

Vincent J. Gardina, District 5

Kevin Kamenetz, District 2

Joseph Bartenfelder, District 6

T. Bryan McIntire, District 3

John Olszewski, Sr., District 7
Chairman, County Council

James T. Smith, Jr.
County Executive

Kenneth N. Oliver, District 4

Recent Trends

In order to create sustainable communities, citizens and decision–makers must recognize the latest trends in housing choices and changes in family makeup. More homebuyers and renters desire to live in areas with shorter commutes to work, convenient access to shopping, dining, and other amenities. Traditional families, married couples with children, are becoming much less common. Young professionals, childless couples, empty nesters and single parents are replacing these traditional families. These consumers tend to prefer condominiums, townhouses and apartments in compact, mixed-use, walkable communities instead of single-family homes in the suburbs.

"Persons born after 1981 and baby boomers prefer to live in compact dense urban places."
Governing Magazine March 2009

"For 50 years, families with children drove America's housing industry. But now, married couples with children make up less than 25 percent of American households. And by 2025, less than 20 percent of households will be married couples with children."
"America's Families and Living Arrangements: 2003" U.S. Census Bureau (November 2004)

"When prospective homebuyers were asked if they would rather live in a large-lot neighborhood where they would depend entirely on cars to get around, or in more compact neighborhoods with schools, shops, and restaurants nearby, sixty percent chose the compact neighborhood."
Smart Growth America and National Association of Realtors. 2004 American Community Survey: National Survey on Communities, Washington, DC., October 2004

Land Management Areas

Master Plan 2020 designates "Land Management Areas" that organize the County into general policy areas. The purpose of these areas is to express the *general intention* of the County regarding development and provision of services. More specific details pertaining to these areas can be found in their respective sections of the plan. Additionally, many of these areas have specific community level plans adopted as part of *Master Plan 2020*. The Land Management Areas include the following:

Rural Areas

Agriculture Priority Preservation Areas – These areas are designated for preserving active agriculture activities, and as such are not suitable for dense residential, commercial, or institutional development. The County also designated areas for the Rural Legacy Program including the Coastal, Piney Run, Gunpowder, Long Green, and Manor areas.

Resource Preservation Areas – These areas are designed to protect environmental, historic, and cultural resources, while allowing only limited residential, commercial or institutional development. These areas include Patapsco/Granite, Prettyboy Reservoir, Gunpowder, Liberty Reservoir, Chesapeake Bay, Loch Raven Reservoir, and Soldiers Delight.

Rural Commercial Centers – The County has two rural commercial centers: Hereford and Jacksonville. Community plans have been prepared for each of these centers to help guide development.

Rural Residential Areas – Some areas of limited low-density development are established. These areas include Chestnut Ridge, Parkton, Patapsco/Granite, Hereford, Kingsville, and Jacksonville.

Urban Areas

Community Conservation Areas – These areas generally consist of lower to moderate density suburban residential neighborhoods. The neighborhoods are served with public water and sewer service. The preservation and stability of these communities is of paramount importance. The majority of these areas have community plans adopted as part of the Master Plan. They also contain a significant amount of commercial development, located primarily along the commercial corridors. Areas suitable for compact, mixed-use, walkable, transit oriented development are called Community Enhancement Areas (CEAs). Commercial Revitalization Districts (CRDs), and strip commercial corridors are also located within some of these areas.

Towson Urban Center – This urban center has been the subject of multiple studies. More specific detail

can be found within the *Towson Urban Area* section of the plan.

Owings Mills Growth Area – The last of the originally designated growth areas. See the *Owing Mills Growth Area* section for more information.

Middle River Redevelopment Area – The newest designated growth area. Details are provided in the *Middle River Redevelopment Area* section in the plan.

Employment Center – These areas generally consist of a variety of commercial uses predominantly employment-oriented, some with retail and housing. They may contain heavy industrial uses as well. These areas include CEAs, CRDs, and strip commercial areas. The preservation of family-supporting wage employment is the primary goal.

Proposed Land Use

The Proposed Land Use Map provides general recommendations for land use, based upon the policies provided in *Master Plan 2020*. The map is conceptual and general, and is intended to reflect land use patterns and support the land use objectives of *Master Plan 2020*, rather than identify land use of individual properties or parcels. The use of transects, and "T-zones", is designed to support compact mixed-use communities, while maintaining the stability of existing community conservation areas (Map 5). The proposed land use map will provide general direction for county land use decisions, and may be amended as needed.

Transect-Based Planning for the Built Environment

A "transect" of nature, first conceived by Alexander Von Humboldt at the close of the 18th century, is a geographical cross-section of a region intended to reveal a sequence of environments. Originally, it was used to analyze natural ecologies, showing varying characteristics through different zones such as shores, wetlands, plains and uplands. It helps study the many elements that contribute to habitats where certain plants and animals thrive in symbiotic relationships to the minerals and microclimate.

This same system can be used to demonstrate different human habitats. Some individuals prefer living on farms while others prefer living in cities. Before the automobile, American development patterns were walkable, and transects within towns and city neighborhoods reflected a variety of development patterns and uses. These degrees of urbanism are represented in a rural-to-urban transect has been developed which provides six "Transect Zones" (T-zones) for application on the proposed land use map.

The transect, as a framework, identifies a range of habitats from the most natural to the most urban (Map 5). Its continuum, when subdivided, lends itself to the creation of zoning categories. These categories include standards that encourage diversity. The standards overlap, reflecting the successional pattern of development and natural ecosystems. The transect thereby integrates environmental and zoning methodologies, enabling the design of compact, mixed-use, walkable communities that support the viability of natural ones.

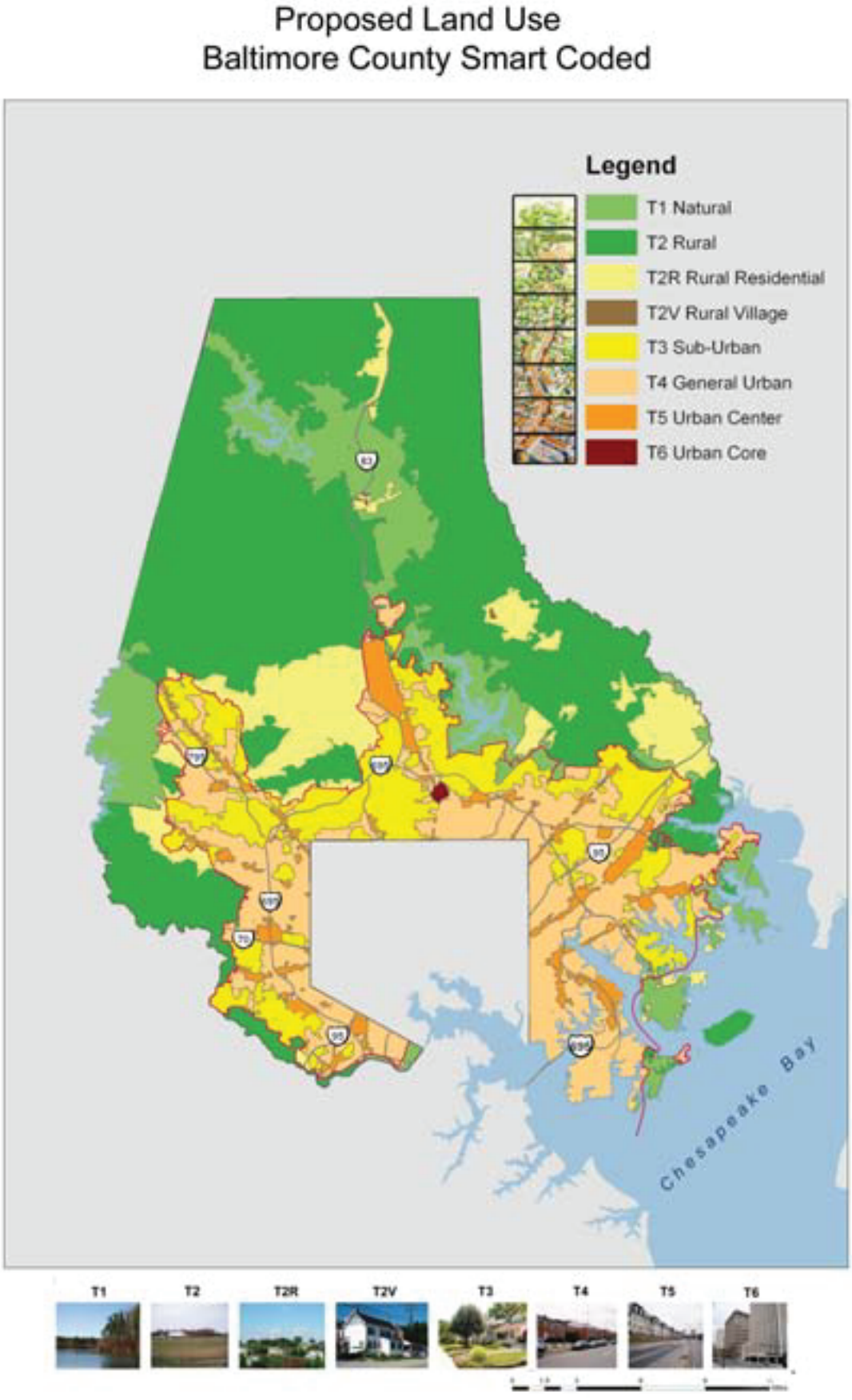
- **T-1 (Natural Zone)** contains lands approximating a natural condition, including lands unsuitable for settlement due to topography, hydrology, or vegetation.

- **T-2 (Rural Zone)** consists of sparsely settled lands in an open or cultivated state. These include woodlands, agricultural lands, and grasslands. Typical buildings may include farmhouses and agricultural buildings.

- **T-2 R (Rural Residential Zone)** consists of large lot single-family detached housing. Plantings are informal. All setbacks are generally 50+ feet. Lots are deep to accommodate a larger backyard. Density varies between 2 to 5 acres per dwelling.

- **T-2 V (Rural Village Zone)** takes into account the rural villages of Hereford and Jacksonville. This zone has a mix of smaller scale retail/ office and some residential uses. T-2 V preserves the rural village character featuring an attractive and traditional pattern of houses,

Map 5: Proposed Land Use



commercial establishments, open spaces and their relationship to roadways.

- **T-3 (Sub-Urban Zone)** includes low-density residential areas, adjacent to higher zones that contain mixed use. Home occupations and outbuildings may be allowed. Landscaping is naturalistic and setbacks are relatively deep. Blocks may be large and the roads irregular to accommodate natural conditions.

- **T-4 (General Urban Zone)** is characterized by mixed-use, but is primarily residential urban fabric. It may have a wide range of building types including single-family detached and attached houses, and townhouses. Setbacks and landscaping are variable. Streets with curbs and sidewalks define medium-sized blocks.

- **T-5 (Urban Center Zone)** includes higher density mixed-use buildings that accommodate retail, offices, townhouses, and apartments. It has a tight network of streets, with wide sidewalks, steady street tree planting and buildings set close to the sidewalks.

- **T-6 (Urban Core Zone)** has the highest density and height with the greatest variety of uses, and civic buildings of regional importance. It may have larger blocks; streets have steady street tree planting and buildings set close to the wide sidewalks. Typically only large towns and cities have an Urban Core Zone.

- **T-M (Manufacturing Zone)** includes certain industries and manufacturing processes that should not be combined with other uses. By their function, they require that their operations not be closely integrated with other uses (except those with similar characteristics).

- **T-I (Institutional Zone)** many institutional uses should be incorporated into the T-4 and T-5 transects, such as community centers, branch government offices, libraries, etc. However, certain institutions like medical complexes, educational campuses, and others that benefit from having all their functions in one location may need room to grow. That may make inclusion into a Community Enhancement Area impractical. Such facilities should be close enough to be walkable, and be mutually supportive.

The transect system replaces the conventional separate land use zoning system. The T-zones provide the basis for real neighborhood structure, which relies upon compact, walkable streets, mixed-use, transportation options, and housing diversity. The T-zones vary by the ratio and level of intensity of their natural, built, and social components. Uses may overlap between one T-zone and another. The ability of transects to clarify the compatibility among uses makes them particularly useful in planning the built environment.

They may be coordinated to all scales of planning, from the region through the community scale, down to the individual lot and building. However, any new zoning would be applied at the community scale, and it is important to note that each community will have to establish (calibrate) its own unique development criteria. Furthermore, T-zones should be balanced within a neighborhood structure based on pedestrian sheds (walksheds), so that residents of lower density neighborhoods may still walk to different habitats, such as a main street, or civic space.

Transect-based planning is used throughout the County to provide a solid foundation for all other planning. As Baltimore County moves towards compact, mixed-use, higher-density walkable communities, the successful implementation of transect-based planning will play a key role in further developing the T-4 and T-5 zones.

The Transect Zones and the following graphics for the Transect Zone descriptions and civic spaces were originated and developed by Duany Plater-Zyberk & Co.

Transect Zone Descriptions



T-1 NATURAL

T-1 Natural Zone consists of lands approximating or reverting to a wilderness condition, including lands unsuitable for settlement due to topography, hydrology or vegetation.

General Character:	Natural landscape with some agricultural use
Building Placement:	Not applicable
Frontage Types:	Not applicable
Typical Building Height:	Not applicable
Type of Civic Space:	Parks, Greenways



T-2 RURAL

T-2 Rural Zone consists of sparsely settled lands in open or cultivated states. These include woodland, agricultural land, grassland, and irrigable desert. Typical buildings are farmhouses, agricultural buildings, cabins, and villas.

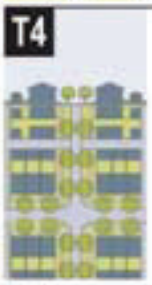
General Character:	Primarily agricultural with woodland & wetland and scattered buildings
Building Placement:	Variable Setbacks
Frontage Types:	Not applicable
Typical Building Height:	1- to 2-Story
Type of Civic Space:	Parks, Greenways



T-3 SUB-URBAN

T-3 Sub-Urban Zone consists of low density residential areas, adjacent to higher zones that some mixed use. Home occupations and outbuildings are allowed. Planting is naturalistic and setbacks are relatively deep. Blocks may be large and the roads irregular to accommodate natural conditions.

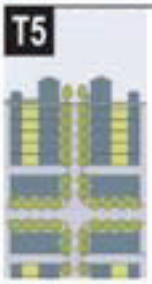
General Character:	Lawns, and landscaped yards surrounding detached single-family houses; pedestrians occasionally
Building Placement:	Large and variable front and side yard Setbacks
Frontage Types:	Porches, fences, naturalistic tree planting
Typical Building Height:	1- to 2-Story with some 3-Story
Type of Civic Space:	Parks, Greenways



T-4 GENERAL URBAN

T-4 General Urban Zone consists of a mixed use but primarily residential urban fabric. It may have a wide range of building types: single, sideyard, and rowhouses. Setbacks and landscaping are variable. Streets with curbs and sidewalks define medium-sized blocks.

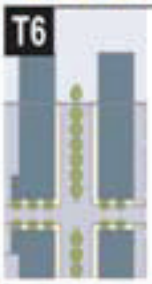
General Character:	Mix of Houses, Townhouses & small Apartment buildings, with scattered Commercial activity; balance between landscape and buildings; presence of pedestrians
Building Placement:	Shallow to medium front and side yard Setbacks
Frontage Types:	Porches, fences, Dooryards
Typical Building Height:	2- to 3-Story with a few taller Mixed Use buildings
Type of Civic Space:	Squares, Greens



T-5 URBAN CENTER

T-5 Urban Center Zone consists of higher density mixed use building that accommodate etail, offices, rowhouses and apartments. It has a tight network of streets, with wide sidewalks, steady street tree planting and buildings set close to the sidewalks.

General Character:	Shops mixed with Townhouses, larger Apartment houses, Offices, workplace, and Civic buildings; predominantly attached buildings; trees within the public right-of-way; substantial pedestrian activit
Building Placement:	Shallow Setbacks or none; buildings oriented to street defining a street wall
Frontage Types:	Stoops, Shopfronts, Galleries
Typical Building Height:	3- to 5-Story with some variation
Type of Civic Space:	Parks, Plazas and Squares, median landscaping



T-6 URBAN CORE

T-6 Urban Core Zone consists of the highest density and height, with the greatest variety of uses, and civic buildings of regional importance. It may have larger blocks; streets have steady street tree planting and buildings are set close to wide sidewalks. Typically only large towns and cities have an Urban Core Zone.

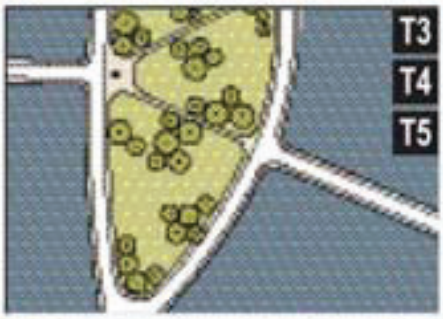
General Character:	Medium to high-Density Mixed Use buildings, entertainment, Civic and cultural uses. Attached buildings forming a continuous street wall; trees within the public right-of-way; highest pedestrian and transit activity
Building Placement:	Shallow Setbacks or none; buildings oriented to street, defining a street wall
Frontage Types:	Stoops, Dooryards, Forecourts, Shopfronts, Galleries, and Arcades
Typical Building Height:	4-plus Story with a few shorter buildings
Type of Civic Space:	Parks, Plazas and Squares; median landscaping

Civic Space Descriptions

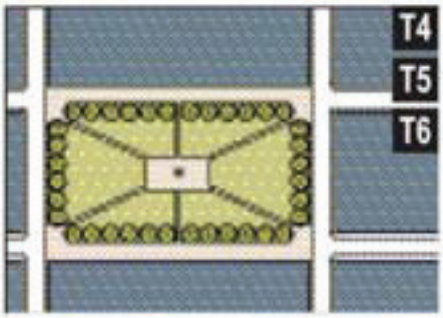
a. Park: A natural preserve available for unstructured recreation. A park may be independent of surrounding building Frontages. Its landscape shall consist of Paths and trails, meadows, waterbodies, woodland and open shelters, all naturalistically disposed. Parks may be lineal, following the trajectories of natural corridors. The minimum size shall be 8 acres. Larger parks may be approved by Warrant as Special Districts in all zones.



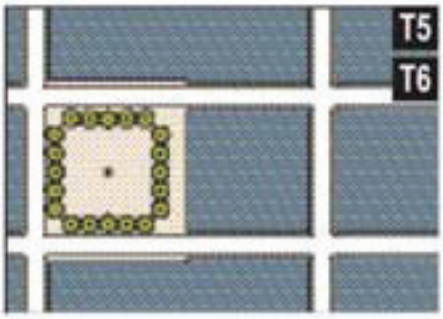
b. Green: An Open Space, available for unstructured recreation. A Green may be spatially defined by landscaping rather than building Frontages. Its landscape shall consist of lawn and trees, naturalistically disposed. The minimum size shall be 1/2 acre and the maximum shall be 8 acres.



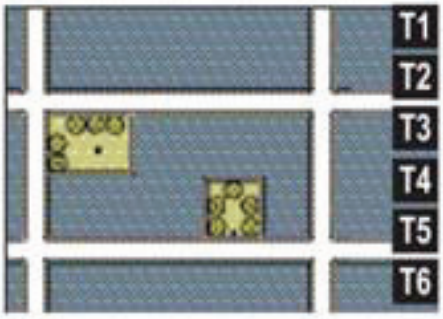
c. Square: An Open Space available for unstructured recreation and Civic purposes. A Square is spatially defined by building Frontages. Its landscape shall consist of paths, lawns and trees, formally disposed. Squares shall be located at the intersection of important Thoroughfares. The minimum size shall be 1/2 acre and the maximum shall be 5 acres.



d. Plaza: An Open Space available for Civic purposes and Commercial activities. A Plaza shall be spatially defined by building Frontages. Its landscape shall consist primarily of pavement. Trees are optional. Plazas should be located at the intersection of important streets. The minimum size shall be 1/2 acre and the maximum shall be 2 acres.



e. Playground: An Open Space designed and equipped for the recreation of children. A playground should be fenced and may include an open shelter. Playgrounds shall be interspersed within Residential areas and may be placed within a Block. Playgrounds may be included within parks and greens. There shall be no minimum or maximum size.



(3) Continue grass roots community-based organizing and information sharing through e-mail, the county website, e-blast updates, internet-based social networking, and meetings with civic, faith, business, educational leaders and other stakeholders.

(4) Continue to administer community-based planning to ensure conformance with the Master Plan, and that the resulting plans and projects address community concerns, and are successfully implemented.

Community Conservation Areas

Baltimore County's Community Conservation Areas (CCAs) encompass the County's more densely populated, established communities (Map 9). Nearly 75% of the county's residents live in these areas, where there is a wide range of housing choices. Many of these communities feature small-town scale commercial centers, a proud history and culture, and an urban dynamic. They also encompass some of the County's larger employment centers.

The CCAs were first delineated in the 1989-2000 Master Plan. By adopting these areas as a new land use designation, the County set precedent, and began a much-needed push to "conserve, revitalize and enhance our older residential communities." The move to protect and invest in the older communities, and revitalize their commercial hubs followed the previous period when most public investment went to the new designated Growth Areas.

Preserving CCAs is a fundamental component of the County's critical effort to effectively maintain, strengthen and manage its built environment. This priority grows in importance as our society continues to elevate principles of sustainability thereby reducing land consumption, and utilizing sustainable construction techniques to preserve resources.

Baltimore County is proud of the plans created and projects implemented to conserve its older communities. Collaborative planning efforts have been undertaken in communities throughout the county. These include four large-scale enterprises that employed the Urban Design Assistance Team (UDAT) planning model in Dundalk, Randallstown, Essex-Middle River, and Towson, and area community plans developed and adopted in the last ten years. Planning charrettes also helped craft a specific redevelopment plan for the former Kingsley Park apartments in Essex-Middle River, to create the Walkable Towson Plan, and to re-energize Turner Station. In addition, the Office of Community Conservation (OCC) developed a range of effective programs providing support to homeowners, homebuyers, and renters. Furthermore, the County made a major capital investment in streetscape enhancement projects in 12 of the 14 traditional commercial centers, designated as Commercial Revitalization Districts (CRDs), from Lansdowne on the west side to Essex-Middle River on the east side.

These planning efforts, and vigorous follow-through involving capital projects and public-private redevelopment produced visible improvements. In some cases, large-scale transformation was achieved. An inspiring review of community conservation activities in recent years can be found in the award-winning report, *Baltimore County Works*, published in 2008.

While the County is proud of its success, there are challenges to be met. Going forward, a sustainable community conservation strategy will include effective action in the following subject areas: Sustainable Housing, Homeownership, Workforce Housing, Rental Housing, and Green Housing.

Sustainable Housing

Baltimore County's CCAs have many advantages for residents, including convenience to shopping, recreation, and cultural amenities, housing affordability, good neighborhood schools, public transportation and community stability. However, it is also true that many of the houses in these areas lack amenities desired by today's homebuyers. Many communities consist of houses that are small, with too few bedrooms and bathrooms, and too little closet space. These houses can be expensive to maintain, with inadequate heating and cooling systems, poor or nonexistent insulation, leaky windows and

Department of Public Works and Transportation

2021 Basic Services Map
Transportation Zones

Legend

Intersections - Level of Service

- D
- E
- F

Transportation Zones - Level of Service

- D
- E
- F
- Commercial Revitalization Areas
- Towson Urban Center
- Urban Rural Demarcation Line
- County Boundary

Shawan Rd, Beaver Dam Rd & Cuba Rd
Falls Rd, Shawan Rd & Tufton Ave
W Padonia Rd, Deerco Rd & Beaver Dam Rd
York Rd & E/W Padonia Rd
Dulaney Valley Rd & E Timonium Rd
York Rd & E/W Timonium Rd
Falls Rd & W Seminary Ave
York Rd & E/W Seminary Ave
Falls Rd, Greenspring Valley Rd & Station Dr
Jones Falls Expy, Falls Rd & W Joppa Rd
Charles St, Bellona Ave & Kenilworth Ave
York Rd & Fairmount Ave
Dulaney Valley Rd & Fairmount Ave
York Rd & Burke Ave
Hillen Rd & Stevenson Ln
Coucher Blvd & Putty Hill Ave
Perring Pkwy & Putty Hill Ave
Loch Raven Blvd & E Joppa Rd
Perring Pkwy & E Joppa Rd
Harford Rd & E Joppa Rd
Jarrettsville Pike, Paper Mill Rd & Sweet Air Rd
Belair Rd, Joppa Rd & Ebenezer Rd
White Marsh Blvd & Honeygo Blvd
Pulaski Hwy & Ebenezer Rd
Belair Rd & Rossville Blvd
Harford Rd & Taylor Ave
Belair Rd, Fullerton Ave & Taylor Ave
Pulaski Hwy & Middle River Rd
Pulaski Hwy & Rossville Blvd
Pulaski Hwy & 66th St
Eastern Ave, Rolling Mill Rd & Eastpoint Mall
Liberty Rd & Washington Ave
Rolling Rd & Windsor Mill Rd
Baltimore National Pike & N Rolling Rd
Frederick Rd, Ingleside Ave & Bloomsbury Ave
Frederick Rd & S Rolling Rd

THIS MAP HAS BEEN ENACTED UNDER BILL NUMBER 32-21 AND IS PART OF THE BALTIMORE COUNTY ZONING REGULATIONS, 1955, AS AMENDED BY THE BILL ADOPTED MAY 7, 2021. EFFECTIVE MAY 17, 2021.

Julian E. Jones Jr.

COUNTY COUNCIL OF BALTIMORE COUNTY

N W E S

SCALE 1 INCH = 4,000 Feet

0 2,000 4,000 8,000 12,000 16,000 20,000 Feet

NOTE: The interpretation of the Basic Services Maps are subject to exceptions provided for in the Baltimore County Zoning Regulations, Article 4A Growth Management, Section 4A02 Basic Services Maps. These exceptions include those mapped in the County's geographic information system (GIS): the Urban and Rural Demarcation Line (URDL), Commercial Revitalization Districts (4A02.4.E.1.i), and the Towson Urban Center (4A02.4.E.1.j). The Towson Urban Center (Downtown Towson District) exists in the Master Plan 2020 in the Land Management Areas feature class.

Feature Class Production Dates

Transportation Zones	2021
Intersections	2021
Commercial Revitalization Districts	2020
Towson Urban Center	2011
Urban Rural Demarcation Line	2012
Roads	2021
County Boundary	2008

Produced by the Baltimore County Department of Public Works and Transportation

North American Datum 1983 HARN, U.S. Survey Foot

Published August 2, 2021

BALTIMORE COUNTY, MARYLAND
BUREAU OF TRAFFIC ENGINEERING AND TRANSPORTATION PLANNING
INTER-OFFICE CORRESPONDENCE

DATE: December 16, 2020 (Revised)

TO: D'Andrea Walker., Acting Director
Department of Public Works

FROM: Greg Carski. Bureau Chief
Bureau of Traffic Engineering and Transportation Planning

SUBJECT: 2021 Basic Service Map – Transportation:

Due to COVID-19, our bureau has restudied 30 out of 35 intersections currently on the Basic Services Map for 2020. These studies were completed prior to the Covid-19 effects on traffic volumes. Studies were suspended in mid March.

The following five intersections were not studied due to COVID-19 during 2020 and the rating below is based upon the 2020 Basic Service Maps.

Joppa Rd E & Loch Raven Blvd (MD 542)	LOS = F
Pulaski Hwy (US 40) & Rossville Blvd	LOS = D
Rolling Rd & Windsor Mill Rd	LOS = D
Seminary Ave (MD 131) & York Rd (MD 45)	LOS = D
Timonium Rd & York Rd (MD 45)	LOS = D

Based on the studies that were completed over the past year and prior years in some cases, we are recommending the following change to the Transportation Map for 2021:

CHANGES:

Beaver Dam Rd / Deerco Rd / Padonia Rd	F to C

There are twelve "F" level intersections and one "E" level intersection that are being proposed on the 2021 Basic Service Transportation Map that would control development. These intersections are:

Baltimore Nat'l Pike (US 40)/ Rolling Rd N	LOS = F
Bellona Ave / Charles St (MD 139) / Kenilworth Dr	LOS = F
Bloomsbury Ave / Frederick Rd (MD 144) / Ingleside Ave	LOS = F
Burke Ave / Burke Ave W / York Rd (MD 45)	LOS = F
Ebenezer Rd / Pulaski Hwy (US 40)	LOS = F
Falls Rd (MD 25) / Seminary Ave W (MD 131)	LOS = F
Falls Rd (MD 25) / Joppa Rd W	LOS = F
Falls Rd (MD 25) / Greenspring Valley Rd (MD 130)	LOS = F
Falls Rd (MD 25) & Shawan Rd & Tufton Ave *	LOS = F
Frederick Rd (MD 144) / Rolling Rd S (MD 166)	LOS = F

Joppa Rd E & Loch Raven Blvd (MD 542) – (COVID 19)	LOS = F
Perring Pkwy (MD 41) / Putty Hill Ave	LOS = F
Joppa Rd E / Perring Pkwy (MD 41)	LOS = E

* Note: Since the intersection of Falls Rd(MD25)/Shawan Rd and Tufton Rd is outside the URDL there will be no commuter shed associated with this intersection.

Beaver Dam Rd/Deerco Rd/Padonia Rd was LOS F on the Basic Services Map for 2020 per Bill 12-19, our engineering review results in a LOS C.

Enclosed is a list of the current D, E, and F intersections for your use. Should you have any questions in regard to the Basic Services Transportation Map for 2021, please contact me at ext. 3554.

Department of Public Works and Transportation

2022 Basic Services Map
Transportation Zones

Legend

Intersections - Level of Service

- D
- E
- F

Towson Urban Center

Commercial Revitalization Areas

Urban Rural Demarcation Line

Transportation Zones - Level of Service

- D
- E
- F

County Boundary

Shawan Rd, Beaver Dam Rd & Cuba Rd

Falls Rd, Shawan Rd & Tufton Ave

Falls Rd & W Seminary Ave

Falls Rd, Greenspring Valley Rd & Station Dr

Jones Falls Expy, Falls Rd & W Joppa Rd

Charles St, Bellona Ave & Kenilworth Ave

York Rd & Fairmount Ave

York Rd & Burke Ave

Hillen Rd & Stevenson Ln

Goucher Blvd & Putty Hill Ave

Loch Raven Blvd & E Joppa Rd

York Rd & E/W Padonia Rd

York Rd & E/W Timonium Rd

York Rd & E/W Seminary Ave

Dulaney Valley Rd & E Timonium Rd

Dulaney Valley Rd & Fairmount Ave

Perring Pkwy & Putty Hill Ave

Harford Rd & Taylor Ave

Jarrettsville Pike, Paper Mill Rd & Sweet Air Rd

Perring Pkwy & E Joppa Rd

Harford Rd & E Joppa Rd

Belair Rd, Joppa Rd & Ebenezer Rd

White Marsh Blvd & Honeygo Blvd

Belair Rd & Rossville Blvd

Belair Rd, Fullerton Ave & Taylor Ave

Pulaski Hwy & Ebenezer Rd

Pulaski Hwy & Middle River Rd

Pulaski Hwy & Rossville Blvd

Pulaski Hwy & 66th St

Eastern Ave, Rolling Mill Rd & Eastpoint Mall

Liberty Rd & Washington Ave

Rolling Rd & Windsor Mill Rd

Baltimore National Pike & N Rolling Rd

Frederick Rd, Ingleside Ave & Bloomsbury Ave

Frederick Rd & S Rolling Rd

THIS MAP HAS BEEN ENACTED UNDER BILL NUMBER 25-22 AND IS PART OF THE BALTIMORE COUNTY ZONING REGULATIONS, 1955, AS AMENDED BY THE BILL ADOPTED MAY 2, 2022. EFFECTIVE MAY 16, 2022.

Julian E. Jones Jr.

COUNTY COUNCIL OF BALTIMORE COUNTY

N W E S

SCALE 1 INCH = 4,000 Feet

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Feature Class Production Dates

Transportation Zones	2022
Intersections	2022
Commercial Revitalization Districts	2020
Towson Urban Center	2011
Urban Rural Demarcation Line	2012
Roads	2022
County Boundary	2008

Produced by Baltimore County Department of Public Works and Transportation

North American Datum 1983 HARN, U.S. Survey Foot

Published May 12, 2022

BALTIMORE COUNTY, MARYLAND
BUREAU OF TRAFFIC ENGINEERING AND TRANSPORTATION PLANNING
INTER-OFFICE CORRESPONDENCE

DATE: February 4, 2022 (Revised)

TO: D'Andrea Walker., Acting Director
Department of Public Works and Transportation

FROM: Anthony Russell. Acting Bureau Chief
Bureau of Transportation

SUBJECT: 2022 Basic Service Map – Transportation:

In September of 2021, the schools in Baltimore County resumed full time in class instruction. With schools back in full session, the D, E, and F intersections on the transportation basic service map were studied for the 2022 Basic Service Map.

The following three intersections were not studied due to construction in the area

Harford Rd (MD 147) & Joppa Rd	LOS = D
Honeygo Blvd & White Marsh Blvd (MD 43)	LOS = D
Perring Pkwy (MD 41) / Putty Hill Ave	LOS = F

As of now the proposal is to retain their level of service from 2021.

Based on these studies over the past year, we are recommending the following change to the Transportation Map for 2022:

CHANGES:

Beaver Dam Rd / Deerco Rd / Padonia Rd	F to C

With the change above, there are twelve "F" level intersections and one "E" level intersection that are being proposed on the 2022 Basic Service Transportation Map that would control development. These intersections are:

Baltimore Nat'l Pike (US 40)/ Rolling Rd N	LOS = F
Bellona Ave / Charles St (MD 139) / Kenilworth Dr	LOS = F
Bloomsbury Ave / Frederick Rd (MD 144) / Ingleside Ave	LOS = F
Burke Ave / Burke Ave W / York Rd (MD 45)	LOS = F
Ebenezer Rd / Pulaski Hwy (US 40)	LOS = F
Falls Rd (MD 25) / Seminary Ave W (MD 131)	LOS = F

Falls Rd (MD 25) / Joppa Rd W	LOS = F
Falls Rd (MD 25) / Greenspring Valley Rd (MD 130)	LOS = F
Falls Rd (MD 25) & Shawan Rd & Tufton Ave *	LOS = F
Frederick Rd (MD 144) / Rolling Rd S (MD 166)	LOS = F
Joppa Rd E & Loch Raven Blvd (MD 542)	LOS = F
Perring Pkwy (MD 41) / Putty Hill Ave	LOS = F
Joppa Rd E / Perring Pkwy (MD 41)	LOS = E

* Note: Since the intersection of Falls Rd(MD25)/Shawan Rd and Tufton Rd is outside the URDL there will be no commuter shed associated with this intersection.

Beaver Dam Rd / Deerco Rd / Padonia Rd was level of service F on the Basic Services Map for 2021 per Bill 32-21.

Enclosed is a list of the current D, E, and F intersections for your use. Should you have any questions in regard to the Basic Services Transportation Map for 2022, please contact me at ext.3554.

Sig#	Prev Date	Prev	Curr Date	Curr	Time	1st Rd Name	2nd Rd Name	3rd Rd Name	Notes
S0284	1/27/20	F	11/17/21	F		Baltimore Nat'l	Rolling Rd N		
C0712	1/28/20	D	11/03/21	D		Beaver Dam Rd	Cuba Rd	Shawan Rd	
S0564	1/29/20	D	9/21/21	D		Belair Rd	Ebenezer Rd	Joppa Rd	
S0619	1/30/20	D	11/08/21	D		Belair Rd	Fullerton Ave	Taylor Ave	
S2325	2/03/20	D	10/28/21	D		Belair Rd	Rossville Blvd		
S1594	2/18/20	F	9/08/21	F		Bellona Ave	Charles St	Kenilworth Dr	
C4270	2/05/20	F	9/22/21	F		Bloomsbury Ave	Frederick Rd	Ingleside Ave	
S 087	2/05/20	F	9/20/21	F		Burke Ave	York Rd		
S1927	2/10/20	D	9/23/21	D		Dulaney Valley Rd	Fairmount Ave		
S2294	2/11/20	D	11/02/21	D		Dulaney Valley Rd	Timonium Rd E		
S0616	2/04/20	D	10/18/21	D		Eastern Ave	Rolling Mill Rd	Mall Ent	
S0605	2/12/20	F	9/14/21	F		Ebenezer Rd	Pulaski Hwy		
S3981	2/13/20	D	10/04/21	D		Fairmount Ave	York Rd		
S0268	2/19/20	F	11/09/21	F		Falls Rd	Greenspring Valley	Station Dr	
S0271	4/19/20	F	11/09/21	F		Falls Rd	Jones Falls Expwy	Joppa Rd W	
S2231	2/18/20	F	11/09/21	F		Falls Rd	Seminary Ave W		
S0428	2/20/20	F	9/13/21	F		Falls Rd	Shawan Rd	Tufton Ave	
S3356	2/24/20	F	9/15/21	F		Frederick Rd	Rolling Rd S		
C0036	1/21/20	D	10/19/21	D		Goucher Blvd	Putty Hill Ave		
S3016	3/21/19	D	2/25/20	D		Harford Rd	Joppa Rd		UNDER CONST.
S2167	2/26/20	D	11/01/21	D		Harford Rd	Taylor Ave		
S0591	2/27/20	D	10/26/21	D		Hillen Rd	Stevenson Ln		
S2512	4/17/19	D	3/02/20	D		Honeygo Blvd	White Marsh Blvd		UNDER CONST.
S0917	3/03/20	D	9/27/21	D		Jarrettsville Pike	Paper Mill Rd	Sweet Air Rd	
S2015	5/01/20	F	9/09/21	F		Joppa Rd E	Loch Raven Blvd		
S4320	3/04/20	E	11/16/21	E		Joppa Rd E	Perring Pkwy		
S1911	3/05/20	D	11/04/21	D		Liberty Rd	Washington Ave		
S0628	3/09/20	D	10/25/21	D		Middle River Rd	Pulaski Hwy		
S4310	3/10/20	D	11/24/21	D		Padonia Rd E/W	York Rd		
S0852	5/06/19	F	3/11/20	F		Perring Pkwy	Putty Hill Ave		UNDER CONST.
S0889	3/12/20	D	10/27/21	D		Pulaski Hwy	66th St		
S0885	3/12/19	D	10/12/21	D		Pulaski Hwy	Rossville Blvd		
C0220	5/08/19	D	11/15/21	D		Rolling Rd	Windsor Mill Rd		
S1580	4/29/19	D	9/29/21	D		Seminary Ave E/W	York Rd		
S3008	5/07/19	D	11/22/21	D		Timonium Rd E/W	York Rd		

Department of Public Works and Transportation

2021 Basic Services Map
Sewer Deficient Areas
and
Areas of Concern

Legend

- Sewer Relief Points
- Area of Concern
- Deficient Area
- Commercial Revitalization Areas
- Towson Urban Center
- Urban Rural Demarcation Line
- County Boundary

#113 Marnat Road
#23 Southern Cross A
#23B Southern Cross B
#22 Alter Road
#24 Patterson Avenue
#99 Edmondson Avenue
#118 Overbrook & Medwick Garth
#116 Nunnery Lane
#117 Briarwood Road
#44 Redwood Avenue
#40 Briarcliff Road
#41 Aiken Avenue
#129 Queen Anne

BROOKLANDVILLE

RICHLYN MANOR

THIS MAP HAS BEEN ENACTED UNDER BILL NUMBER 32-21 AND IS PART OF THE BALTIMORE COUNTY ZONING REGULATIONS, 1955, AS AMENDED BY THE BILL ADOPTED MAY 7, 2021. EFFECTIVE MAY 17, 2021.

Julian E. Jones, Jr.

COUNTY COUNCIL OF BALTIMORE COUNTY

N W E S

SCALE 1 INCH = 4,000 Feet

0 2,000 4,000 8,000 12,000 16,000 20,000 Feet

NOTE: The interpretation of the Basic Services Maps are subject to exceptions provided for in the Baltimore County Zoning Regulations, Article 4A Growth Management, Section 4A02 Basic Services Maps. These exceptions include those mapped in the County's geographic information system (GIS): the Urban and Rural Demarcation Line (URDL), Commercial Revitalization Districts (4A02.4.E.1.i), and the Towson Urban Center (4A02.4.E.1.j). The Towson Urban Center (Downtown Towson District) exists in the Master Plan 2020 in the Land Management Areas feature class.

Feature Class Production Dates

Sewer Relief Points	2021
Sewer Areas	2021
Commercial Revitalization Districts	2020
Towson Urban Center	2011
Urban Rural Demarcation Line	2012
Roads	2021
County Boundary	2008

Produced by the Baltimore County Department of Public Works and Transportation

North American Datum 1983 HARN, U.S. Survey Foot

Published August 2, 2021

BALTIMORE COUNTY GOVERNMENT
DEPARTMENT OF PUBLIC WORKS
INTER-OFFICE CORRESPONDENCE

DATE: January 6, 2021

TO: D'Andrea Walker, Acting Director
Department of Public Works

FROM: Jeffrey Peluso, PE, Acting Chief
Bureau of Engineering & Construction

SUBJECT: 2021 Basic Services Maps
Public Water and Sewer Status

In accordance with your request, we are furnishing an update for the 2021 Basic Services Map.

Water
No deficiencies are known to exist.

Sewer
All of the remaining sewer relief point locations are being metered. We have completed several rehabilitation projects and are now performing post-monitoring to determine the projects' effectiveness. In addition, we have projects still in design which will eventually eliminate the areas of concern.

Everyone should be aware that the removal of an area of special concern does not mean that an area has unlimited developmental potential. All developments are evaluated hydraulically on a case-by-case basis, and determinations are made to see if the development will need downstream supplementation.

JP:LKE

cc: Michael J. Mazurek – Chief, Water Design Section
Lisa K. Eicholtz – Sewer Design Section

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Department of Public Works and Transportation

2022 Basic Services Map
Sewer Deficient Areas
and
Areas of Concern

Legend

- Sewer Relief Points
- Towson Urban Center
- Commercial Revitalization Areas
- Urban Rural Demarcation Line
- Area of Concern
- Deficient Area
- County Boundary

#113 Marnat Road
#23 Southern Cross A
#23B Southern Cross B
#22 Alter Road
#24 Patterson Avenue
#99 Edmondson Avenue
#118 Overbrook & Medwick Garth
#116 Nunnery Lane
#117 Briarwood Road
#44 Redwood Avenue
#40 Briarcliff Road
#41 Aiken Avenue
#129 Queen Anne

BROOKLANDVILLE

RICHLYN MANOR

THIS MAP HAS BEEN ENACTED UNDER BILL NUMBER 25-22 AND IS PART OF THE BALTIMORE COUNTY ZONING REGULATIONS, 1955, AS AMENDED BY THE BILL ADOPTED MAY 2, 2022. EFFECTIVE MAY 16, 2022.

COUNTY COUNCIL OF BALTIMORE COUNTY

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W E
S

SCALE 1 INCH = 4,000 Feet

0 2,000 4,000 8,000 12,000 16,000 20,000 Feet

NOTE: The interpretation of the Basic Services Maps are subject to exceptions provided for in the Baltimore County Zoning Regulations, Article 4A Growth Management, Section 4A02 Basic Services Maps. These exceptions include those mapped in the County's geographic information system (GIS): the Urban and Rural Demarcation Line (URDL), Commercial Revitalization Districts (4A02.4.E.1.i), and the Towson Urban Center (4A02.4.E.1.j). The Towson Urban Center (Downtown Towson District) exists in the Master Plan 2020 in the Land Management Areas feature class.

Feature Class Production Dates

Sewer Relief Points	2022
Sewer Areas	2022
Commercial Revitalization Districts	2020
Towson Urban Center	2011
Urban Rural Demarcation Line	2012
Roads	2022
County Boundary	2008

Produced by Baltimore County Department of Public Works and Transportation

North American Datum 1983 HARN, U.S. Survey Foot

Published May 12, 2022

BALTIMORE COUNTY GOVERNMENT
DEPARTMENT OF PUBLIC WORKS
INTER-OFFICE CORRESPONDENCE

DATE: January 4, 2022

TO: D'Andrea Walker, Acting Director
Department of Public Works and Transportation

FROM: Lisa Eicholtz, PE, Chief LKE
Bureau of Engineering & Construction

SUBJECT: 2022 Basic Services Maps
Public Water & Sewer Status

In accordance with your request, we are furnishing an update for the 2022 Basic Services Map.

Water
No deficiencies are known to exist.

Sewer
All of the 10 remaining sewer relief point locations are being metered. We have completed several rehabilitation projects and are now performing post-construction monitoring to determine the effectiveness of the projects. In addition, we have projects in design and also construction which will eventually allow the elimination of the areas of special concern.

Revisions to the Basic Services Maps to remove an area of special concern do not mean that an area has unlimited development potential. Computer modeling and simulations to assess the impacts on the County's sewer system resulting from development are completed on a case by case basis. Determinations are made to assess if the impacts from development will require downstream improvements to ensure adequate capacity in the sewer system.

LKE: DAB

cc: Erin A. McKenna-Streyle – Water Design Section
David A. Bayer, P.E. – Sewer Design Section
Jeannette Applauso – Sewer Design Section

LS
12-8-11

IN RE: PETITION FOR SPECIAL VARIANCE	*	BEFORE THE
NE side of Falls Road at intersection with Greenspring Valley Road	*	OFFICE OF ADMINISTRATIVE
8th Election District	*	HEARINGS FOR
2nd Council District		
(10749, 10751, 10803, 10805 and 20089 Falls Road)	*	BALTIMORE COUNTY
	*	
Common Ownership or Controlled by Foxleigh Enterprises, Inc.	*	
Petitioner		**CASE NO. 2012-0060-SA**

* * * * * * * * * *

OPINION AND ORDER

This matter comes before the Office of Administrative Hearings for Baltimore County for consideration of a Petition for Special Variance filed by Priscilla K. Carroll, Esquire of Bowie & Jensen, LLC on behalf of the legal owner of the property, Common Ownership or Controlled by Foxleigh Enterprises, Inc. The Petitioner is requesting Variance relief under Baltimore County Zoning Regulations ("B.C.Z.R.") Section 4A.02.4.G to permit the proposed non-industrial development/renovations where it has been determined that the capacity of the public facilities necessary to accommodate same is less than necessary, and for such other and further relief as may be deemed necessary by Administrative Law Judge for Baltimore County. The subject property and requested relief is more fully depicted on the site plan that was marked and accepted into evidence as Petitioner's Exhibit 1.

Appearing at the public hearing in support of the variance request were Thomas L. Peddy, Vice President and Secretary for Foxleigh Enterprises, Inc., Herbert A. Fredeking for Foxleigh Enterprises, Inc., Matt Hjortsberg, Esquire, Priscilla K. Carroll, Esquire and Vincent M. Guida, Jr., Esquire of Bowie & Jensen, LLC, attorneys for the Petitioner. Protestants Thomas F. Mullan, III of Mullan Greenspring, LLLP, Mullan Pavilions, LP, and Norman Wilder, were represented by Richard C. Burch, Esquire of Mudd, Harrison & Burch, LLP. The Meadows of Greenspring Homeowners Association, Inc., and Michael Friedman, were represented by K. Donald Proctor of Proctor and McKee PA. The Valleys Planning Council and Falls Road Community Association were represented by Michael R. McCann, Esquire.

The file reveals that the Petition was properly advertized and the site was properly posted as required by the Baltimore County Zoning Regulations. The file contains correspondence from a number of individuals and businesses in the affected area of the subject site, both in favor and opposed to the relief requested by the Petitioner.

The Zoning Advisory Committee (ZAC) comments were received and are made a part of the record of this case. The only substantive comment was received from the Office of Planning, dated November 10, 2011. In that correspondence, the Office of Planning indicated it would not oppose the Petition if Petitioner agreed to install a sidewalk along a portion of the site. This comment does not pertain, strictly speaking, to the merits of the variance request, and is more appropriately considered in connection with the eventual development of the pad sites. Comments were received from the Bureau of Development Plans Review dated December 6, 2011, which states:

> The Director of Public Works and staff have reviewed the traffic impact analysis submitted by The Traffic Group in support of the proposed redevelopment of the Green Spring Racquet Club.
>
> The Green Spring Station developer is asking to be allowed to proceed with the proposed redevelopment in an 'F', or failing, trafficshed. If traditional (ITE) trip generation rates are assumed for this, the result will be a net increase in the traffic using the failing intersection.
>
> The Traffic Group's analysis assumes very specific uses of the proposed buildings, and utilizes non-traditional trip generation rates based on other sites they have studied or analyzed. They also suggest a strong synergy between the proposed development and the adjacent, remaining businesses in the Green Spring Station complex, which reduces the number of 'new' traffic trips on the adjacent road system. Based on these assumptions, the proposed development would result in no net increase in traffic.

Comments were received from the Department of Planning dated December 7, 2011 which states:

> "The Department of Planning has reviewed the petitioner's request and accompanying site plan. The petitioner owns the shopping center known as Greenspring Station, located in the traffic shed of Falls and Joppa Roads, which has been operating at an "F" Level of Service since 2003. It should be noted that 2012 Comprehensive Zoning Map Process (CZMP) Issue 2-020 has been filed to rezone 5.67 acres within limits of the requested special variance.
>
> The petitioner's request is to raze the two existing tennis barns, currently operating under a special exception for a community building (Case No. 76-167x) and construct an office building and wellness center on the approximate foot print of the rear tennis barn. Additionally, the petitioner proposes the addition of parking in the area occupied by the front tennis barn. Lastly, the submitted site plan also shows a 5,000 square foot retail addition to the front of the Joppa and Falls Concourse Building.
>
> The petition for special variance must demonstrate pursuant to Baltimore County Zoning Regulations (BCZR) § 4A02.4.G.1.a "*That the demand or impact of the development proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal*"; and b "*That the granting of the petition will not adversely affect a person whose application was filed prior to the petitioner's application in accordance with BCZR § 4A02.3.G.2.b.*"
>
> The Department of Planning shall give a report on the petition to the Administrative Law Judge formerly known as the "Zoning Commissioner" prior to his consideration of the petition in accordance with BCZR § 4A02.4.G.2. As such this Department offers the aforementioned and the following:
>
> - The Department of Planning defers to the Department of Public Works' comment on the traffic impact analysis submitted by the Traffic Group in support of the proposed redevelopment of the Greenspring Racquet Club.
> - The Department of Planning has no record of any other application for reserve capacity use certification for any project within the traffic shed of the following intersections operating at an 'F' level of service: Falls and Joppa Roads, Falls and Greenspring Valley Roads and Seminary Avenue and Falls Road.

The Department of Planning issued amended comments on January 13, 2012, which state:

> The Department of Planning has reviewed the petitioner's request and accompanying site plan. The petitioner owns the shopping center known as Greenspring Station, located in the traffic shed of Falls and Joppa Roads, which has been operating at an "F" Level of Service since 2003. It should be noted that

> 2012 Comprehensive Zoning Map Process (CZMP) Issue 2-020 has been filed to rezone 5.67 acres within limits of the requested special variance.
>
> The petitioner has provided additional clarification as to its proposal. The petitioner's request for Special Variance is based on petitioner's plan to raze a portion of the existing tennis barn buildings, and to renovate the remaining building as a mixed use facility containing medical offices and a health fitness center. The mixed use facility all will be within the footprint of the existing building currently operating under a special exception for a community building (case No. 76-167x). Further, the petitioner's proposal is for the addition of off-street parking in the area occupied by the front of the razed tennis barn building. Lastly, the submitted site plan also shows a 5,000 square foot retail addition to the front of the Joppa and Falls Concourse Building.
>
> The petition for special variance must demonstrate pursuant to Baltimore County Zoning Regulations (BCZR) § 4A02.4.G.1.a "*That the demand or impact of the development proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal*"; and b "*That the granting of the petition will not adversely affect a person whose application was filed prior to the petitioner's application in accordance with BCZR § 4A02.3.G.2.b.*"
>
> The Department of Planning shall give a report on the petition to the Administrative Law Judge formerly known as the "Zoning Commissioner" prior to his consideration of the petition in accordance with BCZR § 4A02.4.G.2. As such this Department offers the aforementioned and the following:
>
> - The Department of Planning defers to the Department of Public Works' comment on the traffic impact analysis submitted by the Traffic Group in support of the proposed redevelopment of the Greenspring Racquet Club.
> - The Department of Planning has no record of any other application for reserve capacity use certification for any project within the traffic shed of the following intersections operating at an 'F' level of service: Falls and Joppa Roads, Falls and Greenspring Valley Roads and Seminary Avenue and Falls Road.

As noted in the Planning Department comments, the subject site is within the traffic shed of Falls Road and Joppa Road, Falls Road and Greenspring Valley Road, and Falls Road and Seminary Avenue, all three intersections have been determined to operate at an "F" level of service. As such, further development such as that proposed by the Petitioner is not permitted absent a special variance.

In order to obtain a special variance as to transportation and the hear offending intersections, Petitioner must meet the two prong test set out in 4A02.4.G, which states:

The Zoning Commissioner may, after a public hearing, grant a petition for a special variance from a provision of this subsection, only to an extent that will not violate that provision's pursuant to a finding:

a. That the demand or impact of the development proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal; and

b. That the granting of the petition will not adversely affect a person whose application was filed prior to the petitioner's application in accordance with Section 4A02.3.G.2.b.

As to subsection b above, Petitioner's Counsel presented a properly executed certificate of the Absence of Entry of a Public Record from the Office of Planning, noting that no other or pervious application for reserve capacity certificate or petition for special variance has been filed in this traffic shed.

Subsection a above, was the focus of the testimony presented before me. Mr. Herb Fredeking, co-owner of Petitioner Foxleigh Enterprises, Inc., described the existing Greenspring Station property and its various uses. He provided a verbal "tour" of the subject Greenspring Racquet Club facility, including its various facets and membership activities.

He then turned his attention to the proposed new project. He stated that one building of the existing racquet club would be razed and the remaining structure will be redeveloped to contain 35,000 square feet of health/fitness facilities, while 50,000 square feet would be devoted to medical offices, for a total of 85,000 square feet of space. In addition, 5,000 square feet of new retail space would be constructed on the north side of the Joppa and Falls Road concourse. He proposes to

create a new façade and "look" for the stores and to make the area more pedestrian friendly with the use of new sidewalks and paths.

He acknowledged the existing "F" intersections and their resultant effect on the future of the proposed project; and confirmed that Mr. Guckert and the Traffic Group were brought in to deal with that issue. He then reviewed with Counsel two booklets prepared regarding both the medical retail parts of the proposed project (Petitioner's Exhibits 5 and 6). He stated that there were as yet no architectural drawings of either, but that the Exhibits provided the "approximate outline" of the proposed uses. The site plan, referred to by the witness as a "conceptual schematic," was prepared by Site Resources and was meant to create the "spirit" of the project, and the "flavor" of the proposed project.

On cross examination and redirect, the witness confirmed that the subject racquet club is located in an O3 zone and agreed that he is converting an existing building into a medical office structure. He was questioned as to a number of specifics of the proposed project, but could not provide any detail beyond the "conceptual schematic." He does not know who the tenants will be if the new structure is built, nor what particular specialties will be located there. He acknowledged that no development plan or special exception request has been filed to this date. He could not say what percentage of the existing facility is used now by the medical community, nor what kinds of doctors will either have their offices or use the proposed facility for their patients. He did reiterate that the mixed use nature of the new construction was the goal, with rehabilitation services to be the main intended use.

Mr. Wes Guckert of the Traffic Group was qualified as an expert witness and testified that he was brought in by Petitioner to provide the traffic information necessary to support and obtain the requested special variance. He stated that he had visited the site on a number of occasions,

reviewed its uses with the Petitioner owners and did traffic generation analyses of the present traffic in the area of the site; as well as that which he believes will exist if the Petitioner's ultimate plans for the existing racquet club are approved and constructed.

He believes that the existing facility is "not just tennis courts" but is also an "athletic club," including a Lynn Bricks exercise facility and other athletic and social activities carried on now at the subject site. He presented a traffic volume exhibit (Petitioner's Exhibit 10), which he stated represents a comparison of traffic now and for the future if the site is developed as the Petitioner envisions.

He explained that the data contained thereupon was obtained from the Institute of Traffic Engineering (ITE) trip generation manual as well as software used in conjunction with it. He opined that at present the racquet club is classified as a land use 491 by the ITE. He also determined that, based upon the definition in the ITE manual, the property is otherwise an "athletic club" (land use 493). He then applied the calculations taken from the ITE manual to determine that which represents traffic volume at the site today, including so-called "internal trips," which is the use by drivers on the site of more than one facility in the Greenspring Station development. He also factored in patrons using the present facilities as they "pass by" the Greenspring Station development on their way to a primary destination. He pointed out that the result of internal trip and pass by calculations has the effect of reducing the number of individual trips.

He then described the process by which he determined what the traffic use would be if one of the two racquet court buildings were removed and the remaining structure redeveloped into a health/fitness club (ITE land use 492), medical office building, and additional retail shops (ITE land use 814).

After crafting the numbers for the prospective health/fitness club and retail uses, the witness explained that his calculations relative to the medical office building (MOB) portion of the redevelopment were based upon a study of traffic usage relative to the Osler Drive medical building adjacent to St. Joseph Hospital in Towson. He explained that in this instant he deemed the ITS materials not accurate, as he noted that in this situation in the Baltimore/Washington region it was the custom to use other numbers rather than the ITE figures; and offered that the ITE manual itself suggests the use of local data where appropriate.

Mr. Guckert related that he also spoke with the Petitioner as to the existing and proposed medical usage of his facility at Greenspring Station, including the ultimate goal of the "internal capture" attributable to the proposed facility by the various medical entities located in Greenspring Station. Focusing in on the issue of internal capture (also known as "synergy") and pass by factors for the new facility, the witness explained that the change from 5% to 15% (Petitioner's Exhibit 10) was based to a great extent on his discussion with the Petitioner who believed that "doc's in the Greenspring Station area will be anxious to be able to refer patients for rehabilitation and things of that nature" (T1-23-12 page 47). In addition, the witness opined that the change of the proposed facility to include health/fitness services and not as an athletic club, was also a sufficient basis for him to believe that the 15% "synergy" factor was a valid number.

On cross and redirect examination, Mr. Guckert acknowledged that the standard of proof for the granting of the requested special variance was a comparison of the traffic volumes and structures at the present time with that expected as a result of Petitioner's planned redevelopment. He acknowledged that if the projected use results in more traffic than that which now exists, the variance will not be granted.

He was questioned as to previous studies that had been undertaken, regarding both the Osler building as well as Johns Hopkins Hospital facilities at Greenspring Station and conceded that these numbers were different, with the Hopkins analysis abandoned and the Osler study utilized. He did note, however, that the Johns Hopkins Hospital analysis was carried out by another traffic consultant.

Much time was spent on the question of what the ITE manual/software calculations would be if different classifications were applied to the existing site. Most of the time was spent on the changes in the numbers that would result from whether or not the Lynn Bricks component would be classified today as an athletic club or a health/fitness facility. For instance, he conceded that the ITE trip factor for a health/fitness was considerably lower than the factor for an athletic club, so that if Lynn Bricks is classified a health/fitness center and the traffic impact thereby reduced, the proposed use would not likely qualify for the requested variance (T1-23-12 page 79-82).

Michael Friedman was called as a witness and his testimony was directed to the question of the "true identity" of Lynn Bricks. Protestants then called Barry King, who was accepted as an expert witness regarding the traffic issues herein. He too launched into a discussion of what category yielded what numbers as to traffic volumes and again what Lynn Bricks truly was and the effect of that facility on the existing traffic numbers. He opined that Mr. Guckert's use of the land use codes as he saw them resulted in a much higher number of vehicles to which to compare the projections for the proposed use. He then suggested the rationale for his own base numbers, revealing (not surprisingly) that in utilizing his view of the numbers, Petitioner would not qualify for the requested variance.

Robert Green was called by Protestants and qualified as an expert in development and zoning matters. He noted that the plan submitted by Petitioner was limited to the present request,

and opined that a development plan and accompanying zoning request would need to be further granted.

TIMELINESS OF REQUEST

Protestants initially complained that the Petitioner's request was, at best, precipitous. They offered that, without more detail as to the proposed redevelopment it would not be possible to properly determine what traffic volume would result from it. They suggested (and Mr. Green supported in his testimony) that the proper forum for the instant request would be as part of the development plan approval process, including requests for special exception and variance. In furtherance of this argument, Mr. Guckert was in fact reminded of a 1999 case in which he opined that the appropriate forum to raise this type of issue was "at the time of application for a building." Portions of his testimony or transcript in that matter were placed into evidence by the Protestants (Protestant's Exhibit 1).

I find nothing in the statutes or regulations that limits Petitioner's right to request a special variance at this time. However, the burden of proof in satisfying the requirements under Section 4A02.4.G.1.(a)(b) for the granting of a special variance remain unchanged, and Petitioner's request must stand or fall on information and evidence presently available and presented.

SPECIAL VARIANCE

As noted hereinabove, the test to be applied is to two fold. Turing to Section 4A02.4.G.1(b), I find that the uncontroverted documentation provided by Petitioner (Petitioner's Exhibit 2) is dispositive. Hence, subsection 1(b) is satisfied.

Subsection 1(a) however, is considerably more problematic.

In order to carry his burden of proof as to this section, Petitioner first needed to establish a current baseline of data to which he could compare the expected traffic volume of the proposed

redevelopment. The Petitioner did not offer as evidence any existing traffic count studies of the traffic shed to be affected by this project. Given that the existing shed already contains multiple "F" rated intersections, based upon and maintained at that status as a result of periodic examination by the County, "real" numbers were certainly available. Further, no additional traffic count studies were carried out on the Petitioner's behalf to produce "real" numbers or at least to focus, supplement or extend traffic count studies already available.

Instead, Petitioner's traffic expert created a structural definition on paper of what he opined to be the accurate description of the Petitioner's present facility. The resulting description was then fit into the ITE land use categories to which the ITE formulae and resulting numbers were applied. The ITE manual (and software programs utilized) are admittedly consisting of compilations and averages useful to a degree, especially in the absence of actual numbers. Unfortunately, even the ITE acknowledges that it is sometimes inapplicable and may not reflect actual use in a particular situation. Petitioner's own traffic expert even applied this caution in rationalizing his use of the "Osler building study" instead of the ITE numbers relative to the proposed medical office building facility.

Much testimony was heard from Mr. Guckert, Mr. King, Mr. Friedman and Mr. Fredkin regarding the issue of what ITE land use category to assign to the existing facility (including whether or not to utilize, in part, square footage vs. the number of tennis and other courts) for purposes of then "running the numbers" from the ITE materials. For more specific detail, the transcript may be consulted. Petitioner's expert agreed that, depending on the category assigned, the Petitioner's request would be denied. (Transcript 1-23-23 at 81).

The second prong of proof needed to satisfy the requirements of 1(b) requires the creation of a credible evaluation and estimate of the traffic expected to be generated if the Petitioner can

construct his new facility. The resulting estimate can then be compared to the baseline of existing traffic generation to determine if the requested new use will be less, or at least no worse, than that which already exists. To that end, Petitioner's traffic expert presented the results of a 10 year old study of the Osler Drive buildings instead of utilizing the ITE standards, for reasons he explained and I have already commented upon. He further based his opinion as to the future use and effect of the new project, including its all important issue of internal trips, or synergy, with other uses already at Greenspring Station, by speaking with the Petitioner property owner. (Transcript 1-23-12 at 49).

Petitioner's case is deficient in several ways. First, as to establishing the baseline of traffic use generation at the present time, Petitioner chose to construct and argue a methodology to arrive at the "identity" of the existing facility. He then applied that created identity to the ITE tables which the Petitioner himself did not utilize later due to its regional inaccuracy.

Why do so when real numbers already exist, trends can be identified, and if needed, supplemental real number use studies done? The present can be reasonably and objectively quantified and presented. Petitioner did not do so and that failure is fatal to any comparison required under subsection 1(b).

There are also difficulties as to the proof provided regarding the expected traffic effect of Petitioner's proposed project.

I grant that this second part of the comparison factors is admittedly speculative. I would point to the comment of the Department of Public Works, which notes not only the "non-traditional" trip generation rates, but the "suggestion" of strong synergy as a basic assumption of a no net increase result underlines the weakness of this portion of Petitioner's case. With all due respect, the Petitioner property owner is hardly an objective contributing source in crafting an expert opinion as to the future use and internal synergy, offering proof, which is essentially (with

apologies) "if you build it they will come." Nor do I think that the Osler buildings study, standing on its own, is sufficient to carry the day.

Even in a speculative situation such as this, a preponderance of evidence could be available and presented as to the future effect of the proposed project. Witnesses could include realtors, experts or consultants in medical marketing and administration, as well as economists. Moreover, a search could be made as to other like situations (to see what synergy can in reality exist). Finally, witnesses could have been presented from Johns Hopkins Hospital and other already existing medical practices in the Greenspring Station area to opine on the need and likelihood of the use and possible synergistic opportunities that Petitioner's proposed project would present. As a result, Petitioner's efforts to produce a credible estimation of the use and character of the proposed project fell far short of that necessary to sustain his position.

I find therefore, for the reasons above stated, that the Petitioner has failed to meet his burden under 4A02.4.G.1(a)(b).

Pursuant to the advertisement, posting of the property and public hearing on this Petition, and after considering the testimony and evidence offered by Petitioner, I find that Petitioner's special variance request should be denied.

THEREFORE, IT IS ORDERED, this 24th day of May, 2012 by this Administrative Law Judge that Petitioner's Variance request under Baltimore County Zoning Regulations ("B.C.Z.R.") Section 4A.02.4.G to permit the proposed non-industrial development/renovations where it has been determined that the capacity of the public facilities necessary to accommodate same is less than necessary, be and is hereby **DENIED**.

Any appeal of this decision must be made within thirty (30) days of the date of this Order.

LAWRENCE M. STAHL
Managing Administrative Law Judge
for Baltimore County

LMS:pz

IN RE: PETITION FOR SPECIAL VARIANCE NE side of Falls Road at intersection with Greenspring Valley Road 8th Election District 2nd Council District (10749, 10751, 10803, 10805 and 20089 Falls Rd) Foxleigh Enterprises, Inc. Petitioner	*	BEFORE THE BOARD OF APPEALS OF BALTIMORE COUNTY CASE NO. 12-060-SA

* * * * * * * * * * * * *

ORDER

This matter comes before this Board on appeal by the Petitioner, Foxleigh Enterprises, Inc. of the denial by Administrative Law Judge ("ALJ") of a Petition for Special Variance from the Basic Services Mapping Standards under Baltimore County Code ("BCC") §4A02.4.G. People's Counsel for Baltimore County filed a Motion to Dismiss this appeal for failure by the Petitioner to satisfy the prerequisite zoning and development law requirements. Protestants, Thomas F. Mullan, III and Mullan Greenspring, L.L.L.P., Mullan Pavilions, L.P. and Norman Wilder by their attorney Richard C. Burch, Esquire, and Mudd, Harrison & Burch, L.L.P. filed a Motion in Support of People's Counsel's Motion to Dismiss. Similarly, Protestants Valleys Planning Council and Falls Road Community Association by their attorney Michael R. McCann, Esquire, filed a Motion to join in and incorporate the Motion to Dismiss. In addition, Protestants, The Meadows of Greenspring Homeowners Association, Inc. and Michael Friedman, by their attorneys, K. Donald Proctor, Esquire and Proctor & McKee, P.A. joined in the Motion to Dismiss.

A hearing on the Motion was heard before this Board on June 6, 2013. A public deliberation was held on July 9, 2013.

The Petitioner is seeking a special variance from the transportation standards and maps in §4A02.4. Those standards are determined by the mathematic formulas set forth in §4A02.4.D.2.

The formulas are calculated by the vehicle-trip number generated by vehicles through the intersections surrounding the site where the development is located. In this case, there are three (3) intersections surrounding Greenspring Station. There is no dispute that each of these intersections is failing. At the hearing, Petitioner conceded that regardless of any other relief which may or may not be required for the proposed renovation and redevelopment, this traffic variance is needed. Petitioner points out that there is no provision in Article 4A which prohibits the Petitioner from requesting this traffic variance at this stage. Petitioner believes that its concept plan is sufficient to satisfy the elements in §4A02.4.G.

The positions of the Parties are set forth in their respective Motions, Memorandums and Responses. The hearing before this Board on the Petition for Special Variance is a *de novo* appeal. Petitioner contends that it has a right to appeal the denial by the ALJ and that this Board is without jurisdiction to dismiss the case on the merits.

People's Counsel requests that this Board dismiss the case on the merits because the current zoning on the property prohibits the Petitioner from constructing the proposed renovation and redevelopment. Collectively, the Protestants contend that the Petition for Special Variance can only be considered after the Petitioner has a final development plan and has requested special exception relief.

To make a decision on the merits under §4A02.4.G, this Board must first make a finding, based on the evidence, that the Petition for Special Variance does not violate, or is consistent with, the purpose and intent of the Growth Management, Basic Services Map set forth in §4A02.1. That Subsection requires a determination as to what "*...development would be permitted* under the regulations of the zones or commercial districts within which those areas lie." (Emphasis Added). It also reads that the purpose and intent of the Basic Services Map is to "regulate nonindustrial

development in those under-served areas....." *Id.* (Emphasis Added).

More specifically, the intent of the transportation standards and maps under §4A02.4.D is to "regulate...development where it has been determined that the capacity of certain intersections is less than the capacity that is necessary to accommodate traffic from both '***established uses***' and '***from uses likely to be built***...' ". The intent of the transportation standards and maps is not to restrict the 'development' unless there is a **'substantial probability'** that the intersections are failing (i.e. have an E or F rating). §4A02.4.D.1.

Second, §4A02.4.G.a requires this Board to make a "finding" that the "*demand or impact of the development proposed* will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the *development proposal*..." (Emphasis Added). Again, the district standards are determined by the formulas in §4A02.4.D.2 which formulas calculate vehicle trip numbers. Subsection D.3 indicates that the 'maximum level of development' cannot exceed that which would generate the number of daily peak-hour vehicle trips equal to the reserve capacity for the mapped area.

Finally, we note the language in §4A02.4.E reveals that, where a subdivision plan has been finally approved, or an application for building permit has been made, the mapping standards for water, sewer and transportation do not apply to developments in certain districts.

Given that the purpose of Article 4A is to "*regulate development*" so that the level of additional development in a mapped area does not exceed that which would generate the number of daily peak-hour vehicle trips equal to the reserve capacity of that mapped area, then fundamental to a decision on the merits before this Board must be review of a final development plan showing concretely what project is being proposed at Greenspring Station. We interpret the language contained throughout Article 4A (i.e. "*development would be permitted*"; "*.... uses likely to be*

built..."; making a "finding" that the "*demand or impact of the development proposed will be less than that assumed by the district standard*") as requiring a final development plan under BCC Article 32, Title 4, Subtitle 2 before this Board can conduct a hearing on the Special Variance.

Practically speaking, this Board would not be able to make an informed decision about the daily peak-hour vehicle trips without a final development plan. The request for a traffic variance is specific to this site - with these failing intersections - and with the increase or decrease in traffic volume which may result from the renovation and development proposed.

Said another way, under §4A02.4.D, the traffic generated by the current uses and the traffic generated by the proposed development (whether renovation or the creation of new space) is dictated by the specific development proposal and cannot be decided based on a concept plan. The concept plan is filed with the County prior to a community input meeting and is not decided by an ALJ. However, a final development plan would be reviewed by the ALJ.

We find that completion by the Petitioner of the development review process under BCC §32-4-211 *et seq.* and §32-4-221 *et seq.* is critical to obtaining a complete understanding of the project. As those Sections dictate, the development review process begins with the concept plan, and is followed by community input meeting(s); meeting(s) with County agencies; making changes to the plan(s) if needed; filing a development plan; attending development plan conference(s); concluding a hearing before the ALJ on development plan approval and if necessary, appealing the ALJ's decision to this Board, if needed.

We find that our interpretation is consistent with the exceptions to the basic services mapping standards found in §4A02.4.E. It is also consistent with BCC § 32-4-201 which provides that unless the development meets the exemptions §§ 32-4-105, 32-4-106, and 32-4-107, an approved Development Plan is required for any "development." BCC §32-4-101(p)

defines Development as:

(1) The improvement of property for any purpose involving building;

(2) The subdivision of property;

(3) The combination of any two or more lots, tracts, or parcels of property for any purpose;

(4) Subjecting property to the provisions of the Maryland Condominium Act; or

(5) The preparation of land for any of the purposes listed in this subsection.

Based on the Petitioner's representations contained in their Response to the Motion to Dismiss, even a vague understanding of the project being proposed would meet the definition of "development".

Notwithstanding that this Board has authority under Rule 3.b.I of the Rules of Practice and Procedure of County Board of Appeals (the "Board Rules") to dismiss an appeal prior to the conclusion of the hearing on the merits and, while the Chairman also has authority under Rule 4.b to rule on procedural matters such as Motions to Dismiss, we do not see that a dismissal on merits is appropriate at this stage.

For the reasons set forth herein, we will stay the Petition for Special Variance until the Petitioner has completed all necessary development review by the County and has a final development plan approved, or will simultaneously request this Board to review the final development plan after an ALJ opinion approving or denying the plan has been rendered. In the interest of judicial economy, the case will also be stayed pending all other county approvals which may be needed including, by way of example and not by limitation, all requests for zoning relief such as a request for special exception or other variance relief which may be required, if at all. The Board will then consolidate the Petition for Special Variance with the final development plan

approval (if any) and all other zoning relief (if any) and conducted a single hearing on the proposed project.

ORDER

Upon consideration of Petition for Special Variance and the Motion to Dismiss, it is this 31st day of July, 2013, by the Board of Appeals of Baltimore County

ORDERED, that the Motion to Dismiss is hereby **DENIED** but the case shall be **STAYED** until such time as the Petitioner has a final development plan approved, or one that this Board can approve, and has filed for all other zoning relief and approvals, if any, which are necessary for consideration by this Board of the development issues pertaining to all renovation, redevelopment and/or expansion at Greenspring Station in order that this Board shall conduct a single hearing on all the requested relief; and it is further,

ORDERED, that a final Opinion will be issued by this Board after a hearing on the merits and a public deliberation, with no further action to be taken on this Ruling until such time as the Board's final decision is issued.

BOARD OF APPEALS
OF BALTIMORE COUNTY

Andrew M. Belt, Panel Chairman

David L. Thurston

Maureen E. Murphy

IN THE MATTER OF THE THE PETITION OF FOXLEIGH ENTERPRISES – LEGAL OWNER FOR A VARIANCE ON PROPERTY LOCATED AT 10749, 10751, 10803, 10805 AND 20089 FALLS ROAD	*	BEFORE THE BOARD OF APPEALS OF BALTIMORE COUNTY
8th ELECTION DISTRICT 2nd COUNCILMANIC DISTRICT	*	CASE NO. 12-060-SA

* * * * * * *

ORDER ON PETITIONER'S MOTION FOR RECONSIDERATION

This matter comes before the Board on a Motion for Reconsideration filed by Petitioner, Foxleigh Enterprises, Inc. of this Board's Order denying the Motion to Dismiss filed by People's Counsel but staying the case until such time as the Petitioner has a final development plan approved or one that this Board can approve, and has filed for all zoning relief and approvals, if any, which are necessary for consideration by this Board of the development issues pertaining to all renovation, redevelopment and/or expansion at Greenspring Station in order that this Board shall conduct a single hearing on all the requested relief.

The Petitioners were represented by Priscilla K. Carroll, Esquire, Matthew G. Hjortsberg, Esquire, Vincent Guida, Esquire and Bowie and Jenson, LLC. People's Counsel, Peter Max Zimmerman, Esquire, filed a Reply on Motion for Reconsideration on September 11, 2013. Protestants, by and through their respective counsel namely, The Meadows of Greenspring Homeowners Association, Inc. and Michael Friedman, by K. Donald Proctor, Esquire and Proctor & McKee, P.A.; Valleys Planning Council and Falls Road Community Association by their attorney Michael R. McCann, Esquire; and Thomas F. Mullan, III and Mullan Greenspring, L.L.L.P., Mullan Pavilions, L.P. and Norman Wilder by their attorney, Richard C. Burch, Esquire

and Mudd, Harrison & Burch, L.L.P. filed a joint Opposition to the Motion for Reconsideration on September 30, 2013 The Board convened for a public deliberation on October 17, 2013.

In considering a Motion for Reconsideration, this Board has previously ruled that a Motion should only be necessary when there has been substantive new case law or enactment of a statute not previously available, which would clearly merit a modification of a Board's previous decision. In this case, there has not been any new substantive case law or the enactment of any new statutes in regard to the issues in this case. The Order which is the subject of the instant Motion to Reconsider is a procedural ruling to permit the Petitioner time to obtain the necessary final development plan.

Upon review of the Petitioner's issues raised in their Motion to Reconsider:

1 . The Board does not have the statutory authority to "stay" a case pending before the Board.

The Chairman of the Board, subject to the agreement of a majority of the Board, has the statutory authority under Rule 4b of the Rules of Practice and Procedure of County Board of Appeals (the "Board Rules") to rule on procedural matters such as Motions to Dismiss as follows:

> Rule 4.
>
> * * * *
>
> b. The chairman shall regulate the course of the hearing and shall rule upon procedural matters, applications, modifications and objections made during the course of the hearing, subject to the concurrence of a majority of the board conducting the hearing.
>
> c. A hearing may be adjourned from time to time for good cause shown and if the time and place of reconvening the hearing is announced at adjournment, no further notice of reconvening shall be required. If the time and place of reconvening is not announced at the adjournment, notice of time and place of reconvening shall be given as required in rule 2a.

Accordingly, this Board has the authority by its own rules to stay a case and/or adjourn a hearing. When the Petitioner obtains its final approved development plan, or one which this Board can approve, a hearing on the merits will be promptly scheduled in accordance with Rule 2a, with proper notice to all parties, in order that an informed decision on the Petition for Special Variance request can be made.

2. The Board's Order pronounces a substantive ruling on the merits without permitting the Petitioner the opportunity for a hearing.

Petitioner argues that, because Administrative Law Judge Stahl in his decision ruled that there was no provision in the county regulations which prohibited the Petitioner from requesting a special variance at this time, the Board's Order, in effect ruled on the merits without a hearing. Given that this is a *de novo* appeal, the decision of the Administrative Law Judge has no effect on the case before this Board. Moreover, the Board's Order made clear that the Board was not making a ruling on the merits and that a hearing would be held: "a final Opinion will be issued by this Board after a hearing on the merits and a public deliberation, with no further action to be taken on this Ruling until such time as the Board's final decision is issued."

3. The Renovation of the Green Spring Racquet Club is not subject to the Special Variance request under Baltimore County Zoning Regulations §4A02.4 and therefore this Board should exclude the Renovation from the Order.

Petitioners next assert that the Board erred in staying the Renovation of the Greenspring Racquet Club ("GCRC") pending the development plan approval because the renovation does not meet the definition of "development" under Baltimore County Code ("BCC") §32-4-101(p). In short, the Petitioner now argues in its Motion to Reconsider that the Renovation of the GSRC does not need a special traffic variance and is not subject to Baltimore County Zoning Regulations ("BCZR"), §4A02.4.

In reviewing the Petitioner's Opposition to People's Counsel's Motion to Dismiss (the "Petitioner's Opposition"), the Petitioner described the relief requested as follows:

> Foxleigh requests Special Variance relief from Section 4A02 of the BCZR to permit certain proposed nonindustrial commercial renovations and redevelopment ("Proposed Reduction, Renovation and Redevelopment"). The proposed Reduction, Renovation and Redevelopment comprise the redevelopment of the north façade of the existing Falls/Joppa Concourse including the addition of 5,000 square feet of commercial; and renovation of the existing GSRC by removing certain sections of the improvements and renovating the remaining portion of the building, all within the existing footprint.

The Petitioner's Opposition further explained why the "Proposed Reduction, Renovation and Redevelopment" (as they defined that term) was subject to the Basic Mapping Standards contained in BCZR, §4A02.4 and why Special Variance relief was needed:

> The Proposed Reduction, Renovation and Redevelopment was located in the vicinity of one failing traffic intersection and within an area designated as "Level of Service-F" according to the 2012 Basic Services Transportation Map and are therefore subject to the limitations set by the Basic Service Mapping Standards under Section 4A02.4 of the BCZR. Pursuant to Section 4A.02.4.G of the BCZR, Foxleigh requests relief from these regulations by Special Variance.....

Thus, the acknowledgement in the Petitioner's Opposition that because the Renovation is subject to BCZR, §4A02.4, a special variance is needed for not only the Redevelopment and Expansion but also for the Renovation, convinced this Board that a final development plan would need to be reviewed and is required under BCZR, §4A.02.4.G before this Board could make an informed decision on merits.

In addition, the Board notes that the Petition for Special Variance filed by the Petitioner with Baltimore County Permits, Approvals and Inspections verifies that the addresses listed

thereon include the Racquet Club lot. Further, in the Petition, the Petitioner described the special variance relief to include the Renovation:

> The Petition shall be filed with the Department of Permits and Development Management. The undersigned, legal owner(s) of the property situate in Baltimore County and which is described in the description and plat attached hereto and made a part hereof, hereby petition for a Special Variance from Section(s)
>
> 1. 4A.02.4 to permit the proposed nonindustrial development/renovations where it has been determined that the capacity of the public facilities necessary to accommodate same is less than necessary, pursuant to Section 4A.02.4.G; and
>
> * * * *

As a result, the Petitioner's current argument in the Motion for Reconsideration is contrary to the Petitioner's Opposition and their Petition for Special Variance.

4. The Board's Order prohibits all property owners in Greenspring Station from making any renovations even if those properties were not part of this case.

Finally, the Petitioner asserts that the Board's Order is overly broad and all-encompassing as it prohibits the renovation or development of other properties in Greenspring Station.

The Board finds no merit in this argument. The Board's Order is filed and only applies to the above captioned case number, which is the same case number referenced by the Administrative Law Judge before the case was appealed. This case refers only to the "Proposed Reduction, Renovation and Redevelopment" requested by the Petitioner in its Petition for Special Variance for the property owned by the Petitioner, as identified by the property addresses and deed references listed by the Petitioner thereon, along with any property description and plats attached by the Petitioner. Consequently, the Board is not convinced that its Order was

overly broad or that it applies to any property not listed by the Petitioner and not part of the Petitioner's Special Variance request.

Accordingly, having reviewed all of the Petitioner's arguments on the Motion for Reconsideration and the Oppositions filed by People's Counsel and the Protestants, the Board's Order dated July 31, 2013, staying the case until the Petitioner has met the necessary prerequisites as set forth therein shall remain the same.

IT IS THEREFORE ORDERED THIS 1st day of November, 2013 that the Petitioner's Motion for Reconsideration be, and it is hereby, **DENIED**; and it is further,

ORDERED, that a final Opinion will be issued by this Board after a hearing on the merits and a public deliberation, with no further action to be taken on this Order until such time as the Board's final decision is issued.

BOARD OF APPEALS
OF BALTIMORE COUNTY

Andrew M. Belt, Chairman

Maureen E. Murphy

David L. Thurston

PETITION OF FOXLEIGH ENTERPRISES, LLC	:	IN THE
	:	CIRCUIT COURT
FOR JUDICIAL REVIEW OF THE DECISION OF THE BOARD OF APPEALS OF BALTIMORE COUNTY	:	FOR
	:	BALTIMORE COUNTY
IN THE MATTER OF FOXLEIGH ENTERPRISES, LLC Case No: 12-060-SA	:	CASE NO. 03-C-13-013521

: : : : : : : : : : : : : : : : :

ORDER AFFIRMING BOARD OF APPEALS' ORDERS OF JULY 31, 2013 AND NOVEMBER 1, 2013

The Petition for Judicial Review filed by Foxleigh Enterprises LLC (Paper 1000) came on for oral argument before the undersigned on April 25, 2014. In its Petition, Foxleigh asks this Court to vacate Board of Appeals' orders which stayed proceedings on Foxleigh's Petition for Special Variance, under the following terms:

> "until such time as [Foxleigh] has a final development plan approved, or one that [the Board of Appeals] can approve, and has filed for all other zoning relief and approvals, if any, which are necessary for consideration by [the] Board of the development issues pertaining to all renovation, redevelopment and/or expansion at Greenspring Station in order that [the] Board shall conduct a single hearing on all the requested relief."

Foxleigh refers to this stay of proceedings as "indefinite", and argues that the Board of Appeals lacked statutory authority to enter the orders. It argues that the stay order, in reality, constituted a substantive ruling on the findings of the administrative law judge, which precludes forward motion on the development, and finally, that the Board decisions improperly exceed the scope of the issues presented on appeal.

Also parties to this Circuit Court proceeding are: People's Counsel for Baltimore County, and persons and entities who were designated "Protestants" below: The Meadows of Greenspring Homeowners Association, Inc. and Michael Friedman; Thomas F. Mullan, III and Mullan Greenspring L.L.L.P, Mullan Pavilians, L.P. and Norman Wilder; and the Valleys Planning Counsel and Falls Road Community Associaiton. These parties take the common position (amongst others), that the decision to stay proceedings by the Board was within the ambit of the Board's statutory authority, and was, under these circumstances, a logical and sensible decision designed to "require satisfaction of zoning/development prerequisites" before being taken up by the Board in a final proceeding, if necessary. People's Counsel Memorandum, p. 18.

This Court agrees and will AFFIRM the Board of Appeals' Orders of July 31, 2013 and November 1, 2013; DISMISS the Petition for Judicial Review; and REMAND the

matter to the Board of Appeals pending compliance with the terms of those Orders by Foxleigh Enterprises LLC.

The Court is satisfied that the Maryland Code, the County Charter and the Board of Appeals' Rules of Practice and Procedure authorize a stay under the circumstances presented here and it is plain generally that a stay of proceedings is permissible in administrative actions for "adjudicative economy". Powell v. Breslin, 430 Md. 52 (2013).

That said, it is also manifestly clear that the Board of Appeals' decisions were not final under our administrative law jurisprudence, articulated in Dorsey v. Bethel AME 375 Md 59 (2003), because these orders did not "leave nothing further for the agency to do". AFCO Credit Corp. v. Md. Ins. Admin. 198 Md App 218 (2011) does not compel a contrary conclusion because there, the stay was not conditioned upon action by the party seeking judicial review, as is the case here. There, the Court of Special Appeals determined that an administrative stay was improper because it was to expire only upon resolution of a related, but collateral proceeding and because, on the facts presented the stay was actually the equivalent of an appealable denial of relief. All Foxleigh Enterprises, Inc. need do here is prosecute approval of a final

development plan (even one that "this board can approve"), and file "for all other zoning relief and approvals . . . which are necessary for consideration by this Board of the development issues . . . "and the stay will, by its own terms, evaporate. The stay is not indefinite, nor is it appealable by way of a Petition for Judicial Review.

For these reasons, the orders of the Board of Appeals are AFFIRMED; the petition for judicial review is DENIED and the matter is REMANDED to the Board of Appeals, which is to lift the stay upon compliance, by Foxleigh Enterprises LLC, with the conditions set forth in the July 31, 2013 ORDER.

It is so ORDERED, this 30th day of April, 2014, by the Circuit Court for ~~Baltimore County~~.

ROBERT E. CAHILL, JR., JUDGE

cc: Matthew G. Hjortsberg, Esq./Priscilla K. Carroll, Esq./Carolyn E. Mech, Esq.
Richard C. Burch, Esquire
Michael R. McCann, Esquire
K. Donald Proctor, Esquire
Peter M. Zimmerman, Esquire

Date transmitted to the Office of the Clerk, Circuit Court for Baltimore County for docketing and filing: 4-30-14

Copies mailed

6/30/19

IN RE: **DEVELOPMENT PLAN HEARING** 9th Election District 2nd Council District (6241 - 6247 Falls Road)	*	BEFORE THE OFFICE OF ADMINISTRATIVE HEARINGS
CPC FALLS ROAD PROJECT **BLUESTEM** CPC Falls Road LLC, Owner Developer	*	FOR BALTIMORE COUNTY **CASE NO. 09-0861**

* * * * * * *

ADMINISTRATIVE LAW JUDGE'S ("ALJ")
DEVELOPMENT PLAN OPINION AND ORDER

This matter comes before the Office of Administrative Hearings ("OAH") for Baltimore County for a public hearing on a development proposal submitted in accordance with Article 32, Title 4, of the Baltimore County Code ("BCC"). CPC Falls Road LLC, *Owner/Developer*, (herein known as "Developer") submitted an eight (8) sheet redlined Development Plan ("Plan") prepared by Morris & Ritchie Associates, Inc., known as "CPC Falls Road Project / Bluestem."

The Developer proposes a mixed-use commercial and residential development with approximately 56,600 sq. ft. of restaurant/retail and office in several buildings and on the ground level of a multi-family residential building with 152 apartment units on 6.19 acres, more or less, of land zoned BM-CCC. The property is located in the Bare Hills section of Ruxton/Riderwood/Lake Roland area of Baltimore County, and is inside the Urban Rural Demarcation Line ("URDL"). A connection is proposed into the existing trail system of Lake Roland Park, and park visitors will be permitted to use the off-street parking provided for the project. In its current state, the site is developed with a mix of commercial uses along Falls Road and a large portion of the back half of the property is the mulch operation and storage yard for Hollins Organic Products.

This project is within the Ruxton-Riderwood-Lake Roland residential design area. Pursuant to BCC § 32-4-204, projects within design review areas must be reviewed by the Design Review Panel ("DRP"). The DPR reviewed this project on August 8, 2018, and final DRP approval was granted on September 12, 2018.

A Development Plan Conference ("DPC") was held between the Developer's consultants and various Baltimore County agencies, to consider the project. In this case, the DPC was held on November 21, 2018. At the DPC, the Baltimore County agencies responsible for the review of the Development Plan submit written comments regarding the proposed development. The Hearing Officer's Hearing ("HOH") was scheduled for Friday, January 25, 2019, at 10:00 AM, in Room 205 of the Jefferson Building, 105 West Chesapeake Avenue, Towson, Maryland. Additional hearings were held on several days spanning the next six months.

The property was posted with the Notice of Hearing on December 20, 2018 for 20 working days prior to the hearing, in order to inform all interested citizens of the date and location of the hearing. Appearing at the public hearings on behalf of the Developer was Len Weinberg and Joshua T. Sharon, professional engineer with Morris & Ritchie Associates, Inc., the engineering firm that prepared the Plan. Lawrence E. Schmidt, Esq. and David K. Gildea, Esq. with Smith, Gildea & Schmidt, LLC, appeared on behalf of the Developer. In attendance at the hearing and opposing the project were Michael R. McCann, Esq. representing several members of the community, Dino C. La Fiandra, Esq. representing Princeton Sports, Inc. and Lucile Real Estate LLC, and Robert Smith, Esq. representing the Rockland Ridge Homeowner's Assn.

Representatives of the various Baltimore County agencies who reviewed the Plan attended the hearing, including the following individuals from the Department of Permits, Approvals and Inspections ("PAI"): Jerry S. Chen, Project Manager; Jos Venturina and Jim Hermann, Department of Public Works ("DPW")/Development Plans Review ("DPR"); Gary Hucik, Office of Zoning

Review ("OZR"), and Brad Knatz, Real Estate Compliance. Also appearing on behalf of the County were Jenifer G. Nugent, Department of Planning ("DOP"), and Jeff Livingston with the Department of Environmental Protection and Sustainability ("DEPS").

Agency Witnesses

All agency witnesses indicated the redlined Development Plan satisfied all Baltimore County rules and regulations and each reviewer recommended approval of the Plan. DEPS approved a concept stormwater management plan on October 25, 2018. A schematic landscape plan was approved on December 6, 2018 and Mr. Hermann stated the Developer will provide amenity open space and private/public amenities which pursuant to the BCC are considered offsets to Local Open Space ("LOS") requirements. He testified the Developer will provide certain on and off-site amenities and improvements which will more than offset a fee in the approximate amount of $352,000 which would otherwise be payable to the County in lieu of providing the open space.

According to the School Impact Analysis (Baltimore County Exhibit 1) enrollment at the West Towson Elementary School and Towson High School is projected to exceed 115% of State Rated Capacity ("SRC"). Even so, Ms. Nugent testified there is sufficient capacity at Riderwood Elementary School and Loch Raven High School, and thus that agency opined the Adequate Public Facilities Ordinance ("APFO") is satisfied. On the third day of the hearing (April 5, 2019) Developer submitted a revised school analysis (Developer's Exhibit 17) which used enrollment numbers for the 2017-18 school year, as requested by the DOP. Developer's counsel indicated 2016 enrollment figures were used initially, which was erroneous.

Developer's Case

The first witness in Developer's case was Len Weinberg, a principal in the entity owner of the property. Mr. Weinberg explained he started in 1987 a real estate development company known as Vanguard. The witness testified his firm primarily focuses on retail projects, and that he has constructed approximately 40-50 such projects in this area. Mr. Weinberg described the site and current uses, and explained the project is best described as a mixed-use "village." He also described the process by which the Developer entered into a declaration and covenant agreement with Ruxton Riderwood Lake Roland Area Improvement Association ("RRLRAIA"). Developer's Exhibit 3.

In response to questions on cross examination, the witness indicated he was aware of community opposition to the project, which primarily focused upon the number of apartments proposed. Mr. Weinberg testified his firm attempted to purchase the adjacent property owned by Princeton Sports and was also aware the proposed stormwater management system outfall was located on property owned by Baltimore City.

The next witness in Developer's case was Lawrence Rief, a partner in Continental Realty. Mr. Rief testified his office is located across the street from the site and that he and his employer "wholeheartedly" support the project. He explained the proposed restaurants and retail/service establishments are sorely needed in the area.

Professional engineer Josh Sharon was the next witness. Mr. Sharon, who was accepted as an expert, described the site and existing features and uses thereon. He reviewed the development plan, and explained the significant features (including redline revisions) on each page of the 8-sheet plan. Mr. Sharon testified the site is not within a deficient service area as shown on the County's Basic Services Maps, and he explained the proposed access to the

project from Falls Road, which would involve aligning the proposed access road with Clarkview Road, which is controlled by a traffic signal.

On cross examination, the witness was questioned about (among other things) off-street parking and amenity open space/LOS. Mr. Sharon testified that other than the upper level(s) of the parking structure which would be reserved (with gated access) for residents, there will be no reserved parking at the project. He explained the public will be permitted to park on the property to access Lake Roland, and he stated he had not analyzed how many spaces would be used on a regular basis by the general public. Mr. Sharon advised the open space exhibit (Developer's Exhibit 2) had been approved by the OZR but not by the County's landscape architect.

Mr. Sharon responded to several questions concerning the LOS requirements, and he opined it was not feasible for the Developer to provide the requisite open space on the subject property given the various site and environmental constrains as shown on the Plan. The witness testified Developer will be constructing both public and private amenities (on-site and off-site), the "verified" cost of which can be deducted from the fee required under the LOS regulations. Mr. Sharon explained the costs shown on the Plan are industry estimates, and that in the construction phase (*i.e.,* Phase II) of the project Baltimore County would analyze and verify expenses submitted by Developer in connection with the construction of the proposed amenities.

James Hermann, the Baltimore County landscape architect, was again called as a witness on the third day of the hearing, to discuss a redline amendment (Developer's Exhibit 13) to the Open Space exhibit (Protestant's Exhibit 1) submitted previously. Mr. Hermann testified the revised open space calculations (submitted in response to comments from the OZR) shown on

the revised plan are in compliance with all Baltimore County requirements. In the revised exhibit Developer did not include as amenity open space the portion of land on the bottom of the stormwater management features and the security or fee in lieu (pending offsets for on-site and off-site improvements) amount was increased to $371,811.30. Mr. Hermann also explained additional detail was added to the plan (Developer's Exhibit 13) to categorize how the funds would be used by the Lake Roland Nature Council. In response to questions on cross-examination, the witness stated "verification" on the cost of improvements would come "down the road" after the amenities are constructed.

Dean Hoover, a land planner with over 30 years of experience, was the final witness in Developer's case in chief. Mr. Hoover, who was accepted as an expert, first noted the property's BM-CCC zoning classification is one of the most intense zones in the BCZR. He next described in detail the recent changes to the County's open space law, as found in Bill 73-16. Developer's Exhibit 16. He testified the new law provides an incentive for the Developer to provide amenities instead of unimproved "open space." Mr. Hoover explained the Developer wants to take advantage of its proximity to the 500 acre Lake Roland Park rather than providing open space on this small development site.

In response to questions on cross-examination, he conceded Developer has not obtained approval from Baltimore City to complete any of the off-site improvements shown on that plan. He was asked several questions concerning the feasibility of providing on-site open space and opined that such an analysis is not required in this case since Developer is not paying to Baltimore County a "fee-in-lieu."

Community Concerns

Several neighbors who reside in the community expressed concern with the size and scale of the project. In addition, community members are concerned the project would cause existing traffic conditions to become even more congested as well as the potential impact upon water and sewer resources.

Peter Wiedmann, a volunteer at Lake Roland, described a "balloon test" he performed which he believes shows the project will be visible from the serpentine meadow area of the park. Other residents described the "beautiful trail system" at Lake Roland and feared this project would have a detrimental impact upon the peaceful and bucolic setting. Several neighbors testified traffic along Falls Road in this area is a "disaster" and they feel this project will only exacerbate that problem. Members of the community allege the RRLRAIA is working "behind the scenes with the developer" to secure project approval. Others argue that while the proposal might satisfy some minimal standard, it is poorly designed and is in essence a "glorified parking lot."

Paul Davis is one of the owners of Princeton Sports ("Princeton"), a family-run sporting goods business that started in 1936. Mr. Davis testified that Princeton opened its Falls Road location 50 years ago, and that the Plan proposed by the Developer would "cut off their access to the store." Mr. Davis testified that his customers would need to use the intersection at Racquet Road for ingress and egress, which he believes is unsafe. The witness testified that the proposed means of access would have a detrimental impact upon the business, and that Princeton wants to have continued access to the traffic signal. In response to a question on cross-examination, Mr. Davis indicated that he did not believe Princeton had any specific authorization in its deed to access the Developer's property.

The next witness was Larry Green, a professional engineer accepted as an expert. Mr. Green testified that he is a traffic engineer, and has over 33 years of experience. He performed a traffic study for Princeton and determined that 58% of their customers use the northern driveway, while 42% use Racquet Road for ingress and egress. Mr. Green also testified that 75% of Princeton's customers traveling southbound on Falls Road turn left into the aforementioned driveway, while 25% use Racquet Road. In concluding his testimony, Mr. Green opined that the proposed Plan creates an adverse impact upon Princeton, since traffic would be diverted to Racquet Road which has substandard and unsafe sight distances.

In response to cross-examination questions, Mr. Green stated that he visited the site 4 or 5 times, and agrees that there is a grade differential between the Princeton store and the Bluestem property. The witness also conceded that the current alignment of the Princeton driveway does not comply with State Highway Administration ("SHA") standards. Finally, the witness stated that the Developer could provide access to Clarkview Road extended, but he noted that he had not performed any analysis or investigation of that issue in any detail.

Jane Huth was the next witness in the Protestants' case, and she explained that she lives off of Lake Avenue approximately 2 miles from the site. Ms. Huth stated that her children attend Towson High School, which she stated was presently at 129% of SRC, and has 10 or more portable classrooms to accommodate the overcrowding. The witness also presented documents obtained from the Baltimore County Public Schools which show that the enrollment at Towson High School is anticipated to rise steadily in the next few years to more than 150% of SRC.

Al Barry, a former Assistant Planning Director for Baltimore City with over 30 years of experience, was accepted as an expert in planning and zoning. Mr. Barry testified he in collaboration with community members and other stakeholders prepared the Ruxton-

Riderwood/Lake Roland Community Plan ("RRLRCP") adopted by the County Council in 2011. Mr. Barry explained that Lake Roland Park was a crucial aspect of the Plan, and that one of the important features the community desired was to connect the east and west side of Falls Road to the park.

Mr. Barry explained that the west side of Falls Road in this vicinity was earmarked for more intense development while the east side was specified in the community plan to have low (2 to 3 story) scale buildings, other historic structures, and access to Lake Roland Park. In this regard, the witness explained that the Hollins Organic Company located at the rear of the CPC Falls Road site had already moved the bulk of its operations to Cockeysville, and the community was concerned with the ultimate disposition of this parcel. Mr. Barry testified that he reviewed the development plan and believes that the density, height of structures, lack of open space and the lack of access to Lake Roland Park are all prominent features which are at odds with the RRLRCP. The witness stated that the site has no designated parking spaces for park users, and that the green space at the site should be adjacent to the park, rather than in small parcels spread throughout the entire site.

On cross-examination, the witness stated he is not familiar with Baltimore County Master Plan 2020 ("MP 2020"), and did not review or study that document prior to his testimony. Mr. Barry also conceded that he did not know the current zoning of the property, although he was aware that it was rezoned in or about 2016 after adoption of the RRLRCP.

Barbara Hopkins, the Director of Baltimore County NeighborSpace, was the next witness in the Protestants' case. Ms. Hopkins explained that NeighborSpace is designed to improve the livability of communities inside the URDL. She stated she was familiar with the open space regulations, and believes it is accurate to say there is an open space "crisis" in Baltimore County.

Ms. Hopkins explained she is intimately familiar with and was involved in the revision of BCC Section 32-6-108 concerning open space requirements.

In connection with this case, Ms. Hopkins believed the Developer simply disregarded the "feasibility" of providing open space before it focused upon the fee which would be required for a waiver. She advised that a developer must first demonstrate that it is unfeasible to provide open space on site or off site, pursuant to BCC § 32-6-108(f)(1), before being approved for a fee-in-lieu waiver.

In response to questions on cross-examination, Ms. Hopkins stated that under the new law open space for this project could be provided anywhere within the 2nd council district. She also testified that the new open space law does not focus on any given project; rather, she believes the law requires the Developer and Baltimore County to consider the needs of the entire council district in question. Ms. Hopkins also expressed frustration that even though the local open space law was revised substantially in 2016, the Local Open Space Manual has not been updated, which means neither developers nor the community have guidance concerning the interpretation and application of these regulations.

Mark Behrens is the President of the Rockland Ridge Homeowners Association, a community with 75 single family homes. Mr. Behrens testified he is an architect and civil engineer, and he expressed concern with the following issues: traffic, water pressure, adequacy of the sewer system and potential overcrowding of Lake Roland Park. He also advised that although his community is within its boundaries, he does not think that the RRLRAIA represented their interests in connection with the covenant agreement that association entered into with the Developer.

Robert Smith, an attorney, is also a board member of the Rockland Ridge Homeowners Association, and he also expressed significant concerns with the project. Mr. Smith criticized the traffic study presented by the Developer, which he stated does not consider the impact of I-83, which when congested, funnels traffic onto Falls Road in both directions. The witness also stated that parking at the proposed project is deficient, since the Developer cannot have adequate parking for Lake Roland Park users and also comply with the requirements of BCZR Section 409. Mr. Smith also expressed concern with the visibility of the project from the serpentine barrens, a unique environmental feature near the site which may also contain asbestos according to research papers presented by the witness.

Daniel O'Leary, a professional engineer accepted as an expert, was the next witness in the Protestants' case. Mr. O'Leary explained that he reviewed the stormwater management plan for the project, and determined that the proposed outfall (as shown on sheet 4 of the Plan), was located on property owned by Baltimore City ("City"). Mr. O'Leary opined that this was unacceptable, and that the project might need to be significantly revised if the City at a later date refuses to approve the proposed stormwater outfall. Mr. O'Leary testified that as an alternative the stormwater could be directed "uphill" to Falls Road, although in response to a question on cross-examination the witness conceded that this would be a difficult engineering task given the 25 ft. grade differential between the site and Falls Road. In conclusion, Mr. O'Leary opined that a stormwater outfall should be established early on at the conceptual phase of a development project, and that the Developer's Plan "hinges on getting approval from someone else" for the proposed outfall on City property.

The next witness in the Protestants' case was Randy Grachek, an environmental engineer employed by NewFields, Inc. Mr. Grachek described his extensive background as a civil engineer

and explained that his work focuses upon designing and evaluating large sewer projects. Mr. Grachek explained that he visited the Lake Roland site and reviewed certain documents, primarily the many reports prepared by Rummel, Klepper & Kahl, LLP ("RK&K"), the contractor engaged by Baltimore County to comply with the reporting mandates of the 2010 Consent Decree with the Environmental Protection Agency ("EPA").

Based on his review of those documents, the witness stated the property is in a "red zone," and that in his professional opinion it was not acceptable to add any more sewage to the system, since it is over capacity at the present time. Mr. Grachek testified that the Lake Roland interceptor was installed in the 1950's, and is antiquated and unique, especially since it runs completely under Lake Roland. The witness noted that records submitted to the EPA indicate there are 541 defects detected in the Lake Roland interceptor sewer line, which he explained was a far greater number than in sewers at other segments throughout the county.

In response to cross examination questions, Mr. Grachek conceded that he did not know if the subject property was connected to a public sewer at the present time, and does not know how much sewage is being produced by the current users on site. Mr. Grachek also stated that he has not prepared any calculations concerning the expected sewage demand to be created by the proposed project, but he stated that in his opinion it would generate more sewage than the current industrial activity. He also testified that in preparing for his testimony he relied significantly on the RK&K reports, and did not conduct any independent analysis of the present or proposed conditions of the sewer system. In addition, Mr. Grachek testified he does not believe the improvements recommended by RK&K have been completed.

Beth Miller, a registered architect, was the next witness in the Protestants' case. Ms. Miller is a volunteer with the Green Towson Alliance, and she explained that she monitors new

development proposals in Baltimore County and advocates for environmental issues. With respect to this case, Ms. Miller testified she compiled a list of projects which will drain to the Jones Falls sewer shed, and she prepared a chart (Protestants' Exhibit 66) showing the total number of units constructed since 2012.

Jeffrey Budnitz is a volunteer with Lake Roland Nature Council, and he described his significant involvement with the Lake Roland property, including the process by which Baltimore County assumed responsibility from Baltimore City for the maintenance and administration of the park. Mr. Budnitz testified that he repeatedly attempted to have Baltimore County acquire the Hollins Organic property, and also explained to neighbors opposing the project that they should endeavor to purchase the site so that it would not be developed. At the same time, Mr. Budnitz stressed that the subject property is not a "virgin site," and that impervious surface covers nearly the entire property. In addition, Mr. Budnitz testified that the views from the serpentine meadows are already blocked by cell towers and high voltage lines, and that a visitor can see many commercial and industrial structures from the orange trail in the park. Finally, Mr. Budnitz testified that in his opinion the traffic in the area is dependent upon the private schools in the area, which can generate a significant volume of traffic when school is in session.

Developer's Rebuttal Case

Joshua T. Sharon was again called as a witness in the Developer's rebuttal case, and at this stage of the proceedings he focused upon two issues raised by the Protestants. First, with respect to the Princeton access issue, the witness stated that at present the subject property has three curb cuts, and that if the Plan was implemented there would be only one curb cut on Falls Road for ingress and egress from the site. In addition, Mr. Sharon noted that there is a significant grade

change between the Princeton property and the subject site which would complicate any contemplated access between the properties.

Mr. Sharon also addressed the testimony of professional engineer Daniel O'Leary. He stressed that the stormwater management outfall would essentially be in the same location as at present, but that the water would be released at the bottom of the slope on a flat area. The witness stated that the notion of pumping stormwater, as advocated by Mr. O'Leary, is unwise and is almost never recommended by civil engineers. With regard to the outfall on the city property, Mr. Sharon noted that the stormwater has for many years drained onto city property, and the plan is to keep doing just that, although the outfall will be slightly farther into the park with an upgraded plunge pool to reduce the velocity of the water. Mr. Sharon opined that the proposed system would be far superior to the existing stormwater outfall. Finally, Mr. Sharon identified several regulations and codes (*See* Developer's Exhibit 22) which in his opinion dictate that Baltimore City approval for the outfall is not required until permits are sought for this project.

Christopher Jakubiak, a professional land planner accepted as an expert, was the next witness in the Developer's rebuttal case. Mr. Jakubiak testified at the outset that the planning expert presented by the Protestants (Al Barry) focused solely upon the RRLRCP in reaching his conclusion that the project was inconsistent with MP 2020. Mr. Jakubiak testified that determining consistency requires one to examine MP 2020, the relevant community plans, as well as the zoning maps for the property.

In this regard, Mr. Jakubiak testified that the subject property has three significant attributes under MP 2020: (1) the site is within a "community conservation" area; (2) the site is within a "community enhancement" area; and (3) the site is located in a T-5 transect, which Mr. Jakubiak stated was a signal identifying that the most intense mixed-use development should be directed

into such areas. Mr. Jakubiak described the T-5 transect as a classic urban center, and he opined that the proposed project would "fit nicely" in light of the three land use parameters from MP 2020 identified above. Mr. Jakubiak also noted the zoning was changed during the Comprehensive Zoning Map Process ("CZMP") in 2016 to BM-CCC. He noted that the CZMP is designed to implement the recommendations and goals of the master plan, and that the 2016 rezoning of this site was also consistent with the three master plan attributes identified above.

Mr. Jakubiak also opined that the project was consistent with the 2011 RRLRCP, which he said focuses mainly upon the Bare Hills Community and its connection to Lake Roland Park. Mr. Jakubiak also opined that it was not feasible, given the constraints of the situation and what the MP 2020 indicates, to provide three acres of open space on the subject property, which would be required under the LOS regulations. Mr. Jakubiak stated that in his opinion it would make no sense to demand that a significant amount of open space be provided for this project given that the park is "next door."

In response to questions on cross examination, the witness agreed the proposed structures would not be close to Falls Road, which MP 2020 identifies as an attribute of properties in the T-5 transect. Mr. Jakubiak also opined that MP 2020, not the RRLRCP, should govern the analysis in this case. In support of that conclusion, he noted the RRLRCP is not nearly as detailed as some community plans, which contain specific recommendations for future actions and projects. In addition, Mr. Jakubiak testified the RRLRCP expressly states that future plans were contemplated yet have not been completed, which in his opinion is another factor establishing that the 2011 RRLRCP should not be considered a definitive reference.

The final witness in Developer's rebuttal case was Mickey Cornelius, a professional engineer accepted as an expert. Mr. Cornelius is a traffic engineer, and he testified that his firm

prepared a traffic impact study for this project. Based on instructions he received from the SHA, the study analyzed two signalized intersections; Falls and Clarkview Roads and Falls at Old Pimlico. Mr. Cornelius described the methodology used in his study, and explained that existing traffic conditions at the intersections identified were at a level of service B/C during the morning/evening peak hour. Based upon the projected amount of traffic generated by the new project, which was determined by using trip report data provided by the Institute of Transportation Engineers, Mr. Cornelius indicated that the study determined those intersections would continue to function at a level of service B/C after completion of the project. Mr. Cornelius testified that the study was submitted to the SHA, which approved the analysis and findings therein. *See* Developer's Exhibit 27.

Mr. Cornelius also discussed Racquet Road, the county road to the south of the project which would be used for ingress/egress from the Princeton property. The witness conceded that there is inadequate sight distance using American Society of Highway and Transportation Officials ("ASHTO") standards for motorists attempting to make a left out of Racquet Road onto southbound Maryland Route 25. He stated that while newly constructed roads must comply with ASHTO standards, for existing roads traffic engineers examined crash data to determine whether a particular roadway is safe. In that regard, Mr. Cornelius testified he examined Maryland State Police records for the years of 2015 – 2018 and determined there was only one single vehicle accident reported during that period at the Racquet Road/Falls Road location. As such, Mr. Cornelius opined that a motorist, including customers exiting the Princeton property could safely use Racquet Road as a point of ingress/egress.

With regard to whether access could be provided to the Princeton property, the witness opined that it would not be safe to attempt a two-way in/out access point in front of the store.

Provided the existing parking at the front of the store was reconfigured, Mr. Cornelius stated it might be possible to design a point of inbound access only, provided the driveway was angled in such a fashion that would allow for a 20 to 30 mile per hour design speed for motorists entering the site from Falls Road. Even so, Mr. Cornelius opined that it would not be safe or prudent to construct an access point at the front of the Princeton property, although he conceded a connection point could be engineered which would provide ingress/egress at the rear of the existing commercial structure.

Master Plan

The law is clear that the Master Plan is a binding, regulatory mechanism in development cases in Baltimore County. This was the holding of *HNS Dev. v. People's Counsel*, 425 Md. 436 (2012), and is based on that court's interpretation of BCC § 32-4-102(a)(1). The aforementioned statute requires "all development of land [to] conform to the Master Plan."

Protestants contend the plan does not conform to MP 2020, and in support of that argument they presented testimony from Al Barry, a certified planner who prepared the RRLRCP. Mr. Barry, an impressive and articulate witness, described the major aspects of that plan and opined the project proposed by Developer would not be in conformity therewith. Among other reasons he stressed the community plan called for low-scale, village style buildings along Falls Road and a parking area for Lake Roland. He testified the proposed development would not adhere to either of these requirements.

In rebuttal Christopher Jakubiak testified the property's T-5 transect, community conservation and community enhancement area designations. He explained those designations emphasize the need for "sustainable redevelopments that are compact, mixed use and walkable." MP 2020, p.32. He also explained a major feature of the RRLRCP was connectivity to the park,

which was provided in the plan. In addition, the property's zoning classification permits a variety of intense uses, as explained by Mr. Hoover.

Moreover Mr. Barry's testimony focused almost exclusively upon the community plan without considering the impact of MP 2020 or the property's zoning and transect classifications. This is allowing the tail to wag the dog, since the master plan itself is the primary document recognized and required by state law. Indeed, Mr. Barry conceded he was not familiar with MP 2020 or the property's zoning designation, which in my opinion undercuts the validity of his testimony. While the RRLRCP has been incorporated into MP 2020, a property's zoning classification and transect designation are without a doubt the primary land use controls in Baltimore County. In conclusion, Mr. Jakubiak was a credible and persuasive witness and I find based on his testimony as detailed herein the project is in conformity with MP 2020, as required by BCC § 32-4-102(a)(1).

Princeton Sports

The Falls Road access to the store is somewhat problematic since it is located on property owned by the Developer, CPC Falls Road, LLC. Though Princeton has enjoyed this means of access (which is used by more than 50% of its customers) for nearly 50 years, the Developer now proposes to construct a new entrance road into its project (which would align with current Clarkview Road) which will result in the elimination of Princeton's Falls Road access.

Developer is correct the ALJ has no authority to resolve real property disputes. But the County Code expressly provides the ALJ with authority to impose conditions when necessary to "alleviate an adverse impact on the health, safety, or welfare of the community." BCC § 32-4-229(d). As an adjoining property owner Princeton Sports specifically would experience an adverse impact if patrons could no longer access the store from Falls Road, as they have done for more

than 50 years. And the community at large (or at least the subset thereof which patronizes Princeton Sports) would suffer an adverse impact since they would be required to use Racquet Road as the exclusive means of access to the store. Forcing patrons to use Racquet Road would not simply be inconvenient, it could also pose a serious traffic safety issue.

Both Messrs. Green and Cornelius agreed there is inadequate sight distance for motorists exiting Racquet Road. Closing the Falls Road access would mean 100% of the store's customers (instead of approximately 42% at present) would be subjected to this potentially dangerous condition. To mitigate or alleviate this adverse impact a condition must be included in any final order approving the project requiring Developer to provide at no cost a means of access to the Princeton Sports property from the proposed new road (*i.e.*, Clarkview Road extended).

Suitable Outfall

Protestants contend the plan should be disapproved since the Developer has not obtained approval and a franchise ordinance from Baltimore City permitting the discharge of storm water onto city-owned property. I do not believe this argument has merit.

Ownership or title issues are largely irrelevant in the context of a zoning or development case. *Richard Roeser, Inc. v. Anne Arundel Co.*, 368 Md. 294 (2002). Both development and zoning cases can be initiated by individuals or entities which do not own the property in question. In this case, whether or not the plan shows a "suitable outfall" is determined by examining engineering principles not a license or franchise agreement. *See* BCC §§ 32-4-224(a); 33-4-108(b); and COMAR 26.17.02.09 D.

At this stage of the proceedings the Developer is required only to show on a conceptual plan preliminary computations, the size, type and location of the facility proposed and a suitable outfall. BCC §32-4-224(a)(10). As described by Mr. Sharon, the Developer will be obligated to

provide additional and more detailed stormwater management plans in later phases of the development process, and before permits can be issued the Developer would certainly need to establish the legal right to discharge water onto property owned by Baltimore City. The reality is surface water from the site has for many years been directed onto city property; the current proposal would merely continue to do so, albeit with a modern and properly designed outfall. Based on this testimony and the approval of the conceptual plan by DEPS, I find Developer has satisfied this requirement.

Parking

The plan indicates 581 off-street parking spaces are required, while 584 spaces will be provided. But Protestants contend that since the Developer has not specifically allocated spaces for Lake Roland Park, the Plan should be disapproved. Protestants note the Developer pledged in the RRLRAIA covenant agreement to provide designated parking for park users. *See* Developer's Exhibit 4, p.3. I do not believe this argument has merit, for two reasons.

First, the BCZR does not require any specific number of off-street parking spaces for a public park or facility. BCZR § 409.6. Also, a property owner is not obligated to provide parking for public or off-site uses. While the Developer may be contractually obligated to provide parking for park users, Baltimore County is not a party to and is therefore not bound by that agreement. *Blakehurst Life Care Community v. Baltimore County*, 146 Md. App. 509 (2002). The OZR approved the parking calculation shown on the plan, and for that reason, as well as those articulated above, I believe Developer has satisfied BCZR Section 409.

Local Open Space

As noted above, the County's landscape architect and the OZR both testified Petitioner satisfied the LOS regulations. Similar testimony was presented by Messrs. Sharon and Hoover.

Protestants contend the Developer failed to prove it was not "feasible" to provide open space on the subject property. As such, they argue, a fee-in-lieu analysis is premature.

As an initial matter, I believe Section 32-6-108 of the BCC requires an applicant to establish it is not feasible to provide open space on or off site, before a fee-in-lieu analysis (including permitted reductions for certain amenities) is reached. In this regard I am persuaded by the testimony of Ms. Hopkins to the effect that the Developer disregarded the question of feasibility and proceeded instead to the fee and offset analysis. Indeed, that is the only way to logically interpret the cited Code provision since the cost of certain amenities may be deducted from the "fee" which would otherwise be payable, and the Code clearly states a fee shall be paid only when it is not "feasible" to provide the open space. BCC § 32-6-108(i)(2). The reality is this issue is not frequently litigated in development cases, and waiver fees are routinely approved without any consideration of whether it would be feasible to provide the open space in the first instance.

Having said that, I also believe it is not feasible for the Developer to provide the requisite open space on or off site. While it is true, as Protestants argue, the Developer could scale back the scope of the project which would enable it to comply with the LOS regulations, that is not an appropriate rejoinder to whether something is feasible. If that were the standard, a developer could never prove it would not be feasible to provide open space, since it could always scale back its project. At the very least it would not in many instances be economically feasible for a developer to do so.

While not defined in the BCC, the plain meaning of "feasible" incorporates some element of whether the contingency is logical or likely. In this case, the subject property is simply too small to provide the required amount of open space and the neighborhood (and Council District) in which the project is located is established and built out, which in my opinion would not make it feasible

to provide the open space off-site. Finally, one cannot ignore the fact the project is located next to a 500 acre park, and in my opinion it would be superfluous for Developer to provide on-site a small open space parcel next to such an expansive resource.

Protestants also challenge whether the Developer has established with the requisite degree of certainty the "verified cost" of the proposed amenities. I agree Developer has provided only rough estimates, but that is all that is required at this juncture. As Mr. Hermann testified, the costs will be "verified" at a later date and Baltimore County will ensure that an offset against the fee is granted only for the documented costs associated with the amenities and improvements. It certainly does seem incongruous that a Developer would be entitled to an offset against the LOS fee for a swimming pool provided for the exclusive use of its tenants. But Section 32-6-108 of the BCC expressly allows for such reductions, and I am obligated to enforce the law as written, not as I or the community would like it to read. I would note the County Council has introduced Bill 37-19, which proposes to repeal this aspect of the Code which was enacted in 2016 by Bill 73-16. Developer's Exhibit 16.

Sewer System

Protestants contend the plan should be denied due to insufficient capacity of the sewer which would serve this project. Protestants presented testimony from Randy Grachek, a professional engineer accepted as an expert. Mr. Grachek provided extensive testimony concerning the sewer system "interceptor" which serves the subject property, and he stated that the Jones Falls and Lake Roland Park interceptors were severely over-capacity. The witness prepared an exhibit (Prot. Ex.57) which shows that - - depending on the volume of rainfall which would be experienced in a 2, 10 or 20 year storm -- the sewer would be anywhere from 103% to 589% over capacity. This is sobering testimony, especially considering the County's own Sewer

Design Manual (Prot. Ex. 59) unequivocally states that "trunk and interceptor sewers shall not be designed to flow at depths exceeding 90%."

Baltimore County's sewer system - - like that of nearly all major east coast cities - - is antiquated and in dire need of repair. So serious is the problem that Baltimore County entered into a consent decree with the Environmental Protection Agency ("EPA") which requires the County to undertake a comprehensive evaluation of its sewer system and take corrective action to repair or replace defective portions of this infrastructure. The County hired RK&K (an engineering firm) to evaluate the sewer system as required by the consent decree and it determined in a study the interceptors serving the subject property are severely over capacity. RK&K also determined the Lake Roland interceptor had 541 defects, more than any other pipe segment in the Jones Falls watershed. Also, the County's own testing shows the levels of E coli in Lake Roland far exceed safe levels set forth in state regulations.

The consultant recommended Baltimore County install "relief sewers" for the Lake Roland Park & Jones Falls interceptors, which could help to address the overcapacity issues in this area. There is no evidence in the record to suggest Baltimore County has undertaken such measures, and Mr. Grachek opined "the systemic problems identified does not warrant additional sewage being added to the systemic problem, even if it were just a little bit." (T8, p. 105). Developer correctly notes the witness did not undertake any independent evaluation of the sewer serving the site. He did not need to; he relied upon the findings of the County's consultant, an accepted practice for expert testimony in litigation matters. *Williams v. Illinois*, 567 U.S. 50, 60 (2012)("commonly accepted" practice for one expert to rely on records of another expert). RK&K was not hired by Protestants, and its findings were submitted to the EPA in connection with the Consent Decree. In

these circumstances I believe these reports are especially trustworthy and I place a great deal of reliance upon them.

The Developer did not cause and is not responsible for the deficient sewer system near the subject property. As noted by Mr. Grachek it is a County-wide problem and Baltimore County is responsible for providing and maintaining infrastructure such as sewers, drains and roads. Such infrastructure is aging; the Lake Roland Park sewer was constructed in the early 1950's and was designed to serve a much smaller population than it is at present. But the obvious truth is the County, like local governments across the country, does not have sufficient funds to undertake the necessary repairs to its roads, bridges and sewers.

The Developer did not contradict any of the substantial evidence presented on this point by Protestants and it did not present testimony from an engineer or sanitarian to the effect that the existing sewer is sufficient to accommodate existing and proposed demand. Instead, the Developer cites the fact the subject property is not identified as deficient on the County's basic services map. I believe such reliance is misplaced.

Neither the Maps nor the Growth Management Act ("Act") in section 4A02 of the BCZR state they shall be the decisive factor in determining whether the ALJ approves any particular development plan in a contested case. Instead, the Act provides only that no building permits shall be issued for any project in an area identified as deficient on the sewer, water or transportation basic services maps. BCZR §4A02.3.G. Indeed, developers in similar cases have argued (successfully) that a development plan can be approved for a project within a failing traffic shed; the only prohibition in the law is upon issuance of permits. As recognized by the court of special appeals an HOH is not a proceeding in which a building permit is sought; that occurs later during

Phase II of the development process. *Monkton Preserv. Assn. v. Gaylord Brooks Realty*, 107 Md. App. 573, 584-85 (1996).

And it is certainly understandable why the County would be reticent to include a property on one of the basic services maps. The effect of such inclusion is a legislative moratorium, during which the county is expected to undertake the necessary repairs to the deficient infrastructure. Should this state of affairs persist for longer than 18 months, it is likely a court would find the owner's property had been "taken," which requires the payment of just compensation under the state and federal constitutions. *Tahoe-Sierra Preservation Council, Inc. v. Tahoe Regional Planning Agency*, 535 U.S. 302 (2002). This is yet another reason why I do not believe the maps are dispositive in any given case.

In this case I am persuaded by Mr. Grachek's testimony and the findings of the County's own consultant that the sewer system serving the subject property is woefully inadequate to handle existing demand, much less the additional inputs from recently approved development in the Towson area. As such, I believe the fact the property is not identified on the basic services map is plainly contradicted by the findings of the County's consultant.

Traffic

It is obvious, especially to residents, the traffic near the subject property during peak periods can be extremely congested. Of course the same can be said for many areas of the County. But the undisputed evidence in this case is that the signalized intersections near the project (which were selected by the SHA not the Developer) currently function at a level-of-service B/C during the A.M. and P.M. peak periods. The traffic study performed by Mr. Cornelius was approved by the SHA (Dev. Ex. 27) and indicated those intersections would continue to operate at a B/C level

after completion of the project. I believe this, along with the approval of DPR/DPW, is all the Developer was required to prove.

Schools

There is no dispute the elementary and high schools which would serve this project currently exceed SRC. And according to the Baltimore County Public Schools the situation is likely to get worse in coming years. But the plan cannot be disapproved on this basis.

Indeed, the BCC provides an exception which swallows the rule. If sufficient capacity exists at adjacent schools, the APFO is satisfied. BCC § 32-6-103(f)(3). Ms. Nugent testified sufficient capacity exists at adjacent schools, and that is all that is required by the cited BCC provision.

Forest Buffer

Mr. Sharon testified he prepared a plan delineating the forest buffers, which was approved by DEPS. Protestants did not present any evidence suggesting the buffers were not properly identified and mapped. Instead, Protestants contend Building F shown on the Plan intrudes upon the required setback. That building is residential in nature, but is set back only 25 feet, which would appear to be in violation of the 35 ft. setback for residential structures. I do not believe this is a basis upon which the plan should be disapproved, although if the project moves forward I believe the Developer would be required to obtain from DEPS a forest buffer variance.

CONCLUSION

The BCC provides that the "Hearing Officer shall grant approval of a development plan that complies with these development regulations and applicable policies, rules and regulations." BCC § 32-4-229. As discussed in detail above, I do not believe the plan is in compliance with the myriad state and county laws which require all residential projects to provide adequate and safe

sewage disposal systems. As such, the plan will be disapproved solely on this basis.

THEREFORE, IT IS ORDERED by this Hearing Officer/Administrative Law Judge this **30th** day of **August, 2019**, that the eight (8) sheet redlined Development Plan known as **"CPC FALLS ROAD PROJECT / BLUESTEM"** (Developer's Exhibit 1), be and is hereby **DISAPPROVED.**

Any appeal of this Order shall be taken in accordance with BCC §§ 32-3-401 and 32-4-281.

JOHN E. BEVERUNGEN
Administrative Law Judge
for Baltimore County

JEB:dlw

IN THE MATTER OF	*	BEFORE THE
CPC FALLS ROAD, LLC (CPC FALLS ROAD PROJECT/BLUESTEM) 6241-6247 Falls Road HOH Case No. 09-0861 9th Election District 2nd Councilmanic District	*	BOARD OF APPEALS OF BALTIMORE COUNTY
	*	CASE NO: CBA-20-006

* * * * * * * * * * * * *

OPINION

This case comes to the Board of Appeals from a final Opinion and Order dated August 30, 2019, issued by Administrative Law Judge John E. Beverungen (the "ALJ") wherein he disapproved the Development Plan known as "CPC Falls Road Project/Bluestem." The ALJ denied approval of the Plan as he found "the sewer system serving the property is woefully inadequate to handle existing demand, much less additional inputs from recently approved development in the Towson area," causing him to conclude the Plan was not in compliance "with the myriad [of] state and county laws which require all residential projects to provide adequate and safe sewage disposal systems." This was the sole basis for the disapproval. Petitioner/Developer, represented by Lawrence Schmidt, Esquire, appealed on that issue.

Protestants Robert Macht, Carol Macht, Thomas McCord, Richard and Tatiana North, Mark Fetting, Deidre Smith, Doug Carroll, and Cheryl Finnery were represented by Michael R. McCann, Esquire. They, along with Protestants Rockland Ridge Homeowners Association, Mark Behrens, Peter Broido, Esther Epstein, and Robert G. Smith, Esquire, who participated as a party and as counsel for this set of Protestants (the "Second Set of Protestants", as necessary), jointly

appealed on all other issues raised below, including, by way of example, parking, open space, and stormwater outfall.[1]

As part of the ALJ Opinion, the ALJ also found the adjacent property, namely, Princeton Sports, LLC (and Lucile Real Estate, LLC; Paul M. Davis, and Alan Davis) would experience an adverse impact if the Plan was approved. As such, the ALJ identified a condition to be included on any final order approving of the Plan that would require Petitioner/Developer to provide at no cost a means of access to the Princeton Sports property from the proposed new extension of Clarkview Road. The parties identified herein were represented by Dino La Fiandra, Esquire.

In advance of the Board hearing, Petitioner/Developer filed a Motion for Additional Evidence and Testimony, which the Board denied. This Opinion will briefly address the denial of that Motion. Following the resolution of that Motion, the Board heard argument on the substantive matters and, in advance of the December 19, 2019 deliberation, received post-hearing memoranda from the parties. Many of the issues identified by Protestants in their Petition for Appeal were not argued at the hearing or addressed in their post-hearing closing memoranda. The primary, and dispositive, issue concerns the ALJ's findings and conclusions regarding the deficiencies in the sewer system that would serve this Property after connection.

I. Property Description and Petition

The Property at issue is located at 6241-6247 Falls Road, adjacent to Lake Roland Park. The Property lies within the Urban-Rural Demarcation Line and receives public water and sewer services (and, thus, is within the Metropolitan district relating to the same). As set forth in the Master Plan 2020, the Property and the surrounding area (known as "Bare Hills") was designated as a T-5 (Urban Center Zone) transect zone, which permits a more intense use (the transect zones

[1] As there are cross appeals, this Opinion will not refer to any party as "Appellant" or "Appellee."

run from T-1 to T-6, with T-6 being the most intense). It is also designated as a Community Conservation Area, which encompass the County's "more densely populated, established communities," according to the Master Plan. Further, the Property is also in a Community Enhancement Area, described by the Master Plan, as "compact, mixed-use, and walkable" community, with retail, office, and residential uses. The Property had a recent change to its zoning (2016, as part of the Comprehensive Zoning Map Process) converting from BR-AS (Business Roadside --- Automotive Services) to BM-CCC (Business Major --- Commercial, Community Core).

Petitioner seeks to redevelop the Property to provide 56,600 square feet of commercial floor space and a 152-unit, multi-family residential building. The Plan introduced in the hearing below reflects the following buildings: Building A, 1-story retail/restaurant office; Building B, 2-story restaurant, retail, office; Building C, 3-story retail, restaurant, office; and Building D, ground floor retail/restaurant/office, with five stories above as residential. Building D consists of four structures (Buildings D, E, F, and G, designated in this fashion for emergency services). In addition to the retail and residential components, Petitioner also includes a structured parking garage and a point of entry from the Property to the Orange Trail of Lake Roland Park.

II. Authority of the ALJ and the Board of Appeals for this Matter

County Code §§32-4-227 through 32-4-229 identify the requirements and standards to guide the ALJ for the hearing on a development plan. Section 32-4-227(e) provides the ALJ "shall consider any comments and conditions submitted by a county agency…" and if no comments or conditions are received, "the Development Plan shall be considered to be in compliance with county regulations." Section 32-4-229(b)(1) states: the ALJ "shall grant approval of a Development Plan that complies with these development regulations and applicable policies, rules

and regulations adopted in accordance with Article 3, Title 7 of the Code, provided that the final approval of a plan shall be subject to all appropriate standards, rules, regulations, conditions, and safeguards set forth therein." If the Plan is approved, the ALJ has the authority to impose conditions if the conditions meet the criteria set forth in the Code. BCC §32-4-229(c).

The Board, in connection with this matter, has appellate jurisdiction. Section 32-4-281(e) of the Baltimore County Code ("BCC") authorizes the Board, in its appellate jurisdiction, to: (i) remand the case; (ii) affirm the decision; or (iii) reverse or modify the decision if the decision, (a) exceeds the statutory authority or jurisdiction of the ALJ; (b) results from an unlawful procedure; (c) is affected by any other error of law; (d) is unsupported by competent, material, and substantial evidence in light of the entire record as submitted; or (e) is arbitrary or capricious. The Board does not make independent findings of fact or substitute its judgment for that of ALJ below. As stated by the Court of Special Appeals, when reviewing a hearing officer's decision on the approval of a development plan, the Board is "not vested with broad visitorial power … but acts rather as a review board, to assure that lower agency decisions are in conformance with law and are supported by substantial evidence." People's Counsel for Balt. County v. Elm St. Dev., Inc., 172 Md. App. 690, 704; 917 A.2d 166, 174 (2007), quoting, Monkton Preservation Ass'n v. Gaylord Brooks Realty Corp., 107 Md. App. 573, 580; 669 A.2d 195 (1996).

Petitioner/Developer contends that the ALJ's Opinion, particular to the sewer issue and the ultimate outcome of the findings and conclusions relating thereto, require reversal as it: (1) exceeds the statutory authority or jurisdiction of the ALJ; (2) contains error(s) of law; (3) is unsupported by competent, material and substantial evidence in light of the entire record as submitted; and (4) is arbitrary or capricious. The Board will address the evidentiary record first.

III. Decision

Petitioner correctly states in its Closing Memorandum that a development plan is presumptively compliant with the development review regulations and BCC §32-4-227(e) requires that, in the absence of comments, "the Development Plan shall be considered to be in compliance with county regulations." Petitioner is not required, at that point, to produce additional evidence in support of the County agency determinations. People's Counsel for Balt. County v. Elm St. Dev., Inc., 172 Md.App. 690, 703; 917 A.2d 166, 174 (2007). There is nothing in the ALJ decision that indicates the ALJ did not afford Petitioner that presumption.

Once that presumption has been established, Protestants, as explained by the Court of Special Appeals in Elm St. Dev., have the burden to produce evidence rebutting the recommendations and determinations made. Id., citing Gough v. Board of Zoning Appeals, 21 Md.App. 697, 704; 321 A.2d 315 (1974). In fact, Protestants presented such evidence in sufficient quantity and quality that it not only rebutted the presumption afforded to Petitioner, but also persuaded the ALJ.

The evidence established that the Property sits in close proximity to the convergence point of the three main sewage interceptors in the area, Jones Falls from the west, Roland Run from the north, and Towson Run from the east. The convergence point for the interceptors is located adjacent to Lake Roland, and forms a fourth interceptor, the Lake Roland interceptor, which runs under Lake Roland.

Protestants also introduced the 2005 Consent Decree between the County and the Environmental Protection Agency (EPA) and Maryland Department of Environment (MDE) that concerned the County's sewer system, requiring a comprehensive examination and corrective actions. The Consent Decree remains in effect and runs through 2025.

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In 2012, the County's consultant RK&K conducted a study revealing the interceptors at issue are severely overcapacity and that the Lake Roland interceptor had 541 defects, more than any other segment of pipe in the Jones Falls watershed. Mr. Grachek compiled an exhibit to illustrate the burdens upon the Jones Falls and Lake Roland interceptors following 2-year, 10-year, and 20-year storms, resulting in an overcapacity range between 103%-589% at various points throughout those sewer runs. Judge Beverungen considered this evidence "sobering," especially in light of the County's Sewer Design Manual's requirement that interceptors shall not be designed to flow at depths exceeding 90%. The Jones Falls and Lake Roland interceptors would receive the sewage from the proposed development project.

As established by the Consent Decree, the inadequate flow capacity in these runs resulted in sewage discharges into the nearby water resources, including Towson Run, Lake Roland, and Jones Falls. As a consequence of those discharges, those water resources had elevated levels of E.coli bacteria, presenting a danger. While Petitioner characterizes the evidence as ancient history, the record evidences one or more recent overflow events at the interceptor convergence point. Most notably, nearly half the samples of the water quality at Lake Roland taken by the County between June 2016 and June 2019 revealed levels of E.coli bacteria that exceeded the permissible level for Class I waters established by COMAR 26.08.02.03-3, including some samples that exceeded the maximum measurable level.

The County's consultant recommended relief sewers for the Jones Falls and Lake Roland interceptors. Judge Beverungen, in his Opinion, noted the absence in the evidentiary record that such relief sewers are in place. The County certainly has the reports generated by its contractor, RK&K. The ALJ relied upon Mr. Grachek's testimony that "the systemic problems identified does not warrant additional sewage being added to the systemic problem, even if just a little bit."

Logically, with a more intense use at the subject site than that at present, additional sewage, even if just a little bit[2], will be added to the Jones Falls interceptor and Lake Roland interceptor.

Petitioner claims that the ALJ ignored Development Plan Review comments from 2018 regarding a relief sewer to dispute the ALJ's noting the absence of evidence regarding the existence of the relief sewers recommended by RK&K. However, Mr. Grachek made clear in his testimony that the sewer referred to in those comments was a 12" segment downstream, one not identified by RK&K as being overcapacity or recommended for repair. Further, Mr. Grachek testified the size of the segment reveals it was not intended to serve as relief for the interceptors. Clearly, Judge Beverungen, based on Mr. Grachek's testimony and related evidence, concluded that the 12" segment was unrelated to the relief sewers identified by RK&K and/or that it could not serve the function needed.

Therefore, the evidence presented was competent, material and substantial. The evidentiary record establishes a more than sufficient factual basis for the ALJ to reach his findings of fact and to serve as support for the conclusions drawn. The Consent Decree and related evidence are not too remote, and to the contrary, include reports as recent as six months ago (i.e. during the hearing below). Petitioner obviously did not cause the pre-existing problem, but Petitioner's Plan will contribute flow beyond the present-day amount from the Property. That increased flow adds to the already severely overburdened interceptors, exacerbating the existing conditions, which in turn enhances the risks of contamination of groundwater, surface water, and recreational facilities, as well as other consequences.

[2] Mr. Grachek did not calculate the added sewage flow from the proposed development, nor did Mr. Grachek need to in light of the obvious conclusion that the proposed project is a more intense use of the site than the existing, e.g., Hollins Organic Products store and will contribute additional sewage. Therefore, the need to quantify the amount is not required to reach the conclusions by the ALJ as there will be an additional amount added to the overburdened system, thus, increasing the risks.

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With the factual record reviewed, the other legal issues claimed by Petitioner can be evaluated as the remaining issues are intertwined with the factual record. Petitioner does not identify any challenge to the manner in which the hearing was conducted. Instead, Petitioner challenges the decision made following the hearing.

A. The ALJ Did Not Exceed His Statutory Authority and Jurisdiction

First, Petitioner argues the ALJ does not have the power or authority to deny the Plan unless there is a specific finding of fact that the proposed development will cause a sewer deficiency. The ALJ, however, did find the existence of a sewer deficiency and that the proposed development will add to that existing problem. The ALJ's Opinion expressly states "the sewer system serving the subject property is woefully inadequate to handle existing demand, much less the additional inputs from recently approved development in the Towson area." As noted above, Mr. Grachek testified this project would generate more sewage than the current industrial activity. Common sense dictates the same conclusion. The ALJ also addressed the absence of evidence that the existing sewer can accommodate the existing and proposed demand. Taken together, the ALJ found exactly what Petitioner contends was omitted. As such, this argument fails.

Next, Petitioner states that the ALJ exceeded the statutory authority and jurisdiction when concluding that the Jones Falls sewer shed is deficient, contending only the County Council has such authority, which is expressed in the Basic Services Map.

The Basic Services Map depicts areas of the County as being a concern or as being deficient, or neither a concern, nor deficient. To find that that the subject area is "woefully inadequate," according to Petitioner, is tantamount to overruling the Map, and therefore, the Council. In support, Petitioner focuses on the findings of the Department of Public Works and the

legislation enacted by the County Council in the 2018 and 2019 Basic Services Map, championing it, essentially, as dispositive.

Section 4A02.1 of the Baltimore County Zoning Regulations, the Growth Management Act, sets forth that the Act is "established to regulate nonindustrial development in those underserved areas to a degree commensurate with the availability of these facilities." In enacting these regulations, the County Council recognized that public facilities are inadequate to serve all development that would be permitted. The maps are required to incorporate a delineation of adequacy and availability of water, sewerage, transportation services and facilities according to the standards identified in the regulations. As a part of the Act, the Basic Services Maps are not permanent and are reviewed each year. The County Council, in connection with this legislation, stated it was the Council's intent that existing service deficiencies will be corrected in accordance with the Master Plan and capital improvements program. BCZR §4A02.3(F).

Under BCZR §4A02.4(C), which governs sewerage standards, the County Council intended for the standards and maps to regulate nonindustrial development where it has been determined that the county's share of public sewerage capacity is substantially less than the capacity necessary both to serve already established uses and to serve new uses likely to be established pursuant to Basic Services Map legislation. Sewerage capacity must be capable of serving already established uses and new uses likely to be established under the provisions in the Basic Services Map legislation. BCZR §4A02.4(C)(2). The regulations restrict building permits, absent special variances or other circumstances to depart from the standards. See, e.g., BCZR §4A02.3(F).

Unquestionably, the record establishes that the property is not depicted as deficient on the Basic Services Map. The ALJ, after considering this argument, concluded that the Basic Services

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Maps (or the Growth Management Act) does not control the outcome in this case. The Board agrees.

The Basic Services Map provision does not mandate approval or disapproval of a development plan at a development plan hearing. As such, whether or not an area is depicted on a map as deficient is not dispositive on the question as to whether a development plan complies with the development regulations and applicable policies, rules, and regulations.

Moreover, as further evidence that the Basic Services Map cannot have a dispositive effect, when County agencies have no comments about the development plan, Protestants may still rebut the presumption afforded to Petitioner. See also, People's Counsel for Balt. County v. Elm Street Dev., Inc., 172 Md.App. 690; 917 A.2d 166 (2007). It would be illogical to conclude that Protestants may rebut the presumption of compliance, but the Basic Services Map controls the outcome of a development plan hearing. If the Basic Services Map was dispositive, a public hearing on these issues would serve no purpose other than quasi-judicial theater.

Rather than simply deferring to the Map, Protestants presented their contradictory evidence about the condition on the relevant segments of the sewer system. The ALJ properly weighed the conflicting evidence and found that not only did the Protestants' evidence rebut any presumption, but that evidence persuaded him that the sewer system in the relevant area cannot handle the expected additional demand on the system. The conclusion aligns with the development policies and enumerated purposes for the development regulations, properly at issue for the ALJ's consideration. The ALJ did not usurp the County Council in reaching his findings and conclusions. As such, the ALJ neither exceeded his statutory authority, nor the jurisdiction of the office, in this matter.

B. The ALJ Did Not Commit Any Error of Law

Petitioner, in anticipation of the Board finding the ALJ operated within his statutory authority, suggests, in the alternative, that the ALJ's disapproval constitutes an error of law. Under Maryland law, "[g]enerally, a decision of an administrative agency, including a local zoning board, is owed no deference when its conclusions are based upon an error of law." People's Counsel for Balt. County v. Loyola College in Md., 406 Md. 54, 68; 956 A.2d 166, 174 (2008), citing, Belvoir Farms Homeowners Ass'n, Inc. v. North, 355 Md. 259, 267-68; 734 A.2d 227, 232 (1999). However, a reviewing court affords some deference to an administrative law judge's interpretation of a statute administered by a relevant agency. See, Motor Vehicle Admin. v. Gonce, 446 Md. 100, 109-110; 130 A.3d 436, 442 (2016) (citations omitted).

Petitioner claims the ALJ erred when he denied the Plan, rather than placing conditions upon approval of the Plan. Petitioner also claims the ALJ erred by making no findings that the Plan failed to comply with County standards or in application of standards in reaching the conclusion that the Jones Falls Sewer Shed is "woefully inadequate."

In furtherance of Petitioner's argument regarding the possible imposition of conditions, Petitioner relies upon the Adequate Public Facilities ordinance ("APFO") provision governing sewers, BCC §32-6-106, as instructive on the proper outcome. Section 32-6-106 prohibits the issuance of a building permit for non-compliance. Consequently, Petitioner states that the Plan should be approved with a condition that no building permit be issued until the sewer-shed deficiencies are remedied.

Certainly, the ALJ is neither compelled to approve the Plan in the face of evidence that it fails to comply with development laws, regulations, policies, or rules, nor is the ALJ compelled to impose conditions in lieu of denying approval. To the contrary, the Code mandates the ALJ's

decision in only one set of circumstances: where the ALJ finds the development plan complies with development laws, regulations, policies and/or rules. BCC §32-4-229(b)(1). The ALJ did not find that the Plan so complied, *ergo*, the ALJ had the discretion to deny approval. Similarly, the Code confines the ALJ's discretion when imposing conditions, requiring that the conditions be tethered to certain evidence and in furtherance of certain goals. BCC §32-4-229(d). On the other hand, the APFO neither identifies circumstances requiring approval of a development plan, nor does it mandate approval with conditions.[3]

In the section regarding the APFO legislative intent, the County Council stated its intent was to supersede and abrogate the rights to development which otherwise would accrue from the zoning or development regulations or other county laws. BCC §32-6-102. Its stated legislative purpose is to provide a predictable planning environment for the provision of adequate infrastructure, roads, public school facilities, and recreational space by requiring projects, such as this one, to pass certain tests as a condition of development approval. Id.

With the denial of a development plan, there are no development rights in connection with the disapproved plan. The APFO also does not establish a right to develop in accordance with a proposed plan. The ALJ may refer to and consider the APFO provisions in reaching a decision and may be satisfied that whatever concerns can and will be addressed prior to final approval at the end of the development plan process, but there is nothing in the APFO that requires the ALJ to make such a finding. Clearly, the ALJ did not conclude that the concerns raised would be addressed

[3] Notably, as will be identified later, the APFO authorizes, but does not mandate, the ALJ to conditionally approve of a development plan when it is determined that the development plan does not meet the requirements of the overcrowded schools provision (§32-6-103), but all other parts of the development plan comply with all other laws or regulations. BCC §32-6-109. Conversely, the APFO does not have an express provision authorizing conditional approval when a development plan does not meet the requirements for the sewer system if all other parts of the plan comply.

by final approval. Even if the Board were to agree with Petitioner that approval can be contingent or conditional, the Code establishes that the decision to impose conditions is within the province of the ALJ and the decision to do so is discretionary, bound in this context only by the requirements of BCC §32-4-229(c).

Petitioner argues that the ALJ offered contrary statements when discussing failing traffic sheds versus the outcome arising from the finding of a failing sewer shed. In discussing the same, the ALJ was illustrating that the Basic Services Map is not dispositive. The traffic shed statements and sewer shed findings are not inconsistent. To the contrary, the ALJ employs them harmoniously with respect to the resolution of the Basic Services Map question.

Petitioner's second alleged error of law concerns whether there are findings that the Plan failed to comply with County standards. As set forth by Petitioner, the ALJ is to review the Plan to ensure it satisfies the "General Design Standards and Requirements." Petitioner wishes to focus on the word *proposed* contained in §32-4-410(b) ("*proposed* public or private sewage facilities shall be designed and located to function safely and without danger of contaminating groundwater, surface water, or public or private water supplies" (emphasis added)) to distinguish the proposed facilities from the existing. Petitioner contends the ALJ erred by focusing on "the existing public sewer system as a whole."

First, leaving aside whether the ALJ is authorized to consider the sewer system as a whole, the ALJ did not base the decision on the sewer system as a whole. The ALJ only considered the segments of the sewer system that are adjacent and to which the proposed development will add flow. In other words, the ALJ appropriately evaluated the impact of the additional flow on the portions of the existing system that will be directly affected by the proposed Plan. There is no error in doing so.

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Pursuant to §32-4-410(b), the connection to the existing system must be designed and located to function safely without danger of contaminating groundwater, etc. Judge Beverungen found that additional flow to an already overburdened sewer system results in a system that cannot function safely. The ALJ interpreted the law, correctly, to consider more than the simple, mechanical attachment of pipe and layout emanating from the Property to the existing system to evaluate the impact upon the functioning of the existing system and the risk of contamination as a result of that connection. In fact, focusing only on the proposed addition without consideration of the impact on the system, as urged by Petitioner, would constitute an error of law.

Moreover, to focus solely on the point of origin in this context is nonsensical. Good engineering can design a flawless physical connection and layout with no apparent danger of contamination at the connection point or onsite. From a development perspective, however, if the consequence of the connection causes increased flow into a severely overburdened system, as found here, the risk of failure and contamination offsite also increases. See, Annapolis Market Place, LLC v. Parker, 369 Md. 689, 715; 802 A.2d 1029, 1044 (2002) (A statute should be "given a reasonable interpretation, not one that is illogical or incompatible with common sense."). As such, the ALJ's interpretation is squarely and appropriately within the ambit of BCC §32-4-410(b) and is fully consistent with the development policies and purposes set forth in §32-4-102 and §32-4-103.

For Petitioner's third alleged error of law, Petitioner contends the ALJ did not apply the proper and applicable standards to determine the Jones Falls sewer shed is woefully inadequate. More specifically, Petitioner complains the ALJ failed to identify an enacted standard or requirement to justify the denial. To the contrary, as set forth in the Opinion, the ALJ considered

the overcapacity ranges and compared them to County's Sewer Design Manual, which sets forth "trunk and interceptor sewers shall not be designed to flow at depths exceeding 90%."

The ALJ, however, did not limit his consideration to only the Design Manual. Judge Beverungen also relied upon the Consent Decree and the RK&K studies and reports, as well as the testimony of Mr. Grachek to conclude the interceptors serving the subject property "are severely over capacity." To the extent Petitioner argues that it was improper to consider the Consent Decree and other such evidence, the Board rejects that argument. The evidence was relevant to and probative of matters at issue. Again, Petitioner points to the Basic Services Map, but as noted above, the Board concludes that the Basic Services Map is not dispositive. This argument is easily dismissed. As such, there is no error of law.

C. The ALJ Opinion Is Not Arbitrary or Capricious

Next, Petitioner contends that the ALJ decision is arbitrary and capricious, claiming a lack of consistency with prior decisions as it used a "Consent Decree and a Report from more than [seven] years ago." Petitioner further raises the issue of consistency with prior decisions in furtherance of a constitutional right of due process. More specifically, Petitioner states no ALJ (or Zoning Commissioner) has ever endeavored to impose a building moratorium or denied a plan based upon a conclusion that County-wide infrastructure was failing. Petitioner further faults the ALJ for relying upon the Consent Decree and the related reports that are more than seven years old to support the ALJ's analysis.

The Court of Appeals, in Harvey v. Marshall, examined at length the nature of the arbitrary or capricious standard in an administrative or agency decision-making context. 389 Md. 243, 295-303; 884 A.2d 1171, 1203-1208 (2005). In its review of case law, the Harvey Court noted that the standard as expressed in case law "less than well-defined with respect to judicial review of

discretionary actions." Id., at 297; 884 A.2d at 1203. The Court concluded that the standard "is best understood as a reasonableness standard." Id. A decision is arbitrary and capricious if it is "made impulsively, at random, or according to individual preference rather than motivated by a relevant or applicable set of norms." Id., at 299. In Maryland Transportation Authority v. King, 369 Md. 274; 799 A.2d 1246 (2002), the Court of Appeals provided an explanation of the standard:

> As long as an administrative sanction or decision does not exceed the agency's authority, is not unlawful, and is supported by competent, material and substantial evidence, there can be no judicial reversal or modification of the decision based on disproportionality or abuse of discretion unless, under the facts of a particular case, the disproportionality or abuse of discretion was so extreme and egregious that the reviewing court can properly deem the decision to be "arbitrary or capricious."

369 Md. at 291. The Harvey Court also stated that an administrative decision may fail for being arbitrary or capricious if it ignores the expressly stated policy goals. Harvey, 389 Md. at 294; 884 A.2d at 1202.

The Board does not find the ALJ decision arbitrary and capricious. The decision reflects the impact of Protestants' evidence regarding the sewer system upon Judge Beverungen, so much so he referred to the testimony by Mr. Grachek as "sobering." While parts of that evidence may be seven years old, other parts are more recent (e.g. the E.coli samples from June 2016-June 2019). Moreover, during the testimony from Mr. Grachek, it was revealed that the cost to repair the Jones Falls sewer shed was in excess of $28 million. Nothing in the record established that the specific relief sewers and interceptor repairs relevant to the Property had been made. More to the point, the ALJ was not persuaded that the sewer system could safely accommodate the addition of even more sewage to the overburdened sewer system. The ALJ Opinion reflects the magnitude of the matter and the ALJ's careful consideration of the evidence.

As such, Judge Beverungen concluded that the Plan was not in compliance with the development regulations and policies, as well as other laws. Therefore, the ALJ could not approve

the Plan. BCC §32-4-229. Moreover, the ALJ decision rests upon a foundational purpose for development, zoning, and other land use laws and controls --- protection of public health, safety and welfare --- an unquestionably legitimate and primary matter of governmental interest and public concern.

To that end, the decision reached is in accord with the County development policies and purposes embodied in BCC §§ 32-4-102, 32-4-103. Section 32-4-102 establishes that the development regulations are intended to protect and promote public health, safety, and welfare and to ensure that public facilities, services, and amenities are provided. The County, in adopting the development regulations, identified numerous purposes, including: to protect and provide for the public health, safety, and general welfare of the county; and to provide adequate and efficient transportation, water, sewerage, drainage, schools, parks, street lights and sidewalks, open space tracts, playgrounds, and other recreation facilities and other public requirements and facilities. BCC §32-4-103. The regulations apply to the process of review for approval of all development (BCC §32-4-104(a)) and, as such, apply to the ALJ hearing.

So, contrary to Petitioner's argument, the ALJ decision fully aligns and harmonizes with the County's development policies, legislative intent, and scope of the development regulations. Furthermore, Protestants presented substantial evidence that contradicted the County agencies' positions and that evidence is more than sufficient to support the decision below. This case stands in stark contrast to Elm Street case, where no contradictory evidence was presented. 172 Md.App. at 703-705; 917 A.2d at 174-175. The decision cannot be considered unmoored to the law or facts of the case. The Board concludes that the findings and conclusions reached were reasonable and rational. There was nothing egregious or extreme. There is no basis to find that the ALJ decision was arbitrary or capricious.

D. The Moratorium Argument

Though not a specifically identified error, Petitioner repeatedly asserts the ALJ's finding the sewer shed deficient or "woefully inadequate" constitutes a building moratorium in Baltimore County. At the hearing, the Board expressed reservations as to the possible consequence of the ALJ's finding. By the conclusion of the deliberation, the Board felt comfortable that the impact of the ALJ decision did not present such wide-ranging consequences, but if unintended consequences result in a *de facto* "moratorium," the County Council would need to address it at that time. To be clear, the Board does not consider the ALJ Opinion to be a "moratorium."

First, particular to the Property, there is no preclusive effect from the denial of approval of the Plan at this time if there is a substantial or material change in fact or circumstances. See, e.g. Seminary Galleria, LLC v. Dulaney Valley Improvement Ass'n, 192 Md. App. 719, 738; 995 A.2d 1068, 1079 (2010). Though the Seminary Galleria case concerned zoning matters, the same principle applies in the development context.

Second, also particular to the Property, Petitioner still has the ability to redevelop the site in recognition of the sewer interceptor issues, even if not in the intense manner proposed at this time. Petitioner can also continue with the status quo, thus preserving the present economic benefits Petitioner derives from the Property which are not affected in any way by the ALJ decision, with redevelopment still a possibility.

As to a more widespread "moratorium," the Board is similarly not convinced that this is a realistic consequence of the ALJ Opinion. The cases rise and fall upon their own merits. The disapproval of this Plan is not solely tethered to the existence of the overburdened sewer system independent of other facts. Rather, the evidence presented below persuaded the ALJ that the existing system that would be directly affected could not safely accommodate the increased flow

attributable to the Plan's proposed uses. The Board fails to see how disapproval of this Plan, at this location, in these circumstances, at this time, would compel or result in disapproval of other development plans in different locations with different circumstances.

The Board does not interpret the ALJ Opinion as imposing a "building moratorium" in the County, in the Second District, or any part of either, including the subject Property. Further, this Opinion should not be interpreted in that manner. Here, the Board is required to determine the legality of the decision and whether there was substantial evidence from the record as a whole to support the decision. Annapolis Market Place, LLC, 369 Md. at 703-704; 80 A.2d at 1038. The Board has found no legal issue and has found sufficient supporting evidence for the ALJ decision on the sewer issue. For the foregoing reasons, the Board is not persuaded there will be a "moratorium."

E. Other Issues Raised on Appeal by Protestants

The Board's affirming of the ALJ's decision below regarding the sewer issue and outcome renders some issues moot and/or otherwise do not require any other action at this time.[4] Several issues raised by either Petitioner or Protestants would not be dispositive of this matter. Those issues only become significant in the event there is approval of the Plan and/or the sewer system is found to meet all requirements under the law.

More specifically, two matters concerned conditions identified by the ALJ in the event there would be approval: (1) access to/from Falls Road for Princeton Sports; and (2) a forest buffer setback variance specific to the proposed residential use of Building F. As such issues require

[4] One Board member found an error of law and other defects in the ALJ Opinion with respect to the APFO's school overcrowding provision. The other two Board members do not join as they find the matter moot, requiring no further discussion by the Board at this time. Those issues are addressed in the attached Concurring/Dissenting opinion.

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approval before they have any significance, there is no need to address either, unless and until there is approval.

Similarly, while the ALJ made findings on the overcrowded schools issue, the decision does not require review at this time because, even if reversed, BCC §32-6-109(b) permits conditional approval of a development plan that fails to conform to the requirements on overcrowded schools, but still manages to meet all other requirements under the law. As such, only until the sewer system is found to meet all requirements under the law, would there be a need to address the disposition on the overcrowded schools issue. With the affirming of the decision below regarding the sewers, the issue, again, is moot at the present time.

Nevertheless, other issues can be disposed of along with the sewer issue as they are ones that do not first require approval of the Plan or findings that the relevant segments of the sewer system comply with the requirements under law.[5] In fact, the parties placed a greater emphasis on some of the remaining issues, including the master plan and open space, and to a lesser degree, the outfall, parking, and traffic issues.

1. Master Plan and Community Plan

Under the County Code, all development of land shall conform to: (1) the Master Plan; (2) adopted community plans; and (3) Article 32, Title 4 of the Code. BCC §32-4-102(a). The Court of Appeals confirmed the binding nature of the Master Plan upon development in Baltimore County. HNS Dev. v. People's Counsel, 425 Md. 436; 42 A.3d 12 (2012) The record establishes that the 2010 Ruxton-Riderwood-Lake Roland Community Plan (RRLRCP) was adopted by the

[5] The second set of Protestants also raise the issue of the lack of a plan to address or contain disruption of the possible chrysotile asbestos that may or may not be present in the onsite serpentine rocks. The ALJ did not address this issue in his opinion and its absence causes the Board to conclude it was not only not dispositive to the ALJ, but also not material to the ALJ for the decision below. If such a risk exists, it is expected to be handled in accordance with federal and state laws that regulate the same. The Board finds no error.

County Council in 2011 and therefore, this Plan must not only conform with the Master Plan, but also the RRLRCP.

Protestants argue the community plan calls for low-scale, two-to-three-story buildings on the east and west sides of Falls Road. The RRLRCP identifies commercial uses along Falls Road as ones intended to complement use of the adjacent Lake Roland Park. The RRLRCP recommends County acquisition of several parts of the Property and other parcels so that such land can be dedicated as open space. For other parcels, the community plan recommends exploring easements for expansion of Lake Roland Park and a route connecting the Park to the NCR Trail, as well as easements to protect paths within the Park. The community plan further encourages "a mix of uses throughout the Bare Hills Village area by facilitating redevelopment through the use of PUD, Transect and Renaissance redevelopment processes," and exploring other avenues, in order "to become a more community-oriented retail, office, and residential 'village.'"

Protestants' expert witness, Al Barry, a certified planner and the drafter of the RRLRCP, opined that the Plan was inconsistent with the community plan due to its density, lack of open space, lack of clear and safe pedestrian access, and scale of the proposed buildings (six stories, rather than village-style, two-to-three story buildings contemplated). Mr. Barry's testimony highlighted the importance of the RRLRCP's focus on connectivity to Lake Roland Park, and the attempt to make the park more visible and a more prioritized feature of the area. The ALJ noted Mr. Barry's testimony, and found him to be "impressive and articulate."

In rebuttal, Petitioner called a land planning expert, Christopher Jakubiak, who relayed the significance of the Property's and area's zoning classification, including the change to BM-CCC, its location in a T-5 transect zone, and that it is part of a Community Conservation Area and Community Enhancement Area. From the zoning designations and land management designations,

Mr. Jakubiak concluded that the County Council intended for higher-density mixed uses. Mr. Jakubiak also addressed other factors that contributed to his conclusion that the Plan conforms to the Master Plan, including its location within a priority funding area and proximity to the Falls Road light rail station, as well as concluding that the Plan advances the concepts of sustainable urban planning and smart growth. The ALJ found Mr. Jakubiak "credible and persuasive." In addition, Mr. Jakubiak agreed with Mr. Barry in that a major feature of the RRLCRP was the connectivity to the park, which was accounted for in the Plan.

The ALJ concluded the project conforms to the Master Plan 2020 and distinguished Mr. Barry's testimony about the RRLRCP. The ALJ found that Mr. Barry's testimony focused "almost exclusively upon the community plan," without considering the effect of the Master Plan 2020 or the Property's zoning and transect classifications. The ALJ found that focusing upon the community plan without meaningful consideration of the Master Plan 2020 was akin to the "tail [wagging] the dog." As such, the ALJ found Mr. Jakubiak's testimony more persuasive than Mr. Barry's. There is no error in reaching that conclusion.

The error, as identified by Protestants, arises from the ALJ's conclusion that the Master Plan 2020 "is the primary document recognized and required by state law." To begin with, the Master Plan includes all community plans adopted by the County Council. See, e.g, Appendix B to the Master Plan 2020.[6] The Master Plan provides that the community plans "address goals and provide guidance in a responsive and detailed fashion that augments the broader goals." (Master Plan 2020, at p. 178).

[6] Appendix B notes that the RRLRCP was adopted in 2002, though Protestants' Exhibit No. 24 identifies February 22, 2011. There does not appear to be any dispute that Protestants' Exhibit No. 24 is the community plan and was properly adopted, even if not identified accurately in Appendix B to the Master Plan 2020.

Protestants assert that "the timing of the adoption of the Community Plan is important," noting its adoption occurred after the adoption of the Master Plan 2020. While Protestants cast their argument as the RRLRCP as more specific (and timely) than the Master Plan 2020, Protestants do not acknowledge that, at the time of the adoption of the RRLRCP, the Bare Hills community was already designated within a T-5 transect zone as identified in the Master Plan 2020. The RRLRCP also identifies the use of the transect zone designation as a tool that can be used for the Bare Hills community to become "a more community-oriented retail, office and residential 'village'." The Plan evidences conformity with the RRLRCP in its inclusion of several low-scale mixed-use buildings along or close to Falls Road, with the taller buildings (six stories) being located away from Falls Road. The ALJ Opinion reflects that Judge Beverungen found that the Plan provided additional connectivity with Lake Roland Park in furtherance of the RRLRCP, even if not in all facets recommended in the RRLRCP at this time.

In light of the above, the evidentiary record supports the conclusion that the Plan conforms to the Master Plan and the community plan.

2. Open Space

As noted by the ALJ, §32-6-108, which concerns the APFO provision on open space, is "not frequently litigated in development cases," with waiver fees "routinely approved without any consideration of whether it would be feasible to provide the open space in the first instance."

As constructed, the law provides a scheme to make sure that recreational space is provided as part of a development plan approval. BCC §32-6-102; §32-6-108. The provision identifies a baseline "minimum requirement" of 1,000 square feet of open space per residential dwelling unit, which such open space being provided on or off site. §§32-6-108(c), (e)(1). That minimum, however, can be adjusted based on use and other variables. If the proposed open space is to be

located off-site, the regulation establishes a preference for the open space to at least be within the same councilmanic district as the proposed development, but provides that if located outside of that district, approval is required from the councilperson in which the development is to occur. §32-6-108(e)(3)(i). Under subsection (f), a developer shall submit a fee-in-lieu proposal and pay a fee to the County in the event it is determined that meeting the open space requirement is not feasible. The fee is to be used within the same councilmanic district. §32-6-108(f)(2).

It should be noted that after the hearing below but before the hearing at the Board, the Open Space law was amended by Bill No. 37-19. One change concerned the effect of this Property's location within the CCC District, with the version in place at the time of the hearing requiring satisfaction of the open space requirements identified in the Baltimore County Zoning Regulations, specifically, §235A.4 and providing a reduction of the open space requirement calculated from application of the BCZR from the open space requirement under the APFO. Bill No. 37-19, was enacted and went into effect on September 16, 2019. No party appears to contend that the present-day regulation, which changed the law by removing the provision concerning CCC Districts, applies to the calculation required in this case.

Petitioner states that "amenity open space" and "open space" are not the same thing. "Amenity open space" refers to the requirement arising from the BCZR, defined as "the available open space on a lot minus the area used for vehicular traffic, maneuvering and parking." BCZR §101.1. The terms "amenity" and "open space" as defined in the APFO, when considered together, are defined differently in the APFO versus the definition in the zoning regulations. As relevant, under the APFO provision, an "amenity" means a feature, equipment, facility, installation, or structure that contributes to the enjoyment of area residents and visitors, with outdoor and indoor examples set forth. §32-6-108(a)(2). "Open space" means a parcel or parcels of land that is a

minimum average of 75 feet wide or has an average grade of no more than 15 percent (followed by an exception, not relevant here, applicable in the greater Towson area). §32-6-108(a)(5).

Petitioner's open space analysis was identified on its amended Open Space Exhibit:

1) For the amenity open space required by BCZR §235A.4 (required minimum ratio of 0.20), the amenity open space ratio provided is 78,374 sf, divided by 321,010 sf (adjusted gross floor area), resulting in a ratio of 0.24.

2) For the open space (OS) required under the APFO:

a) Total Residential Development Units --- 152

b) Total OS required, 1,000 sf/unit --- 152,000/3.49 ac.

c) Total OS provided --- 78,734 sf/1.88 ac.

d) Total OS balance --- 73,626 sf/1.60 ac

The applicable fee schedule provides $5.05/sf to calculate the fee for this project and thus, 73,626 multiplied by 5.05, provides the fee cost:

e) Fee Cost --- $371,811.30

Pursuant to §32-6-108(i)(2)(iii), a developer is entitled to a reduction by 100 percent of the verified cost of any outdoor public amenity provided onsite or offsite and 60 percent of the verified cost of any outdoor private amenity provided onsite or offsite, but not any indoor amenity.

3) Deductions:

a) Pool and associated amenities --- $186,000

b) Outdoor recreation (pickleball court) --- $39,750

c) Park signage, benches, trash cans, etc. --- $19,200

d) Walking trails, 800 lf @ 20 lf --- $260,550

e) Offsite outdoor public amenities at Lake Roland Park --- $92,389.45

According to Petitioner, the total onsite private amenities amount to $434,250.00. A 60 percent reduction, pursuant to §32-6-108(i)(2)(iii), is applied to the open space balance, resulting in a new balance of $111,261.30. Outdoor offsite public amenities, consisting of trail maintenance and improvements, a "Roger Latham Serpentine study implementation," and compactor/roller equipment, amounts to $111,500.00, leaving a negative balance of $238.70. As a result, Petitioner determined that no waiver/fee-in-lieu is required. A fee-in-lieu would result if a positive balance remained, but before that payment is required to be paid over to the County, according to Petitioner, a determination is made as to the feasibility to comply with the open space requirements.

Here, the ALJ concluded Petitioner disregarded the question of feasibility and proceeded instead to the fee and offset analysis. Nevertheless, the ALJ then found it is not feasible for Petitioner to provide the requisite open space on or off site. Protestants agree with the ALJ as to when a feasibility determination is made, but challenge the outcome reached below as to feasibility question in this context.

The Board concludes the ALJ's approach as to when a feasibility determination is required, particularly, as testified to by Barbara Hopkins, the Executive Director of NeighborSpace, is the correct one. Ms. Hopkins explained, first, she has substantial experience and familiarity with the open space requirements as NeighborSpace receives 20 percent of any cash fee collected by the County. §32-6-108(f)(3), as well as making recommendations to the County Council on prior revisions to the open space law. She was received as an expert in the open space law and requirements in Baltimore County.

Substantively, Ms. Hopkins established that, under the open space law, a developer must demonstrate that it cannot comply with the open space requirements onsite and that it cannot

comply with the open space requirements offsite before the question of the payment of a fee-in-lieu arises. As such, the Board concludes that the ALJ's interpretation of the open space law correct and the finding is adequately supported by sufficient evidence.

With respect to the second part, Judge Beverungen concluded it was not feasible for Developer to provide the requisite open space on or off site. The ALJ stated, while it was true the project could be scaled back in order to comply, scaling back a project, as a standard, would prevent a developer from proving a lack of feasibility to provide open space. The consequence of doing so would render "many" projects no longer economically feasible to a developer.

The Board is not required to fully agree with the reasoning employed. The Board is required to analyze the record to determine whether sufficient evidence exists regarding the ALJ's finding of lack of feasibility to provide open space on and off site. The record establishes Petitioner's engineer, Joshua Sharon, identified constraints caused by stormwater management, parking travel ways, utilities and landscaping as the items that preclude the provision of 73,000 square feet of open space onsite. Judge Beverungen also concluded that the Property's neighborhood and Council District "is established and built out," rendering the provision of off-site open space unfeasible. The ALJ also factored in the Property's proximity to Lake Roland Park, stating "it would be superfluous for Developer to provide on-site a small open space parcel next to such an expansive resource." The Board majority again believes this to be a matter for resolution by the ALJ and is supported by the evidence and findings.[7]

As to when a verified cost is required in the development process, the Board concludes that ALJ's statutory interpretation, supported by the testimony of County landscape architect, James Hermann, is correct. Section 32-6-108(e)(2) specifically calls for a cost estimate as part of the

[7] One Board member dissents on a part of the feasibility analysis.

development plan submission: " the applicant shall provide a design, layout, and if paying a fee, the applicable *cost estimate* for the amenity with the development plan submission." (emphasis added). There is no error on this point.

3. Remaining Issues: Outfall, Parking, and Traffic.

As noted above, the parties focused their efforts on appeal, both, at the hearing and in closing memoranda, on the sewer, master plan, and open space issues. Other issues, such as stormwater outfall, parking, and traffic study deficiencies were raised.

For the outfall issues, Protestants argued the Developer did not have approval and a franchise ordinance from Baltimore City to permit the discharge of stormwater onto city property.

Pursuant to BCC §32-4-224(10), a development plan is required to contain: stormwater management areas supported by preliminary hydrology computations, and proposed and existing storm drainage systems and verification of suitable outfall. Protestants seize upon the phrase "verification of suitable outfall," noting the absence of formal approval by the city and approval of a conceptual plan by DEPS is not tantamount to approving the suitability of the outfall. The ALJ concluded that the suitability of the outfall as identified on a plan is an engineering matter and not one of licensing or a franchise agreement, referencing BCC §§ 32-4-224(a), 33-4-108(b); and COMAR 16.17.02.09.D.

Much like the open space issue above, the ALJ applied a common sense analysis, as opposed to a rigid, technical reading of language, which is permissible. Annapolis Market Place, 369 Md. at 715; 802 A.2d at 1044-1045 (citations omitted). In addition, the ALJ is afforded deference in the interpretation and application of a law addressed by the ALJ. See, e.g. Elm Street, 172 Md.App. at 701; 917 A.2d at 172-173 (citations omitted).

The ALJ recognized that the surface water has been discharging on to city property for many years and the Plan continued that practice, albeit with a modern and properly designed outfall. Due to the history, the need to secure the legal right prior to any building permit, and approval of the conceptual plan by DEPS, the ALJ found Petitioner satisfied this requirement. The Board finds no error in interpretation or application of the law, and further finds the factual record is sufficient to sustain the conclusion reached below.

Next, Protestants take issue with the parking to be provided. The Plan calls for 584 spaces to be provided, three more than the 581 calculated as required under BCZR §409.6. The problem, according to Protestants, is that parking spaces will also be used by those accessing the Park from the parking lot. Without spots dedicated to public use, there is the risk of conflict between those spaces needed to serve the project uses and those that may avail themselves of open parking for Lake Roland Park, potentially creating a shortage. As such, Protestants contend Petitioner failed to satisfy its burden that the Plan complies with all applicable policies, rules, and regulations.

Judge Beverungen noted that BCZR §409.6 does not require any specific number of off-street parking spaces for the public park, a point acknowledged by Protestants. Developer entered into a covenant agreement with another nearby association, Riderwood Lake Roland Area Improvement Association, to open the parking onsite for public use associated with Lake Roland Park. Nothing in that agreement compels Petitioner to provide a dedicated number of spaces and the County is not party to that agreement. Petitioner provided a sufficient number of spaces as required by BCZR §409.6.The Board concludes that the ALJ's findings are without error.

Protestants also challenge the traffic findings. At the hearing, testimony was presented regarding traffic backups in the area, attributed to spillover and/or relief from I-83 backups and traffic to and from the private schools in the area. Falls Road is a state road. State Highway

Administration (SHA) required the completion of a traffic impact study of certain nearby intersections. Protestants take issue with the intersections selected, but, as noted by the ALJ, were specified for the study by SHA, not Petitioner. The study indicated the intersections would function at the same level following completion of the project. As such, the ALJ concluded that approval by SHA and the County agencies was sufficient at this stage for Petitioner to meet its burden and was not persuaded by the arguments from Protestants. Again, the Board finds no error.

IV. Motion for Additional Evidence

Petitioner filed a Motion for Additional Evidence and Testimony with the Board in advance of the argument on appeal. In response, Protestants filed a Motion to Strike the Motion for Additional Evidence and Testimony and/or an opposition thereto otherwise. After a hearing on the Motions, the Board unanimously denied the Motion to Strike in general, but a majority of the Board granted the Motion to Strike solely as to the affidavits attached to Petitioner's Motion. Clearly, for the Board to understand the nature of the Motion for Additional Evidence and testimony and to give consideration, the Board needed a proffer of what the evidence would be.

As for the Motion for Additional Evidence and Testimony, the Board concluded additional evidence was unnecessary as the some of the information proffered was already part of the record, particularly the County's comments on the sewer system and their recommended approval. Whether the County is presently compliant with the Consent Decree fails to address the ALJ's findings, reasoning or conclusions. The Consent Decree is in place through 2025. The interceptors or trunks relevant to this Plan can still be deficient though the County is compliant. The June 2016-June 2019 evidence regarding levels of E.coli bacteria reveal that, at times, the E.coli bacteria exceeds the threshold and at other times is under the standard. The Board also concluded that Petitioner had the opportunity to present this additional evidence on the sewer system in rebuttal,

but did not do so. Frankly, the Board highly doubts it would have made a difference if Petitioner did present the proposed evidence below.

The ALJ stated in his Opinion, "[t]he Developer did not contradict any of the *substantial evidence* presented on this point by Protestants and did not present testimony from an engineer or sanitarian" to show the sufficiency of the sewer system at present to accommodate existing and proposed demand. (emphasis added). The Opinion is quite clear as to the profound effect of Mr. Grachek's testimony, the reports from RK&K, and other documentary evidence upon the ALJ. The ALJ found the evidence, not only credible, but "sobering." The ALJ did so even after hearing the relevant County agency's recommendation to approve the Plan.

The Board neither found the ALJ's determination to constitute extraordinary circumstances, nor heard some other compelling reason to justify the exercise of the Board's discretion to receive the proposed additional evidence. See, BCC §32-4-281(d)(2) ("At the Board's discretion, additional evidence and testimony may be allowed."). As the Board found no reason to exercise the Board's discretion in this manner and deviate from the norm, the Board denied Petitioner's Motion for Additional Evidence and Testimony.

ORDER

THEREFORE, ON THIS 3rd day of January, 2020, by the Board of Appeals of Baltimore County, it is hereby:

ORDERED that the Administrative Law Judge's Development Plan Opinion and Order are hereby **AFFIRMED**, as to the sewer system, master plan, suitable outfall, parking, and traffic, and it is further,

ORDERED that the issues regarding overcrowded schools, forest buffer, and the condition imposed in favor of Princeton Sports, are hereby now **MOOT**.

Any petition for judicial review from this decision must be made in accordance with Rule 7-201 through Rule 7-210 of the *Maryland Rules*.

BOARD OF APPEALS
OF BALTIMORE COUNTY

Jason S. Garber, Chair

Kendra Randall Jolivet

Andrew M. Belt

IN THE MATTER OF	*	BEFORE THE
CPC FALLS ROAD, LLC (CPC FALLS ROAD PROJECT/BLUESTEM) 6241-6247 Falls Road HOH Case No. 09-0861 9th Election District 2nd Councilmanic District	*	BOARD OF APPEALS
	*	OF
	*	BALTIMORE COUNTY
	*	CASE NO: CBA-20-006

* * * * * * * * * * * * *

CONCURRING & DISSENTING OPINION

The undersigned writes separately to address two issues: (1) overcrowded schools; and (2) open space, particularly with respect to the off-site feasibility analysis and conclusion.

First, the undersigned dissents with the majority opinion to the extent that the majority opinion fails to address two errors regarding the overcrowded schools issue. Though the undersigned dissents on that basis, the undersigned, nevertheless, concurs in the result. There would be little need to address this issue at this time; however, given the similarity with the sewer issues, and what strikes the undersigned as a starkly plain error of law and a decision without substantial evidence in support, the undersigned feels compelled to identify those issues at this time.

The school system, much like the affected sewer system, has a significant overcrowding and lack of capacity issue. Much like the significantly overburdened segments of the sewer pipes, the undisputed evidence in this case established that Towson High School, the high school which students from the proposed project would be districted, is already significantly overcrowded without factoring in any additional students. As defined by law, if a school is 15% or more over its state-rated capacity (i.e: 115% capacity), it is considered to be "overcrowded" under the APFO. See BCC §32-6-103(a)(3).

Baltimore County Public School System issues an annual report on its schools' enrollment, capacity, utilization, and projections. The February 2019 Student Count report (Protestants Ex. 20) and related 2018-2019 APFO Report and Maps, dated May 9, 2019, (Protestants Ex. 22), both of which reveal Towson High School enrollment at 129.29% of its state-rated capacity. Remarkably, its present status of being 29.29% overcapacity is the least overcrowded Towson High School families can expect over the next ten years.[1] Each year, the student enrollment is projected to increase significantly, revealing that in five-years time, Towson High School is projected to be at 151% capacity, and in ten-years time, at 161% capacity. Towson High School certainly surpassed the overcrowded standard and frankly, has ventured or at least is projected to venture into dangerous territory.

Unquestionably, a school that exceeds 115% capacity presents numerous issues, some identified and others logically inferred, including scheduling, class availability, student/teacher ratios, staffing matters, and other problems. More to the point for this analysis, a school that exceeds 115% capacity presents safety issues, whether experienced in overcrowded common areas and hallway spaces, overcrowded bathrooms, overcrowded classrooms, overcrowded transportation, and/or as otherwise attendant to the use and proliferation of trailers (euphemistically referred to as "learning cottages" or "portable classrooms") on school grounds.

[1] County Exhibit 1 "School Impact Analysis", prepared by Jennifer Nugent, Chief of Development for the Department of Planning, identified Towson High School's enrollment as 123.25%. The filing date is identified as September 7, 2018. As such, it is understood that the numbers used reflect the prior year's (2016-2017) numbers, as it would not have captured the September 30 enrollment numbers as contemplated by §32-6-103(c) and other laws. A revised school analysis was submitted reflecting numbers from 2017-2018. Protestants introduced other exhibits establishing more up to date statistics from Baltimore County Public Schools revealing the overcrowding issue at Towson High School was worse and projected to be significantly worse than identified in the earlier exhibits. Similarly, the elementary school to which students from this project would be districted, West Towson Elementary, is also overcrowded (121%). The initial County exhibit did not identify it as such as the exhibit and testimony also relied on the prior year's numbers. The discussion concerning Towson High School is equally applicable to West Towson Elementary School in light of its status as an overcrowded school, even if the magnitude of the overcrowding at Towson High School is even more significant.

As set forth in the APFO provision on overcrowded school districts, development approval may not be granted in existing overcrowded schools or where development will result in creating an overcrowded school. BCC §32-6-103(e). There is, of course, an exception. Subsection (f) states that development approval may be granted in overcrowded school districts in certain circumstances, including, as relevant here, where an adjacent school has sufficient capacity to render the overcrowded school less than 115% of the state-rated capacity. In short, as long as another school can absorb more students to relieve the overcrowded school, development can proceed.

Jennifer Nugent, Chief of Development in the Department of Planning, provided testimony echoing the County's understanding of that exception. To that end, Ms. Nugent provided testimony and the related School Impact Analysis to reveal that neighboring Riderwood Elementary School and Loch Raven High School had sufficient available capacity.

However, when asked if students are actually redistricted for this purpose, Ms. Nugent testified that she does not know for certain. No evidence was presented revealing any plan was in place or being designed to reduce the existing overcrowding at, e.g., Towson High School, without even factoring in the additional students projected from this project. There is also no actual plan for relief to account for the additional students as well. In dispensing with the issue, the ALJ found the following: "Ms. Nugent testified sufficiently capacity exists at adjacent schools, and *that is all that is required by the cited BCC provision.*" (emphasis added).

The undersigned finds the ALJ's interpretation to be an error of law and finds the conclusion reached not supported by competent, material and substantial evidence in light of the entire record as submitted. The undersigned considers the error of law and findings in light of the evidentiary record such a departure that discussion of the same is still required at this time.

As set forth in Annapolis Market Place, LLC v. Parker, the Court of Appeals rejected similar boilerplate findings and limited evidence without factual support. 369 Md. 689, 718; 802 A.2d 1029, 1048 (2002). In that matter, the Court of Appeals concluded that the Anne Arundel County Board of Appeals erred in a zoning reclassification matter when it concluded that transportation facilities met the statutory requirements because the "accomplishment of the proposed traffic improvements was reasonably probable of fruition," when the Board was required to make a finding that adequate access roads existed or were programmed for construction. Id. The Court noted that findings of fact by an administrative agency "must be meaningful and cannot simply repeat statutory criteria, broad conclusory statements, or boilerplate resolutions." Id. The Court also relied on other cases, with one particularly asserting "It is arbitrary and unlawful for [an administrative agency] to make an essential finding without supporting evidence." Id., quoting Aaron v. City of Balt., 207 Md. 401, 406; 114 A.2d 639, 640 (1954).

The conclusion that "*all that was required*" was a statement that an adjacent school had extra capacity is precisely the type of evidence and finding rejected by the Court of Appeals. In fact, the finding here is even more egregious than that in the Annapolis Market Place case. Nothing in the evidentiary record can provide a foundation to conclude that the available capacity in adjacent schools will be used to solve the severe overcrowding in a substantial way or even to accommodate the extra students from this project to at least consider its impact.

Requiring only confirmation of the existence of those seats, as opposed to requiring utilization of those open seats to solve or at least reduce the overcrowding in the affected school, circumvents the purpose for this law and fails to effectuate the plain language in §32-6-103(e) and §32-6-103(f)(3). The consequence of interpreting the law in manner set forth in the ALJ Opinion simply results in even more school overcrowding without any plan for relief, again, increasing the

risks and problems. In addition, permitting the existence of these issues to linger falls far short of any "adequate public school facilities" standard for planning and development purposes, as well as important considerations for the County and its residents beyond that which must be considered and addressed by the Board.

Much like Mr. Grachek's testimony regarding the sewer system, for an already significantly overburdened system adding "even if just a little bit," is unwarranted, especially with no plan for relief in place or on the horizon. This is too important of an issue, especially in light of significant safety, health and welfare concerns, as well as other legitimate issues, to not address at this time even if the issues becomes moot in light of the Board affirming the ALJ decision with respect to the sewer issue.

Nevertheless, the undersigned concurs in the result because the APFO authorizes, but does not mandate, the ALJ to conditionally approve of a development plan that does not meet the requirements of the overcrowded schools provision (§32-6-103), but all other parts of the development plan comply with all other laws or regulations. BCC §32-6-109. Once conditionally approved, the Plan goes on a waiting list for development and may proceed when the Plan can meet the requirements. BCC §32-6-109(c), (e).

In other words, approval can be conditioned on, e.g., an overcrowding relief plan coming to fruition. As such, a conclusion that that development plan does not comply with the law is not necessarily fatal to this Plan. Because the ALJ found that this Plan does not comply with all other laws or regulations, the ALJ could not conditionally approve of the Plan on this basis. Therefore, the undersigned concludes the Board can safely, and should, address the legal errors on this issue at this time, even if the ultimate outcome cannot be addressed and would be rendered premature in light of the Board affirming the ALJ on the sewer issue.

With respect to the open space issue, the open space law provides that the developer "shall meet the open space requirement on-site or off-site." The ALJ Opinion notes that the Petitioner's expert testified Petitioner wants to take advantage of the Property's proximity to Lake Roland Park rather than provide open space onsite.

The undersigned concurs with the majority as to the ALJ's untangling of the open space law to interpret it as requiring Petitioner, in this instance, to establish the lack of feasibility to provide open space onsite or offsite. Petitioner failed to do so. Nevertheless, though the ALJ found that Petitioner failed to address the lack of feasibility, the ALJ still concluded it was not feasible to provide the open space onsite or offsite.

Leaving aside whether the ALJ's finding regarding the failure to address the feasibility issue and the consequences of that finding, the Board concluded the evidentiary record was still sufficient to substantiate the ALJ's conclusion as to the on-site open space. The undersigned, however, dissents as to the Board's affirming the ALJ's determination regarding the feasibility of providing off-site open space. The ALJ Opinion states that "the neighborhood (and Council District) in which the project is located is established and built out, which in my opinion would not make it feasible to provide the open space off-site."

To the undersigned it seems the ALJ has essentially eliminated the requirement to prove the lack of feasibility to provide open space offsite. Even assuming the neighborhood to be sufficiently built out to preclude the provision of offsite open space (to which, nothing is identified for support), the ALJ suggests *all* of the 2nd Council District is also too built out to provide offsite open space. Seemingly, such a finding may be applicable to most, if not all, Council Districts.

The finding does not appear to have any factual support and frankly, its recitation and inclusion without reference to the evidentiary record is of such a jarring nature, the undersigned

questions whether there is a misunderstanding of it. In any event, there still is nothing identified in the record to establish why open space cannot be provided offsite somewhere else in the 2nd Council District. The ALJ also suggests that the Property's proximity to Lake Roland Park cannot be ignored,[2] but neither can §32-6-108(e)(3)(i)) which even allows for the open space to be provided in any other Council District with approval of the relevant Councilperson. Therefore, even assuming that the 2nd Council District is too built out, to which the undersigned has significant doubt, nothing in the record has been identified that offsite open space cannot be provided somewhere, really anywhere in the County. Simply, as recognized by the ALJ, Petitioner simply did not want to do so. The undersigned would, at a minimum, remand on this issue as there is nothing that is apparent from the ALJ Opinion from which the undersigned can determine how the ALJ concluded that there was a lack of feasibility in providing offsite open space.

January 3, 2020
Date

Jason S. Garber, Chair

[2] The undersigned also takes issue with the notion that the requirement to provide onsite or offsite open space can be circumvented because of the property's proximity to a park or some other existing large open space area. The purpose of the law is to provide more open space and while common sense may dictate that a small onsite open space parcel does not have the same utility or importance when located next to a large park, the law still requires open space to be provided somewhere, absent a showing of a lack of feasibility.

Baltimore County 2020 Comprehensive Zoning Map Process
Log of Issues
August 26, 2020

Issue Number 2-024 **Petitioner** Janjua Riaz Janjua Rubina Trustees **Location** S of Chickory Hill Lane and N of Tentmill Lane

Existing Zoning and Acres		Requested Zoning and Acres		Final Staff Recommendations		Planning Board Recommendations		County Council Decision	
DR 16	0.06	DR 16	3.34	DR 16	0.06	DR 16	0.06	DR 16	0.06
DR 5.5	3.27		**3.34**	DR 5.5	3.27	DR 5.5	3.27	DR 5.5	3.27
	3.33				**3.33**		**3.33**		**3.33**

Comments:

Issue Number 2-025 **Petitioner** Deirdre Smith **Location** Falls Road and Clarkview Road

Existing Zoning and Acres		Requested Zoning and Acres		Final Staff Recommendations		Planning Board Recommendations		County Council Decision	
BM CCC	5.99	BR AS	0.01	BM CCC	5.99	BM CCC	5.99	BR	6.19
BR AS	0.20	CB	6.17	BR AS	0.20	BR AS	0.20	RC 7	0.12
RC 7	0.12	RC 7	0.13	RC 7	0.12	RC 7	0.12		**6.31**
	6.31		**6.31**		**6.31**		**6.31**		

Comments:

Issue Number 2-026 **Petitioner** Susan Patz **Location** Park Heights Avenue and Slade Avenue

Existing Zoning and Acres		Requested Zoning and Acres		Final Staff Recommendations		Planning Board Recommendations		County Council Decision	
BL	0.04	BL	0.03	BL	0.04	BL	0.04	BL	0.04
BL AS	0.01	RC 8	144.34	BL AS	0.01	BL AS	0.01	BL AS	0.01
BL CT	0.05		**144.37**	BL CT	0.05	BL CT	0.05	BL CT	0.05
DR 16	6.39			DR 16	6.39	DR 16	18.82	DR 16	6.39
DR 2	137.88			DR 2	137.88	DR 2	125.45	DR 2	137.88
	144.37				**144.37**		**144.37**		**144.37**

Comments: See Issue 2-006

Total acreage may not equal calculated acreage due to rounding.

SECTION 260

Residential Performance Standards
[Bill Nos. 34-2001; 58-2001[1]]

§ 260.1. Scope; statement of legislative intent of performance standards.

A. This section applies to all residential development of four or more lots in Baltimore County that is located within the urban/rural demarcation line.

B. Intent; evaluation of compliance.

1. These performance design standards are intended to ensure that residential development in Baltimore County conforms with a higher quality of design.

2. The evaluation of compliance shall occur as part of the review of development proposals.

3. The Department of Planning may require the submittal of sufficient information, such as building elevations and grading plans, from which a finding can be made on compliance of the project with the standards. **[Bill No. 55-2011]**

4. Deviation from the standards may be allowed only if clearly necessary to:

a. Comply with another standard;

b. Comply with environmental regulations or otherwise protect resources; or

c. Achieve the best possible development design, considering other goals in the Comprehensive Manual of Development Policies.

C. Consideration of findings; deviation from standards. **[Bill No. 122-2010]**

1. The Department of Planning's findings shall be made by the Director of Planning and submitted to the hearing officer or to the Director of Permits, Approvals and Inspections, as applicable. **[Bill No. 55-2011]**

2. The hearing officer or the Director of Permits, Approvals and Inspections, as applicable, shall consider the findings presented by the Director of Planning or the Director's designee before a development plan is approved.

3. After considering the findings, the hearing officer or the Director of Permits, Approvals and Inspections may deviate from the standards only in accordance with the requirements in Paragraph B.4 of this subsection.

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1. **Editor's Note**—This bill provided that it would apply to:
1. A concept plan accepted for filing by the Department of Permits and Development Management on or after July 12, 2001; or
2. In the South Perry Hall — White Marsh area as defined in the official comprehensive Zoning Map accompanying Bill No. 33-01 as adopted by the County Council, a development plan approved on or after May 25, 2001.

§ 260.2. Site planning.[2]

A. A development proposal shall:

1. Retain the existing quality vegetation of the site to the fullest extent possible and protect the root systems of that vegetation during construction.
2. Integrate locally significant features of the site, such as distinctive buildings, vistas, topographic features, specimen trees, tree stands, hedgerows, monuments, landmarks, ruins and gardens, into the site design, and retain the character of the features and their settings.
3. Coordinate building design, site layout, and grading so that grade transitions are gradual and respect the existing topography.
4. Provide a landscaped buffer between the rear yards of dwellings existing on May 25, 2001, and the rear yards of abutting new dwellings.
5. Provide for smooth transitions between neighborhoods by arranging and orienting the proposed buildings and site improvements to complement those in the surrounding neighborhood.
6. Provide transitions with respect to setbacks, street patterns, and building-to-street grade relationships.

B. Reverse-frontage lots are permitted only if the petitioner can demonstrate that adequate setbacks, topography, berming, landscaping or building design, will effectively screen private yard space and decks from the public view. Fences may not be located closer than 20 feet to a public right-of-way.

C. Panhandle lots are not permitted as a matter of right. Panhandles must conform to § 32-4-409 of the Baltimore County Code and to the standards in the Comprehensive Manual of Development Policies. Panhandle lots are not permitted in the South Perry Hall-White Marsh area. Panhandle lots are not permitted in the Middle River area, as defined in Bill No. 59-07, or in the Greenspring-East Pikesville area, as described in Resolution 20-11, unless each lot has a minimum size of two acres. Panhandle lots are not permitted in the Carney-Cub Hill-Parkville area, as described in the Carney-Cub Hill-Parkville Area Community Plan (Resolution No. 22-10). **[Bill Nos. 137-2004; 115-2006;[3] 60-2007; 21-2012; 12-2013]**

D. The minimum width for any single-family detached lot located in the South Perry Hall—White Marsh area is 75 feet as measured along both the front wall and rear wall of the dwelling unit. This subsection does not apply to alternative site design dwellings permitted in accordance with Section 1B01.1.A.1.b. **[Bill No. 74-2012]**

2. **Editor's Note**—Bill No. 49-2016 repealed the C.T. District of Towson. However, in regard to this district, Section 5 of Bill No. 49-2016 stated that the Act would be applied prospectively and have no application to any development plan or development approved by the hearing officer prior to the effective date of the Act, or to a development project for which a concept plan, limited exemption plan or planned unit development application was filed prior to 8-30-2016, or to any parking contract or lease associated with an approved development plan or development, but that a material amendment to a development plan, development, or parking contract or lease was required to be in compliance with the requirements of said Act.

3. **Editor's Note**—This bill was subsequently amended by Bill No. 140-2006 to provide that it would not apply to any development plan for which a hearing officer's hearing was scheduled prior to 11-1-2006.

E. Single-family detached lots in Middle River — Bird River area. **[Bill No. 3-2002[4]]**

1. For any single-family detached lot located in the Middle River — Bird River area, as defined in County Council Bill 122-01:
   a. The minimum width is 75 feet as measured along both the front wall and rear wall of the dwelling unit;
   b. The minimum front yard setback is 20 feet; and
   c. The minimum rear yard setback is 40 feet, except for:
      (1) Unroofed additions, including patios and decks; and
      (2) Roofed additions which do not exceed in width 50 percent of the dwelling unit, and which do not extend more than ten feet into the rear yard setback area.
2. This subsection does not apply to alternative site design dwellings permitted in accordance with Section 1B01.1.A.1.b.

F. Single-family detached lots in Middle River area. The Middle River area, described in the Middle River Community plan adopted by Council Resolution 77-07, is designated as a design review area. For any single-family detached lot in the area that is part of a development plan and is zoned D.R.3.5, the minimum required width is 75 feet as measured along both the front wall and rear wall of the dwelling unit, and the design review panel shall consider the design standards of this section when making a recommendation to the hearing officer. **[Bill Nos. 60-2007; 27-2008[5]]**

§ 260.3. Open space.

A development proposal shall:

A. Integrate open space areas into the proposed development by:
1. Creating focal points along streets;
2. Locating landscaped open green spaces in view of the development entrance or adjoining public street;
3. Planning a linked network of natural and landscaped open areas connected by pedestrian/bike trails; and
4. Orienting dwelling units around open areas or squares.

B. Incorporate significant features, such as stands of trees, into open areas.

C. Link the development's open areas to the surrounding neighborhood open areas, including public parks, walks, and bike trails, and create both functional and visual continuity, e.g., by matching the design of a bike trail in the proposed development to the bike trail located in the adjoining property.

4. **Editor's Note**—This bill was amended by Bill No. 44-2002 to provide that it would not apply to concept plans accepted for filing prior to 3-24-2002.
5. **Editor's Note**—This bill also provided that it would not apply to any development project for which the initial development plan approval was obtained prior to 9-19-2007.

§ 260.4. Streets and parking.

A. A development proposal shall:

1. Provide for at least one street connection to an adjoining neighborhood or an adjoining property, not including the principal access to the subdivision, in order to facilitate good traffic circulation.
2. Design streets to slow traffic by offsetting alignments. Reducing street width, reducing the length of blocks, and employing the use of traffic management devices such as roundabouts, chokers, chicanes, etc., to accomplish traffic calming.
3. Allow on-street parking.
4. Provide pedestrian and bicycle access to commercial areas and community facilities on site within the development and to the surrounding neighborhood.
5. Provide street and parking accommodations which complement the surrounding neighborhood.

B. Culs-de-sac may be used if it is demonstrated that a street connection is not feasible due to site conditions such as severe grade transitions or sensitive natural features, or an alternative site layout is not feasible. If culs-de-sac are used, developments should consist of a balance of street patterns (culs-de-sac and connections). If culs-de-sac are used, design elements such as center landscaping and traffic circles shall be used.

C. Street widths and front yard setbacks may be reduced in accordance with traditional neighborhood design standards.

§ 260.5. Landscape design.

A. A development proposal shall:

1. Landscape public open spaces to invite users. Particularly emphasizing the intended entrance to the open space.
2. In addition to plant material, use fences, walls or earth forms to provide effective and attractive screens and buffers where necessary.
3. Provide for, or reinforce and maintain, a continuous street tree canopy by preserving healthy street trees or, if they are not present, planting new trees. The canopy shall be comprised of trees of the same species or trees with design characteristics and growth habits that are similar to those of the existing street trees.
4. Include the design for site signage on the schematic landscape plan. If this is not possible, the signage design may be included in the final development plan and shall be approved before issuance of any building permits.

§ 260.6. Buildings.

A. A development proposal shall:

1. Provide variety in housing type or design, while maintaining continuity in scale, rhythm, proportion and detail.

2. Orient the front of the dwelling toward the street and incorporate prominent entries and porches or stoops into front building facades.
3. Adhere to a consistent front building setback for all dwellings on the same street or square, so that the fronts of dwellings define a uniform street edge.
4. Design decks, balconies and porches as components of the building following dominant building lines, proportions and style, and in a scale appropriate to the available space on the site. Decks shall be screened to minimize visibility from a public street.
5. Design accessory structures at a scale appropriate to the dwelling and design storage buildings and garages with the same architectural theme as the principal building on the site, providing consistency in materials, colors, roof pitch, and style.
6. Extend the finish material of the exteriors of buildings to grade, or, if this is not possible, to within 12 inches of grade, on all sides of the building excluding foundation walls which shall use a finished quality material such as decorative concrete block, poured concrete with a brick pattern, or stucco, and provide landscaping along the foundation.
7. Use similar materials and design elements on all building facades and articulate all building facades using coordinated architectural features such as porches, windows, doors, chimneys, gables, and dormers.

B. Garages may not become the dominant street feature. Garage doors shall use items such as windows, decorative patterns, and color to relieve the visual impact of the house from the street.

§ 260.7. Adoption of regulations. [Bill Nos. 91-2006; 55-2011]

The Department of Planning may adopt a manual of regulations to implement the residential performance standards of this section and Section 1A04.4. The regulations shall be adopted in accordance with Article 3, Title 7 of the Baltimore County Code.

ARTICLE 4A

GROWTH MANAGEMENT

Section 4A00
Purpose and Definitions

§ 4A00.1. Purpose.
§ 4A00.2. Definitions.

Section 4A01
(Reserved)

Section 4A02
Basic Services Maps

§ 4A02.1. Purpose and intent.
§ 4A02.2. Conflicts.
§ 4A02.3. Adoption of Basic Services Maps.
§ 4A02.4. Basic services mapping standards.

Section 4A03
Growth Management Plan for Bowleys Quarters and Back River Neck Areas

§ 4A03.1. Definitions.
§ 4A03.2. Application.
§ 4A03.3. Connection to public sewer or water.
§ 4A03.4. Building permits.
§ 4A03.5. Building permit application.
§ 4A03.6. Public notice.
§ 4A03.7. Public hearing.
§ 4A03.8. Final approval.
§ 4A03.9. Appeals.
§ 4A03.10. Fees.
§ 4A03.11. Growth allocation not applicable.
§ 4A03.12. Regulations.
§ 4A03.13. Growth allocation: Back River Neck District.
§ 4A03.14. R.C. 20 properties.

SECTION 4A00
Purpose and Definitions
[Bill No. 178-1979]

§ 4A00.1. Purpose.

The purpose and intent of this article is to implement the objectives of the county-wide Master Plan and to adopt standards and guidelines relative to new development in all areas of the county which would result in land use patterns, location of new growth and timing of growth and development that is consistent with preservation of the quality of life in existing neighborhoods, with the ability of the county to provide necessary public facilities and services to support new development, with the ability of the county to correct existing service and facility deficiencies, with the preservation of natural, agricultural and environmental resources and with the promotion of new growth and development in appropriate areas.

§ 4A00.2. Definitions.

For the purposes of this article, certain words and terms are defined as set forth below:

CAPITAL IMPROVEMENTS PROGRAM — A proposed schedule of all future projects listed in order of construction priority together with cost estimates and the anticipated means of financing each project. All major projects requiring the expenditure of public funds, over and above the annual budget, for the purchase, construction or replacement of the physical assets of the community are included as set forth in the Baltimore County Charter. "Capital improvements program" shall refer to the existing or any subsequently adopted CIP as defined herein.

MASTER PLAN — The comprehensive plan for orderly development of the county, adopted by the County Council, pursuant to the Baltimore County Charter and Code, and including all parts and elements thereof which shall serve as the basis for land use regulations in the county.

SECTION 4A01
(Reserved)[1]

1. **Editor's Note**—Former Section 4A01, Monitoring of Development Activity, adopted by Bill No. 178-1979, was repealed by Bill No. 5-1992.

SECTION 4A02

Basic Services Maps

[Bill Nos. 178-1979; 9-1980; 183-1980; 179-1981; 186-1981; 152-1982; 172-1983; 37-1984; 18-1986; 179-1986; 26-1990]

§ 4A02.1. Purpose and intent.

The County Council finds that important public facilities in certain predominantly urban areas of the county are inadequate to serve all of the development that would be permitted under the regulations of the zones or commercial districts within which those areas lie. Basic Services Maps are hereby established to regulate nonindustrial development in those under-served areas to a degree commensurate with the availability of these facilities. Basic Services Maps are not permanent and will be reviewed annually with reports to the County Council.

§ 4A02.2. Conflicts.

In the event that there is any conflict between the provisions of this article and any other provisions of these Zoning Regulations, the provisions of this article shall govern.

§ 4A02.3. Adoption of Basic Services Maps.

A. The following Basic Services Maps, which shall be in the custody of the Zoning Commissioner for Baltimore County and posted on the County's Internet website, are hereby adopted and made a part of this article: **[Bill Nos. 52-1991; 13-1999; 18-2000; 27-2001; 32-2002; 19-2003; 22-2004; 35-2005; 28-2006; 25-2007; 20-2008; 30-2009; 17-2010; 15-2011; 20-2012; 24-2013; 14-2014; 28-2015; 18-2016; 15-2017; 25-2018; 12-2019; 30-2020; 32-2021]**

1. 2021 Basic Services Sewerage Map;
2. 2021 Basic Services Water Supply Map; and
3. 2021 Basic Services Transportation Map, with the following amendments:
   a. The commuter shed located at the intersection of Ebenezer Road and Pulaski Highway shall be redrawn to exclude the area of land shown on the map attached as Exhibit "A" and more fully described herein as follows:

      Beginning for the same on the southeast side of Pulaski Highway, 150 feet wide, at a point designated with a Maryland State Coordinate Value of North 628782.41 and East 1478470.26 as shown on a plat entitled "Final Plat, Cecelia Schwaber, Exempt Trust U/A" and recorded among the land records of Baltimore County in Plat Book S.M. 78, Folio 368; thence binding on the southeast side of Pulaski Highway and on the outline of said plat (1) North 45 degrees 02 minutes 33 seconds East 1068.61; thence leaving said highway and binding on the outlines of said plat the following six courses and distances: (2) South 69 degrees 53 minutes 59 seconds East 70.16 feet; thence (3) South 06 degrees 21 minutes 02 seconds East 1947.07 feet; thence (4) South 82 degrees 05 minutes 22 seconds West 518.59 feet; thence (5) North 07 degrees 00 minutes 39 seconds

West 344.59 feet; thence (6) South 82 degrees 59 minutes 21 seconds West 365.35 feet; and thence (7) North 06 degrees 56 minutes 32 seconds West 985.35 feet to the place of beginning.

Containing 31.489 acres of land, more or less, with the courses based on the Maryland Coordinate System (NAD 83/91).

Being known and designated as #11301 Pulaski Highway - Parcel 27,230 as shown on a plat entitled "Final Plat, Cecelia Schwaber, Exempt Trust U/A" and recorded among the land records of Baltimore County in Plat Book S.M. 78, Folio 368.

Also being all of that land described in a deed dated January 4, 2010 and recorded among the land records of Baltimore County in Liber S.M. 29037, Folio 10 was conveyed by revocable trust agreement of Cecelia Schwaber DTD. December 9, 1985 and Cecelia Schwaber Exempt Trust U/A December 9, 1985 unto 11301 Pulaski Highway, LLC.

b. Padonia Road and Deerco Road/Beaver Dam Road at a 600-foot radius from the center of the intersection - level of service: F.

c. The commuter shed located at the intersection of Charles Street and Bellona Avenue/Kenilworth Drive shall be redrawn to exclude the area of land within the boundary of West Joppa Road, Greenwood Road, and Chestnut Road, as shown on the map attached as Exhibit "B" and more fully described herein as follows: Lot one and Lot two as shown on a plat entitled, 'Amended Subdivision Plat of Blakehurst Life Care community' dated March 18, 1992 and recorded among the land records of Baltimore County in Plat Book SM No. 64, Folio 34.

B. The three Basic Services Maps shall be prepared annually in accordance with the schedule set forth below, which maps shall incorporate a delineation of adequacy and availability of water supply, sewerage, transportation services and facilities according to the standards and requirements set forth in this section.

C. The individual Sewer, Water Supply and Transportation Basic Services Maps shall be adopted by the County Council in accordance with the procedures and requirements of this article, contrary provisions of Article 32 of the Baltimore County Code notwithstanding. **[Bill No. 137-2004]**

D. Boundaries as shown on the Basic Services Maps shall be interpreted in accordance with Section 100.4 of these Zoning Regulations.

E. Amendments.

1. On or before February 28 of each year, the Planning Board shall recommend to the County Council any proposed annual revisions to the Basic Services Maps. The Planning Board need not adopt a preliminary report or hold a public hearing with respect to its recommendations, although it shall allow the public a reasonable opportunity to comment before adopting the recommendations. **[Bill Nos. 117-2001; 99-2008]**

2. On or before May 31 of each year, the County Council shall take action on said maps after consideration of the recommendations of the Planning Board. The County Council shall hold one public hearing prior to adoption of said maps, which hearing shall be advertised and held in accordance with § 32-3-221 of the Baltimore County Code. **[Bill Nos. 117-2001; 137-2004; 99-2008]**

3. The Basic Services Maps may be amended only under the annual revision procedures set forth above, except in the following circumstances, after the Planning Board has been given an opportunity, at a regular meeting of the Board, to review and issue a report concerning the proposed amendment:

   a. Error. In the case of error, the maps may be corrected at any time by resolution of the County Council, provided that the Council finds that an error has, in fact, been made.

   b. Correction of deficiency. In the case of a deficiency which has been corrected by actual construction of adequate facilities, the maps may be amended, at any time, to reflect the correction, by resolution of the County Council after certification by the Department of Public Works, in the case of a water or sewer deficiency, or the Department of Traffic Engineering, in the case of a traffic deficiency, that the needed facility has been constructed and is performing so that the area no longer suffers a service deficiency. Where correction of the deficiency has been accomplished by means of private funding, the developer or developers paying the cost of correction shall have a preferred claim to any increase in the reserve capacity resulting from the correction irrespective of the requirements of Section 4A02.3.G.2.b. Absent a contrary agreement between the developers contributing to the cost of correction, the developers shall share in any increase in reserve capacity on a prorated basis in accordance with their percentage of contribution to the entire cost of correction.[1]

4. When amending the Basic Services Maps pursuant to the provisions of Section 4A02.3.E.3.a or b, the Planning Board and the County Council shall consider the purposes of the Zoning Regulations and Map and the factors set forth in § 32-3-510(a)(2) of the Baltimore County Code. Contrary provisions of § 32-3-221 of the Baltimore County Code notwithstanding, no hearing under the procedures of § 32-3-221 need be held before the County Council adopts an amendment pursuant to Subsection 4A02.3.E.3.a or b of these regulations. **[Bill No. 137-2004]**

1. **Editor's Note**—Under Bill No. 36-1987, the Department of Traffic Engineering was abolished and its duties and responsibilities were transferred to the Bureau of Traffic Engineering of the Department of Public Works. See Section 1 of the Laws of Baltimore County, 1999 (Bill No. 31-1999)

F. Basic Services Maps are not intended to permanently establish either areas of service deficiencies or areas of service availability and adequacy. Such maps will be reviewed annually, as it is the intent of the County Council that existing service deficiencies will be corrected in accordance with the Master Plan and capital improvements program. It is also recognized by the County Council that continuing development in certain areas may create service deficiencies in areas that presently have adequate levels of service. In some cases, changes in underlying zoning classifications may have to be made to better correlate development potential.

G. Reserve capacity use certificate.

1. Except as otherwise provided in this article, no building permit, pursuant to Subsection 500.1 of Article 5 of these Zoning Regulations and no final subdivision approval shall be issued or granted after the effective date of this Article within a Basic Services Mapped area, unless the Director of the Department of Planning has issued, upon appropriate application on forms prepared by the Director, a reserve capacity use certificate for that development in accordance with the following: **[Bill No. 55-2011]**

   a. With respect to all subdivisions recorded prior to the effective date of this article, no reserve capacity use certificate shall be issued which allows an extent of development exceeding that allowed in accordance with Paragraph 4 hereof.

   b. With respect to all subdivisions finally approved subsequent to the effective date of this article, the Department of Planning shall notify the applicant as part of any such final subdivision approval, the extent of development allowed pursuant to such reserve capacity use certificates applicable thereto as of the date of final subdivision approval issued in accordance with Paragraph 4 hereof.

   c. With respect to an application for a building permit for development which does not require subdivision approval, no reserve capacity use certificate shall be issued which allows an extent of development exceeding that allowed in accordance with Paragraph 4 hereof.

2. Application for certificate. **[Bill No. 55-2011]**

   a. Except as otherwise provided in Paragraph 3, an application for a reserve capacity use certificate shall be filed with the Director of the Department of Planning after the applicant has applied for a building permit (for development which does not otherwise require subdivision approval) or final subdivision approval for which the application for a reserve capacity use certificate is sought, and shall be acted upon by the Director within three working days after said filing.

   b. Applications may be acted upon only according to the order in which they are properly filed with the Department of Planning.

3. Prior to January 1, 1980, no applications for a reserve capacity use certificate shall be accepted by the Department of Planning[2], unless the applicant has a final subdivision plat covering the subject property recorded prior to the effective date of this article or the applicant has applied for a building permit for development for which subdivision approval is not otherwise required. **[Bill No. 55-2011]**

4. Formula.

   a. A reserve capacity use certificate shall authorize development only to the extent that it will meet the water supply standards of Section 4A02.4 and will not utilize more than the reserve capacity of the sewerage or the transportation network, as the case may be, of the Basic Services Mapped area within which the property is located. Before issuance of such a certificate, the sewerage or transportation capacity shall be determined under the formula:

   $$R = (N - A) + E$$

   in which:

   R = The reserve capacity at the time of application, in millions of gallons per day or peak hour trips per day, as the case may be.

   N = The numerical designation of the mapped area.

   A = The aggregate reserve capacity already authorized by certificate applications approved on or after the effective date of the Basic Services Map in question plus the aggregate reserve capacity that will be used for development for which certificates are not required but which has been authorized by building permits since that date.

   E = The aggregate reserve capacity so authorized by issuance of certificates that have expired, as provided in this Subsection G.

   b. In the event that any reserve capacity use certificate determination results in R equaling zero, such determination shall not prohibit the granting of final subdivision approval.

5. Except as otherwise provided in Paragraph 6, any reserve capacity use certificate for development of a subdivision tract shall expire nine months after that date it is issued, except to the extent that it applies to a tract or part of a tract on which substantial construction of the utilities or roads has taken place on that date or with respect to which a public works agreement has been both executed and funded in that there has been deposited with Baltimore County money or irrevocable security in an amount sufficient to secure the construction of the public improvements covered by that agreement.

6. A reserve capacity use certificate pertaining to development that has been authorized by a building permit does not expire unless and until the building permit expires.

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2. **Editor's Note**—Formerly the "Office of Planning," this Department was renamed by Bill No. 55-2011, effective 10-16-2011.

7. For a development or section thereof, reserve capacity use certificates allowing an extent of development beyond that authorized by Paragraph 4 above shall be issued by the Director of the Department of Planning upon application, if there is prior to the effective date of the map or maps which would otherwise prohibit the proposed development, any of the following: **[Bill No. 55-2011]**

   a. A public works agreement, covering that section of the proposed development, that has been both executed and funded by the deposit of money or irrevocable security in an amount sufficient to secure construction of the public improvements covered by the public works agreement and which had been both executed and funded at a time when the area had no service deficiency; or

   b. Substantial construction of the utilities or roads has taken place in the proposed development or section thereof at a time when the area had no service deficiency.

   c. A reserve capacity use certificate issued under this paragraph is limited to the part of the proposed development that meets the requirements of subparagraphs a and b above.

§ 4A02.4. Basic services mapping standards.

A. Generally. The standards contained herein are intended to form the basis for the delineation of areas on the Basic Services Maps as well as for the evaluation of development applications in accordance with the requirements of this article.

B. Water supply standards.

   1. Intent. The water supply standards and maps are intended to regulate nonindustrial development where there are serious deficiencies in the public water supply system, as evidenced by county tests of water flows from a substantial sample of fire hydrants.

   2. Standard. Residual water pressure at the public fire hydrant nearest the site of the proposed nonindustrial development must meet the standards established by the National Board of Fire Underwriters fire flow test.

   3. Exception. This subsection does not apply to any development that will not be served by a public water supply system.

C. Sewerage standards.

   1. Intent. The sewerage standards and maps are intended to regulate nonindustrial development where it has been determined that the county's share of public sewerage capacity is substantially less than the capacity necessary both to serve already established uses and to serve new uses likely to be established pursuant to this legislation.

   2. Determination of reserve capacity. The county's share of public sewerage capacity must be capable of serving already established uses and new uses likely to be established under the provisions of this legislation.

3. Maximum level of nonindustrial development. The maximum level of nonindustrial development per sewerage area shall not be greater than that capable of being provided with available sewerage capacity based on the following:

   a. The county's share of the maximum reserve capacity of the sewerage in the area on the effective date of mapping of the area minus the daily quantity of sewerage from any industrial buildings for which construction permits are expected to be issued between that date and the time the "basic services" map is next revised, in millions of gallons of sewerage per day; and

   b. The maximum level of nonindustrial development allowable in the district as determined based on the following assumptions:

      (1) Each dwelling unit with three bedrooms or more shall be considered to result in a yield of 225 gallons of sewage per day.

      (2) Each dwelling unit with less than three bedrooms shall be considered to result in a yield of 200 gallons of sewage per day.

      (3) Each square foot of gross floor area of a building or a part of a building devoted principally to retail use shall be considered to result in a yield of 0.05 gallon of sewage per day.

      (4) Each square foot of gross floor area of a building or a part of a building devoted principally to office use shall be considered to result in a yield of 0.09 gallon of sewage per day.

   c. The quantity of sewage yielded by a building or a part of a building to be devoted principally to uses other than dwelling or retail or office uses shall be determined by the Department of Public Works.

4. Exception. This subsection does not apply to any development that will not be served by a public sewerage system.

D. Transportation.

1. Intent. The transportation standards and maps are intended to regulate nonindustrial development where it has been determined that the capacity of arterial and arterial collector intersections is less than the capacity necessary to accommodate traffic both from established uses and from uses likely to be built pursuant to this article. Such development is not intended to be restricted unless there is a substantial probability that an arterial and arterial collector intersection situated within the mapped area will, on the date the map becomes effective, be rated at level-of-service E or F under standards established by the Highway Capacity Manual, 1965, published by the Highway Research Board of the Division of Engineering and Industrial Research, National Academy of Sciences National Research Council.

2. Determination of critical vehicle-trip number.

   a. For the purpose of this paragraph, the "critical vehicle-trip number" of an intersection is determined by the formula:

      $C = F - E/2 + E$

      in which each letter represents a number of daily vehicle trips through a given intersection at peak hour and

C = The critical vehicle-trip number.
F = That number which if reduced by one would result in a change in the intersection's level of service from F to E.
E = That number which if reduced by one would result in a change in the intersection's level of service from E to D.

b. Determination of reserve capacity. It is intended that the reserve capacity be determined for each district by the formula:

$N = C - (T + I)$

in which

N = Reserve capacity.
C = The critical vehicle-trip number for the most congested arterial intersection in a transportation mapped area on the date the designation becomes effective.
T = The number of daily peak-hour vehicle trips, based on actual traffic counts taken by the Department of Traffic Engineering,[3] passing through the most congested arterial intersection in a transportation mapped area.
I = The projected number of additional daily peak-hour vehicle trips to be generated by nonindustrial developments that have been approved under the provisions of this article and have not yet been constructed and would most likely pass through that intersection. For partially completed nonindustrial developments, the amount of peak-hour vehicle trips shall be prorated based on number of completed units or square footage. However, if N is less than zero under the formula, the reserve capacity in the area shall be zero.

3. Maximum level of nonindustrial development.

a. The level of additional nonindustrial development in a mapped area, as provided above, may not exceed that which would generate the number of daily peak-hour vehicle trips equal to the reserve capacity of that mapped area, based on the following assumptions:

(1) Every 100 dwelling units, other than for the elderly, shall be considered to result in the generation of 85-peak-hour vehicle trips daily.

(2) Every 100 dwelling units in housing for the elderly shall be considered to result in the generation of 25-peak-hour vehicle trips daily.

3. **Editor's Note**—Under Bill No. 36-1987, the Department of Traffic Engineering was abolished and its duties and responsibilities were transferred to the Bureau of Traffic Engineering of the Department of Public Works. See Section 1 of the Laws of Baltimore County, 1999 (Bill No. 31-1999).

(3) Every 1,000 square feet of gross floor area of a building or a part of a building devoted principally to retail use shall be considered to result in the generation of 14.70 peak-hour vehicle trips daily.

(4) Every 1,000 square feet of gross floor area of a building or a part of a building devoted principally to office use shall be considered to result in the generation of 2.34 peak-hour vehicle trips daily.

b. The number of daily peak-hour vehicle trips generated by a building or a part of a building to be devoted principally to uses other than dwellings or retail or office uses shall be determined by the Department of Traffic Engineering.[4]

E. General exceptions to basic services mapping standards.

1. The provisions of Section 4A02.4.A, B, C and D do not apply to any of the following:

a. Any development of three or fewer single-family detached dwellings, or establishment of their accessory uses, on a lot of record as of November 19, 1979 (see Section 101).

b. To any development in a C.C.C. District for which, prior to January 21, 1980, a subdivision plan was finally approved or for which, prior to January 21, 1980, an application for a building permit had been made.

c. To any development in a C.S.A. District for which, prior to January 21, 1980, a subdivision plan was finally approved or for which, prior to January 21, 1980, an application for a building permit has been made.[5]

d. To any development in an R.A.E. Zone for which, prior to January 21, 1980, a subdivision plan was finally approved or for which, prior to January 21, 1980, an application for a building permit had been made.

e. To any development in a town center or community center for which an official detailed plan was approved by the Planning Board as of the effective date of Bill No. 178-1979. For purposes of this exception, an "official detailed plan" includes an official "revitalization" plan or similar plan prepared by the Department of Planning or a consultant to the county, but does not include a subdivision plan or other developer's plan. **[Bill No. 55-2011]**

f. On-site expansions of existing hospitals; any development of a "continuing care facility" as defined in Title 10, Subtitle 4 of the Human Services Article of the Annotated Code of Maryland. **[Bill No. 79-2015]**

g. Any development in an area for which an official detailed plan has been prepared that contains a recommendation that the area be exempted from basic services restrictions. For purposes of this exception, an "official detailed plan" includes an official "revitalization" plan or similar plan prepared by the Department of Planning or a consultant to the county and approved, subsequent

4. **Editor's Note**—Under Bill No. 36-1987, the Department of Traffic Engineering was abolished and its duties and responsibilities were transferred to the Bureau of Traffic Engineering of the Department of Public Works. See Section 1 of the Laws of Baltimore County, 1999 (Bill No. 31-1999).

5. **Editor's Note**—The former C.N.S., C.S.A., C.S.-1 and C.S.-2 Districts were consolidated into the A.S. District by Bill No. 172-1993, effective 1-27-1994. See Section 259.2.B.

to July 1, 1982, by the Planning Board and the County Council, but does not include a subdivision plan or other developer's plan. **[Bill No. 55-2011]**

h. Health-care and surgery center. **[Bill No. 37-2015]**

i. To any development located in a Commercial Revitalization District. **[Bill No. 79-2015[6]]**

j. To any development located in the Downtown Towson District. **[Bill No. 49-2016]**

F. South Perry Hall — White Marsh Area. No grading permit or other building permit shall be issued for development pursuant to a development plan approved after February 1, 2001, for any development project that will be accessed from Bucks School House Road or White Marsh Road, until all of the following road projects have been contracted for construction: **[Bill No. 35-2001[7]]**

1. Replace the box culvert under White Marsh Road that crosses the tributary of White Marsh Run located between Perry Ridge Court and Selwin Court.

2. Widen the paved section of White Marsh Road between Bucks School House Road and Selwin Court to 20 feet.

3. Widen the paved section of Bucks School House Road between Ridge Road and Perry Hall Boulevard to 20 feet.

4. Realign horizontal curves along Bucks School House Road so that the minimum radius of the center line for any horizontal curve is not less than 380 feet.

G. Petitions for special variance from provisions of this subsection.

1. The Zoning Commissioner may, after a public hearing, grant a petition for a special variance from a provision of this subsection, only to an extent that will not violate that provision's purpose, pursuant to a finding:

   a. That the demand or impact of the development proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal; and

   b. That the granting of the petition will not adversely affect a person whose application was filed prior to the petitioner's application in accordance with Section 4A02.3.G.2.b.

2. The Department of Planning shall give a report on the petition to the Zoning Commissioner prior to his consideration of the petition. **[Bill No. 55-2011]**

3. The Zoning Commissioner may grant or deny the petition, or grant it subject to any conditions or limitations consistent with the criteria set forth in Paragraph 1 above.

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6. **Editor's Note**—This bill also provided that it would apply to Commercial Revitalization Districts established by County Council resolution prior to the effective date of this Act.

7. **Editor's Note**—This bill provided for the renumbering of former Subsection F as Subsection G. It also stated that the provisions of this subsection shall expire and be of no further effect when all of the road projects listed have been contracted for construction, or May 25, 2004, whichever shall first occur.

4. An appeal may be filed with the County Board of Appeals within 30 days of the decision of the Zoning Commissioner.

Baltimore County, Maryland
OFFICE OF PEOPLE'S COUNSEL
Jefferson Building
105 West Chesapeake Avenue, Room 204
Towson, Maryland 21204

410-887-2188
Fax: 410-823-4236

PETER MAX ZIMMERMAN
People's Counsel

CAROLE S. DEMILIO
Deputy People's Counsel

November 9, 2021

SENT VIA EMAIL
Paul M. Mayhew, Managing Administrative Law Judge
The Jefferson Building
105 W. Chesapeake Avenue, Suite 103
Towson, Maryland 21204

RE: Greenspring Manor & Greenspring Joppa Falls LLC
2310 W. Joppa Road 2310 W. Joppa Road
Case No.: PAI # 08-0922 Case No.: 2021-250-SPH
Hearing Date: November 18, 2021

Dear Judge Mayhew:

Our office reviewed preliminarily these companion development and special variance cases. We note intense opposition of area citizens. This letter outlines apparent issues relating to master plan consistency, traffic impact, sewer capacity, and zoning in general.

I. The Proposed Subdivision

The proposed single-family detached home subdivision is in Lutherville. The 39-acre tract extends north from Joppa Road, with more depth than width. It is east of mixed-use Greenspring Station and adjacent office buildings near Joppa and Falls Roads. Other surroundings are residential, with single-family detached homes on fairly large lots. Seminary Ridge and Heatherfield are among neighboring residential communities.

The site plan has a dedication table relating to stormwater management, environmental protection, and highway widening areas dedicated to the county. While approximate, these amount to about 21 acres. There are 169,000 square feet (3.9 acres) of open space in different locations. This means the developed area, including lots, roads, and such comes down to about 14 acres. So, the effective density on the area with the homes is arguably about 4.4 lots per acre. There are 122 offstreet parking spaces provided, 2 for each lot.

The lots vary in size. The lot table shows 21 lots are about .2 acre, more or less; another 19 are about .25 acre or under .30 acre; and the remaining 21 are over .30 acre in varying sizes. These look to be a fair amount smaller than the lots in the neighborhood.

The setback chart shows the following:

Front building line to R/W or Property Line:	25'
Side building face to side building face:	30'
Side Building face to public street	25'
Rear Building Face to Rear Property Line and Public Street	30'

The only access to the proposed subdivision is from Joppa Road. There is no Mays Chapel Road connection. Three nearby signalized traffic intersections are rated "F" and failing: Falls Rd/Joppa Rd, Falls Rd/Greenspring Valley Rd., and Falls Rd/Seminary Ave.

II. Selected County Memoranda

As the Department of Planning (DOP) states in its memoranda,

> "The project proposes 61 single-family homes to be built on 39.4 ±acres of land zoned DR 1 and DR 2. The site is mostly wooded and has environmental floodplains and wetlands. There is currently one existing house, which is to remain."

Rosalie Johnson's Zoning Office March 5, 2021 Concept Plan Conference (CPC) Comments observe 16 lots are proposed on 16.8 acres zoned D.R. 1 and 45 lots are on 22.6 acres zoned D.R. 2. The proposal is thus for the maximum density permitted.

The DOP issued a CPC Memorandum on March 1, 2021 and a Development Plan Conference (DPC) Memorandum on August 11, 2021.

Here is the DOP's core statement in their CPC Memorandum:

> "The Department of Planning considers this site to be overdeveloped. Many of the lot sizes are not compatible to the surrounding neighborhoods. The number of lots should be decreased to allow for larger lots and would help achieve a design that could accommodate future improvements and yard space without the need for relief. As designed, the proposed development does not achieve the vision of the Master Plan 2020 nor the Comprehensive Manual of Development Policies. The Master Plan 2020 recommends low-density residential development adjacent to higher zones consisting of mixed-uses. The site also would require extensive grading. The site should be redesigned to minimize cut and fill while using the natural features of the land pursuant to the Comprehensive Manual of Development Policies as well as Section 260 of the BCZR."

The DOP reversed course in their DPC Memorandum. They passed the project as consistent with MP 2020. The DOP did not cite any material changes in density or other factors to explain the turnaround.

Another concerning aspect is concluding Note 8. This says building location, footprints, garages, and driveways may be changed from those shown in the Pattern Book. This potential for

modifications implies there are other issues with the current plan. The correlative question is whether this uncertainty blurs or clouds the issues. There are no changes, however, to the proposed density.

The Development Plans Review (DPR) March 18, 2021 (inadvertently dated 2020) CPC Memorandum, Note 18, states there is not adequate sewer capacity and lists eight relevant segments. Six of these were to be improved by Johns Hopkins to support its recent medical office building expansion, but this was not done and not enforced. We do not see anything in DPR's subsequent August 11, 2021 Development Plan Conference memorandum to show these issues are resolved.

Terry Curtis of the Department of Public Works and Transportation (DPWT) on September 20, 2021 addressed problems with the special variance. Among other things, he discussed the need for a Mays Chapel Road connection between Joppa and Seminary Roads.

The DOP's CPC Memorandum mentions traffic improvements proposed by developer to mitigate impact. The memo does not describe the improvements, but goes on to say the site is overdeveloped. The DOP's DPC Memorandum defers to the expert DPW(T) judgment.

III. The Community Input Meeting

The CIM took place, as prescribed, in the interim between the concept plan conference and the development plan conference. The CIM had 93 attendees and 67 submissions, with strong opposing e-mails from Seminary Ridge Owners and Heatherfield Community Associations and individual residents. They raised specific concerns about density, traffic, schools, and sewer capacity. The developer's representatives suggested they could mitigate these problems with offsite infrastructure improvements.

IV. Master Plan Conflict

The proposed subdivision is located in the Master Plan 2020 (MP 2020) T-3 Sub-Urban Transect Zone, calling for low density and deep setbacks. Somewhat similar T-3 conflicts were evaluated in Woodley Park and Davis Farms. As in those cases, this project is at maximum density for the applicable zones. The proposed 61-lot/39-acre density here exceeds that of Davis Farms on a similar D.R. Zone composition: 19 lots on 21 acres. It is less than Woodley Park, 13 lots on 5 acres, then zoned D.R. 3.5.

In each of these situations, the lots are concentrated or squeezed on a fraction of the acreage because of the required local open space, forest conservation easements, and other environmental constraints. The 19 Davis Farms lots were concentrated on about half the 21-acre site. Both Woodley Park and Davis Farms show that staying within the maximum Density Residential zoning density does not necessarily satisfy separate and overlaying master plan Transect Zone criteria. Here, the 61 lots, mostly about one-quarter acre, with shallow setbacks, are pressed into about 14 acres.

Given the plain T-3 Transect Zone criteria, the Greenspring Manor project appears to present a clear master plan conflict. It tracks the same path as Woodley Park and Davis Farms. (The Planning

Board has voted 7-4, unconvincingly, that Davis Farms does not involve a conflict; but we believe that will be reversed sooner or later).

The DOP's CPC Memorandum definitely describes a conflict. But their DPC Memorandum backslides to pass the project. The DPC Memorandum, Page 2, refers to the low-density criterion but then compliments the plan on meeting bulk regulations, having lot sizes "compatible to surrounding neighborhoods" and minimizing grading. The favorable description of compatibility also contradicts their CPC memo and is at best debatable. Most important, the DOP does not apply or implement meaningfully the low density and deep setback criteria. It is as if the DOP goes its own way.

We saw in Davis Farms the DOP's mindset that if the development is within maximum zoning density and meets bulk regulations, then there is no master plan conflict. This is a non-sequitur and, to paraphrase an idiom, conflates apples with oranges. It is circular reasoning. Maybe they assume the master plan is advisory and doesn't have to be followed. It is confounding that when the case gets close to the hearing stage, the DOP short-circuits the Transect Zone criteria.

The DOP does not mention the cogent community association and area citizen CIM comments. The legislative purpose is for the CIM to perform an important function, with practical information and questions from members of the public. The area residents have knowledge and experience beyond that of developer's consultants. The CIM is not intended to be a desultory exercise to be ignored in the aftermath.

V. Residential Performance Standards

Baltimore County Zoning Regulation (BCZR) Sec. 260 provides Residential Performance Standards (RPS). They involve site planning, open space, streets and parking, landscaping, and buildings. There are a variety of procedures in subsection 260.1. These include findings made by the DOP to be submitted to the Hearing Officer for consideration. The Woodley Park and Davis Farms decisions found several RPS conflicts.

The DOP findings here raise more questions than they answer. Both DOP Memoranda recognize they must make findings. The DPC Memorandum goes on to say they have reviewed the pattern book and the DOP "... recommends approval pending the following comments are addressed (sic)." Page 3. There follow eight numbered comments, but the only reference to RPS is on page 4, paragraph 5, which asks the pattern book to demonstrate how specified high visibility lots meet the BCZR Sec. 260.6 design criteria. There is no discussion of any of the other RPS. Their conclusory finding is, therefore, insufficient.

It will be up to the Hearing Officer to determine if the plan meets all the RPS. The burden of proof is on the developer to meet each standard. There is no favorable presumption.

VI. The Special Variance Relating to Transportation

The growth management standards for transportation applicable to nonindustrial development are in BCZR Sec. 4A02.4.D. Among other things, they preclude a building permit in defined traffic sheds of signalized intersections rated "E" or "F". There are three such intersections nearby.

The 2021 Baltimore County Basic Services Map for Transportation, attached, shows the tripartite array of "F" level failing intersections at Falls/Joppa, Falls/Greenspring, and Falls/Seminary. This is the highest concentration of such intersections in the county. The attached December 16, 2020 Report from the Bureau of Traffic Engineering and Transportation Planning confirms these three intersections make up a quarter of the twelve such intersections countywide.

To obtain a special variance, it is necessary to prove the project will generate less traffic than assumed by the standard or that the standard is irrelevant. BCZR Sec. 4A02.4.G. The law provides a framework for analysis.

Suffice it to say that traffic from this development is likely to have a significant additional impact at peak hours and other hours on the three "F' intersections as drivers head to I-695, I-83, Falls Road, Greenspring Valley Road, and further destinations. This would be true even if there were a Mays Chapel Road connection. It is the more aggravated with the sole access at Joppa Road. The DPWT comment expresses heightened concern about the lack of a Mays Chapel Road connection.

Woodley Park and Davis Farms also presented traffic issues, each in their own way. Woodley Park involved the Dean Avenue vicinity off Reisterstown Road. Davis Farms dealt with the Maple Avenue and Frederick Road situation. The area citizens in those cases identified and described the problems. As serious as those problems are, they do not involve "F" intersections.

VII. Sewer Capacity

Maryland law requires and sets parameters for master water supply and sewer (WSS) plans. Md. Ann. Code Environment Article, Secs. 9-501-521. The County Council approves the WSS plan by resolution as part of the master plan. The function of the plan is to allocate and assure adequate water and sewerage countywide.

The growth management standards for sewage capacity applicable to nonindustrial development are in BCZR Sec. 4A02.4.C. The stated purpose is to assure that the county's share of sewage capacity must be capable of serving already established uses and uses likely to be established. Secs. 4A02.4.C.1, 4A02.4.C.2. There is then provided a method for calculation for the maximum level of nonindustrial development. Sec. 4A02.4.C.3.

We have not seen in the DPR memoranda any estimate of the sewage to be generated by Greenspring Manor. We have cited the DPR March 18, 2021 CPC Memorandum, Note 18, and the

apparent absence of resolution of the specified issues in their later DPC Memorandum. They do say, as noted, that the local sewer segments do not have adequate capacity to accommodate the proposed development. This by itself implies there may be a growth management deficiency.

Separately, the 2021 Baltimore County Basic Services Map for Sewerage, attached, identifies the Joppa/Falls area as located in one of just five "Areas of Concern." We also attach the Department of Public Works' January 6, 2021 Report, which describes in general terms that work is being done to address some areas of concern, but adds,

> "Everyone should be aware that the removal of an area of special concern does not mean that an area has unlimited developmental potential."

The growth management law does not specifically identify or define "Areas of Concern."

Area citizens identified similar problems with the development plan several miles down Falls Road in the Bare Hills area, which is in the same mapped "Area of Concern." This led to denial of that plan in CPC Falls Road Bluestem, 6241-47 Falls Road, Case No. 09-0861 (2019), Administrative Law Judge Opinion; affirmed CBA Case No. 20-006 (2020). As described in the CBA's January 3, 2020 opinion, agreeing with ALJ John Beverungen, there is an operative 2005 Consent Decree between the County, EPA, and MDE. The CBA cited the inadequate capacity in the Jones Falls and Lake Roland interceptors, resulting in discharges to Towson Run, Lake Roland, and Jones Falls, and so elevated contaminant levels.

It is reasonable to inquire of county staff the criteria and implications for "Areas of Concern." It is also reasonable to inquire why this area is not designated as deficient.

Here, area citizens also raised issues the sewer situation. The County's position on this issue is unclear. These issues should be addressed in depth here insofar as applicable.

Davis Farms also presented a sewer issue, of a more localized historic nature regarding the age and condition of the local system. The sewerage issues here appear to be of an order of magnitude much greater than in Davis Farms.

Conclusion

There may be other issues. This letter identifies and outlines our concerns at this juncture. The density is excessive and conflicts with the master plan. The RPS, traffic and sewer capacity issues are problematic and not acceptably resolved so far.

Because all sides are represented by counsel, we anticipate they will flesh out the facts and issues. As the case evolves, we would appreciate the opportunity to address the legal issues further in a memorandum if necessary and appropriate.

Sincerely,

Peter Max Zimmerman

Peter Max Zimmerman
People's Counsel for Baltimore County

cc: Adam Rosenblatt, Esq., Attorney for Petitioner
Matthew Bishop, Consultant for Petitioner,
Jerry Chen, PAI Department Project Manager
Jeffrey Perlow, Zoning Supervisor
Roz Johnson, Zoning Office,
Stephen Lafferty, Director of Planning
Jenifer Nugent, Planning Division Supervisor
D'Andrea Walker. Acting Public Works Director
Terry Curtis, Department of Public Works and Transportation
Vishnu K. DeSai, Development Plans Review Supervisor
Jeffrey Peluso, P.E., Acting Chief, Bureau of Engineering and Construction
Lisa Eichholtz, Baltimore County Sewer Design Section
Michael McCann, Esq., Attorney for Protestants
Richard Burch, Esq., attorney for Mullan Entities
Pat McGee, Heatherfield Community Associates
Blandy Becker, Seminary Ridge Owners Associates

Department of Public Works and Transportation

2021 Basic Services Map
Transportation Zones

Legend

Intersections - Level of Service

- D
- E
- F

Transportation Zones - Level of Service

- D
- E
- F
- Commercial Revitalization Areas
- Towson Urban Center
- Urban Rural Demarcation Line
- County Boundary

Shawan Rd, Beaver Dam Rd & Cuba Rd
Falls Rd, Shawan Rd & Tufton Ave
W Padonia Rd, Deerco Rd & Beaver Dam Rd
York Rd & E/W Padonia Rd
Dulaney Valley Rd & E Timonium Rd
York Rd & E/W Timonium Rd
Falls Rd & W Seminary Ave
York Rd & E/W Seminary Ave
Falls Rd, Greenspring Valley Rd & Station Dr
Jones Falls Expy, Falls Rd & W Joppa Rd
Charles St, Bellona Ave & Kenilworth Ave
York Rd & Fairmount Ave
Dulaney Valley Rd & Fairmount Ave
York Rd & Burke Ave
Hillen Rd & Stevenson Ln
Coucher Blvd & Putty Hill Ave
Perring Pkwy & Putty Hill Ave
Loch Raven Blvd & E Joppa Rd
Perring Pkwy & E Joppa Rd
Harford Rd & E Joppa Rd
Jarrettsville Pike, Paper Mill Rd & Sweet Air Rd
Belair Rd, Joppa Rd & Ebenezer Rd
White Marsh Blvd & Honeygo Blvd
Pulaski Hwy & Ebenezer Rd
Belair Rd & Rossville Blvd
Harford Rd & Taylor Ave
Belair Rd, Fullerton Ave & Taylor Ave
Pulaski Hwy & Middle River Rd
Pulaski Hwy & Rossville Blvd
Pulaski Hwy & 66th St
Eastern Ave, Rolling Mill Rd & Eastpoint Mall
Liberty Rd & Washington Ave
Rolling Rd & Windsor Mill Rd
Baltimore National Pike & N Rolling Rd
Frederick Rd, Ingleside Ave & Bloomsbury Ave
Frederick Rd & S Rolling Rd

THIS MAP HAS BEEN ENACTED UNDER BILL NUMBER 32-21 AND IS PART OF THE BALTIMORE COUNTY ZONING REGULATIONS, 1955, AS AMENDED BY THE BILL ADOPTED MAY 7, 2021. EFFECTIVE MAY 17, 2021.

Julian E. Jones Jr.

COUNTY COUNCIL OF BALTIMORE COUNTY

N W E S

SCALE 1 INCH = 4,000 Feet

0 2,000 4,000 8,000 12,000 16,000 20,000 Feet

NOTE: The interpretation of the Basic Services Maps are subject to exceptions provided for in the Baltimore County Zoning Regulations, Article 4A Growth Management, Section 4A02 Basic Services Maps. These exceptions include those mapped in the County's geographic information system (GIS): the Urban and Rural Demarcation Line (URDL), Commercial Revitalization Districts (4A02.4.E.1.i), and the Towson Urban Center (4A02.4.E.1.j). The Towson Urban Center (Downtown Towson District) exists in the Master Plan 2020 in the Land Management Areas feature class.

Feature Class Production Dates

Transportation Zones	2021
Intersections	2021
Commercial Revitalization Districts	2020
Towson Urban Center	2011
Urban Rural Demarcation Line	2012
Roads	2021
County Boundary	2008

Produced by the Baltimore County Department of Public Works and Transportation

North American Datum 1983 HARN, U.S. Survey Foot

Published August 2, 2021

BALTIMORE COUNTY, MARYLAND
BUREAU OF TRAFFIC ENGINEERING AND TRANSPORTATION PLANNING
INTER-OFFICE CORRESPONDENCE

DATE: December 16, 2020 (Revised)

TO: D'Andrea Walker., Acting Director
Department of Public Works

FROM: Greg Carski. Bureau Chief
Bureau of Traffic Engineering and Transportation Planning

SUBJECT: 2021 Basic Service Map – Transportation:

Due to COVID-19, our bureau has restudied 30 out of 35 intersections currently on the Basic Services Map for 2020. These studies were completed prior to the Covid-19 effects on traffic volumes. Studies were suspended in mid March.

The following five intersections were not studied due to COVID-19 during 2020 and the rating below is based upon the 2020 Basic Service Maps.

Joppa Rd E & Loch Raven Blvd (MD 542)	LOS = F
Pulaski Hwy (US 40) & Rossville Blvd	LOS = D
Rolling Rd & Windsor Mill Rd	LOS = D
Seminary Ave (MD 131) & York Rd (MD 45)	LOS = D
Timonium Rd & York Rd (MD 45)	LOS = D

Based on the studies that were completed over the past year and prior years in some cases, we are recommending the following change to the Transportation Map for 2021:

CHANGES:

Beaver Dam Rd / Deerco Rd / Padonia Rd	F to C

There are twelve "F" level intersections and one "E" level intersection that are being proposed on the 2021 Basic Service Transportation Map that would control development. These intersections are:

Baltimore Nat'l Pike (US 40)/ Rolling Rd N	LOS = F
Bellona Ave / Charles St (MD 139) / Kenilworth Dr	LOS = F
Bloomsbury Ave / Frederick Rd (MD 144) / Ingleside Ave	LOS = F
Burke Ave / Burke Ave W / York Rd (MD 45)	LOS = F
Ebenezer Rd / Pulaski Hwy (US 40)	LOS = F
Falls Rd (MD 25) / Seminary Ave W (MD 131)	LOS = F
Falls Rd (MD 25) / Joppa Rd W	LOS = F
Falls Rd (MD 25) / Greenspring Valley Rd (MD 130)	LOS = F
Falls Rd (MD 25) & Shawan Rd & Tufton Ave *	LOS = F
Frederick Rd (MD 144) / Rolling Rd S (MD 166)	LOS = F

Joppa Rd E & Loch Raven Blvd (MD 542) – (COVID 19)	LOS = F
Perring Pkwy (MD 41) / Putty Hill Ave	LOS = F
Joppa Rd E / Perring Pkwy (MD 41)	LOS = E

* Note: Since the intersection of Falls Rd(MD25)/Shawan Rd and Tufton Rd is outside the URDL there will be no commuter shed associated with this intersection.

Beaver Dam Rd/Deerco Rd/Padonia Rd was LOS F on the Basic Services Map for 2020 per Bill 12-19, our engineering review results in a LOS C.

Enclosed is a list of the current D, E, and F intersections for your use. Should you have any questions in regard to the Basic Services Transportation Map for 2021, please contact me at ext. 3554.

Department of Public Works and Transportation

2021 Basic Services Map
Sewer Deficient Areas
and
Areas of Concern

Legend

- Sewer Relief Points
- Area of Concern
- Deficient Area
- Commercial Revitalization Areas
- Towson Urban Center
- Urban Rural Demarcation Line
- County Boundary

#113 Marnat Road
#23 Southern Cross A
#23B Southern Cross B
#22 Alter Road
#24 Patterson Avenue
#99 Edmondson Avenue
#118 Overbrook & Medwick Garth
#116 Nunnery Lane
#117 Briarwood Road
#44 Redwood Avenue
#40 Briarcliff Road
#41 Aiken Avenue
#129 Queen Anne

BROOKLANDVILLE

RICHLYN MANOR

THIS MAP HAS BEEN ENACTED UNDER BILL NUMBER 32-21 AND IS PART OF THE BALTIMORE COUNTY ZONING REGULATIONS, 1955, AS AMENDED BY THE BILL ADOPTED MAY 7, 2021. EFFECTIVE MAY 17, 2021.

Julian E. Jones, Jr.

COUNTY COUNCIL OF BALTIMORE COUNTY

N W E S

SCALE 1 INCH = 4,000 Feet

0 2,000 4,000 8,000 12,000 16,000 20,000 Feet

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Feature Class Production Dates

Sewer Relief Points	2021
Sewer Areas	2021
Commercial Revitalization Districts	2020
Towson Urban Center	2011
Urban Rural Demarcation Line	2012
Roads	2021
County Boundary	2008

Produced by the Baltimore County Department of Public Works and Transportation

North American Datum 1983 HARN, U.S. Survey Foot

Published August 2, 2021

BALTIMORE COUNTY GOVERNMENT
DEPARTMENT OF PUBLIC WORKS
INTER-OFFICE CORRESPONDENCE

DATE: January 6, 2021

TO: D'Andrea Walker, Acting Director
Department of Public Works

FROM: Jeffrey Peluso, PE, Acting Chief
Bureau of Engineering & Construction

SUBJECT: 2021 Basic Services Maps
Public Water and Sewer Status

In accordance with your request, we are furnishing an update for the 2021 Basic Services Map.

Water
No deficiencies are known to exist.

Sewer
All of the remaining sewer relief point locations are being metered. We have completed several rehabilitation projects and are now performing post-monitoring to determine the projects' effectiveness. In addition, we have projects still in design which will eventually eliminate the areas of concern.

Everyone should be aware that the removal of an area of special concern does not mean that an area has unlimited developmental potential. All developments are evaluated hydraulically on a case-by-case basis, and determinations are made to see if the development will need downstream supplementation.

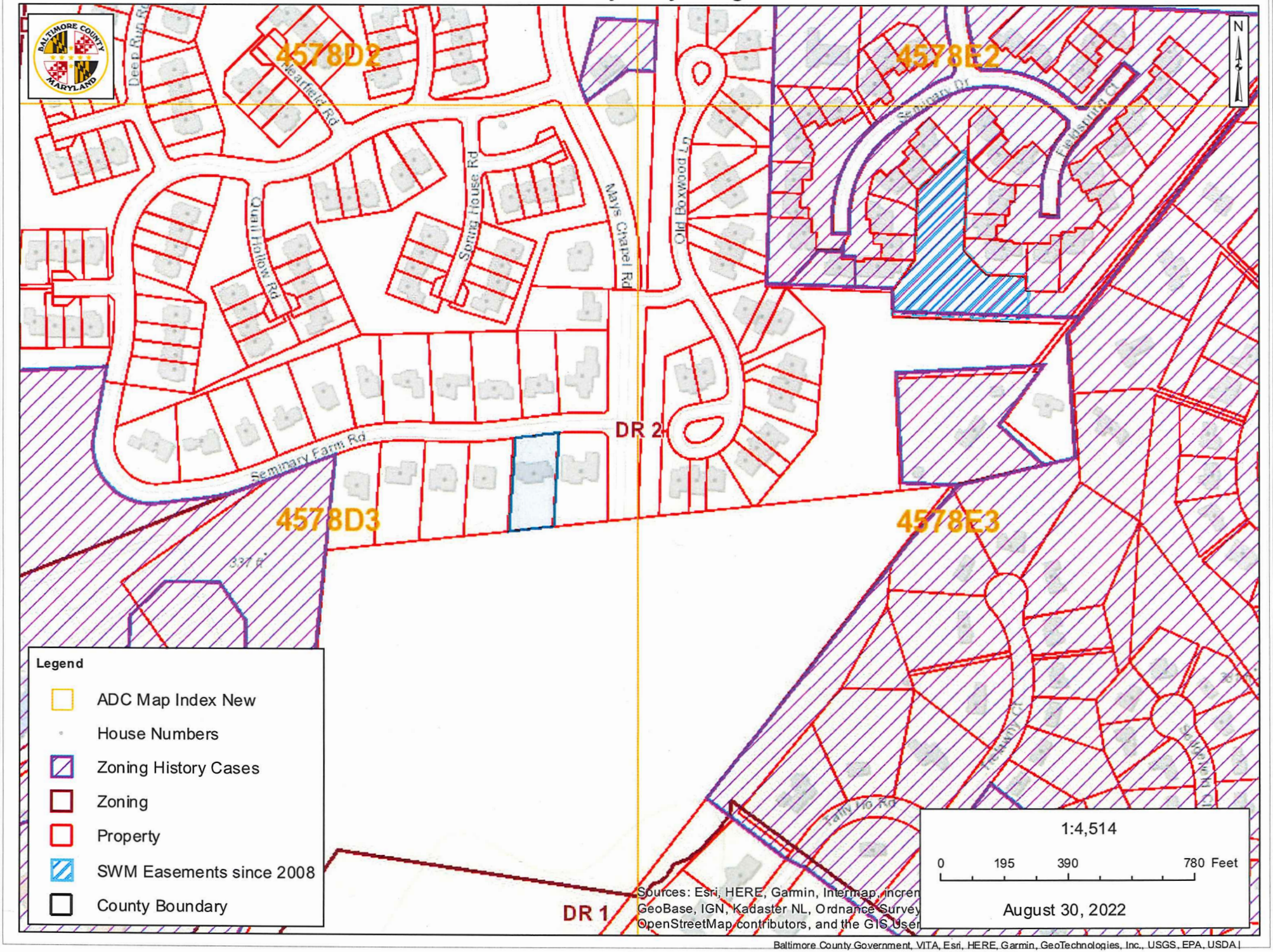
JP:LKE

cc: Michael J. Mazurek – Chief, Water Design Section
Lisa K. Eicholtz – Sewer Design Section

S:\DPW\Restricted\Engineering Design\Engineering Design Sewer\Correspondence\Walker - 2021 Basic Services Maps 1-6-21.doc

PC Exh 16

Baltimore County - My Neighborhood



Real Property Data Search ( )
Search Result for BALTIMORE COUNTY

View Map | View GroundRent Redemption | View GroundRent Registration

Special Tax Recapture: None

Account Identifier: **District -** 08 **Account Number -** 1900006677

Owner Information

Owner Name: BRUDER LAWRENCE F
BRUDER ANN W
Use: RESIDENTIAL
Principal Residence: YES
Mailing Address: 74 SEMINARY FARM RD
LUTH-TIMONIUM MD 21093-4524
Deed Reference: /46944/ 00275

Location & Structure Information

Premises Address: 74 SEMINARY FARM RD
LUTH-TIMONIUM 21093-4524
Legal Description: 23251 SQ FT 0.5337
THE MEADOWS OF GRN SPRG

Map:	Grid:	Parcel:	Neighborhood:	Subdivision:	Section:	Block:	Lot:	Assessment Year:	Plat No:	Plat Ref:
0060	0014	0624	8070140.04	0000	1	C	2	2023	2	0049/ 0124

Town: None

Primary Structure Built	Above Grade Living Area	Finished Basement Area	Property Land Area	County Use
1986	3,259 SF	822 SF	23,251 SF	04

Stories	Basement	Type	Exterior	Quality	Full/Half Bath	Garage	Last Notice of Major Improvements
1 1/2	YES	STANDARD UNIT	FRAME	5	3 full/ 1 half	1 Attached	

Value Information

	Base Value	Value As of 01/01/2020	Phase-in Assessments As of 07/01/2022	As of 07/01/2023
Land:	234,800	234,800		
Improvements	487,500	487,500		
Total:	722,300	722,300	722,300	
Preferential Land:	0			

Transfer Information

Seller: PRICE THOMAS R 3RD	**Date:** 05/25/2022	**Price:** $1,135,000
Type: ARMS LENGTH IMPROVED	**Deed1:** /46944/ 00275	**Deed2:**
Seller: BAQUOL RONALD	**Date:** 05/22/1987	**Price:** $369,000
Type: ARMS LENGTH IMPROVED	**Deed1:** /07540/ 00474	**Deed2:**
Seller:	**Date:**	**Price:**
Type:	**Deed1:**	**Deed2:**

Exemption Information

Partial Exempt Assessments:	Class	07/01/2022	07/01/2023
County:	000	0.00	
State:	000	0.00	
Municipal:	000	0.00	0.00

Special Tax Recapture: None

Homestead Application Information

Homestead Application Status: No Application

Homeowners' Tax Credit Application Information

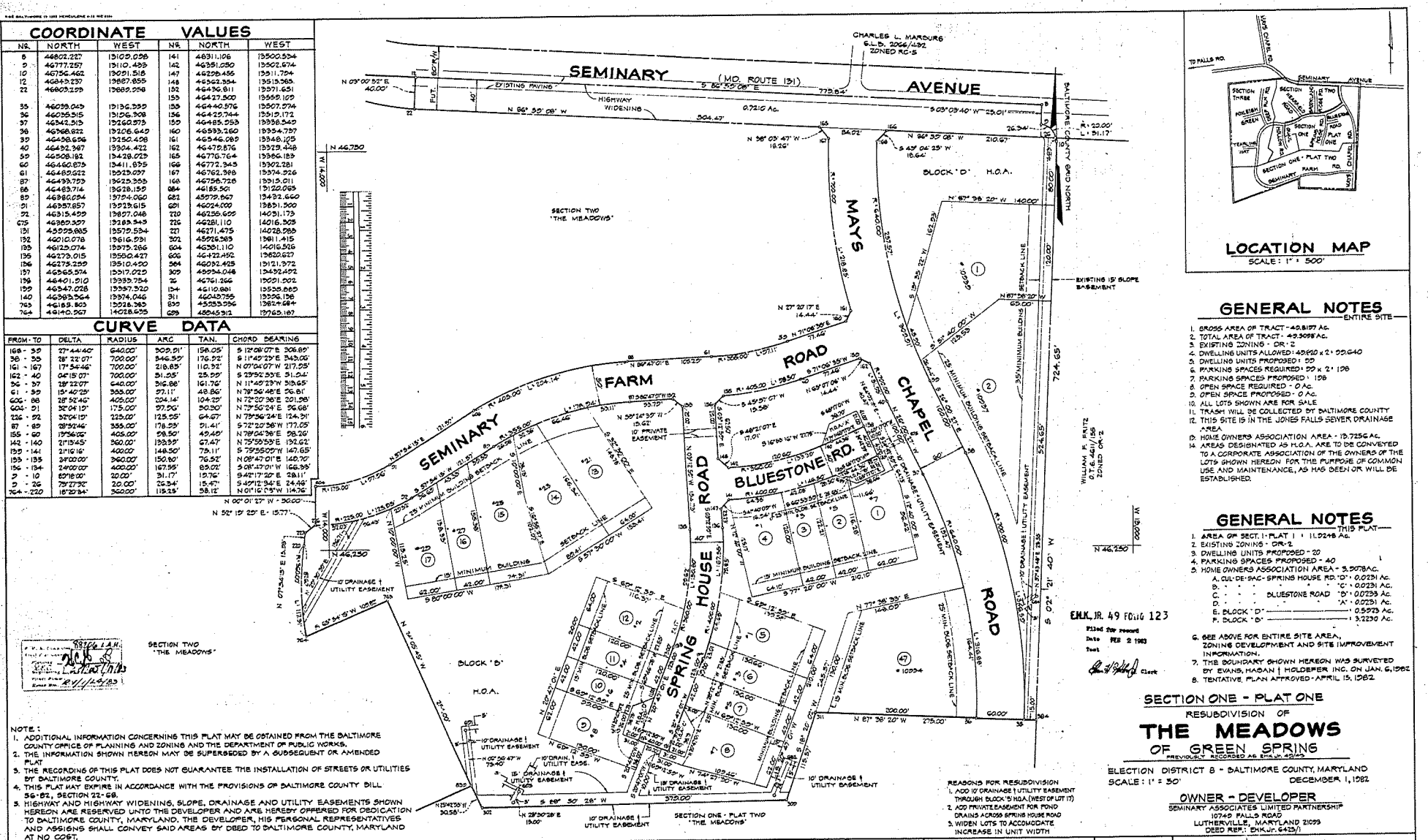
Homeowners' Tax Credit Application Status: No Application **Date:**

COORDINATE VALUES

NO.	NORTH	WEST	NO.	NORTH	WEST
8	46802.227	13105.058	141	46311.106	13500.534
9	46777.257	13110.499	142	46351.050	13562.674
10	46750.462	13091.518	147	46208.455	13511.784
12	46849.237	13887.855	148	45962.554	13515.365
22	46803.259	13889.258	152	46430.811	13571.651
			153	46427.500	13559.109
35	46039.049	13136.359	153	46440.576	13507.774
36	46035.515	13150.308	156	46431.744	13519.173
37	46342.515	13260.573	159	46485.553	13536.540
38	46368.822	13206.645	160	46593.260	13354.737
39	46458.656	13250.408	161	46546.089	13348.105
40	46432.367	13304.422	162	46475.876	13329.428
59	46508.182	13428.673	165	46776.764	13386.189
60	46460.875	13411.835	166	46772.345	13302.281
61	46485.622	13529.097	167	46762.398	13374.926
87	46493.753	13625.353	168	46756.728	13315.011
88	46483.714	13628.155	884	46185.501	13122.065
89	46388.684	13704.060	882	45979.867	13432.660
91	46357.857	13723.615	881	46024.002	13891.500
92	46315.459	13857.048	220	46255.695	14031.173
675	46389.357	13283.343	226	46281.110	14016.305
131	45995.885	13579.534	227	46271.475	14028.588
132	46010.078	13616.531	302	45976.383	13811.415
133	46129.074	13875.286	604	46381.110	14016.506
135	46279.015	13550.427	606	46422.452	13820.627
136	46275.259	13510.450	564	46032.425	13121.372
137	46365.574	13917.025	309	45954.048	13492.492
138	46401.810	13933.754	26	46761.266	13051.202
139	46347.028	13957.320	134	46110.881	13535.885
140	46383.564	13974.046	311	46040.755	13536.138
765	46185.803	13928.383	830	45983.596	13824.684
764	46140.267	14028.655	699	45845.912	13765.187

CURVE DATA

FROM - TO	DELTA	RADIUS	ARC	TAN.	CHORD BEARING
168 - 38	27°44'46"	640.00'	309.91'	158.05'	S 12°08'07"E 306.89'
36 - 39	28° 22' 07"	700.00'	346.59'	176.92'	S 11°49'25"E 343.00'
161 - 167	17°54'46"	700.00'	218.85'	110.32'	N 07°04'07" W 217.95'
162 - 40	04°15'07"	700.00'	51.95'	25.99'	S 23°52'53"E 51.94'
36 - 37	28° 22' 07"	640.00'	316.86'	161.76'	N 11°49'29"W 313.65'
61 - 59	15° 40' 25"	358.00'	97.11'	48.86'	N 78°50'48"E 96.81'
604 - 88	28° 52' 46"	405.00'	204.14'	104.22'	N 72°20'36"E 201.98'
604 - 91	25°04'15"	175.00'	97.96'	50.30'	N 73°50'24"E 96.68'
226 - 92	57°04'15"	225.00'	125.55'	64.67'	N 73°56'24"E 124.21'
87 - 89	28°52'46"	355.00'	178.55'	91.41'	S 72°20'36"W 177.05'
155 - 60	17°56'05"	405.00'	98.50'	49.49'	N 78°04'38"E 98.26'
142 - 140	21°13'45"	360.00'	133.39'	67.47'	N 75°55'55"E 132.62'
139 - 141	21°16'16"	400.00'	148.50'	75.11'	S 75°55'05"W 147.65'
153 - 135	24°00'00"	360.00'	150.80'	76.52'	N 08°47'01"E 149.70'
156 - 134	24°00'00"	400.00'	167.55'	85.02'	S 08°47'01"W 166.33'
2 - 10	80°18'00"	20.00'	31.17'	19.76'	S 42°17'20"E 28.11'
5 - 26	79°27'32"	20.00'	26.24'	15.47'	S 49°12'34"E 24.46'
764 - 220	18°20'34"	360.00'	115.25	58.12	N 01°16'15"W 114.76'



LOCATION MAP
SCALE: 1" = 500'

GENERAL NOTES — ENTIRE SITE

1. GROSS AREA OF TRACT - 40.8157 Ac.
2. TOTAL AREA OF TRACT - 43.3098 Ac.
3. EXISTING ZONING - OR-2
4. DWELLING UNITS ALLOWED: 43.920 x 2 = 87.840
5. DWELLING UNITS PROPOSED: 82
6. PARKING SPACES REQUIRED: 82 x 2 = 164
7. PARKING SPACES PROPOSED: 168
8. OPEN SPACE REQUIRED - 0 Ac.
9. OPEN SPACE PROPOSED - 0 Ac.
10. ALL LOTS SHOWN ARE FOR SALE
11. TRASH WILL BE COLLECTED BY BALTIMORE COUNTY
12. THIS SITE IS IN THE JONES FALLS SEWER DRAINAGE AREA
13. HOME OWNERS ASSOCIATION AREA - 13.7256 Ac.
14. AREAS DESIGNATED AS H.O.A. ARE TO BE CONVEYED TO A CORPORATE ASSOCIATION OF THE OWNERS OF THE LOTS SHOWN HEREON FOR THE PURPOSE OF COMMON USE AND MAINTENANCE, AS HAS BEEN OR WILL BE ESTABLISHED.

GENERAL NOTES — THIS PLAT

1. AREA OF SECT. 1 - PLAT 1 = 11.0248 Ac.
2. EXISTING ZONING - OR-2
3. DWELLING UNITS PROPOSED - 20
4. PARKING SPACES PROPOSED - 40
5. HOME OWNERS ASSOCIATION AREA - 3.9078Ac.
   - A. CUL-DE-SAC - SPRING HOUSE RD. "D" = 0.0231 Ac.
   - B. " " " " "C" = 0.0231 Ac.
   - C. " " BLUESTONE ROAD "D" = 0.0259 Ac.
   - D. " " " "A" = 0.0251 Ac.
   - E. BLOCK 'D' = 0.5973 Ac.
   - F. BLOCK 'D' = 3.2230 Ac.
6. SEE ABOVE FOR ENTIRE SITE AREA, ZONING DEVELOPMENT AND SITE IMPROVEMENT INFORMATION.
7. THE BOUNDARY SHOWN HEREON WAS SURVEYED BY EVANS, HAGAN & HOLDEBRIER INC. ON JAN. 6, 1982
8. TENTATIVE PLAN APPROVED - APRIL 15, 1982

NOTE:
1. ADDITIONAL INFORMATION CONCERNING THIS PLAT MAY BE OBTAINED FROM THE BALTIMORE COUNTY OFFICE OF PLANNING AND ZONING AND THE DEPARTMENT OF PUBLIC WORKS.
2. THE INFORMATION SHOWN HEREON MAY BE SUPERSEDED BY A SUBSEQUENT OR AMENDED PLAT
3. THE RECORDING OF THIS PLAT DOES NOT GUARANTEE THE INSTALLATION OF STREETS OR UTILITIES BY BALTIMORE COUNTY.
4. THIS PLAT MAY EXPIRE IN ACCORDANCE WITH THE PROVISIONS OF BALTIMORE COUNTY BILL 56-82, SECTION 22-68.
5. HIGHWAY AND HIGHWAY WIDENING, SLOPE, DRAINAGE AND UTILITY EASEMENTS SHOWN HEREON ARE RESERVED UNTO THE DEVELOPER AND ARE HEREBY OFFERED FOR DEDICATION TO BALTIMORE COUNTY, MARYLAND. THE DEVELOPER, HIS PERSONAL REPRESENTATIVES AND ASSIGNS SHALL CONVEY SAID AREAS BY DEED TO BALTIMORE COUNTY, MARYLAND AT NO COST.

REASONS FOR RESUBDIVISION
1. ADD 10' DRAINAGE & UTILITY EASEMENT THROUGH BLOCK 'D' H.O.A. (WEST OF LOT 17)
2. ADD PRIVATE EASEMENT FOR POND DRAINS ACROSS SPRING HOUSE ROAD
3. WIDEN LOTS TO ACCOMODATE INCREASE IN UNIT WIDTH

SECTION ONE - PLAT ONE
RESUBDIVISION OF
THE MEADOWS
OF GREEN SPRING
PREVIOUSLY RECORDED AS EMK JR. 49/123

ELECTION DISTRICT 8 - BALTIMORE COUNTY, MARYLAND
SCALE: 1" = 50' DECEMBER 1, 1982

OWNER - DEVELOPER
SEMINARY ASSOCIATES LIMITED PARTNERSHIP
10749 FALLS ROAD
LUTHERVILLE, MARYLAND 21093
DEED REF.: EMK.JR. 6425/1

APPROVED:
1/20/83 Donald P. Rogers
DATE: DEPUTY STATE & COUNTY HEALTH OFFICER

1/24/83 Thomas S. Peddy
DATE: DIRECTOR OF PLANNING AND ZONING

1/20/83 James E. Kirk
DATE: DIRECTOR OF PUBLIC WORKS

NOTE: STREETS and/or ROADS shown hereon and marked thereof as streets are for purposes of description only, and the same are not intended to be dedicated to public use, the fee simple title to the beds thereof is expressly reserved in the grantors of the deed to which this plat is attached, their heirs and assigns.

NOTE: COORDINATES and BEARINGS shown on this plat are referred to the system of coordinates established in The Baltimore County Metropolitan District and are based on the following traverse stations:

X-11744 TO	X-11744
X-11745	N 46836.76
AZIMUTH =	W 13992.64
273° 10' 08"	

OWNERS CERTIFICATE:
The requirements of section 72 D, Article 17 of the Annotated Code of Maryland, (Flack 1947 Supplement) as far as they relate to the preparation of this plat have been complied with.

SEMINARY ASSOCIATED LIMITED PARTNERSHIP
Thomas L. Peddy
OWNER: THOMAS L. PEDDY DATE

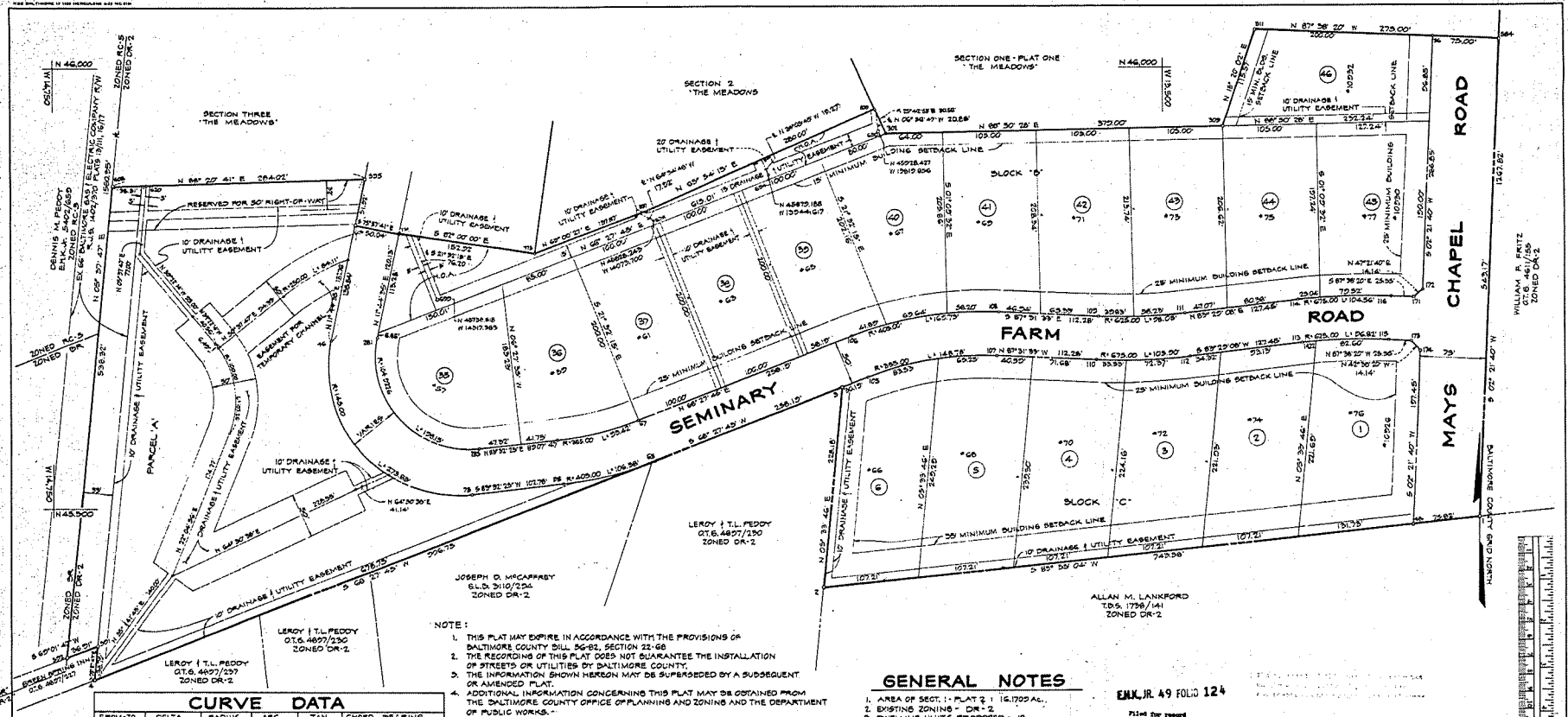
SURVEYORS CERTIFICATE:
I, EDMUND P. HAGAN a Registered Land Surveyor of the State of Maryland, do hereby certify that the land shown hereon has been laid out, and the plat thereof prepared in accordance with the provisions of the law relating to the subdivision of land known as House Bill #850, Chapter 1010 of the Acts of 1945 and subsequent amendatory acts.
Edmund P. Hagan 12/15/82
REGISTERED LAND SURVEYOR: No. 7010 DATE

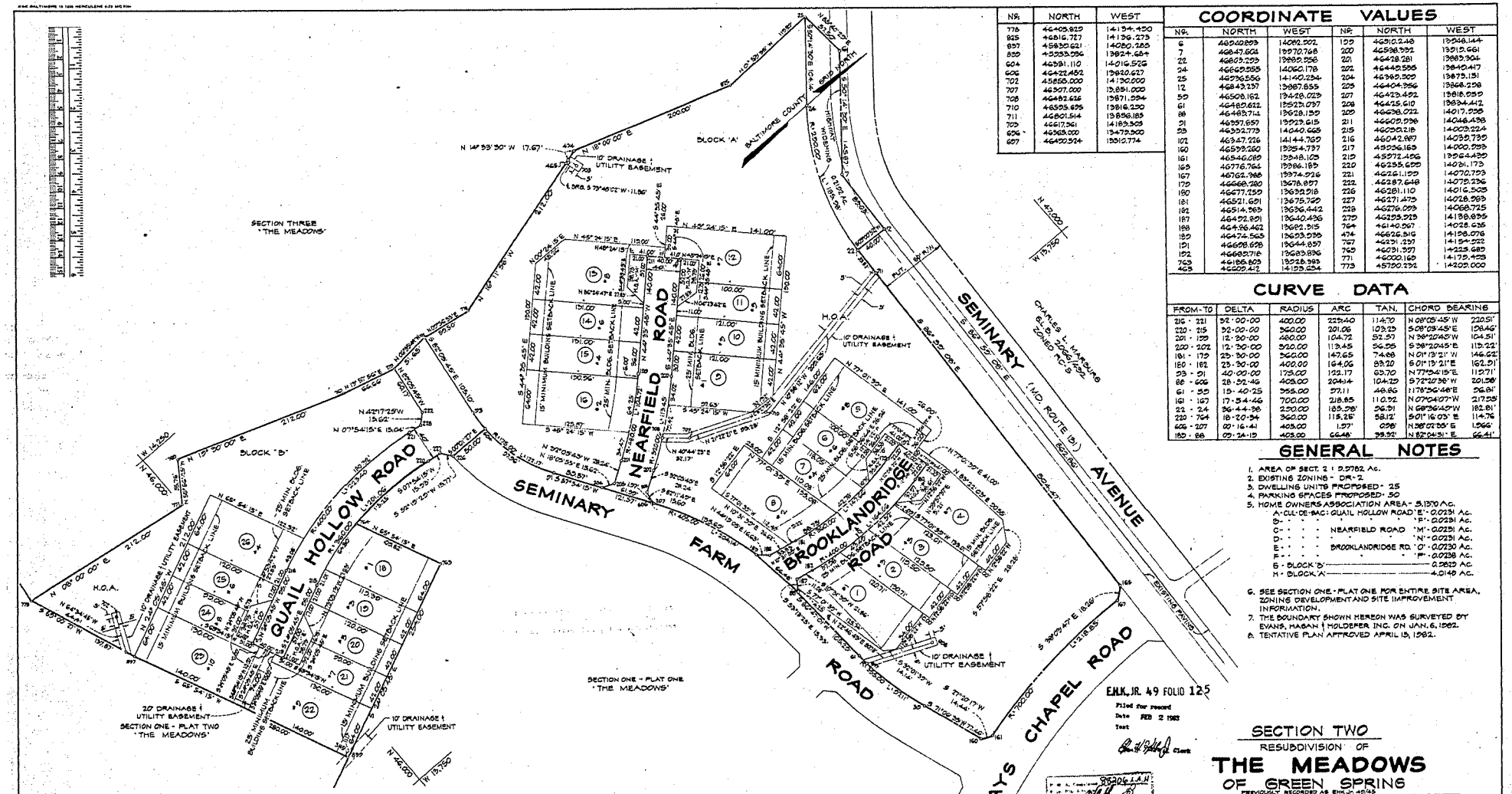
DAFT · McCUNE · WALKER INC.
LAND PLANNING CONSULTANTS
LANDSCAPE ARCHITECTS
ENGINEERS
200 EAST JOPPA ROAD, BALTIMORE, MD. 21204
TELEPHONE: 301-296-3333

COMPUTED J.R.G. DRAWN M.B.S. CHECKED J.R.G./E.P.H. J.O. - 81024

MSA SSU 1836-10305-1 47-123

BALTIMORE COUNTY CIRCUIT COURT (Land Records) Plat Book EHK, Jr. 49, Fol. 123-125, MSA_S1395_10305. Date available 1983/02/02. Printed 09/29/2022.


SECTION THREE
"THE MEADOWS"
SECTION 2
"THE MEADOWS"
SECTION ONE - PLAT ONE
"THE MEADOWS"
SEMINARY
ROAD
FARM
ROAD
CHAPEL
ROAD
MAYS
CHAPEL
ROAD
BLOCK "B"
BLOCK "C"
PARCEL "A"
DENNIS M. PEDDY
E.H.K.JR. 5402/660
ZONED RC-5
ZONED BR
ZONED DR-2
ZONED RC-5
LEROY & T.L. PEDDY
G.T.& 4607/230
ZONED DR-2
JOSEPH D. McCAFFREY
L.L.D. 3110/224
ZONED DR-2
ALLAN M. LANKFORD
T.D.S. 1758/141
ZONED DR-2
WILLIAM R. FRITZ
G.T.& 4611/155
ZONED DR-2
RESERVED FOR 50' RIGHT-OF-WAY
10' DRAINAGE & UTILITY EASEMENT
20' DRAINAGE & UTILITY EASEMENT
15' DRAINAGE & UTILITY EASEMENT
25' MINIMUM BUILDING SETBACK LINE
15' MINIMUM BUILDING SETBACK LINE
EASEMENT FOR TEMPORARY DRAINAGE
N 46,000
N 45,500
N 44,500
N 45,000
W 15,500
W 15,000
N 87° 36' 20" W 275.00'
N 66° 30' 28" E 372.00'
N 66° 30' 28" E 252.24'
S 67° 36' 20" E 275.00'
S 66° 27' 45" W 256.12'
S 64° 27' 45" W 256.12'
S 5° 02' 21" E 1347.82'
S 5° 02' 21" E 543.17'
N 5° 02' 21" W 1347.82'
N 5° 02' 21" W 543.17'
S 5° 02' 21" E 1347.82'
S 5° 02' 21" E 543.17'
N 66° 27' 41" E 284.02'
S 66° 27' 45" E 256.12'
S 64° 27' 45" W 256.12'
N 5° 02' 21" W 1347.82'
N 5° 02' 21" W 543.17'
S 5° 02' 21" E 1347.82'
S 5° 02' 21" E 543.17



NO.	NORTH	WEST
776	46405.929	14134.450
825	46816.727	14139.273
857	45830.621	14080.255
859	45253.086	13824.684
604	46591.110	14016.526
605	46425.693	13980.627
702	45855.000	14130.000
707	46307.000	13,851.000
708	46482.626	13871.284
710	46535.935	13816.290
711	46801.514	13856.183
709	46617.561	14183.305
606	46563.000	13479.900
607	46430.924	13510.774

COORDINATE VALUES

NO.	NORTH	WEST	NO.	NORTH	WEST
6	46540.893	14082.502	199	46310.248	13548.144
7	46847.604	13970.768	200	46598.532	13815.661
22	46803.293	13880.256	201	46428.281	13883.904
24	46669.855	14060.178	202	46445.595	13840.417
25	46736.556	14140.254	204	46365.300	13875.151
12	46843.257	13887.855	205	46404.396	13868.298
59	46508.162	13940.029	207	46423.482	13815.539
61	46480.612	13923.097	208	46415.610	13834.412
88	46468.714	13928.150	209	46698.072	14017.358
21	46597.657	13923.615	211	46605.936	14046.438
23	46352.773	14040.665	215	46253.218	14003.224
102	46347.226	14144.789	216	46042.887	14035.739
160	46539.220	13854.737	217	45956.185	14000.595
161	46546.089	13848.108	219	45772.456	13964.430
165	46776.764	13986.185	220	46255.602	14021.173
167	46762.988	13974.926	221	46261.152	14070.793
179	46668.780	13678.857	222	46287.648	14072.236
180	46677.259	13692.918	226	46281.110	14016.508
181	46521.621	13675.789	227	46271.475	14028.283
182	46514.383	13636.442	228	46276.093	14068.725
187	46492.831	13640.436	270	46253.213	14138.835
188	464.96.462	13682.315	764	46140.067	14028.626
189	46474.565	13693.538	674	46512.345	14198.076
191	46608.698	13644.857	767	46231.257	14154.222
192	46665.716	13683.896	769	46031.357	14225.685
769	46186.803	13726.383	771	46000.160	14172.428
463	46609.412	14123.654	773	45720.252	14209.000

CURVE DATA

FROM-TO	DELTA	RADIUS	ARC	TAN.	CHORD BEARING
216 - 221	32-00-00	400.00	223.40	114.70	N 68°05'45"W 220.51'
220 - 215	32-00-00	360.00	201.06	103.23	S 68°05'45"E 198.46'
201 - 199	12-20-00	480.00	104.72	52.50	N 36°20'45"W 104.51'
200 - 202	12-30-00	520.00	113.45	56.95	S 38°20'45"E 113.22'
181 - 179	25-30-00	360.00	147.65	74.88	N 01°13'21" W 146.52'
180 - 182	23-30-00	400.00	164.06	83.20	S 01°13'21"E 162.91'
23 - 21	40-20-00	128.00	102.17	53.70	N 77°54'15"E 119.71'
88 - 606	28-52-46	405.00	204.14	104.23	S 72°27'38"W 201.98'
61 - 59	15-40-25	355.00	97.11	48.86	N 76°56'48"E 96.81'
161 - 167	17-54-46	700.00	218.85	110.92	N 07°04'07"W 217.93'
23 - 24	86-44-38	230.00	185.28'	96.91	N 68°36'40"W 182.81'
220 - 764	18-20-54	360.00	115.25'	58.12'	S 01° 16' 03" E 114.76'
605 - 207	00-14-41	1395.00	1.27	0.98	N 36°07'55" E 1.266'
180 - 88	09-24-19	405.00	66.48'	33.32'	N 82°04'51" E 66.41'

GENERAL NOTES

1. AREA OF SECT. 2 : 9.5782 Ac.
2. EXISTING ZONING - DR-2
3. DWELLING UNITS PROPOSED - 25
4. PARKING SPACES PROPOSED - 50
5. HOME OWNERS ASSOCIATION AREA - 5.1370 Ac.
   - A - CUL-DE-SAC: QUAIL HOLLOW ROAD 'E' - 0.0231 Ac.
   - B - " " 'F' - 0.0231 Ac.
   - C - " " NEARFIELD ROAD 'M' - 0.0231 Ac.
   - D - " " " 'N' - 0.0231 Ac.
   - E - " " BROOKLANDRIDGE RD. 'O' - 0.0230 Ac.
   - F - " " " 'P' - 0.0238 Ac.
   - G - BLOCK 'B' ——— 0.2822 Ac.
   - H - BLOCK 'A' ——— 4.0140 Ac.
6. SEE SECTION ONE - PLAT ONE FOR ENTIRE SITE AREA, ZONING DEVELOPMENT AND SITE IMPROVEMENT INFORMATION.
7. THE BOUNDARY SHOWN HEREON WAS SURVEYED BY EVANS, HAGAN & HOLDEFER INC. ON JAN. 6, 1982.
8. TENTATIVE PLAN APPROVED APRIL 15, 1982.

NOTE:
1. THIS PLAT MAT EXPIRE IN ACCORDANCE WITH THE PROVISIONS OF BALTIMORE COUNTY BILL 36-82, SECTION 22-68.
2. HIGHWAY AND HIGHWAY WIDENING, SLOPE, DRAINAGE AND UTILITY EASEMENTS SHOWN HEREON ARE RESERVED UNTO THE DEVELOPER AND ARE HEREBY OFFERED FOR DEDICATION TO BALTIMORE COUNTY, MARYLAND. THE DEVELOPER HIS PERSONAL REPRESENTATIVES AND ASSIGNS SHALL CONVEY SAID AREAS BY DEED TO BALTIMORE COUNTY, MARYLAND AT NO COST.
3. THE RECORDING OF THIS PLAT DOES NOT GUARANTEE THE INSTALLATION OF STREETS OR UTILITIES BY BALTIMORE COUNTY.
4. THE INFORMATION SHOWN HEREON MAY BE SUPERSEDED BY A SUBSEQUENT OR AMENDED PLAT.
5. ADDITIONAL INFORMATION CONCERNING THIS PLAT MAY BE OBTAINED FROM THE BALTIMORE COUNTY OFFICE OF PLANNING AND ZONING AND THE DEPARTMENT OF PUBLIC WORKS.

E.H.K. JR. 49 FOLIO 125
Filed for record
Date FEB 2 1983
Test
Clerk

SECTION TWO
RESUBDIVISION OF
THE MEADOWS
OF GREEN SPRING
PREVIOUSLY RECORDED AS E.H.K.JR. 46 FOLIO 149

ELECTION DISTRICT 8 - BALTIMORE COUNTY, MARYLAND
SCALE : 1" : 50' DECEMBER, 1, 1982

REASON FOR RESUBDIVISION
WIDEN LOTS TO ACCOMODATE INCREASE IN UNIT WIDTH

OWNER - DEVELOPER
SEMINARY ASSOCIATES LIMITED PARTNERSHIP
10749 FALLS ROAD
LUTHERVILLE, MARYLAND 21093
DEED REF.: E.H.K.JR. 6425/1

APPROVED:
DATE: DEPUTY STATE & COUNTY HEALTH OFFICER

1/24/83
DATE: DIRECTOR OF PLANNING AND ZONING

1/26/83
DATE: DIRECTOR OF PUBLIC WORKS

NOTE:
STREETS and/or ROADS shown hereon and mention thereof is made are for purposes of description only, and the same are not intended to be dedicated to public use, the fee simple title to the beds thereof is expressly reserved in the grantors of the deed to which this plat is attached, their heirs and assigns.

NOTE:
COORDINATES and BEARINGS shown on this plat are referred to the system of coordinates established in The Baltimore County Metropolitan District and are based on the following traverse stations:

X-11744 to	X-11744
X-11745	N 46816.76
AZIMUTH - 275° 10' 08"	W 13912.64

OWNERS CERTIFICATE
The requirements of Section 22-8, Article 17 of the Annotated Code of Maryland, (Plank 1967 Supplement) as far as they relate to the preparation of this plat have been complied with.
SEMINARY ASSOCIATES LIMITED PARTNERSHIP
OWNER: THOMAS L. PEDDY DATE

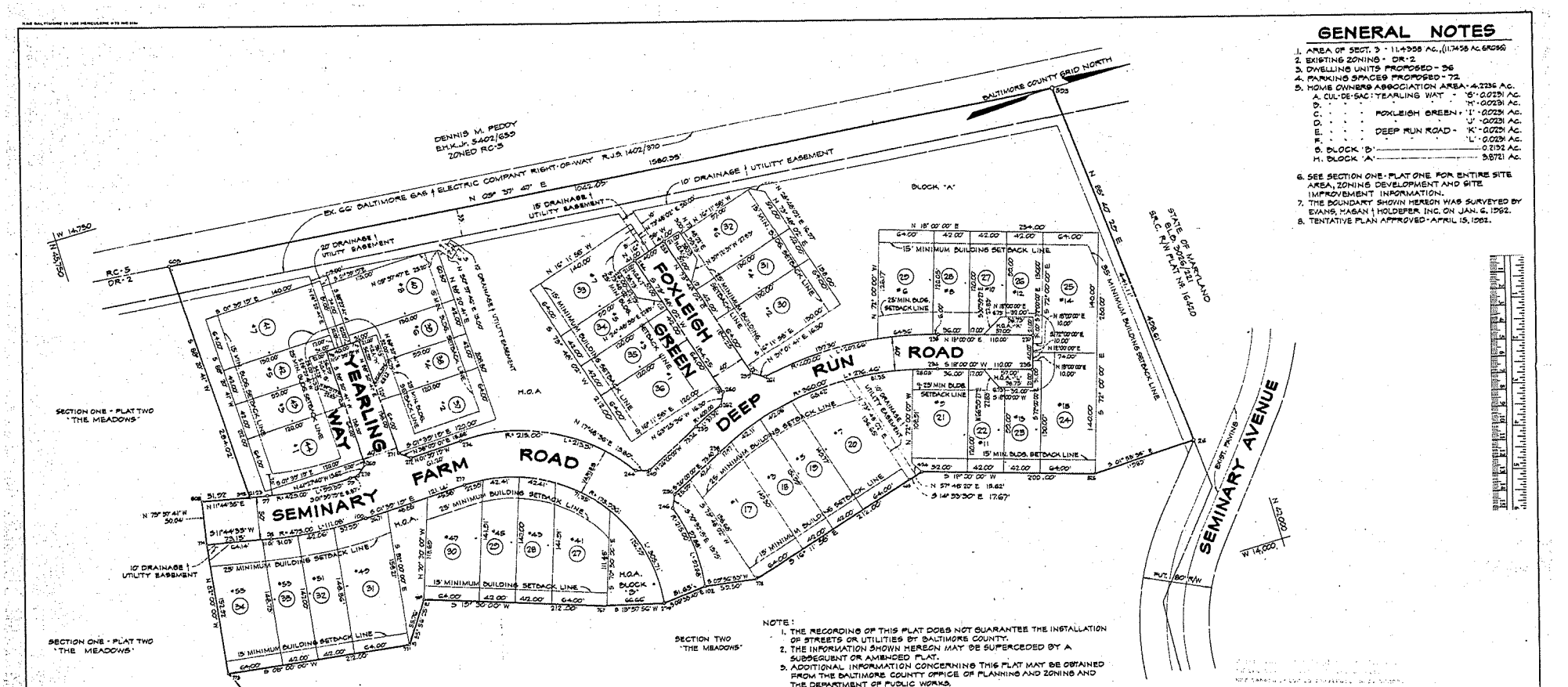
SURVEYORS CERTIFICATE
I, EDMUND R. HAUB a Registered Land Surveyor of the State of Maryland, do hereby certify that the land shown hereon has been laid out, and the plat thereof prepared in accordance with the provisions of the law relating to the subdivision of land known as House Bill #459, Chapter 1016 of the Acts of 1945 and subsequent amendatory acts.
REGISTERED LAND SURVEYOR: NO. 7010 DATE 12/15/82

DAFT · McCUNE · WALKER INC.
LAND PLANNING CONSULTANTS
LANDSCAPE ARCHITECTS
ENGINEERS
200 EAST JOPPA ROAD, BALTIMORE, MD 21204
TELEPHONE 301 296-3333

COMPUTED J.R.S. DRAWN M.S.S. CHECKED J.R.S./E.R.H./D.P.B. 81024

MSA SSU 1986-10305-3 49-125

BALTIMORE COUNTY CIRCUIT COURT | Subdivision Plats, Bay Plat Book Extr, 2-, 49, pp. 123-126, MSA_S1235_10305, Date available 11/12/2020, Printed 08/30/2022.



GENERAL NOTES

1. AREA OF SECT. 3 - 11.4358 Ac. (11.7458 Ac. GROSS)
2. EXISTING ZONING - DR-2
3. DWELLING UNITS PROPOSED - 36
4. PARKING SPACES PROPOSED - 72
5. HOME OWNERS ASSOCIATION AREA - 4.2236 Ac.
   - A. CUL-DE-SAC: TEARLING WAY - 'G' - 0.0231 Ac.
   - B. " " " " - 'H' - 0.0231 Ac.
   - C. " " FOXLEIGH GREEN - 'I' - 0.0231 Ac.
   - D. " " " " - 'J' - 0.0231 Ac.
   - E. " " DEEP RUN ROAD - 'K' - 0.0231 Ac.
   - F. " " " " - 'L' - 0.0231 Ac.
   - G. BLOCK 'B' - 0.2152 Ac.
   - H. BLOCK 'A' - 3.8721 Ac.
6. SEE SECTION ONE - PLAT ONE FOR ENTIRE SITE AREA, ZONING DEVELOPMENT AND SITE IMPROVEMENT INFORMATION.
7. THE BOUNDARY SHOWN HEREON WAS SURVEYED BY EVANS, HAGAN & HOLDEFER, INC. ON JAN. 6, 1982.
8. TENTATIVE PLAN APPROVED - APRIL 15, 1982.

NOTE:
1. THE RECORDING OF THIS PLAT DOES NOT GUARANTEE THE INSTALLATION OF STREETS OR UTILITIES BY BALTIMORE COUNTY.
2. THE INFORMATION SHOWN HEREON MAY BE SUPERCEDED BY A SUBSEQUENT OR AMENDED PLAT.
3. ADDITIONAL INFORMATION CONCERNING THIS PLAT MAY BE OBTAINED FROM THE BALTIMORE COUNTY OFFICE OF PLANNING AND ZONING AND THE DEPARTMENT OF PUBLIC WORKS.

COORDINATE VALUES

NO.	NORTH	WEST	NO.	NORTH	WEST
25	46836.556	14149.234	259	46472.182	14364.503
595	45874.487	14358.409	260	46433.770	14353.746
726	46010.630	14533.913	261	46496.148	14356.504
57	45825.268	14304.089	262	46426.479	14339.169
58	45985.092	14345.196	760	46051.397	14225.682
59	45954.045	14365.901	767	46221.237	14154.022
100	45905.498	14355.592	269	46014.616	14365.570
102	46547.226	14144.760	270	46002.510	14385.628
253	46691.176	14343.301	271	46054.520	14357.126
254	46678.815	14307.259	272	46066.883	14367.477
255	46788.431	14278.267	274	46128.057	14382.245
257	46795.792	14311.502	277	46116.575	14358.022
258	46403.786	14288.444	279	46295.923	14156.835
259	46392.220	14324.306	605	45823.653	14408.976
244	46310.903	14296.503	529	46909.287	14360.000
246	46288.536	14241.416	603	45866.282	14682.310
249	46325.547	14292.071	771	46000.162	14172.455
250	46343.789	14256.268	465	46609.412	14159.634
253	46420781	14541.634	773	45750.232	14405.000
254	46382.260	14530.975	774	46236.516	14128.076
			774	45811.514	14260.451

NO.	NORTH	WEST
714	46180.734	14602.471
778	46405.820	14134.490
754	46050.615	14535.068
8&A	46816.757	14136.273

CURVE DATA

FROM-TO	DELTA	RADIUS	ARC	TAN.	CHORD BEARING
57 - 59	19° 25' 55"	425.00'	53.55'	40.52'	N 05° 02' 38" E 29.16'
100 - 58	19° 23' 55"	475.00'	111.08'	56.75'	S 05° 02' 36" W 110.82'
274 - 244	56° 53' 56"	215.00'	213.51'	116.49'	N 26° 47' 30" E 204.84'
277 - 279	25° 39' 34"	175.9361'	305.71'	208.04'	N 48° 07' 28" E 268.68'
259 - 262	05° 20' 45"	400.00'	37.32'	18.67'	N 29° 15' 37" W 37.31'
261 - 258	25° 44' 41"	400.00'	207.66'	106.22'	N 05° 07' 35" E 205.93'
254 - 236	44° 00' 00"	360.00'	276.46'	145.45'	S 04° 00' 00" E 269.72'
246 - 102	26° 05' 04"	215.00'	97.88'	49.80'	N 64° 51' 45" E 97.04'

NOTE:
1. THIS PLAT MAY EXPIRE IN ACCORDANCE WITH THE PROVISIONS OF BALTIMORE COUNTY BILL 56-82, SECTION 22-68.
2. HIGHWAY AND HIGHWAY WIDENING, SLOPE, DRAINAGE AND UTILITY EASEMENTS SHOWN HEREON ARE RESERVED UNTO THE DEVELOPER AND ARE HEREBY OFFERED FOR DEDICATION TO BALTIMORE COUNTY, MARYLAND. THE DEVELOPER, HIS PERSONAL REPRESENTATIVES AND ASSIGNS SHALL CONVEY SAID AREAS BY DEED TO BALTO. CO., MD. AT NO COST.

E.H.K.,JR. 49 FOLIO 126
Filed for record
Date FEB 2 1983
Test
Clerk

SECTION THREE
RESUBDIVISION OF
THE MEADOWS OF GREEN SPRING
PREVIOUSLY RECORDED AS E.H.K.,JR. 49/46

ELECTION DISTRICT 8 - BALTIMORE COUNTY, MARYLAND
SCALE: 1" = 50' DECEMBER 1, 1982

REASONS FOR RESUBDIVISION
1. CHANGE PHEASANT RUN ROAD NAME TO TEARLING WAY.
2. WIDEN LOTS TO ACCOMODATE INCREASE IN UNIT WIDTH.

OWNER - DEVELOPER
SEMINARY ASSOCIATES LIMITED PARTNERSHIP
10745 RALLS ROAD
LUTHERVILLE, MARYLAND 21093
DEED REF.: E.H.K.,JR. 5425/1

APPROVED:
11-4-83 DATE: DEPUTY STATE & COUNTY HEALTH OFFICER

1/26/83 DATE: DIRECTOR OF PLANNING AND ZONING

1/21/83 DATE: DIRECTOR OF PUBLIC WORKS

NOTE:
STREETS and/or ROADS shown hereon and marked thereon in deeds are for purposes of tax symptom only, and the same are not intended to be dedicated to public use, the fee simple title to the beds thereof is expressly reserved to the grantors of the deed to which this plat is attached, their heirs and assigns.

NOTE:
COORDINATES and BEARINGS shown on this plat are referred to the system of coordinates established in The Baltimore County Metropolitan District and are based on the following monument stations:

X-11744 to X-11745
AZIMUTH: 275° 10' 08"

X-11744	X-11745
N 46836.78	
W 13932.64	

OWNERS CERTIFICATE:
The requirements of Section 22 B, Article 17 of the Annotated Code of Maryland, (Flack 1968 Supplement) as far as they relate to the preparation of this plat have been complied with.

SEMINARY ASSOCIATES LIMITED PARTNERSHIP

OWNER: THOMAS L. PEDDY DATE

SURVEYORS CERTIFICATE:
I, EDMUND R. HAILE, a Registered Land Surveyor of the State of Maryland, do hereby certify that the land shown hereon has been laid out, and the plat thereof prepared in accordance with the provisions of the law relating to the subdivision of land known as House Bill #856, Chapter 1018 of the Acts of 1945 and subsequent amendatory acts.

REGISTERED LAND SURVEYOR NR. 7... DATE

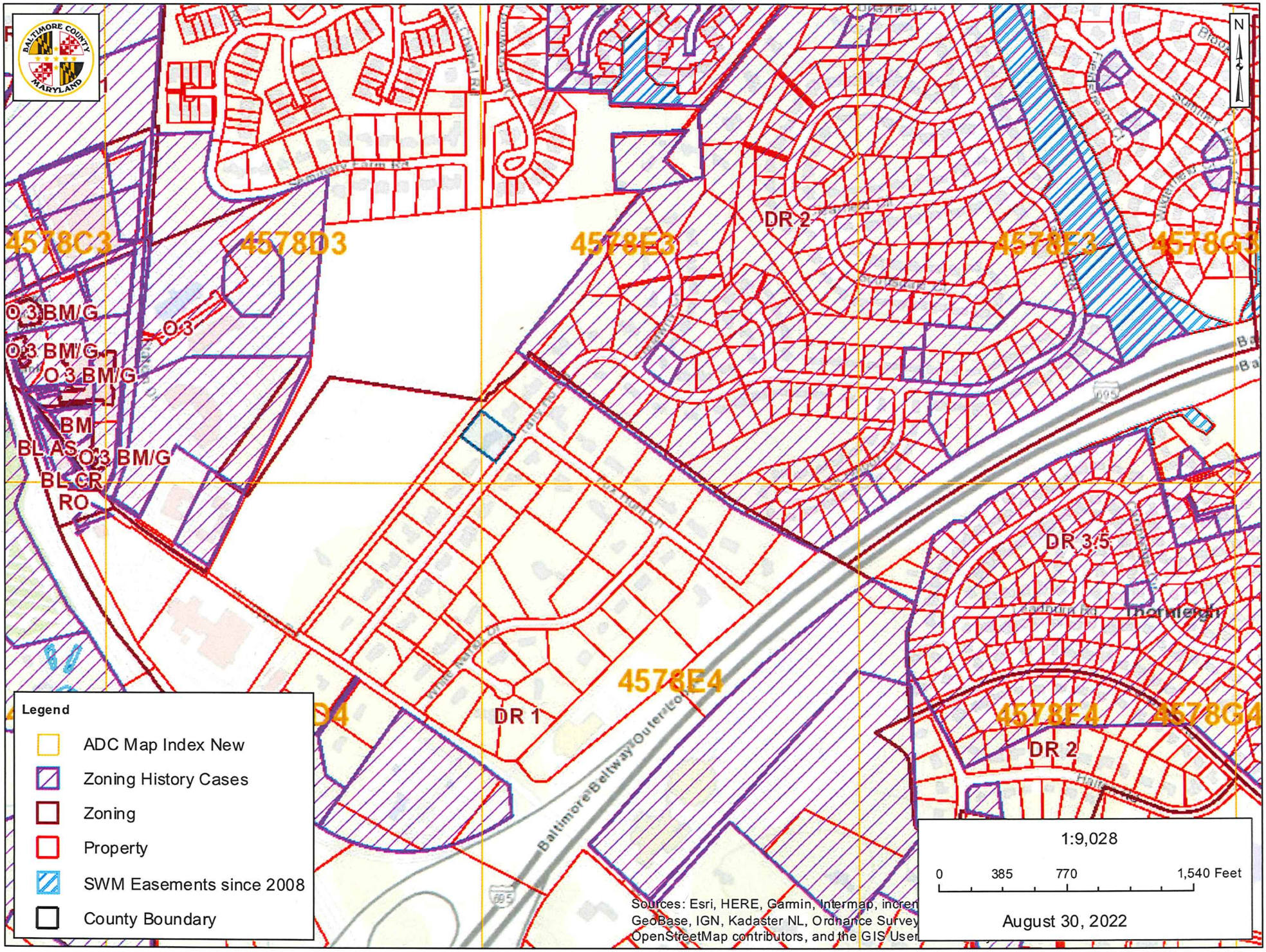
DAFT · McCUNE · WALKER INC.
LAND PLANNING CONSULTANTS
LANDSCAPE ARCHITECTS
ENGINEERS
850 EAST JOPPA ROAD, BALTIMORE, MD. 21204
TELEPHONE 301-296-3333

COMPUTED J.R.G. DRAWN M.G.S. CHECKED J.R.G./E.R.H. J.O. - 81024

MSA-SM81236-10305-4 49-126

BALTIMORE COUNTY CIRCUIT COURT (Subdivision Plat) BAS Plat Book E.H.K. Jr. 49, pp. 125-126. MSA_81236_10305. Date available 1/31/2022. Printed 02/20/2022.

Baltimore County - My Neighborhood



Real Property Data Search ( )
Search Result for BALTIMORE COUNTY

View Map | View GroundRent Redemption | View GroundRent Registration

Special Tax Recapture: None

Account Identifier: **District -** 08 **Account Number -** 0801097200

Owner Information

Owner Name: GOLDSMITH JASON
GOLDSMITH ALISA ET AL

Use: RESIDENTIAL
Principal Residence: YES

Mailing Address: 8214 TALLY HO RD
LUTHERVILLE MD 21093-4717

Deed Reference: /46951/ 00298

Location & Structure Information

Premises Address: 8214 TALLY HO RD
LUTHERVILLE 21093-4717

Legal Description: 8214 TALLY HO RD
HEATHERFIELD

Map:	Grid:	Parcel:	Neighborhood:	Subdivision:	Section:	Block:	Lot:	Assessment Year:	Plat No:
0060	0020	0649	8070141.04	0000			8	2023	Plat Ref: 0019/ 0109

Town: None

Primary Structure Built	Above Grade Living Area	Finished Basement Area	Property Land Area	County Use
1956	3,096 SF		30,000 SF	04

Stories	Basement	Type	Exterior	Quality	Full/Half Bath	Garage	Last Notice of Major Improvements
1	NO	STANDARD UNIT	BRICK/	5	2 full/1 half	1 Attached	

Value Information

	Base Value	Value As of 01/01/2020	Phase-in Assessments As of 07/01/2022	As of 07/01/2023
Land:	189,000	189,000		
Improvements	368,000	368,000		
Total:	557,000	557,000	557,000	
Preferential Land:	0			

Transfer Information

Seller: BERG SHARON ANN	**Date:** 05/27/2022	**Price:** $0
Type: NON-ARMS LENGTH OTHER	**Deed1:** /46951/ 00298	**Deed2:**
Seller: BERG ELLIOTT M	**Date:** 12/21/2000	**Price:** $0
Type: NON-ARMS LENGTH OTHER	**Deed1:** /14877/ 00504	**Deed2:**
Seller: AYERS RAYNOR L,JR	**Date:** 12/14/1972	**Price:** $70,500
Type: ARMS LENGTH IMPROVED	**Deed1:** /05322/ 00602	**Deed2:**

Exemption Information

Partial Exempt Assessments:	Class	07/01/2022	07/01/2023
County:	000	0.00	
State:	000	0.00	
Municipal:	000	0.00	0.00

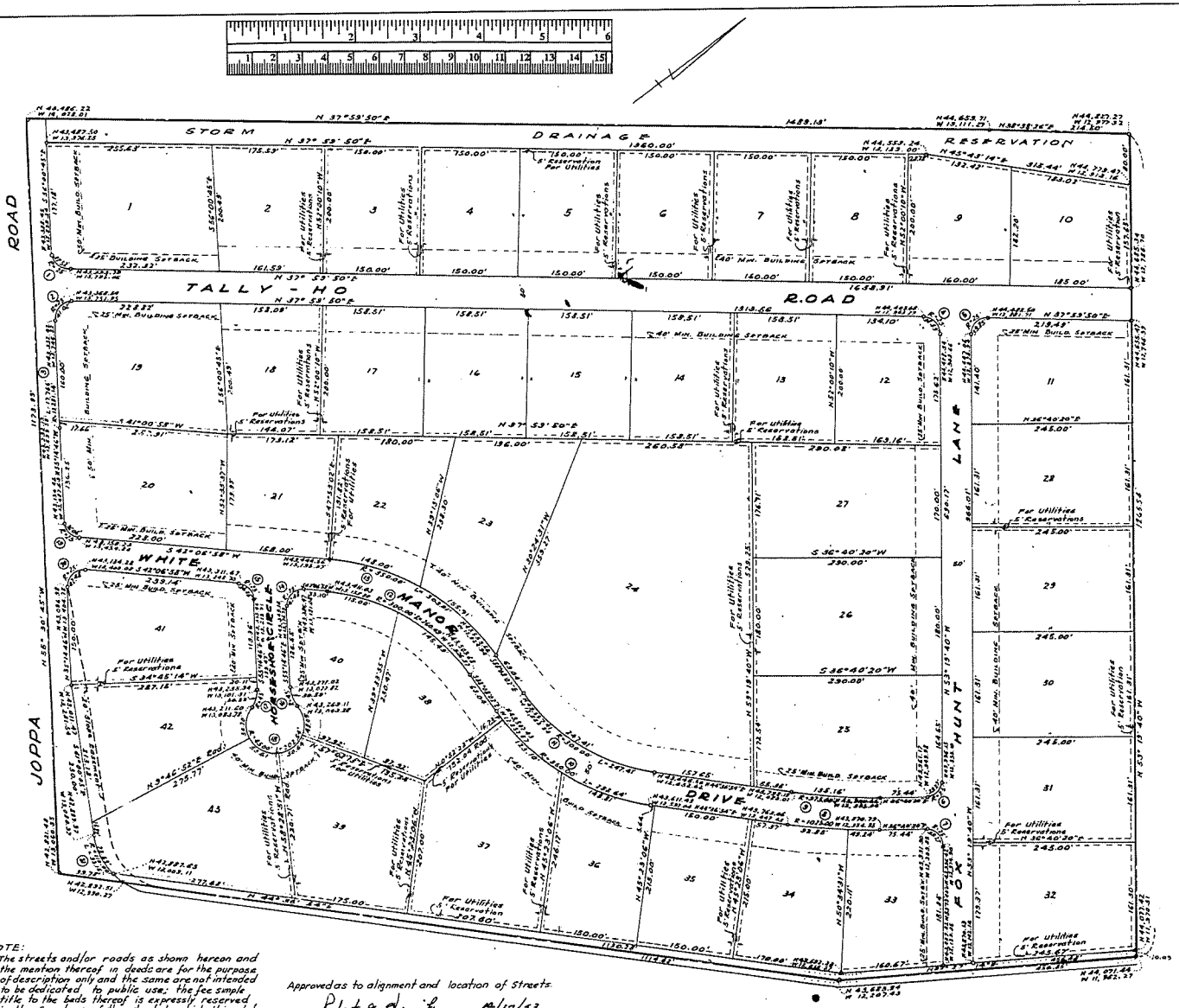
Special Tax Recapture: None

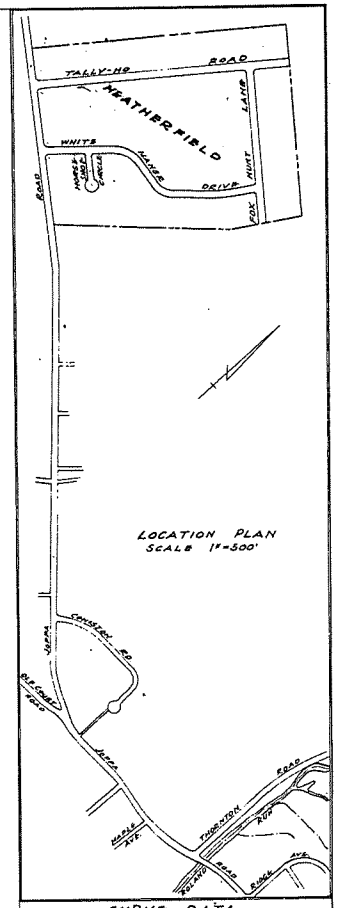
Homestead Application Information

Homestead Application Status: Approved 07/05/2010

Homeowners' Tax Credit Application Information

Homeowners' Tax Credit Application Status: No Application **Date:**





LOCATION PLAN
SCALE 1"=500'

CURVE DATA						
No.	Radius	Δ	Arc.	Tan	Chord	L.C.B.
1	25.00'	85°59' 25"	37.52'	23.31'	34.10'	S 80°59' 33"W
2	25.00'	94°00' 35"	41.02'	26.81'	36.57'	N 9° 00' 28"W
3	1,328.64'	0° 45' 59"	177.66'	88.83'	177.66'	S 55° 37' 45"E
4	25.00'	88°40' 30"	38.69'	24.45'	34.94'	N 82°20' 05"E
5	25.00'	91°19' 30"	39.85'	25.58'	35.76'	N 7° 39' 55"W
6	25.00'	90°00' 00"	39.27'	25.00'	35.36'	S 8° 19' 40"E
7	25.00'	90°00' 00"	39.27'	25.00'	35.36'	S 81°40' 20"W
8	1,025.00'	7°56' 34"	142.09'	71.16'	141.98'	N 40°38' 37"E
9	975.00'	7°56' 34"	135.16'	67.63'	135.05'	N 40°38' 37"E
10	350.00'	47° 15' 04"	288.64'	153.10'	280.53'	N 68°14' 26"E
11	300.00'	47° 15' 04"	247.41'	131.25'	240.43'	N 68°14' 26"E
12	300.00'	49° 45' 00"	260.45'	139.10'	252.38'	S 66°53' 28"W
13	350.00'	49° 45' 00"	303.91'	162.28'	294.45'	S 66°53' 28"W
14	25.00'	97° 21' 44"	42.48'	28.44'	37.55'	N 6° 33' 56"W
15	25.00'	82° 38' 16"	36.06'	21.98'	33.01'	N 83°26' 06"E
16	45.00'	38°56' 33"	30.59'	15.91'	30.00'	S 74°43' 03"E
17	45.00'	38°56' 33"	30.59'	15.91'	30.00'	S 35°46' 29"E
18	45.00'	257°53' 06"	202.54'	—	—	—
19	25.00'	82° 38' 16"	36.06'	21.98'	33.01'	S 83°26' 06"W
20	25.00'	97° 21' 44"	42.48'	28.44'	37.55'	N 6° 33' 56"W
21	110.00'	45°31' 31"	73.16'	48.58'	90.40'	S 85°15' 59"E

NOTE:
The streets and/or roads as shown hereon and the mention thereof in deeds are for the purpose of description only and the same are not intended to be dedicated to public use; the fee simple title to the beds thereof is expressly reserved in the Grantors of the deed to which this plat is attached, their heirs and assigns.

OWNERS CERTIFICATE:
Certification is hereby made that all the requirements of the Annotated Code of Maryland Chapter 1016 Acts of 1945 have been complied with on this plat.

CERTIFICATION:
Certification is hereby made that this plat was computed by G.W. Stephens Jr. & Associates and that it meets the requirements of Section 72B Article 17 of the Annotated Code of Maryland 1947 Supplement.

James O. Armstrong, Jr.
Reg. No. 2086

Approved as to alignment and location of Streets.
Robert J. Kopp 12/17/53
Roads Engineer of Baltimore Co., Md.

Approved by Baltimore County Planning Commission
Malcolm H. Dill Dec. 16, 1953
Director

NOTE:
Coordinates are related to traverse of Baltimore County Metropolitan District.

SUBDIVISION PLAN

HEATHERFIELD

BALTIMORE COUNTY, MD. ELECTION DISTRICT NO. 8
SCALE: 1 IN = 100 FT. AUGUST 1953

C. PRESTON SCHEFFENACKER AND
E. KINGDON HURLOCK-DEVELOPERS
334 ST. PAUL STREET-BALTIMORE, MD.

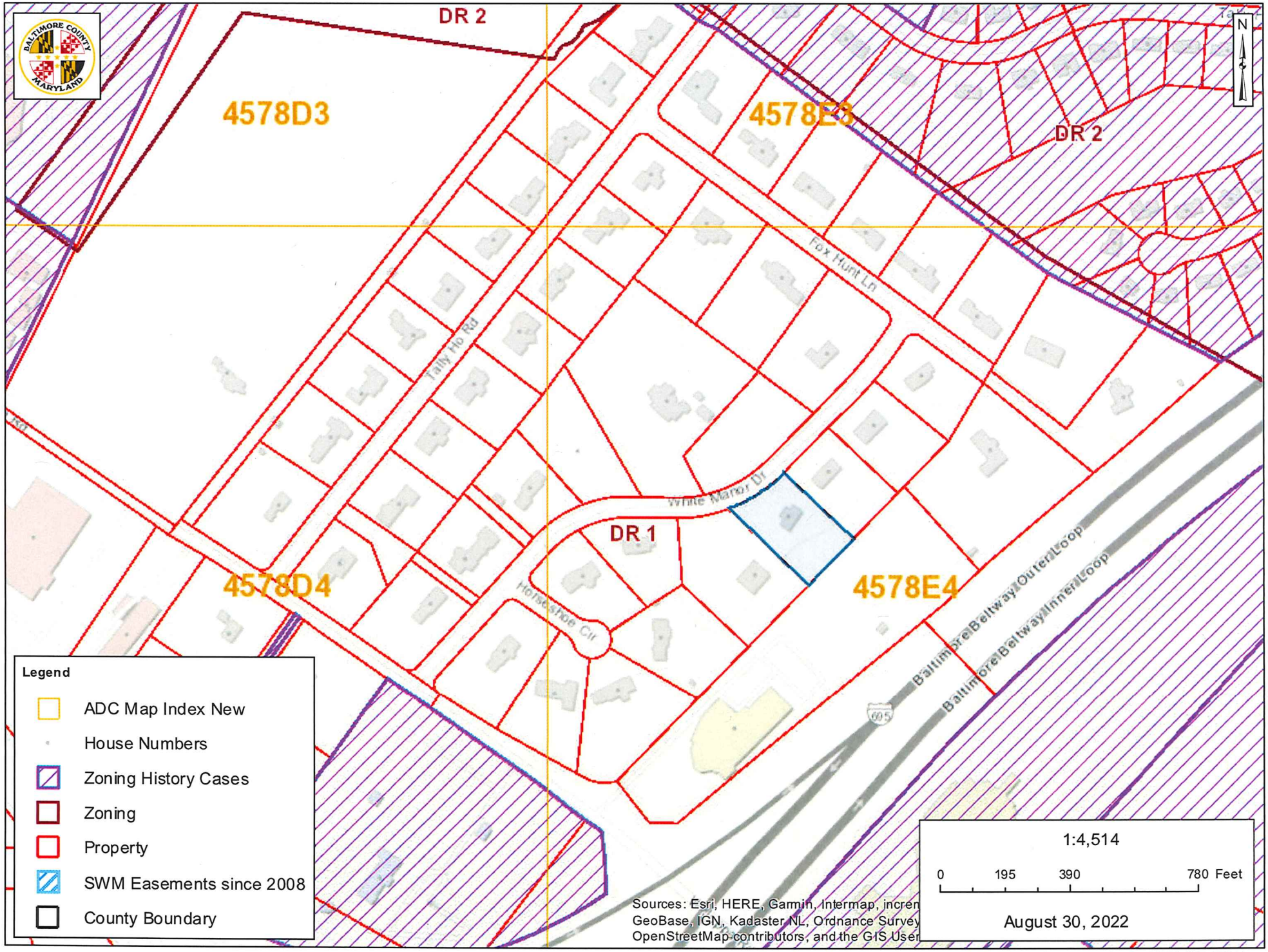
G.L.B. No 19 Folio 109

FILED FOR RECORD WITH
FROM
TO JAN 8 - 1954
, 19
TEST George L. Byerly
Clerk

BALTIMORE COUNTY CIRCUIT COURT (Subdivision Plats, BA) Plat Book GLB 19, p. 109, MSA_S1236_912. Date available 1954/01/08. Printed 08/30/2022.

MSA SSU 1236-912

Baltimore County - My Neighborhood



Real Property Data Search ( )
Search Result for BALTIMORE COUNTY

View Map | View GroundRent Redemption | View GroundRent Registration

Special Tax Recapture: None

Account Identifier: **District -** 08 **Account Number -** 0808056700

Owner Information

Owner Name: TOWNSLEY MARK
TOWNSLEY LARA
Use: RESIDENTIAL
Principal Residence: YES
Mailing Address: 8209 WHITE MANOR DR
LUTHERVILLE MD 21093-4731
Deed Reference: /40178/ 00169

Location & Structure Information

Premises Address: 8209 WHITE MANOR DR
LUTHERVILLE 21093-4731
Legal Description: 524 NE HORSESHOE CIRCLE
HEATHERFIELD

Map:	Grid:	Parcel:	Neighborhood:	Subdivision:	Section:	Block:	Lot:	Assessment Year:	Plat No:
0060	0020	0649	8070141.04	0000		36		2023	Plat Ref: 0019/ 0109

Town: None

Primary Structure Built	Above Grade Living Area	Finished Basement Area	Property Land Area	County Use
1957	1,888 SF	600 SF	34,960 SF	04

Stories	Basement	Type	Exterior	Quality	Full/Half Bath	Garage	Last Notice of Major Improvements
1 1/2	YES	STANDARD UNIT	FRAME/5		4 full/ 1 half		

Value Information

	Base Value	Value As of 01/01/2020	Phase-in Assessments As of 07/01/2022	As of 07/01/2023
Land:	211,200	211,200		
Improvements	308,400	308,400		
Total:	519,600	519,600	519,600	
Preferential Land:	0			

Transfer Information

Seller: WATSON CONSTANCE M	**Date:** 04/24/2018	**Price:** $495,000
Type: ARMS LENGTH IMPROVED	**Deed1:** /40178/ 00169	**Deed2:**
Seller: GOLDBERG HERMAN K	**Date:** 08/21/1972	**Price:** $62,000
Type: ARMS LENGTH IMPROVED	**Deed1:** /05293/ 00646	**Deed2:**
Seller:	**Date:**	**Price:**
Type:	**Deed1:**	**Deed2:**

Exemption Information

Partial Exempt Assessments:	Class	07/01/2022	07/01/2023
County:	000	0.00	
State:	000	0.00	
Municipal:	000	0.00|	0.00|

Special Tax Recapture: None

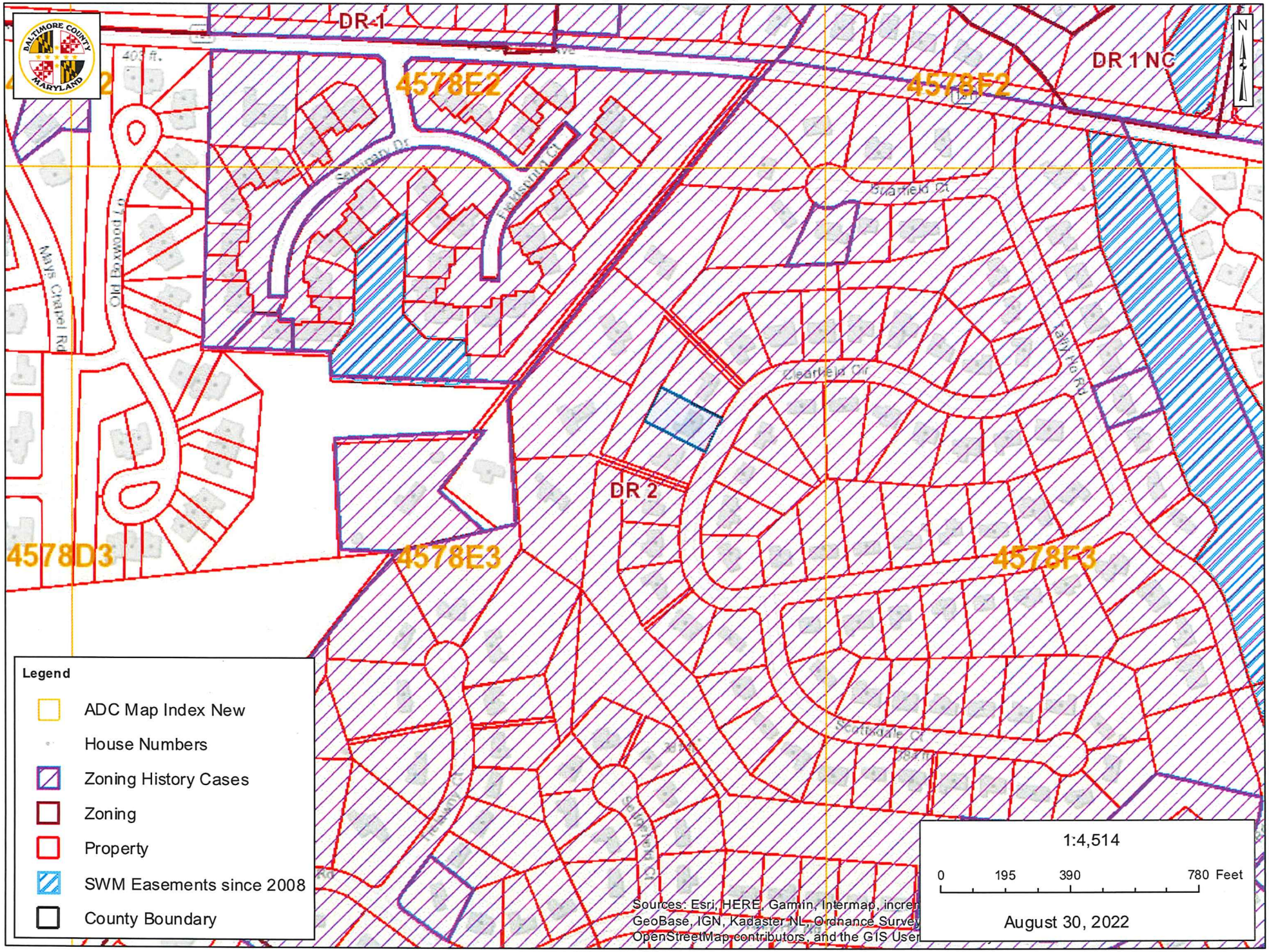
Homestead Application Information

Homestead Application Status: Approved 05/22/2018

Homeowners' Tax Credit Application Information

Homeowners' Tax Credit Application Status: No Application **Date:**

Baltimore County - My Neighborhood



Real Property Data Search ( )
Search Result for BALTIMORE COUNTY

View Map | View GroundRent Redemption | View GroundRent Registration

Special Tax Recapture: None

Account Identifier: **District -** 08 **Account Number -** 0802069930

Owner Information

Owner Name: CREIGHTON DAVID M
CREIGHTON JOANNE

Mailing Address: 1222 CLEARFIELD CIR
LUTH-TIMONIUM MD 21093-4706

Use: RESIDENTIAL
Principal Residence: YES
Deed Reference: /10161/ 00550

Location & Structure Information

Premises Address: 1222 CLEARFIELD CIR
LUTH-TIMONIUM 21093-4706

Legal Description: 1222 CLEARFIELD CIR NS SEMINARY RIDGE

Map:	Grid:	Parcel:	Neighborhood:	Subdivision:	Section:	Block:	Lot:	Assessment Year:	Plat No:	Plat Ref:
0060	0021	0707	8070142.04	0000		B	22	2023	2	0032/ 0021

Town: None

Primary Structure Built	Above Grade Living Area	Finished Basement Area	Property Land Area	County Use
1969	2,188 SF		14,400 SF	04

Stories	Basement	Type	Exterior	Quality	Full/Half Bath	Garage	Last Notice of Major Improvements
2	NO	SPLIT LEVEL	ASBESTOS SHINGLE/4		2 full/ 1 half	1 Attached	

Value Information

	Base Value	Value As of 01/01/2020	Phase-in Assessments As of 07/01/2022	As of 07/01/2023
Land:	206,100	206,100		
Improvements	264,200	264,200		
Total:	470,300	470,300	470,300	
Preferential Land:	0			

Transfer Information

Seller: JONES MICHAEL W	**Date:** 11/23/1993	**Price:** $234,900
Type: ARMS LENGTH IMPROVED	**Deed1:** /10161/ 00550	**Deed2:**
Seller: STAMPONE ANTHONY J	**Date:** 08/02/1989	**Price:** $140,000
Type: ARMS LENGTH IMPROVED	**Deed1:** /08239/ 00136	**Deed2:**
Seller:	**Date:**	**Price:**
Type:	**Deed1:**	**Deed2:**

Exemption Information

Partial Exempt Assessments:	Class	07/01/2022	07/01/2023
County:	000	0.00	
State:	000	0.00	
Municipal:	000	0.00	0.00

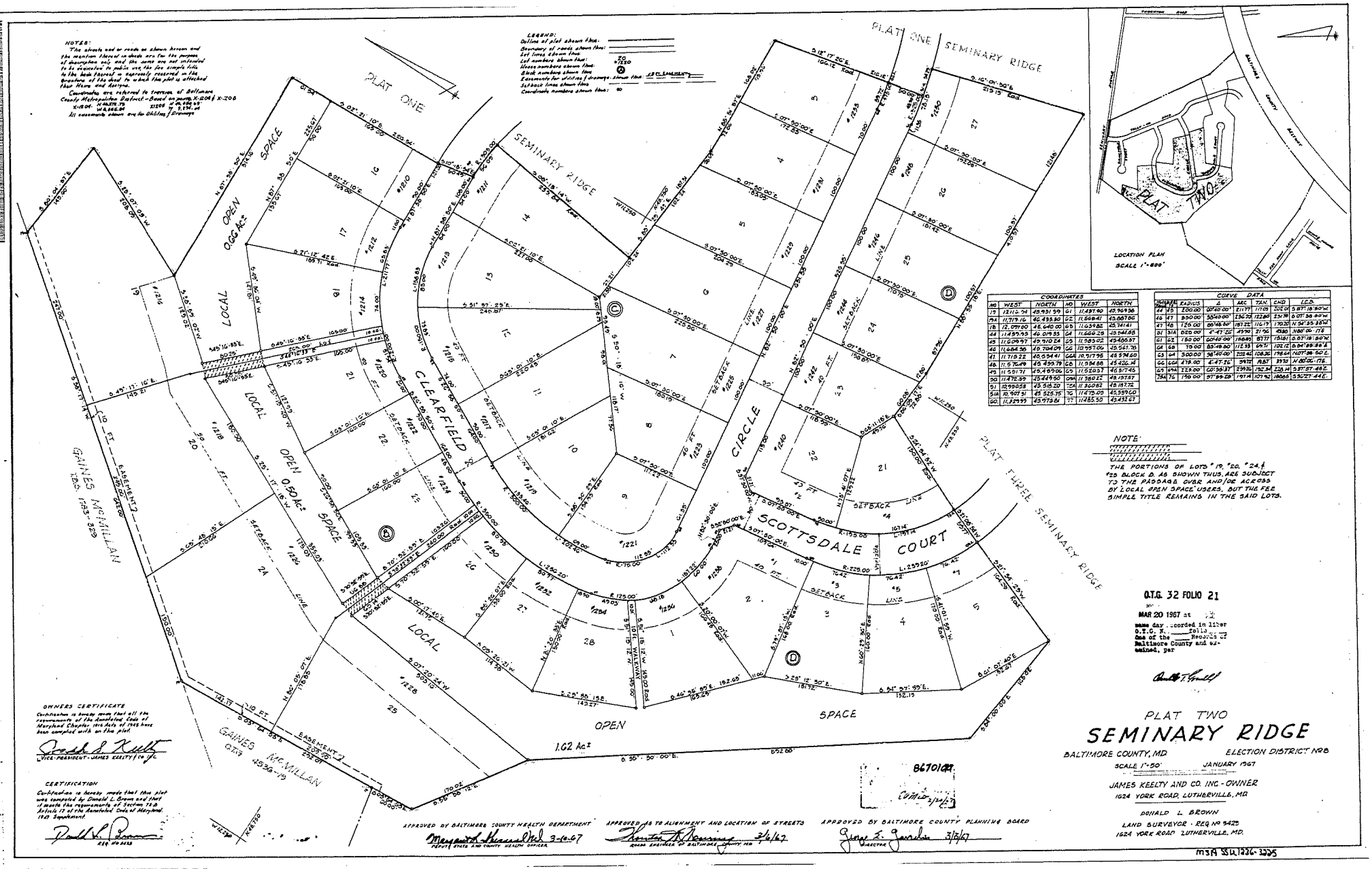
Special Tax Recapture: None

Homestead Application Information

Homestead Application Status: Approved 09/13/2008

Homeowners' Tax Credit Application Information

Homeowners' Tax Credit Application Status: No Application **Date:**



NO	COORDINATES WEST	NORTH	NO	WEST	NORTH
15	13112.74	45931.59	G1	11487.90	45.969.98
14	11719.16	46.493.90	G2	11.668.41	45.867.06
13	12.099.00	46.640.00	G3	11.639.82	45.741.41
44	11.893.93	46.019.55	G4	11.660.28	45.566.88
45	11.609.97	45.970.24	G5	11.583.02	45.486.87
46	11.684.56	45.784.09	G6	11.737.06	45.561.73
47	11.715.22	46.034.41	GGA	10.917.95	48.574.60
48	11.976.49	45.953.79	G8	11.534.88	45.426.41
49	11.951.71	45.769.06	G9	11.502.03	45.377.45
50	11.875.39	45.749.50	GNN	11.360.22	45.197.87
51	10.998.58	45.516.20	GA	11.320.82	45.187.72
54A	10.907.51	45.525.75	TG	11.475.00	45.559.60
60	11.839.99	45.973.84	TT	11.485.50	45.432.27

CURVE DATA						
DESIGN	RADIUS	Δ	ARC	TAN	CHD	L.C.D.
44	475	250.00'	20°40'-00"	211.71	117.05	202.06	S 87°18'-30"W
46	147	350.00'	30°40'-00"	230.70	122.80	227.78	S 01°38'-30"W
47	48	125.00'	80°48'-50"	187.22	114.19	170.35	N 54°35'-35"W
61	514	225.00'	1°-27'-22"	29.30	21.92	29.28	N 86°-38'-17"E
62	62	150.00'	60°-40'-00"	176.85	97.77	168.81	S 01°18'-30"W
58	68	70.00'	83°-48'-00"	112.93	69.71	102.12	S 84°-28'-28"E
63	64	300.00'	36°-20'-00"	202.40	104.86	198.64	N 89°-38'-30" E.
66	666	618.00'	4°-27'-26"	39.72	N.A.D.	39.70	W 88°-26'-17" E.
69	694	225.00'	62°-58'-37"	247.35	140.74	235.14	S 87°-27'-48" E.
764	76	750.00'	97°-29'-29"	1071.41	1071.92	1666.5	S 36°27'-44" E.

BEARING	DISTANCE
G1	11487.90
G2	11.668.41
G3	11.639.82
G4	11.660.28
G5	11.583.02
G6	11.737.06
GGA	10.917.95
G8	11.534.88
G9	11.502.03
GNN	11.360.22
GA	11.320.82
TG	11.475.00
TT	11.485.50

O.T.G. 32 FOLIO 21

MAR 20 1967 at

Name day recorded in Liber O.T.G. No. Folio One of the Records of Baltimore County and examined, per

PLAT TWO

SEMINARY RIDGE

BALTIMORE COUNTY, MD. ELECTION DISTRICT NO 8

SCALE 1"-50' JANUARY 1967

JAMES KEELTY AND CO. INC - OWNER
1624 YORK ROAD, LUTHERVILLE, MD.

DONALD L. BROWN
LAND SURVEYOR - REG. NO 5428
1624 YORK ROAD LUTHERVILLE, MD.

OWNERS CERTIFICATION

CERTIFICATION

APPROVED BY BALTIMORE COUNTY HEALTH DEPARTMENT

APPROVED AS TO ALIGNMENT AND LOCATION OF STREETS

APPROVED BY BALTIMORE COUNTY PLANNING BOARD

8670127

3SA SW 1336-1325

Baltimore County - My Neighborhood



Real Property Data Search ( )
Search Result for BALTIMORE COUNTY

View Map | View GroundRent Redemption | View GroundRent Registration

Special Tax Recapture: None

Account Identifier: **District -** 08 **Account Number -** 2200004160

Owner Information

Owner Name: VANDERVEST CRAIG P
VANDERVEST LISA B

Mailing Address: 8514 HUNTSPRING DR
LUTH-TIMONIUM MD 21093-4763

Use: RESIDENTIAL
Principal Residence: YES
Deed Reference: /18251/ 00137

Location & Structure Information

Premises Address: 8514 HUNTSPRING DR
LUTH-TIMONIUM 21093-4763

Legal Description: .7118 AC
8514 HUNTSPRING DR
HUNTSPRING

Map	Grid	Parcel	Neighborhood	Subdivision	Section	Block	Lot	Assessment Year	Plat No	Plat Ref
0060	0015	0867	8070137.04	0000			8	2023	1	0062/ 0053

Town: None

Primary Structure Built	Above Grade Living Area	Finished Basement Area	Property Land Area	County Use
1992	4,486 SF		30,928 SF	04

Stories	Basement	Type	Exterior	Quality	Full/Half Bath	Garage	Last Notice of Major Improvements
2	YES	STANDARD UNIT	BRICK/ STUCCO	6	3 full/ 1 half	1 Attached	

Value Information

	Base Value	Value As of 01/01/2020	Phase-in Assessments As of 07/01/2022	As of 07/01/2023
Land:	270,200	270,200		
Improvements	766,400	766,400		
Total:	1,036,600	1,036,600	1,036,600	
Preferential Land:	0			

Transfer Information

Seller: LARSON MICHAEL L	**Date:** 06/23/2003	**Price:** $800,000
Type: ARMS LENGTH IMPROVED	**Deed1:** /18251/ 00137	**Deed2:**
Seller: BULLOCK JAMES W	**Date:** 08/30/1994	**Price:** $575,000
Type: ARMS LENGTH IMPROVED	**Deed1:** /10727/ 00072	**Deed2:**
Seller: ASHLEY GROUP LTD	**Date:** 11/04/1992	**Price:** $525,000
Type: ARMS LENGTH IMPROVED	**Deed1:** /09444/ 00040	**Deed2:**

Exemption Information

Partial Exempt Assessments:	Class	07/01/2022	07/01/2023
County:	000	0.00	
State:	000	0.00	
Municipal:	000	0.00	0.00

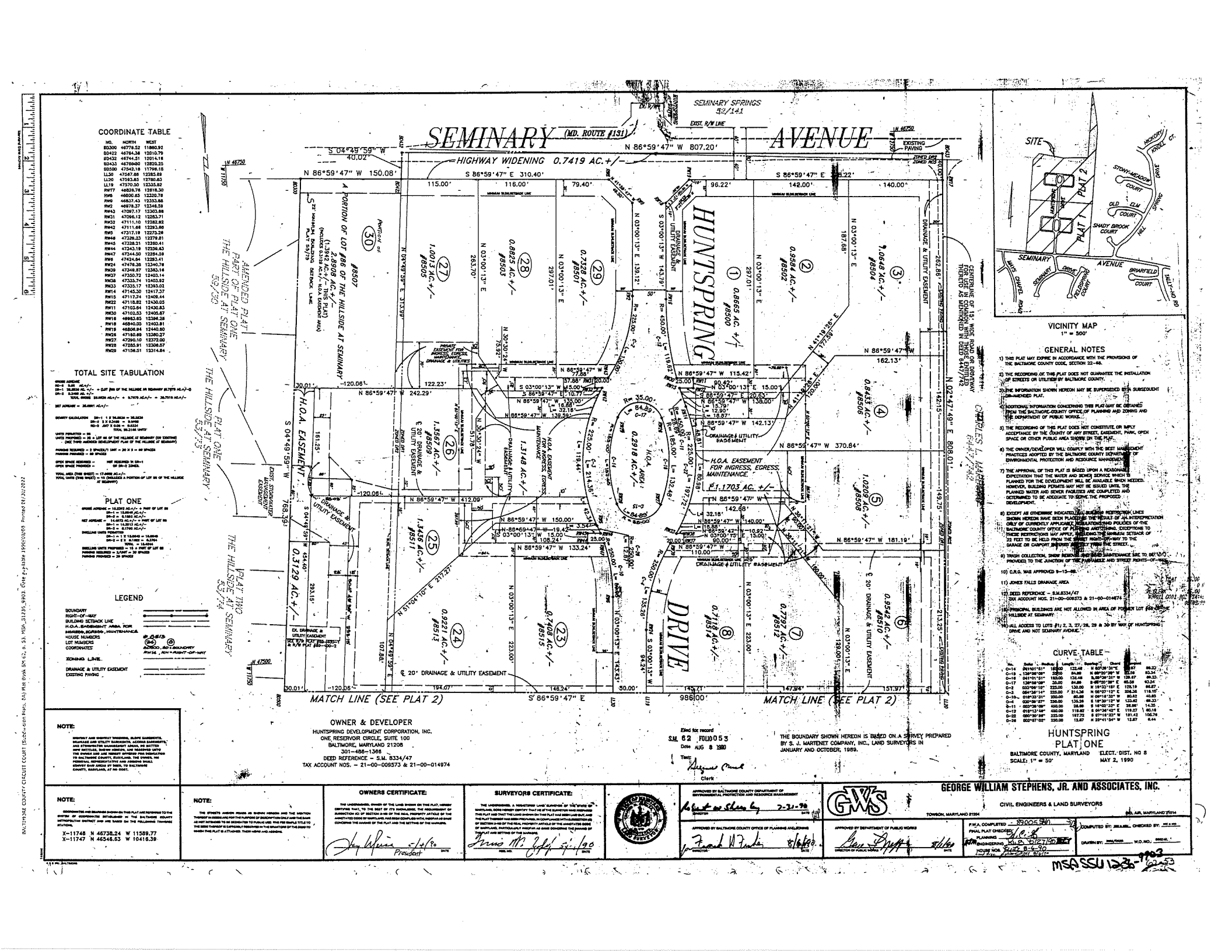
Special Tax Recapture: None

Homestead Application Information

Homestead Application Status: No Application

Homeowners' Tax Credit Application Information

Homeowners' Tax Credit Application Status: No Application **Date:**



COORDINATE TABLE

NO.	NORTH	WEST
BD300	46778.52	11860.92
BD422	46784.34	12010.79
BD432	46744.51	12014.16
BD433	46760490	12820.25
BD500	47542.18	11798.18
LL50	47567.88	12285.89
LL50	47563.85	12780.83
LL19	47570.50	12335.82
RWT7	46826.76	12818.30
RW6	46830.63	13320.78
RW5	46837.43	12353.88
RW2	46878.37	12346.59
RW43	47097.17	12303.88
RW31	47096.12	12283.71
RW32	47111.10	12282.82
RW42	47111.66	12293.98
RW5	47317.19	12273.28
RW46	47329.23	12279.81
RW45	47338.21	12280.41
RW44	47343.19	12290.63
RW47	47344.50	12284.58
RW8	47434.84	12282.41
RW24	47476.38	12340.78
RW39	47348.87	12363.14
RW37	47350.72	12403.14
RW38	47335.74	12403.82
RW33	47335.17	12363.02
RW14	47145.30	12417.37
RW13	47117.74	12408.44
RW22	47118.82	12430.05
RW11	47103.64	12430.83
RW30	47102.53	12405.67
RW18	46863.65	12384.28
RW18	46840.05	12403.81
RW18	46806.94	12440.60
RW25	47160.89	12380.27
RW27	47290.10	12373.00
RW28	47283.91	12306.57
RW29	47156.51	12314.84

TOTAL SITE TABULATION

GROSS ACREAGE
RC-2 5.25 AC.+/-
DR-1 35.8524 AC.+/- - OUT (NW OF THE HILLSIDE IN SEMINARY 31.7975 AC.+/-) = 4.0549 AC.+/-
DR-2 0.3488 AC.+/-
TOTAL GROSS 39.4573 AC.+/- + 5.7975 AC.+/- = 35.7915 AC.+/-

NET ACREAGE = 35.6991 AC.+/-

DENSITY CALCULATION DR-1 1 X 35.8524 = 35.8524
DR-2 3 X 0.3488 = 1.0464
RC-2 .667 X 5.25 = 3.5018
TOTAL NET 40.3006 UNITS*

UNITS PERMITTED = 39
UNITS PROPOSED = 39 + LOT 86 OF THE HILLSIDE AT SEMINARY (OR EXISTING ONE THIRD AMENDED DEVELOPMENT PLAN OF THE HILLSIDE AT SEMINARY)

PARKING REQUIRED = 2 SPACES/1 UNIT = 39 X 2 = 78 SPACES
PARKING PROVIDED = 39 SPACES

OPEN SPACE REQUIRED = NOT REQUIRED IN DR-1
OPEN SPACE PROVIDED = OR DR-2 ZONES.

TOTAL UNITS (THIS SHEET) = 17 (INCLUDES A PORTION OF LOT 86 OF THE HILLSIDE AT SEMINARY)
TOTAL UNITS (THIS PLAT) = 16 (INCLUDES A PORTION OF LOT 86 OF THE HILLSIDE AT SEMINARY)

PLAT ONE

GROSS ACREAGE = 18.2909 AC.+/- + PART OF LOT 86
DR-1 = 15.8845 AC.+/-
DR-2 = 0.1861 AC.+/-
NET ACREAGE = 16.0706 AC.+/- + PART OF LOT 86
DR-1 = 15.8312 AC.+/-
DR-2 = 0.1758 AC.+/-
DWELLING UNITS PERMITTED
DR-1 = 1 X 15.8845 = 15.8845
DR-2 = 3 X 0.1861 = 0.5583
TOTAL = 16.4428
DWELLING UNITS PROPOSED = 15 + PART OF LOT 86
PARKING REQUIRED = 2/UNIT = 30 SPACES
PARKING PROVIDED = 30 SPACES

LEGEND

BOUNDARY
RIGHT-OF-WAY
BUILDING SETBACK LINE
H.O.A. EASEMENT AREA FOR INGRESS, EGRESS, MAINTENANCE
HOUSE NUMBERS
LOT NUMBERS
COORDINATES
ZONING LINE
DRAINAGE & UTILITY EASEMENT
EXISTING PAVING

VICINITY MAP

1" = 500'

GENERAL NOTES

1) THIS PLAT MAY EXPIRE IN ACCORDANCE WITH THE PROVISIONS OF THE BALTIMORE COUNTY CODE, SECTION 22-66.

2) THE RECORDING OF THIS PLAT DOES NOT GUARANTEE THE INSTALLATION OF STREETS OR UTILITIES BY BALTIMORE COUNTY.

3) THE INFORMATION SHOWN HEREON MAY BE SUPERSEDED BY A SUBSEQUENT AMENDED PLAT.

4) ADDITIONAL INFORMATION CONCERNING THIS PLAT MAY BE OBTAINED FROM THE BALTIMORE COUNTY OFFICE OF PLANNING AND ZONING AND THE DEPARTMENT OF PUBLIC WORKS.

5) THE RECORDING OF THIS PLAT DOES NOT CONSTITUTE OR IMPLY ACCEPTANCE BY THE COUNTY OF ANY STREET, EASEMENT, PARK, OPEN SPACE OR OTHER PUBLIC AREA SHOWN ON THE PLAT.

6) THE OWNER/DEVELOPER WILL COMPLY WITH THE BEST MANAGEMENT PRACTICES ADOPTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT.

7) THE APPROVAL OF THIS PLAT IS BASED UPON A REASONABLE EXPECTATION THAT THE WATER AND SEWER SERVICE WHICH IS PLANNED FOR THE DEVELOPMENT WILL BE AVAILABLE WHEN NEEDED. HOWEVER, BUILDING PERMITS MAY NOT BE ISSUED UNTIL THE PLANNED WATER AND SEWER FACILITIES ARE COMPLETED AND DETERMINED TO BE ADEQUATE TO SERVE THE PROPOSED DEVELOPMENT.

8) EXCEPT AS OTHERWISE INDICATED, ALL BUILDING RESTRICTION LINES SHOWN HEREON HAVE BEEN PLACED AS THE RESULT OF AN INTERPRETATION ONLY OF CURRENTLY APPLICABLE REGULATIONS GOVERNING POLICIES OF THE BALTIMORE COUNTY OFFICE OF PLANNING AND ZONING. EXCEPTIONS TO THESE RESTRICTIONS MAY APPLY. BUILDING TO MINIMUM SETBACK OF 25 FEET TO BE HELD FROM THE STREET RIGHT-OF-WAY TO THE GARAGE FACE. SUPPORT BRACED AGAINST FROM THE STREET.

9) TRASH COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE TO BE PROVIDED TO THE JUNCTION OF THE PAVEMENT AND STREET RIGHTS-OF-WAY.

10) C.R.G. WAS APPROVED 9-15-88.

11) JONES FALLS DRAINAGE AREA

12) DEED REFERENCE - S.M.8334/47
TAX ACCOUNT NOS. 21-00-009573 & 21-00-014974

13) PRINCIPAL BUILDINGS ARE NOT ALLOWED IN AREA OF FORMER LOT 86 OF THE HILLSIDE AT SEMINARY.

14) ALL ACCESS TO LOTS #1, 2, 3, 27, 28, 29 & 30 BY WAY OF HUNTSPRING DRIVE AND NOT SEMINARY AVENUE.

CURVE TABLE

No.	Delta	Radius	Length	Bearing	Chord	
C-1	041°01'51"	185.00	132.48	N 82°28'35" E	129.67	88.33
C-2	139°58'08"	35.00	84.89	N 69°00'39" W	65.56	83.34
C-3	041°01'51"	185.00	132.48	S 82°28'35" E	129.67	88.33
C-4	139°58'08"	35.00	84.89	S 69°00'39" E	65.56	83.34
C-5	033°56'19"	225.00	130.00	N 16°03'18" E	128.16	84.87
C-6	061°01'51"	225.00	239.62	N 56°27'11" E	228.56	116.10
C-7	018°33'31"	350.00	80.86	N 09°16'13" W	80.62	40.65
C-8	020°36'27"	350.00	125.84	N 28°30'13" W	125.15	63.33
C-9	003°36'09"	450.00	28.88	S 16°02'35" E	28.87	14.35
C-10	015°13'44"	450.00	119.62	S 07°36'43" E	119.27	60.18
C-11	020°36'27"	225.00	187.72	S 28°30'13" E	181.42	105.78
C-12	003°36'09"	250.00	15.87	N 29°41'54" W	15.87	8.44

HUNTSPRING PLAT ONE

BALTIMORE COUNTY, MARYLAND
SCALE: 1" = 50'
ELECT. DIST. NO 8
MAY 2, 1990

NOTE:
HIGHWAY AND HIGHWAY WIDENING, SLOPE EASEMENTS, DRAINAGE AND UTILITY EASEMENTS, ACCESS EASEMENTS, AND STORMWATER MANAGEMENT AREAS, NO MATTER HOW ENTITLED, SHOWN HEREON, ARE HEREBY GRANTED UNTO THE OWNER AND ARE HEREBY OFFERED FOR DEDICATION TO BALTIMORE COUNTY, MARYLAND. THE OWNER, THE PERSONAL REPRESENTATIVE AND ASSIGNS SHALL CONVEY SAID AREAS BY DEED, TO BALTIMORE COUNTY, MARYLAND, AT NO COST.

NOTE:
ORDINATES AND BEARINGS SHOWN ON THIS PLAT ARE REFERRED TO THE SYSTEM OF COORDINATES ESTABLISHED IN THE BALTIMORE COUNTY METROPOLITAN DISTRICT AND ARE BASED ON THE FOLLOWING MARYLAND STATIONS.

X-11748 N 46738.24 W 11589.77
X-11747 N 46548.63 W 10418.39

NOTE:
THE STREETS AND/OR ROADS AS SHOWN HEREON AND THE MENTION THEREOF IN DEEDS ARE FOR THE PURPOSES OF DESCRIPTION ONLY AND THE SAME ARE NOT INTENDED TO BE DEDICATION TO PUBLIC USE. THE FEE SIMPLE TITLE TO THE BEDS THEREOF IS EXPRESSLY RESERVED IN THE GRANTORS OF THE LAND TO WHOM THIS PLAT IS ATTACHED, THEIR HEIRS AND ASSIGNS.

OWNERS CERTIFICATE:
THE UNDERSIGNED, OWNER OF THE LAND SHOWN ON THIS PLAT, HEREBY CERTIFIES THAT, TO THE BEST OF ITS KNOWLEDGE, THE REQUIREMENT OF SUBSECTION (C) OF SECTION 3-108 OF THE REAL PROPERTY ARTICLE OF THE ANNOTATED CODE OF MARYLAND, HAS BEEN COMPLIED WITH, INSOFAR AS SAME CONCERNS THE MARKING OF THE PLAT AND THE SETTING OF THE MARKERS.

Jay Weiss 1-4-90
President DATE

SURVEYORS CERTIFICATE:
THE UNDERSIGNED, A REGISTERED LAND SURVEYOR OF THE STATE OF MARYLAND, DOES HEREBY CERTIFY THAT HE IS THE SURVEYOR WHO PREPARED THIS PLAT AND THAT THE LAND SHOWN ON THIS PLAT HAS BEEN LAID OUT, AND THE PLAT THEREOF HAS BEEN PREPARED, IN COMPLIANCE WITH SUBSECTION (C) OF SECTION 3-108 OF THE REAL PROPERTY ARTICLE OF THE ANNOTATED CODE OF MARYLAND, PARTICULARLY INSOFAR AS SAME CONCERNS THE MARKING OF THE PLAT AND SETTING OF THE MARKERS.

Thomas M. Zyla 5-1-90
REG. NO. DATE

APPROVED BY BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT
DIRECTOR 2-21-90 DATE

APPROVED BY BALTIMORE COUNTY OFFICE OF PLANNING AND ZONING
DIRECTOR 5/6/90 DATE

APPROVED BY DEPARTMENT OF PUBLIC WORKS
DIRECTOR 5/16/90 DATE

GEORGE WILLIAM STEPHENS, JR. AND ASSOCIATES, INC.
CIVIL ENGINEERS & LAND SURVEYORS
TOWSON, MARYLAND 21204 (301) AIR, MARYLAND 21014

P.W.A. COMPLETED 890054501
FINAL PLAT CHECKED
PLANNING
ENGINEERING 5/15 5-21-90
HOUSE NOS.
COMPUTED BY: CHECKED BY:
DRAWN BY: W.O. NO.:

OWNER & DEVELOPER
HUNTSPRING DEVELOPMENT CORPORATION, INC.
ONE RESERVOIR CIRCLE, SUITE 100
BALTIMORE, MARYLAND 21208
301-486-1366
DEED REFERENCE - S.M. 8334/47
TAX ACCOUNT NOS. - 21-00-009573 & 21-00-014974

filed for record
S.M. 62 FOLIO 053
Date AUG 8 1990
Test:
Clerk

THE BOUNDARY SHOWN HEREON IS BASED ON A SURVEY PREPARED BY S. J. MARTENET COMPANY, INC., LAND SURVEYORS IN JANUARY AND OCTOBER, 1989.

MSA SSU 1236-9103 (2253)

BALTIMORE COUNTY CIRCUIT COURT (Land records) Plats, BAI Plat Book SM 62, p. 53, MSA_S1235_9803. Date printed: 01/30/2022

IN RE: DEVELOPMENT PLAN HEARING 4th Election District 2nd Council District **(18 Dean Avenue)**	*	BEFORE THE OFFICE OF ADMINISTRATIVE HEARINGS FOR
WOODLEY PARK F.K.A. **DEAN AVENUE** Woodley Property Partners, LLC *Owner/Applicant*	*	BALTIMORE COUNTY **CASE NO. 04-0728**

* * * * * * *

ADMINISTRATIVE LAW JUDGE'S ("ALJ")
DEVELOPMENT PLAN OPINION & ORDER

This matter comes before the Office of Administrative Hearings ("OAH") for a public hearing pursuant on a development proposal submitted in accordance with Article 32, Title 4, of the Baltimore County Code ("BCC"). Woodley Property Partners, LLC, *Owner/Applicant* (herein known as "Developer") submitted for approval a one-sheet redlined Development Plan ("Plan") prepared by Little & Associates, Inc., known as "Woodley Park fka Dean Avenue".

The proposal is for thirteen (13) single family dwellings, eight (8) of which are semi-detached. The site is 3.97 gross acres and is zoned DR 3.5. It lies within the Urban Rural Demarcation Line ("URDL"). According to the site plan two (2) existing dwellings on the site will be razed. In 2012 a concept plan for 12 single family detached dwellings was filed but did not pass the concept plan phase.

In accordance with the Baltimore County Zoning Regulations ("BCZR"), the property was posted on August 29, 2019 with the Notice of Hearing Officer's Hearing ("HOH") for the September 27, 2019 hearing. In attendance at the HOH in support of the Plan was the developer, Michael Greenspun, and the engineer who prepared the site plan, John Motsco, with Little & Associates, Inc. Howard L. Alderman, Esq., with Levin & Gann, PA, appeared and represented the Developer. J. Carroll Holzer, Esq. appeared on behalf of numerous community members, who oppose the proposed development.

BACKGROUND

The neighborhood is approximately twenty acres in size and is accessed by and contained within three (3) streets: Stocksdale Avenue, which is a through street on the southern edge; and Woodley and Dean Avenues, which are each only a couple blocks long. Woodley Avenue is presently a one way one lane street with only westbound traffic permitted. Stocksdale Avenue is also unusually narrow. According to testimony from neighborhood witnesses these streets were formerly old unpaved farm roads. The neighborhood consists of single family detached residences on relatively large lots, with ample driveway and garage parking. On street parking is permitted only on Dean Avenue due to the narrow streets. There are no sidewalks. Some of the homes are quite old and some have been recently built. All appear well maintained. It is located near Historic Main Street in Reisterstown. To the north of the tract there is forest and wetlands protected by a forest conservation easement, a forest buffer easement and a greenway adjacent to Norris Run, a protected intermittent stream which is part of the Liberty Reservoir watershed. The parcel in question is essentially in the middle of this neighborhood.[1] It is mostly forested although there are two (2) vacant dwellings that are to be razed according to the Plan. According to the notes on the Plan, the property in question has been "held intact since 1971."

AGENCY WITNESSES

The undersigned conducted a public hearing in Room 205 of the Jefferson Building, 105 West Chesapeake Avenue, Towson, Maryland. The Hearing spanned parts of three (3) days: September 27, 2109, November 1, 2019, and November 7, 2019. On September 27, 2019 a redlined Development Plan was submitted for approval and was admitted into evidence as

[1] The boundaries of the described neighborhood are based on the parameters set forth in BCC § 32-4-402(a).

Developer's Exhibit 1. Numerous representatives of the various Baltimore County agencies which reviewed the Plan also attended the hearing, including the following individuals from the Department of Permits, Approvals and Inspections ("PAI"): Jerry S. Chen, Project Manager; Jos Venturina and Jim Hermann, Department of Public Works ("DPW")/Development Plans Review ("DPR"); LaChelle Imwiko, Real Estate Compliance, and Aaron Tsui, from the Office of Zoning Review ("OZR"). Also appearing on behalf of the County were Marta Kulchytska, Department of Planning ("DOP"), and Jeff Livingston with the Department of Environmental Protection and Sustainability ("DEPS").

Aaron Tsui from OZR submitted a one page document captioned "Development Plan Comments," that was admitted as County Exhibit 3. Mr. Tsui testified that zoning recommends approval of the Plan. The exhibit states that this approval is subject to the DOP approval of the proposed panhandle driveway, and to final zoning approval. Mr. Holzer cross-examined Mr. Tsui as to whether DOP had, in fact, approved the proposed panhandle drive and lots since DOP's last written comments, as set forth in the DOP Hearing Officer Hearing Final Report" dated September 27, 2019, stated that DOP was "unable to recommend that the Development Plan be approved." Mr. Tsui testified that he had received nothing in writing from DOP but that he had spoken with Marta Kulchytska and she had told him that DOP was now recommending approval of the Plan.

Mr. Hermann testified next. He submitted a Schematic Landscape Plan that had been approved by DPR on September 20, 2019, which was admitted as County Exhibit 1. He testified on behalf of DPR that this agency recommended approval of the Plan. On behalf of the Department of Recreation and Parks Mr. Hermann submitted an approved Open Space Waiver, which was admitted as County Exhibit 2. Pursuant to this waiver the Developer will make a payment of $45,630.00 in lieu of providing any open space.

Mr. Livingston testified on behalf of DEPS that the groundwater and stormwater management concept plans were acceptable and he explained that a Forest Buffer easement had been approved so that the development could be connected to public sewer without the use of a grinder pump. An environmental "alternatives analysis" concerning this issue was admitted as Developer's Exhibit 2. Mr. Livingston further explained that a Special Variance to remove nine (9) of the 17 specimen trees on the site had been granted by the Director of DEPS, and that a fee in lieu will be made to the DEPS forest fund and will be used to plant trees elsewhere. This variance approval was admitted as Developer's Exhibit 3. In conclusion, Mr. Livingston stated that DEPS recommended approval of the Plan.

Ms. Kulchytska then testified on behalf of DOP. At the outset of her testimony she presented a School Impact Analysis ('SIA") (County Exhibit 4) demonstrating that the proposed development would comply with State-mandated requirements concerning the maximum number of students permitted to attend the elementary, middle and high school in the vicinity of the project. Ms. Kulchytska also stated that DOP had approved the pattern book for the development, which was admitted as County Exhibit 5, and which provides elevations and architectural details for the dwellings and other amenities to be located on the site. She then proffered an amended Hearing Officer Hearing Final Report from DOP, also dated September 27, 2019, which recommended approval of the Plan, subject to various comments. As noted above, Mr. Holzer had previously questioned Mr. Tsui about the prior version of the DOP Final Report, which had concluded that DOP could not support approval of the Plan. This prior Report was the only ones in the file prior to the hearing. The undersigned asked Ms. Kulchytska to provide copies of the amended Final Report to counsel for both parties, which she did. At this point counsel for protestants objected to the admission of the amended Final Report. Pursuant to BCC § 32-4-226(d), the Comments from

all the relevant County agencies, including DOP, are required to be submitted to the Hearing Officer "*at least 5 days before the Hearing Officer's hearing*" by the Director of PAI. This is so that all interested parties can review the comments prior to the Hearing so they are on notice of the County agencies' positions concerning the Development Plan. I therefore proposed that the Hearing be adjourned and continued so that the parties could review and digest the amended Final Report, and the significant change in position by DOP. Counsel for the Developer agreed this was appropriate. The hearing was therefore adjourned.

On November 1, 2019 the hearing resumed. The Developer's engineer, John Motsco, explained that they had made various amendments to the Site Plan based on DOP's amended Comments. The principal substantive changes were to add Note 21 indicating that Lots 1, 4, 5, 8, 9, and 10 would be treated as high visibility lots because of their site orientation. This amended Site Plan was admitted as Developer's Exhibit 1A.

Ms. Kulchytska then resumed her testimony. Mr. Holzer questioned her about the basis for DOP's change of position. He noted that in all the earlier DOP Comments during the development review process DOP had stated that it could not recommend approval of the Plan because it wanted the Developer to, among other things, *"[d]emonstrate alternative dwelling layout/locations in order to address some of the community's concerns and create a layout that more closely matches the existing pattern of the neighborhood, while also addressing traffic and ROW issues."* *See,* DOP Development Plan Conference, and initial Hearing Officer Hearing Report, dated July 3, 2019 and September 27, 2019, respectively.

Ms. Kulchytska stated that she and other planners from DOP had done "additional studies" and had visited the site and were now satisfied that the panhandle drive and lots, and the proposed duplex designs were acceptable. Mr. Holzer asked her when these additional studies and site visit

had occurred. She could not provide dates but stated that it had been before the initial Hearing date of September 27, 2019. Mr. Holzer asked her if she had seen any duplexes in the existing neighborhood and she stated she didn't recall seeing any. Mr. Holzer asked her if duplexes on small lots were consistent with the neighborhood and she responded that the proposed architectural features would be consistent. When pressed as to whether the duplex design is consistent with the neighborhood she stated: "That's a very good question, but I can't answer that." Mr. Holzer then questioned her about how DOP was now approving rear facing dwellings (Lots 9 and 10) on Dean Avenue when the DOP Comments from July 3, 2019 had noted that this orientation "is in conflict with the Comprehensive Manual of Design Policies ("CMDP") (page 22) and the Baltimore County Landscape Manual ("BCLM") (page 55) which state that rear facing dwellings are discouraged. The applicant must demonstrate that there are no other alternatives for situating the rear facing dwellings." *See, July* 3, 2019 DOP Development Plan Conference Comments. Ms. Kulchytska stated that the Site Plan now shows a privacy fence and landscape screening along Dean Avenue; however, she did not explain why the Developer was excused from demonstrating that there were no alternatives to this site orientation. She was then asked why the proposed privacy fences along Dean Avenue were permitted only 10 feet from the public right of way when BCZR § 260.2.B states that they may not be closer than 20 feet. She stated that the BCLM allows only 10 feet and that is what DOP went by. Finally, she was questioned about the adequacy of the screening for the proposed decks. Mr. Alderman then briefly questioned her about whether all the "high visibility" requirements were met in the Developer's pattern book and she stated that they were.

Jos Venturina from the Development Plans Review section then testified. He stated that DPR recommended approval of the Plan. He explained that all comments from the Bureau of

Highways had been addressed in the redlined Site Plan. He stated that the Developer will be required to pave only the sections of Dean and Woodley Avenues in front of the site. He testified that the fee dedication for the panhandle drive was only required to be 36 feet wide (with only 20 feet paved) because DPR interpreted it as only serving 3 lots – and that is because Lots 9 and 10 had access via Dean Avenue. When Mr. Holzer pointed out that this access was only theoretical, i.e., that the site plan shows the only access for Lots 9 and 10 is via the panhandle driveway, Mr. Venturina stated that he had consulted with an unnamed co-worker who told him this was okay. When questioned about where visitors and service people visiting the development would park he stated he didn't know. He did not know how many bedrooms were in the proposed duplexes or how long the driveways were. He then testified that all the Fire Department's comments had been addressed. Mr. Holzer asked specifically about the Fire Department's July 3, 2019 DPC Comment that the Developer must "*provide 35' minimum turning radius for the emergency vehicles to turn around in the corner of Woodley Avenue and Dean Avenue per NFPA 1. An offsite rite-of-way may need to be acquired from the property located at 20 Dean Avenue.*" Mr. Venturina stated that this property owner had not been contacted but that DPR had done a site visit and had concluded there was no problem. He was asked specifically whether a fire truck trying to turn that corner would be impeded by the hedge at 20 Dean Avenue. He replied "no sir." Mr. Alderman then questioned him to confirm DPR's interpretation that Lots 9 and 10 were not considered panhandle lots because of their frontage on Dean Avenue. Mr. Venturina also confirmed in questioning by Mr. Alderman that the paved part of the proposed panhandle drive was 20 feet wide, which conformed to the minimum width required by the Fire Department's Comment.

LaChelle Imwiko from Real Estate Compliance was the last County witness. She testified that all the required easements and dedications had been properly delineated on the Site Plan and that her agency therefore recommended approval of the Plan. Neither party questioned her.

THE DEVELOPER'S CASE

In its case in chief, the Developer presented one (1) witness: John Motsco, a professional engineer who was accepted as an expert. His *curriculum vitae* was admitted as Developer's Exhibit 4. Mr. Motsco discussed the project in general and described in detail the improvements planned for the site. Another redlined Site Plan was marked and admitted as Developer's Exhibit 1A. Mr. Motsco described the additional revisions that had been made in response to the amended DOP Comments received on the first day of the Hearing; namely: fencing and screening along Dean Avenue behind Lots 9 and 10, widening the panhandle drive and Woodley Avenue, and adding "no parking" signs on Woodley. He testified that because Lots 9 and 10 have "frontage" on Dean Avenue they should not be considered panhandle lots. He also described the "high visibility" changes made in the pattern book. In conclusion, Mr. Motsco opined that the proposed development satisfied all Baltimore County requirements and was in conformance with the BCC and BCZR.

PROTESTANTS' CASE

Numerous neighbors testified in opposition to the proposed development, as did Mary Molinaro, the 1st Vice President of the Reisterstown, Owings-Mills, Glyndon Coordinating Council ("ROG"), who presented a letter and Resolution from that organization in opposition. (Protestants' Exhibit 6). The protestants acknowledged that the Developer has the right to build homes on this parcel – they just believe this proposed development is too dense and is incompatible with the existing neighborhood. Their primary concerns are: density, traffic flow and volume,

parking, the use of panhandle driveway and lots, and public safety. Concerns about environmental impacts were also raised. Although these concerns are well-founded in this era of climate change, they are typical of those now raised in virtually every development case, and are not sufficient in and of themselves to warrant denial of the Plan. However, the other community concerns will be addressed below.

A. Panhandle and Density issues

The neighborhood witnesses testified and produced photographs (Protestants' Exhibit Nos. 2, 4, 7, and 9) showing that there are currently no semi-detached ("duplex") homes or panhandle lots in the neighborhood. They pointed out that the panhandle lots and duplexes will enable the Developer to obtain 100% of the possible density on this parcel at the expense of the aesthetics of the existing neighborhood and at a cost to public safety. The neighborhood witnesses; most notably, Patricia Gordon, her daughter Lauren Maynard, and Onaje Williams testified that the neighborhood has actively opposed this proposed development during the entire process to date, starting with the Community Input Meeting ("CIM"). They noted that after the CIM and the Development Plan Conference ("DPC"), and indeed even in its initial HOH Comments, the DOP had stated that it could not support approval of the Plan because it wanted the Developer to *"[d]emonstrate alternative dwelling layout/locations in order to address some of the community's concerns and create a layout that more closely matches the existing pattern of the neighborhood, while also addressing traffic and ROW issues." See,* DOP Development Plan Conference, and initial Hearing Officer Hearing Comments, dated July 3, 2019 and September 27, 2019. These witnesses and others pointed out that none of the County agency witnesses explained how it was that DOP had changed its position to recommend approval of the Plan without ever requiring the Developer to submit any alternative plan. Regarding the panhandle driveway, they testified that

they do not understand how DOP ultimately allowed the Developer to not count Lots 9 and 10 as panhandle lots based on the fact that they back to Dean Avenue. They pointed out that the Dean Avenue access is purely theoretical because, as proposed, the site plan shows that all five (5) of the detached dwellings rely on the panhandle driveway as their sole ingress and egress. They wonder, therefore, why the County did not require the Developer to abide by the width requirements of BCC § 32-4-409 (b) (2) (iii), which would have required a 50 foot wide panhandle drive to serve these five dwellings. They further explained that they believe the proposed panhandle driveway and lots do not conform with BCC § 32-4-409 (a) because: (1) as the site plan shows, this parcel is *not* "irregularly shaped," (2) the panhandle design *will* be detrimental to adjacent properties, and (3) this design *will* impact public safety and welfare. In their view, the proposed panhandle design will be detrimental to adjacent properties for lots of reasons, including the increased density it will allow, which will exacerbate an already problematic traffic flow situation. Numerous residents testified that the three (3) roads in the neighborhood are so narrow that they are essentially single lane streets. As a result, drivers approaching each other must pull onto residents' lawns or into their driveways in order to allow passage. Photos in Protestants' Exhibit 3 document this problem. Witnesses testified that many residents have lined their front property boundaries with large stones to prevent cars from traversing their lawns and hitting their mailboxes. The protestants believe that the estimated 130 additional daily car trips associated with the proposed development will push the traffic problem past the tipping point.

Owen Murphy resides with his wife, the aforementioned Lauren Maynard, at 24 Woodley Avenue. Their home is on almost an acre of property and is across the street and just west of the row of proposed duplexes. Mr. Murphy is a professional graphic designer. He created a graphic depiction of the existing neighborhood and proposed development. It was admitted as Protestants'

Exhibit 7 and 7A. He testified that he used the State Department of Assessment and Taxation ("SDAT") website and Google maps to create this exhibit. According to his unrebutted testimony and Exhibit 7 and 7A, there are 17 houses on approximately 20 acres in the existing neighborhood.[2] All are detached homes on an average lot size of .61 acres. By contrast, the proposed development will add 13 houses on less than 4 acres, with the houses all crowded onto approximately 2.5 acres of the site. But for the use of duplexes and panhandle lots this tract could not accommodate such density. The neighbors share DOP's earlier concern that this design does not "match the existing pattern of the neighborhood." Mr. Murphy and other witnesses also expressed concerns about the height of the proposed duplexes lining Woodley Avenue, which they feel will tower over the existing homes.

Lauren Maynard expressed frustration over DOP's decision to change its position and recommend approval of the Development Plan despite the fact that the Developer had never submitted any alternative site plan as requested. She noted that the 2020 Master Plan adopted the "transect zone" concept of zoning and development. She proffered a copy of an excerpt from the 2020 Master Plan that defines the characteristics of the various transects. (Protestants' Exhibit 11). Ms. Maynard stated that she believes the existing neighborhood is properly categorized as a T-3 "sub-urban" transect zone, but that if the proposed development were built it would transform the neighborhood into a T-4 "general urban" transect zone. Ms. Maynard noted that earlier DOP comments in the file had suggested putting single family detached homes on Woodley Avenue and moving the proposed duplexes to the interior of the parcel. She further noted that DOP had also advised that the Developer should consider having some of the proposed homes facing Dean Avenue with direct access to it, rather than having their back yards facing Dean Avenue since that

[2] Exhibit 7A lists a total of 23 homes but 6 of those homes are further down Stocksdale Avenue across the I-795 overpass so he did not consider them in calculating the density in the actual neighborhood.

orientation is discouraged by the BCZR. She questioned why the Developer was never required to submit site plans with these alternative layouts. Ms. Maynard had prepared a map of the existing neighborhood and the proposed new development site in the middle of it. (Protestants' Exhibit 5). According to this Exhibit (and the redlined site plan) there are currently only three (3) houses on Woodley Avenue between Dean and Stocksdale Avenues. They are all on sizable lots with ample parking. The proposed development would add thirteen homes whose sole ingress and egress would be on Woodley Avenue, which would change the entire feel of the neighborhood.

B. Traffic and parking

Numerous residents also raised concerns about traffic safety and parking. Onaje Williams owns a home on approximately two (2) acres at 23 Stocksdale Avenue. He testified that his young sons and other children in the neighborhood walk to the public schools. He stated that it is already dangerous for pedestrians in the neighborhood because there are no sidewalks and very narrow streets. He realizes that the site plan calls for sidewalks directly in front of the proposed duplexes on Woodley Avenue, and behind the lots backing to Dean Avenue, but there will still be no sidewalks in the rest of the neighborhood and the development will be creating an estimated 130 additional car trips. He also expressed frustration and concern about the effect this proposed development would have on the feel of the neighborhood, which he and his wife recently moved to because of its rural and historic feel.

Virtually every witness raised concerns about the limited parking provided in the proposed development because there is no street parking through most of the existing neighborhood due to the narrow streets. Woodley Avenue, where the sole entrance to the development will be, will have "no parking" signs installed. There will be no parking on the panhandle drive either, as it is only 20 feet wide, and the driveways for the proposed homes can accommodate only two (2)

vehicles at most, since they are only 35 feet long. The community is concerned about where the new residents' guests, delivery trucks, and service vehicles will park. They noted that the duplexes will have as many as four (4) bedrooms and it is unrealistic in this day and age to think that there will be only two (2) vehicles per family. They stressed that most the existing homes in the neighborhood have long, wide driveways and large lawns for overflow parking. Photos demonstrating this were admitted as Protestants' Exhibit 4.

C. Public safety and welfare

The community witnesses also raised concerns about the impact the proposed development would have on public safety. As noted above, they point out that there are presently only 17 houses in the neighborhood so the addition of 13 new homes will nearly double the density. Ms. Maynard testified that it is already extremely difficult to turn onto Reisterstown Road due to the volume and speed of traffic on it. She stated that there is often a line of six (6) or seven (7) cars backed up on both Woodley and Stockdale Avenues trying to leave the neighborhood, especially during morning rush hour. She is concerned that doubling the number of people in the neighborhood will create a very untenable traffic situation. She also submitted Police Department records showing the high volume of accidents on Reisterstown Road in the immediate vicinity of this neighborhood. (Protestants' Exhibit 10).

Witnesses also noted that this increase in population can be expected to generate a commensurate increase in emergency responses to the neighborhood. Because of the very narrow streets there is already a problem getting fire apparatus into the neighborhood, and once it is there the streets are then impassable. They note that according to the Plan, Woodley Avenue will still be only 20 feet wide even after it is widened in front of the proposed duplexes. Mr. Williams testified that he is considered essential personnel at his job and he was prevented from getting out

of the neighborhood on an earlier occasion when fire vehicles were called to a neighbor's home because there was no room to get around them. Ms. Maynard is an emergency room nurse and also expressed concern about her ability to get to work during such an event. Her father, Bryan Maynard, testified that he was a volunteer firefighter in Reisterstown for 19 years and that this neighborhood was notoriously difficult for fire apparatus to get in and out of.

As noted above, several new single family homes have been built along Stocksdale Avenue on the west side of the neighborhood. Witnesses testified that because of the tight turns and narrow roads construction vehicles for those projects had damaged existing properties as they travelled to those sites. A photo submitted as part of Protestants' Exhibit 3 shows a cement mixer running over the lawn and hedges of the home at the corner of Dean and Woodley Avenues as it tries to make that turn. This is the same corner that the County witness said a fire truck should be able to turn into with no problem. Other witnesses described delivery vehicles having to drive across lawns to make the turn from Stocksdale onto Woodley Avenue.

Finally, the community witnesses all voiced frustration about the County's development process and how they felt that their voices and concerns had fallen on deaf ears. Ms. Maynard pointed out that the 2020 Master Plan states that existing community members are supposed to have "an integral role in the creation of sustainable developments through collaborative efforts," and that in this case it feels to the community that only the Developer's profit margin has been considered. Mr. Williams testified that he felt the process puts "profit over people." They are upset that DOP had stated throughout the development process that it could not recommend approval of the project and wanted the Developer to submit alternative plans, but had then recommended approval at the HOH without sufficiently explaining its change of position. In sum, the community acknowledged the Developer's right to build houses on this parcel but they believe

those houses should be detached single family dwellings on lots that are similar in size to those in the existing neighborhood. Photos of new construction of this type in the neighborhood were admitted as Protestants' Exhibit 13.

DEVELOPER'S REBUTTAL

The Developer, Michael Greenspun, testified that in his experience new developments add vibrancy to an area and prevent stagnation. He stated that he could not make his necessary profit margin with fewer than the 13 proposed units in the development. He stated that he felt like the neighbors who are most strongly opposed to the project are those that moved into the neighborhood most recently and want to shut the door behind them.

Mr. Motsco was then re-called to the stand to address some of the protestant's testimony concerning stormwater runoff and environmental issues.

BRIEFS IN LIEU OF CLOSING ARGUMENT

At the close of all the evidence counsel agreed to submit written memoranda in lieu of closing argument. Those memoranda were filed by the agreed upon deadline of December 13, 2019 and have been considered fully. They will be made a part of the record.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

The BCC provides that the "Hearing Officer shall grant approval of a development plan that complies with these development regulations and applicable policies, rules and regulations." BCC § 32-4-229. In *People's Counsel v. Elm Street Development, Inc.*, 172 Md. App. 690 (2007), the Court of Special Appeals held that if the county agencies recommend approval of a development plan, it is "then up to [protestants] to provide evidence rebutting the Director's recommendations." Id. At 703. It should be noted that in the *Elm Street* case the protestants did not question the agency witnesses or submit evidence to rebut the agency recommendations. As

will be explained, the protestants in this case did so, and I believe the protestants in this case have met their burden of rebuttal.

In the Hearing before me the county agency witnesses did recommend approval of the Development Plan. Under the holding in *Elm Street Dev., supra,* the Developer was entitled to rest his case on these approvals, provided the agency testimony or the bases therefor were not debunked or rebutted. Other than calling Mr. Motsco to explain the Plan, and to offer his opinion that it meets all County laws and regulations, counsel for the Developer did just that. Mr. Alderman thanked each agency witness for that agency's recommendation and largely asked no further questions. The protestants, however, called numerous witnesses with firsthand knowledge of the immediate neighborhood and the surrounding communities, and these witnesses gave testimony and produced exhibits (without objection) that undermined the testimony of the agency witnesses and the Developer's engineer. Further, and perhaps more importantly, the protestants asked questions of the agency witnesses that were not satisfactorily answered. Finally, they pointed out that the Plan does not conform to various relevant provisions of County law.

The starting point for my analysis is BCC § 32-4-102, entitled "DEVELOPMENT POLICIES," which provides, in relevant part:

"(a) *Conformity with Master Plan required.*

(1) Subject to the limitations in the Charter and this Code, all development of land shall conform to:
(i) The Master Plan;

(b) *Intent of laws.*

(2) This title is intended to ensure that proposed development projects are safe, adequate, convenient and, where applicable, provide for the following:

(i) Conservation of existing communities and the promotion of the quality of development, site and building design, and compatibility."

The following two (2) Code sections are also applicable here, and state as follows:

"§ 32-4-103. - PURPOSES OF THE TITLE.

(a) *In general.* This title is adopted for the following purposes:

(1) To protect and provide for the public health, safety, and general welfare of the county;

(2) To implement the future growth and development of the county in accordance with the Master Plan;

(6) To protect the viability of the county's existing communities by ensuring that new development and redevelopment is compatible with the neighborhood and minimizes adverse environmental, traffic, and economic impacts on the surrounding community;"

"§ 32-4-104. - SCOPE OF TITLE.

(a) *Applicability of title.* This title shall apply to the process of review for approval of all development."

In his post-trial Brief the Developer contends that "the proposed development depicted on the Development Plan is not subject to compatibility review pursuant to § 32-4-402." Developer's Brief at 20. The Developer also urges that under County law a plan approval by the Hearing Officer is just the "first step" in the "ongoing [development] process." *Id., citing, Miller v. Forty West Builders,* 62 Md. App. 320 (1985), *Art Wood Enterprises v. Wiseburg Community Association, Inc.,* 88 Md. App. 723 (1991) and *Monkton Preservation Association, et al. v. Gaylord Brooks Realty Corporation,* 107 Md. App. 573 (1996).

First, I do not read BCC § 32-4-402 that narrowly. It states, in relevant part, as follows:

"§ 32-4-402. - COMPATIBILITY.

(a) *"Neighborhood" defined.* In this section, "neighborhood" means the existing buildings and land uses adjacent to and extending from the proposed development to:

(1) A definable boundary such as a primary collector street or arterial street;

(2) An area with a significant change in character or land use; or

(3) A major natural feature.

(b) *Exception.* This section does not apply to a research park.

(c) *Recommendations by Director of Planning.* The Director of Planning shall make compatibility recommendations to the Hearing Officer for:

(1) A cluster subdivision;

(2) A development in the RCC, R-O, OR-1, OR-2, O-3, SE, OT zones, the CR districts, or, except as provided for a development described in § 32-4-402.1, a Planned Unit Development; or

(3) Alternative site design dwellings as provided in the comprehensive manual of development policies.

(d) *Compatibility objectives.* Subject to subsection (c) of this section, development of property shall be designed to achieve the following compatibility objectives in accordance with the guidelines in the comprehensive manual of development policies:

(1) The arrangement and orientation of the proposed buildings and site improvements are patterned in a similar manner to those in the neighborhood;

(2) The building and parking lot layouts reinforce existing building and streetscape patterns and assure that the placement of buildings and parking lots have no adverse impact on the neighborhood."

It is noteworthy that in its post-trial Brief the Developer does not even argue that the proposed development *is* compatible with the existing neighborhood. Instead he argues that "there are only certain instances when the Director of Planning or the Design Review panel are *authorized* to conduct a § 34-4-102 compatibility review of a proposed development project." Developer's Brief at 20-21 (emphasis added). Counsel then quotes the language of § 34-4-102 (c). While it is true that this subsection enumerates the types of development projects where the DOP Director *shall* make compatibility recommendations to the Hearing Officer, it does *not* state that these development scenarios are the *only* types of development where the concept of compatibility should be considered. In enacting this Code provision the County Council may have reasoned that certain types of development are more technical or unique and that the DOP should therefore be required to assist the Hearing Officer with recommendations. Further, subsection (b) expressly states the *only* type of development to which the section does *not* apply are research parks. So the County Council knows how to exempt a type of development from compatibility review when it

wants to. Moreover, the Comprehensive Manual of Design Policies ("CMDP"), contains a "Residential Compatibility" Section that states that the BCZR and CMDP *"require* the Director of Planning to make compatibility recommendations for all development proposals other than certain single family housing in DR 5.5 zones." This "Compatibility" section lists five "compatibility objectives," including "Site Development Context," whose objective is to ensure that "[t]he arrangement and orientation of the proposed buildings and site improvements are patterned in a similar manner to those in the neighborhood." *See,* CMDP p. 66. Finally, and conclusively, BCC § 32-4-104, titled "Scope of Title," states that "[t]his title shall apply to the process of review for approval of *all* development." (emphasis added).

In sum, I believe that DOP is charged with making compatibility assessments on virtually all development projects, and I further believe that the Hearing Officer can and should consider compatibility in deciding whether a development plan should be approved.

And in the instant case, as noted above, DOP *did* in fact make compatibility assessments and comments throughout the development process. In its Concept Plan comments dated May 8, 2018 DOP noted that under the 2020 Master Plan the subject site is in a Community Conservation Area and was designated as a T-3 transect, that is "characterized by low-density residential areas, adjacent to higher zones that contain mixed use." Specific DOP comments in that CPC memo are relevant now, including paragraph 5, which asks the Developer to "[d]etail on the proposed plan how the existing Dean Avenue will be extended to allow vehicles to access proposed Lots 9 and 10." Further, paragraph 6, states that the Developer should "[p]rovide alternative plan layout options for Lots 11, 12, and 13. As stated in the Development Regulations of Baltimore County, the use of panhandle lots is not a matter of right and *may only be permitted in very limited situations.*" (emphasis added).

Later, at the Development Plan Conference (DPC) phase, DOP stated in its Memorandum dated July 3, 2019 that it was "*unable to recommend the Development Plan be approved*" until various comments were addressed. Among the specific "additional comments" listed under paragraph 3 were the following:

> "a. Demonstrate alternative dwelling layout/locations in order to address some of the community's concerns and create a layout that more closely matches the existing pattern of the neighborhood, while also addressing traffic and ROW issues.
>
> h. The submitted plan has the rear and side of proposed homes facing Dean Avenue. This is in conflict with the CMDP (Page 22) and the Baltimore County Landscape manual (BCLM) (Page 55) which states that rear facing dwellings are discouraged. The applicant must demonstrate there are no other alternatives for situating the rear facing dwellings. If unavoidable, the guidelines of the BCLM (Pages 55-57) shall be used."

Further, as detailed above in its *initial* Hearing Officer's Hearing "Final Report" dated September 27, 2019, DOP continued to state that it was "*unable to recommend the Development Plan be approved,"* because of the very same design issues; namely, that it still wanted the Developer to propose a modified plan that "*more closely matches the existing pattern of the neighborhood,* while also addressing traffic and ROW issues."

So it is clear that DOP voiced concerns about the compatibility of this Plan right up to the first day of the Hearing Office Hearing. However, as detailed above, during her testimony on the first day of the Hearing, the DOP witness produced an amended "Final Report," which for the first time now recommended that the Development Plan be approved. When asked how it was that DOP had changed its position – despite the fact that the Developer had never submitted any alternative site plan - the witness (perhaps understandably) could not offer a cogent explanation. This is detailed above in the recitation of the Hearing testimony, but of specific note, when asked Mr. Holzer the DOP representative if duplexes on small lots were consistent with the exiting neighborhood of detached homes on larger lots, she responded that the proposed *architectural*

features would be consistent. When pressed as to whether the duplex design itself is consistent with the neighborhood she stated: "That's a very good question, but I can't answer that." There was, likewise, no good answer for why DOP had allowed the Developer to maintain the site orientation of Lots 9 and 10 with their rears facing Dean Avenue and their sole ingress and egress by way of the panhandle drive without ever requiring the Developer to submit alternative layout proposals, as DOP had requested through the entire development process to that point.

I find that the design of this Development Plan is not compatible with the existing neighborhood. The testimony and exhibits offered by the neighborhood witnesses establish that the proposed eight 45 foot high duplexes along Woodley Avenue would change the essential character of this small neighborhood of two story detached homes set back on relatively spacious lots. Especially when considered together with the additional five detached dwellings whose sole ingress and egress is via a panhandle drive off of Woodley Avenue in the middle of these duplexes.

In addition, other than the conclusory statements of the agency witnesses and Mr. Motsco, the Developer failed to adduce evidence concerning several sections of the "performance standards" set forth at § 260 of the BCZR. Specifically, no explanation was offered for why the "reverse-frontage" Lots 9 and 10 were ultimately approved by the agencies in the final site plan without the Developer ever submitting the alternative layouts that DOP had requested. For instance, it was never explained why it was recommended that the Plan be approved without complying with § 260.4 which states, in relevant part, that a development proposal *shall*: "3. Allow on-street parking," and "5. Provide street parking and accommodations which complement the surrounding neighborhood." As explained above, the Plan in this case provides for *zero* on-street parking – a problem numerous neighborhood witnesses pointed out. Indeed, the residents voiced understandable concern about where people would park if the residents of the proposed

development hosted a party, or on a more daily basis, had delivery or service people come to their homes.

Finally, as described in detail above, the protestants produced testimony and exhibits showing the traffic flow problems this proposed new development would create, and how it would greatly exacerbate problems that already exist due to the narrow width of the streets and the existing volume of traffic. They described how construction vehicles working on other recent residential construction projects have damaged lawns and mailboxes. They testified that the roads are so narrow that drivers must go onto lawns or into driveways in order to get around each other. It is unrebutted that this proposed development is expected to generate an additional 130 daily car trips, yet the only road widening proposed in the Development Plan is along the one block of Woodley Avenue in front of the development and the one section of Dean Avenue behind Lot 9. And Woodley Avenue would still be only 20 feet wide.

As also detailed above, earlier plan comments expressed concern about the limited turning radius for emergency vehicles at the corner of Woodley and Dean Avenues. It was suggested that the Developer may have to obtain an off-site right of way from the owner of that corner lot in order to provide the requisite 35 foot turning radius. However, as also detailed above, the county witness from DPR acknowledged that this right of way had never been explored but that this issue had been resolved by a site visit in which it was determined that it should be "no problem" for a fire truck to make this turn. However, a photo in Protestants' Exhibit 3 shows a cement mixer truck having to drive over the lawn and bushes of this property. I can use lay experience to conclude that a cement mixer is a fraction of the length of a hook and ladder fire truck and substantially shorter than a standard fire engine. Further, even the redlined site plan admitted as Developer's

Exhibit 1A shows that the line of the adjusted turning radius at that corner crosses the corner of the lot at 20 Dean Avenue.

Numerous witnesses voiced their understandable concern that this development, which would nearly double the population of the existing neighborhood, will generate a commensurate increase in emergency responses and therefore a commensurate increase in potential public safety concerns due to these traffic issues. I note that if an emergency vehicle - or for that matter a delivery or service vehicle – had to go to Lots 1, 2, 3, or 4 that they would likely have to back out of Woodley Avenue (at least until they could back into the proposed panhandle driveway) in order to get out of the neighborhood. This would, at a minimum, cause congestion and delay for other neighbors, and could also create safety hazards. Indeed one of the witnesses described the dangerous conditions already affecting the neighborhood children walking to school. In sum, the problems the proposed development would create go beyond compatibility because they pose a real threat to public safety. Further they would certainly impact public welfare by intensifying the traffic congestion that already plagues the neighborhood.

I also find that the Developer has not met its burden of establishing that it is appropriate to use a panhandle drive and panhandle lots in this case. These are separate but obviously related issues. The development law and regulations disfavor panhandle driveways and lots. The code provisions governing panhandle lots state as follows:

"(a) *In general.*

(1) The county may *only* allow a panhandle lot:

(i) To achieve better use of irregularly shaped parcels;

(ii) To avoid development in environmentally sensitive areas;

(iii) Where the lot will not be detrimental to adjacent properties; and

(iv) Where the lot will not conflict with efforts to provide for public safety and general welfare." (emphasis added).

Further, the CMDP cautions that "panhandle lots can create a variety of design and aesthetic problems which, if not properly addressed, prove incompatible with neighboring dwellings and communities." The site plan (Developer's Exhibit 1A) shows that this is *not* an irregularly shaped parcel. It is a rectangle. The Developer urges in its Brief that it should be considered irregular in shape due to "the County Greenway, areas of Forest Conservation and Forest Buffer and the required stormwater management area for the proposed issues." Developer's Brief at 24. In my view this is a "bootstrap" argument because it is not the parcel itself that is irregularly shaped. It is the irregular shape caused by the project design – for the sake of achieving 100% density.

In addition, only Lots 11, 12, and 13 were considered panhandle lots by the Developer's expert and, ultimately by the county agencies. However, as these witnesses testified, Lots 9 and 10 would be considered panhandle lots but-for the fact that they have "frontage" on Dean Avenue. As mentioned above, these rear-facing lots were ultimately approved by DOP even though no alternative designs were ever submitted by the Developer. This was vital to the viability of the Plan because if these lots *were* considered panhandle lots then the "in-fee" access strip for access to Woodley Avenue would have had to be a minimum of 50 feet wide per BCC § 32-4-409(b)2(iii), which requires 10 feet for each lot. Mr. Motsco testified that Lots 9 and 10 should not be counted as panhandle lots because theoretically they could have driveway access off of Dean Avenue. I note, however, that the site plan calls for a retaining wall along Dean Avenue, which would presumably complicate if not preclude the construction of driveways. Further, the site plan would not allow feasible driveway access to the fronts of the proposed dwellings on Lots 9 and 10. In sum, all the design and safety concerns posed by panhandle lots and driveways are presented by these five proposed lots – no matter what they are called.

Finally, I agree with the protestants that this proposed development would take this neighborhood from a T-3 "sub-urban" transect classification to a T-4 "general urban" classification. While the 2020 Master Plan does not necessarily prohibit such a transformation it does state in its "Introduction" that "[m]any existing stable residential neighborhoods should not be disturbed for additional development." In my view this is one such neighborhood, at least with regard to the proposed development plan before me.

Unlike the protestants in *Elm Street Dev., supra,* who failed to questions the county witnesses, and failed to present evidence themselves, the protestants in this case did both. The unrebutted evidence produced by the protestants is that the existing neighborhood consist of 17 homes on approximately 20 acres, and that this proposed development would add 13 homes on less than four (4) acres by using a site design that achieves 100% of the possible zoning density. The Developer justified this by claiming that it was necessary to meet his profit margins. But he offered no evidence in support of that claim and the neighbors pointed out that the Developer's profit margins should not be seen as more important than their property values and their present quality of life. I agree. Further, I question whether a development that is more compatible with the existing neighborhood *is* in fact economically infeasible because the record evidence shows that several new detached homes have recently been built on lots similar in size to those in the existing neighborhood.[3]

CONCLUSION

I am mindful that continuing development is vital to Baltimore County for a myriad of reasons. However, under County law I must also consider the impact a proposed project will have

[3] In the event this Decision and Order is vacated, this is to confirm that the Director's Approval of the Special Variance under BCC § 33-6-116 for the removal of 9 specimen trees is hereby AFFIRMED.

on existing neighborhoods and residents. Indeed, as noted above, the "Purpose" clause of the Development law specifically states that one of the primary purposes is "[t]o protect the viability of the county's existing communities by ensuring that new development and redevelopment is compatible with the neighborhood and minimizes adverse environmental, traffic, and economic impacts on the surrounding community." With all this in mind, the record evidence in this case compels me to deny the proposed Development Plan.

THEREFORE, IT IS ORDERED by this Hearing Officer/Administrative Law Judge this 27th day of **December, 2019**, that the one-sheet redlined Development Plan known as **"WOODLEY PARK FKA DEAN AVENUE"** (Developer's Exhibit 1), be and is hereby **DENIED**.

Any appeal of this Order shall be taken in accordance with Baltimore County Code, § 32-4-281.

PAUL M. MAYHEW
Managing Administrative Law Judge
for Baltimore County

PMH/dlw

IN THE MATTER OF	*	BEFORE THE
WOODLEY PARK / DEAN AVENUE 18 Dean Avenue	*	BOARD OF APPEALS
HOH Case No. 04-0728 4th Election District	*	OF
2nd Councilmanic District	*	BALTIMORE COUNTY
	*	CASE NO: CBA-20-024

* * * * * * * * * * * *

OPINION

This case comes to the Board of Appeals ("CBA") as an "on the record" appeal from a final Opinion and Order dated December 27, 2019 by Administrative Law Judge Paul Mayhew (the "ALJ") wherein he disapproved the Development Plan known as Woodley Park (the "Plan"). The ALJ disapproved of the proposed plan as incompatible with the neighborhood in density and character, and presented an array of zoning and development problems with traffic flow, parking, emergency vehicle access, panhandle lots, and other issues. Developer, Woodley Park Partners, LLC (the "Developer") was represented by Howard L. Alderman, Jr., Esquire, of Levin & Gann, and appealed the ALJ's ruling to his Board.

Protestants, consisting of numerous community members, were represented by J. Carroll Holzer, Esquire. On March 10, 2020, the CBA granted Peter Max Zimmerman, People's Counsel's Motion to be Joined and/or to Intervene.

Property Description and Petition

Developer Woodley Park's subdivision plan proposes 13 dwellings (8 semi-detached/Duplex; 5 single-family homes) on 3.97 acres zoned Density Residential (D.R. 3.5). It lies within the Urban Rural Demarcation Line ("URDL") on the north side of Woodley Avenue,

west of Dean Avenue (the "Property"). Two existing dwellings on the Property presently are to be razed.

As noted by the ALJ, the neighborhood at issue is approximately 20 acres in size and is accessed by and contained within three streets: Stocksdale Avenue, a through street on the southern edge of the neighborhood; and Woodley and Dean Avenues, each being a couple of blocks long. Testimony before the ALJ described the neighborhood as consisting of single family, detached residences on relatively large lots, with ample driveway and garage parking. On street parking is permitted on Dean Avenue only. There are no sidewalks. The neighborhood is a mixture of old and new houses located near the Historic Main Street in Reisterstown. To the north of the Property there are forest and wetlands protected by a forest conversation easement, a forest buffer easement and a Greenway adjacent to Norris Run, a protected intermittent stream which is part of the Liberty Reservoir watershed.

The Developer notes the Plan includes in-fee dedicated areas of highway widening improvements, together with perpetual easements for drainage and utilities, forest buffer and forest conservation, and County Greenway and storm water management. A schematic landscape plan has been approved and a waiver of local open space has been granted by the Department of Recreation and Parks. An alternative analysis regarding the best means of providing a sewage outfall/connection was submitted for review and approval pursuant to BCC § 33-3-112 and was approved by the Department of Environmental Protection and Sustainability ("DEPS"). A forest conservation Special Variance allowing the removal of 9 of the 17 specimen trees on the Property was also reviewed and approved by DEPS.

Authority of the ALJ and the Board of Appeals for this Matter

BCC §32-4-227 through §32-4-229 identifies the requirements and standards to guide the ALJ for the hearing on a development plan. BCC §32-4-227(e) provides the ALJ "shall consider any comments and conditions submitted by a county agency…" and if no comments or conditions are received, "the Development Plan shall be considered to be in compliance with county regulations." BCC §32-4-229(b)(1) states: the ALJ "shall grant approval of a Development Plan that complies with these development regulations and applicable policies, rules and regulations adopted in accordance with Article 3, Title 7 of the Code, provided that the final approval of a plan shall be subject to all appropriate standards, rules, regulations, conditions, and safeguards set forth therein." If a plan is approved, the ALJ has the authority to impose conditions if the conditions meet the criteria set forth in the Code. BCC §32-4-229(c).

The Board, in connection with this matter, has appellate jurisdiction. BCC §32-4-281(e) authorizes the Board, in its appellate jurisdiction, to: (i) remand the case; (ii) affirm the decision; or (iii) reverse or modify the decision if the decision, (a) exceeds the statutory authority or jurisdiction of the ALJ; (b) results from an unlawful procedure; (c) is affected by any other error of law; (d) is unsupported by competent, material, and substantial evidence in light of the entire record as submitted; or (e) is arbitrary or capricious. The Board does not make independent findings of fact or substitute its judgment for that of ALJ below. As stated by the Court of Special Appeals, when reviewing a hearing officer's decision on the approval of a development plan, the Board is "not vested with broad visitorial power … but acts rather as a review board, to assure that lower agency decisions are in conformance with law and are supported by substantial evidence." *People's Counsel for Balt. County v. Elm St. Dev., Inc.,* 172 Md. App. 690, 704; 917

A.2d 166, 174 (2007), quoting, *Monkton Preservation Ass'n v. Gaylord Brooks Realty Corp.*, 107 Md. App. 573, 580; 669 A.2d 195 (1996).

The Developer contends that the ALJ's Opinion, requires reversal as it: (1) exceeds the statutory authority or jurisdiction of the ALJ; (2) contains error(s) of law; (3) is unsupported by competent, material and substantial evidence in light of the entire record as submitted; and (4) is arbitrary or capricious. The Developer here takes issue specifically with the ALJ findings regarding Compatibility Review pursuant to BCC §32-4-402, requirements governing Residential Panhandle Lots pursuant to BCC §32-4-409(a), alleged conflict with the Baltimore County Master Plan, and the Residential Performance Standards.

Testimony Presented Before the ALJ

Numerous representatives of various Baltimore County agencies which reviewed the Plan testified at the hearing before the ALJ including the following individuals from the Department of Permits, Approvals and Inspections ("PAI"): Jerry S. Chen, Project Manager; Jos Venturina and Jim Herman, Department of Public Works ("DPW")/Development Plans Review ("DPR"); LaChelle Imwiko, Real Estate Compliance, and Aaron Tsui, from the Office of Zoning Review ("OZR"). Also appearing on behalf of the County were Marta Kulchytska, Department of Planning ("DOP"), and Jeff Livingston with the Department of Environmental Protection and Sustainability ("DEPS").

Aaron Tsui from OZR submitted a one-page document captioned "Development Plan Comments," that was admitted as County Exhibit 3. Mr. Tsui testified that zoning recommends approval of the Plan. The exhibit states that this approval is subject to the DOP approval of the proposed panhandle driveway, and to final zoning approval. Counsel for the Protestants cross-examined Mr. Tsui as to whether DOP had, in fact, approved the proposed panhandle drive and

lots since DOP's last written comments, as set forth in the "DOP Hearing Officer Hearing Final Report" dated September 27, 2019, which report stated that DOP was "unable to recommend that the Development Plan be approved." Mr. Tsui testified that he had received nothing in writing from DOP but he had spoken with Marta Kulchytska who told him that DOP was now recommending approval of the Plan.

Jim Herman submitted a Schematic Landscape Plan that had been approved by DPR on September 20, 2019 as County Exhibit 1. He testified on behalf of DPR that the agency recommended approval of the Plan. On behalf of the Department of Recreation and Parks, Mr. Herman submitted an approved Open Space Waiver, which was admitted as County Exhibit 2. Mr. Herman also explained how required planting units are calculated and evaluated.

Jeff Livingston testified on behalf of DEPS that the groundwater and stormwater management concept plans were acceptable and explained that a Forest Buffer easement had been approved. He opined that Conceptual Stormwater Management approval regarding preliminary hydrology, suitability of outfall, etc. is required for approval of the Plan. An environmental "alternative analysis" concerning this issue was admitted as Developers Exhibit 2. Mr. Livingston further explained that a Special Variance to remove 9 of the 17 specimen trees on the site had been granted by the Director of DEPS, and that a fee in lieu will be made to DEPS forest fund and will be used to plant trees elsewhere. Mr. Livingston concluded testified that DEPS recommended approval of the Plan.

Ms. Kulchytska testified on behalf of DOP. At the outset of her testimony she presented a School Impact Analysis ('SIA") (County Exhibit 4) as required by BCC §32-6-103, demonstrating the proposed development would comply with State-mandated requirements concerning the maximum number of students permitted to attend elementary, middle and high

school in the vicinity of the project. Ms. Kulchytska also stated that the DOP had approved the Pattern Book for the development, which was admitted as County Exhibit 5 and which provided elevations and architectural details for the dwellings and other amenities to be located on the Property. Ms. Kulchytska described the final changes made to the plan, including additional architectural elements on proposed lots determined by DOP to be high visibility lots. Other requirements that were incorporated into the Pattern Book changes in design to duplex units, limits on garage door frontage and relocation of proposed fence screening to comply with County's Landscape Manual. She then proffered an amended Hearing Officer Hearing Final Report from DOP, also dated September 27, 2019, which concluded that the Pattern Book complied with the applicable Residential Performance Standards of the Baltimore County Zoning Regulations ("BCZR") §260 and recommended approval of the Plan, subject to various comments.

Counsel for the Protestants previously questioned Mr. Tsui about the prior version of the DOP Final Report, which had concluded that DOP could not support the approval of the Plan. This prior Report was the only one in the file prior to the hearing. The ALJ asked Ms. Kulchytska to provide copies of the amended Final Report to counsel for all parties, which she did. Despite objections from Counsel for the Protestants, the ALJ admitted the Final Report into evidence. The ALJ then adjourned the hearing so that all parties could review the amended Final Report.

When the hearing reconvened on November 1, 2019, the Developer's Engineer, John Motsco testified to the various amendments that had been made based on the DOP's amended Comments. The most substantive change was Note 21 indicating that Lots 1, 4, 5, 8, 9, and 10 were to be treated as high visibility lots because of their site orientation. An amended Site Plan was admitted as Developer's Exhibit 1A.

Ms. Kulchytska then resumed her testimony. Counsel for the Protestants questioned her about the basis for DOP's change in position. He noted that in the earlier DOP Comments during the development review process, DOP had stated that it could not recommend approval of the Plan because it wanted the Developer to among other things, "demonstrate alternative dwelling layout/locations in order to address some of the community's concerns and create a layout that more closely matches the existing pattern of the neighborhood, while also addressing traffic and ROW issues." *See DOP Development Plan Conference, and initial Hearing Officer Hearing Report*, dated July 3, 2019 and September 27, 2019.

Ms. Kulchytska stated that she and the planners from the DOP had done "additional studies" and had visited the site and were now satisfied that the panhandle drive and lots, and the proposed duplex designs were acceptable. Counsel for the Protestants inquired as to when these additional studies and site visit had occurred. Although she was unable to give a specific date, she added that it had occurred before the initial hearing date of September 27, 2019. Counsel for the Protestants further inquired if she had seen any duplexes in the existing neighborhood and she stated she did not recall seeing any. Counsel inquired if duplexes on small lots were consistent with the neighborhood and she responded that the architectural features would be consistent, but was unable to opine as to whether the duplex design was consistent with the neighborhood. Ms. Kulchytska was questioned further regarding DOP approval regarding the rear-facing dwellings (Lots 9 and 10) on Dean Avenue. DOP Comments from July 3, 2019 noted that such an orientation "is in conflict with the Comprehensive Manual of Design Policies ("CMDP") and the Baltimore County Landscape Manual ("BCLM") which state that rear-facing dwellings are discouraged. The applicant must demonstrate that there are no other alternatives for situating the rear-facing dwellings." *See July 3, 2019 DOP Development Plan Conference*

Comments. Ms. Kulchytska testified that the Site Plan now shows a privacy fence and landscape screening along Dean Avenue; however, she did not explain why the Developer did not provide the alternatives as previously required. When questioned as to why the proposed privacy fences were permitted to be 10 feet from the public right of way instead of the required 20, she explained that the BCLM allows for 10 feet. Finally, Ms. Kulchytska testified that the Developer had met all "high visibility" requirements for screening proposed decks.

Jos Venturina from the Development Plans Review section testified next. He testified that DPR recommended approval of the Plan. He explained that all comments from the Bureau of Highways had been addressed in the redlined Site Plan. He testified that the road right of way for Dean and Woodley Avenues will be 25 feet from the centerline along the respective lot lines of the Property with no intrusion on other properties. He stated that Developer will be required to pave only the sections of Dean and Woodley Avenues in front of the Property. He testified that the fee dedication for the panhandle drive was only required to be 36 feet wide (with only 20 feet paved) because DPR interpreted the panhandle drive as only serving 3 lots due to Lots 9 and 10 having access via Dean Avenue. The ALJ notes in his Opinion and Order that when counsel for Protestants presented Mr. Venturina with the argument that this access was only theoretical in nature, in that the Plan shows the only access for Lots 9 and 10 is via the panhandle driveway, Mr. Venturina stated the had consulted with an unnamed co-worker who told him this was acceptable. Mr. Venturina was unable to comment on where visitors and service people visiting the development would park. He was also unable to comment on how many bedrooms were in the proposed duplexes and as to the length of the driveways. Mr. Venturina was further questioned about the July 3, 2019 DPC Comment that the Developer must provide a 35' minimum turning radius for the emergency vehicles to turn around in the corner if Woodley

Avenue and Dean Avenue. Mr. Venturina testified that the DPR had done a site visit and had concluded there was no problem. He further testified that the widening of Woodley Avenue required for the proposed development would obviate any current conditions that may restrict emergency vehicle access. He testified that a fire truck would not be impeded in trying to turn by the hedge at 20 Dean Avenue.

LaChelle Imwiko from Real Estate Compliance testified that all required easements and dedications had been properly delineated on the Site Plan and that her agency therefore recommended approval of the Plan.

Developer's Case

The Developer presented the expert testimony of its professional engineer, John Motsco, PE who was accepted as a professional engineer and an expert in land use, development and zoning issues. Mr. Motsco presented the Plan and discussed in detail the redline changes added as a result of the comments received at the Development Plan Conference and additional comments received from DOP. Mr. Motsco testified regarding the initial difference of opinion between the Developer and the Planning Department as to the number and type of architectural features required on the proposed homes. He testified that ultimately, the Developer accepted the Department's position and modified the Pattern Book accordingly. Mr. Motsco explained the general requirement for open space and the reasons why a waiver from those requirements was granted, as well as the location and extent of the mandatory Greenway area to be dedicated to the County. Mr. Motsco rendered his expert opinion that the Plan met all County laws, regulations and rules, polices and guidelines.

Upon cross-examination, Mr. Motsco described how proposed Lot Nos. 9 and 10 have legal access along its Dean Avenue frontage. Mr. Motsco opined that Lot Nos. 9 and 10 are not

panhandle lots even though they will have paved access to their common driveway pursuant to a Private Ingress, Egress Maintenance & Utility easement, which he testified would establish ingress/egress rights and maintenance and repair obligations. Mr. Motsco explained that, in accordance with the BCZR and the Zoning Commissioner's Policy Manual, front and rear yards of homes are determined by the orientation of the home. Regarding proposed residential subdivisions in Baltimore County, Mr. Motsco the described the evaluation of public water pressure during Phase II of the development process. He testified the pattern of development shown in the Plan may proceed if adequate water pressure exists. However, if a problem would develop in the future it would need to be remedied so that the development could be completed.

Protestants' Case

Numerous neighbors testified in opposition to the proposed development, as did Mary Molinaro, the 1st Vice President of the Reisterstown, Owings Mills, Glyndon Coordinating Council ("ROG"), who presented a letter and Resolution in opposition to the proposed development. In short, the Protestants believe that the proposed development is too dense and is incompatible with the existing neighborhood. Their primary concerns are: density, traffic flow and volume, parking, the use of the panhandle driveway and lots, and public safety. Concerns about environmental impacts were also raised.

Panhandle and Density Issue

The neighborhood witnesses testified and produced photographs supporting their contention that there are no semi-detached ('duplex') homes or panhandle lots in the neighborhood. They pointed out that the panhandle lots and duplexes will enable the Developer to obtain 100% of the possible density on this parcel, which they contend will be at the expense of the aesthetics of the existing neighborhood and at a cost of public safety. These witnesses

noted that the DOP had initially noted it wanted the Developer to "demonstrate alternative dwelling layout/locations in order to address some of the community's concerns and create a layout that more closely matched the existing pattern of the neighborhood, while also addressing traffic and ROW issues. *See DOP Development Plan Conference, and initial Hearing Officer Hearing Comments, dated July 3, 2019 and September 27, 2019.* These witnesses complained that County witnesses had not explained how it was that DOP had changed its position to recommend the approval of the Plan without requiring the Developer to submit any alternative plan. Regarding the issue of the panhandle driveway, they testified that they did not agree with the finding that lots 9 and 10 were not to be considered panhandle lots. They argue that the Dean Avenue access is purely theoretical because as proposed, the site plan shows that all five of the detached dwellings rely on the panhandle driveway as their sole ingress and egress. Consequently, they found it illogical that the County did not require the Developer to follow the width requirements of BCC §32-4-409(b)(2)(iii), which would have required a 50 foot wide panhandle drive to service these 5 single family homes. They further argued that the proposed panhandle driveway and lots do not conform with BCC §32-4-409(a) because (1) the parcel is not irregularly shaped, (2) the panhandle design will be detrimental to the adjacent properties, and (3) this design will impact public safety and welfare. In the Protestants view, the proposed panhandle design will be detrimental to the adjacent properties due to the increased density it will allow, which will exacerbate what they deem as an already problematic traffic flow situation.

Numerous residents raised concerns about traffic safety and parking. Onaje Williams owns a home on approximately two acres at 23 Stocksdale Avenue. He testified that his young sons and other children in the neighborhood walk to the public schools. He stated that it is already dangerous for pedestrians in the neighborhood because there are no sidewalks and very narrow

streets. He realizes that the Plan calls for sidewalks directly in front of the proposed duplexes on Woodley Avenue, and behind the lots backing to Dean Avenue, but there will still be no sidewalks in the rest if the neighborhood and the development will be creating an estimated 130 additional car trips.

A majority of the Protestants' witnesses raised concerns about the limited parking provided in the proposed development due to the fact there is no street parking through most of the existing neighborhood. Woodley Avenue, where the sole entrance to the development will be, will have "no parking" signs installed. There will be no parking on the panhandle drive either, as it is only 20 feet wide, and the driveways for the proposed homes can accommodate only two vehicles at most. The community is concerned about where the new residents guests, delivery trucks and service vehicles will park. They noted the duplexes will have as many as four bedrooms and therefore it is unrealistic to assume that there will be only 2 vehicles per family. They noted that most of the existing homes in the neighborhood have long, wide driveways and large lawns for overflow parking.

Community witnesses raised further concerns regarding the impact the proposed development would have on public safety. Due to the fact there are only 17 homes in the neighborhood presently, 13 additional hones would nearly double its density. A community witness noted that it is already extremely difficult to turn onto Reisterstown Road due to the volume and speed of traffic and that there was already a high volume of accidents on Reisterstown Road in the vicinity of this neighborhood.

Witnesses also noted that this increase in population can be expected to generate an increase in emergency responses to the neighborhood and, because of the very narrow streets there is already a problem getting fire apparatus into the neighborhood.

DECISION

Panhandle Lots

BCC § 32-4-409(a) states:

§ 32-4-409. - PANHANDLE DRIVEWAYS.

(a) *In general.*
(1) The county may only allow a panhandle lot:
(i) To achieve better use of irregularly shaped parcels;
(ii) To avoid development in environmentally sensitive areas;
(iii) Where the lot will not be detrimental to adjacent properties; and
(iv) Where the lot will not conflict with efforts to provide for public safety and general welfare.
(2) The county may only allow a panhandle driveway where necessary to provide access to interior lots where a public road is neither feasible nor desirable.

The ALJ concluded the Developer did not meet its burden of establishing that it is appropriate to use a panhandle drive and panhandle lots in this case. The ALJ concluded that the two issues were separate but obviously related. The ALJ noted that the CMDP cautions "panhandle lots can create a variety of design and aesthetic problems which, if not properly addressed, prove incompatible with neighboring dwellings and communities." After reviewing the evidence submitted, the ALJ concluded that the parcel at issue is not irregular in shape, but rather is a rectangle. The ALJ did not accept the Developer's assertion that the parcel is irregularly shaped due to the County Greenways, areas of Forest Conservation and Forest Buffer and the required stormwater management proposed, but rather concluded that it irregular shape was caused by project design in an effort to achieve 100% density.

The ALJ, did not agree with the Developer's expert and county agency finding that only Lots 11, 12, and 13 were considered to be panhandle lots. The Developers' Expert and County witnesses testified that Lots 9 and 10 would be considered panhandle lots but-for the fact they have frontage on Dean Avenue. The ALJ notes that these rear-facing lots were approved by DOP

despite the fact that alternative designs were never produced during the ALJ hearing, nor could County witnesses refer to their content with any specificity. The ALJ asserts that this detail was vital the viability of the Plan because if these lots were in fact considered panhandle lots then the 'in-fee" access strip for access to Woodley Avenue would have had to be a minimum of 50 feet wide pursuant to §32-4-409(b)(2)(iii) (10 feet for each lot). The ALJ mistakenly found that a retaining wall would run along Dean Avenue blocking access to Lots 9 and 10. However, he further found that the Plan would not allow feasible driveway access to the fronts of the proposed dwelling on Lots 9 and 10, causing the design and safety concerns to be the same for all 5 of the lots whether called 'panhandle lots' or not .

As there is no dispute between the parties as to what code sections apply when evaluating the appropriateness of panhandle lots, the only question before this Board is whether there was substantial evidence in the record for the ALJ to arrive at his finding on this issue. In doing so, the Board must examine the record as a whole to determine whether or not substantial evidence exists to support his findings, and if so, the Board may affirm those findings. Toward that end, the Board takes note that "substantive evidence" has been defined to mean more than a "scintilla of evidence." *Prince George's County v. Meininger*, 264 Md. 148, 152 (1972). If the ALJ's finding on this issue was based solely on his mistaken belief that a retaining wall would block access of Lots 9 and 10 to Dean Avenue, the Board would not be inclined to give the ALJ's factual finding its customary deference. However, the ALJ has also found that the Property is not irregular in shape, nor did he agree that Lots 9 and 10 are not panhandle lots for purposes of calculating the width of the access strip to Woodley Avenue. The Board concludes that these findings of fact are within the exclusive purview of the ALJ and are based on substantial evidence provided at the hearing before him. Consequently, it is not the place of this Board to question

such findings of fact and must defer to the ALJ's conclusion on the matter of panhandle lots. Thus, the Board affirms the ALJ's decision on this issue and for this reason, the Plan should be denied.

Residential Performance Standards

The ALJ concluded that the Developer failed to adduce evidence concerning several sections of the performance standards set forth at §260 of the BCZR. Specifically, the ALJ found that no explanation was offered for why the "reverse-frontage" Lots 9 and 10 were ultimately approved by the agencies in the final site plan without evidence being submitted regarding the alternative layouts requested by DOP. The ALJ also noted that it was never explained why the Plan was approved without compliance with §260.4 of BCZR which states, in relevant part, that a development proposal shall: "Allow on-street parking and Provide street parking and accommodations which complement the surrounding neighborhood." As explained above, the Plan provides for zero on-street parking – a problem numerous neighborhood witnesses pointed out. The ALJ found these witnesses to be credible and their testimony was supported by photographs submitted into evidence. (Protestants' Exhibits 2, 3, and 4)

Counsel for the Developer noted that the absence of off street parking was at the behest of DOP and that there is parking on Dean Avenue and on the existing two-way portions of both Woodley and Stocksdale Avenues. In addition, each of the proposed homes have garages and driveways. Counsel for the Developer further argues that the ALJ assumed no alternative layouts were submitted. Counsel asserts that the DOP would not have issued its final recommendation for approval of the Plan if Developer had not submitted (on September 18, 2019) to DOP, alternative layouts, demonstrating each was not feasible.

As noted by Counsel for the Developer, the BCC mandates that specific agencies review the Development Plan. BCC §32-4-226(b). County agency representatives typically appear and testify under oath as to the positions taken by their respective agency or department. As stated by the Court of Appeals in *Marzullo v. Kahl*, 366, Md. 158 (2001), "an administrative agency's interpretation and application of the statute which the agency administers should be ordinarily be given considerable weight by the reviewing courts." Additionally, a development plan is presumptively compliant with the development review regulations and BCC §32-4-227(e) requires that, in the absence of comments, "the Development Plan shall be considered to be in compliance with county regulations." Petitioner is not required, at that point, to produce additional evidence in support of the County agency determinations. *People's Counsel for Balt. County v. Elm St. Dev., Inc.,* 172 Md. App. 690, 703; 917 A.2d 166, 174 (2007). Once that presumption has been established, Protestants, as explained by the Court of Special Appeals in *Elm St. Dev.*, have the burden to produce evidence rebutting the recommendations and determinations made. *Id., citing Gough v. Board of Zoning Appeals*, 21 Md.App. 697, 704; 321 A.2d 315 (1974).

Although it is well-settled that the various county agencies providing reports approving a development plan, by presumption, creates a *prima facie* case for its approval by the ALJ, Protestants are not prohibited from rebutting that presumption by presenting additional evidence, or by cross-examining the County representatives, thus challenging their findings. If the Board were to accept the argument that the opinions of the County agencies were unimpeachable, it would be unnecessary to have a development plan approved by the ALJ in the first place. A majority of the fodder for the Protestants' cross-examination of the County representatives originated from Concept Plan Comments, and more specifically, the Comments requiring

alternatives to the reverse-frontage of lots 9 and 10. Counsel for the Developer correctly argues that the Concept Plan is not a matter before the ALJ, but an agency's documented concern about a specific issue that has not been specifically rectified in the Development Plan, is obviously fair game for cross-examination of a representative from that agency.

Applying the reasoning above to this matter, while the testimony from an agency representative such as DOP representative, Ms. Kulchytska, is given considerable weight, the fact finder may give her testimony less weight if he finds that her credibility on the issue has been impeached by her inability to explain certain matters and her lack of specific knowledge on such topics as alternative layouts for the reverse frontage lots. As it is the ALJ who is charged with the finding of fact and weighing the credibility of the witnesses who testify before him in Development Plan cases, it is not within this Board's power to supplant its judgment on such issues for that of the ALJ. Consequently, this Board defers to the fact finding of the ALJ on the issue of Residential Performance Standards and affirms his denial of the plan as to that issue.

Compatibility

The Developer argues that the ALJ has exceeded his statutory authority by making his own compatibility determination pursuant to BCC §32-4-402. This section states in pertinent part:

> § 32-4-402. - COMPATIBILITY.
>
> (a) *"Neighborhood" defined.* In this section, "neighborhood" means the existing buildings and land uses adjacent to and extending from the proposed development to:
> (1) A definable boundary such as a primary collector street or arterial street;
> (2) An area with a significant change in character or land use; or
> (3) A major natural feature.
> (b) *Exception.* This section does not apply to a research park.
> (c) *Recommendations by Director of Planning.* The Director of Planning shall make compatibility recommendations to the Hearing Officer for:
> (1) A cluster subdivision;

> (2) A development in the RCC, R-O, OR-1, OR-2, O-3, SE, OT zones, the CR districts, or, except as provided for a development described in § 32-4-402.1, a Planned Unit Development; or
> (3) Alternative site design dwellings as provided in the comprehensive manual of development policies.

The Developer argues that statutorily, there are specific instances in BCC, §32-4-402(c) in which such a compatibility review is called for, but this Plan, which includes single-family detached and single-family duplex dwellings, does not fall within one of those instances.

The ALJ found that both the BCZR and CMDP require the Director of Planning to make compatibility recommendations for all development proposals other than certain single family housing in DR 5.5 zones. The Developer notes, conversely that the CMDP requires a compatibility recommendation to the Hearing Officer for:

> Development other than single-family detached, semi-detached, or duplex hosing that occurs in the DR 5.5 zone.

See CMDP, Division II/Residential Compatibility at 66.

The Developer interprets this to mean that if a development is proposed in the DR 5.5 Zone, other than single-family detached, semi-detached, or duplex housing, a compatibility recommendation is required. The Developer further reasons that this provision is consistent with the BCZR, which in defining uses permitted a right in the DR zones, BCZR §1B01.1.A provides as follows:

> 1.a In all D.R. Zones, single family detached, semi-detached or duplex dwellings;
> 1.c In D.R. 5.5 Zones, subject to findings of compatibility by the hearing offer: group homes and multifamily buildings
> 1d. In D.R. 10.5 and DR 16 Zones: group houses and multifamily buildings.

The Developer contends this statutory language makes it clear that single-family detached, semi-detached and duplex dwellings are permitted as of right in all D.R. zones, without

a compatibility analysis. Counsel for the Developer further notes that the Board had addressed a similar issue *In the Matter of 11301 Pulaski Highway, LLC*, Case No. CBA-19-002. Although the facts in that case are quite distinguishable from the case at bar, the Board did find that the ALJ's power to make compatibility findings are limited by BCC, §32-4-402. In response to the Developer's argument, the ALJ stated in his Opinion and Order:

> . . . in sum, I believe the DOP is charged with making compatibility assessments on virtually all development projects, and I further believe that the Hearing officer can and should consider compatibility in deciding whether a development plan should be approved.

ALJ Opinion Order at 19.

In an effort to be consistent with this Board's prior decisions on the scope of BCC, §34-4-402, we cannot agree with the ALJ's broader interpretation as to his responsibility for making compatibility findings, and restate our position that the required compatibility analysis found in BCC, §32-4-402, is limited to statutorily defined circumstances, of which this development is not one.

Master Plan Conflict

As stated in BCC §32-4-215(a), any conflict between the concept plan of development and the Master Plan has to be identified and the concept plan shall be immediately transmitted to the Planning Board in accordance with BCC §32-4-231. If, during the development plan hearing, the Hearing Officer determines that a conflict exists between the development plan and the Master Plan, he shall refer the Development Plan to the Planning Board. BCC § 32-4-231(a)(1).

In his Opinion and Order, the ALJ stated:

> I agree with the protestants that this proposed development would take this neighborhood from a T-3 'sub-urban' transect classification to T-4 'general urban' classification. While the 2020 Master Plan does not necessarily prohibit such a transformation it does state in its 'Introduction that 'many existing stable residential neighborhoods should not be

> disturbed for additional development.' In my view this is one such neighborhood, at least with regard to the proposed development plan before me.

ALJ Opinion and Order at 25.

It appears the ALJ's comment on this issue is mere *dicta* regarding his opinion on the nature of this development and it is ambiguous to the Board as to whether he is definitively finding a conflict with the Master Plan. Consequently, the Board cannot not find with certainty that the ALJ found a Master Plan conflict that would merit remand to the Planning Board. The Board also finds that the ALJ's comment in this regard is harmless in that the Board has affirmed the ALJ's findings of facts on other matters precluding the approval of the Development Plan at issue.

CONCLUSION

Based on the analysis stated above, the Board finds that the ALJ's denial of the Development Plan based on the issues of the Panhandle Lots/Driveways and Residential Performance Standards is supported by competent, material, and substantial evidence in light of the entire record as submitted and is hereby AFFIRMED. The Board does not agree that the ALJ found a conflict with the Master Plan nor does it agree with the ALJ's opinion as to his requirement to make compatibility findings in all development cases. However, due to the Plan's failure on the previous noted issues of Panhandle Lots/Driveways and Residential Performance Standards, the Board finds questions concerning compatibility and a Master Plan conflict are MOOT.

In the matter of: Woodley Property Partners, LLC
Case No: CBA-20-024

ORDER

THEREFORE, IT IS THIS 24th day of July, 2020, by the Board of Appeals of Baltimore County, hereby:

ORDERED that the Administrative Law Judge's Development Plan Opinion and Order are hereby **AFFIRMED**, as to his finding of facts on the Issue of Residential Performance Standards and Panhandle Lots/Driveways, and it is further,

ORDERED that the issues regarding Compatibility and Master Plan Conflict are hereby **MOOT**.

Any petition for judicial review from this decision must be made in accordance with Rule 7-201 through Rule 7-210 of the *Maryland Rules*.

BOARD OF APPEALS
OF BALTIMORE COUNTY

Maureen Murphy/kc
Maureen E. Murphy, Panel Chair

Andrew M. Belt

see attached
Joseph L. Evans

In the matter of: Woodley Property Partners, LLC
Case No: CBA-20-024

ORDER

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ORDERED that the Administrative Law Judge's Development Plan Opinion and Order are hereby **AFFIRMED**, as to his finding of facts on the Issue of Residential Performance Standards and Panhandle Lots/Driveways, and it is further,

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Any petition for judicial review from this decision must be made in accordance with Rule 7-201 through Rule 7-210 of the *Maryland Rules*.

BOARD OF APPEALS
OF BALTIMORE COUNTY

see attached
Maureen E. Murphy, Panel Chair

see attached
Andrew M. Belt

Joseph L. Evans

IN RE: **DEVELOPMENT PLAN HEARING & PETITION FOR SPECIAL HEARING**	*	BEFORE THE OFFICE OF
1st Election District 1st Council District	*	ADMINISTRATIVE HEARINGS
(106 110 Maple Avenue)	*	FOR
DAVIS FARMS	*	BALTIMORE COUNTY
MILDRED D. HAMMEN **EMILY R. WESSEL, TRUSTEE** **TRI-STAR DEVELOPMENT** *Owner/Applicant*	*	**Case Nos: 01-0606 and 2020-0105-SPH**

* * * * * * *

ADMINISTRATIVE LAW JUDGE'S ORDER ON REMAND RE: COMBINED DEVELOPMENT PLAN AND ZONING PETITION

PROCEDURAL HISTORY

On February 12, 2021 the undersigned issued an Opinion and Order in this case denying approval of the Development Plans. One of the grounds upon which the Plan was denied was that it was in conflict with the 2020 Master Plan. The Developer appealed. By Opinion dated July 14, 2021 the Board of Appeals remanded the case to the undersigned with instructions to "immediately refer the matter to the Baltimore County Planning Board pursuant to Baltimore County Code § 32-4-231." The undersigned followed this directive. On October 12, 2021 Stephen Lafferty, the Director of the Department of Planning ("DOP") and Secretary to the Baltimore County Planning Board, authored a letter to the undersigned informing me that on October 7, 2021 the Planning Board, acting on the recommendation of the DOP, had voted to confirm that there was no Master Plan conflict, and that the Development Plan should be approved. *See,* Planning Board Decision and DOP Recommendation, attached collectively as Exhibit 1, and incorporated herein. This decision was forwarded to the undersigned and to the County Council pursuant to BCC § 32-4-232(b)(2) and (b)(3), respectively.

Pursuant to BCC § 32-4-232(f)(1) the Decision of the Planning Board is binding upon the Administrative Law Judge and shall be incorporated into the final Order unless the County Council overrules the Decision of the Planning Board pursuant to BCC § 32-4-232(f)(2). The County Council took the matter up and on November 15, 2021 Resolution No. 137-21 was introduced. *See,* County Council Resolution No. 137-21, attached as Exhibit 2, and incorporated herein. The Resolution required the Council to consider whether to affirm or overrule the Planning Board's Decision. The Parties and People's Counsel were informed that the Resolution would be considered at the County Council's November 29, 2021 Work Session; at which time the Parties and People's Counsel would be afforded the opportunity to present their respective positions. All were also afforded the right to submit written arguments.

At the November 29, 2021 Work Session counsel for the Parties, People's Counsel, and several neighbors argued their positions and answered questions posed by Councilmembers. Thereafter, on December 6, 2021 the County Council voted 7-0 to ADOPT the Resolution, thereby overruling the Planning Board's Decision and finding that the Development Plan *is* in conflict with the 2020 Master Plan. *See,* Adopted Resolution, Exhibit 2. By letter dated December 7, 2021, Thomas H. Bostwick, Legislative Counsel and Secretary to the County Council, sent a copy of Resolution 137-21 to the undersigned.

DECISION

Pursuant to BCC § 32-4-102(a)(1) "all development of land *shall* conform to the Master Plan." (emphasis added). In *HNS Development, Inc. v. People's Counsel*, 425 Md. 436, 451 (2012), the court of appeals closely analyzed the Baltimore County development law and held that a

PC Exh 18

development plan could not be approved if it did not conform to the Master Plan. As just explained, the County Council adopted Resolution 137-21, finding that the Development Plan in this case does not conform to the 2020 Master Plan. I shall therefore reaffirm my February 12, 2021 Opinion and Order, and it is hereby incorporated in full and attached hereto.

THEREFORE, IT IS ORDERED by this Administrative Law Judge/Hearing Officer for Baltimore County, this **14th** day of **December, 2021,** that the **"DAVIS FARMS"** Plan marked and accepted into evidence as Developer's Exhibit 2, be and hereby is **DENIED**; and,

IT IS FURTHER ORDERED that, in the event the denial of the Development Plan is reversed and the Plan is approved, the Petition for Special Hearing from the Baltimore County Zoning Regulations ("BCZR") § 500.7 to approve the density, house location, use areas and lot configurations for Lot Nos. 1, 2, 3, 4, 16, 17 & 19 as shown on the Plat to Accompany this Petition (and Development Plan for Davis Farms) as a Density Anomaly is **GRANTED**; and,

IT IS FURTHER ORDERED that, in the event the denial of the Development Plan is reversed and the Plan is approved, the Special Forest Variance, as approved by the Director of DEPS, is also, **GRANTED.**

Any appeal of this Order shall be taken in accordance with BCC § 32-4-281.

PAUL M. MAYHEW
Managing Administrative Law Judge
for Baltimore County

JOHN A. OLSZEWSKI, JR.
County Executive

STEPHEN LAFFERTY, *Director*
Department of Planning

RECEIVED
OCT 12 2021
OFFICE OF
ADMINISTRATIVE HEARINGS

October 12, 2021

Hon. Paul Mayhew
Managing Administrative Law Judge
Office of Administrative Hearings
105 West Chesapeake Avenue
Towson, Maryland 21204

Re: Davis Farms, PAI# 1-0606, Master Plan Conflict

Dear Judge Mayhew:

On August 16, 2021, pursuant to Baltimore County Code (BCC) Section 32-4-231(a)(1), you referred the above development plan to the Baltimore County Planning Board to determine whether this development plan was in conflict with the County's 2020 Master Plan.

The Davis Farms development plan was presented to the Planning Board at its regular meeting on September 2, 2021 as required by BCC Section 32-4-231(b). This meeting was advertised to allow for public comment. At this meeting, Jenifer Nugent of the Department of Planning presented the Department's Staff Report and recommendation. Counsel were present and afforded an equal amount of time to present their respective cases and points. Howard Alderman was present as representative for the developer; Michael McCann attended as the representative of the community; and, Peter Max Zimmerman participated as People's Counsel. Four community residents from Maple Avenue were present to speak before the Board: Ms. Christy Katz, Ms. Monica Simonsen, Mr. Albert Cunniff, and Ms. Eileen Lehman. Other community members also submitted similar comments of concern and opposition in the WebEx "chat", as well. The Board adjourned after these presentations and comments were made.

BCC Section 32-4-232(d)(1) requires the Planning Board to provide a written decision to the Hearing Officer and a written notification to the County Council within 45 days after the referral to the Board. However, Mr. Alderman advised that he would not be available at the Board's next regularly scheduled meeting on September 23, 2021. As Board Secretary, I consulted with Counsel who agreed that they could proceed at a subsequent meeting. I advised you of this time frame dilemma in light of the Code requirements. You advised that, since all counsel were in agreement and you still retained jurisdiction, the Board could take up the matter at its subsequent, regular meeting on October 7, 2021.

The Planning Board met at its regular meeting on October 7, 2021 to discuss and vote on the issue before them. Upon a motion to accept the Planning Department's recommendation that there is no Master Plan conflict, the Board voted in favor of the motion. The motion was:

> **Be It Moved,** that, for the reasons stated in the August 23, 2021 staff report and reports from the concept plan conference and development plan conference, the Planning Board's decision to the

105 West Chesapeake Avenue, Suite 101 | Towson, Maryland 21204 | Phone: 410-887-3211 | Fax: 410-887-5862
planning@baltimorecountymd.gov | www.baltimorecountymd.gov/planning
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Exhibit 1

Administrative Law Judge is that the proposed development "Davis Farms" (PAI #: I-0606) does not constitute a "conflict" with the Master Plan.

The Staff Report, which is attached, provided these Findings and Recommendation:

Findings:

- The Department of Planning supported the proposed Development Plan without raising an issue of conformity with the Master Plan 2020.
- After reviewing the Master Plan 2020 Proposed Land Use Map, the Urban Rural Demarcation Line (URDL), and the zoning map at the time of the Master Plan 2020 adoption, the transect designation for the development proposal site was mapped to run coincident with the zoning classification. The transect designation of T3 for this property is appropriate as the general character description from the Master Plan 2020 states that areas should be comprised of "..Lawns and landscaped yards surrounding detached single family houses…" with "…variable front and side yard setbacks". The T3 transect and the DR zoning (DR 1, 2, and 3.5 on this site) support one another in that concept. Similarly, the T2R transect designation is described as "primarily agricultural character with woodland and wetland and scattered buildings" and "variable setbacks". The T-2R transect designation is located on a minor portion of the development site that is fully wooded and coincides with the RC 5 zoning adopted in the 2008 CZMP zoning cycle.
- The T-2R transect on the site does not, in itself, create a Master Plan Conflict as no development is proposed on that portion of the site and uses no density from that portion of the site.
- At the time Master Plan 2020 was adopted, a majority of the zoning for the proposed development proposal was DR. It remains DR. The combination of the DR classifications allows the number of density units proposed.
- The entire development proposal site falls completely within the urban portion of the URDL.
- The Land Management Area map from the Master Plan 2020 designates the site as Community Conservation Area, which describes this land use as low to moderate density residential neighborhoods served by public water and sewer services. This designation follows the residential zoning on the site inclusive of the RC 5 zoning.

Recommendation:

The Department of Planning recommends to the Baltimore County Planning Board that the Davis Farm PAI# 01-606 development proposal does not present a Master Plan conflict and that the Planning Board approve the single family detached development plan with the Master Plan 2020 T-2R transect designation on the Proposed Land Use map.

There was no discussion by Board members prior to the vote. Therefore, there are no additional reasons included in the record.

Please accept this letter as the Planning Board's written decision regarding the Davis Farms Development Plan. A copy of the Department of Planning's August 23, 2021 Memorandum to the Planning Board is enclosed to describe the Department's basis as reflected in the Motion and as presented on September 2, 2021.

If you have any questions regarding the report or the proposed recommendations, please direct them to me.

Sincerely,

Stephen Lafferty
Secretary to the Board

SL:kp

Enclosures

c: Members, Baltimore County Planning Board
Thomas Bostwick, Legislative Counsel/Secretary
Lauren M. Smelkinson, County Auditor
Drew Vetter, Deputy Administrative Officer
Pete Gutwald, Director, Permits, Approvals, and Inspections
James R. Benjamin, Jr., County Attorney
Howard Alderman
Michael McCann
Peter Zimmerman

JOHN A. OLSZEWSKI, JR.
County Executive

STEPHEN LAFFERTY, *Director*
Department of Planning

TO: Members of the Planning Board **DATE:** 8/23/2021

FROM: Steve Lafferty
Director, Department of Planning

SUBJECT: Master Plan Conflict, Davis Farms PAI#01-606

BACKGROUND INFORMATION:

The proposal is to develop 21.17 ± acres of land accessed via Maple Avenue in Catonsville with 1 existing and 18 new single family detached homes. The site is currently zoned DR 1 (12.17 acres), DR 2 (2.95 acres), DR 3.5 (0.99 acres), RC 5 (4.94 acres) and RC 8 (0.12 acres). All of the proposed development is located within the DR 1, 2 and 3.5 zoned portions of the property is proposing only to use the density from the DR zones for the development as well. The portion at the rear of the site, zoned RC 5 and 4.94 acres, is wooded and will remain.

In developing the Master Plan 2020, the Proposed Land Use map was reformatted from specific land uses to a transect model. The transect model allows a delineation of degrees of intensity from rural to urban without associating a specific land use to a specific parcel. The ranges of intensity also include a variety of uses and habitats. The purpose of this reframing of the Proposed Land Use map was to strengthen the concept which guides land use decisions in a general manner rather than for specific properties. In a fashion similar to the Master Plan 2010, text from the Master Plan 2020 frames how the 'Proposed Land Use' map should be utilized. Master Plan 2020 states:

> "The map is conceptual and general, and is intended to reflect land use patterns and support the land use objectives of Master Plan 2020, rather than identify land use of individual properties or parcels. The use of 'T-zones', is designed to support compact mixed-use communities, while maintaining the stability of the existing community conservation areas (Map 5). The proposed land use map will provide general direction forum county land use decisions, and may be amended as needed." Page 27.
>
> "The T-zones vary by the ratio and level of intensity of their natural, built, and social components. Uses may overlap between one T-zone and another." Page 29.

The Master Plan 2020 Transect designations on the site are T2R and T3. The T-2 R (Rural Residential Zone) consists of large lot single-family detached housing. Plantings are informal. All setbacks are generally 50+ feet. Lots are deep to accommodate a larger backyard. Density varies between 2 to 5 acres per dwelling (page 27). The T-3 (Sub-Urban Zone) includes low-density residential areas, adjacent to higher zones that contain mixed use. Home occupations and outbuildings may be allowed. Landscaping is naturalistic and setbacks are relatively deep. Blocks may be large and the roads irregular to accommodate natural conditions (page 29). Further descriptions and graphics were originated and developed by Duany Plater-Zyberk & Co.and are on page 30 of the Master Plan 2020 document. Here the T2 Rural transect character is described as sparsely settled lands in an open or cultivated state including woodlands with variable setbacks. The T3 Sub-Urban transect character describes lawns and landscaped yards surrounding detached single-family houses with variable front and side yard setbacks.

As shown on the attached Zoning Maps, the property has been subject to zoning changes since 2008. The 2008 request, CZMP Issue #1-016, was to rezone the property from solely DR zoning to all RC 5 or RC 8 zoning. The Department of Planning did not support the request and the Planning Board adopted the Department's recommendation. The final decision by the County Council was to keep the DR zoning for most of the property and rezone 4.94 acres of the site to RC 5. Subsequent CZMPs have retained the RC 5 classification.

The Davis Farms project went through the normal major subdivision process, which included a Concept Plan Conference, a Community Input Meeting, a Development Plan Conference and a hearing before the Administrative Law Judge. The Department of Planning recommended to the Administrative Law Judge (ALJ) that the Development Plan be approved. ALJ Mayhew issued an Order on February 12, 2021 denying the Development Plan, stating that the proposed single family detached homes would not be in conformity with the Master Plan 2020 based on the Proposed Land Use transect designations. The decision was appealed to the Board of Appeals. On July 14, 2021, the Board remanded the case to the Administrative Law Judge with direction that he refer the case to the Planning board to determine if a Master Plan conflict exists in accordance with the process described in the Baltimore County Code.

REFERAL TO THE PLANNING BOARD:

ALJ Mayhew's referral is in accordance with BCC §§ 32-4-231 and 32-4-232. These two County Codes sections are attached as a reference. Significant points from these two sections are listed below with the code reference.

The Hearing Officer shall refer the Development Plan to the Planning Board when: The Development Plan conflicts with the Master Plan.	32-4-231(a)(1)
The Planning Board shall review a referred plan at its next scheduled meeting.	32-4-231(b)
The Planning Board shall only consider issues referred under 32-4-231(a)	32-4-232(a)(1)
The applicant, a person of an agency can submit oral or written comments to the Planning Board.	32-4-232(a)(2)
The Planning Board shall file a written decision to the ALJ that includes the reasons for the decision and file a recommendation with the County Council at the same time.	32-4-232(b)(2) 32-4-232(b)(3)

The Planning Board shall file its written decision no later than 45 days after the referral to the Planning Board.	32-4-232(c)
The decision of the Planning Board is binding upon the ALJ and shall be incorporated into the final order.	32-4-232(f)(1)
The decision of the Planning Board is not binding upon the ALJ if the decision is overruled by action of the County Council.	32-4-232(f)(2)

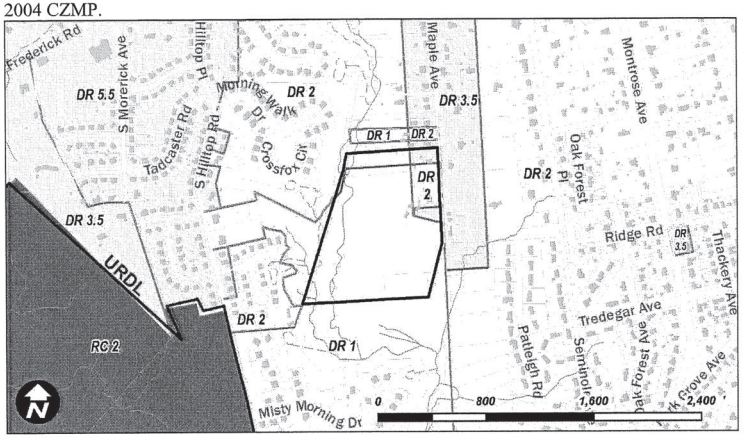
FINDINGS:

- The Department of Planning supported the proposed Development Plan without raising an issue of conformity with the Master Plan 2020.
- After reviewing the Master Plan 2020 Proposed Land Use Map, the Urban Rural Demarcation Line (URDL), and the zoning map at the time of the Master Plan 2020 adoption, the transect designation for the development proposal site was mapped to run coincident with the zoning classification. The transect designation of T3 for this property is appropriate as the general character description from the Master Plan 2020 states that areas should be comprised of "..Lawns and landscaped yards surrounding detached single family houses…" with "…variable front and side yard setbacks". The T3 transect and the DR zoning (DR 1, 2, and 3.5 on this site) support one another in that concept. Similarly, the T2R transect designation is described as "primarily agricultural character with woodland and wetland and scattered buildings" and "variable setbacks". The T-2R transect designation is located on a minor portion of the development site that is fully wooded and coincides with the RC 5 zoning adopted in the 2008 CZMP zoning cycle.
- The T-2R transect on the site does not, in itself, create a Master Plan Conflict as no development is proposed on that portion of the site and uses no density from that portion of the site.
- At the time Master Plan 2020 was adopted, a majority of the zoning for the proposed development proposal was DR. It remains DR. The combination of the DR classifications allows the number of density units proposed.
- The entire development proposal site falls completely within the urban portion of the URDL.
- The Land Management Area map from the Master Plan 2020 designates the site as Community Conservation Area, which describes this land use as low to moderate density residential neighborhoods served by public water and sewer services. This designation follows the residential zoning on the site inclusive of the RC 5 zoning.

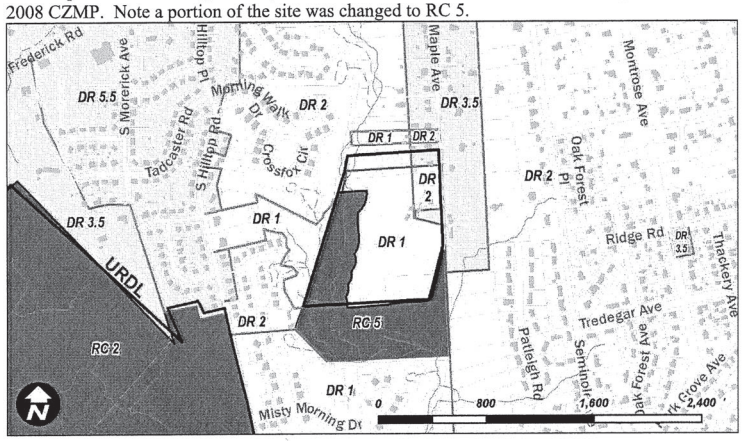
RECOMENDATION:

The Department of Planning recommends to the Baltimore County Planning Board that the Davis Farm PAI# 01-606 development proposal does not present a Master Plan conflict and that the Planning Board approve the single family detached development plan with the Master Plan 2020 T-2R transect designation on the Proposed Land Use map.

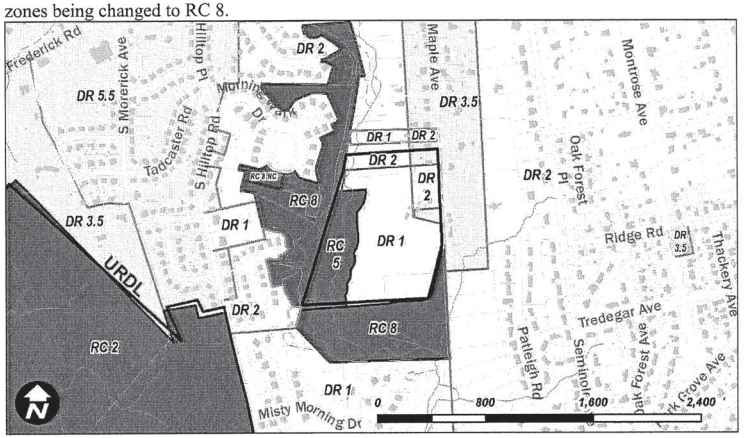
This map shows the zoning for the parcels associated with the Davis Farm Development after the 2004 CZMP.



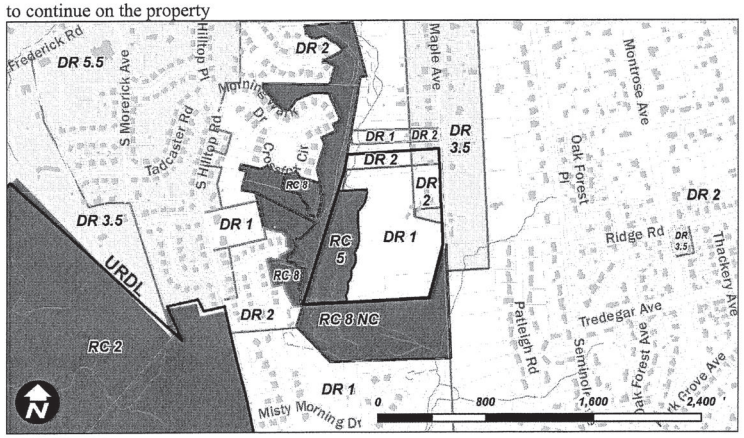
This map shows the zoning for the parcels associated with the Davis Farm Development after the 2008 CZMP. Note a portion of the site was changed to RC 5.



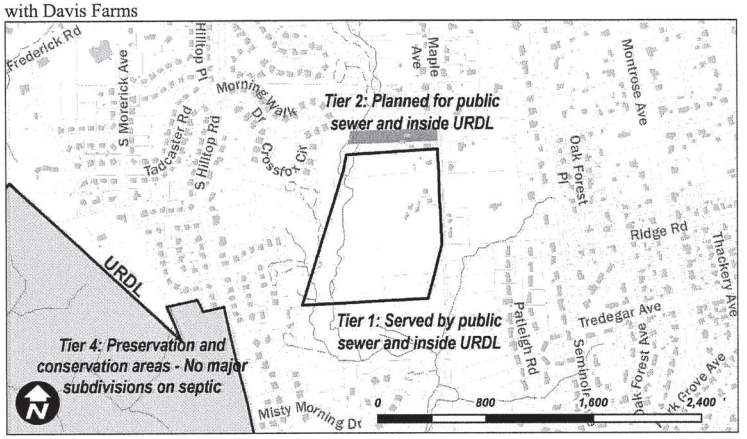
This map shows the zoning for the parcels associated with the Davis Farm Development after the 2012 CZMP. Note the RC 5 portion of the site remained unchanged despite the surrounding DR zones being changed to RC 8.



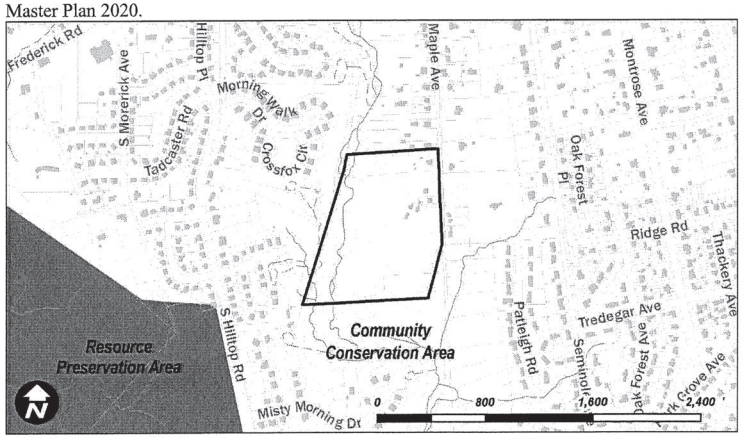
This map shows the current zoning on the land today. The adjacent RC 8 zone to the south was upgraded to RC 8 NC to further prevent development of that parcel. In allowing the RC 5 on the development site to remain, the county council was intentional in allowing some residential use to continue on the property



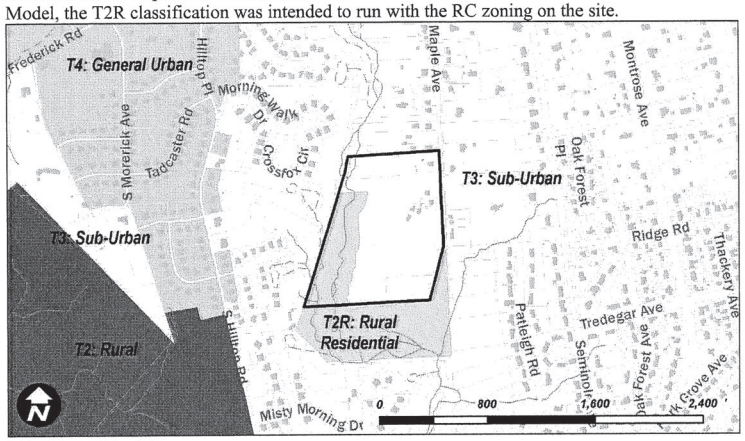
This map shows the location of the URDL and Growth Tiers relative to the parcels associated with Davis Farms



This map shows the Land Management Area from the Master Plan 2020 for the parcels associated with the Davis Farm Development. Note the parcels are designated Community Conservation Area, which would coincide with the zoning at the time of the development of the Master Plan 2020.



This map shows the Transects from the Master Plan 2020 for the parcels associated with the Davis Farm Development. When Master Plan 2020 introduced the Transect Based Land Use Model, the T2R classification was intended to run with the RC zoning on the site.



County Council of Baltimore County

Court House
Towson, Maryland 21204

410-887-3196
Fax: 410-887-5791

Tom Quirk
FIRST DISTRICT

Izzy Patoka
SECOND DISTRICT

Wade Kach
THIRD DISTRICT

Julian E. Jones, Jr.
FOURTH DISTRICT

David Marks
FIFTH DISTRICT

Cathy Bevins
SIXTH DISTRICT

Todd K. Crandell
SEVENTH DISTRICT

Thomas H. Bostwick
LEGISLATIVE COUNSEL
SECRETARY

December 7, 2021

Paul M. Mayhew
Managing Administrative Law Judge
The Jefferson Building
105 W. Chesapeake Avenue
Towson, Maryland 21204

RECEIVED
DEC 08 2021
OFFICE OF
ADMINISTRATIVE HEARINGS

Dear Mr. Mayhew:

Attached please find a copy of Resolution 137-21 of the Baltimore County Council to determine whether to overrule the Baltimore County Planning Board in regard to the Planning Board's decision in the Tri-Star Development – Davis Farms development case ("Davis Farms"), in which the Planning Board found that the proposed Development Plan was not in conflict with the Baltimore County Master Plan.

This Resolution was approved by the County Council at its December 6, 2021 and is being forwarded to you for appropriate action.

Sincerely,

Thomas H. Bostwick
Legislative Counsel/Secretary

THB:jlh
Enclosure

Exh. # 2

COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND
Legislative Session 2021, Legislative Day No. 20

Resolution No. 137-21

Mr. Tom Quirk, Councilman

By the County Council, November 1, 2021

A RESOLUTION of the Baltimore County Council to determine whether to overrule the Baltimore County Planning Board in regard to the Planning Board's decision in the Tri-Star Development – Davis Farms development case ("Davis Farms"), in which the Planning Board found that the proposed Development Plan was not in conflict with the Baltimore County Master Plan.

WHEREAS, on February 12, 2021, Administrative Law Judge Paul M. Mayhew issued an Opinion and Order in the Davis Farms combined Zoning and Hearing Officers Hearing case, Case No. 01-0606 and 2020-0105-SPH, denying approval of the Development Plan, in part, based on a finding that the Development Plan did not comply with the Master Plan; and

WHEREAS, after an appeal was filed by the Developer, the Board of Appeals of Baltimore County remanded the case back to the Administrative Law Judge in order for the case to be referred to the Planning Board for a decision on the issue of whether the Development Plan is in compliance with the Master Plan. Judge Mayhew referred the case to the Planning Board on August 16, 2021 pursuant to Baltimore County Code ("BCC") Section 32-4-231(a)(1); and

WHEREAS, the Davis Farms Development Plan was presented to the Planning Board at its regular meeting on September 2, 2021 as required by BCC Section 32-4-231(b). The meeting was advertised to allow for public comment, and representatives of the Department of Planning presented the Department's Staff Report and recommendation; and

WHEREAS, counsel for the Developer and the Community appeared and Peoples Counsel Peter Max Zimmerman participated and all were afforded an equal amount of time to present their respective cases and points; several members of the community also spoke before the Planning Board; and

WHEREAS, the Planning Board met at its regular meeting on October 7, 2021 to discuss and vote on the Master Plan issue before them. Upon a motion to accept the Planning Department's recommendation that the proposed development is not in conflict with the Master Plan, the Planning Board voted in favor of the motion and forwarded its decision to the Administrative Law Judge and its recommendation to the County Council pursuant to Sections 32-4-232(b)(2) and (b)(3), respectively; and

WHEREAS, pursuant to BCC Section 32-4-232(f)(1), the decision of the Planning Board is binding upon the Administrative Law Judge and shall be incorporated into the final order; and

WHEREAS, pursuant to BCC Section 32-4-232(f)(2), the decision of the Planning Board is not binding upon the Administrative Law Judge if the decision is overruled by action of the County Council; now therefore

BE IT RESOLVED BY THE COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND, that the Baltimore County Council hereby overrules the decision of the Planning Board that the proposed development is not in conflict with the Master Plan, and the decision of the Planning Board is, therefore, not binding on the Administrative Law Judge; and

BE IT FURTHER RESOLVED, that a copy of this Resolution be sent to the Baltimore County Planning Board, the Department of Planning, and the Office of Administrative Hearings; and

AND BE IT FURTHER RESOLVED, that this Resolution shall take effect from the date of its passage by the County Council.

READ AND PASSED this ***6th*** day of ***DECEMBER, 2021***

BY ORDER

Thomas H. Bostwick
Secretary

ITEM: ***RESOLUTION 137-21***

IN RE: **DEVELOPMENT PLAN HEARING & PETITION FOR SPECIAL HEARING**	*	BEFORE THE OFFICE OF
1st Election District	*	ADMINISTRATIVE HEARINGS
1st Council District		
(106 110 Maple Avenue)	*	FOR
DAVIS FARMS	*	BALTIMORE COUNTY
MILDRED D. HAMMEN		
EMILY R. WESSEL, TRUSTEE	*	**Case Nos: 01-0606 and**
TRI-STAR DEVELOPMENT		**2020-0105-SPH**
Owner/Applicant	*	

* * * * * * *

ADMINISTRATIVE LAW JUDGE'S
COMBINED DEVELOPMENT PLAN AND ZONING OPINION & ORDER

This matter comes before the Office of Administrative Hearings ("OAH") for a public hearing on a development proposal submitted in accordance with Article 32, Title 4, of the Baltimore County Code ("BCC"). Tri-Star Development, *Owner/Applicant* (herein known as "Developer") submitted for approval a 2-sheet redlined Development Plan ("Plan") known as "Davis Farms."

The Developer proposes 19 single family homes to be built on 21.17 acres of land under various zone classifications. The site is currently developed with existing vacant dwellings, accessory structures and ancillary buildings.

The Developer has also filed a Petition for Special Hearing under Section 500.7 of the Baltimore County Zoning Regulations ("BCZR") to approve the density, house location, use areas and lot configurations for Lot Nos. 1, 2, 3, 4, 16, 17 and 19 as shown on the Plat to Accompany this Petition (and Development Plan for Davis Farms) as a Density Anomaly that is within the spirit and intent of the BCZR.

The development and zoning cases were considered at a combined hearing as permitted by

BCC § 32-4-230. Details of the proposed development are more fully depicted on the Plan, which was marked and accepted into evidence as Developer's Exhibit 2. The property was posted with the Notice of Hearing Officer's Hearing ("HOH") and Zoning Notice, both on January 6, 2021, in compliance with the regulations. Due to the COVID-19 pandemic, the undersigned conducted a public virtual WebEx hearing in lieu of an in-person public hearing on January 29, 2021.

The Developer, William Holland, attended the HOH in support of the Plan but did not testify. Also in attendance were Aaron Kensinger of Little & Associates Engineers, the engineer who prepared and sealed the Plan; Mark Keeley of Traffic Concepts, Inc.; and Henry Leskinen of Eco-Science Professional, Inc. Their *curricula vitae* were admitted as Developer's Exhibits 3, 12, and 10, respectively. Howard Alderman, Esquire of Levin Gann, P.A. represented the Developer. Numerous neighbors attended to oppose the requested relief.

AGENCY WITNESSES

Numerous representatives of the various Baltimore County agencies who reviewed the Plan also attended the virtual hearing, including the following individuals from the Department of Permits, Approvals and Inspections ("PAI"): Patrick Williams, the Project Manager, Jim Hermann of Development Plans Review ("DPR"), and Department of Recreation and Parks ("R&P"), LaChelle Imwiko from Real Estate Compliance, and Jason Seidelman, Office of Zoning Review ("OZR"). Also appearing on behalf of the County were Jeff Livingston from the Department of Environmental Protection and Sustainability ("DEPS"), Vishnu Desai from DPR, and Te-Sheng Huang and Kui Zhao from the Department of Planning ("DOP").

Each County agency representative testified briefly and indicated that the Plan addressed all comments submitted by their agency, and they each recommended approval of the Plan. First to testify was Jeff Livingston of DEPS, who testified that the Plan addresses all remaining

comments made by the Groundwater Management and Stormwater Management sections at the Development Plan Conference ("DPC"). He explained that the site is served by public water and sewer but that the public sewer does not currently extend beyond 27 and 28 Maple Avenue. Therefore, a "low pressure" sewer line will be installed to serve the 19 proposed homes, which will need to use "grinder pumps" to connect to the pressure sewer line because a gravity sewer line is not feasible. He explained that the maintenance of the stormwater management systems will be the responsibility of the homeowners association. He also testified that the Director of DEPS had approved the Developer's petition for a Special Forest Variance to allow for the removal of 22 specimen trees.

The next witness was Te-Sheng Huang from DOP. He identified the following exhibits: Final Hearing Report from DOP, which was admitted as County Exhibit 1; the approved Pattern Book, admitted as County Exhibit 2; and the approved School Impact Analysis ("SIA"), admitted as County Exhibit 3. Based on the Plan filing date of February 27, 2020 the SIA was based on the September 2019 school enrollment numbers. Mr. Huang was unable to say why the SIA was based on a proposal of 16 homes, when the Plan proposes 19 homes. This was explained later in the hearing by Kui Zhao, the demographer for DOP who actually approved the SIA. She testified that because there are three existing residential structures on the property that the SIA considered only the additional 16 homes. When community members pointed out that the three existing structures are vacant Ms. Zhao stated that even if the analysis was done using 19 additional homes none of the schools would exceed 115% capacity. Mr. Huang testified that the redlined Plan addresses all the DOP comments from the DPC and that DOP recommends approval.

Jim Hermann from DPR testified next. He identified Developer's Exhibit 4 as the approved Schematic Landscape Plan. He next explained that these 19 proposed residences require 19,000

square feet of Open Space and that the Plan provides 22,553 square feet of Open Space. He noted that a gazebo and two benches are being provided in response to DPC comments from Rec. & Parks. He too stated that the redlined Plan satisfies all DPR and Rec. & Parks comments and that these agencies recommend approval.

Jason Seidelman from the Office of Zoning Review testified next regarding the Special Hearing relief. As noted above, the subject parcel contains DR 1, DR 2, DR 3.5, RC-5, and RC-8 zones. This creates "density anomalies" on lots 1, 2, 3, 4, 13, 16, 17 and 19 because these lots each have more than one zoning classification. Mr. Alderman explained that this would technically generate a "density unit" for each zone in the lot. However, he further explained that the Special Hearing relief would not result in creating greater overall density for the tract because each lot on the Plan is supported by the density of the zone in which it is located. Mr. Seidelman confirmed that OZR supports the Special Hearing relief.

LaChelle Imwiko testified next on behalf of the office of Real Estate Compliance. She stated that the Developer must add a forest buffer access easement to the dedication table, but that other than that the Plan meets all requirements.

Vishnu Desai then testified on behalf of DPR and the Department of Public Works ("DPW"). He stated that he had done a site visit with Dennis Kennedy of Little & Associates on January 18, 2021, as documented by Developer's Exhibit 6. He stated that the redlined Plan addresses all DPW comments from the DPC. In response to questions from the community he explained that the individual homeowners will be financially responsible for any problems associated with the grinder pumps – just as homeowners are responsible for any septic system issues. He was asked whether he had observed the severe flood damage and erosion caused by recent flooding of the Sawmill Branch stream adjacent to the tract. He said he had not.

DEVELOPER'S CASE

The engineer, Aaron Kensinger, gave an overview of the development proposal, explaining that the existing structures on the parcel will be razed and that 19 single family detached homes are proposed to be built. Seventeen of the homes will be built on the "loop road" depicted as "Davis Farms Road" on the Plan. The other two homes are to be built directly on Maple Avenue. He identified the original site plan and the redlined Plan, which were admitted as Developer's Exhibit 1 and 2, respectively. He described a "blue line" amendment which will depict a forest buffer access easement between lots 8 and 9. He testified that Davis Farms Road will be a public road. He described the Schematic Landscape Plan which calls for 133 "planting units" as required by the Baltimore County Landscape Manual ("BCLM"). He identified Developer's Exhibit 5 as the Stormwater Management Conceptual Computations which were approved on April 22, 2020. He identified Developer's Exhibit 7 as the Groundwater Management Plan approval dated January 20, 2021. He also identified Developer's Exhibit 9 as the DOP recommendation of approval also dated January 20, 2021. Mr. Kensinger also discussed the density anomalies and offered the opinion that the Special Hearing relief could be granted within the spirit and intent of the BCZR. He identified Petitioner's Exhibit 3 as the DOP recommendation in favor of the density anomaly relief. In response to questions from neighbors Mr. Kensinger explained that he could not give a timeframe for the completion of the development because the Developer plans to build the houses as they are sold.

Developer's next witness was Mark Keeley of Traffic Concepts, Inc. He testified that he is licensed by the Institute of Transportation Engineers ("ITE"). He testified that he had read the minutes of the Community Input Meeting so he is aware of the neighborhood's concerns about the traffic and safety impacts of the additional 19 homes. He testified that the County's "ultimate"

road width for Maple Avenue calls for a paved width of 30 ft. and a right of way width of 50 ft. However, he agreed that this would require the county to exercise its eminent domain powers to purchase private land from the homeowners along Maple Avenue – and that the county has no plans to do so. He further acknowledged that the road is as narrow as 16 feet in places and that the only proposed road widening is along the frontage of the Davis Farms development. He testified that, per the county's regulations, each of the 19 proposed homes is expected to generate 10 "daily trips" for a total of 190 additional trips. He further explained that it is expected that the new homes will add 18 a.m. peak hour trips (7 a.m. to 9 a.m.) and 21 p.m. peak hour trips (4 p.m. to 6 p.m.). He suggested that the proposed loop road will actually improve the ability of larger vehicles to turn around without having to use private driveways on Maple Avenue as they must currently do. He acknowledged that there are approximately 45 existing homes on Maple Avenue so that these 19 additional homes will generate in excess of 40% more traffic on the street. However, he stated that he does not believe this would have a significant impact on the neighbors.

On cross examination Mr. Keeley acknowledged that he was hired by the Developer to perform this traffic study and to provide this testimony. He further acknowledged that he generally testifies on behalf of developers, not on behalf of community groups. He was asked whether these larger 4 to 5 bedroom homes would be more likely to generate more car trips than the smaller homes along Maple Avenue and he replied that he was not sure one way or the other. He acknowledged that Maple Avenue would remain at its current width except for the widening along the frontage of this development, and he acknowledged that there are no sidewalks along the length of Maple Avenue. In response to community questioning he explained that flaggers would be used to manage construction traffic and that the street would never be fully closed during construction. He also acknowledged that he had not done any traffic safety study on the intersection of Maple

Avenue and Frederick Road (Md. Rte. 144). He also acknowledged that the last "corridor" study of Frederick Road was done by the State Highway Administration back in 2013. He could not dispute the estimates of several neighbors that traffic along Frederick Road has increased approximately 50% since 2013. He further acknowledged that the two closest signalized intersections – North Rolling Road and Frederick Road, and South Rolling Road and Frederick Road have been rated "D" for several years. However, on re-direct he pointed out that this proposed development does not have any basic services map issues under county law.

The Developer's next witness was Henry Leskinen of Eco-Science Professionals, Inc. He testified that he had performed a Forest Stand Delineation and Forest Conservation Analysis of the tract as required by county law. In doing so he identified 22 specimen trees that would need to be removed in order to build the proposed development (under BCC § 33-6-111(b)(5) a specimen tree is defined as one having a diameter of 30 inches or greater at 4.5 feet above ground)). He explained that a significant percentage of the tract (11.2 of the 21.1 acres) is within a 100 year riverine floodplain, and therefore cannot be built on. The site also contains "steep slopes" (greater than 25% grade). He testified that of the 22 specimen trees proposed for removal 11 are in poor condition and one is non-native. He further explained that the Developer applied for and obtained from DEPS a forest conservation variance to remove these trees. He explained that the majority of the trees slated for removal are in open and unforested areas of the tract where the homes are proposed. He stressed that much of the contiguous forest on the tract will be protected by forest buffer and forest conservation easements. He identified Developer's Exhibit 11 as the DEPS approval of the special variance.

COMMUNITY TESTIMONY AND EVIDENCE

Numerous residents of Maple Road testified in opposition to the proposed development. In

addition, numerous letters, emails, videos, photos and a community petition were received expressing opposition. The primary concerns expressed are traffic increases, traffic and pedestrian safety, environmental impacts, and school crowding.

Eileen and Bruce Leaman testified that they have lived at 27 Maple Avenue for 39 years. They described the unique nature of this dead-end narrow road. Mrs. Leaman testified that this narrow street already gets burdened by overflow traffic from the church on the corner and from the adjacent Five Oaks Swim Club. She pointed out that the only ingress and egress for the 46 existing homes is the intersection of Maple Avenue and Frederick Road. She testified that in the morning rush hour cars back up from the intersection at South Rolling Road all the way down past Maple Avenue; and in the afternoon rush cars back up from North Rolling Road past Maple Avenue. She submitted two short videos showing the huge volume of traffic on Frederick Road, which were admitted, collectively, as Community Exhibit 5. She also submitted documents, maps and photos that were admitted as Community Exhibits 6, 7, 8, and 9. She testified that there are numerous auto accidents at the Maple Avenue and Frederick Road intersection every year, and that cars travelling westbound on Frederick Road travel at significant speeds down a steep hill which bottoms out right at Maple Avenue, creating significant hazards for cars stopped to turn left onto Maple, and to pedestrians trying to cross Frederick from Maple. She pointed out that Maple Avenue was finally repaved by the County last year and laments that it would need to be torn up again to install the sewer and other infrastructure needed for the proposed development. She testified that the existing terra cotta sewer main dates to 1930, and the neighbors are concerned about odors and leaks from the proposed grinder pump connections. Finally, she testified about the recent surge in flooding events caused by climate change, and described a recent flood that washed out the historic stone bridge over Saw Mill Branch adjacent to the proposed development.

See, Photo of flood damage (Community Exhibit 15). In conclusion the Leamans asked that no more than four new houses be allowed.

Maria Czajkowski testified next. She lives directly across Frederick Road from the Maple Avenue intersection. She testified that traffic in the area has gotten worse and worse and that it can take as much as 5 minutes to get onto Frederick Road during the morning and evening rush hours. She further testified that there are a lot of children in the area and that pedestrian and bike safety are real concerns. She described hearing auto accidents and the ensuing ambulance sirens on a regular basis.

Albert Cunniff testified next. He has lived on Maple Avenue since 1976. He stressed that Maple Avenue is unique among streets in the area because of its narrow width, rural feel, and its dead end at Patapsco State Park. He explained that there is already a high volume of pedestrians on Maple Avenue because people from many of the surrounding streets use Maple Avenue to access the park, either on foot or on bikes. Because there are no sidewalks this pedestrian traffic must use the road itself. He submitted a photo of three people spanning the width of Maple Avenue by simply standing abreast with their arms partially outstretched. (Community Exhibit 2). He echoed the concerns about the environmental and traffic impacts from the proposed development. He submitted a diagram of the existing homes on the street and the 19 proposed homes at the end (Community Exhibit 3), and likened the proposed development to "a watermelon hanging from the branch of an apple tree" – the branch being Maple Avenue.

Christy Katz testified that she lives at 7 Maple Avenue. She has young children and is concerned about their safety. She testified that there are approximately 30 young children on the street and that they must walk to the bus stop at the end of Maple Avenue because the street is too narrow for the school buses to traverse. She testified that over 100 community members attended

the Community Input Meeting and raised the same concerns that she and others are still expressing about traffic impacts, pedestrian safety, environmental impacts, and current and projected school crowding. She stated that she doesn't feel like the Developer has addressed any of these concerns. She questioned whether the county development regulations adequately address the realities of climate change. She pointed out that this site is only a couple miles west of Ellicott City, which has suffered devastating flood damage in two recent super storm events. She submitted photos of Maple Avenue which were admitted as Community Exhibit 10, and a petition opposing the development signed by more than 150 community members, which was admitted as Community Exhibit 11.

David Hunter testified next. He lives at 125 Maple, directly across from the proposed development. He stated that he understands the Developer's right to develop this land but he believes that the Developer can get a fair economic return without building all of the 19 proposed houses. He disagreed with Mr. Keeley's description of Maple Avenue as a "typical" Catonsville street because it is a very narrow, dead end street. He also does not understand how 190 additional daily car trips could be seen as insignificant.

Monica Simonsen testified next and echoed all these concerns. She lives at 17 Maple Avenue. She too has young children and is concerned about pedestrian safety and school crowding. She testified that she has reviewed BCPS projections showing overcrowding in all the district schools in the next couple years. She testified about the impacts caused by the construction of two new homes on either side of her, including flood damage and damage to her lawn caused by construction vehicles. She submitted a series of photos showing the condition of Maple Avenue and the effect of construction trucks on the street. (Community Exhibit 14). She pointed out that the proposed 19 home development will clog their street for years since the Developer plans to

build the development piecemeal as the lots are sold. Finally, she stated that there would have been more neighborhood opposition at this hearing but that many of the residents of Maple Avenue are older and not conversant with the technology needed to participate. She asked, therefore, for me to give weight to the number of persons who signed the petition opposing the project. She also submitted a written statement which was admitted as Community Exhibit 13.

Finally, Sarah Bennett, a 30 year resident of Maple Avenue testified about all these concerns. In addition, she raised concern about the presence of lead paint on the old existing structures on the property. She asked that proper measures be used to abate the lead issues when the structures are razed, especially given the large number of children living on this street. She submitted a photo of flood damage at the end of Maple Avenue which was admitted as Community Exhibit 15.

On cross-examination Mr. Alderman asked each of these witnesses whether they had sought to get this parcel rezoned via the quadrennial Comprehensive Zoning Map Process ("CZMP"). None had done so, although most did not seem clear about what the CZMP process is, or how they would have participated.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

The law is clear that the Master Plan is a binding, regulatory mechanism in development cases in Baltimore County. This was the holding of *HNS Dev. v. People's Counsel*, 425 Md. 436 (2012), and is based on that court's interpretation of BCC § 32-4-102(a)(1). The aforementioned statute requires "all development of land [to] conform to the Master Plan." The 2020 Master Plan states that existing community members are supposed to have "an integral role in the creation of sustainable developments through collaborative efforts."

Further, the introduction to the 2020 Master Plan document states that "[in]any existing stable residential neighborhoods should not be disturbed for additional development." Based on the record evidence I do not believe the construction of 19 homes on this bucolic street, adjacent to a 100 year floodplain and Patapsco State Park is consistent with the Master Plan's vision for T-2 Rural Residential and T-3 Sub-Urban transects applicable to this tract. As explained below, I find that a site plan with fewer homes on larger lots would be more consistent with that vision.[1]

Pursuant to BCC § 32-4-229, the "Hearing Officer *shall* grant approval of a development plan that complies with these development regulations and applicable policies, rules and regulations." (emphasis added). In *People's Counsel v. Elm Street Development, Inc.*, 172 Md. App. 690 (2007), the Court of Special Appeals held that if the county agencies recommend approval of a development plan, it is "then up to [protestants] to provide evidence rebutting the Director's recommendations." *Id.* at 703. It should be noted that in the *Elm Street* case the community opponents did not question the agency witnesses or submit evidence to rebut the agency recommendations. And, as will be explained, the community witnesses in this case *did* provide substantial testimony and evidence that undermines some of the agency recommendations on critical issues.

My analysis begins with the stated legislative intent of the Development Law and the Master Plan. BCC § 32-4-103, captioned "PURPOSES OF THE TITLE" provides in relevant part as follows:

"(a) *In general.* This title is adopted for the following purposes:

(1) To protect and provide for the public health, safety, and general welfare of the county;

[1] In the event this Opinion and Order is vacated and reversed, this is to confirm that the Director's Approval of the Special Variance under BCC § 33-6-116 for the removal of 22 specimen trees is hereby AFFIRMED.

(2) To implement the future growth and development of the county in accordance with the Master Plan;

(6) To protect the viability of the county's existing communities by ensuring that new development and redevelopment is compatible with the neighborhood and minimizes adverse environmental, traffic, and economic impacts on the surrounding community."

With these guiding principles in mind I will now address the material issues in this case topic by topic.

Tipping Point Issues

Some of the issues raised by the community are perhaps not, in and of themselves, enough to warrant a denial of the development Plan. For instance, the School Impact Study, based on enrollment numbers from September 2019, shows that none of the schools is currently over the 115% threshold. Yet as several of the community witnesses pointed out, the official Baltimore County Public School ("BCPS") projections show overcrowding in the immediate future – indeed before this planned development is anywhere near completion. The BCPS' "Educational Facilities Master Plan 2020" report states that for the Southwest Planning District "[t]here are no high schools in the region that are overcrowded (115% or above capacity) as of the 2019–2020 school year, *although Catonsville high school is projected to exceed 115 percent of capacity in 2022 and will remain severely overcrowded through 2029.*"

Likewise, the community is justifiably concerned about the environmental impacts from this proposed development – especially given the proximity of this project to a "100 year" floodplain, and to Patapsco State Park. As several neighbors pointed out, these "100 year" super storms now occur virtually every year. And the devastating flood damage in Ellicott City is a cautionary tale because it has been attributed in large part to the overdevelopment and resulting loss of forest buffer along the perimeter of that historic town.

Further, the unrebutted testimony is that the sewer main that will support this proposed development is a terra cotta pipe installed in 1930. That fact, combined with the 19 proposed grinder pump connections, are cause for legitimate concern. In Case No. 09-0861, the Administrative Law Judge observed that "Baltimore County's sewer system - - like that of nearly all major east coast cities - - is antiquated and in dire need of repair. So serious is the problem that Baltimore County entered into a consent decree with the Environmental Protection Agency ("EPA") which requires the County to undertake a comprehensive evaluation of its sewer system and take corrective action to repair or replace defective portions of this infrastructure." That work is far from complete, and obviously has not yet reached Maple Avenue, which still has numerous homes on septic systems.

In addition, the neighbors on Maple Avenue have good reason to lament the impact this development will have on their daily quality of life. They note that after decades of complaints to county officials Maple Avenue was finally repaved in the last couple years, and now it will be torn up again to facilitate the proposed development. Photos submitted by the community show that large construction vehicles associated with recent home construction obstruct nearly the entire width of Maple Avenue. *See,* Community Exhibits 4 and 14. The Developer's engineer and traffic expert testified that Maple Avenue will never actually be closed to traffic during these years of construction, but they acknowledge that traffic will have to be managed by "flaggers," and we all know how exasperating that system can be when we have someplace we need to be. And these substantial impacts can be expected to last several years, while the development is built out lot by lot, per the Developer's stated plan.

Further, the Plan raises other questions that are not addressed in the Pattern Book and which were not addressed at the hearing. The "performance standards" set forth in BCZR Sec. 260 provide, in relevant part, as follows:

§ 260.3. - Open space.

A development proposal shall:

A. Integrate open space areas into the proposed development by:

1. Creating focal points along streets;

2. Locating landscaped open green spaces in view of the development entrance or adjoining public street;

3. Planning a linked network of natural and landscaped open areas connected by pedestrian/bike trails; and

4. Orienting dwelling units around open areas or squares.

B. Incorporate significant features, such as stands of trees, into open areas.

C. Link the development's open areas to the surrounding neighborhood open areas, including public parks, walks, and bike trails, and create both functional and visual continuity, e.g., by matching the design of a bike trail in the proposed development to the bike trail located in the adjoining property.

§ 260.4. - Streets and parking.

A development proposal shall:

1. Provide for at least one street connection to an adjoining neighborhood or an adjoining property, not including the principal access to the subdivision, in order to facilitate good traffic circulation.

2. Design streets to slow traffic by offsetting alignments. Reducing street width, reducing the length of blocks, and employing the use of traffic management devices such as roundabouts, chokers, chicanes, etc., to accomplish traffic calming.

3. Allow on-street parking.

4. Provide pedestrian and bicycle access to commercial areas and community facilities on site within the development and to the surrounding neighborhood.

5. Provide street and parking accommodations which complement the surrounding neighborhood.

With respect to § 260.3 this proposed development fails to incorporate several of these requirements. Most significantly it does not provide "a linked network of natural and landscaped open areas connected by pedestrian/bike trails." And there is no link to the surrounding neighborhood or to the adjacent State Park. And with respect to § 260.4, this proposed development does not satisfy the parking or connectivity requirements. In sum, these "tipping point" issues become significant in the aggregate and in my considered view the Plan as proposed cannot be approved, especially when considered with the issues discussed below.

Traffic Safety and Impacts

Perhaps more significant than the issues just discussed are the serious traffic issues raised by the community. First, the neighbors are understandably baffled by Mr. Keeley's testimony that a 40% or greater increase in traffic volume is "insignificant." It is not – especially on this narrow street with no sidewalks. Further, as discussed at the hearing, it seems clear that the estimate of 190 additional trips is low in this new age of incessant Amazon deliveries. Numerous residents of Maple Avenue described the already high levels of pedestrian traffic on Maple Avenue – some by children who live on the street, and some from the surrounding neighborhoods that use Maple to access the state park, including a high volume of mountain bikers. As noted, the children on this street must traverse the length of it at the beginning and end of every school day in order to reach the school bus stop on Frederick Road, since Maple Avenue is too narrow to accommodate the buses. In short, pedestrian safety is a real issue and would be substantially exacerbated by 19 additional homes at the very end of the street – since each of the estimated 190 trips will traverse the entire length of Maple Avenue.

Further, and of greater concern, are the automobile safety and traffic volume issues raised by the community. The videos, photos, and testimony all show beyond debate that the intersection of Maple Avenue and Frederick Road is already a nightmare. The neighbor who lives right on the corner described the familiar sounds of colliding vehicles, followed by ambulance sirens. The videos and photos show the dangerous conditions caused by vehicles traveling west down the long hill on Frederick Road toward its intersection with Maple Avenue at the bottom. And traffic volume and congestion are already horrible, even before the addition of 190 vehicle trips a day. The DOP noted that the two closest signalized intersections (Frederick and North and South Rolling Roads) are "D" intersections, and therefore not failing under the county regulations. But the testimony and photographic evidence show horrendous morning and evening rush hour backups on Frederick Road. One neighbor estimated that it takes approximately 5 minutes to get onto Frederick from Maple or Dutton Avenues during rush hour. As a former resident of Catonsville I recall evening rush hour traffic backing up on South Rolling Road from Frederick Avenue all the way back to the Community College, and sometimes to the ramp of I-195. The addition of 190 daily trips to this existing mess is just not tenable. I understand that this proposed development tract is not covered by any basic services maps, but it has previously been decided that the maps are not singularly dispositive. As the ALJ explained in Case No. 09-0861, *supra,* at p. 25:

> [I]it is certainly understandable why the County would be reticent to include a property on one of the basic services maps. The effect of such inclusion is a legislative moratorium, during which the county is expected to undertake the necessary repairs to the deficient infrastructure. Should this state of affairs persist for longer than 18 months, it is likely a court would find the owner's property had been "taken," which requires the payment of just compensation under the state and federal constitutions. *Tahoe-Sierra Preservation Council, Inc. v. Tahoe Regional Planning Agency,* 535 U.S. 302 (2002). This is yet another reason why I do not believe the maps are dispositive in any given case.

In my view this reasoning applies here.

Master Plan

As noted by the Planning Office in their Final HOH Report, this tract consists of TR 2 Rural Residential and TR 3 Sub-Urban transects. The GIS database indicates that the tract is primarily in the TR 3 transect. The TR 2 Rural Residential transect is described as consisting of "large lot single-family detached housing," with setbacks "generally 50 plus feet. Lots are deep to accommodate a larger backyard. Density varies between 2 to 5 acres per dwelling." And the TR 3 transect describes "low density residential areas, adjacent to higher zones that contain mixed use. Landscaping is naturalistic and setbacks are relatively deep."

In my view the development Plan in this case does not comply with the Master Plan vision for these transects. As the "Lot Area Table" on the Plan shows, the 19 proposed lots range from .27 acres to .63 acres, with the majority of lots falling in the .30 to .45 range. And the "Typical Lot Layou"t on the Plan for the lots in the DR 1 and DR 2 zones show front setbacks of as little as 25', and side building-to-building distances of as little as 30'. This is how 19 four to five bedroom homes are squeezed onto the buildable portion of this tract.

Conclusion

I am aware that the county agencies have attested that the Plan meets each agency's own minimum standards in isolation. However, it is my job to consider the global impacts of the Plan, in light of all the evidence, and with the Master Plan and Development Law in mind. As noted above, the Master Plan mandates that community members are to have "an integral role in the creation of sustainable developments through collaborative efforts." And one of the express legislative purposes of the Development Law is "[t]o protect the viability of the county's existing communities by ensuring that new development and redevelopment is compatible with the

neighborhood and minimizes adverse environmental, traffic, and economic impacts on the surrounding community." BCC § 32-4-103(a)(6). Likewise, the Master Plan provides that "[m]any existing stable residential neighborhoods should not be disturbed for additional development."

The community acknowledges that the owners of the subject property have the right to develop the tract to some reasonable degree. However, they are justifiably concerned about the "adverse environmental, traffic, and economic impacts" of this proposed project. Many in the community asked that I approve no more than four new homes at this site. The Developer did not provide any testimony or evidence concerning the economic viability of the project based on any specific number of units. In fact, the Developer did not testify at all. Certainly the owner of this parcel has the right to build some number of homes. However, my task is to approve or deny the plan that was submitted, and the Plan that was submitted – for 19 four to five bedroom houses - cannot in my view be approved without severely impacting the Maple Avenue neighborhood. I must therefore deny approval, as I believe I am bound to do by the Development Law and the Master Plan.

THEREFORE, IT IS ORDERED by this Administrative Law Judge/Hearing Officer for Baltimore County, this **12th** day of **February, 2021,** that the **"DAVIS FARMS"** Plan marked and accepted into evidence as Developer's Exhibit 2, be and hereby is **DENIED**; and,

IT IS FURTHER ORDERED that, in the event the denial of the Development Plan is reversed and the Plan is approved, the Petition for Special Hearing from the Baltimore County Zoning Regulations ("BCZR") § 500.7 to approve the density, house location, use areas and lot configurations for Lot Nos. 1, 2, 3, 4, 16, 17 & 19 as shown on the Plat to Accompany this Petition (and Development Plan for Davis Farms) as a Density Anomaly is **GRANTED**; and,

IT IS FURTHER ORDERED that, in the event the denial of the Development Plan is reversed and the Plan is approved, the Special Forest Variance, as approved by the Director of DEPS, is also, **GRANTED.**

Any appeal of this Order shall be taken in accordance with BCC § 32-4-281.

PAUL M. MAYHEW
Managing Administrative Law Judge
for Baltimore County

PMM:dlm/dlw


ROAD
END


ROAD
END


ZONING NOTICE

Sec. 522.1. - Duties of the department of planning; limitation of powers.

(a) The department of planning shall have the responsibility and duty of planning for Baltimore County, including:

(1) Preparing, at least every ten years, and revising, a master plan; monitoring the implementation of the master plan; and preparing at least every two years a report to the county executive and county council on the progress achieved toward implementation of the master plan.

(2) Preparing, at least every six years, recommending to the county council, and administering, a zoning map.

(3) Preparing and recommending to the county council rules and regulations governing the subdivision of land, and administering the subdivision rules and regulations as adopted.

(4) Preparing and recommending to the county council zoning rules and regulations which, together with the zoning map, shall constitute a zoning code.

(5) Administering the zoning code.

(b) The master plan shall be adopted as provided by section 523 of this Charter. All other plans, zoning maps, and rules and regulations recommended for adoption, amendment or repeal by the department of planning, the planning board or the zoning commissioner shall, prior to taking effect as law, be approved by legislative act of the county council.

(Bill No. 83, 1978, § 2; approved by voters Nov. 7, 1978; effective Dec. 8, 1978; Bill No. 128, 1990, § 1; approved by voters Nov. 6, 1990; effective Dec. 7, 1990; Bill No. 13-18 , § 1; approved by the voters Nov. 6, 2018; effective Dec. 6, 2018)

Editor's note— The publisher corrected a former reference to "offices" to read "office" in subsection (b). Bill 83-78, which originally enacted § 522.1, used the word "office". The annual cumulative supplements to the 1978 Code used the word "office" from 1979 to 1985. The change was made inadvertently in the 1986 cumulative supplement.

Bill No. 13-18 , § 1; approved by the voters Nov. 6, 2018; effective Dec. 6, 2018, changed the title of § 522.1 from "Duties of office of planning and zoning; limitation of powers" to read as herein set out.

Sec. 523. - The master plan and the zoning maps.

(a) *Definition and implementation of the master plan.* The master plan shall be a composite of mapped and written proposals setting forth comprehensive objectives, policies and standards to serve as a guide for the development of the county. Upon receipt of the master plan from the department of planning, the county council shall accept or modify and then adopt it by resolution.

(b) *Definition and implementation of the zoning maps.* The zoning maps shall show the boundaries of the proposed districts, divisions and zones into which the county is to be divided consistent with the master plan. Upon receipt of the zoning map from the department of planning, the county council shall accept or modify and then adopt it by legislative act.

(Bill No. 83, 1978, § 3; approved by voters Nov. 7, 1978; effective Dec. 8, 1978; Bill No. 13-18 , § 1; approved by the voters Nov. 6, 2018; effective Dec. 6, 2018)

§ 32-4-102. - DEVELOPMENT POLICIES.

(a) *Conformity with Master Plan required.*

(1) Subject to the limitations in the Charter and this Code, all development of land shall conform to:

(i) The Master Plan;

(ii) Adopted community plans; and

(iii) This title.

(2) (i) Land to be developed should be of such character that it can be used safely for building purposes without danger to health or peril from flood, fire, erosion or other menace.

(ii) The area of peril from flood is characterized as the riverine floodplain and tidal floodplain as defined in Title 8 of this article.

(b) *Intent of laws.*

(1) This title is intended to protect and promote public health, safety, and welfare and to ensure that public facilities, services, and amenities are provided.

(2) This title is intended to ensure that proposed development projects are safe, adequate, convenient and, where applicable, provide for the following:

(i) Conservation of existing communities and the promotion of the quality of development, site and building design, and compatibility;

(ii) Promotion of economic development to expand the tax base, provide employment, facilitate commercial activity, and house the citizens of the county;

(iii) Improved linkage between developments to enhance circulation of motor vehicles, bicycles, and pedestrians, including appropriate location and design of streets, foot paths, and transit facilities relative to their anticipated functions and to existing facilities;

(iv) Water supply, sewerage, stormwater drainage, street lighting, fire protection, and emergency services, including adequacy of water volume, water pressure, and emergency access to all parts of the property;

(v) Community services, including schools, parks and other open spaces, recreation areas and facilities, and other amenities for users or occupants of the property;

(vi) Prevention of environmental degradation and promotion of environmental enhancement, including adequacy of landscaping and energy conservation measures, and of protection of floodplains, steep slopes, watersheds, nontidal wetlands, tidal wetlands, vegetation, other natural features and historical sites or areas; and

(vii) Preservation of agricultural lands, including adequacy of protection of prime and productive soils from inappropriate development.

(1988 Code, § 26-166) (Bill No. 1, 1992, § 2, 3-2-1992; Bill No. 173-93, § 3, 11-17-1993; Bill No. 79-01, § 2, 7-1-2004; Bill No. 75-03, § 8, 7-1-2004; Bill No. 42-12, § 1, 6-18-2012)

§ 32-4-103. - PURPOSES OF THE TITLE.

(a) *In general.* This title is adopted for the following purposes:

(1) To protect and provide for the public health, safety, and general welfare of the county;

(2) To implement the future growth and development of the county in accordance with the Master Plan;

(3) To provide for adequate light, air, and privacy;

(4) To secure safety from fire, flood, and other danger;

(5) To prevent overcrowding of land;

(6) To protect the viability of the county's existing communities by ensuring that new development and redevelopment is compatible with the neighborhood and minimizes adverse environmental, traffic, and economic impacts on the surrounding community;

(7) To preserve and protect existing business and industry and provide a system of regulatory controls on development that will foster the growth of business, employment, and the economic tax base of the county;

(8) To provide adequate and efficient transportation, water, sewerage, drainage, schools, parks, street lights and sidewalks, open space tracts, playgrounds, and other recreation facilities and other public requirements and facilities;

(9) To provide the most beneficial relationships between the uses of land and buildings and the circulation of traffic throughout the county, having particular regard for:

(i) The avoidance of congestion in the streets and highways;

(ii) The provisions of access for firefighting and other emergency equipment; and

(iii) The pedestrian traffic movement appropriate to the various uses;

(10) To provide for the proper location and width of streets and building lines;

(11) To establish reasonable guidelines, standards of design, and procedures for development, in order to:

(i) Further the orderly and beneficial layout and use of land; and

(ii) Ensure that the same standards are applied to all applicants and developments;

(12) To ensure proper descriptions of property boundaries;

(13) To encourage the wise use and management of natural resources throughout the county in order to preserve the integrity, stability, and beauty of the community and the value of property;

(14) To preserve the natural beauty and topography of the county and ensure appropriate development with regard to these natural features;

(15) To provide for open spaces in order to:

(i) Offer recreational opportunities close to home;

(ii) Enhance the appearance of neighborhoods through the preservation of natural green spaces;

(iii) Counteract the effects of urban congestion; and

(iv) Encourage participation by all age groups in the use and care of local open space tracts;

(16) To ensure an adequate supply of land suitable for development; and

(17) To simplify and clarify the development review and approval process.

(b) *Fulfillment of development policies and purposes.* Compliance with this title and the Comprehensive Manual of Development Policies fulfills the development policies and purposes set forth in § 32-4-102 of this subtitle

and subsection (a) of this section, respectively.

(1988 Code, § 26-167) (Bill No. 1, 1992, § 2, 3-2-1992; Bill No. 79-01, § 2, 7-1-2004)

§ 32-4-229. - SAME - DECISION OF THE HEARING OFFICER.

(a) *Final decision.*

(1) (i) The Hearing Officer shall issue the final decision within 15 days after the conclusion of the final hearing held on the Development Plan.

(ii) The Hearing Officer shall file an opinion which includes the basis of the Hearing Officer's decision.

(2) If a final decision is not rendered within 15 days:

(i) The Development Plan shall be deemed approved as submitted by the applicant; and

(ii) The Hearing Officer shall immediately notify the participants that:

1. The Development Plan is deemed approved; and
2. The appeal period began on the fifteenth day after the conclusion of the final hearing.

(b) *Approval; Appeals.*

(1) The Hearing Officer shall grant approval of a Development Plan that complies with these development regulations and applicable policies, rules and regulations adopted in accordance with Article 3, Title 7 of the Code, provided that the final approval of a plan shall be subject to all appropriate standards, rules, regulations, conditions, and safeguards set forth therein.

(2) A final decision of the Hearing Officer on a Development Plan may be appealed to the Board of Appeals in accordance with Part VIII of this subtitle.

(c) *Copies of approved Development Plan to county agencies.* The Hearing Officer shall forward copies of the approved Development Plan to the directors of the Department of Permits, Approvals and Inspections, the Department of Public Works and Transportation, the Department of Planning, and the Department of Environmental Protection and Sustainability within 5 working days after the date of the Hearing Officer's decision granting approval of:

(1) The Development Plan as submitted; or

(2) The Development Plan as revised within the 5-day period in compliance with the Hearing Officer's requirements for any condition imposed upon the plan.

(d) *Conditions imposed by Hearing Officer.*

(1) This subsection does not apply to a Development Plan for a Planned Unit Development.

(2) In approving a Development Plan, the Hearing Officer may impose any conditions if a condition:

(i) Protects the surrounding and neighboring properties;

(ii) Is based upon a comment that was raised or a condition that was proposed or requested by a participant;

(iii) Is necessary to alleviate an adverse impact on the health, safety, or welfare of the community that would be present without the condition; and

(iv) Does not reduce by more than 20%:

1. The number of dwelling units proposed by a residential Development Plan in a DR 5.5., DR 10.5, or D
2. The square footage proposed by a non-residential Development Plan.

(3) The Hearing Officer shall base the decision to impose a condition on factual findings that are supported by evidence.

(e) *Agreements upon final approval; recordation required.*

(1) If required by the Hearing Officer, the owners, lessees, or tenants of the property for which a Development Plan is approved shall:

(i) Enter into an agreement in writing with the Hearing Officer stipulating to the conditions governing the final Development Plan approval; and

(ii) Record the agreement among the land records of the county.

(2) The participant requesting final Development Plan approval shall bear the cost of the agreement and the cost of recording the agreement.

(3) When recorded the agreement shall govern the exercise of the approved Development Plan by any person, firm, or corporation, regardless of subsequent sale, lease, assignment, or other transfer.

(f) *Restrictions on issuance of permit or plat.* A plat may not be recorded and the Department of Permits, Approvals and Inspections may not issue a permit or record a plat in connection with a Development Plan for a period of 30 days after a final decision by the Hearing Officer on the Development Plan if the case involved an unresolved comment or condition.

(g) *Subsequent Development Plans.* Subsequent detailed Development Plans shall be sealed and certified as being in accordance with the approved Development Plan, including:

(1) The final grading and erosion and sediment control plan;

(2) The stormwater management plan;

(3) The landscape plan; and

(4) The record plat.

(1988 Code, § 26-206) (Bill No. 1, 1992, § 2, 3-2-1992; Bill No. 29-95, §§ 1, 3, 5-21-1995; Bill No. 69-95, § 10, 7-1-1995; Bill No. 46-01, § 1, 8-4-2001; Bill No. 79-01, § 2, 7-1-2004; Bill No. 101-01, § 1, 1-24-2002; Bill No. 75-03, §§ 12, 13, 7-1-2004; Bill No. 42-05, § 1, 5-15-2005; Bill No. 122-10, §§ 12, 30, 1-16-2011; Bill No. 55-11, §§ 1, 2, 10-16-2011; Bill No. 72-12, § 1, 1-9-2013; Bill No. 33-21 , § 1, 5-3-2021)

§ 32-4-230. - COMBINED ZONING AND DEVELOPMENT PLAN APPROVAL HEARING.

(a) *In general.* If the Development Plan requires a special exception, variance, special hearing, or interpretation of the Baltimore County Zoning Regulations, the applicant may combine the public hearing required under Title 3, Subtitle 3 of this article and under the Baltimore County Zoning Regulations with the public hearing held by the Hearing Officer on the Development Plan.

(b) *Scheduling.* The scheduling of the combined hearing shall be subject to § 32-4-225 of this subtitle.

(1988 Code, § 26-206.1) (Bill No. 1, 1992, § 2, 3-2-1992; Bill No. 79-01, § 2, 7-1-2004; Bill No. 75-03, §§ 12, 13, 7-1-2004)

§ 32-4-231. - REFERRAL TO THE PLANNING BOARD.

(a) *In general.* The Hearing Officer shall refer the Development Plan to the Planning Board when:

(1) The Development Plan conflicts with the Master Plan;

(2) The Baltimore County Zoning Regulations require Planning Board consideration;

(3) The Development Plan involves a building, structure, or site included on the Landmarks Preservation Commission preliminary or final county landmarks list or is located within a county historic district; or

(4) The applicant has made a written request, under the authority of COMAR 27.01.11.01.A, for a variation from the standards provided under Article 33, Title 2 of the Code.

(b) *Review by the Planning Board at next meeting.* The Planning Board shall review a referred plan at its next scheduled meeting.

(c) *Continuation of hearing.* A hearing may be continued by the Hearing Officer.

(d) *Final action.* When applicable, the final action of the Hearing Officer is subject to action by the Planning Board and the County Council.

(1988 Code, § 26-207) (Bill No. 18, 1990, § 2, 3-30-1990; Bill No. 1, 1992, § 2, 3-2-1992; Bill No. 135-94, § 1, 10-13-1994; Bill No. 29-95, § 1, 5-21-1995; Bill No. 79-01, § 2, 7-1-2004; Bill No. 75-03, § 12, 7-1-2004; Bill No. 42-05, § 1, 5-15-2005; Bill No. 26-07, § 1, 4-29-2007; Bill No. 5-10, § 2, 4-4-2010)

§ 32-4-232. - SAME - PROCEDURE OF THE PLANNING BOARD.

(a) *Issues considered by Planning Board; comments.* When considering Development Plan issues, the Planning Board shall:

(1) Only consider those issues referred under § 32-4-231(a) of this subtitle; and

(2) Allow the applicant, a person, or an agency to submit oral or written comments concerning the issues referred under § 32-4-231(a) of this subtitle.

(b) *Master Plan conflicts; required procedures.* With respect to an issue referred to the Planning Board under § 32-4-231(a) of this Subtitle, the Planning Board shall:

(1) Act in accordance with Title 2, Subtitle 3 of this article;

(2) File a written decision with the Hearing Officer that includes the reasons for the decision; and

(3) File a recommendation with the County Council at the same time its decision is filed with the Hearing Officer.

(c) *Written decision; Master Plan required referral and landmark historic preservation.* With respect to issues referred under § 32-4-231(a) or (b) of this subtitle, the Planning Board shall file a written decision with the Hearing Officer that includes the reasons for the decision no later than 45 days after referral to the Planning Board.

(d) *Written decision; critical areas.*

(1) With respect to issues referred under § 32-4-231(a)(4) of this subtitle, the Planning Board shall file a written decision with the Hearing Officer no later than 45 days after the date of referral to the Planning Board.

(2) Consistent with state law or regulations, the Board's decision shall contain findings of fact whether:

(i) Special conditions or circumstances exist that are peculiar to the land or structure within the critical

area of the county;

(ii) Strict compliance with the critical area regulations would result in unwarranted hardship;

(iii) Strict compliance with the critical area regulations will deprive the applicant of rights commonly enjoyed by other properties in similar areas within the critical area of the county;

(iv) The granting of a variation will not confer upon an applicant any special privilege that would be denied by the critical area regulations to other lands or structures within the critical area of the county;

(v) The variation request is not based on conditions or circumstances that are the result of actions by the applicant;

(vi) The request does not arise from any condition relating to land or building use, either permitted or nonconforming, on any neighboring property;

(vii) The granting of a variation will be in harmony with the general spirit and intent of the critical area regulations of the county; and

(viii) The variation conforms to the requirements as stated in § 32-4-226(d) of this subtitle.

(e) *Referral date.* The date of the referral to the Planning Board is:

(1) The Hearing Officer's referral date; or

(2) In the case of a building permit, the date of the filing.

(f) *Planning Board decision is final; exceptions.*

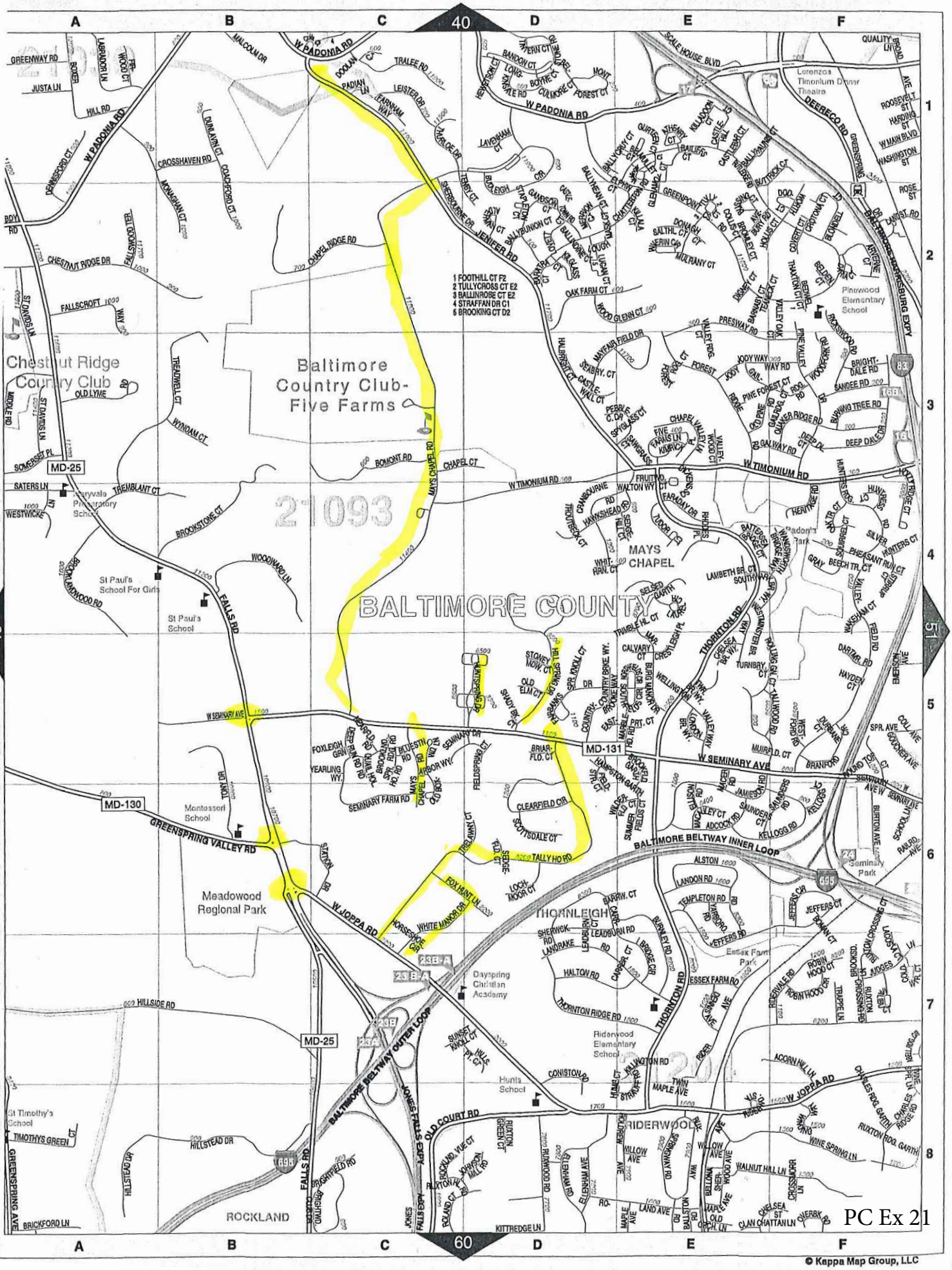
(1) Except as provided under paragraph (2) of this subsection, a decision of the Planning Board on an issue referred under § 32-4-231 of this subtitle is binding upon the Hearing Officer and shall be incorporated as part of the Hearing Officer's final action on a plan.

(2) A decision of the Planning Board is not binding on the Hearing Officer if the decision of the Planning Board on an issue referred under § 32-4-231(a)(1) of this subtitle is overruled by action of the County Council.

(1988 Code, § 26-208) (Bill No. 18-90, § 3, 3-30-1990; Bill No. 1-92, § 2, 2-3-1992; Bill No. 135-94, § 1, 10-13-1994; Bill No. 29-95, § 1, 5-21-1995; Bill No. 79-01, § 2, 7-1-2004; Bill No. 75-03, §§ 12, 13, 7-1-2004; Bill No. 19-04, § 9, 5-29-2004)

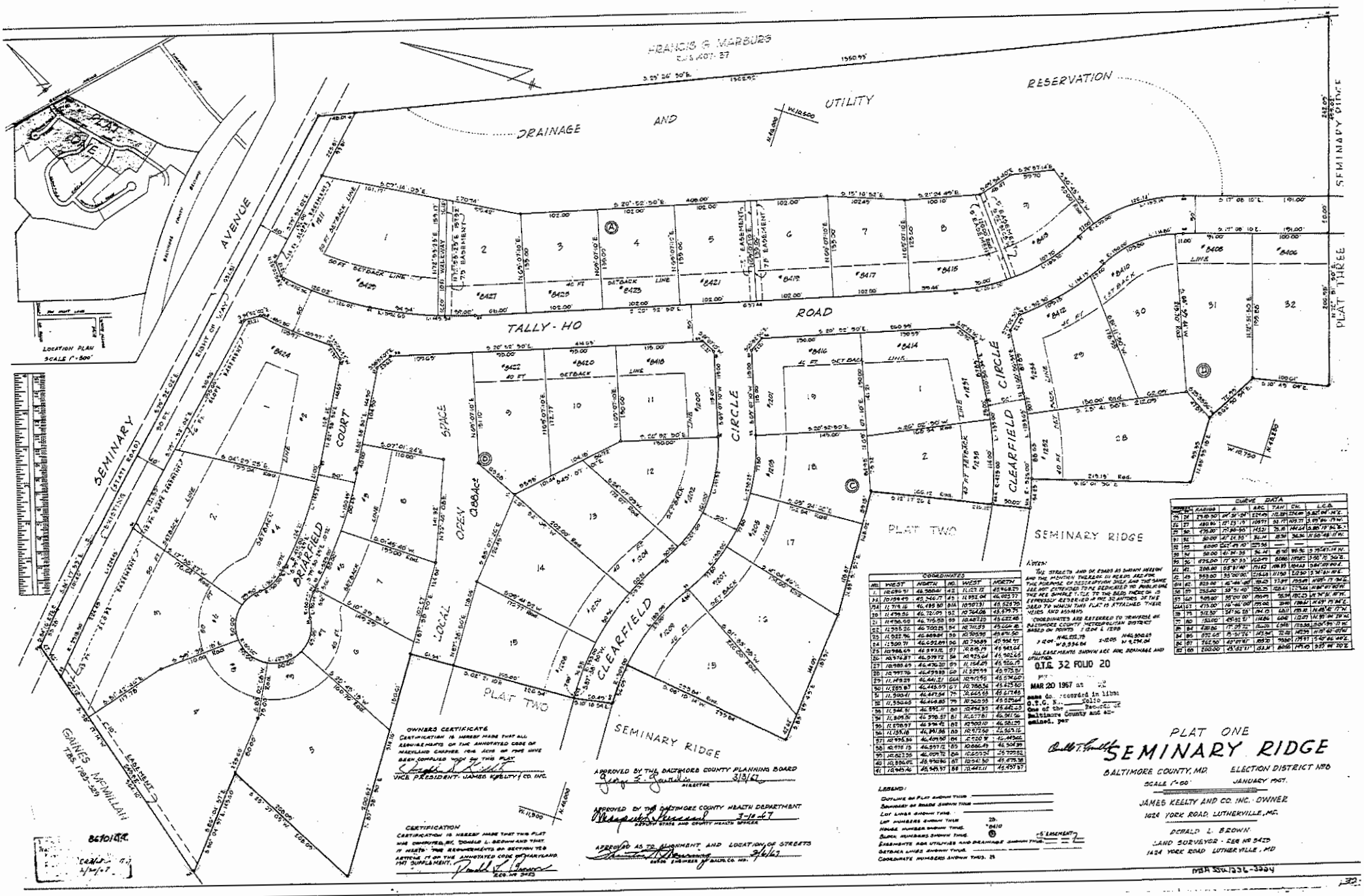
Scale 1:24,000
1 in = 2,000 ft

0 ft 1,000 2,000 3,000 4,000 5,000 1 mi
0 m 200 400 600 800 1 km

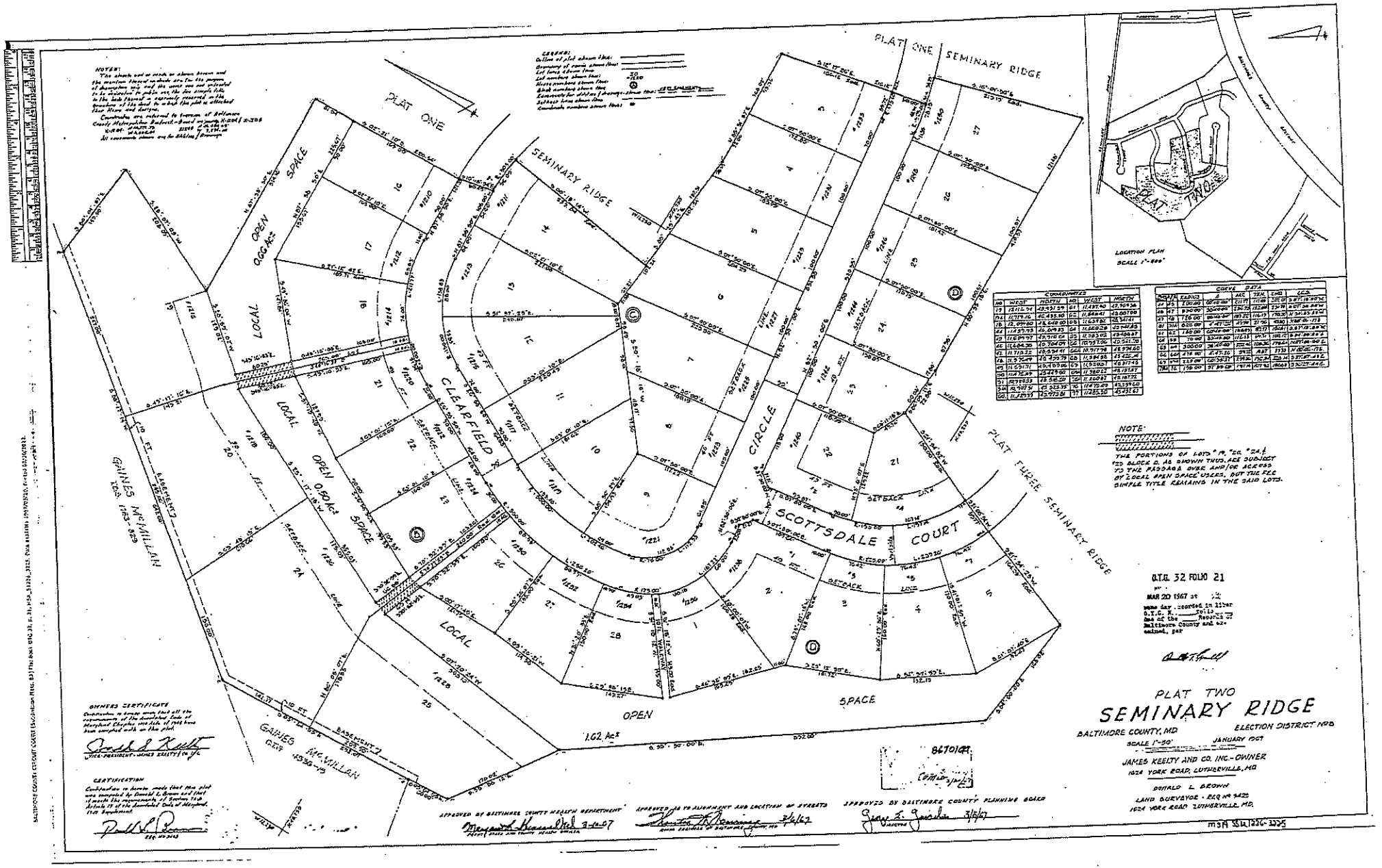


PC Ex 21

© Kappa Map Group, LLC


FRANCIS G. MARBURG
DRAINAGE AND UTILITY RESERVATION
SEMINARY RIDGE
PLAT THREE
TALLY-HO ROAD
SEMINARY AVENUE
BEARFIELD COURT
LOCAL OPEN SPACE
CLEARFIELD CIRCLE
PLAT TWO
SEMINARY RIDGE
GAINES MCMILLAN
LOCATION PLAN
SCALE 1"=500'
OWNERS CERTIFICATE
VICE PRESIDENT - JAMES KEELTY & CO. INC.
CERTIFICATION
APPROVED BY THE BALTIMORE COUNTY PLANNING BOARD
DIRECTOR
APPROVED BY THE BALTIMORE COUNTY HEALTH DEPARTMENT
DEPUTY STATE AND COUNTY HEALTH OFFICER
APPROVED AS TO ALIGNMENT AND LOCATION OF STREETS
CHIEF ENGINEER OF BALTO. CO. MD.
LEGEND:
CURVE DATA
O.T.G. 32 FOLIO 20
MAR 20 1967
PLAT ONE
SEMINARY RIDGE
BALTIMORE COUNTY, MD.
ELECTION DISTRICT NO 8
SCALE 1"=50'
JANUARY 1967.
JAMES KEELTY AND CO. INC. - OWNER
1424 YORK ROAD, LUTHERVILLE, MD.
DONALD L. BROWN
LAND SURVEYOR - REG NO 5423
1424 YORK ROAD LUTHERVILLE, MD

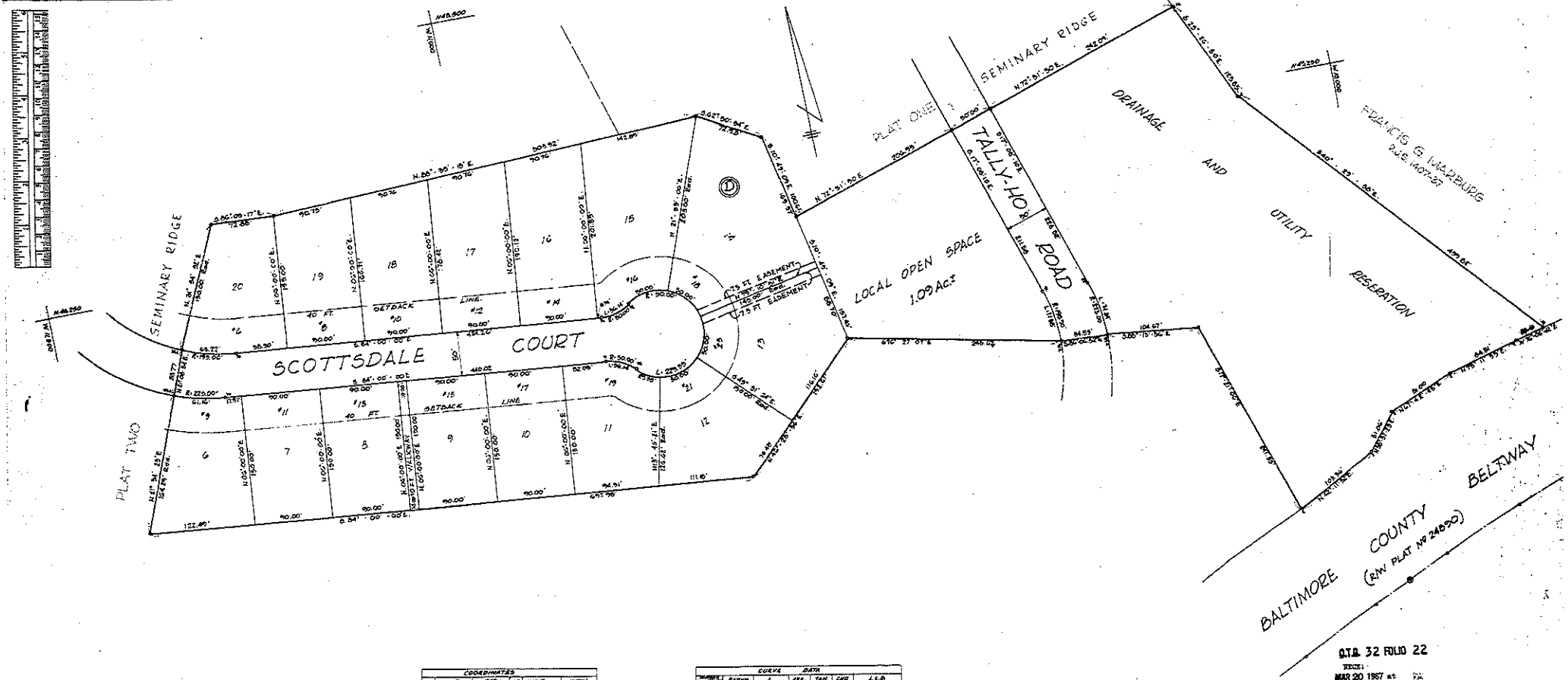
PC Exh 22

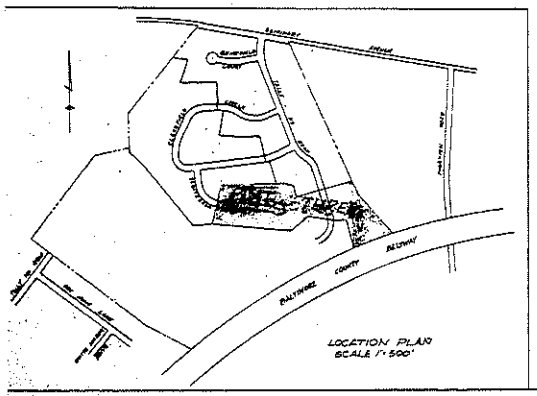


No	WEST	NORTH	No	WEST	NORTH
12	13115.94	48.951.30	21	11.697.90	49.324.56
13	12.979.76	48.952.80	22	11.888.41	49.007.08
14	12.979.76	48.640.00	23	11.683.82	48.547.61
15	12.979.80	48.640.00	24	11.683.82	48.547.61
16	12.979.83	48.209.83	25	11.600.26	48.209.83
17	12.979.97	48.209.83	26	11.600.26	48.209.83
18	12.979.97	48.209.83	27	11.583.93	48.209.83
19	12.979.97	48.209.83	28	11.583.93	48.209.83
20	12.979.97	48.209.83	29	11.583.93	48.209.83
21	12.979.97	48.209.83	30	11.583.93	48.209.83
22	12.979.97	48.209.83	31	11.583.93	48.209.83
23	12.979.97	48.209.83	32	11.583.93	48.209.83
24	12.979.97	48.209.83	33	11.583.93	48.209.83
25	12.979.97	48.209.83	34	11.583.93	48.209.83
26	12.979.97	48.209.83	35	11.583.93	48.209.83
27	12.979.97	48.209.83	36	11.583.93	48.209.83
28	12.979.97	48.209.83	37	11.583.93	48.209.83
29	12.979.97	48.209.83	38	11.583.93	48.209.83
30	12.979.97	48.209.83	39	11.583.93	48.209.83
31	12.979.97	48.209.83	40	11.583.93	48.209.83
32	12.979.97	48.209.83	41	11.583.93	48.209.83
33	12.979.97	48.209.83	42	11.583.93	48.209.83
34	12.979.97	48.209.83	43	11.583.93	48.209.83
35	12.979.97	48.209.83	44	11.583.93	48.209.83
36	12.979.97	48.209.83	45	11.583.93	48.209.83
37	12.979.97	48.209.83	46	11.583.93	48.209.83
38	12.979.97	48.209.83	47	11.583.93	48.209.83
39	12.979.97	48.209.83	48	11.583.93	48.209.83
40	12.979.97	48.209.83	49	11.583.93	48.209.83
41	12.979.97	48.209.83	50	11.583.93	48.209.83
42	12.979.97	48.209.83	51	11.583.93	48.209.83
43	12.979.97	48.209.83	52	11.583.93	48.209.83
44	12.979.97	48.209.83	53	11.583.93	48.209.83
45	12.979.97	48.209.83	54	11.583.93	48.209.83
46	12.979.97	48.209.83	55	11.583.93	48.209.83
47	12.979.97	48.209.83	56	11.583.93	48.209.83
48	12.979.97	48.209.83	57	11.583.93	48.209.83
49	12.979.97	48.209.83	58	11.583.93	48.209.83
50	12.979.97	48.209.83	59	11.583.93	48.209.83
51	12.979.97	48.209.83	60	11.583.93	48.209.83
52	12.979.97	48.209.83	61	11.583.93	48.209.83
53	12.979.97	48.209.83	62	11.583.93	48.209.83
54	12.979.97	48.209.83	63	11.583.93	48.209.83
55	12.979.97	48.209.83	64	11.583.93	48.209.83
56	12.979.97	48.209.83	65	11.583.93	48.209.83
57	12.979.97	48.209.83	66	11.583.93	48.209.83
58	12.979.97	48.209.83	67	11.583.93	48.209.83
59	12.979.97	48.209.83	68	11.583.93	48.209.83
60	12.979.97	48.209.83	69	11.583.93	48.209.83

No	RADIUS	ARC	TAN	CHD	CHB
1	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
2	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
3	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
4	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
5	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
6	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
7	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
8	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
9	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
10	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
11	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
12	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
13	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
14	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
15	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
16	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
17	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
18	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
19	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
20	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
21	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
22	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
23	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
24	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
25	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
26	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
27	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
28	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
29	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
30	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
31	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
32	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
33	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
34	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
35	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
36	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
37	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
38	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
39	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
40	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
41	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
42	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
43	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
44	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
45	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
46	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
47	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
48	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
49	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
50	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
51	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
52	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
53	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
54	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
55	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
56	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
57	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
58	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
59	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E
60	150.00'	235.62'	150.00'	212.13'	S 45°00'00" E

O.T.G. 32 FOLIO 21
MAR 20 1967 at
same day recorded in Liber O.T.G. No. 2013
and of the Records of Baltimore County and examined, per





LOCATION PLAN
SCALE 1" = 500'

COORDINATES					
NO	WEST	NORTH	NO	WEST	NORTH
L8	10,155.19	46,842.77	71	10,980.40	45,877.08
C	10,110.22	45,252.86	72	10,951.81	45,941.46
8	9,925.62	44,990.07	73	10,849.99	46,105.98
4	9,851.06	44,990.05	74	10,878.77	46,172.79
5	9,779.17	44,809.46	75	11,300.10	45,751.12
6	10,019.72	44,897.79	754	11,948.86	45,182.72
7	10,099.99	44,752.94	85	10,937.50	45,084.47
8	10,137.02	44,749.68	854	10,979.03	44,965.25
854	11,980.20	45,187.57	91	10,932.27	45,047.92
90	11,521.01	45,125.08	914	10,968.82	44,966.73

CURVE DATA						
NUMBER OF CURVE	RADIUS	Δ	ARC	TAN	CHD	L.S.B.
C&L	26°	276.00'	18°34'29"	61.46'	30.77	0.09' S.E. & 29.6' E.
71	75°	150.00'	41°31'56"	90.41'	88.50	3.08' N.E. & 0.5' E.
72	176°	60.00'	322°49'40"	279.86'	—	—
73	74°	60.00'	41°21'00"	36.44'	35.76'	N 78° 17' 42" E
73A	176°	199.00'	18°24'32"	63.23'	62.94'	S 74° 42' 44" E
891	89A°	220.00'	8°39'14"	34.24'	34.21'	S 89°41'06" E
90	76°	199.90'	27°01'18"	71.88'	71.48'	S 80°37'57" E

BGTO/CRC
CRM 4/20/67

OWNER'S CERTIFICATE:
CERTIFICATION IS HEREBY MADE THAT ALL REQUIREMENTS OF THE ANNOTATED CODE OF MARYLAND CHAPTER 1096 ACTS OF 1945 HAVE BEEN COMPLIED WITH ON THIS PLAT
VICE PRESIDENT - JAMES KEELTY & CO. INC.

CERTIFICATION:
CERTIFICATION IS HEREBY MADE THAT THIS PLAT WAS COMPUTED BY DONALD L. BROWN AND THAT IT MEETS THE REQUIREMENTS OF SECTION 11.03 ARTICLE 17 OF THE ANNOTATED CODE OF MARYLAND 1947 SUPPLEMENT.
REG. NO. 9429

APPROVED BY THE BALTIMORE COUNTY PLANNING BOARD
DIRECTOR 3/3/67

APPROVED AS TO ALIGNMENT AND LOCATION OF STREETS
ROADS COMMISSIONER FOR BALTO. CO. MD. 3/6/67

APPROVED BY THE BALTIMORE COUNTY HEALTH DEPARTMENT
DEPUTY STATE AND COUNTY HEALTH OFFICER 3-10-67

NOTES:
THE STREETS AND OR ROADS AS SHOWN HEREON AND THE MENTION THEREOF IN DEEDS ARE FOR THE PURPOSE OF DESCRIPTION ONLY AND THE SAME ARE NOT EXTENDED TO BE DEDICATED TO PUBLIC USE THE FEE SIMPLE TITLE TO THE BEDS THEREOF IS EXPRESSLY RESERVED IN THE GRANTORS OR THE DEED TO WHICH THIS PLAT IS ATTACHED. THEIR HEIRS AND ASSIGNS

COORDINATES ARE REFERRED TO TRAVERSE OF BALTIMORE COUNTY METROPOLITAN DISTRICT - BASED ON POINTS 1-1204 AND 1-1205
N 46,772.73 N 46,960.09
E 1204 W 8004.86 E 1205 W 9,274.06

ALL EASEMENTS SHOWN ARE FOR DRAINAGE & UTILITIES

LEGEND:
OUTLINE OF PLAT SHOWN THUS
BOUNDARY OF ROADS SHOWN THUS
LOT LINES SHOWN THUS
LOT NUMBERS SHOWN THUS 12
HOUSE NUMBERS SHOWN THUS 721
BLOCK NUMBERS SHOWN THUS (12)
EASEMENTS FOR DRAINAGE & UTILITIES SHOWN THUS 5' DRY EASEMENT
SETBACK LINES SHOWN THUS
COORDINATE NUMBERS SHOWN THUS 76

PLAT THREE
SEMINARY RIDGE
BALTIMORE COUNTY, MD ELECTION DISTRICT NO 8
SCALE 1"=50' JANUARY 1967

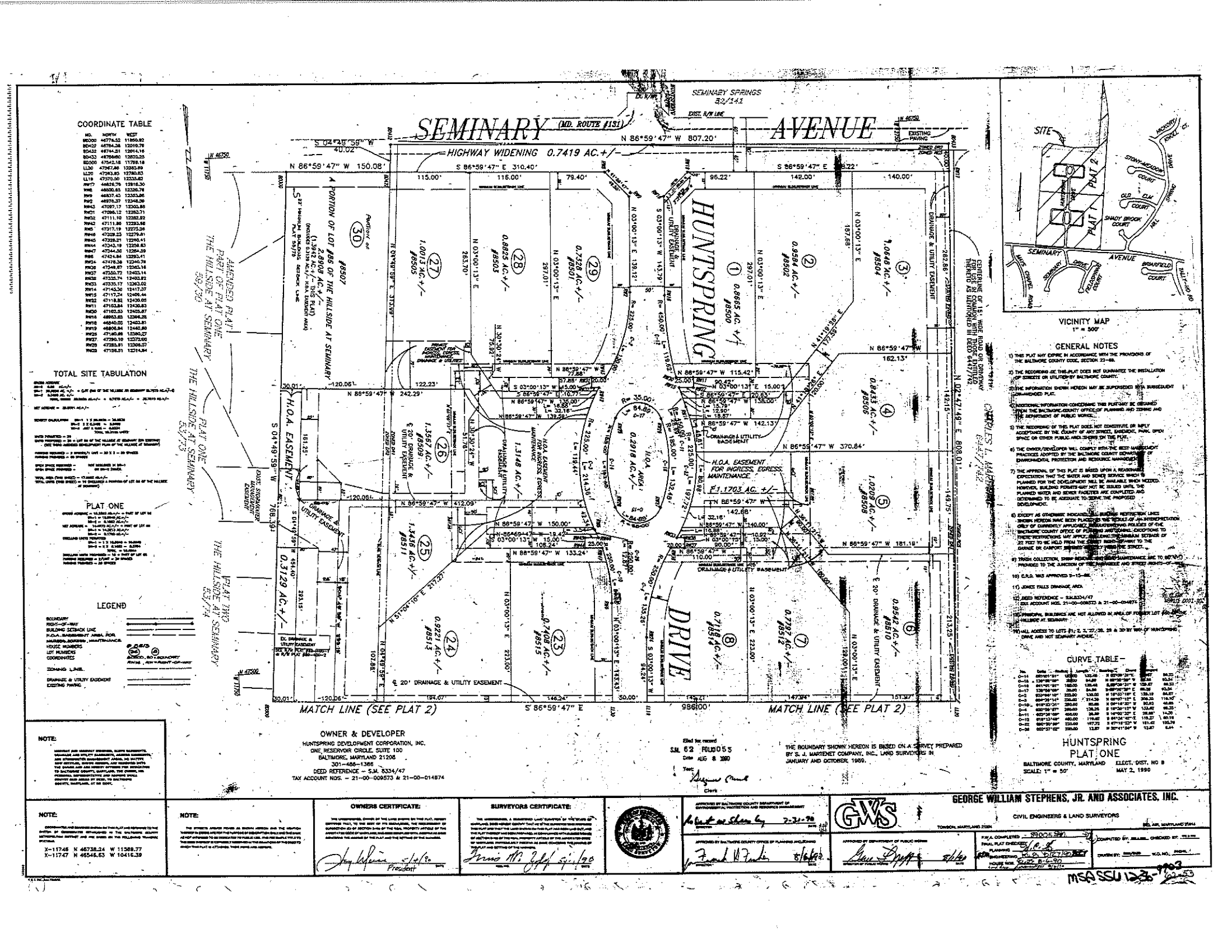
JAMES KEELTY AND CO. INC. - OWNER
1624 YORK ROAD, LUTHERVILLE, MD.

DONALD L. BROWN
LAND SURVEYOR - REG Nº 9429
1624 YORK ROAD LUTHERVILLE, MD

MAR 20 1967 at P.M.
same &c recorded in Liber
E.T.G. No. Folio
&c of the Records of
Baltimore County and examined.

O.T.G. 32 FOLIO 22

MAR 30 1967 - 3223



COORDINATE TABLE

NO.	NORTH	WEST
BS000	46778.52	11350.92
BS432	46784.26	12019.79
BS432	46784.51	12014.16
BS433	46756.60	12020.25
BS000	47542.16	11798.18
LL30	47567.86	12262.89
LL29	47563.80	12260.63
LL18	47570.28	12255.62
RW17	46826.78	12818.30
RW8	46830.63	12320.78
RW9	46837.43	12253.26
RW5	46976.37	12248.29
RW43	47097.17	12300.86
RW31	47098.12	12282.71
RW32	47111.10	12282.82
RW42	47111.86	12283.98
RW6	47317.19	12277.26
RW46	47328.23	12279.81
RW45	47328.21	12260.41
RW44	47343.19	12258.83
RW47	47344.26	12264.29
RW8	47424.84	12263.41
RW24	47476.38	12240.78
RW28	47348.87	12363.18
RW27	47330.72	12403.14
RW38	47335.74	12403.82
RW33	47335.17	12363.02
RW14	47143.30	12417.37
RW15	47117.24	12406.44
RW22	47114.82	12400.05
RW11	47103.84	12430.83
RW30	47102.53	12425.87
RW16	46803.85	12364.26
RW18	46840.05	12403.81
RW13	46806.84	12440.80
RW26	47140.66	12365.27
RW27	47290.10	12377.00
RW29	47285.81	12306.57
RW28	47156.51	12314.84

TOTAL SITE TABULATION

GROSS AREA:
R-1 0.00 AC.+/-
R-2 0.2400 AC.+/-
TOTAL 0.2400 AC.+/-

NET AREA = (SEE BELOW)

DENSITY CALCULATION R-1 1.2 UNITS/AC. = 0 UNITS
R-2 2.5 UNITS/AC. = 0.6000 UNITS
TOTAL 0.6000 UNITS

UNITS PERMITTED = 29
UNITS PROPOSED = 29 + LOT 86 OF THE HILLSIDE AT SEMINARY (ON EXISTING) (SEE THIRD AMENDED DEVELOPMENT PLAN OF THE HILLSIDE AT SEMINARY)

PARKING REQUIRED = 2 SPACES/1 UNIT = 60 X 2 = 58 SPACES
PARKING PROVIDED = 60 SPACES

SPACE STANDARDS IN R-1 = NOT INCLUDED
SPACE STANDARDS IN R-2 = 60 SPACES

TOTAL AREA (THIS SHEET) = 17.2965 AC.+/-
TOTAL LAND (THIS SHEET) = 16.3965 AC.+/- (EXCLUDES A PORTION OF LOT 86 OF THE HILLSIDE AT SEMINARY)

PLAT ONE

GROSS ACREAGE = 16.3965 AC.+/- = PART OF LOT 86
R-1 = 15.8965 AC.+/-
R-2 = 0.5000 AC.+/-
NET ACREAGE = 15.4470 AC.+/- = PART OF LOT 86
R-1 = 14.9470 AC.+/-
R-2 = 0.5000 AC.+/-
DWELLING UNITS PERMITTED
R-1 = 1.2 X 14.9470 = 18 UNITS
R-2 = 2.5 X 0.5000 = 1 UNITS
TOTAL = 19 UNITS
DWELLING UNITS PROPOSED = 19 = PART OF LOT 86
PARKING REQUIRED = 2/UNIT = 38 SPACES
PARKING PROVIDED = 38 SPACES

LEGEND

BOUNDARY
RIGHT-OF-WAY
BUILDING SETBACK LINE
H.O.A., EASEMENT AREA, FOR INGRESS, EGRESS, MAINTENANCE
HOUSE NUMBERS
LOT NUMBERS
COORDINATES
ZONING LINE
DRAINAGE & UTILITY EASEMENT
EXISTING PAVING

VICINITY MAP

1" = 500'

GENERAL NOTES

1) THIS PLAT MAY EXPIRE IN ACCORDANCE WITH THE PROVISIONS OF THE BALTIMORE COUNTY CODE, SECTION 22-68.

2) THE RECORDING OF THIS PLAT DOES NOT GUARANTEE THE INSTALLATION OF STREETS ON UTILITIES BY BALTIMORE COUNTY.

3) THE INFORMATION SHOWN HEREON MAY BE SUPERSEDED WITH SUBSEQUENT UNRECORDED PLAT.

4) ADDITIONAL INFORMATION CONCERNING THIS PLAT MAY BE OBTAINED FROM THE BALTIMORE COUNTY OFFICE OF PLANNING AND ZONING AND THE DEPARTMENT OF PUBLIC WORKS.

5) THE RECORDING OF THIS PLAT DOES NOT CONSTITUTE OR IMPLY ACCEPTANCE BY THE COUNTY OF ANY STREET, EASEMENT, PARK, OPEN SPACE OR OTHER PUBLIC AREA SHOWN ON THIS PLAT.

6) THE OWNER/DEVELOPER WILL COMPLY WITH THE BEST MANAGEMENT PRACTICES ADOPTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT.

7) THE APPROVAL OF THIS PLAT IS BASED UPON A REASONABLE EXPECTATION THAT THE WATER AND SEWER SERVICE WHICH IS PLANNED FOR THE DEVELOPMENT WILL BE AVAILABLE WHEN NEEDED. HOWEVER, BUILDING PERMITS MAY NOT BE ISSUED UNTIL THE PLANNED WATER AND SEWER FACILITIES ARE COMPLETED AND DETERMINED TO BE ADEQUATE TO SERVE THE PROPOSED DEVELOPMENT.

8) EXCEPT AS OTHERWISE INDICATED, ALL BUILDING RESTRICTION LINES SHOWN HEREON HAVE BEEN PLACED ON THE RESULT OF AN INTERPRETATION ONLY OF CURRENTLY APPLICABLE ZONING/BUILDING POLICIES OF THE BALTIMORE COUNTY OFFICE OF PLANNING AND ZONING. EXCEPTIONS TO THESE RESTRICTIONS MAY APPLY. FOR EXAMPLE, THE MINIMUM SETBACK OF 22 FEET TO BE HELD FROM THE STREET RIGHT-OF-WAY TO THE GARAGE OR CARPORT DOORS FACING THE STREET.

9) TRASH COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE TO BE PROVIDED TO THE JUNCTION OF THE DRIVEWAYS AND STREET RIGHTS-OF-WAY.

10) C.R.G. WAS APPROVED 9-15-88.

11) JONES FALLS DRAINAGE AREA.

12) DEED REFERENCE - S.M. 8334/47
TAX ACCOUNT NOS. 21-00-009573 & 21-00-014874

13) PRINCIPAL BUILDINGS ARE NOT ALLOWED IN AREA OF FORMER LOT 86 OF THE HILLSIDE AT SEMINARY.

14) ALL ACCESS TO LOTS 21, 22, 23, 24, 25, 26 & 30 BY WAY OF HUNTSPRING DRIVE AND NOT SEMINARY AVENUE.

CURVE TABLE

CURVE	DELTA	RADIUS	LENGTH	CHORD	CHORD BEARING
C-1	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-2	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-3	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-4	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-5	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-6	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-7	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-8	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-9	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-10	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-11	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-12	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-13	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-14	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-15	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-16	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-17	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-18	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-19	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-20	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-21	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-22	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-23	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-24	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-25	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-26	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-27	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-28	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-29	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-30	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-31	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-32	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-33	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-34	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-35	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-36	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-37	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-38	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-39	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-40	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-41	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-42	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-43	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-44	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-45	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-46	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-47	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-48	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-49	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-50	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-51	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-52	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-53	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-54	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-55	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-56	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-57	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-58	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-59	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-60	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-61	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-62	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-63	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-64	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-65	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-66	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-67	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-68	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-69	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-70	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-71	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-72	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-73	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-74	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-75	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-76	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-77	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-78	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-79	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-80	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-81	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-82	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-83	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-84	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-85	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-86	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-87	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-88	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-89	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-90	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-91	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-92	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-93	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-94	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-95	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-96	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E
C-97	90°00'00"	25.00'	39.27'	35.36'	N 41°59'47" W
C-98	90°00'00"	25.00'	39.27'	35.36'	S 48°00'13" W
C-99	90°00'00"	25.00'	39.27'	35.36'	S 41°59'47" E
C-100	90°00'00"	25.00'	39.27'	35.36'	N 48°00'13" E

HUNTSPRING PLAT ONE

BALTIMORE COUNTY, MARYLAND ELECT. DIST. NO 8
SCALE: 1" = 50' MAY 2, 1990

OWNER & DEVELOPER
HUNTSPRING DEVELOPMENT CORPORATION, INC.
ONE, RESERVOIR CIRCLE, SUITE 100
BALTIMORE, MARYLAND 21208
301-486-1366
DEED REFERENCE - S.M. 8334/47
TAX ACCOUNT NOS. - 21-00-009573 & 21-00-014874

Filed for record
S.M. 62 FOLIO 055
Date AUG 8 1990
Time
Clerk

THE BOUNDARY SHOWN HEREON IS BASED ON A SURVEY PREPARED BY S. J. MARTENET COMPANY, INC., LAND SURVEYORS IN JANUARY AND OCTOBER, 1989.

NOTE:
EASEMENTS AND RIGHTS-OF-WAY SHOWN, NOTE NUMBERS, DRAINAGE AND UTILITY EASEMENTS, ADDRESS NUMBERS, H.O.A. EASEMENT AREA FOR INGRESS, EGRESS, MAINTENANCE AND NO BUILDING SETBACK LINES ARE SHOWN WITH THE SAME SIZE AND STYLE AS APPEARS ON THE PLAN TO BALTIMORE COUNTY, MARYLAND. THE OWNER, HIS HEIRS AND ASSIGNS ARE RESPONSIBLE FOR THESE DETAILS EXISTING AND AREAS AS NEED, TO BALTIMORE COUNTY, MARYLAND, AT NO COST.

NOTE:
ALL STREETS ARE/ARE NOT PUBLIC AS SHOWN HEREON AND THE HUNTSPRING DEVELOPMENT CORPORATION, INC. HEREBY DEDICATES AS PUBLIC USE, THE RIGHT-OF-WAY FOR THE SAME AS IS INDICATED ON THE PLAT AND THE BEDS OF THE STREETS SHOWN THEREON AS IS NECESSARY FOR THE CONSTRUCTION OF PUBLIC ROADS THEREON.

NOTE:
THE DEDICATION OF THE BEDS OF THE STREETS AS SHOWN HEREON AND THE GRANTING OF EASEMENTS AS SHOWN HEREON ARE NOT INTENDED TO BE DEDICATION TO PUBLIC USE, BUT ARE SOLELY FOR THE BENEFIT OF THE OWNERS OF THE LOTS AND THE SETTLERS OF THE SUBDIVISION.

OWNERS CERTIFICATE:
I/WE HEREBY CERTIFY, OWNER OF THE LAND SHOWN ON THIS PLAT, HEREBY CERTIFIES THAT, TO THE BEST OF ITS KNOWLEDGE, THE REQUIREMENT OF SUBSECTION (D) OF SECTION 3-108 OF THE REAL PROPERTY ARTICLE OF THE ANNOTATED CODE OF MARYLAND, AND AMENDMENTS THEREOF AS AMENDED, CONCERNING THE MARKING OF THE PLAT AND THE SETTING OF THE MARKERS.
President

SURVEYORS CERTIFICATE:
I HEREBY CERTIFY THAT THE BOUNDARY SHOWN HEREON IS BASED ON A SURVEY PREPARED BY S. J. MARTENET COMPANY, INC., LAND SURVEYORS IN JANUARY AND OCTOBER, 1989. I FURTHER CERTIFY THAT ALL OF THE REQUIREMENTS OF THE PLAT AND THAT THE LAND SHOWN ON THIS PLAT HAS BEEN LAID OUT, AND THE PLAT THEREOF HAS BEEN PREPARED, IN CONFORMITY WITH THE REQUIREMENTS OF SECTION 3-108 OF THE REAL PROPERTY ARTICLE OF THE ANNOTATED CODE OF MARYLAND, AND AMENDMENTS THEREOF AS AMENDED, CONCERNING THE ORDERING OF PUBLIC LOT AND SETTING OF THE MARKERS.

APPROVED BY BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT
2-21-90

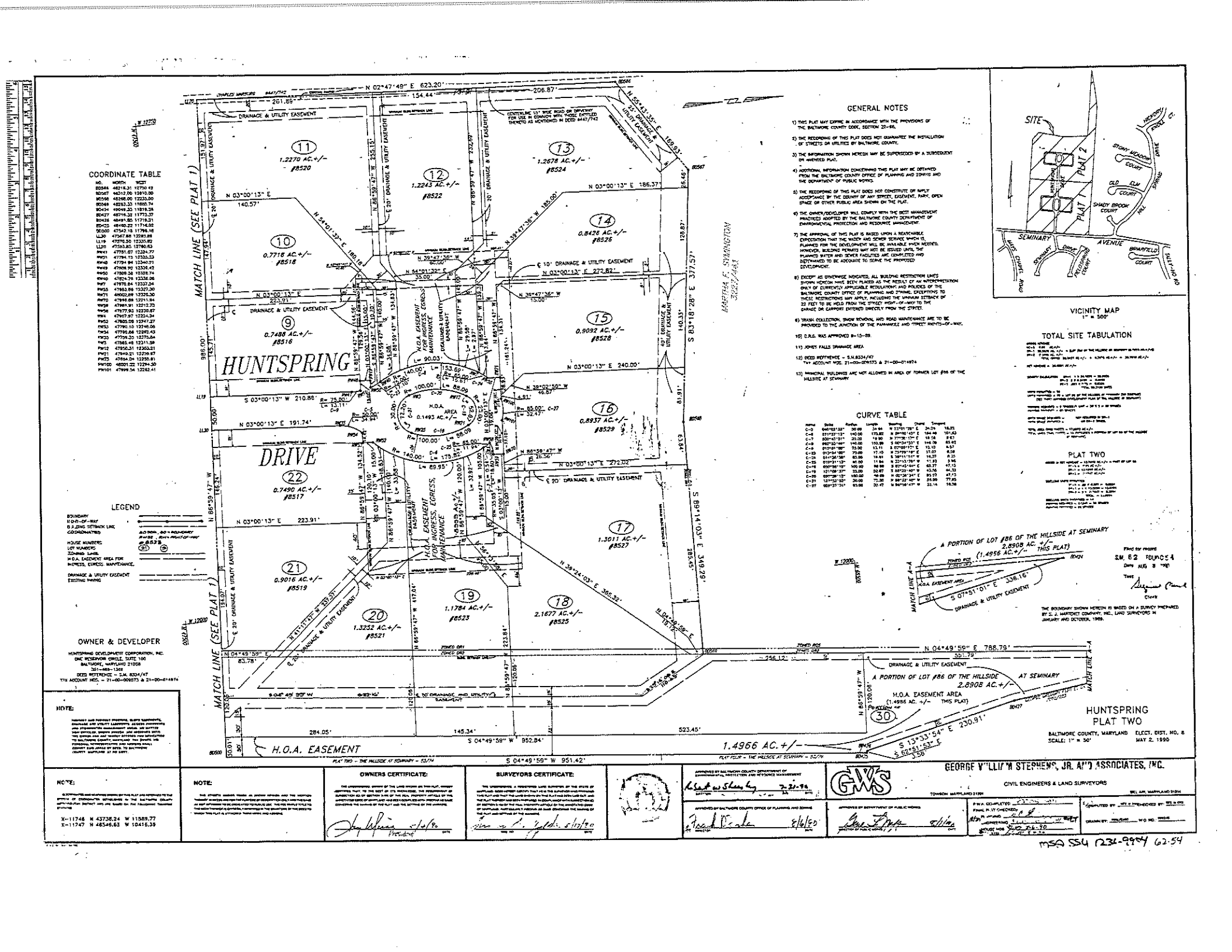
APPROVED BY BALTIMORE COUNTY OFFICE OF PLANNING AND ZONING
5/6/90

APPROVED BY DEPARTMENT OF PUBLIC WORKS
5/6/90

GEORGE WILLIAM STEPHENS, JR. AND ASSOCIATES, INC.
CIVIL ENGINEERS & LAND SURVEYORS
TOWSON, MARYLAND 21204 BEL AIR, MARYLAND 21014

F.W.A. COMPLETED 2-20-90
FINAL PLAT CHECKED 2-21-90
PLANNING
ENGINEERING
HOUSE NOS. 5-4-90
COMPUTED BY:
DRAWN BY:
CHECKED BY:
W.O. NO.

MSA SSU 1236-9703


HUNTSPRING
DRIVE
MATCH LINE (SEE PLAT 1)
MATCH LINE (SEE PLAT 1)
MARTHA F. SYMINGTON
SURVEY
N 02°47'49" E 623.20'
N 04°49'59" E 788.79'
S 04°49'59" W 952.84'
S 04°49'59" W 951.42'
H.O.A. EASEMENT
1.4966 AC.+/-
A PORTION OF LOT #86 OF THE HILLSIDE AT SEMINARY
2.8908 AC.+/-
(1.4966 AC.+/- THIS PLAT)
H.O.A. EASEMENT AREA
DRAINAGE & UTILITY EASEMENT
TOWARD ROS
TOWARD ORT
11
1.2270 AC.+/-
#8520
12
1.2243 AC.+/-
#8522
13
1.2678 AC.+/-
#8524
14
0.8426 AC.+/-
#8526
15
0.9092 AC.+/-
#8528
16
0.8937 AC.+/-
#8529
17
1.3011 AC.+/-
#8527
18
2.1677 AC.+/-
#8525
19
1.1784 AC.+/-
#8523
20
1.3252 AC.+/-
#8521
21
0.9016 AC.+/-
#8519
22
0.7490 AC.+/-
#8517
9
0.7488 AC.+/-
#8516
10
0.7716 AC.+/-
#8518
30
H.O.A. AREA
0.1493 AC.+/-
H.O.A. EASEMENT AREA
0.4939 AC.+/-
H.O.A. EASEMENT FOR INGRESS, EGRESS, MAINTENANCE
N 86°59'47" W 1334.52'
N 86°59'47" W 1334.83'
N 86°59'47" W 1334.56'
N 86°59'47" W 1334.27'
N 86°59'47" W 1334.27'
N 86°59'47" W 1334.27

BALTIMORE COUNTY, MARYLAND
INTER-OFFICE MEMORANDUM

TO: Michael D. Mallinoff
Director, Department of Permits, Approvals and Inspections

DATE: 8/11/2020

FROM: C. Pete Gutwald
Director, Department of Planning

SUBJECT: **CONCEPT PLAN CONFERENCE**
Project Name: 1400 W Seminary Avenue
PAI #VIII-819

GENERAL INFORMATION:

Applicant Name: Alvin B. (Buzzy) Krongard
1400 W Seminary Avenue
Lutherville, MD 21093

Location: 1400 W Seminary Avenue
Council District: Third

Growth Tier: II

Zoning: DR.1

Acres: ±42.44

Surrounding Zoning and Land Use:

North:	RC 5 and DR 1	Permanent Preservation/Single Family Detached
South:	DR 2	Road
East:	DR 1	Single Family Detached
West:	RC 5	Road

Project Proposal:

The applicant proposes to develop the site with 32 single family detached dwellings on ±42.44 acres of land.

Project History:

During the Baltimore County Comprehensive Zoning Map Process in 2000 the site was rezoned to DR 1. The site is under review by the Planning Board as part of the Cycle 38 Water and Sewer amendment process. The Planning Board will hold a vote on September 3, 2020 on whether the Board will recommend a change to the water and sewer designation for this site from W-7 and S-7 (No Planned Community or Multi-Use Service) to W-3 and S-3 (Capital Facilities Areas).

Other Anticipated Actions and Additional Review Items:

☐ Variance	☒ Complete Streets*	☒ School Impact Analysis
☐ Special Exception	☒ Scenic Route	☐ PUD
☐ Special Hearing	☐ Compatibility	☐ Design Review Panel
☐ RTA Modification	☒ Section 260 Standards*	☒ Referral to Planning Board
☐ Waiver	☒ Pattern Book*	☐ Other

* Information about the requirements for these items is located on the Baltimore County web page at www.baltimorecountymd.gov/devrev

PARTIES TO BE NOTIFIED BY APPLICANT

1. All adjacent property owners.
2. Community associations listed below:

Greater Timonium Community Council, Inc.
Attn: Mr. Eric Rockel, President
9B W Ridgely Rd,
Lutherville-Timonium, MD 21093
410-252-8439
erockel@earthlink.net

Falls Road Community Association
Attn: Mr. Harold Burns
P.O. Box 555
Brooklandville, MD 21022
410.296.0360

Baltimore County Land Trust Alliance
Executive Plaza One, Suite 502
Attn: Mr. Edward Halle, Jr., Treasurer
11350 McCormick Road
Hunt Valley, MD 21031

MEETINGS

Concept Plan Conference: 8/11/2020

ANALYSIS

Master Plan:

The *Master Plan 2020* "Land Management Area Plan" designation for the subject site is Community Conservation Area and Rural Residential Area.

a. Community Conservation Areas (CCAs) feature small-town scale commercial centers, a proud history and culture, and an urban dynamic. Therefore, preserving CCAs is a fundamental component of the County's critical effort to effectively maintain, strengthen and manage its built environment as a way to elevate principles of sustainability thereby reducing land consumption, and utilizing sustainable construction techniques to preserve resources.
b. Rural Residential Areas (RRA) are a mix of single-family residential development and woodlands, stream valleys and areas of significant historic and cultural value.

The "Proposed Land Use, Baltimore County Smart Coded (PLUBCSC)" designation is T-3 (Sub-Urban). The T-3 transect is described as follows: "low-density residential areas, adjacent to higher zones that contain mixed use" with landscaping that "is naturalistic and setbacks [that] are relatively deep" and "the roads [that are] irregular to accommodate natural conditions, page 29 of PLUBCSC.

Community Plan:

The development is located within the Hunt Valley and Timonium Master Plan (HV/T MP) which was adopted by Baltimore County Council as part of the Master Plan on October 19, 1998. The community plan designates residential and commercial areas. The mission, goals and objectives of the plan are to "insure that the future redevelopment of sites in the HV/T area does not create negative impacts on existing communities," pages 29 and 36.

The mission, goals, and objectives of the HV/T MP include the following:

- Establish community conservation strategies;
- Restore and protect environmental quality;
- Provide and improve opportunities for pedestrian and bicycle access throughout the HV/T area;
- Provide and improve opportunities for, and access to, parks and recreational facilities;
- Ensure an increase in open space/pervious area through the use of open concrete paver blocks in selected areas or sharing of parking facilities, page 34;
- Ensure open space parcels that are sizable, flat and open enough to support active recreational facilities, page 19;
- Ensure the use of natural features such as woodlands and stream valleys to provide visual breaks from the built environment and employ existing mechanisms such as environmental regulation and mandatory open space dedication, within the development process, to secure such areas without incurring the cost of fee-simple acquisition, page 35;
- Ensure that appropriate pedestrian and bicycle facilities are provided in new construction projects, and where appropriate, to the open space system, the light rail, and employee support uses, page 34.

Pedestrian and Bicycle Access Plan:

Based on the West Baltimore County Pedestrian and Bicycle Plan (WBCPBP), Seminary Avenue is one of three county road corridors that are designated as Signature Streets.

- For the County's future implementation, ensure the fulfilment of Shared Use Paths that "serve both pedestrian and bicyclists for both short and long distance trips" page 7.
- Ensure the inclusion of continuous facilities for bicycling and walking to enhance Seminary Avenue as a significant east-west connector serving a variety of destinations, page 44.

School Impact:

This development is subject to Section 32-6-103 of the Baltimore County Code, Adequate Public Facilities. A school impact analysis is required with development plan submittal. Information is available at the following web site:

www.baltimorecountymd.gov/Agencies/planning/devrevandlanduse/adequatepublicschoolfacilities.html

The proposal is within the boundaries of the following schools:

Riderwood Elementary School
Ridgely Middle School
Dulaney High School

EVALUATION AND RECOMMENDATION

The receipt of additional information from the Community Input Meeting or other sources may generate further comments at the Development Plan Conference.

1. **Residential Performance Standards:** The Baltimore County Zoning Regulations (BCZR) § 260 requires the Director of the Department of Planning to make a finding to the Hearing Officer for all residential development of four lots or more in Baltimore County that is located within the Urban/Rural Demarcation Line. The Department of Planning requires a pattern book to be submitted and for it to be consistent with the spirit and intent of Section 260 of the BCZR.

   260.2. Site planning.
   A development proposal shall:
   - Retain the existing quality vegetation of the site to the fullest extent possible and protect the root systems of that vegetation during construction.
   - Integrate locally significant features of the site, such as topographic features, specimen trees and hedgerows, into the site design, and retain the character of the features and their settings.
   - Coordinate building design, site layout, and grading so that grade transitions are gradual and respect the existing topography.
   - Panhandle lots are not permitted as a matter of right. Panhandles must conform to § 32-4-409 of the Baltimore County Code and to the standards in the Comprehensive Manual pf Development Policies.

260.3. Open space.
A development proposal shall integrate open space areas into the proposed development by:

- Creating focal points along streets;
- Locating landscaped open green spaces in view of the development entrance or adjoining public street;
- Planning a linked network of natural and landscaped open areas connected by pedestrian/bike trails; and
- Orienting dwelling units around open areas or squares.
- Incorporate significant features, such as stands of trees, into open areas.
- Link the development's open areas to the surrounding neighborhood open areas, including public parks, walks, and bike trails, and create both functional and visual continuity, e.g., by matching the design of a bike trail in the proposed development to the bike trail located in the adjoining property.

260.5. Landscape design.
A development proposal shall:

- Landscape public open spaces to invite users, particularly emphasizing the intended entrance to the open space.
- Use fences, walls or earth forms to provide effective and attractive screens and buffers where necessary in addition to plant material
- Provide for, or reinforce and maintain, a continuous street tree canopy by preserving healthy street trees or, if they are not present, planting new trees. The canopy shall be comprised of trees of the same species or trees with design characteristics and growth habits that are similar to those of the existing street trees.

2. **Additional Comments to the Plan:**

a. The plan needs to clearly label all environmental features of the site, including forest conservation areas, a 100' stream setback, forest buffer, all specimen trees, and any other existing environmental features. The proposed dwellings should be designed around all of these features and respect their setbacks. See CMDP pages 41, 43, 46, and 50.
b. The Department of Planning advises to use the existing site access.
c. A comprehensive study should be done to document existing specimen trees on the site. The existing trees should be saved and incorporated into the layout design as much as possible. The design of the main entrance and main access to the site should incorporate the allee of the existing trees.
d. Provide a landscape plan to the County Landscape Architect and to the Department of Planning for review. The landscape plan should include a replacement plan for the existing vegetation along W. Seminary Avenue which is in poor condition.
e. Provide centralized open space and label on the plan all proposed amenity open spaces, such as gazebos, picnic areas, tot-lots, sitting areas and other.
f. W. Seminary is a Baltimore County scenic road. The existing building on W. Seminary Avenue located at the entrance to the site should be maintained. This building is a part of the scenic character of W. Seminary Ave. The proposed residential dwellings should be located as far as possible from W. Seminary Avenue and be screened with enhanced landscaping.

g. The rear elevations of the dwellings facing W. Seminary Ave shall provide a decorative high quality metal fence along W. Seminary Avenue in combination with berming and enhanced landscaping. Where the rear of the dwellings abut public or private street rights-of-way, the applicant must demonstrate that the visibility of the backs of the dwellings from the rights-of-way will be significantly diminished. In addition, show on the plan that fencing will not be located closer than 10 feet to the public street right-of-way. These requirements must be shown on the Landscape plan. See CMDP page 22 and the Baltimore County Landscape Manual, Condition M, pages 55-57.
h. Any sheds and play equipment should not be placed up against W. Seminary Avenue.
i. Avoid a panhandle lot layout. As stated in the Development Regulations of Baltimore County, the use of panhandle lots is not a matter of right and may only be permitted in very limited situations.
j. Provide shared path for bicyclist and pedestrians along W. Seminary Avenue that is within the site. (WBCPBP, pages 44, 55)
k. Clearly identify the access from the West Seminary Avenue side to the existing residence located to the north in the RC 5 zone.
l. Clarify what name and address will be used, since the existing 1400 W. Seminary Avenue residence has the same address as the proposed development.
m. Clearly label all existing structures to remain.
n. Rename the "buffer" area on the west of the subdivision to "Land Preservation Trust Easement Buffer".
o. Show location for all proposed light fixtures.
p. Provide community signage and label it on the plan. Signage must comply with § 450 of the BCZR.

Prepared by:

M. Kulchytska

Marta Kulchytska

Division Chief:

Jenifer G. Nugent

Jenifer G. Nugent

CPG/JGN/MK/

BALTIMORE COUNTY, MARYLAND
INTER-OFFICE MEMORANDUM

TO: C. Pete Gutwald
Director, Department of Permits, Approvals and Inspections

DATE: 11/1/2021

FROM: Stephen Lafferty
Director, Department of Planning

SUBJECT: DEVELOPMENT PLAN CONFERENCE
Project Name: Torch Hill aka. 1400 W Seminary Avenue
PAI #VIII-919

GENERAL INFORMATION:

Applicant Name: Alvin B. (Buzzy) Krongard
1400 W Seminary Avenue
Lutherville, MD 21093

Location: 1400 W Seminary Avenue
Council District: Third

Growth Tier: II

Zoning: DR.1

Acres: ±42.44

Surrounding Zoning and Land Use:

North:	RC 5 and DR 1	Permanent Preservation/Single Family Detached
South:	DR 2	Road
East:	DR 1	Single Family Detached
West:	RC 5	Road

Project Proposal:

The applicant proposes to develop ±42.44 acres of land with 31 new single family detached dwellings and leave one existing dwelling to remain on the site.

Project History:

The site was rezoned to DR 1 during the Baltimore County Comprehensive Zoning Map Process in 2000. In 2020, the site was reviewed by the Planning Board as part of the Cycle 38 Water and Sewer amendment process. In September 2020, the Planning Board recommended a change to the water and sewer designation for this site from W-7 and S-7 (No Planned Community or Multi-Use Service) to W-3

and S-3 (Capital Facilities Areas). On January 4, 2021 the County Council Resolution No. 1-21 was passed to amend the Baltimore County Water Supply and Sewerage Plan.

Other Anticipated Actions and Additional Review Items:

☐ Variance	☒ Complete Streets*	☒ School Impact Analysis
☐ Special Exception	☒ Scenic Route	☐ PUD
☐ Special Hearing	☐ Compatibility	☐ Design Review Panel
☐ RTA Modification	☒ Section 260 Standards*	☒ Referral to Planning Board
☒ Waiver	☒ Pattern Book*	☐ Other

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Falls Road Community Association
Attn: Mr. Harold Burns
P.O. Box 555
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410.296.0360

Baltimore County Land Trust Alliance
Executive Plaza One, Suite 502
Attn: Mr. Edward Halle, Jr., Treasurer
11350 McCormick Road
Hunt Valley, MD 21031

MEETINGS

Concept Plan Conference:	8/11/2020	Community Input Meeting:	9/17/2020
Development Plan Conference:	11/3/2021	Administrative Law Judge's Hearing:	TBD

ANALYSIS

Master Plan:

The *Master Plan 2020* "Land Management Area Plan" designation for the subject site is Community Conservation Area and Rural Residential Area.

The "Proposed Land Use, Baltimore County Smart Coded (PLUBCSC)" designation is T-3 (Sub-Urban). The T-3 transect is described as follows: "low-density residential areas, adjacent to higher zones that contain mixed use" with landscaping that "is naturalistic and setbacks [that] are relatively deep" and "the roads [that are] irregular to accommodate natural conditions, page 29 of PLUBCSC.

Community Plan:

The development is located within the Hunt Valley and Timonium Master Plan (HV/T MP) which was adopted by Baltimore County Council as part of the Master Plan on October 19, 1998. The community plan designates residential and commercial areas. The mission, goals and objectives of the plan are to "insure that the future redevelopment of sites in the HV/T area does not create negative impacts on existing communities," pages 29 and 36.

Pedestrian and Bicycle Access Plan:

Based on the West Baltimore County Pedestrian and Bicycle Plan (WBCPBP), Seminary Avenue is one of three county road corridors that are designated as Signature Streets.

School Impact Analysis (SIA):

This development is subject to Section 32-6-103 of the Baltimore County Code, Adequate Public Facilities. The Department of Planning has reviewed the School Impact Analysis submitted on September 10, 2021 an offers the following comments:

- On all forms, the official filing date was September 14, 2021.
- On Form 1, the percentage for Dulaney High School District ought to be 97.28%.
- On Form 3, the projected number of pupil yields for high school is 8 instead of 7.
- The above affects the final results of Form 4.

SIA Approval Finding:

The Department of Planning finds that the subject Development Plan meets the requirements of BCC § 32-6-103 at the time of the filing date, September 14, 2021. The School Impact Analysis performed by the Department of Planning indicates that the projected enrollment for Riderwood Elementary School, Ridgely Middle School, and Dulaney High School are all below 115% of the state rated capacity respectively.

The projected number of students as a percentage of the state rated capacity is:

- Riderwood ES : 98.09%
- Ridgely MS: 103.36%
- Dulaney HS: 97.83%

Waiver Request from Public Works Standards:

Developer requests a waiver from Public Work Standards that sidewalks will not be provided along both sides of the proposed roads and along the frontage of West Seminary Avenue. A letter was issued back to the applicants that the Department of Planning is in support of the waiver requests as they resulted from design considerations worked through with the Department. The waivers help to achieve specific design requests by keeping the existing structure on Seminary Avenue along with a portion of the existing allee of trees at the existing entrance and some existing vegetation along Seminary Avenue.

EVALUATION AND RECOMMENDATION

1. **Residential Performance Standards:** The Baltimore County Zoning Regulations (BCZR) § 260 requires the Director of the Department of Planning to make a finding to the Hearing Officer for all residential development of four lots or more in Baltimore County that is located within the Urban/Rural Demarcation Line.

   The Department of Planning reviewed a pattern book dated September 10, 2021 and offers the following comments:
   a. Label on the plan and in the pattern book the following lots as high visibility lots: 1, 2, 3, 4, 10, 11, 12, 13, 21, 25, 30 and 31. Provide square footage for each high visibility elevation and indicate the required number of architectural elements.
   b. Provide front, back and side elevations for each type of unit. Include dimensions, building height, label all materials, and indicate colors.
   c. Provide elevations and sections for lots 1, 2, 3, 4, 29, and 30 to show enhanced screening from W Seminary Ave.
   d. The development plan and the landscape plan provided need to match the plans in the Pattern Book.

2. **Additional Comments to the Plan:**

   a. Provide a bike path along W. Seminary Ave. (WBCPBP, pages 44, 55)
   b. W. Seminary Ave. is a Baltimore County scenic road. Provide enhanced screening for lots 1, 2, 3, 4, 29, 30, and 31. Coordinate with DEPS and the Baltimore County Landscape Architect to provide mature trees for the reforestation area along W. Seminary Ave. to demonstrate adequate screening from the road.
   c. Provide a decorative high quality metal fence along W. Seminary Ave. in combination with enhanced landscaping. The applicant must demonstrate that the visibility of the backs of the dwellings will be significantly diminished where the rear of dwellings abut public or private street rights-of-way. In addition, show on the plan that fencing will not be located closer than 10 feet to the public street right-of-way. These requirements must be shown on the Landscape plan. See CMDP page 22 and the Baltimore County Landscape Manual, Condition M, pages 55-57.
   d. Label on the plan all proposed existing specimen trees to be removed.
   e. For each lot, clearly label on the plan all the setbacks, including the setbacks from all environmental features located on the site to demonstrate that all requirements are met and that the proposed dwellings do not impact any environmental features.
   f. Provide additional amenity open spaces, such as picnic areas, tot-lots, and sitting areas and provide walking paths to these spaces.

g. Any sheds and play equipment should not be placed up against W. Seminary Ave.
h. Clarify and label on the plan if the existing residence located to the north in the RC 5 zone will have access from the W. Seminary Ave. side.
i. Clarify if any light fixtures are proposed along W. Seminary Ave.
j. Clearly label on the plan all existing driveways to remain.
k. Label on the plan all proposed retaining walls and provide details and materials.

Prepared by:

Marta Kulchytska

Division Chief:

Jenifer G. Nugent

SL/JGN/MK/

LOT AREAS

Excerpt from Dev Exh 1B with PC Notes added in color at bottom

LOT NO.	SF	ACRE
LOT 1	130,099+/-	3.986+/-
LOT 2	11,040+/-	.253+/-
LOT 3	8,222+/-	.188+/-
LOT 4	9,343+/-	.214+/-
LOT 5	10,315+/-	.236+/-
LOT 6	9,790+/-	.224+/-
LOT 7	8,311+/-	.190+/-
LOT 8	8,311+/-	.190+/-
LOT 9	7,507+/-	.172+/-
LOT 10	12,173+/-	.279+/-
LOT 11	12,453+/-	.285+/-
LOT 12	12,453+/-	.285+/-
LOT 13	12,453+/-	.285+/-
LOT 14	12,193+/-	.279+/-
LOT 15	8,809+/-	.202+/-
LOT 16	8,809+/-	.202+/-
LOT 17	13,483+/-	.309+/-
LOT 18	15,499+/-	.355+/-
LOT 19	18,798+/-	.431+/-
LOT 20	15,573+/-	.357+/-
LOT 21	16,950+/-	.389+/-
LOT 22	11,593+/-	.266+/-
LOT 23	13,315+/-	.305+/-
LOT 24	14,067+/-	.322+/-
LOT 25	11,363+/-	.260+/-
LOT 26	12,154+/-	.279+/-
LOT 27	9,851+/-	.226+/-
LOT 28	12,336+/-	.283+/-
LOT 29	17,640+/-	.404+/-
LOT 30	21,571+/-	.495+/-

LOT 31	13,584+/-	.311+/-
LOT 32	11,252+/-	.258+/-
LOT 33	11,369+/-	.260+/-
LOT 34	12,250+/-	.281+/-
LOT 35	13,484+/-	.309+/-
LOT 36	13,154+/-	.301+/-
LOT 37	14,360+/-	.329+/-
LOT 38	9,827+/-	.225+/-
LOT 39	8,107+/-	.186+/-
LOT 40	8,226+/-	.188+/-
LOT 41	9,845+/-	.226+/-
LOT 42	11,724+/-	.269+/-
LOT 43	11,872+/-	.221+/-
LOT 44	8,549+/-	.272+/-
LOT 45	8,299+/-	.190+/-
LOT 46	7,953+/-	.182+/-
LOT 47	7,953+/-	.182+/-
LOT 48	10,552+/-	.242+/-
LOT 49	11,066+/-	.254+/-
LOT 50	9,876+/-	.226+/-
LOT 51	11,897+/-	.273+/-
LOT 52	13,008+/-	.298+/-
LOT 53	12,195+/-	.280+/-
LOT 54	11,011+/-	.208+/-
LOT 55	14,656+/-	.336+/-
LOT 56	9,090+/-	.208+/-
LOT 57	8,563+/-	.196+/-
LOT 58	8,244+/-	.189+/-
LOT 59	8,244+/-	.189+/-
LOT 60	9,775+/-	.224+/-
LOT 61	8,855+/-	.203+/-

Sum of Lots 2- 30: 6.965 acres Sum of Lots 31-61: 7.416 Acres
Combined : 6.965 + 7.416 = 14.381 Acres ; Average: 14.38/60 = .24 Acres
(Average Lot Size 10,454sf); (Median BTW.17 and .495 Acres = .3325 Acres = 14,483sf)
Effective Density in Lots 2-61 Area: 60 lots / 14.4 Acres = 4.2 lots per Acre

LOT AREAS

Excerpt from Dev Exh 1B with PC Notes added in color at bottom

LOT NO.	SF	ACRE
LOT 1	130,099+/-	3.986+/-
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LOT 59	8,244+/-	.189+/-
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LOT 61	8,855+/-	.203+/-

Sum of Lots 2- 30: 6.965 acres Sum of Lots 31-61: 7.416 Acres

Combined : 6.965 + 7.416 = 14.381 Acres ; Average: 14.38/60 = 2.4 Acres

(Average Lot Size 10,454sf); (Median BTW.17 and .43 Acres = .30 Acres = 13,068sf)

Effective Density in Lots 2-61 Area: 60 lots / 14.4 Acres = 4.2 lots per Acre

PLANNING

1. TIER I: SERVED BY PUBLIC SEWER AND INSIDE URDL. PER BALTIMORE COUNTY MY NEIGHBORHOOD WEBSITE.
2. THERE ARE NO KNOWN BUILDINGS, PROPERTIES, OR SITES WITHIN THE PROPOSED DEVELOPMENT AREA INCLUDED ON THE MARYLAND HISTORICAL TRUST INVENTORY (MHT), BALTIMORE COUNTY LANDMARKS LIST, THE NATIONAL REGISTER OF HISTORIC PLACES, OR THE MARYLAND ARCHEOLOGICAL SURVEY
3. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR NATIONAL HISTORIC DISTRICTS.
4. A MINIMUM PRIVATE YARD AREA OF 500 CONTIGUOUS SQUARE FEET WITH A MINIMUM 15-FOOT DIMENSION IS PROVIDED FOR EACH LOT.

ZONING

1. EXISTING ZONING DR-1 & DR-2
2. THIS DEVELOPMENT IS SUBJECT TO THE COMPREHENSIVE MANUAL OF DEVELOPMENT POLICIES (SECTION 504.2), AND THE COUNTY LANDSCAPE MANUAL (SECTION 409.8.A.1). THIS DEVELOPMENT WILL COMPLY AND BE CONSISTENT WITH ALL OF THE AFOREMENTIONED REGULATIONS, STANDARDS, GUIDELINES, AND POLICIES OR THE PROPER RELIEF WILL BE REQUESTED.
3. ~~ALL SIGNS WILL CONFORM TO BALTIMORE COUNTY ZONING CODE, SECTIONS 450 OR APPROPRIATE RELIEF WILL BE REQUESTED.~~ ALL SIGNAGE WILL COMPLY WITH SECTION 450 OF THE BCZR.
4. THE DENSITY CALCULATION IS PURSUANT TO §~~1B02.2~~ OF THE BCZR.1B01.2.C.1(b)
5. THE SETBACK REQUIREMENTS ARE PURSUANT TO THE LARGE TRACT TABLE FOUND IN §1B01.2.C(1)(B) OF THE BCZR.
6. THIS PROPERTY AS SHOWN ON THE PLAN HAS BEEN HELD INTACT SINCE 1971. THE DEVELOPER'S ENGINEER HAS CONFIRMED THAT NO PART OF THE GROSS AREA OF THIS PROPERTY AS SHOWN ON THE PLAN HAS EVER BEEN UTILIZED, RECORDED OR REPRESENTED AS DENSITY OR AREA TO SUPPORT ANY OFF-SITE DWELLINGS.
7. NO THERE ARE NO EXISTING BUILDINGS TO BE RAZED.
8. MAXIMUM BUILDING HEIGHT WILL NOT EXCEED 50' IN THE DR ZONES.
9. THERE IS NO ZONING CASE HISTORY FOR THE PROPERTY.
10. ACCESS EASEMENTS MAY NOT BE FENCED.
11. ACCESS EASEMENTS ARE PROPOSED ON THE FOLLOWING LOTS. 6,7 AND 11,12.
12. TYPICAL OPEN DECK DIMENSION OF 10 FT. X 20 FT. SHALL PROVIDE THE MINIMUM REAR DECK SETBACK OF 22.5 FT.

SITE DEVELOPMENT PROPOSAL

DWELLING TYPE	PROPOSED UNITS	PARKING REQUIRED	PARKING PROVIDED	OPEN SPACE REQUIRED	OPEN SPACE PROPOSED	AVERAGE DAILY TRIPS	PHASE	DEVELOPMENT SCHEDULE
SINGLE-FAMILY DETACHED	61	122	244	1.38 AC.±	1.40 AC.	600	I&II	
TOTAL	61	122	244	1.38 AC.±	1.40 AC.	600	I&II	

EXISTING ZONING AND MAXIMUM DENSITY PERMITTED

ZONE	GROSS ACRES	DWELLING UNITS PERMITTED	DWELLING UNITS PROPOSED
DR-1	±16.8 AC	16	16
DR-2	±22.6 AC	45	45
		TOTAL	61

19. FINAL GRADES ALONG WEST JOPPA ROAD ARE SUBJECT TO PROPOSED IMPROVEMENTS IN PHASE 2 DESIGN. EXISTING OVER-TOPPING DURING A 100-YR STORM EVENT WILL BE ADDRESSED DURING THE PHASE 2 PROCESS FOR THIS PROJECT.

GRADED, AND KEPT FREE OF ANY OBSTRUCTIONS.
S. GRADING, ESC, AND SWM WILL BE INSTALLED FOR THE ENTIRE
L BE INSTALLED IN TWO PHASES AS SHOWN ON THE SITE PLAN.

SETBACK TABLE

SETBACK TYPE - DR 1 & 2	SETBACK
FRONT BUILDING FACE TO:	
R/W OR PROPERTY LINE-	25'
SIDE BUILDING FACE TO:	
SIDE BUILDING FACE-	30'
PUBLIC STREET R/W-	25'
PAVING OR PRIVATE ROAD-	30'
TRACT BOUNDARY-	25'
REAR BUILDING FACE TO:	
REAR PROPERTY LINE -	30'
PUBLIC STREET R/W -	30

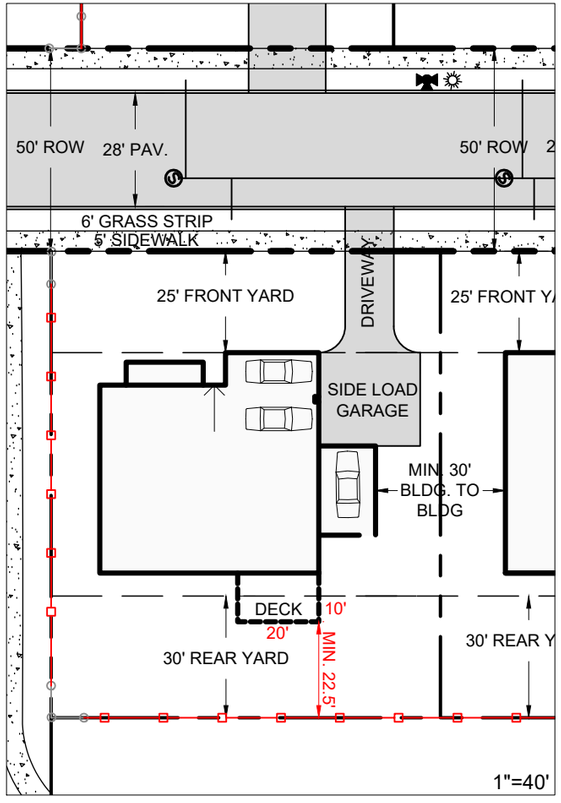
PAI# - 08-0922
TRACKING # - Maj-2021-00001

Excerpt from Dev Exh 1B

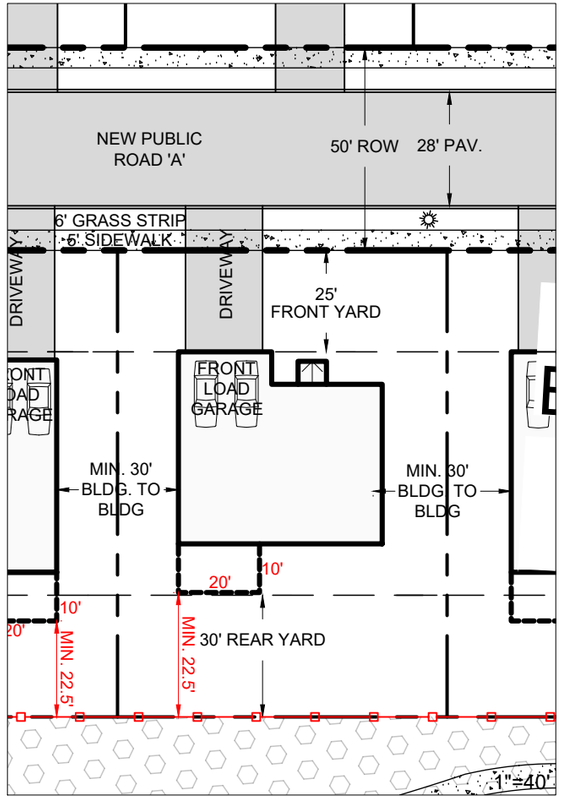
PC Exh 25

SITE PLAN 1"=60'

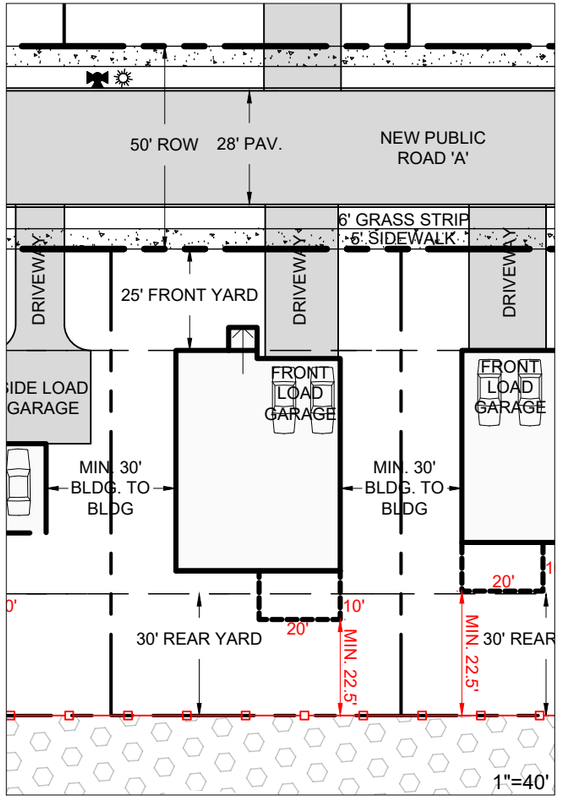
TYPICAL 54' WIDE UNIT LAYOUT



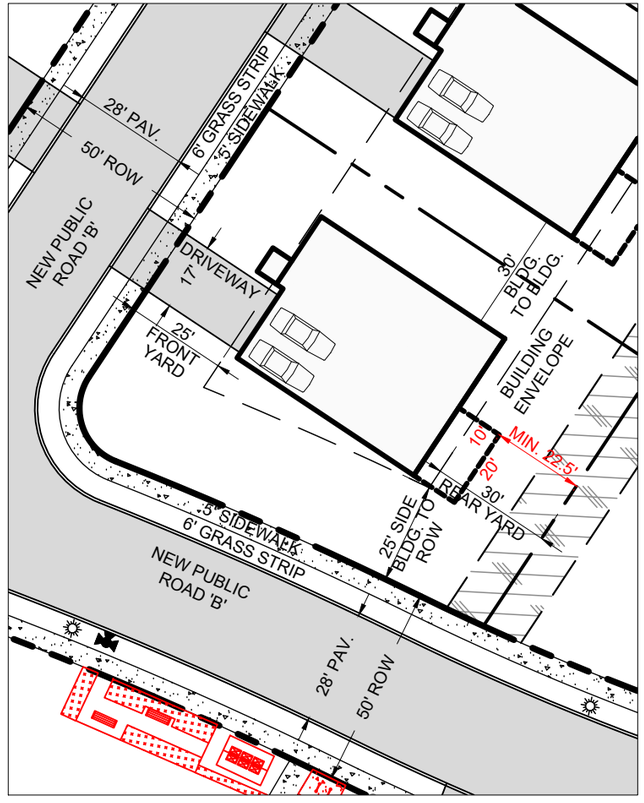
TYPICAL 50' WIDE UNIT LAYOUT



TYPICAL 40' WIDE UNIT LAYOUT



TYPICAL CORNER LOT LAYOUT



1) THE SETBACK REQUIREMENTS ARE PURSUANT TO THE LARGE TRACT TABLE FOUND IN §1B01.2.C(1)(B) OF THE BCZR.
2) ENVELOPES OR TYPICAL DWELLINGS AS SHOWN DICTATE A SPECIFIC LOCATION AND ORIENTATION WHICH IS INTENDED TO ALLOW COMPLIANCE WITH BALTIMORE COUNTY ZONING REGULATIONS AND POLICIES. SHOULD THE LOCATION OR ORIENTATION CHANGE OR CREATE CONFLICTS WITH THE REGULATIONS OR POLICIES, THE LOCATION OR ORIENTATION MUST BE CHANGED TO ALLEVIATE THE CONFLICT.

1"=20'

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UNDEVELOPED AREAS OPEN SPACE

DESCRIPTION	ACRES
STORMWATER MANAGEMENT	2.15 ±
HOA/COA AREAS	1.75 ±
OTHER	12.55 ±
TOTAL PROVIDED	16.45 ±

1. OPEN SPACE REQUIRED - 60 UNITS (60 NEW + 1 EXISTING) X 1,000 S.F. = 60,000 S.F. OPEN SPACE.
2. OPEN SPACE PROVIDED - ~~169,900~~ S.F.
   OPEN SPACE NOTES: 148,340
   ALL LOCAL OPEN SPACE SHALL BE IN COMPLIANCE WITH THE LOCAL OPEN SPACE MANUAL, LATEST EDITION.
3. TEMPORARY OPEN SPACE BOUNDARY MARKERS, TREE PROTECTION DEVICES AND FOUR FOOT HIGH SNOW FENCING OR APPROVED EQUIVALENT SHALL BE INSTALLED PRIOR TO ANY CLEARING OR GRADING.
4. WITHIN THE AREA SHOWN AS OPEN SPACE, DISTURBANCE BEYOND THAT WHICH IS SHOWN ON THE DEVELOPMENT PLAN SHALL NOT BE ALLOWED WITHOUT PRIOR APPROVAL FROM THE DEPARTMENT OF RECREATION AND PARKS.
5. ANY FILL PLACED IN OPEN SPACE AREAS WHICH WERE PREVIOUSLY 100-YEAR FLOODPLAIN SHALL BE DESIGNED AND OBSERVED BY A GEOTECHNICAL ENGINEER TO DISCOURAGE ISSUES THAT MIGHT ARISE FROM WET SOILS.
10. HOA/COA OPEN SPACE SHALL BE OWNED AND MAINTAINED BY A HOMEOWNERS ASSOCIATION.

OPEN SPACE CONT.

11. NO UTILITIES, WHETHER PUBLIC OR PRIVATE, INCLUDING BUT NOT LIMITED TO, TELEPHONE, CABLE TELEVISION, GAS AND ELECTRIC, WATER, SEWER AND STORM DRAINS SHALL BE PLACED OR CONSTRUCTED ON OR WITHIN AREAS LABELED AS OPEN SPACE WITHOUT PRIOR WRITTEN CONSENT FROM BALTIMORE COUNTY DEPARTMENT OF RECREATION AND PARKS.
12. THE DESIGN, CONSTRUCTION AND INSTALLATION OF ALL AMENITIES SHOWN ON THE DEVELOPMENT PLAN SHALL BE THE RESPONSIBILITY OF THE DEVELOPER.
13. THE PROPOSED OPEN SPACE AMENITIES INCLUDING THE WALKING PATHS SHALL BE CONSTRUCTED AFTER THE 30TH BUILDING PERMIT IS ISSUED BUT PRIOR TO THE 40TH.

DEVELOPMENT PLANS REVIEW

1. THIS PROJECT IS LOCATED WITHIN THE URBAN RURAL DEMARCATION LINE.
2. THE SITE IS LOCATED WITHIN A LEVEL OF SERVICE F AS SHOWN ON THE 2020 BASIC SERVICES MAP TRANSPORTATION ZONE. A SPECIAL VARIANCE IS BEING SOUGHT IN CONJUNCTION WITH THIS DEVELOPMENT PLAN.
3. THE SITE IS LOCATED WITHIN AN AREA OF CONCERN AS SHOWN ON THE 2020 BASIC SERVICES MAP SEWER DEFICIENT AREAS AND AREAS OF CONCERN.
4. THE SITE IS NOT LOCATED IN A DEFICIENT AREA FOR PUBLIC WATER AS SHOWN ON THE 2020 BASIC SERVICES MAP WATER SUPPLY AREA.
5. RAMPS SHALL BE PROVIDED FOR PHYSICALLY HANDICAPPED PERSONS AT ALL STREET INTERSECTIONS WITH DETECTABLE WARNING AREAS, PER STANDARD DETAILS R-36A AND R-36B.
6. SIDEWALKS WILL BE PROVIDED ALONG ALL PUBLIC ROADS AND WILL MEET ALL STATE HIGHWAY ADMINISTRATION STANDARDS FOR CONSTRUCTION.
7. A CIM WAS HELD ON APRIL 27, 2021. ISSUES WERE RAISED REGARDING THE POTENTIAL EXTENSION OF MAYS CHAPEL ROAD THROUGH THE SUBJECT PROPERTY. THE PLAN PROPOSES TO EXTEND MAYS CHAPEL ROAD BUT TO GATE IT FOR EMERGENCY ACCESS ONLY, TO BE APPROVED BY THE ALJ.
8. STREET LIGHTS SHALL BE INSTALLED ALONG ALL PUBLIC ROADS.
9. ALL SIGNS WILL CONFORM TO BALTIMORE COUNTY ZONING CODE, SECTIONS 450 OR THE APPROPRIATE RELIEF WILL BE REQUESTED.
10. IT IS ANTICIPATED THAT THIS PROJECT WILL BE DEVELOPED IN TWO PHASES.
11. TOTAL ADT GENERATED BY THE SITE= 600
12. THE SITE IS LOCATED WITHIN A W-1 AND S-1 (EXISTING SERVICE AREA) WATER AND SEWER SERVICE AREA.
13. THERE ARE WETLANDS PRESENT ON THE SITE.
14. "NO PARKING" SIGNS SHALL BE POSTED PROHIBITING PARALLEL PARKING WITHIN THE TURNAROUND AREAS/CUL-DE-SAC.
15. ALL SIDEWALKS SHALL BE A MINIMUM OF 5-FEET WIDE AND SHALL BE INSTALLED IN CONFORMANCE WITH BALTIMORE COUNTY STANDARDS AND TO CURRENT AMERICANS WITH DISABILITIES ACT (ADA) GUIDELINES.
16. A PRESSURE REDUCING VALVE WILL BE REQUIRED IF THE STATIC PRESSURE EXCEEDS 80-PSI.
17. AREAS BETWEEN THE SIGHT LINE AND THE CURB LINE MUST BE CLEARED, GRADED, AND KEPT FREE OF ANY OBSTRUCTIONS.
18. IT IS ANTICIPATED THAT THIS PROJECT WILL BE DEVELOPED IN TWO PHASES. GRADING, ESC, AND SWM WILL BE INSTALLED FOR THE ENTIRE PROJECT IN PHASE I. THE PAVING, WATER, SEWER, AND STORM DRAIN WILL BE INSTALLED IN TWO PHASES AS SHOWN ON THE SITE PLAN.

TED # OF PUPILS OR PROP. VELOPMENT	PROJECTED # OF PUPILS FOR OTHER DEVELOPMENTS	TOTAL PROJECTED ENROLLMENT	# OF STUDENTS ABOVE OR (BELOW) CAPACITY	PROJECTED # OF PUPILS AS A % OF SRC
9	0	414	~~(26)~~ 6	~~94.1%~~ 98.6%
4	4	1,108	38	103.6%
5	8	1,943	(41)	97.9%

PLANNING

1. TIER I: SERVED BY PUBLIC SEWER AND INSIDE URDL. PER BALTIMORE COUNTY MY NEIGHBORHOOD WEBSITE.
2. THERE ARE NO KNOWN BUILDINGS, PROPERTIES, OR SITES WITHIN THE PROPOSED DEVELOPMENT AREA INCLUDED ON THE MARYLAND HISTORICAL TRUST INVENTORY (MHT), BALTIMORE COUNTY LANDMARKS LIST, THE NATIONAL REGISTER OF HISTORIC PLACES, OR THE MARYLAND ARCHEOLOGICAL SURVEY
3. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR NATIONAL HISTORIC DISTRICTS.
4. A MINIMUM PRIVATE YARD AREA OF 500 CONTIGUOUS SQUARE FEET WITH A MINIMUM 15-FOOT DIMENSION IS PROVIDED FOR EACH LOT.

SITE DEVELOPMENT PROPOSAL

DWELLING TYPE	PROPOSED UNITS	PARKING REQUIRED
SINGLE-FAMILY DETACHED	61	122
TOTAL	61	122

EXISTING ZONING AND MAXIMUM

ZONE	GROSS ACRES	DWELLING UNITS PERMITTED
DR-1	±16.8 AC	16
DR-2	±22.6 AC	45

19. FINAL GRADES ALONG WEST JOPPA ROAD ARE SUBJECT TO PROPOSED IMPROVEMENTS IN PHASE 2 DESIGN. EXISTING OVER-TOPPING DURING A 100-YR STORM EVENT WILL BE ADDRESSED DURING THE PHASE 2 PROCESS FOR THIS PROJECT.

TO

COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND
Legislative Session 2010, Legislative Day No. 18

Resolution No. 94-10

All Councilmembers

By the County Council, November 1, 2010

A RESOLUTION to adopt a Master Plan as a guide for the development of the County for the next ten years.

WHEREAS, pursuant to provisions of the Charter and of the County Code, Baltimore County is responsible for planning for the future growth and development of the County, including the preparation of a Master Plan; and

WHEREAS, pursuant to Section 523 of the Baltimore County Charter, the Master Plan shall be a composite of mapped and written proposals setting forth comprehensive objectives, policies and standards to serve as a guide for the development of the County; and

WHEREAS, the Baltimore County Charter provides that the Office of Planning prepare and revise a Master Plan at least every ten years, the previous such revision having been accomplished in 2000; and

WHEREAS, pursuant to Section 523 of the Baltimore County Charter, the County Council has the responsibility to accept or modify, and then adopt a Master Plan which it receives from the Office of Planning; and

WHEREAS, the Office of Planning has prepared a Master Plan, containing objectives, policies and standards, and a composite of mapped and written proposals serving as a guide for the development of the County; and

WHEREAS, the Baltimore County Planning Board has held public hearings on the Master Plan and has recommended the adoption of the Plan; and

WHEREAS, the Office of Planning has submitted to the County Council a Master Plan, entitled "Master Plan 2020"; and

WHEREAS, the County Council held public hearings on the Master Plan on October 18, 2010 and October 26, 2010.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND, that the Master Plan submitted by the Office of Planning and adopted by the Baltimore County Planning Board, including mapped and written proposals, is hereby adopted to serve as a guide for the development of the County, subject to such further modifications as deemed advisable by the Baltimore County Council.

READ AND PASSED this ***15TH*** day of ***NOVEMBER***, 2010.

BY ORDER

Thomas J. Peddicord, Jr.
Secretary

ITEM: ***RESOLUTION 94-10***

STANDARD DESIGN MANUAL, COUNTY BILL NO. 65-10, SECTION 5.

4. THE FIRE HYDRANTS SHALL BE PAINTED "ORANGE" FOR PUBLIC HYDRANTS IN ACCORDANCE WITH THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17, SECTION 1:18.5.10.5.
5. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A RESIDENTIAL SPRINKLER SYSTEM FOR EACH INDIVIDUAL DWELLING UNIT. THE SPRINKLER CONTRACTOR SHALL HAVE A MARYLAND SPRINKLER LICENSE THROUGH THE MARYLAND STATE FIRE MARSHAL'S OFFICE.
6. ALL RESIDENTIAL SPRINKLER SYSTEMS SHALL BE INSPECTED AND APPROVED BY THE BALTIMORE COUNTY MARSHAL'S OFFICE PRIOR TO OCCUPANCY.
7. THE BALTIMORE COUNTY FIRE MARSHAL'S OFFICE HAS REQUESTED THAT STREET SIGNS BE INSTALLED WHEN THE FIRST HOUSE IS UNDER ROOF.
8. ADDRESS NUMBERS SHALL BE A MINIMUM OF 3 INCHES IN SIZE PER THE PROVISIONS OF THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17, SECTION 1:10.11.1.5.

STEEP SLOPES NOTE

THE DEVELOPMENT AS PROPOSED WILL INCLUDE PROTECTIVE MEASURES ADEQUATE TO PREVENT EROSION OR SLOUGHING OF ANY STEEP SLOPES AS DEFINED BY SECTION 32-4-101 OF THE BALTIMORE COUNTY CODE AND PROMOTE THE PRESERVATION OF THE NATURAL TOPOGRAPHIC FEATURES OF THE STEEP SLOPE. THIS WILL BE ACHIEVED BY PROVIDING EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE REQUIREMENTS OF THE BALTIMORE COUNTY SOIL CONSERVATION DISTRICT AND THE CURRENT STATE OF MARYLAND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

SPECIAL HEARING

A COMBINED DEVELOPMENT PLAN & SPECIAL HEARING REQUEST CONFIRMING DENSITY HAVE BEEN FILED PURSUANT TO BCC § 32-4-221(C)(2).

2020-0105-SPH

DEVELOPMENT PLAN AND PLAN TO ACCOMPANY PETITION FOR ZONING HEARING

DAVIS FARMS

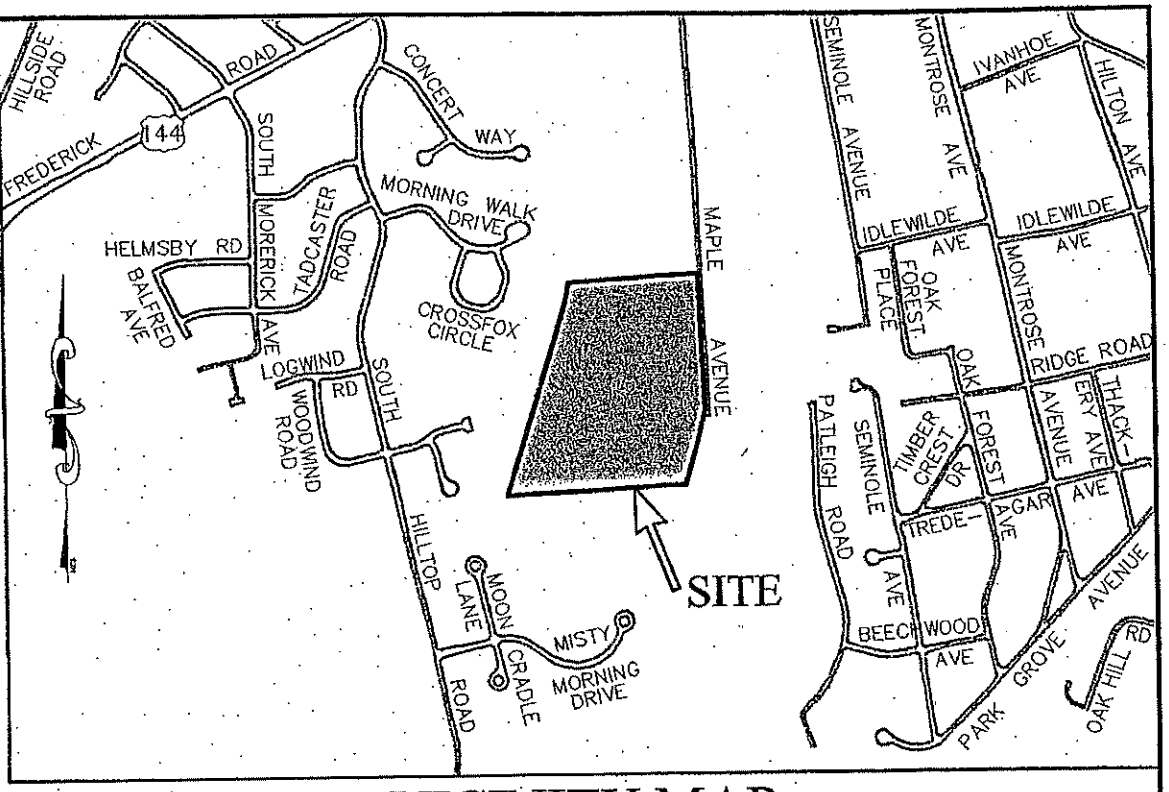
DISTRICT 1c1
SCALE: 1"=50'
PAI FILE #: 01-0606

BALTIMORE COUNTY, MD
FEBRUARY 20, 2020
SHEET 1 OF 2

18369A

PC Exh 29

AREA **
0.58
4.76
6.41
3.62
0.23
1.22
1.13
ER TO



VICINITY MAP

SCALE: 1"=1000'

GENERAL NOTES

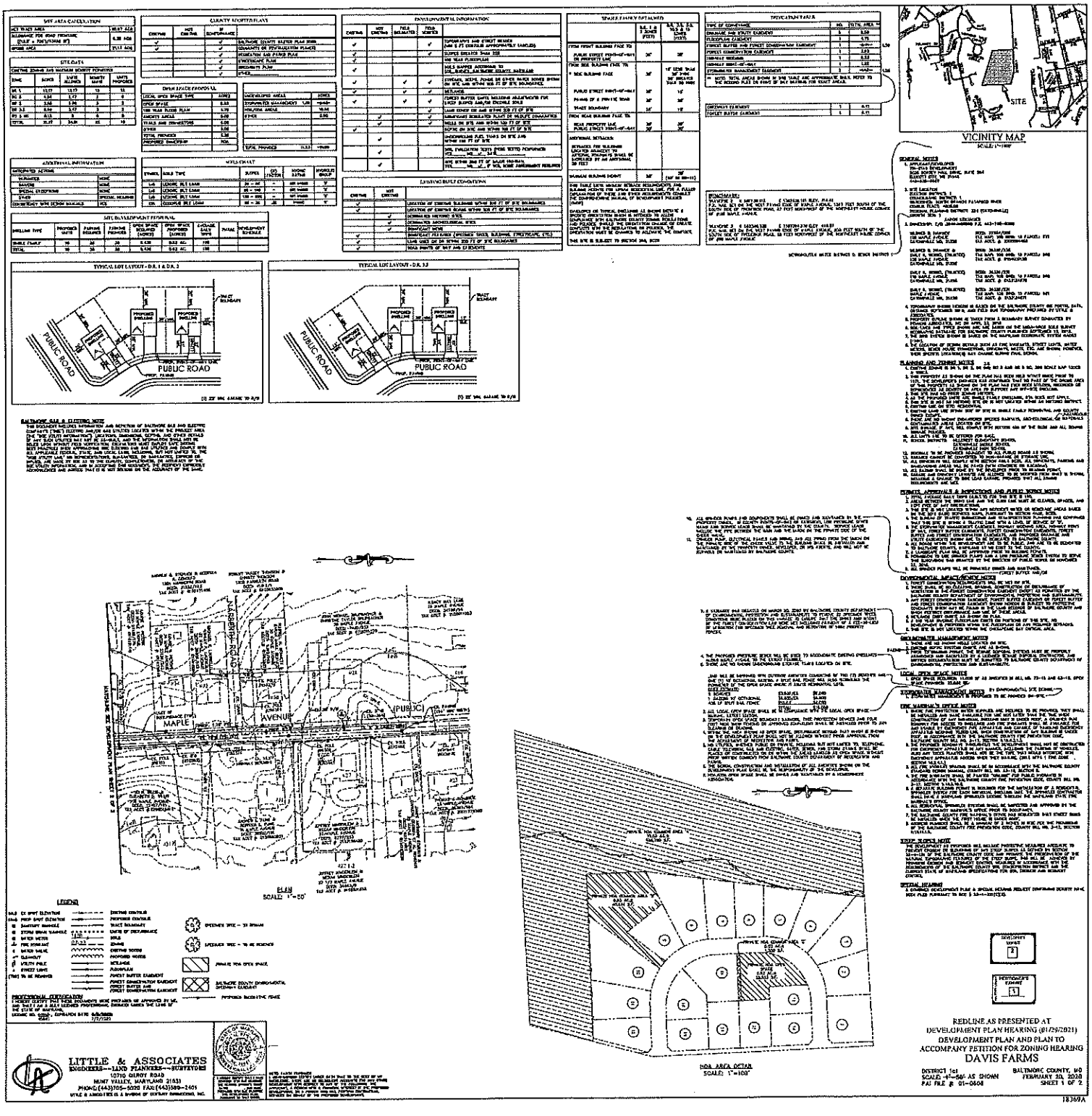
1. APPLICANT/DEVELOPER
   TRI-STAR DEVELOPMENT
   5026 DORSEY HALL DRIVE, SUITE 204
   ELLICOTT CITY, MD 21042
   443-535-9557

2. SITE LOCATION
   ELECTION DISTRICT: 1
   COUNCILMANIC DISTRICT: 1
   WATERSHED: NORTH BRANCH PATAPSCO RIVER
   CENSUS TRACT: 4005.00
   REGIONAL PLANNING DISTRICT: 324 (CATONSVILLE)
   GROWTH TIER: 1

3. OWNERSHIP: C/O JOHN MOTSCO P.E. 443-705-5020

MILDRED D. HAMMEN 106 MAPLE AVENUE CATONSVILLE MD, 21228	DEED: 27854/006 TAX MAP: 100 GRID: 18 PARCEL: 971 TAX ACCT. #: 2200004458
MILDRED D. HAMMEN & EMILY R. WESSEL (TRUSTEE) 108 MAPLE AVENUE CATONSVILLE MD, 21228	DEED: 39326/235 TAX MAP: 100 GRID: 18 PARCEL: 602 TAX ACCT. #: 0104000120
EMILY R. WESSEL (TRUSTEE) 110 MAPLE AVENUE CATONSVILLE MD, 21228	DEED: 39326/231 TAX MAP: 100 GRID: 18 PARCEL: 600 TAX ACCT. #: 0123154870
EMILY R. WESSEL (TRUSTEE) MAPLE AVENUE CATONSVILLE MD, 21228	DEED: 39326/231 TAX MAP: 100 GRID: 18 PARCEL: 601 TAX ACCT. #: 0123154871

4. TOPOGRAPHY SHOWN HEREON IS BASED ON THE BALTIMORE COUNTY GIS PORTAL DATA, OBTAINED SEPTEMBER 2018; AND FIELD RUN TOPOGRAPHY PREPARED BY LITTLE & ASSOCIATES.
5. PROPERTY OUTLINE SHOWN IS TAKEN FROM A BOUNDARY SURVEY CONDUCTED BY PENNONI ASSOCIATES, INC ON APRIL 23, 2018
6. SOIL LINES AND TYPES SHOWN ARE ARE BASED ON THE USDA-NRCS SOILS SURVEY GEOGRAPHIC DATABASE FOR BALTIMORE COUNTY PUBLISHED SEPTEMBER 10, 2018.
7. THE GRID SYSTEM SHOWN IS BASED ON THE MARYLAND COORDINATE SYSTEM NAD83 (1991).



REDLINE AS PRESENTED AT DEVELOPMENT PLAN HEARING (01/29/2021)

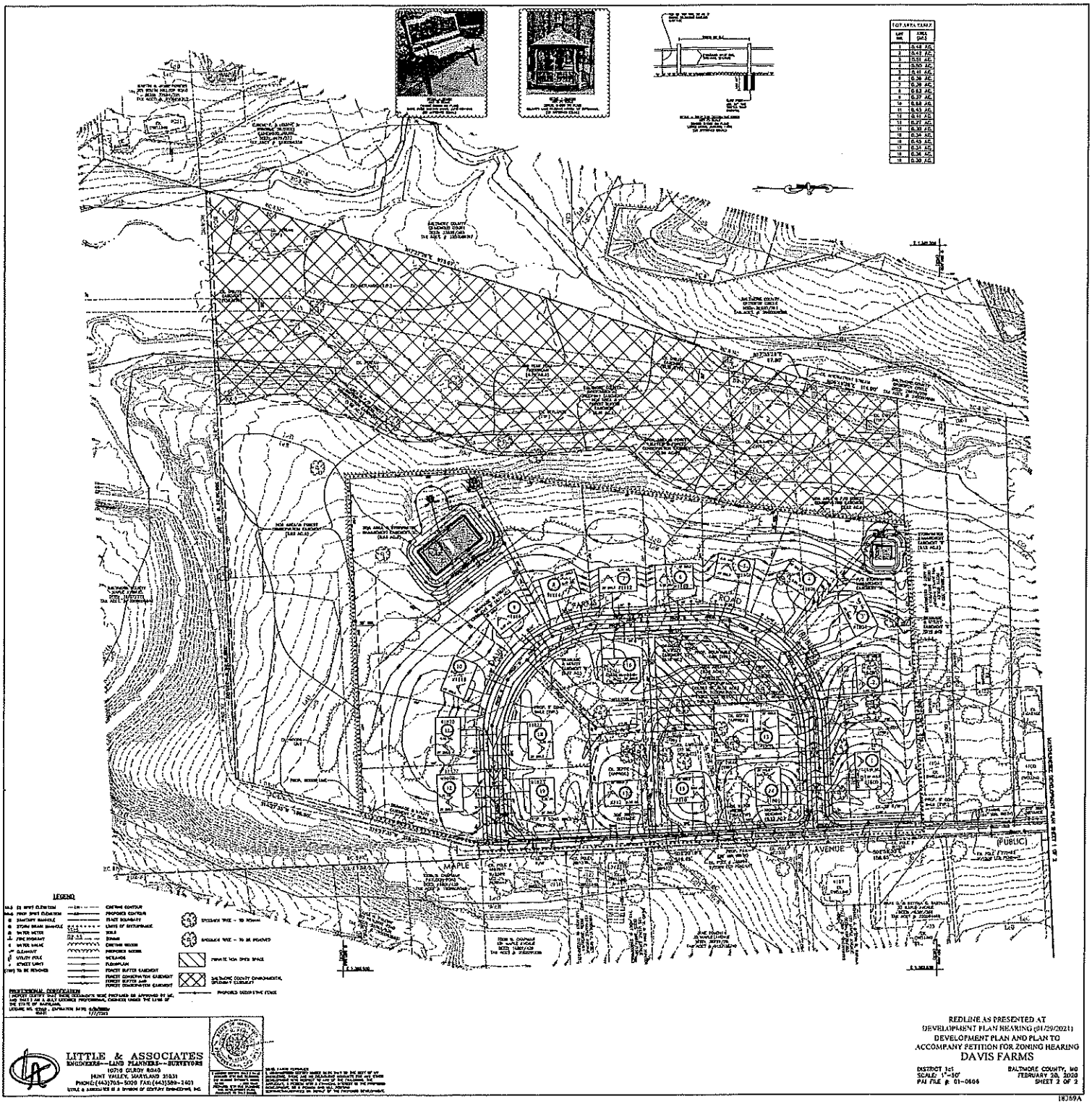
DEVELOPMENT PLAN AND PLAN TO ACCOMPANY PETITION FOR ZONING HEARING

DAVIS FARMS

DISTRICT 1st — BALTIMORE COUNTY, MD
SCALE: 1"=50' AS SHOWN — FEBRUARY 20, 2020
PAI FILE # 01-0608 — SHEET 1 OF 2

LITTLE & ASSOCIATES
ENGINEERS---LAND PLANNERS---SURVEYORS
10710 GILROY ROAD
HUNT VALLEY, MARYLAND 21031
PHONE (443)905-5200 FAX (443)589-2401
LITTLE & ASSOCIATES IS A DIVISION OF CENTURY ENGINEERING, INC.

18369A



LITTLE & ASSOCIATES
ENGINEERS — LAND PLANNERS — SURVEYORS
10710 GILROY ROAD
HUNT VALLEY, MARYLAND 21031
PHONE (443)755-5010 FAX (443)589-2401
LITTLE & ASSOCIATES IS A DIVISION OF CENTURY ENGINEERING, INC.

REDLINE AS PRESENTED AT
DEVELOPMENT PLAN HEARING (01/29/2021)
DEVELOPMENT PLAN AND PLAN TO
ACCOMPANY PETITION FOR ZONING HEARING

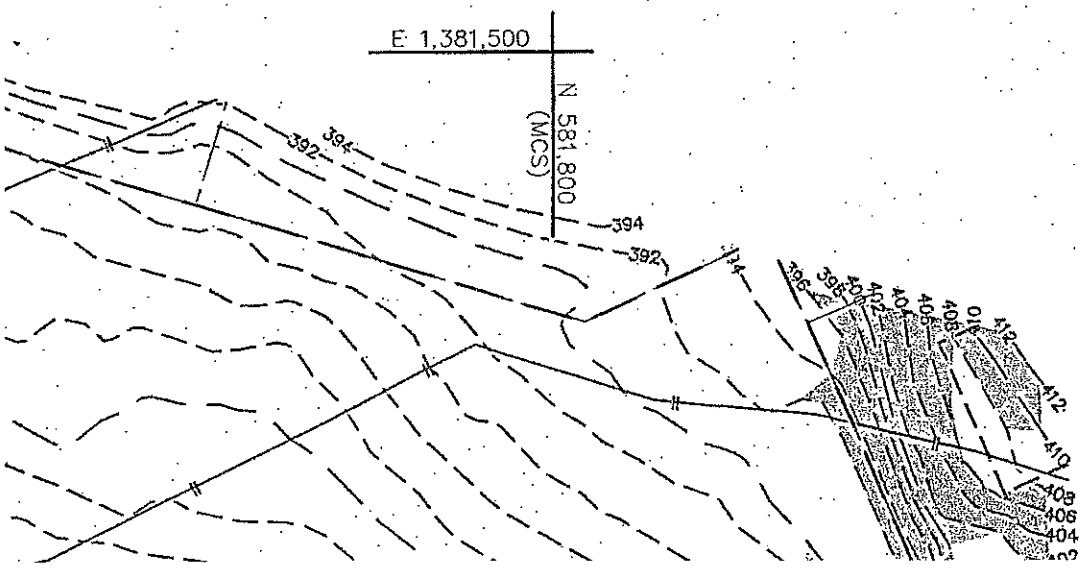
DAVIS FARMS

DISTRICT 1st
SCALE: 1"=50'
PAI FILE #: 01-0606

BALTIMORE COUNTY, MD
FEBRUARY 28, 2020
SHEET 2 OF 2

18359A

LOT AREA TABLE	
LOT NO.	AREA (AC.)
1	0.48 AC.
2	0.42 AC.
3	0.51 AC.
4	0.50 AC.
5	0.41 AC.
6	0.36 AC.
7	0.39 AC.
8	0.63 AC.
9	0.37 AC.
10	0.68 AC.
11	0.45 AC.
12	0.41 AC.
13	0.27 AC.
14	0.30 AC.
15	0.34 AC.
16	0.45 AC.
17	0.34 AC.
18	0.36 AC.
19	0.30 AC.



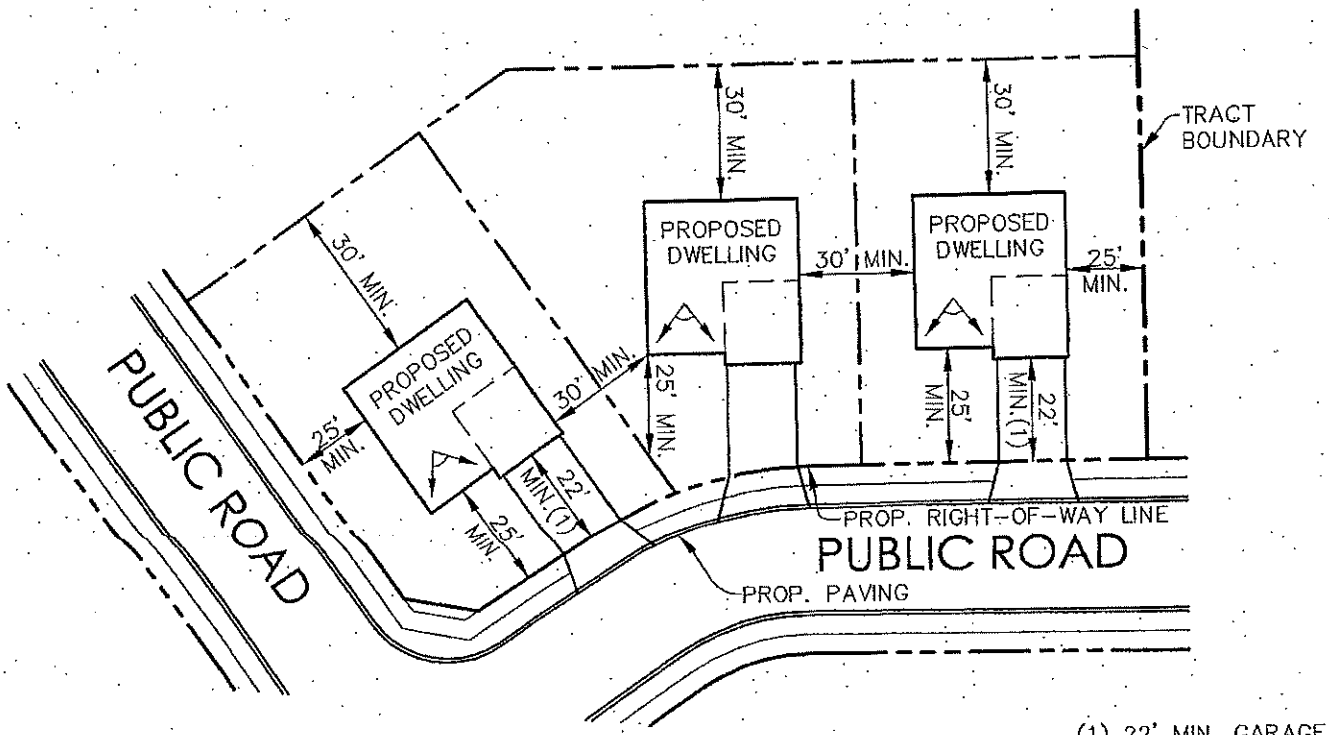
SPECIAL EXCEPTIONS	NONE
OTHER	SPECIAL HEARING
CONSISTENCY WITH DESIGN MANUALS	YES

LeC	LEGORE SILT LOAM	8% – 15
LeD	LEGORE SILT LOAM	15% – 25
CfA	CODORUS SILT LOAM	0% – 3%

SITE DEVELOPMENT PROPOSAL

DWELLING TYPE	PROPOSED UNITS	PARKING REQUIRED	PARKING PROVIDED	OPEN SPACE REQUIRED (ACRES)	OPEN SPACE PROPOSED (ACRES)	AVERAGE DAILY TRIPS	PHASE	DEVELOPME SCHEDUL
SINGLE FAMILY	19	38	38	0.436	0.52 AC.	190		
TOTAL	19	38	38	0.436	0.52 AC.	190		

TYPICAL LOT LAYOUT - D.R. 1 & D.R. 2



(1) 22' MIN. GARAGE TO R/W

BALTIMORE GAS & ELECTRIC NOTE

THIS DOCUMENT INCLUDES INFORMATION AND DEPICTION OF BALTIMORE GAS AND ELECTRIC COMPANY'S ("BGE") ELECTRIC AND/OR GAS UTILITIES LOCATED WITHIN THE PROJECT AREA (THE "BGE UTILITY INFORMATION"). LOCATIONS, DIMENSIONS, DEPTHS, AND OTHER DETAILS OF ANY SUCH UTILITIES MAY NOT BE AS-BUILT, AND THE INFORMATION SHALL NOT BE RELIED UPON WITHOUT FIELD VERIFICATION. EXCAVATORS MUST EMPLOY SAFE DIGGING BEST PRACTICES WHEN APPROACHING BGE ELECTRIC AND GAS UTILITIES AND COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, INCLUDING, BUT NOT LIMITED TO, THE "MISS UTILITY LAW." NO REPRESENTATIONS, GUARANTEES, OR WARRANTIES, EXPRESS OR IMPLIED, ARE MADE BY BGE AS TO THE QUALITY, COMPLETENESS, OR ACCURACY OF THE BGE UTILITY INFORMATION, AND IN ACCEPTING THIS DOCUMENT, THE RECIPIENT EXPRESSLY ACKNOWLEDGES AND AGREES THAT IT IS NOT RELYING ON THE ACCURACY OF THE SAME.

People's Counsel Exhibit 30

My Neighborhood Location, Zoning, and SDAT Real Property Data for Areas Identified in Developer's Exhibit 9

Centered Locations --- Sample Properties

(1) Mayfair Field Drive --- 11705 (Structure Built 1994 -- Mayfair Subdivision)

(2) Five Farms Lane --- 422 (Structure Built 1980 -- Valleywood Subdivision)

(3) Chelsea Bridge Way -- 8615 (Structure Built 1984 – (Padonia Complex Subdivision)

(4) Yarborough Road --- 8206 (Structure Built 1957 – (Thornleigh Subdivision)

(5) Old Post Drive --- 3127 (Structure Built 1981 – (Stevenson Crossing Subdivision)

P.C. Exh. 30 (1)
(DEV X 9 (1))

Baltimore County - My Neighborhood

My Neighborhood

Select a Property from the Map

enter ADDRESS or 10-DIGIT TAX ACCOUNT

11705 Mayfair Field Road

Search

:

Property Report - 11705 MAYFAIR FIELD DR

11705 MAYFAIR FIELD DR

Tax Account Number	2200013217
Owner Name	HOLMES BRET MATTHEW SCHARF HOLMES AMELIA ERIN
Premise Address	11705 MAYFAIR FIELD DR
Tax Map	0060
Parcel	0036
Real Property Report	More info
StreetView	Click for StreetView
PermitReview	Permit Review Tool URL

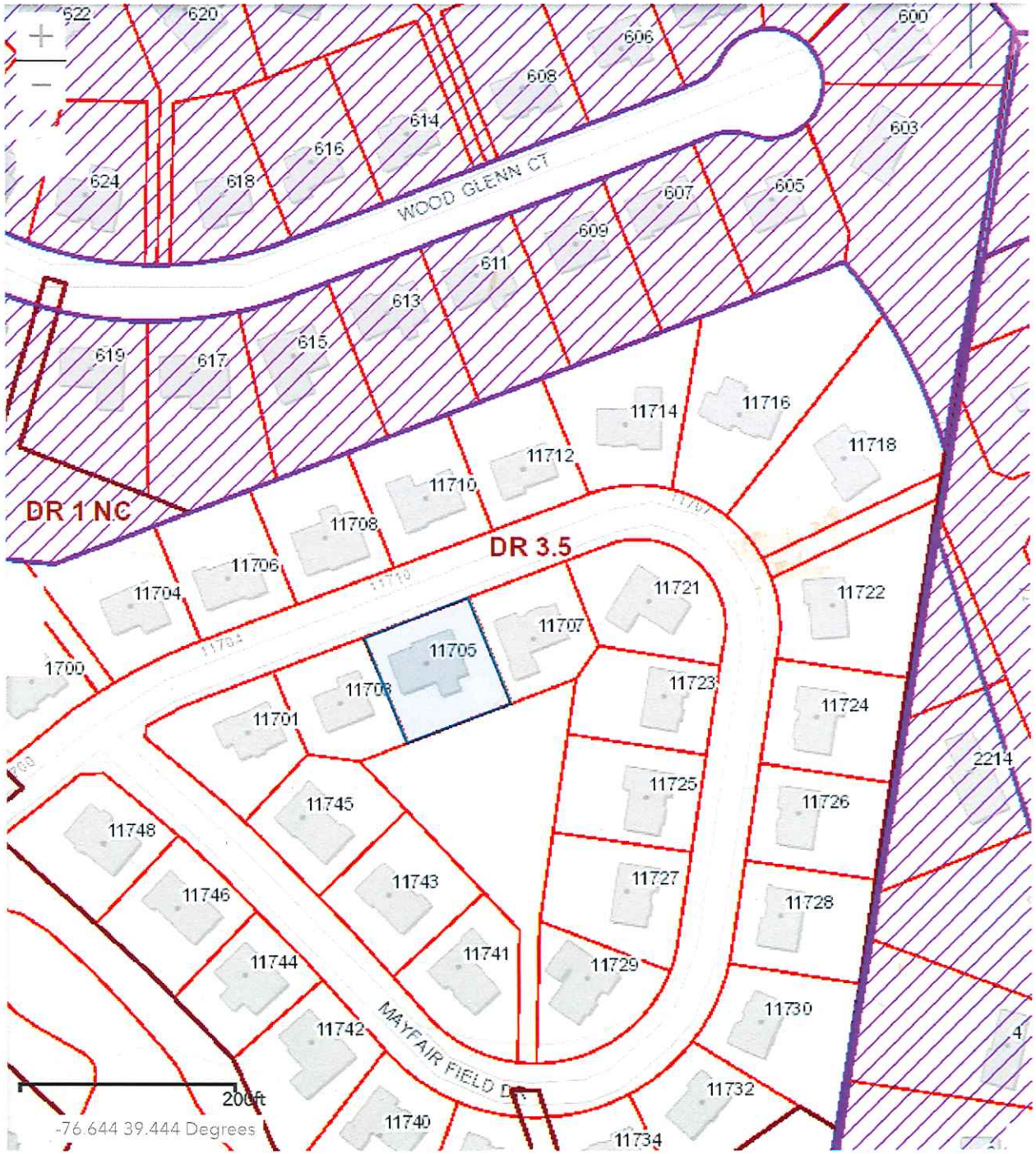
ZONING INFORMATION

Zoning	DR 3.5

SCHOOL DISTRICTS

Elementary School District	Pinewood ES
Middle School District	Ridgely MS
High School District	Dulaney HS

CIVIC - GOVERNMENT



Real Property Data Search ( )
Search Result for BALTIMORE COUNTY

View Map | View GroundRent Redemption | View GroundRent Registration

Special Tax Recapture: None

Account Identifier: **District -** 08 **Account Number -** 2200013217

Owner Information

Owner Name:	HOLMES BRET MATTHEW SCHARF HOLMES AMELIA ERIN	**Use:** **Principal Residence:**	RESIDENTIAL YES
Mailing Address:	11705 MAYFAIR FIELD DR LUTH-TIMONIUM MD 21093-7011	**Deed Reference:**	/36956/ 00366

Location & Structure Information

Premises Address:	11705 MAYFAIR FIELD DR LUTH-TIMONIUM 21093-	**Legal Description:**	.236 AC 11705 MAYFAIR FIELD DR S MAYFAIR

Map:	Grid:	Parcel:	Neighborhood:	Subdivision:	Section:	Block:	Lot:	Assessment Year:	Plat No:	Plat Ref:
0060	0003	0036	8070129.04	0000			79	2023	2	0064/ 0103

Town: None

Primary Structure Built	Above Grade Living Area	Finished Basement Area	Property Land Area	County Use
1994	3,328 SF	860 SF	10,280 SF	04

Stories	Basement	Type	Exterior	Quality	Full/Half Bath	Garage	Last Notice of Major Improvements
2	YES	STANDARD UNIT	FRAME	4	3 full/ 1 half	1 Attached	

Value Information

	Base Value	Value As of 01/01/2020	Phase-in Assessments As of 07/01/2022	As of 07/01/2023
Land:	230,200	230,200		
Improvements	447,100	447,100		
Total:	677,300	677,300	677,300	
Preferential Land:	0			

Transfer Information

Seller: DEMPSEY BRIAN G	**Date:** 12/08/2015	**Price:** $735,000
Type: NON-ARMS LENGTH OTHER	**Deed1:** /36956/ 00366	**Deed2:**
Seller: MARK BUILDING DEVELOPMENT CO INC	**Date:** 03/10/1994	**Price:** $283,850
Type: ARMS LENGTH IMPROVED	**Deed1:** /10396/ 00301	**Deed2:**
Seller: MAYFAIR LAND LIMITED PARTNERSHIP	**Date:** 01/06/1994	**Price:** $1
Type: NON-ARMS LENGTH OTHER	**Deed1:** /10263/ 00580	**Deed2:**

Exemption Information

Partial Exempt Assessments:	Class	07/01/2022	07/01/2023
County:	000	0.00	
State:	000	0.00	
Municipal:	000	0.00	0.00

Special Tax Recapture: None

Homestead Application Information

Homestead Application Status: Approved 11/27/2018

Homeowners' Tax Credit Application Information

Homeowners' Tax Credit Application Status: No Application **Date:**

BALTIMORE COUNTY CIRCUIT COURT (Subdivision Plats, BA) Plat Book SM 64, pp. 102-103, MSA_S1236_9472. Date available 1992/08/27. Printed 10/24/2022.

COORDINATE TABLE

NO.	NORTH	WEST	NO.	NORTH	WEST
1	52089.86	10880.25	45	52783.22	10847.41
3	52628.93	10350.57	46	52541.21	10722.89
13	52846.69	10204.79	46	52487.34	10823.74
35	52912.43	10204.35	46A	52436.99	10957.45
			47	52448.10	10940.17
4	53028.20	10834.55	48	52803.58	10402.33
7	52897.47	10511.11	49	52801.88	10413.28
8	53118.05	10409.74	50	52728.84	10811.08
9	53412.60	10379.82	50A	52785.28	10817.04
10	53080.41	10822.05	51	52749.83	10529.55
11	53030.75	10779.66	52	52739.63	10519.20
12	52876.18	10189.70	53	52693.78	10399.52
14	52734.01	10302.28	54	52879.47	10381.78
15	52582.28	10138.31	55	52897.82	10235.58
16	52581.93	10145.88	15	52848.69	10204.19
17	52536.90	10138.05	56	52828.43	10345.31
18	52516.85	10106.87	57	52293.02	10428.48
19	52508.43	10091.07	58	52271.07	10433.12
20	52500.08	10083.40	59	52253.84	10427.57
21	52491.94	10078.98	60	52230.18	10393.78
22	52413.15	10011.41	61	52205.58	10303.75
23	52384.91	9898.80	62	52210.85	10233.98
24	52336.49	9820.14	63	52234.18	10198.92
25	52240.41	9714.14	64	52238.33	10151.17
26	52081.74	9732.12	65	52251.55	10138.29
26	52081.22	10812.40	65A	52245.01	10090.28
27	52149.28	10858.05	66	52197.43	10105.82
2	52209.87	10702.38	67	52185.20	10125.91
5	52515.38	10891.82	68	52181.01	10133.07
4	52815.47	11045.43	69	52180.78	10230.53
34	52145.51	10838.38	70	52155.88	10300.10
33	52209.28	10542.23	71	52189.10	10422.30
32	52301.85	10475.07	72	52208.93	10450.86
31	52370.31	10459.12	73	52208.35	10470.82
30	52388.64	10470.99	74	52105.47	10808.19
29	52418.37	10632.78	74	52161.56	10514.64
40	52518.34	10787.40			
41	52823.23	10924.21			
41A	52846.10	10878.73			
42	52811.80	10843.37			

CURVE DATA

Name	Delta	Radius	Length	Bearing	Chord	Tangent
C1	042°48'15"	180.00'	119.58'	N 35°05'42" E	116.81'	62.74'
C2	052°22'10"	190.00'	173.66'	N 53°24'10" E	167.68'	93.43'
C3	250°31'44"	50.00'	218.63'			
C4	070°51'44"	25.00'	30.91'	S 08°09'47" W	28.97'	17.88'
C5	052°22'10"	140.00'	127.98'	S 53°24'10" E	123.54'	68.84'
C6	028°55'58"	450.00'	227.24'	N 81°35'36" E	224.83'	116.10'
C7	057°51'04"	50.00'	214.13'			
C8	075°51'04"	25.00'	33.10'	S 19°40'38" E	30.73'	18.48'
C9	028°55'58"	400.00'	202.01'	S 81°35'36" W	199.86'	103.01'
C10	032°08'14"	480.00'	257.75'	N 35°05'17" E	254.39'	132.35'
C11	037°27'19"	410.00'	268.09'	S 32°24'44" W	263.28'	139.09'
C12	008°15'33"	210.00'	22.94'	S 16°48'51" W	22.93'	11.46'
C13	038°58'48"	140.00'	95.18'	N 7°42'18" E	93.34'	49.50'
C14	026°09'50"	175.00'	79.91'	N 72°44'24" E	79.22'	40.67'
C15	048°11'23"	25.00'	21.03'	N 35°33'47" E	20.41'	11.18'
C16	278°22'46"	50.00'	241.19'			
C17	048°11'23"	25.00'	21.03'	S 83°45'10" W	20.41'	11.18'
C18	026°09'50"	225.00'	102.75'	S 72°44'24" W	101.86'	52.28'
C19	038°58'48"	190.00'	129.15'	N 7°42'18" W	126.68'	67.18'
C20	008°15'33"	210.00'	30.28'	N 16°48'51" E	30.25'	15.54'
C21	008°25'38"	2470.00'	363.27'	N 31°23'51" W	362.94'	181.96'
C22	082°30'53"	20.00'	28.80'	S 16°48'04" E	26.38'	17.54'
C23	145°00'13"	225.00'	569.50'	S 67°48'36" E	441.06'	237.94'
C24	000°58'10"	1020.00'	11.32'	N 26°58'39" W	11.32'	5.66'
C25	021°12'30"	340.00'	125.86'	S 40°52'09" W	125.13'	63.74'

LEGEND

- PROPERTY LINE SHOWN THUS
- ROAD RIGHT-OF-WAY SHOWN THUS
- LOT LINES SHOWN THUS
- BUILDING SETBACK SHOWN THUS
- EASEMENTS SHOWN THUS
- LOT NUMBERS SHOWN THUS (45)
- BLOCK LETTERS SHOWN THUS (B)
- HOUSE NUMBERS SHOWN THUS #10
- COORDINATES SHOWN THUS (51)
- CURVE REFERENCE SHOWN THUS C-43
- PLAT OUTLINE SHOWN THUS
- BUILDING RESTRICTION LINE FROM FOREST BUFFER SHOWN THUS
- H.O.A. S.W.M. LIMITS SHOWN THUS
- FLOOD PLAIN RESERVATION SHOWN THUS FP FP FP
- H.O.A.- HOMEOWNERS ASSOCIATION
- B.R.L.- BUILDING RESTRICTION LINE

VICINITY MAP

SCALE: 1" = 500'

TABULATION (OVERALL)

EX. ZONING	D.R. 3.5
TOTAL AREA OF TRACT	(34.357 Ac.± GROSS) (33.800 NET)
NO. UNITS PERMITTED	120 (3.5 × 34.351)
NO. UNITS PROPOSED	80
NO. PARKING SPACES REQUIRED	160 (80 × 2)
NO. PARKING SPACES PROVIDED	160
OPEN SPACE REQUIRED	1.194 Ac.± (650 S.F./UNIT)
LOCAL OPEN SPACE PROPOSED	1.989 Ac.±
H.O.A. OPEN SPACE PROPOSED	1.205 Ac.±
TOTAL OPEN SPACE PROPOSED	3.194 Ac.±

TABULATION (THIS PLAT ONLY)

EX. ZONING	D.R. 3.5
AREA OF PLAT	(18.784 Ac.± GROSS) (17.724 Ac.± NET)
NO. UNITS PERMITTED	64.00 (3.5 × 18.284)
NO. UNITS PROPOSED	45
NO. PARKING SPACES REQUIRED	90 (45 × 2)
NO. PARKING SPACES PROVIDED	90
OPEN SPACE REQUIRED	0.672 Ac.± (650 S.F./UNIT)
OPEN SPACE PROPOSED (H.O.A.)	0.618 Ac.±

GENERAL NOTES

1. THIS PLAT MAY EXPIRE IN ACCORDANCE WITH THE PROVISIONS OF THE BALTIMORE COUNTY CODE, SECTION 26-216.
2. THE RECORDING OF THIS PLAT DOES NOT GUARANTEE THE INSTALLATION OF STREETS OR UTILITIES BY BALTIMORE COUNTY.
3. THE INFORMATION SHOWN HEREON MAY BE SUPERSEDED BY A SUBSEQUENT OR AMENDED PLAT.
4. ADDITIONAL INFORMATION CONCERNING THIS PLAT MAY BE OBTAINED FROM THE BALTIMORE COUNTY OFFICE OF PLANNING AND ZONING AND THE DEPARTMENT OF PUBLIC WORKS.
5. THE RECORDING OF THIS PLAT DOES NOT CONSTITUTE OR IMPLY ACCEPTANCE BY THE COUNTY OF ANY STREET, EASEMENT, PARK, OPEN SPACE OR OTHER PUBLIC AREA SHOWN ON THIS PLAT.
6. THE OWNER/DEVELOPER WILL COMPLY WITH THE BEST MANAGEMENT PRACTICES ADOPTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT.
7. THE PLAN FOR THE PROPERTY SHOWN ON THIS PLAT WAS APPROVED ON AUG. 1, 1991.
8. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST BUFFER EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT.
9. EXCEPT AS OTHERWISE INDICATED, ALL BUILDING RESTRICTION LINES SHOWN HEREON HAVE BEEN PLACED AS A RESULT OF AN INTERPRETATION ONLY OF CURRENTLY APPLICABLE REGULATIONS AND POLICIES OF THE BALTIMORE COUNTY OFFICE OF PLANNING AND ZONING. EXCEPTIONS TO THESE RESTRICTIONS MAY APPLY, INCLUDING THE MINIMUM SETBACK OF 22 FEET TO BE HELD FROM THE STREET RIGHT-OF-WAY TO THE GARAGE OR CARPORT ENTERED DIRECTLY FROM THE STREET.
10. THE AREA DESIGNATED AS A FLOODPLAIN INCLUDES THE AREA INUNDATED BY THE 100-YEAR FREQUENCY STORM AND A MINIMUM OF 1 FOOT VERTICAL FREEBOARD. THE ELEVATIONS SHOWN ON THE FLOODPLAIN SECTIONS ARE THE 100-YEAR DESIGN FREQUENCY SURFACE ELEVATIONS.
11. TRASH COLLECTION, SNOW REMOVAL, AND ROAD MAINTENANCE ARE TO PROVIDED TO THE JUNCTION OF THE PANHANDLE AND STREETS RIGHT-OF-WAY.
12. THIS SITE IS LOCATED IN THE JONES FALLS SEWERSHED.
13. THE APPROVAL OF THIS PLAT IS BASED UPON A REASONABLE EXPECTATION THAT THE WATER AND SEWER SERVICE WHICH IS PLANNED FOR THE DEVELOPMENT WILL BE AVAILABLE WHEN NEEDED. HOWEVER, BUILDING PERMITS MAY NOT BE ISSUED UNTIL THE PLANNED WATER AND SEWER FACILITIES ARE COMPLETED AND DETERMINED TO BE ADEQUATE TO SERVE THE PROPOSED DEVELOPMENT.
14. ANY FOREST BUFFER SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF BALTIMORE COUNTY AND WHICH RESTRICT DISTURBANCE AND USE OF THESE AREAS.
15. DEED REFERENCE: 8371/027 & 8371/030
16. PROPERTY NUMBER: 22-00001082, 22-00001083 & 22-00001084

GENERAL NOTES (CONT.)

17. PRIOR TO THE ISSUANCE OF ANY BUILDING PERMITS, A FENCE SHALL BE CONSTRUCTED ALONG THE OUTER EDGE OF THE FOREST BUFFER RESERVATION. THE FENCE SHALL BE CONSTRUCTED OF SPLIT RAIL, CHAIN LINK, OR SOLID BOARD, AT THE DISCRETION OF THE DEVELOPER.
18. ON JULY 29, 1991, A VARIANCE WAS GRANTED BY BALTIMORE COUNTY'S DEPARTMENT OF ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT FROM REGULATIONS FOR THE PROTECTION OF WATER QUALITY, STREAMS, WETLANDS, AND FLOODPLAINS WHICH BECAME EFFECTIVE JANUARY 1, 1991. THE FOREST BUFFER RESERVATION SHOWN HEREON IS REFLECTIVE OF THE FACT THAT THIS VARIANCE WAS GRANTED.
19. 50' LANDSCAPE EASEMENT ALONG JENNIFER ROAD IS HEREBY RESERVED UNTO THE OWNERS, ITS PERSONAL REPRESENTATIVES AND ASSIGNS WHO WILL CONVEY SAID EASEMENT TO THE HOMEOWNERS ASSOCIATION.

OWNER/DEVELOPER

MAYFAIR LAND LIMITED PARTNERSHIP
1235 MT. ROYAL AVENUE
BALTIMORE, MARYLAND 21217
(410) 727-4586

NOTE: HIGHWAYS AND HIGHWAY WIDENINGS, SLOPE EASEMENTS, DRAINAGE AND UTILITY EASEMENTS, ACCESS EASEMENTS, FOREST BUFFER AREAS IN FEE OR EASEMENT, AND STORMWATER MANAGEMENT AREAS, NO MATTER HOW ENTITLED, SHOWN HEREON, ARE RESERVED UNTO THE OWNER AND, EXCEPT FOR THOSE INDICATED AS PRIVATE, ARE HEREBY OFFERED FOR DEDICATION TO BALTIMORE COUNTY, MARYLAND. THE OWNER, HIS PERSONAL REPRESENTATIVES AND ASSIGNS WILL CONVEY SAID AREAS BY DEED TO BALTIMORE COUNTY, MARYLAND, AT NO COST.

REASON FOR AMENDMENT:
THIS PLAT IS AN AMENDMENT OF PLATS ENTITLED "FIRST AMENDED PLAT TWO OF MAYFAIR (FORMERLY FRENCH PROPERTY)" DATED MAY 5, 1990, AND "FIRST AMENDED PLAT ONE OF MAYFAIR (FORMERLY FRENCH PROPERTY)" DATED MAY 5, 1990, AND RECORDED AMONG THE PLAT RECORDS OF BALTIMORE COUNTY, MARYLAND, IN PLAT BOOK S.M. 62, FOLIO 71 & 72. THE PLATS ARE BEING AMENDED TO REALIGN ROADS, TO REVISE FROM TOWNHOUSES TO SINGLE FAMILY LOTS AND TO CHANGE SOUTHERNMOST TRACT OUTLINE OF PLAT ONE.

NOTE: COORDINATES AND BEARINGS SHOWN ON THIS PLAT ARE REFERRED TO THE SYSTEM OF COORDINATES ESTABLISHED IN THE BALTIMORE COUNTY METROPOLITAN DISTRICT AND ARE BASED ON THE FOLLOWING TRAVERSE STATIONS.

HUB NO. 16435 N 52345.36 W 10842.09
HUB NO. 16436 N 52821.39 W 11102.57

NOTE: STREETS AND/OR ROADS SHOWN HEREON AND THE MENTION THEREOF IN DEEDS ARE FOR THE PURPOSE OF DESCRIPTION ONLY, AND THE SAME ARE NOT INTENDED TO BE DEDICATED TO PUBLIC USE; THE FEE SIMPLE TITLE TO THE BEDS THEREOF IS EXPRESSLY RESERVED IN THE GRANTORS OF THE DEED TO WHICH THIS PLAT IS ATTACHED, THEIR HEIRS AND ASSIGNS.

OWNER'S CERTIFICATE

THE UNDERSIGNED, OWNER OF THE LAND SHOWN ON THIS PLAT, HEREBY CERTIFIES THAT, TO THE BEST OF IT'S KNOWLEDGE, THE REQUIREMENT OF SUBSECTION (C) OF SECTION 3-108 OF THE REAL PROPERTY ARTICLE OF THE ANNOTATED CODE OF MARYLAND, HAS BEEN COMPLIED WITH, INSOFAR AS SAME CONCERNS THE MAKING OF THE PLAT AND THE SETTING OF THE MARKERS.

Richard Davison 5/8/92
Partner — DATE

Richard DAVISON

SURVEYOR'S CERTIFICATE

THE UNDERSIGNED, A REGISTERED LAND SURVEYOR OF THE STATE OF MARYLAND, DOES HEREBY CERTIFY THAT HE IS THE SURVEYOR WHO PREPARED THIS PLAT AND THAT THE LAND SHOWN ON THIS PLAT HAS BEEN LAID OUT, AND THE PLAT THEREOF HAS BEEN PREPARED, IN COMPLIANCE WITH SUBSECTION (C) OF SECTION 3-108 OF THE REAL PROPERTY ARTICLE OF THE ANNOTATED CODE OF MARYLAND, PARTICULARLY INSOFAR AS SAME CONCERNS THE MAKING OF THE PLAT AND THE SETTING OF THE MARKERS.

Walter Francis Evans 4/30/92
REG. NO. 10883 — DATE

APPROVED BY BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT
James Dieter DCO 8-21-92
DIRECTOR — DATE

APPROVED FOR THE DEPARTMENT OF PUBLIC WORKS AND THE OFFICE OF PLANNING AND ZONING
7/22/92
DIRECTOR OF PUBLIC WORKS — DATE

GEORGE WILLIAM STEPHENS, JR. AND ASSOCIATES, INC.
CIVIL ENGINEERS & LAND SURVEYORS
SUITE 100, 606 WASHINGTON AVENUE, TOWSON, MARYLAND 21204
BEL AIR, MARYLAND 21014

P.W.A. COMPLETED: 8/27/92 (NEW OWNERSHIP)
FINAL PLAT CHECKED: PLANNING 8/14/92; ENGINEERING RWB 7/15/92
HOUSE NOS. 7-16-92
COMPUTED BY: R.W.M. CHECKED BY: R.B.B./W.F.E.
DRAWN BY: R.A.M. W.O. NO. 6658

SECOND AMENDMENT OF MAYFAIR
PLAT 1 OF 2

BALTIMORE CO., MD. SCALE: 1" = 50'
ELECTION DIST. # 8, C-5 APRIL 29, 1992

SHEET 1 OF 2

C. PLAT $5.00
0 #
SM CI CRK $5.00
WETLANDS COOL ROAD $1,350.00
08/27/92

Filed for record
S.M. 64 FOLIO 102
Date AUG 27 1992
Test
Clerk

MSA SSU 1236 9472-1 64-102

COORDINATE TABLE

NO.	NORTH	WEST
23	52240.41	9714.14
24	52338.49	9820.14
25	52364.94	9899.80
21	52491.84	10078.88
22	52413.15	10011.41
20	52300.08	10083.49
19	52306.43	10091.07
18	52516.85	10108.67
17	52536.40	10138.05
16	52581.85	10145.88
15	52582.28	10136.31
14	52734.01	10302.28
13	52846.89	10294.18
12	52876.45	10189.70
11	53000.25	10279.46
10	53060.41	10372.06
9	53112.42	10389.62
100	53101.39	10157.72
101	53377.82	9429.12
102	53257.78	9358.30
103	53211.80	9337.88
104	52385.80	9473.13
105	52365.48	9583.92
106	52389.67	9698.57
107	52971.72	10131.81
108	53024.47	10035.95
109	53169.34	9838.71
110	53032.38	9489.03
111	52938.68	9531.38
112	52848.82	9843.40
113	52923.02	9910.42
114	52908.99	10110.88
115	52908.81	10129.57
116	52957.92	10080.54
117	53116.50	9680.29
118	53127.15	10070.81
119	53028.54	9540.33
120	52736.24	9585.17
121	52889.42	9812.88
122	52756.58	9873.31
123	52934.92	10082.55
124	52912.45	10214.76

CURVE DATA

Name	Delta	Radius	Length	Bearing	Chord	Tangent
C11	018°05'06"	342.00'	107.94'	N 89°10'54" E	107.49'	54.43'
C12	120°07'42"	125.00'	262.08'	S 50°42'45" E	216.85'	217.07'
C13	126°33'48"	177.00'	397.18'	S 73°38'00" W	318.93'	387.48'
C14	010°09'21"	1545.00'	273.88'	N 47°08'47" W	273.52'	137.28'
C38	008°57'11"	297.00'	46.93'	N 64°54'49" E	46.89'	23.01'
C37	120°07'42"	81.87'	171.57'	S 50°42'45" E	142.07'	142.38'
C36	126°33'48"	131.80'	285.29'	S 73°38'00" W	237.13'	273.28'
C35	009°30'30"	1585.00'	260.07'	N 46°46'22" W	259.78'	130.32'
C44	018°47'31"	430.00'	141.03'	S 31°14'38" E	140.40'	71.15'
C43	145°00'33"	75.00'	189.82'	S 47°48'38" E	143.08'	237.94'
C41	082°30'57"	20.00'	28.80'	S 18°49'04" E	26.38'	17.54'
C-45	021°12'30"	410.00'	151.76'	N 40°32'09" E	150.90'	76.76'

FLOOD PLAIN RESERVATION DATA

No.	BEARINGS	DIST.	NO.	BEARINGS	DIST.
FP 1	N 69° 51' 53" W	29.41'	FP 31	S 52° 22' 15" E	25.70'
FP 2	N 69° 55' 46" W	28.46'	FP 32	S 43° 37' 05" E	61.16'
FP 3	N 67° 56' 31" W	20.01'	FP 33	S 43° 00' 02" E	24.15'
FP 4	N 76° 28' 32" W	73.00'	FP 34	S 39° 15' 39" E	44.49'
FP 5	N 89° 01' 41" W	26.50'	FP 35	S 40° 45' 16" E	29.14'
FP 6	S 85° 52' 36" W	26.89'	FP 36	S 25° 08' 15" E	18.24'
FP 7	N 89° 39' 56" W	35.01'	FP 37	S 24° 09' 08" E	19.34'
FP 8	N 83° 11' 50" W	36.50'	FP 38	S 34° 04' 12" E	24.40'
FP 9	N 89° 21' 23" W	33.50'	FP 39	S 39° 26' 20" E	20.60'
FP 10	N 61° 08' 22" W	20.62'	FP 40	S 33° 27' 31" E	20.60'
FP 11	N 66° 04' 38" W	15.00'	FP 41	S 48° 53' 38" E	47.50'
FP 12	N 50° 24' 48" W	17.15'	FP 42	S 55° 12' 02" E	20.60'
FP 13	N 48° 34' 28" W	16.74'	FP 43	S 63° 51' 27" E	29.46'
FP 14	N 49° 11' 04" W	39.86'	FP 44	S 69° 53' 05" E	54.49'
FP 15	N 45° 53' 05" W	41.41'	FP 45	S 71° 39' 48" E	27.10'
FP 16	N 50° 22' 25" W	21.98'	FP 46	S 58° 57' 20" E	29.25'
FP 17	N 56° 14' 25" W	15.76'	FP 47	S 62° 51' 25" E	28.57'
FP 18	N 56° 04' 32" W	34.97'	FP 48	S 66° 01' 58" E	21.71'
FP 19	R = 20.00'	28.80'	FP 49	S 63° 46' 02" E	26.45'
FP 20	N 28° 20' 28" E	29.87'	FP 50	S 64° 16' 15" E	19.66'
FP 21	N 72° 21' 06" E	28.11'	FP 51	S 73° 50' 59" E	27.58'
FP 22	R = 23.00'	33.78'	FP 52	S 78° 41' 47" E	22.47'
FP 23	N 89° 47' 04" W	42.50'	FP 53	S 89° 46' 11" E	22.71'
FP 24	N 51° 00' 24" W	21.34'	FP 54	S 81° 09' 31" E	59.86'
FP 25	N 44° 07' 04" W	28.40'			
FP 26	N 36° 16' 29" W	21.69'			
FP 27	N 12° 19' 47" W	22.59'			
FP 28	N 80° 33' 51" E	18.61'			
FP 29	N 45° 20' 40" E	27.98'			
FP 30	S 77° 44' 07" E	20.66'			

LEGEND

PROPERTY LINE SHOWN THUS
ROAD RIGHT-OF-WAY SHOWN THUS
LOT LINES SHOWN THUS
BUILDING SETBACK SHOWN THUS
EASEMENTS SHOWN THUS
LOT NUMBERS SHOWN THUS (67)
BLOCK LETTERS SHOWN THUS (B)
HOUSE NUMBERS SHOWN THUS #10
COORDINATES SHOWN THUS (15)
CURVE REFERENCE SHOWN THUS C-14
PLAT OUTLINE SHOWN THUS
FLOOD PLAIN SECTION SHOWN THUS (30) (30)
BUILDING RESTRICTION LINE FROM FOREST BUFFER SHOWN THUS
FLOOD PLAIN RESERVATION SHOWN THUS FP FP

H.O.A. - HOMEOWNERS ASSOCIATION
B.R.L. - BUILDING RESTRICTION LINE

GENERAL NOTES

1. THIS PLAT MAY EXPIRE IN ACCORDANCE WITH THE PROVISIONS OF THE BALTIMORE COUNTY CODE, SECTION 26-216.
2. THE RECORDING OF THIS PLAT DOES NOT GUARANTEE THE INSTALLATION OF STREETS OR UTILITIES BY BALTIMORE COUNTY.
3. THE INFORMATION SHOWN HEREON MAY BE SUPERSEDED BY A SUBSEQUENT OR AMENDED PLAT.
4. ADDITIONAL INFORMATION CONCERNING THIS PLAT MAY BE OBTAINED FROM THE BALTIMORE COUNTY OFFICE OF PLANNING AND ZONING AND THE DEPARTMENT OF PUBLIC WORKS.
5. THE RECORDING OF THIS PLAT DOES NOT CONSTITUTE OR IMPLY ACCEPTANCE BY THE COUNTY OF ANY STREET, EASEMENT, PARK, OPEN SPACE OR OTHER PUBLIC AREA SHOWN ON THE PLAT.
6. THE OWNER/DEVELOPER WILL COMPLY WITH THE BEST MANAGEMENT PRACTICES ADOPTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT.
7. THE PLAN FOR THE PROPERTY SHOWN ON THIS PLAT WAS APPROVED ON AUG. 1, 1991.
8. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST BUFFER EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT.
9. EXCEPT AS OTHERWISE INDICATED, ALL BUILDING RESTRICTION LINES SHOWN HEREON HAVE BEEN PLACED AS A RESULT OF AN INTERPRETATION ONLY OF CURRENTLY APPLICABLE REGULATIONS AND POLICIES OF THE BALTIMORE COUNTY OFFICE OF PLANNING AND ZONING. EXCEPTIONS TO THESE RESTRICTIONS MAY APPLY, INCLUDING THE MINIMUM SETBACK OF 22 FEET TO BE HELD FROM THE STREET RIGHT-OF-WAY TO THE GARAGE OR CARPORT ENTERED DIRECTLY FROM THE STREET.
10. THE AREA DESIGNATED AS A FLOODPLAIN INCLUDES THE AREA INUNDATED BY THE 100-YEAR FREQUENCY STORM AND A MINIMUM OF 1 FOOT VERTICAL FREEBOARD. THE ELEVATIONS SHOWN ON THE FLOODPLAIN SECTIONS ARE THE 100-YEAR DESIGN FREQUENCY SURFACE ELEVATIONS.
11. TRASH COLLECTION, SNOW REMOVAL, AND ROAD MAINTENANCE ARE TO BE PROVIDED TO THE JUNCTION OF THE PANHANDLE AND STREETS RIGHT-OF-WAY.
12. THIS SITE IS LOCATED IN THE JONES FALLS SEWERSHED.
13. THE APPROVAL OF THIS PLAT IS BASED UPON A REASONABLE EXPECTATION THAT THE WATER AND SEWER SERVICE WHICH IS PLANNED FOR THE DEVELOPMENT WILL BE AVAILABLE WHEN NEEDED. HOWEVER, BUILDING PERMITS MAY NOT BE ISSUED UNTIL THE PLANNED WATER AND SEWAGE FACILITIES ARE COMPLETED AND DETERMINED TO BE ADEQUATE TO SERVE THE PROPOSED DEVELOPMENT.
14. ANY FOREST BUFFER SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF BALTIMORE COUNTY AND WHICH RESTRICT DISTURBANCE AND USE OF THESE AREAS.
15. DEED REFERENCE 8871/027 & 8871/080
16. PROPERTY NUMBER 22-00001092, 22-00001093 & 22-00001094
17. PRIOR TO THE ISSUANCE OF ANY BUILDING PERMITS, A FENCE SHALL BE CONSTRUCTED ALONG THE OUTER EDGE OF THE FOREST BUFFER RESERVATION. THE FENCE SHALL BE CONSTRUCTED OF SPLIT RAIL, CHAIN LINK, OR SOLID BOARD, AT THE DISCRETION OF THE DEVELOPER.
18. ON JULY 29, 1991, A VARIANCE WAS GRANTED BY BALTIMORE COUNTY'S DEPARTMENT OF ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT, FIRM REGULATIONS FOR THE PROTECTION OF WATER QUALITY, STREAMS, WETLANDS, AND FLOODPLAINS WHICH BECAME EFFECTIVE JANUARY 1, 1991. THE FOREST BUFFER RESERVATION SHOWN HEREON IS REFLECTIVE OF THE FACT THAT THIS VARIANCE WAS GRANTED.

OVERALL TABULATION
SEE PLAT 1 OF 2

TABULATION
(THIS PLAT ONLY)

EX. ZONING	DR 3.5
AREA OF PLAT	16.0716 Ac.±
NO. UNITS PERMITTED	56 (3.5 × 16.0716)
NO. UNITS PROPOSED	35
NO. PARKING SPACES REQUIRED	70 (35×2)
NO. PARKING SPACES PROVIDED	70
OPEN SPACE REQUIRED	0.522 Ac.± (650 S.F./UNIT)
LOCAL OPEN SPACE PROPOSED	1.989 Ac.±
H.O.A. OPEN SPACE PROPOSED	0.587 Ac.±
TOTAL OPEN SPACE PROPOSED	2.576 Ac.±

Filed for record
S.M. 64 FOLIO 103
Date AUG 27 1992
Test:
Clerk

THE OAKS AT FIVE FARMS S.M. 62/109

PEBBLE CREEK S.M. 63/55

H.O.A. OPEN SPACE

LOCAL OPEN SPACE 0.486 Ac.±

FOREST BUFFER RESERVATION

STORM WATER MANAGEMENT RESERVATION 0.578 Ac.±

H.O.A. OPEN SPACE 0.587 Ac.±

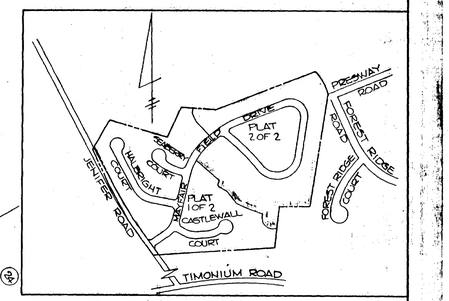
VALLEYWOOD SECTIONS 4A & 4B OTG 82/93

EX. PARCEL 'B'

EX. UTILITY & DRAINAGE RESERVATION

FOREST RIDGE ROAD (EX. 60' R/W) (EX. MAC PAN)

VICINITY MAP
SCALE: 1" = 500'



OWNER / DEVELOPER
MAYFAIR LAND LIMITED PARTNERSHIP
1233 M.T. ROYAL AVENUE
BALTIMORE, MARYLAND 21217
(410) 727-4886

SECOND AMENDMENT OF MAYFAIR
PLAT 2 OF 2

BALTIMORE CO., MD. — ELECTION DIST. # 8, C-3
SCALE: 1" = 50' — APRIL 29, 1992

SHEET 2 OF 2

C PLAT $5.00
0
$5.00
SM CLERK
#27819 0001 R02 T13:50
04/27/92

REASON FOR AMENDMENT:
THIS PLAT IS AN AMENDMENT OF PLATS ENTITLED "FIRST AMENDED PLAT TWO OF MAYFAIR (FORMERLY FRENCH PROPERTY)" AND FIRST AMENDED PLAT ONE OF MAYFAIR (FORMERLY FRENCH PROPERTY) DATED MAY 5, 1990, AND RECORDED AMONG THE PLAT RECORDS OF BALTIMORE COUNTY, MARYLAND, IN PLAT BOOK S.M. 62, FOLIO 71 & 72. THE PLATS ARE BEING AMENDED TO REALIGN ROADS AND TO REVISE FROM TOWNHOUSES TO SINGLE FAMILY LOTS.

NOTE:
HIGHWAYS AND HIGHWAY WIDENINGS, SLOPE EASEMENTS, DRAINAGE AND UTILITY EASEMENTS, ACCESS EASEMENTS, FOREST BUFFER AREAS IN FEE OR EASEMENT, AND STORMWATER MANAGEMENT AREAS, NO MATTER HOW ENTITLED, SHOWN HEREON, ARE RESERVED UNTO THE OWNER AND, EXCEPT FOR THOSE INDICATED AS PRIVATE, ARE HEREBY OFFERED FOR DEDICATION TO BALTIMORE COUNTY, MARYLAND. THE OWNER, HIS PERSONAL REPRESENTATIVES AND ASSIGNS WILL CONVEY SAID AREAS BY DEED TO BALTIMORE COUNTY, MARYLAND, AT NO COST.

NOTE:
COORDINATES AND BEARINGS SHOWN ON THIS PLAT ARE REFERRED TO THE SYSTEM OF COORDINATES ESTABLISHED IN THE BALTIMORE COUNTY METROPOLITAN DISTRICT AND ARE BASED ON THE FOLLOWING TRAVERSE STATIONS.

HUB NO. 16485 — N 52345.34, W 10842.09
HUB NO. 16486 — N 52821.39, W 11102.57

NOTE:
STREETS AND/OR ROADS SHOWN HEREON AND THE MENTION THEREOF IN DEEDS ARE FOR THE PURPOSE OF DESCRIPTION ONLY, AND THE SAME ARE NOT INTENDED TO BE DEDICATED TO PUBLIC USE; THE FEE SIMPLE TITLE TO THE BEDS THEREOF IS EXPRESSLY RESERVED IN THE GRANTORS OF THE DEED TO WHICH THIS PLAT IS ATTACHED, THEIR HEIRS AND ASSIGNS.

OWNER'S CERTIFICATE

THE UNDERSIGNED, OWNER OF THE LAND SHOWN ON THIS PLAT, HEREBY CERTIFIES THAT, TO THE BEST OF IT'S KNOWLEDGE, THE REQUIREMENT OF SUBSECTION (C) OF SECTION 3-108 OF THE REAL PROPERTY ARTICLE OF THE ANNOTATED CODE OF MARYLAND, HAS (ARE) COMPLIED WITH, INSOFAR AS SAME CONCERNS THE MAKING OF THE PLAT AND THE SETTING OF THE MARKERS.

Richard Davison — PARTNER — 5/5/92 DATE
Richard DAVISON

SURVEYOR'S CERTIFICATE

THE UNDERSIGNED, A REGISTERED LAND SURVEYOR OF THE STATE OF MARYLAND, DOES HEREBY CERTIFY THAT HE IS THE SURVEYOR WHO PREPARED THIS PLAT AND THAT THE LAND SHOWN ON THIS PLAT HAS BEEN LAID OUT, AND THE PLAT THEREOF HAS BEEN PREPARED, IN COMPLIANCE WITH SUBSECTION (C) OF SECTION 3-108 OF THE REAL PROPERTY ARTICLE OF THE ANNOTATED CODE OF MARYLAND, PARTICULARLY INSOFAR AS SAME CONCERNS THE MAKING OF THE PLAT AND THE SETTING OF THE MARKERS.

Walter Francis Eisner — REG. NO. 10889 — 4/30/92 DATE

STATE OF MARYLAND — WALTER FRANCIS EISNER — 10889 — REGISTERED PROFESSIONAL LAND SURVEYOR

APPROVED BY BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND RESOURCE MANAGEMENT
DIRECTOR — 7/1/92 DATE

APPROVED FOR THE DEPARTMENT OF PUBLIC WORKS AND THE OFFICE OF PLANNING AND ZONING
DIRECTOR OF PUBLIC WORKS — 7/24/92 DATE

GWS

GEORGE WILLIAM STEPHENS, JR. AND ASSOCIATES, INC.
CIVIL ENGINEERS & LAND SURVEYORS
SUITE 100, 606 BOSLEY AVENUE, TOWSON, MARYLAND 21204
BEL AIR, MARYLAND 21014

P.W.A. COMPLETED: 8/28/92 (Nau Ownership)
FINAL PLAT CHECKED: 8/24/92
PLANNING: 8/26/92
ENGINEERING: 8/27/92
HOUSE NOS.: 7/16/92
LAND ACQ.: 7/23/92
COMPUTED BY: R.W.M. — CHECKED BY: R.B.B./W.F.E.
DRAWN BY: B.L.H. — W.O. NO. 6656

MSA SSU 1236-9472-2 64-103

BALTIMORE COUNTY CIRCUIT COURT (Subdivision Plats, BA) Plat Book SM 64, pp. 102-103, MSA_S1236_9472. Date available 1992/08/27. Printed 10/24/2022.

P.C. Exh. 30 (2)
(Dev X 9(2))

Baltimore County - My Neighborhood

My Neighborhood

Select a Property from the Map

enter ADDRESS or 10-DIGIT TAX ACCOUNT

422 Five Farms Lane

Search

:

Property Report - 422 FIVE FARMS LN

422 FIVE FARMS LN

Tax Account Number	1800006725
Owner Name	SHAW BRUCE E SHAW KATHLEEN L
Premise Address	422 FIVE FARMS LN
Tax Map	0060
Parcel	0685
Real Property Report	More info
StreetView	Click for StreetView
PermitReview	Permit Review Tool URL

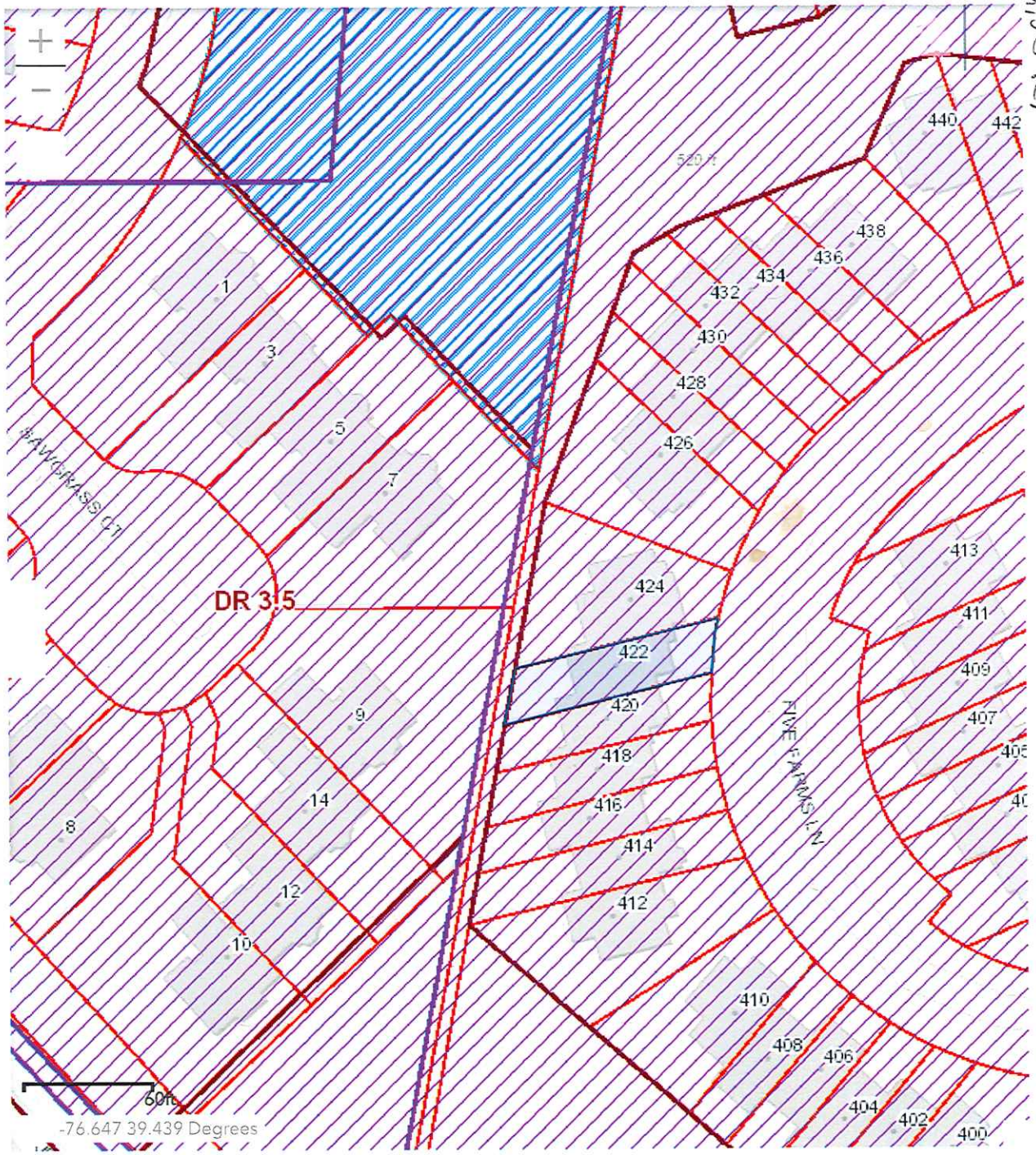
ZONING INFORMATION

Zoning	DR 5.5

SCHOOL DISTRICTS

Elementary School District	Pinewood ES
Middle School District	Ridgely MS
High School District	Dulaney HS

CIVIC - GOVERNMENT



Real Property Data Search ( )
Search Result for BALTIMORE COUNTY

View Map | View GroundRent Redemption | View GroundRent Registration

Special Tax Recapture: None

Account Identifier: **District -** 08 **Account Number -** 1800006725

Owner Information

Owner Name: SHAW BRUCE E
SHAW KATHLEEN L
Use: RESIDENTIAL
Principal Residence: YES
Mailing Address: 422 FIVE FARMS LN
LUTH-TIMONIUM MD 21093-2944
Deed Reference: /29218/ 00103

Location & Structure Information

Premises Address: 422 FIVE FARMS LN
LUTH-TIMONIUM 21093-2944
Legal Description: .049 AC
422 FIVE FARMS LN WS
VALLEYWOOD

Map:	Grid:	Parcel:	Neighborhood:	Subdivision:	Section:	Block:	Lot:	Assessment Year:	Plat No:
0060	0010	0685	8070127.04	0000	7		111	2023	Plat Ref: 0044/ 0133

Town: None

Primary Structure Built	Above Grade Living Area	Finished Basement Area	Property Land Area	County Use
1980	1,772 SF	380 SF	2,137 SF	04

Stories	Basement	Type	Exterior	Quality	Full/Half Bath	Garage	Last Notice of Major Improvements
2		CENTER UNIT	BRICK/	4	2 full/ 1 half		

Value Information

	Base Value	Value As of 01/01/2020	Phase-in Assessments As of 07/01/2022	As of 07/01/2023
Land:	100,000	100,000		
Improvements	209,700	209,700		
Total:	309,700	309,700	309,700	
Preferential Land:	0			

Transfer Information

Seller: SHAW BRUCE E	**Date:** 02/25/2010	**Price:** $0
Type: NON-ARMS LENGTH OTHER	**Deed1:** /29218/ 00103	**Deed2:**
Seller: STAPF FRED L C	**Date:** 05/30/2001	**Price:** $190,000
Type: ARMS LENGTH IMPROVED	**Deed1:** /15244/ 00088	**Deed2:**
Seller: STAPF FRED L C	**Date:** 04/08/1994	**Price:** $0
Type: NON-ARMS LENGTH OTHER	**Deed1:** /10453/ 00620	**Deed2:**

Exemption Information

Partial Exempt Assessments:	Class	07/01/2022	07/01/2023
County:	000	0.00	
State:	000	0.00	
Municipal:	000	0.00	0.00

Special Tax Recapture: None

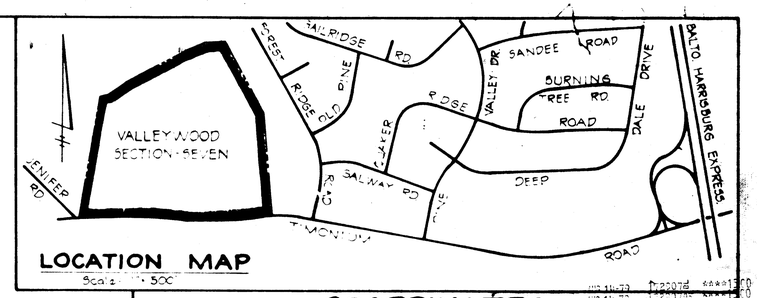
Homestead Application Information

Homestead Application Status: Approved 09/02/2008

Homeowners' Tax Credit Application Information

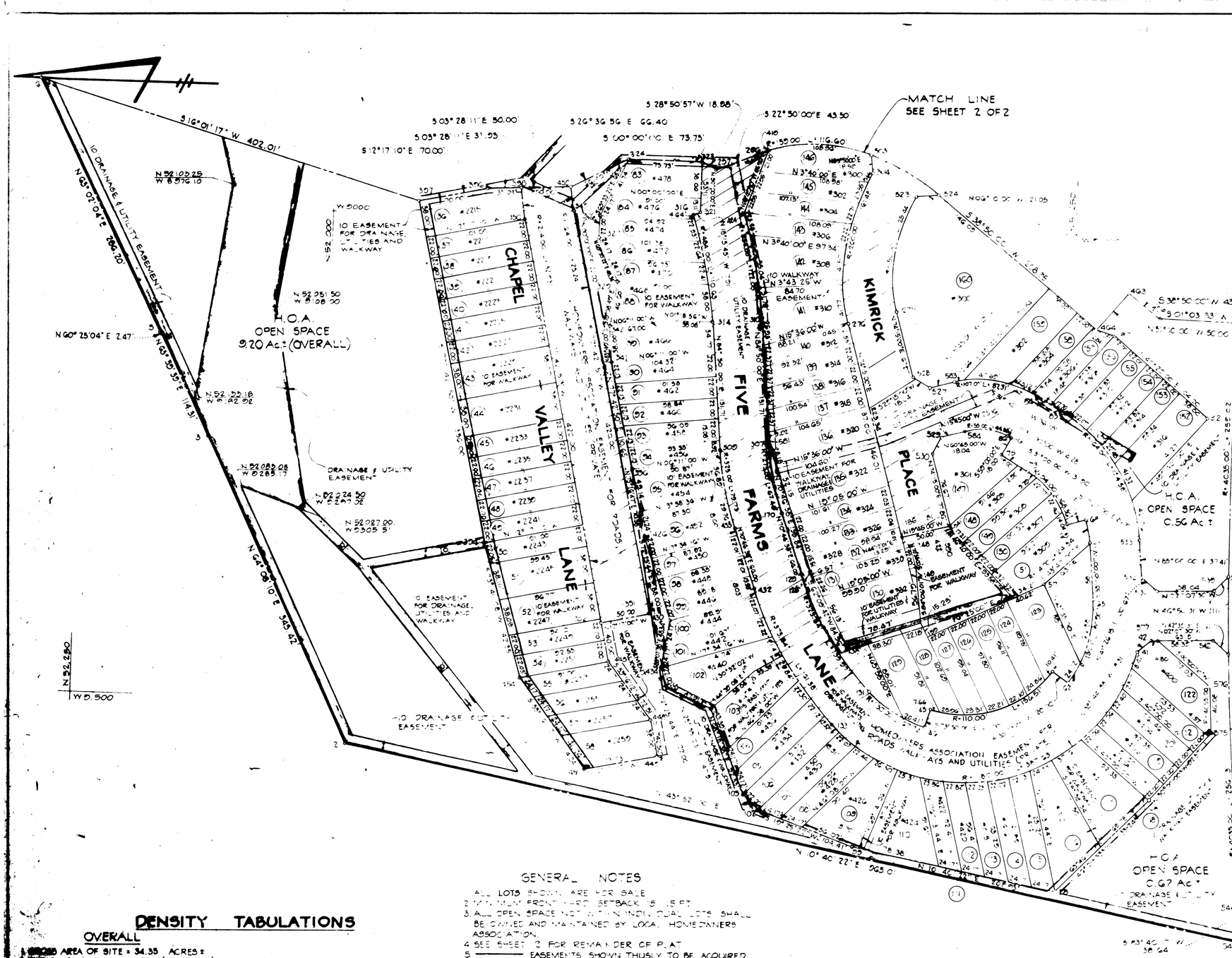
Homeowners' Tax Credit Application Status: No Application **Date:**

BALTIMORE COUNTY CIRCUIT COURT (Subdivision Plats, BA) Plat Book EHK, Jr. 44, p. 133, MSA_S1236_8063. Date available 1979/08/14. Printed 10/24/2022.



LOCATION MAP

Scale: 1" = 500'


MATCH LINE SEE SHEET 2 OF 2
CHAPEL VALLEY LANE
FIVE FARMS LANE
KIMRICK PLACE
TIMONIUM ROAD
H.O.A. OPEN SPACE 9.20 Ac.± (OVERALL)
H.O.A. OPEN SPACE 0.56 Ac.±
H.O.A. OPEN SPACE 0.67 Ac.±
10' DRAINAGE & UTILITY EASEMENT
10' EASEMENT FOR DRAINAGE, UTILITIES AND WALKWAY
10' EASEMENT FOR WALKWAY
10' WALKWAY EASEMENT
HOMEOWNERS ASSOCIATION EASEMENTS FOR WALKWAYS AND UTILITIES
R = 80.00'
R = 110.00'
R = 45.00'
N 16° 36' 00" W 104.60'
N 15° 05' 00" W 99.50'
N 3° 40' 00" E 300.00'
N 3° 43' 25" W 84.70'
N 0° 48' 00" W 18.04'
N 0° 48' 00" W 375.00'
N 0° 48' 00" W 252.00'
N 0° 48' 00" W 252.00'
N 0° 48' 00" W 252

PC Exh 30(3)
(Dex 9)
9(3)

Baltimore County - My Neighborhood

Premise Address	8615 CHELSEA BRIDGE WAY
Tax Map	0060
Parcel	0701
Real Property Report	More info
StreetView	Click for StreetView
PermitReview	Permit Review Tool URL

ZONING INFORMATION

Zoning	DR 3.5

SCHOOL DISTRICTS

Elementary School District	Pinewood ES
Middle School District	Ridgely MS
High School District	Dulaney HS

CIVIC - GOVERNMENT

Police Precinct	Cockeysville
Councilmanic District	3
Congressional District	7
Legislative District	11B
Election District	8
Voting Precinct	08-009
Highway Shop District	TEXAS

ECONOMIC

Commercial Revitalization District	No Feature Found
Enterprise Zone	No Feature Found
Economic Park Center Name	No Feature Found
Economic Park Center Type	No Feature Found



Real Property Data Search ( )
Search Result for BALTIMORE COUNTY

View Map | View GroundRent Redemption | View GroundRent Registration

Special Tax Recapture: None

Account Identifier: District - 08 Account Number - 1900010123

Owner Information

Owner Name: XU SHIYAO
Use: RESIDENTIAL
Principal Residence: YES
Mailing Address: 8615 CHELSEA BRIDGE WAY
LUTHERVILLE TIMONIUM MD 21093-3950
Deed Reference: /47019/ 00369

Location & Structure Information

Premises Address: 8615 CHELSEA BRIDGE WAY
LUTHERVILLE TIMONIUM 21093-3950
Legal Description: .509 AC
8615 CHELSEA BRIDGE WAY
PADONIA COMPLEX

Map	Grid	Parcel	Neighborhood	Subdivision	Section	Block	Lot	Assessment Year	Plat No	Plat Ref
0060	0016	0701	8070124.04	0000	3		160	2023		0051/ 0032

Town: None

Primary Structure Built	Above Grade Living Area	Finished Basement Area	Property Land Area	County Use
1984	1,540 SF	374 SF	2,217 SF	04

Stories	Basement	Type	Exterior	Quality	Full/Half Bath	Garage	Last Notice of Major Improvements
2		CENTER UNIT	SIDING/	4	2 full/ 2 half		

Value Information

	Base Value	Value As of 01/01/2020	Phase-in Assessments As of 07/01/2022	As of 07/01/2023
Land:	95,000	95,000		
Improvements	193,200	193,200		
Total:	288,200	288,200	288,200	
Preferential Land:	0			

Transfer Information

Seller: STURM PATRICIA H	**Date:** 06/15/2022	**Price:** $390,000
Type: ARMS LENGTH IMPROVED	**Deed1:** /47019/ 00369	**Deed2:**
Seller: BLANKENBILLER DANA L	**Date:** 08/15/2013	**Price:** $300,000
Type: NON-ARMS LENGTH OTHER	**Deed1:** /34085/ 00351	**Deed2:**
Seller: MCKEE BRUCE W	**Date:** 05/18/2005	**Price:** $276,000
Type: ARMS LENGTH IMPROVED	**Deed1:** /21885/ 00453	**Deed2:**

Exemption Information

Partial Exempt Assessments:	Class	07/01/2022	07/01/2023
County:	000	0.00	
State:	000	0.00	
Municipal:	000	0.00|	0.00|

Special Tax Recapture: None

Homestead Application Information

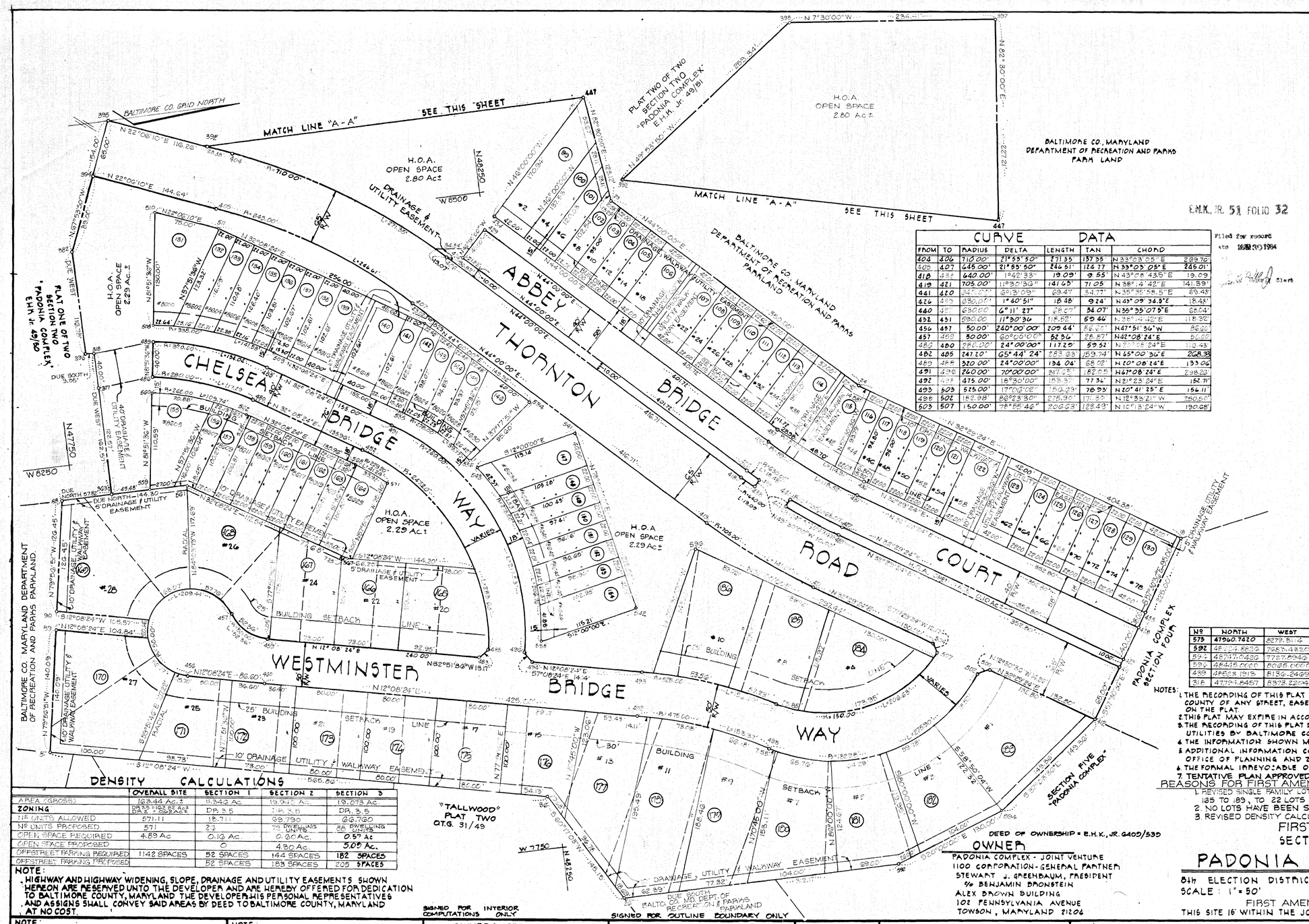
Homestead Application Status: No Application

Homeowners' Tax Credit Application Information

Homeowners' Tax Credit Application Status: No Application **Date:**

BALTIMORE COUNTY CIRCUIT COURT (Subdivision Plats, BA) Plat Book EHK, Jr. 51, p. 32, MSA_S1236_10116. Date available 1984/03/30. Printed 10/24/2022.




BALTIMORE CO. GRID NORTH
MATCH LINE "A-A"
SEE THIS SHEET
PLAT TWO OF TWO SECTION TWO "PADONIA COMPLEX" E.H.K. Jr. 49/51
H.O.A. OPEN SPACE 2.80 Ac±
BALTIMORE CO., MARYLAND DEPARTMENT OF RECREATION AND PARKS FARM LAND
DRAINAGE & UTILITY EASEMENT
BALTIMORE CO. MARYLAND DEPARTMENT OF RECREATION AND PARKS PARKLAND
PLAT ONE OF TWO SECTION TWO "PADONIA COMPLEX" E.H.K. Jr. 49/50
H.O.A. OPEN SPACE 2.29 Ac.±
ABBEY
THORNTON
BRIDGE
CHELSEA
WAY
ROAD
COURT
WESTMINSTER
"TALLWOOD" PLAT TWO O.T.G. 31/49
PADONIA COMPLEX SECTION FOUR
SECTION FIVE "PADONIA COMPLEX"
BALTIMORE CO. MARYLAND DEPARTMENT OF RECREATION AND PARKS PARKLAND
10' DRAINAGE UTILITY & WALKWAY EASEMENT
40' DRAINAGE & UTILITY EASEMENT
5' DRAINAGE & UTILITY EASEMENT
BUILDING SETBACK LINE
DUE NORTH 144.80
DUE SOUTH 9.05
DUE WEST 162.51
N 44°00'00" E
N 46°00'00" W
N 22°06'10" E 116.26
N 22°06'10" E 144.64'
N 67°53'50" W
S 67°53'50" E
S 12°08'24" W 155.57
N 12°08'24" E 104.84'
N 32°08'24" E
S 32°08'24" W
N 57°51'36" W
S 57°51'36" E
N 61°51'36" W 119.69'
N 28°08'24" E 78.00'
N 61°51'36" W 130.00'
N 57°51'36" W 124.32'
S 61°51'36" E 130.00'
N 28°08'24" E 256.00'
N 61°51'36" W 119.69'
N 32°08'24" E 155.00'
S 32°08'24" W 155.00'
N 57°51'36" W 124.32'
S 57°51'36" E 124.32

P.C. Exh. 36 (4)

Baltimore County - My Neighborhood

My Neighborhood

Select a Property from the Map

enter ADDRESS or 10-DIGIT TAX ACCOUNT

8206 Yarborough Road

Search

:

Property Report - 8206 YARBOROUGH RD

8206 YARBOROUGH RD

Tax Account Number	0820031800
Owner Name	MACDONALD PETER V MACDONALD KATHRYN G
Premise Address	8206 YARBOROUGH RD
Tax Map	0060
Parcel	0619
Real Property Report	More info
StreetView	Click for StreetView
PermitReview	Permit Review Tool URL

ZONING INFORMATION

Zoning	DR 3.5

SCHOOL DISTRICTS

Elementary School District	Riderwood ES
Middle School District	Dumbarton MS
High School District	Towson HS

CIVIC - GOVERNMENT



Real Property Data Search ( )
Search Result for BALTIMORE COUNTY

View Map | View GroundRent Redemption | View GroundRent Registration

Special Tax Recapture: None

Account Identifier: **District -** 08 **Account Number -** 0820031800

Owner Information

Owner Name: MACDONALD PETER V
MACDONALD KATHRYN G
Use: RESIDENTIAL
Principal Residence: YES
Mailing Address: 8206 YARBOROUGH RD
TOWSON MD 21204-1950
Deed Reference: /17872/ 00090

Location & Structure Information

Premises Address: 8206 YARBOROUGH RD
TOWSON 21204-1950
Legal Description: 8206 YARBOROUGH RD
THORNLEIGH

Map:	Grid:	Parcel:	Neighborhood:	Subdivision:	Section:	Block:	Lot:	Assessment Year:	Plat No:
0060	0022	0619	8050093.04	0000	1	O	6	2023	2

Plat Ref: 0023/ 0027

Town: None

Primary Structure Built	Above Grade Living Area	Finished Basement Area	Property Land Area	County Use
1957	2,068 SF		11,049 SF	04

Stories	Basement	Type	Exterior	Quality	Full/Half Bath	Garage	Last Notice of Major Improvements
2	NO	SPLIT LEVEL	SIDING/	4	2 full		

Value Information

	Base Value	Value As of 01/01/2020	Phase-in Assessments As of 07/01/2022	As of 07/01/2023
Land:	154,200	154,200		
Improvements	129,400	129,400		
Total:	283,600	283,600	283,600	
Preferential Land:	0			

Transfer Information

Seller: HUGHES JOHN D M	**Date:** 04/21/2003	**Price:** $210,000
Type: ARMS LENGTH IMPROVED	**Deed1:** /17872/ 00090	**Deed2:**
Seller: THOMAS FERDINAND	**Date:** 08/03/1982	**Price:** $90,000
Type: ARMS LENGTH IMPROVED	**Deed1:** /06419/ 00528	**Deed2:**
Seller:	**Date:**	**Price:**
Type:	**Deed1:**	**Deed2:**

Exemption Information

Partial Exempt Assessments:	Class	07/01/2022	07/01/2023
County:	000	0.00	
State:	000	0.00	
Municipal:	000	0.00|	0.00|

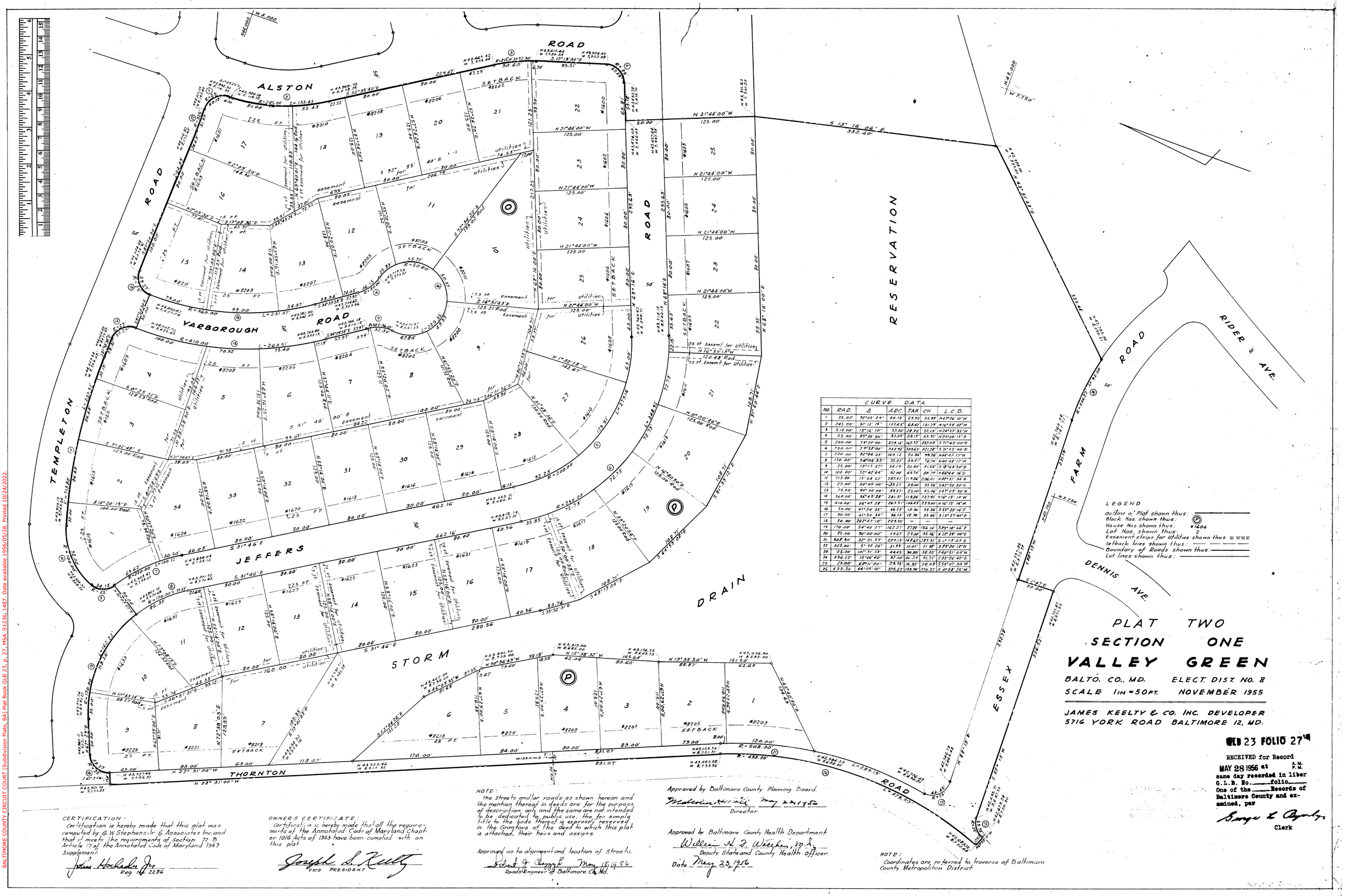
Special Tax Recapture: None

Homestead Application Information

Homestead Application Status: Approved 10/06/2008

Homeowners' Tax Credit Application Information

Homeowners' Tax Credit Application Status: No Application **Date:**



CURVE DATA						
NO.	RAD.	Δ	ARC.	TAN	CH	L.C.B.
1	25.00'	92°05'29"	40.18'	25.93'	35.99'	N47°26'10"W
2	245.00'	31°12'15"	133.43'	68.42'	131.79'	N16°59'32"W
3	215.00'	15°16'10"	57.30'	28.82'	57.13'	N24°57'35"W
4	25.00'	85°35'30"	37.35'	23.15'	33.97'	N25°28'15"E
5	200.00'	79°58'00"	279.14'	167.72'	257.03'	S71°45'00"E
6	250.00'	79°58'00"	348.92'	209.65'	321.28'	S71°45'00"E
7	220.00'	26°04'33"	100.12'	50.94'	99.26'	N44°48'17"W
8	170.00'	26°04'33"	77.37'	39.37'	76.70'	N44°48'17"W
9	25.00'	73°13'27"	34.13'	20.33'	31.54'	S18°43'50"E
10	100.00'	52°42'44"	92.00'	49.54'	88.79'	N46°44'16"E
11	713.80'	19°08'52"	237.51'	119.86'	236.41'	N82°37'36"E
12	25.00'	90°00'00"	39.27'	25.00'	35.36'	S42°50'30"E
13	25.00'	90°00'00"	39.27'	25.00'	35.36'	S47°09'30"W
14	360.00'	36°49'28"	231.37'	119.84'	227.41'	N16°15'14"W
15	410.00'	36°49'28"	263.51'	136.49'	259.00'	N16°15'14"W
16	50.00'	41°24'35"	36.13'	18.90'	35.36'	S55°22'16"E
17	50.00'	41°24'35"	36.13'	18.90'	35.36'	S13°57'40"E
18	50.00'	262°49'10"	229.35'	—	—	—
19	170.00'	54°40'27"	162.27'	87.88'	156.14'	S85°10'46"E
20	25.00'	90°00'00"	39.27'	25.00'	35.36'	N22°29'00"E
21	508.30'	32°35'53"	289.19'	148.69'	285.31'	S[illegible]°13'03"E
22	325.00'	5°38'24"	31.99'	16.01'	31.98'	S89°20'18"W
23	25.00'	101°51'53"	44.45'	30.80'	38.82'	N40°51'03"W
24	336.22'	15°40'40"	92.00'	46.29'	91.71'	S23°56'40"E
25	25.00'	62°11'00"	29.75'	16.92'	28.03'	S54°07'30"W
26	493.30'	44°05'10"	379.57'	199.74'	370.27'	N0°28'25"W

PLAT TWO
SECTION ONE
VALLEY GREEN

BALTO. CO., MD. ELECT. DIST. NO. 8

SCALE 1IN = 50FT. NOVEMBER 1955

JAMES KEELTY & CO. INC. DEVELOPER
5716 YORK ROAD BALTIMORE 12, MD.

GLB 23 FOLIO 27

RECEIVED for Record
MAY 28 1956 at A.M. P.M.
same day recorded in liber G.L.B. No. ____ folio ____
One of the ____ Records of Baltimore County and examined, per
George L. Ayerby
Clerk

CERTIFICATION:
Certification is hereby made that this plat was computed by G.W. Stephens Jr & Associates Inc. and that it meets the requirements of section 72-B Article 17 of the Annotated Code of Maryland 1947 Supplement.
John Hochedr Jr.
Reg. No. 2286

OWNERS CERTIFICATE:
Certification is hereby made that all the requirements of the Annotated Code of Maryland Chapter 1016 Acts of 1945 have been complied with on this plat.
Joseph S. Keelty
VICE PRESIDENT

NOTE:
The streets and/or roads as shown hereon and the mention thereof in deeds are for the purpose of description only and the same are not intended to be dedicated to public use; the fee simple title to the beds thereof is expressly reserved in the Grantors of the deed to which this plat is attached, their heirs and assigns.

Approved as to alignment and location of Streets.
Robert J. Cappy Jr. May 18, 1956
Roads Engineer of Baltimore Co. Md.

Approved by Baltimore County Planning Board.
Malcolm H. Hill May 22, 1956
Director

Approved by Baltimore County Health Department.
William H. F. Wheeler, M.D.
Deputy State and County Health Officer.
Date May 23, 1956

NOTE:
Coordinates are referred to traverse of Baltimore County Metropolitan District.

BALTIMORE COUNTY CIRCUIT COURT (Subdivision Plats, BA) Plat Book GLB 23, p. 27, MSA S1236-1487. Date available 1956/05/28. Printed 10/24/2022.

MSA SSU 1236-1487

PC. Exh 30(5)

Dev X 9(5)

Baltimore County - My Neighborhood

My Neighborhood

Select a Property from the Map

enter ADDRESS or 10-DIGIT TAX ACCOUNT

3127 Old Post Drive.

Search

:

Property Report - 3127 OLD POST DR

3127 OLD POST DR

Tax Account Number	1800003016
Owner Name	UNGER SERAFIMA UNGER HOWARD A
Premise Address	3127 OLD POST DR
Tax Map	0068
Parcel	0226
Real Property Report	More info
StreetView	Click for StreetView
PermitReview	Permit Review Tool URL

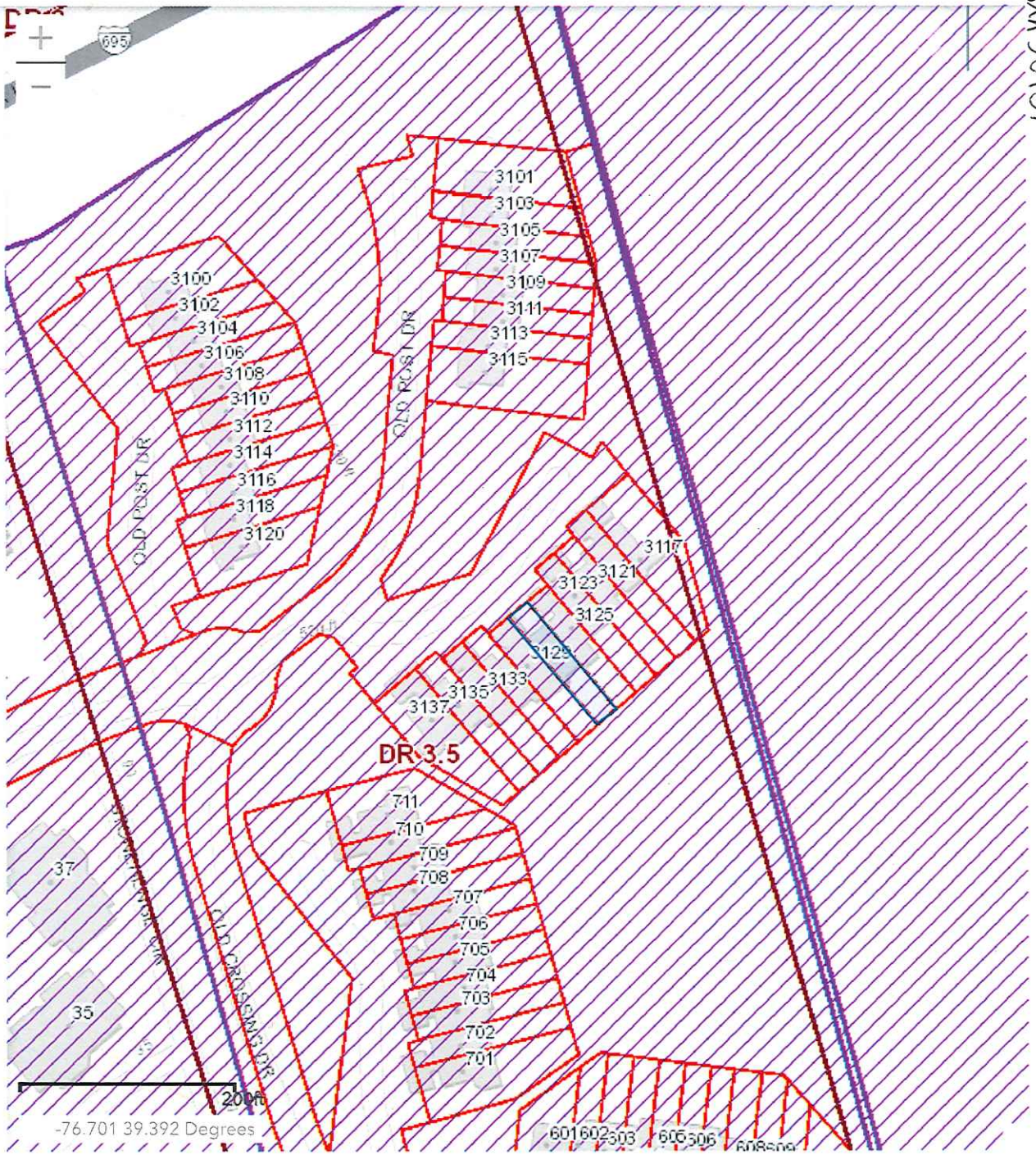
ZONING INFORMATION

Zoning	DR 3.5

SCHOOL DISTRICTS

Elementary School District	Wellwood ES
Middle School District	Pikesville MS
High School District	Pikesville HS

CIVIC - GOVERNMENT



Real Property Data Search ( )
Search Result for BALTIMORE COUNTY

View Map | View GroundRent Redemption | View GroundRent Registration

Special Tax Recapture: None

Account Identifier: **District** - 03 **Account Number** - 1800003016

Owner Information

Owner Name:	UNGER SERAFIMA UNGER HOWARD A	**Use:**	RESIDENTIAL
		Principal Residence:	YES
Mailing Address:	3127 OLD POST DR BALTIMORE MD 21208-3205	**Deed Reference:**	/14585/ 00568

Location & Structure Information

Premises Address:	3127 OLD POST DR BALTIMORE 21208-3205	**Legal Description:**	3067 SQ FT 0.0704 A 3127 OLD POST DR STEVENSON CROSSING

Map:	Grid:	Parcel:	Neighborhood:	Subdivision:	Section:	Block:	Lot:	Assessment Year:	Plat No:	Plat Ref:
0068	0022	0226	3030036.04	0000			72	2023	2	0044/ 0086

Town: None

Primary Structure Built	Above Grade Living Area	Finished Basement Area	Property Land Area	County Use
1981	2,223 SF	515 SF	3,048 SF	04

Stories	Basement	Type	Exterior	Quality	Full/Half Bath	Garage	Last Notice of Major Improvements
2		CENTER UNIT	1/2 BRICK FRAME/4 BRICK		2 full/ 1 half	1 Attached	

Value Information

	Base Value	Value As of 01/01/2020	Phase-in Assessments As of 07/01/2022	As of 07/01/2023
Land:	115,000	115,000		
Improvements	198,200	198,200		
Total:	313,200	313,200	313,200	
Preferential Land:	0			

Transfer Information

Seller: MOFFET HOWARD H	**Date:** 07/19/2000	**Price:** $0
Type: NON-ARMS LENGTH OTHER	**Deed1:** /14585/ 00568	**Deed2:**
Seller: STEVENSON LIMITE D PARTNERSHIP	**Date:** 04/13/1981	**Price:** $125,000
Type: ARMS LENGTH IMPROVED	**Deed1:** /06275/ 00751	**Deed2:**
Seller:	**Date:**	**Price:**
Type:	**Deed1:**	**Deed2:**

Exemption Information

Partial Exempt Assessments:	Class	07/01/2022	07/01/2023
County:	000	0.00	
State:	000	0.00	
Municipal:	000	0.00|	0.00|

Special Tax Recapture: None

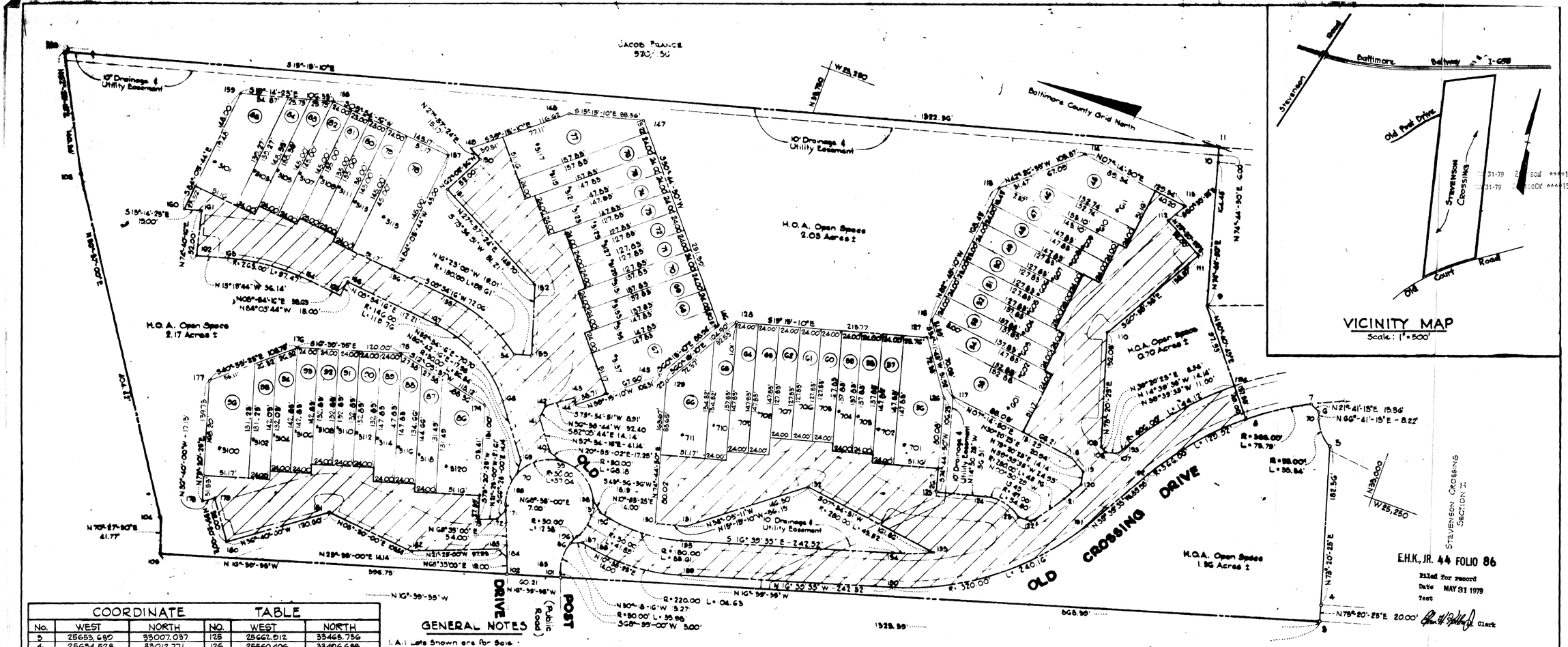
Homestead Application Information

Homestead Application Status: No Application

Homeowners' Tax Credit Application Information

Homeowners' Tax Credit Application Status: No Application **Date:**

BALTIMORE COUNTY CIRCUIT COURT (Subdivision Plats, BA) Plat Book EHK, Jr. 44, p. 86, MSA_S1236_7903. Date available 1979/05/31. Printed 10/24/2022.


JACOB FRANCIS
930/ 50
10' Drainage & Utility Easement
S 15°-18'-10"E
1322.50'
Baltimore County Grid North
H.O.A. Open Space
2.05 Acres ±
H.O.A. Open Space
2.17 Acres ±
H.O.A. Open Space
0.70 Acres ±
H.O.A. Open Space
1.86 Acres ±
OLD POST DRIVE
STEVENSON CROSSING DRIVE
OLD POST DRIVE (Public Road)
N 15°-39'-55"W
S 15°-39'-55"E - 242.52'
N 74°-41'-50"E 89.34'
N 74°-41'-50"E 67.00'
N 74°-44'-50"E 67.00'
N 74°-44'-50"E 89.34'
N 74°-41'-50"E 89.34'
N 74°-41'-50"E 67.00

People's Counsel's Statistics for Greenspring Manor Lots 2-61
Based on Lot Table Sizes Listed in Developer's Exhibit 1B*
*(Not including Lot 1)

Average Lot Size Calculations

Sum of Lots 2-30: 6.985 Ac.
Sum of Lots 31-61: 7.41 Ac.
Combined: 6.985 + 7.41 = 14.381 Ac.
Average Lot Size: 14.38 / 60 = 0.24 Ac. = 10,454sf

Median (Midpoint) Lot Size Calculations

Between .17 (lot 9) and .495 (Lot 30) Ac. = .3325 Ac. = 14,483sf
More lots closer to .17 than .495, that is to say, below .3325 Ac. or 14,483sf
53 of the 60 new lots are below the median
7 above the median: Lots 18-21, 29-30, and 55

Mode (Value appearing most often in set of data values, most likely to be sampled or to occur) **and Distribution by Lot Size Segments (SF)**

(1) 8000sf- 9000sf --- 13 lots – 3, 7-8, 15-16, 39-40, 44-45, 57-59, 61
(2) 11,000-12,000sf --- 10 lots – 2, 22, 25, 32-33, 42-43, 49, 51, 54
(3) 12,000-13,000 – 9 lots – 10-14, 26, 28, 34, 53
(4) 9000-10,000sf – 8 lots --- 4, 6, 27, 38, 41, 50, 56, 60
(5) 13,000-14,000 – 6 lots --- 17, 23, 31, 35-36, 52
(6) 7000-8000sf – 3 lots --- 9, 46-47
(7) 14,000 – 15,000sf – 3 lots – 24, 37, 55
(8) 10,000 – 11,000sf – 2 lots – 5, 48
(9) 15,000 – 16,000sf – 2 lots – 18, 20
(10) 16,000-17,000sf – 1 lot -- 21
(11) 17,00-18,000sf – 1 lot – 29
(12) 18,000-19,000sf – 1 lot – 19
(13) 21,000-22,000sf – 1 lot – 30 **(Lots 2-61 all accounted for)**

Overview:

24 lots less than 10,000sf (.23 Ac.) 40% of lots
3-4, 6-9, 15-16, 27, 38-41, 44-47, 50, 56-61
36 lots (12 additional) less than 12,000sf (.275Ac.) 60% of lots
Additional 2, 5, 22, 25, 32-33, 42-43, 48-49, 51, 54
45 lots (9 additional) less than 13,000sf (.298 Ac.) 75% of lots

Effective lot density for Lots 2-61 Area

60 lots/14.4 Ac. = **4.2 lots per acre in the lot territory**

Effective lot density for Entire Tract

60 lots/39 Ac. = **1.54 lots per acre**
(If lot 1 added, 61/39 = 1.56 lots per acre)

People's Counsel's Davis Farms Lot Size Statistics Based on Site Plan Table for Lots 1-19
The Davis Farms Site Plan (PC Exh 29), Sheet 2 of 2, includes Lot Area Table at Upper Right and Zoning Array, Sheet 1 of 2, at Upper Left. These are reproduced in the present exhibit.

Average Lot Size Calculations

Sum of Lot 1-19 Areas = 8.0 Ac. (34,848sf)
Average Lot Size = 8.0/19 = .42 Ac. (18295sf)

Median (Midpoint)

In between .27 (Lot 13) and .68 (Lot 10) = .475 = 20,691sf
14 lots less than median – 2, 5-7, 9, 11-19
5 lots above median --- 1, 3, 4, 8, 10

Mode Value appearing most often in set of data values, most likely to be sampled or to occur) **and Distribution by Lot Size Segments (SF)**

13,000-14,000sf – 2 lots --- 14, 19
14,000-15,000sf – 2 lots – 15, 17
15,000 – 16,000sf -- 2 lots – 6, 18
16,000 – 17,000 – 2 lots -- 7, 9
17,000-18,000sf – 2 lots – 5, 12
19,000-20,000 --- 2 lots – 11, 16
18,000-19,000sf – 1 lot – 2
11,000-12,000 – 1 lot -- 13
20,000-21,000 – 1 lot – 1
21,000-22,000 – 1 lot – 4
22,000-23,000 – 1 lot -- 3
27,000-28,000 – 1 lot -- 8
29,000-30,000 – 1 lot -- 10 **(Lots 1-19 all accounted for)**

Overview

No lots under 11,000sf (.25 Ac.), only 1 lot under 12,000sf (.275 Ac.)
14 of the 19 lots between 11,000sf (.25 Ac.) and 20,000sf (.46 Ac.)
13 of the 19 lots evenly spread between 13,000sf (.298 Ac.) and 20,000sf (.46 Ac.)
5 of the 19 lots fairly evenly spread between 20,000sf (.46 Ac.) and 29,000sf (.68 Ac.)

Effective Lot Density for Lots 1-19 area of 8.0 acres

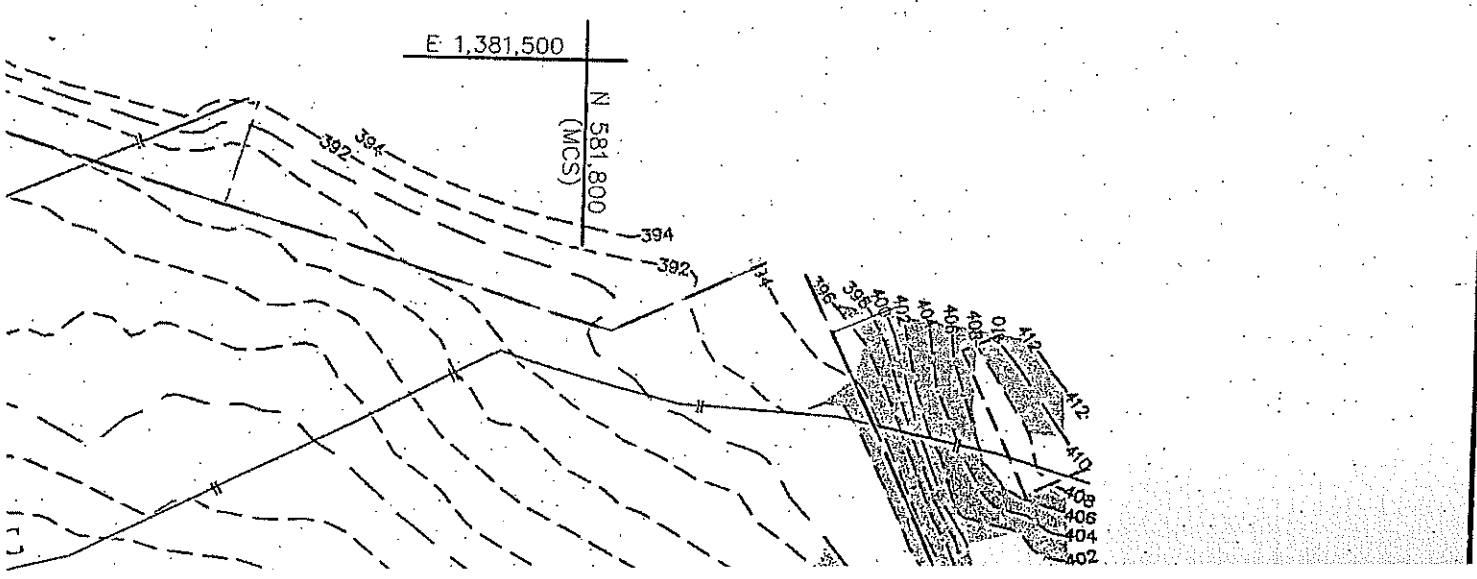
19 lots/8.0 Ac. = **2.4 lots per acre**

Effective Lot Density for Entire 21-acre Site

19 lots/21 Ac. = **.9 lots per acre**

Zoning Note: D.R. 1, 12.17 Ac.; R.C. 5, 4.94 Ac.; D.R. 2, 2.95 Ac.; D.R. 3.5, 0.99 Ac.; R.C. 8 NC, 0.12 Ac.

LOT AREA TABLE	
LOT NO.	AREA (AC.)
1	0.48 AC.
2	0.42 AC.
3	0.51 AC.
4	0.50 AC.
5	0.41 AC.
6	0.36 AC.
7	0.39 AC.
8	0.63 AC.
9	0.37 AC.
10	0.68 AC.
11	0.45 AC.
12	0.41 AC.
13	0.27 AC.
14	0.30 AC.
15	0.34 AC.
16	0.45 AC.
17	0.34 AC.
18	0.36 AC.
19	0.30 AC.



SITE AREA CALCULATION

NET TRACT AREA	20.97 AC±
ALLOWANCE FOR ROAD FRONTAGE [(12.5' x 706')/43650 SF]	0.20 AC±
GROSS AREA	21.17 AC±

SITE DATA

EXISTING ZONING AND MAXIMUM DENSITY PERMITTED

ZONE	ACRES	UNITS ALLOWED	DENSITY UNITS	UNITS PROPOSED
DR 1	12.17	12.17	12	12
RC 5	4.94	2.47	2	0
DR 2	2.95	5.90	5	5
DR 3.5	0.99	3.47	3	2
RC 8 NC	0.12	0	0	0
TOTAL	21.17	24.01	22	19

COUNTY ADOPTED PL

EXISTING	NOT EXISTING	IN CONFORMANCE	
✓		✓	BALTIMORE
✓		✓	COMMUNIT
		✓	RECREATIC
		✓	STREETSCA
		✓	GREENWAY
		✓	OTHER

OPEN SPACE PROPOSAL

LOCAL OPEN SPACE TYPE	ACRES
OPEN SPACE	0.52
100 YEAR FLOOD PLAIN	4.76
AMENITY AREAS	0.00
TRAILS AND CONNECTORS	0.00
OTHER	0.00
TOTAL PROVIDED	5.28
PROPOSED OWNERSHIP	HOA

UNDEVE
STORMW
HOA/C
OTHER
TOTAL

ADDITIONAL INFORMATION

ANTICIPATED ACTIONS	
VARIANCES	NONE
WAIVERS	NONE
SPECIAL EXCEPTIONS	NONE
OTHER	SPECIAL HEARING
CONSISTENCY WITH DESIGN MANUALS	YES

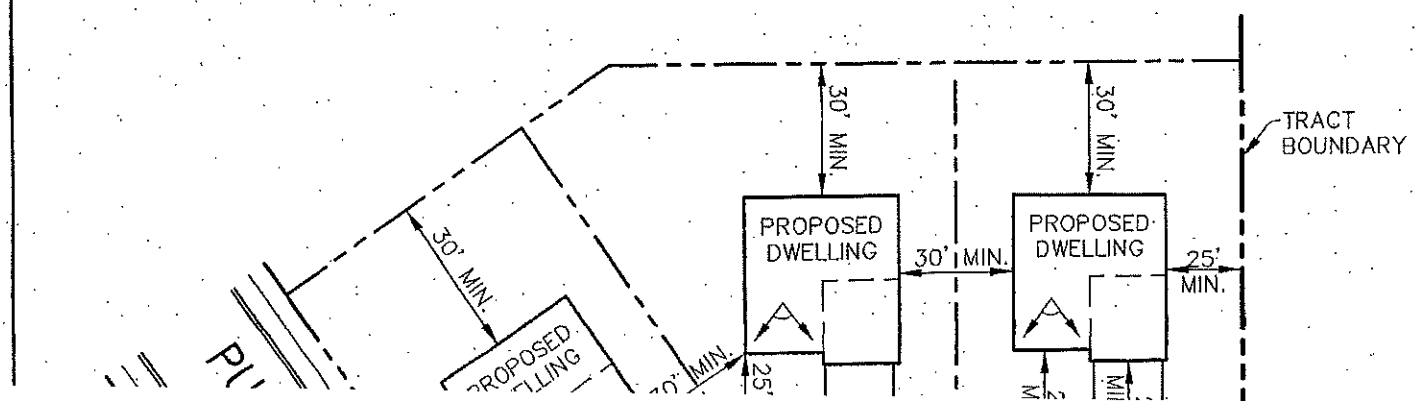
SOILS CHART

SYMBOL	SOILS TYPE	SLOPES
LeB	LEGORE SILT LOAM	3% – 8%
LeC	LEGORE SILT LOAM	8% – 15
LeD	LEGORE SILT LOAM	15% – 25
CfA	CODORUS SILT LOAM	0% – 3

SITE DEVELOPMENT PROPOSAL

DWELLING TYPE	PROPOSED UNITS	PARKING REQUIRED	PARKING PROVIDED	OPEN SPACE REQUIRED (ACRES)	OPEN SPACE PROPOSED (ACRES)	AVERAGE DAILY TRIPS	PHASE	DEVELOPM SCHEDUI
SINGLE FAMILY	19	38	38	0.436	0.52 AC.	190		
TOTAL	19	38	38	0.436	0.52 AC.	190		

TYPICAL LOT LAYOUT - D.R. 1 & D.R. 2



Traffic Engineering and Transportation Planning

Angelica Daniel, Bureau Chief

Submit a Request or Complaint

Submit a service request or complaint to Traffic Engineering online. We'll investigate your concern and contact you soon.

Responsibilities

This Bureau plans for anticipated County-wide transportation needs and ensures a safe, efficient operation of the Baltimore County highway system. It is divided into several divisions:

- Traffic Engineering maintains traffic regulations, develops traffic control needs and detours.
- Street Light Program handles requests for new or upgraded street lighting on existing or proposed County roadways.
- Transportation Planning provides technical assistance to the Department of Planning, and evaluates and recommends specific projects in anticipation of future transportation, land use and economic development needs.
- Traffic Signal installs and maintains all traffic signals, flashers, and signal systems along the County highway system and some of those on the State highway system in Baltimore County.
- Traffic Sign and Roadway Marking installs and maintains County traffic signs, paints and marks County roadways.
- Traffic Calming is a program for slowing traffic on residential roadways.
- Reserved Handicap Parking Program—Baltimore County jointly administers a Reserved Handicap Parking program with the Maryland Motor Vehicle administration.
- Residential Permit Parking Program—The intent of this program is to aid those areas where a heavy influx of nonresidents into the area constricts the available on-street parking spaces to the resident.

Report A Problem

Traffic signs and signals are maintained by either Baltimore County or State Highway Administration. For immediate safety issues, call 911. They will contact the appropriate agency for emergency response. Contact us for general concerns.

Other Items of Interest

- Road Closures—Find out about roads closed due to repairs and maintenance, flooding and accidents
- Road Closure Reimbursement Policy (PDF)—Find information on the procedures for reimbursing Baltimore County for expenses related to road closures.
- Level of Service—View level of service for traffic signals at Baltimore County intersections.
- Engineering Projects—Learn about engineering projects in your council district, such as road closures, bridge repairs, water or sewer line repairs or installations

Contact Us

111 West Chesapeake Avenue, Room 326
Towson, Maryland 21204

Phone: 410-887-3554
Fax: 410-887-5784
Email: trafficeng@baltimorecountymd.gov

Revised June 8, 2022

> ⓘ **A NEW WEBSITE FOR BALTIMORE COUNTY**
>
> We're working to provide you with a better experience, and want your feedback. Learn more about our project and give your feedback.

DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION

Public Works Overview

Report A Problem

Street Light Program

Traffic Calming

Disabled Parking Signs and Parking Lot Layouts

Sign Installation and Procedure Manual

Frequently Asked Questions

Pedestrian and Bicycle Traffic

FOLLOW CLEAN GREEN BALTIMORE COUNTY



Clean Green Baltimore County provides residents and businesses with the latest news and information on county initiatives, services and resources that support sustainable living.

Department of Public Works and Transportation

D'Andrea L. Walker
Acting Director

Anthony Russell
Acting Deputy Director for Transportation

Lauren T. Buckler, PE, CEM, LEED AP
Deputy Director

Submit a Request or Complaint

Report a problem or file a complaint online:

- Trash and Recycling
- Roads and Sidewalks
- Traffic Engineering
- Water and Sewer

We'll investigate your concern and contact you soon.

Responsibilities

Metropolitan District Financing and Petitions—Computes, processes and bills Metropolitan charges.

Flood Insurance Map Information, Basic Services Maps, and Master Plan Amendments have moved to the Bureau of Engineering and Construction.

Water Issues

Baltimore City is responsible for the water service in Baltimore County. There are a number of different issues related to the water service that are handled by Baltimore City, and some that are handled by Baltimore County.

Call Baltimore City for:

- Water billing or water rates—call 410-396-5398.
    - Look Up a Water Bill.
    - Pay Your Water Bill.
- Water meter issues—call 410-396-3100.
- Water quality, such as color, water pressure, etc.—call 443-263-2220.

Call Baltimore County for:

- Water leaks—call 410-887-7415.
- Water main breaks—call 410-887-7415. You can use Baltimore City's interactive map to view where breaks have occurred and the status of repairs.
- Water leaking from fire hydrants—call 410-887-7415.

Sanitary Sewer System Consent Decree

The Consent Decree was brought forth by the Environmental Protection Agency (EPA) and Maryland Department of the Environment (MDE) against Baltimore County, to force upgrades to the aging sewer infrastructure. This was necessary for compliance with the Clean Water Act and the Maryland water pollution control laws with the goal of eliminating sanitary sewer overflows.

Bureaus

- Utilities—For sewer emergencies, call 410-887-7415.
    - Permitting and monitoring of industrial and commercial wastewater discharge

- Highways and Equipment Maintenance
    - Performs snow removal
    - Road resurfacing
    - Pot hole repair
    - Roadside mowing and tree maintenance
    - Storm debris removal
    - Street sweeping
    - Driveway access and concrete replacement
    - Curb, gutter and sidewalk repair and replacement
    - Coordinates Emergency Management and Homeland Security with other agencies
    - Manages the Safety and Training program
    - Provides maintenance and repair of county equipment, large trucks, heavy equipment, fire apparatus, etc.
- Solid Waste Management
    - Coordinates and oversees Collection Connection for trash and Single Stream recycling
    - Oversees disposal of County's trash and recycling
    - Promotes recycling
- Traffic Engineering and Transportation Planning
    - Installs and maintains traffic signals; traffic signs; traffic calming program
    - Performs and coordinates line painting on county roads
    - Ensures safe and efficient operation of County's highway system
    - Plans for anticipated transportation needs
- Engineering and Construction
    - Designs County infrastructure
    - Administers prequalification and selection of engineers and contractors; bridge inspections
    - Administers construction contract bidding, processing and inspection for:
        - public roads
        - sewers
        - water lines
        - alleys

- storm drains
- bridges
- shoreline protection
- dredging and parks
- property surveys
- City and County project coordination

Public Rights-of-Way and Sidewalks

Baltimore County is a sub-recipient of federal funds disbursed through State Highway Administration (SHA), therefore the County is required to provide ADA facilities within its public rights-of-way that comply with the Americans with Disabilities Act (ADA) of 1990 and the Rehabilitation Act of 1973 (Section 504). The County's Transition Plan with documentation will outline related existing County programs, policies and procedures.

Other Items of Interest

- Directory of Services—View an alphabetical listing of County services.
- Road Closures—View information on roads closed due to repairs, maintenance, flooding, emergencies, etc.
- Engineering Projects—View a list of current engineering projects.
- Rural Roads—View information about what they are and related projects.
- **Wise Avenue Bridge**—The Wise Avenue Draw Bridge can now be raised and lowered for water traffic with notice to the Department of Public Works and Transportation . To request a bridge opening, call 410-887-8160, Monday through Friday, 8 a.m. to 3 p.m. or the Public Works Dispatch number at 410-887-7415.

Contact Information

County Office Building
111 West Chesapeake Avenue, Suite 307
Towson, Maryland 21204

Phone: 410-887-3300
Fax: 410-887-3406
Email: publicworks@baltimorecountymd.gov

Revised January 5, 2022

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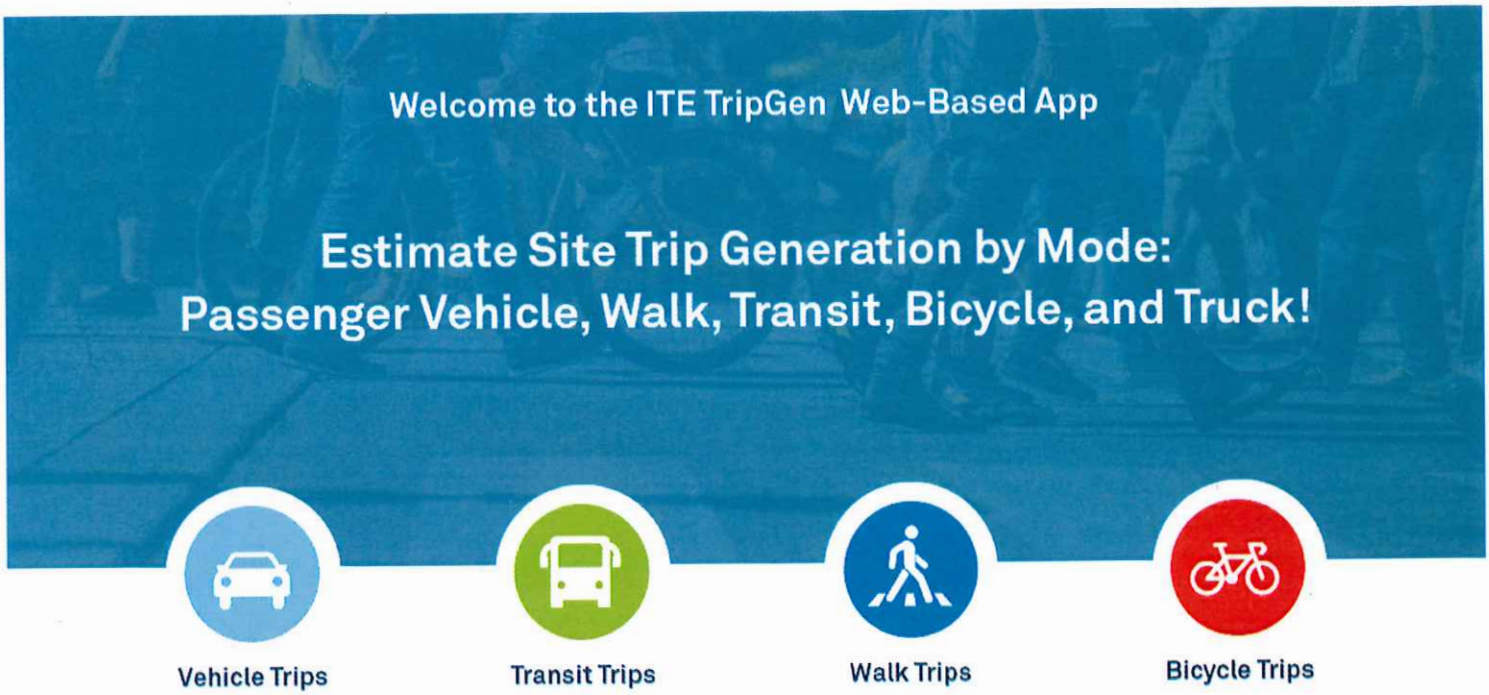
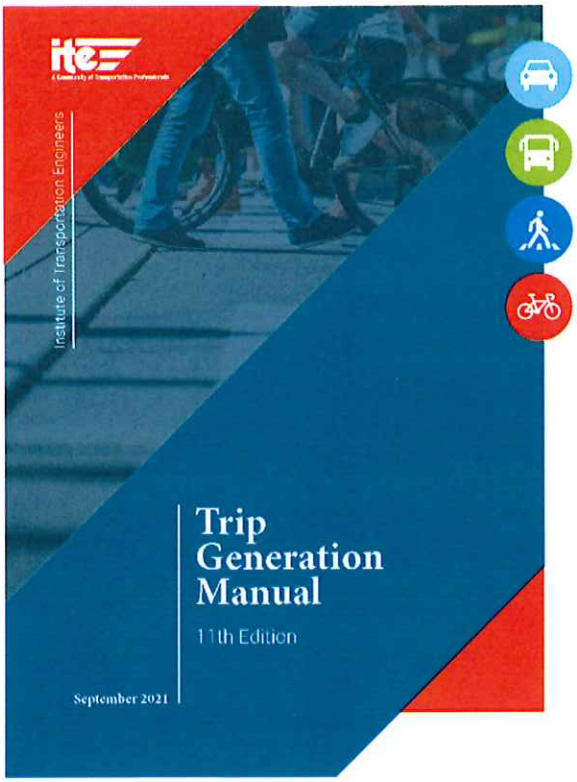
Email | Password | LOGIN

Not Registered Yet? Create an account.



PC Exh 34



ITETripGen provides access to the entirety
ITE *Trip Generation Manual, 11th Edition*. T
enables development of estimates of motor
pedestrian, transit user, bicyclist, and truck
generated by a land use based on its chara
and setting. The app offers a functionality tc
data records by their age, the region within
America, and the development size.

Access to the app is available through the *I*
Marketplace . With each purchase, the regis
receives a web app unlock key that can be
create an individual account for accessing
ITETripGen .

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COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND
Legislative Session 2001, Legislative Day No. 8

Bill No. 34-01

Mr. Joseph Bartenfelder, Councilman

By the County Council, April 16, 2001

A BILL
ENTITLED

AN ACT concerning

~~South Perry Hall - White Marsh Area~~ Residential Performance Standards

FOR the purpose of amending the Baltimore County Zoning Regulations in order to provide performance design standards for residential development within the ~~South Perry Hall - White Marsh area of~~ Baltimore County; providing that the Office of Planning shall review development proposals for compliance with the standards and ~~make a recommendation~~ submit its findings to the Hearing Officer or the Director of Permits and Development Management; specifying standards for site planning, open space, streets and parking, landscape design, and buildings; and generally relating to performance design standards for residential development in ~~the South Perry Hall - White Marsh area of~~ Baltimore County.

EXPLANATION: CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.
[Brackets] indicate matter stricken from existing law.
~~Strike-out~~ indicates matter stricken from bill.
Underlining INDICATES AMENDMENTS TO BILL.

PC Exh. 35

BY adding

Section 260

Baltimore County Zoning Regulations, as amended

WHEREAS, the Baltimore County Council has received a final report, dated January 18, 2001 from the Baltimore County Planning Board concerning the subject legislation and has held a public hearing thereon on March 5, 2001; now therefore

SECTION 1. BE IT ENACTED BY THE COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND, that Section 260 be and it is hereby added to the Baltimore County Zoning Regulations, as amended, to read as follows:

SECTION 260

~~SOUTH PERRY HALL - WHITE MARSH AREA~~ RESIDENTIAL PERFORMANCE STANDARDS

260.1 SCOPE; STATEMENT OF LEGISLATIVE INTENT FOR ~~SOUTH PERRY HALL - WHITE MARSH AREA~~ PERFORMANCE STANDARDS.

~~(A) THIS SECTION APPLIES TO THE SOUTH PERRY HALL - WHITE MARSH AREA DEFINED IN THE OFFICIAL COMPREHENSIVE ZONING MAP ACCOMPANYING BILL NO. 33-01 AS ADOPTED BY THE COUNTY COUNCIL.~~

(A) THIS SECTION APPLIES TO ALL RESIDENTIAL DEVELOPMENT IN BALTIMORE COUNTY.

(B) THESE PERFORMANCE DESIGN STANDARDS ARE INTENDED TO ENSURE

THAT RESIDENTIAL DEVELOPMENT IN ~~THE SOUTH PERRY HALL - WHITE MARSH AREA~~ BALTIMORE COUNTY CONFORMS WITH A HIGHER QUALITY OF DESIGN. THE EVALUATION OF COMPLIANCE SHALL OCCUR AS PART OF THE REVIEW OF DEVELOPMENT PROPOSALS, EITHER IN REVIEWING CONCEPT PLANS PURSUANT TO THE DEVELOPMENT REGULATIONS OF THE BALTIMORE COUNTY CODE OR BUILDING PERMIT APPLICATIONS SUBMITTED PURSUANT TO AN APPROVED DEVELOPMENT PLAN. THE OFFICE OF PLANNING MAY REQUIRE THE SUBMITTAL OF SUFFICIENT INFORMATION, SUCH AS BUILDING ELEVATIONS AND GRADING PLANS, FROM WHICH A ~~RECOMMENDATION~~ FINDING CAN BE MADE ON COMPLIANCE OF THE PROJECT WITH THE STANDARDS. DEVIATION FROM THE STANDARDS IS ALLOWED ONLY IF CLEARLY NECESSARY TO:

1. COMPLY WITH ANOTHER STANDARD;

2. COMPLY WITH ENVIRONMENTAL REGULATIONS OR OTHERWISE PROTECT RESOURCES; OR

3. ACHIEVE THE BEST POSSIBLE DEVELOPMENT DESIGN, CONSIDERING OTHER GOALS IN THE COMPREHENSIVE MANUAL OF DEVELOPMENT POLICIES.

(C) THE OFFICE OF PLANNING'S ~~RECOMMENDATION~~ FINDINGS SHALL BE MADE BY THE DIRECTOR OF PLANNING AND SUBMITTED TO THE HEARING OFFICER OR TO THE DIRECTOR OF PERMITS AND DEVELOPMENT MANAGEMENT, AS APPLICABLE. IF THE DIRECTOR FINDS THAT A DEVELOPMENT PROPOSAL

DOES NOT COMPLY WITH THE STANDARDS, THE PROPOSAL MAY NOT BE APPROVED. THE PLANNING DIRECTOR SHALL PROPOSE AND ADOPT REGULATIONS TO PROVIDE MINIMUM DUE PROCESS IN THE MAKING OF HIS FINDINGS UNDER THIS SECTION. THE DIRECTOR'S FINDINGS SHALL BE APPEALABLE TO THE BOARD OF APPEALS ONLY AS PART OF AN APPEAL FROM THE HEARING OFFICER OR DIRECTOR, AS APPLICABLE.

260.2 SITE PLANNING

(A) A DEVELOPMENT PROPOSAL SHALL:

1. RETAIN THE EXISTING QUALITY VEGETATION OF THE SITE TO THE FULLEST EXTENT POSSIBLE AND PROTECT THE ROOT SYSTEMS OF THAT VEGETATION DURING CONSTRUCTION.

2. INTEGRATE LOCALLY SIGNIFICANT FEATURES OF THE SITE, SUCH AS DISTINCTIVE BUILDINGS, VISTAS, TOPOGRAPHIC FEATURES, SPECIMEN TREES, TREE STANDS, HEDGEROWS, MONUMENTS, LANDMARKS, RUINS, AND GARDENS, INTO THE SITE DESIGN, AND RETAIN THE CHARACTER OF THE FEATURES AND THEIR SETTINGS.

3. COORDINATE BUILDING DESIGN, SITE LAYOUT, AND GRADING SO THAT GRADE TRANSITIONS ARE GRADUAL AND RESPECT THE EXISTING TOPOGRAPHY.

4. PROVIDE A LANDSCAPED BUFFER BETWEEN THE REAR YARDS OF DWELLINGS EXISTING ON MAY 25, 2001 AND THE REAR YARDS OF ABUTTING

NEW DWELLINGS.

5. PROVIDE FOR SMOOTH TRANSITIONS BETWEEN NEIGHBORHOODS BY ARRANGING AND ORIENTING THE PROPOSED BUILDINGS AND SITE IMPROVEMENTS TO COMPLEMENT THOSE IN THE SURROUNDING NEIGHBORHOOD.

6. PROVIDE TRANSITIONS WITH RESPECT TO SETBACKS, STREET PATTERNS, AND BUILDING-T0-STREET GRADE RELATIONSHIPS.

(B) REVERSE FRONTAGE LOTS ARE PERMITTED ONLY IF THE PETITIONER CAN DEMONSTRATE THAT ADEQUATE SETBACKS, TOPOGRAPHY, BERMING, LANDSCAPING, OR BUILDING DESIGN WILL EFFECTIVELY SCREEN PRIVATE YARD SPACE AND DECKS FROM THE PUBLIC VIEW. FENCES MAY NOT BE LOCATED CLOSER THAN 20 FEET TO A PUBLIC RIGHT OF WAY.

(C) PANHANDLE LOTS ARE NOT PERMITTED AS A MATTER OF RIGHT. PANHANDLES MUST CONFORM TO SECTION 26-266 OF THE BALTIMORE COUNTY CODE AND TO THE STANDARDS IN THE COMPREHENSIVE MANUAL OF DEVELOPMENT POLICIES.

(D) THE MINIMUM WIDTH FOR ANY SINGLE-FAMILY DETACHED LOT LOCATED IN THE SOUTH PERRY HALL - WHITE MARSH AREA ~~ON THE NORTH SIDE~~ NORTH OF RIDGE ROAD IS 75 FEET AS MEASURED ALONG BOTH THE FRONT WALL AND ~~REAR WALL OF THE DWELLING UNIT. THIS SUBSECTION DOES NOT APPLY TO A MINOR DEVELOPMENT.~~ REAR WALL OF THE DWELLING UNIT. THIS

SUBSECTION DOES NOT APPLY TO ALTERNATIVE SITE DESIGN DWELLINGS PERMITTED IN ACCORDANCE WITH SECTION 1BO1.1A.1.b., OR TO DEVELOPMENT PLANS APPROVED PRIOR TO FEBRUARY 1, 2001, OR TO MINOR DEVELOPMENTS.

260.3 OPEN SPACE

A DEVELOPMENT PROPOSAL SHALL:

(A) INTEGRATE OPEN SPACE AREAS INTO THE PROPOSED DEVELOPMENT BY:

1. CREATING FOCAL POINTS ALONG STREETS;

2. LOCATING LANDSCAPED OPEN GREEN SPACES IN VIEW OF THE DEVELOPMENT ENTRANCE OR ADJOINING PUBLIC STREET;

3. PLANNING A LINKED NETWORK OF NATURAL AND LANDSCAPED OPEN AREAS CONNECTED BY PEDESTRIAN/BIKE TRAILS; AND

4. ORIENTING DWELLING UNITS AROUND OPEN AREAS OR SQUARES.

(B) INCORPORATE SIGNIFICANT FEATURES, SUCH AS STANDS OF TREES, INTO OPEN AREAS.

(C) LINK THE DEVELOPMENT'S OPEN AREAS TO THE SURROUNDING NEIGHBORHOOD OPEN AREAS, INCLUDING PUBLIC PARKS, WALKS, AND BIKE TRAILS AND CREATE BOTH FUNCTIONAL AND VISUAL CONTINUITY, E.G., BY MATCHING THE DESIGN OF A BIKE TRAIL IN THE PROPOSED DEVELOPMENT TO THE BIKE TRAIL LOCATED IN THE ADJOINING PROPERTY.

260.4 STREETS AND PARKING

(A) A DEVELOPMENT PROPOSAL SHALL:

1. PROVIDE FOR AT LEAST ONE STREET CONNECTION TO AN ADJOINING NEIGHBORHOOD OR AN ADJOINING PROPERTY, NOT INCLUDING THE PRINCIPAL ACCESS TO THE SUBDIVISION, IN ORDER TO FACILITATE GOOD TRAFFIC CIRCULATION.

2. DESIGN STREETS TO SLOW TRAFFIC BY OFFSETTING ALIGNMENTS, REDUCING STREET WIDTH, REDUCING THE LENGTH OF BLOCKS, AND EMPLOYING THE USE OF TRAFFIC MANAGEMENT DEVICES SUCH AS ROUNDABOUTS, CHOKERS, CHICANES, ETC., TO ACCOMPLISH TRAFFIC CALMING.

3. ALLOW ON-STREET PARKING.

4. PROVIDE PEDESTRIAN AND BICYCLE ACCESS TO COMMERCIAL AREAS AND COMMUNITY FACILITIES ON SITE WITHIN THE DEVELOPMENT AND TO THE SURROUNDING NEIGHBORHOOD.

5. PROVIDE STREET AND PARKING ACCOMMODATIONS WHICH COMPLEMENT THE SURROUNDING NEIGHBORHOOD.

(B) CUL-DE-SACS MAY BE USED IF IT IS DEMONSTRATED THAT A STREET CONNECTION IS NOT FEASIBLE DUE TO SITE CONDITIONS SUCH AS SEVERE GRADE TRANSITIONS OR SENSITIVE NATURAL FEATURES, OR AN ALTERNATIVE SITE LAYOUT IS NOT FEASIBLE. IF CUL-DE-SACS ARE USED, DEVELOPMENTS SHOULD CONSIST OF A BALANCE OF STREET PATTERNS (CUL-DE-SACS AND CONNECTIONS). IF CUL-DE-SACS ARE USED, DESIGN ELEMENTS SUCH AS

CENTER LANDSCAPING AND TRAFFIC CIRCLES SHALL BE USED.

(C) STREET WIDTHS AND FRONT YARD SETBACKS MAY BE REDUCED IN ACCORDANCE WITH TRADITIONAL NEIGHBORHOOD DESIGN STANDARDS.

260.5 LANDSCAPE DESIGN

A DEVELOPMENT PROPOSAL SHALL:

1. LANDSCAPE PUBLIC OPEN SPACES TO INVITE USERS, PARTICULARLY EMPHASIZING THE INTENDED ENTRANCE TO THE OPEN SPACE.

2. IN ADDITION TO PLANT MATERIAL, USE FENCES, WALLS, OR EARTH FORMS TO PROVIDE EFFECTIVE AND ATTRACTIVE SCREENS AND BUFFERS WHERE NECESSARY.

3. PROVIDE FOR, OR REINFORCE AND MAINTAIN, A CONTINUOUS STREET TREE CANOPY BY PRESERVING HEALTHY STREET TREES OR, IF THEY ARE NOT PRESENT, PLANTING NEW TREES. THE CANOPY SHALL BE COMPRISED OF TREES OF THE SAME SPECIES OR TREES WITH DESIGN CHARACTERISTICS AND GROWTH HABITS THAT ARE SIMILAR TO THOSE OF THE EXISTING STREET TREES.

4. INCLUDE THE DESIGN FOR SITE SIGNAGE ON THE SCHEMATIC LANDSCAPE PLAN. IF THIS IS NOT POSSIBLE, THE SIGNAGE DESIGN MAY BE INCLUDED IN THE FINAL DEVELOPMENT PLAN, AND SHALL BE APPROVED BEFORE ISSUANCE OF ANY BUILDING PERMITS.

260.6 BUILDINGS

(A) A DEVELOPMENT PROPOSAL SHALL:

1. PROVIDE VARIETY IN HOUSING TYPE OR DESIGN, WHILE MAINTAINING CONTINUITY IN SCALE, RHYTHM, PROPORTION, AND DETAIL.

2. ORIENT THE FRONT OF THE DWELLING TOWARD THE STREET AND INCORPORATE PROMINENT ENTRIES AND PORCHES OR STOOPS INTO FRONT BUILDING FACADES.

3. ADHERE TO A CONSISTENT FRONT BUILDING SETBACK FOR ALL DWELLINGS ON THE SAME STREET OR SQUARE, SO THAT THE FRONTS OF DWELLINGS DEFINE A UNIFORM STREET EDGE.

4. DESIGN DECKS, BALCONIES, AND PORCHES AS COMPONENTS OF THE BUILDING FOLLOWING DOMINANT BUILDING LINES, PROPORTIONS, AND STYLE, AND IN A SCALE APPROPRIATE TO THE AVAILABLE SPACE ON THE SITE. DECKS SHALL BE SCREENED TO MINIMIZE VISIBILITY FROM A PUBLIC STREET.

5. DESIGN ACCESSORY STRUCTURES AT A SCALE APPROPRIATE TO THE DWELLING AND DESIGN STORAGE BUILDINGS AND GARAGES WITH THE SAME ARCHITECTURAL THEME AS THE PRINCIPAL BUILDING ON THE SITE, PROVIDING CONSISTENCY IN MATERIALS, COLORS, ROOF PITCH, AND STYLE.

6. EXTEND THE FINISH MATERIAL OF THE EXTERIORS OF BUILDINGS TO GRADE, OR, IF THIS IS NOT POSSIBLE, TO WITHIN 12 INCHES OF GRADE, ON ALL SIDES OF THE BUILDING EXCLUDING FOUNDATION WALLS WHICH SHALL USE A FINISHED QUALITY MATERIAL SUCH AS DECORATIVE CONCRETE BLOCK, POURED CONCRETE WITH A BRICK PATTERN, OR STUCCO, AND PROVIDE

LANDSCAPING ALONG THE FOUNDATION.

7. USE SIMILAR MATERIALS AND DESIGN ELEMENTS ON ALL BUILDING FACADES AND ARTICULATE ALL BUILDING FACADES USING COORDINATED ARCHITECTURAL FEATURES SUCH AS PORCHES, WINDOWS, DOORS, CHIMNEYS, GABLES, AND DORMERS.

(B) GARAGES MAY NOT BECOME THE DOMINANT STREET FEATURE. GARAGE DOORS SHALL USE ITEMS SUCH AS WINDOWS, DECORATIVE PATTERNS, AND COLOR TO RELIEVE THE VISUAL IMPACT OF THE HOUSE FROM THE STREET.

SECTION 2. AND BE IT FURTHER ENACTED, that this Act, having been passed by the affirmative vote of five members of the County Council, shall take effect on May 25, 2001, and shall apply to development plans approved after May 25, 2001.

b03401.wpd

READ AND PASSED this 21st day of May, 2001.

BY ORDER

Thomas J. Peddicord, Jr.
Secretary

PRESENTED to the County Executive for his approval this 22nd day of May, 2001.

Thomas J. Peddicord, Jr.
Secretary

APPROVED AND ENACTED:

C. A. Dutch Ruppersberger
County Executive

I HEREBY CERTIFY THAT BILL NO. 34-01 IS TRUE AND CORRECT AND TOOK EFFECT ON _____.

S. G. Samuel Moxley
Chairman, County Council

COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND
Legislative Session 2001, Legislative Day No. 12

Bill No. 58-01

Councilmembers Moxley, Bartenfelder, Kamenetz, Gardina & Olszewski

---

By the County Council, June 4, 2001

A BILL
ENTITLED

AN ACT concerning

Residential Performance Standards

FOR the purpose of providing that residential performance standards apply to certain developments and within certain areas of Baltimore County; requiring certain persons to consider certain findings before development plan approval; authorizing deviation from residential performance standards under certain circumstances; deleting certain requirements; providing for the application of this Act; and generally relating to residential performance standards.

BY repealing and reenacting, with amendments

Section 260
Baltimore County Zoning Regulations, as added by Bill 34-01

WHEREAS, the County Council finds that the South Perry Hall - White Marsh area is unique, and that the piecemeal approval of development plans will impede the County's ability to achieve its objectives in a manner consistent with the Master Plan and the County's

---

EXPLANATION: CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.
[Brackets] indicate matter stricken from existing law.
~~Strike out~~ indicates matter stricken from bill.
Underlining indicates amendments to bill.

land use policies; and

WHEREAS, the County Council had imposed a moratorium on the issuance of building permits in the South Perry Hall - White Marsh area and that moratorium expired on May 30, 2001; and

WHEREAS, the effective date of Council Bill No. 34-01, May 25, 2001, which would have established building standards in the South Perry Hall - White Marsh area, was delayed in order for the Office of Planning to adopt regulations establishing an appeals process for appeals relating to residential performance standards; and

WHEREAS, County Council Bill No. 33-01 and County Council Bill No. 35-01 established a coordinated approach in the planning and development of the South Perry Hall - White Marsh area and these bills were effective May 25, 2001; and

WHEREAS, the County Council believes that it is necessary to require certain developments in the South Perry Hall - White Marsh Area as defined in the official comprehensive zoning map accompanying Bill No. 33-01 to meet the residential performance standards when building permit applications are submitted on a date which coincides with the effective dates of the other legislation concerning the South Perry Hall - White Marsh area; now therefore

SECTION 1. BE IT ENACTED BY THE COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND, that Section 260 of the Baltimore County Zoning Regulations, as added by Bill No. 34-01, be and it is hereby repealed and reenacted, with amendments, to read as follows:

Section 260

Residential Performance Standards

260.1 Scope; Statement of Legislative Intent for Performance Standards.

(a) This section applies to all residential development OF FOUR OR MORE LOTS in Baltimore County THAT IS LOCATED WITHIN THE URBAN/RURAL DEMARCATION LINE.

(b)(1) These performance design standards are intended to ensure that residential development in Baltimore County conforms with a higher quality of design.

(2) The evaluation of compliance shall occur as part of the review of development proposals[, either in reviewing concept plans pursuant to the development regulations of the Baltimore County Code or building permit applications submitted pursuant to an approved development plan].

(3) The Office of Planning may require the submittal of sufficient information, such as building elevations and grading plans, from which a finding can be made on compliance of the project with the standards.

(4) Deviation from the standards [is] MAY BE allowed only if clearly necessary to:

1. Comply with another standard;

2. Comply with environmental regulations or otherwise protect resources; or

3. Achieve the best possible development design, considering other goals in the comprehensive manual of development policies.

(c)(1) The Office of Planning's findings shall be made by the Director of Planning and submitted to the hearing officer or to the Director of Permits and Development Management, as applicable. [If the Director finds that a development proposal does not comply with the standards,

the proposal may not be approved. The Planning Director shall propose and adopt regulations to provide minimum due process in the making of his findings under this section. The Director's findings shall be appealable to the Board of Appeals only as part of an appeal from the hearing officer or director, as applicable.]

(2) THE HEARING OFFICER OR THE DIRECTOR ~~OR~~ OF PERMITS AND DEVELOPMENT MANAGEMENT, AS APPLICABLE, SHALL CONSIDER THE FINDINGS PRESENTED BY THE DIRECTOR OF PLANNING OR THE DIRECTOR'S DESIGNEE BEFORE A DEVELOPMENT PLAN IS APPROVED.

(3) AFTER CONSIDERING THE FINDINGS, THE HEARING OFFICER OR THE DIRECTOR OF PERMITS AND DEVELOPMENT MANAGEMENT MAY DEVIATE FROM THE STANDARDS ONLY IN ACCORDANCE WITH THE REQUIREMENTS IN PARAGRAPH (B)(4) OF THIS SUBSECTION.

260.2 Site Planning

(a) A development proposal shall:

1. Retain the existing quality vegetation of the site to the fullest extent possible and protect the root systems of that vegetation during construction.

2. Integrate locally significant features of the site, such as distinctive buildings, vistas, topographic features, specimen trees, tree stands, hedgerows, monuments, landmarks, ruins, and gardens, into the site design, and retain the character of the features and their settings.

3. Coordinate building design, site layout, and grading so that grade transitions are gradual and respect the existing topography.

4. Provide a landscaped buffer between the rear yards of dwellings existing on may

25, 2001 and the rear yards of abutting new dwellings.

5. Provide for smooth transitions between neighborhoods by arranging and orienting the proposed buildings and site improvements to complement those in the surrounding neighborhood.

6. Provide transitions with respect to setbacks, street patterns, and building-to-street grade relationships.

(b) Reverse frontage lots are permitted only if the petitioner can demonstrate that adequate setbacks, topography, berming, landscaping, or building design will effectively screen private yard space and decks from the public view. Fences may not be located closer than 20 feet to a public right of way.

(c) Panhandle lots are not permitted as a matter of right. Panhandles must conform to section 26-266 of the Baltimore County Code and to the standards in the comprehensive manual of development policies.

(d) The minimum width for any single-family detached lot located in the south perry hall-white marsh area north of Ridge Road is 75 feet as measured along both the front wall and rear wall of the dwelling unit. This subsection does not apply to alternative site design dwellings permitted in accordance with section 1B01.1A.1.b.[, or to development plans approved prior to February 1, 2001, or to minor developments].

260.3 Open Space

A development proposal shall:

(a) Integrate open space areas into the proposed development by:

1. Creating focal points along streets;

2. Locating landscaped open green spaces in view of the development entrance or adjoining public street;

3. Planning a linked network of natural and landscaped open areas connected by pedestrian/bike trails; and

4. Orienting dwelling units around open areas or squares.

(b) Incorporate significant features, such as stands of trees, into open areas.

(c) Link the development's open areas to the surrounding neighborhood open areas, including public parks, walks, and bike trails and create both functional and visual continuity, e.g., by matching the design of a bike trail in the proposed development to the bike trail located in the adjoining property.

260.4 Streets and Parking

(a) A development proposal shall:

1. Provide for at least one street connection to an adjoining neighborhood or an adjoining property, not including the principal access to the subdivision, in order to facilitate good traffic circulation.

2. Design streets to slow traffic by offsetting alignments. Reducing street width, reducing the length of blocks, and employing the use of traffic management devices such as roundabouts, chokers, chicanes, etc., to accomplish traffic calming.

3. Allow on-street parking.

4. Provide pedestrian and bicycle access to commercial areas and community facilities on site within the development and to the surrounding neighborhood.

5. Provide street and parking accommodations which complement the surrounding

neighborhood.

(b) Cul-de-sacs may be used if it is demonstrated that a street connection is not feasible due to site conditions such as severe grade transitions or sensitive natural features, or an alternative site layout is not feasible. If cul-de-sacs are used, developments should consist of a balance of street patterns (cul-de-sacs and connections). If cul-de-sacs are used, design elements such as center landscaping and traffic circles shall be used.

(c) Street widths and front yard setbacks may be reduced in accordance with traditional neighborhood design standards.

260.5 Landscape Design

A development proposal shall:

1. Landscape public open spaces to invite users. Particularly emphasizing the intended entrance to the open space.

2. In addition to plant material, use fences, walls or earth forms to provide effective and attractive screens and buffers where necessary.

3. Provide for, or reinforce and maintain, a continuous street tree canopy by preserving healthy street trees or, if they are not present, planting new trees. The canopy shall be comprised of trees of the same species or trees with design characteristics and growth habits that are similar to those of the existing street trees.

4. Include the design for site signage on the schematic landscape plan. If this is not possible, the signage design may be included in the final development plan, and shall be approved before issuance of any building permits.

260.6 Buildings

(a) A development proposal shall:

1. Provide variety in housing type or design, while maintaining continuity in scale, rhythm, proportion, and detail.

2. Orient the front of the dwelling toward the street and incorporate prominent entries and porches or stoops into front building facades.

3. Adhere to a consistent front building setback for all dwellings on the same street or square, so that the fronts of dwellings define a uniform street edge.

4. Design decks, balconies, and porches as components of the building following dominant building lines, proportions, and style, and in a scale appropriate to the available space on the site. Decks shall be screened to minimize visibility from a public street.

5. Design accessory structures at a scale appropriate to the dwelling and design storage buildings and garages with the same architectural theme as the principal building on the site, providing consistency in materials, colors, roof pitch, and style.

6. Extend the finish material of the exteriors of buildings to grade, or, if this is not possible, to within 12 inches of grade, on all sides of the building excluding foundation walls which shall use a finished quality material such as decorative concrete block, poured concrete with a brick pattern, or stucco, and provide landscaping along the foundation.

7. Use similar materials and design elements on all building facades and articulate all building facades using coordinated architectural features such as porches, windows, doors, chimneys, gables, and dormers.

(b) Garages may not become the dominant street feature. Garage doors shall use items such

as windows, decorative patterns, and color to relieve the visual impact of the house from the street.

SECTION 2. AND BE IT FURTHER ENACTED, That this Act shall apply to:

1. Except as provided in subsection 2. of this section, a ~~development~~ concept plan accepted for filing by the Department of Permits and Development Management on or after July 12, 2001; or

2. A development plan approved on or after May 25, 2001 in the South Perry Hall - White Marsh Area as defined in the official comprehensive zoning map accompanying Bill No. 33-01 as adopted by the County Council.

SECTION 3. AND BE IT FURTHER ENACTED, That this Act, having been passed by the affirmative vote of five members of the County Council, shall take effect July 12, 2001.

READ AND PASSED this 2nd day of July, 2001.

BY ORDER

Thomas J. Peddicord, Jr.
Secretary

PRESENTED to the County Executive for his approval this 3rd day of July, 2001.

Thomas J. Peddicord, Jr.
Secretary

APPROVED AND ENACTED:

July 9, 2001

C. A. Dutch Ruppersberger
County Executive

I HEREBY CERTIFY THAT BILL NO. 58-01 IS TRUE AND CORRECT AND TOOK EFFECT ON July 12, 2001.

S. G. Samuel Moxley
Chairman, County Council

BALTIMORE COUNTY

DEPARTMENT OF PERMITS AND DEVELOPMENT MANAGEMENT

BUREAU OF DEVELOPMENT PLANS REVIEW POLICY MANUAL

In accordance with Section 26-283 of the Baltimore County code, regulations in this manual are intended to repeal the following sections of the Department of Public Works Development Procedures and Policy Manual adopted by County Council Resolution No. 100-85 on November 18, 1985.

Division I	***Sections 4, 5, 6, 7, 8***
Division II	***All Sections***
Division III	***Section 14***
Division IV	***All Sections***

February 27, 2002

PC Exh. 36

XII. STREET LIGHTS

A. GENERAL

1. This street light policy shall apply equally to all land used, or to be used, for residential purposes, including apartments, and to commercial, industrial, institutional or other types of public or non-public usage in Baltimore County. *(For street light policy, see Appendix C.)*

2. Provisions for street lighting must accompany plans for all residential development of two or more lots and all other developments as required.

3. In new residential development, streetlights shall be installed by the Baltimore Gas & Electric Company in the public street rights-of-way. The developer shall be completely responsible for the installation of streetlights in private street rights-of-way.

4. The developer shall pay the estimated costs for street lighting installation before approval of the Utility and/or Rights-of-Way Agreements.

XIII. TRAFFIC ENGINEERING DEVELOPMENT

A. GENERAL GUIDELINES

The following items are intended as general guidelines and may be recommended to be waived or made more stringent by the Director of the Department of Public Works as found to be reasonable for traffic safety or traffic operations.

1. Sight Distance Requirement – Use current AASHTO policy as a guideline. Improving sight distance may take precedence over the following other traffic engineering development regulations when in conflict. In addition to considering sight distance in criteria for points of access, the Department of Public Works also considers posted speed, operating speed, and horizontal and vertical alignment.

2. Street Widths, for Existing County Roads – Are determined by the Bureau of Engineering & Construction, Department of Public Works.

3. Internal Circulation Between Sites – On major collectors and arterials, internal circulation between sites should be provided in order to reduce short trips and turning movements on through streets.

4. Acceleration/Deceleration Lanes - Where a new street intersects an existing street without curb and gutter, and the traffic volume

on the existing street is approximately 5000 or more vehicles a day, an acceleration lane and a deceleration lane shall be provided. The length of these lanes may be reduced depending upon available rights-of-way and field conditions.

5. Intersection Spacing - Where possible, the distance between public or private street intersections shall be at least 100 feet, measured edge of road to edge of road. However, sight distance or traffic operation considerations may take precedence. The Department of Public Works may increase this distance requirement for arterial and major collector roads or to provide adequate stacking distance at traffic signals.

6. Median Breaks - New median breaks generally will be discouraged. However, when a new median break is necessary, a left-turn lane should be provided. When an entrance exists opposite a proposed median break, left-turn lanes should be provided in both directions. Where a new entrance is located at an existing median break, a left-turn lane should be provided.

7. Sidewalks - Sidewalks shall normally be provided along closed-section roadways in areas inside the URDL. In all other situations, the need for sidewalks shall be determined by the Director of the Department of Public Works.

8. Left Turn Lanes on Arterials - Where practical, road widening for left-turn lanes shall be provided on arterial roads where left-turning traffic would significantly impede straight-through traffic.

9. Traffic Impact Studies - A traffic impact study may be required as determined by the Director of the Department of Public Works. Upon the findings of the study, improvements along the property frontage and/or offsite may be required. The scope of the study will be determined on a case-by-case basis.

10. Perpendicular Parking – Where perpendicular parking is located on one side of a county road, maximum average daily trips is 800. Where perpendicular parking is on both sides of a county road, the maximum average daily trips is 600.

11. Traffic Calming – The use of traffic calming/management may be required where the Department of Public Works determines that such improvements are required.

B. ACCESS GUIDELINES

1. Maximum Number of Units with One Means of Access

a. Limits of Units

- 100 units with no future street extension proposed

- 150 units when a future street extension is proposed and is feasible

- >150↑ 2nd means of access must be constructed

b. Exception

These limits may be increased when restricted by a limited or controlled access highway or other physical barrier or limitation as advised by the Department of Public Works

c. Emergency access points in place of full-use access points generally will be discouraged, but may be approved in unusual circumstances.

2. Number of Street Access Points - Along major collectors and arterials, access points exclusive of residential driveways generally shall be kept to a minimum of one access point for each public road bounding the property. However, additional access points may be permitted by the Director of the Department of Public Works. Minor roads may have more entrances as needed for subdivision layout.

3. Number of Driveway Access Points- The number of residential and commercial driveway access points generally shall be kept to a minimum on major collectors and arterials. This can be done by having a use-in-common driveway for adjacent lots, by having corner lots access off the minor street, or by having a private driveway for a group of lots to reduce or eliminate individual driveway access on major streets. Providing residential driveways on to major collectors and arterials should be avoided whenever possible, by instead fronting said lots onto internal subdivision roadways.

4. Use-In-Common Entrances- On major collectors and arterials, use-in-common entrances shall be considered where one property on a main street is being subdivided into several smaller parcels with frontage on the same street. Also, use-in-common entrances shall be placed on the edge of a developing property for use with an adjacent property.

C. PAYMENT FOR TRAFFIC CONTROL DEVICES.

1. Signals Operated and Maintained by Baltimore County

a. Where a traffic signal on a public street is justified on the basis of traffic from a private entrance, the developer shall

be responsible for the entire cost of designing and installing the entire signal with a county-approved private consultant and contractor. In addition, the developer shall be responsible for paying for the continuing monthly energy costs for operation of the signal.

b. When a private entrance is to be located opposite an existing traffic signal, the developer or property owner shall be responsible for the entire cost of designing and installing the necessary modifications by a County-approved private consultant and contractor.

c. Where a traffic signal at the intersection of two (2) public streets is justified on the basis of traffic generated by a proposed development, the developer shall be responsible for the entire cost of designing and installing the entire signal by a county-approved private consultant and contractor.

2. Traffic Signs & Markings - The developer shall be responsible for supplying and installing the traffic signs on public streets or rights-of-way which the traffic engineer determines are needed at the time the Plan is approved. Street name signs on private roads must have white letters on a blue background so that highway, police, and fire personnel know that the roads are private. Otherwise, the signs shall conform to and be installed according to the Manual of Uniform Traffic Control Devices (MUTCD), unless otherwise outlined in specifications supplied by the County.

The developer shall be responsible for the cost of street markings according to the Manual of Uniform Traffic Control Devices.

COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND
Legislative Session 2015, Legislative Day No. 8

Bill No. 37-15

Councilmembers Almond, Jones & Quirk

By the County Council, April 20, 2015

A BILL
ENTITLED

AN ACT concerning

Health Care and Surgery Center and Related Uses

FOR the purpose of defining a health care and surgery center; permitting a health care and surgery center in the OR-2 and B.M. Zones as a matter of right subject to certain requirements; permitting certain accessory commercial uses in the OR-2 Zone; specifying the permitted square footage of certain accessory commercial uses; exempting a health care and surgery center from open space requirements; providing that the performance standards for office buildings apply to a health care and surgery center; providing the off-street parking requirements for a health care and surgery center; exempting a health care and surgery center from basic services mapping standards; clarifying language; and generally relating to a health care and surgery center and related accessory uses.

EXPLANATION: CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.
[Brackets] indicate matter stricken from existing law.
~~Strike out~~ indicates matter stricken from bill.
Underlining indicates amendments to bill.

BY adding
Section 101.1, the definition of health care and surgery center, alphabetically, and Sections 206.3A.3.b.15, 16, and 17, 206.3.A.7, 206.4.E., 233.1.B, health care and surgery center, alphabetically, 409.6.A.2, health care and surgery center, alphabetically, 4A02.4.E.1.H., and 438
Baltimore County Zoning Regulations

BY repealing and re-enacting, with amendments
Sections 206.3.C.1.b. and 206.4.D.
Baltimore County Zoning Regulations

WHEREAS, a health care and surgery center brings together a variety of wellness care, surgical, diagnostic, and treatment services by providing these services within a centralized campus location; and

WHEREAS, a health care and surgery center provides better access, operational efficiencies, and integration for providers which results in conveniences for the patient; and

WHEREAS, a health care and surgery center is part of a fully integrated, patient centered health care delivery system; and

WHEREAS, the Affordable Care Act and the new All-Payer Demonstration provides momentum for the continuing shift from hospital inpatient to ambulatory settings; and

WHEREAS, the consolidation of services in a health care and surgery center creates an opportunity to improve efficiency and coordination of patients' outpatient clinical needs and reduce the need for higher cost inpatient services; now therefore

SECTION 1. BE IT ENACTED BY THE COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND, that the Baltimore County Zoning Regulations read as follows:

Section 101. Definitions.

§101.1 Word usage; definitions

HEALTH CARE AND SURGERY CENTER. ONE OR MORE BUILDINGS AT WHICH COMPREHENSIVE HEALTH CARE SERVICES ARE PROVIDED THROUGH PERSONS OR ENTITIES LICENSED UNDER EITHER THE HEALTH GENERAL OR HEALTH OCCUPATIONS ARTICLE OF THE ANNOTATED CODE OF MARYLAND.

Section 206. OR-2 (Office Building - Residential) Zone.

§206.3. Use Regulations in OR-2 Zones.

A. Uses permitted by right. The following uses, only, are permitted by right:

3. Accessory uses or structures which are normally and customarily incidental to any permitted principal use, including the following, if within office buildings:

b. The following accessory commercial uses:

(15) WELLNESS, HEALTH AND FITNESS CENTER.

(16) FLORIST.

(17) OPTICIAN'S OR OPTOMETRIST'S ESTABLISHMENT.

§206.3. Use Regulations in OR-2 Zones.

A. Uses permitted by right. The following uses, only, are permitted by right:

7. HEALTH CARE AND SURGERY CENTER (see Section 438)

§206.3. Use Regulations in OR-2 Zones.

C. Supplementary use regulations (see also Section 208).

1. Accessory floor area limitations.

b. No single accessory commercial use other than a hotel, WELLNESS,

health and fitness [club] CENTER, conference facility, standard restaurant, carry-out restaurant or tavern, DRUGSTORE, OR OPTICIAN'S OR OPTOMETRIST'S ESTABLISHMENT may occupy more than 1,500 square feet of floor area.

§206.4. Performance standards in OR-2 Zones.

D. For the purpose of this subsection, a research institute or laboratory, AND A HEALTH CARE AND SURGERY CENTER, shall be considered an office building and shall be governed by the performance standards specified for office buildings in this subsection.

E. NOTWITHSTANDING THE PERFORMANCE STANDARDS IN SECTION 206.4.C, THERE IS NO MINIMUM AMENITY OPEN SPACE REQUIREMENT FOR A HEALTH CARE AND SURGERY CENTER.

Section 233. Business, Major (B.M.) Zone Use Regulations.

§233.1. Permitted Uses.

The following uses only are permitted (Section 233.2)

B. HEALTH CARE AND SURGERY CENTER (SEE SECTION 438)

Section 409. Off-Street Parking and Loading.

§409.6. Required number of parking spaces.

A. General Requirements. The standards set forth below shall apply in all zones unless otherwise noted. [Where] IF the required number of off-street parking spaces is not set forth for a particular type of use, the Director of Permits, Approvals and Inspections shall determine the basis of the number of spaces to be provided. [When] IF the number of spaces calculated in accordance with this section results in a number containing a fraction, the required number of

spaces shall be the next highest whole number.

2. Commercial and service uses.

Type of Use	Minimum Number of Required Off-Street Parking Spaces
HEALTH CARE AND SURGERY CENTER	4 PER 1,000 SQUARE FEET OF GROSS FLOOR AREA

§4A02.4. Basic services mapping standards.

E. General exceptions to basic services mapping standards.

1. The provisions of Section 4A02.4.A, B, C and D do not apply to any of the following:

H. HEALTH CARE AND SURGERY CENTER.

Article 4

Special Regulations

SECTION 438. HEALTH CARE AND SURGERY CENTER.

A HEALTH CARE AND SURGERY CENTER IS SUBJECT TO THE FOLLOWING REQUIREMENTS:

1. AMBULATORY SURGERY AND RADIOLOGY SERVICES SHALL BE PROVIDED;

2. AT LEAST 75% OF THE MEDICAL AND SURGICAL SPECIALITIES OR SUBSPECIALTIES RECOGNIZED BY THE AMERICAN BOARD OF MEDICAL SPECIALITIES SHALL BE PROVIDED;

3. HEALTH CARE SERVICES SHALL BE PROVIDED 7 DAYS PER WEEK AND 365 DAYS PER YEAR;

4. THE CENTER SHALL HAVE AT LEAST FOUR OPERATING ROOMS; AND

5. THE GROSS FLOOR AREA OF THE CENTER, WHICH INCLUDES ALL BUILDINGS, SHALL BE AT LEAST 150,000 SQUARE FEET, WITH A MINIMUM OF 10,000 SQUARE FEET OF RADIOLOGY SPACE, BUT NO MORE THAN 400,000 SQUARE FEET IN TOTAL.

SECTION 2. AND BE IT FURTHER ENACTED, that this Act, having been passed by the affirmative vote of five members of the County Council, shall take effect on June 1, 2015.

b03715.wpd

READ AND PASSED this ***21st*** day of ***MAY,*** 2015.

BY ORDER

Thomas J. Peddicord, Jr.
Secretary

PRESENTED to the County Executive for his approval this ***22nd*** day of ***MAY,*** 2015.

Thomas J. Peddicord, Jr.
Secretary

APPROVED AND ENACTED:

June 1, 2015

Kevin B. Kamenetz
County Executive

I HEREBY CERTIFY THAT BILL NO. ***37-15*** IS TRUE AND CORRECT AND TOOK EFFECT ON June 4, 2015.

Cathy Bevins
Chair, County Council

COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND
Legislative Session 2017, Legislative Day No. 7

Bill No. 15-17

All Councilmembers

By the County Council, April 3, 2017

A BILL
ENTITLED

AN ACT concerning

Basic Services Maps

FOR the purpose of repealing the Basic Services Sewerage Map, the Basic Services Water Supply Map and the Basic Services Transportation Map; and adopting a new Basic Services Sewerage Map, a new Basic Services Water Supply Map and a new Basic Services Transportation Map.

By repealing and reenacting, with amendments
Subsection 4A02.3.A.1.,2. and 3.
Baltimore County Zoning Regulations, as amended

BY repealing
2016 Basic Services Sewerage Map
2016 Basic Services Water Supply Map
2016 Basic Services Transportation Map, all as adopted by Bill No. 18-16

BY adopting the new
2017 Basic Services Sewerage Map
2017 Basic Services Water Supply Map
2017 Basic Services Transportation Map

EXPLANATION: CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.
[Brackets] indicate matter stricken from existing law.
~~Strike out~~ indicates matter stricken from bill.
Underlining indicates amendments to bill.

WHEREAS, in accordance with Subsection 4A02.3.E. of the Baltimore County Zoning Regulations, the Planning Board has recommended revisions to the Basic Services Maps and submitted those recommendations to the County Council on February 21, 2017, and the County Council has held a public hearing thereon on April 3, 2017; now, therefore

SECTION 1. BE IT ENACTED BY THE COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND, that the Basic Services Maps referred to in Subsections 4A02.3.A.1., 2. and 3. of the Baltimore County Zoning Regulations, and further identified as (1) 2016 Basic Services Sewerage Map, (2) 2016 Basic Services Water Supply Map; and (3) 2016 Basic Services Transportation Map, and any amendments and revisions previously made thereto are hereby repealed.

SECTION 2. AND BE IT FURTHER ENACTED, that the Basic Services Maps identified herein and accompanying this Act are hereby adopted and declared to be a part of this Act and incorporated by reference herein. The following maps are hereby adopted and identified as follows:

1. 2017 Basic Services Sewerage Map;

2. 2017 Basic Services Water Supply Map; and

3. 2017 Basic Services Transportation Map , WITH THE FOLLOWING AMENDMENTS:

(A) THE COMMUTER SHED AT THE INTERSECTION OF PULASKI HIGHWAY AND EBENEZER ROAD SHALL BE REDRAWN TO INCLUDE THE ADDITIONAL AREAS WEST OF PULASKI HIGHWAY, NORTH OF EBENEZER ROAD TO THE CURRENT

BOUNDARY, AND SOUTH OF EBENEZER ROAD TO HONEYGO RUN. THE COMMUTER SHED SHALL ALSO INCLUDE THE AREAS NORTH OF HONEYGO RUN AND EAST OF INTERSTATE 95, AND SOUTH OF COWENTON AVENUE AND EBENEZER ROAD TO THE CURRENT BOUNDARY AT THE RAILROAD TRACKS.

(B) BELAIR ROAD AND ROSSVILLE BOULEVARD – LEVEL OF SERVICE: F.

SECTION 3. AND BE IT FURTHER ENACTED, that upon the effective date of this Act, the Maps adopted hereby shall be signed by the Chairman of the County Council and shall be dated as of the effective date of this Act and thereafter delivered to the Department of Permits, Approvals and Inspections.

SECTION 4. AND BE IT FURTHER ENACTED, that Subsection 4A02.3.A.1., 2. and 3. of the Baltimore County Zoning Regulations, be and they are hereby repealed and reenacted, with amendments, to read as follows:

Section 4A02.3 - Basic Services Maps

4A02.3 - Adoption of Basic Services Maps

A. The following basic services maps, which shall be in the custody of the Zoning Commissioner for Baltimore County and posted on the county's internet website, are hereby adopted and made a part of this Article:

1. [2016] 2017 Basic Services Sewerage Map

2. [2016] 2017 Basic Services Water Supply Map

3. [2016] 2017 Basic Services Transportation Map

SECTION 5. AND BE IT FURTHER ENACTED, that this Act, having been passed by

the affirmative vote of five members of the County Council, shall take effect on May 15, 2017.

b01816.wpd

READ AND PASSED this ***1ST*** day of ***MAY,*** 2017.

BY ORDER

Thomas J. Peddicord, Jr.
Secretary

PRESENTED to the County Executive for his approval this ***2nd*** day of ***MAY***, 2017.

Thomas J. Peddicord, Jr.
Secretary

APPROVED AND ENACTED:

May 4, 2017

Kevin B. Kamenetz
County Executive

I HEREBY CERTIFY THAT BILL NO. ***15-17*** IS TRUE AND CORRECT AND TOOK EFFECT ON May 15, 2017.

Tom Quirk
Chairman, County Council

COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND
Legislative Session 2020, Legislative Day No. 8

Bill No. 30-20

All Councilmembers

By the County Council, April 6, 2020

A BILL
ENTITLED

AN ACT concerning

Basic Services Maps

FOR the purpose of repealing the Basic Services Sewerage Map, the Basic Services Water Supply Map and the Basic Services Transportation Map; and adopting a new Basic Services Sewerage Map, a new Basic Services Water Supply Map and a new Basic Services Transportation Map.

By repealing and reenacting, with amendments
Subsection 4A02.3.A.1.,2. and 3.
Baltimore County Zoning Regulations, as amended

BY repealing
2019 Basic Services Sewerage Map
2019 Basic Services Water Supply Map
2019 Basic Services Transportation Map, all as adopted by Bill No. 25-18

BY adopting the new
2020 Basic Services Sewerage Map
2020 Basic Services Water Supply Map
2020 Basic Services Transportation Map

EXPLANATION: CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.
[Brackets] indicate matter stricken from existing law.
~~Strike-out~~ indicates matter stricken from bill.
Underlining indicates amendments to bill.

WHEREAS, in accordance with Subsection 4A02.3.E. of the Baltimore County Zoning

Regulations, the Planning Board has recommended revisions to the Basic Services Maps and submitted those recommendations to the County Council on February 21, 2019, and the County Council has held a public hearing thereon on April 1, 2019; now, therefore

SECTION 1. BE IT ENACTED BY THE COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND, that the Basic Services Maps referred to in Subsections 4A02.3.A.1., 2. and 3. of the Baltimore County Zoning Regulations, and further identified as (1) 2019 Basic Services Sewerage Map, (2) 2019 Basic Services Water Supply Map; and (3) 2019 Basic Services Transportation Map, and any amendments and revisions previously made thereto are hereby repealed.

SECTION 2. AND BE IT FURTHER ENACTED, that the Basic Services Maps identified herein and accompanying this Act are hereby adopted and declared to be a part of this Act and incorporated by reference herein. The following maps are hereby adopted and identified as follows:

1. 2020 Basic Services Sewerage Map;

2. 2020 Basic Services Water Supply Map; and

3. 2020 Basic Services Transportation Map, WITH THE FOLLOWING AMENDMENTS:

A. THE COMMUTER SHED LOCATED AT THE INTERSECTION OF EBENEZER ROAD AND PULASKI HIGHWAY SHALL BE REDRAWN TO EXCLUDE THE AREA OF LAND ATTACHED AS EXHIBIT "A" AND DESCRIBED HEREIN AS FOLLOWS:

BEGINNING FOR THE SAME ON THE SOUTHEAST SIDE OF PULASKI HIGHWAY, 150 FEET WIDE, AT A POINT DESIGNATED WITH A MARYLAND STATE COORDINATE

VALUE OF NORTH 628782.41 AND EAST 1478470.26 AS SHOWN ON A PLAT ENTITLED "FINAL PLAT, CECELIA SCHWABER, EXEMPT TRUST U/A" AND RECORDED AMONG THE LAND RECORDS OF BALTIMORE COUNTY IN PLAT BOOK S.M. 78, FOLIO 368; THENCE BINDING ON THE SOUTHEAST SIDE OF PULASKI HIGHWAY AND ON THE OUTLINE OF SAID PLAT **(1)** NORTH 45 DEGREES 02 MINUTES 33 SECONDS EAST 1068.61; THENCE LEAVING SAID HIGHWAY AND BINDING ON THE OUTLINES OF SAID PLAT THE FOLLOWING SIX COURSES AND DISTANCES: **(2)** SOUTH 69 DEGREES 53 MINUTES 59 SECONDS EAST 70.16 FEET; THENCE **(3)** SOUTH 06 DEGREES 21 MINUTES 02 SECONDS EAST 1947.07 FEET; THENCE **(4)** SOUTH 82 DEGREES 05 MINUTES 22 SECONDS WEST 518.59 FEET; THENCE **(5)** NORTH 07 DEGREES 00 MINUTES 39 SECONDS WEST 344.59 FEET; THENCE **(6)** SOUTH 82 DEGREES 59 MINUTES 21 SECONDS WEST 365.35 FEET; AND THENCE **(7)** NORTH 06 DEGREES 56 MINUTES 32 SECONDS WEST 985.35 FEET TO THE PLACE OF BEGINNING.

CONTAINING 31.489 ACRES OF LAND, MORE OR LESS, WITH THE COURSES BASED ON THE MARYLAND COORDINATE SYSTEM (NAD 83/91).

BEING KNOWN AND DESIGNATED AS #11301 PULASKI HIGHWAY – PARCEL 27, 230 AS SHOWN ON A PLAT ENTITLED "FINAL PLAT, CECELIA SCHWABER, EXEMPT TRUST U/A" AND RECORDED AMONG THE LAND RECORDS OF BALTIMORE COUNTY IN PLAT BOOK S.M. 78, FOLIO 368.

ALSO BEING ALL OF THAT LAND DESCRIBED IN A DEED DATED JANUARY 4, 2010 AND RECORDED AMONG THE LAND RECORDS OF BALTIMORE COUNTY IN LIBER S.M. 29037, FOLIO 10 WAS CONVEYED BY REVOCABLE TRUST AGREEMENT OF CECELIA SCHWABER DTD. DECEMBER 9, 1985 AND CECELIA SCHWABER EXEMPT

TRUST U/A DECEMBER 9, 1985 UNTO 11301 PULASKI HIGHWAY, LLC.

B. PADONIA ROAD AND DEERCO ROAD/BEAVER DAM ROAD AT A 600 FOOT RADIUS FROM THE CENTER OF THE INTERSECTION – LEVEL OF SERVICE: F.

SECTION 3. AND BE IT FURTHER ENACTED, that upon the effective date of this Act, the Maps adopted hereby shall be signed by the Chairman of the County Council and shall be dated as of the effective date of this Act and thereafter delivered to the Department of Permits, Approvals and Inspections.

SECTION 4. AND BE IT FURTHER ENACTED, that Subsection 4A02.3.A.1., 2. and 3. of the Baltimore County Zoning Regulations, be and they are hereby repealed and reenacted, with amendments, to read as follows:

Section 4A02.3 - Basic Services Maps

4A02.3 - Adoption of Basic Services Maps

A. The following basic services maps, which shall be in the custody of the Zoning Commissioner for Baltimore County and posted on the county's internet website, are hereby adopted and made a part of this Article:

1. [2019] 2020 Basic Services Sewerage Map

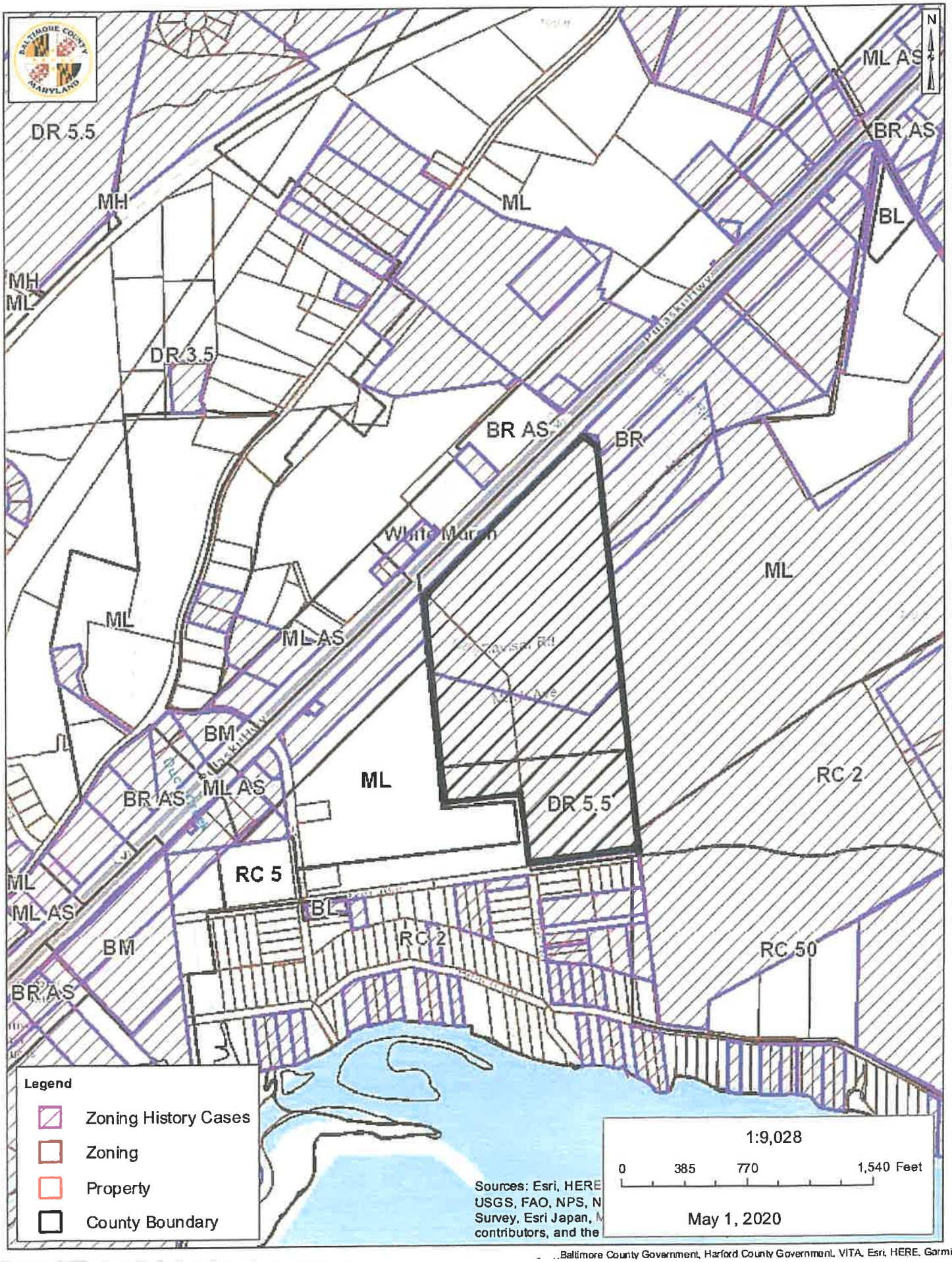
2. [2019] 2020 Basic Services Water Supply Map

3. [2019] 2020 Basic Services Transportation Map

SECTION 5. AND BE IT FURTHER ENACTED, that this Act, having been passed by the affirmative vote of five members of the County Council, shall take effect on May 18, 2020.

Exhibit "A"

Baltimore County - My Neighborhood



READ AND PASSED this ***4th*** day of ***MAY,*** 2020.

BY ORDER

Thomas H. Bostwick
Secretary

PRESENTED to the County Executive for his approval this ***5th*** day of ***MAY,*** 2020.

Thomas H. Bostwick
Secretary

APPROVED AND ENACTED:

May 11, 2020

John A. Olszewski, Jr.
County Executive

I HEREBY CERTIFY THAT BILL NO. ***30-20*** IS TRUE AND CORRECT AND TOOK EFFECT ON May 18, 2020.

Cathy Bevins
Chair, County Council

COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND
Legislative Session 2021, Legislative Day No. 7

Bill No. 32-21

All Councilmembers

By the County Council, April 5, 2021

A BILL
ENTITLED

AN ACT concerning

Basic Services Maps

FOR the purpose of repealing the Basic Services Sewerage Map, the Basic Services Water Supply Map and the Basic Services Transportation Map; and adopting a new Basic Services Sewerage Map, a new Basic Services Water Supply Map and a new Basic Services Transportation Map.

By repealing and reenacting, with amendments
Subsection 4A02.3.A.1.,2. and 3.
Baltimore County Zoning Regulations, as amended

BY repealing
2020 Basic Services Sewerage Map
2020 Basic Services Water Supply Map
2020 Basic Services Transportation Map, all as adopted by Bill No. 30-20

BY adopting the new
2021 Basic Services Sewerage Map
2021 Basic Services Water Supply Map
2021 Basic Services Transportation Map

EXPLANATION: CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.
[Brackets] indicate matter stricken from existing law.
~~Strike-out~~ indicates matter stricken from bill.
Underlining indicates amendments to bill.

WHEREAS, in accordance with Subsection 4A02.3.E. of the Baltimore County Zoning Regulations, the Planning Board has recommended revisions to the Basic Services Maps and submitted those recommendations to the County Council on March 5, 2021, and the County Council has held a public hearing thereon on April 27, 2021; now, therefore

SECTION 1. BE IT ENACTED BY THE COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND, that the Basic Services Maps referred to in Subsections 4A02.3.A.1., 2. and 3. of the Baltimore County Zoning Regulations, and further identified as (1) 2020 Basic Services Sewerage Map, (2) 2020 Basic Services Water Supply Map; and (3) 2020 Basic Services Transportation Map, and any amendments and revisions previously made thereto are hereby repealed.

SECTION 2. AND BE IT FURTHER ENACTED, that the Basic Services Maps identified herein and accompanying this Act are hereby adopted and declared to be a part of this Act and incorporated by reference herein. The following maps are hereby adopted and identified as follows:

1. 2021 Basic Services Sewerage Map;

2. 2021 Basic Services Water Supply Map; and

3. 2021 Basic Services Transportation Map, WITH THE FOLLOWING AMENDMENTS:

A. THE COMMUTER SHED LOCATED AT THE INTERSECTION OF EBENEZER ROAD AND PULASKI HIGHWAY SHALL BE REDRAWN TO EXCLUDE THE AREA OF LAND SHOWN ON THE MAP ATTACHED AS EXHIBIT "A" AND MORE FULLY DESCRIBED HEREIN AS FOLLOWS:

BEGINNING FOR THE SAME ON THE SOUTHEAST SIDE OF PULASKI HIGHWAY, 150 FEET WIDE, AT A POINT DESIGNATED WITH A MARYLAND STATE COORDINATE VALUE OF NORTH 628782.41 AND EAST 1478470.26 AS SHOWN ON A PLAT ENTITLED "FINAL PLAT, CECELIA SCHWABER, EXEMPT TRUST U/A" AND RECORDED AMONG THE LAND RECORDS OF BALTIMORE COUNTY IN PLAT BOOK S.M. 78, FOLIO 368; THENCE BINDING ON THE SOUTHEAST SIDE OF PULASKI HIGHWAY AND ON THE OUTLINE OF SAID PLAT **(1)** NORTH 45 DEGREES 02 MINUTES 33 SECONDS EAST 1068.61; THENCE LEAVING SAID HIGHWAY AND BINDING ON THE OUTLINES OF SAID PLAT THE FOLLOWING SIX COURSES AND DISTANCES: (2) SOUTH 69 DEGREES 53 MINUTES 59 SECONDS EAST 70.16 FEET; THENCE (3) SOUTH 06 DEGREES 21 MINUTES 02 SECONDS EAST 1947.07 FEET; THENCE (4) SOUTH 82 DEGREES 05 MINUTES 22 SECONDS WEST 518.59 FEET; THENCE (5) NORTH 07 DEGREES 00 MINUTES 39 SECONDS WEST 344.59 FEET; THENCE (6) SOUTH 82 DEGREES 59 MINUTES 21 SECONDS WEST 365.35 FEET; AND THENCE **(7)** NORTH 06 DEGREES 56 MINUTES 32 SECONDS WEST 985.35 FEET TO THE PLACE OF BEGINNING.

CONTAINING 31.489 ACRES OF LAND, MORE OR LESS, WITH THE COURSES BASED ON THE MARYLAND COORDINATE SYSTEM (NAD 83/91).

BEING KNOWN AND DESIGNATED AS #11301 PULASKI HIGHWAY – PARCEL 27, 230 AS SHOWN ON A PLAT ENTITLED "FINAL PLAT, CECELIA SCHWABER, EXEMPT TRUST U/A" AND RECORDED AMONG THE LAND RECORDS OF BALTIMORE COUNTY IN PLAT BOOK S.M. 78, FOLIO 368.

ALSO BEING ALL OF THAT LAND DESCRIBED IN A DEED DATED JANUARY 4, 2010 AND RECORDED AMONG THE LAND RECORDS OF BALTIMORE COUNTY IN LIBER S.M. 29037, FOLIO 10 WAS CONVEYED BY REVOCABLE TRUST AGREEMENT OF CECELIA SCHWABER DTD. DECEMBER 9, 1985 AND CECELIA SCHWABER EXEMPT TRUST U/A DECEMBER 9, 1985 UNTO 11301 PULASKI HIGHWAY, LLC.

B. PADONIA ROAD AND DEERCO ROAD/BEAVER DAM ROAD AT A 600 FOOT RADIUS FROM THE CENTER OF THE INTERSECTION – LEVEL OF SERVICE F.

C. THE COMMUTER SHED LOCATED AT THE INTERSECTION OF CHARLES STREET AND BELLONA AVENUE/KENILWORTH DRIVE SHALL BE REDRAWN TO EXCLUDE THE AREA OF LAND WITHIN THE BOUNDARY OF WEST JOPPA ROAD, GREENWOOD ROAD, AND CHESTNUT ROAD, AS SHOWN ON THE MAP ATTACHED AS EXHIBIT "B" AND MORE FULLY DESCRIBED HEREIN AS FOLLOWS:

LOT ONE AND LOT TWO AS SHOWN ON A PLAT ENTITLED, 'AMENDED SUBDIVISION PLAT OF BLAKEHURST LIFE CARE COMMUNITY' DATED MARCH 18, 1992 AND RECORDED AMONG THE LAND RECORDS OF BALTIMORE COUNTY IN PLAT BOOK SM NO. 64, FOLIO 34.

SECTION 3. AND BE IT FURTHER ENACTED, that upon the effective date of this Act, the Maps adopted hereby shall be signed by the Chairman of the County Council and shall be dated as of the effective date of this Act and thereafter delivered to the Department of Permits, Approvals and Inspections.

SECTION 4. AND BE IT FURTHER ENACTED, that Subsection 4A02.3.A.1., 2. and 3. of the Baltimore County Zoning Regulations, be and they are hereby repealed and reenacted,

with amendments, to read as follows:

Section 4A02.3 - Basic Services Maps

4A02.3 - Adoption of Basic Services Maps

A. The following basic services maps, which shall be in the custody of the Zoning Commissioner for Baltimore County and posted on the county's internet website, are hereby adopted and made a part of this Article:

1. [2020] 2021 Basic Services Sewerage Map

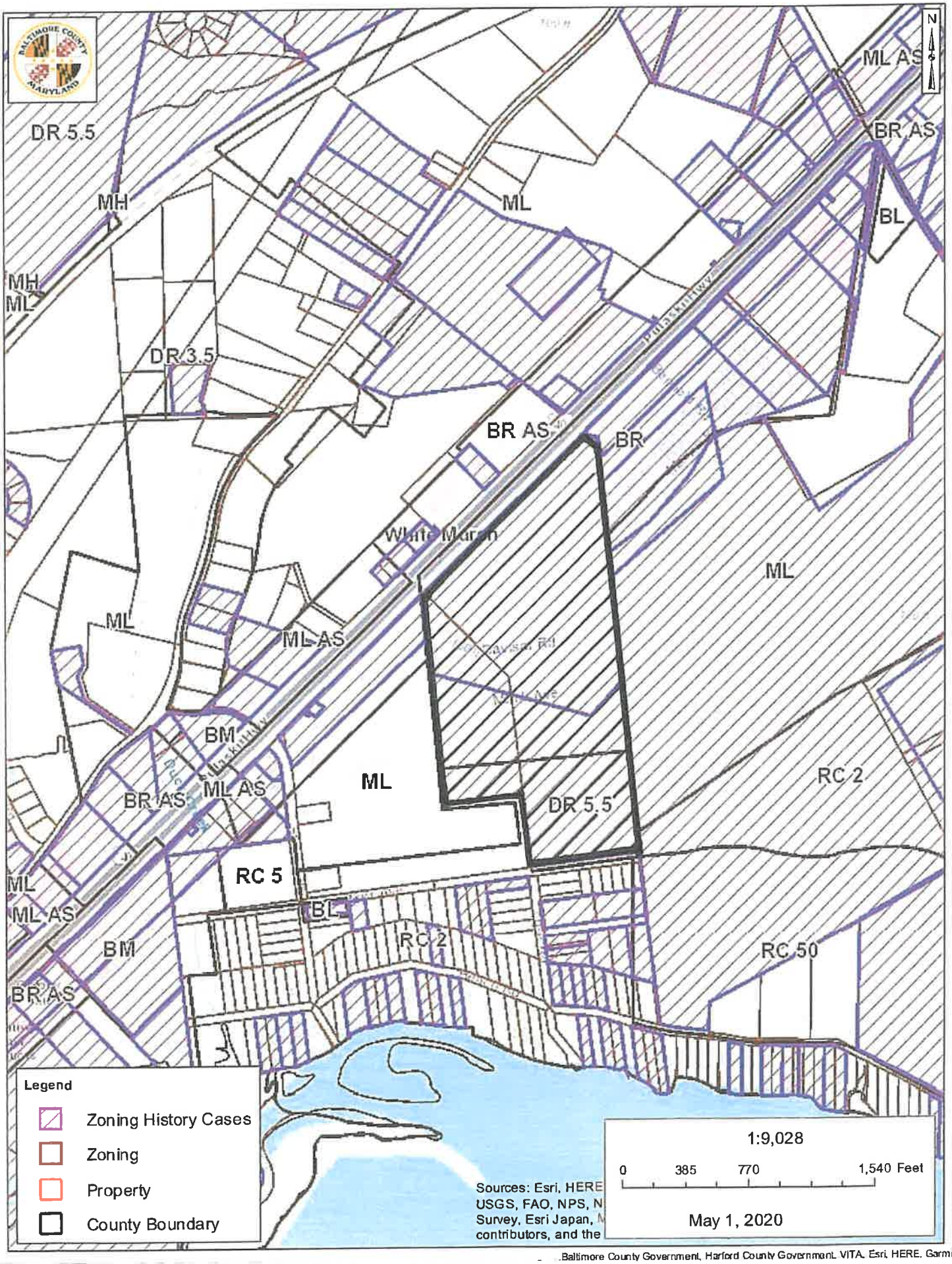
2. [2020] 2021 Basic Services Water Supply Map

3. [2020] 2021 Basic Services Transportation Map

SECTION 5. AND BE IT FURTHER ENACTED, that this Act, having been passed by the affirmative vote of five members of the County Council, shall take effect on May 17, 2021.

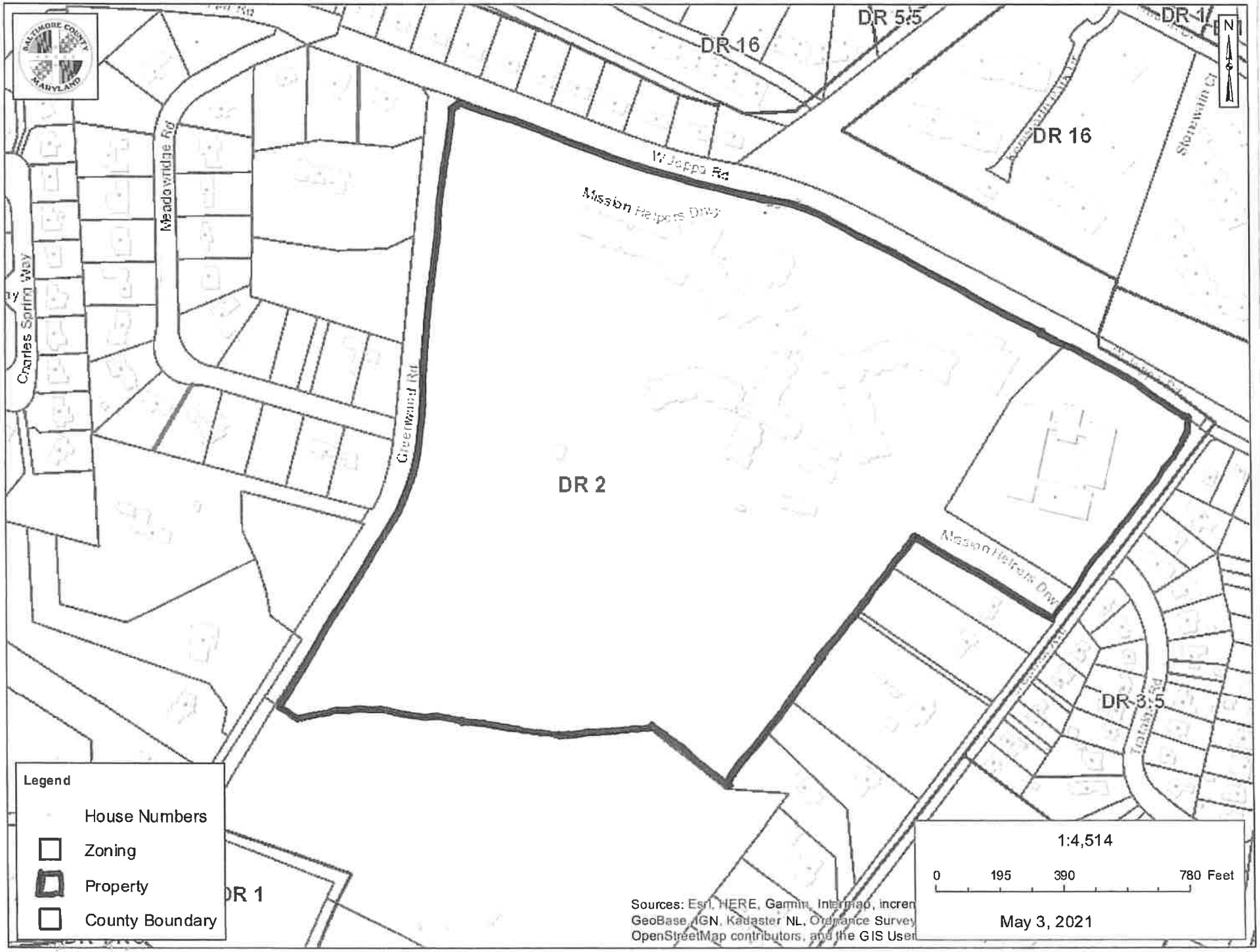
Exhibit "A"

Baltimore County - My Neighborhood



Baltimore County - My Neighborhood

EXHIBIT "B"



READ AND PASSED this ***3rd*** day of ***MAY,*** 2021.

Thomas H. Bostwick
Secretary

PRESENTED to the County Executive for his approval this ***4th*** day of ***MAY,*** 2021.

Thomas H. Bostwick
Secretary

APPROVED AND ENACTED:

May 7, 2021

John A. Olszewski, Jr.
County Executive

I HEREBY CERTIFY THAT BILL NO. ***32-21*** IS TRUE AND CORRECT AND TOOK EFFECT ON May 17, 2021.

Julian E. Jones Jr.
Chair, County Council

COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND
Legislative Session 2022, Legislative Day No. 8

Bill No. 25-22

All Councilmembers

By the County Council, April 4, 2022

A BILL
ENTITLED

AN ACT concerning

Basic Services Maps

FOR the purpose of repealing the Basic Services Sewerage Map, the Basic Services Water Supply Map and the Basic Services Transportation Map; and adopting a new Basic Services Sewerage Map, a new Basic Services Water Supply Map and a new Basic Services Transportation Map.

By repealing and reenacting, with amendments
Subsection 4A02.3.A.1.,2. and 3.
Baltimore County Zoning Regulations, as amended

BY repealing
2021 Basic Services Sewerage Map
2021 Basic Services Water Supply Map
2021 Basic Services Transportation Map, all as adopted by Bill No. 32-21

BY adopting the new
2022 Basic Services Sewerage Map
2022 Basic Services Water Supply Map
2022 Basic Services Transportation Map

EXPLANATION: CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.
[Brackets] indicate matter stricken from existing law.
~~Strike out~~ indicates matter stricken from bill.
Underlining indicates amendments to bill.

WHEREAS, in accordance with Subsection 4A02.3.E. of the Baltimore County Zoning Regulations, the Planning Board has recommended revisions to the Basic Services Maps and submitted those recommendations to the County Council on March 5, 2021, and the County Council has held a public hearing thereon on April 26, 2022; now, therefore

SECTION 1. BE IT ENACTED BY THE COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND, that the Basic Services Maps referred to in Subsections 4A02.3.A.1., 2. and 3. of the Baltimore County Zoning Regulations, and further identified as (1) 2021 Basic Services Sewerage Map, (2) 2021 Basic Services Water Supply Map; and (3) 2021 Basic Services Transportation Map, and any amendments and revisions previously made thereto are hereby repealed.

SECTION 2. AND BE IT FURTHER ENACTED, that the Basic Services Maps identified herein and accompanying this Act are hereby adopted and declared to be a part of this Act and incorporated by reference herein. The following maps are hereby adopted and identified as follows:

1. 2022 Basic Services Sewerage Map;

2. 2022 Basic Services Water Supply Map; and

3. 2022 Basic Services Transportation Map, WITH THE FOLLOWING AMENDMENTS:

A. THE COMMUTER SHED LOCATED AT THE INTERSECTION OF SOUTH ROLLING ROAD AND FREDERICK ROAD SHALL BE REDRAWN TO EXCLUDE THE AREA OF LAND ENCOMPASSED WITHIN THE ELLICOTT MILL NATIONAL REGISTER HISTORIC DISTRICT AS SHOWN ON THE MAP ATTACHED AS EXHIBIT "A".

B. THE COMMUTER SHED LOCATED AT THE INTERSECTION OF CHARLES STREET AND BELLONA AVENUE/KENILWORTH DRIVE SHALL BE REDRAWN TO EXCLUDE THE AREA OF LAND WITHIN THE BOUNDARY OF WEST JOPPA ROAD, GREENWOOD ROAD, AND CHESTNUT ROAD, AS SHOWN ON THE MAP ATTACHED AS EXHIBIT "B" AND MORE FULLY DESCRIBED HEREIN AS FOLLOWS:

LOT ONE AND LOT TWO AS SHOWN ON A PLAT ENTITLED, 'AMENDED SUBDIVISION PLAT OF BLAKEHURST LIFE CARE COMMUNITY' DATED MARCH 18, 1992 AND RECORDED AMONG THE LAND RECORDS OF BALTIMORE COUNTY IN PLAT BOOK SM NO. 64, FOLIO 34.

C. THE COMMUTER SHED LOCATED AT THE INTERSECTION OF EBENEZER ROAD AND PULASKI HIGHWAY SHALL BE REDRAWN TO EXCLUDE THE AREA OF LAND SHOWN ON THE MAP ATTACHED AS EXHIBIT "C" AND MORE FULLY DESCRIBED HEREIN AS FOLLOWS:

BEGINNING FOR THE SAME ON THE SOUTHEAST SIDE OF PULASKI HIGHWAY, 150 FEET WIDE, AT A POINT DESIGNATED WITH A MARYLAND STATE COORDINATE VALUE OF NORTH 628782.41 AND EAST 1478470.26 AS SHOWN ON A PLAT ENTITLED "FINAL PLAT, CECELIA SCHWABER, EXEMPT TRUST U/A" AND RECORDED AMONG THE LAND RECORDS OF BALTIMORE COUNTY IN PLAT BOOK S.M. 78, FOLIO 368; THENCE BINDING ON THE SOUTHEAST SIDE OF PULASKI HIGHWAY AND ON THE OUTLINE OF SAID PLAT **(1)** NORTH 45 DEGREES 02 MINUTES 33 SECONDS EAST 1068.61; THENCE LEAVING SAID HIGHWAY AND BINDING ON THE OUTLINES OF SAID PLAT THE FOLLOWING SIX COURSES AND DISTANCES: **(2)** SOUTH 69 DEGREES 53 MINUTES 59 SECONDS EAST 70.16 FEET;

THENCE (3) SOUTH 06 DEGREES 21 MINUTES 02 SECONDS EAST 1947.07 FEET; THENCE (4) SOUTH 82 DEGREES 05 MINUTES 22 SECONDS WEST 518.59 FEET; THENCE (5) NORTH 07 DEGREES 00 MINUTES 39 SECONDS WEST 344.59 FEET; THENCE (6) SOUTH 82 DEGREES 59 MINUTES 21 SECONDS WEST 365.35 FEET; AND THENCE (7) NORTH 06 DEGREES 56 MINUTES 32 SECONDS WEST 985.35 FEET TO THE PLACE OF BEGINNING.

CONTAINING 31.489 ACRES OF LAND, MORE OR LESS, WITH THE COURSES BASED ON THE MARYLAND COORDINATE SYSTEM (NAD 83/91).

BEING KNOWN AND DESIGNATED AS #11301 PULASKI HIGHWAY – PARCEL 27, 230 AS SHOWN ON A PLAT ENTITLED "FINAL PLAT, CECELIA SCHWABER, EXEMPT TRUST U/A" AND RECORDED AMONG THE LAND RECORDS OF BALTIMORE COUNTY IN PLAT BOOK S.M. 78, FOLIO 368.

ALSO BEING ALL OF THAT LAND DESCRIBED IN A DEED DATED JANUARY 4, 2010 AND RECORDED AMONG THE LAND RECORDS OF BALTIMORE COUNTY IN LIBER S.M. 29037, FOLIO 10 WAS CONVEYED BY REVOCABLE TRUST AGREEMENT OF CECELIA SCHWABER DTD. DECEMBER 9, 1985 AND CECELIA SCHWABER EXEMPT TRUST U/A DECEMBER 9, 1985 UNTO 11301 PULASKI HIGHWAY, LLC.

SECTION 3. AND BE IT FURTHER ENACTED, that upon the effective date of this Act, the Maps adopted hereby shall be signed by the Chairman of the County Council and shall be dated as of the effective date of this Act and thereafter delivered to the Department of Permits, Approvals and Inspections.

SECTION 4. AND BE IT FURTHER ENACTED, that Subsection 4A02.3.A.1., 2. and 3. of the Baltimore County Zoning Regulations, be and they are hereby repealed and reenacted, with amendments, to read as follows:

Section 4A02.3 - Basic Services Maps

4A02.3 - Adoption of Basic Services Maps

A. The following basic services maps, which shall be in the custody of the Zoning Commissioner for Baltimore County and posted on the county's internet website, are hereby adopted and made a part of this Article:

1. [2021] 2022 Basic Services Sewerage Map

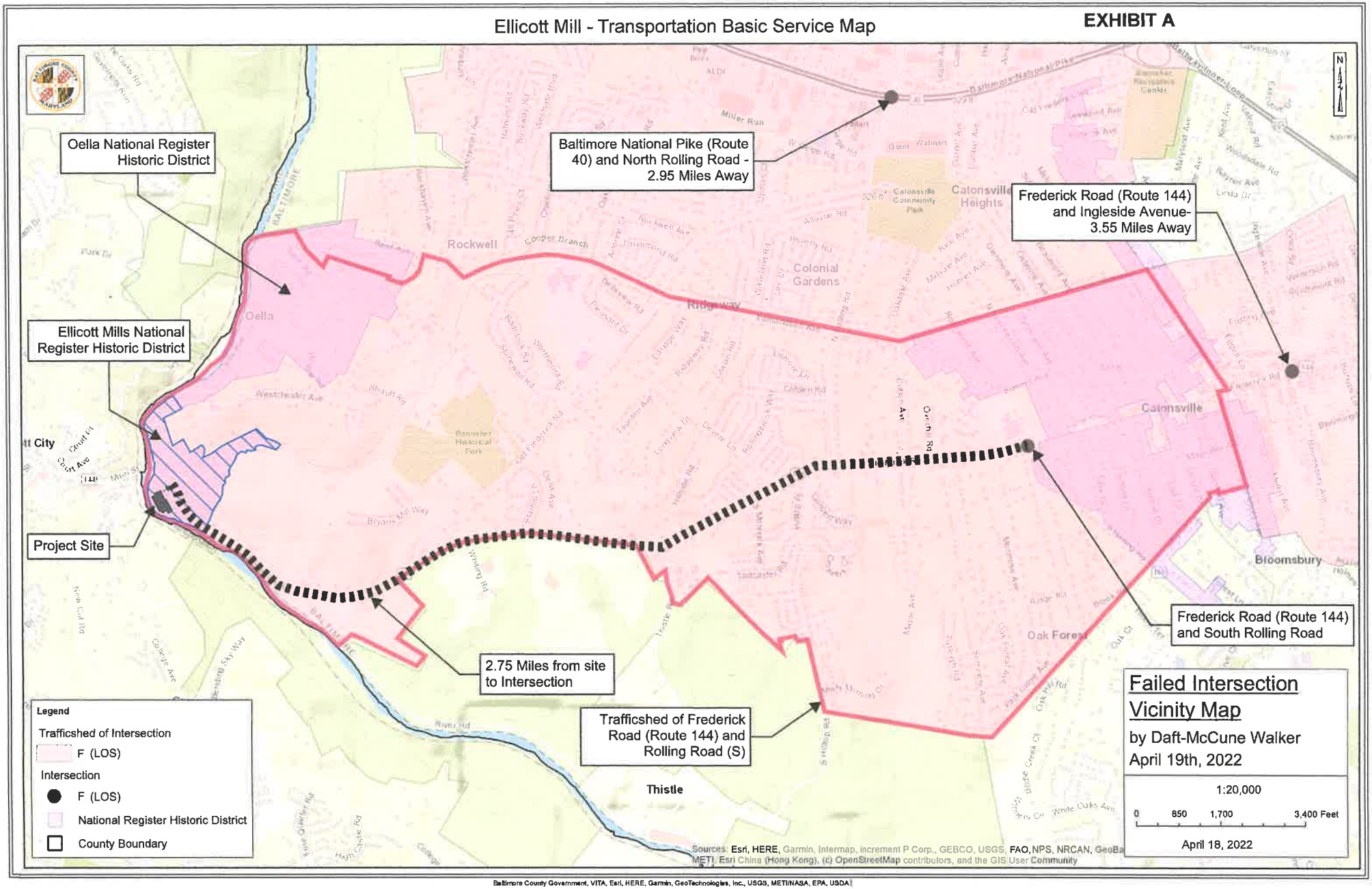
2. [2021] 2022 Basic Services Water Supply Map

3. [2021] 2022 Basic Services Transportation Map

SECTION 5. AND BE IT FURTHER ENACTED, that this Act, having been passed by the affirmative vote of five members of the County Council, shall take effect on May 16, 2022.

Ellicott Mill - Transportation Basic Service Map

EXHIBIT A



Baltimore County - My Neighborhood

EXHIBIT "B"

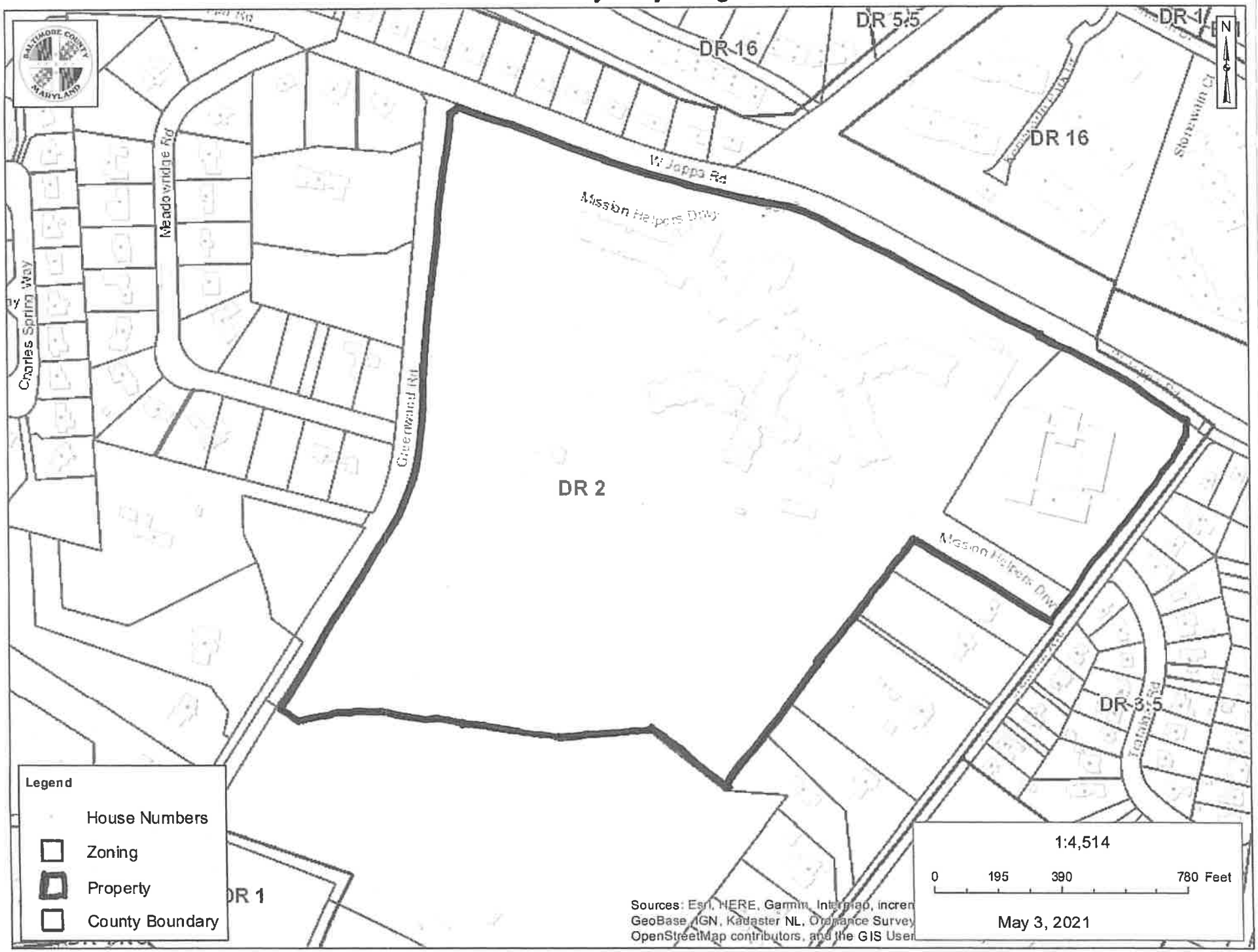
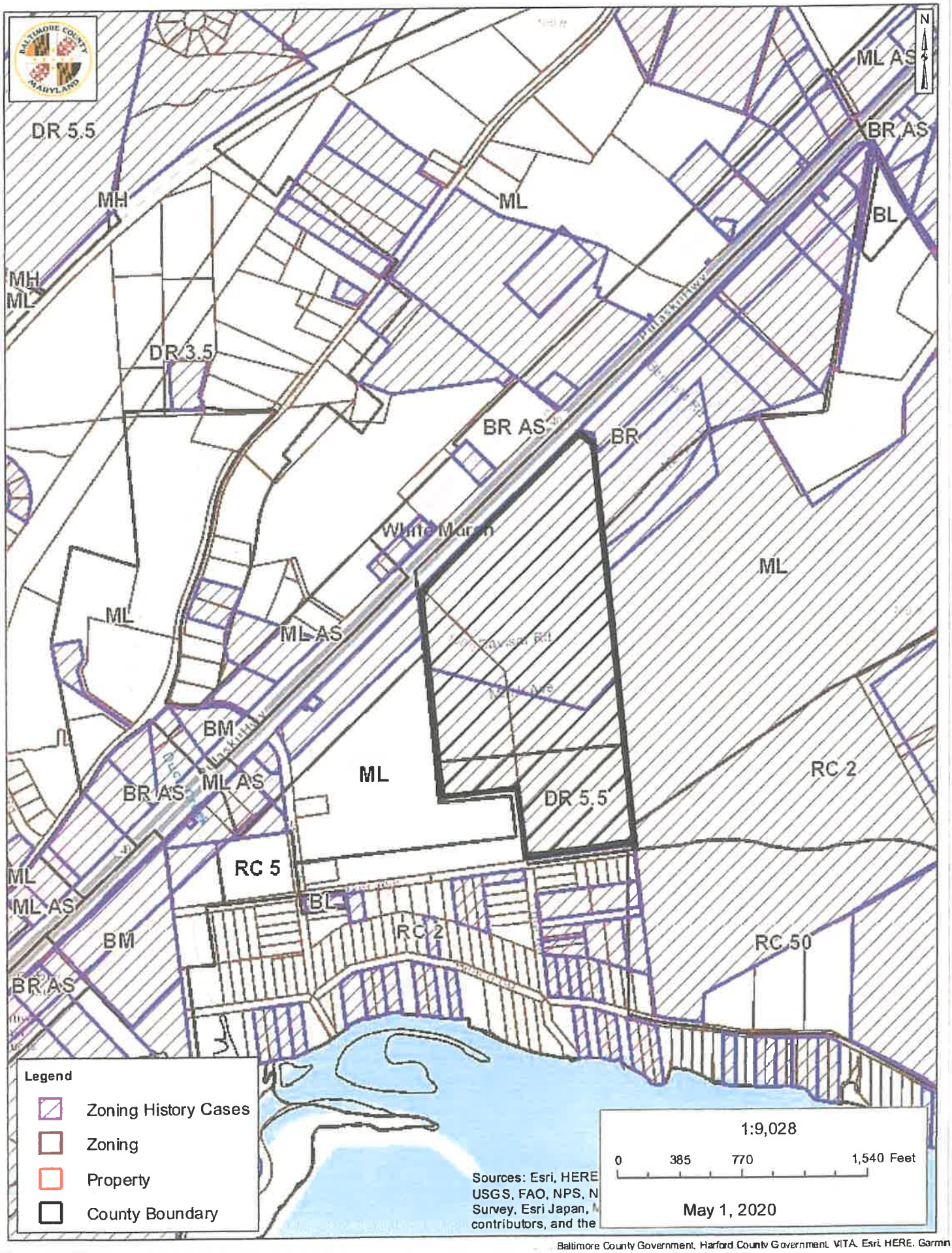


Exhibit "C"

Baltimore County - My Neighborhood



READ AND PASSED this ***2nd*** day of ***MAY,*** 2022.

Thomas H. Bostwick
Secretary

PRESENTED to the County Executive for his approval this ***3rd*** day of ***MAY,*** 2022.

Thomas H. Bostwick
Secretary

APPROVED AND ENACTED:

May 12, 2022

John A. Olszewski, Jr.
County Executive

I HEREBY CERTIFY THAT BILL NO. ***25-22*** IS TRUE AND CORRECT AND TOOK EFFECT ON May 16, 2022.

Julian E. Jones, Jr.
Chair, County Council

IN RE: PETITION FOR SPECIAL VARIANCE NE/S Castlemoor Road at W/S Liberty Gardens Road 2nd Election District 2nd Councilmanic District (7118, 7200, 7202, 7204, 7206 7208, 7210 Castlemoor Road) Elias Rizakos & Dimitrios Vangelakos Petitioners	*	BEFORE THE DEPUTY ZONING COMMIS SIONER OF BALTIMORE COUNTY CASE NO. 00-557-SA

* * * * * * * * * * * * * * * * *

FINDINGS OF FACT AND CONCLUSIONS OF LAW

This matter comes before this Deputy Zoning Commissioner as a Petition for Special Variance filed by the legal owners of the subject property, Elias Rizakos & Dimitrios Vangelakos, for property they own, located along Castlemoor Road, in the Lochearn area of Baltimore County. The subject property is zoned DR 5.5. The special variance request is from Sections 4A02.4.D and 4A02.4.F of the Baltimore County Zoning Regulations (B.C.Z.R.), to allow 7 residential building permits within a traffic moratorium area.

Appearing at the hearing on behalf of the special variance request were Elias Rizakos, on behalf of the property owners, Alec Ratych, an engineer with APR Associates, Inc., the engineering firm who prepared the site plan of the property, Dick Moore, traffic expert with Wells & Associates and C. William Clark, attorney at law, representing the Petitioners. Appearing in opposition to the Petitioners' request were George Hall, Sr., John Davidson, Judith Berger and Julius Lichter, attorney at law, representing a client who did not attend the hearing. There were no others in attendance.

Testimony and evidence demonstrated that the property, which is the subject of this special variance request, is a 7 lot residential subdivision located on the north side of Castlemoor Road, just west of its intersection with Liberty Gardens Road. The subject property was approved for

ORDER RECEIVED FOR FILING
Date 8/31/00
By

the development of 7 additional single-family, residential homes. The property is better known as "Castlemoor Estates" and was approved by way of a Hearing Officer's Hearing in December 1997. None of the homes have been constructed on the subject property and the 7 additional lots remain unimproved at this time.

After the approval of the development plan in 1997, the Petitioners continued to proceed through the development process. However, in August of 1998, the intersection of Liberty Road and Washington Avenue was downgraded to a "F" level intersection. The property, which is the subject of this special variance request, was depicted within the traffic shed area that feeds the intersection of Liberty Road and Washington Avenue.

Testimony and evidence offered by Mr. C. Richard Moore, the traffic expert testifying for the Petitioners, demonstrated that a traffic shed area is determined by those properties which generate 50% or more of their traffic towards the failing intersection in question. The Petitioners submitted into evidence an exhibit showing the intersection of Liberty Road and Washington Avenue and its surrounding traffic shed. Mr. Moore, who was employed by Baltimore County for 31 years as its head traffic engineer, testified that the traffic shed as it exists today for Liberty Road and Washington Avenue, covers the same area as it has for the past 3 decades. Mr. Moore's testimony was that the traffic shed area for this intersection has remained constant for the past 30 years and has not been altered, notwithstanding the changes in the road system over that time. Mr. Moore testified that it is necessary, at this time, given the changing traffic patterns and additional streets and roads that may have been constructed over the past few decades, to review the specific property in question to determine whether the subject property should remain within the traffic shed for Liberty Road and Washington Avenue. Mr. Moore performed a traffic study utilizing the driving habits of the residents of the Oakview Apartments as being representative of the future property owners for the subject property. The Oakview Apartments

ORDER RECEIVED FOR FILING
Date 8/31/00
By

were chosen due to the fact that they are located immediately adjacent to the property which is the subject of this variance request.

Mr. Moore submitted into evidence as Petitioners' Exhibit No. 3, the results of his traffic study. Those results clearly demonstrated that the traffic patterns of those residents residing within the Oakview Apartments fall substantially below the 50% requirement that would cause that particular property to be located within the Liberty Road/Washington Avenue traffic shed. Mr. Moore's study demonstrated that only 38.2% of the traffic from the Oakview Apartments actually utilizes the intersection in question. In addition, a study was conducted by the Baltimore County Bureau of Traffic & Transportation which also demonstrated that less than 50% of the vehicles exiting the Oakview Apartments actually utilize the intersection of Liberty Road and Washington Avenue.

Based on the testimony and evidence offered by the Petitioners' traffic expert, I find, pursuant to Section 4A02.4.F, that the district standard is not relevant to the proposed development of 7 additional lots located within the "Castlemoor Estates" property. Based on my finding, less than 50% of those residents will actually utilize the intersection in question. Furthermore, the variance requested herein will not violate the purpose of Section 4A02 of the Baltimore County Zoning Regulations and the granting of this variance will not adversely affect a person whose application was filed prior to this Petitioners' application. Therefore, the request for special hearing shall be granted.

As stated previously, several residents from the surrounding community appeared in opposition to the Petitioners' request. The testimony of those residents was that the traffic congestion in this area of the County is unbearable. Their testimony demonstrated that the addition of one more automobile traveling in this area of Baltimore County is not acceptable. In addition, Mr. Hall testified that many motorists in this area utilize Castlemoor Road as a shortcut

ORDER RECEIVED FOR FILING
Date 8/31/00
By R. Jameson

which causes a high volume of vehicles to pass by his house. He testified that Castlemoor Road is a narrow road which simply cannot accommodate these large number of commuters. Mr. Hall suggested that Castlemoor Road be made a one way street from Richwood Avenue to Timanus Lane. This would prohibit residents from utilizing Castlemoor Road as a shortcut.

While I can appreciate Mr. Hall's suggestion, I do not have the authority to alter traffic patterns as he suggested. He should pursue his suggestion with the Department of Public Works, Bureau of Traffic & Transportation. Perhaps they could consider his request and determine whether making Castlemoor Road a one way street is an acceptable solution.

As to the special variance request, I find for the reasons stated herein, that the variance should be granted.

THEREFORE, IT IS ORDERED this 31st day of August, 2000, by this Deputy Zoning Commissioner, that the Petitioners' request for special variance from Sections 4A02.4.D and 4A02.4.F of the Baltimore County Zoning Regulations, to allow 7 residential building permits within a traffic moratorium area, be and is hereby GRANTED, subject, however, to the following restriction which is a condition precedent to the relief granted herein:

1. The Petitioners may apply for their building permit and be granted same upon receipt of this Order; however, Petitioners are hereby made aware that proceeding at his time is at their own risk until such time as the 30 day appellate process from this Order has expired. If, for whatever reason, this Order is reversed, the Petitioners would be required to return, and be responsible for returning, said property to its original condition.

Timothy Kotroco
TIMOTHY M. KOTROCO
DEPUTY ZONING COMMISSIONER
FOR BALTIMORE COUNTY

TMK:raj

ORDER RECEIVED FOR FILING
Date 8/31/00
By R. Jameson

IN RE: PETITION FOR ADMIN. VARIANCE
SW/S of Wilson Avenue, 750 ft. NW
of Putty Hill Avenue
14th Election District
6th Councilmanic District
(8834, 8836, 8838 Wilson Avenue)

FDP, LLC,
By: Dante Betro, Authorized Member
Petitioners

* BEFORE THE

* DEPUTY ZONING COMMISSIONER

* OF BALTIMORE COUNTY

* CASE NO. 05-336-SA

* * * * * * * * * * * * * * * * *

FINDINGS OF FACT AND CONCLUSIONS OF LAW

This matter comes before this Deputy Zoning Commissioner as a Petition for Special Variance filed by the legal owners of the subject property, FDP, LLC, by Dante Betro an authorized member. The variance request is for properties located at 8834, 8836 and 8838 Wilson Avenue in Baltimore County. The special variance is requested from Section 4A02.4.D of the Baltimore County Zoning Regulations (B.C.Z.R.), pursuant to Section 4A02.4.G of the B.C.Z.R., to permit construction on three lots in a transportation deficient area. The subject property and requested relief are more particularly described on Petitioners' Exhibit No. 1, the plat to accompany the Petition for Variance.

The property was posted with Notice of Hearing on January 21, 2005, for 15 days prior to the hearing, in order to notify all interested citizens of the requested zoning relief. In addition, a Notice of Zoning hearing was published in "The Jeffersonian" newspaper on January 25, 2005 to notify any interested persons of the scheduled hearing date.

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Applicable Law

4A02.1 Purpose and intent. The County Council finds that important public facilities in certain predominantly urban areas of the county are inadequate to serve all of the development that would be permitted under the regulations of the zones or commercial districts within which those areas lie. Basic Services Maps are hereby established to regulate non-industrial development in those under-served areas to a degree commensurate with the availability of these facilities. Basic Services Maps are not permanent and will be reviewed annually with reports to the County Council.

b. Correction of deficiency. In the case of a deficiency which has been corrected by actual construction of adequate facilities, the maps may be amended, at any time, to reflect the correction, by resolution of the County Council after certification by the Department of Public Works, in the case of a water or sewer deficiency, or the Department of Traffic Engineering, in the case of a traffic deficiency, that the needed facility has been constructed and is performing so that the area no longer suffers a service deficiency. Where correction of the deficiency has been accomplished by means of private funding, the developer or developers paying the cost of correction shall have a preferred claim to any increase in the reserve capacity resulting from the correction irrespective of the requirements of Section 4A02.3.G.2.b. Absent a contrary agreement between the developers contributing to the cost of correction, the developers shall share in any increase in reserve capacity on a prorated basis in accordance with their percentage of contribution to the entire cost of correction.

F. Basic Services Maps are not intended to permanently establish either areas of service deficiencies or areas of service availability and adequacy. Such maps will be reviewed annually, as it is the intent of the County Council that existing service deficiencies will be corrected in accordance with the Master Plan and capital improvements program. The County Council also recognizes that continuing development in certain areas may create service deficiencies in areas that presently have adequate levels of service. In some cases, changes in underlying zoning classifications may have to be made to better correlate development potential.

Transportation. Intent. The transportation standards and maps are intended to regulate non-industrial development where it has been determined that the capacity of arterial and arterial collector intersections is less than the capacity necessary to accommodate traffic both from established uses and from uses likely to be built pursuant to this article. Such development is not intended to be restricted unless there is a substantial probability that an arterial and arterial collector intersection situated within the mapped area will, on the date the map becomes effective, be rated at level-of-service E or F under standards established by the Highway Capacity Manual, 1965, published by the Highway Research Board of the Division of Engineering and Industrial Research, National Academy of Sciences National Research Council.

E. General exceptions to basic services mapping standards.

1. The provisions of Section 4A02.4.A, B, C and D do not apply to any of the following:
a. Any development of three or fewer single-family detached dwellings, or establishment of their accessory uses, on a lot of record as of November 19, 1979 (see Section 101).

Petitions for special variance from provisions of this subsection.
1. The Zoning Commissioner may, after a public hearing, grant a petition for a special variance from a provision of this subsection, only to an extent that will not violate that provision's purpose, pursuant to a finding:
a. That the demand or impact of the development proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal; and

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b. That the granting of the petition will not adversely affect a person whose application was filed prior to the petitioner's application in accordance with Section 4A02.3.G.2.b.
2. The Office of Planning shall give a report on the petition to the Zoning Commissioner prior to his consideration of the petition.
3. The Zoning Commissioner may grant or deny the petition, or grant it subject to any conditions or limitations consistent with the criteria set forth in Paragraph 1 above.
4. An appeal may be filed with the County Board of Appeals within 30 days of the decision of the Zoning Commissioner.

Zoning Advisory Committee Comments

The Zoning Advisory Committee (ZAC) comments are made part of the record of this case and contain the following highlights: None.

Interested Persons

Appearing at the hearing on behalf of the variance request were Dante and Flora Betro, Petitioners. Donald E. Hicks appeared on behalf of Hicks Engineering, the engineering firm that prepared the site plan of the property and Benjamin Bronstein, Esquire, represented the Petitioners. Walter Smith and Steven Weber, county employees, appeared at the hearing at the request of the Petitioner. Appearing at the hearing as protestants or citizens were Janet & Donald Keplinger, Albert & Rachel Diegel, Arthur & Margaret Dietsch, Jerome Beck, Fred Altman and Ruth Baisden. People's Counsel, Peter Max Zimmerman, entered the appearance of his office in this case.

Testimony and Evidence

Testimony proffered by the Petitioner indicated that the Petitioner bought six lots fronting on Wilson Avenue. These six were part of a ten lot subdivision which was recorded in the Land Records of Baltimore County on March 11, 1997. The County Council passed the transportation portion of the Basic Services Map in January 6, 1997 which designated the intersection of Harford Road and Putty Hill Avenue as a failing intersection. The transportation shed

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surrounding this intersection included these ten lots. All agreed that the subdivision should not have been allowed to be recorded under the circumstances, but as Walter Smith, project manager for the Department of Permits & Development Management testified, it often takes 5 to 6 months for the final subdivision plat to be recorded. Apparently in that time the intersection was declared to have become failing (F level).

History aside, the Petitioner applied for and received a three lot exemption under Section 4A02.E.1.a and has or is building three homes on lots 4, 5, and 6. The question in this case is whether or not a special variance should be granted to allow homes on lots 1, 2, and 3. Apparently lots 7, 8, 9 and 10 are vacant and are not owned by the Petitioner.

Steven Weber, Chief of the Traffic Engineering Division of the Department of Public Works, testified that the County studies show the peak time for the Harford Road/Putty Hill intersection is 7:15 AM to 8:15 AM. and that the number of vehicles using the intersection at that hour is approximately 3,100. He next testified that during this hour, the trips generated by the proposed three lots were 2.55 trips. From this data, he concluded that the impact of these three additional homes on the intersection was imperceptible. In fact, he indicated that daily fluctuations of traffic using the intersection were greater than the added trips from the three homes. He also noted that generally special variances are granted in failing traffic sheds when the number of lots is less than 10.

A great deal of the time for cross-examination of Mr. Weber was taken by residents of Wilson Avenue who complained vehemently about traffic on Sunday mornings going to and from St. Ursula's Church via a curb cut in the cul-de-sac in which Wilson Avenue terminates. Apparently, this issue had been raised and debated for several years before the hearing on the subject case without adequate resolution as far as the residents along Wilson Avenue were

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concerned. Given Mr. Weber's position in the County, he became the focus of much questioning about this continuing problem as seen from the residents' standpoint. Ms. Keplinger, one of the residents, supplemented her complaints about church traffic given at the hearing by a long and detailed recount of her efforts to stop the church traffic and her frustration at not being successful thus far.

Mr. Weber mentioned that Putty Hill Avenue was the subject of an ongoing County capital improvement program to widen Putty Hill at its intersection with Harford Road. However, neither Wilson Avenue or the part of Putty Hill not near the intersection were scheduled for improvement according to Mr. Weber. He indicated that at peak hours, traffic backs up from the intersection of Harford Road and Putty Hill east to Wilson Avenue. Finally, he mentioned that the Department interprets the transportation portion of the Basic Services Legislation to exempt three lots for each subdivided tract of land recorded before 1979.

Mr. Smith, from the Department of Permits and Development Management, testified that the ten lot subdivision was recorded in the Land Records for Baltimore County on March 11, 1997. He indicated that the County Council passed the transportation portion of the Basic Services Map in January 6, 1997 which designated the intersection of Harford Road and Putty Hill Avenue as a failing intersection. The transportation shed surrounding this intersection included these ten lots. He indicated the subdivision should not have been allowed to be recorded under the circumstances, but it often takes 5 or 6 months for the final subdivision plat to be recorded. Apparently in that time, the rating of the intersection at Putty Hill and Harford Road changed to level "failing F" and the plat reviewers failed to detect the problem. He also noted that there was no reserve capacity use certificate in the subdivision file.

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The protestants who live along Wilson Avenue testified at length regarding the traffic generated by the Church on Sunday morning, the difficulty this traffic causes for elderly residents, and their opposition to even the small traffic that would be generated by the proposed three homes. Ruth Baisden, President of the Greater Parkville Community Council, described the efforts made by the community. She testified that they worked to delete a general widening of Putty Hill Avenue from the Master Plan, and to reduce the high number of traffic accidents on Harford Road. In general she noted that her organization does not support in-fill development, but rather seeks to preserve open space such as the subject lots. She also indicated that there was no hardship in this case other than economic return for the developer. Finally, she noted that this subdivision involved 10 lots of which the Petitioner bought 6 at a later time. She expressed concern that the remaining lots could also be granted a three lot exemption.

Finally, Mr. Bronstein pointed out that the County has to correct failing intersections. He stated that the impact on the failing intersection of these three lots would be insignificant, and that the problem of church generated traffic did not occur at the same time (Sunday morning) as the peak traffic in the failing intersection. He also noted that there is no reserve capacity use certificate for this subdivision. Finally, he argued that since the Planning Office did not comment on this request, this indicated Planning's approval.

The Planning Office submitted a comment after the hearing on the case which indicated that they did not oppose the Petitioner's request and the development of three lots would not negatively affect the district.

Findings of fact and conclusions of law

As I explained at the hearing, the issue of church traffic on Wilson Avenue is not before me. I do not have the power to order the church to stop using Wilson Avenue on Sunday

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mornings. That said, I want to recognize the problem articulated so well by Ms. Keplinger's post hearing letter.

In addition, the issue of whether or not the Petitioner was entitled to a three lot exemption under the regulations is not before me. I will only note that the law allowing these exemption seems to require that the development involve 3 lots or less (this development involved 10 lots) and was recorded before 1979 (this subdivision was recorded in 1997). It appears that the County reviewers grant a blanket three lot exemption to all proposed developments in failing traffic sheds.

As Mr. Bronstein points out, this is a case for special variance and not a typical variance case under Section 307 of the B.C.Z.R. Consequently, the usual suspects of uniqueness, hardship, practical difficulty and impact are not factors to be considered. In order to grant a special variance, the special variance law requires:

1. that it will not violate that purpose of the legislation,
2. that the demand or impact of the development proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or
3. that the standard is not relevant to the development proposal; and
4. That the granting of the petition will not adversely affect a person whose application was filed prior to the petitioner's application in accordance with Section 4A02.3.G.2.b.

Regarding criteria #4, from the testimony in this case, I have no evidence that granting the petition will adversely affect some other developer with a reserve capacity use certificate already in place. Apparently, this subdivision was not issued such a certificate. Whether there are any other developments pending in this traffic shed, I do not know, but have to trust that if such were the case the planning and traffic engineering groups would know and object. They have not.

Regarding criteria # 2 and #3, Mr. Weber testified that the impact of these three homes on the failing intersection of Putty Hill and Harford Road is "imperceptible". In fact, the additional

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traffic at peak hour is lower than the daily variations of traffic in that intersection at the peak time. Consequently, I find that criteria #2 and #3 are satisfied.

Finally, in regard to #1, again the impact of these three homes is so small that it becomes lost in the noise of data variations and so, I find that it does not violate that purpose of the legislation which is to limit development while facilities improvement are being designed and constructed. I note also the Planning Office comment that development of these three lots will not adversely affect the neighborhood. Consequently I will grant the special variance.

Pursuant to the advertisement, posting of the property, and public hearing on this petition held, and after considering the testimony and evidence offered by the Petitioners, I find that the Petitioners' special variance request should be granted.

THEREFORE, IT IS ORDERED, this 16 day of February, 2005, by this Deputy Zoning Commissioner, that the Petitioners' request for special variance requested from Section 4A02.4.D of the Baltimore County Zoning Regulations (B.C.Z.R.), pursuant to Section 4A02.4.G of the B.C.Z.R., to permit construction on three lots in a transportation deficient area, be and is hereby GRANTED.

Any appeal of this decision must be made within thirty (30) days of the date of this Order.

John V. Murphy

JOHN V. MURPHY
DEPUTY ZONING COMMISSIONER
FOR BALTIMORE COUNTY

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IN RE: PETITION FOR SPECIAL VARIANCE SE side of Transverse Avenue, 75 feet +/- NE of c/l of Corktree Road 15th Election District 6th Councilmanic District **(852 Middle River Road)** Jacqueline E. Stillerman *Petitioner*	*	BEFORE THE DEPUTY ZONING COMMISSIONER FOR BALTIMORE COUNTY **Case No. 08-264-A**

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FINDINGS OF FACT AND CONCLUSIONS OF LAW

This matter comes before this Deputy Zoning Commissioner for consideration of a Petition for Special Variance filed by the legal owner of the subject property, Jacqueline E. Stillerman. Petitioner is requesting special variance relief from Section 4A02.4 of the Baltimore County Zoning Regulations (B.C.Z.R.) to permit the proposed non-industrial development where it has been determined that the capacity of the public facilities necessary to accommodate same (transportation) is less than necessary, and for such other and further relief that may be deemed necessary by the Zoning Commissioner for Baltimore County. The subject property and the requested relief are more fully described on the site plan which was marked and accepted into evidence as Petitioner's Exhibit 1.

Appearing at the requisite public hearing in support of the special variance request was Neil Stillerman, principal of Stillskyes Superior Builders. Mr. Stillerman is the proposed builder/developer of the site. The title of the subject property is in the name of his spouse, Jacqueline Stillerman. Also present at the hearing was Kenneth J. Wells with KJ Wells, Inc., the licensed property line surveyor who prepared the site plan. Petitioner was represented by Lawrence E. Schmidt, Esquire of Gildea & Schmidt, LLC. There were no Protestants or other interested citizens in attendance at the hearing.

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Testimony and evidence offered revealed that the subject property is an irregular-shaped unimproved parcel, consisting of approximately 1.27 acres and zoned D.R.5.5. The property has frontage on the unimproved roadbed of Transverse Avenue and abuts the Middle River Middle School campus, in eastern Baltimore County. The paved portion of Transverse Avenue ends immediately to the southwest side of the subject property. Mr. Stillerman proposes the development/subdivision of the property with five single-family detached homes. This is within the zoning density permitted.

In order to proceed with this proposed development, the developer has submitted a Concept Plan pursuant to the development review process contained in Article 32, Subtitle 2 of the Baltimore County Code ("BCC"). Concept Plan Comments were issued by the reviewing County agencies as a result of their respective reviews of the Concept Plan. One of the comments alerted Petitioner to the fact that the subject property is located within the shed of a failing intersection located at Middle River Road and Pulaski Highway (MD Route 40). This intersection has been assigned an "F" level of service pursuant to the current Basic Service Map for transportation. Thus, and as will be explained in more detail below, the instant Petition for Special Variance was filed.

The Concept Plan Comments also address the proposed access and road frontage issue as it relates to the development of the site. As is noted above, the property does not have frontage on any paved section of a public road as the paving for Transverse Avenue ends immediately adjacent to the southwest property line. It is also relevant that a proposed residential development has been approved across the bed of the unimproved section of Transverse Avenue from the subject property. This development will be a large subdivision of townhouses and is known as "Green Wood Manor."

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In order to provide access to the five dwellings proposed on the subject site, the Department of Public Works has taken the position that Mr. Stillerman will be required to improve a portion of Transverse Avenue. As explained at the hearing by Mr. Wells, one-half of the ultimate width of the road on the subject property's "side" of the road will be improved by Mr. Stillerman and Stillskyes Superior Builders. This will permit the subject property to have access to a paved public road. Moreover, as is more particularly shown on the site plan, two of the proposed single-family dwellings will have direct access via driveway to the improved public road and the remaining three units will share a common driveway from the road. Petitioner anticipates moving forward through the development review process to resolve any additional County agency comments or concerns, pending the outcome of the instant Petition for Special Variance.

The Petition for Special Variance is requested pursuant to Section 4A02.4.G of the B.C.Z.R. This section falls within the growth management regulations contained in Article 4A of the B.C.Z.R. Petitions for Special Variance under this section have rarely been considered by the Office of the Zoning Commissioner and this is indeed a case of first impression so far as the undersigned is concerned. Thus, a brief overview of the growth management regulations is appropriate.

Pursuant to Section 4A00.1 of the B.C.Z.R., the purpose and intent of Article 4A, entitled "Growth Management," is to generally "implement the objectives of the County-wide Master Plan and to adopt standards and guidelines relative to new development." Additionally, the growth management regulations seek to encourage development patterns that are consistent with the preservation of the quality of life in existing neighborhoods, to ensure the adequacy of public facilities and infrastructure, the preservation of the natural, agricultural and environmental resources and to promote appropriate new growth and development. The purpose and intent of the Basic Service Maps of the growth management regulations is set forth in Section 4A02.1 of the

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B.C.Z.R. Therein, it is provided that Basic Service Maps are to be annually prepared by the County to ensure that public facilities are in place to adequately serve proposed development. Additionally, Section 4A02.2 of the B.C.Z.R. states that in the event of any conflict between the growth management regulations and any other provision of the B.C.Z.R., the provisions of the growth management regulations control. Thus, the Petition for Special Variance requested in this case is governed by the requirements in Article 4A and, hence, the variance provisions of Section 307 of the B.C.Z.R. are not applicable.

Section 4A02.3 of the B.C.Z.R. sets out in detail the adoption process for the Basic Services Maps. There are actually three maps adopted; one related to the supply of public water, the second related to public sewage, and the third related to transportation. Petitioner seeks relief in this case only as to the third map (transportation map). Section 4A02.3 of the B.C.Z.R. sets forth in full detail the methodology to be employed during the annual adoption of the three Basic Services Maps by the Baltimore County Council. Additionally, Section 4A02.3.G of the B.C.Z.R. provides that no building permit or subdivision approval can be granted unless the Director of the Office of Planning has issued a reserve capacity use certificate for the proposed development. That section goes on to state that a property owner/developer shall make application for a reserve capacity use certificate in a method to be set forth by the Office of Planning. In this case, Mr. Wells testified at the hearing that because development proposed pursuant to the provisions of the special variance regulation (Section 4A02.4.G) have rarely been sought, he was advised by the Office of Planning that it has not produced for public use any such "application form." Moreover, he was informed that notwithstanding the provisions of Section 4A02 of the B.C.Z.R., the Office of Planning does not maintain a list of the pending applications.

Section 4A02.4 of the B.C.Z.R. sets out the Basic Services Mapping standards. The standards are individually established as they relate to water supply, sewage, and transportation.

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Moreover, Section 4A02.4.E of the B.C.Z.R. sets forth certain exceptions to the Basic Services Mapping standards. For example, Section 4A02.4.E.1.a of the B.C.Z.R. provides that minor subdivisions of three or fewer single-family detached dwellings are exempted from certain provisions of the Basic Services Mapping statute. Finally, Section 4A02.4.G of the B.C.Z.R. provides that a Special Variance can be granted from a provision of this subsection. In order for special variance relief to be granted, the Zoning Commissioner must hold a public hearing and must determine that the granting will not violate the particular provision's purpose, pursuant to making certain findings -- effectively a two-prong test. First, the Zoning Commissioner must determine that the demand or impact of the proposed development will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal. Second, the Zoning Commissioner must find that the granting of a petition would not adversely affect a person whose application was filed prior to Petitioner's application.

In this case, relief is requested because the intersection of Middle River Road and Pulaski Highway is a failing intersection. It has been graded as an "F" level of service intersection and the "shed" of this intersection is shown on Petitioner's Exhibit No. 4, which includes the subject property. As the subject property is located within that shed, building permits cannot be issued nor development approval given until the intersection is improved and no longer failing or special variance relief is granted.

Addressing this second requirement for a Petition for Special Variance first, the uncontradicted testimony and evidence offered in this case was that the application submitted by Petitioner would not adversely affect a person whose application was filed prior to Petitioner's application. As noted above, apparently due to the rare utilization of the relief afforded by this special variance process, there is no list maintained by the Office of Planning and thus there is no

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"person whose application was filed prior to the petitioner's application." I therefore find that Petitioner has met this criteria in that its application is effectively first in line. I am cognizant of the fact there is other proposed development in the area, but that development is apparently not proceeding forward pursuant to the variance process set forth in growth management regulations as described herein. Thus, Petitioner has met its burden insofar as this test.

Turning next to the first prong identified, a finding must be made that the impact of the proposed development will be less than that assumed by the district standard that would otherwise restrict or prohibit the development; or that the district standard does not apply. Unfortunately, a review of the regulations at issue discloses that the "district standard" is neither a defined term nor is it described anywhere in Article 4A. In fact, testimony offered at the hearing is that the Baltimore County Bureau of Traffic Engineering has not defined the term and it is not a phrase used in the parlance of traffic engineers.

Although these special variance cases are rare, they are not altogether unfamiliar and the most recent case of this type came before the Office of the Zoning Commissioner as Case No. 05-336-SA, a copy of which was marked and accepted into evidence as Petitioner's Exhibit 5. That case was considered by former Deputy Zoning Commissioner John D. Murphy and relief was granted by the approval of a Special Variance on May 16, 2005. The Findings of Fact and Conclusions of Law rendered therein is instructive. Deputy Commissioner Murphy analyzed the issue of the impact of the proposed development on proposed conditions as he formulated the "district standard." He considered whether the anticipated impacts on traffic as they related to such issues as volume, congestion, movement and timing of the proposed development would be less than the impact normally associated with a development of that type and size. He concluded that if the impacts were less, then relief could be granted pursuant to a petition for special variance. Specific factors such as the anticipated volume of traffic to be generated, the route

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(including access and exit) of traffic to and from the proposed development, anticipated road improvements in the area, the nature and timing of the traffic generated by the proposed development, existing potential development patterns in the area, the nature of the land use proposed for development and existing development in the area are all factors that need be considered in determining whether special variance relief should be granted.

In the instant case, a copy of the County's data collection sheet and traffic analysis for the intersection of Middle River Road and Pulaski Highway was marked and accepted into evidence as Petitioner's Exhibit 3. This exhibit depicts traffic counts for the intersection and analyzes the levels of service for respective movements through that intersection. For example, volumes and analysis are provided for straight (through) traffic patterns in each direction on both roads through the intersections, as well as left and right turning movements for each roadway. It is to be noted that an intersection is considered failing by Baltimore County if but one traffic movement reaches an unsatisfactory level. That is, an intersection might have adequate capacity for through traffic in all directions, but still be determined failing if a single turning movement capacity is inadequate. Obviously, the manner in which a proposed development will impact specific directions/movements in the intersection is a significant consideration in determining the merits of a special variance request.

In this case, there are several factors that support a finding that the impact of the proposed development will be less than anticipated and that the Petition for Special Variance should be granted. First, as shown on an aerial photograph that was marked and accepted into evidence as Petitioner's Exhibit 2, although the subject property is in the shed, it is located a significant distance to the southwest of the failing intersection of Middle River Road and Pulaski Highway and is not easily accessible thereto. As described above, the paved section of Transverse Avenue ends immediately to the southwest of the subject property. It will be extended to provide frontage

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on the property; however, as a part of this development, that extension will not continue to the northeast and intersect with Middle River Road. Ultimately, that connection of Transverse Avenue and Middle River Road may be made not as part of this subject development, but rather due to the Green Wood Manor townhouse development. Thus, Transverse Avenue, even after the proposed improvements required as a part of this subdivision, will be a dead end street and will not provide direct access for the future residents of the subject property to Middle River Road.

Data was submitted from the Baltimore County Bureau of Traffic Engineering regarding traffic counts undertaken on June 6, 2007 and was marked and accepted into evidence as Petitioner's Exhibit 3. It was this investigation which lead to the designation of the Middle River Road and Pulaski Highway intersection as a failing intersection (Grade F) under the 2007 Basic Services Maps now in effect. That data shows that the highest volume of traffic, which contributed to the failing grade, resulted from the morning movement of through traffic westbound on Pulaski Highway. In fact, the data showed that 41,066 cars passed through that intersection westbound on Pulaski Highway during the morning peak hour.

The evidence indicates that if the residents of the proposed development were to travel westerly (toward the Baltimore beltway) in the AM hour, none would utilize the intersection. Rather, they would proceed southwesterly on Transverse Avenue to Honeycomb Road and ultimately intersect Pulaski Highway southwest of the failing intersection. Thus, due to these unusual circumstances, it is clear there will be no impact on the intersection during its peak volume. Similarly, traffic generated to and from this proposed development will not impact the intersection during the evening peak hour. Residents and visitors to the five homes proposed coming from the west (i.e. returning home from work) will not utilize the intersection. Thus, it is equally clear that existing traffic patterns, anticipated road improvements, the contemplated volume direction and timing of traffic to and/or from the proposed development are all factors that

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weigh in favor of a finding that the anticipated impact of this development will be less than that assumed by the "district standard."

Secondly, the testimony offered by Stephen Weber, Chief of the Traffic Engineering Division of the Department of Public Works, to Deputy Commissioner Murphy and Deputy Commissioner Murphy's conclusions in Case No. 05-336-SA are also instructive. Therein, Mr. Weber opined and Deputy Commissioner Murphy agreed that the anticipated impact of a six lot subdivision would be negligible. Characterizing Mr. Weber's testimony, Deputy Commissioner Murphy wrote at page 4 that "[f]rom this data he concluded that the impact of these three additional homes on the intersection was imperceptible." In fact, he indicated the daily fluctuations of traffic using the intersection were greater from the added trips from the three homes. He also noted that "generally special variances are granted in failing traffic sheds when the number of lots is less than 10." These facts, opinions and conclusions are relevant to the instant case. The proposed subdivision is under ten units and the negligible amount of traffic to be generated to and from the subject site is insignificant when compared with the traffic volumes that utilize the subject intersection.

Based upon the foregoing, I find that the testimony and evidence that has been offered is sufficient to comply with the special variance standard set forth in Section 4A03.4.G of the B.C.Z.R. Thus, the Petition for Special Variance shall be granted and relief approved so that the proposed subdivision may be approved and building permits issued for this subdivision, notwithstanding its location within the shed of a failing intersection.

Pursuant to the advertisement, posting of the property and public hearing on these Petitions held, and for the reasons set forth above, the relief shall be granted.

THEREFORE, IT IS ORDERED, this 25th day of April, 2008 by this Deputy Zoning Commissioner, that pursuant to a finding that the demand or impact of the development

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proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, and that the granting of the petition will not adversely affect a person whose application was filed prior to the petitioner's application, Petitioner's request for Special Variance from Section 4A02.4 of the Baltimore County Zoning Regulations (B.C.Z.R.) is hereby GRANTED subject to the following.

1. Petitioner is advised that he may apply for any required building permits and be granted same upon receipt of this Order; however, Petitioner is hereby made aware that proceeding at this time is at his own risk until such time as the 30-day appellate process from this Order has expired. If, for whatever reason, this Order is reversed, Petitioner would be required to return, and be responsible for returning, said property to its original condition.

2. Petitioner shall improve Transverse Avenue in accordance with the requirements of the Department of Public Works. In particular, Petitioner agrees to improve one-half of the ultimate width of the road on Petitioner's "side" of the road.

3. The property must comply with the Forest Conservation Regulations (Sections 33-6-101 through 33-6-122 of the Baltimore County Code).

Any appeal of this decision must be made within thirty (30) days of the date of this Order.

THOMAS H. BOSTWICK
Deputy Zoning Commissioner
for Baltimore County

THB:pz

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IN RE: PETITION FOR SPECIAL VARIANCE S end of Forest Avenue, 1050 feet S of Edmondson Avenue 1st Election District 1st Councilmanic District **(110 Forest Avenue)** Leno Lapenna *Petitioner* Skirven Enterprises, Inc., Charles Skirven, President *Contract Purchaser*	* * * * * * * * *	BEFORE THE DEPUTY ZONING COMMISSIONER FOR BALTIMORE COUNTY **CASE NO. 08-349-SA**

* * * * * * * * * * * * * * * * *

FINDINGS OF FACT AND CONCLUSIONS OF LAW

This matter comes before this Deputy Zoning Commissioner for consideration of a Petition for Special Variance filed by Leno Lapenna, the legal owner of the subject property, and Charles Skirven on behalf of Skirven Enterprises, Inc., the contract purchaser/developer. The special variance is requested from Section 4A02 of the Baltimore County Zoning Regulations (B.C.Z.R.) pursuant to Section 4A02.4.G of the B.C.Z.R. to permit subdivision approval and issuance of building permits for 23 dwelling units in the traffic shed of an "F" rated intersection on the Baltimore County Basic Services Map for Transportation. The subject property and requested relief are more particularly described on site plan that is contained within the case file.

Appearing at the requisite public hearing in support of the special variance request was Petitioner Charles Skirven, President of Skirven Enterprises, Inc., and his attorney, G. Scott Barhight, Esquire with Whiteford, Taylor & Preston, LLP. Also appearing in support of the requested relief was David S. Thaler with D.S. Thaler & Associates, Inc., the professional engineer who prepared the site plan, and Mickey Cornelius with The Traffic Group, Petitioner's traffic engineering and transportation planning consultant. There were several citizens who reside in the vicinity of the subject property that appeared in opposition to the requested relief, including the following: Paul Blair, Jr. of 112 Forest Avenue, Stephanie Dines of 31 Glenwood Avenue, Ann and Stephen Power of 122 Forest Avenue, and Stephen Lackey of 114 Forest Avenue.

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Introduction

The subject property is a 6.46 acre parcel located directly to the west of Interstate 695 between Edmonson Avenue to the north and Frederick Road to the south in the Catonsville area of Baltimore County. Both Edmonson Avenue and Frederick Road have direct access to Interstate 695. The property is part of a Planned Unit Development ("PUD") known as the "Villas at Eden Terrace," which was approved by the Planning Board on October 18, 2007 and by the undersigned Deputy Zoning Commissioner acting as Hearing Officer on November 9, 2007.

At the time the Planning Board was considering the proposed development, it found that according to the 2007 Basic Services Map for Transportation, the subject property is within the traffic shed of the intersection of Frederick Avenue and Bloomsbury Avenue, which was shown as a failing intersection. It also noted that pursuant to Section 4A02.3.G of the B.C.Z.R., no permits may be issued and no subdivision plat may be approved for a proposed development within the traffic shed of a failing intersection. At that time, the Developer proposed that the Planning Board modify the requirements of Section 4A02.3.G of the B.C.Z.R. to permit final subdivision plat approval and the issuance of permits based on the unique characteristics and circumstances of this proposed development. Upon the recommendation of the County's Office of Planning and the Office of Law, the Planning Board found that it did not have the legal authority to modify this particular aspect of the zoning regulations. Petitioner now comes before this Commission seeking special variance relief from the Growth Management provision relating to Transportation, pursuant to Section 4A02.4.G of the B.C.Z.R.

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Basic Services Maps

Pursuant to Sections 4A02.1 and 4A02.3 of the B.C.Z.R., the Baltimore County Council reviews and adopts the Basic Services Maps for Water, Sewer and Transportation on an annual basis (the "Basic Services Maps"). The Basic Services Maps incorporate a delineation of adequacy and availability of sewerage, water supply, and transportation services and facilities. The County Council annually prepares these maps in an effort to ensure that non-industrial development is regulated in a manner that is proportionate with the availability of the public facilities. The Basic Services Maps may be amended at any time to reflect the correction of a service deficiency. In fact, it is the intent of the County Council that existing deficiencies will be corrected in accordance with the Master Plan and the capital improvements program.

Section 4A02.4.D of the B.C.Z.R. provides that the Basic Services Map for Transportation is intended to regulate non-industrial development where it has been determined that the capacity of arterial and arterial collection intersections is less than the capacity necessary to accommodate traffic from established uses and uses which are likely to be established. It is intended that development shall be restricted if there is a substantial probability that an arterial and arterial collector intersection situated within the mapped area will, on the date the Basic Services Map for Transportation becomes effective, be rated at an "F" level of service under the standards established by the Highway Capacity Manual, 1965, published by the Highway Research Board of the Division of Engineering and Industrial Research, National Academy of Sciences National Research Council.

As shown on the 2007 Basic Services Maps – Transportation Map, Revised 01-23-07, which was marked and accepted into evidence as Petitioner's Exhibit 2, the failing intersection in the instant matter is located at Ingleside Avenue/Bloomsbury Avenue and Frederick Road. As

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Ingleside Avenue crosses Frederick Road, it becomes Bloomsbury Avenue on the south side of the intersection. This intersection is located approximately 1,800 feet west of the intersection of Arbutus Avenue and Frederick Road, the intersection through which the residents of the Villas at Eden Terrace would travel when they exit the property from the south.

Special Variance

Section 4A02.4.G of the B.C.Z.R. permits the Zoning Commissioner to grant a petition for a special variance from any of the Growth Management provisions set forth in Section 4A02 of the B.C.Z.R. provided such variance will not violate the provision's purpose. In order to grant a petition for a special variance, the Zoning Commissioner must find:

a. That the demand or impact of the development proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal; and

b. That the granting of the petition will not adversely affect a person whose application was filed prior to the petitioner's application in accordance with Section 4A02.3.G.2b.

B.C.Z.R. Section 4A02.4.G.1.

District Standards

As noted above, Section 4A02.4.G of the B.C.Z.R. provides that the Zoning Commissioner may grant a petition for special variance if the impact of the proposed development "will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal". In the instant matter, there are two district standards which, unless the Petition for Special Variance is granted, would restrict or prohibit the proposed development:

1. The location of the traffic shed of the F-Rated intersection (i.e. whether the proposed development should be located within the traffic shed of the F-Rated intersection); and

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2. What factors lead to the intersection's F-Rating (i.e. what impact, if any, does the proposed development have on the intersection's F-Rating)?

The proposed development's anticipated impact in light of these district standards is analyzed below.

F-Rated Intersections

The Bureau of Traffic Engineering and Transportation Planning inspects hundreds of intersections controlled by traffic signals on an annual basis in order to determine how well traffic flows during the morning and evening rush hours. Intersections receive letter grades from "A" to "F" which indicate the level of service, or the degree of congestion. The level of service of an intersection is determined by analyzing each approach to the intersection individually. A computation is made of each approach to determine its "load factor" during both the morning and afternoon peak hours. The "load factor" is ascertained by recording the number of "loaded cycles" on each approach during the peak hours in both the morning and afternoon.

The cycle of a traffic signal is the period that encompasses one green indication of the signal. During each cycle of the traffic signal, an observer determines which vehicle is the last vehicle stopped in the queue at the time the signal turns green. If the last vehicle does not get through the intersection during that one green indication, the cycle is considered to be "loaded."

Each approach to the intersection is studied to determine the particular 60 minute period that has the highest percentage of cycles which are "loaded". In this case, the northbound approach to the intersection at Ingleside Avenue/Bloomsbury Avenue and Frederick Road between 4:00 P.M. and 5:00 P.M. generates the highest percentage of loaded cycles. This percentage, known as the "load factor," can range from 0 percent to 100 percent.

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At the hearing, Mickey Cornelius with The Traffic Group, who was admitted as an expert in traffic engineering and transportation planning, and whose resume was marked and accepted into evidence as Petitioner's Exhibit 1, testified that the northbound approach to the intersection of Ingleside Avenue/Bloomsbury Avenue and Frederick Road has a load factor of 100 percent, which means that during 100 percent of the cycles between 4:00 P.M. and 5:00 P.M. not all of the vehicles stopped in line for the signal when it changes green get through the signal. No other approach through the intersection generates a failing percentage of loaded cycles at any time. Mr. Cornelius obtained this data from the Baltimore County Traffic Engineering Turning Movement County Data, which was marked and accepted into evidence as Petitioner's Exhibit 3.

Traffic Shed

As set forth in Section 4A02.4.G of the B.C.Z.R., in order for the Zoning Commissioner to grant a petition for a special variance, it must be found that the impact of the proposed development will be less than that assumed by the district standard which would otherwise restrict or prohibit the development. If the "district standard" is whether the proposed development is located within the traffic shed of the failing intersection, one must ask the question: "What constitutes the appropriate traffic shed of an F-Rated intersection?"

While there is a specific formula to determine when a given intersection is failing, there is no regulation which defines or creates the traffic shed of an F-Rated intersection. At the hearing, Mr. Cornelius testified that despite the lack of a legislative or regulatory definition for what constitutes a traffic shed, the accepted Baltimore County standard for mapping traffic sheds of failing intersections is based on the supposition that one-half of the traffic from the areas within the shed will proceed through the failing intersection. Mr. Cornelius indicated that he confirmed this standard with the County.

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Petitioner maintains that the impact of the approved PUD is substantially "less than that assumed by the district standard." Evidence and testimony presented at the hearing revealed that the subject property is served by both Forest and Arbutus Avenues which lead to Edmonson Avenue and Frederick Road, respectively. As shown on the aerial photograph which was marked and accepted into evidence as Petitioner's Exhibit 4, both Edmonson and Frederick Avenues have direct access to Interstate 695, and as such, it is unreasonable to assume that one-half of the traffic generated by the PUD will proceed through the intersection, considering its close proximity to Interstate 695. In fact, given the unique location of the proposed development and its accessibility to Interstate 695, Petitioner believes the district standard is not even relevant to the proposed development.

Impact of PUD on F-Rated Intersection

In support of his testimony regarding the impact of the PUD on the traffic shed, Mr. Cornelius introduced a report on the trip generation study for the approved PUD plan, which was admitted as Petitioner's Exhibit 5 (the "Report"). The Report estimates the inbound and outbound trips generated by the approved PUD during the morning and evening peak hours. Mr. Cornelius used this information to analyze the impact of the approved PUD on the F-Rated intersection during the evening peak hour. In explaining this analysis, Mr. Cornelius stated that the 23 age targeted single-family attached units of the PUD will have significantly different trip generation characteristics than do non-age targeted developments. Typically, age targeted developments, similar to the approved PUD, generate considerably fewer trips during the peak hours than do similar non-age targeted developments. This is attributed to the fact that most of the residents of these communities have different daily schedules than the typical residents of a non-age targeted community.

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Mr. Cornelius's Report estimates the inbound and outbound peak hour trips generated by the approved PUD. Mr. Cornelius used this information to analyze the impact of the approved PUD on the F-Rated intersection during the evening peak hour at the hearing. During the evening peak hour, it is estimated that the approved PUD generates seven total trips (four inbound and three outbound). Of the four inbound trips, the Report estimates that half are coming from the north and half are coming from the south. In regard to the two trips coming from the south, Mr. Cornelius testified that it is unnecessary for them to proceed through the F-Rated intersection in order to reach the development. There are three alternative routes which avoid the intersection entirely. Two of these alternatives, which assume the vehicles are proceeding from Interstate 95, are actually two minutes shorter than the route which proceeds through the F-Rated intersection. Mr. Cornelius added that even if both trips coming in from the south during the evening peak hours were to go through the F-Rated intersection, the impact is imperceptible.

On the other hand, a number of interested citizens testified in opposition to the requested relief. These included Mr. Power, Ms. Dines, and Mr. Lackey. All expressed concerns over the potential traffic impact of the new development on the F-Rated intersection. Collectively, they disagreed with the conclusions of Petitioner's traffic expert, Mr. Cornelius. Those living in the area believe that the addition of the Villas at Eden Terrace will significantly increase the overall traffic in the area, and in particular, will make the F-Rated intersection at Ingleside Avenue/Bloomsbury Avenue and Frederick Road even worse. In short, these neighbors did not feel Mr. Cornelius's conclusions concerning the traffic impact of the new development reflected their actual experiences with traffic congestion in the area.

Specifically, testimony indicated that age targeted seniors living at the Villas at Eden Terrace would contribute to the traffic problems, even at peak times; that the new development's

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dual access to Interstate 695 from Frederick Road and Edmondson Avenue would create additional traffic and contribute to additional ingress and egress problems to and from the Baltimore Beltway; that because the new development is age targeted versus age restricted, it could still result in families residing in the planned dwellings and additional traffic during peak times; and that notwithstanding Mr. Cornelius's conclusions, residents of the community and the planned Villas at Eden Terrace would continue to use Bloomsbury Avenue as an access road from Interstate 95 to the south into the Catonsville community, thereby making the F-Rated intersection even worse. Finally, marked and accepted into evidence as Protestants' Exhibit 1 was a two-page Petition signed by a number of residents of Catonsville and particularly the Glenwood Avenue area, opposing any change in zoning and opposing the variance.

The Zoning Advisory Committee (ZAC) comments were received and are made part of the record of this case. The ZAC comments received from the Department of Environmental Protection and Resource Management dated February 21, 2008 indicate that the property must comply with the Forest Conservation Regulations. Comments received from the Bureau of Development Plans Review dated February 14, 2008 indicate that the property is proposed to be gated at both ends: Arbutus Avenue and Forest Avenue; as such, there will be no opportunity for cut-through. Given this, most of the new residents will choose to use Forest Avenue to get to Edmondson Avenue to get on the beltway and they will only go to Frederick Road via Arbutus Avenue during off-peak hours. Hence, they have no objection to granting the requested permission. Comments received from the Office of Planning dated March 19, 2008 indicate that agency does not oppose the request for special variance.

After considering the testimony and evidence from both the Petitioner and the Protestants, I find that the impact of the proposed development on the F-Rated intersection meets the threshold

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set forth in Section 4A02.4.G of the B.C.Z.R., in regard to the F-Rated intersection district standard. Although I am mindful of the community's concerns of overall traffic in the area, I agree with Petitioner's traffic engineering and traffic planning expert, Mr. Cornelius, that the impact of the proposed development on the F-Rated intersection at Ingleside Avenue/Bloomsbury Avenue and Frederick Road will be minimal. Currently, of the potential eight cycles of traffic at the intersection (northbound, southbound, eastbound, and westbound each in the morning and evening peak times), only the northbound evening cycle from Bloomsbury Avenue is at 100% loaded, and therefore, F-Rated. Mr. Cornelius made a number of points concerning his analysis of current traffic movements and travel patterns in the area, calculating travel times from Interstate 695 to Frederick Road and Edmondson Avenue, and travel times from Interstate 195 to Bloomsbury Avenue and Edmondson Avenue, and reviewing other arterial roads and identifying properties where the majority of the trips originate. Taking into account his conclusions, I am persuaded that the impact of the new development to northbound Bloomsbury Avenue during the evening peak time will be imperceptible, and that granting the special variance will be consistent with purposes of Section 4A02 of the B.C.Z.R.

The second consideration which must be considered in reviewing a petition for special variance is whether the granting of the petition will adversely affect a person whose application was filed prior to the petitioner's application in accordance with Section 4A02.3.G.2.b of the B.C.Z.R. This Section pertains to applications for reserve capacity use certificates. As Mr. Cornelius testified, there are no applications pending for any reserve capacity use certificates in this traffic shed.

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Pursuant to the advertisement, posting of the property, and public hearing on this petition held, and after considering the testimony and evidence offered by the parties, I find that Petitioner's special variance request should be granted.

THEREFORE, IT IS ORDERED this 13th day of May, 2008 by this Deputy Zoning Commissioner, that Petitioner's request for special variance from Section 4A02 of the Baltimore County Zoning Regulations (B.C.Z.R.) pursuant to Section 4A02.4.G of the B.C.Z.R. to permit subdivision approval and issuance of building permits for 23 dwelling units in the traffic shed of an "F" rated intersection on the Baltimore County Basic Services Map for Transportation be and is hereby GRANTED, subject to the following:

1. Petitioners are advised that they may apply for any required building permits and be granted same upon receipt of this Order; however, Petitioners are hereby made aware that proceeding at this time is at their own risk until such time as the 30-day appellate process from this Order has expired. If, for whatever reason, this Order is reversed, Petitioners would be required to return, and be responsible for returning, said property to its original condition.

Any appeal of this decision must be made within thirty (30) days of the date of this Order.

THOMAS H. BOSTWICK
Deputy Zoning Commissioner
for Baltimore County

THB:pz

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IN RE: PETITION FOR SPECIAL VARIANCE E/S Wampler Road, 500' N c/line Wampler Road & Sterling Avenue **(Wampler Rd. & Kristy Michele Ct.)** 15th Election District 6th Council District Sterling Reserve, LLC, et al Petitioners	*	BEFORE THE ZONING COMMISSIONER FOR BALTIMORE COUNTY **Case No. 08-436-SA**

* * * * * * * * * *

FINDINGS OF FACT AND CONCLUSIONS OF LAW

This matter comes before the Zoning Commissioner for consideration of a Petition for Special Variance filed by the owners of the subject property, Sterling Reserve, LLC, GM Holmes, LLC, Michael R. and Patricia R. Fromm, Dottie L. and Clifford D. Porter, and Peggy A. and James H. Carr, III (collectively Petitioners). Petitioners are requesting special variance relief from Section 4A02.4G of the Baltimore County Zoning Regulations (B.C.Z.R.) to permit subdivision (Sterling Reserve) approval, recordation and the issuance of building permits for fifteen (15) single-family dwelling units where it has been determined that the capacity of the public facilities necessary to accommodate same (transportation) is less than necessary. The subject property and the requested relief are more fully described on the site plan which was marked and accepted into evidence as Petitioners' Exhibit 2.

Appearing at the requisite public hearing in support of the special variance were Paul Amirault, managing member, Sterling Reserve, LLC, George Holmes, on behalf of the GM Holmes, LLC, Michael R. Fromm Sr. and Patricia R. Fromm, Dottie L. and Clifford D. Porter, and Peggy A. and James H. Carr, III. Petitioners were represented by G. Scott Barhight, Esquire and Jennifer R. Busse, Esquire of Whiteford, Taylor & Preston, LLP. Also attending in support of the request were Mickey Cornelius, Senior Vice President of the Traffic Group, Inc., who was offered and accepted as an expert in traffic engineering and planning; Kristy M. Bischoff, P.E., the professional engineer with Daft-McCune-Walker, Inc., land planners who prepared the site plan. The issues presented in this case generated significant public interest and a number of individuals connected with the Developer (Sterling Reserve, LLC), the homebuilder (GM Holmes, LLC) and the individual lot owners named above attended in support. It should also be noted that the Fromm's personal attorney, R. James Mitchell, Esquire, attended as well as real estate agents Jennifer and Nancy Ryan, Debra and Michael Fromm, Jr. There were no Protestants or other interested citizens in attendance.

An appreciation of the property's past history and use is relevant and is briefly outlined. The subject property and the 15 dwelling units under consideration were previously approved by this Zoning Commissioner sitting as the Hearing Officer on February 23, 2005 in Case No. XV-836 and 05-263-A. No appeal having been filed, the record plat for the Sterling Reserve Development was then recorded among the Land Records of Baltimore County on or about December 8, 2006. The irregularly shaped 7.79 acres of D.R.2 zoned land is located in eastern Baltimore County on the north side of Sterling Avenue and the east side of Wampler Road accessed by Bird River Road from the north and Bengies Road from the south. Building permits have been processed and issued by Baltimore County. Ownership of four of the fifteen lots was then transferred from Sterling Reserve, LLC to the homebuilder, George Holmes. Of those four lots, one is still owned by GM Holmes, LLC. Mr. Holmes constructed dwellings on two lots and sold those lots - one to the Carrs (Lot 10, known as 715 Kristy Michele Court) and the other to the Porters (Lot 12, known as 711 Kristy Michele Court). The Porters moved into their new home on December 27, 2007, the Carrs on February, 8, 2008. Subsequently, Holmes sold Lot 14, 707 Kristy Michele Court, to the Fromms. Early in 2008, Holmes began the permitting

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process for construction of the home for Mr. and Mrs. Fromm. Baltimore County, however, informed Holmes that the permit would not be issued due to the fact that the subject lot was located in a failing traffic shed as a result of the failing intersection at Pulaski Highway (MD Rt. 40) and Middle River Road. In order to obtain relief for the Fromms as well as validating those permits already issued for the other lots, Petitioners filed a request for special variance relief. Section 4A02.4.G of the B.C.Z.R. falls within the growth management regulations contained in Article 4A of the regulations. Petitions for special variance under this Section have rarely been considered by this Commission. Thus, a brief overview of the growth management regulations is also deemed appropriate.

Pursuant to Section 4A00.1 of the B.C.Z.R., the purpose and intent of Article 4A, entitled "Growth Management," is to generally "implement the objectives of the County-wide Master Plan and to adopt standards and guidelines relative to new development." Additionally, the growth management regulations seek to encourage development patterns that are consistent with the preservation of the quality of life in existing neighborhoods, to ensure the adequacy of public facilities and infrastructure, the preservation of the natural, agricultural and environmental resources and to promote appropriate new growth and development. The purpose and intent of the Basic Service Maps of the growth management regulations is set forth in Section 4A02.1 of the B.C.Z.R. Therein, it is provided that Basic Service Maps are to be annually prepared by the County to ensure that public facilities are in place to adequately serve proposed development. Additionally, Section 4A02.2 of the B.C.Z.R. states that in the event of any conflict between the growth management regulations and any other provision of the B.C.Z.R., the provisions of the growth management regulations control. Thus, the Petition for Special Variance requested in

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this case is governed by the requirements in Article 4A and, hence, the variance provisions of Section 307 of the B.C.Z.R. are not applicable.

Section 4A02.3 of the B.C.Z.R. sets out in detail the adoption process for the Basic Services Maps. There are actually three maps adopted; one related to the supply of public water, the second related to public sewage, and the third related to transportation. Petitioners seek relief in this case only as to the third map (transportation map). Section 4A02.3 of the B.C.Z.R. sets forth in full detail the methodology to be employed during the annual adoption of the three Basic Services Maps by the Baltimore County Council. Additionally, Section 4A02.3.G provides that no building permit or subdivision approval can be granted unless the Director of the Office of Planning has issued a reserve capacity use certificate for the proposed development. That section goes on to state that a property owner/developer shall make application for a reserve capacity use certificate in a method to be set forth by the Office of Planning. In this case, Mr. Barhight stated at the hearing that because development proposed pursuant to the provisions of the special variance regulation (Section 4A02.4.G) have rarely been sought, he was advised by the Office of Planning that it has not produced for public use any such "application form." Moreover, he was informed that notwithstanding the provisions of Section 4A02 of the B.C.Z.R., the Office of Planning does not maintain a list of the pending applications.

Section 4A02.4 of the B.C.Z.R. sets out the Basic Services Mapping standards. The standards are individually established as they relate to water supply, sewage, and transportation. Moreover, Section 4A02.4.E of the B.C.Z.R. sets forth certain exceptions to the Basic Services Mapping standards. For example, Section 4A02.4.E.1.a provides that minor subdivisions of three or fewer single-family detached dwellings are exempted from certain provisions of the Basic Services Mapping statute. Finally, Section 4A02.4.G provides that a Special Variance can

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be granted from a provision of this subsection. In order for special variance relief to be granted, the Zoning Commissioner must hold a public hearing and must determine that the granting will not violate the particular provision's purpose, pursuant to making certain findings -- effectively a two-prong test. First, the Zoning Commissioner must determine that the demand or impact of the proposed development will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal. Second, the Zoning Commissioner must find that the granting of a petition would not adversely affect a person whose application was filed prior to Petitioner's application.

In this case, relief is requested because the intersection of Middle River Road and Pulaski Highway is a failing intersection. It has been graded as an "F" level of service intersection and the "shed" of this intersection is shown on Petitioners' Exhibit 3, which includes the subject property. As the subject property is located within that shed, building permits cannot be issued nor should development approval be given until the intersection is improved and no longer failing or special variance relief is granted.

Addressing this second requirement for a Petition for Special Variance first, the uncontradicted testimony and evidence offered in this case was that the application submitted by Petitioner would not adversely affect a person whose application was filed prior to Petitioner's application. As noted above, apparently due to the rare utilization of the relief afforded by this special variance process, there is no list maintained by the Office of Planning and thus there is no "person whose application was filed prior to the petitioner's application." I therefore find that Petitioners have met this criteria in that their application is effectively first in line.[1]

[1] As noted, the Sterling Reserve Development Plan was approved on February 23, 2005.

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I am cognizant of the fact there is other proposed development in the area, but that development is apparently not proceeding forward pursuant to the variance process set forth in growth management regulations as described herein. Thus, Petitioner has met its burden insofar as this test.

Turning next to the first prong identified, a finding must be made that the impact of the proposed development will be less than that assumed by the district standard that would otherwise restrict or prohibit the development; or that the district standard does not apply. Unfortunately, a review of the regulations at issue discloses that the "district standard" is neither a defined term nor is it described anywhere in Article 4A. In fact, testimony offered at the hearing is that the Baltimore County Bureau of Traffic Engineering has not defined the term and it is not a phrase used in the parlance of traffic engineers.

Although these special variance cases are rare, they are not altogether unfamiliar. The most recent cases of this type came before the Office of the Zoning Commissioner as Case Nos. 08-264-A and 05-336-SA. Those cases considered by Deputy Zoning Commissioner Thomas H. Bostwick and John V. Murphy granted approvals of a Special Variance on April 25, 2008 and May 16, 2005. The Findings of Fact and Conclusions of Law rendered are instructive. Deputy Commissioner Murphy (also a civil engineer) analyzed the issue of the impact of the proposed development on proposed conditions as he formulated the "district standard." He considered whether the anticipated impacts on traffic as they related to such issues as volume, congestion, movement and timing of the proposed development would be less than the impact normally associated with a development of that type and size. He concluded that if the impacts were less, then relief could be granted pursuant to a petition for special variance. Specific factors such as the anticipated volume of traffic to be generated, the route (including access and exit) of traffic

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to and from the proposed development, anticipated road improvements in the area, the nature and timing of the traffic generated by the proposed development, existing potential development patterns in the area, the nature of the land use proposed for development and existing development in the area are all factors that need be considered in determining whether special variance relief should be granted.

In the instant case, a copy of the County's data collection sheet and traffic analysis for the intersection of Middle River Road and Pulaski Highway was marked and accepted into evidence as Petitioners' Exhibit 4. This exhibit depicts traffic counts for the intersection and analyzes the levels of service for respective movements through that intersection. For example, volumes and analysis are provided for straight (through) traffic patterns in each direction on both roads through the intersections, as well as left and right turning movements for each roadway. It is to be noted that an intersection is considered failing by Baltimore County if but one traffic movement reaches an unsatisfactory level. That is, an intersection might have adequate capacity for through traffic in all directions, but still be determined failing if a single turning movement capacity is inadequate. Obviously, the manner in which a proposed development will impact specific directions/movements in the intersection is a significant consideration in determining the merits of a special variance request.

In this case, there are several factors that support a finding that the impact of the proposed development will be less than anticipated and that the Petition for Special Variance should be granted.

Mickey Cornelius described his familiarity with the proposed site and its immediate surrounding area, including numerous visits to the site and the completion by him of a Traffic Impact Study (*See* Petitioners' Exhibit 1). He explained that the County's Bureau of Traffic

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Engineering and Transportation Planning inspects hundreds of intersections controlled by traffic signals on an annual basis in order to determine how well traffic flows during the morning and evening rush hours. Intersections receive letter grades from "A" to "F" which indicate the level-of-service, or the degree of congestion. The level-of-service of an intersection is determined by analyzing each approach to the intersection individually. A computation is made of each approach to determine its "load factor" during both the morning and afternoon peak hours. The "load factor" is ascertained by recording the number of "loaded cycles" on each approach during the peak hours in both the morning and afternoon.

The cycle of a traffic signal is the period that encompasses one green indication of the signal. During each cycle of the traffic signal, an observer determines which vehicle is the last vehicle stopped in the queue at the time the signal turns green. If the last vehicle does not get through the intersection during that one green indication, the cycle is considered to be "loaded".

Each approach to the intersection is studied to determine the particular 60-minute period that has the highest percentage of cycles which are "loaded". In this case, *the southbound approach to the intersection* at MD Rt. 40 and Middle River Road between 4:30 P.M. and 5:30 P.M. generates the highest percentage of loaded cycles. This percentage, known as the "load factor", can range from 0 percent to 100 percent.

Mr. Cornelius testified that only one leg of the subject intersection is failing. Specifically, Mr. Cornelius explained that the southbound traffic on Middle River Road as it approaches the intersection of MD Rt. 40 has a load factor of 91 percent, which means that during 91 percent of the cycles between 4:30 P.M. and 5:30 P.M. all of the vehicles stopped in line to cross over Rt. 40 when it changes green do not get through the signal. No other approach through the intersection generates a failing percentage of loaded cycles at any time. This

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testimony was confirmed by the data obtained from Baltimore County's Traffic Engineering Division. (Petitioners' Exhibit 4)

Mr. Cornelius opined that the impact of the 15 dwellings in Sterling Reserve is substantially "less than that assumed by the district standard". Using Petitioners' Exhibits 1 and 3 and showing the location of the subject property and overlay of the relevant traffic shed, he demonstrated that the anticipated impact of inbound and outbound traffic of this development will be less than that assumed by the "district standard". He focused on the evening peak hour effects at this F-Rated intersection since that is the only time that the relevant leg of the intersection is classified as failing. During the evening peak hour, it is estimated that the 15 dwellings generate 15 total trips (10 inbound and 5 outbound). Since only the southbound leg of the intersection (cars on Middle River Road crossing over Rt. 40) is failing, the 6 trips exiting Sterling Reserve will not impact the subject failing intersection. In regard to the 10 trips entering Sterling Reserve, Mr. Cornelius testified that it is unnecessary for them to proceed through the F-Rated intersection in order to reach the property. There are numerous alternative routes which avoid the intersection entirely. Residents of Sterling Reserve are not likely to work in the very limited geographic areas which would place them in a position to decide whether to use the failing intersection on their way home from work. At most, only a few, if any, would work in the businesses which would even give them the reasonable opportunity to use this leg of the failing intersection. Mr. Cornelius added that given the small number of possible trips that could go through the failing leg of this intersection, during the peak evening hours, the potential impact would be imperceptible. In light of the evidence and testimony presented, I find that the impact of the proposed development on the F-Rated intersection meets the threshold set forth in

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B.C.Z.R. Section 4A02.4.G. The potential impact is less than that assumed by the district standard.

B.C.Z.R. Section 4A02.4G.3 requires that the Office of Planning provide this Commission with Zoning Advisory Committee (ZAC) comments on the pending petition. The Office of Planning's comment, dated April 18, 2008, was accepted into evidence as Petitioners' Exhibit 6. This comment provides in pertinent part ... that since there are several alternative routes that are not located in the failing traffic shed and can be utilized by those traveling to and from the property, the Office of Planning does not object to the granting of the special variance.

The Office of Planning's comment notes that it is expected that the State Highway Administration (SHA) will complete improvements to the subject failing intersection (MD Rt. 40 and Middle River Road) such that the building moratorium may be lifted in early summer 2009. Mr. Cornelius supported this comment and provided data from the SHA showing that the proposed improvements are included in the State's capital budget and plans and construction is scheduled to begin in Fiscal Year 2008. The SHA Consolidated Transportation Program (CTP) 2008-2013 planned improvement data sheet was accepted as Petitioners' Exhibit 5.

I find that the evidence and testimony supports the fact that there are no other developments or lots in line for reserve capacity use certificates. I also note that while the testimony and evidence support the presumption that the planned improvements to the subject failing intersection will begin shortly and hopefully be completed prior to the end of 2009, forcing these Petitioners, given these circumstances, to wait what may be two (2) years for building permits is an unreasonable hardship.

The Sterling Reserve development is essentially half "built-out". The base paving has been laid but until either the moratorium is lifted or this special variance relief is granted, the

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developer is prohibited from completing the road paving. Two families already live in the community and the Fromms are paying a mortgage on their lot without being able to build their home. I find these circumstances truly unfortunate. Thus, the Petition for Special Variance shall be granted and relief approved so that the previously approved subdivision may be issued building permits, not withstanding its location within the shed of a failing intersection.

Pursuant to the advertisement, posting of the property and public hearing on this petition held, and for the reasons set forth above, the relief shall be granted.

THEREFORE, IT IS ORDERED, by the Zoning Commissioner for Baltimore County, this 6th day of May 2008, that pursuant to a finding that the demand or impact of the development proposed will be less than assumed by the district standard would otherwise restrict or prohibit the development, and the granting of the petition will not adversely affect a person whose application was filed prior to the Petitioners application, the Petitioners request for a Special Variance from Section 4A02.4.G of the Baltimore County Zoning Regulations (B.C.Z.R.), to permit subdivision approval, recordation and the issuance of building permits for fifteen (15) single-family dwelling units where it has been determined that the capacity of the public facilities necessary to accommodate same (transportation) is less than necessary, be and is hereby GRANTED, subject to the following:

1. Petitioners may apply for their building permits and be granted same upon receipt of this Order; however, Petitioners are hereby made aware that proceeding at this time is at their own risk until the thirty (30) day appeal period from the date of this Order has expired. If an appeal is filed and this Order is reversed, the relief granted herein shall be rescinded.

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Any appeal of this decision must be made within thirty (30) days of the date of this Order.

WILLIAM J. WISEMAN, III
Zoning Commissioner
for Baltimore County

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IN RE: **PETITIONS FOR SPECIAL EXCEPTION, VARIANCE and SPECIAL VARIANCE**	*	BEFORE THE
S/E Side of Joppa Road, 60' SW of c/line of Quentin Avenue	*	ZONING COMMISSIONER
(1807 East Joppa Road)	*	OF
9th Election District		
5th Council District	*	BALTIMORE COUNTY
Jennifer M. Hitt	*	**Case No. 2009-0080-XSA**
Petitioner		

* * * * * * * * * * * *

FINDINGS OF FACT AND CONCLUSIONS OF LAW

This matter comes before the Zoning Commissioner for consideration of Petitions for Special Exception, Variance and Special Variance filed by Jennifer M. Hitt, the owner of the subject property, through her attorney, Edward J. Gilliss, Esquire. The Petitioner requests a special exception to allow the conversion of an existing Class A Office Building to a Class B Office Building in an R-O (Residential – Office) Zone, pursuant to Section 204.3.B.2.a of the Baltimore County Zoning Regulations (B.C.Z.R.). In addition, variance relief is requested from the B.C.Z.R. as follows: **(1)** from Section 409.4.A to permit a drive aisle with a width of 7.2 feet in lieu of the required 20 feet; **(2)** from Section 409.4.C to permit a travel lane with a width of 19 feet in lieu of the required 22 feet; **(3)** from Section 409.8.A.5 to permit a dead end parking bay without backup area; **(4)** from Section 204.4.C.4 to permit an 8 foot side yard setback for an addition in lieu of the required 10 feet; and lastly **(5)** for a special variance from Section 4A02.4.G to permit a proposed addition to 1807 East Joppa Road that is within the Loch Raven Boulevard/Joppa Road traffic shed. The subject property and requested relief are more particularly described on the redlined site plan submitted which was accepted into evidence and marked as Petitioner's Exhibit 1.

Appearing at the requisite public hearing in support of the request(s) on behalf of the property owner, Jennifer Hitt, were her husband, Matthew B. Hitt, who has for fifteen (15) years operated his accounting business at the subject location; Bernadette L. Moskunas with Site Rite

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Surveying, Inc., the consultant who prepared the site plan for this property, and Edward J. Gilliss, Esquire, attorney for the Petitioner. There were no Protestants or other interested persons present. People's Counsel, Peter Max Zimmerman, entered the appearance of his office in this case and at the onset of the hearing, the Petitioner amended the Petition and site plan in response to comments submitted by Mr. Zimmerman and Stephen E. Weber, Chief of Traffic Engineering, who had reviewed the initial site plan. The amended plan provides signage and traffic circulation detail.

Testimony and evidence offered revealed that the subject property is a rectangular shaped parcel (50' wide x 160' deep) located on the southeast side of East Joppa Road between Quentin Avenue and Oakleigh Road, near the Baltimore Beltway (I-695) Overpass in Parkville. The property contains a gross area of 9,250 square feet or 0.212 acres, more or less, zoned R-O and is improved with a 1 ½-story frame bungalow and a paved accessory parking area in the rear portion of the lot. The Petitioner purchased the site in 2002 after leasing the property and improvements for some ten (10) years prior and now proposes a rear addition to accommodate the growing CPA (Certified Public Accountant) business. As shown on the site plan, the existing building is 32' wide x 31' deep and contains approximately 1,018 square feet of office space. The Petitioner proposes the construction of a two-story addition, 25' x 30' in dimension, to the rear of the structure to provide an additional 750 square feet of commercial space. Mr. Hitt stated the basement and second floor area would be dedicated to needed storage space. The addition's first floor will serve as a desperately needed conference room and provide organizational space. These improvements and uses are more particularly shown on building elevation drawings submitted into evidence as Petitioner's Exhibit 5.

Special Exception relief is necessary to reflect the proposed expansion of the current use from a Class A Office building to a Class B Office building. A Class B office building is defined in Section 101 of the B.C.Z.R. as "A principle building used for offices and which is not a Class A Building." A Class B Office Building is permitted in the R-O zone by special exception. In this regard, the building has been used by Matthew Hitt for the past 15 years and

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has worked well without any complaint, zoning violation, or incident. The term "Office" is defined in the regulations as "A building or portion of a building used for conducting the affairs of a business, *profession*, service, industry, or government, including a medical office." Surely, this structure falls within that definition. For the Petitioner, the building is suitable and economically feasible for use at this site. The proposed 0.27 floor area ratio is appropriate and the seven (7) off-street parking spaces are adequate for the no more than five (5) office workers on premises at any one time. Mr. Hitt testified that the CPA's business primarily involves off-site visits to their client's place of business. It was further indicated that there will be no new employees, no new bathroom, no new vehicles, and, as stated above, storage will be dedicated to the basement and second floor areas with the remaining first floor for needed work space and conference room. Mr. Hitt stated that he anticipates staying at this location for at least the next thirteen (13) years and hopes to purchase 1805 East Joppa Road when the Odette's retire and close their insurance agency.

Based upon the testimony and evidence presented, I am persuaded that special exception relief should be granted. In my judgment, the proposal complies with the requirements of Section 502.1 of the B.C.Z.R. and will not cause detrimental impacts to the health, safety and general welfare of the locale.

Turning next to the variance requests, the Petitioner originally requested four (4) variances, three (3) relating to B.C.Z.R. Section 409 requirements for driveways (7.2 feet instead of 20 feet), travel lanes (19 feet instead of 22 feet), and dead-end parking (without back-up area) and one (1) from B.C.Z.R. Section 204.4.C.4 for a building side yard setback (8 feet instead of 10 feet). This Section states in pertinent part: "Minimum side yard setbacks: 10 feet, *except if the adjacent property is predominantly residentially zoned, residentially used or is adjacent to a residential street, in which case the setback shall be 20 feet*".[1] Although the adjacent properties are zoned R-O, they are used commercially and not residentially. Accordingly, the Office of

[1] In January 2005, the County Council rewrote the definitional section of the B.C.Z.R. to include the R-O zone as being within the "residential zone".

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Zoning Review determined the applicable side yard setback in this case to be 10 feet. I agree. As illustrated on the site plan adjacent side-by-side properties are used commercially. Neighboring 1801 East Joppa Road is in the B.L.R. (Business Local Restricted) Zone. There is not a dissimilar use between the properties to lend support for a 20-foot side yard buffer. As to the appropriateness of this variance to permit a side yard setback of 8 feet, the 1-½ story bungalow is already built and located on the lot 7.2 feet (east side) from the property line. The setback has therefore already been established and has existed since 1951. This is corroborated by the Zoning Advisory Committee (ZAC) comment submitted by the Office of Planning. Within the comment the Director states:

> "This office supports the special exception request to expand the existing office. *The office addition is in line with and to the rear of the existing building.* The driveway servicing the building exists. The variances requested do not appear to place a burden on the existing adjacent residential uses or have negative impacts on the general vicinity."

Due to the architectural and structural characteristics possessed by this property, not shared by other properties in the area, the requested setback relief of 8 feet in lieu of the 10 feet is in order to comply with the spirit and intent of the regulations.

Addressing the Section 409 variances, Mr. Hitt stated that the driveway on the subject property provides for a total width of 10.5 feet (8.5 feet on the subject property plus a 2 foot encroachment of the driveway onto the adjacent property to the east). This driveway/configuration has existed on the site since 1951, well before the amended zoning regulations of 1955; however, current regulations require a minimum driveway width of 20 feet. As suggested by Steve Weber, who reviewed the plan at the request of Office of People's Counsel, Petitioner submitted Exhibit 3 - (Driveway Use Agreement), to address concerns of encroachment. This Agreement, dating back to 1984, provides for the right of the Petitioner, her heirs, and assigns, to use, for as long as it is used as a driveway, the piece of ground 2'-6" wide to

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the east of the boundary line between 1809 and 1807 East Joppa Road and running 120' parallel with the western boundary of 1809 East Joppa Road. The Petitioner next requests approval to permit a travel lane with a width of 19 feet in lieu of the required 22 feet from 409.4.C. As also suggested by Stephen Weber, Petitioner submitted Exhibit 6 – (Joint Use Driveway Agreement) that states in pertinent part:

> "WHEREFORE, Odette and Hitt agree that the owners, tenants, employees and customers of the aforesaid properties and the business users of those properties shall be permitted to use each other's driveways, so that the driveway on the east edge of the properties (1805 E. Joppa Road) shall be used for ingress to the parking areas and the driveway on the far west of the properties (1807 E. Joppa Road) shall be used for egress from the parking areas. Odette and Hitt agree to instruct tenants and/or employees to use the driveways as aforesaid".

This agreement, to pair the driveways, is demonstrated on the revised site plan (Exhibit 1) and addresses to the extent possible the substandard entrance and driveway issues.

In addition, Mr. Hitt testified from his personal knowledge of the workings of the property that surprisingly, given Mr. Weber's comments, that there are no parking lot problems on site today. He believed this was because the Odette's property (1805 East Joppa Road) and Hitt's property (1807 East Joppa Road) sit side-by-side with driveways on either side of the adjoining properties with parking located behind the structures. Because both properties were formerly residences before being converted to commercial use, the driveways are narrower than if they had originally been constructed for commercial use. As noted above, Petitioner purchased 1807 East Joppa Road from Odette and intends to purchase 1805 East Joppa Road from Odette when they desire to sell. The Hitt's intend to merge the two (2) properties once they are under common ownership. *See* Petitioner's Exhibit 6. Mr. Gilliss opined that the use-in-common parking lot and access with the adjacent property qualified for relief to be granted for a

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modified parking plan pursuant to B.C.Z.R. Section 409.12. To provide compliance with current regulations, he argues would be an undue hardship on the Petitioner for reasons given. I accept the fact that there is currently no room on the nonconforming property to rectify the drive aisle deficiencies. As such, I find the property unique. I also find that the Petitioner would suffer a practical difficulty if the regulations were strictly enforced.

In regard to parking, Ms. Moskunas supplemented Mr. Hitt's testimony by noting that ordinarily adding a new addition would require more parking. However, the subject addition will be used by the existing CPA business employees; therefore, the seven (7) spaces will provide more than adequate parking. People's Counsel correctly points out that B.C.Z.R. Section 204.4.C.6 and 9 requires Class B Office buildings to provide amenity open space in the interior portion of the parking lot in addition to buffer area requirements. Ms. Moskunas noted that a retaining wall runs along the parking area at the boundary between the subject property and 1809 East Joppa Road. *See* Photographic Exhibits 4B-9 through 4B-16. There is existing planting provided with existing mulch areas that runs perpendicular (east to west) across the parking area with 1805 East Joppa Road. Additionally, a 7-foot wood-on-wood board privacy fence runs across the entire rear property line separating the R-O from the D.R.5.5 residential uses to the rear. As evidenced on Petitioner's Exhibit 1 - General Note 13, the Petitioner shall submit for review and approval a landscape plan to Avery Harden, the County's Landscape Architect, at the time of building permit application. To require the Petitioner to provide additional amenity open space in the parking lot given these facts would be inconsistent with other commercial uses in the vicinity.

In addition, special variance relief is requested in order to proceed with the proposed development, the ZAC comments issued by reviewing agencies as a result of their respective

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review of the site alerted Petitioner to the fact that the subject property is located within the shed of a failing intersection as well as an "Area of Special Concern" for sewer. The "F" level traffic shed identified is Loch Raven and Joppa Roads. This intersection has been assigned an "F" level of service pursuant to the current Basic Service Map for transportation. Thus, and as will be explained in more detail below, the instant Petition for Special Variance was filed.

Pursuant to Section 4A00.1 of the B.C.Z.R., the purpose and intent of Article 4A, entitled "Growth Management," is to generally "implement the objectives of the County-wide Master Plan and to adopt standards and guidelines relative to new development." Additionally, the growth management regulations seek to encourage development patterns that are consistent with the preservation of the quality of life in existing neighborhoods, to ensure the adequacy of public facilities and infrastructure, the preservation of the natural, agricultural and environmental resources and to promote appropriate new growth and development. The purpose and intent of the Basic Services Maps of the growth management regulations is set forth in Section 4A02.1 of the B.C.Z.R. Therein, it is provided that Basic Service Maps are to be annually prepared by the County to ensure that public facilities are in place to adequately serve proposed development. Additionally, Section 4A02.2 of the B.C.Z.R. states that in the event of any conflict between the growth management regulations and any other provision of the B.C.Z.R., the provisions of the growth management regulations control. Thus, the Petition for Special Variance requested in this case is governed by the requirements in Article 4A and, hence, the variance provisions of Section 307 of the B.C.Z.R. are not applicable.

Mr. Gilliss demonstrated that the only ingress and egress to the subject site is by way of the eastbound lanes of Joppa Road. He discussed several factors that mitigate against any anticipated impacts at the subject intersection. First, Joppa Road's eastbound and westbound

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traffic lanes are separated by a concrete median as depicted on the photographs submitted. *See* Petitioner's Exhibit 4B-1 through 4B-6. Traffic exiting 1807 East Joppa Road must therefore proceed east on Joppa Road away from the failing intersection. Secondly, there will be no increased traffic as a result of the proposed addition in as much as the employees will remain the same. This testimony is substantiated by Stephen Weber, who in his correspondence to the Office of People's Counsel dated October 19, 2008, states in pertinent part:

> "Based on the relatively small size of the addition, the distance of this site from the critical intersection, and recognizing that the eastern border of the moratorium area only lies 200 feet to the east at the Beltway, we would find that the additional traffic impacts from this site on the critical intersection would be nearly imperceptible and therefore we would have no objection to the granting of a Special Variance for this proposal".

Based upon the foregoing, I find that the testimony and evidence that has been offered is sufficient to comply with the special variance standard set forth in Section 4A03.4.G of the B.C.Z.R. Thus, the Petition for Special Variance shall be granted and relief approved so that the proposed improvement may be approved and building permits issued for this addition notwithstanding its location within the shed of a failing intersection. It is clear that there will be no impact on the "F" intersection.

After due consideration of all of the testimony and evidence presented, a review of the provisions contained within Petitioner's Deed (Exhibit 2) and Agreement(s) – (Exhibits 3 and 6), I am persuaded to grant the special exception and variance requests. The testimony and amended site plan presented by Ms. Moskunas and the fact that the CPA business has been operating for 15 years without incident is persuasive to a finding that the proposed use meets the special exception requirements set forth in Section 502.1 of the B.C.Z.R. as well as Section 307 and *Cromwell v. Ward* 102 Md. App. 691 (1995) and will not be detrimental to the health, safety or general welfare of the surrounding locale. I further find that the proposed use is consistent with and will complement the other businesses in the vicinity, and that sufficient parking exists to support the use.

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Pursuant to the advertisement, posting of the property and public hearing on these Petitions held, and for the reasons set forth above, the relief requested shall be granted.

THEREFORE, IT IS ORDERED by the Zoning Commissioner for Baltimore County this 12th day of January 2009 that the Petition for Special Exception, pursuant to Section 204.3.B.2.a of the Baltimore County Zoning Regulations (B.C.Z.R.), to permit a Class B office building in an R-O zone, be and is hereby GRANTED; and,

IT IS FURTHER ORDERED that the Petition for Variance, seeking relief from the B.C.Z.R. as follows: **(1)** from Section 409.4.A to permit a drive aisle with a width of 7.2 feet in lieu of the required 20 feet; **(2)** from Section 409.4.C to permit a travel lane with a width of 19 feet in lieu of the required 22 feet; **(3)** from Section 409.8.A.5 to permit a dead end parking bay without backup area, and **(4)** from Section 204.4.C.4 to permit an 8 foot side yard setback for an addition in lieu of the required 10 feet, in accordance with Petitioner's Exhibit 1, be and is hereby GRANTED; and

IT IS FURTHER ORDERED that the Petition for Special Variance seeking relief from Section 4A02.4.G of the B.C.Z.R. to permit the construction of a proposed addition to 1807 East Joppa Road within the Loch Raven Boulevard/Joppa Road traffic shed and a finding that such improvements will not adversely impact the traffic shed in which this property is located, in accordance with Petitioner's Exhibit 1, be and is hereby GRANTED, subject to the following restrictions:

1) The Petitioner may apply for her permit and be granted same upon receipt of this Order; however, Petitioner is hereby made aware that proceeding at this time is at her own risk until the 30-day appeal period from the date of this Order has expired. If an appeal is filed and this Order is reversed, the relief granted herein shall be rescinded.

2) The proposed addition shall be constructed substantially in accordance with the building elevation drawings accepted and marked as Petitioner's Exhibit 5.

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3) Prior to the issuance of any permits, the Petitioner shall submit a landscape plan for review and approval by Avery Harden, the County's Landscape Architect.

4) When applying for any permits, the site plan and/or landscaping plan filed must reference this case and set forth and address the restrictions of this Order.

WILLIAM J. WISEMAN, III
Zoning Commissioner
for Baltimore County

WJW:dlw

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By

IN RE: PETITION FOR SPECIAL VARIANCE SE corner of Oakleigh Road and Joppa Road 9th Election District 5th Councilmanic District (1801 Joppa Road) **Rave-On Enterprises, LLC** *Petitioner*	*	BEFORE THE DEPUTY ZONING COMMISSIONER FOR BALTIMORE COUNTY **CASE NO. 2009-0275-SA**

* * * * * * * * * * * * * * * * *

FINDINGS OF FACT AND CONCLUSIONS OF LAW

This matter comes before this Deputy Zoning Commissioner for consideration of a Petition for Special Variance filed by F. Calvin Raver on behalf of the legal owner of the subject property, Rave-On Enterprises, LLC. Petitioner is requesting special variance relief from Section 4A02.4 of the Baltimore County Zoning Regulations (B.C.Z.R.) to permit the proposed non-industrial development where it has been determined that the capacity of the public facilities necessary to accommodate same is less than necessary, pursuant to Section 4A02.4.G; and for such other and further relief as may be deemed necessary by the Zoning Commissioner for Baltimore County. The subject property and requested relief are more fully depicted on the site plan that was marked and accepted into evidence as Petitioner's Exhibit 1.

Appearing at the requisite public hearing in support of the special variance request was Petitioner F. Calvin Raver with Rave-On Enterprises, LLC, and his attorneys Arnold Jablon, Esquire and Kedrick Whitmore, Esquire. Also appearing in support of the requested relief were Paul Lee and George Lambros with Century Engineering, Inc., the professional engineers who prepared the site plan. There were no Protestants or other interested citizens in attendance at the hearing.

Testimony and evidence was presented by Mr. Jablon by way of a proffer and revealed that the subject property is an irregular-shaped property consisting of approximately 1.23 acres

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and zoned B.L.R. The property is located at the southeast corner of East Joppa Road and Oakleigh Road, just south of Interstate 695, in the Parkville area of Baltimore County. The property is improved with several existing structures, including a 2½-story building (to be removed) and a one-story block garage, in a state of disrepair (to be abandoned). At this juncture, Petitioner desires to construct an office building on the site to replace the existing building that is also in a state of disrepair. Mr. Jablon indicated that the office building is permitted as of right and all area requirements and building setbacks would be met and all parking calculations would comply with the applicable regulations. The only matter at issue is compliance with the growth management regulations contained in the Zoning Regulations. In particular, according to the Basic Services Map for transportation, the subject property is located within the shed of a failing intersection located at the intersection of Loch Raven Boulevard and East Joppa Road. This intersection has been assigned an "F" level of service, which constitutes a failing intersection. Thus, and as will be explained in more detail below, the instant Petition for Special Variance was filed.

The Petition for Special Variance is requested pursuant to Section 4A02.4.G of the B.C.Z.R. This section falls within the growth management regulations contained in Article 4A of the B.C.Z.R. Petitions for Special Variance under this section have rarely been considered by the Office of the Zoning Commissioner, thus a brief overview of the growth management regulations is appropriate.

Pursuant to Section 4A00.1 of the B.C.Z.R., the purpose and intent of Article 4A, entitled "Growth Management," is to generally "implement the objectives of the County-wide Master Plan and to adopt standards and guidelines relative to new development." Additionally, the growth management regulations seek to encourage development patterns that are consistent with the preservation of the quality of life in existing neighborhoods, to ensure the adequacy of public

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facilities and infrastructure, the preservation of the natural, agricultural and environmental resources and to promote appropriate new growth and development. The purpose and intent of the Basic Service Maps of the growth management regulations is set forth in Section 4A02.1 of the B.C.Z.R. Therein, it is provided that Basic Service Maps are to be annually prepared by the County to ensure that public facilities are in place to adequately serve proposed development. Additionally, Section 4A02.2 of the B.C.Z.R. states that in the event of any conflict between the growth management regulations and any other provision of the B.C.Z.R., the provisions of the growth management regulations control. Thus, the Petition for Special Variance requested in this case is governed by the requirements in Article 4A and, hence, the variance provisions of Section 307 of the B.C.Z.R. are not applicable.

Section 4A02.3 of the B.C.Z.R. sets out in detail the adoption process for the Basic Services Maps. There are actually three maps adopted; one related to the supply of public water, the second related to public sewage, and the third related to transportation. Petitioner seeks relief in this case only as to the third map (transportation map). Section 4A02.3 of the B.C.Z.R. sets forth in full detail the methodology to be employed during the annual adoption of the three Basic Services Maps by the Baltimore County Council. Additionally, Section 4A02.3.G of the B.C.Z.R. provides that no building permit or subdivision approval can be granted unless the Director of the Office of Planning has issued a reserve capacity use certificate for the proposed development. That section goes on to state that a property owner/developer shall make application for a reserve capacity use certificate in a method to be set forth by the Office of Planning. In this case, Mr. Jablon indicated that the Office of Planning has not produced for public use any such "application form." Moreover, he indicated that notwithstanding the provisions of Section 4A02 of the B.C.Z.R., the Office of Planning does not maintain a list of the pending applications.

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Section 4A02.4 of the B.C.Z.R. sets out the Basic Services Mapping standards. The standards are individually established as they relate to water supply, sewage, and transportation. In addition, Section 4A02.4.E of the B.C.Z.R. sets forth certain exceptions to the Basic Services Mapping standards. For example, Section 4A02.4.E.1.a of the B.C.Z.R. provides that minor subdivisions of three or fewer single-family detached dwellings are exempted from certain provisions of the Basic Services Mapping statute. Finally, Section 4A02.4.G of the B.C.Z.R. provides that a Special Variance can be granted from a provision of this subsection. In order for special variance relief to be granted, the Zoning Commissioner must hold a public hearing and must determine that the granting will not violate the particular provision's purpose, pursuant to making certain findings -- effectively a two-prong test. First, the Zoning Commissioner must determine that the demand or impact of the proposed development will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal. Second, the Zoning Commissioner must find that the granting of a petition would not adversely affect a person whose application was filed prior to Petitioner's application.

In this case, relief is requested because the intersection of Loch Raven Boulevard and East Joppa Road is a failing intersection. It has been graded as an "F" level of service intersection and the "shed" of this intersection includes the subject property, as shown on the Basic Services Map for transportation that was marked and accepted into evidence as Petitioner's Exhibit 7. As the subject property is located within that shed, building permits cannot be issued nor development approval given until the intersection is improved and no longer failing or special variance relief is granted.

Addressing this second requirement for a Petition for Special Variance first, the uncontradicted testimony and evidence offered in this case was that the application submitted by

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Petitioner would not adversely affect a person whose application was filed prior to Petitioner's application. As noted above, perhaps due to the rare utilization of the relief afforded by this special variance process, there is no list maintained by the Office of Planning and thus there is no "person whose application was filed prior to the petitioner's application." I therefore find that Petitioner has met this criteria by default. Thus, Petitioner has met its burden insofar as this prong of the test.

Turning next to the first prong identified, a finding must be made that the impact of the proposed development will be less than that assumed by the district standard that would otherwise restrict or prohibit the development; or that the district standard does not apply. Unfortunately, a review of the regulations at issue discloses that the "district standard" is neither a defined term nor is it described anywhere in Article 4A. In fact, testimony offered at the hearing is that the Baltimore County Bureau of Traffic Engineering has not defined the term and it is not a phrase used in the parlance of traffic engineers.

Although these special variance cases are rare, they are not altogether unfamiliar and a recent case of this type came before the Office of the Zoning Commissioner as Case No. 08-264-SA, a copy of which was marked and accepted into evidence as Petitioner's Exhibit 2. That case involved a similar request for special variance and quoted from an earlier case (Case No. 05-336-SA) that was considered by former Deputy Zoning Commissioner John D. Murphy, wherein relief was granted on May 16, 2005. In that case, Deputy Commissioner Murphy analyzed the issue of the impact of the proposed development on proposed conditions as he formulated the "district standard." He considered whether the anticipated impacts on traffic as they related to such issues as volume, congestion, movement and timing of the proposed development would be less than the impact normally associated with a development of that type and size. He concluded that if the impacts were less, then relief could be granted pursuant to a petition for special

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variance. Specific factors such as the anticipated volume of traffic to be generated, the route (including access and exit) of traffic to and from the proposed development, anticipated road improvements in the area, the nature and timing of the traffic generated by the proposed development, existing potential development patterns in the area, the nature of the land use proposed for development and existing development in the area are all factors that need be considered in determining whether special variance relief should be granted.

In the instant case, a copy of the County's data collection sheet and traffic analysis for the intersection of Loch Raven Boulevard and East Joppa Road from May 2, 2007 and May 28, 2008 were marked and accepted into evidence as Petitioner's Exhibits 5 and 6, respectively. These exhibits depict traffic counts for the intersection and analyze the levels of service for respective movements through that intersection. For example, volumes and analysis are provided for straight (through) traffic patterns in each direction on both roads through the intersections, as well as left and right turning movements for each roadway. It is to be noted that an intersection is considered failing by Baltimore County if but one traffic movement reaches an unsatisfactory level. That is, an intersection might have adequate capacity for through traffic in all directions, but still be determined failing if a single turning movement capacity is inadequate. Obviously, the manner in which a proposed development will impact specific directions/movements in the intersection is a significant consideration in determining the merits of a special variance request.

In this case, there are several factors that support a finding that the impact of the proposed development will be less than anticipated and that the Petition for Special Variance should be granted. First, as shown on the aerial photograph marked and accepted into evidence as Petitioner's Exhibit 3, although the subject property is in the deficient traffic shed, it is located some distance to the east of the failing intersection of Loch Raven Boulevard and East Joppa Road. In addition, the only direction of travel that is "failing" is heading west and in the

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morning (AM) hours, away from the subject property. Hence the location of the subject property is largely unaffected by the failing intersection. On the other hand, traveling on Joppa Road from west to east toward the subject property is not at an "F" level of service and is also unaffected despite the overall "failure" status of the intersection. These conclusions were supported by the testimony of Petitioner's engineering experts, Paul Lee and George Lambros, as well as the email dated June 19, 2009 from Steve Weber, Chief of the County's Division of Traffic Engineering, to Dennis Kennedy with the County's Bureau of Development Plans Review in connection with that agency's Zoning Advisory Committee (ZAC) comments.

Thus, based on the above, it is clear there will be no impact from the development of the subject property on the failing intersection during its peak volume. It is equally clear that existing traffic patterns, anticipated road improvements, the contemplated volume direction and timing of traffic to and/or from the proposed development are all factors that weigh in favor of a finding that the anticipated impact of this development will be less than that assumed by the "district standard."

Based upon the foregoing, I find that the testimony and evidence that has been offered is sufficient to comply with the special variance standard set forth in Section 4A03.4.G of the B.C.Z.R. Thus, the Petition for Special Variance shall be granted and relief approved so that the proposed development may be approved and building permits issued for this project, notwithstanding its location within the shed of a failing intersection.

Pursuant to the advertisement, posting of the property and public hearing on this Petition held, and for the reasons set forth above, the relief shall be granted.

THEREFORE, IT IS ORDERED this 7th day of July, 2009 by this Deputy Zoning Commissioner, that Petitioner's Special Variance request from Section 4A02.4 of the Baltimore County Zoning Regulations (B.C.Z.R.) to permit the proposed non-industrail

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development where it has been determined that the capacity of the public facilities necessary to accommodate same is less than necessary be and is hereby GRANTED. The relief granted herein shall be subject to the following:

1. Petitioner may apply for its building permit and be granted same upon receipt of this Order; however, Petitioner is hereby made aware that proceeding at this time is at its own risk until such time as the 30-day appellate process from this Order has expired. If, for whatever reason, this Order is reversed, Petitioner would be required to return, and be responsible for returning, said property to its original condition.
2. Development of the property must comply with the Regulations for the Protection of Water Quality, Streams, Wetlands and Floodplains (Sections 33-3-101 through 33-3-120 of the Baltimore County Code).
3. Petitioner shall complete the Forest Buffer Protection Plan and the recordation of the Forest Buffer Easement for this project.
4. The site shall be made to comply with all applicable parts of the Baltimore County Fire Prevention Code prior to occupancy or beginning of operation.
5. Prior to issuance of any building permits, Petitioner shall demonstrate compliance with the applicable Performance Standards for the B.L.R. Zone set forth in Section 229 of the B.C.Z.R.

Any appeal of this decision must be made within thirty (30) days of the date of this Order.

THOMAS H. BOSTWICK
Deputy Zoning Commissioner
for Baltimore County

THB:pz

7.7.09

IN RE: PETITIONS FOR SPECIAL EXCEPTION AND SPECIAL VARIANCE (1526 E. Joppa Road) 9th Election District 5th Council District Baynesville Properties, LLC *Legal Owners* PS Atlantic Coast, LLC *Contract Purchaser* **Petitioners**	*	BEFORE THE
	*	OFFICE OF ADMINISTRATIVE
	*	HEARINGS OF
	*	BALTIMORE COUNTY
	*	**Case No: 2022-0079-XSA**
	*	

* * * * * * * *

OPINION AND ORDER

This matter comes before the Office of Administrative Hearings ("OAH") as Petitions for Special Exception and Special Variance filed for property located at 1526 E. Joppa Road, Towson, by Baynesville Properties, LLC, legal owner and PS Atlantic Coast, LLC, Contract Purchaser, ("Petitioners"). The Special Exception Petition requests approval under the Baltimore County Zoning Regulations ("BCZR"), § 450.4 to permit an Outdoor Advertising sign (as part of an existing Joint Identification sign) for off-premises sign for a proposed business use in the BR zone or in the alternative a Special Hearing pursuant to BCZR §§ 500.7 and 450.4 to permit off-premises signage on an existing Joint Identification sign in the BR zone. For purposes of clarity, there will only be one (1) off-premises sign for the proposed business, as illustrated by the site plan. Special Variance relief is also requested from BCZR, § 4A02.4.G. to allow development in an area restricted pursuant to BCZR 4A02.4.D.

Due to the COVID-19 a public WebEx hearing was conducted virtually in lieu of an in-person hearing. The Petition was properly advertised and posted. Ms. Shaun Walker appeared in support of the Petition and was represented by Adam Baker, Esquire of Rosenberg Martin Greenberg, LLP. Also in attendance were Brandon Rowe, PE, of Bohler Engineering and Carl Wilson, PE, of The Traffic Group. The site plan Mr. Rowe prepared and sealed was admitted as Petitioner's Exhibit 1, and the Traffic Report prepared by Mr. Wilson was admitted as Petitioner's Exhibit 8. They were accepted as experts in their fields and in the BCZR. There were no interested persons or protestants present. Accordingly Mr. Baker was permitted to proffer the following facts and evidence supporting the requested relief. Zoning Advisory Committee ("ZAC") comments were from the Department of Planning ("DOP") and Development Plans Review ("DPR") which agencies did not oppose the requested relief.

RECORD EVIDENCE

Mr. Baker explained that the subject property is located on the north side of East Joppa Road just west of Orchard Tree Lane. It is approximately 2.09 acres and is zoned BR. It is currently occupied by a construction storage yard that was approved in Case No. 08-190-SPH. Mr. Baker explained that the Public Storage corporation proposes to construct a five story, 173,000 sq. ft. self-storage facility. He identified Petitioner's Exhibit 2 as a letter from Peter Gutwald, the Director of Permits, Approvals, and Inspections ("PAI"), approving the development for a limited exemption under BCC § 32-4-106(b)(8). The architectural elevations were admitted as Petitioner's Exhibit 3 and show the typical Public Storage design. Mr. Baker also explained that Public Storage proposes to add its name and logo to the existing joint identification sign on E. Joppa Road. Finally, Mr. Baker submitted and explained in detail Petitioner's Exhibit 8, the Traffic Report. The Report explains that the only deficient aspect of the E. Joppa and Loch Raven intersection is the westbound "thru movement" on E. Joppa Road. The Report explains that this large volume of westbound traffic is likely caused by motorists using E. Joppa Road as an alternative to westbound I-695, which also experiences heavy traffic and backups in the morning rush hour. The salient conclusion of the Report is that the minimal traffic generated by this proposed self-storage business

will have little or no impact on the failing intersection because this location is *west* of that intersection. Finally, Mr. Baker submitted and explained Petitioner's Exhibit 10, which is the "height tent" plans prepared by Mr. Rowe, which demonstrate conformance with the BCZR.

SPECIAL EXCEPTION

Under Maryland law, a special exception use enjoys a presumption that it is in the interest of the general welfare, and therefore, valid. *Schultz v. Pritts*, 291 Md. 1 (1981). The *Schultz* standard was revisited in *Attar v. DMS Tollgate, LLC*, 451 Md. 272 (2017), where the court of appeals discussed the nature of the evidentiary presumption in special exception cases. The court again emphasized a special exception is properly denied only when there are facts and circumstances showing that the adverse impacts of the use at the particular location in question would be above and beyond those inherently associated with the special exception use.

Based on the evidence in this case, I find that the special exception request for identifying signage on an existing joint identification sign will have no greater impacts at this location than are inherent to such signs. I further find that the relief will not harm the public health, safety or welfare. To the contrary, the signage will assist motorists in finding this business and will thereby improve traffic safety. Accordingly, the Special Exception relief will be granted. In the alternative, I will also grant the Special Hearing relief for this signage for the same reasons.

SPECIAL VARIANCE

Under BCZR, § 4a02.4.G a "special variance" can be granted to provide relief from the Basic Services Map restrictions, but only as follows:

G. Petitions for special variance from provisions of this subsection.

1. The Zoning Commissioner may, after a public hearing, grant a petition for a special variance from a provision of this subsection, only to an extent that will not violate that provision's purpose, pursuant to a finding:

   a. That the demand or impact of the development proposed will be less than that assumed by the district standard that would otherwise restrict or prohibit the development, or that the standard is not relevant to the development proposal; and

   b. That the granting of the petition will not adversely affect a person whose application was filed prior to the petitioner's application in accordance with Section 4A02.3.G.2.b.

2. The Department of Planning shall give a report on the petition to the Zoning Commissioner prior to his consideration of the petition.

3. The Zoning Commissioner may grant or deny the petition, or grant it subject to any conditions or limitations consistent with the criteria set forth in Paragraph 1 above.

It is not altogether clear what is meant by the term "district standard" in sub-section 1.a, above. However, in the instant case I find that the special variance is within the spirit and intent of the Basic Services regulations because the traffic generated by this proposed self-storage business will have no impact on the failing E. Joppa Road and Loch Raven Blvd. intersection. Accordingly, "the standard is not relevant to the development proposal," and thereby meets sub-section 1.a.

With regard to sub-section 1.b, there was no evidence adduced concerning any other pending applications, but because of this project's minimal traffic impacts, and the lack of any objection by any of the County agencies, I find that this requirement is also satisfied. Further, as to sub-section 2, the DOP notes in its ZAC comments that "the commercial use [proposed self-storage facility] is consistent with the context of the surrounding land uses and meets the spirit and intent of the regulations. The Department has no objections to approving the requested variance and special exception."

THEREFORE, IT IS ORDERED by the Administrative Law Judge for Baltimore County, this **24th** day of **May, 2022** that the Petition for Special Exception BCZR § § 450.4 to permit an Outdoor Advertising sign (as part of an existing Joint Identification sign) for off-premises sign for a proposed business use in the BR zone; and, in the alternative, Special Hearing relief pursuant to BCZR §§ 500.7 and 450.4 to permit off-premises signage on an existing Joint Identification sign in the BR zone are both **GRANTED**; and

IT IS FURTHER ORDERED that Special Variance relief under BCZR, § 4A02.4.G. to allow development in an area restricted pursuant to BCZR § 4A02.4.D is also **GRANTED**.

The relief granted herein shall be subject to the following:

1. Petitioners may apply for necessary permits and/or licenses upon receipt of this Order. However, Petitioners are hereby made aware that proceeding at this time is at their own risk until 30 days from the date hereof, during which time an appeal can be filed by any party. If for whatever reason this Order is reversed, Petitioners would be required to return the subject property to its original condition.

2. Prior to issuance of permits, Petitioners must submit for approval a landscape and lighting plan.

Any appeal of this decision must be made within thirty (30) days of the date of this Order.

PAUL M. MAYHEW
Managing Administrative Law Judge
for Baltimore County

PMM/dlm

Baltimore County, Maryland

MASTER PLAN 2020

PC Exh. 39

Baltimore County, Maryland

MASTER PLAN 2020

ADOPTED BY BALTIMORE COUNTY COUNCIL
November 15, 2010

Baltimore County Executive
James T. Smith, Jr.

Baltimore County Council
S.G. Samuel Moxley, District 1
Kevin Kamenetz, District 2
T. Bryan McIntire, District 3
Kenneth N. Oliver, District 4
Vincent J. Gardina, District 5
Joseph Bartenfelder, District 6
John Olszewski, Sr., District 7

Thomas J. Peddicord, Jr., Legislative Counsel/Secretary

Goals of Master Plan 2020

To promote policies and actions resulting in a safe, sustainable environment for future generations, the County Council in partnership with the citizens of Baltimore County, Maryland hereby adopt this Master Plan 2020.

Goal One: Continue the Success of Growth Management

- Direct the future growth within the Urban-Rural Demarcation Line (URDL)
- Protect and enhance Community Conservation Areas
- Promote redevelopment with an emphasis on ailing commercial or industrial properties
- Develop compact, mixed-use, transit-oriented, and walkable neighborhoods
- Advance economic well-being by promoting a high quality labor force
- Provide a mixture of housing types for an emerging diversity of residents
- Support quality public schools to enhance communities
- Prioritize infrastructure improvements via the Capital Improvement Program to endorse sustainable development
- Protect the character and economic vitality of the rural communities

Goal Two: Improve the Built Environment

- Provide adequate open space and recreational opportunities and increase connections to nature by linking open spaces and parks
- Invest in public grounds by tree planting, buffer conservation and habitat restoration
- Expand and deliver multi-modal transportation services
- Reduce pollutant loadings of runoff with enhanced stormwater management
- Meet desire for green communities by providing regulatory incentives
- Ensure integration between regulations and sustainability programs such as LEED

Goal Three: Strengthen Resource Conservation and Protection

- Protect health of the natural environment and maintain a valuable biodiversity
- Restore ecosystems and encourage fair, efficient use of natural resources
- Preserve cultural assets to establish a tangible sense of community
- Nurture farming activities and importance of the agricultural industry
- Conserve rural characteristics and scenic vistas

Futhermore, in conformance with Article 66B of the Annotated Code of Maryland, the following "Visions" to be implemented by Master Plan 2020 are hereby adopted.

(1) Quality of life and sustainability: a high quality of life is achieved through universal stewardship of the land, water, and air resulting in sustainable communities and protection of the environment;

(2) Public participation: citizens are active partners in the planning and implementation of community initiatives and are sensitive to their responsibilities in achieving community goals;

(3) Growth areas: growth is concentrated in existing population and business centers, growth areas adjacent to these centers, or strategically selected new centers;

(4) Community design: compact, mixed-use, walkable design consistent with existing community character and located near available or planned transit options is encouraged to ensure efficient use of land and transportation resources and preservation and enhancement of natural systems, open spaces, recreational areas, and historical, cultural, and archeological resources;

(5) Infrastructure: growth areas have the water resources and infrastructure to accommodate population and business expansion in an orderly, efficient, and environmentally sustainable manner;

(6) Transportation: a well-maintained, multimodal transportation system facilitates the safe, convenient, affordable, and efficient movement of people, goods, and services within and between population and business centers;

(7) Housing: a range of housing densities, types, and sizes provides residential options for citizens of all ages and incomes;

(8) Economic development: economic development and natural resource-based businesses that promote employment opportunities for all income levels within the capacity of the State's natural resources, public services, and public facilities are encouraged;

(9) Environmental protection: land and water resources, including the Chesapeake and coastal bays, are carefully managed to restore and maintain healthy air and water, natural systems, and living resources;

(10) Resource conservation: waterways, forests, agricultural areas, open space, natural systems, and scenic areas are conserved;

(11) Stewardship: government, business entities, and residents are responsible for the creation of sustainable communities by collaborating to balance efficient growth with resource protection; and

(12) Implementation: strategies, policies, programs, and funding for growth and development, resource conservation, infrastructure, and transportation are integrated across the local, regional, State, and interstate levels to achieve these visions.

SUSTAINABLE ENVIRONMENT

Environmental sustainability means using natural resources wisely to meet current needs without degrading the supply and quality of those resources for the future.



The goal of a sustainable environment supports Baltimore County's vision for community vibrancy and economic vitality. Environmental sustainability means using natural resources wisely to meet current needs without degrading the supply and quality of those resources for the future. Natural resources and air quality are essential to economic growth, environmental protection, energy conservation, and quality of life. Natural resources, especially forests and wetlands that comprise the green infrastructure, provide valuable ecosystem services including cleaning air and water. Sustainability also assures habitat protection for terrestrial and aquatic wildlife and genetic diversity.

Improvements to stream quality, in both water quality and habitat, will require a range of controls that best address specific types of pollution sources.

Policy: Continue to protect, enhance, and restore degraded waterways to meet water quality standards and permit requirements.

Actions:

(1) Continue to enforce development regulations for the protection of water quality, streams, wetlands, and floodplains.

(2) Continue to prepare and implement Small Watershed Action Plans (SWAPs) and participate in studies to identify needs and opportunities for stream restoration, wetland creation and restoration, and stormwater management.

(3) Continue to design and construct stream restoration projects using an adaptive natural channel design (NCD) approach.

(4) Incorporate stream protection policies in community plans.

(5) Continue to implement biological, chemical, and geomorphological stream monitoring programs in order to measure the long-term trends in stream quality.

(6) Identify opportunities for the creation of wetlands as mitigation for County capital projects and other land development impacts.

(7) Continue environmental education programs for schools, businesses, and homeowners for the reduction of water pollution and toxic and solid wastes.

(8) Continue to implement environmental inspection and maintenance programs such as storm drain inlet cleaning and maintenance of stormwater management facilities.

(9) Continue to identify and convert appropriate publicly owned stormwater management facilities to provide for increased water quality function.

(10) Continue to retrofit older communities to provide for stormwater treatment for improved water quality to the receiving waters.

(11) Continue to support watershed associations and citizens in stream clean-ups, stream and watershed surveys, and other restoration projects.

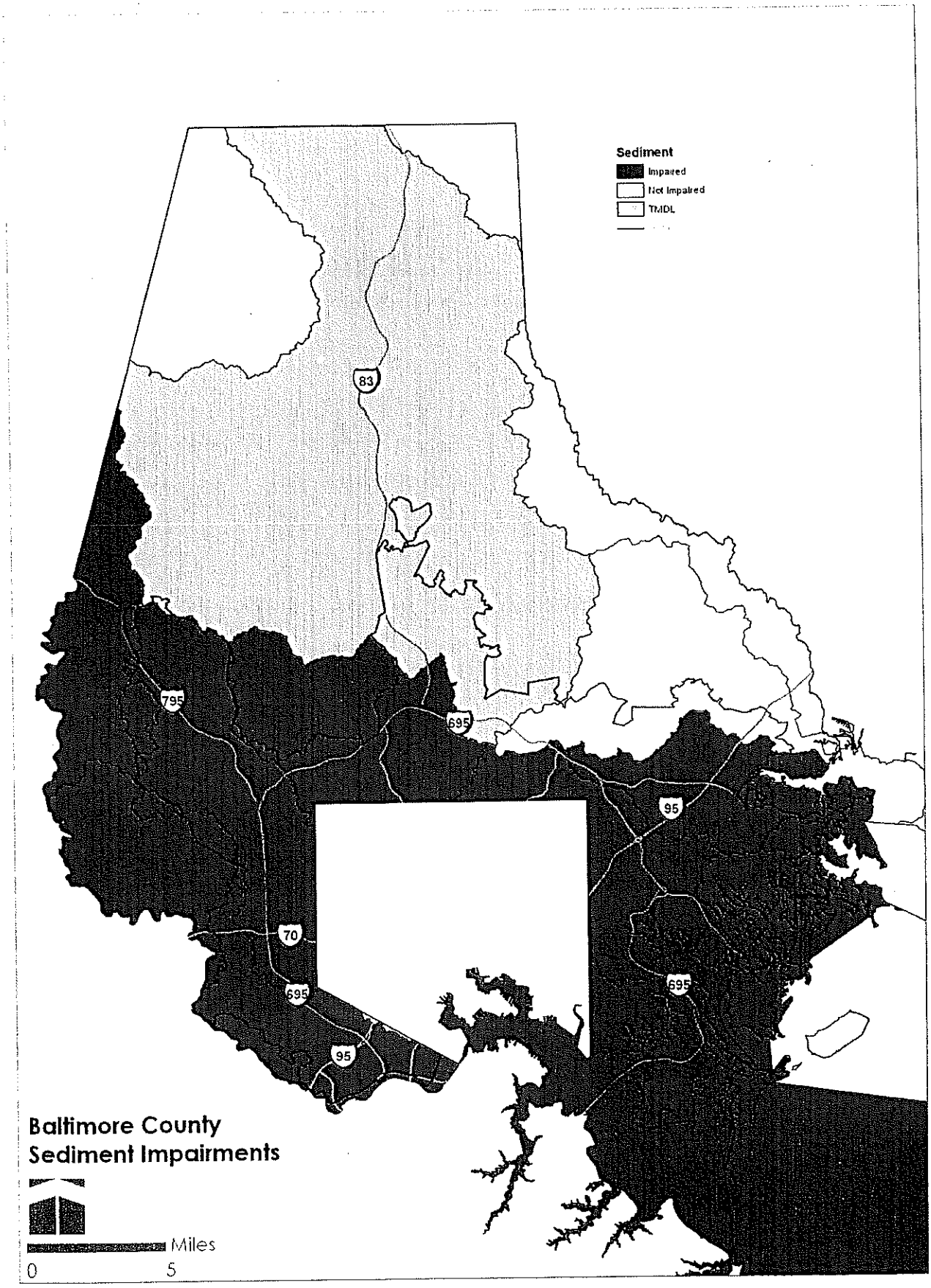
(12) Identify impediments to, and opportunities for tree plantings along streams on private properties, and work to plant more trees on private lands.

Stormwater Management and Sediment Control

The hydrologic cycle is a descriptive model for the movement of precipitation from the atmosphere to the earth's surface and then to receiving waters and back to the atmosphere. In natural areas, precipitation that reaches the ground infiltrates into the soil, replenishing groundwater aquifers and discharging to streams. In urban areas, precipitation that falls onto impervious surfaces runs off the surface much more rapidly. Unless properly controlled, stormwater runoff can result in stream channel erosion and the degradation of in-stream habitat and the aquatic biological community. Stormwater runoff also results in an increase of pollutants washed downstream. During the land development process, the soil at construction sites is the most vulnerable to erosion in streams and other surface waters. Soil erosion from construction activity may exceed 100 to 400 times that obtained from an adjacent undeveloped land or woodland in an equivalent period of time.

About 80% of Baltimore County was developed prior to the advent of stormwater management regulations, which damaged many waterways. In 1968, Baltimore County enacted Maryland's first local sediment control ordinance. Since the mid 1970's, Baltimore County has been a statewide leader in recognizing the impact of stormwater runoff generated as a result of land development. Stormwater management requirements have evolved over time. Initial

Map 40: Sediment Impairments



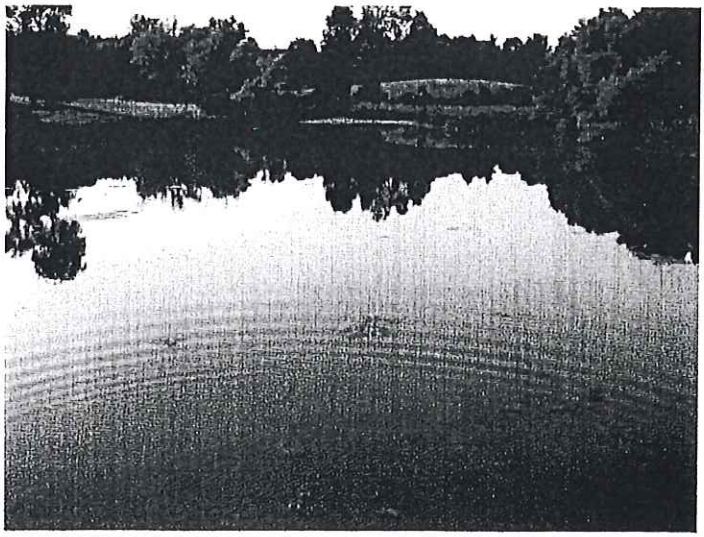
stormwater management focused on volume and peak discharge control to reduce physical impacts on streams. Beginning in the late 1980's through the early 1990's, water quality treatment was added as a means to address the increased pollutant loads associated with urban development. As stream science and understanding of stream dynamics evolved, it was recognized that further peak discharge control was necessary to protect stream channels from erosion during storm flow.

In the early 2000's, control of small storms was required, along with methods to disperse the flow from a development site instead of concentrating the flow. The Maryland Stormwater Act of 2007 further refined stormwater management by requiring Environmental Site Design (ESD) where practicable. ESD attempts to reduce stormwater runoff from a site by reducing impervious cover, retaining natural vegetation, and dispersing the runoff throughout the site to allow greater infiltration of precipitation. As Baltimore County's older urban and suburban areas are redeveloped, state-of-the-art stormwater practices will be constructed and water quality will improve.

Policy: Protect and improve water quality through the application of stormwater control measures for new development and redevelopment projects.

Actions:

(1) Continue to implement state-of-the-art stormwater management techniques, including ESD as feasible, for new and redevelopment projects.



(2) Provide flexibility for redevelopment to implement innovative solutions to stormwater management.

(3) Ensure the sustainability of stormwater practices including long-term function and maintenance.

Policy: Inspect and enforce compliance with the Baltimore County Code, permits, plans and State specifications as related to erosion and sediment control and grading.

Actions:

(1) Continue to inspect and enforce erosion and sediment control implementation on all active projects for compliance with approved plans.

(2) Continue to investigate complaints pertaining to erosion, sediment control, grading, and surface drainage problems associated with new construction.

(3) Continue to provide responsible personnel training and certification of individuals that oversee installation and maintenance of project controls.

(4) Continue to work in cooperation with the Baltimore County Soil Conservation District to require minimum standards for Soil Conservation and Water Quality Management Plans for conservation easements.

Best Management Practices (BMPs) for Agriculture

Best Management Practices (BMPs) that prevent soil erosion and protect water quality provide long-term benefits for maintaining the productive quality of farmland. Farmers are assisted in their efforts to apply BMPs by the Baltimore County Soil Conservation District, University of Maryland Extension (UME), the Maryland Department of Agriculture, the U.S. Department of Agriculture's Natural Resources Conservation Service, and the U.S. Farm Services Agency. Farmers and landowners participate in

§ 9-503. County plans
West's Annotated Code of Maryland
Environment

West's Annotated Code of Maryland
Environment
Title 9. Water, Ice, & Sanitary Facilities (Refs & Annos)
Subtitle 5. County Water and Sewerage Plans (Refs & Annos)

MD Code, Environment, § 9-503

§ 9-503. County plans

Currentness

In general
(a) Each county shall have a county plan or a plan with adjoining counties that:

(1) Is approved by the Department;

(2) Covers at least the 10-year period next following adoption by the county governing body; and

(3) Deals with:

(i) Water supply systems;

(ii) Sewerage systems;

(iii) Solid waste disposal systems;

(iv) Solid waste acceptance facilities; and

(v) The systematic collection and disposal of solid waste, including litter.

Periodic review of county plan
(b) Except as provided in § 9-515 of this subtitle, each county governing body shall review its county plan at least once every 3 years in accordance with a schedule set by the Department.

When revision or amendment to county plan is required
(c) Each county governing body shall adopt and submit to the Department a revision or amendment to its county plan if:

(1) The governing body considers a revision or amendment necessary; or

(2) The Department requires a revision or amendment.

Notice and public hearing before revision or amendment to county plan
(d)(1) Before a county governing body adopts any revision or amendment to its county plan or adopts a new county plan, the governing body shall:

(i) Conduct a public hearing on the county plan, revision, or amendment that may be conducted jointly with other public hearings or meetings; and

(ii) Give the principal elected official of each municipal corporation that is affected notice of the county plan, revision, or amendment at least 14 days before the hearing.

(2)(i) Notice of the time and place of the public hearing, together with a summary of the plan, revision, or amendment, shall be published in at least 1 newspaper of general circulation in the county once each week for 2 successive weeks, with the first publication of notice appearing at least 14 days before the hearing.

(ii) Notice of the public hearing may be a part of the general notice listing all other items to be considered during the public hearing or meeting.

Credits

Added by Acts 1983, c. 542, § 2. Amended by Acts 1985, c. 224; Acts 1988, c. 101; Acts 1989, c. 820; Acts 1990, c. 6, § 2; Acts 1994, c. 661, § 2, eff. Oct. 1, 1994.

MD Code, Environment, § 9-503, MD ENVIR § 9-503

Current through all legislation from the 2022 Regular Session of the General Assembly. Some statute sections may be more current, see credits for details.

END OF DOCUMENT

THOMSON REUTERS
WESTLAW Maryland Code and Court Rules

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Effective: April 14, 2015

MD Code, Environment, § 9-505

§ 9-505. Contents of plan; regional plans

Currentness

In general

(a) In addition to the other requirements of this subtitle, each county plan shall:

(1) Provide for the orderly expansion and extension of the following systems in a manner consistent with all county and local comprehensive plans prepared under Title 1, Subtitle 4, Title 3, or Title 21 of the Land Use Article and § 10-324 of the Local Government Article:

(i) Community water supply systems and multiuse water supply systems;

(ii) Community sewerage systems and multiuse sewerage systems; and

(iii) Solid waste disposal systems and solid waste acceptance facilities;

(2) Provide for the sizing and staging of facilities construction that is consistent with the county plan;

(3) Show compliance with items (1) and (2) of this subsection by using graphic and tabular information;

(4) Provide:

(i) For sewage treatment facilities that are adequate to prevent the discharge of any inadequately treated sewage or other liquid waste into any waters; or

(ii) Otherwise for safe and sanitary treatment of sewage and other liquid waste;

(5) Provide for facilities that are adequate to treat, recover, or dispose of solid waste in a manner that is consistent with the laws of this State that relate to air pollution, water pollution, and land use;

(6) Contain adequate information about:

(i) The existing sewage treatment capacity in each drainage basin or sewage treatment plant service area in the county;

(ii) The present level of use of sewage treatment plants in each drainage basin; and

(iii) Projections for use of sewage treatment plant capacity based on:
1. Outstanding building permits and subdivision plats if the county has subdivision authority; or

2. Zoning commitments if the county does not have subdivision authority;

(7) Taking into account all relevant planning, zoning, population, engineering, and economic information and all State, regional, municipal, and local plans, describe, with all practical precision, those parts of the county that reasonably may be expected to be served in the next 10 years by any:

(i) Community water supply system;

(ii) Multiuse water supply system;

(iii) Community sewerage system;

(iv) Multiuse sewerage system;

(v) Solid waste disposal system; and

(vi) Solid waste acceptance facility;

(8) Set procedures for identifying and acquiring, on a time schedule that conforms to the time requirement in item (7) of this subsection, any rights-of-way or easements that are necessary for any:

(i) Community water supply system;

(Ii) Multiuse water supply system;

(iii) Community sewerage system;

(iv) Solid waste disposal system; or

(v) Solid waste acceptance facility;

(9) Taking into account all relevant planning, zoning, population, engineering, and economic information and all State, regional, municipal, and local plans, describe, with all practical precision, any parts of the county in which it is not reasonably foreseeable to have service in the next 10 years by any:

(i) Community water supply system;

(ii) Multiuse water supply system;

(iii) Community sewerage system;

(iv) Multiuse sewerage system;

(v) Solid waste disposal system; and

(vi) Solld waste acceptance facility;

(10) Set a time schedule and a proposed method for financing the construction and operation of each planned:

(i) Community water supply system;

(ii) Multiuse water supply system;

(iii) Community sewerage system;

(iv) Solid waste disposal system; and

(v) Solid waste acceptance facility;

(11) Set forth the estimated cost of constructing and operating each planned:

(i) Community water supply system;

(ii) Multiuse water supply system;

(iii) Community sewerage system;

(iv) Solid waste disposal system; and

(v) Solid waste acceptance facility;

(12) Indicate:

(i) Any source of supply from the waters of this State;

(ii) The approximate amount of water to be withdrawn from the waters of this State; and

(iii) The quantity and quality of waste to be discharged into the waters of this State;

(13) Describe, in accordance with the provisions of this subtitle, each area in the county where:

(i) A community water supply system must be provided;

(ii) A multiuse water supply system may be installed and used;

(iii) An individual water supply system may be installed and used for an interim period until a planned community water supply system is available;

(iv) An individual water supply system may be installed and used indefinitely;

(v) A community sewerage system must be provided;

(vi) A multiuse sewerage system may be installed and used;

(vii) Except as provided in § 9-517 of this subtitle, an individual sewerage system may be installed and used for an interim period until a planned community sewerage system is available;

(viii) An individual sewerage system may be installed and used indefinitely;

(ix) A community solid waste disposal system must be provided; or

(x) A community solid waste acceptance facility must be provided for use by residents of the described area during an interim period until a planned community solid waste disposal system is available;

(14) Except as provided in § 9-515 of this subtitle, provide for amendment or revision of the county plan at least once every 2 years in accordance with a schedule adopted by the Department;

(15) Designate an appropriate agency of the county to be responsible for creating a workable plan:

(i) To keep the environment of the county free of solid waste, including litter; and

(ii) To prevent scenic pollution of both public and private property in the county;

(16) By July 1, 1987, treat each publicly owned community sewerage system as a separate entity for fiscal purposes within the local operating agency;

(17) Document compliance with and report on actions taken and plans to enforce §§ 12-605 and 12-606 of the Business Occupations and Professions Article;

(18) For a county with a population greater than 150,000 according to the latest Department of Planning projections, include a recycling plan by July 1, 2014 that:

(i) Provides for a reduction through recycling of at least 35% of the county's solid waste stream by weight or submits adequate justification, including economic and other specific factors, as to why the 35% reduction cannot be met;

(ii) Provides for recycling of the solid waste stream to the extent practical and economically feasible, but in no event may less than a 15% reduction be submitted; and

(iii) Requires full implementation of the recycling plan by December 31, 2015; and

(19) For a county with a population less than 150,000 according to the latest Department of Planning projections, include a recycling plan by July 1, 2014 that:

(i) Provides for a reduction through recycling of at least 20% of the county's solid waste stream or submits adequate justification, including economic and other specific factors, as to why the 20% reduction cannot be met;

(ii) Provides for recycling of the solid waste stream to the extent practical and economically feasible, but in no event may less than a 10% reduction be submitted; and

(iii) Requires full implementation of the recycling plan by December 31, 2015.

Use of prisoners
(b) A plan created under subsection (a)(15) of this section may include the use of prisoners from the State correctional system or from county jails or detention centers.

Rate of recycling
(c) The recycling reductions of 35% and 20% provided in subsection (a)(18) and (19) of this section are not intended to be the maximum percentage that a county can achieve. A county that can practically and economically achieve a higher rate of recycling is encouraged to submit a recycling plan for a higher percentage.

Revision of recycling plan due to population increase
(d) If a county with a population less than 150,000 increases to a population of above 150,000, the county shall have 2 years to revise the recycling plan to be consistent with the recycling goals under subsection (a)(18) of this section.

Regional recycling plan

(e)(1) The governing bodies of 2 or more counties may adopt a regional recycling plan to comply with subsection (a)(18) or (19) of this section.

(2) A regional recycling plan which otherwise satisfies the requirements of this subtitle for each of the participating counties shall constitute the county recycling plan for each county which participates in the plan.

Credits

Added by Acts 1983, c. 542, § 2. Amended by Acts 1984, c. 255; Acts 1984, c. 798; Acts 1985, c. 10, § 3; Acts 1988, c. 536; Acts 1988, c. 647, § 1; Acts 1989, c. 89; Acts 1989, c. 236, § 4; Acts 1989, c. 540, § 1; Acts 1989, c. 820; Acts 1990, c. 6, § 13; Acts 2000, c. 209, § 2, eff. July 1, 2000; Acts 2002, c. 19, § 1, eff. April 9, 2002; Acts 2012, c. 427, § 1, eff. Oct. 1, 2012; Acts 2012, c. 692, § 1, eff. Oct. 1, 2012; Acts 2013, c. 43, § 5; Acts 2013, c. 136, § 1, eff. Oct. 1, 2013; Acts 2014, c. 45, § 5; Acts 2015, c. 22, § 1, eff. April 14, 2015.

MD Code, Environment, § 9-505, MD ENVIR § 9-505

Current through all legislation from the 2022 Regular Session of the General Assembly. Some statute sections may be more current, see credits for details.

END OF DOCUMENT

Instructions and Guidance for Specific Plan Submissions

- General
- Comprehensive Plans
- Annexations
- PFA Certifications
- Water and Sewer Plans

Instructions and Guidance on Submissions to the Maryland Department of Planning

Water and Sewer Plans

Planning staff are responsible for reviewing both draft and adopted versions of county water and sewer plans and their amendments for consistency with county and municipal comprehensive plans, PFA eligibility, Growth Tier Map implications, and areas of other state interest. Planning completes and submits its review to the Maryland Department of the Environment (MDE) within 35 days of receipt. However, Planning is not responsible for the intake and processing of water and sewer plans and their amendments.

Counties must mail these plans for review, with a cover letter, to the office of the Director of the Water and Science Administration at:

D. Lee Currey, Director
Water and Science Administration
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230-4718

For questions, please contact Robin Pellicano, Chief, Integrated Water Planning Program - Water Resources Planning Division in MDE's Water and Science administration, at robin.pellicano@maryland.gov.

Wes Moore
Governor

Aruna Miller
Lt. Governor



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233733

More Information

Maryland.gov

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Take Our Survey

More Information

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301 W. Preston Street, Suite 1101, Baltimore, MD 21201
(410) 767-4500

MASTER PLAN AMENDMENTS AND REVIEW

The Maryland Department of the Environment (MDE) requires all counties and the City to maintain maps designating service areas for water supply and sewerage, whether public utilities or private well/septic systems. The service areas designated on these maps must be located within the Metropolitan District and are required to be consistent with the Comprehensive Land Use Master Plan adopted by the County.

WATER SUPPLY AND SEWERAGE MASTER PLAN AMENDMENTS

Amendments to the Water and Sewer Master Plan maps may be petitioned for change under an annual amendment cycle process governed by the Executive Order of April 11, 1990. Annually, Public Works submits a staff report to the Planning Board with updates and revisions to the plans. Recommendations from the Planning Board have been added to the Planning Board Report to the County Executive. The amendments are scheduled for vote by the Baltimore County Council on December 19.

The Planning Board will hold a public hearing on the petitions regarding Amendment Cycle 40 of the Baltimore County Water Supply and Sewerage Plan. Please not that Petition 22-05 633 Earls Road (LaFarge Quarry) has been withdrawn from Cycle 40.

WATER SUPPLY AND SEWERAGE MASTER PLAN TRIENNIAL REVIEW

Local jurisdictions throughout the State of Maryland are required by regulation to submit a comprehensive review of their water supply and sewerage plans once every three years. Baltimore County's most recent Triennial Review was approved on November 30 by MDE.

DOWNLOAD THE DOCUMENTS

CONTACT

Call Jeannette Applauso at 410-887-3781 with any questions.

EXPLORE ENGINEERING AND CONSTRUCTION

- FLOOD INSURANCE MAP
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- SUBMIT TO WORK ON A PROJECT
- MASTER PLAN
- RECORDS
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ENGINEERING AND CONSTRUCTION

111 West Chesapeake Avenue
Room 205
Towson, Maryland 21204

HOURS

Monday through Friday
8 a.m. to 4:30 p.m.

EMAIL

engineering@baltimorecountymd.gov

PHONE

410-887-3788

Baltimore County
Water Supply and Sewerage Plan

2020 Triennial Review

Report of the Review
as submitted to the
Baltimore County Council

May 18, 2021

Errata & Addenda
September 1, 2021

1. Insert County Council Resolution
2. Insert Transmittal Letter from Director, DPW&T

Errata & Addenda
December 27, 2021

1. Insert Final Action Letter from Director, MDE

COUNTY COUNCIL OF BALTIMORE COUNTY, MARYLAND
Legislative Session 2021, Legislative Day No. 12

Resolution No. 99-21

Mr. Julian E. Jones, Jr., Chairman
By Request of County Executive

By the County Council, July 6, 2021

A RESOLUTION adopting the report of the 2020 Triennial Review of Baltimore County Water Supply and Sewerage Plan.

WHEREAS, pursuant to Title 9, Subtitle 5 of the Environment Article of the Annotated Code of Maryland, Baltimore County has adopted a comprehensive 10-year Water Supply and Sewerage Plan; and

WHEREAS, the Plan was adopted on March 05, 2018 by Resolution 5-18; and

WHEREAS, the County is required by State law to review the Plan every three years and to submit a report of its review, together with amendments thereto or revisions thereof, to the State Department of the Environment; and

WHEREAS, the Planning Board did on October 1, 2020 hold an advertised public hearing on the 2020 Triennial Review; and

WHEREAS, the Planning Board did on October 15, 2020 vote to recommend that the 2020 Triennial Review be adopted; now therefore

BE IT RESOLVED BY THE COUNTY COUNCIL OF BALTIMORE COUNTY, that the 2020 Triennial Review of the Baltimore County Water Supply and Sewerage Plan, as amended, is hereby adopted; and

BE IT FURTHER RESOLVED, that this Resolution be submitted to the County Executive for his approval; and

BE IT FURTHER RESOLVED, that a copy of this Resolution together with the 2020 Triennial Review be submitted to the Maryland Department of Environment; and

BE IT FURTHER RESOLVED, that this Resolution shall take effect from the date of its passage by the County Council.

READ AND PASSED this 2nd day of ***AUGUST, 2021***

BY ORDER

Thomas H. Bostwick
Secretary

DATE: August 6, 2021

John A. Olszewski, Jr.
County Executive

ITEM: ***RESOLUTION 99-21***

JOHN A. OLSZEWSKI, JR.
County Executive

D'ANDREA L. WALKER, *Acting Director*
Department of Public Works and Transportation

August 10, 2021

D. Lee Currey, Director
Water and Science Administration
1800 Washington Boulevard, Suite 405
Baltimore, Maryland 21230-4718

Subject: Baltimore County Water Supply & Sewerage Master Plan
Triennial Review 2020

Dear Mr. Currey:

Baltimore County has completed its 2020 Triennial Review of the Water Supply and Sewerage Plan.

A preliminary draft of the Review was made available via e-mail to the Maryland Department of the Environment on September 22, 2020 with copies to the Maryland Department of Planning. The Baltimore County Planning Board held a hearing on October 21, 2020 and passed a resolution endorsing the Review on October 15, 2020. The report of the Review was adopted by the local governing body by County Council Resolution 99-21 signed by the County Executive on August 2, 2021.

I am forwarding one printed copy of the 2020 Triennial Review document, maps and appendices for review and approval. In lieu of additional paper copies the entire report, maps and appendices are available for viewing and download at:

https://www.baltimorecountymd.gov/departments/publicworks/masterplan.html

This Plan was prepared and processed following the requirements of COMAR 26.03.01, Regulation .02B. Sections covering engineering aspects of the plan have been prepared and reviewed for adequacy by Erin McKenna-Streyle, a P.E. licensed in the State of Maryland. If there are any questions, please feel free to contact Erin at (410) 887-8545.

Regards,

D'Andrea L. Walker, Acting Director
Bureau of Engineering & Construction
Department of Public Works and Transportation

DLW/JSP/EAM/s
Attachment: 1 copy: Council Resolution 99-21; "2020 Triennial Review…"
CC: Thomas H. Bostwick; James R. Benjamin Jr.; Charles Connor; Lauren Buckler; Jeffrey Peluso; Mike Mazurek; Lisa Eicholtz; Kevin Koepenick; Kui Zhao; Bryan Bokey; Robin Pellicano, MDE; Nicholai Francis-Lau, MDE; Dinorah Dalmasy, MDE; Chuck Boyd, MDP; Steve Alfaro, MDE; Hannah Benzion, MDE

Maryland
Department of
the Environment

Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor

Ben Grumbles, Secretary
Horacio Tablada, Deputy Secretary

November 30, 2021

The Honorable Julian E. Jones, Jr.
Council Chair
Baltimore County Council
Old Courthouse
400 Washington Ave.
Towson, MD 21204

Dear Council Chair Jones:

The Maryland Department of the Environment (MDE) has completed its review of the **Triennial 2020 W&S Plan Update (Plan)** of the Baltimore County Water Supply and Sewerage Plan. The Baltimore County Council adopted the Plan on August 2, 2021 by Resolution 99-21. The Update included text regarding septic connections for public and safety reasons outside of the Urban Rural Demarcation Line (URDL), table updates with new information, such as population forecasts and proposed water and sewer infrastructure projects and updated water and sewer category maps.

Maryland Department of Planning Findings

The Maryland Department of Planning (MDP) found the update to be consistent with the County's adopted 2020 Master Plan. MDP noted that although the plan incorporates the amendments from Fall/Spring cycle since 2017, the WSP does not seem to include the amendments in Cycle 38 and EM-01. Planning recommends that the county confirm that these amendments will be added to the new WSP and adjust it accordingly. In addition, MDP's comments included several recommended Growth Tier Map changes. The County is encouraged to work with MDP on any recommended updates.

MDE Findings and Action

In accordance with §9-507(a) of the Environment Article, Annotated Code of Maryland, the Department hereby **approves the Triennial 2020 W&S Plan Update.**

Recommendation: Based on MDE's Digital Flood Insurance Rate Maps, portions of the County are within Flood Zones and Inundation areas. Please see the following mapped areas on the Climate Ready Action Boundary Map: https://mdfloodmaps.net/CRAB/. The

County could consider climate resiliency in future updates to the W&S Plan, which could include but not limited to the following steps (https://toolkit.climate.gov/):

- Explore Hazards: Identify climate and non-climate stressors, threats, and hazards and how they could affect assets (people and infrastructure).
- Assess vulnerability and risks: Evaluate assets vulnerability and estimate the risk to each asset.
- Investigate options: Consider possible solutions for your highest risks, check how others have responded to similar issues, and reduce your list to feasible actions.
- Prioritize and plan: Evaluate costs, benefits, and capacity to accomplish each action integrating the highest value actions into a stepwise plan.
- Take action: Move forward with your plan and check to see if your actions are increasing your resilience with monitoring.

The County is encouraged to contact Dave Guignet, State NFIP Coordinator, of MDE's Stormwater, Dam Safety, and Flood Management Program, at (410) 537-3775 for additional information regarding the regulatory requirements for Floodplains and Storm Surges.

The County is also encouraged to contact Matthew C. Rowe, CC-P, Assistant Director of MDE's Water and Science Administration, at (410) 537-3578 for additional information regarding Climate Change and Resiliency.

This completes MDE's review, as required by §9-507 of the Environment Article, Annotated Code of Maryland. If you need further assistance on these matters, please contact Heater Barthel, Deputy Director, at (410) 537-3512, toll-free at (800) 633-6101, or by e-mail at heather.barthel@maryland.gov.

Sincerely,

Matthew C. Rowe

D. Lee Currey, Director
Water and Science Administration

Enclosures

cc: Bryan Bokey, Department of Public Works, Baltimore Co.
Erin McKenna-Streyle, Project Manager, Department of Public Works, Baltimore Co.
Dave Guignet, State NFIP Coordinator, Water and Science Administration, MDE
Matthew C. Rowe, CC-P, Assistant Director, Water and Science Administration, MDE
Charles Boyd, Director, Planning Coordination, MDP
Heather Barthel, Deputy Director, Water and Science Administration, MDE

for

CHAPTER I: GOALS AND ORGANIZATION

GOALS OF THE COUNTY CONSISTENT WITH COMPREHENSIVE PLANNING

MASTER PLAN 2020

To promote policies and actions resulting in a safe, sustainable environment for future generations, the County Council in partnership with the Citizens of Baltimore County, Maryland, adopted *Master Plan 2020* on November 15, 2010 (Resolution 94-10). The goals of the plan are as follows:

Goal One: Continue the Success of Growth Management

- Direct the future growth within the Urban-Rural Demarcation Line (URDL)
- Protect and enhance Community Conservation Areas
- Promote redevelopment with an emphasis on ailing commercial or industrial properties
- Develop compact, mixed-use, transit-oriented and walkable neighborhoods
- Advance economic wellbeing by promoting a high quality labor force
- Provide a mixture of housing types for an emerging diversity of residents
- Support quality public schools to enhance communities
- Prioritize infrastructure improvements via the Capital Improvement Program to endorse sustainable development
- Protect the character and economic vitality of the rural communities

Goal Two: Improve the Built Environment

- Provide adequate open space and recreational opportunities and increase connections to nature by linking open spaces and parks
- Invest in public grounds by tree planting, buffer conservation and habitat restoration
- Expand and deliver multi-modal transportation services
- Reduce pollutant loadings of runoff with enhanced stormwater management
- Meet desire for green communities by providing regulatory incentives
- Ensure integration between regulations and sustainability programs such as LEED

Goal Three: Strengthen Resource Conservation and Protection

- Protect health of the natural environment and maintain a valuable biodiversity
- Restore ecosystems and encourage fair, efficient use of natural resources
- Preserve cultural assets to establish a tangible sense of community
- Nurture farming activities and importance of the agricultural industry
- Conserve rural characteristics and scenic vistas

WATER AND SEWER PLAN

Sustainable development has been defined as that which "meets the needs of the present in a responsible manner without compromising the ability of current and future generations to meet their own needs" (United Nations General Assembly (1987)). To help ensure a sustainable community, Baltimore County will continue the following actions to protect the public water supplies and sewer systems:

- Work with Baltimore City and adjacent jurisdictions to protect and enhance the water supply reservoirs;
- Maintain and upgrade all capital facilities as required;
- Implement the water resource conservation practices established in the Baltimore county plumbing code;
- Where technically feasible, require property owners with developed properties that utilize septic systems that are located within areas designated as S-1, to connect to public sewer and abandon their septic systems.
- Where technically feasible and as determined by the Department of Environmental Protection and Sustainability (EPS), individual properties, communities, and subdivisions with failing, inadequate, and substandard private onsite water or septic systems or other public health concerns exist inside of the Metropolitan District and outside of the URDL in W-7 and/or S-7 (no planned service) designated areas, public water and/or sewer may be extended to existing lots of record if evaluated and required by DPW as the most economically feasible solution. Such extensions are permitted through the County's existing Water Supply and Sewerage Master Plan Amendment process.
- Actively participate in the Metropolitan District;
- Also actively participate in the Susquehanna River Basin Commission.

Master Plan 2020 was prepared in accordance with Article 66B of the Annotated Code of Maryland, Section 523 of the Baltimore County Charter, and pertinent sections in the Baltimore County Code. Development of the master plan involved all "stakeholders", such as citizens and community associations, county and state agencies, government officials, and businesspersons. Similarly, in preparing this Water and Sewer Plan, the appropriate comprehensive planning agencies were consulted: the Maryland Department of Planning, the Baltimore County Department of Planning, and the regional planning group, the Baltimore Metropolitan Council (BMC). This unified effort helped to ensure the Water and Sewer Plan is indeed consistent with, and in fact supportive of the County's goals of comprehensive planning.

The Water and Sewer Plan shall remain in effect concurrently with the Master Plan. Any revision to one plan that has substantive impact on the other will require commensurate modification of the other plan.

ADDITIONAL PLANS

Additional plans and studies are amendments to the *Master Plan 2020*, which further define land use and growth management strategies countywide, and for specific areas of the County. The County's Master Planning web page lists all adopted community and other plans:
https://www.baltimorecountymd.gov/departments/planning/masterplanning/adoptedcommunityplans/index.html

Furthermore, "The Baltimore County, Maryland Land Preservation, Parks and Recreation Plan," was adopted by the Baltimore County Council as a *Master Plan 2020* Amendment on June 5, 2017. The full document is posted at:
https://www.baltimorecountymd.gov/departments/planning/masterplanning/parkrecplan

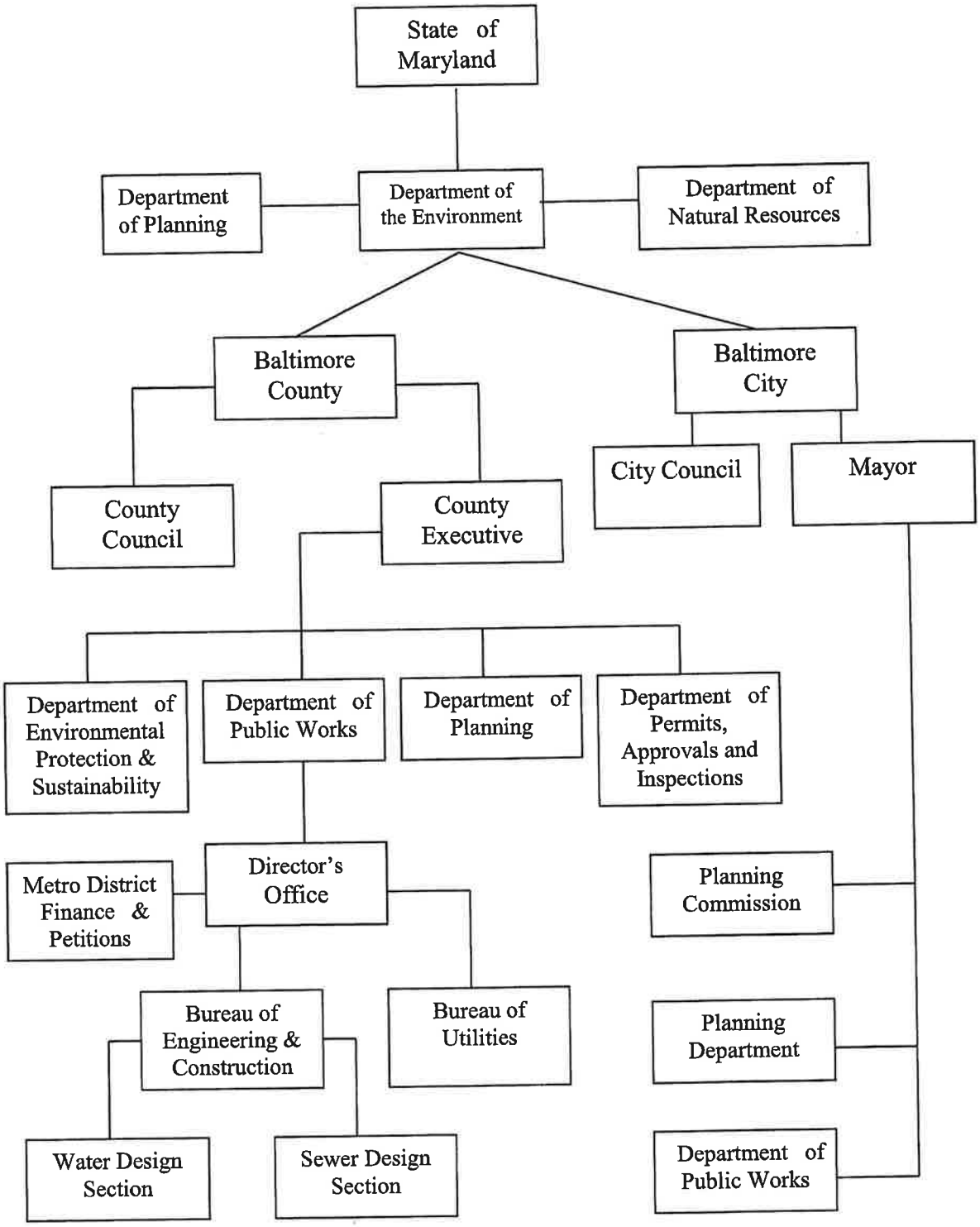
ARTICLE 66B, ANNOTATED CODE OF MARYLAND

In response to directives from the United States Environmental Protection Agency (EPA), the General Assembly of Maryland passed legislation amending Article 66B of the Annotated Code of Maryland. In 2012, the Maryland General Assembly repealed Article 66B and Article 28 and replaced them with the Land Use Article.

Specifically House Bill 1141 (HB 1141, 2006) required, among other items, a thorough examination of the safety and adequacy of all drinking water supplies and sewerage disposal systems for existing and future populations. The analysis contained in the master plan, called a Water Resources element (WRE), revealed that, with continued maintenance and protection, the public water supply and sewerage systems serving Baltimore County will be safe and adequate for the projected population until at least 2035. The WRE had a major influence on the policies and actions developed in *Master Plan 2020*, especially concerning protection of surface waters and the Chesapeake Bay. One of the primary goals is to direct virtually all new land development (or *redevelopment*) inside the Priority Funding Area (PFA), which is essentially the urban area closest to Baltimore City. Even with this anticipated population growth, there will be enough potable water in the public supply system, and adequate capacity in the public sewer system.

ORGANIZATIONAL CHART

State & Local Government as Related to Water & Sewer Management



CHAPTER IV - SEWERAGE PLAN

GENERAL BACKGROUND

Baltimore County constructs, operates and maintains all sewage collection and pumping facilities within the County. There are twenty-three (23) sewersheds which contain 2,060 miles of gravity sewer and 163 miles of pressure sewer. Baltimore County operates one hundred twenty (120) pumping stations and one (1) 90-thousand gallon per day treatment plant at Richlyn Manor, east of Belair Road, adjacent to the Gunpowder River.

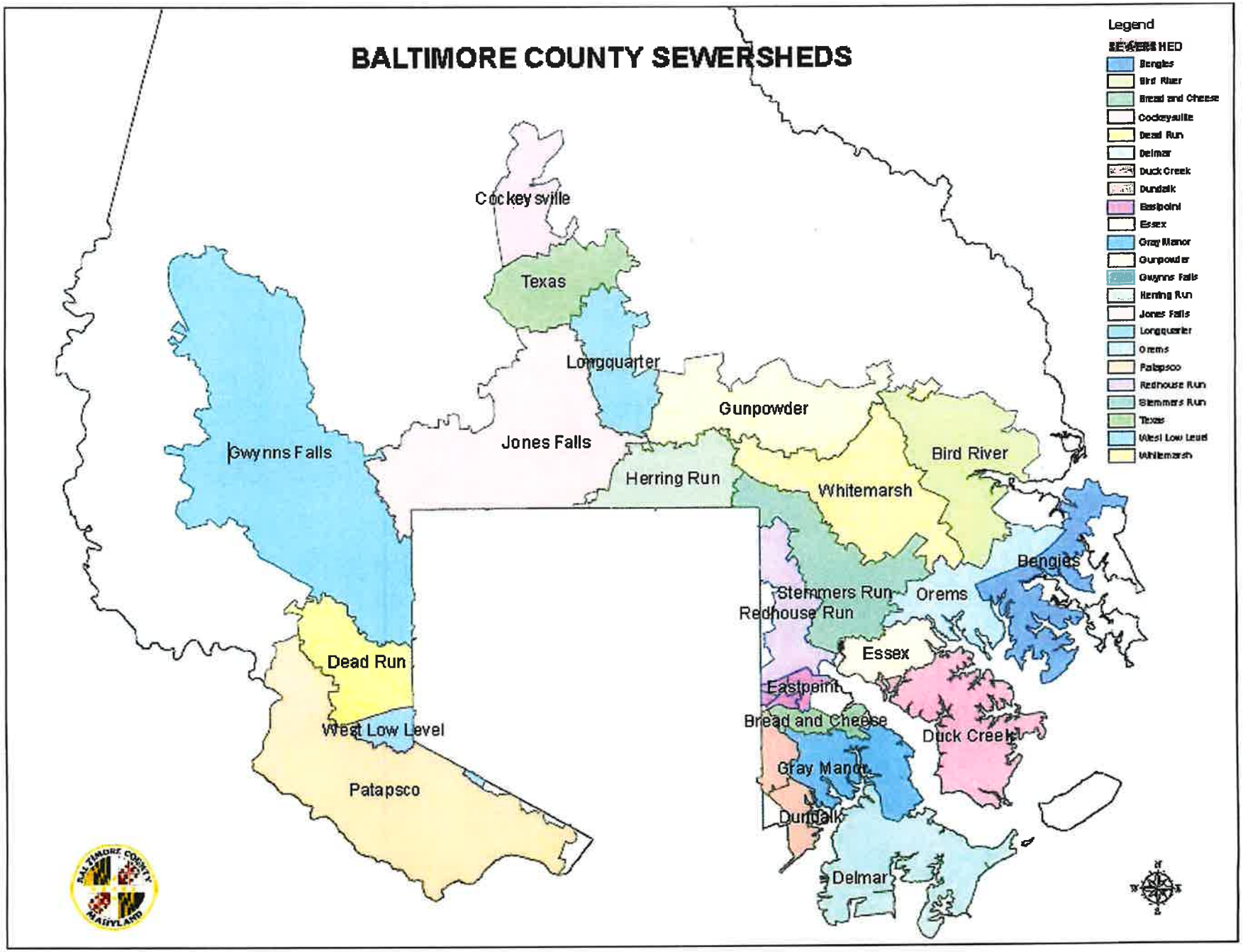
County generated sewage is treated and disposed of at the City-owned and operated treatment plants, Back River and Patapsco. The City and County agree to pay for new capital projects and for the repair to, and enlargement of, additions or improvements to sewerage facilities. The total flow conveyed from the County to the treatment plants determines the County's portion of capital improvement and/or operation and maintenance cost.

Baltimore County receives flow from Anne Arundel and Howard Counties. By agreement, these counties pay their portion of operating and capital costs. Copies of the sewer agreements with Baltimore City, Anne Arundel County and Howard County are included in the Appendices.

On September 20, 2005, Baltimore County entered into a Consent Decree with the U.S. Department of Justice, the U.S. Environmental Protection Agency and the Maryland Department of the Environment. This document requires Baltimore County to completely evaluate its sewer system and make corrections in order to eliminate sanitary overflows in the collection system. This massive effort will involve field investigations, studies, reports, designs and construction projects. As of September 29, 2016 MDE and the EPA approved all Sewershed Repair, Replacement and Rehabilitation (SRRR) Plans. The County is in the process of implementing the corrective actions from these plans.

System Overview

The following is a description of each of the twenty-three (23) sewersheds with a discussion of their location, major system components, pumped flow, existing conditions and proposed projects:


BALTIMORE COUNTY SEWERSHEDS
Legend
SEWERSHED
Bengies
Bird River
Bread and Cheese
Cockeysville
Dead Run
Delmar
Duck Creek
Dundalk
Eastpoint
Essex
Gray Manor
Gunpowder
Gwynns Falls
Herring Run
Jones Falls
Longquarter
Orems
Patapsco
Redhouse Run
Stemmers Run
Texas
West Low Level
Whitemarsh
Cockeysville
Texas
Longquarter
Gunpowder
Gwynns Falls
Jones Falls
Herring Run
Bird River
Whitemarsh
Bengies
Stemmers Run
Redhouse Run
Orems
Essex
Eastpoint
Bread and Cheese
Duck Creek
Gray Manor
Dundalk
Delmar
Dead Run
West Low Level
Patapsco
BALTIMORE COUNTY MARYLAND

JONES FALLS

System Components Location

The Jones Falls Sewershed is located in central Baltimore County from the north boundary of Baltimore City to Green Spring Valley and from York Road on the east to Reisterstown on the west. The system serves approximately 7,100 acres and 64,217 people.

Major Sewers	Length (Miles)	Pipe Size
Jones Falls Interceptor	5.23	8" to 42"
Towson Run Interceptor	3.83	8" to 24"
Roland Run Interceptor	5.60	15" to 42"
Moores Branch	3.11	12" to 18"

Pumped Flow

There are four (4) pumping stations in the Jones Falls System, Stevenson at Anton, Templegate, Stanton Woods and Buchanan Road. The sewage from these stations flow to the Jones Falls Interceptor and then to the Mt. Washington Flume at the Baltimore City Line.

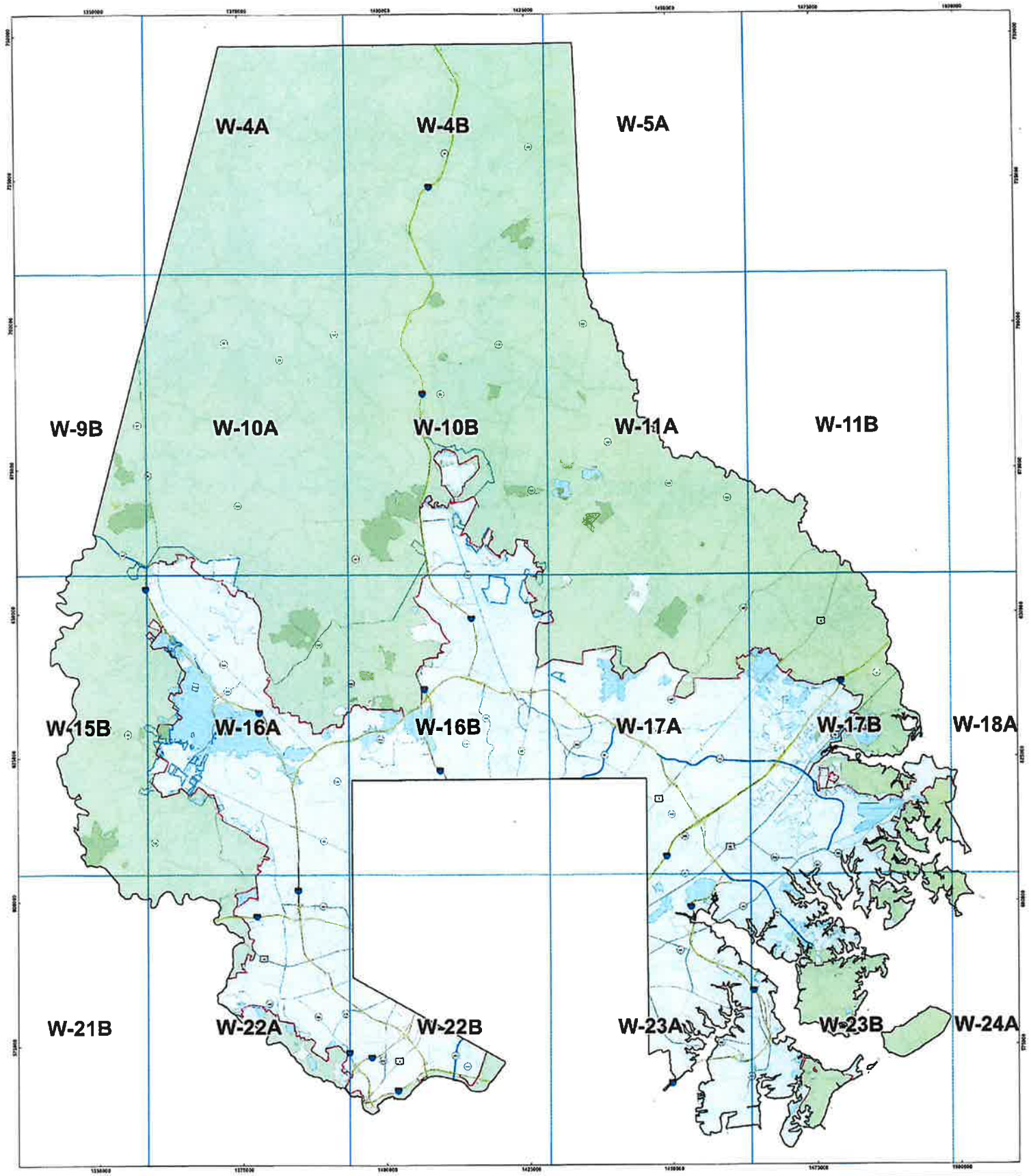
Existing Conditions

The Jones Falls SRRR Plan was accepted by the EPA on December 9, 2013 and certified by the County as substantially complete on September 6, 2018.

Proposed Projects

Below is the list of the proposed projects in Jones Falls.

Project	Description	Estimated Cost
Towson Run Relief Sewer	4,899 LF of 24"-27" relief sewer	$9,300,000
	Total	$9,300,000



Baltimore County Water Supply Plan 2020 Triennial Review

Water Supply Plan Areal Designations

- W-1 Existing Service Area
- W-3 Capital Facilities Area
- W-4 Study Area
- W-5 Master Plan Area
- W-5 X Master Plan Area
- W-6 Area of Future Consideration
- W-7 CS No Planned Service: Community System
- W-7 MU No Planned Service: Multi-Use System
- W-7 No Planned Community or Multi-Use Service (NPS)

Boundaries

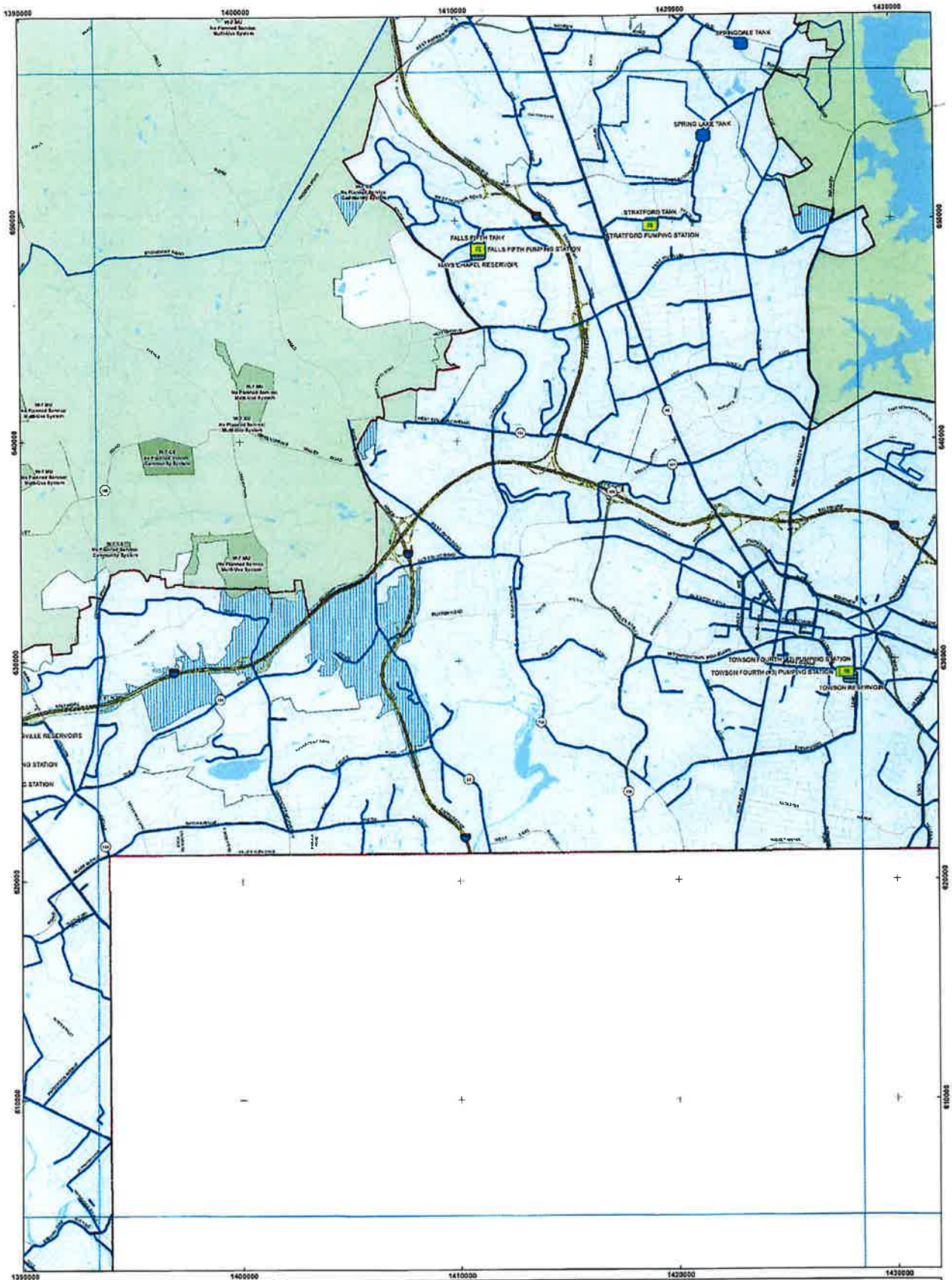
- Triennial Master Plan Grid
- Urban Rural Demarcation Line
- Metropolitan District

1:63,360

0 1 2 4 6 8 10 Miles

1 in = 1 mile

Maryland State Plane Coordinate System | North American Datum 1983 HARN, U.S. Survey Foot | Produced by Baltimore County, Department of Public Works | Published August 2020



Baltimore County Water Supply Plan

2020 Triennial Review Map W-16B

Maryland State Plane Coordinate System
North American Datum 1983 (NAD83), U.S. Survey Foot

Produced by Baltimore County, Department of Public Works
Published August 2020

System Facilities

- Pumping Station
- Reservoir
- Tank
- Treatment Plant
- Mains 12" and Greater

Water Supply Plan Areal Designations

- W-1 Existing Service Area
- W-3 Capital Facilities Area
- W-4 Study Area
- W-5 Master Plan Area
- W-5 X Master Plan Area
- W-6 Area of Future Consideration
- W-7 CS No Planned Service: Community System
- W-7 MU No Planned Service: Multi-Use System
- W-7 No Planned Community or Multi-Use Service (NPS)

N NW NE W E SW SE S

0 1,000 2,000 4,000 6,000 8,000 10,000 Feet

1:24,000

Boundaries

- Triennial Master Plan Grid
- Urban Rural Demarcation Line
- Metropolitan District

Baltimore County, Maryland

MASTER PLAN 2020



PC Exh. 41

Goals of Master Plan 2020

To promote policies and actions resulting in a safe, sustainable environment for future generations, the County Council in partnership with the citizens of Baltimore County, Maryland hereby adopt this Master Plan 2020.

Goal One: Continue the Success of Growth Management

- Direct the future growth within the Urban-Rural Demarcation Line (URDL)
- Protect and enhance Community Conservation Areas
- Promote redevelopment with an emphasis on ailing commercial or industrial properties
- Develop compact, mixed-use, transit-oriented, and walkable neighborhoods
- Advance economic well-being by promoting a high quality labor force
- Provide a mixture of housing types for an emerging diversity of residents
- Support quality public schools to enhance communities
- Prioritize infrastructure improvements via the Capital Improvement Program to endorse sustainable development
- Protect the character and economic vitality of the rural communities

Goal Two: Improve the Built Environment

- Provide adequate open space and recreational opportunities and increase connections to nature by linking open spaces and parks
- Invest in public grounds by tree planting, buffer conservation and habitat restoration
- Expand and deliver multi-modal transportation services
- Reduce pollutant loadings of runoff with enhanced stormwater management
- Meet desire for green communities by providing regulatory incentives
- Ensure integration between regulations and sustainability programs such as LEED

Goal Three: Strengthen Resource Conservation and Protection

- Protect health of the natural environment and maintain a valuable biodiversity
- Restore ecosystems and encourage fair, efficient use of natural resources
- Preserve cultural assets to establish a tangible sense of community
- Nurture farming activities and importance of the agricultural industry
- Conserve rural characteristics and scenic vistas

Visions of Master Plan 2020

Futhermore, in conformance with Article 66B of the Annotated Code of Maryland, the following "Visions" to be implemented by Master Plan 2020 are hereby adopted.

(1) Quality of life and sustainability: a high quality of life is achieved through universal stewardship of the land, water, and air resulting in sustainable communities and protection of the environment;

(2) Public participation: citizens are active partners in the planning and implementation of community initiatives and are sensitive to their responsibilities in achieving community goals;

(3) Growth areas: growth is concentrated in existing population and business centers, growth areas adjacent to these centers, or strategically selected new centers;

(4) Community design: compact, mixed-use, walkable design consistent with existing community character and located near available or planned transit options is encouraged to ensure efficient use of land and transportation resources and preservation and enhancement of natural systems, open spaces, recreational areas, and historical, cultural, and archeological resources;

(5) Infrastructure: growth areas have the water resources and infrastructure to accommodate population and business expansion in an orderly, efficient, and environmentally sustainable manner;

(6) Transportation: a well-maintained, multimodal transportation system facilitates the safe, convenient, affordable, and efficient movement of people, goods, and services within and between population and business centers;

(7) Housing: a range of housing densities, types, and sizes provides residential options for citizens of all ages and incomes;

(8) Economic development: economic development and natural resource-based businesses that promote employment opportunities for all income levels within the capacity of the State's natural resources, public services, and public facilities are encouraged;

(9) Environmental protection: land and water resources, including the Chesapeake and coastal bays, are carefully managed to restore and maintain healthy air and water, natural systems, and living resources;

(10) Resource conservation: waterways, forests, agricultural areas, open space, natural systems, and scenic areas are conserved;

(11) Stewardship: government, business entities, and residents are responsible for the creation of sustainable communities by collaborating to balance efficient growth with resource protection; and

(12) Implementation: strategies, policies, programs, and funding for growth and development, resource conservation, infrastructure, and transportation are integrated across the local, regional, State, and interstate levels to achieve these visions.

improvements that reduce energy usage and promote healthier indoor air quality in residential and non-residential buildings.

(5) Require Energy Audits by certified personnel for all building rehabilitation projects receiving public funds.

(6) Provide training and certification opportunities to County personnel in LEED accreditation, Building Performance Institute certification, Energy Star Certification and other certificate programs that promote energy efficient and sustainable building practices.

(7) Encourage new construction for residential meet or exceed the design and construction standard of LEED silver certification, where feasible.

(8) Establish incentives for developers to build high performance buildings with LEED Gold certification and above.

(9) Upgrade building codes and provide incentives to allow, where feasible, new housing and major rebuilt ("gutted") houses to be built to LEED standards, or equivalent.

(10) Recommend that the County Council revise codes to incorporate the principles of LEED Neighborhood Design (LEED-ND) for residential developments.

LEED ~ Leadership in Energy and Environmental Design

A LEED-certified home is designed and constructed in accordance with the rigorous guidelines of the LEED for Homes green building certification program. LEED for Homes is a consensus-developed, third party-verified, voluntary rating system which promotes the design and construction of high-performance green homes.

Enterprise Green Communities

Green Communities is the first national green building program developed for affordable housing. It focuses on the use of environmentally sustainable materials, reduction of negative environmental impacts and increased energy efficiency. It emphasizes designs and materials that safeguard the health of residents and locations that provide easy access to services and public transportation.

Energy Star Certification

Homes that earn the ENERGY STAR certification must meet guidelines for energy efficiency set by the U.S. Environmental Protection Agency. ENERGY STAR qualified homes are at least 15 percent more energy efficient than homes built to the 2006 International Residential Code (IRC), and include additional energy-savings features that typically make them 20-30% more efficient than homes built to local residential construction codes.

Building Performance Institute (BPI)

BPI is a national standards development organization for residential energy efficiency and weatherization retrofit work. As an independent, not-for-profit organization, they bring together leading building science experts from across North America to develop their standards using a consensus-based methodology. Taking a holistic view, they ensure that all styles and ages of dwelling are included, and all climate zones are covered.

Earth Advantage

An Earth Advantage home is designed to improve energy efficiency by 15 percent over a conventionally built home. Every Earth Advantage home is designed to provide its residents with comfort and quality while maintaining high standards for energy efficiency, indoor air quality, environmental responsibility and resource efficiency. Earth Advantage, Inc. works with building professionals to help them understand and incorporate high performance green building practices and materials into their projects.

PUBLIC INFRASTRUCTURE

Public infrastructure consists of the facilities, equipment, and services needed for the functioning of a community. Infrastructure includes utilities for water and sewer, roads, bridges, storm drains, solid waste sites and public buildings. The Department of Public Works (DPW) is the county agency responsible for most of the County's infrastructure items. The Baltimore County School System and Department of Recreation and Parks manage the infrastructure for schools and parks respectively.

DPW plans, maintains, and constructs public infrastructure in the safest, most efficient, and cost effective manner possible. All facilities built in Baltimore County's urban area followed the county's pattern and timing of growth. The majority of these systems were put into service during the growth boom of the 1950s and 1960s. Because of the age

of the infrastructure systems, the needs shifted from constructing new facilities to maintaining and replacing the existing ones.

However, in the rural areas, the County will continue to provide only those levels of services necessary to address basic public health, safety and welfare. The guiding *Master Plan 2020* policies are to design and scale all infrastructure improvements appropriately for the limited amount of growth and maintenance of rural character, while still providing for public safety. The County does not provide increased levels of service where population density does not justify them.

Public infrastructure is important in determining the timing, location, and intensity of development; it serves as a valuable tool for master plan implementation. The basic infrastructure functions shape how Baltimore County integrates with other areas of the Baltimore Region. A well-designed county infrastructure system helps create a holistic system for the region and state. Each system working together in a hierarchy can minimize impacts to the environment. The county road network is an example of how local infrastructure feeds into, and complements the state road system, and the federal interstate road system.

Basic infrastructure provides the foundation for where redevelopment and reinvestment take place from the private and public sectors. Maintaining and enhancing the infrastructure in areas that strengthen Community Enhancement Areas, Community Conservation Areas and Employment Centers will help minimize the obstacles to building and creating sustainable communities in Baltimore County.

Policy: The infrastructure projects in the Capital Budget and Program should be used to maintain existing healthy communities, and leverage county resources to direct future mixed-use growth to the Community Enhancement Areas.

Actions:

(1) Maintain existing capital facilities. Maintaining and strengthening existing facilities protects the investments Baltimore County has made, and ensures that capital items will not be paid for twice.

(2) Consider capital projects for Community Enhancement Areas and Employment Centers that are the locations suitable for proposed mixed-use redevelopment projects.

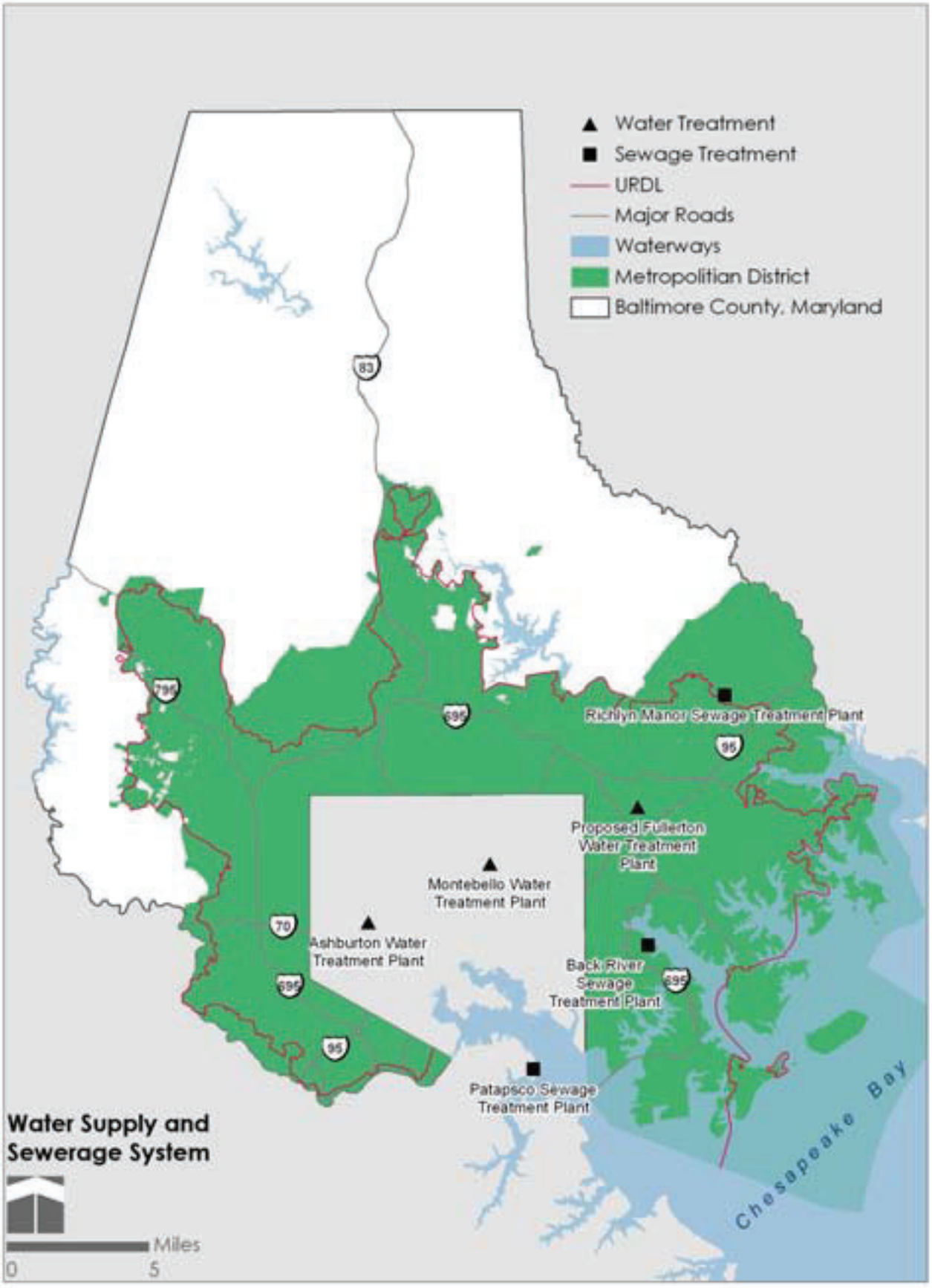
Water Supply System

The Baltimore County water supply system is part of the metropolitan water system serving Baltimore City (Map 10). There are three sources of water for the system: the Gunpowder River, which supplies the Prettyboy and Loch Raven reservoirs; the North Branch of the Patapsco River, which supplies the Liberty Reservoir; and the Susquehanna River. Water drawn from the three reservoirs is treated at the Montebello and Ashburton filtration plants, and then distributed to regional consumers. Susquehanna River water is used only on an emergency basis.

Baltimore County has another viable source of water supply, the prolific aquifer that exists within the geologic formation known as the Cockeysville Marble. This source of high quality water has been recognized as a natural resource worth protecting. In 1975, Baltimore County identified this aquifer as an area of critical state concern. Should the County ever be in a situation that would require it to find its own source of water, the Cockeysville formation will be its primary source. It is imperative that we protect this natural resource through a variety of techniques, including limiting the use of septic systems, modifying



Map 10: Water Supply and Sewerage System



land use regulations to prevent uses which may have adverse impact on the aquifer, and educating property owners who own land over the Cockeysville marble formation.

There are 13 distinct zones of water service. They are linked together by a series of pumping stations, transmission mains, storage reservoirs, and elevated tanks. Baltimore County now uses about 99 million gallons a day from the Baltimore system. About 30% of the consumption is used by commerce and industry. Residential consumption accounts for the remaining 70%. The system also supplies water for fire protection.

In the WRE, water supplies serving the County were compared to anticipated increases in the number of residents, and the corresponding water demand. Based on these population projections, reservoir capacities, and the additional source from the Susquehanna River, it is determined that there will be adequate water to serve Baltimore County's citizens living within the URDL until at least 2035. Additional information may be found in the WRE, adopted as part of *Master Plan 2020*.

Sewer System

Baltimore County constructs, operates and maintains all sewage collection and pumping facilities within the county (Map 10). There are 22 sewersheds that are divided into 80 sub-sewersheds. Baltimore County operates 104 pumping stations and one very small package treatment plant at Richlyn Manor. County-generated sewage is treated at two Baltimore City owned and operated wastewater treatment plants, at the Back River Treatment Plant near Essex and the Patapsco Treatment Plant at Wagners Point in South Baltimore.

Flow figures for existing and proposed populations projected out to 2035 fall within the limits of the existing NPDES permits for the wastewater treatment plants (WWTPs). These analyses show that the land use plan proposed in *Master Plan 2020* will be capable of achieving reductions in overall pollutant loadings to the Chesapeake Bay, as determined by State and Federal requirements. It is further demonstrated that there will be sufficient capacity in the WWTPs to accommodate additional flow from populations projected Countywide until at least 2035. More detailed information can be found in the WRE.

The Metropolitan District

The Metropolitan District of Baltimore County is both the geographic area within which public water and sewer services are provided, and the quasi-public corporation through which public utility services are financed and managed. It was established pursuant to the Metropolitan District Act (*Acts of the General Assembly of Maryland of 1924, Chapter 539, as Amended*), and operates according to the provisions of Article 20 of the *Baltimore County Code, 2003*. The County does not have a legal mechanism to finance public water and sewer utilities outside the district. The Metropolitan District is the agency that maintains and operates the water and sewer systems for the Baltimore Region. Baltimore City is the jurisdiction responsible for the operation of the Metropolitan District, enabled through cost-sharing agreements with the remaining Baltimore Region jurisdictions.

Adjacent property owners outside the boundary of the Metropolitan District who wish to receive public water and sewer service may petition to be included in the district. The Baltimore County Council may, upon recommendation by the County Executive, and subject to the approval of the mayor and city council of Baltimore, extend the Metropolitan District boundary to include the petitioner's locality.

Policy: Continue active participation in the Metropolitan District.

Action:

(1) To encourage a regional perspective, an investigation should be undertaken to determine whether an independent regional water/sewer management authority would better serve the Baltimore Region.

There are a few locations where the adopted urban rural demarcation line (URDL), the county's growth boundary, does not coincide with the Metropolitan

District boundary. The discrepancy between these boundaries leads to confusion.

Over the past 43 years (1967-2010) there has been little adjustment to the URDL. In fact, in balance, the URDL has contracted more than it has expanded, meaning that the urban area actually decreased in area, while the rural acreage increased. For any request to change the URDL, current standards provide for extensive review and public input, with significant burden placed on the applicant to prove there are public health concerns or similar issues as justification. This process has worked well in examining any proposed expansion or contraction of the urban area. As a general policy, in addition to those requirements specified in the zoning definitions, any subsequent change to zoning that involves changing an urban zoning classification to a rural zoning classification, or vice versa, should be immediately followed by a requisite review of the URDL.

Policy: The Metropolitan District Line should coincide with the URDL.

Actions:

(1) Consider the benefits of moving the Metropolitan District line to coincide with the URDL.

(2) Review the impacts of revisions to the URDL when zoning reclassification changes the designation of a property from rural to urban, or vice versa.

In future years, the County will need to increase its focus on maintenance and upgrading of the existing water and sewer infrastructure. Some system improvements are necessary to provide improved reliability of service.

Policy: Water and sewer infrastructure requires continuous maintenance and upgrading, as demand for service increases.

Actions:

(1) Continue upgrading the sewerage pump stations to increase capacity and improve reliability and energy efficiency.

(2) Effectively monitor the pump stations for malfunctions.

(3) Rehabilitate and replace sewer pipelines and manholes as needed.

(4) Use high technology analytical tools to determine the optimal expenditure of resources.

(5) Expand testing for sources of groundwater inflow and infiltration that reduce the sewerage system's capacity during wet weather conditions. Use test results to make repairs and thereby increase system efficiency and capacity.

(6) Increase the frequency of sewer main cleaning to clear away roots, sludge and grease in order to maintain a fully functional conveyance system, reduce sewerage back-ups, and to provide a means of detecting early signs of structural failures.

(7) Develop a major water purification and storage facility in Fullerton, which will complete the system of water treatment plants for the metropolitan system.

(8) Expand the water main cleaning and lining program to prevent or correct "water line constrictions" (obstructions that reduce water volume and water pressure) in older pipes. Newer pipes are constructed with special linings that prevent constrictions from forming.

(9) Continue to extend public utilities to all unserved communities within the URDL, giving highest priority to those areas that have failing wells or septic systems.

(10) Ensure that sewer extensions to correct failing septic areas outside the URDL only address existing problems and do not stimulate growth and development.

SUSTAINABLE ENVIRONMENT

Environmental sustainability means using natural resources wisely to meet current needs without degrading the supply and quality of those resources for the future.



The goal of a sustainable environment supports Baltimore County's vision for community vibrancy and economic vitality. Environmental sustainability means using natural resources wisely to meet current needs without degrading the supply and quality of those resources for the future. Natural resources and air quality are essential to economic growth, environmental protection, energy conservation, and quality of life. Natural resources, especially forests and wetlands that comprise the green infrastructure, provide valuable ecosystem services including cleaning air and water. Sustainability also assures habitat protection for terrestrial and aquatic wildlife and genetic diversity.

Baltimore County's environmental mission is to protect and perpetuate the natural resources of the County and to protect environmental health. Over the past 20 years, the County's Department of Environmental Protection and Resource Management (DEPRM) has established and implemented programs to protect critical natural resources, restore ecosystem functions, and educate citizens about good stewardship. While the County's environmental programs are nationally recognized, the pollution from sprawl development and unmanaged agricultural activities, as well as the continued loss of forests, requires significant changes to land use practices under new federal and State programs to restore the health of the Chesapeake Bay. *Master Plan 2020* builds upon past successes and recommends new policies to address emerging environmental challenges such as climate change.

Overall, both the biggest challenge and the most important reason for the County to serve as a catalyst for good resource management is the fact that 85% of the land area and resources in Baltimore County, depended upon and enjoyed by all, are privately owned. DEPRM uses an integrated watershed management framework to accomplish its mission, including land preservation, resource protection/ regulation, restoration, facility maintenance, monitoring, planning and research, and citizen education and participation.

Nature-Friendly Community

"Baltimore County, Maryland, has one of the most ambitious and successful land management and environmental protection programs in the country. An impressive combination of tools and strategies – land use regulations, land acquisition, and urban growth boundary, education, partnerships with private land trusts, and infill development initiatives – has been employed to preserve thousands of acres throughout the county and protect critical wildlife habitat….Baltimore County is in many ways a model for local governments everywhere when it comes to protecting nature and biodiversity." (Source: Duerksen and Snyder, 2005. Nature-Friendly Communities: Habitat Protection and Land Use Planning. p.152).

Climate Change

Citizens in Baltimore County and elsewhere are debating the implications of a changing climate as it relates to human activities. Of particular interest is whether human-produced greenhouse gases are causing long-term global warming. Baltimore County, as part of the global community, should reduce and mitigate negative impacts of human activities on the environment.

County government operations, private businesses, and the daily routines of citizens have great potential to increase atmospheric pollution through release of harmful gases and thermal pollution. One concern about a changing climate is the relative increase in sea level. While the rate and extent of sea level rise are under continuing study, it is estimated that the mean high tide in the coastal areas of the County may increase from three to five feet in the next century. Overall, the retention and planting of forests and trees is considered the single most effective measure for mitigating the negative impact of climate change.

Citizens can make adaptations to actions that might contribute to climate change, and mitigate impacts that are unavoidable or more difficult to prevent. This represents also good stewardship of limited energy and financial resources. Human activities that potentially affect the degree of climate change are mostly attributed to the production, use, and conservation of energy. Most of current energy in Maryland derives from coal and other fossil fuels that increase harmful atmospheric gases. Walking or riding a bike instead of driving, turning off lights and other electrical appliances when not in use, changing light bulbs from fluorescents to LED's, and similar actions are beneficial to the environmental health and natural resources. Energy conservation and other climate change adaptation and mitigation actions will lead to significant changes in current economic structure and community function. Over the long term, they will enhance sustainability.

Policy: Continue to adapt to, and mitigate impacts of climate change on the environment.

Actions:

(1) Implement the recommendations of the County's Sustainability Network for County operations, energy conservation, protection of natural resources, and communities in order to reduce emissions of greenhouse gases and energy consumption.

(2) Develop appropriate indicators for sustainability actions and commitments in order to summarize sustainability conditions and trends and to provide a basis for evaluation of progress.

Environmental Justice

The development of environmental justice in the United States dates to almost three decades ago when communities began to form organized protests against traditional planning efforts to site polluting factories and toxic waste dumps in less affluent and often minority neighborhoods. Local victories empowered local protesters to coalesce into a national movement. In 1994, President Clinton signed an Executive Order focusing the federal government effort on protecting or improving the quality of the environment and human health conditions for all communities.

The federal government definition of environmental justice is applicable to all levels of state and local government planning. Environmental justice calls for the fair treatment of all minority, indigenous, and low-income populations to ensure that no individual racial, ethnic, or socioeconomic group will bear an unequal burden due to the negative effects of pollution or other environmental hazards. Environmental justice also promotes equal access to public information and equal rights to participate in the development, implementation, and enforcement of environmental laws.

The Phase I Action Plan of the Baltimore Watershed Agreement between Baltimore County and Baltimore City specifically calls for consideration of environmental justice issues in the course of watershed management planning.

Policy: Incorporate environmental justice considerations when developing Small Watershed Action Plans to address water quality protection and restoration.

Actions:

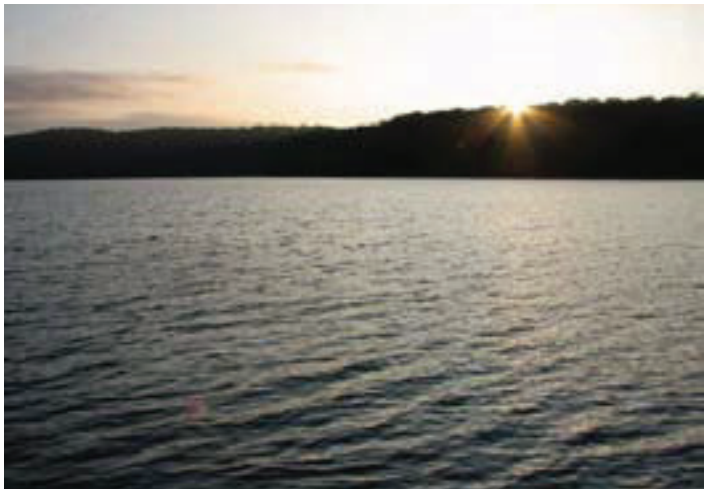
(1) Review environmental justice indicators developed nationwide and develop a set of indicators for the watershed management planning process.

(2) Include the environmental justice indicators in the Small Watershed Action Plans for prioritizing water quality improvement projects.

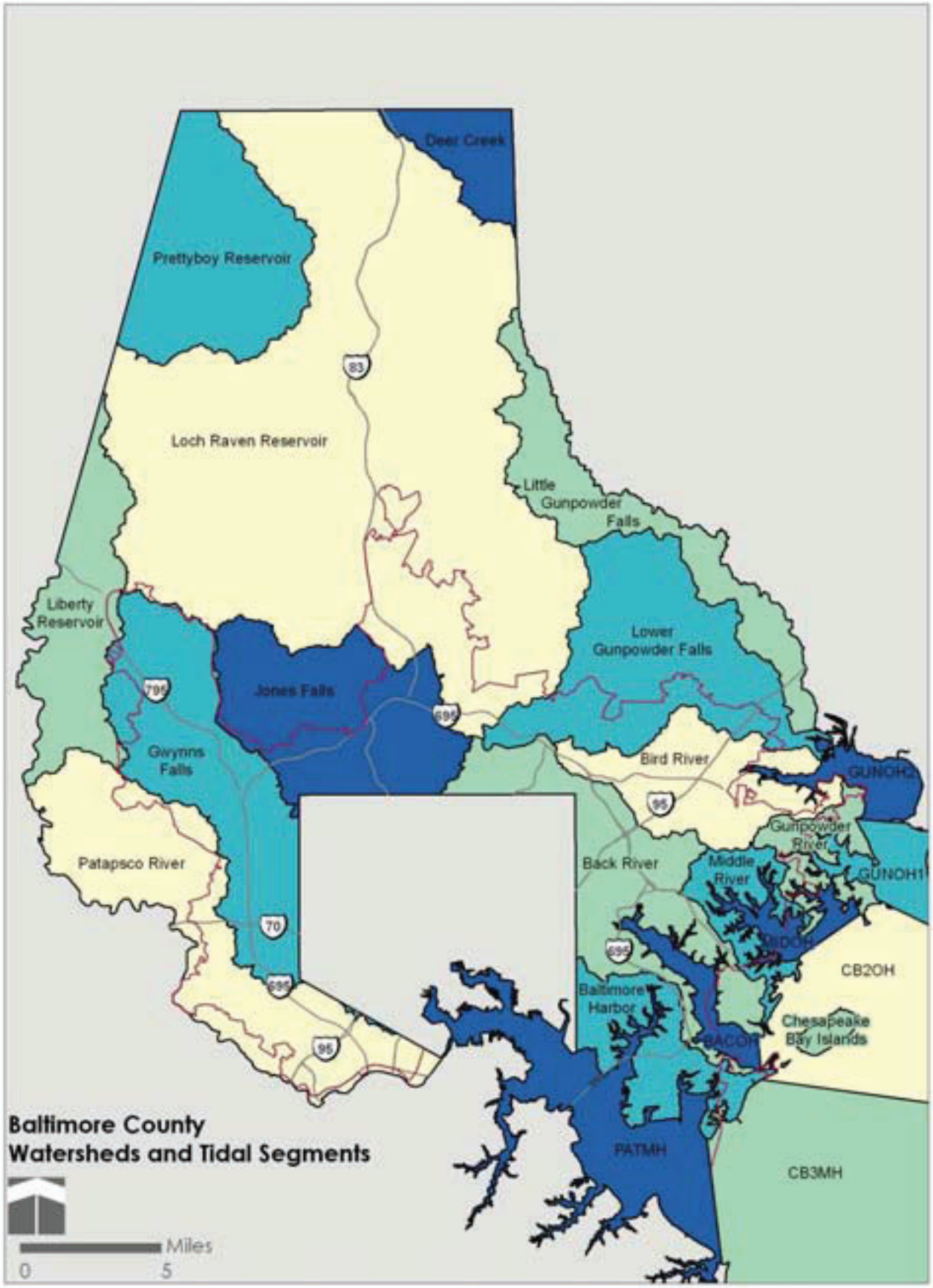
WATER RESOURCES

The water resources of Baltimore County include over 2,100 miles of streams, groundwater resources, three drinking water reservoirs, non-tidal and tidal wetlands, and tidal waters. All of these water resources are interconnected through the hydrologic cycle driven by precipitation in the form of rain and snow. These water resources are also interconnected with surrounding jurisdictions and through tidal exchange with the Chesapeake Bay.

Precipitation falling on the land drains to streams, either as surface flow or through groundwater flow. The land surface that drains to a particular stream is called a watershed or a basin. The Chesapeake Bay is a large basin with a total drainage area in excess of 64,000 square miles.



Map 36: Watersheds and Tidal Segments



Water Use Classification of County Waterways

In order to protect multiple water uses, the State of Maryland has designated four Use Classes and associated water quality standards. If the water is a source for a public drinking water supply, a "P" follows the Use Class.

The four Use Classes (and subcategories for Use II) are:
Use I
Water contact recreation and protection of non-tidal warm water aquatic life.
Use II
Support of estuarine and marine aquatic life and shell fish harvesting (not all subcategories apply to each tidal water segment); Shellfish harvesting; Seasonal migratory fish spawning and nursery (Chesapeake Bay only); Seasonal shallow-water submerged aquatic vegetation (Chesapeake Bay only); Open-water fish and shellfish (Chesapeake Bay only); Seasonal deep-water fish and shellfish (Chesapeake Bay only); Seasonal deep-channel refuge use (Chesapeake Bay only)
Use III
Non-tidal cold water – usually considered natural trout waters
Use IV
Recreational trout waters – waters that are stocked with trout

These waters support aquatic communities and provide for human uses such as agricultural irrigation and livestock watering, drinking water, industrial uses, fishing and boating, and receiving areas for treated wastewater. Having adequate clean water to support all of these uses is crucial to continued ecological and human health now and for the future, and for providing for the continued quality of life for citizens and the economic vitality of Baltimore County.

Waters in Baltimore County are of high quality in general. Some water resources are degraded by improper human activities. The waters that do not meet or exceed water quality standards are placed on an impaired waters list (Sec. 303(d) of the federal Clean Water Act) by the State of Maryland. These listings are based on 8-digit watersheds and tidal water segments, with each impairing substance listed separately. Regulations and policies require protection of high quality water resources and improvement of degraded water resources. High quality waters are protected through the permitting requirements associated with Tier II, defined as waters with a better than the average aquatic biological community. Tier II waters meet the anti-degradation requirements of the federal Clean Water Act. For each impairing



substance in any watershed or tidal segment, the State must determine how much of the substance must be reduced through modeling. This is referred to as a Total Maximum Daily Load (TMDL), or the maximum amount of a particular pollutant in a waterway that can be naturally assimilated while maintaining water quality standards

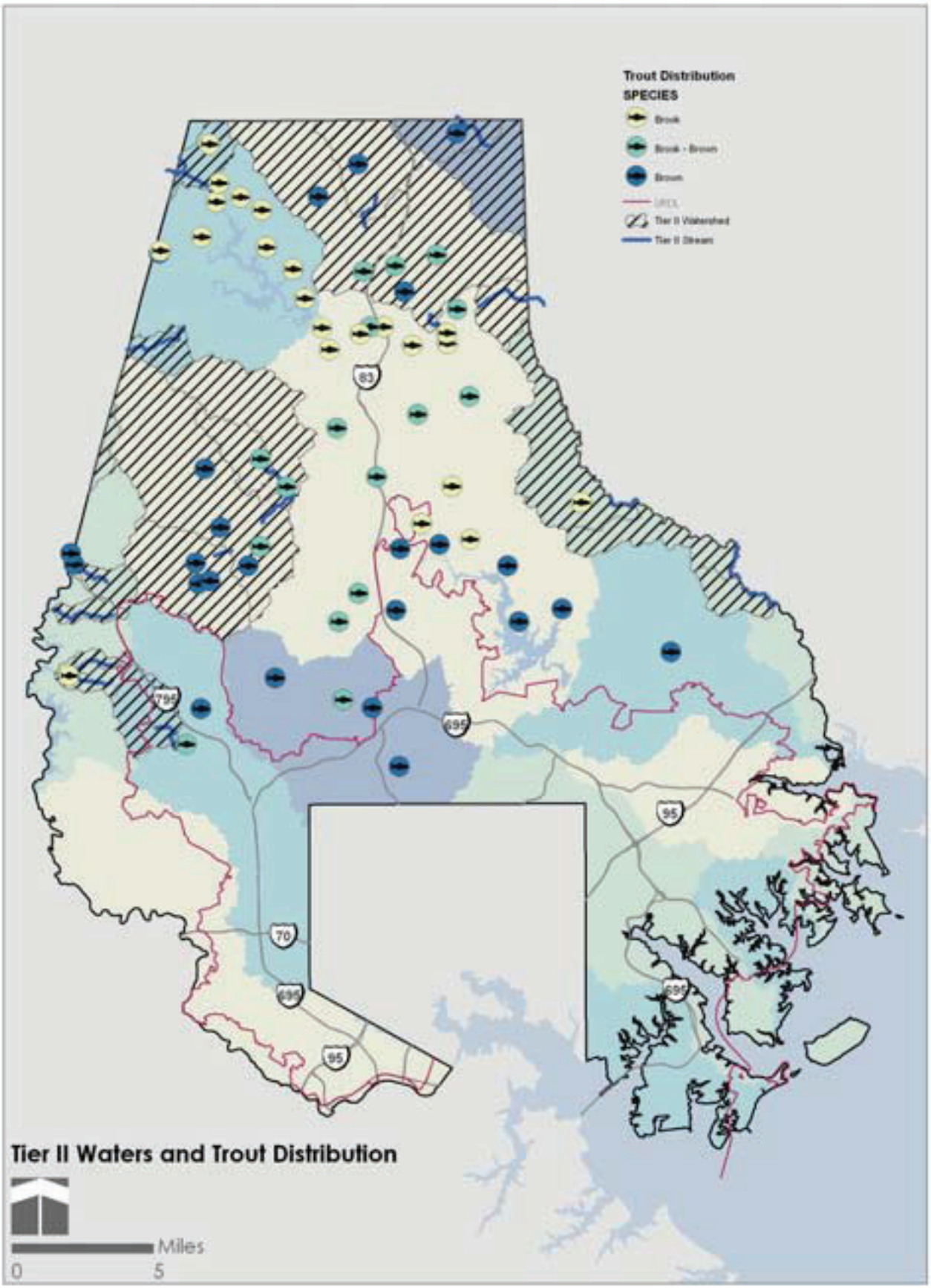
The principal regulatory requirement to address pollution impacts in urban areas is to implement the National Pollutant Discharge Elimination System - Municipal Separate Storm Sewer System (NPDES-MS4) permit. This permit requires the County to control the water quality that is discharged from its storm drain system, by implementing stormwater management, sediment control, education, monitoring, watershed management planning, and restoration programs. These programs are intended to control pollution from new development and restore

Tier II Waters and Trout

Tier II waters are identified and rated on the basis of aquatic community sampling by Maryland Department of Natural Resources. When both the fish and the bottom-dwelling invertebrate community have a rating of "good" the reach of stream represented by the sampling is identified as Tier II waters. Baltimore County has 33 miles of Tier II stream segments at 20 different sites, mainly in rural areas. The drainage area to these sites represents 23% of the County. These stream segments must be protected from degradation.

Trout are also indicative of higher quality water. Baltimore County's streams support a fairly good population of both brook and brown trout. Over 61 sites located on various streams have trout present. The trout are more wide spread than the Tier II waters, indicating that additional Baltimore County streams are still supporting aquatic natural resources.

Map 37: Tier II Waters and Trout Distribution



Total Maximum Daily Load (TMDL)

Baltimore County watersheds and tidal segments are impaired by a variety of substances, including nutrients, sediment, bacteria, trash, and various toxic substances, as well as biological impairments. The amount of each pollutant that needs to be reduced from each source in order to meet water quality standards is then determined. The model also indicates a cap for each pollutant based on the assimilative capacity of the water body. Any increase in a load from a new source must be offset to maintain the water quality standards. For each TMDL, the County is required to prepare an Implementation Plan with measurable implementation milestones and a projected timeline for meeting water quality standards.

The Chesapeake Bay is impaired by nitrogen, phosphorus, and sediment. The U.S. Environmental Protection Agency is developing TMDLs for nitrogen, phosphorus, and sediment to improve Bay water quality.

degradation caused by development that occurred prior to the current environmental protection requirements. Approximately 80% of the urban land was developed prior to environmental controls. Future permits will require preparing Implementation Plans for approved TMDLs and meeting water quality improvement and restoration milestones.

The Water Resources Element is an analysis of the adequacy of drinking water and wastewater treatment to support future population growth, and the ability to maintain and improve water quality within the County's receiving waters. The WRE analysis indicates that redevelopment will result in the greatest protection of high quality aquatic resources and reduction of pollution. The WRE is adopted as part of *Master Plan 2020.*

Watersheds

Baltimore County contains 14 major watersheds, which are identified on the basis of local stream systems and drinking water reservoirs. Seven of them are part of the Gunpowder River basin, six are in the Patapsco River basin, and one flows to the Susquehanna River basin. Watersheds are a useful framework for resource management. Individual resource elements including streams and forests are linked through ecosystem processes that operate to maintain the stability of the system.

Land use activities within watersheds affect the water quality of streams and downstream water bodies. Clearing forests increases stormwater runoff to streams, causing an increase in the amount of sediments, nutrients, and toxins and the erosion of stream channels. Changes in sediment and nutrient levels may degrade stream habitat quality. Land preservation programs that place environmentally sensitive land in permanent easements help protect watersheds and their interrelated systems.

The County's watershed program consists of characterizing and prioritizing watersheds, preparing management plans, including Small Watershed Action Plans (SWAPs), and evaluating resource systems and functions at varying scales. Assessments of pollutant loads, stream stability, and forest community structure provide the framework for the implementation of capital projects, facility maintenance, education programs, and cooperative citizen actions.

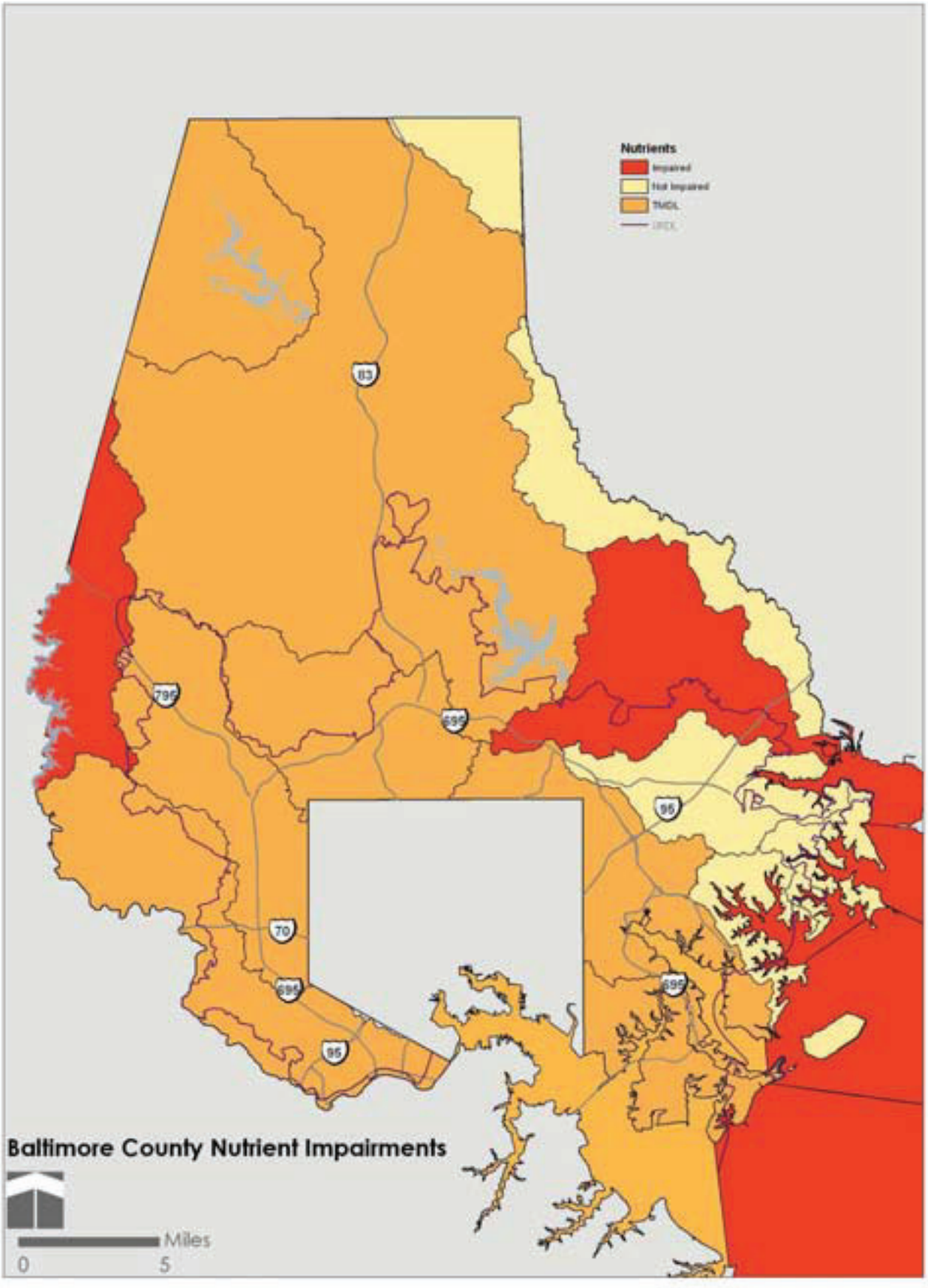
Policy: Promote redevelopment and revitalization inside the URDL to reduce pollutant loads and protect natural resources.

Actions:

(1) Assure that the countywide redevelopment strategy accommodates population growth, provides maximum pollutant reduction, protects high quality waters, promotes economic vitality, and maintains a high quality of life for Baltimore County residents.



Map 38: Nutrient Impairments



(2) Include environmental policies and goals in community plans for the preservation and enhancement of functional open spaces such as greenways and wildlife habitat; the reduction of water, air, and toxic pollution and solid wastes; and the promotion of neighborhood environmental stewardship.
(3) Facilitate the redevelopment of underutilized industrial properties.

(4) Direct redevelopment efforts along the waterfront into historically disturbed, uncontrolled buffer areas in order to maximize water quality protection.

Policy: Assure protection of Tier II waters and those with known trout resources.

Actions:

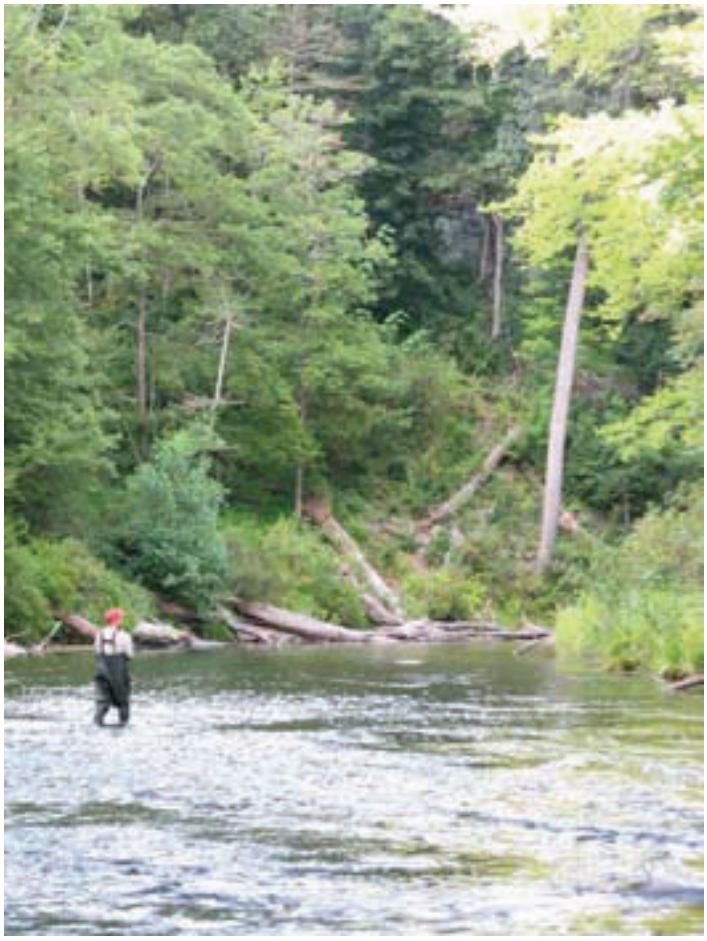
(1) Investigate the development of overlay zones for Tier II waters and those with known trout resources and evaluate the need for additional protection through development regulations.

(2) Examine the feasibility of an offset program to achieve a no net increase in pollutant loads from new development.

(3) Continue to protect water quality, streams, wetlands, floodplains, and forests from impacts of new development and redevelopment.

(4) Implement projects to restore wetlands, reestablish forests, plant stream and shoreline buffers, and stabilize stream channels in impacted watersheds.

(5) Continue to implement the 2006 Baltimore Watershed Agreement with the City of Baltimore for improved and coordinated efforts for public health, trash, stormwater management, community greening, and redevelopment.



Streams and Non-Tidal Wetlands

Baltimore County contains more than 2,100 miles of non-tidal streams and rivers, including some of the highest quality recreational fishery resources in the eastern United States and more than 1,000 miles of streams that drain to the three drinking water reservoirs. A stream system consists of a stream and its associated floodplain, wetlands, and springs. Wetland and riparian vegetation play an essential role in the natural functioning of a stream system, including maintaining base flow, regulating water temperature, controlling pollution, and providing habitat. Pollutants discharged from point and non-point sources degrade stream water quality. These sources include urban runoff (non-point sources, particularly from impervious surfaces), pollutants discharged directly to streams (point sources), and agricultural operations (non-point source). Urban non-point source types of pollution vary and include nutrients, sediments, metals, pesticides, oil and grease, salts, and other particulate and dissolved matter.

Point-source pollution, generated from wastewater treatment plants, industries, and other sources with a direct, piped discharge, is regulated by the State. Over the past several decades, channelization, encroachment of development on floodplains, draining and filling of wetlands, removal of riparian vegetation, and development or clearing of steep slopes and erodible soils has been detrimental to streams.

In 1987, DEPRM initiated a capital environmental restoration program to assess and identify water quality problems and implement design and construction of watershed restoration projects. The program is based on the County's 14 major watersheds, providing a comprehensive framework for protection and restoration of water resources. DEPRM has been recognized nationally for its stream restoration program and, with the completion of numerous projects, has made significant progress toward its objectives for watershed restoration. In the early 1990's Baltimore County developed regulations to protect water quality, streams, wetlands, floodplains, forests, and steep or highly erodible slopes from land development impacts. The County faces a challenge common to most areas experiencing urban growth: how to restore, protect, and enhance its waterways.

Stream Restoration

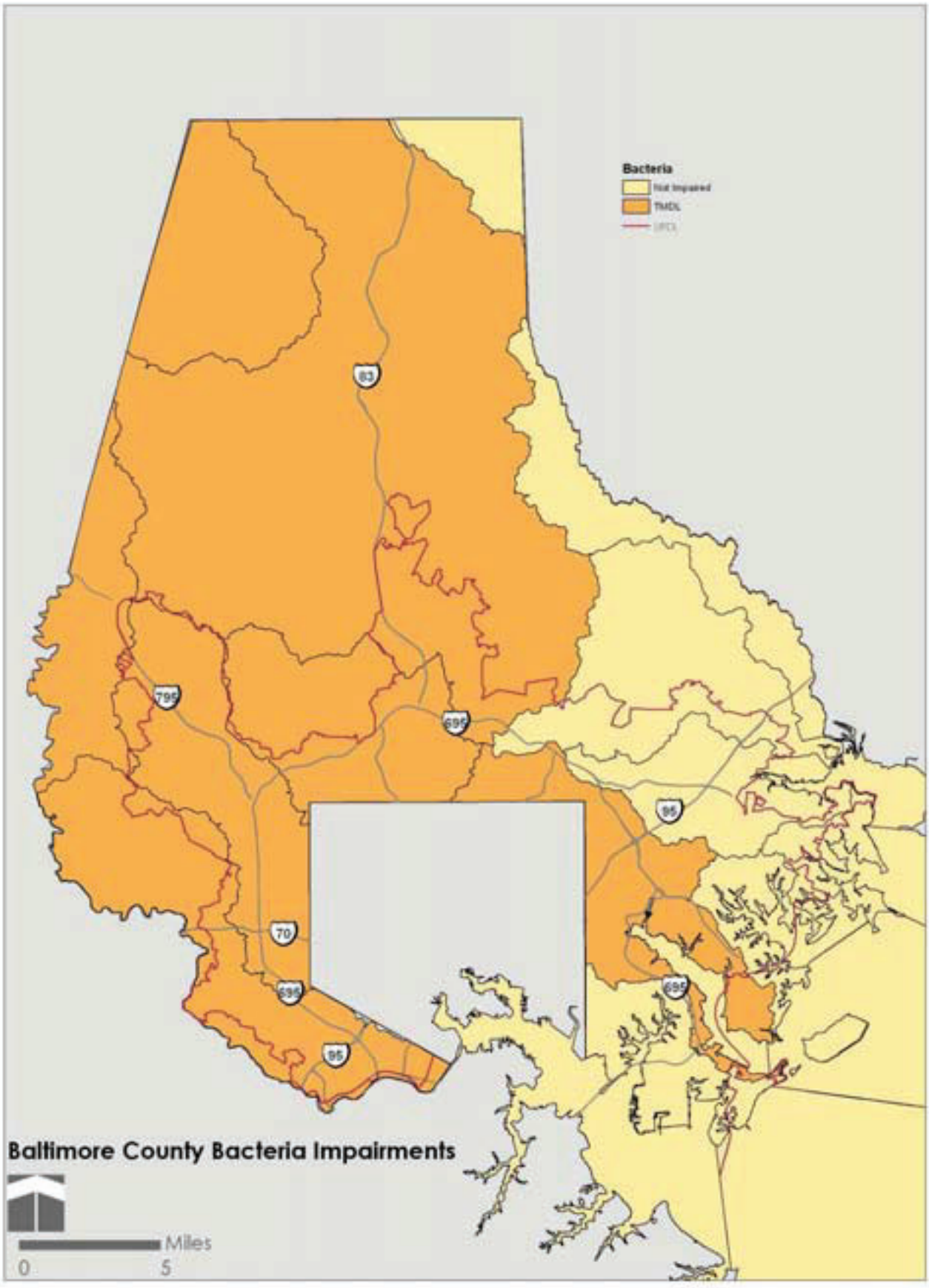
The U.S. EPA Mid-Atlantic Integrated Assessment program (MAIA) produced a document to share knowledge among state and local governments, regional offices, and non-governmental organizations. The document highlights DEPRM's stream restoration accomplishments. DEPRM's program incorporates project planning and design, communication and coordination with property owners, construction, and post-restoration follow-up. The program integrates state-of-the art techniques with an environmentally sensitive approach to stabilizing streams and reducing sediment loads, in turn enhancing stream morphology, ecological function, water quality, and aquatic habitat. Baltimore County responds to degraded urban streams with an adaptive natural channel design (NCD) approach that relies on the principles of fluvial geomorphology to evaluate stream flow, channel dimension, and bed and bank materials to optimize water and sediment movement and minimize erosive forces.





Physical changes to stream systems can be worse than pollutant runoff, point source discharges, or storm water management impacts. Since 1990, DEPRM has developed expertise in the restoration of destabilized stream channels. Reconstruction of channels applies the concepts of natural channel design (NCD) using natural materials (boulders and vegetation) in conjunction with the reshaping of the stream channels. When properly constructed, these restored streams are a cost-effective and attractive means to sustain physical stability, function, and habitat. Since the early 1990's, DEPRM has also maintained a physical, chemical, and biological stream monitoring program to determine ambient water quality and trends over time, assist in targeting restoration efforts, assess the effectiveness of restoration, and track progress in meeting TMDL pollutant load reduction requirements. The monitoring measures the abundance and diversity of aquatic life as indicators of stream quality and chemical constituents. Summary data from the biological monitoring indicate that there is fairly widespread impairment of aquatic organisms, even if only moderate, for most of the County's streams.

Map 39: Bacteria Impairments



Improvements to stream quality, in both water quality and habitat, will require a range of controls that best address specific types of pollution sources.

Policy: Continue to protect, enhance, and restore degraded waterways to meet water quality standards and permit requirements.

Actions:

(1) Continue to enforce development regulations for the protection of water quality, streams, wetlands, and floodplains.

(2) Continue to prepare and implement Small Watershed Action Plans (SWAPs) and participate in studies to identify needs and opportunities for stream restoration, wetland creation and restoration, and stormwater management.

(3) Continue to design and construct stream restoration projects using an adaptive natural channel design (NCD) approach.

(4) Incorporate stream protection policies in community plans.

(5) Continue to implement biological, chemical, and geomorphological stream monitoring programs in order to measure the long-term trends in stream quality.

(6) Identify opportunities for the creation of wetlands as mitigation for County capital projects and other land development impacts.

(7) Continue environmental education programs for schools, businesses, and homeowners for the reduction of water pollution and toxic and solid wastes.

(8) Continue to implement environmental inspection and maintenance programs such as storm drain inlet cleaning and maintenance of stormwater management facilities.

(9) Continue to identify and convert appropriate publicly owned stormwater management facilities to provide for increased water quality function.

(10) Continue to retrofit older communities to provide for stormwater treatment for improved water quality to the receiving waters.

(11) Continue to support watershed associations and citizens in stream clean-ups, stream and watershed surveys, and other restoration projects.

(12) Identify impediments to, and opportunities for tree plantings along streams on private properties, and work to plant more trees on private lands.

Stormwater Management and Sediment Control

The hydrologic cycle is a descriptive model for the movement of precipitation from the atmosphere to the earth's surface and then to receiving waters and back to the atmosphere. In natural areas, precipitation that reaches the ground infiltrates into the soil, replenishing groundwater aquifers and discharging to streams. In urban areas, precipitation that falls onto impervious surfaces runs off the surface much more rapidly. Unless properly controlled, stormwater runoff can result in stream channel erosion and the degradation of in-stream habitat and the aquatic biological community. Stormwater runoff also results in an increase of pollutants washed downstream. During the land development process, the soil at construction sites is the most vulnerable to erosion in streams and other surface waters. Soil erosion from construction activity may exceed 100 to 400 times that obtained from an adjacent undeveloped land or woodland in an equivalent period of time.

About 80% of Baltimore County was developed prior to the advent of stormwater management regulations, which damaged many waterways. In 1968, Baltimore County enacted Maryland's first local sediment control ordinance. Since the mid 1970's, Baltimore County has been a statewide leader in recognizing the impact of stormwater runoff generated as a result of land development. Stormwater management requirements have evolved over time. Initial

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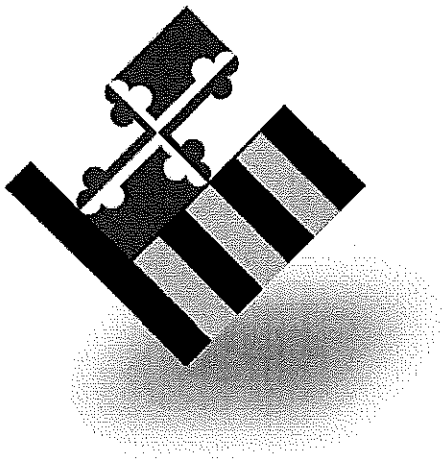
WATER RESOURCES ELEMENT



BALTIMORE COUNTY

MARYLAND

Draft presented to
Maryland Department of Planning
June 14, 2010

Executive Summary

Introduction

Developed in response to House Bill 1141, entitled *Land Use – Local Government Planning*, this Water Resources Element (WRE) will assist in protection and restoration of all water resources, including the Chesapeake Bay. The WRE is a thorough examination of all water resources in Baltimore County, Maryland. It includes public and private drinking water supplies, public and private wastewater disposal systems, and stormwater runoff from existing and proposed land uses. The intent of the analysis is to ensure safe and adequate supplies of drinking water, adequate facilities for wastewater disposal, protection of high quality natural resources, and a reduction *and cap* of pollutant loadings from point and non-point sources. Incorporated into the County's land use plan - *Master Plan 2020*, the WRE will inform policies and actions to be implemented over the next decade and beyond.

Growth

The population growth rate in Baltimore County is projected to slow, however, there still is an anticipated increase in the number of residents. Planning is crucial for any growth: it must be managed to protect natural resources, and assist in the restoration of degraded water bodies. Furthermore, responsible growth must be *sustainable*: the County must meet present and future needs, while preserving the environment and resources for future generations.

Drinking Water and Wastewater Disposal

Drinking water and wastewater disposal are either public or private systems. The public Baltimore Metropolitan Water Supply serves properties located "inside" the "Urban Rural Demarcation Line" (URDL), closest to Baltimore City. In a few growth-restricted areas, water and sewer is supplied due to public health issues related directly to preserving the quality of the Chesapeake Bay. The water system is supplied by 3 reservoirs located in Baltimore County, supplemented by the Susquehanna River. The public system providing wastewater treatment includes two large facilities and one smaller facility. Outside the URDL, there are private single homes, business well and septic systems, and multiple privately owned institutional, community and multi-use wastewater treatment facilities. For the most part in the rural areas, private water wells and on-site disposal systems are utilized. These public and private water supplies were examined to ensure they continue to be properly protected, and have an adequate supply to serve future populations. Pollutants discharged from all wastewater treatment facilities: public, private, community and individual systems, were analyzed to affirm they do not exceed permitted levels, accounting for the anticipated increase in the number of users.

Stormwater Runoff

The major contributor to pollution of our water bodies is how land is developed and used. Increased impervious surfaces from parking lots, driveways, houses and buildings, result in greater volumes of water runoff, eroding stream banks, and carrying nutrient-laden sediments and other contaminants. Agricultural uses, without benefit of *best management practices*, can cause similar effects, with additional contamination by inappropriate use of chemicals on crops. There is also considerable pollution from urban and suburban lawns. This Water Resources Element examines existing conditions of land uses, and determines current pollutant loadings. Based on projected population figures, and various proposed land use scenarios, future loadings are also calculated.

A Sustainable Plan

To meet the Total Maximum Daily Loads (TMDLs) required by state and federal regulations, the best future land use plan was selected from six (6) scenarios analyzed. As discussed in Chapter 5, it is demonstrated the future growth pattern allowing for the lowest pollutant loadings is a mix of high density mixed-use, revitalization of older neighborhoods with single-family homes and townhouses, including conversion of existing development to parks. Policies and actions to enable implementation of this land use pattern, preserving and protecting our high quality waters and resources in our rural areas, are proposed in this Water Resources Element. These policies and actions are further strengthened and enhanced throughout *Master Plan 2020*. The plan is based on a *sustainability framework* that will allow for appropriate development *and* redevelopment, while ensuring a brighter future for our citizens, and a cleaner, healthier natural environment. Baltimore County is strongly committed to improving the health of our local water bodies and the Chesapeake Bay.

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MDP

Maryland Department of Planning

Martin O'Malley
Governor
Anthony G. Brown
Lt. Governor

Richard Eberhart Hall
Secretary
Matthew J. Power
Deputy Secretary

Mr. Arnold F. 'Pat' Keller, III
Director
Baltimore County Office of Planning
105 West Chesapeake Avenue, Suite 101
Towson, Maryland 21204

August 27, 2010

Dear Mr. Keller: Pat

The Maryland Department of Planning has completed the coordinated review of the draft Water Resources Element for Baltimore County dated June 14, 2010. The draft element was sent to the Maryland Departments of Transportation, Environment, Natural Resources, Business and Economic Development, Housing and Community Development, and Agriculture. Comments received after the date of this letter will be forwarded to you upon receipt.

In addition to the requirements of HB 1141, our planning staff has reviewed the elements for consistency with the Planning Act of 1992, the Smart Growth Areas Act of 1997 and other State growth management principles and policies. Our review comments are attached for your consideration.

If you have any questions please feel free to contact me at (410) 767- 4500 or Steve Allan at (410) 767-4572 with any questions or concerns.

The Maryland Department of Planning looks forward to continued planning coordination with Baltimore County.

Sincerely,

Peter Conrad, AICP
Director, Local Government Assistance

Enclosure: Review comments

cc: Jason Dubow, Planner, WRE Coordinator
Steve Allan, Regional Planner
Rich Josephson, Director, Planning Services
Rita Elliot, MDP Clearinghouse

301 West Preston Street • Suite 1101 • Baltimore, Maryland 21201-2305
Telephone: 410.767.4500 • Fax: 410.767.4480 • Toll Free: 1.877.767.6272 • TTY Users: Maryland Relay
Internet: www.MDP.state.md.us

MDP

Maryland Department of Planning
Review Comments
Baltimore County Water Resources Element
August 27, 2010

The WRE is very close to completion, but would meet the requirements of HB1141 with recommended comments. The most important comments to include are in **bold**. The WRE does not yet effectively address the following purposes of the law and/or State guidance, as follows:

- For each watershed, identify current WWTP discharge locations and loads (MDP M&G 26, p. 12).
- Does the WRE make findings that address estimated changes in both point and nonpoint nutrient loads (MDP M&G 26, pp. 39-40).

Overall WRE comments:

- The Master Plan indicates that the WRE is incorporated as part of the Master Plan (Master Plan 2020, p. 24). The WRE (and not just the WRE executive summary) should be adopted as part of the Master Plan.
- The County should be commended for:
  - including a WRE that examines multiple possible land use scenarios (p. 27) and a Master Plan that chooses the least impactful land use plan examined by the WRE with regard to both nutrient loading and impervious surface (Master Plan 2020, p. 24).
  - recognizing in its WRE that all new development impacts must be offset (pp. 17, 27) and including a policy to investigate the feasibility of an offset program (p. 55).
  - using the WRE as a preliminary assessment to determine whether local and Chesapeake Bay TMDL allocations can be met, in part through the proposed land use plan (pp. 27-28, 39).
- **The County should include a forecast on how future water and sewer demand would change given the WRE's recommendation of a land use plan that focuses on redevelopment within the URDL.** The water and sewer demand forecast (p. 5) appears to be based on the County's current land use plan. An alternative land use plan that focuses on redevelopment likely will increase demand for public water and sewer above current forecasts. If the County believes that the water and sewer demand forecast provided in the WRE adequately captures expected demand under the alternative land use scenario (i.e., redevelopment within the URDL), then the WRE should clarify that this is the case.
- The County should review its Land Preservation, Parks, and Recreation Plan and identify measures that will implement the Water Resources Element strategies. Referral of these relevant sections within the Land Preservation, Parks and Recreation Plan should be cited within the Water Resources Element.
- SB276, passed in the 2009 Maryland legislative session, sets a statewide land use goal of increasing the current percentage of growth in Priority Funding Areas (PFAs) and decreasing the current percentage of growth outside of PFAs. SB276 also requires local governments to develop

a percentage goal towards achieving the statewide goal. Although the new annual report requirements (including the local land use goal) under SB276 will not be filed until July 1, 2011, Baltimore County should consider (and discuss) whether its estimates of the percentage of growth to be served by public water and sewer will be sufficient to achieve the statewide land use goal. Statewide in Maryland, the current (as of 2006) percentage of growth in PFAs (not including "comment areas") is 68% http://www.mdp.state.md.us/msdc/PFA/Resid_Growth/by_County/PFA_cnty_index.htm.

- Please consider the following edits to add clarity:
  - There is a possible typo (p. 2) where the text refers to the county's population rate as decreasing to "3,900 people per year in the near future." To add clarity the text could use the 3,800 figure found in the chart for 2020 annual change in population.
  - The list of appendices (p. 6) is confusing because it does not refer to the appendices within the WRE. The WRE should clarify where these documents are located and/or assign them a letter not already used in the current appendix. For example, Appendix A is listed as the WRE Flowchart. However, Appendix A in the WRE is actually a technical memo on existing water quality conditions.

Comments on source water protection:

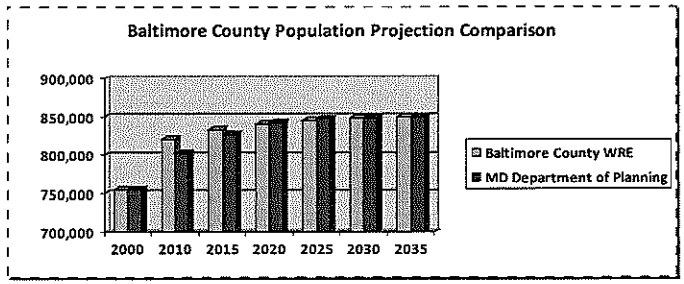
- The WRE could also include a few sentences regarding regional efforts to protect the Susquehanna River as a drinking water source since the County relies on the river in part for its drinking water needs.

Comments on identifying suitable receiving waters:

- **The WRE should provide a point source loading forecast for and indicate the discharge locations of the Patapsco WWTP, Back River WWTP and Richlyn Manor WWTP.**
- **The WRE should list the Maryland Tributary Strategy point source caps for the County's WWTPs.**
- **The WRE also should provide a combined point and nonpoint source loading forecast.**

Comments on population projections:

The population projections in the WRE are suitable for planning purposes. The long range (2020 through 2035) population projections presented in the WRE are consistent with county level population projections prepared by the Maryland Department of Planning (MDP) for Baltimore County (See Chart 1).



The short range (2010 and 2015) population projections presented in the Baltimore County Water Resources Element are slightly high relative to Maryland Department of Planning population projections. This difference is due to our incorporating the slowdown in population growth over the last several years as documented by the U. S. Bureau of the Census' population estimates through July 1, 2009.

The time period displaying the highest difference is 2010 where the WRE projection is 18,774 persons above the MDP projection. This difference shrinks in 2015 with the WRE population projection higher by 6,888 persons. Both short term projections presented in the WRE represent a less than three-percent difference compared to the MDP population projections for the same years.

Other Comments on methodology:

The population forecasts provided in the Draft of the Baltimore County WRE are generally found to be in-line with MDP's historical and projected total population estimates for Baltimore County, last updated in December 2008.

The methodologies used to determine the household population distribution from TAZ and Census Tracts to WQPA's, the modification of 2002 MDP Land Use data to 2005 Land Use data, low density residential modifications and the population change analyses are thoroughly explained and generally well executed, thanks in-part to the concise diagrams and thorough discussions found throughout the WRE Technical Memo B.

Date: June 14, 2010

Mr. Richard Josephson
Director of Planning Services
Maryland Department of Planning
301 West Preston Street, Suite 1101
Baltimore, MD 21201-2305

Dear Mr. Josephson:

Attached please find four (4) copies of the draft Water Resources Element (WRE) prepared by Baltimore County for your review. Thank you for offering to distribute to all appropriate Maryland State agencies for their review and comment. Staff looks forward to hearing from you soon with all comments on the WRE draft.

Staff convened a committee with representatives from the Departments of Environmental Protection and Resource Management and Public Works to develop the WRE. Furthermore, staff from all Baltimore County agencies are working on *Master Plan 2020*, which will propose policies and actions to implement strategies to further the goals of the WRE. It is anticipated that the adoption of *Master Plan 2020* by the Planning Board and the County Council will occur this autumn.

If you have any questions regarding this document please contact Bruce Seeley, Master Plan Coordinator, at (410) 887-3480. We look forward to hearing from you soon.

Sincerely,

Arnold F. 'Pat' Keller, III
Director

PK:BS:bs

Attachments
C: Fred Homan, Administrative Officer (w/o attachments)
Jonas A. Jacobson, Director, DEPRM (w/o attachments)
Edward C. Adams, Director, DPW (w/o attachments)

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BALTIMORE COUNTY, MARYLAND
BUREAU OF TRAFFIC ENGINEERING AND TRANSPORTATION PLANNING
INTER-OFFICE CORRESPONDENCE

DATE: December 14, 2022

TO: D'Andrea Walker., Acting Director
Department of Public Works and Transportation

FROM: Angelica Daniel, Bureau Chief
Bureau of Transportation

SUBJECT: 2023 Basic Service Map – Transportation:

Our bureau has restudied all of the intersections currently on the Basic Services Map for 2022 as well as continued the update of all other signalized intersections, with the exception of the following intersection due to construction.

Honeygo Blvd & White Marsh Blvd (MD 43)	LOS = D

As of now the proposal is to retain its level of service from 2022.

CHANGES:
Based on these studies over the past year, we are recommending the following change to the Transportation Map for 2023:

Ebenezer Rd / Pulaski Hwy (US 40)	F to D

With the change above, there are eleven "F" level intersections and one "E" level intersection that are being proposed to control development on the 2023 Basic Service Transportation Map. These intersections are:

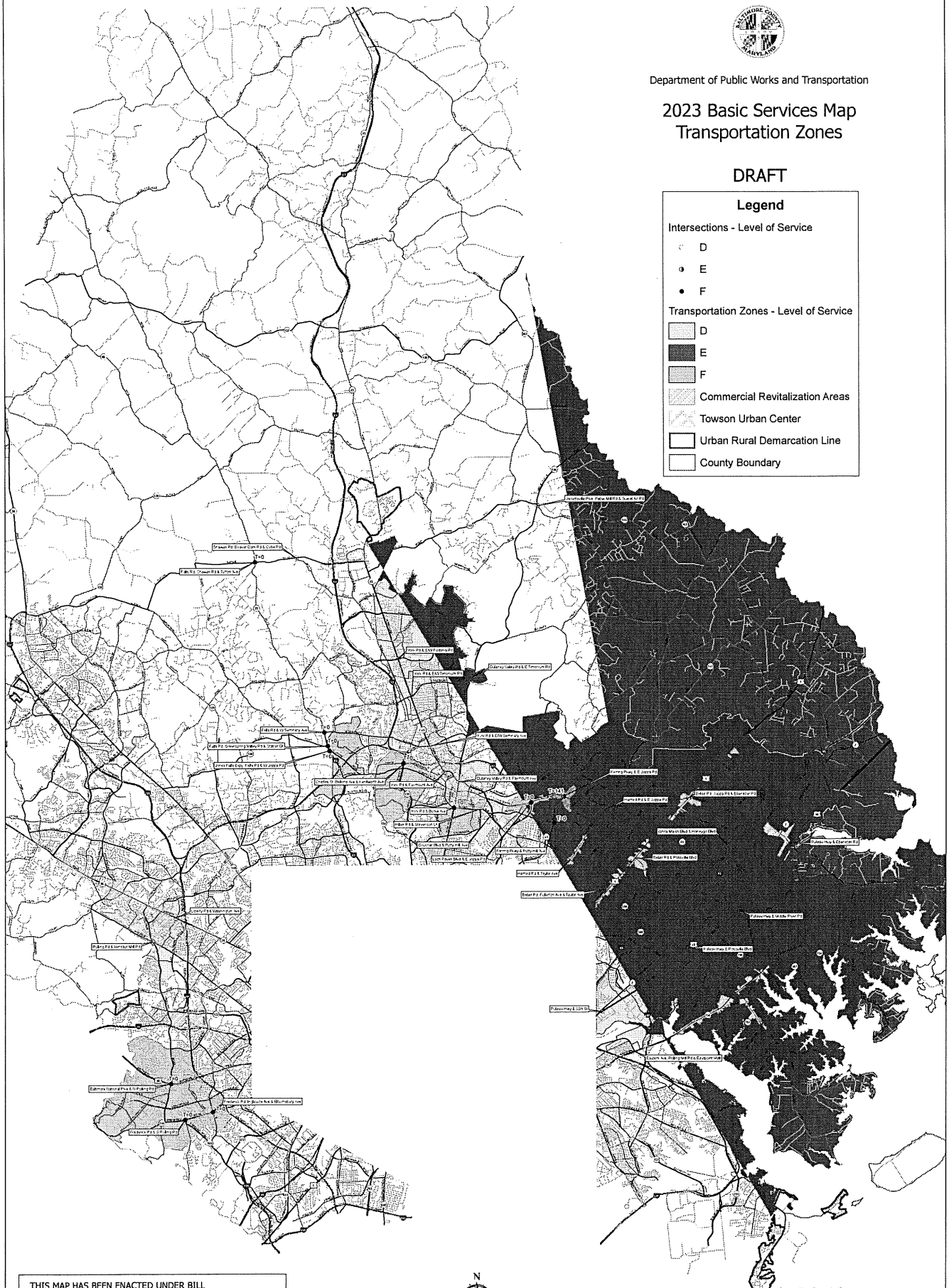
Baltimore Nat'l Pike (US 40)/ Rolling Rd N	LOS = F
Bellona Ave / Charles St (MD 139) / Kenilworth Dr	LOS = F
Bloomsbury Ave / Frederick Rd (MD 144) / Ingleside Ave	LOS = F
Burke Ave / Burke Ave W / York Rd (MD 45)	LOS = F
Falls Rd (MD 25) / Seminary Ave W (MD 131)	LOS = F
Falls Rd (MD 25) / Joppa Rd W	LOS = F
Falls Rd (MD 25) / Greenspring Valley Rd (MD 130)	LOS = F
Falls Rd (MD 25) & Shawan Rd & Tufton Ave *	LOS = F*
Frederick Rd (MD 144) / Rolling Rd S (MD 166)	LOS = F
Joppa Rd E & Loch Raven Blvd (MD 542)	LOS = F
Perring Pkwy (MD 41) / Putty Hill Ave	LOS = F
Joppa Rd E / Perring Pkwy (MD 41)	LOS = E

*The intersection of Falls Rd(MD25)/Shawan Rd and Tufton Rd is outside the URDL, therefore no commuter shed will be associated with this intersection.

At the intersection of Ebenezer & US-40, the northbound leg was widened to accommodate a fully assigned right turn lane. As a result, the level of service improved from an F to a D.

Enclosed is a list of the current D, E, and F intersections for your use. Should you have any questions in regard to the Basic Services Transportation Map for 2023, please contact me at ext.3554.

Sig#	Prev Date	Prev LOS	Curr Date	Curr LOS	Time	1st Rd Name	2nd Rd Name	3rd Rd Name	Notes
S0284	11/17/21	F	9/28/22	F		Baltimore Nat'l Pike	Rolling Rd N		
C0712	11/03/21	D	9/19/22	D		Beaver Dam Rd	Cuba Rd	Shawan Rd	
S0564	9/21/21	D	10/17/22	D		Belair Rd	Ebenezer Rd	Joppa Rd	
S0619	11/08/21	D	10/18/22	D		Belair Rd	Fullerton Ave	Taylor Ave	
S2325	10/28/21	D	10/19/22	D		Belair Rd	Rossville Blvd		
S1594	9/08/21	F	11/01/22	F		Bellona Ave	Charles St	Kenilworth Dr	
C4270	9/22/21	F	9/26/22	F		Bloomsbury Ave	Frederick Rd	Ingleside Ave	
S 087	9/20/21	F	10/27/22	F		Burke Ave	York Rd		
S1927	9/23/21	D	11/03/22	D		Dulaney Valley Rd	Fairmount Ave		
S2294	11/02/21	D	9/28/22	D		Dulaney Valley Rd	Timonium Rd E		
S0616	10/18/21	D	10/11/22	D		Eastern Ave	Rolling Mill Rd	Mall Ent	
S0605	9/14/21	F	12/14/22	D		Ebenezer Rd	Pulaski Hwy		
S3981	10/04/21	D	10/25/22	D		Fairmount Ave	York Rd		
S0268	11/09/21	F	11/29/22	F		Falls Rd	Greenspring Valley Rd	Station Dr	
S0271	11/09/21	F	11/29/22	F		Falls Rd	Jones Falls Expwy	Joppa Rd W	
S2231	11/09/21	F	11/29/22	F		Falls Rd	Seminary Ave W		
S0428	9/13/21	F	9/21/22	F		Falls Rd	Shawan Rd	Tufton Ave	
S3356	9/15/21	F	9/21/22	F		Frederick Rd	Rolling Rd S		
C0036	10/19/21	D	11/02/22	D		Goucher Blvd	Putty Hill Ave		
S3016	2/25/20	D	10/24/22	D		Harford Rd	Joppa Rd		
S2167	11/01/21	D	10/13/22	D		Harford Rd	Taylor Ave		
S0591	10/26/21	D	10/20/22	D		Hillen Rd	Stevenson Ln		
S2512	4/17/19	D	3/02/20	D		Honeygo Blvd	White Marsh Blvd		UNDER CONST.
S0917	9/27/21	D	10/05/22	D		Jarrettsville Pike	Paper Mill Rd	Sweet Air Rd	
S2015	9/09/21	F	10/26/22	F		Joppa Rd E	Loch Raven Blvd		
S4320	11/16/21	E	10/31/22	E		Joppa Rd E	Perring Pkwy		
S1911	11/04/21	D	10/03/22	D		Liberty Rd	Washington Ave		
S0628	10/25/21	D	9/12/22	D		Middle River Rd	Pulaski Hwy		
S4310	11/24/21	D	10/03/22	D		Padonia Rd E/W	York Rd		
S0852	3/11/20	F	10/05/22	F		Perring Pkwy	Putty Hill Ave		
S0889	10/27/21	D	10/11/22	D		Pulaski Hwy	66th St		
S0885	10/12/21	D	10/12/22	D		Pulaski Hwy	Rossville Blvd		
C0220	11/15/21	D	9/19/22	D		Rolling Rd	Windsor Mill Rd		
S1580	9/29/21	D	11/07/22	D		Seminary Ave E/W	York Rd		
S3008	11/22/21	D	9/26/22	D		Timonium Rd E/W	York Rd		



Department of Public Works and Transportation

2023 Basic Services Map
Transportation Zones

DRAFT

Legend

Intersections - Level of Service

- D
- E
- F

Transportation Zones - Level of Service

- D
- E
- F
- Commercial Revitalization Areas
- Towson Urban Center
- Urban Rural Demarcation Line
- County Boundary

THIS MAP HAS BEEN ENACTED UNDER BILL NUMBER _____ AND IS PART OF THE BALTIMORE COUNTY ZONING REGULATIONS, 1955, AS AMENDED BY THE BILL ADOPTED _____. EFFECTIVE _____.

_____
COUNTY COUNCIL OF BALTIMORE COUNTY

N W E S

SCALE 1 INCH = 4,000 Feet

0 2,000 4,000 8,000 12,000 16,000 20,000 Feet

NOTE: The interpretation of the Basic Services Maps are subject to exceptions provided for in the Baltimore County Zoning Regulations, Article 4A Growth Management, Section 4A02 Basic Services Maps. These exceptions include those mapped in the County's geographic information system (GIS): the Urban and Rural Demarcation Line (URDL), Commercial Revitalization Districts (4A02.4.E.1.i), and the Towson Urban Center (4A02.4.E.1.j). The Towson Urban Center (Downtown Towson District) exists in the Master Plan 2020 in the Land Management Areas feature class.

Feature Class Production Dates

Transportation Zones	2023
Intersections	2023
Commercial Revitalization Districts	2022
Towson Urban Center	2011
Urban Rural Demarcation Line	2012
Roads	2023
County Boundary	2008

Produced by Baltimore County Department of Public Works and Transportation

North American Datum 1983 HARN, U.S. Survey Foot

Published January 8, 2023

MEDIA CONTACTS:

Mark Miller, Administrator
Send email
410-313-2022

AUDIENCE:

Businesses
Residents

ELLICOTT CITY, MD – Howard County Executive Calvin Ball today announced that due to steps taken by the County's Department of Public Works' Bureau of Utilities to reduce the number of sanitary sewer overflows throughout the county, the Maryland Department of the Environment (MDE) has terminated its Sewer Consent Decree with the County. MDE established the decree with the County in March 2010 to decrease the number of sanitary sewer overflows caused by infiltration, grease and capacity.

"Sanitary sewer overflows don't just threaten our public health and property, but also threaten our environment, resulting in serious damage to and pollution of our streams, rivers and the Chesapeake Bay. I applaud our Bureau of Utilities team for meeting this challenge head on and executing solutions that ensure our sanity sewer systems operate effectively and efficiently."

Calvin Ball Howard County Executive

Since 2010, the Bureau of Utilities has implemented several capital projects to study and evaluate sewer service throughout the county and rehabilitate public sewer house connections. The Bureau has also standardized its method of reporting overflows and expanded its sewer system geographic information system mapping to include all water and sewer assets and locations. All new sewer main installations are also inspected to insure they meet current standards.

The Bureau of Utilities annually cleans out one-fifth of the County sewer mains and inspects one-twentieth of County sewer mains via closed circuit television video to identify any inflow and infiltration in the sewer system, and make repairs as needed. Staff also routinely inspect the County's extensive network of sanitary sewer main outfalls to assess conditions and make any necessary repairs.

As nearly 50 percent of all sewage overflows nationwide are caused by homeowners who improperly dispose of everyday fats, oils and grease (FOG), the Bureau of Utilities strives to educate residents, as well as business owners, on how to properly dispose of FOG. Since 2011, there have only been three overflows related to commercial businesses as sources of FOG.

Finally, the County is diligent in its oversight of maintenance and calibration of the sewer flow meters which measure the flow of collected sewage to both the Little Patuxent Water Reclamation Plant as well as the Patapsco Wastewater Treatment Plant.

"Since the enactment of the decree, because of the diligent maintenance efforts of our Bureau of Utilities, we successfully reduced our overflows by nearly 70 percent. Which puts us well below the State average."

Calvin Ball Howard County Executive

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Politics & Government

Sewer Consent Decree Between HoCo, MD Terminated

The state has terminated its sewer consent decree with HoCo after the county implemented several capital projects to improve its system.

Kristin Danley-Greiner, Patch Staff

Posted Mon, Feb 6, 2023 at 4:41 pm ET

Reply



Since 2010, the Howard County bureau of utilities has implemented several capital projects to study and evaluate sewer service throughout the county and rehabilitate public sewer house connections. (David Allen/Patch)

HOWARD COUNTY, MD — The Maryland Department of the Environment has terminated its sewer consent decree with the county, which was established in March 2010 to decrease the number of sanitary sewer overflows caused by infiltration, grease and capacity.

ADVERTISEMENT

ADVERTISEMENT

ADVERTISEMENT

“Sanitary sewer overflows don’t just threaten our public health and property, but also threaten our environment, resulting in serious damage to and pollution of our streams, rivers and the Chesapeake Bay,” Howard County Executive Calvin Ball said. “I applaud our bureau of utilities team for meeting this challenge head on and executing solutions that ensure our sanity sewer systems operate effectively and efficiently.”

Since 2010, the bureau of utilities has implemented several capital projects to study and evaluate sewer service throughout the county and rehabilitate public sewer house connections. The bureau has also standardized its method of reporting overflows and expanded its sewer system geographic information system mapping to include all water and sewer assets and locations. All new sewer main installations are also inspected to insure they meet current standards.

The bureau of utilities annually cleans out some of the county's sewer mains and inspects some county sewer mains via closed circuit television video to identify any inflow and infiltration in the sewer system and make repairs as needed. Staff also routinely inspect the county’s extensive network of sanitary sewer main outfalls to assess conditions and make any necessary repairs.

As nearly 50 percent of all sewage overflows nationwide are caused by homeowners who improperly dispose of everyday fats, oils and grease, the bureau of utilities aims to educate residents, as well as business owners, on how to properly dispose of FOG. Since 2011, there have only been three overflows related to commercial businesses as sources of FOG.

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“Since the enactment of the decree, because of the diligent maintenance efforts of our bureau of utilities, we successfully reduced our overflows by nearly 70 percent, which puts us well below the State average,” Ball added.

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PARK HOURS

BALTIMORE MD
MAY 30, 2023

SUNRISE: 5:43 AM
SUNSET: 8:25 PM

MORE PARK HOURS INFO

CURRENT PARK WEATHER

LIGHTNING ALERTS

LAKE ROLAND WATER QUALITY

Click for Current Testing Results

Current: GOOD

PAW POINT WATER ACCESS

Current: OPEN

PAW POINT DRINKING WATER

Current: ON

LAKE ROLAND WATER LEVELS

Click for Current Water Level Data

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- Lake Roland Nature Council at District 2 Town Hall

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BALTIMORE COUNTY RECREATION & PARKS





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Water Testing Locations
Sample Location 3 & 4-Dog Park
Sample Location 5-Steel Steps
Sample Location 1-Picnic Area
Sample Location 2-Marble Steps

MENU

HOME > DEPARTMENTS > HEALTH > ENVIRONMENTAL HEALTH SERVICES > WATER SAMPLING PROGRAM > RESULTS > LAKE ROLAND

LAKE ROLAND WATER SAMPLING RESULTS

FRESH WATER RECREATIONAL WATER

May 16, 2023

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	27	41	8	35	25

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	23.87	72.6	N/A	N/A	N/A	N/A	N/A	N/A	NW 9	No

May 8, 2023

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	15	20	31	11	66

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	23.221	68.0	N/A	N/A	N/A	N/A	N/A	N/A	S 10	Yes

May 3, 2023

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	435	365	249	197	261

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	289.48	55.6	N/A	N/A	N/A	N/A	N/A	N/A	W 7	Yes

April 18, 2023

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	192	210	228	308	145

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	210.22	66.0	N/A	N/A	N/A	N/A	N/A	N/A	E 17	No

August 18, 2022

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	12	6	19	19	18

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	13.615	75.7	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	Yes

August 2, 2022

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	11	11	6	23	16

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	12.172	81.7	N/A	N/A	N/A	N/A	N/A	N/A	E 11	Yes

July 28, 2022

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	1	7	4	9	9

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	4.6895	80.8	N/A	N/A	N/A	N/A	N/A	N/A	E 5-10	No

July 20, 2022

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	921	435	461	49	28

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	190.88	86.5	N/A	N/A	N/A	N/A	N/A	N/A	NE 1-5	No

July 6, 2022

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	10	15	16	12	0

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	11,156	79.4	N/A	N/A	N/A	N/A	N/A	N/A	E 5-10	Yes

June 15, 2022

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	10	50	13	7	11

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	13.8	80.1	N/A	N/A	N/A	N/A	N/A	N/A	NW 1-5	Yes

June 1, 2022

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	43	18	46	24	47

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	33.171	82.8	N/A	N/A	N/A	N/A	N/A	N/A	NE 5-10	No

May 23, 2022

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	>2420	>2420	>2420	>2420	>2420

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	2420	71.7	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	Yes

May 17, 2022

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	1414	1414	866	1300	1203

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	1220.5	72.0	N/A	N/A	N/A	N/A	N/A	N/A	NE 10-15	Yes

May 3, 2022

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	122	64	122	99	78

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	94.043	63.3	N/A	N/A	N/A	N/A	N/A	N/A	NW 5-10	No

April 19, 2022

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	1986	2420	2420	2420	2420

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	2326.2	50.0	N/A	N/A	N/A	N/A	N/A	N/A	E 22	Yes

September 8, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	15	23	219	24	26

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	34.25	77.0	N/A	N/A	N/A	N/A	N/A	N/A	S 5-10	No

August 25, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	24	26	40	16	28

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	25.686	79.0	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	No

August 17, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	>2420	>2420	<2420	2420	<2420

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	2420	79.2	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	Yes

August 3, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	70	59	63	32	81

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	58.316	75.1	N/A	N/A	N/A	N/A	N/A	N/A	E 1-5	Yes

July 20, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	74	72	71	60	56

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	66.20	80.0	N/A	N/A	N/A	N/A	N/A	N/A	NW 5-10	No

July 7, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	10	3	17	2	7

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	5.8985	84.1	N/A	N/A	N/A	N/A	N/A	N/A	S 5-10	No

June 28, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	40	102	30	29	33

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	41.09	79.1	N/A	N/A	N/A	N/A	N/A	N/A	S 5-10	No

June 25, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	770	479	548	517	411

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	532.83	70.1	N/A	N/A	N/A	N/A	N/A	N/A	E 5-10	No

June 15, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	225	517	291	326	2420

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	484.53	78.3	N/A	N/A	N/A	N/A	N/A	N/A	NW 10	No

June 2, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	54	119	104	65	75

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr

May 18, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	8	6	7	38	26

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	12.71	67.4	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	No

May 10, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	74	63	51	64	64

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	62.76	56.5	N/A	N/A	N/A	N/A	N/A	N/A	NW 10	Yes

May 4, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	>2420	>2420	>2420	>2420	>2420

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	2420	70.7	N/A	N/A	N/A	N/A	N/A	N/A	W 5-10	Yes

April 20, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	21	10	79	16	16

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	21.17	59.0	N/A	N/A	N/A	N/A	N/A	N/A	SW 5-10	Yes

September 14, 2020

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	124	71	138	83	84

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	96.73	71.4	N/A	N/A	N/A	N/A	N/A	N/A	NW 7-10	No

August 25, 2020

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	6	38	61	32	64

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	30.968	80.5	N/A	N/A	N/A	N/A	N/A	N/A	W 10-15	Yes

August 11, 2020

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	22	31	35	31	15

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	25.648	85.6	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	No

July 28, 2020

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	15	19	24	26	19

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	5.9851	86.2	N/A	N/A	N/A	N/A	N/A	N/A	W 5-10	No

July 15, 2020

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	15	72	31	49	79

Other Parameters	Geo Mean	Temp °F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	41.93	79.00	N/A	N/A	N/A	N/A	N/A	N/A	E 1-5	No

June 29, 2020

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	108	76	44	96	50

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	70.43	75.9	N/A	N/A	N/A	N/A	N/A	N/A	NW 5-10	Yes

June 23, 2020

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	>2420	>2420	>2420	>2420	>2420

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	>2420	81.7	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	Yes

HALLAHAN COMMENTS TO ADMINSTRATIVE LAW JUDGE MURPHY–GREENSPRING MANOR CASE #2021-0250-SPH

All opinions expressed in this document are those solely expressed by my wife and me from our single family detached home at 76 Seminary Farm Road, at the corner intersection with Mays Chapel Road in The MEADOWS of Green Spring community (Noted as Lot 7 in the Greenspring Manor Development Plan).

Our overall opinion is that we are not opposed to the proposed 61 home Greenspring Manor community, but believe that the MAYS CHAPEL ROAD EXTERNTION SHOULD NOT BE APPROVED AND ANY ROAD PHYSICAL CONSTRUCTION SHOULD NOT BE ALLOWED, SINCE THE "GATED EMERGENCY ACCESS ONLY" WILL NOT BE SUSTAINABLE OVER TIME

If the current proposed Greenspring Manor Development Plan is approved with an extended Mays Chapel Road gated for "Emergency Access Only", our view is that our entire Meadows community will be negatively impacted by significant increases in Mays Chapel Road traffic when the "Emergency Access Only" condition is removed. Rationale supporting our view is as follows.

In the Day 4 public hearing on October 27,2022, Atty. Rosenblatt (Atty. for Developer Atapco) called upon Traffic Engineer Nick Driban of Lenhart Traffic Consulting. As part of his testimony, Mr Driban made the following two statements relevant to the proposed Mays Chapel Road Extension.

- If a proposed community is under 100 living units, Baltimore County requires only one access road. Greenspring Manor is 61 living units and therefore requires only one access road, as provided by its connection to Joppa Road.
- If the "Emergency Access Only" requirement is removed, Mays Chapel Road through the Meadows, as well as the primary road through Greenspring Manor, would "quickly become a major thruway" from Seminary Avenue to Joppa Road with an increase in traffic of over 400 cars per day.

The extended Mays Chapel Road "Emergency Access Only" designation may last for a year or two or possibly for a decade, but eventually will be removed due to increased pressure from one or all of the four following conditions as noted below.

- Tally Ho Road affiliated groups increase their pressure for a Seminary-Joppa pass-through road to reduce traffic on Tally Ho Road.
- An unfortunate emergency delay for an ambulance or fire truck due to a malfunction with the gate opening at the sign for "Emergency Access Only".
- Significant pressure from Baltimore County officials and commuter groups publically recognizing that a traffic increase on Mays Chapel Road through to Joppa Road is directly related to a traffic decrease at the increasingly high volume and failed Falls Road-Seminary Avenue intersection.
- The un-scientific, but publicly accepted, concept from the baseball movie Field of Dreams, "If you build it, they will come."

Considering all the above, we therefore suggest to ALJ Murphy that the current Manor Development Plan be revised to include the following THREE MINOR CHANGES to the Development Plan assuring that the current Mays Chapel Road extension will never occur and a pass-through road "major thruway" from Seminary Avenue to Joppa Road will never be created.

- Eliminate a 50 foot easement for extending Mays Chapel Road between Manor Lots 23 & 24
- Distribute the now surplus 50 feet of Manor lot lines among Manor Lots 21 through 27.
- Modify the currently proposed 14 foot high berm along rear property lines behind Manor Lots 19-27 to include a 14 foot high by 50 foot wide continuous berm along the revised rear property lines for Manor Lots 23 &24

As stated at the beginning of this document, all opinions expressed are those solely expressed by my wife and me. However, we sense that there are numerous current Meadows residents who concur with our opinions.

Respectfully, Fred & Jan Hallahan


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EXHIBIT I

WYATT & GUNNING LLC
100 W. PENNSYLVANIA AVENUE, SUITE 10
TOWSON, MARYLAND 21204
410-296-5960
FAX 410-296-3443
WWW.WYATTGUNNING.COM

MICHAEL T. WYATT
MWYATT@WYATTGUNNING.COM

ADMITTED IN MD AND DC

December 2, 2022

Via Hand Delivery

Baltimore County
Offices of Administrative Hearings
105 W. Chesapeake Avenue
Suite 103
Towson, MD 21204

Re: Combined Development & Zoning Hearing
Case Nos. 08-0922 / 2021-0250 SPH
Greenspring Manor - 2310 W. Joppa Road

Dear Sir/Madam:

Enclosed please find Wyatt Exhibit I related to the hearing in the above referenced matter.

Thank you for your customary courtesies.

Very truly yours,

Michael T. Wyatt

MTW:ljs
Enclosures


Jones Falls Expy
Timonium, Maryland
Google
Street View - Jun 2022
ONLY
Joppa
Falls
Circle K
Meadowood Regional Park
Google
Image capture: Jun 2022 © 2022 Google United States Terms Privacy Report a problem

EXHIBIT I

EXHIBIT
1

MPTEx1
Ex 1 P1

Mike - I would like to respond to your request regarding Mr. Chen and others.
However, I have limited skills regarding doing things like this.
Would you please coach me through the process?
I am available on Thursday (6/10) after 11:00 a.m.
If that is not a good time for you, give me another.
Peggy

> On Jun 2, 2021, at 8:30 AM, Michael Tanczyn <michael.tanczyn@gmail.com> wrote:
>
> Dear Mr Chen, I have lived in Boxwood since January 2009. I practiced land use law as part of my practice in Towson since 1976. I reviewed this Proposed residential project and listened to the CIM . I als o reviewed the communications you kindly attached to your meeting minutes. I favor this project over other possibilities like more Johns Hopkins Hospital North or another Peddy expansion, both of which will make the expected traffic impact from the future residents of Greenspring Manor pale to that of a fly vs cicadas which never go away.
> I would also point out for consideration something not mentioned by the Seminary Ridge residents who prefer no one but themselves should use the public roads of their community linking Seminary Road to Joppa Road for decades before Seminary Springs , Boxwood, the Meadows or the North side of Seminary west of Thornton were ever built out and inhabited.
> Anyone who lives in this area knows the sight distance on Seminary Ave.from the entrance to Seminary Springs to the Mays Chapel South entrance to the Meadows and Boxwood sucks and is very dangerous. In less than .1 of a mile between those entrances, Seminary Ave crests to a degree that westbound Seminary traffic towards Falls road from Seminary Ridge entrance come bombing over the hill between Seminary Springs sole entrance and Mays Chapel Road South, many times above the speed limit with less than 50 yards from that entrance. All communities South of Seminary Ave in this distance for westbound traffic usually have to stop to make a left into each community.. My own personal experience over the last. 12 years is that many drivers travelling fast when I was stopped would nearly crash into me while stopped. Some of the younger drivers going to a Falls Road private school per their window decals would give me the finger as they ran onto the northern grass because I was waiting to make a turn. Impeding their preferred path. I learned to habitually turn my left turn signal on at the Seminary Springs entrance; and check my rear view mirror to see if there were any cars cresting the first hill west of Seminary Ridge who could see my signal if observant which helped.
> I recognized many of the Seminary Ridge resident commenters and would ask them to consider the width of Seminary Ave at their entrance , the better sight distance both ways on Seminary at their entrance, and the winding path and speed bumps and

MPT Ex 1 P2

stop signs aplenty within their community public road network. Their sight distance on Joppa Road end is also very good.
> Finally, when Boxwood, Seminary Springs, and the northern Seminary Ave communities west of Seminary Ridge were developed, many had only 1 entrance/exit. I was involved for a Client in the proposed development on Seminary Ave proposed by Grace Fellowship, a megachurch. I also worked on it as part of the Coalition in opposition. I still regret that Seminary Ridge chose not to participate in opposing that megachurch development. Fortunately, the Church Elders chose to withdraw their proposal.
Respectfully, Michael P. Tanczyn, Esq.

Michael P Tanczyn

EX 1 B 3

Dear Mr Chen, I have lived in Boxwood since January 2009. I practiced land use law as part of my practice in Towson since 1976. I reviewed this Proposed residential project and listened to the CIM . I also reviewed the communications you kindly attached to your meeting minutes. I favor this project over other possibilities like more Johns Hopkins Hospital North or another Peddy expansion, both of which will make the expected traffic impact from the future residents of Greenspring Manor pale to that of a fly vs cicadas which never go away.

I would also point out for consideration something not mentioned by the Seminary Ridge residents who prefer no one but themselves should use the public roads of their community linking Seminary Road to Joppa Road for decades before Seminary Springs , Boxwood, the Meadows or the North side of Seminary west of Thornton were ever built out and inhabited.

Anyone who lives in this area knows the sight distance on Seminary Ave.from the entrance to Seminary Springs to the Mays Chapel South entrance to the Meadows and Boxwood sucks and is very dangerous. In less than .1 of a mile between those entrances, Seminary Ave crests to a degree that westbound Seminary traffic towards Falls road from Seminary Ridge entrance come bombing over the hill between Seminary Springs sole entrance and Mays Chapel Road South, many times above the speed limit with less than 50 yards from that entrance. All communities South of Seminary Ave in this distance for westbound traffic usually have to stop to make a left into each community.. My own personal experience over the last. 12 years is that many drivers travelling fast when I was stopped would nearly crash into me while stopped. Some of the younger drivers going to a Falls Road private school per their window decals would give me the finger as they ran onto the northern grass because I was waiting to make a turn. Impeding their preferred path. I learned to habitually turn my left turn signal on at the Seminary Springs entrance; and check my rear view mirror to see if there were any cars cresting the first hill west of Seminary Ridge who could see my signal if observant which helped.

I recognized many of the Seminary Ridge resident commenters and would ask them to consider the width of Seminary Ave at their entrance , the better sight distance both ways on Seminary at their entrance, and the winding path and speed bumps and stop signs aplenty within their community public road network. Their sight distance on Joppa Road end is also very good.

Finally, when Boxwood, Seminary Springs, and the northern Seminary Ave communities west of Seminary Ridge were developed, many had only 1 entrance/exit. I was involved for a Client in the proposed development on Seminary Ave proposed by Grace Fellowship, a megachurch. I also worked on it as part of the Coalition in opposition. I still regret that Seminary Ridge chose not to participate in opposing that megachurch development. Fortunately, the Church Elders chose to withdraw their proposal. Respectfully,

Michael P. Tanczyn, Esq.

Michael P Tanczyn

EXHIBIT
tabbies 2

Zimbra [redacted] lagaster@unitedplanners.com

Fwd: Proposed Gr[redacted]sion

From : Michael Tanczyn <michael.tanczyn@gmail.com> Mon, Nov 08, 2021 09:43 AM

Subject : Fwd: Proposed Greenspring Manor residential subdivision

To : Lori Gaster <LAGaster@unitedplanners.com>

Caution! This message was sent from outside your organization.

Lori Could you print just my letter to Planning and public works attached . I can pick it up after our contractor leaves here this noon. Thanks, Mike

---------- Forwarded message ---------
From: **Michael Tanczyn** <michael.tanczyn@gmail.com>
Date: Wed, Jun 2, 2021 at 10:06 AM
Subject: Fwd: Proposed Greenspring Manor residential subdivision
To: <Council2@baltimorecountymd.gov>, <publicworks@baltimorecountymd.gov>, <planning@baltimorecountymd.gov>
Cc: Dave McNamara, Jr. <Davejr@gorgesco.com>, Margaret Mohler-Strahan <mmohler@me.com>

Councilman Patoka, Chief of Public Works, and Chief of Planning,
Dear Councilman and Division Chiefs
I forward my comments re Greenspring Manor proposed development.which I favor. Additionally, you may well remember that both Meadows 199 homes and Boxwood with 27 homes and 11 plus acres of open space only share 1 exit/entrance at present. I suggest the Countie's prior wisdom about bifurcating Mays Chapel North from Mays Chapel south at Seminary Ave was prudent and foresaw what has evolved as the Falls Road multiple failed intersections with 20 tomatoes in an 8 tomato can.. Any move to create a County desired cutthrough will devalue both of these communities as well as
Atapco's proposed development. Atapco has offered significant public improvement contributions to Joppa Road widening, and storm water management and their plan if improved as requested will enhance the neighboring residential communities with the possibility of shared. walking paths in common areas which I and my neighbor have striven to create for Boxwood in my 12 years here. I can tell you Seminary Springs residents utilize the Boxwood paths in good weather already. Thank you for considering my comments. Best, Mike Tanczyn
---------- Forwarded message ---------
From: **Michael Tanczyn** <michael.tanczyn@gmail.com>
Date: Wed, Jun 2, 2021 at 8:30 AM
Subject: Proposed Greenspring Manor residential subdivision
To: <jchen@baltimorecountymd.govl>
Cc: Dave McNamara, Jr. <Davejr@gorgesco.com>, Margaret Mohler-Strahan <mmohler@me.com>

Ex 2
P2

Councilman Patoka, Chief of Public Works, and Chief of Planning,

Dear Councilman and Division Chiefs,

I forward my comments re Greenspring Manor proposed development which I favor. Additionally, you may well remember that both Meadows 199 homes and Boxwood with 27 homes, and 11 plus acres of open space only share 1 exit/entrance at present. I suggest the Counties' prior wisdom about bifurcating Mays Chapel North from Mays Chapel south at Seminary Ave was prudent and foresaw what has evolved as the Falls Road multiple failed intersections with 20 tomatoes in an 8 tomato can. Any move to create a County desired cut through will devalue both of these communities as well as Atapco's proposed development. Atapco has offered significant public improvement contributions to Joppa Road widening, and storm water management and their plan if improved as requested will enhance the neighboring residential communities with the possibility of shared. walking paths in common areas which I and my neighbor have striven to create for Boxwood in my 12 years here. I can tell you Seminary Springs residents utilize the Boxwood paths in good weather already.

Thank you for considering my comments.

Best,

Mike Tanczyn

EXHIBIT 3

Fwd: Fwd: MAT EX 3

From : Michael Tanczyn <michael.tanczyn@gmail.com> Tue, Aug 30, 2022 02:12 PM
Subject : Fwd: Fwd: 3 attachments
To : Lori Gaster <LAGaster@unitedplanners.com>

Caution! This message was sent from outside your organization.

Lori, Please copy email 1x . Thanks, Mike
---------- Forwarded message ---------
From: **Michael Tanczyn** <michael.tanczyn@gmail.com>
Date: Fri, Aug 19, 2022 at 1:42 PM
Subject: Re: Fwd:
To: Rosenblatt, Adam M. <AMRosenblatt@venable.com>

Adam, Sure, I have Dr appt at 8am out by 9am. I then am due at Ladew Topiary Butterfly House by 12:20pm. Tell me when works for your schedule as I will be busy at Butterfly House until 3:50 PM and gates close at 4PM. I sent you pix for prefiling for hearing. Before we speak, I am also working on another theory that the County Planning Office when Seminary Ridge Plat was approved in March 1970 as the only connector from Seminary on the North to Joppa road on the South expressed the County's future plan for getting to Joppa in the event of traffic backups in the future on Falls at Seminary and Joppa and Falls Rds. I am verifying every other near community on North side of JoppaRd and North and South sides of Seminary Ave located west of Thornton road did not have 2 similar access points to both Seminary and Joppa road. I will let you know what I find when we speak Monday. Best, Mike Tanczyn, Esq.

On Fri, Aug 19, 2022 at 1:24 PM Rosenblatt, Adam M. <AMRosenblatt@venable.com> wrote:
Mike, can we possibly talk Monday I am out today?

Adam M. Rosenblatt, Esq. | Venable LLP
t 410.494.6271 | f 410.821.0147 | m410.294.9430
210 W. Pennsylvania Avenue, Suite 500, Towson, MD 21204

From: Michael Tanczyn <michael.tanczyn@gmail.com>
Date: Friday, Aug 19, 2022, 1:07 PM
To: Rosenblatt, Adam M. <AMRosenblatt@Venable.com>
Subject: Fwd:

Caution: External Email

Adam , As described in first. Tranch taken Friday, 8/19/2022 by Patricia Tanczyn in my presence. #4Westbound on Seminary Ave. showing sight distance to Seminary Ridge entrance and beyond the ascending hill to The Hillside at Seminary. #5Westbound Seminary Ave just beyond Hillside at Seminary entrance showing accel lane right and gradual rise in elevation on Seminary Ave ahead with Seminary Springs ahead on left and Huntspring entrance to the right. #6 Westbound Seminary Ave showing Seminary Springs sole entrance/exit on left and Huntspring sole entrance /exit on right. Note further elevation rise on Seminary beyond Seminary Springs entrance/exit and start of no shoulder after accel right lane before cresting the rise westbound. Respectfully submitted, Michael P. Tanczyn, Esq.

EXHIBIT
tabbies
4A

Zimbra MPT Ex 4 **lagaster@unitedplanners.com**

Fwd: MPT Ex 4 A1

From : Michael Tanczyn <michael.tanczyn@gmail.com> Tue, Aug 30, 2022 02:09 PM
Subject : Fwd: 3 attachments
To : Lori Gaster <LAGaster@unitedplanners.com>

Caution! This message was sent from outside your organization.

Lori, Can you print email and attachments in color 1x and I will pickup and pay tomorrow. Thanks, Mike

---------- Forwarded message ---------
From: **Michael Tanczyn** <michael.tanczyn@gmail.com>
Date: Fri, Aug 19, 2022 at 12:53 PM
Subject: Fwd:
To: Rosenblatt, Adam M. <AMRosenblatt@venable.com>

Adam, Pix taken between 12:30PM friday 8/19,2022 by Patricia Tanczyn in my presence. #1 Exiting Mays Chapel South onto Seminary Ave showing Gatehouse and no northern shoulder. # 2 Same location just East showing grassy hill no shoulder NS Seminary Ave. # 3 Westbound on Seminary Ave at Thornton Road showing width and multiple lanes towards Seminary Ridge entrance in the distance. Can these be color copied and prefiled with ALJ for my testimony. Next Tranch of pix same date and time taken by nPatricia Tanczyn in my presence described therein. respectfully submitted Michael P. Tanczyn, Esq.

---------- Forwarded message ---------
From: **Patricia Tanczyn** <ptt1221@hotmail.com>
Date: Fri, Aug 19, 2022 at 12:40 PM
Subject:
To: Michael Tanczyn <michael.tanczyn@gmail.com>



#1



Ex #32



#1
EXIT MAYS CHAPEL ROAD SOUTH TO SEMINARY AVE
8/19/2022



MATTER 4A3



#2 SEE NEXT PAGE
ENLARGEMENT
8/19/2022



#3 SEE NEXT PAGE
ENLARGEMENT
8/19/2022

Sent from my iPhone

MPT Ex #3



#2
SAME LOCATION
JUST EAST
SHOWING
GRASSY HILLY
& NO N SHOULDER
NS SEMINARY AVE
8/19/2022

Zimbra MPT Ex 4 B p4 @unitedplanners.com

Fwd:

From : Michael Tanczyn <michael.tanczyn@gmail.com> Tue, Aug 30, 2022 02:11 PM
Subject : Fwd: 3 attachments
To : Lori Gaster <LAGaster@unitedplanners.com>

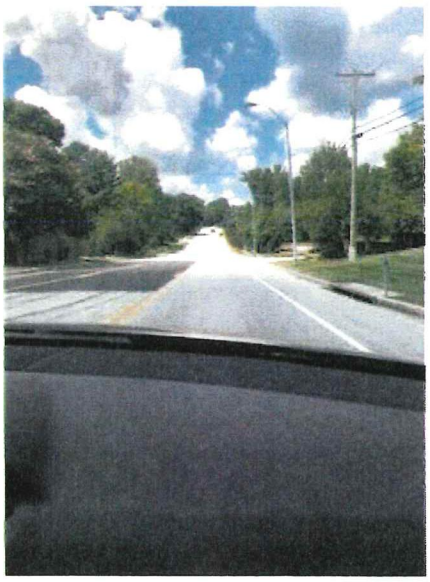
Caution! This message was sent from outside your organization.

Lori Ditto on color pix and email black copied 1x please. Thanks, Mike

---------- Forwarded message ---------
From: **Michael Tanczyn** <michael.tanczyn@gmail.com>
Date: Fri, Aug 19, 2022 at 1:06 PM
Subject: Fwd:
To: Rosenblatt, Adam M. <AMRosenblatt@venable.com>

Adam , As described in first. Tranch taken Friday, 8/19/2022 by Patricia Tanczyn in my presence. #4Westbound on Seminary Ave. showing sight distance to Seminary Ridge entrance and beyond the ascending hill to The Hillside at Seminary. #5Westbound Seminary Ave just beyond Hillside at Seminary entrance showing accel lane right and gradual rise in elevation on Seminary Ave ahead with Seminary Springs ahead on left and Huntspring entrance to the right. #6 Westbound Seminary Ave showing Seminary Springs sole entrance/exit on left and Huntspring sole entrance /exit on right. Note further elevation rise on Seminary beyond Seminary Springs entrance/exit and start of no shoulder after accel right lane before cresting the rise westbound. Respectfully submitted, Michael P. Tanczyn, Esq.

---------- Forwarded message ---------
From: **Patricia Tanczyn** <ptt1221@hotmail.com>
Date: Fri, Aug 19, 2022 at 12:41 PM
Subject:
To: Michael Tanczyn <michael.tanczyn@gmail.com>



#4 SEMINARY AVE WESTBOUND SHOWING SIGHT DISTANCE TO SEMINARY AVE/TALLY HO ROAD ENTRANCE TO SEMINARY RIDGE/HEATHERFIELDS AND BEYOND ASCENDING HILL TO HILLSIDE AT SEMINARY + 1301 WEST SEMINARY ENTRANCES/EXIT. 8/19/2022

MPT Ex 4A P5

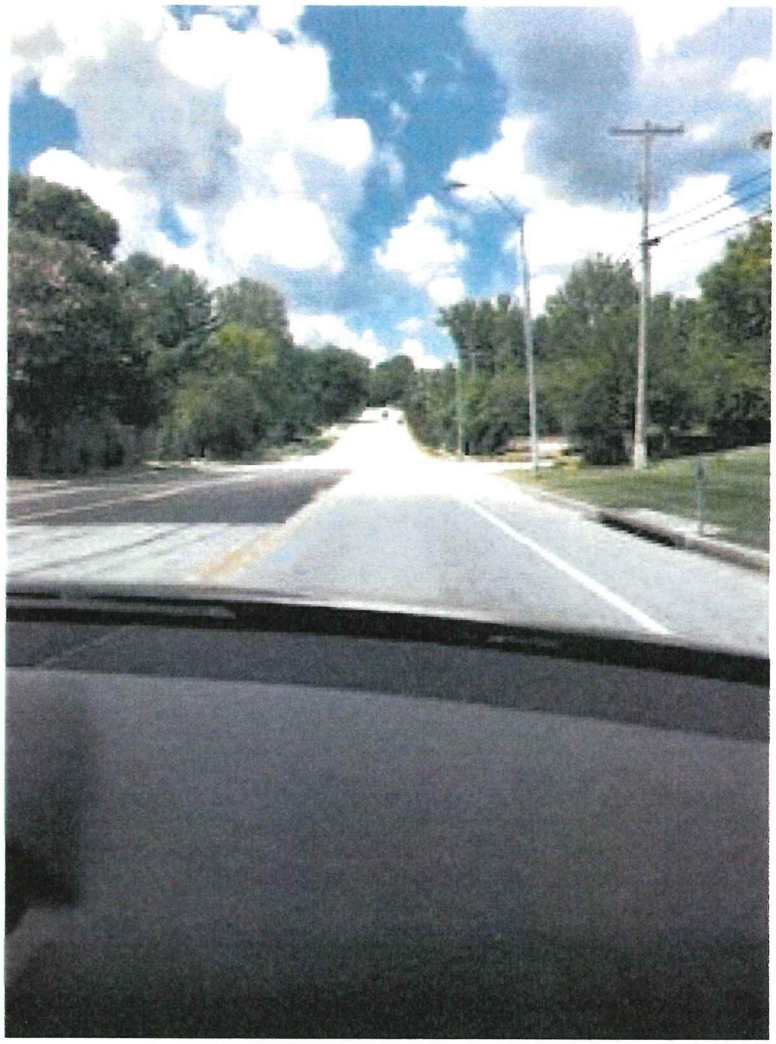


#3

SEMINARY AVE AT THORNTON ROAD POINTING WESTBOUND

8/19/2022

MPT Ex 4A P6

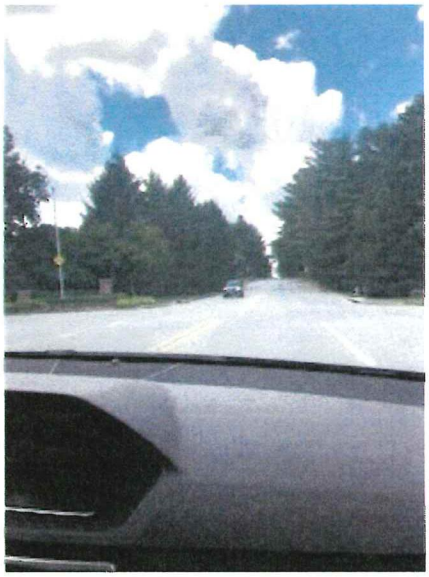


#4 ENLARGED PHOTO
8/19/2022

MPT EX # [redacted] P1



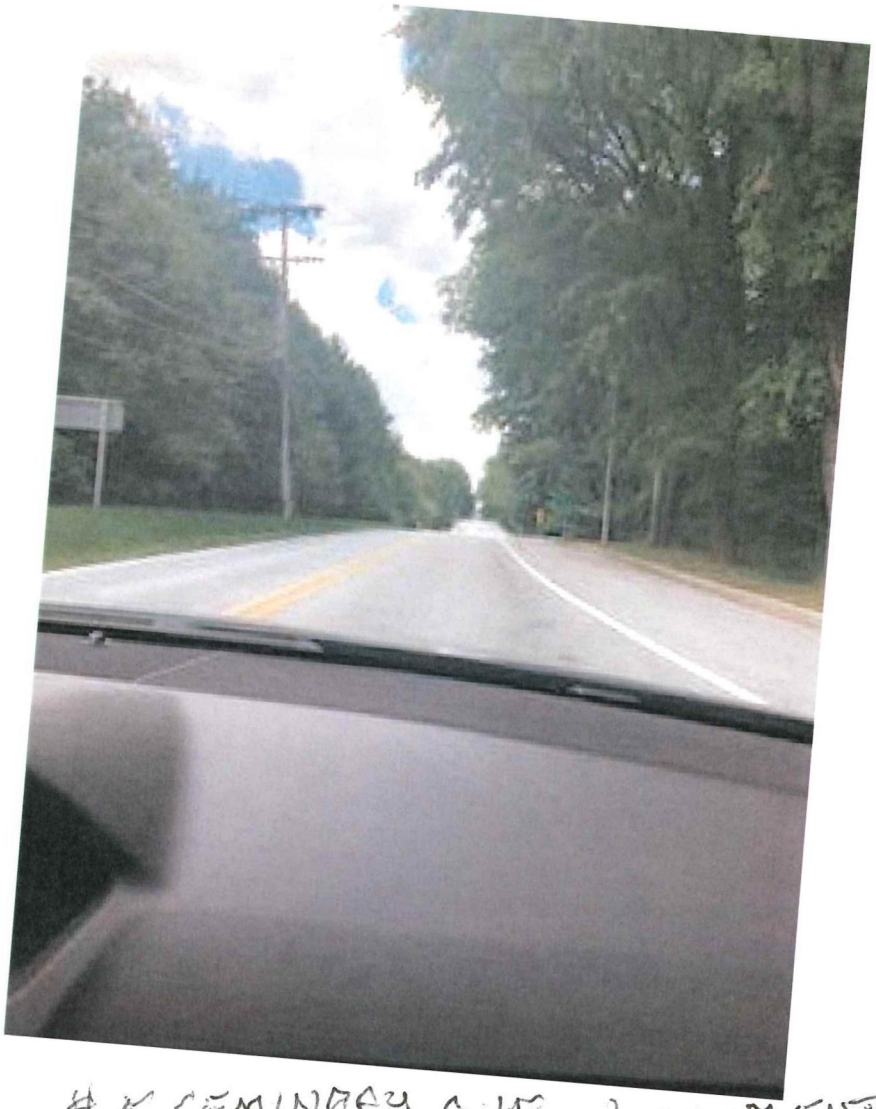
#5 SEE ENLARGED PHOTO
8/19/2022



#6 SEE ENLARGED PHOTO
8/19/2022

Sent from my iPhone

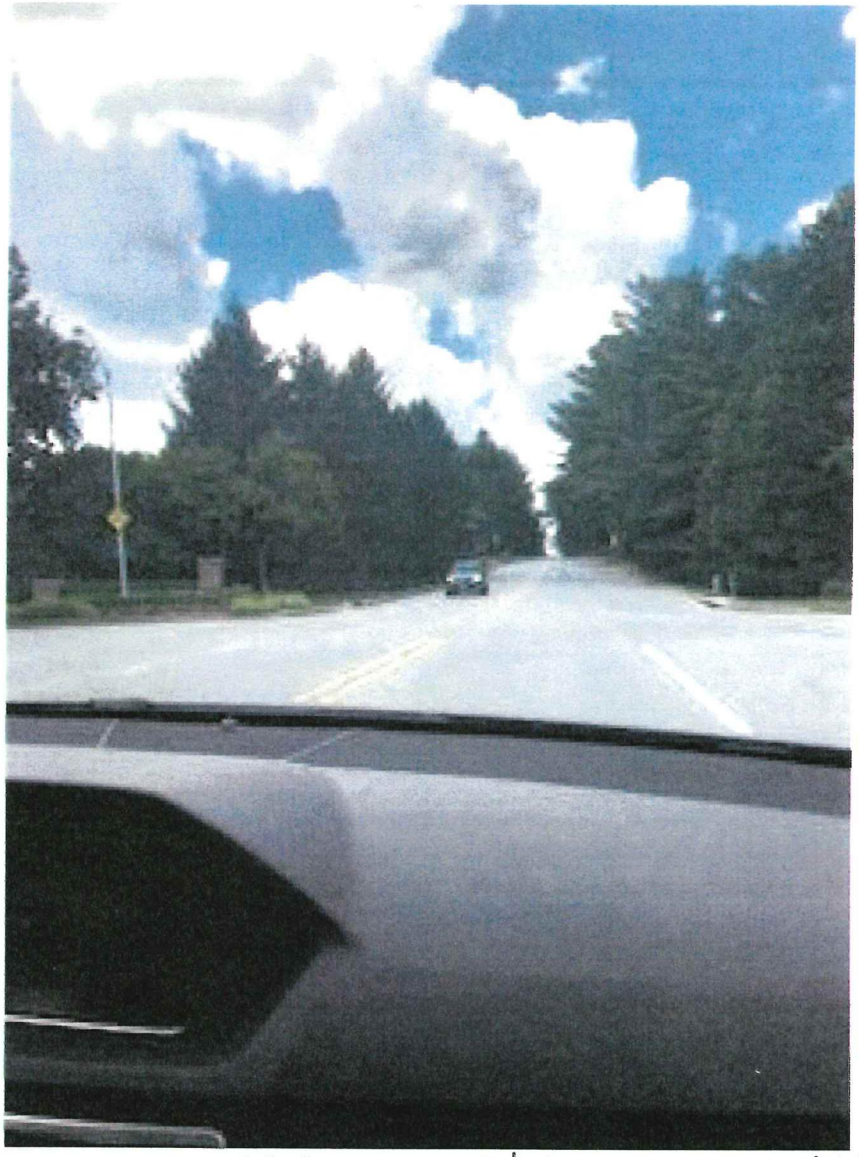
MPT Ex 4 P8



#5 SEMINARY AVE WEST OF ENTRANCE TO HILLSIDE AT SEMINARY ENTRANCE SHOWING ACCEL RIGHT LANE, NO SHOULDER LEFT SIDE OF ROAD, & GRADUAL RISE IN ELEVATION OF ROAD AHEAD BEYOND
8/19/20 2 of 2

MFT Ex 4 A

p9



8/19/2002

#6 SEMINARY AVENUE WEST OF #5 PICTURE SHOWING SEMINARY SPRINGS SOLE ENTRANCE/EXIT ON LEFT; DIRECTLY ACROSS FROM HUNTSPRING SOLE ENTRANCE/EXIT ON RIGHT, ACCEL LANE FROM SEMINARY SPRINGS AND SHORT ACCEL LANE FROM HUNTSPRING WEST WHICH ENDS AT KRONGARD 34 HOME DEVELOPMENT ACCESS LANE WHERE TREES ON RIGHT SIDE ARE SHOWN WITH NO SHOULDER NORTH SIDE SEMINARY AVE UNTIL WEST OF GATE HOUSE (SEE #1 PICTURE SIGHT DISTANCE TO MAYS CHAPEL SOUTH ROAD AND GATEHOUSE NON-EXISTENT UNTIL HILL IS CRESTED JUST PRIOR TO ENTRANCE

EXHIBIT
4B

MPT
EX 4B
PI

PIX TAKEN 10/20/2022
IN MY PRESENCE



MPT
Ex 4 B
p 2



MPT
Ex 4B
p 3



MBT
Ex 4 B
P 4



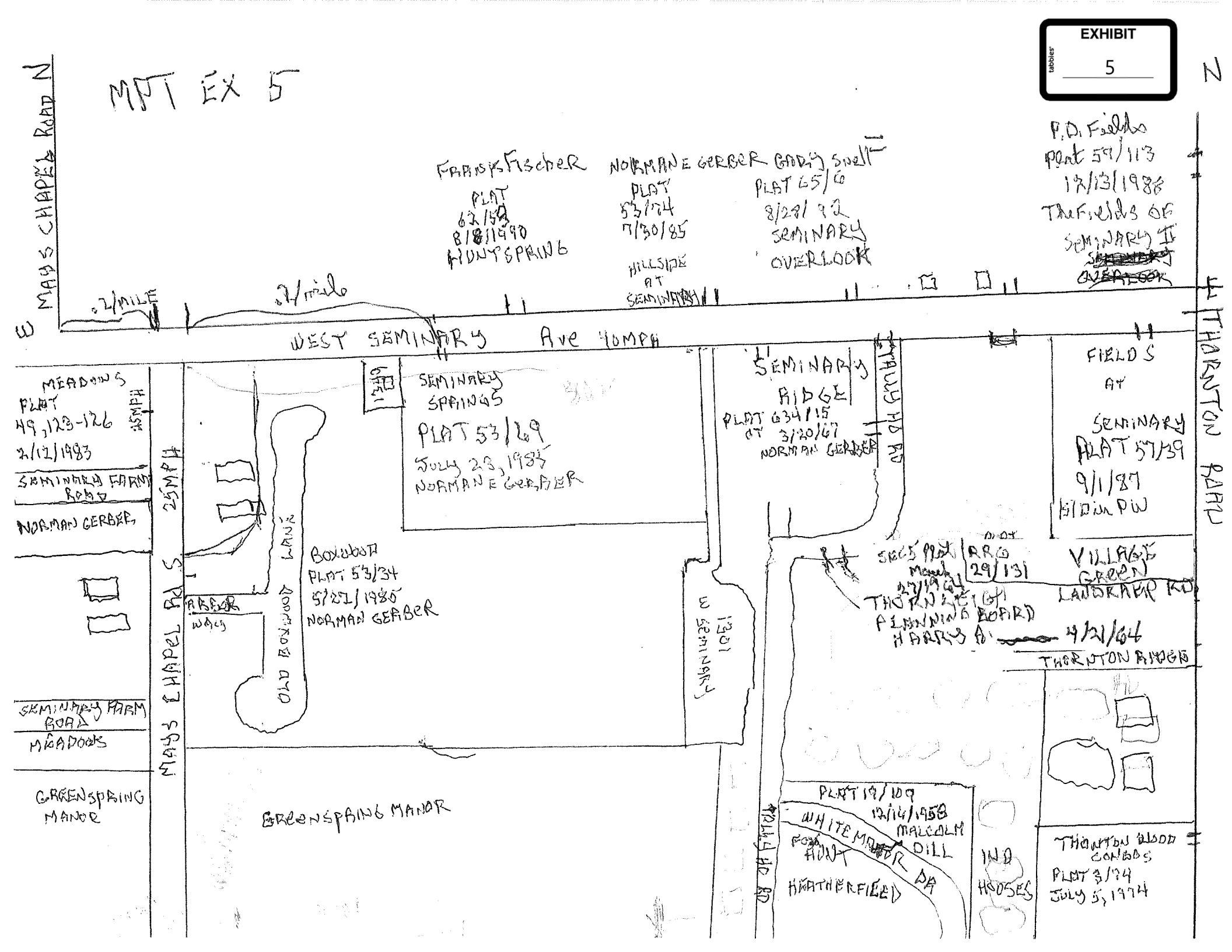
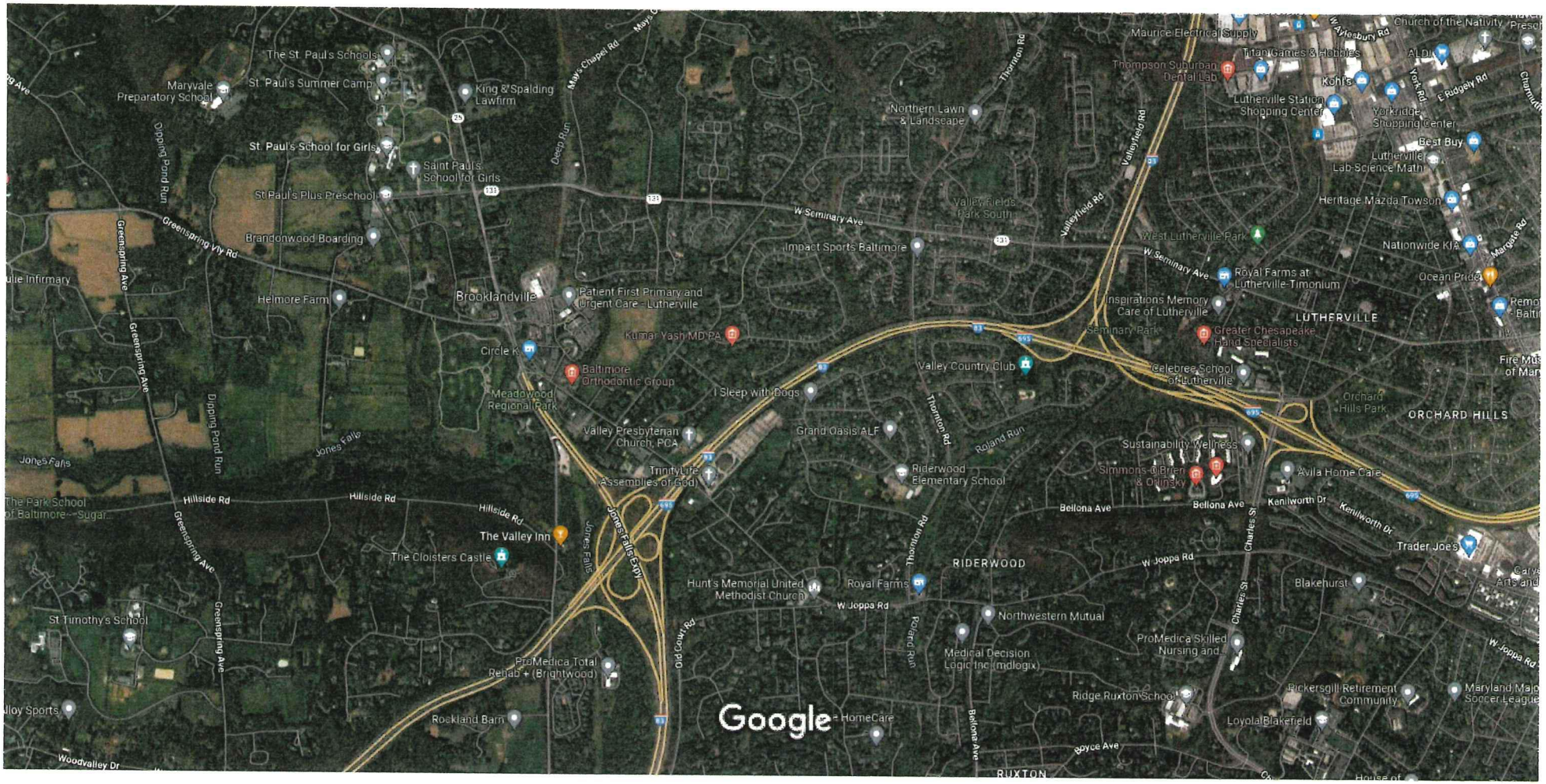


EXHIBIT
5
MPT EX 5
N
W
MAYS CHAPEL ROAD N
.2/MILE
.2/mile
WEST SEMINARY Ave 40MPH
FRANK Fischer
PLAT
62/59
8/8/1990
HUNTSPRING
NORMAN E GERBER
PLAT
53/74
7/30/85
HILLSIDE
AT
SEMINARY
GARY Snell
PLAT 65/6
8/28/92
SEMINARY
OVERLOOK
P.D. Fields
Plat 59/113
12/13/1988
The Fields OF
SEMINARY II
~~SEMINARY~~
~~OVERLOOK~~
THORNTON ROAD
MEADOWS
PLAT
49,123-126
2/12/1983
25MPH
SEMINARY FARM ROAD
NORMAN GERBER
MAYS CHAPEL RD S
25MPH
SEMINARY
SPRINGS
PLAT 53/69
JULY 23, 1985
NORMAN E GERBER
SEMINARY
RIDGE
PLAT 634/15
AT 3/20/67
NORMAN GERBER
TALLY HO RD
FIELDS
AT
SEMINARY
PLAT 57/39
9/1/87
S/D in PW
BOXWOOD
PLAT 53/34
5/22/1985
NORMAN GERBER
OLD BOXWOOD LANE
ARBOR
WAY
1301
W SEMINARY
SEC 5 Plat
March
27/1964
RRG
29/131
VILLAGE
GREEN
LANDRAKE RD
THORNLEIGH
PLANNING BOARD
HARRY A.
4/21/64
THORNTON RIDGE
SEMINARY FARM ROAD
MEADOWS
GREENSPRING
MANOR
GREENSPRING MANOR
TALLY HO RD
PLAT 19/109
12/14/1958
MALCOLM
DILL
WHITE MANOR DR
FOX
HUNT
HEATHERFIELD
IND
HOUSES
THORNTON WOOD
CONDOS
PLAT 3/74
JULY 5, 1974

EXHIBIT
tabbies
6

MPT EX 6 STUDY AREA
Google MAP

Google Maps



MPT Ex 7

EXHIBIT
tabbies
7



Kimley»Horn

SITE PLAN RENDERING

GREENSPRING MANOR
ATAPCO PROPERTIES

1 OF 1

EXHIBIT

tabbies

8



		SCALE	LOCATION	SHEET
MPT EX 8	FLOWN	1" = 200' ±		N.W.
	DATE OF		BROOKLANDVILLE	12-C

GREENSPRING MANOR
PAI No. 08-0922, 2021-0250-SPH
2310 W. Joppa Road

COMMUNITY MEMBER EXHIBIT LIST

1. Email to Jerry Chen

2. Email to Councilman, DPW, and Planning

3. Email to Adam Rosenblatt

4. A. Emails and Site Photos
   B. Site Photos

5. Summary of Plats and Approvals

6. Study Area Map

7. Site Plan Rendering

8. Brooklandville Map

JOHN A. OLSZEWSKI, JR.
County Executive

DAVID V. LYKENS, *Director*
Department of Environmental Protection and Sustainability

September 21, 2021

Mr. John P. Canoles
Eco-Science Professionals, Inc.
P.O. Box 5006
Glen Arm, MD 21057

Re: Greenspring Manor
2310 West Joppa Road
Forest Buffer Alternatives Analysis

Dear Mr. Canoles:

The Department of Environmental Protection and Sustainability (EPS) has reviewed an alternatives analysis, initially received on May 20, 2021, in accordance with Article 33, Title 3, Section 33-3-112(c) of the Law for the Protection of Water Quality, Streams, Wetlands and Floodplains. Section 33-3-112(c) states that roads and SWM and drainage devices are a few of the limited items and practices permitted in the Forest Buffer provided no other feasible alternative exists and that impacts to water quality have been minimized inasmuch as possible.

The initial analysis evaluated impacts to the required Forest Buffer Easement (FBE) for the construction of a public roadway and the creation of a stormwater quality and quantity management (SWM) facility that will serve a proposed 61-lot residential subdivision. However, this alternatives analysis was revised pursuant to our design meeting of July 28, 2021 with the development team for the widening of West Joppa Road to install a deceleration lane and to address new utility connections for the existing dwelling to remain. A second revised alternatives analysis plan further refining those water and sewer house connection designs was received by EIR on August 18, 2021 in response to our August 11, 2021 comments. A combination preliminary Forest Buffer Protection and Forest Conservation Plan (FBP/FCP) included with the analysis illustrates mitigation of the impacts at a 1:1 ratio with tree plantings that will fill in lawn and row crop areas and will delineate the Forest Buffer Easement between the resources and the proposed dwellings as well as West Joppa Road.

In all, five alternatives were evaluated for ingress/egress. Additionally, several designs were also considered for utility connections, SWM and access to the existing homestead. The preferred design of the interior "Public Road A" will result in 0.7 acres of direct impact to the100-year floodplain and FBE due to filling to elevate the roadway beyond the floodplain. An additional acre (1.0 Ac.) of secondary impact will occur, as the floodplain area upslope of the roadway connection will be excluded from being accessed by floodwaters. The other alternatives for access were rejected due to traffic safety, potential flooding, or neighborhood

concerns over excessive traffic in interior roadways. Required road widening along West Joppa Road will permanently impact 0.3 acres for the creation of a deceleration lane and the installation of a sidewalk within the existing County right-of-way. Lastly, the existing dwelling is being required to connect to metropolitan water and sewer service. Consequently, a new gravity-fall sewer connection to the County main in West Joppa Road is proposed within the limit of disturbance (LOD) associated with the removal of the existing driveway, since this dwelling will access West Joppa Road via "Public Road A". The proposed sewer line will cross the extensive floodplain and FBE at its narrowest width along the prior driveway alignment. A 0.07-acre maintenance area for the sewer would be sustained within the FBE. The FBE and floodplain to be impacted is currently maintained lawn or fallow row crop field. The applicant proposes planting over 2.07 acres within the remaining FBE as mitigation for the impacts, which would mitigate the impacts at a 1:1 ratio.

This Department has reviewed your analysis and has determined that the most feasible designs have been selected for the access road, utility connections, and SWM facility. Furthermore, we acknowledge that the mitigation described above will adequately minimize the proposed impacts to water quality, aquatic resources and the FBE. Therefore, the preferred designs of this infrastructure in the latest alternatives analysis are hereby approved in accordance with Section 33-3-112(c) of the Baltimore County Code with the following conditions:

1. The impacts to water quality and the Forest Buffer Easement shall be mitigated at a 1:1 ratio by planting 2.07 acres of Forest Buffer Easement onsite. Trees shall be native deciduous species a minimum 1-inch caliper, planted at a density of 200 stems per acre, and adequately sheltered. This mitigation can be included in the FBP/FCP for the 17,424 square feet of mitigation required as a condition of the companion forest buffer variance.

2. Any portions of the proposed Forest Buffer Easement temporarily disturbed by construction or driveway removal activities shall be stabilized at the end of each day in accordance with standard sediment control practices. Restoration seeding of disturbed areas shall be conducted with a diverse, native meadow seed mix, which **does not** contain Kentucky K-31 tall fescue.

3. The final FBP/FCP detailing the 2.07-acre FBE planting and including an itemized cost estimate must be approved by EIR prior to approval of any grading/sediment control plan for the project.

4. Impacts to the 100-year floodplain must have the necessary State and/or Federal authorizations in place prior to commencement of construction activities. Documentation of all State and Federal authorizations to impact waterways, wetlands and associated buffers shall be provided to EIR prior to County grading permit release.

5. Prior to grading permit approval, an Environment Agreement shall be signed, and a Forest Buffer Protection security based on 110% of the EIR-approved cost estimate shall be posted in accordance with the standard Forest Buffer Protection security policy. A separate Forest Conservation planting security will also be required at that time.

6. The following note must appear on all subsequent plans submitted for this project:

   - "An alternatives analysis was approved on September 21, 2021, by the Baltimore County Department of Environmental Protection and Sustainability in accordance with Section 33-3-112 of the Law for the Protection of Water Quality, Streams, Wetlands and Floodplains to facilitate infrastructure and utility connections. Conditions were placed on this approval to reduce water quality impacts, including vegetative stabilization using a native seed mix and planting in excess of 2.07 acres of fallow Forest Buffer Easement."

It is the intent of this Department to approve this alternatives analysis subject to the above conditions. Any changes to site layout may require submittal of revised plans and an amended alternatives analysis.

Please have the party responsible for meeting the conditions of this approval sign the statement on the following page and return a signed copy of this letter to this Department within 21 calendar days. Failure to return a signed copy may render this approval null and void, or may result in delays in the processing of plans for this project.

If you have any questions regarding this correspondence, please contact Michael S. Kulis or me at (410) 887-3980.

Sincerely yours,

Glenn Shaffer, Supervisor
Environmental Impact Review

c. Mr. Matt Bishop; Kimley Horn

GES/msk

****

I/we agree to the above conditions to bring my/our property into compliance with Law for the Protection of Water Quality, Streams, Wetlands and Floodplains.

Atapco Representative's Signature — Date: 10/5/21

Russel Powell
Printed Name

JOHN A. OLSZEWSKI, JR.
County Executive

DAVID V. LYKENS, *Director*
Department of Environmental Protection and Sustainability

September 21, 2021

Mr. John P. Canoles
Eco-Science Professionals, Inc.
P.O. Box 5006
Glen Arm, MD 21057

Re: Greenspring Manor
2310 West Joppa Road
Forest Buffer Alternatives Analysis

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The initial analysis evaluated impacts to the required Forest Buffer Easement (FBE) for the construction of a public roadway and the creation of a stormwater quality and quantity management (SWM) facility that will serve a proposed 61-lot residential subdivision. However, this alternatives analysis was revised pursuant to our design meeting of July 28, 2021 with the development team for the widening of West Joppa Road to install a deceleration lane and to address new utility connections for the existing dwelling to remain. A second revised alternatives analysis plan further refining those water and sewer house connection designs was received by EIR on August 18, 2021 in response to our August 11, 2021 comments. A combination preliminary Forest Buffer Protection and Forest Conservation Plan (FBP/FCP) included with the analysis illustrates mitigation of the impacts at a 1:1 ratio with tree plantings that will fill in lawn and row crop areas and will delineate the Forest Buffer Easement between the resources and the proposed dwellings as well as West Joppa Road.

In all, five alternatives were evaluated for ingress/egress. Additionally, several designs were also considered for utility connections, SWM and access to the existing homestead. The preferred design of the interior "Public Road A" will result in 0.7 acres of direct impact to the100-year floodplain and FBE due to filling to elevate the roadway beyond the floodplain. An additional acre (1.0 Ac.) of secondary impact will occur, as the floodplain area upslope of the roadway connection will be excluded from being accessed by floodwaters. The other alternatives for access were rejected due to traffic safety, potential flooding, or neighborhood

concerns over excessive traffic in interior roadways. Required road widening along West Joppa Road will permanently impact 0.3 acres for the creation of a deceleration lane and the installation of a sidewalk within the existing County right-of-way. Lastly, the existing dwelling is being required to connect to metropolitan water and sewer service. Consequently, a new gravity-fall sewer connection to the County main in West Joppa Road is proposed within the limit of disturbance (LOD) associated with the removal of the existing driveway, since this dwelling will access West Joppa Road via "Public Road A". The proposed sewer line will cross the extensive floodplain and FBE at its narrowest width along the prior driveway alignment. A 0.07-acre maintenance area for the sewer would be sustained within the FBE. The FBE and floodplain to be impacted is currently maintained lawn or fallow row crop field. The applicant proposes planting over 2.07 acres within the remaining FBE as mitigation for the impacts, which would mitigate the impacts at a 1:1 ratio.

This Department has reviewed your analysis and has determined that the most feasible designs have been selected for the access road, utility connections, and SWM facility. Furthermore, we acknowledge that the mitigation described above will adequately minimize the proposed impacts to water quality, aquatic resources and the FBE. Therefore, the preferred designs of this infrastructure in the latest alternatives analysis are hereby approved in accordance with Section 33-3-112(c) of the Baltimore County Code with the following conditions:

1. The impacts to water quality and the Forest Buffer Easement shall be mitigated at a 1:1 ratio by planting 2.07 acres of Forest Buffer Easement onsite. Trees shall be native deciduous species a minimum 1-inch caliper, planted at a density of 200 stems per acre, and adequately sheltered. This mitigation can be included in the FBP/FCP for the 17,424 square feet of mitigation required as a condition of the companion forest buffer variance.

2. Any portions of the proposed Forest Buffer Easement temporarily disturbed by construction or driveway removal activities shall be stabilized at the end of each day in accordance with standard sediment control practices. Restoration seeding of disturbed areas shall be conducted with a diverse, native meadow seed mix, which **does not** contain Kentucky K-31 tall fescue.

3. The final FBP/FCP detailing the 2.07-acre FBE planting and including an itemized cost estimate must be approved by EIR prior to approval of any grading/sediment control plan for the project.

4. Impacts to the 100-year floodplain must have the necessary State and/or Federal authorizations in place prior to commencement of construction activities. Documentation of all State and Federal authorizations to impact waterways, wetlands and associated buffers shall be provided to EIR prior to County grading permit release.

5. Prior to grading permit approval, an Environment Agreement shall be signed, and a Forest Buffer Protection security based on 110% of the EIR-approved cost estimate shall be posted in accordance with the standard Forest Buffer Protection security policy. A separate Forest Conservation planting security will also be required at that time.

6. The following note must appear on all subsequent plans submitted for this project:

   - "An alternatives analysis was approved on September 21, 2021, by the Baltimore County Department of Environmental Protection and Sustainability in accordance with Section 33-3-112 of the Law for the Protection of Water Quality, Streams, Wetlands and Floodplains to facilitate infrastructure and utility connections. Conditions were placed on this approval to reduce water quality impacts, including vegetative stabilization using a native seed mix and planting in excess of 2.07 acres of fallow Forest Buffer Easement."

It is the intent of this Department to approve this alternatives analysis subject to the above conditions. Any changes to site layout may require submittal of revised plans and an amended alternatives analysis.

Please have the party responsible for meeting the conditions of this approval sign the statement on the following page and return a signed copy of this letter to this Department within 21 calendar days. Failure to return a signed copy may render this approval null and void, or may result in delays in the processing of plans for this project.

If you have any questions regarding this correspondence, please contact Michael S. Kulis or me at (410) 887-3980.

Sincerely yours,

Glenn Shaffer, Supervisor
Environmental Impact Review

c. Mr. Matt Bishop; Kimley Horn

GES/msk

****

I/we agree to the above conditions to bring my/our property into compliance with Law for the Protection of Water Quality, Streams, Wetlands and Floodplains.

Atapco Representative's Signature — Date 10/5/21

Russel Powell
Printed Name

Eco-Science Professionals, Inc.
Consulting Ecologists

P.O. Box 5006 Glen Arm, Maryland 21057 Telephone (410) 683-7840 Fax (410) 683-7817

August 16, 2021

Mr. Michael Kulis
Baltimore County Environmental Protection & Sustainability
111 W. Chesapeake Ave, Room 319
Towson, Maryland 21204

RECEIVED
AUG 18 2021
ENVIRONMENTAL IMPACT REVIEW

RE: Greenspring Manor
2310 West Joppa Road

Dear Mr. Kulis,

Thank you for your continued review of the referenced project. As noted in your August 11, 2021 comment letter we have been working with your department to address the County Code requirements relative to the Law for the Protection fo Water Quality, Streams, Wetlands and Floodplains and the Forest Conservation Act. Your most recent comment letter outlined four issues related to our July 30, 2021 submission that required additional attention/justification. These issues and how they have been addressed are provided below:

1. Can the proposed water house connection for Lot 1, the existing home, be relocated outside the buffer?

The attached plan shows a relocated water line alignment that avoids impacts to the forest buffer. The water line has also be located to minimize impacts to specimen tree.

2. Please relocate the proposed gravity sewer connection for Lot 1 so that it will be installed within the LOD of the driveway to be removed and quantify the impacts.

The sewer line alignment as been revised and the sewer connection will be installed within the LOD of the driveway to be removed. Though the installation of the sewer is a temporary impact as the LOD will be restored to grade and revegetated, we have identified the 2,760 sq.ft. area as a permanent impact because access to the sewer line will need to be maintained within the buffer. We have proposed that a 10 foot wide access easement will be provided for the sewer line maintenance within the buffer. The 0.06 acres of permanent impact will be addressed by the planting of 0.06 acres of buffer on the site. Mitigation credit for this obligation has been added to FCE/FBE 1.

3. Show and assess impacts to specimen trees outside the FB/FC save areas.

The critical root zones for specimen trees 4, 5, 6, and 7 have been added to the plans. These trees are located within proximity of proposed improvements. In light of the CRZ locations, the sewer and water line alignments have been revised to minimize CRZ impacts. The only tree with significant root zone impact will be ST 7, a 36" white pine, and the utility improvements will result in impacts to only 26% of the CRZ and therefore the tree can retained. The final FCP will include details and specifications for root zone protection including root pruning and protective fencing.

Disturbances associated with relocation of the driveway, as was required by DEPS to minimize permanent impervious surface within the buffer, will occur within the root zone of specimen trees 3, 4 and 5. This work, however will be limited to the existing driveway footprint and will not require excavation or fill. The existing driveway will be removed and restored, over-paved, or removed/re-paved, as needed, in this area. Protective fencing will be provided to protect the adjacent root zones. We do not anticipate that this work will adversely impact the adjacent trees given that the driveway currently existing within their root zones.

4. The preliminary FCP/FBPP may have to be further revised to mitigate for additional unavoidable impacts.

The PFCP has been updated to show the critical root zones and additional tree protection measures for the specimen trees to be retained outside of any easements. The PFCP has also been updated to correct the FC worksheet calculation and the planting areas have been revised accordingly.

The FBPP has been revised to include additional mitigation area necessary to address the sewer line crossing of the buffer. Final planting schedules, specifications and details will be provided on the Final Forest Conservation and Forest Buffer Protection Plan.

Thank you again for your time and efforts in this matter. Please do not hesitate to contact me if you have any further questions.

Sincerely yours,

John Canoles

Enc.

cc: Mr. Matt Bishop; Kimley Horn
file



GREENSPRING MANOR

ALTERNATIVE ANALYSIS

prepared for:

Kimley-Horn
210 W. Pennsylvania Avenue, Suite 100
Towson, Maryland 21204

prepared by:

Eco-Science Professionals, Inc.
P.O. Box 5006
Glen Arm, Maryland 21057
(410) 683-7840

May 17, 2021
updated August 16, 2021

ALTERNATIVES ANALYSIS APPLICATION

Regulations for the Protection of Water Quality, Streams, Wetlands, and Floodplains

Part A. Applicant Information

Applicant(s):

Mr. Ron Snyder
Atapco Properties, Inc.
1 South Street, Suite 2800
Baltimore, Maryland 21202

Telephone: (443) 277-4748

Property Owner(s):

Contract Purchaser(s):

Engineer/Other Representative:

Mr. Matt Bishop
Kimley-Horn
210 W. Pennsylvania Ave., Suite 100
Towson, Maryland 21204

Telephone: (443) 792-9995

Principal Contact:

Mr. John Canoles
Eco-Science Professionals, Inc
P.O. Box 5006
Glen Arm, Maryland 21057

Telephone: (410) 683-7840

Part B. Property Information

Property Address/Location: 2310 W Joppa Road, Brooklandville, MD 21022-0285

Tax Account Number(s) 0812000275

Subdivision/Property Name: NA

Tax Map 60 **Parcel No.** 449

Acreage/Lot Size 39 acres

Zoning DR-1 and DR 2

Water: public **Sewer:** public

Part C. Describe the purpose and need for the project (e.g., a stream crossing is needed to access the property).

The project will require impacts to the 100 year floodplain and forest buffer for access to the property and for a gravity sewer connection for the existing home.

Part D. Describe the existing site constraints. This section must be accompanied by a plan as described in the instructions accompanying this application.

The 100 year floodplain and the associated forest buffer extend across the entire Joppa Road frontage on the property. To gain adequate access to the site for the proposed community the applicant will be required to provide road widening and construct the road through the floodplain and the buffer. The construction of the driveway will result in 0.7 acres of direct impact to the floodplain and the buffer but will also result in the reduction of the floodplain due to the fill required to elevate the roadway above the floodplain such that the total buffer impact in this area has been defined to be 1.7 acres.

Areas upslope of the access road that will be outside the revised floodplain limits will be used for stormwater management and associated grading.

Grading is proposed within the floodplain/forest buffer to remain to increase the floodplain storage downslope of the access road. This grading is a temporary disturbance and will be stabilized and revegetated.

Road widening along the road frontage of Joppa Road will require impacts to 0.3 acres for the road improvements and installation of a required sidewalk. These impacts will

occur within the proposed road right of way.

Unavoidable impacts to the buffer are also required to install a gravity sewer connection for the existing home. The County is requiring that the house be converted from private to public sewer and the only gravity sewer connection available is located in Joppa Road and required access through the buffer. A 0.06 acre maintenance area will be maintained within the buffer.

Overall impact permanent impact to the buffer/floodplain complex will be 2.06 acres.

The floodplain and forest buffer to be impacted by the project are currently utilized for crop production.

Part E. Describe all of the alternatives which have been investigated which could achieve the purpose and need for the project. Identify the preferred alternative, and provide supporting documentation to indicate why the remaining alternatives were eliminated from consideration.

The Baltimore County Regulations for the Protection of Water Quality, Streams, Wetlands, and Floodplains 33-3-112 (c)(2) (I) indicates that roads, bridges, trails, storm drainage, stormwater management devices and practices, and utilities approved by the Department are authorized within the forest buffer provided that an alternatives analysis has clearly demonstrated that no other feasible alternative exists and that minimal disturbance will take place. The proposed development includes impacts to the forest buffer that qualify as approved uses within the buffer. These includes the access road and associated SWM facilities, the required widening of Joppa Road, and a sewer line connection for the existing home.

Access Road/SWM -

The proposed access road will require impacts to the floodplain and buffer. Since the floodplain extends across the entire Joppa Road frontage of the property there are no viable alternatives that could avoid these impacts. The project engineer and applicant have considered other site design alternatives in an effort to reduce impacts and have found that the proposed site design is the most practical and efficient way to address the access needs of the project and the goals of the regulations.

While the road construction itself only directly impacts 0.7 acres of the site, the fill required to elevate the road above the floodplain will impact and reduce the backwater floodplain that extends across the site. As such, all areas upslope of the driveway will be removed from the floodplain and considered as part of the impact calculation. Consideration of this secondary impact on the resources was taken in the alternative analysis for the project.

The following alternate site design elements were considered for the proposed access road.

Alternate 1 - Existing Driveway Alignment

The original site designs anticipated utilizing the driveway location of the existing home as the entrance road location. This location was preferred from an engineering standpoint because it allowed for a preferred lot layout within the interior of the site. This alternate was rejected once the extent of the floodplain was determined. Constructing the road in that location would have greater impact on the floodplain as it would create more area upslope (northwest) of the driveway that would be impacted by the required floodplain fill. The floodplain configuration and resulting buffers along the eastern edge of the site also impacted the preferred and anticipated lot layout, reducing the preferred functionality of having the access road in this location.

Alternate 2 - Access from May's Chapel Road

The project engineer considered the possibility of using May's Chapel Road as the primary access to the site to avoid impacts to the floodplain/buffer along Joppa Road. This alternative, however, would not reduce the impact on the floodplain/buffer because the property fronts on Joppa Road and the project will be required to provide an entrance to Joppa Road for emergency vehicle access. Due to the nature of the emergency access, this road would have to be elevated above the floodplain and would result in impacts to the buffer.

Mays Chapel Road is a narrow community road with limited road width. The use of this access point was not selected for the primary access to the site because the adjacent community has expressed opposition to this proposal. In an effort to appease community concerns about traffic that would flow through the existing community and for safety and emergency access, the use of Mays Chapel Road is limited to an emergency access connection between the proposed community and the adjacent neighborhood.

Alternate 3 - Shift Access Alignment to the Northwest

The project engineer investigated the possibility of shifting the access road alignment to the northwest, toward the property line, to reduce the floodplain impacts upslope of the access road. This alternate was rejected because it would require a curved entrance drive that would require much more paving than the proposed alignment. This alignment also does not allow for stormwater management to be installed outside the 100 year floodplain, unless that too was elevated above the floodplain on the southeast side of the road. Filling to create the SWM facilities on the downslope side of the driveway would result in comparable impacts to the floodplain and buffer, as compared to the proposed alignment, thus making the alternative undesirable.

Alternate 4 - Lowered elevation of roadway

By lowering the access road the extent of the floodplain could be maintained over the road, similar to condition of the existing driveway. This alternate could reduce the overall impact to the floodplain and buffer, however, would not provide safe access to the site during a flood event. If the driveway is not elevated above the floodplain it could be underwater and inaccessible during a flood and therefore this option was rejected.

Alternate 5 - Use of Flood By-pass Culverts in Access Road

The fill to elevate the roadway out of the floodplain causes the reduction of the floodplain upslope of the driveway. This indirect impact could be reduced if culverts were installed within the roadway fill to allow flood waters to move through the road fill and into its full extent upslope of the roadway. This alternate was rejected because the calculated floodplain extends offsite into the adjoining developed office park and this alternate would leave those offsite properties at risk for flooding. By addressing the flooding condition onsite, downslope of the roadway, this project can help eliminate this offsite flooding issue.

Joppa Road Widening -

There are no alternatives possible for the required road widening. This work is necessary to ensure traffic flow is safe and efficient for the proposed community and traffic users on Joppa Road. Because the floodplain/buffer extends across the entire frontage of the lot there is no way to make these improvements without impacting the buffers. The road improvements and sidewalk have been required by the County and therefore are not at the discretion of the applicant.

Sewer Connection -

The existing home is currently served by private water and sewer services. As part of the development plan, the home will be upgraded to public water and sewer. Unfortunately, due to the elevation of the home and the available sewer line connections, there are no gravity sewer connections available that will not result in impacts to the forest buffer. The applicant has been able to find a water line connection route that will tie into the proposed community to avoid buffer impacts for this use, but connecting the sewer into the future community lines would require a grinder pump service which is not the preferred method by the County. The use of the grinder pump has increased risk of failure that can cause secondary release issues. Given that the gravity sewer connection can be installed in a location well outside the standard stream buffers and avoids all direct stream/wetland issues, this alternative is the most practicable for the project. Further, to minimize impacts within the buffer, the sewer line will be run within the footprint of the existing driveway to be removed. This means that the overall disturbance within the buffer will be minimized to the extent required to remove the driveway.

A ten foot wide sewer access right of way is proposed over the sewer connection to allow for future maintenance. This area will not be planted or placed within a Forest Conservation Easement and may be mowed periodically to maintain access to the sewer line. No impervious surface or other formal uses will be permitted within this maintenance right of way and it will continue to be within the recorded Forest Buffer Easement.

Part F. Describe how the impacts associated with the proposed alternative will be minimized.

The proposed project has avoided all wetland and buffer impacts for the lot development of the project. The only impacts to the forest buffer are associated with a broad backwater floodplain that is currently utilized for crop production.

The proposed road alignment and design will minimize resource impacts by its location and configuration. The road impacts are situated toward the outer edge of the backwater floodplain and will help to reduce the flow of water potential on an adjacent property.

During construction the impacts associated with the proposed alternative will be minimized by using appropriate sediment and erosion control techniques

Further, to offset the proposed impacts the floodplain and forest buffer the project will provide afforestation of the buffer and floodplain to remain on the site at a 1:1 ratio. This conversion of the floodplain and buffer from active agriculture to forest and field will significantly improve water quality of the adjacent waters.

A Preliminary Forest Buffer Protection Plan is included with the application.

DEVELOPMENT PLAN CONFERENCE COMMENTS
EPS Project ID: M210057
Project: Greenspring Manor
Address/Location: 2310 West Joppa Road
Date & Time: August 11, 2021 @ 10:00 am
Assignee: Jeannette Applauso, P.E.

STORMWATER MANAGEMENT COMMENTS:

Note: Comments are advisory in nature and may or may not be applicable to this project. More specific comments will be provided with review of the Development Plan.

1. The Stormwater Management Act of 2007:

   A. The Developer is responsible to address the requirements of the Baltimore County Code, Section 33-4.

   B. Provisions for exemptions, waivers and variances for Stormwater Management (SWM) are described in this document. Exemptions, waivers and variances should be applied for and granted (or denied) by the Department before Development Plan approval is given.

   C. The Concept SWM plan must be approved by EPS before Development Plan approval.

   D. Conditions for recording plats and approving grading and building permits, as related to SWM, are also described in this document. The developer is advised to be aware of these conditions and include them in planning the project to avoid unnecessary delays.

2. General Engineering Requirements:

   A. Water quality storage volume (WQ_v), Recharge Storage Volume (Re_v) and Channel Protection Volume (Cp_v) are to be addressed using Environmental Site Design to the maximum extent practicable. If the development is in certain designated inter-jurisdictional watersheds or, if deemed necessary by Baltimore County, Extreme Flood Protection (Qf) or 100 year peak management may also be required.

   B. Please refer to the 2000 Maryland Stormwater Design Manual, Volumes I & II including the Stormwater Act of 2007 revisions, chapters on Environmental Site Design for general design criteria. Hydrology shall be in accordance with the June 1986 version of TR-55. After August 2010, project must use the latest NRCS Soil Classification at their website. Refer to Chapter 5, Environmental Site Design. Provide Environmental Site Design (ESD) to the maximum extent practicable using small-scale stormwater management practices, non-structural techniques and better site planning to mimic natural hydrologic runoff characteristics and minimize the impact of land development on water quality.

   C. The developer is responsible for addressing all applicable requirements of Federal, State and Local agencies, whether within or outside of Baltimore County, having jurisdiction over water quality, streams or wetlands.

   D. SWM Best Management Practices (BMP's) are also subject to review and approval by the Baltimore County Soil Conservation District (SCD).

E. SWM BMP's, which outfall to a Baltimore County right of way storm drain system or flood plain, will be reviewed concurrently by the Developers Plan Review (PAI) and EPS.

F. Site design must maintain, to the maximum extent possible, predevelopment drainage patterns and characteristics. Diversion of drainage is discouraged and EPS reserves the right to prohibit drainage diversions it finds detrimental.

3. Maintenance Requirements:

A. Private maintenance of SWM BMP's is acceptable. A Deed of Declaration and Easement must be executed by the developer guaranteeing maintenance of, and County access to SWM BMP's before the SWM permit security may be released. SWM BMP's in residential subdivisions are to be maintained privately by a Homeowners Association and shall be designed according to the requirements for public facilities.

4. Guidelines for Development Plan Approval:

A. Show type, size and location of all Best Management Practices (BMP's) on the Development Plan. Concept stormwater management plans must be approved.

B. Show that all outfalls from BMP facilities and bypass areas are "suitable" as defined by the Baltimore County Department of Public Works and the Department of Environmental Protection and Sustainability (EPS).

C. Show that the BMP facilities do not create a hazard. An example of a hazard would be an embankment dam located such that, in the event of a breach failure, down stream life or property is endangered.

D. List on the Development Plan any waiver or variance and give the date of approval by Baltimore County.

DEVELOPMENT PLAN CONFERENCE COMMENTS
EPS Project ID: M210057
Project: Greenspring Manor

5. Site - Specific Comments:

In addition to the above, each project will be given a brief review by EPS's Stormwater Management personnel, and a set of specific comments will be provided. The developer is responsible for addressing the following site-specific comments:

A. Water quality volume (WQ_v), Recharge storage volume (Re_v), Channel protection volume (Cp_v) are required using ESD to the MEP.
B. Overbank flood protection volume (Qp) and extreme flood volume (Qf) are also required for this project.
C. All site runoff must be conveyed to a suitable outfall without adversely affecting the receiving wetland, watercourse, waterbody, storm drain or adjacent property.
D. Provide BMP and ESD volume computations and drainage area maps indicating any by-pass areas at least four weeks prior to the Development Plan Conference. Include plans showing area(s) needed for BMP(s) as dictated by the MDE design manual. These areas should be separated to include pre-treatment, WQ_v and quantity management areas as required.
E. Building and grading permits will not be issued until BMP, ESD plans are approved.
F. This project is subject to the stormwater management requirements that Baltimore County adopted on July 2, 2001 and revised under the 2007 MDE SWM regulations for Environmental Site Design (ESD) features.
G. BMP and ESD sizing computations must be referenced to the 2000 and 2007 Maryland Stormwater Design Manual by page and section.
H. Chain link fence, meeting current County Standards, shall be used on all stormwater management facilities in residential developments that require fencing. Fence construction shall be in accordance with State Highway Administration Standard Details 690.01 and 690.02 and Maryland State Highway Administration Standard Specifications for Construction and Material Section 914.
I. Please note; on use III or IV waters, the maximum release time for Cp_v shall be 12 hours.
J. 3:1 interior slopes are required for all proposed structural stormwater management facilities.
K. Show proposed storm drains and swales to verify how proposed runoff gets to the BMP's, ESD's and SWM facilities. Swales needed as part of the SWM strategy need to be within a D&U Easement so as to be able to enforce that their operation will be maintained.
L. Show proposed BMP facility or pond contours and outfalls.
M. Show all BMP locations, easements, etc. needed to support the computations and regulations.
N. Diversion of drainage is discouraged. Diversions greater than 1 acre need to be submitted to and approved by Baltimore County Department of Public Works (DPW) prior to acceptance by EPS.
O. ESD practices must be shown in easements on plan with bearings and distances.
P. The concept stormwater plans were approved on June 23, 2021. We suggest to move the location of the swm facility as far as possible outside of the 100 year floodplain. Flood water back-up in the swm facility will increase maintenance and repair cost of the facility. Once the final swm plans are approved, the project will meet the Baltimore County Code Development Plan requirements.
Q. This project **does not** meet the Baltimore County Code Development Plan requirements at this time.

c:

BALTIMORE COUNTY, MARYLAND
INTER-OFFICE MEMORANDUM

TO: C. Pete Gutwald
Director, Permits, Approvals and Inspections

DATE: 3/1/2021

FROM: Steve Lafferty
Director, Department of Planning

SUBJECT: CONCEPT PLAN CONFERENCE
Project Name: Greenspring Manor
PAI #VIII-0922

GENERAL INFORMATION:

Applicant Name: Atapco Properties, INC.
1 South Street, Suite 2800
Location: Baltimore, MD, 21202
Council District: Second
Growth Tier: I
Zoning: DR 1, DR 2
Acres: 39.4 gross acres ±

Surrounding Zoning and Land Use:

North:	DR 2	Residential
South:	DR 1	Residential
East:	DR 1, DR 2	Residential
West:	O3	Office

Project Proposal:

The project proposes 61 single-family homes to be built on 39.4 ±acres of land zoned DR 1 and DR 2. The site is mostly wooded and has environmental floodplains and wetlands. There is currently one existing house, which is to remain.

Project History:

The project exhibits no development history at this time.

Other Anticipated Actions and Additional Review Items:

☐ Variance	☒ Complete Streets*	☒ School Impact Analysis
☐ Special Exception	☐ Scenic Route	☐ PUD
☒ Special Hearing- F Level Intersection, Basic Services	☐ Compatibility	☐ Design Review Panel
☐ RTA Modification	☒ Section 260 Standards*	☐ Referral to Planning Board
☐ Waiver	☒ Pattern Book*	☐ Other –

* Information about the requirements for these items is located on the Baltimore County web page at www.baltimorecountymd.gov/devrev

MEETINGS

Post Submission Community Input Meeting:		Pre-Concept Plan Conference:	
Concept Plan Conference:	3/9/2021	Community Input Meeting:	
Development Plan Conference:		Administrative Law Judge's Hearing:	

ANALYSIS

Master Plan:
The *Master Plan 2020* "Land Management Area Plan" designation for the subject site is Community Conservation Area. (CCA). Baltimore County's CCAs encompass the County's more densely populated, established communities. Nearly 75% of the County's residents live in CCAs, where there are a wide range of housing choices, small-town scale commercial centers and employment centers.
The CCA land management area designation is intended to protect and invest in these older communities, and revitalize their commercial hubs.

The "Proposed Land Use, Baltimore County Smart Coded" designation is T3 Sub-Urban. The T-3 transect is characterized by low-density residential areas, adjacent to higher zones that contain mixed-use. Landscaping is naturalistic and setbacks are relatively deep. Blocks may be large and the roads irregular to accommodate natural conditions.

School Impact:
This development is subject to Section 32-6-103 of the Baltimore County Code, Adequate Public Facilities. A school impact analysis is required with development plan submittal. Information is available at the following web site:

www.baltimorecountymd.gov/Agencies/planning/devrevandlanduse/adequatepublicschoolfacilities.html

The proposal is within the boundaries of the following schools:

Riderwood Elementary School
Ridgley Middle School
Dulaney High School

EVALUATION AND RECOMMENDATION

The receipt of additional information from the Community Input Meeting or other sources may generate further comments at the Development Plan Conference.

Special Variance Request:

The applicant has requested the county to permit its development in an F level traffic shed as delineated on the 2020 Basic Services Map. This includes the intersection of West Joppa Road and Falls Road/I-83. The development access is within this failing traffic shed. The Department has received the applicant's memorandum regarding the traffic study analysis conducted in September 2020 which proposes improvements to mitigate the traffic in order to obtain a variance from the Basic Serves requirement.

The Department of Planning considers this site to be overdeveloped. Many of the lot sizes are not compatible to the surrounding neighborhoods. The number of lots should be decreased to allow for larger lots and would help achieve a design that could accommodate future improvements and yard space without the need for relief. As designed, the proposed development does not achieve the vision of the Master Plan 2020 nor the Comprehensive Manual of Development Policies. The Master Plan 2020 recommends low-density residential development adjacent to higher zones consisting of mixed-uses. The site also would require extensive grading. The site should be redesigned to minimize cut and fill while using the natural features of the land pursuant to the Comprehensive Manual of Development Policies as well as Section 260 of the BCZR.

Residential Performance Standards:

The Baltimore County Zoning Regulations (BCZR) § 260 requires the Director of the Department of Planning to provide a finding to the Hearing Officer for all residential development of four lots or more in Baltimore County that is located within the Urban/Rural Demarcation Line. The applicant is to provide to the Department of Planning a pattern book for review. The development must be consistent with the spirit and intent of the entirety of §260 of the BCZR.

Additional Comments on the Plan:

1. Redesign the overall layout with uniform lot sizes that are more compatible with the surrounding developments and more compatible with the description of the Master Plan 2020 T3 Transect designation. Design road alignments in relation to existing topography. Minimize cutting and filling and avoid mass grading of large tracts of land where possible pursuant to the CMDP, Residential Guidelines, page 43. Coordinate building design, site layout, and grading so that grade transitions are gradual and respect the existing topography pursuant to the Baltimore County Zoning Regulations section 260.2.A.3.
2. Remove lot 7 or reallocate it within the redesign of the site plan to avoid the awkward siting of this home.
3. Show front building orientations for all proposed dwellings.
4. Provide a landscape and lighting plan to the County Landscape Architect for review and approval. Proposed lighting should be designed at a pedestrian scale and not create light spillage onto adjacent properties.
5. Add a note to the plan stating that the maximum height for a dwelling in a DR 1/DR 2 zone is 50 feet.
6. Confirm with the Office of Zoning Review whether additional on street parking for overflow will be required.
7. Confirm by note on the plan that a minimum private yard area of 500 contiguous square feet with

a minimum 15-foot dimension is provided for each proposed lot to ensure adequate yard space pursuant to the Comprehensive Manual of Development Policies (CMDP) page 33.

8. The Department of Planning will require the proposed cul-de-sacs to be designed pursuant to Baltimore County Zoning Regulation section 260.4.B. Landscaped islands will be required unless an unforeseen hardship exists notwithstanding the proposed layout design.
9. Provide all architectural designs to the Department of Planning for review and approval. The architecture should be included in the required pattern book and show all proposed housing types. The proposed architecture should indicate proposed dimensions, materials, and colors to be used.
10. All proposed signage should be included in the pattern book and comply with section 450 of the Baltimore County Zoning Regulations. Signage should include proposed sign type, dimensions, materials, and colors.
11. Indicate in the required pattern book that Lots 2, 6, 8,15,36,46,47,52,53 and 61 are high visibility lots. It should be demonstrated in the required pattern book how these lots meet the higher quality of design pursuant to the Baltimore County Manual of Regulations Section 260.6. The pattern book should include square footage for the side facades with element count requirements.
12. The plan states that the proposed 52,000 sf HOA space will be an active recreation field. Cleary indicate whether this will be an open multi-use field, sports field, tot lot, or other open space. Clarify whether the proposed open space within the 100-year floodplain is acceptable per county open space standards.
13. Confirm with the Department of Environmental Protection and Sustainability that all wetland, floodplain and forest buffer setbacks are being met.
14. Make a clear distinction on the plan between the labeled forest buffer and forest conservation easement areas.
15. Indicate if there are any specimen trees on the site. These trees should be preserved to the fullest extent possible.
16. Any fencing around the storm water management ponds should be of high quality materials as approved by the Baltimore County Landscape Architect.
17. It is a policy of the Department of Planning that the homeowner should be able to have an open projection (i.e. rear decks) of at least 10' without requiring individual zoning relief.
18. Changes in building location or orientation, or proposed driveway location, at the time of building permit may require a determination from the zoning office of a possible amendment to the Final Development Plan (FDP). If, at the building permit stage, it is anticipated that dwelling footprints may be reversed, or that the location of garages may change from front- to side-loaded, or vice versa, a detailed alternative typical lot layout plan should be included in the pattern book.

Prepared by:

Brett M. Williams

Brett M. Williams

Division Chief:

Jenifer G. Nugent

SL/JGN/MK/BMW/

GREENSPRING MANOR

2310 W. JOPPA ROAD

TIMONIUM, MARYLAND

ENVIRONMENTAL

1. A TOPOGRAPHIC SURVEY WAS PREPARED BY MTPLS IN SEPTEMBER OF 2020. THIS INFORMATION WAS SUPPLEMENTED BY AVAILABLE BALTIMORE COUNTY GIS DATA.
2. BOUNDARY INFORMATION WAS GENERATED FROM A FIELD RUN SURVEY PREPARED BY MTPLS IN SEPTEMBER OF 2020.
3. THE EXISTING HOME IS SERVED BY A PRIVATE SEPTIC SYSTEM. THE SEPTIC SYSTEM WILL BE PROPERLY ABANDONED BY A LICENSED CONTRACTOR AND THE HOME WILL BE CONNECTED TO THE PUBLIC SEWER SYSTEM.
4. TO OUR KNOWLEDGE THERE ARE NO KNOWN UNDERGROUND STORAGE TANKS ON THIS SITE.
5. NO KNOWN HAZARDOUS MATERIALS AS DEFINED BY SECTION 7-101 OF THE ENVIRONMENTAL ARTICLE OF THE ANNOTATED CODE OF MARYLAND EXIST ON SITE.
6. THE SITE IS NOT LOCATED WITHIN A HISTORIC DISTRICT OR IS IDENTIFIED AS SUCH UNDER THE PROCEDURES OF SECTION 9-611 OF THE STATE FINANCE AND PROCUREMENT ARTICLE OF THE ANNOTATED CODE OF MARYLAND ON THIS SITE.
7. SOILS WERE OBTAINED FROM THE NRCS SOIL DATA MART WEBSITE.
8. THIS SITE IS NOT LOCATED WITHIN THE CHESAPEAKE BAY CRITICAL AREA.
9. A PORTION OF THE SITE IS LOCATED WITHIN A BALTIMORE COUNTY DEFINED 100 YEAR FLOODPLAIN. THE PROJECT IS NOT LOCATED WITHIN A FEMA FLOODPLAIN.
10. NO FOREST CONSERVATION EASEMENTS OR PRELIMINARY FOREST CONSERVATION PLAN HAVE BEEN SUBMITTED TO THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.
11. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO KNOWN SIGNIFICANT REGULATED PLANT OR WILDLIFE COMMUNITIES PER DEPS OR MARYLAND DEPARTMENT OF NATURAL RESOURCE DATA.

ADJACENT PROPERTY INFORMATION

1. 13 OLD BOXWOOD LANE
PAMELA BOYER
TAX ID: 2000004431
DEED REF.: 11943/569
PLAT REF.: 53/34

2. 15 OLD BOXWOOD LANE
CAROL RENICK
TAX ID: 2000004432
DEED REF.: 33222/36
PLAT REF.: 53/34

3. 17 OLD BOXWOOD LANE
THOMAS AND CAROL BRADLEE
TAX ID: 2000004433
DEED REF.: 40440/243
PLAT REF.: 53/34

4. 19 OLD BOXWOOD LANE
LORRAINE BRONSTEIN TRUSTEE
TAX ID: 2000004434
DEED REF.: 23741/666
PLAT REF.: 53/34

5. 21 OLD BOXWOOD LANE
ALVIN AND MARI KALIN
TAX ID: 2000004435
DEED REF.: 30668/144
PLAT REF.: 53/34

6. 23 OLD BOXWOOD LANE
JAMES AND DOROTHY TRUITT
TAX ID: 2000004436
DEED REF.: 28568/25
PLAT REF.: 53/34

7. 76 SEMINARY FARM RD.
FRED AND JAN HALLAHAN
TAX ID: 1900006676
DEED REF.: 24347/683
PLAT REF.: 49/124

8. 74 SEMINARY FARM RD.
THOMAS AND PATRICIA PRICE
TAX ID: 1900006677
DEED REF.: 7540/474
PLAT REF.: 49/124

9. 72 SEMINARY FARM RD.
THOMAS ONEILL JR. AND WILLIAM HALE
TAX ID: 1900006678
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10. 70 SEMINARY FARM RD.
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TAX ID: 1900006679
DEED REF.: 31148/40
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11. 68 SEMINARY FARM RD.
HARJIT AND JAIMALA SINGH
TAX ID: 1900006680
DEED REF.: 7646/129
PLAT REF.: 49/124

12. 66 SEMINARY FARM RD.
MELVILLE AND BETSY YEARLEY
TAX ID: 1900006681
DEED REF.: 31642/00
PLAT REF.: 49/124

13. FALLS RD.
BRIAN RYMOND
TRUSTEE & JAMES GRIEMPLER
TAX ID: 0912591081
DEED REF.: 38972/329
PLAT REF.: NONE

14. 2340 W JOPPA RD.
VALLEY CENTER PARTNERSHIP
TAX ID: 1800002866
DEED REF.: 5868/533
PLAT REF.: 44/40

15. 2343 W. JOPPA RD.
MD MICHAEL INC.
TAX ID: 0902551280
DEED REF.: 29728/56
PLAT REF.: NONE

16. FALLS RD.
BRIAN RAYMOND
TRUSTEE & JAMES GRIEMPLER
TAX ID: 0912591082
DEED REF.: 38972/329
PLAT REF.: NONE

10753 FALLS RD.
FOXLEIGH PAVILIONS LIMITED PARTNERSHIP
TAX ID: 2200011094
DEED REF.: NONE
PLAT REF.: 64/19
COMMERCIAL

2330 W. JOPPA RD.
MULLAN GREENSPRING LLLP
TAX ID: 0809035026
DEED REF.: 17268/497
PLAT REF.: NONE
COMMERCIAL

2324 W. JOPPA RD.
JOPPA GREEN LIMITED PARTNERSHIP LLLP
TAX ID: 0823078210
DEED REF.: 17319/272
PLAT REF.: NONE

JOPPA RD.
STATE OF MD. STATE ROADS COMMISSION
TAX ID: 0919848407
DEED REF.: 3203/28

2323 W. JOPPA RD.
DEPT. OF PUBLIC SAFETY AND CORRECTION SERVICES
TAX ID: 0919848410
DEED REF.: 3509/1387
PLAT REF.: NONE

8200 TALLY HO RD.
GEORGE KENNEDY
TAX ID: 0805063690
DEED REF.: 2219/130
PLAT REF.: 19/109

8202 TALLY HO RD.
JAMES HIGGINS & CATHERINE HALLOCK
TAX ID: 0819012770
DEED REF.: 7137/514
PLAT REF.: 19/109

8204 TALLY HO RD.
NADINE HENCHCLIFFE
TAX ID: 0802059700
DEED REF.: 31112/307
PLAT REF.: 19/109

8206 TALLY HO RD.
DOUGLAS AND PAMELA
TAX ID: 0813023130
DEED REF.: 33328/322
PLAT REF.: 19/109

8208 TALLY HO RD.
GLENN AND BARBARA ABBOTT
TAX ID: 0808070080
DEED REF.: 8437/461
PLAT REF.: 19/109

8210 TALLY HO RD.
DENNIS AND NANCY BURNS
TAX ID: 0819010720
DEED REF.: 5383/866
PLAT REF.: 19/109

8212 TALLY HO RD.
DANIEL AND ELIZABETH RADEBAUGH
TAX ID: 0805071090
DEED REF.: 43541/395
PLAT REF.: 19/109

8214 TALLY HO RD.
SHARON BERG
TAX ID: 0801097200
DEED REF.: 14877/504
PLAT REF.: 19/109

8216 TALLY HO RD.
CHARLES AND LINDA WALCUTT
TAX ID: 0803030370
DEED REF.: 22750/173
PLAT REF.: 19/109

8300 TALLY HO RD.
LYNN MANTHY
TAX ID: 0816017060
DEED REF.: 43514/360
PLAT REF.: 19/109

8302 TALLY HO RD.
JAMES AND SUSAN WEISS
TAX ID: 1600014964
DEED REF.: 5913/648
PLAT REF.: 37/113

8304 TALLY HO RD.
THOMAS AND PAMELA LLOYD
TAX ID: 1600014963
DEED REF.: 29611/36
PLAT REF.: 37/113

TALLY HO RD.
BALTIMORE COUNTY MD
TAX ID: 2000007023
DEED REF.: NONE
PLAT REF.: 37/113

SEMINARY RIDGE OWNERS ASSOCIATION, INC.
TAX ID: 1600014972
DEED REF.: 5572/189
PLAT REF.: 37/113

6 TRELAWNY CT
JAMES AND MARY JO GARY
TAX ID: 1600014960
DEED REF.: 16669/449
PLAT REF.: 37/113

8 TRELAWNY CT
MICHAEL AND BETH VOLLEY
TAX ID: 1600014959
DEED REF.: 18853/743
PLAT REF.: 37/113

10 TRELAWNY CT
MARK AND CAROLYN ROBINSON
TAX ID: 1600014958
DEED REF.: 20884/726
PLAT REF.: 37/113

1301 W. SEMINARY AVE.
LINDA NICHOLS
TAX ID: 1800005977
DEED REF.: 14919/415
PLAT REF.: NONE

OLD BOXWOOD LANE PFAM INCORPORATED
TAX ID: 2000004443
DEED REF.: NONE
PLAT REF.: 53/34

LEGEND

CONTOUR LINE (1' INTERVAL)	MONITORING WELL
DEPRESSION CONTOUR	WATER VAULT
CONCRETE CURB W/ GUTTER	CLEANOUT
CONCRETE LINE	SANITARY SEWER MANHOLE
BUILDING LINE	ELECTRIC METER
EDGE OF PAVEMENT	LIGHT POLE
SANITARY SEWER	GAS VALVE
STORM DRAIN	MAJOR TREE
WOOD LINE	MINOR TREE (FLOWERING)
OVERHEAD WIRE	MINOR TREE (EVERGREEN)
WALL	SHRUB
FLOOD PLAIN	
FOREST BUFFER	

SIGN	
WATE VALVE	
HAND BOX	
UTILITY POLE	
INLET	
PINE TREE	
DECIDUOUS TREE	

SLOPE PROTECTION NOTE:

1. THE DEVELOPMENT AS PROPOSED WILL INCLUDE PROTECTIVE MEASURES ADEQUATE TO PREVENT EROSION OR SLOUGHING OF ANY STEEP SLOPES AS DEFINED BY SECTION 32-4-101 OF THE BALTIMORE COUNTY CODE AND PROMOTE THE PRESERVATION OF THE NATURAL TOPOGRAPHIC FEATURES OF THE STEEP SLOPE. THIS WILL BE ACHIEVED BY PROVIDING EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE REQUIREMENTS OF THE BALTIMORE COUNTY SOIL CONSERVATION DISTRICT AND THE CURRENT STATE OF MARYLAND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.



VICINITY MAP

SCALE: 1" = 1000'

BENCHMARKS

NAME	NORTHING (NAD 83)	EASTING (NAD 83)	ELEVATION (NAVD 88)	DESCRIPTION
DAVA 320	636,767.82	1,405,686.70	292.63	BRASS DISC
DAVA 320 AZ MK	637,715.75	1,405,953.28	290.31	BRASS CAP
419A	637,027.56	1,406,235.87	282.89	CAPPED PIPE

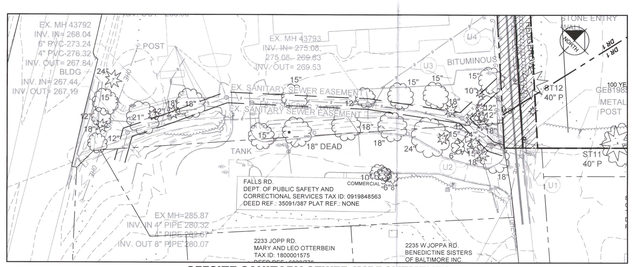
1. PROPERTY OWNER:
DOROTHEA LANKFORD
PO BOX 285
2310 W JOPPA ROAD
BROOKLANDVILLE, MD. 21022

2. DEVELOPER:
ATAPCO PROPERTIES, INC.
ATTN: RON SNYDER
DIRECTOR OF LAND DEVELOPMENT
1 SOUTH STREET, SUITE 2800
BALTIMORE, MD. 21202
TEL.: 410-347-7217

3. PLAN PREPARED BY:
KIMLEY-HORN
ATTN: MATTHEW BISHOP, PLA, LEED AP
210 WEST PENNSYLVANIA AVENUE
TOWSON, MD 21204
TEL.: 443-792-9995

SITE DATA:

1.	SITE ADDRESS:	2310 WEST JOPPA ROAD
2.	ZONING:	DR-1 & DR-2
3.	SITE AREA:	
	GROSS	±39.4 ACRES
	NET	±39.4 ACRES
4.	EXISTING LAND USE:	RESIDENTIAL / FIELDS
	PROPOSED LAND USE:	SINGLE-FAMILY DETACHED RESIDENTIAL
5.	PROPERTY INFORMATION:	
A.	TAX ACCOUNT NUMBER:	0812000275
B.	TAX MAP:	60
C.	PARCEL:	449
D.	DEED REFERENCE:	42953/411
E.	COUNCILMANIC DISTRICT:	2
F.	ELECTION DISTRICT:	8
G.	CENSUS TRACT:	4087.04
H.	TAX MAP GRID/PARCEL:	457BD4, 457BD3
I.	ZONING MAP:	060A3
J.	WATERSHED:	JONES FALLS
K.	GROWTH TIER:	1 SERVED BY PUBLIC SEWER AND INSIDE URDL
L.	SCHOOLS:	
	ELEMENTARY	RIDERWOOD ES
	MIDDLE	RIDGELY MS
	HIGH	DULANEY HS



OFFSITE SANITARY SEWER IMPROVEMENTS 1"=60'

SITE CONSTRAINTS PLAN 1"=60'

SOILS DATA

SYMBOL	SOIL SERIES	SLOPE	HYDRIC	HYDROLOGIC CLASSIFICATION	WITHIN LOD?
BoA	BALTIMORE GRAVELLY LOAM	0-3%	NO	B	Y
ChB	CONESTOGA SILT LOAM	3-8%	NO	B	Y
ChB	CONESTOGA SILT LOAM	0-8%	NO	B	Y
HoB	HOLLINGER SILT LOAM	3-8%	NO	B	Y
HoC	HOLLINGER SILT LOAM	8-15%	NO	B	Y
UaD	UDORTHENTS	15-25%	NO	C	Y
UaB	URBAN LAND-UDORTHENTS COMPLEX	0-8%	NO	D	Y
WkA	WILTSHIRE SILT LOAM	0-3%	NO	C	Y
WkB	WILTSHIRE-URBAN LAND COMPLEX	0-8%	NO	C	Y

ENVIRONMENTAL INFORMATION

EXISTING	EXIST.	NOT FIELD DEL.	FIELD VERIFIED	
X		X	X	TOPOGRAPHY AND STREET GRADES (MIN 5 FOOT CONTOUR APPROPRIATELY LABELED
X		X	X	SLOPES GREATER THAN 25%
X		X	X	100 YEAR FLOODPLAIN
X		X	X	SOILS MAPPED ACCORDING TO SOIL SURVEY, BALTIMORE COUNTY, MD
X		X	X	STREAMS, SEEPS, PONDS OR OTHER WATER BODIES SHOWN ON SITE AND WITHIN 200 FT. OF SITE BOUNDARIES
X		X	X	WETLANDS
X		X	X	FOREST BUFFER LIMITS INCLUDING ADJUSTMENTS FOR STEEP SLOPES AND/OR ERODIBLE SOILS
X		X	X	LAND COVER ON OR WITHIN 200 FEET OF SITE.
		X		SIGNIFICANT REGULATED PLANT OR WILDLIFE COMMUNITIES
		X		WELLS ON SITE OR WITHIN 100 FEET OF SITE
X		X	X	SEPTIC ON SITE OR WITHIN 100 FEET OF SITE
		X		UNDERGROUND FUEL TANKS ON SITE AND WITHIN 100 FEET OF SITE
		X		SOIL EVALUATION TESTS (PERC TESTS) PERFORMED: YES___ NO_X
		X		SITE WITHIN 500 FEET OF MAJOR HIGHWAY: YES__ NO_X

EXISTING BUILT CONDITIONS

EXISTING	NOT EXISTING	
X		LOCATIONS OF EXISTING BUILDINGS WITHIN 200 FT. OF SITE BOUNDARIES
X		LOCATION OF EXISTING ROADS WITHIN 200 FT. OF SITE BOUNDARIES
	X	DESIGNATED HISTORIC SITES AS PER LANDMARKS PRESERVATION COMMISSION OR THE MD HISTORIC TRUST INVENTORY
	X	DESIGNATED SITES AS PER THE MARYLAND ARCHEOLOGICAL SURVEY
	X	SIGNIFICANT VIEWS
X		SIGNIFICANT FEATURES (SPECIMEN TREES, BUILDINGS, STREETSCAPES, ETC.)
X		LAND USES ON AND WITHIN 200 FT. OF SITE
X		ROADS RIGHT-OF-WAY AND EASEMENTS

COUNTY ADOPTED PLANS

EXISTING	NOT EXISTING	CONFORMANCE	
X		X	BALTIMORE COUNTY MASTER PLAN 2020
	X		COMMUNITY OR REVITALIZATION PLAN(S)
	X		RECREATION AND PARKS PLAN
	X		STREETSCAPE PLAN
	X		GREENWAYS PLAN
	X		BALTIMORE CO. PEDESTRIAN/BICYCLE PLAN
	X		DESIGN REVIEW PANEL AREA
	X		OTHER

RECEIVED
DEC 16 2021
DEPARTMENT OF PERMITS APPROVALS AND INSPECTIONS

PA## - 08-0922
TRACKING # - May-2021-00001

No.	REVISIONS	DATE	BY

Kimley»Horn
160 PORTER ST, SUITE 400, BALTIMORE, MD 21230
PHONE: 443-743-3370
WWW.KIMLEY-HORN.COM

KHA PROJECT 114000001
DATE: 2/5/2021
SCALE: AS SHOWN
DESIGN BY: MAB
DRAWN BY: MAB
CHECKED BY: MAB

CONCEPT PLAN
SITE CONSTRAINTS PLAN

GREENSPRING MANOR
(2310 WEST JOPPA ROAD)
PREPARED FOR
ATAPCO PROPERTIES

BALTIMORE COUNTY, MD
COUNCILMANIC DISTRICT
ELECTION DISTRICT

SHEET NUMBER
1 OF 2

GREENSPRING MANOR

2310 W. JOPPA ROAD

TIMONIUM, MARYLAND

DEVELOPMENT PLANS REVIEW

1. THIS PROJECT IS LOCATED WITHIN THE URBAN RURAL DEMARCATION LINE.
2. THE SITE IS LOCATED WITHIN A LEVEL OF SERVICE F AS SHOWN ON THE 2020 BASIC SERVICES MAP TRANSPORTATION ZONE. A SPECIAL VARIANCE WILL BE SOUGHT IN CONJUNCTION WITH THIS DEVELOPMENT PLAN.
3. THE SITE IS LOCATED WITHIN AN AREA OF CONCERN AS SHOWN ON THE 2020 BASIC SERVICES MAP SEWER DEFICIENT AREAS AND AREAS OF CONCERN.
4. THE SITE IS NOT LOCATED IN A DEFICIENT AREA FOR PUBLIC WATER AS SHOWN ON THE 2020 BASIC SERVICES MAP WATER SUPPLY AREA.
5. TRAFFIC SHALL BE PROVIDED FOR PHYSICALLY HANDICAPPED PERSONS AT ALL STREET INTERSECTIONS WITH DETECTABLE WARNING AREAS. PER STANDARD DETAILS R-36A AND R-36B.
6. SIDEWALKS WILL BE PROVIDED ALONG ALL PUBLIC ROADS AND WILL MEET ALL STATE HIGHWAY ADMINISTRATION STANDARDS FOR CONSTRUCTION.
7. STREET LIGHTS SHALL BE INSTALLED ALONG ALL PUBLIC ROADS.
8. ALL SIGNS WILL CONFORM TO BALTIMORE COUNTY ZONING CODE, SECTIONS 450 OR THE APPROPRIATE RELIEF WILL BE REQUESTED.
9. STEAM AND GENERATOR EMISSIONS TESTING WILL BE DEVELOPED IN TWO PHASES.
10. TOTAL ADT GENERATED BY THE SITE= 600

ENVIRONMENTAL AREAS

DESCRIPTION	SQUARE FOOTAGE
EXISTING FLOODPLAIN	391,500 ±
PROPOSED FLOODPLAIN	393,200 ±
EXISTING FOREST BUFFER	609,480 ±
PROPOSED FOREST BUFFER	303,200 ±
PROPOSED FOREST CONSERVATION	42,814 ±
PROPOSED FOREST BUFFER AND FOREST CONSERVATION	270,693 ±

PLANNING

1. THE1, SERVED BY PUBLIC SEWER AND INSIDE URDL, PER BALTIMORE COUNTY MY NEIGHBORHOOD WEBSITE.
2. THERE ARE NO KNOWN BUILDINGS, PROPERTIES, OR SITES WITHIN THE PROPOSED DEVELOPMENT AREA THAT ARE LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES, THE MARYLAND INVENTORY OF HISTORIC PROPERTIES LIST, THE NATIONAL REGISTER OF HISTORIC PLACES, OR THE MARYLAND ARCHEOLOGICAL SURVEY.
3. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR NATIONAL HISTORIC DISTRICTS.

OPEN SPACE

1. OPEN SPACE REQUIRED - 60 UNITS (60 NEW + 1 EXISTING) X 1,000 S.F. = 60,000 S.F. OPEN SPACE.
2. OPEN SPACE PROVIDED - 61.000 S.F.

   OPEN SPACE NOTES
   1. LOCAL OPEN SPACE SHALL BE IN COMPLIANCE WITH THE LOCAL OPEN SPACE MANUAL, LATEST EDITION.
   2. TEMPORARY OPEN SPACE BOUNDARY MARKERS, TREE PROTECTION DEVICES AND FOUR FOOT HIGH SNOW FENCING OR APPROVED EQUIVALENT SHALL BE INSTALLED PRIOR TO ANY CLEARING OR GRADING.
   3. WITHIN THE AREA SHOWN AS OPEN SPACE, DISTURBANCE BEYOND THAT WHICH IS SHOWN ON THE DEVELOPMENT PLAN SHALL NOT BE ALLOWED WITHOUT PRIOR APPROVAL FROM THE DEPARTMENT OF RECREATION AND PARKS.

ZONING

1. EXISTING ZONING DR-1 & DR-2
2. THIS DEVELOPMENT IS SUBJECT TO THE COMPREHENSIVE MANUAL OF DEVELOPMENT POLICIES (SECTION 504.2), AND THE COUNTY LANDSCAPE MANUAL (SECTION 409.6.A.1). THIS DEVELOPMENT WILL COMPLY AND BE CONSISTENT WITH ALL OF THE AFOREMENTIONED REGULATIONS, STANDARDS, GUIDELINES, AND POLICIES OR THE PROPER RELIEF WILL BE REQUESTED.
3. ALL SIGNS WILL CONFORM TO BALTIMORE COUNTY ZONING CODE, SECTIONS 450 OR APPROPRIATE RELIEF WILL BE REQUESTED.

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   PLAT REF.: 53/34
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   TAX ID: 2000004435
   DEED REF.: 30680/144
   PLAT REF.: 53/34
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   DEED REF.: 28568/25
   PLAT REF.: 53/34
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    PLAT REF.: 49/124
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    TAX ID: 1900006680
    DEED REF.: 17446/129
    PLAT REF.: 49/124
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    TAX ID: 1900006681
    DEED REF.: 31642/30
    PLAT REF.: 49/124
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    TAX ID: 0912091081
    DEED REF.: 38972/129
    PLAT REF.: NONE
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    VALLEY CENTER PARTNERSHIP
    TAX ID: 1900002865
    DEED REF.: 5868/533
    PLAT REF.: 44/40
15. 2345 W. JOPPA RD.
    JOPPA-MD-I, INC.
    TAX ID: 0902851280
    DEED REF.: 29728/56
    PLAT REF.: NONE
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DEPT. OF PUBLIC SAFETY AND CORRECTION SERVICES
TAX ID: 0919846410
DEED REF.: 35091/387
PLAT REF.: NONE

FALLS RD.
DEPT. OF PUBLIC SAFETY AND CORRECTIONAL SERVICES TAX ID: 0919846563
DEED REF.: 35091/387 PLAT REF.: NONE

2233 JOPP RD.
MARY AND LEO OTTERBEIN
TAX ID: 1800001575
DEED REF.: 4722/41
PLAT REF.: 40/107

2235 W JOPPA RD.
BENEDICTINE SISTERS OF BALTIMORE INC.
TAX ID: 1800001573
DEED REF.: 8722/41
PLAT REF.: 40/107

8200 TALLY HO RD.
GEORGE KENNEDY
TAX ID: 0805063690
DEED REF.: 22119/330
PLAT REF.: 19/109

8202 TALLY HO RD.
JAMES HIGGINS & CATHERINE HALLOCK
TAX ID: 0818012770
DEED REF.: 7137/514
PLAT REF.: 19/109

8204 TALLY HO RD.
NADINE HENCHCLIFFE
TAX ID: 0802059200
DEED REF.: 31112/207
PLAT REF.: 19/109

8206 TALLY HO RD.
DOUGLAS AND PAMELA
TAX ID: 0813023130
DEED REF.: 33328/322
PLAT REF.: 19/109

8208 TALLY HO RD.
GLENN AND BARBARA ABBOTT
TAX ID: 0809070080
DEED REF.: 8437/461
PLAT REF.: 19/109

8210 TALLY HO RD.
DENNIS AND NANCY BURNS
TAX ID: 0819010720
DEED REF.: 5383/866
PLAT REF.: 19/109

8212 TALLY HO RD.
DANIEL AND ELIZABETH RADEBAUGH
TAX ID: 0805071090
DEED REF.: 43541/395
PLAT REF.: 19/109

8214 TALLY HO RD.
SHARON BERG
TAX ID: 0801097200
DEED REF.: 14877/504
PLAT REF.: 19/109

8216 TALLY HO RD.
CHARLES AND LINDA WALCUTT
TAX ID: 0803038370
DEED REF.: 22750/173
PLAT REF.: 19/109

8300 TALLY HO RD.
LYNN MANTHY
TAX ID: 0816017060
DEED REF.: 43514/360
PLAT REF.: 19/109

TALLY HO RD.
BALTIMORE COUNTY MD TAX ID: 0802000314
DEED REF.: 2814/413 PLAT REF.: 19/109

8302 TALLY HO RD.
JAMES AND SUSAN WEISS
TAX ID: 1600014964
DEED REF.: 5913/646
PLAT REF.: 37/113

TALLY HO RD.
BALTIMORE COUNTY MD
TAX ID: 2000007023
DEED REF.: NONE
PLAT REF.: 37/113

8304 TALLY HO RD.
THOMAS AND PAMELA LLOYD
TAX ID: 1600014963
DEED REF.: 29611/36
PLAT REF.: 37/113

SEMINARY RIDGE OWNERS ASSOCIATION, INC.
TAX ID: 1600014972
DEED REF.: 5572/189
PLAT REF.: 37/113

6 TRELAWNY CT
JAMES AND MARY JO GARY
TAX ID: 1600014960
DEED REF.: 15669/449
PLAT REF.: 37/113

8 TRELAWNY CT
MICHAEL AND BETH VOLLEY
TAX ID: 1600014959
DEED REF.: 18853/743
PLAT REF.: 37/113

10 TRELAWNY CT.
MARK AND CAROLYN ROBINSON
TAX ID: 1600014958
DEED REF.: 20884/726
PLAT REF.: 37/113

1301 W. SEMINARY AVE.
LINDA NICHOLS
TAX ID: 1800005977
DEED REF.: 14918/416
PLAT REF.: NONE

OLD BOXWOOD LANE PFAM INCORPORATED
TAX ID: 2000004443
DEED REF.: NONE
PLAT REF.: 53/34

FIRE MARSHAL

1. PROPOSED BUILDINGS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO MEET THE APPLICABLE PROVISIONS OF THE BALTIMORE COUNTY FIRE PREVENTION CODE.
2. LANDSCAPING OR OTHER OBSTRUCTIONS SHALL NOT BE PLACED AROUND THE PERIMETER OF THE BUILDING SHALL BE OF A TYPE THAT WILL NOT INTERFERE WITH EMERGENCY APPARATUS ACCESS WHEN THEY MATURE. NFPA 1141, 4.2.6?.
3. A CRUSHER RUN ROAD FOR ACCESS TO BUILDINGS AND REQUIRED WATER SUPPLIES SHALL BE AVAILABLE FOR THE USE BY EMERGENCY FIRE APPARATUS AND CAPABLE OF HANDLING EMERGENCY APPARATUS WEIGHING 75,000 LBS. WHEN CONSTRUCTION OF ANY BUILDING IS UNDER ROOF, IN ACCORDANCE WITH THE BALTIMORE COUNTY FIRE PREVENTION CODE, SECTION 29-2.3.1.

VEHICLE AND BIKE PARKING

1. PARKING
   REQUIRED PARKING
   SINGLE FAMILY ATTACHED
   61 UNITS @ 2 SPACE / DWELLING UNIT = 122 PARKING SPACES
   TOTAL REQUIRED SPACES = 122 PARKING SPACES
   PROVIDED PARKING SPACES
   GARAGE PARKING SPACES 122 PARKING SPACES
   DRIVEWAY PARKING SPACES 122 PARKING SPACES
   TOTAL 244 PARKING SPACES
2. REQUIRED BICYCLE PARKING SPACES 1/2 , 04 = 3
3. PROVIDED BICYCLE PARKING SPACES 9 SPACES

ADDITIONAL INFO

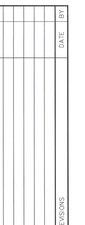
ANTICIPATED ACTIONS:
1. VARIANCES: NONE
2. SPECIAL VARIANCE: TO PERMIT BUILDING PERMITS IN AN F LEVEL TRAFFIC SHED AS DELINEATED ON THE 2020 BASIC SERVICES MAP.
3. WAIVERS: 28' PAVING ON A 50' ROW IN LIEU OF 30' PAVING ON A 50' ROW
4. ADMINISTRATIVE ADJUSTMENTS: NONE
5. OTHER: NONE
6. CONSISTENCY WITH DESIGN MANUALS: YES

LEGEND

CONTOUR LINE (1' INTERVAL)
DEPRESSION CONTOUR
CONCRETE CURB W/ GUTTER
CONCRETE LINE
BUILDING LINE
EDGE OF PAVEMENT
SANITARY SEWER
STORM DRAIN
WOOD LINE
OVERHEAD
WALL
FLOOD PLAIN
FOREST BUFFER

MONITORING WELL
WATER VAULT
CLEANOUT
SANITARY SEWER MANHOLE
ELECTRIC METER
LIGHT POLE
GAS VALVE
MAJOR TREE
MINOR TREE (FLOWERING)
MINOR TREE (EVERGREEN)
SHRUB

SIGN
WATE VALVE VAULT
HAND BOX
UTILITY POLE
INLET
PINE TREE
DECIDUOUS TREE



VICINITY MAP

SCALE: 1" = 1000'

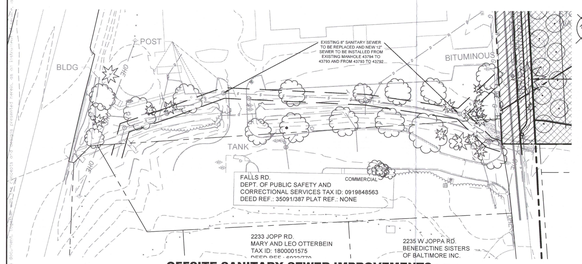
BENCHMARKS

NAME	NORTHING (NAD 83)	EASTING (NAD 83)	ELEVATION (NAVD 88)	DESCRIPTION
SHA 320	636,167.82	1,405,699.79	290.03	BRASS DISC
SHA 320 AZ MK	637,711.75	1,405,853.28	290.31	BRASS CAP
416A	637,027.98	1,406,235.87	282.89	CAPPED PIPE

LOT AREAS

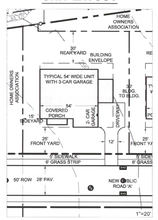
LOT NO.	SF	ACRE
LOT 1	146,936+/-	3.373+/-
LOT 2	11,870+/-	.727+/-
LOT 3	8,410+/-	.193+/-
LOT 4	8,410+/-	.193+/-
LOT 5	8,410+/-	.193+/-
LOT 6	7,205+/-	.165+/-
LOT 7	17,615+/-	.405+/-
LOT 8	12,173+/-	.279+/-
LOT 9	12,453+/-	.285+/-
LOT 10	12,453+/-	.285+/-
LOT 11	12,453+/-	.285+/-
LOT 12	11,451+/-	.262+/-
LOT 13	8,809+/-	.202+/-
LOT 14	9,623+/-	.220+/-
LOT 15	14,231+/-	.326+/-
LOT 16	14,250+/-	.327+/-
LOT 17	16,643+/-	.382+/-
LOT 18	14,018+/-	.321+/-
LOT 19	12,803+/-	.293+/-
LOT 20	10,707+/-	.245+/-
LOT 21	11,688+/-	.268+/-
LOT 22	12,216+/-	.280+/-
LOT 23	12,347+/-	.283+/-
LOT 24	11,218+/-	.257+/-
LOT 25	9,053+/-	.207+/-
LOT 26	11,555+/-	.267+/-
LOT 27	17,244+/-	.395+/-
LOT 28	21,344+/-	.489+/-
LOT 29	13,487+/-	.309+/-
LOT 30	11,233+/-	.257+/-
LOT 31	11,392+/-	.261+/-
LOT 32	12,265+/-	.281+/-
LOT 33	13,484+/-	.309+/-
LOT 34	13,154+/-	.301+/-
LOT 35	14,360+/-	.329+/-
LOT 36	9,827+/-	.225+/-
LOT 37	8,165+/-	.187+/-
LOT 38	9,819+/-	.225+/-
LOT 39	10,337+/-	.237+/-
LOT 40	12,282+/-	.281+/-
LOT 41	12,653+/-	.290+/-
LOT 42	11,463+/-	.263+/-
LOT 43	9,652+/-	.221+/-
LOT 44	8,549+/-	.196+/-
LOT 45	8,619+/-	.197+/-
LOT 46	11,384+/-	.261+/-
LOT 47	12,048+/-	.276+/-
LOT 48	10,535+/-	.241+/-
LOT 49	12,288+/-	.282+/-
LOT 50	12,533+/-	.296+/-
LOT 51	13,144+/-	.301+/-
LOT 52	11,011+/-	.252+/-
LOT 53	14,656+/-	.336+/-
LOT 54	9,090+/-	.208+/-
LOT 55	8,562+/-	.196+/-
LOT 56	8,244+/-	.189+/-
LOT 57	8,168+/-	.187+/-
LOT 58	9,315+/-	.213+/-
LOT 59	9,315+/-	.213+/-
LOT 60	9,315+/-	.213+/-
LOT 61	11,466+/-	.263+/-

SITE CONSTRAINTS PLAN

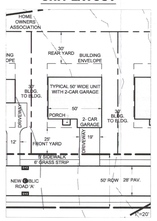


OFFSITE SANITARY SEWER IMPROVEMENTS 1"=60'

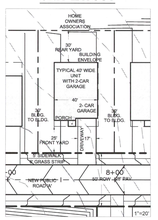
TYPICAL 54' WIDE UNIT LAYOUT



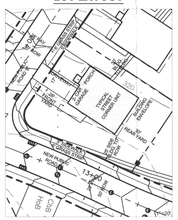
TYPICAL 50' WIDE UNIT LAYOUT



TYPICAL 40' WIDE UNIT LAYOUT



TYPICAL CORNER LOT LAYOUT



CONCEPT LANDSCAPE PLAN CALCULATIONS

Baltimore County Planting Unit Calculation	PU Credit Requirement Rate	Quantity	Required Planting Units (PU)
Condition A Adjacent and Interior Roads			
Adjacent Road	1 PU/ 40 LF	500	13
Interior Road	1 PU/ 20 LF	3730	187
Condition I Stormwater Management			
Perimeter of Cut	1 PU/ 15 LF	2800	187
Condition M Rear and Side Yards			
Rear and Side Yards	1 PU/ 15 LF	1115	74
Condition R Open Space			
Open Space	1 PU/ 1,500 SF	61000	41
	Total Required Planting Units (PU)		613
Baltimore County Proposed Planting Unit Calculation	**PU Credit Requirement Rate**	**Quantity**	**Proposed Planting Units (PU)**
Major Trees Proposed	1 PU/ Tree	296	296
Minor Trees Proposed	1 PU/ 2 Trees	221	110.5
Evergreen Trees Proposed	1 PU/ 2 Trees	316	158.0
Shrubs Proposed	1 PU/ 5 Shrubs	281	56.2
	Total Proposed Planting Units (PU)		620.7

SITE DEVELOPMENT PROPOSAL

DWELLING TYPE	PROPOSED UNITS	PARKING REQUIRED	PARKING PROVIDED	OPEN SPACE REQUIRED	OPEN SPACE PROPOSED	AVERAGE DAILY TRIPS	PHASE	DEVELOPMENT SCHEDULE
SINGLE-FAMILY DETACHED	61	122	244	1.38 AC ±	1.40 AC.	600	I	-
TOTAL	61	122	244	1.38 AC ±	1.40 AC.	600	-	-

EXISTING ZONING AND MAXIMUM DENSITY PERMITTED

ZONE	GROSS ACRES	DWELLING UNITS PERMITTED	DWELLING UNITS PROPOSED
DR-1	±16.8 AC	16	16
DR-2	±22.8 AC	45	45
		TOTAL	61

UNDEVELOPED AREAS

DESCRIPTION	ACRES
STORMWATER MANAGEMENT	3.5 ±
HOA/COA AREAS	1.5 ±
OTHER	8.0 ±
TOTAL PROVIDED	13.0 ±

SETBACK TABLE

SETBACK TYPE - DR 1 & 2	SETBACK
FRONT BUILDING FACE TO:	
R/W OR PROPERTY LINE:	25'
SIDE BUILDING FACE TO:	
SIDE BUILDING FACE:	20'
PUBLIC STREET R/W:	20'
REAR BUILDING FACE TO:	50'
TRACT BOUNDARY:	20'
REAR BUILDING FACE TO:	
NEAR PROPERTY LINE:	30'
PUBLIC STREET R/W:	30'

PA## - 08-0922
TRACKING # - Maj-2021-00001

Kimley»Horn
1801 PORTER ST., SUITE 401, BALTIMORE, MD 21230
PHONE: 443-743-3470
WWW.KLEY-HORN.COM

No.	REVISIONS	DATE	BY

KHA PROJECT 114000001
02/15/2021
SCALE: AS SHOWN
DESIGNED BY: MJED
DRAWN BY: MJED
CHECKED BY: MJB

CONCEPT PLAN
SITE PROPOSAL PLAN

GREENSPRING MANOR
(2310 WEST JOPPA ROAD)
PREPARED FOR
ATAPCO PROPERTIES

BALTIMORE COUNTY, MD
TAX MAP: 70 GRID: 12
ELECTION DISTRICT: 3RD

SHEET NUMBER
2 OF 2

BALTIMORE COUNTY, MARYLAND
INTER-OFFICE MEMORANDUM

TO: C. Pete Gutwald
Director, Permits, Approvals and Inspections

DATE: 8/11/2021

FROM: Steve Lafferty
Director, Department of Planning

SUBJECT: DEVELOPMENT PLAN CONFERENCE
Project Name: Greenspring Manor
PAI #VIII-0922

GENERAL INFORMATION:

Applicant Name: Atapco Properties, INC.
1 South Street, Suite 2800
Baltimore, MD, 21202

Location:

Council District: Second

Growth Tier: I

Zoning: DR 1, DR 2

Acres: 39.4 gross acres ±

Surrounding Zoning and Land Use:

North:	DR 2	Residential
South:	DR 1	Residential
East:	DR 1, DR 2	Residential
West:	O3	Office

Project Proposal:

The project proposes 61 single-family homes to be built on 39.4 ±acres of land zoned DR 1 and DR 2. The site is mostly wooded and has environmental floodplains and wetlands. There is currently one existing house, which is to remain.

Project History:

The project exhibits no development history at this time.

Other Anticipated Actions and Additional Review Items:

☐ Variance	☒ Complete Streets*	☒ School Impact Analysis
☐ Special Exception	☐ Scenic Route	☐ PUD
☒ Special Hearing- F Level Intersection, Basic Services	☐ Compatibility	☐ Design Review Panel
☐ RTA Modification	☒ Section 260 Standards*	☐ Referral to Planning Board
☐ Waiver	☒ Pattern Book*	☐ Other

* Information about the requirements for these items is located on the Baltimore County web page at www.baltimorecountymd.gov/devrev

MEETINGS

Concept Plan Conference:	3/9/2021	Community Input Meeting:	4/27/2021
Development Plan Conference:	8/11/2021	Administrative Law Judge's Hearing:	TBD

ANALYSIS

Master Plan:
The *Master Plan 2020* "Land Management Area Plan" designation for the subject site is Community Conservation Area. (CCA). Baltimore County's CCAs encompass the County's more densely populated, established communities. Nearly 75% of the County's residents live in CCAs, where there are a wide range of housing choices, small-town scale commercial centers and employment centers.
The CCA land management area designation is intended to protect and invest in these older communities, and revitalize their commercial hubs.

The "Proposed Land Use, Baltimore County Smart Coded" designation is T3 Sub-Urban. The T-3 transect is characterized by low-density residential areas, adjacent to higher zones that contain mixed-use. Landscaping is naturalistic and setbacks are relatively deep. Blocks may be large and the roads irregular to accommodate natural conditions.

The Department of Planning considers this site proposal consistent with the spirit and intent of the vision of the Master Plan 2020, the Comprehensive Manual of Development Policies (CMDP) and the Baltimore County Zoning Regulations (BCZR). The Master Plan 2020 recommends low-density residential development adjacent to higher zones consisting of mixed-uses. The proposal has been redesigned to meet bulk regulations and accommodate future improvements and yard space to comply with the CMDP and BCZR without the need for relief. The lot sizes are compatible to the surrounding neighborhoods and do not adversely impact the established community. The proposal minimizes extensive grading and cut and fill, to the fullest extent possible, while using the natural features of the land pursuant to the Comprehensive Manual of Development Policies as well as Section 260 of the BCZR.

School Impact:
This development is subject to Section 32-6-103 of the Baltimore County Code, Adequate Public Facilities. The Department of Planning has reviewed the School Impact Analysis submitted on July 9, 2021 an offers the following comments:

- On all forms, the PAI number ought to be entered.
- On all forms, the official filing date should be July 9, 2021.
- On Form 1, there are 22 committed seats in the Riderwood Elementary School district. https://resources.baltimorecountymd.gov/Documents/Planning/apfo/committedseats.pdf
- On Form 3, the projected number of pupils (high school) is seven (7) instead of eight (8). Pupil yields from approved development in the past four (4) years ought to be selected and calculated against the official filing date of the referenced development plan.
- The above inaccuracies affect final results on Form 4.

SIA Approval Finding:

The Department of Planning finds that the subject Development Plan meets the requirements of BCC § 32-6-103 at the time of the filing date, July 9, 2021. The School Impact Analysis performed by the Department of Planning indicates that the projected enrollment for Riderwood Elementary School, Ridgely Middle School, and Dulaney High School is below 115% of the state rated capacity respectively. The projected number of students as a percentage of the state rated capacity is:

- Riderwood ES: 98.57%
- Ridgely MS: 103.55%
- Dulaney HS: 97.88%

EVALUATION AND RECOMMENDATION

The Department of Planning has reviewed the Development Plan submitted on July 9, 2021 and offers the following Comments.

Special Variance Request:

The applicant has requested the County to permit its development in an F level traffic shed as delineated on the 2020 Basic Services Map. This includes the intersection of West Joppa Road and Falls Road/I-83. The development access is within this failing traffic shed. The Department has received the applicant's memorandum regarding the traffic study analysis conducted in September 2020, which proposes improvements to mitigate the traffic in order to obtain a variance from the Basic Serves requirement.

With regard to the Special Variance request, the Department of Planning will defer and rely upon the expert judgement of the Department of Public Works and the final decision of the Administrative Law Judge.

Residential Performance Standards:

The Baltimore County Zoning Regulations (BCZR) § 260 requires the Director of the Department of Planning to provide a finding to the Hearing Officer for all residential development of four lots or more in Baltimore County that is located within the Urban/Rural Demarcation Line. The Department of Planning has reviewed the pattern book submit on July 9, 2021 and recommends approval pending the following comments below are addressed.

Additional Comments:

1. Clearly delineate and label on the plan all HOA open space areas.
2. To the extent possible, on all housing types that propose a water table, this treatment should be continued on all dwelling facades for continuity and to create a balance.
3. Show on the plan and in the pattern book the locations of all proposed signage.
4. Illustrate on the plan and in the pattern book the locations of all proposed trails, paths, and site amenities, such as the gazebo. Also, provide details and locations of all proposed trash receptacles.
5. Indicate in the required pattern book that Lots 2, 9, 10, 17, 23, 24, 37, 38, 48, 49, 54, 55 and 61 are high visibility lots. It should be demonstrated in the required pattern book how these lots meet the higher quality of design pursuant to the Baltimore County Manual of Regulations Section 260.6. The pattern book should include square footage for the side facades with element count requirements.
6. It is the position of the Department of Planning to ensure that every development in Baltimore County is aligned with the vision and goals of the Master Plan 2020, Comprehensive Manual of Development Polices and all applicable Community Plans. The vision of the Master Plan 2020 is to provide a network design that exemplifies walkability, a greater pedestrian experience, enhanced circulation, connectivity etc. The proposed Public Road "A" is proposed to provide connectivity to the adjacent community via sidewalks and a paved road that is gated and accessible by emergency vehicles only.
7. It is a policy of the Department of Planning that the homeowner should be able to have an open projection (i.e. rear decks) of at least 10' without requiring individual zoning relief.
8. Changes in building location or orientation, or proposed driveway location, at the time of building permit may require a determination from the zoning office of a possible amendment to the Final Development Plan (FDP). If, at the building permit stage, it is anticipated that dwelling footprints may be reversed, or that the location of garages may change from front- to side-loaded, or vice versa, a detailed alternative typical lot layout plan should be included in the pattern book.

Prepared by:

Brett M. Williams

Brett M. Williams

Division Chief:

Jenifer G. Nugent

SL/JGN/MK/BMW/

BALTIMORE COUNTY, MARYLAND

SUBJECT: Development Plan Review Comments
For Floodplain Analysis

DATE: April 26, 2021

EFC for V/C D

FROM: Vishnu Desai, Supervisor
Bureau of Development Plans Review
Department of Permits, Approvals and Inspections

PROJECT NAME: GREENSPRING MANOR

P.A.I. NO.: 08-0922

LOCATION: 2310 WEST JOPPA RD

DISTRICT: 8C2

We reviewed the subject Floodplain Analysis Report dated March 6, 2021 and have the following comments.

SITE-SPECIFIC COMMENTS:

1. Engineer shall re-evaluate the hydrology represented on the drainage area map, there are a total of four (4) sub-drainage areas that should be analyzed as part of the study. There is a drainage area between the W. Joppa Road and Jones Falls Expressway that may have not been considered.
2. Additionally the report seems to only discuss an upper and middle sub-drainage northeast of W. Joppa Road. There is a lower drainage area shown on the drainage area map, but not discussed in the narrative of the report. The acreage and runoff seems to have been considered in the analysis, not absolutely sure. Please clarify the hydrology so that the drainage area map and the report are consistent.
3. There are no Tc paths shown on the Drainage Area Map for the middle or lower sub-drainage areas northeast of W. Joppa Road. The 4th sub-drainage area is not shown and devoid of any hydrologic information.
4. The County suggest the Engineer to use TR-20 to determine the 100-year peak Q for each sub-drainage area and the additive peak Q. Provide the TR-20 files in the report.
5. Engineer to provide in the report the FEMA panel or information which indicates the estimated backwater elevation of 276.0 at the confluence on the Jones Falls, as discussed in Section 4.1

6. The full scale plans (2x3) provided in the submission shall be re-numbered, two (2) of the plans are labeled as Sheet 1. The plans shall be included in a sleeve in the back of the report.
7. On the plans provide additional labeling of the contours especially the contours along W. Joppa Road and the Jones Fall Expressway.
8. Did the Engineer contact Baltimore County DPW-Storm Drain Section to see if any flooding complaints have been documented in the County's database for that area or adjacent subdivisions. If so, indicate in the report the approximate number of complaints or reports location relative to proposed development
9. The Engineering shows the proposed entrance road to the site is located within the existing Riverine Floodplain, a waiver request to permit such an improvement shall be submitted to the County (Director of Public Works) for approval.
10. Coordinate with Baltimore County DEPS regarding the location of the proposed SWM facilities in the existing Riverine Floodplain. The Jones Fall watershed requires 100-year quantity management, the proposed location of the SWM facilities may be hydraulically impacted.
11. The Flood Study indicates that W. Joppa Road is being over-topped by a 100-storm event in both the existing and proposed conditions, County requests the Engineer to model proposed improvements to meet County freeboard requirements for W. Joppa Road (County Roads).
12. In the report, the Engineer shall discuss how the culverts were analyzed (HY-8 or with HEC-RAS) and there impacts to the floodplain. This comment is somewhat related to the request in Item #9 above.
13. In regards to Jones Fall Expressway there seems to be some ambiguity, the water surface profile on the plan entitled Floodplain Profile shows the Jones Falls being over-topped. The water surface profile and cross-section 2015 in the report does not show over-topping of the Jones Falls. Please reconcile this information so it is consistent and correct.
14. Cross section No. 2015 in the report is NOT shown as a cross section on the plan entitled Floodplain Profile. The report and the plans shall be consistent in terms of information presented. There seems to be a few cross sections that do not show up consistently on profile, charts and in the report. Some cross section are labeled/shown twice, but are different sections. Make sure the information is consistent and correct.
15. For all cross sections adjacent to or directly over the existing culverts in W. Joppa Road or Jones Falls Expressway, incorporate or project the culverts on to the cross sections so the water surface elevation is shown relative the culvert or the opening.
16. Engineer to include the complete HEC-RAS file(s) in the next report submission. Not just the output file.
17. In section 4.6 Results, there is a statement that the proposed condition show no increase in 100-year ultimate conditions water surface profile as a result of this proposed development, which is logical considering the Greenspring Manor project is the last developable site within the drainage area being analyzed. The proposed condition is the ultimate condition in this specific case.

18. The title on Table 3 on page 6 seems to be a bit misleading; 100-Year Pre- and Post-Development. Was a pre-development Floodplain analysis completed on the drainage area evaluating the site in its existing condition? If so, provide that analysis and data. Is the Engineer trying to indicate the pre and post development water surface elevations are the same, further explanation may be needed?
19. Please indicate in the study any downstream impacts to properties located southwest of W. Joppa Rd and the proposed Greenspring Manor development. Will increased flooding occur on these properties and to what magnitude? Additionally, while modeling improvements to eliminate over-topping of W. Joppa Road, the Engineer shall consider downstream impacts of those improvements. Side note, I think these properties are owned by the State of Maryland.

The Engineer has clearly shown proposed site improvements (road & utilities) are within the existing County riverine floodplain. By County Code, no construction is allowed within a riverine floodplain without a waiver request submitted to the Director of Public Works for approval. Therefore, this flood study shall not be re-submitted to County for review and acceptance until such waivers has been approved or issued.

If you have any questions regarding the above comments, please contact either Mr. Vishnu Desai or Mr. Eugene Cauley at 410-887-3751.

* * * * *

VKD: efc
cc: file

JOHN A. OLSZEWSKI, JR.
County Executive

D'ANDREA L. WALKER, *Acting Director*
Department of Public Works and Transportation

August 18, 2021

Matthew A. Bishop, PLA, LEED AP
Kimley-Horn
210 West Pennsylvania Avenue, Suite 100
Towson, Maryland 21204

Subject: Greenspring Manor waiver to Baltimore County Code 32-4-414
Property Tax Account 08-12-000275

Dear Mr. Bishop:

Pursuant to development of the above-referenced property, this office has found that the property is not located within a special flood hazard area as shown on the Federal Emergency Management Agency's Flood Insurance Rate Map No. 245F, Community Panel No. 240010-0245F, dated August 2, 2011. The property as shown on the map is located in Zone X unshaded zones. However, there is a riverine special flood hazard area as defined in the Development Plans Review Policy Manual as having a drainage area equal to or greater than 30 acres.

This project involves development in the form of a proposed public road and roadway widening, bridges or culverts, utilities, drainage facilities grading and construction in the 1% annual special flood hazard, 100-year, riverine flood plain. Under The Baltimore County Code Section 32-4-414 (c) it states:

> "(c) *Development in flood plain prohibited; exceptions.* The county may not permit development in a riverine flood plain except for:
>
> (1) The establishment of property subdivision lines; and
> (2) The installation of a pond, culvert, bridge, street, utility, or drainage facility that the county finds is not detrimental to flood plain management programs."

After consideration of the Code above, the Department finds that the proposed public road and roadway widening, bridges or culverts, utilities, drainage facilities grading and construction for this project in riverine flood plain areas is not detrimental to flood plain management programs, subject to the following conditions:

1. The 1% annual flood plain and freeboard limits are delineated by a flood plain study certified by a Professional Engineer registered in the State of Maryland as being correct and done in accordance with the Baltimore County Department of Public Works Policy adopted August 1, 1991.

2. The flood plain study indicates no detrimental offsite impacts resulting from the grading and construction project.

3. All other governmental permits and waivers must be filed and are the responsibility of the engineer if the site is to be developed.

In conclusion, the letter of request for Greenspring Manor submission dated June 1, 2021 states the development activities "will not have negative impacts to upstream or downstream properties and are not detrimental to flood plain management programs". Based on this criteria noted above, the development will not require a waiver under Baltimore County Code Section 32-4-107 Title 8 Subtitle 3.

If you have any questions, please feel free to contact Terry Curtis at (410) 887-3117.

Sincerely,

D'Andrea L. Walker

D'Andrea L. Walker
Acting Director

TWC/s

cc: Vishnubhai K. Desai, Chief, Development Plans Review Bureau

BALTIMORE COUNTY

DEPARTMENT OF PERMITS AND
DEVELOPMENT MANAGEMENT

BUREAU OF DEVELOPMENT PLANS REVIEW POLICY MANUAL

In accordance with Section 26-283 of the Baltimore County code, regulations in this manual are intended to repeal the following sections of the Department of Public Works Development Procedures and Policy Manual adopted by County Council Resolution No. 100-85 on November 18, 1985.

Division I	*Sections 4, 5, 6, 7, 8*
Division II	*All Sections*
Division III	*Section 14*
Division IV	*All Sections*

February 27, 2002

on the existing street is approximately 5000 or more vehicles a day, an acceleration lane and a deceleration lane shall be provided. The length of these lanes may be reduced depending upon available rights-of-way and field conditions.

5. Intersection Spacing - Where possible, the distance between public or private street intersections shall be at least 100 feet, measured edge of road to edge of road. However, sight distance or traffic operation considerations may take precedence. The Department of Public Works may increase this distance requirement for arterial and major collector roads or to provide adequate stacking distance at traffic signals.

6. Median Breaks - New median breaks generally will be discouraged. However, when a new median break is necessary, a left-turn lane should be provided. When an entrance exists opposite a proposed median break, left-turn lanes should be provided in both directions. Where a new entrance is located at an existing median break, a left-turn lane should be provided.

7. Sidewalks - Sidewalks shall normally be provided along closed-section roadways in areas inside the URDL. In all other situations, the need for sidewalks shall be determined by the Director of the Department of Public Works.

8. Left Turn Lanes on Arterials - Where practical, road widening for left-turn lanes shall be provided on arterial roads where left-turning traffic would significantly impede straight-through traffic.

9. Traffic Impact Studies - A traffic impact study may be required as determined by the Director of the Department of Public Works. Upon the findings of the study, improvements along the property frontage and/or offsite may be required. The scope of the study will be determined on a case-by-case basis.

10. Perpendicular Parking – Where perpendicular parking is located on one side of a county road, maximum average daily trips is 800. Where perpendicular parking is on both sides of a county road, the maximum average daily trips is 600.

11. Traffic Calming – The use of traffic calming/management may be required where the Department of Public Works determines that such improvements are required.

B. ACCESS GUIDELINES

1. Maximum Number of Units with One Means of Access

a. Limits of Units

- 100 units with no future street extension proposed

- 150 units when a future street extension is proposed and is feasible

- >150↑ 2nd means of access must be constructed

b. Exception

These limits may be increased when restricted by a limited or controlled access highway or other physical barrier or limitation as advised by the Department of Public Works

c. Emergency access points in place of full-use access points generally will be discouraged, but may be approved in unusual circumstances.

2. Number of Street Access Points - Along major collectors and arterials, access points exclusive of residential driveways generally shall be kept to a minimum of one access point for each public road bounding the property. However, additional access points may be permitted by the Director of the Department of Public Works. Minor roads may have more entrances as needed for subdivision layout.

3. Number of Driveway Access Points- The number of residential and commercial driveway access points generally shall be kept to a minimum on major collectors and arterials. This can be done by having a use-in-common driveway for adjacent lots, by having corner lots access off the minor street, or by having a private driveway for a group of lots to reduce or eliminate individual driveway access on major streets. Providing residential driveways on to major collectors and arterials should be avoided whenever possible, by instead fronting said lots onto internal subdivision roadways.

4. Use-In-Common Entrances- On major collectors and arterials, use-in-common entrances shall be considered where one property on a main street is being subdivided into several smaller parcels with frontage on the same street. Also, use-in-common entrances shall be placed on the edge of a developing property for use with an adjacent property.

C. PAYMENT FOR TRAFFIC CONTROL DEVICES. .

1. Signals Operated and Maintained by Baltimore County

a. Where a traffic signal on a public street is justified on the basis of traffic from a private entrance, the developer shall

Baltimore County - My Neighborhood



Baltimore County Government, VITA, Esri, HERE, Garmin, GeoTechnologies, Inc., Intermap, USGS, METI/NASA, EPA, USDA |

JOHN A. OLSZEWSKI, JR.
County Executive

JOANNE R. RUND, *Chief*
Fire Department

March 8, 2021

To: Jerry Chen
Permits, Approvals and Inspections

From: David Blenman, Inspector
Baltimore County Fire Marshal's Office
700 E. Joppa Road, 3rd Floor
Towson, Maryland 21286
Office: 410-887-4880
E-Mail: FireFMO_Specialprojects@baltimorecountymd.gov

Type of Plan: **Concept Plan**

Project Name: **Greenspring Manor**

Project Location: **2310 W Joppa Road**

PAI Number: **08-0922**

FD-R Number: **1376805**

Comments: **61 Single Family Dwellings**

1. Comment # 1 shall read; the Baltimore County Fire Prevention Code No: 3-17.

2. Comment #2 shall read; 2015 NFPA 1 Fire Code Section 18.2.4.1

3. Comment # 3 shall read; A crusher driveway for access to buildings shall be available for the use by emergency fire apparatus and capable of handling emergency apparatus weighing 70,000 lbs. when construction of any building is under roof, in accordance with Baltimore County Fire Prevention Code, County Bill No.3-17; Section 1:16.4.3.1.3

4. A separate building permit is required for the installation of a residential sprinkler system for each individual dwelling

5. The sprinkler system must be inspected by the Baltimore County Fire Marshal's Office prior to taking occupancy. (Sprinkler Hydro / Sprinkler Final).

6. Provide location of all proposed fire hydrants.

7. The private fire hydrants shall be painted " OSHA Red" to distinguish them from the public (Orange) fire hydrants in accordance with Baltimore County Fire Prevention Code, County Bill No. 3-17 Section 1: 18;5.10.5 Private Hydrant Color.

8. A separate building permit is required for the installation of a private underground fire line and shall be reviewed by the Plans Review Section of Baltimore County. A plumbing permit shall not be used to install an underground fire line.

9. All fire hydrants spacing shall be in accordance with the Baltimore County Standard Design Manual.

10. Need to provide the addresses for proposed buildings.

11. Provide name of all proposed roads.

12. The Baltimore County Fire Prevention Code, County Bill No. 3-17, Section 1:10.11.1.5, requires that the address numbers for residential properties shall be minimum of 3 inches in size.

13. The Baltimore County Fire Marshal's Office has requested that the above comments be added to the general note section of the plan. Once the notes have been added please resubmit the plan for 2nd review.

BALTIMORE COUNTY, MARYLAND

SUBJECT: Development Plan Review Comments
For CPC March 9, 2021

DATE: March 8, 2020

FROM: Vishnu K. Desai, Supervisor
Bureau of Development Plans Review
Department of Permits, Approvals and Inspections

PROJECT NAME: GREENSPRING MANOR

P.A.I. NO.: 08-0922

LOCATION: 2310 WEST JOPPA RD

DISTRICT: 8C2

We reviewed the subject plans received dated February 15, 2021 and have the following comments.

LANDSCAPE COMMENTS:

1. A Schematic Landscape Plan must be approved prior to Development Plan approval.
2. An approved Final Landscape Plan, cost estimate and security are required prior to permit approval.

SITE-SPECIFIC COMMENTS:

1. A Public Works Agreement is required for this project.
2. Provide additional details to the vicinity map like road network, road names and property boundaries.
3. Add Metropolitan District designations for sewer and water.
4. Add the Delinquent Account certification to the plan.
5. Provide additional labeling of the existing contours throughout the plan.
6. Provide note on the plan indicating if there are or are not wetlands on site. In accordance with *Baltimore County Code, Section 32-4-414*, dredging, filling or construction in any wetland is prohibited.
7. If the proposed Development is to be developed or designed in two (2) phases, please delineate phasing on the Development Plan.
8. Show the proposed first floor elevations.

9. West Joppa Road is an existing road, which shall ultimately be improved as a 50-foot street cross-section on a 70-foot right-of-way.
10. All proposed streets in this subdivision shall be improved with a 28-foot curb and gutter cross-section on a 50-foot right-of-way and shall be the Developer's full responsibility. Please label both the width of the road section and right-of-way on the plan.
11. The proposed cul-de-sac shall meet County standards, see Plate R-D, which requires a 60-foot turning radius.
12. **"No Parking"** signs shall be posted prohibiting parallel parking within the turnaround areas/cul-de-sac.
13. All sidewalks shall be a minimum of 5-feet wide and shall be installed in conformance with Baltimore County standards and to current Americans with Disabilities act (ADA) guidelines.
14. Developer shall extend proposed Public Road 'A' to connect to Mays Chapel Rd to the north via a 28-foot curb & gutter road section within a 50-foot right-of-way. The 50-foot right-of-way to be provided will replace the Emergency Access Easement shown on the plan.
15. Minimum width for all Drainage & Utility easements shall be 20-feet.
16. Engineer to show all existing sewer manhole numbers adjacent to the site on the plan.
17. The Developer shall provide a minimum 10-foot drainage and utility easement along all bordering property lines which are not adjacent to road right-of-way or storm drain reservations or where private easements or environmental easements border the property line.
18. The following existing 8" sewer segments do not have adequate capacity to accommodate the proposed 61 home subdivision at 2310 West Joppa Road, known as Greenspring Manor

Upstream MH	Downstream MH	Length	Diameter	Status
43794	43793	137.96	8"	
43793	43792	192.31	8"	
43792	43791	87.36	8"	Part of Hopkins project
43791	43790	60.00	8"	Part of Hopkins project
43790	43789	316.80	8"	Part of Hopkins project
43789	43788	232.57	8"	Part of Hopkins project
43788	43787	159.01	8"	Part of Hopkins project
43787	43786	76.00	8"	Part of Hopkins project

Six of the segments noted above were to be addressed by the Johns Hopkins at Green Spring Station development prior to issuance of their use and occupancy permit. PAI did not enforce this requirement and the project was completed without the necessary sewer system improvements being completed.

The Greenspring Manor development may not connect to public sewer until the agreement with Johns Hopkins at Green Spring Station is enforced and all sewer improvements are completed, including the additional improvements to segments 43794-73793 and 43793-73792 noted in the above table.

19. Developer is responsible for acquisition of off-site easements for downstream sewer improvements.
20. All existing or proposed public utilities within W. Joppa Road and Mays Chapel Road shall be clearly labeled, type of utility and size. Provide the reference drawing numbers if the utility is existing.
21. Water and sanitary sewer service connections shall be shown on the Development Plan.
22. All site runoff must be conveyed to a suitable outfall without imposing adverse impacts to the receiving watercourse.
23. The existing storm drain system needs to be checked for adequacy and upgraded or provide stormwater management as needed.
24. Submit existing storm drain outfall study for review and approval.
25. Provide 100-year floodplain study for review and approval.
26. In accordance with *Baltimore County Code, Section 32-4-414*, filling within a floodplain is prohibited.
27. Developer shall investigate for adequate fire flow at the site and extend minimum 8-water main in all proposed roads serving the site.
28. Show all proposed Fire Hydrants along the proposed roads within the development. Coordinate with *Fire Protection Section* in regards to possible fire hydrants along Mays Chapel Road extension. Fire hydrant spacing and locations are subject to review and approval by the *Fire Protection Section* of the *Fire Department*.
29. Developer shall provide a **fee simple strip frontage on public road** for all meter services connected to public water main.
30. Developer shall investigate and provide pressure-reducing valve (PRV) when the static pressure exceeds 80-psi.
31. Developer's engineer has submitted a traffic impact study to Traffic Engineering Section. While the proposed development is located within a failing traffic shed, the proposed improvements associated with the traffic impact study will mitigate the increased traffic generated by the proposed development.
32. This site is in a traffic deficient area with an 'F' level of service. Therefore, no building or grading permits will be issued unless allowed by the Administrative Law Judge at a Special Hearing. A traffic impact analysis will be required along with expert witness testimony at the Hearing. Approval of this development plan does not guarantee or warrant that a permit will be issued.

33. Sight lines are to be drawn from the centerline of the proposed access at a point ten feet behind the extension of the main road curb line to the centerline of the nearest approach lane on the main road.
34. The Developer shall be responsible for having all proposed street names in any new development approved by the Street Name and Address Section of the Department of Permits, Approvals and Inspections.
35. The Transportation Planning unit recommends that a multi-use path be constructed along the frontage of the property instead of the proposed sidewalk, as stated in Baltimore County's Western Bicycle and Pedestrian Master Plan.
36. Show proposed streetlights spaced per Baltimore County standards.
37. Prior to Development Plan approval, Development Plans Review (DPR, 410-887-3751) shall be contacted to schedule a field visit

* * * * *

The Development Plan when submitted will not be approved until all of the above comments, at a minimum, are properly addressed.

VKD: efc
cc: file

BALTIMORE COUNTY, MARYLAND

INTER-OFFICE CORRESPONDANCE

DATE: March 3, 2021

TO: Vishnu Desai, Supervisor
Development Plans Review

FROM: David Bayer, Acting Chief LKE for
Sewer Design Section

SUBJECT: Greenspring Manor
Concept Plan 08-0922

The following 8" sewer segments do not have adequate capacity to accommodate the proposed 61 home subdivision at 2310 West Joppa Road, known as Greenspring Manor

Upstream MH	Downstream MH	Length	Diameter	Status
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Six of the segments noted above were to be addressed by the Johns Hopkins at Green Spring Station development prior to issuance of their use and occupancy permit. PAI did not enforce this requirement and the project was completed without the necessary sewer system improvements being completed.

The Greenspring Manor development may not connect to public sewer until the agreement with Johns Hopkins at Green Spring Station is enforced and all sewer improvements are completed, including the additional improvements to segments 43794-73793 and 43793-73792 noted in the table.

LKE

BALTIMORE COUNTY, MARYLAND

INTER-OFFICE CORRESPONDANCE

DATE: August 2, 2021

TO: Vishnu Desai, Supervisor
Development Plans Review

FROM: Lisa Eicholtz, PE Chief LKE
Sewer Design Section

SUBJECT: Greenspring Manor
Development Plan 08-0922

The following 8" sewer segments do not have adequate capacity to accommodate the proposed 61 home subdivision at 2310 West Joppa Road, known as Greenspring Manor:

Upstream MH	Downstream MH	Length	Diameter	Status
43794	43793	137.96	8"	*
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43788	43787	159.01	8"	Part of Hopkins project
43787	43786	76.00	8"	Part of Hopkins project

*required sanitary sewer upsizing from 8" to 12" by this developer is shown on the development plan

Six of the segments noted above are to be addressed by the Johns Hopkins at Green Spring Station development. To date, these improvements have not been completed.

Issuance of Use and Occupancy permits for the residential units from the Greenspring Manor development should be subject to completion of the system improvements noted above, including those Johns Hopkins at Green Spring Station is obligated to complete.

LKE

Kristoffer Nebre

From: Greg Carski
Sent: Tuesday, October 13, 2020 9:08 AM
To: mlenhart; Vishnubhai K Desai; Kristoffer Nebre
Cc: Nick Driban; Bishop, Matt; Rahee Famili; Michael Filsinger
Subject: RE: Traffic Impact Study for 2310 W. Joppa Road

Good Morning Mike – we took a quick peak at the study. As noted, the site falls within a LOS F traffic shed, thus prohibiting development. As you are aware, the LOS F determination is based on actual peak hour field observations of the intersection. Theoretical calculations do not override our observations and ratings.

It should also be noted, that due to the Covid epidemic, these intersections along Falls Rd were not observed this year nor will they be. Therefore the F rating and associated traffic sheds will carry over to the 2021 Basic Service Map.

I'm sure this is not the news you wanted to hear but that's where we are.

Greg

From: mlenhart [mailto:mlenhart@LENHARTTRAFFIC.COM]
Sent: Tuesday, October 13, 2020 7:31 AM
To: Vishnubhai K Desai <vdesai@baltimorecountymd.gov>; Kristoffer Nebre <knebre@baltimorecountymd.gov>; Greg Carski <gcarski@baltimorecountymd.gov>
Cc: Nick Driban <ndriban@LENHARTTRAFFIC.COM>; mlenhart <mlenhart@LENHARTTRAFFIC.COM>; Bishop, Matt <Matt.Bishop@kimley-horn.com>
Subject: RE: Traffic Impact Study for 2310 W. Joppa Road

CAUTION: This message from mlenhart@lenharttraffic.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Hi Greg, Kris, and Vishnu,

I'm writing to follow up on the attached traffic study that we submitted last week for your review. My client has the property at 2310 W. Joppa Road under a due diligence assessment and their due diligence period ends the end of next week.

We would appreciate the opportunity to speak with you regarding this project given the findings of the study and the location of the project with respect to the Basic Services Map and the two failing intersections per the Map.

Would you have 30-60 minutes we could set up a call to discuss on the 19th, or 20th next week?

Thanks,
Mike

Mike Lenhart, P.E., PTOE
President

PLEASE NOTE NEW PHONE AND ADDRESS

Office: (410) 216-3333 (Ext. 1)

Mobile: (410) 980-2367
Fax: (443) 782-2288

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

From: mlenhart <mlenhart@LENHARTTRAFFIC.COM>
Sent: Thursday, October 8, 2020 12:43 PM
To: vdesai@baltimorecountymd.gov; 'Kristoffer Nebre' <knebre@baltimorecountymd.gov>; gcarski@baltimorecountymd.gov
Cc: mlenhart <mlenhart@LENHARTTRAFFIC.COM>; Nick Driban <ndriban@LENHARTTRAFFIC.COM>
Subject: Traffic Impact Study for 2310 W. Joppa Road

Hi Greg, Kris, and Vishnu,

I've attached a TIA for review. Can you please reply to confirm receipt and distribute this for review and comment as needed. When do you think you might be able to provide feedback? We have also submitted to SHA for review.

Thanks,
Mike

Mike Lenhart, P.E., PTOE
President

PLEASE NOTE NEW PHONE AND ADDRESS

Office: (410) 216-3333 (Ext. 1)
Mobile: (410) 980-2367
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LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Kristoffer Nebre

From: Greg Carski
Sent: Thursday, October 08, 2020 1:10 PM
To: Vishnubhai K Desai; Rahee Famili
Cc: Michael Filsinger; Kristoffer Nebre
Subject: RE: Traffic Impact Study for 2310 W. Joppa Road

Why would they do a traffic study for a development in a F level traffic shed? Isn't this development dead on arrival?

From: mlenhart [mailto:mlenhart@LENHARTTRAFFIC.COM]
Sent: Thursday, October 08, 2020 12:43 PM
To: Vishnubhai K Desai <vdesai@baltimorecountymd.gov>; Kristoffer Nebre <knebre@baltimorecountymd.gov>; Greg Carski <gcarski@baltimorecountymd.gov>
Cc: mlenhart <mlenhart@LENHARTTRAFFIC.COM>; Nick Driban <ndriban@LENHARTTRAFFIC.COM>
Subject: Traffic Impact Study for 2310 W. Joppa Road

CAUTION: This message from mlenhart@lenharttraffic.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Hi Greg, Kris, and Vishnu,

I've attached a TIA for review. Can you please reply to confirm receipt and distribute this for review and comment as needed. When do you think you might be able to provide feedback? We have also submitted to SHA for review.

Thanks,
Mike

Mike Lenhart, P.E., PTOE
President

PLEASE NOTE NEW PHONE AND ADDRESS

Office: (410) 216-3333 (Ext. 1)
Mobile: (410) 980-2367
Fax: (443) 782-2288

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Kristoffer Nebre

From: Michael Filsinger
Sent: Friday, October 23, 2020 6:08 AM
To: Kristoffer Nebre
Subject: FW: Analysis for Falls and Joppa
Attachments: Carski 10-21-2020.pdf

Let's discuss on Monday – this is interesting that they want to develop in a deficient shed.

Mike Filsinger, P.E., Chief
Division of Traffic Engineering

From: Greg Carski
Sent: Friday, October 23, 2020 5:47 AM
To: Michael Filsinger <mfilsinger@baltimorecountymd.gov>; Kristoffer Nebre <knebre@baltimorecountymd.gov>
Subject: FW: Analysis for Falls and Joppa

Review and comment pls

From: Rosenblatt, Adam M. [mailto:AMRosenblatt@Venable.com]
Sent: Thursday, October 22, 2020 8:35 PM
To: Greg Carski <gcarski@baltimorecountymd.gov>
Subject: Analysis for Falls and Joppa

CAUTION: This message from AMRosenblatt@venable.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Hi Greg,

Here is the analysis we discussed today. We would greatly appreciate your thoughts on our proposed improvements. Feel free to call any time if you have questions.

Thank you very much.

Adam M. Rosenblatt, Esq.
Venable LLP
t 410.494.6271 | m 410.294.9430
210 W. Pennsylvania Avenue, Suite 500, Towson, MD 21204

****
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****

Kristoffer Nebre

From: Greg Carski
Sent: Friday, November 13, 2020 1:11 PM
To: Rosenblatt, Adam M.
Cc: Michael Filsinger; Kristoffer Nebre; Rahee Famili; Vishnubhai K Desai
Subject: RE: Analysis for Falls and Joppa

Good Afternoon Adam-

In regards to the traffic analysis for the 2310 W Joppa Rd site, we offer the following comments:

The proposed site is currently within a failing traffic shed as identified on the 2020 Basic Service Map. Furthermore, it actually lies within overlapping failing traffic sheds from three failing intersections, Falls Rd & Joppa Rd, Falls Rd & Greenspring Valley Rd and Falls and Seminary Ave. With new traffic being introduced into the three failing intersections, improvements would also need to be done to handle additional traffic at all three intersections. Since we are required to count all three intersections at the same time per the county council bill, the three intersections along the Falls Rd Corridor from Joppa to Seminary must be analyzed together. Because of this council bill which combines the corridor into one study, the increased traffic along the corridor needs to be accounted for and improvements would also be needed at the three intersections. Because of the special conditions that are in place to study this corridor and the fact that we have overlapping traffic sheds, it is not sufficient to propose improvements to only one intersection for the approval of this site.

Given the above, we have noted that the report calls for proposed changes to the signal/striping/geometrics at the Joppa/Falls Rd intersection. The change is to remove the split phasing and go to a more conventional phasing. In addition, lane assignments were changed along Joppa and Falls to allow for double left turns on both legs. Since the proposal is to remove the split phasing, we believe that the dashed lines providing guidance to the drivers making that movement are extremely close to one another and we would have concerns making that movement. Unfortunately, the geometry of the intersection in our opinion would not be conducive to allowing this movement without the split phasing. Additionally, it does not appear that the proposed changes would bring the intersection of Falls Rd/Joppa Rd out of the failed rating given the fact that the level of service following the improvements with site traffic is worse than the existing level of service. Clearly the changes would not ameliorate the currently failing intersection.

Based upon the above information, this report does not justify approval of the additional development within the failing traffic shed.

Please contact us if you have any questions. Thank you.

Greg

Gregory W. Carski, Bureau Chief
Bureau of Transportation
410-887-3554

From: Rosenblatt, Adam M. [mailto:AMRosenblatt@Venable.com]
Sent: Thursday, November 12, 2020 12:41 PM
To: Greg Carski <gcarski@baltimorecountymd.gov>

Cc: Michael Filsinger <mfilsinger@baltimorecountymd.gov>
Subject: RE: Analysis for Falls and Joppa

CAUTION: This message from AMRosenblatt@venable.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Hey Greg and Mike,

Just checking in on this. If you have any comments I'd greatly appreciate it if you can email them to me.

Thank you.

Adam M. Rosenblatt, Esq. | **Venable LLP**
t 410.494.6271 | **f** 410.821.0147 | **m** 410.294.9430
210 W. Pennsylvania Avenue, Suite 500, Towson, MD 21204

AMRosenblatt@Venable.com | www.Venable.com

From: Greg Carski <gcarski@baltimorecountymd.gov>
Sent: Monday, November 9, 2020 1:10 PM
To: Rosenblatt, Adam M. <AMRosenblatt@Venable.com>
Cc: Michael Filsinger <mfilsinger@baltimorecountymd.gov>
Subject: RE: Analysis for Falls and Joppa

Caution: External Email

We'll have something for you this week.

Greg

From: Rosenblatt, Adam M. [mailto:AMRosenblatt@Venable.com]
Sent: Monday, November 09, 2020 1:08 PM
To: Greg Carski <gcarski@baltimorecountymd.gov>
Subject: RE: Analysis for Falls and Joppa

CAUTION: This message from AMRosenblatt@venable.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Hey Greg just checking in. Do you and your team have any comments for us?

Adam M. Rosenblatt, Esq. | **Venable LLP**
t 410.494.6271 | **f** 410.821.0147 | **m** 410.294.9430
210 W. Pennsylvania Avenue, Suite 500, Towson, MD 21204

AMRosenblatt@Venable.com | www.Venable.com

From: Greg Carski <gcarski@baltimorecountymd.gov>
Sent: Friday, October 30, 2020 9:03 AM
To: Rosenblatt, Adam M. <AMRosenblatt@Venable.com>
Subject: RE: Analysis for Falls and Joppa

Caution: External Email

You too

From: Rosenblatt, Adam M. [mailto:AMRosenblatt@Venable.com]
Sent: Friday, October 30, 2020 8:54 AM
To: Greg Carski <gcarski@baltimorecountymd.gov>
Subject: RE: Analysis for Falls and Joppa

CAUTION: This message from AMRosenblatt@venable.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Thank you Greg, have a good weekend!

Adam M. Rosenblatt, Esq. | **Venable LLP**
t 410.494.6271 | **f** 410.821.0147 | **m** 410.294.9430
210 W. Pennsylvania Avenue, Suite 500, Towson, MD 21204

AMRosenblatt@Venable.com | www.Venable.com

From: Greg Carski <gcarski@baltimorecountymd.gov>
Sent: Friday, October 30, 2020 8:53 AM
To: Rosenblatt, Adam M. <AMRosenblatt@Venable.com>
Subject: RE: Analysis for Falls and Joppa

Caution: External Email

We are reviewing it now.

Greg

From: Rosenblatt, Adam M. [mailto:AMRosenblatt@Venable.com]
Sent: Thursday, October 29, 2020 2:52 PM
To: Greg Carski <gcarski@baltimorecountymd.gov>
Subject: FW: Analysis for Falls and Joppa

CAUTION: This message from AMRosenblatt@venable.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Hi Greg,

Just checking in on this. If you have any thoughts or comments please let us know.

Thank you.

Adam M. Rosenblatt, Esq. | **Venable LLP**
t 410.494.6271 | **f** 410.821.0147 | **m** 410.294.9430
210 W. Pennsylvania Avenue, Suite 500, Towson, MD 21204

AMRosenblatt@Venable.com | http://secure-web.cisco.com/193D_OU_EuWSsur9LkG-F8o1tbpNkd8YAQ3y0sN-K-ybOL8fgtXR6RVa9M6-0mE9gllN1msqALNFbzoLzmSyU3JKq6nRSLdSPgJ_ZxAl2NYbYKmZVy9RW2bOOdCVvkEXDotSkYfYGpTkoNG6R8EkWjXsfXtO1lKKMcNl4cUUvJnCheuBHknGAunsyM-U1hdt04Xi91P1CJxbV5sbEqJaJ5ICJGh9lo2mDzUybWaOFV6yHPmzOlaTWsw1oTNERQliVuPgmUeCfSdsAzqiTaXNuGxUVtYSSCj7_8Ft5DWpFXXMu4w_S_kjlimkysyjHMmrlyrI-

buHQVDJqTsv58P_xfSALL1enu5ZgRlezF56DOvm6ydGga7Kg5iXmVU2FdWVL6zbOjEoEfKhlhEi01UUFsGQCfFIFtegxLFcimIo3KNljgYL3lHUZeNG3CfJR7uIxS5DOV4NpGu_wgFtbyleVxw/http%3A%2F%2Fwww.Venable.com

From: Rosenblatt, Adam M.
Sent: Thursday, October 22, 2020 8:35 PM
To: Greg Carski <gcarski@baltimorecountymd.gov>
Subject: Analysis for Falls and Joppa

Hi Greg,

Here is the analysis we discussed today. We would greatly appreciate your thoughts on our proposed improvements. Feel free to call any time if you have questions.

Thank you very much.

Adam M. Rosenblatt, Esq.
Venable LLP
t 410.494.6271 | m 410.294.9430
210 W. Pennsylvania Avenue, Suite 500, Towson, MD 21204

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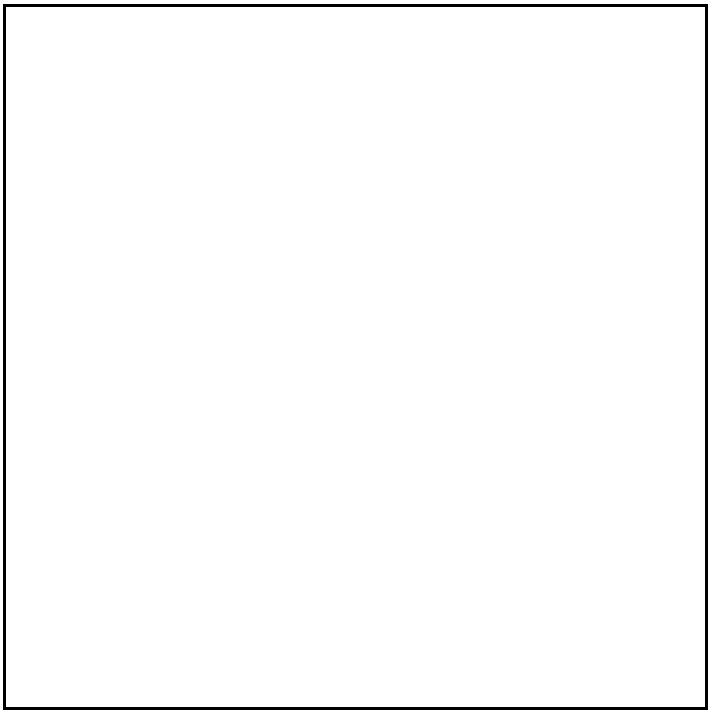
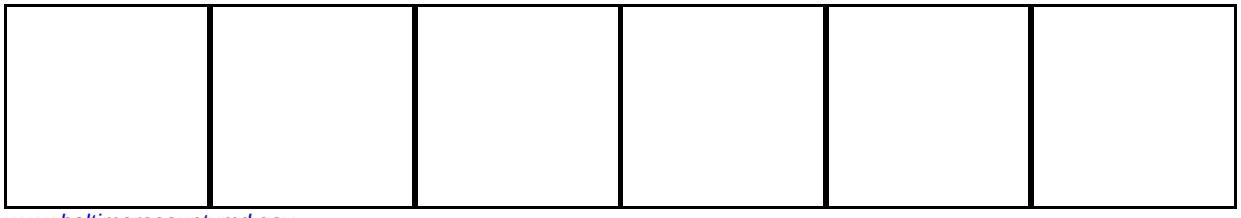


CONNECT WITH BALTIMORE COUNTY



www.baltimorecountymd.gov

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****

Kristoffer Nebre

From: Michael Filsinger
Sent: Tuesday, November 24, 2020 8:58 AM
To: Kristoffer Nebre
Cc: Greg Carski
Subject: FW: Analysis for Falls and Joppa
Attachments: Carski 10-21-2020.pdf

The lawyers are now asking that with the improvements will the intersection operate better than existing. Need to dive into this a bit more. We need it by early next week.

Mike Filsinger, P.E., Chief
Division of Traffic Engineering

From: Michael Filsinger
Sent: Thursday, November 12, 2020 11:07 AM
To: Kristoffer Nebre <knebre@baltimorecountymd.gov>
Subject: FW: Analysis for Falls and Joppa

Mike Filsinger, P.E., Chief
Division of Traffic Engineering

From: Michael Filsinger
Sent: Tuesday, October 27, 2020 1:48 PM
To: Kristoffer Nebre <knebre@baltimorecountymd.gov>
Subject: FW: Analysis for Falls and Joppa

Kris – looking at this – the intersection just to the north is failing badly with a 92% load in the NB direction in the PM hours. If the improvements were made to the intersection to the south as the report shows, would it help or hurt the intersection to the north? From a common sense perspective, I can't see that it would help, therefore it would improve the overall failing shed. Your thoughts?

Mike Filsinger, P.E., Chief
Division of Traffic Engineering

From: Greg Carski
Sent: Friday, October 23, 2020 5:47 AM
To: Michael Filsinger <mfilsinger@baltimorecountymd.gov>; Kristoffer Nebre <knebre@baltimorecountymd.gov>
Subject: FW: Analysis for Falls and Joppa

Review and comment pls

From: Rosenblatt, Adam M. [mailto:AMRosenblatt@Venable.com]
Sent: Thursday, October 22, 2020 8:35 PM
To: Greg Carski <gcarski@baltimorecountymd.gov>
Subject: Analysis for Falls and Joppa

CAUTION: This message from AMRosenblatt@venable.com originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Hi Greg,

Here is the analysis we discussed today. We would greatly appreciate your thoughts on our proposed improvements. Feel free to call any time if you have questions.

Thank you very much.

Adam M. Rosenblatt, Esq.
Venable LLP
t 410.494.6271 | m 410.294.9430
210 W. Pennsylvania Avenue, Suite 500, Towson, MD 21204

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****

GREENSPRING MANOR

2310 W. JOPPA ROAD

TIMONIUM, MARYLAND

ENVIRONMENTAL

1. A TOPOGRAPHIC SURVEY WAS PREPARED BY MTPLS IN SEPTEMBER OF 2020. THIS INFORMATION WAS SUPPLEMENTED BY AVAILABLE BALTIMORE COUNTY GIS DATA.
2. BOUNDARY INFORMATION WAS GENERATED FROM A FIELD RUN SURVEY PREPARED BY MTPLS IN SEPTEMBER OF 2020.
3. THE EXISTING HOME IS SERVED BY A PRIVATE SEPTIC SYSTEM. THE SEPTIC SYSTEM WILL BE PROPERLY ABANDONED BY A LICENSED CONTRACTOR AND THE HOME WILL BE CONNECTED TO THE PUBLIC SEWER SYSTEM.
4. TO OUR KNOWLEDGE THERE ARE NO KNOWN UNDERGROUND STORAGE TANKS ON THIS SITE.
5. NO KNOWN HAZARDOUS MATERIALS AS DEFINED BY SECTION 7-101 OF THE ENVIRONMENTAL ARTICLE OF THE ANNOTATED CODE OF MARYLAND EXIST ON SITE.
6. THE PROPOSED USE OF THIS SITE IS NOT ONE OF THE USES IDENTIFIED AS SUCH UNDER THE PROCEDURES OF SECTION 5-601 OF THE STATE FINANCE AND PROCUREMENT ARTICLE OF THE ANNOTATED CODE OF MARYLAND ON THIS SITE.
7. SOILS WERE OBTAINED FROM THE NRCS SOIL DATA MART WEBSITE.
8. THIS SITE IS NOT LOCATED WITHIN THE CHESAPEAKE BAY CRITICAL AREA.
9. A PORTION OF THE SITE IS LOCATED WITHIN A BALTIMORE COUNTY DEFINED 100 YEAR FLOODPLAIN. THE PROJECT IS NOT LOCATED WITHIN A FEMA FLOODPLAIN.
10. NATURAL RESOURCES INVENTORY AND PRELIMINARY FOREST CONSERVATION PLAN HAVE BEEN SUBMITTED TO THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.
11. TO THE BEST OF OUR KNOWLEDGE THERE ARE NO KNOWN SIGNIFICANT REGULATED PLANT OR WILDLIFE COMMUNITIES PER DEPS OR MARYLAND DEPARTMENT OF NATURAL RESOURCE DATA.

ADJACENT PROPERTY INFORMATION

1. 13 OLD BOXWOOD LANE
PAMELA BOYER
TAX ID: 2000004431
DEED REF.: 11943/569
PLAT REF.: 53/34

2. 15 OLD BOXWOOD LANE
CAROL RENICK
TAX ID: 2000004432
DEED REF.: 3322/236
PLAT REF.: 53/34

3. 17 OLD BOXWOOD LANE
THOMAS AND CAROL BRADLEE
TAX ID: 2000004433
DEED REF.: 4046/243
PLAT REF.: 53/34

4. 19 OLD BOXWOOD LANE
LORRAINE BRONSTEIN TRUSTEE
TAX ID: 2000004434
DEED REF.: 23741/666
PLAT REF.: 53/34

5. 21 OLD BOXWOOD LANE
ALVIN AND MARI KALIN
TAX ID: 2000004435
DEED REF.: 30668/144
PLAT REF.: 53/34

6. 23 OLD BOXWOOD LANE
JAMES AND DOROTHY TRUITT
TAX ID: 2000004436
DEED REF.: 28568/25
PLAT REF.: 53/34

7. 76 SEMINARY FARM RD.
FRED AND JAN HALLANAN
TAX ID: 1900006676
DEED REF.: 24347/683
PLAT REF.: 49/124

8. 74 SEMINARY FARM RD.
THOMAS AND PATRICIA PRICE
TAX ID: 1900006677
DEED REF.: 7540/474
PLAT REF.: 49/124

9. 72 SEMINARY FARM RD.
THOMAS ONEILL JR. AND WILLIAM HALE
TAX ID: 1900006678
DEED REF.: 43537/169
PLAT REF.: 49/124

10. 70 SEMINARY FARM RD.
GARY WOODRUFF
TAX ID: 1900006679
DEED REF.: 31148/40
PLAT REF.: 49/124

11. 68 SEMINARY FARM RD.
HARJIT AND JAIMALA SINGH
TAX ID: 1900006680
DEED REF.: 7646/129
PLAT REF.: 49/124

12. 66 SEMINARY FARM RD.
MELVILLE AND BETSY YEARLEY
TAX ID: 1900006681
DEED REF.: 31642/00
PLAT REF.: 49/124

13. FALLS RD.
BRIAN RYMOND
TRUSTEE & JAMES GRIEMPLER
TAX ID: 0912591081
DEED REF.: 38972/329
PLAT REF.: NONE

14. 2340 W JOPPA RD.
VALLEY CENTER PARTNERSHIP
TAX ID: 1800002866
DEED REF.: 5868/533
PLAT REF.: 44/40

15. 2343 W. JOPPA RD.
MG MICHAEL INC.
TAX ID: 0902851280
DEED REF.: 29728/56
PLAT REF.: NONE

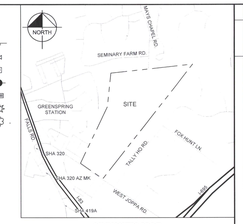
16. FALLS RD.
BRIAN RAYMOND
TRUSTEE & JAMES GRIEMPLER
TAX ID: 0912591082
DEED REF.: 38972/329
PLAT REF.: NONE

LEGEND

- CONTOUR LINE (1' INTERVAL)
- DEPRESSION CONTOUR
- CONCRETE CURB W/ GUTTER
- CONCRETE LINE
- BUILDING LINE
- EDGE OF PAVEMENT
- SANITARY SEWER
- STORM DRAIN
- WOOD LINE
- OVERHEAD WIRE
- WALL
- FLOOD PLAIN
- FOREST BUFFER
- MONITORING WELL
- WATER VAULT
- CLEANOUT
- SANITARY SEWER MANHOLE
- ELECTRIC METER
- LIGHT POLE
- GAS VALVE
- MAJOR TREE
- MINOR TREE (FLOWERING)
- MINOR TREE (EVERGREEN)
- SHRUB
- SIGN
- WATE VALVE
- HAND BOX
- UTILITY POLE
- INLET
- PINE TREE
- DECIDUOUS TREE

SLOPE PROTECTION NOTE:

1. THE DEVELOPMENT AS PROPOSED WILL INCLUDE PROTECTIVE MEASURES ADEQUATE TO PREVENT EROSION OR SLOUGHING OF ANY STEEP SLOPES AS DEFINED BY SECTION 32-4-101 OF THE BALTIMORE COUNTY CODE AND PROMOTE THE PRESERVATION OF THE TOPOGRAPHIC FEATURES OF THE STEEP SLOPE. THIS WILL BE ACHIEVED BY PROVIDING EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE REQUIREMENTS OF THE BALTIMORE COUNTY SOIL CONSERVATION DISTRICT AND THE CURRENT STATE OF MARYLAND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.



VICINITY MAP

SCALE: 1" = 1000'

BENCHMARKS

NAME	NORTHING (NAD 83)	EASTING (NAD 83)	ELEVATION (NAVD 88)	DESCRIPTION
SHA 320	636,167.82	1,405,686.70	282.83	BRASS DISC
SHA 320 AZ MK	637,715.75	1,405,953.28	290.31	BRASS CAP
416A	637,027.56	1,406,235.67	282.89	CAPPED PIPE

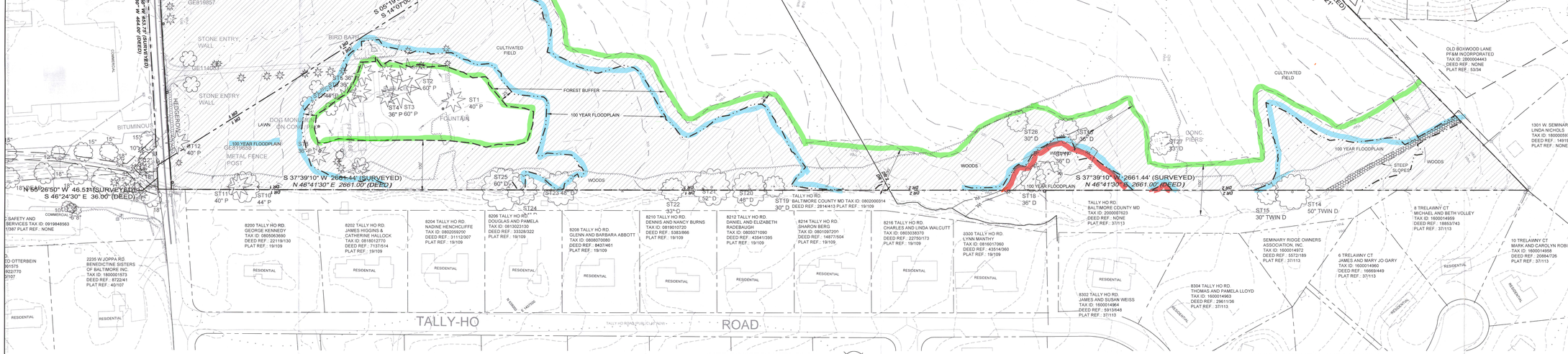
1. PROPERTY OWNER:
DOROTHEA LANKFORD
PO BOX 285
2310 W JOPPA ROAD
BROOKLANDVILLE, MD. 21022

2. DEVELOPER:
ATAPCO PROPERTIES, INC.
ATTN: RON SNYDER
DIRECTOR OF LAND DEVELOPMENT
1 SOUTH STREET, SUITE 2800
BALTIMORE, MD. 21202
TEL.: 410-347-7217

3. PLAN PREPARED BY:
KIMLEY-HORN
ATTN: MATTHEW BISHOP, PLA, LEED AP
210 WEST PENNSYLVANIA AVENUE
TOWSON, MD 21204
TEL.: 443-792-9995

SITE DATA:

1.	SITE ADDRESS:	2310 WEST JOPPA ROAD
2.	ZONING:	DR-1 & DR-2
3.	SITE AREA:	
	GROSS	±39.4 ACRES
	NET	±39.4 ACRES
4.	EXISTING LAND USE:	RESIDENTIAL / FIELDS
	PROPOSED LAND USE:	SINGLE-FAMILY DETACHED RESIDENTIAL
5.	PROPERTY INFORMATION:	
A.	TAX ACCOUNT NUMBER:	0812000275
B.	TAX MAP:	60
C.	PARCEL:	449
D.	DEED REFERENCE:	42953/411
E.	COUNCILMANIC DISTRICT:	2
F.	ELECTION DISTRICT:	8
G.	CENSUS TRACT:	4087.04
H.	TAX MAP GRID:	4578D4, 4578D3
I.	ZONING MAP:	060A3
J.	WATERSHED:	JONES FALLS
K.	GROWTH TIER:	1 SERVED BY PUBLIC SEWER AND INSIDE URDL
L.	SCHOOLS:	
	ELEMENTARY	RIDERWOOD ES
	MIDDLE	RIDGELY MS
	HIGH	DULANEY HS


JOPPA RD.
STATE OF MD. STATE ROADS COMMISSION
TAX ID: 0919848407
DEED REF.: 3203/28
2324 W. JOPPA RD.
JOPPA GREEN LIMITED PARTNERSHIP LLLP
TAX ID: 0823078210
DEED REF.: 17319/272
PLAT REF.: NONE
2330 W. JOPPA RD.
MULLAN GREENSPRING LLLP
TAX ID: 0909035026
DEED REF.: 17268/497
PLAT REF.: NONE
COMMERCIAL
10753 FALLS RD
FOXLEIGH PAVILIONS LIMITED PARTNERSHIP
TAX ID: 2200011094
DEED REF.: NONE
PLAT REF.: 64/19
COMMERCIAL
OFFSITE VISIBLE LIMITS OF CEMETERY
WOODS
N 05°19'56" E 670.16'
N 26°17'56" E 1206.80' (SURVEYED)
N 35°25'00" E 1106.23' (DEED)
S 05°19'56" W 1925.29' (SURVEYED)
S 14°07'00" W 1928.15' (DEED)
S 37°39'10" W 2661.44' (SURVEYED)
N 46°41'30" E 2661.00' (DEED)
N 52°26'50" W 46.51' (SURVEYED)
S 46°24'30" E 36.00' (DEED)
S 07°20'00" W 1404.10' (DEED)
N 83°40'10" E 1484.21' (SURVEYED)
100 YEAR FLOODPLAIN
FOREST BUFFER
CULTIVATED FIELD
ROCK OUT CROPPING
WOOD POST 6"REFLECTOR
CURB
BITUMINOUS CURB
GATE
ROAD
ARBOR WAY
BOXWOOD LANE
OLD BOXWOOD LANE
PFAM INCORPORATED
TAX ID: 2000004443
DEED REF.: NONE
PLAT REF.: 53/34
1301 W. SEMINARY AVE.
LINDA NICHOLS
TAX ID: 1800005977
DEED REF.: 14919/416
PLAT REF.: NONE
2323 W. JOPPA RD.
DEPT. OF PUBLIC SAFETY AND CORRECTION SERVICES
TAX ID: 0919848410
DEED REF.: 3509/1387
PLAT REF.: NONE
GE523532
GE352267
COMMS. CABINET ON CONC. PAD
GE619857
GE619858
GE619859
GE619860
GE619861
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GE619883
GE619884
GE619885
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GE619889
GE619890
GE619891
GE619892
GE619893
GE619894
GE619895
GE619896

GREENSPRING MANOR

2310 W. JOPPA ROAD

TIMONIUM, MARYLAND

DEVELOPMENT PLANS REVIEW

1. THIS PROJECT IS LOCATED WITHIN THE URBAN RURAL DEMARCATION LINE.
2. THE SITE IS LOCATED WITHIN A LEVEL OF SERVICE F AS SHOWN ON THE 2020 BASIC SERVICES MAP TRANSPORTATION ZONE. A SPECIAL VARIANCE WILL BE SOUGHT IN CONJUNCTION WITH THIS DEVELOPMENT PLAN.
3. THE SITE IS LOCATED WITHIN AN AREA OF CONCERN AS SHOWN ON THE 2020 BASIC SERVICES MAP SEWER DEFICIENT AREAS AND AREAS OF CONCERN.
4. THE SITE IS NOT LOCATED IN A DEFICIENT AREA FOR PUBLIC WATER AS SHOWN ON THE 2020 BASIC SERVICES MAP WATER SUPPLY AREA.
5. TRAFFIC SHALL BE PROVIDED FOR PHYSICALLY HANDICAPPED PERSONS AT ALL STREET INTERSECTIONS WITH DETECTABLE WARNING AREAS. PER STANDARD DETAILS R-36A AND R-36B.
6. SIDEWALKS WILL BE PROVIDED ALONG ALL PUBLIC ROADS AND WILL MEET ALL STATE HIGHWAY ADMINISTRATION STANDARDS FOR CONSTRUCTION.
7. STREET LIGHTS SHALL BE INSTALLED ALONG ALL PUBLIC ROADS.
8. ALL SIGNS WILL CONFORM TO BALTIMORE COUNTY ZONING CODE, SECTIONS 450 OR THE APPROPRIATE RELIEF WILL BE REQUESTED.
9. STEAM AND GENERATOR EMISSIONS TESTING WILL BE DEVELOPED IN TWO PHASES.
10. TOTAL ADT GENERATED BY THE SITE= 600

ENVIRONMENTAL AREAS

DESCRIPTION	SQUARE FOOTAGE
EXISTING FLOODPLAIN	391,500 ±
PROPOSED FLOODPLAIN	393,200 ±
EXISTING FOREST BUFFER	609,480 ±
PROPOSED FOREST BUFFER	303,200 ±
PROPOSED FOREST CONSERVATION	42,814 ±
PROPOSED FOREST BUFFER AND FOREST CONSERVATION	270,693 ±

PLANNING

1. THE1, SERVED BY PUBLIC SEWER AND INSIDE URDL, PER BALTIMORE COUNTY MY NEIGHBORHOOD WEBSITE.
2. THERE ARE NO KNOWN BUILDINGS, PROPERTIES, OR SITES WITHIN THE PROPOSED DEVELOPMENT AREA THAT ARE LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES, THE MARYLAND INVENTORY OF HISTORIC PROPERTIES LIST, THE NATIONAL REGISTER OF HISTORIC PLACES, OR THE MARYLAND ARCHEOLOGICAL SURVEY.
3. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR NATIONAL HISTORIC DISTRICTS.

OPEN SPACE

1. OPEN SPACE REQUIRED - 60 UNITS (60 NEW + 1 EXISTING) X 1,000 S.F. = 60,000 S.F. OPEN SPACE.
2. OPEN SPACE PROVIDED - 61.000 S.F.

   OPEN SPACE NOTES
   1. LOCAL OPEN SPACE SHALL BE IN COMPLIANCE WITH THE LOCAL OPEN SPACE MANUAL, LATEST EDITION.
   2. TEMPORARY OPEN SPACE BOUNDARY MARKERS, TREE PROTECTION DEVICES AND FOUR FOOT HIGH SNOW FENCING OR APPROVED EQUIVALENT SHALL BE INSTALLED PRIOR TO ANY CLEARING OR GRADING.
   3. WITHIN THE AREA SHOWN AS OPEN SPACE, DISTURBANCE BEYOND THAT WHICH IS SHOWN ON THE DEVELOPMENT PLAN SHALL NOT BE ALLOWED WITHOUT PRIOR APPROVAL FROM THE DEPARTMENT OF RECREATION AND PARKS.

ZONING

1. EXISTING ZONING DR-1 & DR-2
2. THIS DEVELOPMENT IS SUBJECT TO THE COMPREHENSIVE MANUAL OF DEVELOPMENT POLICIES (SECTION 504.2), AND THE COUNTY LANDSCAPE MANUAL (SECTION 409.6.A.1). THIS DEVELOPMENT WILL COMPLY AND BE CONSISTENT WITH ALL OF THE AFOREMENTIONED REGULATIONS, STANDARDS, GUIDELINES, AND POLICIES OR THE PROPER RELIEF WILL BE REQUESTED.
3. ALL SIGNS WILL CONFORM TO BALTIMORE COUNTY ZONING CODE, SECTIONS 450 OR APPROPRIATE RELIEF WILL BE REQUESTED.

ADJACENT PROPERTY INFORMATION

1. 13 OLD BOXWOOD LANE
   PAMELA BOYER
   TAX ID: 2000004431
   DEED REF.: 11543/869
   PLAT REF.: 53/34
2. 15 OLD BOXWOOD LANE
   CAROL RENICH
   TAX ID: 2000004432
   DEED REF.: 33222/36
   PLAT REF.: 53/34
3. 17 OLD BOXWOOD LANE
   THOMAS AND CAROL BRADLEE
   TAX ID: 2000004433
   DEED REF.: 40442/243
   PLAT REF.: 53/34
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   LORRAINE BRONSTEIN TRUSTEE
   TAX ID: 2000004434
   DEED REF.: 23741/666
   PLAT REF.: 53/34
5. 21 OLD BOXWOOD LANE
   ALVIN AND MARI KALIN
   TAX ID: 2000004435
   DEED REF.: 30680/144
   PLAT REF.: 53/34
6. 25 OLD BOXWOOD LANE
   JAMES AND DOROTHY SCHMITT
   TAX ID: 2000004436
   DEED REF.: 28568/25
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   PLAT REF.: 49/124
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    DEED REF.: 17446/129
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    MELVILLE AND BETSY YEARLEY
    TAX ID: 1900006681
    DEED REF.: 31642/30
    PLAT REF.: 49/124
13. FALLS RD.
    BRIAN RYMOND
    TRUSTEE & JAMES GREMPLER
    TAX ID: 0912091081
    DEED REF.: 38972/129
    PLAT REF.: NONE
14. 2360 W JOPPA RD.
    VALLEY CENTER PARTNERSHIP
    TAX ID: 1900002865
    DEED REF.: 5868/533
    PLAT REF.: 44/40
15. 2345 W. JOPPA RD.
    JOPPA-MD-I, INC.
    TAX ID: 0902851280
    DEED REF.: 29728/56
    PLAT REF.: NONE
16. FALLS RD.
    BRIAN RAYMOND
    TRUSTEE & JAMES GREMPLER
    TAX ID: 0912091082
    DEED REF.: 38972/129
    PLAT REF.: NONE

10753 FALLS RD.
FOXLEIGH PAVILIONS LIMITED PARTNERSHIP
TAX ID: 2200011094
DEED REF.: NONE
PLAT REF.: 64/19
COMMERCIAL

2330 W. JOPPA RD.
MCLEAN GREENSPRING LLLP
TAX ID: 0800035026
DEED REF.: 17269/497
PLAT REF.: NONE
COMMERCIAL

2324 W. JOPPA RD.
JOPPA GREEN LIMITED PARTNERSHIP LLLP
TAX ID: 0803078210
DEED REF.: 17319/272
PLAT REF.: NONE
COMMERCIAL

JOPPA RD.
STATE OF MD. STATE ROADS COMMISSION
TAX ID: 0919846407
DEED REF.: 3203/28

2323 W. JOPPA RD.
DEPT. OF PUBLIC SAFETY AND CORRECTION SERVICES
TAX ID: 0919846410
DEED REF.: 35091/387
PLAT REF.: NONE

FALLS RD.
DEPT. OF PUBLIC SAFETY AND CORRECTIONAL SERVICES TAX ID: 0919846563
DEED REF.: 35091/387 PLAT REF.: NONE

2233 JOPP RD.
MARY AND LEO OTTERBEIN
TAX ID: 1800001575
DEED REF.: 4722/41
PLAT REF.: 40/107

2235 W JOPPA RD.
BENEDICTINE SISTERS OF BALTIMORE INC.
TAX ID: 1800001573
DEED REF.: 8722/41
PLAT REF.: 40/107

8200 TALLY HO RD.
GEORGE KENNEDY
TAX ID: 0805063690
DEED REF.: 22119/330
PLAT REF.: 19/109

8202 TALLY HO RD.
JAMES HIGGINS & CATHERINE HALLOCK
TAX ID: 0818012770
DEED REF.: 7137/514
PLAT REF.: 19/109

8204 TALLY HO RD.
NADINE HENCHCLIFFE
TAX ID: 0802059200
DEED REF.: 31112/207
PLAT REF.: 19/109

8206 TALLY HO RD.
DOUGLAS AND PAMELA
TAX ID: 0813023130
DEED REF.: 33328/322
PLAT REF.: 19/109

8208 TALLY HO RD.
GLENN AND BARBARA ABBOTT
TAX ID: 0809070080
DEED REF.: 8437/461
PLAT REF.: 19/109

8210 TALLY HO RD.
DENNIS AND NANCY BURNS
TAX ID: 0819010720
DEED REF.: 5383/866
PLAT REF.: 19/109

8212 TALLY HO RD.
DANIEL AND ELIZABETH RADEBAUGH
TAX ID: 0805071090
DEED REF.: 43541/395
PLAT REF.: 19/109

8214 TALLY HO RD.
SHARON BERG
TAX ID: 0801097200
DEED REF.: 14877/504
PLAT REF.: 19/109

8216 TALLY HO RD.
CHARLES AND LINDA WALCUTT
TAX ID: 0803038370
DEED REF.: 22750/173
PLAT REF.: 19/109

8300 TALLY HO RD.
LYNN MANTHY
TAX ID: 0816017060
DEED REF.: 43514/360
PLAT REF.: 19/109

TALLY HO RD.
BALTIMORE COUNTY MD TAX ID: 0802000314
DEED REF.: 2814/413 PLAT REF.: 19/109

8302 TALLY HO RD.
JAMES AND SUSAN WEISS
TAX ID: 1600014964
DEED REF.: 5913/646
PLAT REF.: 37/113

TALLY HO RD.
BALTIMORE COUNTY MD
TAX ID: 2000007023
DEED REF.: NONE
PLAT REF.: 37/113

8304 TALLY HO RD.
THOMAS AND PAMELA LLOYD
TAX ID: 1600014963
DEED REF.: 29611/36
PLAT REF.: 37/113

SEMINARY RIDGE OWNERS ASSOCIATION, INC.
TAX ID: 1600014972
DEED REF.: 5572/189
PLAT REF.: 37/113

6 TRELAWNY CT
JAMES AND MARY JO GARY
TAX ID: 1600014960
DEED REF.: 15669/449
PLAT REF.: 37/113

8 TRELAWNY CT
MICHAEL AND BETH VOLLEY
TAX ID: 1600014959
DEED REF.: 18853/743
PLAT REF.: 37/113

10 TRELAWNY CT.
MARK AND CAROLYN ROBINSON
TAX ID: 1600014958
DEED REF.: 20884/726
PLAT REF.: 37/113

1301 W. SEMINARY AVE.
LINDA NICHOLS
TAX ID: 1800005977
DEED REF.: 14918/416
PLAT REF.: NONE

OLD BOXWOOD LANE PFAM INCORPORATED
TAX ID: 2000004443
DEED REF.: NONE
PLAT REF.: 53/34

FIRE MARSHAL

1. PROPOSED BUILDINGS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO MEET THE APPLICABLE PROVISIONS OF THE BALTIMORE COUNTY FIRE PREVENTION CODE.
2. LANDSCAPING OR OTHER OBSTRUCTIONS SHALL NOT BE PLACED AROUND THE PERIMETER OF THE BUILDING SHALL BE OF A TYPE THAT WILL NOT INTERFERE WITH EMERGENCY APPARATUS ACCESS WHEN THEY MATURE. NFPA 1141, 4.2.6?.
3. A CRUSHER RUN ROAD FOR ACCESS TO BUILDINGS AND REQUIRED WATER SUPPLIES SHALL BE AVAILABLE FOR THE USE BY EMERGENCY FIRE APPARATUS AND CAPABLE OF HANDLING EMERGENCY APPARATUS WEIGHING 75,000 LBS. WHEN CONSTRUCTION OF ANY BUILDING IS UNDER ROOF, IN ACCORDANCE WITH THE BALTIMORE COUNTY FIRE PREVENTION CODE, SECTION 29-2.3.1.

VEHICLE AND BIKE PARKING

1. PARKING
   REQUIRED PARKING
   SINGLE FAMILY ATTACHED
   61 UNITS @ 2 SPACE / DWELLING UNIT = 122 PARKING SPACES
   TOTAL REQUIRED SPACES = 122 PARKING SPACES
   PROVIDED PARKING SPACES
   GARAGE PARKING SPACES 122 PARKING SPACES
   DRIVEWAY PARKING SPACES 122 PARKING SPACES
   TOTAL 244 PARKING SPACES
2. REQUIRED BICYCLE PARKING SPACES 1/2 , 04 = 3
3. PROVIDED BICYCLE PARKING SPACES 9 SPACES

ADDITIONAL INFO

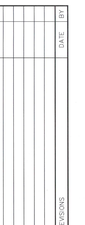
ANTICIPATED ACTIONS:
1. VARIANCES: NONE
2. SPECIAL VARIANCE: TO PERMIT BUILDING PERMITS IN AN F LEVEL TRAFFIC SHED AS DELINEATED ON THE 2020 BASIC SERVICES MAP.
3. WAIVERS: 28' PAVING ON A 50' ROW IN LIEU OF 30' PAVING ON A 50' ROW
4. ADMINISTRATIVE ADJUSTMENTS: NONE
5. OTHER: NONE
6. CONSISTENCY WITH DESIGN MANUALS: YES

LEGEND

CONTOUR LINE (1' INTERVAL)
DEPRESSION CONTOUR
CONCRETE CURB W/ GUTTER
CONCRETE LINE
BUILDING LINE
EDGE OF PAVEMENT
SANITARY SEWER
STORM DRAIN
WOOD LINE
OVERHEAD
WALL
FLOOD PLAIN
FOREST BUFFER

MONITORING WELL
WATER VAULT
CLEANOUT
SANITARY SEWER MANHOLE
ELECTRIC METER
LIGHT POLE
GAS VALVE
MAJOR TREE
MINOR TREE (FLOWERING)
MINOR TREE (EVERGREEN)
SHRUB

SIGN
WATE VALVE VAULT
HAND BOX
UTILITY POLE
INLET
PINE TREE
DECIDUOUS TREE



VICINITY MAP

SCALE: 1" = 1000'

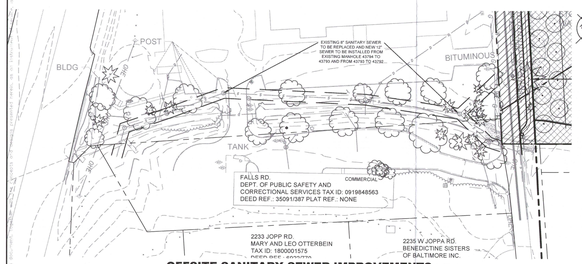
BENCHMARKS

NAME	NORTHING (NAD 83)	EASTING (NAD 83)	ELEVATION (NAVD 88)	DESCRIPTION
SHA 320	636,167.82	1,405,699.79	290.03	BRASS DISC
SHA 320 AZ MK	637,711.75	1,405,853.28	290.31	BRASS CAP
416A	637,027.98	1,406,235.87	282.89	CAPPED PIPE

LOT AREAS

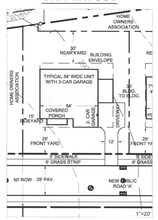
LOT NO.	SF	ACRE
LOT 1	146,936+/-	3.373+/-
LOT 2	11,870+/-	.727+/-
LOT 3	8,410+/-	.193+/-
LOT 4	8,410+/-	.193+/-
LOT 5	8,410+/-	.193+/-
LOT 6	7,205+/-	.165+/-
LOT 7	17,615+/-	.405+/-
LOT 8	12,173+/-	.279+/-
LOT 9	12,453+/-	.285+/-
LOT 10	12,453+/-	.285+/-
LOT 11	12,453+/-	.285+/-
LOT 12	11,451+/-	.262+/-
LOT 13	8,809+/-	.202+/-
LOT 14	9,623+/-	.220+/-
LOT 15	14,231+/-	.326+/-
LOT 16	14,250+/-	.327+/-
LOT 17	16,643+/-	.382+/-
LOT 18	14,018+/-	.321+/-
LOT 19	12,803+/-	.293+/-
LOT 20	10,707+/-	.245+/-
LOT 21	11,688+/-	.268+/-
LOT 22	12,216+/-	.280+/-
LOT 23	12,347+/-	.283+/-
LOT 24	11,218+/-	.257+/-
LOT 25	9,053+/-	.207+/-
LOT 26	11,555+/-	.267+/-
LOT 27	17,244+/-	.395+/-
LOT 28	21,344+/-	.489+/-
LOT 29	13,487+/-	.309+/-
LOT 30	11,233+/-	.257+/-
LOT 31	11,392+/-	.261+/-
LOT 32	12,265+/-	.281+/-
LOT 33	13,484+/-	.309+/-
LOT 34	13,154+/-	.301+/-
LOT 35	14,360+/-	.329+/-
LOT 36	9,827+/-	.225+/-
LOT 37	8,165+/-	.187+/-
LOT 38	9,819+/-	.225+/-
LOT 39	10,337+/-	.237+/-
LOT 40	12,282+/-	.281+/-
LOT 41	12,653+/-	.290+/-
LOT 42	11,463+/-	.263+/-
LOT 43	9,652+/-	.221+/-
LOT 44	8,549+/-	.196+/-
LOT 45	8,619+/-	.197+/-
LOT 46	11,384+/-	.261+/-
LOT 47	12,048+/-	.276+/-
LOT 48	10,535+/-	.241+/-
LOT 49	12,288+/-	.282+/-
LOT 50	12,533+/-	.296+/-
LOT 51	13,144+/-	.301+/-
LOT 52	11,011+/-	.252+/-
LOT 53	14,656+/-	.336+/-
LOT 54	9,090+/-	.208+/-
LOT 55	8,562+/-	.196+/-
LOT 56	8,244+/-	.189+/-
LOT 57	8,168+/-	.187+/-
LOT 58	9,315+/-	.213+/-
LOT 59	9,315+/-	.213+/-
LOT 60	9,315+/-	.213+/-
LOT 61	11,466+/-	.263+/-

SITE CONSTRAINTS PLAN

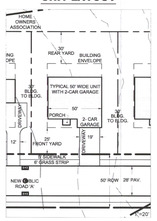


OFFSITE SANITARY SEWER IMPROVEMENTS 1"=60'

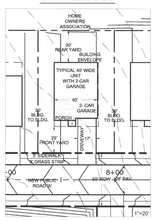
TYPICAL 54' WIDE UNIT LAYOUT



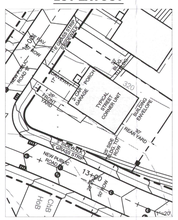
TYPICAL 50' WIDE UNIT LAYOUT



TYPICAL 40' WIDE UNIT LAYOUT



TYPICAL CORNER LOT LAYOUT



CONCEPT LANDSCAPE PLAN CALCULATIONS

Baltimore County Planting Unit Calculation	PU Credit Requirement Rate	Quantity	Required Planting Units (PU)
Condition A Adjacent and Interior Roads			
Adjacent Road	1 PU/ 40 LF	500	13
Interior Road	1 PU/ 20 LF	3730	187
Condition I Stormwater Management			
Perimeter of Cut	1 PU/ 15 LF	2800	187
Condition M Rear and Side Yards			
Rear and Side Yards	1 PU/ 15 LF	1115	74
Condition R Open Space			
Open Space	1 PU/ 1,500 SF	61000	41
	Total Required Planting Units (PU)		613
Baltimore County Proposed Planting Unit Calculation	**PU Credit Requirement Rate**	**Quantity**	**Proposed Planting Units (PU)**
Major Trees Proposed	1 PU/ Tree	296	296
Minor Trees Proposed	1 PU/ 2 Trees	221	110.5
Evergreen Trees Proposed	1 PU/ 2 Trees	316	158.0
Shrubs Proposed	1 PU/ 5 Shrubs	281	56.2
	Total Proposed Planting Units (PU)		620.7

SITE DEVELOPMENT PROPOSAL

DWELLING TYPE	PROPOSED UNITS	PARKING REQUIRED	PARKING PROVIDED	OPEN SPACE REQUIRED	OPEN SPACE PROPOSED	AVERAGE DAILY TRIPS	PHASE	DEVELOPMENT SCHEDULE
SINGLE-FAMILY DETACHED	61	122	244	1.38 AC ±	1.40 AC.	600	I	-
TOTAL	61	122	244	1.38 AC ±	1.40 AC.	600	-	-

EXISTING ZONING AND MAXIMUM DENSITY PERMITTED

ZONE	GROSS ACRES	DWELLING UNITS PERMITTED	DWELLING UNITS PROPOSED
DR-1	±16.8 AC	16	16
DR-2	±22.8 AC	45	45
		TOTAL	61

UNDEVELOPED AREAS

DESCRIPTION	ACRES
STORMWATER MANAGEMENT	3.5 ±
HOA/COA AREAS	1.5 ±
OTHER	8.0 ±
TOTAL PROVIDED	13.0 ±

SETBACK TABLE

SETBACK TYPE - DR 1 & 2	SETBACK
FRONT BUILDING FACE TO:	
R/W OR PROPERTY LINE:	25'
SIDE BUILDING FACE TO:	
SIDE BUILDING FACE:	20'
PUBLIC STREET R/W:	20'
REAR BUILDING FACE TO:	50'
TRACT BOUNDARY:	20'
REAR BUILDING FACE TO:	
NEAR PROPERTY LINE:	30'
PUBLIC STREET R/W:	30'

PA## - 08-0922
TRACKING # - Maj-2021-00001

Kimley»Horn
1801 PORTER ST., SUITE 401, BALTIMORE, MD 21230
PHONE: 443-743-3470
WWW.KLEY-HORN.COM

No.	REVISIONS	DATE	BY

KHA PROJECT 114000001
02/15/2021
SCALE: AS SHOWN
DESIGNED BY: MJED
DRAWN BY: MJED
CHECKED BY: MJB

CONCEPT PLAN
SITE PROPOSAL PLAN

GREENSPRING MANOR
(2310 WEST JOPPA ROAD)
PREPARED FOR
ATAPCO PROPERTIES

BALTIMORE COUNTY, MD
TAX MAP: 70 GRID: 12
ELECTION DISTRICT: 3RD

SHEET NUMBER
2 OF 2

GREENSPRING MANOR

2310 W. JOPPA ROAD

DEDICATION TABLE

THE FOLLOWING PROPERTIES ARE TO BE CONVEYED TO BALTIMORE COUNTY BY THE DEVELOPER OWNER OF THESE PROPERTY AS A CONDITION OF APPROVAL OF THESE PLANS:

TYPE OF CONVEYANCE	NO.	TOTAL AREA**
FOREST CONSERVATION EASEMENT	1	4.60 AC±
DRAINAGE AND UTILITY EASEMENT	1	4.68 AC±
FOREST CONSERVATION EASEMENT	1	0.06 AC±
100 YEAR FLOODPLAIN EASEMENT	1	4.56 AC±
FOREST BUFFER EASEMENT (INCLUDES 25' BUFFER)	1	4.56 AC±
FOREST BUFFER EASEMENT (INCLUDES 50' BUFFER)	1	4.56 AC±
HOA OPEN SPACE	1	4.56 AC±
HOA FOREST CONSERVATION EASEMENT	1	4.56 AC±
REFORESTATION AREA	1	4.56 AC±
ACCESS EASEMENT	1	0.06 AC±

** NOTE: TOTAL AREAS SHOWN IN THIS TABLE ARE APPROXIMATE ONLY, RELATED TO THE RECORDS PLAT (ON RIGHT OF WAY / DRAINAGE TYPE EASEMENTS AREAS)

ENTRANCE FEATURE AND SIGN



DELINQUENT ACCOUNTS CERTIFICATION:

I HEREBY CERTIFY THAT, TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF, THE DIRECTOR OF LAND DEVELOPMENT CENTURY LAND DEVELOPMENT, LLC HAS NO DELINQUENT ACCOUNTS FOR ANY OTHER DEVELOPMENT WITH RESPECT TO ANY OF THE FOLLOWING: THE APPLICANT, A PERSON WITH FINANCIAL INTEREST IN THE PROPOSED DEVELOPMENT OR A PERSON WITH SIGNIFICANT, KNOWN CONTRACTUAL INTEREST IN THE PROPERTY OR DEVELOPMENT.

GROUNDWATER MANAGEMENT

1. PRIOR TO ISSUANCE OF FIRST BUILDING PERMIT, THE EXISTING WELL MUST BE CONNECTED TO PUBLIC WATER AND ABANDONED IN ACCORDANCE WITH THE BALTIMORE COUNTY GROUNDWATER MANAGEMENT REGULATIONS. ABANDONMENT REPORTS MUST BE SUBMITTED PRIOR TO ANY FINAL INSPECTION.
2. ANY EXISTING WELL NOT TO BE ABANDONED MUST BE PROTECTED BY A STRUCTURE BEYOND THE LIMITS OF DISTURBANCE AND SHOWN ON CONSTRUCTION PLANS. MAINTENANCE REPORTS MUST BE SUBMITTED PRIOR TO FINAL INSPECTION AT APPROVAL.

ADJACENT PROPERTY INFORMATION

1. 13 OLD BOYWOOD LANE, LLC, ET AL
TAX ID: 2000018431
DEED REF.: 11949/460
PLAT REF.: 33/31
2. 15 OLD BOYWOOD LANE, LLC
DAWN AND RONNY PUGH
TAX ID: 2000019432
DEED REF.: 11949/460
PLAT REF.: 33/34
3. 17 OLD BOYWOOD LANE
JAMES AND CAROL BRADLEY
TAX ID: 2000019433
DEED REF.: 11949/460
PLAT REF.: 33/34
4. 19 OLD BOYWOOD LANE
LORRAINE BROKERSER
TRUSTEE
TAX ID: 2000018434
DEED REF.: 23741/406
PLAT REF.: 33/34
5. 21 OLD BOYWOOD LANE
JARED AND ANNE
DOMPKOWSKI
TAX ID: 2000018435
DEED REF.: 39166/121
PLAT REF.: 33/34
6. 23 OLD BOYWOOD LANE
JARED AND ANNE
DOMPKOWSKI
TAX ID: 2000018435
DEED REF.: 39166/121
PLAT REF.: 49124
7. 76 SEMINARY FARM RD
FRED AND JAN HALLWIGH
TAX ID: 1900018431
DEED REF.: 24341/465
PLAT REF.: 69124
8. 78 SEMINARY FARM RD
SUSAN MAY
PATTON PRICE
TAX ID: 1900018437
DEED REF.: 43719/001
PLAT REF.: 49124
9. 12 SEMINARY FARM RD
THOMAS O'NEILL JR
AND WILLIAM NALL
TAX ID: 1900018438
DEED REF.: 43977/350
PLAT REF.: 46126
10. 70 FALLS RD
FOXLEIGH PAVILIONS LIMITED
PARTNERSHIP
TAX ID: 2200011594
DEED REF.: NONE
PLAT REF.: 6618
CONNECTION: 4"
11. 71 SEMINARY FARM RD
HAYLEY AND
DANIEL A. BAKER
TAX ID: 1900018000
DEED REF.: 41667/139
PLAT REF.: 49124
12. 69 SEMINARY FARM RD
MELLVILLE AND
ANNE MCCLAIN
TAX ID: 1900018001
DEED REF.: 31642/20
PLAT REF.: 49124
13. 73 OLD SEMINARY FARM RD
JOHN AND ANNE
TAX ID: 1900018439
DEED REF.: 31149/40
PLAT REF.: 49124
11 PK SEMINARY FARM RD
TAX ID: 1900018439
DEED REF.: 31149/40
PLAT REF.: 49124

FIRE MARSHAL

1. PROPOSED BUILDINGS SHALL BE DESIGNED AND CONSTRUCTED TO AS TO MEET THE APPLICABLE PROVISIONS OF THE BALTIMORE COUNTY FIRE PREVENTION CODE.
2. LANDSCAPING OR OTHER OBSTRUCTION PLACED AROUND STRUCTURES SHALL NOT IMPAIR OR IMPEDE ACCESSIBILITY FOR FIRE DEPARTMENT APPARATUS ACCESS SHALL THEY MATURE. MIN 4 PN EFFECTIVE SECTION 18.2.4.1
3. ALL FIRE APPARATUS ACCESS ROADS AND WATER SUPPLIES SHALL BE AVAILABLE BY THE TIME OF EMERGENCY FIRE APPARATUS AND CAPABLE OF HANDLING EMERGENCY APPARATUS WEIGHING 75,000 LBS. WHEN CONSTRUCTION OF ANY BUILDING OR UNDER PROF. IN ACCORDANCE WITH THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17, SECTION 1.19.0.1.3.
4. ONE FIRE HYDRANT SHALL BE PROVIDED WITHIN 600 FEET OF ANY PROPOSED INDIVIDUAL DWELLING.
5. THE DRIVEWAY (S) (STEEP HILL) MUST BE APPROVED BY THE BALTIMORE COUNTY FIRE MARSHAL'S OFFICE PRIOR TO SEEKING OCCUPANCY. (SPRINKLER HYDRO - SPRINKLER FLOW).
6. THE PRIVATE FIRE HYDRANT(S) SHALL BE PAINTED "ORHA PROT TO DISTINGUISH THEM FROM THE PUBLIC (ORANGE) FIRE HYDRANTS IN ACCORDANCE WITH THE BALTIMORE COUNTY STANDARD DETAIL MANUAL.
7. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A PRIVATE UNDERGROUND FIRE LINE AND SHALL BE REVIEWED BY THE PLANS REVIEW SECTION OF BALTIMORE COUNTY. A PLUMBING PERMIT SHALL NOT BE USED TO INSTALL AN UNDERGROUND FIRE LINE.
8. ALL FIRE HYDRANTS UPACING SHALL BE IN ACCORDANCE WITH THE BALTIMORE COUNTY STANDARD DETAIL MANUAL.
9. ALL ROADS SHALL BE DESIGNED IN ACCORDANCE WITH NFPA 1141, SECTION 1 16 11 16. REQUIRED THAT THE ACCESS IS MAINTAINED FOR
10. RESIDENTIAL PROPOSED SHALL BE A MINIMUM OF 2 ACCESS IN AND

LEGEND

CONTOUR LINE (1' INTERVAL)
DEPRESSION CONTOUR
CONCRETE CURB OR GUTTER
CONCRETE CURB AND GUTTER
BUILDING LINE
LIMIT OF DISTURBANCE
EDGE OF PAVEMENT
SANITARY SEWER
STORM DRAIN
WOOD LINE
SHED
TYPICAL LOT
TYPICAL BUILDING
MONITORING WELL
WATER VALVE
CLEANOUT
UTILITY POLE
INLET
FIRE TRUCK
DEVELOPMENT BOUNDARY
SIGN
WATER SHUT
HAND BOX
SANITARY SEWER MANHOLE
ELECTRIC METER
LIGHT POLE
GAS VALVE
MAJOR TREE
MINOR TREE (FLOWERING)
MINOR TREE (EVERGREEN)
SHRUB

VICINITY MAP

SCALE: 1" = 1000'

BENCHMARKS

NAME	NORTHING (NAD 83)	EASTING (NAD 83)	ELEVATION (NAVD 88)	DESCRIPTION
BM #66	578,761.81	1,462,646.71	464.97	MAG NAIL
BM #67	577,737.75	1,462,863.05	394.41	BRASS CAP
BM #68	577,742.96	1,462,822.97	392.89	CAPPED PIPE

LOT AREAS

LOT NO.	SF	NOTE	LOT NO.	SF	NOTE
LOT 1	7,500		LOT 51	11,250	
LOT 2	7,500		LOT 52	11,250	
LOT 3	11,040		LOT 53	11,250	
LOT 4	9,225		LOT 54	10,200	
LOT 5	8,360		LOT 55	10,440	
LOT 6	15,310		LOT 56	43,124	
LOT 7	8,780		LOT 57	11,250	
LOT 8	8,370		LOT 58	11,250	
LOT 9	8,711		LOT 59	11,250	
LOT 10	7,500		LOT 60	11,250	
LOT 11	7,500		LOT 61	11,250	
LOT 12	12,125		LOT 62	11,250	
LOT 13	12,625		LOT 63	11,250	
LOT 14	12,160		LOT 64	11,250	
LOT 15	8,625		LOT 65	11,250	
LOT 16	8,950		LOT 66	11,250	
LOT 17	11,460		LOT 67	11,250	
LOT 18	10,400		LOT 68	11,250	
LOT 19	11,250		LOT 69	11,250	
LOT 20	11,250		LOT 70	11,250	
LOT 21	11,250		LOT 71	11,250	
LOT 22	11,250		LOT 72	11,250	
LOT 23	11,250		LOT 73	11,250	
LOT 24	11,250		LOT 74	11,250	
LOT 25	11,250		LOT 75	11,250	
LOT 26	11,250		LOT 76	11,250	
LOT 27	11,250		LOT 77	11,250	
LOT 28	11,250		LOT 78	11,250	
LOT 29	11,250		LOT 79	11,250	
LOT 30	11,250		LOT 80	11,250	
LOT 31	11,250		LOT 81	11,250	
LOT 32	11,250		LOT 82	11,250	
LOT 33	11,250		LOT 83	11,250	
LOT 34	11,250		LOT 84	11,250	
LOT 35	11,250		LOT 85	11,250	
LOT 36	11,250		LOT 86	11,250	
LOT 37	11,250		LOT 87	11,250	
LOT 38	11,250		LOT 88	11,250	
LOT 39	11,250		LOT 89	11,250	
LOT 40	11,250		LOT 90	11,250	
LOT 41	11,250		LOT 91	11,250	
LOT 42	11,250		LOT 92	11,250	
LOT 43	11,250		LOT 93	11,250	
LOT 44	11,250		LOT 94	11,250	
LOT 45	11,250		LOT 95	11,250	
LOT 46	11,250		LOT 96	11,250	
LOT 47	11,250		LOT 97	11,250	
LOT 48	11,250		LOT 98	11,250	
LOT 49	11,250		LOT 99	11,250	
LOT 50	11,250		LOT 100	11,250	

GREENSPRING MANOR - OPEN SPACE AMENITY COST ESTIMATE

Activity / Item	Unit	Quantity	Unit Cost	Total Cost
Grading	AC	4.56	$2,000.00	$9,120.00
Planting	AC	4.56	$2,000.00	$9,120.00
Total Open Space				$18,240.00
Amenity Space (Active Recreation)				
Playground Equipment	LS	1	$75,000.00	$75,000.00
Playground Safety Surface	SF	5,000	$8.00	$40,000.00
Playground Fencing	LF	350	$30.00	$10,500.00
Tree Removal	EA	5	$1,500.00	$7,500.00
Tree Planting	EA	10	$500.00	$5,000.00
Total Amenity Space (Active Recreation)				$138,000.00
Amenity Space (Passive Recreation)				
Pavilion	LS	1	$50,000.00	$50,000.00
Pavilion Concrete Slab	SF	1,200	$10.00	$12,000.00
Pavilion Electrical	LS	1	$5,000.00	$5,000.00
Pavilion Lighting	LS	1	$3,000.00	$3,000.00
Tree Removal	EA	5	$1,500.00	$7,500.00
Tree Planting	EA	10	$500.00	$5,000.00
Total Amenity Space (Passive Recreation)				$82,500.00
Amenity Space (Natural Area)				
Trail Grading	LF	1,200	$15.00	$18,000.00
Trail Surface	LF	1,200	$20.00	$24,000.00
Trail Signage	EA	4	$500.00	$2,000.00
Tree Removal	EA	5	$1,500.00	$7,500.00
Tree Planting	EA	10	$500.00	$5,000.00
Total Amenity Space (Natural Area)				$56,500.00
Total Amenity Space				$277,000.00

SUITABLE OUTFALL STATEMENT

IN THE EXISTING CONDITION, THE SITE CONSISTS OF SINGLE-FAMILY HOMES AND AGRICULTURAL FIELDS. THE SITE DRAINS TO THE NORTH AND EAST TO TWO UNNAMED TRIBUTARIES TO THE GUNPOWDER FALLS. THE PROPOSED SITE WILL BE DIVIDED INTO FIVE DRAINAGE AREAS (AREAS 1 - 5). AREAS 1 AND 2 WILL BE HYDROLOGICALLY THE SAME AS THE EXISTING CONDITIONS. AREAS 3 AND 4 WILL BE HYDROLOGICALLY THE SAME AS THE EXISTING CONDITIONS, EXCEPT THAT THE IMPERVIOUS AREA WILL BE REDUCED BY 20% AND THE TIME OF CONCENTRATION WILL BE INCREASED BY 20%. THE PROPOSED DEVELOPMENT WILL ESSENTIALLY MAINTAIN THE DRAINAGE PATTERNS OF THE EXISTING SITE. HOWEVER, THE PROPOSED DEVELOPMENT WILL RESULT IN AN INCREASE TO THE 2, 10, AND 100 YEAR STORM EVENTS. THE INCREASE WILL BE MINIMAL AND WILL NOT IMPACT THE PROPOSED ULTIMATE CONDITIONS. THE INCREASE WILL BE MANAGED THROUGH THE IMPLEMENTATION OF ENVIRONMENTAL SITE DESIGN PRACTICES, SPECIFICALLY # 3 REFORESTATION, # 4 FOREST CONSERVATION, # 5 FOREST BUFFER, # 6 STREAM BUFFER, # 7 WETLAND BUFFER, FOR ADDITIONAL STORAGE IF NEEDED, A POND COUNTY REVIEW, QUANTITY CONTROL FOR INCREASED RUNOFF WILL BE PROVIDED WITHIN 2 OF THE EXPLORED STORMWATER PONDS. OUTLINE AREAS, INCLUDING LOW-RATE DETENTION FOR 50Y RESULTS IN AN INCREASE TO THE 2, 10, AND 100 YEAR STORM EVENTS.

COMBINED HEARING REQUEST

WE ARE REQUESTING A COMBINED DEVELOPMENT PLAN AND SPECIAL HEARING HEARING. THE SPECIAL HEARING PETITION IS TO EXEMPT BUILDING PERMITS IN ANY LEVEL TRAFFIC SHED AS EQUIVALENT TO THE 2019 BASIN PARAMETERS.

ADDITIONAL INFO

1. VARIANCES: NONE
2. SPECIAL HEARING: TO PERMIT BUILDING PERMITS IN ANY LEVEL TRAFFIC SHED AS EQUIVALENT TO THE 2019 BASIN PARAMETERS.
3. 1301 W. SEMINARY AVE.
LINDA MCNEALS
TAX ID: 1900002277
DEED REF.: 14818/178
PLAT REF.: NONE
4. SPECIAL EXCEPTIONS: NONE
5. VARIANCES: NONE
6. CONVENIENCE WITH DESIGN MANUAL # 1.2.3

VEHICLE AND BIKE PARKING

REQUIRED PARKING:
1 SPACE PER ATTACHED 1 SPACES / DWELLING UNIT = 122 PARKING SPACES
TOTAL REQUIRED SPACES = 122 PARKING SPACES
PROVIDED PARKING SPACES:
GARAGE PARKING SPACES 122 PARKING SPACES
DRIVEWAY PARKING SPACES 122 PARKING SPACES
TOTAL PROVIDED SPACES 244 PARKING SPACES
REQUIRED BICYCLE PARKING SPACES 12 PK 3
PROVIDED BICYCLE PARKING SPACES 3 SPACES

ASPHALT TRAIL DETAIL

NOT TO SCALE

PLANNING

1. LOT SIZING PER BALTIMORE COUNTY ZONING REGULATIONS, PER BALTIMORE COUNTY AND NEIGHBORHOOD WAIVER REQUEST.
2. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR STATE DESIGNATED GROWTH AREA.
3. THE PROJECT SITE IS NOT LOCATED IN ANY AGRICULTURAL PRESERVATION, PRESERVATION, PRIORITY PRESERVATION AREA, BALTIMORE COUNTY LANDMARKS LIST, OR ANY HISTORIC DISTRICT.
4. THE PROJECT SITE IS NOT LOCATED IN THE CHESAPEAKE BAY CRITICAL AREA.
5. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR STATE DESIGNATED SCENIC ROUTE.
6. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR STATE DESIGNATED HISTORIC DISTRICT.
7. THE PROJECT SITE IS NOT LOCATED IN ANY AGRICULTURAL PRESERVATION, PRESERVATION, PRIORITY PRESERVATION AREA, BALTIMORE COUNTY LANDMARKS LIST, OR ANY HISTORIC DISTRICT.
8. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR STATE DESIGNATED SCENIC ROUTE.
9. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR STATE DESIGNATED HISTORIC DISTRICT.
10. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR STATE DESIGNATED HISTORIC DISTRICT.

ZONING

1. EXISTING ZONING: DR 1, DR 2
2. SEE SECTION 1A.04.B.1.A.1 OF THE ZONING REGULATIONS FOR ADDITIONAL INFORMATION.
3. THE DEVELOPMENT PLAN IS SUBJECT TO THE REGULATIONS IN EFFECT AT THE TIME OF THE ENACTMENT OF THE 2019 COMPREHENSIVE ZONING MAPS PROCESS.
4. THE PROJECT SITE IS NOT LOCATED IN ANY AGRICULTURAL PRESERVATION, PRESERVATION, PRIORITY PRESERVATION AREA, BALTIMORE COUNTY LANDMARKS LIST, OR ANY HISTORIC DISTRICT.
5. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR STATE DESIGNATED SCENIC ROUTE.
6. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR STATE DESIGNATED HISTORIC DISTRICT.
7. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR STATE DESIGNATED HISTORIC DISTRICT.
8. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR STATE DESIGNATED HISTORIC DISTRICT.

SITE DEVELOPMENT PROPOSAL

DWELLING TYPE	PROPOSED UNITS	PARKING REQUIRED	PARKING PROVIDED	OPEN SPACE REQUIRED	OPEN SPACE PROVIDED	AVERAGE DAILY TRIPS	THRESHOLD	DEVELOPMENT SCHEDULE
SINGLE FAMILY DETACHED	61	122	244	1.38 AC ±	1.40 AC ±	600	366	
TOWNHOUSE	4	8	8	0.09 AC ±	0.09 AC ±	40	24	
TOTAL	65	122	244	1.38 AC ±	1.40 AC ±	600	366	

EXISTING ZONING AND MAXIMUM DENSITY PERMITTED

ZONE	GROSS ACRES	DWELLING UNITS PERMITTED	DWELLING UNITS PROPOSED
DR 1	19.9 AC	19	19
DR 2	142.5 AC	46	46
		TOTAL	61

SETBACK TABLE

SETBACK TYPE	DR 1 & 2	SETBACK
FRONT BUILDING FACE TO	30'	
SIDE BUILDING FACE TO	10'	
SIDE PROPERTY LINE	10'	
REAR BUILDING FACE TO	40'	
REAR PROPERTY LINE	40'	
FRONT BUILDING FACE TO PUBLIC ROAD	30'	
SIDE BUILDING FACE TO PUBLIC ROAD	30'	

SCHOOL IMPACT ANALYSIS

SCHOOL DISTRICT	MET STATE RATED CAPACITY (SRC)	ACTUAL SEPTEMBER 30TH ENROLLMENT (2020)	LAST UPDATED JUNE 30, 2021 PROJECTED # OF PUPILS FROM THIS DEVELOPMENT	PROJECTED # OF PUPILS FOR OTHER DEVELOPMENTS	TOTAL PROJECTED ENROLLMENT	# OF STUDENTS ABOVE OR (BELOW) CAPACITY	PROJECTED # OF PUPILS AS A % OF SRC
WOODSTOCK ELEMENTARY SCHOOL	489 (-0)	675	9	4	474	(15)	96.9%
LOCUST HILL MIDDLE SCHOOL	1,013	1,133	4	4	1,155	36	107.6%
GLENELG HIGH SCHOOL	1,564	1,607	9	4	1,543	(41)	97.9%

DEVELOPMENT PLANS REVIEW

1. THE SITE IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
2. THE SITE IS LOCATED WITHIN A PLANNING AREA AS SHOWN ON THE 2020 BASIC SERVICES MAP.
3. THE SITE IS LOCATED WITHIN A TIER AS SHOWN ON THE 2020 BASIC SERVICES MAP.
4. THE SITE IS NOT LOCATED IN A DESIGNATED AREA FOR PUBLIC WATER OR SEWER SERVICE.
5. ALL LOCAL OPEN SPACE WILL SHALL BE IN COMPLIANCE WITH THE LOCAL OPEN SPACE APPLICABLE LATEST EDITION.
6. THE PROPOSED DEVELOPMENT IS NOT LOCATED IN A DESIGNATED AREA FOR PUBLIC WATER OR SEWER SERVICE.
7. THE PROPOSED DEVELOPMENT SHALL BE IN COMPLIANCE WITH THE LOCAL OPEN SPACE APPLICABLE LATEST EDITION.
8. NOTWITHSTANDING ANY OTHER PROVISIONS OF THE BALTIMORE COUNTY CODE, THE AREA SHOWN AS OPEN SPACE ON THE 2020 BASIC SERVICES MAP THAT WHICH IS SHOWN ON THE PLAN SHALL BE CONSIDERED PLAN SHALL BE CONSIDERED AS OPEN SPACE.
9. THE PROPOSED DEVELOPMENT SHALL BE IN COMPLIANCE WITH THE LOCAL OPEN SPACE APPLICABLE LATEST EDITION.
10. THE PROPOSED DEVELOPMENT SHALL BE IN COMPLIANCE WITH THE LOCAL OPEN SPACE APPLICABLE LATEST EDITION.

OPEN SPACE CONT.

1. ACCESS TO ALL OPEN SPACE LOTS SHALL BE PROVIDED BY A MINIMUM 30' WIDE ACCESS EASEMENT OR PUBLIC ROAD.
2. ALL OPEN SPACE LOTS SHALL BE CONVEYED TO A HOMEOWNERS ASSOCIATION.
3. ALL OPEN SPACE LOTS SHALL BE CONVEYED TO A HOMEOWNERS ASSOCIATION.
4. ALL OPEN SPACE LOTS SHALL BE CONVEYED TO A HOMEOWNERS ASSOCIATION.
5. ALL OPEN SPACE LOTS SHALL BE CONVEYED TO A HOMEOWNERS ASSOCIATION.
6. ALL OPEN SPACE LOTS SHALL BE CONVEYED TO A HOMEOWNERS ASSOCIATION.
7. ALL OPEN SPACE LOTS SHALL BE CONVEYED TO A HOMEOWNERS ASSOCIATION.
8. ALL OPEN SPACE LOTS SHALL BE CONVEYED TO A HOMEOWNERS ASSOCIATION.
9. ALL OPEN SPACE LOTS SHALL BE CONVEYED TO A HOMEOWNERS ASSOCIATION.
10. ALL OPEN SPACE LOTS SHALL BE CONVEYED TO A HOMEOWNERS ASSOCIATION.

UNDEVELOPED AREAS OPEN SPACE

DESCRIPTION	ACRES
RESERVATION MANAGEMENT	4.56 ±
WOODLAND AREAS	1.75 ±
OTHER	12.56 ±
TOTAL PROVIDED	18.48 ±

ENVIRONMENTAL IMPACT REVIEW

THESE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST BUFFER EASEMENT EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY FOREST CONSERVATION EASEMENT AGREEMENT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.

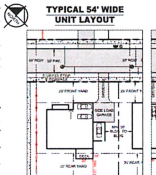
THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST BUFFER EASEMENT EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY FOREST CONSERVATION EASEMENT AGREEMENT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.

THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST BUFFER EASEMENT EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY FOREST CONSERVATION EASEMENT AGREEMENT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.

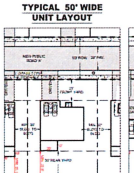
THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST BUFFER EASEMENT EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY FOREST CONSERVATION EASEMENT AGREEMENT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.

THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST BUFFER EASEMENT EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY FOREST CONSERVATION EASEMENT AGREEMENT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.

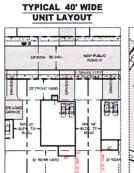
TYPICAL 54' WIDE UNIT LAYOUT



TYPICAL 50' WIDE UNIT LAYOUT

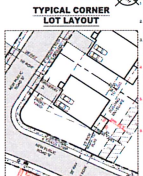


TYPICAL 40' WIDE UNIT LAYOUT

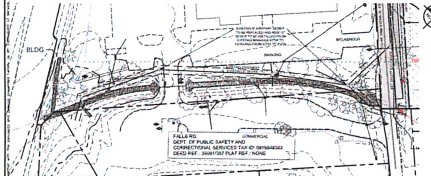


SITE PLAN

TYPICAL CORNER LOT LAYOUT



OFFSITE SANITARY SEWER IMPROVEMENTS



DEDICATION PLAN

DEVELOPMENT PLAN PROPOSED CONDITIONS PLAN GREENLINE REDLINE

GREENSPRING MANOR
(2310 WEST JOPPA ROAD)
ATAPCO PROPERTIES

PAR - 09-0022
TRACKING # - May 2021-00003

SHEET NUMBER
1 OF 1

Kimley»Horn
2X WEST PENNSYLVANIA AVENUE, SUITE 100, TOWSON, MD 21204
WWW.KIMLEY-HORN.COM

DATE | BY | REVISIONS

Kimley»Horn

TRANSMITTAL

Date:	6/1/2021	**Project Name / Number:**	Greenspring Manor (2310 West Joppa Road)
Name:	Ms. D'Andrea Walker	**Phone:**	
Company Name:	Baltimore County Department of Public Works		
Address:	111 West Chesapeake Avenue		
City:	Towson	**State:** MD	**Zip** 21204

We are sending you via ☐ FedEx ☐ Courier ☒ Hand Delivery ☐ Street Mail **the following items:**

☐ Shop Drawings ☒ Prints/Plans ☐ Specifications ☐ Change Orders ☐ Samples ☐ CD/DVD

Item #	# of Copies	Item Description
1	1	Floodplain Site Work Request Letter
2	1	Site Plan

RECEIVED
JUN 03 2021
DEPARTMENT OF PERMITS
APPROVALS AND INSPECTIONS

☐ For Your Use ☐ Returned for Corrections ☐ Corrected Prints ☐ For Your Review & Comment

☐ As Requested ☐ Approved as Noted ☐ Copies for Distribution ☐ Approved as Submitted

☐ Return ☒ Submit ☐ Resubmit ☐ Copies for Approval

Remarks:	

Copy To:		**Sender:**	Matthew Bishop

Kimley»Horn

June 1, 2021

Ms. D'Andrea L. Walker, Acting Director
Baltimore County Department of Public Works
111 W. Chesapeake Avenue, Suite 307
Baltimore, Maryland 21204

Re: Greenspring Manor
2310 West Joppa Road
Lutherville-Timonium, MD
Floodplain Site Work Request

Dear Ms. Walker:

In accordance with Baltimore County Code (BCC) Article 32, Title 4, Section 414 we are requesting permission to construct a new public street, utilities, and drainage facilities within a riverine floodplain for the project known as Greenspring Manor. The proposed improvements will serve a residential neighborhood on the property.

The existing floodplain is generated by a small stream located along the easternmost edge of the property. A floodplain study meeting the requirements of the Baltimore County Department of Public Works (DPW) Design Manual has been submitted to Baltimore County Development Plans Review (DPR). The floodplain study models both the pre and post construction conditions and makes clear that there will be no negative impacts to either upstream or downstream properties or to floodplain management programs.

A copy of the current draft of the Development Plan for the Greenspring Manor project is attached for your reference with the proposed road and utilities in the floodplain shown.

Given that the proposed activity only consists of a new public street, utilities, and drainage facilities and that these activities will not have negative impacts to upstream or downstream properties and are not detrimental to floodplain management programs, we are respectfully requesting that your department approve this request and confirm that no waiver is required under Section 32-4-107 of the Baltimore County Code. These activities are expressly permitted under Section 32-4-414(c), provided they are not detrimental to floodplain management programs.

Thank you for your consideration of this request.

Sincerely,

MA Bishop

Matthew A. Bishop, PLA, LEED AP

Senior Project Manager

GREENSPRING MANOR

2310 W. JOPPA ROAD

TIMONIUM, MARYLAND

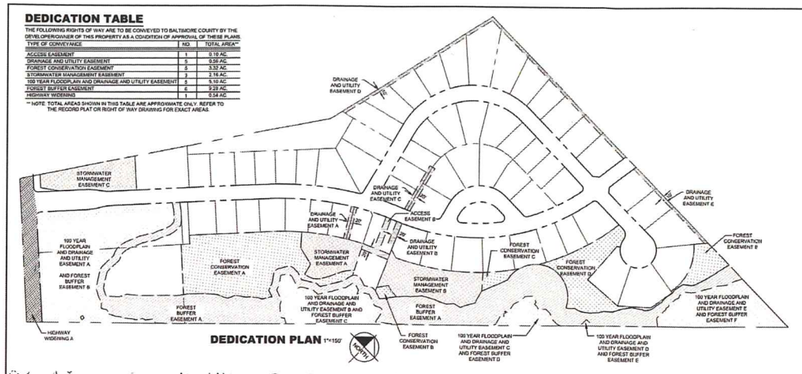
DEDICATION TABLE

THE FOLLOWING RIGHTS OF WAY ARE TO BE CONVEYED TO BALTIMORE COUNTY BY THE OWNER/OPERATOR OF THIS PROPERTY AS A CONDITION OF APPROVAL OF THESE PLANS:

TYPE OF CONVEYANCE	NO	TOTAL AREA*
ACCESS EASEMENT	1	0.15 AC
DRAINAGE AND UTILITY EASEMENT	3	3.09 AC
FOREST CONSERVATION EASEMENT	3	3.32 AC
STORMWATER MANAGEMENT EASEMENT	1	2.16 AC
100 YEAR FLOODPLAIN AND DRAINAGE AND UTILITY EASEMENT	3	5.10 AC
FOREST BUFFER EASEMENT	4	9.29 AC
HIGHWAY WIDENING	1	0.54 AC

** NOTE: TOTAL AREAS SHOWN IN THIS TABLE ARE APPROXIMATE ONLY. REFER TO THE RECORD PLAT OR RIGHT OF WAY DRAWING FOR EXACT AREAS.

DEDICATION PLAN 1"=150'



ADJACENT PROPERTY INFORMATION

1. 13 OLD BOXWOOD LANE
PAMELA BOYER
TAX ID: 2000004431
DEED REF.: 11943/459
PLAT REF.: 53/34
2. 15 OLD BOXWOOD LANE
CAROL RENICK
TAX ID: 2000004432
DEED REF.: 3322/296
PLAT REF.: 53/34
3. 17 OLD BOXWOOD LANE
THOMAS AND CAROL BRADLEE
TAX ID: 2000004433
DEED REF.: 4948/243
PLAT REF.: 53/34
4. 19 OLD BOXWOOD LANE
LORRAINE BROWSTEIN TRUSTEE
TAX ID: 2000004434
DEED REF.: 23741/668
PLAT REF.: 53/34
5. 21 OLD BOXWOOD LANE
ALVIN AND MARI KALIN
TAX ID: 2000004435
DEED REF.: 30989/144
PLAT REF.: 53/34
6. 23 OLD BOXWOOD LANE
JAMES AND DOROTHY TRUITT
TAX ID: 2000004436
DEED REF.: 2658/25
PLAT REF.: 53/34
7. 76 SEMINARY FARM RD.
FRED AND JAN HALLAHAN
TAX ID: 1900056576
DEED REF.: 24347/683
PLAT REF.: 49/124
8. 74 SEMINARY FARM RD.
THOMAS AND PATRICIA PRICE
TAX ID: 1900056577
DEED REF.: 7540/474
PLAT REF.: 49/124
9. 72 SEMINARY FARM RD
THOMAS ONEILL JR. AND WILLIAM HALE
TAX ID: 1900056578
DEED REF.: 4353/7169
PLAT REF.: 49/124
10. 70 SEMINARY FARM RD
GARY WOODRUFF
TAX ID: 1900056579
DEED REF.: 21144/40
PLAT REF.: 49/124
11. 68 SEMINARY FARM RD.
HARJIT AND JAIMALA SINGH
TAX ID: 1900056580
DEED REF.: 7646/129
PLAT REF.: 49/124
12. 66 SEMINARY FARM RD.
MELVILLE AND BETSY YEARLEY
TAX ID: 1900056581
DEED REF.: 3184/230
PLAT REF.: 49/124
13. FALLS RD.
BRIAN RAYMOND TRUSTEE & JAMES GRIEMPLER
TAX ID: 0912561081
DEED REF.: 39972/129
PLAT REF.: NONE
14. 2360 W. JOPPA RD.
VALLEY CENTER PARTNERSHIP
TAX ID: 1800002893
DEED REF.: 8868/533
PLAT REF.: 44/40
15. 2343 W. JOPPA RD.
MG MICHAEL INC
TAX ID: 0902551280
DEED REF.: 25728/95
PLAT REF.: NONE
16. FALLS RD.
BRIAN RAYMOND TRUSTEE & JAMES GRIEMPLER
TAX ID: 0912561082
DEED REF.: 39972/129
PLAT REF.: NONE

LEGEND

CONTOUR LINE (1' INTERVAL)
DEPRESSION CONTOUR
CONCRETE CURB W/ GUTTER
CONCRETE CURB ONLY
BUILDING LINE
EDGE OF PAVEMENT
SANITARY SEWER
STORM DRAIN
WOOD LINE
OVERHEAD WIRE
WALL
FLOOD PLAIN
FOREST BUFFER
MONITORING WELL
WATER VAULT
CLEANOUT
SANITARY SEWER MANHOLE
ELECTRIC METER
LIGHT POLE
GAS VALVE
MAJOR TREE
MINOR TREE (FLOWERING)
MINOR TREE (EVERGREEN)
SHRUB
SIGN
WATER VALVE
HAND BOX
UTILITY POLE
INLET
FIRE TREE
DECIDUOUS TREE

FIRE MARSHAL

1. PROPOSED BUILDINGS SHALL BE DESIGNED AND CONSTRUCTED SO AS TO MEET THE APPLICABLE PROVISIONS OF THE BALTIMORE COUNTY FIRE PREVENTION CODE NO. 5-17
2. LAGS/CAPINGS OR OTHER OBSTRUCTIONS PLACED AROUND STRUCTURES SHALL NOT IMPAIR OR IMPEDE ACCESSIBILITY FOR FIRE DEPARTMENT OPERATIONS. ANY TREE PLANTINGS AROUND THE PERIMETER OF THE BUILDING SHALL BE OF A TYPE THAT WILL NOT INTERFERE WITH EMERGENCY APPARATUS ACCESS WHEN THEY MATURE. NFPA FIRE CODE SECTION 18.2.4.1
3. A CRUSHER RUN ROAD FOR ACCESS TO BUILDINGS AND REQUIRED WATER SUPPLIES SHALL BE AVAILABLE FOR THE USE BY EMERGENCY FIRE APPARATUS AND CAPABLE OF HANDLING EMERGENCY APPARATUS WEIGHING 70,000 LBS. WHEN CONSTRUCTION OF ANY BUILDING IS UNDER ROOF, IN ACCORDANCE WITH THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO.3-17, SECTION 1:18:4:3.1.3.
4. A BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF A RESIDENTIAL SPRINKLER SYSTEM FOR EACH INDIVIDUAL DWELLING.
5. THE SPRINKLER SYSTEM MUST BE INSPECTED BY THE BALTIMORE COUNTY FIRE MARSHAL'S OFFICE PRIOR TO TAKING OCCUPANCY. (SPRINKLER HYDRO / SPRINKLER FINAL)
6. THE PRIVATE FIRE HYDRANTS SHALL BE PAINTED "OSHA RED" TO DISTINGUISH THEM FROM THE PUBLIC (ORANGE) FIRE HYDRANTS IN ACCORDANCE WITH BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17 SECTION 1: 18.5.10.9 PRIVATE HYDRANTS.
7. A SEPARATE BUILDING PERMIT IS REQUIRED FOR THE INSTALLATION OF UNDERGROUND FIRE LINE AND SHALL BE REVIEWED BY THE PLANS REVIEW SECTION OF BALTIMORE COUNTY. A PLUMBING PERMIT SHALL NOT BE USED TO INSTALL AN UNDERGROUND FIRE LINE.
8. ALL FIRE HYDRANTS SPACING SHALL BE IN ACCORDANCE WITH THE BALTIMORE COUNTY STANDARD DESIGN MANUAL.
9. THE BALTIMORE COUNTY FIRE PREVENTION CODE, COUNTY BILL NO. 3-17, SECTION 1:10 11:1:6, REQUIRES THAT THE ADDRESS NUMBERS FOR RESIDENTIAL PROPERTIES SHALL BE A MINIMUM OF 3 INCHES IN SIZE.

VEHICLE AND BIKE PARKING

1. PARKING
REQUIRED PARKING
SINGLE FAMILY ATTACHED
61 UNITS @ 2 SPACE / DWELLING UNIT = 122 PARKING SPACES
TOTAL REQUIRED SPACES = 122 PARKING SPACES
PROVIDED PARKING SPACES
GARAGE PARKING SPACES 122 PARKING SPACES
DRIVEWAY PARKING SPACES 122 PARKING SPACES
TOTAL 244 PARKING SPACES
2. REQUIRED BICYCLE PARKING SPACES 122 / 24 = 5 SPACES
3. PROVIDED BICYCLE PARKING SPACES 5 SPACES

ADDITIONAL INFO

ANTICIPATED ACTIONS:
1. WAIVERS: NONE
2. VARIANCES: NONE TO PERMIT BUILDING PERMITS IN AN F LEVEL TRAFFIC SHED AS DELINEATED ON THE 2020 BASIC SERVICES MAP.
3. WAIVERS: 28' PAVING ON A SP ROW IN LIEU OF 30' PAVING ON A SP ROW.
4. SPECIAL EXCEPTIONS: NONE
5. OTHER: NONE
6. CONSISTENCY WITH DEGIGN MANUALS: YES

DELINQUENT ACCOUNTS CERTIFICATION:

DIRECTOR OF DEVELOPMENT CERTIFY UNDER OATH THAT THERE ARE NO DELINQUENT ACCOUNTS FOR ANY OTHER DEVELOPMENT WITH RESPECT TO ANY OF THE FOLLOWING: THE APPLICANT, A PERSON WITH FINANCIAL INTEREST IN THE PROPOSED DEVELOPMENT, OR A PERSON WHO SHALL PERFORM CONTRACTUAL SERVICES ON BEHALF OF THE PROPOSED DEVELOPMENT.

VICINITY MAP

SCALE: 1" = 1000'



BENCHMARKS

NAME	NORTHING (NAD 83)	EASTING (NAD 83)	ELEVATION (NAVD 88)	DESCRIPTION
7444.720	656,197.63	1,443,899.26	293.62	BRASS DISC
2444.320 AT MH	657,711.75	1,440,663.25	269.31	BRASS CAP
7444.720	657,537.58	1,444,230.67	292.48	CAPPED PIPE

LOT AREAS

LOT NO.	SF	ACRE
LOT 1	136,683+/-	2.020+/-
LOT 2	11,870+/-	727+/-
LOT 3	8,416+/-	193+/-
LOT 4	8,416+/-	193+/-
LOT 5	8,416+/-	193+/-
LOT 6	7,320+/-	183+/-
LOT 7	17,674+/-	405+/-
LOT 8	12,173+/-	279+/-
LOT 9	12,452+/-	285+/-
LOT 10	12,452+/-	286+/-
LOT 11	12,452+/-	283+/-
LOT 12	11,451+/-	262+/-
LOT 13	8,559+/-	202+/-
LOT 14	9,823+/-	226+/-
LOT 15	14,231+/-	326+/-
LOT 16	14,230+/-	327+/-
LOT 17	18,643+/-	340+/-
LOT 18	14,019+/-	321+/-
LOT 19	12,993+/-	298+/-
LOT 20	10,707+/-	245+/-
LOT 21	11,699+/-	268+/-
LOT 22	12,218+/-	280+/-
LOT 23	12,347+/-	283+/-
LOT 24	11,216+/-	257+/-
LOT 25	9,253+/-	207+/-
LOT 26	11,655+/-	267+/-
LOT 27	17,244+/-	395+/-
LOT 28	21,349+/-	490+/-
LOT 29	13,467+/-	309+/-
LOT 30	11,232+/-	257+/-
LOT 31	11,382+/-	261+/-
LOT 32	12,285+/-	281+/-
LOT 33	13,466+/-	309+/-
LOT 34	13,154+/-	302+/-
LOT 35	14,260+/-	329+/-
LOT 36	9,827+/-	226+/-
LOT 37	8,160+/-	187+/-
LOT 38	9,019+/-	207+/-
LOT 39	10,327+/-	237+/-
LOT 40	12,282+/-	281+/-
LOT 41	12,452+/-	286+/-
LOT 42	11,465+/-	263+/-
LOT 43	9,682+/-	221+/-
LOT 44	8,548+/-	196+/-
LOT 45	8,616+/-	197+/-
LOT 46	11,390+/-	261+/-
LOT 47	12,049+/-	276+/-
LOT 48	10,535+/-	241+/-
LOT 49	12,288+/-	282+/-
LOT 50	12,920+/-	296+/-
LOT 51	12,144+/-	278+/-
LOT 52	11,011+/-	252+/-
LOT 53	14,658+/-	336+/-
LOT 54	9,099+/-	209+/-
LOT 55	8,583+/-	196+/-
LOT 56	8,244+/-	189+/-
LOT 57	8,148+/-	187+/-
LOT 58	9,315+/-	213+/-
LOT 59	9,315+/-	213+/-
LOT 60	9,315+/-	213+/-
LOT 61	11,456+/-	263+/-

SUITABLE OUTFALL STATEMENT

XXXXXXXXX

PLANNING

1. THIS IS SERVED BY PUBLIC SEWER AND IN/SIDE URDL, PER BALTIMORE COUNTY MY HOUSING WEBSITE
2. THERE ARE NO KNOWN BUILDINGS, PROPERTIES, OR SITES WITHIN THE PROPOSED DEVELOPMENT AREA INCLUDED ON THE MARYLAND HISTORICAL TRUST INVENTORY (MHT), BALTIMORE COUNTY LANDMARKS LIST, OR THE REGISTER OF HISTORIC PLACES, OR THE MARYLAND ARCHEOLOGICAL INVENTORY.
3. THE PROJECT SITE IS NOT LOCATED IN ANY BALTIMORE COUNTY OR NATIONAL HISTORIC DISTRICTS.
4. A MINIMUM PRIVATE YARD AREA OF 500 CONTIGUOUS SQUARE FEET WITH A MINIMUM 15 FOOT DIMENSION IS PROVIDED FOR EACH LOT

ZONING

1. EXISTING ZONING DR-1 & DR-2
2. THIS PROJECT IS SUBJECT TO THE COMPREHENSIVE MANUAL OF DEVELOPMENT POLICIES (SECTION 2.D AND THE COUNTY LANDSCAPE MANUAL (SECTION 405.B.4.). THIS DEVELOPMENT WILL COMPLY AND BE CONSISTENT WITH ALL OF THE APPENDIX/FOOD RISK-LATIONS, STANDARDS, GUIDELINES, AND POLICIES ON THE PROPER RELIEF WILL BE REQUESTED.
3. ALL SIGNS WILL CONFORM TO BALTIMORE COUNTY ZONING CODE, SECTIONS 450 OR APPROPRIATE RELIEF WILL BE REQUESTED.
4. DENSITY CALCULATION IS PURSUANT TO §1B02.2 OF THE BCZR.
5. THE SETBACK REQUIREMENTS ARE PURSUANT TO THE LARGE TRACT TABLE FOUND IN §1B01.2.C(1)(B) OF THE BCZR.
6. THIS PROPERTY AS SHOWN ON THE PLAN HAS BEEN HELD INTACT SINCE 1971. THE DEVELOPERS ENGINEER HAS CONFIRMED THAT NO PART OF THE GROSS AREA OF THIS PROPERTY AS SHOWN ON THE PLAN HAS EVER BEEN UTILIZED, RECORDED OR REPRESENTED AS DENSITY OR AREA TO SUPPORT ANY OFF-SITE DWELLINGS.
7. NO THERE ARE NO EXISTING BUILDINGS TO BE RAZED.
8. MAXIMUM BUILDING HEIGHT WILL NOT EXCEED 50' IN THE DR ZONES.
9. THERE IS NO ZONING HISTORY FOR THE PROPERTY.

OPEN SPACE

1. OPEN SPACE REQUIRED - 65 UNITS (43 NEW + 1 EXISTING) X 1,000 S.F. = 65,500 S.F. OPEN SPACE.
2. OPEN SPACE PROVIDED - 81,482 S.F.
3. ALL LOCAL OPEN SPACE SHALL BE IN COMPLIANCE WITH THE LOCAL OPEN SPACE MANUAL, LATEST EDITION.
4. TEMPORARY OPEN SPACE BOUNDARY MARKERS, TREE PROTECTION DEVICES AND FOUR POST HIGH SIGNS FENCING OR APPROVED EQUIVALENT SHALL BE INSTALLED PRIOR TO ANY CLEARING OR GRADING.
5. THE USE OF OPEN SPACE FOR ANY PURPOSE OTHER THAN THOSE WHICH IS SHOWN ON THE DEVELOPMENT PLAN SHALL NOT BE ALLOWED WITHOUT PRIOR APPROVAL FROM THE DEPARTMENT OF RECREATION AND PARKS.

DEVELOPMENT PLANS REVIEW

1. THIS PROJECT IS LOCATED WITHIN THE URBAN RURAL DEMARCATION LINE.
2. THE SITE IS LOCATED WITHIN A LEVEL OF SERVICE F AS SHOWN ON THE 2020 BASIC SERVICES MAP TRANSPORTATION ZONE. A SPECIAL VARIANCE WILL BE SOUGHT IN CONJUNCTION WITH THIS DEVELOPMENT PLAN.
3. THE SITE IS LOCATED WITHIN AN AREA OF W-1 PRIORITY AS SHOWN ON THE 2020 BASIC SERVICES MAP SEWER DEFICIENT AREAS AND AREAS OF CONCERN.
4. THE SITE IS NOT LOCATED IN A DEFICIENT AREA FOR PUBLIC WATER AS SHOWN ON THE 2020 BASIC SERVICES MAP WATER SUPPLY AREA.
5. INVERTS SHALL BE PROVIDED FOR PHYSICALLY HANDICAPPED PERSONS AT ALL STREET INTERSECTIONS WITH DETECTABLE WARNING AREAS, PER STANDARD DETAILS R-34A AND D-34B.
6. SIDEWALKS WILL BE PROVIDED ALONG ALL PUBLIC ROADS AND WILL MEET ALL STATE HIGHWAY ADMINISTRATION STANDARDS FOR CONSTRUCTION.
7. STREET LIGHTS SHALL BE INSTALLED ALONG ALL PUBLIC ROADS.
8. THE SITE LIES WITHIN TOWSON COUNTY ZONING CODE, SECTIONS 450 OR THE APPROPRIATE RELIEF WILL BE REQUESTED.
9. IT IS ANTICIPATED THAT THIS PROJECT WILL BE DEVELOPED IN TWO PHASES.
10. TOTAL ACT GENERATED BY THE SITE=-0.00
11. THE SITE IS LOCATED WITHIN A W-1 AND S-1 (EXISTING SERVICE AREA) WATER AND SEWER SERVICE AREA.
12. THERE ARE WETLANDS PRESENT ON THE SITE.
13. "NO PARKING" SIGNS SHALL BE POSTED PROHIBITING PARKING WITHIN THE TURNAROUND AREA/CUL-DE-SAC.
14. ALL SIDEWALKS SHALL BE A MINIMUM OF 5 FEET WIDE. ALL SIDEWALKS SHALL BE INSTALLED IN CONFORMANCE WITH BALTIMORE COUNTY STANDARDS AND TO CURRENT AMERICANS WITH DISABILITIES ACT (ADA) GUIDELINES.
15. A PRESSURE REDUCING VALVE WILL BE REQUIRED IF THE STATIC PRESSURE EXCEEDS 80-PSI.

ENVIRONMENTAL IMPACT REVIEW

1. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST BUFFER EASEMENT. FOREST CONSERVATION EASEMENT AND FOREST BUFFER & FOREST CONSERVATION EASEMENT EXCEPT AS PERMITTED BY THE BALTIMORE COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION AND SUSTAINABILITY.
2. ANY FOREST BUFFER EASEMENT, FOREST CONSERVATION EASEMENT AND FOREST BUFFER & FOREST CONSERVATION EASEMENT SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF BALTIMORE COUNTY AND WHICH RESTRICT DISTURBANCE AND USE OF THIS AREA
3. THE EXISTING WELL ON THIS SITE SHALL BE ABANDONED AND BACK-FILLED IN ACCORDANCE TO PUBLIC WATER AND SEWER. UPON CONNECTION, THE EXISTING WELL MUST BE BACK-FILLED BY A LICENSED MASTER WELL DRILLER WHO MUST SUBMIT A WELL ABANDONMENT REPORT TO GROUNDWATER MANAGEMENT. THE EXISTING SEPTIC SYSTEM MUST BE PUMPED AND BACK-FILLED OR REMOVED BY A LICENSES SEWAGE DISPOSAL CONTRACTOR. ABANDONMENT REPORTS MUST BE SUBMITTED PRIOR TO RECORD PLAT APPROVAL.

GROUNDWATER MANAGEMENT

1. PRIOR TO RECORD PLAT APPROVAL THE EXISTING WELL(S) MUST BE CONNECTED TO PUBLIC WATER AND SEWER. UPON CONNECTION, THE EXISTING WELL MUST BE BACK-FILLED BY A LICENSES MASTER WELL DRILLER WHO MUST SUBMIT A WELL ABANDONMENT REPORT TO GROUNDWATER MANAGEMENT. THE EXISTING SEPTIC SYSTEM MUST BE PUMPED AND BACK-FILLED OR REMOVED BY A LICENSES SEWAGE DISPOSAL CONTRACTOR. ABANDONMENT REPORTS MUST BE SUBMITTED PRIOR TO RECORD PLAT APPROVAL.

SCHOOL IMPACT ANALYSIS

LAST UPDATED MAY 5, 2021

SCHOOL DISTRICT	NET STATE RATED CAPACITY (SRC)	ACTUAL SEPTEMBER 30TH ENROLLMENT (2020)	PROJECTED # OF PUPILS FOR PROP. DEVELOPMENT	PROJECTED # OF PUPILS FOR OTHER DEVELOPMENTS	TOTAL PROJECTED ENROLLMENT	# OF STUDENTS ABOVE OR (BELOW) CAPACITY	PROJECTED # OF PUPILS AS A % OF SRC
RIDERWOOD ELEMENTARY SCHOOL	440	405	9	0	414	(26)	94.1%
RIDGELY MIDDLE SCHOOL	1,070	1,100	4	6	1,110	40	103.7%
DULANEY HIGH SCHOOL	1,304	1,930	5	8	1,943	(41)	97.9%

SITE DEVELOPMENT PROPOSAL

DWELLING TYPE	PROPOSED UNITS	PARKING REQUIRED	PARKING PROVIDED	OPEN SPACE REQUIRED	OPEN SPACE PROPOSED	AVERAGE DAILY TRIPS	PHASE	DEVELOPMENT SCHEDULE
SINGLE-FAMILY DETACHED	61	122	244	1.38 AC±	1.40 AC±	600	I	-
TOTAL	61	122	244	1.38 AC±	1.40 AC±	600	-	-

EXISTING ZONING AND MAXIMUM DENSITY PERMITTED

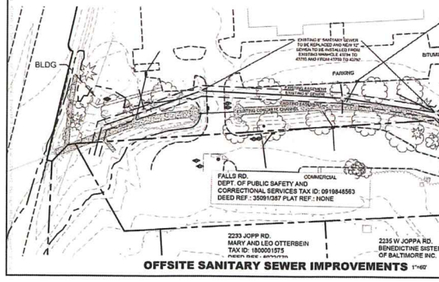
ZONE	GROSS ACRES	DWELLING UNITS PERMITTED	DWELLING UNITS PROPOSED
DR-1	±16.8 AC	16	16
DR-2	±22.6 AC	45	45
		TOTAL	61

SETBACK TABLE

SETBACK TYPE - DR-1 & 2	SETBACK
FRONT BUILDING FACE TO REV OR PROPERTY LINE:	25'
SIDE BUILDING FACE TO SIDE BUILDING FACE:	30'
SIDE BUILDING FACE TO PUBLIC STREET R/W:	25'
PARKING OR PRIVATE ROAD:	30'
TRACT BOUNDARY:	25'
REAR BUILDING FACE TO REAR PROPERTY LINE:	50'
PUBLIC STREET R/W:	50

PA## - 08-0922

TRACKING # - Maj-2021-00001



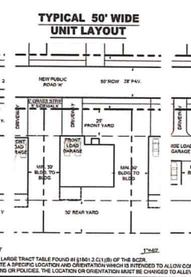
OFFSITE SANITARY SEWER IMPROVEMENTS 1"=60'

SITE CONSTRAINTS PLAN 1"=60'

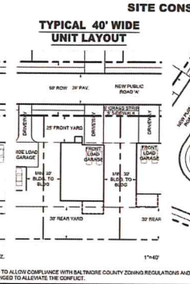
TYPICAL 54' WIDE UNIT LAYOUT



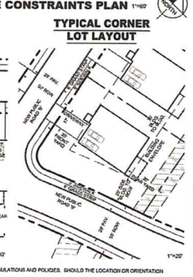
TYPICAL 50' WIDE UNIT LAYOUT



TYPICAL 40' WIDE UNIT LAYOUT



TYPICAL CORNER LOT LAYOUT



1) THE SETBACK REQUIREMENTS ARE PURSUANT TO THE LARGE TRACT TABLE FOUND IN §1B01.2.C(1)(B) OF THE BCZR.
2) ENVELOPES ON TYPICAL DWELLINGS AS SHOWN INDICATE A SPECIFIC LOCATION AND ORIENTATION WHICH IS INTENDED TO ALLOW COMPLIANCE WITH BALTIMORE COUNTY ZONING REGULATIONS AND POLICIES. SHOULD THE LOCATION OR ORIENTATION CHANGE OR CREATE CONFLICTS WITH THE REGULATIONS OR POLICIES, THE LOCATION OR ORIENTATION MUST BE CHANGED TO ALLEVIATE THE CONFLICT.

Kimley»Horn

1801 PORTER ST., SUITE 400, BALTIMORE, MD 21230
PHONE: 443-743-3470
WWW.KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY

5

Kimley»Horn

TRANSMITTAL

Date:	6/28/2021	**Project Name / Number:**	Greenspring Manor (2310 West Joppa Road)
Name:	Ms. D'Andrea Walker c/o Terry Curtis	**Phone:**	
Company Name:	Baltimore County Department of Public Works		
Address:	111 West Chesapeake Avenue		
City:	Towson	**State:** MD	**Zip** 21204

We are sending you via ☐ FedEx ☐ Courier ☒ Hand Delivery ☐ Street Mail **the following items:**

☐ Shop Drawings ☒ Prints/Plans ☐ Specifications ☐ Change Orders ☐ Samples ☐ CD/DVD

Item #	# of Copies	Item Description
1	1	Culvert Design Freeboard Request Letter
2	1	Draft Development Plan

☐ For Your Use ☐ Returned for Corrections ☐ Corrected Prints ☐ For Your Review & Comment

☐ As Requested ☐ Approved as Noted ☐ Copies for Distribution ☐ Approved as Submitted

☐ Return ☒ Submit ☐ Resubmit ☐ Copies for Approval

Remarks:	

Copy To:		**Sender:**	Matthew Bishop

RECEIVED
JUN 29 2021
DEPARTMENT OF PERMITS

kimley-horn.com | 210 West Pennsylvania Avenue, Suite 100, Towson, MD 21204 | 443 792 9995

Kimley»Horn

June 28, 2021

Ms. D'Andrea L. Walker, Acting Director
Baltimore County Department of Public Works
111 W. Chesapeake Avenue, Suite 307
Baltimore, Maryland 21204

RECEIVED
JUN 29 2021
DEPARTMENT OF PERMITS
APPROVALS AND INSPECTIONS

Re: Greenspring Manor
2310 West Joppa Road
Lutherville-Timonium, MD
Culvert Design Freeboard Request

Dear Ms. Walker:

We are writing regarding an existing condition on West Joppa Road adjacent to the above-referenced project. The Baltimore County Department of Public Works Design Manual Dated August 2, 2010, Page 7-36 Item IV. Stream Crossings, A. Culvert Design, 4 provides that no *"rise closer than 3.0 feet to the low point in the established grade of the road in the vicinity of the culvert"* be permitted. The existing conditions on West Joppa Road do not comply with this provision during a 100-year storm event, and our study of the proposed conditions when this project is constructed show the same result as the existing condition. As outlined below, we respectfully request that the existing water overtopping West Joppa Road in a 100-year storm event be permitted to remain after this project is approved and constructed.

Existing Conditions:

- The existing condition at West Joppa Road along the frontage of the subject property does not meet the 3.0 freeboard requirement of the DPW Design Manual.

- A small stream exists along the easternmost edge of the property. A floodplain study meeting the requirements of the Baltimore County Department of Public Works (DPW) Design Manual has been submitted to Baltimore County Development Plans Review (DPR) to establish the extent of the existing 100-year floodplain. The results of the study show that there is ±8" of water overtopping West Joppa Road in a 100-year storm event.

- The property is currently occupied by one single-family home and the remainder of the property is actively cultivated with corn, soybeans, or other crops. A narrow-vegetated buffer exists immediately adjacent to the stream and associated wetlands. This buffer will not be impacted by the proposed development and stormwater management and permanent environmental easements will be established for the first time on this property as a result of this project.

Proposed Conditions:

- New 60 Lot Single-Family Detached Residential Neighborhood with associated public road, sidewalks, utilities, open space, landscaping, and stormwater management. Stormwater management will include both ESD and 100-year management in the form of Submerged Gravel Wetlands.

- The 100-year floodplain study referenced previously also models the post construction conditions. The results of the study show that there is no impact to the existing 100-year floodplain elevation or the depth of water overtopping West Joppa Road. Additionally, the study shows that no negative impacts are anticipated to upstream and downstream properties because of the proposed development.

Potential Solutions to eliminate overtopping and meet the 3' Freeboard requirement.

- Raise West Joppa Road 3'-8".
  - Raising West Joppa Road by 3'-8" would create many negative effects on adjacent properties including but not limited to the following:
    - The State of Maryland owned property on the south side of West Joppa Road would need to be filled 3'-8". Doing so would create drainage issues on the property, require the removal of several mature trees, and require the relocation of a utility pole. Additionally, the entrance to the parking lot for this property would be impacted and would need to be rebuilt and raised by 3'-8". Doing this would have negative impacts on the existing parking lot.
    - Raising of the road would extend beyond the extent of the frontage of the subject property at 2310 West Joppa Road. This would require impacts to the existing stream, 100-year floodplain, and wetlands in the area by requiring additional fill and or a new retaining wall to support the raised road.
    - If the road was raised 3'-8" it would create a damming effect which would have negative impacts on adjacent upstream properties. This is not permitted, nor is it sound floodplain management. To remedy this a larger culvert would need to be installed under West Joppa Road. Installing a larger culvert would have a negative impact on downstream properties because it would increase the flow of water onto those properties in a 100-year storm event.

- Increase the size of the existing culvert under West Joppa Road without raising W. Joppa Road.
  - The existing culvert is already ±12' wide but it is only ±2.5' tall. The culvert cannot be made wider because it would become wider than the receiving concrete channel on the south side of W. Joppa Road. The culvert cannot be made deeper because the bottom of the culvert is already at the elevation of the receiving concrete channel which is very flat and it cannot be made taller because it is already just below the surface of the road.

A copy of the current draft of the Development Plan for the Greenspring Manor project is attached for your reference with the proposed road and utilities in the floodplain shown.

Given that (1) the overtopping of West Joppa Road is an existing condition, (2) that the proposed development will not have negative impacts to the depth of overtopping or to upstream or downstream properties, and that (3) reducing the depth of overtopping would have negative impacts to adjacent properties and environmentally sensitive areas, we are respectfully requesting that your department approve this request to allow the existing condition on West Joppa Road to remain.

Thank you for your consideration of this request.

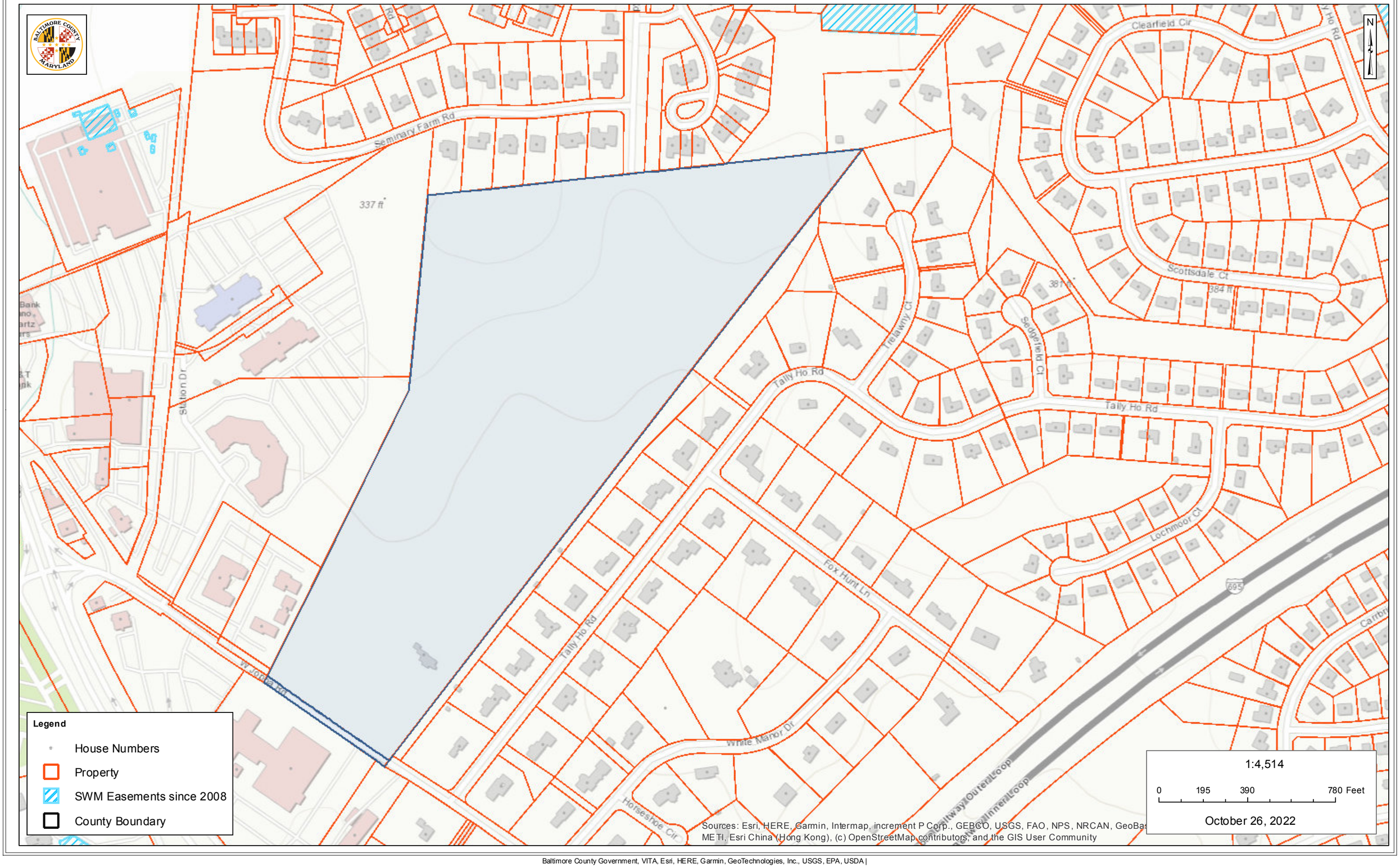
Sincerely,

MA Bishop

Matthew A. Bishop, PLA, LEED AP

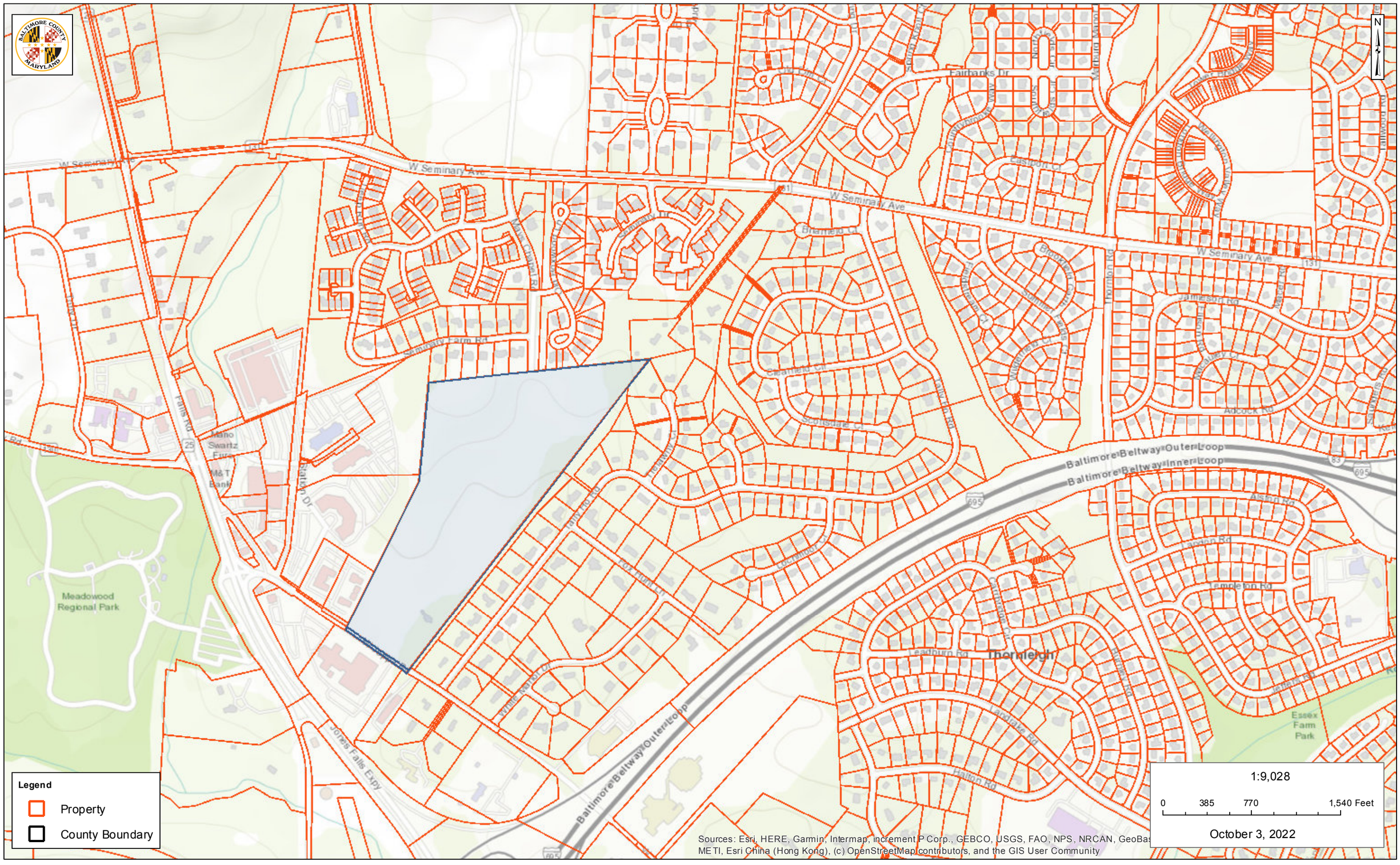
Senior Project Manager

Baltimore County - My Neighborhood



Baltimore County Government, VITA, Esri, HERE, Garmin, GeoTechnologies, Inc., USGS, EPA, USDA |

Baltimore County - My Neighborhood



Baltimore County Government, VITA, Esri, HERE, Garmin, GeoTechnologies, Inc., Intermap, USGS, METI/NASA, EPA, USDA |

Baltimore County - My Neighborhood



Baltimore County Government, VITA, Esri, HERE, Garmin, GeoTechnologies, Inc., Intermap, USGS, METI/NASA, EPA, USDA |


Johns Hopkins
Pavilion III at Green...
Greenspring
Montessori School
Intrastaff Johns
Hopkins Health
Patient First
Baltimore
Orthodontic Group
Deep Run
Meadowood
Regional Park
Recreational
facilities &
picnic areas
Jones Falls Expy
Google Earth
Imagery date: 6/10/17
100 m
Camera: 654 m 39°25'03"N 76°40'07"W
86 m


School for Girls
Deep Run
Johns H
Pavilion III
The Maryland
Pediatric Group
Greenspring
Montessori School
Google Earth
Imagery date: 6/10/17
100 m
Camera: 654 m 39°25'17"N 76°40'19"W
105 m

I am opposed to the development plan filed with Baltimore County for 61 single family homes at 2310 W. Joppa Road. I am also opposed to the granting of a special variance from the "F" level of service at the intersection of Joppa Road and Falls Road.
I believe the plan and the special variance should be denied for many reasons, including traffic congestion, sewer capacity, and other issues that will make this development too impactful on and incompatible with the surrounding area.

name	email	phone	address	message	Date
Louise Y. Meledin	louise.meledin@starpower.net	410-494-8833	208 Garrison Forest Road, Owings Mills, MD 21117	There is already a lot of traffic and congestion at the intersection of Falls Road and Joppa Road. This development will only make it worse.	2022-10-25T16:01:16-04:00
Patricia Phillips, OSB	pphillips@emmanuelosb.org	4108215792	2229 West Joppa Road, Lutherville, Maryland		2022-10-25T14:11:59-04:00
Sr. Jo-El McLaughlin, OSB	amenkds@aol.com	14108215792	2229 W. Joppa Rd Lutherville, md 21093	I am opposed to the huge number of homes being considered at 2310 W. Joppa Road Lutherville, MD 21093. I not only have an issue with the number of homes but also how many people, traffic, and other changes that would take place as a result of a developmental opportunity.	2022-10-25T14:11:03-04:00
Eleanor Noll	eanollosb@emmanuelosb.org	410-821-5792	2225 West Joppa Rd. Lutherville MD 21093		2022-10-24T13:13:33-04:00
Sr. Kathleen White, OSB	kwhite@emmanuelosb.org	410-821-5792	2229 W. Joppa Road, Lutherville, MD	Joppa Road and the traffic coming off the Beltway already create problems of exit and egress and safety for people who travel on Joppa Road. and for many people trying to access the Beltway and the Jones Falls Expressway.	2022-10-24T11:42:56-04:00
Jeri Willson	jeriwosb@emmanuelosb.org	410 821 5792	2225 W Joppa Rd Lutherville MD	Concerned about increased traffic on Joppa Rd, possibility of losing some frontage of property at 2235 W Joppa Rd if Joppa Rd has to be widened, lack of privacy to existing homes.	2022-10-24T11:11:25-04:00
Germaine Hartle	ghartle@emmanuelosb.org	410-821-5792	2229 West Joppa Road, Lutherville, MD, 21093		2022-10-24T10:38:17-04:00
Sister Jacinta Fernandes	jacintaosb@yahoo.com	410 830 9937	2229 W. Joppa Road, Lutherville, MD 21093		2022-10-24T10:36:25-04:00
Tom Fekete	tomfekete@hotmail.com	31497145494	70 River Oaks Circle Pikesville, MD		2022-10-24T09:53:45-04:00
Sister Patricia Kirk	pkirk@emmanuelosb.org	4108215792	2229 W. Joppa Rd :Lutherville, MD 21093-4601	There are constant cars /travelers/along Joppa Rd and to put 61+ more cars especially knowing that many who live here have more than one car would be a Disaster!!!! Plus in the summer time, the Pool draws many children and parents to gather here. Very dangerous for children. THIS IS NOT A GOOD IDEA!!!	2022-10-23T20:28:51-04:00
Cathy	cathy@futureharvest.org	4102183620	15541 Carroll Rd Monkton Md 21111		2022-10-23T14:51:03-04:00
James Gary	bfjmj1@gmail.com	4108256391	6 trelawny court	The current infrastructure can not handle the amount of traffic in the area. Failing intersections should be a large reason this development should not go forward. All mitigation plans will not make the intersection above a failing grade. Sewer and water runoff is a large problem as Joppa road is regularly flooded directly next to the undeveloped property already. More building and less permeable ground will only make this problem worse	2022-10-21T10:59:55-04:00
Nancy Feldman	feldmannancyh@gmail.com	4102920109	200 Chattolanee Hill Rd		2022-10-21T08:29:21-04:00
Alan Penczek	apenczek@verizon.net	443-334-2190	19 Jonathans Ct, Cockeysville MD 21030		2022-10-20T13:51:31-04:00
Kirsten Burger	kirstenburger@comcast.net	4104093961	1906 Corbridge Lane, Monkton, MD 21111		2022-10-19T20:50:59-04:00
Annie Darrow	a.darrow@yahoo.com	4086210545	211 Regester Avenue, Baltimore, MD 21212	I strongly oppose any additional development at Greenspring Manor due to the horrendous traffic congestion in that area and due to the sewer issue.	2022-10-19T20:38:07-04:00
Sheila J Williams	sjw6@mac.com	410-526-4880	3012 Butler Rd. , Reisterstown, MD.,21136		2022-10-19T19:42:25-04:00
Margaret Green	msgreen47@gmail.com	4108689851	1810 Greenspring Valley Road		2022-10-19T19:41:04-04:00
John Spilman	jspilman4@comcast.net	4109522988	1503 Broadway Rd		2022-10-19T18:19:23-04:00
Sally Spilman	sallyspilman1@comcast.net	4109607636	1503 Broadway Rd		2022-10-19T18:07:08-04:00
Elizabeth Blue	eblue1229@aol.com	410-329-3818	PO Box 86, Butler, MD 21023		2022-10-19T17:07:01-04:00
Andrew Chriss	andrewjachriss@gmail.com	4109787928	2020 West Joppa Road Lutherville, MD 21093		2022-10-19T17:04:59-04:00
John Pauliny	jjpauliny2@comcast.net	4437973263	1011 Chestnut Ridge Drive, Lutherville, MD 21093		2022-10-19T16:29:24-04:00
Shannon Hoffman	pucca111977@yahoo.com	4109639528	6 Scottsdale Ct., Lutherville, MD 21093	I can only imagine the chaos that will result in upwards of 100 cars trying to make the left hand turn into the new community from Joppa Road on a daily basis. It is absurd that a community of this density could be allowed with a single route of egress. There has been clear and compelling evidence presented in the hearings, from many departments, that the development of this density will create undue burden to the community. The only benefit I can see if the lining the pockets of the developers. It will not serve the greater good in any way, and will only overwhelm an already-strained infrastructure.	2022-10-19T11:06:23-04:00
Lawrence Hooper	llhooperjr@gmail.com	4433863240	2312 Tufton Ridge Rd., Reisterstown MD 21136	There is no way this project should be allowed to go forward unless the sewer and traffic issues presented by it are fixed before ground is broken.	2022-10-18T11:42:27-04:00

Mark Robinson	roby2442@gmail.com	4103759083	10 Trelawny ct Lutherville md 21093	We are not anti-development by any means, but this will absolutely destroy this area. The traffic is already brutal at all times of the day. the roads were not built to handle more homes. The critical systems , power and water , cannot handle more houses. Most importantly, there is no was our main road can handle construction vehicles, its already a major safety hazard with Waze circumventing drivers through the streets. Thanks, Mark	2022-10-18T08:39:37-04:00
Deb Patterson	debfall8@gmail.com	4108300989	1309 Sudvale Road Pikesville, MD 21208		2022-10-14T12:54:19-04:00
Kenneth Heiman	kedheiman@netscape.net	4144123683	16 Old Boxwood Lane Timonium MD 21093		2022-10-14T10:17:11-04:00
Helga Heiman	helgaheiman@gmail.com	4144123683	16 Old Boxwood Lane Timonium MD 21093		2022-10-14T10:16:00-04:00
Kate Knott	kpknott1@verizon.net	4435275153	322 Dixie Dr		2022-10-05T14:00:03-04:00
Matthew Miller	matthewjmiller127@gmail.com	4842694347	10 Lochmoor Ct, Timonium, MD 21093		2022-10-03T22:35:52-04:00
victoria campbell collins	foxbriar1@msn.com	14437997428	2050 Geist Road	This is simply too intense a use in that area which is already under great pressure on many fronts. Wouldnt it make more sense to re develop existing areas which are already in use but in poor condition?	2022-10-01T10:56:31-04:00
Bradford Sharpless	bvsharpless@hotmail.com	4438468762	316 Townleigh Road, Reisterstown, MD 21136		2022-09-29T10:57:48-04:00
Steven D Silverman	ssilverman@silvermanthompson.	4103852225	903 Greenspring valley Rd.		2022-09-29T09:10:06-04:00
Chris Bennett	cbennett@mackenziecommercial	4109605381	15325 Tanyard Road, Sparks, MD 21152		2022-09-29T08:50:55-04:00
Elizabeth G Wilmerding	bgwilmerding@gmail.com	4102418431	2518 Caves Rd		2022-09-29T07:44:58-04:00
paula silverman	paulabsilverman@gmail.com	4109674110	903 Greenspring Valley Road Lutherville MD 21093		2022-09-29T06:28:00-04:00
Susan Immelt	scimmelt@gmail.com	443-928-8330	1019 Greensprin Valley Road 21093	The intersections of Greenspring Valley Road, Falls Road and Joppa road are already over-taxed. Communters driving north and south on Falls Road race to beat the lights, because the traffic is so backed up. Cars lawfully entering these intersections on green lights are broadsided by impatient north-south drivers. I blame the county for allowing the development without concern to the overwhelming traffic. It is dangerous. The potential residence on Joppa Road would pay a high price for living there!	2022-09-28T21:33:54-04:00
James Davis	jamesgdavis@gmail.com	4108285358	8205 Carrbridge Circle, Towson MD 21204		2022-09-28T21:12:52-04:00
Lucy Howard	lhowar@nyc.rr.com	4109673442	11044 Greenspring Avenue, Lutherville, MD. 21093		2022-09-28T19:26:35-04:00
Robert Macht	robertmacht@comcast.net	443-632-4108	6140 Barroll Rd Baltimore, MD. 21209		2022-09-28T19:09:51-04:00
Georgia Smith	georgiepa@gmail.com	4105918373	1102 Hollins Lane, Baltimore, 21209		2022-09-28T18:40:38-04:00
Lori Gottlieb	lorimegdesigns@me.com	4109175280	8 Stream Ct, Owings Mills, Md 21117		2022-09-28T18:08:11-04:00
Polly Roberts	probertsmd@comcast.net	410-584-2667	4 Beechmere Lane	I am particularly concerned about the negative environmental impact of this development.	2022-09-28T17:59:17-04:00
douglas carroll	dgcarroll3@gmail.com	4107909140	1117 greenspring valley rd, lutherville, md. 21093		2022-09-28T17:58:58-04:00
Holly Bricken	Huntmeet@aol.com	4105988601	13941 Mantua Milll Rd	My family has property in The Meadows. Traffic on Seminary, Joppa Falls Road is already beyond awful.	2022-09-28T17:50:54-04:00
Deirdre M Smith	farmerdms@gmail.com	4107909141	1117 Greenspring Valley Road Lutherville, MD 21093		2022-09-28T17:37:02-04:00
Donald Semesky	dsemesky.foc@gmail.com	4103038605	1223 Clearfield Circle, Lutherville, MD 21093		2022-09-28T17:25:34-04:00
Jason Goldsmith	jgoldy52@gmail.com	4437423993	8214 Tally Ho Rd		2022-09-28T15:03:41-04:00
Dolly von Hollen	ollyda@aol.com	917 816 8266	PO Box 603 Oldwick, NJ 07921		2022-09-27T12:34:36-04:00
Page Crosby	pagemac@comcast.net	4103823580	1628 Corbett Road, Monkton, Md 21111		2022-09-25T11:44:25-04:00
FRIEDA NICHOLLS PALM	friedanichollspalm@gmail.com	410-952-7556	11933 Falls Road 21030	At present this intersection is, at best, a hazard. We have two major schools, a shopping center, a public park, private doctor's offices, plus a huge medical complex. This intersection is dangerous at present. Frieda Palm	2022-09-24T15:14:20-04:00
charles c stieff	cstieff3@gmail.com	4109359446	10124 Falls Rd Lutherville Md 21093		2022-09-24T09:07:01-04:00
Alice Dearing	alicemdearing@gmail.com	4109601364	14001 Greencroft Ln 21030		2022-09-23T19:17:25-04:00
Tony azola	tazola@azolainc.com	4103675277	10116 falls rd Lutherville, md 21093	Any intersection that gets an F rating cannot be allowed to add traffic. This is common sense. The traffic on Joppa and Falls is at breaking point during rush hour. Anyone approving this does not live in the area and should be made to sit in the traffic so they can feel the pain of the rest of us.	2022-09-22T20:08:43-04:00
Sandie Weisfeld	weisfes@yahoo.com	4438345959	10112 Falls Road		2022-09-22T19:26:09-04:00
Ann Stieff	acsilver25@hotmail.com	4105917307	10124 Falls Rd Lutherville, MD 21093	Falls Rd, Joppa Rd & 83 is a failed intersection and can not handle anymore traffic. It canâ€™t handle the traffic the exists presently. The 61 homes will also be a problem for over crowding in the school district.	2022-09-22T17:42:21-04:00
Rachel ichniowski	rachel.ichniowski@gmail.com	4437912755	8333 Tally Ho Road, Lutherville, MD 21093		2022-09-22T13:41:02-04:00
April Snyder	sweetautumnfarm@gmail.com	4103570855	20810 Slab Bridge Road, Freeland Md		2022-09-21T23:35:39-04:00
Winny Tan	w1nny@hotmail.com	4439351700	11700 Greenspring Avenue 21093	This intersection is already congested. Please do not approve such densely packed housing.	2022-09-21T18:15:54-04:00

Twill Bruggman	Tmbruggs13@gmail.com	41099031144	2202 Old Court Rd	Opposed !!!!	2022-09-21T15:33:54-04:00
Catherine Phipps	cackyphipps@gmail.com	(443) 762-6287	15400 Duncan hill road, sparks 21152		2022-09-21T11:49:02-04:00
Anne & Chris Steuart	csteuart3@gmail.com	4102077945	3105 Hunting Tweed Drive, Owings Mills, MD 21117		2022-09-21T11:33:23-04:00
Barbara Coleman White	barbaracwhite@verizon.net	401-575-1600	800A Southerly Road #1224, Towson, MD 21286	As a resident that travels Joppa Road to Greenspring Station for medical reasons, frequently,I am opposed to this development.	2022-09-21T08:57:49-04:00
Kelly McDonald	kellyandmorgan@hotmail.com	1 (410) 215-3404	1100 westwicke ln		2022-09-21T08:20:57-04:00
C b	cabbits@yahoo.com	4438415485	814 upper Glencoe rd sparks md		2022-09-21T08:17:32-04:00
Mike Palm	mike@mikepalm.com	4434651224	11933 Falls Road		2022-09-21T07:35:20-04:00
Sherry Jordan	sherryjordan23@gmail.com	4436686356	2606 Geist Road, Reisterstown 21136		2022-09-21T07:31:52-04:00
Leigh McDonald Hall	samuelshope@comcast.net	4105831102	7525 Bellona ave Towson Md. 21204	There's not enough room!	2022-09-21T06:40:05-04:00
Kristen Sayan	kmsayan@aol.com	4108122487	14318 Cuba Rd 21030	Traffic in that immediate area is terrible already. Monumental backups most days. Residences will only add to the problem.	2022-09-21T06:33:12-04:00
Anne Hooper Caplan	nancycaplan@gmail.com	3018752306	1 Pine Spring Lane, Owings Mills, MD 21117		2022-09-21T00:01:06-04:00
Michelle Winner	masw74@yahoo.com	4439305004	19 Oak Tree Court, Lutherville, MD 21093		2022-09-20T21:01:53-04:00
Kathleen Pontone	kathleenpontone@gmail.com	4103634159	2522 Caves Rd. Owings Mills Md 21117		2022-09-20T20:50:17-04:00
Carolyn Quattrocki	cquattrocki@yahoo.com	410-812-0241	6 Sedgefield Court, Lutherville, 21093		2022-09-20T19:43:50-04:00
Allyson Huey	ahuey19@gmail.com	4103409268	7016 Charles Ridge Road 21204		2022-09-20T18:55:09-04:00
Elizabeth Hembling	lizhembling@yahoo.com	4109350741	11933 Falls Rd Cockeysville, MD 21030	We already have huge run off and flooding issues in this area. The local streams are now flood areas that not only flood areas around Greenspring Station, but also downstream along Falls Rd.	2022-09-20T18:37:14-04:00
Kathy Lambrow	klambrow@comcast.net	(410) 733-5837	1857 Cape May Rd., Essex, MD 21221		2022-09-20T18:15:35-04:00
Lesales Dunworth	lesalesdunworth@gmail.com	443983590	11702 Greenspring Ave		2022-09-20T17:50:13-04:00
Kathy Quinn	quinn13208@cs.com	4109160337	13208 Falls Road, Cockeysville, MD. 21030	Absolutely opposed. This will add greatly to the already congested traffic issues in this area. It will affect our wildlife, water and overall loss of rural habitat. No more construction in this area!!!!	2022-09-20T17:43:34-04:00
Timothy Quinn	tquinn123@cs.com	4438240606	13208 falls rd, cockeysville md 21030	I am absolutely opposed to the Joppa Rd housing development, as well as the variance at the Joppa/Falls Rd. Intersection. Enough with housing sprawl in our fragile area! We're already at a tipping point.	2022-09-20T17:33:01-04:00
Keith Rosenstiel	keithrosenstiel@comcast.net	(240) 508-3543	13212 Falls Road,Cockeysville MD 21030		2022-09-20T17:27:55-04:00
Ying Wei Lum	yingweilum@gmail.com	2152034346	8308 tally ho road, Lutherville, MD 21093		2022-09-19T19:16:18-04:00
CLAYTON SHELHOSS	clayton@secondchanceinc.org	4104094997	8207 Tally Ho Road, Lutherville MD 21093	I have been a resident homeowner for over 30 years at 10935 Falls Road (one house south of Falls and Seminary), 10941 Falls Road (corner of Falls and Seminary), 1407 West Joppa Road and currently 8207 Tally Ho Road. I have firsthand experience of the year over year "F" failings of the intersections of Falls and Seminary, Falls and Greenspring Valley Road; and Falls and Joppa Road. I oppose the development plan as well as the granting of a special variance for all of the reasons stated above. Both Seminary and Joppa Roads are used weekly as alternate routes for the congestion that occurs due to westbound 695 and southbound 83 traffic jams. I ask that the County rule appropriately. Sincerely, Clayton Shelhoss	2022-09-19T10:49:09-04:00
Kevin Cordell	kcordell@gmail.com	4433986693	2206 Fox Hunt Lane, Lutherville, MD 21093		2022-09-19T10:29:53-04:00
Gill Shelhoss	GShelhoss@Sageproducts.com	14107909022	8207 Tally Ho Rd, Lutherville, md 21093	Why on earth would a special variance from the "F" level of service at the intersection of Joppa Rd and Falls Rd ever be granted? This situation has similarities to the city school system passing children who can not read. The intersections are a safety hazard to the members of the existing communities. those intersections should be fixed before any consideration of intentionally putting more traffic into those roads. Safety should be paramount over revenue. The intersections need to be fixed before any development should be considered	2022-09-19T09:54:16-04:00
Patrick Ferris	Lovettferris@gmail.com	4105986668	752 Bomont Rd Lutherville, MD 21093		2022-09-19T08:31:05-04:00
Lara Townsley	larajpeake@gmail.com	6109726227	8209 White Manor Drive		2022-09-19T08:20:47-04:00
Virginia Meade	hgmeade@verizon.net	4108255185	2204 Fox Hunt Lane, Lutherville MD 21093		2022-09-18T22:24:14-04:00
Hugh Meade	hgmeade@verizon.net	4105255185	2204 Fox Hunt Ln Lutherville MD 21093		2022-09-18T22:22:57-04:00
Gerard R. Blair	blair.gerard@comcast.net	410-790-8968	8215 Tally Ho Road Lutherville, MD 21093	Having lived here for 36+ years, I witnessed theoad corridor "shortcutting" to the Beltway! We don't need more through these neighborhoods full of children!	2022-09-18T20:13:45-04:00
Scott Andrzejewski	Scott.Andrzejewski@ymail.com	4436909025	6 Briarfield Court Lutherville MD 21093	This is going to make traffic even worse!	2022-09-18T17:12:52-04:00

Rachel Hughes	hughes.house@comcast.net	4109132028	8 Briarfield Court		2022-09-18T17:08:42-04:00
Vanessa Finney	vlafinney@comcast.net	410-823-1789	8408 Tally Ho Road. Lutherville, MD. 21093	The Joppa Rd - Falls Rd - Seminary Avenue corridor has been a failed traffic area FOR YEARS. There has been no work to improve the situation. I do not believe a new development in this area, even with promise to put in new infrastructure will resolve the current traffic and over-capacity use of the road in this area.	2022-09-17T22:05:41-04:00
Harrison JoAnn	joannharrison@mac.com	4438953656	2 Trelawny Ct		2022-09-17T14:08:04-04:00
George LeVanis	georgelevanis@aol.com	4439215294	2208 Fox Hunt Lane 21093		2022-09-17T11:39:58-04:00
Lynn Manthy	lynncsanders@hotmail.com	4102003844	8300 Tally Ho Rd, Lutherville, MD 21093		2022-09-17T10:34:46-04:00
Michelle Love	michellelove@verizon.net	4106988052	2211 Fox Hunt Lane		2022-09-17T00:25:57-04:00
Patrick G McGee	pmcgee5@verizon.net	4105980721	5 Horseshoe Circle Lutherville-Timonium 21093	This development presents a direct danger to all the residents and visitors to Heatherfield. Heatherfield is unique as it does not have sidewalks, curbs nor street lights. The increased traffic resulting from this development will increase the danger for citizens who walk, drive and live in Heatherfield. This development will place our children, grandchildren and great grandchildren at increased risk!	2022-09-16T16:18:54-04:00
Lillian Price	lillieny48@aol.com	4109522216	2209 Fox Hunt Lane		2022-09-16T13:05:03-04:00
Mark Townsley	mgtownsley@gmail.com	4104285887	8209 White Manor Drive		2022-09-16T12:57:25-04:00
Helen Brooks	hlb58745@gmail.com	410-329-1250	20 Old Boxwood Lane, Lutherville, MD 21093		2022-09-16T12:36:06-04:00
John Mezzullo	john.mezzullo@yahoo.com	4103291250	20 Old Boxwood Lane, Lutherville, MD 21093		2022-09-16T12:35:31-04:00
Brian Kasabula	bkasabula4@gmail.com	4435196230	9 Briarfield Court		2022-09-15T23:33:42-04:00
Barbara Blair	baiblair@hotmail.com	410-828-6773	8215 Tally Ho Road, Lutherville, MD 21093		2022-09-15T20:10:08-04:00
Pat Brannan	pdbrannan1@yahoo.com	4432355914	1244 Tally Ho Road		2022-09-15T15:12:20-04:00
Dean Merritt	dean@merrittinc.net	4108211956	3 Horseshoe Circle, Lutherville, MD 21093	If anything at all is built here, the road should go through to Seminary Ave as planned by the original county plan.	2022-09-15T13:10:26-04:00
William Warner	billwarner21@gmail.com	2159151911	13 Lochmoor Court, Timonium, MD 21093		2022-09-15T13:00:24-04:00
Mary Smith	maryandsean@comcast.net	4103083487	8427 Tally Ho Rd		2022-09-15T12:05:00-04:00
Michael T Wyatt	mwyatt@wyattgunning.com	4102965960	4 Trelawny Court, Lutherville MD 21093		2022-09-15T09:25:34-04:00
Kathy McGee	oconn7@aol.com	410-804-5228	5 Horseshoe Circle. 21093		2022-09-15T09:11:57-04:00
Paul j stefano	paul@paulstefano.com	4102059525	8345 Tallyho road lutherville, MD, 21093		2022-09-15T09:07:29-04:00
Lindsay lastner	lindsayercole@gmail.com	4438344262	12 Scottsdale court		2022-09-15T08:54:08-04:00
Linda Anderson	irishchance@aol.com	4104404009	1246 Clearfield Circle		2022-09-15T08:29:37-04:00
Trisha Voegtlin	tavoegtlin@gmail.com	4438508781	1210 Clearfield Circle		2022-09-15T08:19:33-04:00
michael Volley	mikevolley2000@yahoo.com	4438029094	8 trelawny ct 21093		2022-09-15T08:18:34-04:00
Lynn Krugman	thekrugmans@comcast.net	4104536749	19 Scottsdale Court, Lutherville		2022-09-15T08:07:15-04:00
Erin Shucosky	erins235@aol.com	4108043223	10 Scottsdale Court		2022-09-15T07:45:59-04:00
andie yellott	andie.yellott@gmail.com	4437972755	8421 Tally Ho Rd., Lutherville, MD 21093		2022-09-15T07:37:56-04:00
Tina Beliveau	tinacastronovo@gmail.com	(410) 948-0099	8344 Tally Ho Rd, Lutherville MD 21093		2022-09-15T07:31:52-04:00
Josh Nohe	jnohe2@gmail.com	4432574706	8429 Tally Ho Rd		2022-09-15T07:28:09-04:00
Ellen Waranch	ellen.laughlin@gmail.com	3016758793	8414 Tally Ho Road		2022-09-15T07:00:07-04:00
Joshua Waranch	jwaranch@gmail.com	4109602624	8414 Tally Ho Road		2022-09-15T06:59:09-04:00
Maria Andrzejewski	maria.andrzejewski@yahoo.com	6092144770	6 briarfield court Lutherville MD 21093		2022-09-15T06:58:26-04:00
Ben Hoffman	bhoffman@gmail.com	4436107131	6 Scottsdale Ct Lutherville, MD 21093		2022-09-15T06:25:44-04:00
Elaine Gehris	elainegehris@hotmail.com	4103370130	8343 tally ho road. Lutherville Md 21093	I live on Tally ho road. There is too much congestion on Joppa road . Sometimes it can take minutes to turn right or left onto Joppa road. When there is heavy rain, there is flooding on road out to Falls road. It is dangerous enough at the falls and Joppa intersection already without more traffic if this proposal goes through.	2022-09-15T06:21:08-04:00
Rameen Molavi	jtbar100@hotmail.com	4102964747	4 Scottsdale Ct		2022-09-15T05:45:50-04:00
Debbie Brown	eaglebrown@aol.com	4103397182	13 Trelawny Ct. Lutherville Md 21093		2022-09-15T05:41:25-04:00
Brian Sheahan	bsheahan@comcast.net	410-821-5665	8406 Tally Ho Road, Lutherville, MD 21093	I am very concerned about the current traffic failures on Joppa and Seminary Roads becoming exacerbated by this proposed new development project. Also, Tally Ho Road will become an even more dangerous "cut through" street. This is especially troublesome because so many young children play in the stream next to Tally Ho Road and have to cross the street to access the bike trail on the other side of the road.	2022-09-15T05:28:16-04:00
Thomas and Mary K mu	mkm2145@yahoo.com	4105837040	8331 tally Ho rd		2022-09-15T03:40:26-04:00

Mark Mercer	markbmercer@gmail.com	4109130626	8322 Tally Ho Road, Lutherville, Maryland 21093	As a resident on Tally Ho Road, I expect that this project would result in a substantial increase in traffic in front of my home, as people seek to avoid the failed section of Falls Road along Greenspring Station. This would be detrimental to the peace and safety of my community. The proposed "improvements" of infrastructure are not sufficient to relieve the traffic congestion or meet the needs of water and sewer delivery. This project should be abandoned; failing that, scaled back dramatically, to minimize its impact.	2022-09-15T02:05:06-04:00
Kristen seabrease	kristen.seabrease@gmail.com	4434679377	8415 tally Ho rd		2022-09-14T23:54:39-04:00
Debbie Brodsky	brodsky984@yahoo.com	4108230309	7 Briarfield Ct, Lutherville 21093		2022-09-14T23:07:48-04:00
Lindsay Ringgold	lindsaymajorringgold@gmail.com	4108120216	1234 Clearfield Circle, Lutherville 21093		2022-09-14T23:06:55-04:00
James weiss	jameslweiss@comcast.net	4103211145	8302 tally ho rf		2022-09-14T23:03:35-04:00
William Hildebrandt	billhildebrandt@gmail.com	4102419979	8321 Tally Ho Rd.		2022-09-14T23:03:05-04:00
Pamela Lloyd	thelloydfamily4@verizon.net	4436555565	8304 Tally Ho Lutherville MD 21093		2022-09-14T23:02:32-04:00
Cathy Cawley	cathygcawley@yahoo.com	(908) 963-3991	13 Scottsdale Court, Lutherville 21093	The traffic in the area is already unbearable with Green Spring Station (stores and Hopkins medical buildings) as well as the private schools. Adding more housing will cause so much more congestion. The Seminary Ridge neighborhood will become more of a cut through as there is no other outlet for the new neighborhood to get to Seminary Road.	2022-09-14T23:01:20-04:00
Barbara C. Schumann	bcschumann@comcast.net	4102964190	1227 Clearfield Cir, Lutherville, MD		2022-09-14T23:00:35-04:00
Susan Weiss	sweiss@jhu.edu	4109678500	8302 Tally Ho Road	The storm drain that borders the existing homes on Tally Ho Rd is barely functioning as is. Further strain imposed by 61 houses will have an adverse effect on the environment.	2022-09-14T22:57:46-04:00
Carl Friedman	carlfriedman@alumni.williams.ed	4109714175	1230 Clearfield Circle, Lutherville, MD 21093	In the event that permission is granted to build the proposed development, it is critically important that there be unimpeded access to the development directly from Seminary Avenue in order to ameliorate the damage of additional traffic. This access must NOT be "emergency only", but, rather, a standard intersection and road open at all times.	2022-09-14T22:51:35-04:00
James Clayton	james.d.clayton7@gmail.com	4438343065	14 Lochmoor Ct, Timonium, MD, 21093	If the development must proceed, I implore you to create connection from the new development to Mays Chapel Road, which dead-ends in a way clearly intended to become a future through street.	2022-09-14T22:51:32-04:00
Carolyn Robinson	Krollnlbi@gmail.com	4437420650	10 Trelawny Ct Lutherville MD 21093		2022-09-14T22:51:26-04:00
Blandy Becker	blandy.becker@gmail.com	4103755777	1205 Clearfield Circle Lutherville, MD 21093		2022-09-14T22:39:31-04:00
Charles Brrman	buzzcarol@aol.com	4102527194	2 Old Boxwood Lane, 21093		2022-09-14T11:45:19-04:00
Brian Rubin	brian.rubin@benjaminfedwards.c	4109793696	15 Old Boxwood Lane Lutherville, MD 21093		2022-09-14T11:23:02-04:00
Thomas Bradlee	tbradlee@hotmail.com	444-553-0809	17 Old Boxwood Lane, Timonium, MD 21093	Traffic can already be a nightmare in that area. The approval of this project will only make it worse.	2022-09-14T10:31:34-04:00
Alice Wilkinson	cwilkins1@mindspring.com	4103365095	1 Old Boxwood Lane		2022-09-14T09:17:34-04:00
Doug Sachse	dsachse@dtslawoffices.com	410-984-8643	9 Sedgefield Court, Lutherville MD 21093		2022-09-13T17:51:36-04:00
Alisa Goldsmith	alisa@thewhomegroup.com	917-282-8899	8214 Tally Ho Rd Lutherville, MD 21093		2022-09-13T16:55:20-04:00
Dan Radebaugh	dan@radebaughlaw.com	4102077225	8212 Tally Ho Road, Lutherville, MD 21093	We recently purchased our property on Tally Ho Road and love the neighborhood. The one downside is the traffic that currently exists on Tally Ho and especially on the nearby intersections on Falls Road. The area simply cannot handle further development at this time.	2022-09-13T16:43:26-04:00

	B	C	D	E
1	**I am opposed to the development plan filed with Baltimore County for 61 single family homes at 2310 W. Joppa Road.**			
2	**I am also opposed to the granting of a special variance from the "F" level of service at the intersection of Joppa Road and Falls Road.**			
3	**I believe the plan and the special variance should be denied for many reasons, including traffic congestion,**			
4	**sewer capacity, and other issues that will make this development too impactful on and incompatible with the surrounding area.**			
5				
6				
7	your-email	your-phone	your-address	your-message
8	abrainerd@gmail.com	410-252-1957	11833 Falls Rd, Cockeysville, 21030	
9	acsilver25@hotmail.com	4105917307	10124 Falls Rd Lutherville, MD 21093	Falls Rd, Joppa Rd & 83 is a failed intersection and can not handle anymore traffic. It can't handle the traffic the exists presently. The 61 homes will also be a problem for over crowding in the school district.
10	ahuey19@gmail.com	4103409268	7016 Charles Ridge Road 21204	
11	alisa@thewhomegroup.com	917-282-8899	8214 Tally Ho Rd Lutherville, MD 21093	
12	amenkds@aol.com	14108215792	2229 W. Joppa Rd Lutherville, md 21093	I am opposed to the huge number of homes being considered at 2310 W. Joppa Road Lutherville, MD 21093. I not only have an issue with the number of homes but also how many people, traffic, and other changes that would take place as a result of a developmental opportunity.
13	andie.yellott@gmail.com	4437972755	8421 Tally Ho Rd., Lutherville, MD 21093	
14	andrewjachriss@gmail.com	4109787928	2020 West Joppa Road Lutherville, MD 21093	
15	baiblair@hotmail.com	410-828-6773	8215 Tally Ho Road, Lutherville, MD 21093	
16	barbaracwhite@verizon.net	401-575-1600	800A Southerly Road #1224, Towson, MD 21286	As a resident that travels Joppa Road to Greenspring Station for medical reasons, frequently,I am opposed to this development.
17	bcschumann@comcast.net	4102964190	1227 Clearfield Cir, Lutherville, MD	
18	bfjmj1@gmail.com	4108256391	6 trelawny court	The current infrastructure can not handle the amount of traffic in the area. Failing intersections should be a large reason this development should not go forward. All mitigation plans will not make the intersection above a failing grade. Sewer and water runoff is a large problem as Joppa road is regularly flooded directly next to the undeveloped property already. More building and less permeable ground will only make this problem worse
19	bhoffman@gmail.com	4436107131	6 Scottsdale Ct Lutherville, MD 21093	
20	billhildebrandt@gmail.com	4102419979	8321 Tally Ho Rd.	
21	billwarner21@gmail.com	2159151911	13 Lochmoor Court, Timonium, MD 21093	
22	bkasabula4@gmail.com	4435196230	9 Briarfield Court	
23	blair.gerard@comcast.net	410-790-8968	8215 Tally Ho Road Lutherville, MD 21093	Having lived here for 36+ years, I witnessed theoad corridor "shortcutting" to the Beltway! We don't need more through these neighborhoods full of children!
24	blandy.becker@gmail.com	4103755777	1205 Clearfield Circle Lutherville, MD 21093	
25	bpeck@janney.com	410-967-6228	12207 Boxer Hill Road, Cockeysville, MD. 21030	Please observe the very heavy traffic patterns currently at the intersection of Falls Road and Joppa Road during the morning and afternoon rush hours. (Please imagine how much more congested these crazy traffic patterns will be, if an additional 61 new homes are built at this location.) You don't have to be too imaginative knowing how bad this additional traffic will be with 122 additional vehicles cruising this immediate location. If you've ever been in northern Va. (i.e., McLean, Great Falls, Alexandria, Arlington) during morning or afternoon rush hours, it's a complete cluster of grid lock and traffic. If this housing development is built, everyone will HATE living in a northern VA. environment!

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26	brian.rubin@benjaminfedwards.com	4109793696	15 Old Boxwood Lane Lutherville, MD 21093	
27	brodsky984@yahoo.com	4108230309	7 Briarfield Ct, Lutherville 21093	
28	bsheahan@comcast.net	410-821-5665	8406 Tally Ho Road, Lutherville, MD 21093	I am very concerned about the current traffic failures on Joppa and Seminary Roads becoming exacerbated by this proposed new development project. Also, Tally Ho Road will become an even more dangerous "cut through" street. This is especially troublesome because so many young children play in the stream next to Tally Ho Road and have to cross the street to access the bike trail on the other side of the road.
29	buzzcarol@aol.com	4102527194	2 Old Boxwood Lane, 21093	
30	carlfriedman@alumni.williams.edu	4109714175	1230 Clearfield Circle, Lutherville, MD 21093	In the event that permission is granted to build the proposed development, it is critically important that there be unimpeded access to the development directly from Seminary Avenue in order to ameliorate the damage of additional traffic. This access must NOT be "emergency only", but, rather, a standard intersection and road open at all times.
31	cathygcawley@yahoo.com	(908) 963-3991	13 Scottsdale Court, Lutherville 21093	The traffic in the area is already unbearable with Green Spring Station (stores and Hopkins medical buildings) as well as the private schools. Adding more housing will cause so much more congestion. The Seminary Ridge neighborhood will become more of a cut through as there is no other outlet for the new neighborhood to get to Seminary Road.
32	clayton@secondchanceinc.org	4104094997	8207 Tally Ho Road, Lutherville MD 21093	I have been a resident homeowner for over 30 years at 10935 Falls Road (one house south of Falls and Seminary), 10941 Falls Road (corner of Falls and Seminary), 1407 West Joppa Road and currently 8207 Tally Ho Road. I have firsthand experience of the year over year "F" failings of the intersections of Falls and Seminary, Falls and Greenspring Valley Road; and Falls and Joppa Road. I oppose the development plan as well as the granting of a special variance for all of the reasons stated above. Both Seminary and Joppa Roads are used weekly as alternate routes for the congestion that occurs due to westbound 695 and southbound 83 traffic jams. I ask that the County rule appropriately. Sincerely, Clayton Shelhoss
33	clintonrdaly@gmail.com	4108281775	10214 Falls Rd	
34	cquattrocki@yahoo.com	410-812-0241	6 Sedgefield Court, Lutherville, 21093	
35	cstieff3@gmail.com	4109359446	10124 Falls Rd Lutherville Md 21093	
36	cwilkins1@mindspring.com	4103365095	1 Old Boxwood Lane	
37	dan@radebaughlaw.com	4102077225	8212 Tally Ho Road, Lutherville, MD 21093	We recently purchased our property on Tally Ho Road and love the neighborhood. The one downside is the traffic that currently exists on Tally Ho and especially on the nearby intersections on Falls Road. The area simply cannot handle further development at this time.
38	davidebrainerd@gmail.com	410 252-1957	11833 Falls Road Cockeysville, Maryland 21030	
39	dean@merrittinc.net	4108211956	3 Horseshoe Circle, Lutherville, MD 21093	If anything at all is built here, the road should go through to Seminary Ave as planned by the original county plan.
40	dsachse@dtslawoffices.com	410-984-8643	9 Sedgefield Court, Lutherville MD 21093	

	B	C	D	E
41	dsemesky.foc@gmail.com	4103038605	1223 Clearfield Circle, Lutherville, MD 21093	
42	eaglebrown@aol.com	4103397182	13 Trelawny Ct. Lutherville Md 21093	
43	eanollosb@emmanuelosb.org	410-821-5792	2225 West Joppa Rd. Lutherville MD 21093	
44	elainegehris@hotmail.com	4103370130	8343 tally ho road. Lutherville Md 21093	I live on Tally ho road. There is too much congestion on Joppa road . Sometimes it can take minutes to turn right or left onto Joppa road. When there is heavy rain, there is flooding on road out to Falls road. It is dangerous enough at the falls and Joppa intersection already without more traffic if this proposal goes through.
45	ellen.laughlin@gmail.com	3016758793	8414 Tally Ho Road	
46	erins235@aol.com	4108043223	10 Scottsdale Court	
47	friedanichollspalm@gmail.com	410-952-7556	11933 Falls Road 21030	At present this intersection is, at best, a hazard. We have two major schools, a shopping center, a public park, private doctor's offices, plus a huge medical complex. This intersection is dangerous at present. Frieda Palm
48	georgelevanis@aol.com	4439215294	2208 Fox Hunt Lane 21093	
49	ghartle@emmanuelosb.org	410-821-5792	2229 West Joppa Road, Lutherville, MD, 21093	
50	GShelhoss@Sageproducts.com	14107909022	8207 Tally Ho Rd, Lutherville, md 21093	Why on earth would a special variance from the "F" level of service at the intersection of Joppa Rd and Falls Rd ever be granted? This situation has similarities to the city school system passing children who can not read. The intersections are a safety hazard to the members of the existing communities. those intersections should be fixed before any consideration of intentionally putting more traffic into those roads. Safety should be paramount over revenue. The intersections need to be fixed before any development should be considered
51	harrisopeace@gmail.com	4436109537	2022 W Joppa Rd. Lutherville MD. 21093	
52	helgaheiman@gmail.com	4144123683	16 Old Boxwood Lane Timonium MD 21093	
53	hgmeade@verizon.net	4108255185	2204 Fox Hunt Lane, Lutherville MD 21093	
54	hgmeade@verizon.net	4105255185	2204 Fox Hunt Ln Lutherville MD 21093	
55	hlb58745@gmail.com	410-329-1250	20 Old Boxwood Lane, Lutherville, MD 21093	
56	hughes.house@comcast.net	4109132028	8 Briarfield Court	
57	Huntmeet@aol.com	4105988601	13941 Mantua Milll Rd	My family has property in The Meadows. Traffic on Seminary, Joppa Falls Road is already beyond awful.
58	irishchance@aol.com	4104404009	1246 Clearfield Circle	
59	jacintaosb@yahoo.com	410 830 9937	2229 W. Joppa Road, Lutherville, MD 21093	
60	james.d.clayton7@gmail.com	4438343065	14 Lochmoor Ct, Timonium, MD, 21093	If the development must proceed, I implore you to create connection from the new development to Mays Chapel Road, which dead-ends in a way clearly intended to become a future through street.
61	jamesgdavis@gmail.com	4108285358	8205 Carrbridge Circle, Towson MD 21204	
62	jameslweiss@comcast.net	4104047537	8302 tally ho rd.	Crippling traffic problems on both Tally Hall and Joppa roads are inevitable if this project is completed.. In adequate sewer drainage, and threats to wildlife in the woods of joining the project or additional, severe, consequences of this project being completed.
63	jbatoff@gmail.com	4435207185	1021 Greenspring Valley Road, Lutherville Md 21093	How this development is even being considered is beyond comprehension
64	jeriwosb@emmanuelosb.org	410 821 5792	2225 W Joppa Rd Lutherville MD	Concerned about increased traffic on Joppa Rd, possibility of losing some frontage of property at 2235 W Joppa Rd if Joppa Rd has to be widened, lack of privacy to existing homes.
65	jgoldy52@gmail.com	4437423993	8214 Tally Ho Rd	
66	jjpauliny2@comcast.net	4437973263	1011 Chestnut Ridge Drive, Lutherville, MD 21093	

	B	C	D	E
67	jmstief@emmanuelosb.org	410-821-5792	2229 W. Joppa Road / Lutherville 21093-4601	I go through the Falls Road/Joppa Road/I-83 intersection frequently. At least 25% of the time I witness a near-accident, sometimes an actual one. I no longer use the post office at Greenspring Station because it takes at least 20 minutes to drive from and back to my home (a safe walk were it not for the traffic on Joppa Road). We are not far from the City line. What size sewer pipe does this one enter into? Might this project unintentionally build in the capacity for backflow and leaks if the City line cannot accommodate it? Thank you..
68	jnohe2@gmail.com	4432574706	8429 Tally Ho Rd	
69	joannharrison@mac.com	4438953656	2 Trelawny Ct	
70	john.mezzullo@yahoo.com	4103291250	20 Old Boxwood Lane, Lutherville, MD 21093	
71	jonhiggins1@mac.com	4436762446	8208 White Manor Drive	
72	jtbar100@hotmail.com	4102964747	4 Scottsdale Ct	
73	jwaranch@gmail.com	4109602624	8414 Tally Ho Road	
74	kathleenpontone@gmail.com	4103634159	2522 Caves Rd. Owings Mills Md 21117	
75	kcordell@gmail.com	4433986693	2206 Fox Hunt Lane, Lutherville, MD 21093	
76	kedheiman@netscape.net	4144123683	16 Old Boxwood Lane Timonium MD 21093	
77	keithrosenstiel@comcast.net	(240) 508-3543	13212 Falls Road,Cockeysville MD 21030	
78	kellyandmorgan@hotmail.com	1 (410) 215-340	1100 westwicke ln	
79	kirstenburger@comcast.net	4104093961	1906 Corbridge Lane, Monkton, MD 21111	
80	klambrow@comcast.net	(410) 733-5837	1857 Cape May Rd., Essex, MD 21221	
81	kmsayan@aol.com	4108122487	14318 Cuba Rd 21030	Traffic in that immediate area is terrible already. Monumental backups most days. Residences will only add to the problem.
82	kmwashburne@gmail.com	410-363-1371	112 Greenspring valley Rd., Owings ills,21117-4103	
83	kpknott1@verizon.net	4435275153	322 Dixie Dr	
84	kristen.seabrease@gmail.com	4434679377	8415 tally Ho rd	
85	Krollnlbi@gmail.com	4437420650	10 Trelawny Ct Lutherville MD 21093	
86	kwhite@emmanuelosb.org	410-821-5792	2229 W. Joppa Road, Lutherville, MD	Joppa Road and the traffic coming off the Beltway already create problems of exit and egress and safety for people who travel on Joppa Road. and for many people trying to access the Beltway and the Jones Falls Expressway.
87	larajpeake@gmail.com	6109726227	8209 White Manor Drive	
88	lesalesdunworth@gmail.com	443983590	11702 Greenspring Ave	
89	lhowar@nyc.rr.com	4109673442	11044 Greenspring Avenue, Lutherville, MD. 21093	
90	lillieny48@aol.com	4109522216	2209 Fox Hunt Lane	
91	lindsayercole@gmail.com	4438344262	12 Scottsdale court	
92	lindsaymajorringgold@gmail.com	4108120216	1234 Clearfield Circle, Lutherville 21093	
93	lizhembling@yahoo.com	4109350741	11933 Falls Rd Cockeysville, MD 21030	We already have huge run off and flooding issues in this area. The local streams are now flood areas that not only flood areas around Greenspring Station, but also downstream along Falls Rd.
94	llhooperjr@gmail.com	4433863240	2312 Tufton Ridge Rd., Reisterstown MD 21136	There is no way this project should be allowed to go forward unless the sewer and traffic issues presented by it are fixed before ground is broken.
95	lorimegdesigns@me.com	4109175280	8 Stream Ct, Owings Mills, Md 21117	

	B	C	D	E
96	louise.meledin@starpower.net	410-494-8833	208 Garrison Forest Road, Owings Mills, MD 21117	There is already a lot of traffic and congestion at the intersection of Falls Road and Joppa Road. This development will only make it worse.
97	Lovettferris@gmail.com	4105986668	752 Bomont Rd Lutherville, MD 21093	
98	lynncsanders@hotmail.com	4102003844	8300 Tally Ho Rd, Lutherville, MD 21093	
99	m_bun@msn.com	4102184229	12831 Dover Rd Reisterstown, Md. 21071	
100	maria.andrzejewski@yahoo.com	6092144770	6 briarfield court Lutherville MD 21093	
101	markbmercer@gmail.com	4109130626	8322 Tally Ho Road, Lutherville, Maryland 21093	As a resident on Tally Ho Road, I expect that this project would result in a substantial increase in traffic in front of my home, as people seek to avoid the failed section of Falls Road along Greenspring Station. This would be detrimental to the peace and safety of my community. The proposed "improvements" of infrastructure are not sufficient to relieve the traffic congestion or meet the needs of water and sewer delivery. This project should be abandoned; failing that, scaled back dramatically, to minimize its impact.
102	maryandsean@comcast.net	4103083487	8427 Tally Ho Rd	
103	masw74@yahoo.com	4439305004	19 Oak Tree Court, Lutherville, MD 21093	
104	matthewjmiller127@gmail.com	4842694347	10 Lochmoor Ct, Timonium, MD 21093	
105	mgold66@comcast.net	4102525914	12165 Falls Rd., Cockeysville, MD 21030	
106	mgtownsley@gmail.com	4104285887	8209 White Manor Drive	
107	michellelove@verizon.net	4106988052	2211 Fox Hunt Lane	
108	michich23@hotmail.com	4108231698	8333 Tally Ho Rd, Lutherville, MD 21093	This development will only add to the congestion at the already overloaded Joppa Rd/Falls Rd intersection and will greatly increase cut-through traffic on Tally Ho Road where I live. I strongly urge that this development not be approved.
109	mike@mikepalm.com	4434651224	11933 Falls Road	
110	mikevolley2000@yahoo.com	4438029094	8 trelawny ct 21093	
111	mkm2145@yahoo.com	4105837040	8331 tally Ho rd	
112	msgreen47@gmail.com	4108689851	1810 Greenspring Valley Road	
113	mwyatt@wyattgunning.com	4102965960	4 Trelawny Court, Lutherville MD 21093	
114	nancycaplan@gmail.com	3018752306	1 Pine Spring Lane, Owings Mills, MD 21117	
115	oconn7@aol.com	410-804-5228	5 Horseshoe Circle. 21093	
116	ollyda@aol.com	917 816 8266	PO Box 603 Oldwick, NJ 07921	
117	pagemac@comcast.net	4103823580	1628 Corbett Road, Monkton, Md 21111	
118	paul@paulstefano.com	4102059525	8345 Tallyho road lutherville, MD, 21093	
119	paulabsilverman@gmail.com	4109674110	903 Greenspring Valley Road Lutherville MD 21093	
120	paulareynolds.photo@gmail.com	4104580223	10538 Burnside Farm Rd, PO Box 28, Stevenson, MD 21153	I have lived and worked in the Green Spring Valley since 1975. In almost 50 years, I have watched the development of this area continue to grow and with it, the difficulty to traverse Falls, Greenspring Valley Road, andHillside Road, at certain times during the day. I think the development in this area is saturated, and another 61 residences creating more traffic and sewer issues is not something this valley needs.
121	paulhartman3000@gmail.com	410-622-8396	18 1/2 Cedar Avenue, Baltimore MD 21286	There should not be development that increases density within the traffic shed of failing "F" intersections.
122	pdbrannan1@yahoo.com	4432355914	1244 Tally Ho Road	
123	pkirk@emmanuelosb.org	4108215792	2229 W. Joppa Rd :Lutherville, MD 21093-4601	There are constant cars /travelers/along Joppa Rd and to put 61+ more cars especially knowing that many who live here have more than one car would be a Disaster!!!! Plus in the summer time, the Pool draws many children and parents to gather here. Very dangerous for children. THIS IS NOT A GOOD IDEA!!!

	B	C	D	E
124	pmcgee5@verizon.net	4105980721	5 Horseshoe Circle Lutherville-Timonium 21093	This development presents a direct danger to all the residents and visitors to Heatherfield. Heatherfield is unique as it does not have sidewalks, curbs nor street lights. The increased traffic resulting from this development will increase the danger for citizens who walk, drive and live in Heatherfield. This development will place our children, grandchildren and great grandchildren at increased risk!
125	pphillips@emmanuelosb.org	4108215792	2229 West Joppa Road, Lutherville, Maryland	
126	probertsmd@comcast.net	410-584-2667	4 Beechmere Lane	I am particularly concerned about the negative environmental impact of this development.
127	pucca111977@yahoo.com	4109639528	6 Scottsdale Ct., Lutherville, MD 21093	I can only imagine the chaos that will result in upwards of 100 cars trying to make the left hand turn into the new community from Joppa Road on a daily basis. It is absurd that a community of this density could be allowed with a single route of egress. There has been clear and compelling evidence presented in the hearings, from many departments, that the development of this density will create undue burden to the community. The only benefit I can see if the lining the pockets of the developers. It will not serve the greater good in any way, and will only overwhelm an already-strained infrastructure.
128	quinn13208@cs.com	4109160337	13208 Falls Road, Cockeysville, MD. 21030	Absolutely opposed. This will add greatly to the already congested traffic issues in this area. It will affect our wildlife, water and overall loss of rural habitat. No more construction in this area!!!!
129	rachel.ichniowski@gmail.com	4437912755	8333 Tally Ho Road, Lutherville, MD 21093	
130	rascheper@comcast.net	14434189069	12901 Falls Road, Cockeysville, MD 21030	
131	rich@applefalls.org	443-768-9123	12901 Falls Road, Cockeysville, MD 21030	
132	robertmacht@comcast.net	443-632-4108	6140 Barroll Rd Baltimore, MD. 21209	
133	roby2442@gmail.com	4103759083	10 Trelawny ct Lutherville md 21093	We are not anti-development by any means, but this will absolutely destroy this area. The traffic is already brutal at all times of the day. the roads were not built to handle more homes. The critical systems , power and water , cannot handle more houses. Most importantly, there is no was our main road can handle construction vehicles, its already a major safety hazard with Waze circumventing drivers through the streets. Thanks, Mark
134	sallymerz@gmail.com	4103634529	301 Garrison Forest Road Owings Mills MD	The traffic at this set of intersections and in this area of Baltimore is already failing. There is no way to fix the bottleneck that already exists. Further building in this area would be irresponsible environmentally and cause an already dense community to become more dense.
135	sallyspilman1@comcast.net	4109607636	1503 , Broadway Rd	
136	sarapvita@gmail.com	2022510810	13001 Dover Road Reisterstown, MD 21136	

	B	C	D	E
137	scimmelt@gmail.com	443-928-8330	1019 Greensprin Valley Road 21093	The intersections of Greenspring Valley Road, Falls Road and Joppa road are already over-taxed. Communters driving north and south on Falls Road race to beat the lights, because the traffic is so backed up. Cars lawfully entering these intersections on green lights are broadsided by impatient north-south drivers. I blame the county for allowing the development without concern to the overwhelming traffic. It is dangerous. The potential residence on Joppa Road would pay a high price for living there!
138	Scott.Andrzejewski@ymail.com	4436909025	6 Briarfield Court Lutherville MD 21093	This is going to make traffic even worse!
139	sherryjordan23@gmail.com	4436686356	2606 Geist Road, Reisterstown 21136	
140	sjw6@mac.com	410-526-4880	3012 Butler Rd. , Reisterstown, MD.,21136	
141	ssilverman@silvermanthompson.com	4103852225	903 Greenspring valley Rd.	
142	sujata.rana67@gmail.com	4435623923	19 Caveswood Ln, Owings Mills, MD 21117	
143	sweetautumnfarm@gmail.com	4103570855	20810 Slab Bridge Road, Freeland Md	
144	sweiss@jhu.edu	4109678500	8302 Tally Ho Road	The storm drain that borders the existing homes on Tally Ho Rd is barely functioning as is. Further strain imposed by 61 houses will have an adverse effect on the environment.
145	tavoegtlin@gmail.com	4438508781	1210 Clearfield Circle	
146	tazola@azolainc.com	4103675277	10116 falls rd Lutherville, md 21093	Any intersection that gets an F rating cannot be allowed to add traffic. This is common sense. The traffic on Joppa and Falls is at breaking point during rush hour. Anyone approving this does not live in the area and should be made to sit in the traffic so they can feel the pain of the rest of us.
147	tbradlee@hotmail.com	444-553-0809	17 Old Boxwood Lane, Timonium, MD 21093	Traffic can already be a nightmare in that area. The approval of this project will only make it worse.
148	thekrugmans@comcast.net	4104536749	19 Scottsdale Court, Lutherville	
149	thelloydfamily4@verizon.net	4436555565	8304 Tally Ho	The negative effect on the traffic, water, sewage, soil, infrastructure, etc is extreme. There is absolutely not enough land for this many houses to not negatively impact the whole area.
150	tigtopper@gmail.com	410-92609834	704 Dryden Drive, Baltimore MD 21229	
151	tinacastronovo@gmail.com	(410) 948-0099	8344 Tally Ho Rd, Lutherville MD 21093	
152	tj.showponies@gmail.com	4104722526	15635 Falls Rd., Sparks Glencoe, MD 21152	
153	Tmbruggs13@gmail.com	41099031144	2202 Old Court Rd	Opposed !!!!
154	tomfekete@hotmail.com	31497145494	70 River Oaks Circle Pikesville, MD	
155	tquinn123@cs.com	4438240606	13208 falls rd, cockeysville md 21030	I am absolutely opposed to the Joppa Rd housing development, as well as the variance at the Joppa/Falls Rd. Intersection. Enough with housing sprawl in our fragile area! We're already at a tipping point.
156	vlafinney@comcast.net	410-823-1789	8408 Tally Ho Road. Lutherville, MD. 21093	The Joppa Rd - Falls Rd - Seminary Avenue corridor has been a failed traffic area FOR YEARS. There has been no work to improve the situation. I do not believe a new development in this area, even with promise to put in new infrastructure will resolve the current traffic and over-capacity use of the road in this area.
157	w1nny@hotmail.com	4439351700	11700 Greenspring Avenue 21093	This intersection is already congested. Please do not approve such densely packed housing.
158	weisfes@yahoo.com	4438345959	10112 Falls Road	

	B	C	D	E
				First, we would like to identify ourselves. We have lived in Seminary Ridge since 1978 when we bought the property at 8302 Tally Ho Road directly from Michael Keelty. At that time, the house was merely a foundation. Over time we have built 2 additions, one in 1989, a music room/library that overlooks the western part of the property, and in 2008, with a view toward our retirement, a first-floor master bedroom suite. This much more extensive addition also looks out to the trees and to the Lankford's cornfield. Before we undertook that project, we got reassurance from Norris Lankford that his property would never be sold to developers. We also checked with our family lawyer at Venable who also confirmed that the property was protected by zoning. Of course that was then. Subsequently, we learned that in March 2021 Dorothea Lankford sold the house and acreage to Greenspring Joppa Falls LLC for $8 Million. Atapco has proposed building 61 homes on the approximately 39 acres. We both retired on July 1 and were very busy before and after. As a result we may have missed some emails. One of the important items we missed was brought up by Blandy Becker when she mentioned that no one responded to the question of whether we would have liked additional landscaping, trees, etc. as a visual barrier. We certainly would have liked to have that option. We've been watching with great interest some of the hearings regarding the proposed Greenspring Manor and while we haven't been able to see all of the witnesses, we are struck by a number of things. Paramount is the increase in population density to a community that is already overburdened by issues relating to traffic, sewer systems, and water. One witness, a Mr. Compton, from The Meadows, mentioned â€œequality of life.That is an important concern that can't be measured with traditional visual or numerical data. One other thing of importance has not to our knowledge been brought up. Our storm drain reservation and open space is also a nature preserve. We have families of deer, rabbits, foxes, rare birds and other fauna and flora that roam the woods in between our homes and the cornfield. Adding 61 homes in the cornfield will displace these denizens of the community who are already living in our backyards. [OUT:The whitetail deer are eating our plants and shrubs and are carrying the ticks that cause Lyme Disease]. Another witness, Sister Kathy McNamy, abbess of the monastery of Benedictine sisters, spoke about the already existing dangers on Joppa Road (with its many institutions, such as 3 churches, the shops and offices at Greenspring station and Joppa Green as well as the three pavilions of Johns Hopkins at Greenspring), including how youngsters from the Roland Run Club walk to the snowball stand on a road (Joppa) without sidewalks or shoulders. She also talked about issues with the sewer system that arose when Johns Hopkins Medicine began developing Hopkins at Greenspring. At that time, the monastery was concerned about the possibility that the trees behind the monastery would need to be removed, leaving them with no barrier between their property and I-83. Attorney McMann asked Sister Kathy about her concern that their property could have been condemned at that time and wondered if she was worried about that potential with this new development. Mr. Rosenblatt, the attorney for Atapco, could not provide reassurance. Sister Kathy, like so many of us, were hoping to get to the hearing that was cancelled. She also used the term â€œdone deal.â€ We hope that is not the case. The overwhelming majority of the residents of the various communities impacted by the proposed â€˜villageâ€™ have expressed their reasons for why it is a very bad idea and have signed petitions opposing the development. To summarize, it would appear that three major issues remain unsatisfactorily addressed: 1) severe traffic congestion, over and above the already-significant traffic overburden, with attendant risk to the numerous pedestrians, children, and bike riders who currently travel on Tally Ho Road; 2) continued inadequate sewer/storm drainage; 3) damage or destruction of the current visual barrier between Seminary Ridge and the proposed development plan.
159	weiss.susan@gmail.com	4109678500	8302 Tally Ho Road Lutherville, MD 21093	
160	yingweilum@gmail.com	2152034346	8308 tally ho road, Lutherville, MD 21093	

Address	Street	Property Area SF	Community	Dev's Ex. 4
1	Old Boxwood Lane	10,367	Boxwood	red
12	Old Boxwood Lane	10,497	Boxwood	red
2	Old Boxwood Lane	11,717	Boxwood	red
3	Old Boxwood Lane	7,056	Boxwood	red
4	Old Boxwood Lane	8,102	Boxwood	red
5	Old Boxwood Lane	12,719	Boxwood	red
6	Old Boxwood Lane	10,933	Boxwood	red
7	Old Boxwood Lane	12,414	Boxwood	red
8	Old Boxwood Lane	12,371	Boxwood	red
9	Old Boxwood Lane	6,795	Boxwood	red
10	Old Boxwood Lane	9,278	Boxwood	red
11	Old Boxwood Lane	12,153	Boxwood	red
13	Old Boxwood Lane	11,238	Boxwood	red
14	Old Boxwood Lane	8,886	Boxwood	red
15	Old Boxwood Lane	5,793	Boxwood	red
16	Old Boxwood Lane	6,926	Boxwood	red
17	Old Boxwood Lane	10,585	Boxwood	red
18	Old Boxwood Lane	9,365	Boxwood	red
19	Old Boxwood Lane	9,234	Boxwood	red
20	Old Boxwood Lane	7,797	Boxwood	red
21	Old Boxwood Lane	5,052	Boxwood	red
22	Old Boxwood Lane	10,628	Boxwood	red
23	Old Boxwood Lane	16,802	Boxwood	red
24	Old Boxwood Lane	13,372	Boxwood	red
25	Old Boxwood Lane	10,585	Boxwood	red
26	Old Boxwood Lane	10,323	Boxwood	red
27	Old Boxwood Lane	10,105	Boxwood	red
	average lot size	10,040	range 5,052-16,802	
1	Hampston Garth	12,371	Fields at Seminary	purple
3	Hampston Garth	12,344	Fields at Seminary	purple
4	Hampston Garth	10,193	Fields at Seminary	purple
5	Hampston Garth	9,365	Fields at Seminary	purple
6	Hampston Garth	15,028	Fields at Seminary	purple
7	Hampston Garth	9,757	Fields at Seminary	purple
3	Fieldstream Ct	7,710	Fields at Seminary	purple
5	Fieldstream Ct	9,278	Fields at Seminary	purple

7	Fieldstream Ct	9,559	Fields at Seminary	purple
8	Fieldstream Ct	12,807	Fields at Seminary	purple
9	Fieldstream Ct	10,454	Fields at Seminary	purple
10	Fieldstream Ct	9,714	Fields at Seminary	purple
11	Fieldstream Ct	11,892	Fields at Seminary	purple
12	Fieldstream Ct	9,212	Fields at Seminary	purple
13	Fieldstream Ct	11,326	Fields at Seminary	purple
14	Fieldstream Ct	9,335	Fields at Seminary	purple
15	Fieldstream Ct	10,585	Fields at Seminary	purple
16	Fieldstream Ct	8,930	Fields at Seminary	purple
17	Fieldstream Ct	12,545	Fields at Seminary	purple
18	Fieldstream Ct	7,536	Fields at Seminary	purple
1	Summer Field Ct	17,903	Fields at Seminary	purple
2	Summer Field Ct	14,985	Fields at Seminary	purple
3	Summer Field Ct	11,935	Fields at Seminary	purple
4	Summer Field Ct	15,159	Fields at Seminary	purple
5	Summer Field Ct	11,064	Fields at Seminary	purple
7	Summer Field Ct	9,417	Fields at Seminary	purple
8	Summer Field Ct	9,801	Fields at Seminary	purple
9	Summer Field Ct	9,862	Fields at Seminary	purple
10	Summer Field Ct	10,242	Fields at Seminary	purple
11	Summer Field Ct	10,357	Fields at Seminary	purple
1	Summer Field Ct	9,200	Fields at Seminary	purple
13	Summer Field Ct	10,852	Fields at Seminary	purple
14	Summer Field Ct	9,200	Fields at Seminary	purple
15	Summer Field Ct	12,240	Fields at Seminary	purple
16	Summer Field Ct	13,199	Fields at Seminary	purple
18	Summer Field Ct	9,600	Fields at Seminary	purple
20	Summer Field Ct	9,388	Fields at Seminary	purple
21	Summer Field Ct	15,856	Fields at Seminary	purple
22	Summer Field Ct	9,670	Fields at Seminary	purple
23	Summer Field Ct	10,106	Fields at Seminary	purple
25	Summer Field Ct	9,446	Fields at Seminary	purple
27	Summer Field Ct	8,902	Fields at Seminary	purple
28	Summer Field Ct	8,015	Fields at Seminary	purple
29	Summer Field Ct	9,267	Fields at Seminary	purple
30	Summer Field Ct	10,585	Fields at Seminary	purple

31	Summer Field Ct	8,973	Fields at Seminary	purple
32	Summer Field Ct	8,538	Fields at Seminary	purple
33	Summer Field Ct	9,409	Fields at Seminary	purple
34	Summer Field Ct	9,975	Fields at Seminary	purple
35	Summer Field Ct	12,502	Fields at Seminary	purple
36	Summer Field Ct	12,327	Fields at Seminary	purple
1	Wilderfield Ct	10,062	Fields at Seminary	purple
3	Wilderfield Ct	8,276	Fields at Seminary	purple
4	Wilderfield Ct	13,591	Fields at Seminary	purple
5	Wilderfield Ct	10,062	Fields at Seminary	purple
6	Wilderfield Ct	11,941	Fields at Seminary	purple
7	Wilderfield Ct	10,585	Fields at Seminary	purple
8	Wilderfield Ct	11,326	Fields at Seminary	purple
9	Wilderfield Ct	9,496	Fields at Seminary	purple
10	Wilderfield Ct	12,676	Fields at Seminary	purple
11	Wilderfield Ct	11,238	Fields at Seminary	purple
12	Wilderfield Ct	15,845	Fields at Seminary	purple
13	Wilderfield Ct	14,375	Fields at Seminary	purple
14	Wilderfield Ct	10,933	Fields at Seminary	purple
15	Wilderfield Ct	13,983	Fields at Seminary	purple
16	Wilderfield Ct	8,451	Fields at Seminary	purple
17	Wilderfield Ct	10,585	Fields at Seminary	purple
18	Wilderfield Ct	9,102	Fields at Seminary	purple
1	Brookfield Garth	14,771	Fields at Seminary	purple
3	Brookfield Garth	13,329	Fields at Seminary	purple
4	Brookfield Garth	11,761	Fields at Seminary	purple
5	Brookfield Garth	10,977	Fields at Seminary	purple
6	Brookfield Garth	10,977	Fields at Seminary	purple
7	Brookfield Garth	11,805	Fields at Seminary	purple
8	Brookfield Garth	9,888	Fields at Seminary	purple
9	Brookfield Garth	18,077	Fields at Seminary	purple
10	Brookfield Garth	11,892	Fields at Seminary	purple
11	Brookfield Garth	23,087	Fields at Seminary	purple
12	Brookfield Garth	19,036	Fields at Seminary	purple
	average lot size	11,342	range 7,356-23,807	
1	Eastport Court	14,357	Fields at Seminary II	purple
2	Eastport Court	29,163	Fields at Seminary II	purple

3	Eastport Court	15,699	Fields at Seminary II	purple
4	Eastport Court	16,291	Fields at Seminary II	purple
5	Eastport Court	11,687	Fields at Seminary II	purple
6	Eastport Court	16,740	Fields at Seminary II	purple
7	Eastport Court	11,038	Fields at Seminary II	purple
8	Eastport Court	14,283	Fields at Seminary II	purple
9	Eastport Court	13,059	Fields at Seminary II	purple
10	Eastport Court	13,176	Fields at Seminary II	purple
12	Eastport Court	13,494	Fields at Seminary II	purple
14	Eastport Court	12,479	Fields at Seminary II	purple
15	Eastport Court	12,776	Fields at Seminary II	purple
16	Eastport Court	12,479	Fields at Seminary II	purple
17	Eastport Court	13,455	Fields at Seminary II	purple
18	Eastport Court	15,071	Fields at Seminary II	purple
19	Eastport Court	10,811	Fields at Seminary II	purple
20	Eastport Court	13,629	Fields at Seminary II	purple
21	Eastport Court	12,074	Fields at Seminary II	purple
23	Eastport Court	15,115	Fields at Seminary II	purple
8500	Marblehead Rd	11,826	Fields at Seminary II	purple
8501	Marblehead Rd	11,826	Fields at Seminary II	purple
8502	Marblehead Rd	10,001	Fields at Seminary II	purple
8503	Marblehead Rd	10,937	Fields at Seminary II	purple
8504	Marblehead Rd	10,001	Fields at Seminary II	purple
8505	Marblehead Rd	11,229	Fields at Seminary II	purple
8506	Marblehead Rd	10,001	Fields at Seminary II	purple
8507	Marblehead Rd	11,133	Fields at Seminary II	purple
8508	Marblehead Rd	11,782	Fields at Seminary II	purple
8509	Marblehead Rd	11,961	Fields at Seminary II	purple
8510	Marblehead Rd	14,849	Fields at Seminary II	purple
	average lot size	13,304	range 10,001-29,163	
8200	Tally Ho Road	49,658	Heatherfield	tan
8201	Tally Ho Road	34,380	Heatherfield	tan
8202	Tally Ho Road	33,600	Heatherfield	tan
8203	Tally Ho Road	33,600	Heatherfield	tan
8204	Tally Ho Road	30,000	Heatherfield	tan
8205	Tally Ho Road	31,600	Heatherfield	tan
8206	Tally Ho Road	30,000	Heatherfield	tan

8207	Tally Ho Road	31,600	Heatherfield	tan
8208	Tally Ho Road	30,000	Heatherfield	tan
8209	Tally Ho Road	31,600	Heatherfield	tan
8210	Tally Ho Road	30,000	Heatherfield	tan
8211	Tally Ho Road	31,600	Heatherfield	tan
8212	Tally Ho Road	30,000	Heatherfield	tan
8213	Tally Ho Road	31,600	Heatherfield	tan
8214	Tally Ho Road	30,000	Heatherfield	tan
8215	Tally Ho Road	32,200	Heatherfield	tan
8216	Tally Ho Road	30,560	Heatherfield	tan
8300	Tally Ho Road	46,609	Heatherfield	tan
8301	Tally Ho Road	38,962	Heatherfield	tan
8302	Tally Ho Road	39,825	Heatherfield	tan
8200	White Manor Dr	43,124	Heatherfield	tan
8201	White Manor Dr	34,380	Heatherfield	tan
8202	White Manor Dr	36,513	Heatherfield	tan
8203	White Manor Dr	31,050	Heatherfield	tan
8204	White Manor Dr	30,745	Heatherfield	tan
8205	White Manor Dr	29,605	Heatherfield	tan
8206	White Manor Dr	47,916	Heatherfield	tan
8207	White Manor Dr	49,658	Heatherfield	tan
8208	White Manor Dr	168,577	Heatherfield	tan
8209	White Manor Dr	34,960	Heatherfield	tan
8211	White Manor Dr	32,250	Heatherfield	tan
8213	White Manor Dr	32,250	Heatherfield	tan
8214	White Manor Dr	38,160	Heatherfield	tan
8215	White Manor Dr	32,802	Heatherfield	tan
3	Horsehoe Circle	43,996	Heatherfield	tan
5	Horsehoe Circle	42,385	Heatherfield	tan
7	Horsehoe Circle	34,832	Heatherfield	tan
2200	Fox Hunt Lane	60,113	Heatherfield	tan
2202	Fox Hunt Lane	54,014	Heatherfield	tan
2203	Fox Hunt Lane	98,010	Heatherfield	tan
2204	Fox Hunt Lane	32,802	Heatherfield	tan
2206	Fox Hunt Lane	39,445	Heatherfield	tan
2208	Fox Hunt Lane	39,445	Heatherfield	tan
2209	Fox Hunt Lane	52,272	Heatherfield	tan

2210	Fox Hunt Lane	39,445	Heatherfield	tan
2211	Fox Hunt Lane	50,094	Heatherfield	tan
2212	Fox Hunt Lane	39,445	Heatherfield	tan
	average lot size	41,397	range 21,605-168,577	
2	Shady Brook Ct	12,937	Hillside at Seminary	purple
3	Shady Brook Ct	36,154	Hillside at Seminary	purple
4	Shady Brook Ct	10,759	Hillside at Seminary	purple
6	Shady Brook Ct	11,107	Hillside at Seminary	purple
7	Shady Brook Ct	13,503	Hillside at Seminary	purple
8	Shady Brook Ct	15,028	Hillside at Seminary	purple
9	Shady Brook Ct	16,552	Hillside at Seminary	purple
1	Old Elm Ct	13,764	Hillside at Seminary	purple
3	Old Elm Ct	11,891	Hillside at Seminary	purple
4	Old Elm Ct	12,850	Hillside at Seminary	purple
5	Old Elm Ct	12,371	Hillside at Seminary	purple
6	Old Elm Ct	15,289	Hillside at Seminary	purple
7	Old Elm Ct	13,329	Hillside at Seminary	purple
8	Old Elm Ct	15,855	Hillside at Seminary	purple
9	Old Elm Ct	12,763	Hillside at Seminary	purple
10	Old Elm Ct	10,193	Hillside at Seminary	purple
11	Old Elm Ct	8,189	Hillside at Seminary	purple
12	Old Elm Ct	9,321	Hillside at Seminary	purple
13	Old Elm Ct	14,549	Hillside at Seminary	purple
14	Old Elm Ct	15,202	Hillside at Seminary	purple
15	Old Elm Ct	9,016	Hillside at Seminary	purple
16	Old Elm Ct	17,728	Hillside at Seminary	purple
18	Old Elm Ct	10,454	Hillside at Seminary	purple
20	Old Elm Ct	12,501	Hillside at Seminary	purple
22	Old Elm Ct	9,234	Hillside at Seminary	purple
1	Stony Meadow Ct	15,246	Hillside at Seminary	purple
2	Stony Meadow Ct	18,948	Hillside at Seminary	purple
3	Stony Meadow Ct	14,549	Hillside at Seminary	purple
4	Stony Meadow Ct	12,937	Hillside at Seminary	purple
5	Stony Meadow Ct	14,418	Hillside at Seminary	purple
6	Stony Meadow Ct	18,164	Hillside at Seminary	purple
7	Stony Meadow Ct	14,026	Hillside at Seminary	purple
8	Stony Meadow Ct	16,639	Hillside at Seminary	purple

9	Stony Meadow Ct	13,111	Hillside at Seminary	purple
10	Stony Meadow Ct	12,283	Hillside at Seminary	purple
11	Stony Meadow Ct	13,111	Hillside at Seminary	purple
12	Stony Meadow Ct	15,028	Hillside at Seminary	purple
13	Stony Meadow Ct	17,728	Hillside at Seminary	purple
14	Stony Meadow Ct	25,656	Hillside at Seminary	purple
15	Stony Meadow Ct	16,596	Hillside at Seminary	purple
17	Stony Meadow Ct	15,071	Hillside at Seminary	purple
8501	Hill Spring Dr	14,287	Hillside at Seminary	purple
8503	Hill Spring Dr	14,111	Hillside at Seminary	purple
8516	Hill Spring Dr	12,545	Hillside at Seminary	purple
8518	Hill Spring Dr	14,157	Hillside at Seminary	purple
8521	Hill Spring Dr	16,727	Hillside at Seminary	purple
8523	Hill Spring Dr	15,855	Hillside at Seminary	purple
8525	Hill Spring Dr	17,075	Hillside at Seminary	purple
8526	Hill Spring Dr	10,759	Hillside at Seminary	purple
8527	Hill Spring Dr	31,276	Hillside at Seminary	purple
8528	Hill Spring Dr	12,850	Hillside at Seminary	purple
8529	Hill Spring Dr	16,335	Hillside at Seminary	purple
8530	Hill Spring Dr	15,463	Hillside at Seminary	purple
8531	Hill Spring Dr	32,421	Hillside at Seminary	purple
8532	Hill Spring Dr	17,031	Hillside at Seminary	purple
8533	Hill Spring Dr	27,882	Hillside at Seminary	purple
8534	Hill Spring Dr	17,946	Hillside at Seminary	purple
8535	Hill Spring Dr	19,994	Hillside at Seminary	purple
8536	Hill Spring Dr	18,164	Hillside at Seminary	purple
8537	Hill Spring Dr	24,088	Hillside at Seminary	purple
8538	Hill Spring Dr	19,645	Hillside at Seminary	purple
8539	Hill Spring Dr	14,766	Hillside at Seminary	purple
8540	Hill Spring Dr	26,223	Hillside at Seminary	purple
8542	Hill Spring Dr	24,785	Hillside at Seminary	purple
1	Hickory Knoll Ct	18,905	Hillside at Seminary	purple
3	Hickory Knoll Ct	32,800	Hillside at Seminary	purple
5	Hickory Knoll Ct	50,094	Hillside at Seminary	purple
7	Hickory Knoll Ct	31,058	Hillside at Seminary	purple
9	Hickory Knoll Ct	18,948	Hillside at Seminary	purple
11	Hickory Knoll Ct	24,045	Hillside at Seminary	purple

13	Hickory Knoll Ct	27,965	Hillside at Seminary	purple
15	Hickory Knoll Ct	45,738	Hillside at Seminary	purple
17	Hickory Knoll Ct	22,694	Hillside at Seminary	purple
19	Hickory Knoll Ct	27,965	Hillside at Seminary	purple
21	Hickory Knoll Ct	30,448	Hillside at Seminary	purple
6	Hickory Knoll Ct	19,514	Hillside at Seminary	purple
8	Hickory Knoll Ct	35,544	Hillside at Seminary	purple
10	Hickory Knoll Ct	44,867	Hillside at Seminary	purple
12	Hickory Knoll Ct	22,781	Hillside at Seminary	purple
14	Hickory Knoll Ct	14,287	Hillside at Seminary	purple
16	Hickory Knoll Ct	16,378	Hillside at Seminary	purple
18	Hickory Knoll Ct	29,925	Hillside at Seminary	purple
20	Hickory Knoll Ct	28,314	Hillside at Seminary	purple
	average lot size	18,924	range 8,189-50,094	
8501	Huntspring Drive	37,897	Huntspring	tan
8502	Huntspring Drive	31,799	Huntspring	tan
8503	Huntspring Drive	41,818	Huntspring	tan
8504	Huntspring Drive	38,333	Huntspring	tan
8505	Huntspring Drive	46,174	Huntspring	tan
8506	Huntspring Drive	43,560	Huntspring	tan
8507	Huntspring Drive	36,590	Huntspring	tan
8508	Huntspring Drive	47,045	Huntspring	tan
8509	Huntspring Drive	44,431	Huntspring	tan
8510	Huntspring Drive	58,806	Huntspring	tan
8511	Huntspring Drive	41,382	Huntspring	tan
8512	Huntspring Drive	58,370	Huntspring	tan
8513	Huntspring Drive	33,977	Huntspring	tan
8514	Huntspring Drive	40,075	Huntspring	tan
8515	Huntspring Drive	32,234	Huntspring	tan
8517	Huntspring Drive	32,234	Huntspring	tan
8516	Huntspring Drive	32,670	Huntspring	tan
8519	Huntspring Drive	32,234	Huntspring	tan
8518	Huntspring Drive	33,541	Huntspring	tan
8520	Huntspring Drive	53,143	Huntspring	tan
8521	Huntspring Drive	53,143	Huntspring	tan
8522	Huntspring Drive	57,499	Huntspring	tan
8523	Huntspring Drive	50,965	Huntspring	tan

8524	Huntspring Drive	54,886	Huntspring	tan
8525	Huntspring Drive	94,090	Huntspring	tan
8526	Huntspring Drive	36,590	Huntspring	tan
8527	Huntspring Drive	56,628	Huntspring	tan
8528	Huntspring Drive	39,204	Huntspring	tan
8529	Huntspring Drive	38,768	Huntspring	tan
	average lot size	44,762	range 31,799-94,090	
57	Seminary Farm Rd	22,319	Meadows of GS	blue
59	Seminary Farm Rd	21,231	Meadows of GS	blue
61	Seminary Farm Rd	19,999	Meadows of GS	blue
63	Seminary Farm Rd	19,999	Meadows of GS	blue
65	Seminary Farm Rd	20,030	Meadows of GS	blue
66	Seminary Farm Rd	25,351	Meadows of GS	blue
67	Seminary Farm Rd	22,033	Meadows of GS	blue
68	Seminary Farm Rd	25,838	Meadows of GS	blue
69	Seminary Farm Rd	21,605	Meadows of GS	blue
70	Seminary Farm Rd	24,297	Meadows of GS	blue
71	Seminary Farm Rd	22,208	Meadows of GS	blue
72	Seminary Farm Rd	22,243	Meadows of GS	blue
73	Seminary Farm Rd	22,159	Meadows of GS	blue
74	Seminary Farm Rd	23,251	Meadows of GS	blue
75	Seminary Farm Rd	21,178	Meadows of GS	blue
76	Seminary Farm Rd	26,654	Meadows of GS	blue
77	Seminary Farm Rd	23,842	Meadows of GS	blue
10932	Mays Chapel Rd	22,333	Meadows of GS	blue
10934	Mays Chapel Rd	25,114	Meadows of GS	blue
10937	Mays Chapel Rd	36,999	Meadows of GS	blue
10939	Mays Chapel Rd	23,211	Meadows of GS	blue
1	Deep Run Road	9,226	Meadows of GS	RED
3	Deep Run Road	6,344	Meadows of GS	RED
5	Deep Run Road	6,354	Meadows of GS	RED
6	Deep Run Road	7,823	Meadows of GS	RED
7	Deep Run Road	9,230	Meadows of GS	RED
8	Deep Run Road	5,040	Meadows of GS	RED
9	Deep Run Road	7,609	Meadows of GS	RED
10	Deep Run Road	4,707	Meadows of GS	RED
11	Deep Run Road	4,707	Meadows of GS	RED

12	Deep Run Road	4,467	Meadows of GS	RED
13	Deep Run Road	4,467	Meadows of GS	RED
14	Deep Run Road	9,059	Meadows of GS	RED
15	Deep Run Road	9,059	Meadows of GS	RED
1	Foxleigh Green	7,679	Meadows of GS	RED
2	Foxleigh Green	8,319	Meadows of GS	RED
3	Foxleigh Green	5,039	Meadows of GS	RED
4	Foxleigh Green	5,432	Meadows of GS	RED
5	Foxleigh Green	4,580	Meadows of GS	RED
6	Foxleigh Green	7,304	Meadows of GS	RED
7	Foxleigh Green	7,893	Meadows of GS	RED
1	Nearfield Road	7,487	Meadows of GS	RED
2	Nearfield Road	8,012	Meadows of GS	RED
3	Nearfield Road	5,081	Meadows of GS	RED
4	Nearfield Road	5,502	Meadows of GS	RED
5	Nearfield Road	4,622	Meadows of GS	RED
6	Nearfield Road	5,501	Meadows of GS	RED
7	Nearfield Road	7,957	Meadows of GS	RED
8	Nearfield Road	8,417	Meadows of GS	RED
1	Brooklandridge Rd	8,417	Meadows of GS	RED
2	Brooklandridge Rd	7,990	Meadows of GS	RED
3	Brooklandridge Rd	5,237	Meadows of GS	RED
4	Brooklandridge Rd	4,808	Meadows of GS	RED
5	Brooklandridge Rd	5,386	Meadows of GS	RED
6	Brooklandridge Rd	4,580	Meadows of GS	RED
7	Brooklandridge Rd	7,769	Meadows of GS	RED
8	Brooklandridge Rd	7,675	Meadows of GS	RED
1	Yearling Way	7,679	Meadows of GS	RED
2	Yearling Way	7,679	Meadows of GS	RED
3	Yearling Way	4,559	Meadows of GS	RED
4	Yearling Way	4,750	Meadows of GS	RED
5	Yearling Way	4,684	Meadows of GS	RED
6	Yearling Way	4,467	Meadows of GS	RED
7	Yearling Way	9,129	Meadows of GS	RED
8	Yearling Way	9,019	Meadows of GS	RED
55	Seminary Farm Rd	9,652	Meadows of GS	RED
53	Seminary Farm Rd	6,199	Meadows of GS	RED

51	Seminary Farm Rd	6,213	Meadows of GS	RED
49	Seminary Farm Rd	9,796	Meadows of GS	RED
47	Seminary Farm Rd	8,377	Meadows of GS	RED
45	Seminary Farm Rd	6,103	Meadows of GS	RED
43	Seminary Farm Rd	6,103	Meadows of GS	RED
29	Seminary Farm Rd	7,815	Meadows of GS	RED
27	Seminary Farm Rd	6,167	Meadows of GS	RED
25	Seminary Farm Rd	11,028	Meadows of GS	RED
23	Seminary Farm Rd	10,781	Meadows of GS	RED
21	Seminary Farm Rd	10,152	Meadows of GS	RED
1	Quail Hollow Rd	7,177	Meadows of GS	RED
3	Quail Hollow Rd	5,035	Meadows of GS	RED
4	Quail Hollow Rd	7,468	Meadows of GS	RED
5	Quail Hollow Rd	4,706	Meadows of GS	RED
6	Quail Hollow Rd	4,705	Meadows of GS	RED
7	Quail Hollow Rd	4,467	Meadows of GS	RED
8	Quail Hollow Rd	4,467	Meadows of GS	RED
9	Quail Hollow Rd	9,098	Meadows of GS	RED
10	Quail Hollow Rd	9,060	Meadows of GS	RED
1	Bluestone Road	7,802	Meadows of GS	RED
3	Bluestone Road	5,007	Meadows of GS	RED
5	Bluestone Road	4,658	Meadows of GS	RED
7	Bluestone Road	7,463	Meadows of GS	RED
1	Spring House Rd	8,591	Meadows of GS	RED
2	Spring House Rd	7,618	Meadows of GS	RED
3	Spring House Rd	5,465	Meadows of GS	RED
4	Spring House Rd	5,039	Meadows of GS	RED
5	Spring House Rd	5,459	Meadows of GS	RED
6	Spring House Rd	4,579	Meadows of GS	RED
7	Spring House Rd	7,912	Meadows of GS	RED
8	Spring House Rd	9,253	Meadows of GS	RED
	average lot size	10,368	range 4,467 -36,999	
1310	W Seminary Ave	18,469	Seminary Overlook	purple
1312	W Seminary Ave	18,468	Seminary Overlook	purple
1314	W Seminary Ave	17,031	Seminary Overlook	purple
1316	W Seminary Ave	23,958	Seminary Overlook	purple
1318	W Seminary Ave	16,552	Seminary Overlook	purple

1	Spring Knoll Ct	17,424	Seminary Overlook	purple
2	Spring Knoll Ct	15,246	Seminary Overlook	purple
3	Spring Knoll Ct	12,632	Seminary Overlook	purple
4	Spring Knoll Ct	16,117	Seminary Overlook	purple
5	Spring Knoll Ct	13,503	Seminary Overlook	purple
6	Spring Knoll Ct	15,682	Seminary Overlook	purple
7	Spring Knoll Ct	13,503	Seminary Overlook	purple
8	Spring Knoll Ct	11,325	Seminary Overlook	purple
9	Spring Knoll Ct	14,374	Seminary Overlook	purple
10	Spring Knoll Ct	10,454	Seminary Overlook	purple
11	Spring Knoll Ct	16,117	Seminary Overlook	purple
12	Spring Knoll Ct	16,552	Seminary Overlook	purple
14	Spring Knoll Ct	16,117	Seminary Overlook	purple
16	Spring Knoll Ct	13,068	Seminary Overlook	purple
18	Spring Knoll Ct	16,552	Seminary Overlook	purple
20	Spring Knoll Ct	13,068	Seminary Overlook	purple
8501	Countrybrooke Way	10,846	Seminary Overlook	purple
8503	Countrybrooke Way	13,808	Seminary Overlook	purple
8505	Countrybrooke Way	12,632	Seminary Overlook	purple
8507	Countrybrooke Way	13,068	Seminary Overlook	purple
8509	Countrybrooke Way	12,632	Seminary Overlook	purple
8511	Countrybrooke Way	13,939	Seminary Overlook	purple
8512	Countrybrooke Way	14,374	Seminary Overlook	purple
8513	Countrybrooke Way	16,988	Seminary Overlook	purple
8514	Countrybrooke Way	15,682	Seminary Overlook	purple
8515	Countrybrooke Way	12,196	Seminary Overlook	purple
8516	Countrybrooke Way	15,246	Seminary Overlook	purple
8517	Countrybrooke Way	13,503	Seminary Overlook	purple
8519	Countrybrooke Way	12,196	Seminary Overlook	purple
8521	Countrybrooke Way	11,761	Seminary Overlook	purple
8601	Countrybrooke Way	11,761	Seminary Overlook	purple
8602	Countrybrooke Way	10,454	Seminary Overlook	purple
8603	Countrybrooke Way	12,196	Seminary Overlook	purple
8604	Countrybrooke Way	10,018	Seminary Overlook	purple
8605	Countrybrooke Way	11,325	Seminary Overlook	purple
8606	Countrybrooke Way	10,454	Seminary Overlook	purple
8607	Countrybrooke Way	10,890	Seminary Overlook	purple

8608	Countrybrooke Way	10,890	Seminary Overlook	purple
8609	Countrybrooke Way	13,068	Seminary Overlook	purple
8610	Countrybrooke Way	15,246	Seminary Overlook	purple
8611	Countrybrooke Way	17,424	Seminary Overlook	purple
8500	Southfields Circle	11,761	Seminary Overlook	purple
8502	Southfields Circle	12,196	Seminary Overlook	purple
8504	Southfields Circle	12,196	Seminary Overlook	purple
8506	Southfields Circle	11,761	Seminary Overlook	purple
8508	Southfields Circle	12,196	Seminary Overlook	purple
8510	Southfields Circle	12,196	Seminary Overlook	purple
8512	Southfields Circle	11,761	Seminary Overlook	purple
8514	Southfields Circle	12,196	Seminary Overlook	purple
8516	Southfields Circle	12,196	Seminary Overlook	purple
8518	Southfields Circle	11,761	Seminary Overlook	purple
8600	Northfields Circle	11,761	Seminary Overlook	purple
8602	Northfields Circle	12,196	Seminary Overlook	purple
8604	Northfields Circle	12,196	Seminary Overlook	purple
8606	Northfields Circle	11,761	Seminary Overlook	purple
8608	Northfields Circle	12,196	Seminary Overlook	purple
8610	Northfields Circle	12,196	Seminary Overlook	purple
8612	Northfields Circle	11,761	Seminary Overlook	purple
8614	Northfields Circle	12,196	Seminary Overlook	purple
8616	Northfields Circle	12,196	Seminary Overlook	purple
8618	Northfields Circle	11,761	Seminary Overlook	purple
2	Fairbanks Drive	20,473	Seminary Overlook	purple
3	Fairbanks Drive	16,117	Seminary Overlook	purple
4	Fairbanks Drive	18,703	Seminary Overlook	purple
5	Fairbanks Drive	10,890	Seminary Overlook	purple
6	Fairbanks Drive	17,424	Seminary Overlook	purple
7	Fairbanks Drive	13,503	Seminary Overlook	purple
8	Fairbanks Drive	16,117	Seminary Overlook	purple
1116	Fairbanks Drive	13,939	Seminary Overlook	purple
1117	Fairbanks Drive	11,761	Seminary Overlook	purple
1119	Fairbanks Drive	14,374	Seminary Overlook	purple
1131	Fairbanks Drive	12,503	Seminary Overlook	purple
1132	Fairbanks Drive	11,761	Seminary Overlook	purple
1133	Fairbanks Drive	13,503	Seminary Overlook	purple

1134	Fairbanks Drive	13,503	Seminary Overlook	purple
1135	Fairbanks Drive	13,939	Seminary Overlook	purple
1136	Fairbanks Drive	13,939	Seminary Overlook	purple
1137	Fairbanks Drive	11,761	Seminary Overlook	purple
1139	Fairbanks Drive	9,147	Seminary Overlook	purple
1140	Fairbanks Drive	10,018	Seminary Overlook	purple
1140	Fairbanks Drive	12,632	Seminary Overlook	purple
1	Trimble Hill Ct	11,325	Seminary Overlook	purple
2	Trimble Hill Ct	13,503	Seminary Overlook	purple
3	Trimble Hill Ct	10,454	Seminary Overlook	purple
4	Trimble Hill Ct	14,810	Seminary Overlook	purple
5	Trimble Hill Ct	12,196	Seminary Overlook	purple
6	Trimble Hill Ct	16,117	Seminary Overlook	purple
1	Selsed Garth	8,276	Seminary Overlook	purple
2	Selsed Garth	10,018	Seminary Overlook	purple
3	Selsed Garth	10,454	Seminary Overlook	purple
4	Selsed Garth	15,681	Seminary Overlook	purple
5	Selsed Garth	14,810	Seminary Overlook	purple
6	Selsed Garth	14,324	Seminary Overlook	purple
7	Selsed Garth	10,454	Seminary Overlook	purple
8	Selsed Garth	13,503	Seminary Overlook	purple
9	Selsed Garth	13,939	Seminary Overlook	purple
10	Selsed Garth	15,246	Seminary Overlook	purple
11	Selsed Garth	14,374	Seminary Overlook	purple
12	Selsed Garth	16,117	Seminary Overlook	purple
14	Selsed Garth	15,681	Seminary Overlook	purple
16	Selsed Garth	13,068	Seminary Overlook	purple
18	Selsed Garth	14,810	Seminary Overlook	purple
8502	Marburg Manor Dr	13,068	Seminary Overlook	purple
8504	Marburg Manor Dr	14,374	Seminary Overlook	purple
8506	Marburg Manor Dr	15,681	Seminary Overlook	purple
8508	Marburg Manor Dr	13,503	Seminary Overlook	purple
8510	Marburg Manor Dr	11,761	Seminary Overlook	purple
8602	Marburg Manor Dr	11,761	Seminary Overlook	purple
8604	Marburg Manor Dr	12,196	Seminary Overlook	purple
8606	Marburg Manor Dr	12,196	Seminary Overlook	purple
8607	Marburg Manor Dr	11,936	Seminary Overlook	purple

8608	Marburg Manor Dr	12,196	Seminary Overlook	purple
8609	Marburg Manor Dr	13,503	Seminary Overlook	purple
8611	Marburg Manor Dr	19,166	Seminary Overlook	purple
8701	Marburg Manor Dr	14,810	Seminary Overlook	purple
8703	Marburg Manor Dr	10,890	Seminary Overlook	purple
8705	Marburg Manor Dr	10,454	Seminary Overlook	purple
8707	Marburg Manor Dr	9,583	Seminary Overlook	purple
8717	Marburg Manor Dr	172,062	Seminary Overlook	purple
8719	Marburg Manor Dr	9,583	Seminary Overlook	purple
8721	Marburg Manor Dr	9,147	Seminary Overlook	purple
8723	Marburg Manor Dr	10,454	Seminary Overlook	purple
8725	Marburg Manor Dr	10,454	Seminary Overlook	purple
8730	Marburg Manor Dr	14,374	Seminary Overlook	purple
8731	Marburg Manor Dr	11,325	Seminary Overlook	purple
8732	Marburg Manor Dr	11,979	Seminary Overlook	purple
8733	Marburg Manor Dr	17,424	Seminary Overlook	purple
8734	Marburg Manor Dr	12,458	Seminary Overlook	purple
8735	Marburg Manor Dr	13,939	Seminary Overlook	purple
8736	Marburg Manor Dr	16,901	Seminary Overlook	purple
8738	Marburg Manor Dr	31,363	Seminary Overlook	purple
8739	Marburg Manor Dr	11,761	Seminary Overlook	purple
8741	Marburg Manor Dr	17,424	Seminary Overlook	purple
8743	Marburg Manor Dr	28,750	Seminary Overlook	purple
3	Crestleigh Place	16,988	Seminary Overlook	purple
4	Crestleigh Place	18,295	Seminary Overlook	purple
5	Crestleigh Place	13,068	Seminary Overlook	purple
6	Crestleigh Place	12,196	Seminary Overlook	purple
7	Crestleigh Place	12,196	Seminary Overlook	purple
8	Crestleigh Place	16,117	Seminary Overlook	purple
9	Crestleigh Place	13,068	Seminary Overlook	purple
8503	Thornton Road	18,730	Seminary Overlook	purple
8505	Thornton Road	12,196	Seminary Overlook	purple
8507	Thornton Road	11,761	Seminary Overlook	purple
8509	Thornton Road	15,246	Seminary Overlook	purple
8511	Thornton Road	13,503	Seminary Overlook	purple
8513	Thornton Road	10,454	Seminary Overlook	purple
8515	Thornton Road	19,602	Seminary Overlook	purple

8517	Thornton Road	20,908	Seminary Overlook	purple
	average lot size	14,774	range 8,276 - 172,062	
8303	Tally Ho Road	46,609	Seminary Ridge	tan
8304	Tally Ho Road	39,026	Seminary Ridge	tan
8305	Tally Ho Road	34,126	Seminary Ridge	tan
8307	Tally Ho Road	42,330	Seminary Ridge	tan
8308	Tally Ho Road	18,070	Seminary Ridge	tan
8309	Tally Ho Road	39,913	Seminary Ridge	tan
8310	Tally Ho Road	16,983	Seminary Ridge	tan
8311	Tally Ho Road	20,776	Seminary Ridge	tan
8312	Tally Ho Road	17,776	Seminary Ridge	tan
8313	Tally Ho Road	19,200	Seminary Ridge	tan
8314	Tally Ho Road	16,199	Seminary Ridge	tan
8315	Tally Ho Road	19,602	Seminary Ridge	tan
8317	Tally Ho Road	16,074	Seminary Ridge	tan
8319	Tally Ho Road	13,508	Seminary Ridge	tan
8320	Tally Ho Road	13,500	Seminary Ridge	tan
8321	Tally Ho Road	14,250	Seminary Ridge	tan
8322	Tally Ho Road	13,500	Seminary Ridge	tan
8324	Tally Ho Road	13,500	Seminary Ridge	tan
8325	Tally Ho Road	26,250	Seminary Ridge	tan
8326	Tally Ho Road	12,900	Seminary Ridge	tan
8328	Tally Ho Road	14,100	Seminary Ridge	tan
8330	Tally Ho Road	13,500	Seminary Ridge	tan
8331	Tally Ho Road	21,645	Seminary Ridge	tan
8332	Tally Ho Road	13,500	Seminary Ridge	tan
8333	Tally Ho Road	27,540	Seminary Ridge	tan
8334	Tally Ho Road	13,500	Seminary Ridge	tan
8335	Tally Ho Road	22,950	Seminary Ridge	tan
8336	Tally Ho Road	15,900	Seminary Ridge	tan
8337	Tally Ho Road	18,228	Seminary Ridge	tan
8338	Tally Ho Road	15,000	Seminary Ridge	tan
8339	Tally Ho Road	15,840	Seminary Ridge	tan
8340	Tally Ho Road	13,500	Seminary Ridge	tan
8341	Tally Ho Road	15,660	Seminary Ridge	tan
8342	Tally Ho Road	13,500	Seminary Ridge	tan
8343	Tally Ho Road	15,390	Seminary Ridge	tan

8344	Tally Ho Road	16,740	Seminary Ridge	tan
8345	Tally Ho Road	16,089	Seminary Ridge	purple
8347	Tally Ho Road	18,762	Seminary Ridge	purple
8349	Tally Ho Road	26,010	Seminary Ridge	purple
8406	Tally Ho Road	20,000	Seminary Ridge	purple
8408	Tally Ho Road	22,140	Seminary Ridge	purple
8410	Tally Ho Road	20,384	Seminary Ridge	purple
8412	Tally Ho Road	19,890	Seminary Ridge	purple
8413	Tally Ho Road	11,235	Seminary Ridge	purple
8414	Tally Ho Road	19,781	Seminary Ridge	purple
8415	Tally Ho Road	14,884	Seminary Ridge	purple
8416	Tally Ho Road	17,892	Seminary Ridge	purple
8417	Tally Ho Road	13,260	Seminary Ridge	purple
8418	Tally Ho Road	16,002	Seminary Ridge	purple
8419	Tally Ho Road	13,770	Seminary Ridge	purple
8420	Tally Ho Road	14,798	Seminary Ridge	purple
8421	Tally Ho Road	13,770	Seminary Ridge	purple
8422	Tally Ho Road	16,422	Seminary Ridge	purple
8423	Tally Ho Road	13,770	Seminary Ridge	purple
8425	Tally Ho Road	13,770	Seminary Ridge	purple
8427	Tally Ho Road	15,184	Seminary Ridge	purple
8429	Tally Ho Road	30,750	Seminary Ridge	purple
2	Trelawny Court	34,476	Seminary Ridge	tan
3	Trelawny Court	15,617	Seminary Ridge	purple
4	Trelawny Court	42,456	Seminary Ridge	tan
5	Trelawny Court	23,049	Seminary Ridge	purple
6	Trelawny Court	41,832	Seminary Ridge	tan
7	Trelawny Court	17,072	Seminary Ridge	purple
8	Trelawny Court	35,624	Seminary Ridge	tan
9	Trelawny Court	18,128	Seminary Ridge	purple
10	Trelawny Court	41,616	Seminary Ridge	tan
11	Trelawny Court	18,135	Seminary Ridge	purple
13	Trelawny Court	43,560	Seminary Ridge	tan
1202	Clearfield Court	18,724	Seminary Ridge	purple
1203	Clearfield Court	13,764	Seminary Ridge	purple
1204	Clearfield Court	17,391	Seminary Ridge	purple
1205	Clearfield Court	15,322	Seminary Ridge	purple

1206	Clearfield Court	18,144	Seminary Ridge	purple
1207	Clearfield Court	19,700	Seminary Ridge	purple
1208	Clearfield Court	15,810	Seminary Ridge	purple
1209	Clearfield Court	21,696	Seminary Ridge	purple
1210	Clearfield Court	14,850	Seminary Ridge	purple
1211	Clearfield Court	21,620	Seminary Ridge	purple
1212	Clearfield Court	16,800	Seminary Ridge	purple
1213	Clearfield Court	22,656	Seminary Ridge	purple
1214	Clearfield Court	17,325	Seminary Ridge	purple
1215	Clearfield Court	23,836	Seminary Ridge	purple
1216	Clearfield Court	42,658	Seminary Ridge	tan
1217	Clearfield Court	18,400	Seminary Ridge	purple
1218	Clearfield Court	60,548	Seminary Ridge	purple
1219	Clearfield Court	17,741	Seminary Ridge	purple
1220	Clearfield Court	15,228	Seminary Ridge	purple
1221	Clearfield Court	30,250	Seminary Ridge	purple
1222	Clearfield Court	14,400	Seminary Ridge	purple
1223	Clearfield Court	21,412	Seminary Ridge	purple
1224	Clearfield Court	14,651	Seminary Ridge	purple
1225	Clearfield Court	21,008	Seminary Ridge	purple
1226	Clearfield Court	43,560	Seminary Ridge	tan
1227	Clearfield Court	21,400	Seminary Ridge	purple
1228	Clearfield Court	43,560	Seminary Ridge	tan
1229	Clearfield Court	19,300	Seminary Ridge	purple
1230	Clearfield Court	13,818	Seminary Ridge	purple
1231	Clearfield Court	17,700	Seminary Ridge	purple
1232	Clearfield Court	13,468	Seminary Ridge	purple
1233	Clearfield Court	17,576	Seminary Ridge	purple
1234	Clearfield Court	13,671	Seminary Ridge	purple
1235	Clearfield Court	16,533	Seminary Ridge	purple
1236	Clearfield Court	15,655	Seminary Ridge	purple
1240	Clearfield Court	15,876	Seminary Ridge	purple
1242	Clearfield Court	14,214	Seminary Ridge	purple
1244	Clearfield Court	16,400	Seminary Ridge	purple
1246	Clearfield Court	17,400	Seminary Ridge	purple
1248	Clearfield Court	18,600	Seminary Ridge	purple
1250	Clearfield Court	20,200	Seminary Ridge	purple

1252	Clearfield Court	22,472	Seminary Ridge	purple
1	Lochmoor Ct	18,522	Seminary Ridge	purple
2	Lochmoor Ct	14,820	Seminary Ridge	purple
3	Lochmoor Ct	16,956	Seminary Ridge	purple
4	Lochmoor Ct	18,966	Seminary Ridge	purple
5	Lochmoor Ct	13,950	Seminary Ridge	purple
6	Lochmoor Ct	24,495	Seminary Ridge	purple
7	Lochmoor Ct	13,950	Seminary Ridge	purple
8	Lochmoor Ct	17,943	Seminary Ridge	purple
9	Lochmoor Ct	14,924	Seminary Ridge	purple
10	Lochmoor Ct	15,996	Seminary Ridge	purple
11	Lochmoor Ct	17,876	Seminary Ridge	purple
12	Lochmoor Ct	16,380	Seminary Ridge	purple
13	Lochmoor Ct	16,068	Seminary Ridge	purple
14	Lochmoor Ct	17,550	Seminary Ridge	purple
15	Lochmoor Ct	23,310	Seminary Ridge	purple
16	Lochmoor Ct	20,661	Seminary Ridge	purple
18	Lochmoor Ct	22,969	Seminary Ridge	purple
20	Lochmoor Ct	19,092	Seminary Ridge	purple
22	Lochmoor Ct	16,854	Seminary Ridge	purple
1	Sedgefield Court	19,698	Seminary Ridge	purple
2	Sedgefield Court	18,224	Seminary Ridge	purple
3	Sedgefield Court	15,580	Seminary Ridge	purple
4	Sedgefield Court	11,620	Seminary Ridge	purple
5	Sedgefield Court	14,651	Seminary Ridge	purple
6	Sedgefield Court	13,442	Seminary Ridge	purple
7	Sedgefield Court	13,536	Seminary Ridge	purple
8	Sedgefield Court	10,904	Seminary Ridge	purple
9	Sedgefield Court	12,792	Seminary Ridge	purple
1	Scottsdale Court	14,696	Seminary Ridge	purple
3	Scottsdale Court	15,580	Seminary Ridge	purple
4	Scottsdale Court	17,375	Seminary Ridge	purple
5	Scottsdale Court	15,675	Seminary Ridge	purple
6	Scottsdale Court	15,656	Seminary Ridge	purple
7	Scottsdale Court	15,865	Seminary Ridge	purple
8	Scottsdale Court	14,400	Seminary Ridge	purple
9	Scottsdale Court	14,758	Seminary Ridge	purple

10	Scottsdale Court	15,480	Seminary Ridge	purple
11	Scottsdale Court	13,500	Seminary Ridge	purple
12	Scottsdale Court	16,560	Seminary Ridge	purple
13	Scottsdale Court	13,500	Seminary Ridge	purple
14	Scottsdale Court	13,140	Seminary Ridge	purple
15	Scottsdale Court	13,500	Seminary Ridge	purple
16	Scottsdale Court	21,315	Seminary Ridge	purple
17	Scottsdale Court	13,500	Seminary Ridge	purple
18	Scottsdale Court	20,475	Seminary Ridge	purple
19	Scottsdale Court	14,904	Seminary Ridge	purple
21	Scottsdale Court	12,416	Seminary Ridge	purple
23	Scottsdale Court	18,025	Seminary Ridge	purple
2	Briarfield Court	30,051	Seminary Ridge	tan
3	Briarfield Court	15,367	Seminary Ridge	purple
4	Briarfield Court	30,810	Seminary Ridge	tan
5	Briarfield Court	12,972	Seminary Ridge	purple
6	Briarfield Court	30,132	Seminary Ridge	tan
7	Briarfield Court	16,016	Seminary Ridge	purple
8	Briarfield Court	31,297	Seminary Ridge	tan
9	Briarfield Court	27,013	Seminary Ridge	tan
	average lot size	19,709	range 10,904-60,548	
1301	W. Seminary Ave	90,605	Seminary Springs	tan
1349	W. Seminary Ave	46,609	Seminary Springs	red
1	Seminary Drive	8,494	Seminary Springs	red
2	Seminary Drive	10,280	Seminary Springs	red
3	Seminary Drive	4,965	Seminary Springs	red
4	Seminary Drive	11,630	Seminary Springs	red
5	Seminary Drive	6,403	Seminary Springs	red
8	Seminary Drive	8,494	Seminary Springs	red
9	Seminary Drive	8,058	Seminary Springs	red
10	Seminary Drive	5,314	Seminary Springs	red
11	Seminary Drive	4,486	Seminary Springs	red
12	Seminary Drive	6,708	Seminary Springs	red
13	Seminary Drive	6,910	Seminary Springs	red
15	Seminary Drive	9,147	Seminary Springs	red
16	Seminary Drive	7,230	Seminary Springs	red
17	Seminary Drive	5,183	Seminary Springs	red

18	Seminary Drive	6,272	Seminary Springs	red
19	Seminary Drive	8,886	Seminary Springs	red
20	Seminary Drive	11,782	Seminary Springs	red
22	Seminary Drive	6,751	Seminary Springs	red
24	Seminary Drive	5,009	Seminary Springs	red
26	Seminary Drive	16,465	Seminary Springs	red
28	Seminary Drive	11,020	Seminary Springs	red
1	Fieldspring Ct	10,759	Seminary Springs	red
2	Fieldspring Ct	9,104	Seminary Springs	red
3	Fieldspring Ct	9,931	Seminary Springs	red
4	Fieldspring Ct	4,617	Seminary Springs	red
5	Fieldspring Ct	12,414	Seminary Springs	red
6	Fieldspring Ct	7,100	Seminary Springs	red
7	Fieldspring Ct	8,668	Seminary Springs	red
9	Fieldspring Ct	7,318	Seminary Springs	red
10	Fieldspring Ct	10,149	Seminary Springs	red
11	Fieldspring Ct	7,797	Seminary Springs	red
12	Fieldspring Ct	4,965	Seminary Springs	red
13	Fieldspring Ct	10,149	Seminary Springs	red
14	Fieldspring Ct	10,890	Seminary Springs	red
15	Fieldspring Ct	9,496	Seminary Springs	red
1245	Seminary Ave	41,760	Seminary Springs	tan
	average lot size	12,416	range 4,486-90,605	

overall 752 lots, average lot size is 17,870 sq. ft.

Address	Street	pperty Area	Community	
1	Old Boxwood Lane	10,367	Boxwood	red
12	Old Boxwood Lane	10,497	Boxwood	red
2	Old Boxwood Lane	11,717	Boxwood	red
3	Old Boxwood Lane	7,056	Boxwood	red
4	Old Boxwood Lane	8,102	Boxwood	red
5	Old Boxwood Lane	12,719	Boxwood	red
6	Old Boxwood Lane	10,933	Boxwood	red
7	Old Boxwood Lane	12,414	Boxwood	red
8	Old Boxwood Lane	12,371	Boxwood	red
9	Old Boxwood Lane	6,795	Boxwood	red
10	Old Boxwood Lane	9,278	Boxwood	red
11	Old Boxwood Lane	12,153	Boxwood	red
13	Old Boxwood Lane	11,238	Boxwood	red
14	Old Boxwood Lane	8,886	Boxwood	red
15	Old Boxwood Lane	5,793	Boxwood	red
16	Old Boxwood Lane	6,926	Boxwood	red
17	Old Boxwood Lane	10,585	Boxwood	red
18	Old Boxwood Lane	9,365	Boxwood	red
19	Old Boxwood Lane	9,234	Boxwood	red
20	Old Boxwood Lane	7,797	Boxwood	red
21	Old Boxwood Lane	5,052	Boxwood	red
22	Old Boxwood Lane	10,628	Boxwood	red
23	Old Boxwood Lane	16,802	Boxwood	red
24	Old Boxwood Lane	13,372	Boxwood	red
25	Old Boxwood Lane	10,585	Boxwood	red
26	Old Boxwood Lane	10,323	Boxwood	red
27	Old Boxwood Lane	10,105	Boxwood	red
	average lot size	10,040	range 5,052-16,802	median 10,367
1	Hampston Garth	12,371	Fields at Seminary	purple
3	Hampston Garth	12,344	Fields at Seminary	purple
4	Hampston Garth	10,193	Fields at Seminary	purple
5	Hampston Garth	9,365	Fields at Seminary	purple
6	Hampston Garth	15,028	Fields at Seminary	purple
7	Hampston Garth	9,757	Fields at Seminary	purple
3	Fieldstream Ct	7,710	Fields at Seminary	purple
5	Fieldstream Ct	9,278	Fields at Seminary	purple

7	Fieldstream Ct	9,559	Fields at Seminary	purple
8	Fieldstream Ct	12,807	Fields at Seminary	purple
9	Fieldstream Ct	10,454	Fields at Seminary	purple
10	Fieldstream Ct	9,714	Fields at Seminary	purple
11	Fieldstream Ct	11,892	Fields at Seminary	purple
12	Fieldstream Ct	9,212	Fields at Seminary	purple
13	Fieldstream Ct	11,326	Fields at Seminary	purple
14	Fieldstream Ct	9,335	Fields at Seminary	purple
15	Fieldstream Ct	10,585	Fields at Seminary	purple
16	Fieldstream Ct	8,930	Fields at Seminary	purple
17	Fieldstream Ct	12,545	Fields at Seminary	purple
18	Fieldstream Ct	7,536	Fields at Seminary	purple
1	Summer Field Ct	17,903	Fields at Seminary	purple
2	Summer Field Ct	14,985	Fields at Seminary	purple
3	Summer Field Ct	11,935	Fields at Seminary	purple
4	Summer Field Ct	15,159	Fields at Seminary	purple
5	Summer Field Ct	11,064	Fields at Seminary	purple
7	Summer Field Ct	9,417	Fields at Seminary	purple
8	Summer Field Ct	9,801	Fields at Seminary	purple
9	Summer Field Ct	9,862	Fields at Seminary	purple
10	Summer Field Ct	10,242	Fields at Seminary	purple
11	Summer Field Ct	10,357	Fields at Seminary	purple
1	Summer Field Ct	9,200	Fields at Seminary	purple
13	Summer Field Ct	10,852	Fields at Seminary	purple
14	Summer Field Ct	9,200	Fields at Seminary	purple
15	Summer Field Ct	12,240	Fields at Seminary	purple
16	Summer Field Ct	13,199	Fields at Seminary	purple
18	Summer Field Ct	9,600	Fields at Seminary	purple
20	Summer Field Ct	9,388	Fields at Seminary	purple
21	Summer Field Ct	15,856	Fields at Seminary	purple
22	Summer Field Ct	9,670	Fields at Seminary	purple
23	Summer Field Ct	10,106	Fields at Seminary	purple
25	Summer Field Ct	9,446	Fields at Seminary	purple
27	Summer Field Ct	8,902	Fields at Seminary	purple
28	Summer Field Ct	8,015	Fields at Seminary	purple
29	Summer Field Ct	9,267	Fields at Seminary	purple
30	Summer Field Ct	10,585	Fields at Seminary	purple

31	Summer Field Ct	8,973	Fields at Seminary	purple
32	Summer Field Ct	8,538	Fields at Seminary	purple
33	Summer Field Ct	9,409	Fields at Seminary	purple
34	Summer Field Ct	9,975	Fields at Seminary	purple
35	Summer Field Ct	12,502	Fields at Seminary	purple
36	Summer Field Ct	12,327	Fields at Seminary	purple
1	Wilderfield Ct	10,062	Fields at Seminary	purple
3	Wilderfield Ct	8,276	Fields at Seminary	purple
4	Wilderfield Ct	13,591	Fields at Seminary	purple
5	Wilderfield Ct	10,062	Fields at Seminary	purple
6	Wilderfield Ct	11,941	Fields at Seminary	purple
7	Wilderfield Ct	10,585	Fields at Seminary	purple
8	Wilderfield Ct	11,326	Fields at Seminary	purple
9	Wilderfield Ct	9,496	Fields at Seminary	purple
10	Wilderfield Ct	12,676	Fields at Seminary	purple
11	Wilderfield Ct	11,238	Fields at Seminary	purple
12	Wilderfield Ct	15,845	Fields at Seminary	purple
13	Wilderfield Ct	14,375	Fields at Seminary	purple
14	Wilderfield Ct	10,933	Fields at Seminary	purple
15	Wilderfield Ct	13,983	Fields at Seminary	purple
16	Wilderfield Ct	8,451	Fields at Seminary	purple
17	Wilderfield Ct	10,585	Fields at Seminary	purple
18	Wilderfield Ct	9,102	Fields at Seminary	purple
1	Brookfield Garth	14,771	Fields at Seminary	purple
3	Brookfield Garth	13,329	Fields at Seminary	purple
4	Brookfield Garth	11,761	Fields at Seminary	purple
5	Brookfield Garth	10,977	Fields at Seminary	purple
6	Brookfield Garth	10,977	Fields at Seminary	purple
7	Brookfield Garth	11,805	Fields at Seminary	purple
8	Brookfield Garth	9,888	Fields at Seminary	purple
9	Brookfield Garth	18,077	Fields at Seminary	purple
10	Brookfield Garth	11,892	Fields at Seminary	purple
11	Brookfield Garth	23,087	Fields at Seminary	purple
12	Brookfield Garth	19,036	Fields at Seminary	purple
	average lot size	11,342	range 7,356-23,807	median 10,585
1	Eastport Court	14,357	Fields at Seminary II	purple
2	Eastport Court	29,163	Fields at Seminary II	purple

3	Eastport Court	15,699	Fields at Seminary II	purple
4	Eastport Court	16,291	Fields at Seminary II	purple
5	Eastport Court	11,687	Fields at Seminary II	purple
6	Eastport Court	16,740	Fields at Seminary II	purple
7	Eastport Court	11,038	Fields at Seminary II	purple
8	Eastport Court	14,283	Fields at Seminary II	purple
9	Eastport Court	13,059	Fields at Seminary II	purple
10	Eastport Court	13,176	Fields at Seminary II	purple
12	Eastport Court	13,494	Fields at Seminary II	purple
14	Eastport Court	12,479	Fields at Seminary II	purple
15	Eastport Court	12,776	Fields at Seminary II	purple
16	Eastport Court	12,479	Fields at Seminary II	purple
17	Eastport Court	13,455	Fields at Seminary II	purple
18	Eastport Court	15,071	Fields at Seminary II	purple
19	Eastport Court	10,811	Fields at Seminary II	purple
20	Eastport Court	13,629	Fields at Seminary II	purple
21	Eastport Court	12,074	Fields at Seminary II	purple
23	Eastport Court	15,115	Fields at Seminary II	purple
8500	Marblehead Rd	11,826	Fields at Seminary II	purple
8501	Marblehead Rd	11,826	Fields at Seminary II	purple
8502	Marblehead Rd	10,001	Fields at Seminary II	purple
8503	Marblehead Rd	10,937	Fields at Seminary II	purple
8504	Marblehead Rd	10,001	Fields at Seminary II	purple
8505	Marblehead Rd	11,229	Fields at Seminary II	purple
8506	Marblehead Rd	10,001	Fields at Seminary II	purple
8507	Marblehead Rd	11,133	Fields at Seminary II	purple
8508	Marblehead Rd	11,782	Fields at Seminary II	purple
8509	Marblehead Rd	11,961	Fields at Seminary II	purple
8510	Marblehead Rd	14,849	Fields at Seminary II	purple
	average lot size	13,304	range 10,001-29,163	median 12,479
8200	Tally Ho Road	49,658	Heatherfield	tan
8201	Tally Ho Road	34,380	Heatherfield	tan
8202	Tally Ho Road	33,600	Heatherfield	tan
8203	Tally Ho Road	33,600	Heatherfield	tan
8204	Tally Ho Road	30,000	Heatherfield	tan
8205	Tally Ho Road	31,600	Heatherfield	tan
8206	Tally Ho Road	30,000	Heatherfield	tan

8207	Tally Ho Road	31,600	Heatherfield	tan
8208	Tally Ho Road	30,000	Heatherfield	tan
8209	Tally Ho Road	31,600	Heatherfield	tan
8210	Tally Ho Road	30,000	Heatherfield	tan
8211	Tally Ho Road	31,600	Heatherfield	tan
8212	Tally Ho Road	30,000	Heatherfield	tan
8213	Tally Ho Road	31,600	Heatherfield	tan
8214	Tally Ho Road	30,000	Heatherfield	tan
8215	Tally Ho Road	32,200	Heatherfield	tan
8216	Tally Ho Road	30,560	Heatherfield	tan
8300	Tally Ho Road	46,609	Heatherfield	tan
8301	Tally Ho Road	38,962	Heatherfield	tan
8302	Tally Ho Road	39,825	Heatherfield	tan
8200	White Manor Dr	43,124	Heatherfield	tan
8201	White Manor Dr	34,380	Heatherfield	tan
8202	White Manor Dr	36,513	Heatherfield	tan
8203	White Manor Dr	31,050	Heatherfield	tan
8204	White Manor Dr	30,745	Heatherfield	tan
8205	White Manor Dr	29,605	Heatherfield	tan
8206	White Manor Dr	47,916	Heatherfield	tan
8207	White Manor Dr	49,658	Heatherfield	tan
8208	White Manor Dr	168,577	Heatherfield	tan
8209	White Manor Dr	34,960	Heatherfield	tan
8211	White Manor Dr	32,250	Heatherfield	tan
8213	White Manor Dr	32,250	Heatherfield	tan
8214	White Manor Dr	38,160	Heatherfield	tan
8215	White Manor Dr	32,802	Heatherfield	tan
3	Horsehoe Circle	43,996	Heatherfield	tan
5	Horsehoe Circle	42,385	Heatherfield	tan
7	Horsehoe Circle	34,832	Heatherfield	tan
2200	Fox Hunt Lane	60,113	Heatherfield	tan
2202	Fox Hunt Lane	54,014	Heatherfield	tan
2203	Fox Hunt Lane	98,010	Heatherfield	tan
2204	Fox Hunt Lane	32,802	Heatherfield	tan
2206	Fox Hunt Lane	39,445	Heatherfield	tan
2208	Fox Hunt Lane	39,445	Heatherfield	tan
2209	Fox Hunt Lane	52,272	Heatherfield	tan

2210	Fox Hunt Lane	39,445	Heatherfield	tan
2211	Fox Hunt Lane	50,094	Heatherfield	tan
2212	Fox Hunt Lane	39,445	Heatherfield	tan
	average lot size	41,397	range 21,605-168,577	median 34,380
2	Shady Brook Ct	12,937	Hillside at Seminary	purple
3	Shady Brook Ct	36,154	Hillside at Seminary	purple
4	Shady Brook Ct	10,759	Hillside at Seminary	purple
6	Shady Brook Ct	11,107	Hillside at Seminary	purple
7	Shady Brook Ct	13,503	Hillside at Seminary	purple
8	Shady Brook Ct	15,028	Hillside at Seminary	purple
9	Shady Brook Ct	16,552	Hillside at Seminary	purple
1	Old Elm Ct	13,764	Hillside at Seminary	purple
3	Old Elm Ct	11,891	Hillside at Seminary	purple
4	Old Elm Ct	12,850	Hillside at Seminary	purple
5	Old Elm Ct	12,371	Hillside at Seminary	purple
6	Old Elm Ct	15,289	Hillside at Seminary	purple
7	Old Elm Ct	13,329	Hillside at Seminary	purple
8	Old Elm Ct	15,855	Hillside at Seminary	purple
9	Old Elm Ct	12,763	Hillside at Seminary	purple
10	Old Elm Ct	10,193	Hillside at Seminary	purple
11	Old Elm Ct	8,189	Hillside at Seminary	purple
12	Old Elm Ct	9,321	Hillside at Seminary	purple
13	Old Elm Ct	14,549	Hillside at Seminary	purple
14	Old Elm Ct	15,202	Hillside at Seminary	purple
15	Old Elm Ct	9,016	Hillside at Seminary	purple
16	Old Elm Ct	17,728	Hillside at Seminary	purple
18	Old Elm Ct	10,454	Hillside at Seminary	purple
20	Old Elm Ct	12,501	Hillside at Seminary	purple
22	Old Elm Ct	9,234	Hillside at Seminary	purple
1	Stony Meadow Ct	15,246	Hillside at Seminary	purple
2	Stony Meadow Ct	18,948	Hillside at Seminary	purple
3	Stony Meadow Ct	14,549	Hillside at Seminary	purple
4	Stony Meadow Ct	12,937	Hillside at Seminary	purple
5	Stony Meadow Ct	14,418	Hillside at Seminary	purple
6	Stony Meadow Ct	18,164	Hillside at Seminary	purple
7	Stony Meadow Ct	14,026	Hillside at Seminary	purple
8	Stony Meadow Ct	16,639	Hillside at Seminary	purple

9	Stony Meadow Ct	13,111	Hillside at Seminary	purple
10	Stony Meadow Ct	12,283	Hillside at Seminary	purple
11	Stony Meadow Ct	13,111	Hillside at Seminary	purple
12	Stony Meadow Ct	15,028	Hillside at Seminary	purple
13	Stony Meadow Ct	17,728	Hillside at Seminary	purple
14	Stony Meadow Ct	25,656	Hillside at Seminary	purple
15	Stony Meadow Ct	16,596	Hillside at Seminary	purple
17	Stony Meadow Ct	15,071	Hillside at Seminary	purple
8501	Hill Spring Dr	14,287	Hillside at Seminary	purple
8503	Hill Spring Dr	14,111	Hillside at Seminary	purple
8516	Hill Spring Dr	12,545	Hillside at Seminary	purple
8518	Hill Spring Dr	14,157	Hillside at Seminary	purple
8521	Hill Spring Dr	16,727	Hillside at Seminary	purple
8523	Hill Spring Dr	15,855	Hillside at Seminary	purple
8525	Hill Spring Dr	17,075	Hillside at Seminary	purple
8526	Hill Spring Dr	10,759	Hillside at Seminary	purple
8527	Hill Spring Dr	31,276	Hillside at Seminary	purple
8528	Hill Spring Dr	12,850	Hillside at Seminary	purple
8529	Hill Spring Dr	16,335	Hillside at Seminary	purple
8530	Hill Spring Dr	15,463	Hillside at Seminary	purple
8531	Hill Spring Dr	32,421	Hillside at Seminary	purple
8532	Hill Spring Dr	17,031	Hillside at Seminary	purple
8533	Hill Spring Dr	27,882	Hillside at Seminary	purple
8534	Hill Spring Dr	17,946	Hillside at Seminary	purple
8535	Hill Spring Dr	19,994	Hillside at Seminary	purple
8536	Hill Spring Dr	18,164	Hillside at Seminary	purple
8537	Hill Spring Dr	24,088	Hillside at Seminary	purple
8538	Hill Spring Dr	19,645	Hillside at Seminary	purple
8539	Hill Spring Dr	14,766	Hillside at Seminary	purple
8540	Hill Spring Dr	26,223	Hillside at Seminary	purple
8542	Hill Spring Dr	24,785	Hillside at Seminary	purple
1	Hickory Knoll Ct	18,905	Hillside at Seminary	purple
3	Hickory Knoll Ct	32,800	Hillside at Seminary	purple
5	Hickory Knoll Ct	50,094	Hillside at Seminary	purple
7	Hickory Knoll Ct	31,058	Hillside at Seminary	purple
9	Hickory Knoll Ct	18,948	Hillside at Seminary	purple
11	Hickory Knoll Ct	24,045	Hillside at Seminary	purple

13	Hickory Knoll Ct	27,965	Hillside at Seminary	purple
15	Hickory Knoll Ct	45,738	Hillside at Seminary	purple
17	Hickory Knoll Ct	22,694	Hillside at Seminary	purple
19	Hickory Knoll Ct	27,965	Hillside at Seminary	purple
21	Hickory Knoll Ct	30,448	Hillside at Seminary	purple
6	Hickory Knoll Ct	19,514	Hillside at Seminary	purple
8	Hickory Knoll Ct	35,544	Hillside at Seminary	purple
10	Hickory Knoll Ct	44,867	Hillside at Seminary	purple
12	Hickory Knoll Ct	22,781	Hillside at Seminary	purple
14	Hickory Knoll Ct	14,287	Hillside at Seminary	purple
16	Hickory Knoll Ct	16,378	Hillside at Seminary	purple
18	Hickory Knoll Ct	29,925	Hillside at Seminary	purple
20	Hickory Knoll Ct	28,314	Hillside at Seminary	purple
	average lot size	18,924	range 8,189-50,094	median 15,855
8501	Huntspring Drive	37,897	Huntspring	tan
8502	Huntspring Drive	31,799	Huntspring	tan
8503	Huntspring Drive	41,818	Huntspring	tan
8504	Huntspring Drive	38,333	Huntspring	tan
8505	Huntspring Drive	46,174	Huntspring	tan
8506	Huntspring Drive	43,560	Huntspring	tan
8507	Huntspring Drive	36,590	Huntspring	tan
8508	Huntspring Drive	47,045	Huntspring	tan
8509	Huntspring Drive	44,431	Huntspring	tan
8510	Huntspring Drive	58,806	Huntspring	tan
8511	Huntspring Drive	41,382	Huntspring	tan
8512	Huntspring Drive	58,370	Huntspring	tan
8513	Huntspring Drive	33,977	Huntspring	tan
8514	Huntspring Drive	40,075	Huntspring	tan
8515	Huntspring Drive	32,234	Huntspring	tan
8517	Huntspring Drive	32,234	Huntspring	tan
8516	Huntspring Drive	32,670	Huntspring	tan
8519	Huntspring Drive	32,234	Huntspring	tan
8518	Huntspring Drive	33,541	Huntspring	tan
8520	Huntspring Drive	53,143	Huntspring	tan
8521	Huntspring Drive	53,143	Huntspring	tan
8522	Huntspring Drive	57,499	Huntspring	tan
8523	Huntspring Drive	50,965	Huntspring	tan

8524	Huntspring Drive	54,886	Huntspring	tan
8525	Huntspring Drive	94,090	Huntspring	tan
8526	Huntspring Drive	36,590	Huntspring	tan
8527	Huntspring Drive	56,628	Huntspring	tan
8528	Huntspring Drive	39,204	Huntspring	tan
8529	Huntspring Drive	38,768	Huntspring	tan
	average lot size	44,762	range 31,799-94,090	median 41,382
57	Seminary Farm Rd	22,319	Meadows of GS	blue
59	Seminary Farm Rd	21,231	Meadows of GS	blue
61	Seminary Farm Rd	19,999	Meadows of GS	blue
63	Seminary Farm Rd	19,999	Meadows of GS	blue
65	Seminary Farm Rd	20,030	Meadows of GS	blue
66	Seminary Farm Rd	25,351	Meadows of GS	blue
67	Seminary Farm Rd	22,033	Meadows of GS	blue
68	Seminary Farm Rd	25,838	Meadows of GS	blue
69	Seminary Farm Rd	21,605	Meadows of GS	blue
70	Seminary Farm Rd	24,297	Meadows of GS	blue
71	Seminary Farm Rd	22,208	Meadows of GS	blue
72	Seminary Farm Rd	22,243	Meadows of GS	blue
73	Seminary Farm Rd	22,159	Meadows of GS	blue
74	Seminary Farm Rd	23,251	Meadows of GS	blue
75	Seminary Farm Rd	21,178	Meadows of GS	blue
76	Seminary Farm Rd	26,654	Meadows of GS	blue
77	Seminary Farm Rd	23,842	Meadows of GS	blue
10932	Mays Chapel Rd	22,333	Meadows of GS	blue
10934	Mays Chapel Rd	25,114	Meadows of GS	blue
10937	Mays Chapel Rd	36,999	Meadows of GS	blue
10939	Mays Chapel Rd	23,211	Meadows of GS	blue
1	Deep Run Road	9,226	Meadows of GS	RED
3	Deep Run Road	6,344	Meadows of GS	RED
5	Deep Run Road	6,354	Meadows of GS	RED
6	Deep Run Road	7,823	Meadows of GS	RED
7	Deep Run Road	9,230	Meadows of GS	RED
8	Deep Run Road	5,040	Meadows of GS	RED
9	Deep Run Road	7,609	Meadows of GS	RED
10	Deep Run Road	4,707	Meadows of GS	RED
11	Deep Run Road	4,707	Meadows of GS	RED

12	Deep Run Road	4,467	Meadows of GS	RED
13	Deep Run Road	4,467	Meadows of GS	RED
14	Deep Run Road	9,059	Meadows of GS	RED
15	Deep Run Road	9,059	Meadows of GS	RED
1	Foxleigh Green	7,679	Meadows of GS	RED
2	Foxleigh Green	8,319	Meadows of GS	RED
3	Foxleigh Green	5,039	Meadows of GS	RED
4	Foxleigh Green	5,432	Meadows of GS	RED
5	Foxleigh Green	4,580	Meadows of GS	RED
6	Foxleigh Green	7,304	Meadows of GS	RED
7	Foxleigh Green	7,893	Meadows of GS	RED
1	Nearfield Road	7,487	Meadows of GS	RED
2	Nearfield Road	8,012	Meadows of GS	RED
3	Nearfield Road	5,081	Meadows of GS	RED
4	Nearfield Road	5,502	Meadows of GS	RED
5	Nearfield Road	4,622	Meadows of GS	RED
6	Nearfield Road	5,501	Meadows of GS	RED
7	Nearfield Road	7,957	Meadows of GS	RED
8	Nearfield Road	8,417	Meadows of GS	RED
1	Brooklandridge Rd	8,417	Meadows of GS	RED
2	Brooklandridge Rd	7,990	Meadows of GS	RED
3	Brooklandridge Rd	5,237	Meadows of GS	RED
4	Brooklandridge Rd	4,808	Meadows of GS	RED
5	Brooklandridge Rd	5,386	Meadows of GS	RED
6	Brooklandridge Rd	4,580	Meadows of GS	RED
7	Brooklandridge Rd	7,769	Meadows of GS	RED
8	Brooklandridge Rd	7,675	Meadows of GS	RED
1	Yearling Way	7,679	Meadows of GS	RED
2	Yearling Way	7,679	Meadows of GS	RED
3	Yearling Way	4,559	Meadows of GS	RED
4	Yearling Way	4,750	Meadows of GS	RED
5	Yearling Way	4,684	Meadows of GS	RED
6	Yearling Way	4,467	Meadows of GS	RED
7	Yearling Way	9,129	Meadows of GS	RED
8	Yearling Way	9,019	Meadows of GS	RED
55	Seminary Farm Rd	9,652	Meadows of GS	RED
53	Seminary Farm Rd	6,199	Meadows of GS	RED

51	Seminary Farm Rd	6,213	Meadows of GS	RED
49	Seminary Farm Rd	9,796	Meadows of GS	RED
47	Seminary Farm Rd	8,377	Meadows of GS	RED
45	Seminary Farm Rd	6,103	Meadows of GS	RED
43	Seminary Farm Rd	6,103	Meadows of GS	RED
29	Seminary Farm Rd	7,815	Meadows of GS	RED
27	Seminary Farm Rd	6,167	Meadows of GS	RED
25	Seminary Farm Rd	11,028	Meadows of GS	RED
23	Seminary Farm Rd	10,781	Meadows of GS	RED
21	Seminary Farm Rd	10,152	Meadows of GS	RED
1	Quail Hollow Rd	7,177	Meadows of GS	RED
3	Quail Hollow Rd	5,035	Meadows of GS	RED
4	Quail Hollow Rd	7,468	Meadows of GS	RED
5	Quail Hollow Rd	4,706	Meadows of GS	RED
6	Quail Hollow Rd	4,705	Meadows of GS	RED
7	Quail Hollow Rd	4,467	Meadows of GS	RED
8	Quail Hollow Rd	4,467	Meadows of GS	RED
9	Quail Hollow Rd	9,098	Meadows of GS	RED
10	Quail Hollow Rd	9,060	Meadows of GS	RED
1	Bluestone Road	7,802	Meadows of GS	RED
3	Bluestone Road	5,007	Meadows of GS	RED
5	Bluestone Road	4,658	Meadows of GS	RED
7	Bluestone Road	7,463	Meadows of GS	RED
1	Spring House Rd	8,591	Meadows of GS	RED
2	Spring House Rd	7,618	Meadows of GS	RED
3	Spring House Rd	5,465	Meadows of GS	RED
4	Spring House Rd	5,039	Meadows of GS	RED
5	Spring House Rd	5,459	Meadows of GS	RED
6	Spring House Rd	4,579	Meadows of GS	RED
7	Spring House Rd	7,912	Meadows of GS	RED
8	Spring House Rd	9,253	Meadows of GS	RED
	average lot size	10,368	range 4,467 -36,999	median 7,724
1310	W Seminary Ave	18,469	Seminary Overlook	purple
1312	W Seminary Ave	18,468	Seminary Overlook	purple
1314	W Seminary Ave	17,031	Seminary Overlook	purple
1316	W Seminary Ave	23,958	Seminary Overlook	purple
1318	W Seminary Ave	16,552	Seminary Overlook	purple

1	Spring Knoll Ct	17,424	Seminary Overlook	purple
2	Spring Knoll Ct	15,246	Seminary Overlook	purple
3	Spring Knoll Ct	12,632	Seminary Overlook	purple
4	Spring Knoll Ct	16,117	Seminary Overlook	purple
5	Spring Knoll Ct	13,503	Seminary Overlook	purple
6	Spring Knoll Ct	15,682	Seminary Overlook	purple
7	Spring Knoll Ct	13,503	Seminary Overlook	purple
8	Spring Knoll Ct	11,325	Seminary Overlook	purple
9	Spring Knoll Ct	14,374	Seminary Overlook	purple
10	Spring Knoll Ct	10,454	Seminary Overlook	purple
11	Spring Knoll Ct	16,117	Seminary Overlook	purple
12	Spring Knoll Ct	16,552	Seminary Overlook	purple
14	Spring Knoll Ct	16,117	Seminary Overlook	purple
16	Spring Knoll Ct	13,068	Seminary Overlook	purple
18	Spring Knoll Ct	16,552	Seminary Overlook	purple
20	Spring Knoll Ct	13,068	Seminary Overlook	purple
8501	Countrybrooke Way	10,846	Seminary Overlook	purple
8503	Countrybrooke Way	13,808	Seminary Overlook	purple
8505	Countrybrooke Way	12,632	Seminary Overlook	purple
8507	Countrybrooke Way	13,068	Seminary Overlook	purple
8509	Countrybrooke Way	12,632	Seminary Overlook	purple
8511	Countrybrooke Way	13,939	Seminary Overlook	purple
8512	Countrybrooke Way	14,374	Seminary Overlook	purple
8513	Countrybrooke Way	16,988	Seminary Overlook	purple
8514	Countrybrooke Way	15,682	Seminary Overlook	purple
8515	Countrybrooke Way	12,196	Seminary Overlook	purple
8516	Countrybrooke Way	15,246	Seminary Overlook	purple
8517	Countrybrooke Way	13,503	Seminary Overlook	purple
8519	Countrybrooke Way	12,196	Seminary Overlook	purple
8521	Countrybrooke Way	11,761	Seminary Overlook	purple
8601	Countrybrooke Way	11,761	Seminary Overlook	purple
8602	Countrybrooke Way	10,454	Seminary Overlook	purple
8603	Countrybrooke Way	12,196	Seminary Overlook	purple
8604	Countrybrooke Way	10,018	Seminary Overlook	purple
8605	Countrybrooke Way	11,325	Seminary Overlook	purple
8606	Countrybrooke Way	10,454	Seminary Overlook	purple
8607	Countrybrooke Way	10,890	Seminary Overlook	purple

8608	Countrybrooke Way	10,890	Seminary Overlook	purple
8609	Countrybrooke Way	13,068	Seminary Overlook	purple
8610	Countrybrooke Way	15,246	Seminary Overlook	purple
8611	Countrybrooke Way	17,424	Seminary Overlook	purple
8500	Southfields Circle	11,761	Seminary Overlook	purple
8502	Southfields Circle	12,196	Seminary Overlook	purple
8504	Southfields Circle	12,196	Seminary Overlook	purple
8506	Southfields Circle	11,761	Seminary Overlook	purple
8508	Southfields Circle	12,196	Seminary Overlook	purple
8510	Southfields Circle	12,196	Seminary Overlook	purple
8512	Southfields Circle	11,761	Seminary Overlook	purple
8514	Southfields Circle	12,196	Seminary Overlook	purple
8516	Southfields Circle	12,196	Seminary Overlook	purple
8518	Southfields Circle	11,761	Seminary Overlook	purple
8600	Northfields Circle	11,761	Seminary Overlook	purple
8602	Northfields Circle	12,196	Seminary Overlook	purple
8604	Northfields Circle	12,196	Seminary Overlook	purple
8606	Northfields Circle	11,761	Seminary Overlook	purple
8608	Northfields Circle	12,196	Seminary Overlook	purple
8610	Northfields Circle	12,196	Seminary Overlook	purple
8612	Northfields Circle	11,761	Seminary Overlook	purple
8614	Northfields Circle	12,196	Seminary Overlook	purple
8616	Northfields Circle	12,196	Seminary Overlook	purple
8618	Northfields Circle	11,761	Seminary Overlook	purple
2	Fairbanks Drive	20,473	Seminary Overlook	purple
3	Fairbanks Drive	16,117	Seminary Overlook	purple
4	Fairbanks Drive	18,703	Seminary Overlook	purple
5	Fairbanks Drive	10,890	Seminary Overlook	purple
6	Fairbanks Drive	17,424	Seminary Overlook	purple
7	Fairbanks Drive	13,503	Seminary Overlook	purple
8	Fairbanks Drive	16,117	Seminary Overlook	purple
1116	Fairbanks Drive	13,939	Seminary Overlook	purple
1117	Fairbanks Drive	11,761	Seminary Overlook	purple
1119	Fairbanks Drive	14,374	Seminary Overlook	purple
1131	Fairbanks Drive	12,503	Seminary Overlook	purple
1132	Fairbanks Drive	11,761	Seminary Overlook	purple
1133	Fairbanks Drive	13,503	Seminary Overlook	purple

1134	Fairbanks Drive	13,503	Seminary Overlook	purple
1135	Fairbanks Drive	13,939	Seminary Overlook	purple
1136	Fairbanks Drive	13,939	Seminary Overlook	purple
1137	Fairbanks Drive	11,761	Seminary Overlook	purple
1139	Fairbanks Drive	9,147	Seminary Overlook	purple
1140	Fairbanks Drive	10,018	Seminary Overlook	purple
1140	Fairbanks Drive	12,632	Seminary Overlook	purple
1	Trimble Hill Ct	11,325	Seminary Overlook	purple
2	Trimble Hill Ct	13,503	Seminary Overlook	purple
3	Trimble Hill Ct	10,454	Seminary Overlook	purple
4	Trimble Hill Ct	14,810	Seminary Overlook	purple
5	Trimble Hill Ct	12,196	Seminary Overlook	purple
6	Trimble Hill Ct	16,117	Seminary Overlook	purple
1	Selsed Garth	8,276	Seminary Overlook	purple
2	Selsed Garth	10,018	Seminary Overlook	purple
3	Selsed Garth	10,454	Seminary Overlook	purple
4	Selsed Garth	15,681	Seminary Overlook	purple
5	Selsed Garth	14,810	Seminary Overlook	purple
6	Selsed Garth	14,324	Seminary Overlook	purple
7	Selsed Garth	10,454	Seminary Overlook	purple
8	Selsed Garth	13,503	Seminary Overlook	purple
9	Selsed Garth	13,939	Seminary Overlook	purple
10	Selsed Garth	15,246	Seminary Overlook	purple
11	Selsed Garth	14,374	Seminary Overlook	purple
12	Selsed Garth	16,117	Seminary Overlook	purple
14	Selsed Garth	15,681	Seminary Overlook	purple
16	Selsed Garth	13,068	Seminary Overlook	purple
18	Selsed Garth	14,810	Seminary Overlook	purple
8502	Marburg Manor Dr	13,068	Seminary Overlook	purple
8504	Marburg Manor Dr	14,374	Seminary Overlook	purple
8506	Marburg Manor Dr	15,681	Seminary Overlook	purple
8508	Marburg Manor Dr	13,503	Seminary Overlook	purple
8510	Marburg Manor Dr	11,761	Seminary Overlook	purple
8602	Marburg Manor Dr	11,761	Seminary Overlook	purple
8604	Marburg Manor Dr	12,196	Seminary Overlook	purple
8606	Marburg Manor Dr	12,196	Seminary Overlook	purple
8607	Marburg Manor Dr	11,936	Seminary Overlook	purple

8608	Marburg Manor Dr	12,196	Seminary Overlook	purple
8609	Marburg Manor Dr	13,503	Seminary Overlook	purple
8611	Marburg Manor Dr	19,166	Seminary Overlook	purple
8701	Marburg Manor Dr	14,810	Seminary Overlook	purple
8703	Marburg Manor Dr	10,890	Seminary Overlook	purple
8705	Marburg Manor Dr	10,454	Seminary Overlook	purple
8707	Marburg Manor Dr	9,583	Seminary Overlook	purple
8717	Marburg Manor Dr	172,062	Seminary Overlook	purple
8719	Marburg Manor Dr	9,583	Seminary Overlook	purple
8721	Marburg Manor Dr	9,147	Seminary Overlook	purple
8723	Marburg Manor Dr	10,454	Seminary Overlook	purple
8725	Marburg Manor Dr	10,454	Seminary Overlook	purple
8730	Marburg Manor Dr	14,374	Seminary Overlook	purple
8731	Marburg Manor Dr	11,325	Seminary Overlook	purple
8732	Marburg Manor Dr	11,979	Seminary Overlook	purple
8733	Marburg Manor Dr	17,424	Seminary Overlook	purple
8734	Marburg Manor Dr	12,458	Seminary Overlook	purple
8735	Marburg Manor Dr	13,939	Seminary Overlook	purple
8736	Marburg Manor Dr	16,901	Seminary Overlook	purple
8738	Marburg Manor Dr	31,363	Seminary Overlook	purple
8739	Marburg Manor Dr	11,761	Seminary Overlook	purple
8741	Marburg Manor Dr	17,424	Seminary Overlook	purple
8743	Marburg Manor Dr	28,750	Seminary Overlook	purple
3	Crestleigh Place	16,988	Seminary Overlook	purple
4	Crestleigh Place	18,295	Seminary Overlook	purple
5	Crestleigh Place	13,068	Seminary Overlook	purple
6	Crestleigh Place	12,196	Seminary Overlook	purple
7	Crestleigh Place	12,196	Seminary Overlook	purple
8	Crestleigh Place	16,117	Seminary Overlook	purple
9	Crestleigh Place	13,068	Seminary Overlook	purple
8503	Thornton Road	18,730	Seminary Overlook	purple
8505	Thornton Road	12,196	Seminary Overlook	purple
8507	Thornton Road	11,761	Seminary Overlook	purple
8509	Thornton Road	15,246	Seminary Overlook	purple
8511	Thornton Road	13,503	Seminary Overlook	purple
8513	Thornton Road	10,454	Seminary Overlook	purple
8515	Thornton Road	19,602	Seminary Overlook	purple

8517	Thornton Road	20,908	Seminary Overlook	purple
	average lot size	14,774	range 8,276 - 172,062	median 13,068
8303	Tally Ho Road	46,609	Seminary Ridge	tan
8304	Tally Ho Road	39,026	Seminary Ridge	tan
8305	Tally Ho Road	34,126	Seminary Ridge	tan
8307	Tally Ho Road	42,330	Seminary Ridge	tan
8308	Tally Ho Road	18,070	Seminary Ridge	tan
8309	Tally Ho Road	39,913	Seminary Ridge	tan
8310	Tally Ho Road	16,983	Seminary Ridge	tan
8311	Tally Ho Road	20,776	Seminary Ridge	tan
8312	Tally Ho Road	17,776	Seminary Ridge	tan
8313	Tally Ho Road	19,200	Seminary Ridge	tan
8314	Tally Ho Road	16,199	Seminary Ridge	tan
8315	Tally Ho Road	19,602	Seminary Ridge	tan
8317	Tally Ho Road	16,074	Seminary Ridge	tan
8319	Tally Ho Road	13,508	Seminary Ridge	tan
8320	Tally Ho Road	13,500	Seminary Ridge	tan
8321	Tally Ho Road	14,250	Seminary Ridge	tan
8322	Tally Ho Road	13,500	Seminary Ridge	tan
8324	Tally Ho Road	13,500	Seminary Ridge	tan
8325	Tally Ho Road	26,250	Seminary Ridge	tan
8326	Tally Ho Road	12,900	Seminary Ridge	tan
8328	Tally Ho Road	14,100	Seminary Ridge	tan
8330	Tally Ho Road	13,500	Seminary Ridge	tan
8331	Tally Ho Road	21,645	Seminary Ridge	tan
8332	Tally Ho Road	13,500	Seminary Ridge	tan
8333	Tally Ho Road	27,540	Seminary Ridge	tan
8334	Tally Ho Road	13,500	Seminary Ridge	tan
8335	Tally Ho Road	22,950	Seminary Ridge	tan
8336	Tally Ho Road	15,900	Seminary Ridge	tan
8337	Tally Ho Road	18,228	Seminary Ridge	tan
8338	Tally Ho Road	15,000	Seminary Ridge	tan
8339	Tally Ho Road	15,840	Seminary Ridge	tan
8340	Tally Ho Road	13,500	Seminary Ridge	tan
8341	Tally Ho Road	15,660	Seminary Ridge	tan
8342	Tally Ho Road	13,500	Seminary Ridge	tan
8343	Tally Ho Road	15,390	Seminary Ridge	tan

8344	Tally Ho Road	16,740	Seminary Ridge	tan
8345	Tally Ho Road	16,089	Seminary Ridge	purple
8347	Tally Ho Road	18,762	Seminary Ridge	purple
8349	Tally Ho Road	26,010	Seminary Ridge	purple
8406	Tally Ho Road	20,000	Seminary Ridge	purple
8408	Tally Ho Road	22,140	Seminary Ridge	purple
8410	Tally Ho Road	20,384	Seminary Ridge	purple
8412	Tally Ho Road	19,890	Seminary Ridge	purple
8413	Tally Ho Road	11,235	Seminary Ridge	purple
8414	Tally Ho Road	19,781	Seminary Ridge	purple
8415	Tally Ho Road	14,884	Seminary Ridge	purple
8416	Tally Ho Road	17,892	Seminary Ridge	purple
8417	Tally Ho Road	13,260	Seminary Ridge	purple
8418	Tally Ho Road	16,002	Seminary Ridge	purple
8419	Tally Ho Road	13,770	Seminary Ridge	purple
8420	Tally Ho Road	14,798	Seminary Ridge	purple
8421	Tally Ho Road	13,770	Seminary Ridge	purple
8422	Tally Ho Road	16,422	Seminary Ridge	purple
8423	Tally Ho Road	13,770	Seminary Ridge	purple
8425	Tally Ho Road	13,770	Seminary Ridge	purple
8427	Tally Ho Road	15,184	Seminary Ridge	purple
8429	Tally Ho Road	30,750	Seminary Ridge	purple
2	Trelawny Court	34,476	Seminary Ridge	tan
3	Trelawny Court	15,617	Seminary Ridge	purple
4	Trelawny Court	42,456	Seminary Ridge	tan
5	Trelawny Court	23,049	Seminary Ridge	purple
6	Trelawny Court	41,832	Seminary Ridge	tan
7	Trelawny Court	17,072	Seminary Ridge	purple
8	Trelawny Court	35,624	Seminary Ridge	tan
9	Trelawny Court	18,128	Seminary Ridge	purple
10	Trelawny Court	41,616	Seminary Ridge	tan
11	Trelawny Court	18,135	Seminary Ridge	purple
13	Trelawny Court	43,560	Seminary Ridge	tan
1202	Clearfield Court	18,724	Seminary Ridge	purple
1203	Clearfield Court	13,764	Seminary Ridge	purple
1204	Clearfield Court	17,391	Seminary Ridge	purple
1205	Clearfield Court	15,322	Seminary Ridge	purple

1206	Clearfield Court	18,144	Seminary Ridge	purple
1207	Clearfield Court	19,700	Seminary Ridge	purple
1208	Clearfield Court	15,810	Seminary Ridge	purple
1209	Clearfield Court	21,696	Seminary Ridge	purple
1210	Clearfield Court	14,850	Seminary Ridge	purple
1211	Clearfield Court	21,620	Seminary Ridge	purple
1212	Clearfield Court	16,800	Seminary Ridge	purple
1213	Clearfield Court	22,656	Seminary Ridge	purple
1214	Clearfield Court	17,325	Seminary Ridge	purple
1215	Clearfield Court	23,836	Seminary Ridge	purple
1216	Clearfield Court	42,658	Seminary Ridge	tan
1217	Clearfield Court	18,400	Seminary Ridge	purple
1218	Clearfield Court	60,548	Seminary Ridge	purple
1219	Clearfield Court	17,741	Seminary Ridge	purple
1220	Clearfield Court	15,228	Seminary Ridge	purple
1221	Clearfield Court	30,250	Seminary Ridge	purple
1222	Clearfield Court	14,400	Seminary Ridge	purple
1223	Clearfield Court	21,412	Seminary Ridge	purple
1224	Clearfield Court	14,651	Seminary Ridge	purple
1225	Clearfield Court	21,008	Seminary Ridge	purple
1226	Clearfield Court	43,560	Seminary Ridge	tan
1227	Clearfield Court	21,400	Seminary Ridge	purple
1228	Clearfield Court	43,560	Seminary Ridge	tan
1229	Clearfield Court	19,300	Seminary Ridge	purple
1230	Clearfield Court	13,818	Seminary Ridge	purple
1231	Clearfield Court	17,700	Seminary Ridge	purple
1232	Clearfield Court	13,468	Seminary Ridge	purple
1233	Clearfield Court	17,576	Seminary Ridge	purple
1234	Clearfield Court	13,671	Seminary Ridge	purple
1235	Clearfield Court	16,533	Seminary Ridge	purple
1236	Clearfield Court	15,655	Seminary Ridge	purple
1240	Clearfield Court	15,876	Seminary Ridge	purple
1242	Clearfield Court	14,214	Seminary Ridge	purple
1244	Clearfield Court	16,400	Seminary Ridge	purple
1246	Clearfield Court	17,400	Seminary Ridge	purple
1248	Clearfield Court	18,600	Seminary Ridge	purple
1250	Clearfield Court	20,200	Seminary Ridge	purple

1252	Clearfield Court	22,472	Seminary Ridge	purple
1	Lochmoor Ct	18,522	Seminary Ridge	purple
2	Lochmoor Ct	14,820	Seminary Ridge	purple
3	Lochmoor Ct	16,956	Seminary Ridge	purple
4	Lochmoor Ct	18,966	Seminary Ridge	purple
5	Lochmoor Ct	13,950	Seminary Ridge	purple
6	Lochmoor Ct	24,495	Seminary Ridge	purple
7	Lochmoor Ct	13,950	Seminary Ridge	purple
8	Lochmoor Ct	17,943	Seminary Ridge	purple
9	Lochmoor Ct	14,924	Seminary Ridge	purple
10	Lochmoor Ct	15,996	Seminary Ridge	purple
11	Lochmoor Ct	17,876	Seminary Ridge	purple
12	Lochmoor Ct	16,380	Seminary Ridge	purple
13	Lochmoor Ct	16,068	Seminary Ridge	purple
14	Lochmoor Ct	17,550	Seminary Ridge	purple
15	Lochmoor Ct	23,310	Seminary Ridge	purple
16	Lochmoor Ct	20,661	Seminary Ridge	purple
18	Lochmoor Ct	22,969	Seminary Ridge	purple
20	Lochmoor Ct	19,092	Seminary Ridge	purple
22	Lochmoor Ct	16,854	Seminary Ridge	purple
1	Sedgefield Court	19,698	Seminary Ridge	purple
2	Sedgefield Court	18,224	Seminary Ridge	purple
3	Sedgefield Court	15,580	Seminary Ridge	purple
4	Sedgefield Court	11,620	Seminary Ridge	purple
5	Sedgefield Court	14,651	Seminary Ridge	purple
6	Sedgefield Court	13,442	Seminary Ridge	purple
7	Sedgefield Court	13,536	Seminary Ridge	purple
8	Sedgefield Court	10,904	Seminary Ridge	purple
9	Sedgefield Court	12,792	Seminary Ridge	purple
1	Scottsdale Court	14,696	Seminary Ridge	purple
3	Scottsdale Court	15,580	Seminary Ridge	purple
4	Scottsdale Court	17,375	Seminary Ridge	purple
5	Scottsdale Court	15,675	Seminary Ridge	purple
6	Scottsdale Court	15,656	Seminary Ridge	purple
7	Scottsdale Court	15,865	Seminary Ridge	purple
8	Scottsdale Court	14,400	Seminary Ridge	purple
9	Scottsdale Court	14,758	Seminary Ridge	purple

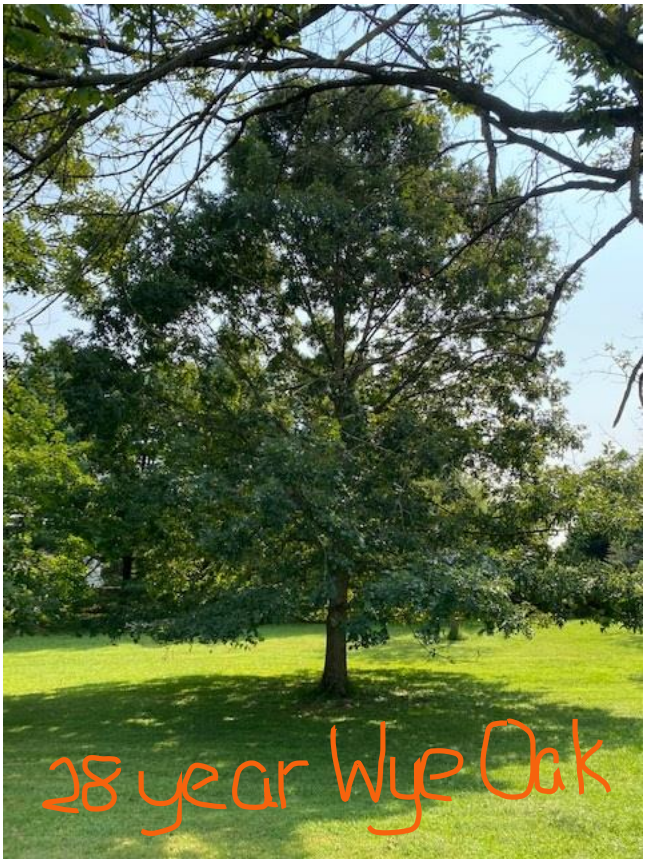
10	Scottsdale Court	15,480	Seminary Ridge	purple
11	Scottsdale Court	13,500	Seminary Ridge	purple
12	Scottsdale Court	16,560	Seminary Ridge	purple
13	Scottsdale Court	13,500	Seminary Ridge	purple
14	Scottsdale Court	13,140	Seminary Ridge	purple
15	Scottsdale Court	13,500	Seminary Ridge	purple
16	Scottsdale Court	21,315	Seminary Ridge	purple
17	Scottsdale Court	13,500	Seminary Ridge	purple
18	Scottsdale Court	20,475	Seminary Ridge	purple
19	Scottsdale Court	14,904	Seminary Ridge	purple
21	Scottsdale Court	12,416	Seminary Ridge	purple
23	Scottsdale Court	18,025	Seminary Ridge	purple
2	Briarfield Court	30,051	Seminary Ridge	tan
3	Briarfield Court	15,367	Seminary Ridge	purple
4	Briarfield Court	30,810	Seminary Ridge	tan
5	Briarfield Court	12,972	Seminary Ridge	purple
6	Briarfield Court	30,132	Seminary Ridge	tan
7	Briarfield Court	16,016	Seminary Ridge	purple
8	Briarfield Court	31,297	Seminary Ridge	tan
9	Briarfield Court	27,013	Seminary Ridge	tan
	average lot size	19,709	range 10,904-60,548	median 16,905
1301	W. Seminary Ave	90,605	Seminary Springs	tan
1349	W. Seminary Ave	46,609	Seminary Springs	red
1	Seminary Drive	8,494	Seminary Springs	red
2	Seminary Drive	10,280	Seminary Springs	red
3	Seminary Drive	4,965	Seminary Springs	red
4	Seminary Drive	11,630	Seminary Springs	red
5	Seminary Drive	6,403	Seminary Springs	red
8	Seminary Drive	8,494	Seminary Springs	red
9	Seminary Drive	8,058	Seminary Springs	red
10	Seminary Drive	5,314	Seminary Springs	red
11	Seminary Drive	4,486	Seminary Springs	red
12	Seminary Drive	6,708	Seminary Springs	red
13	Seminary Drive	6,910	Seminary Springs	red
15	Seminary Drive	9,147	Seminary Springs	red
16	Seminary Drive	7,230	Seminary Springs	red
17	Seminary Drive	5,183	Seminary Springs	red

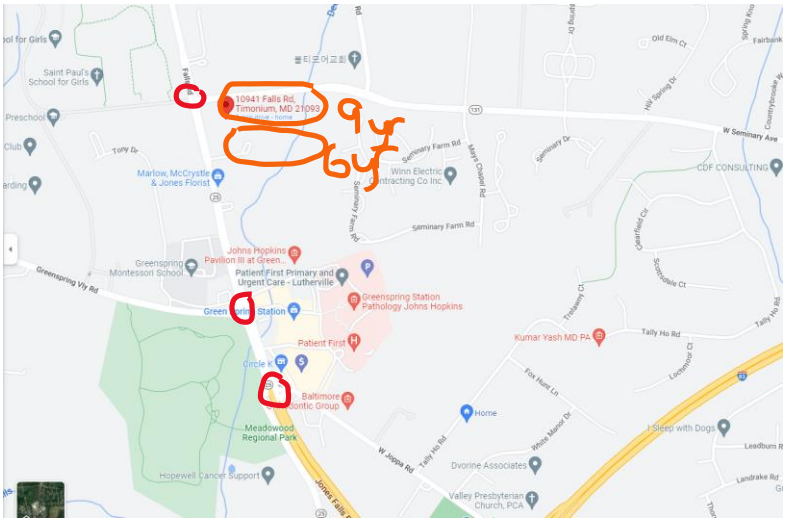
18	Seminary Drive	6,272	Seminary Springs	red
19	Seminary Drive	8,886	Seminary Springs	red
20	Seminary Drive	11,782	Seminary Springs	red
22	Seminary Drive	6,751	Seminary Springs	red
24	Seminary Drive	5,009	Seminary Springs	red
26	Seminary Drive	16,465	Seminary Springs	red
28	Seminary Drive	11,020	Seminary Springs	red
1	Fieldspring Ct	10,759	Seminary Springs	red
2	Fieldspring Ct	9,104	Seminary Springs	red
3	Fieldspring Ct	9,931	Seminary Springs	red
4	Fieldspring Ct	4,617	Seminary Springs	red
5	Fieldspring Ct	12,414	Seminary Springs	red
6	Fieldspring Ct	7,100	Seminary Springs	red
7	Fieldspring Ct	8,668	Seminary Springs	red
9	Fieldspring Ct	7,318	Seminary Springs	red
10	Fieldspring Ct	10,149	Seminary Springs	red
11	Fieldspring Ct	7,797	Seminary Springs	red
12	Fieldspring Ct	4,965	Seminary Springs	red
13	Fieldspring Ct	10,149	Seminary Springs	red
14	Fieldspring Ct	10,890	Seminary Springs	red
15	Fieldspring Ct	9,496	Seminary Springs	red
1245	Seminary Ave	41,760	Seminary Springs	tan
	average lot size	12,416	range 4,486-90,605	median 8,581

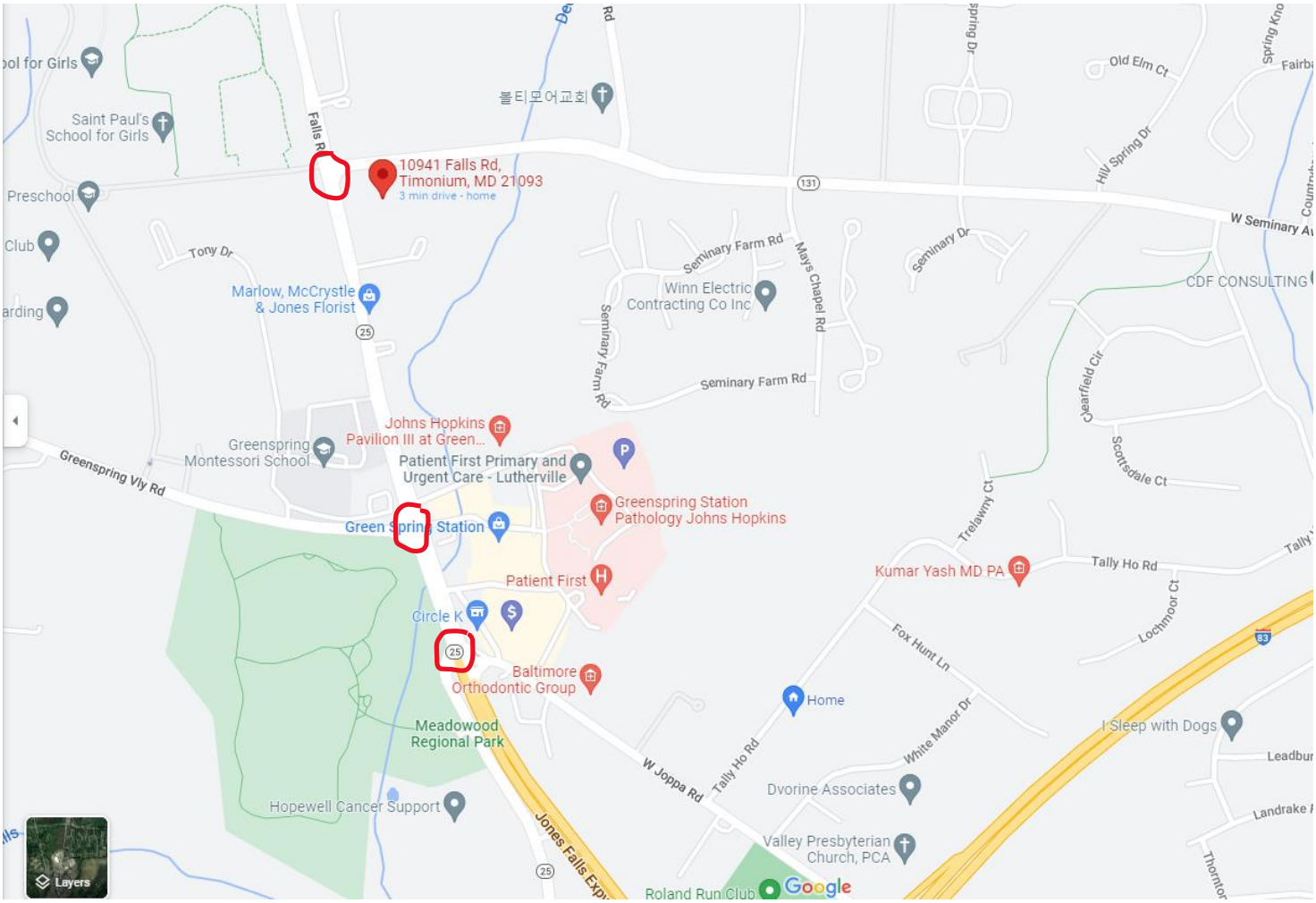
overall 752 lots, average lot size is 17,870 sq. ft.

Gill Shelhoss

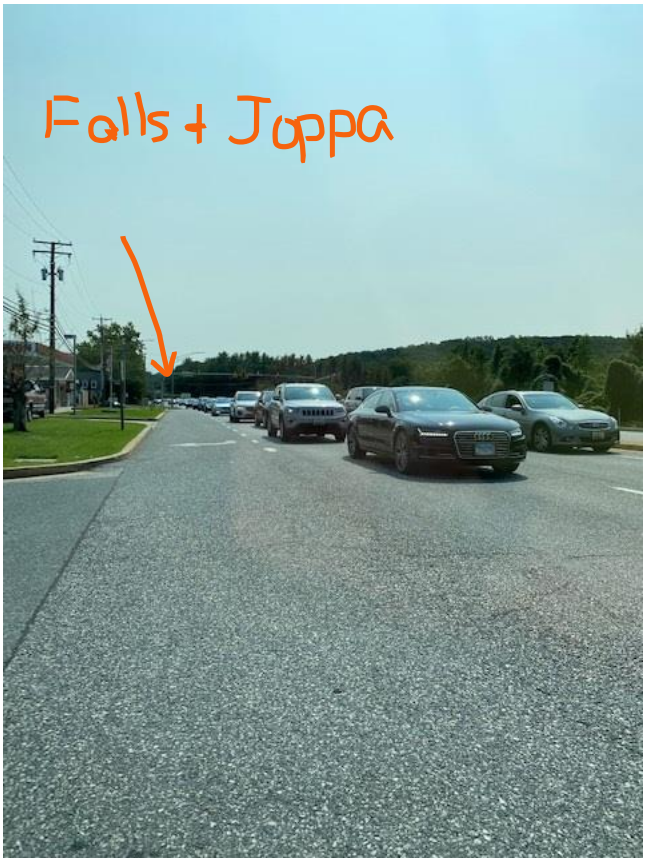








September 16th at 1:15

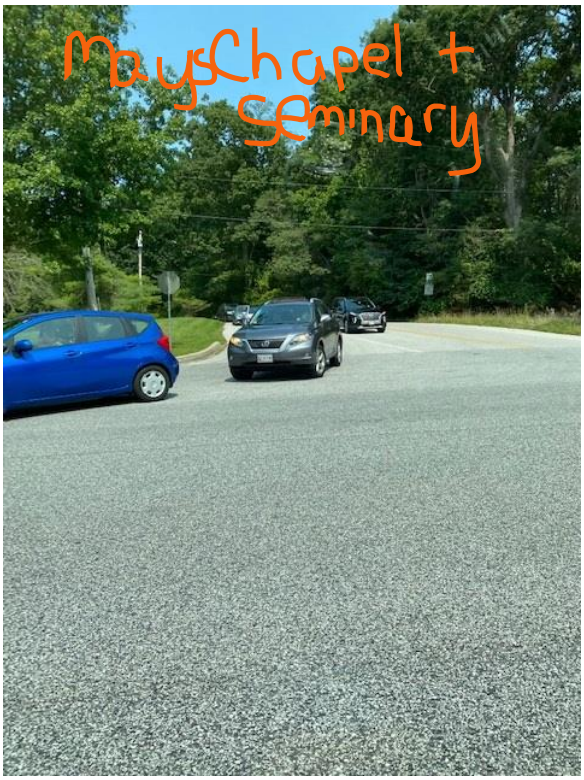

Falls + Joppa


Greenspring Valley
+ Falls
Stevenson University

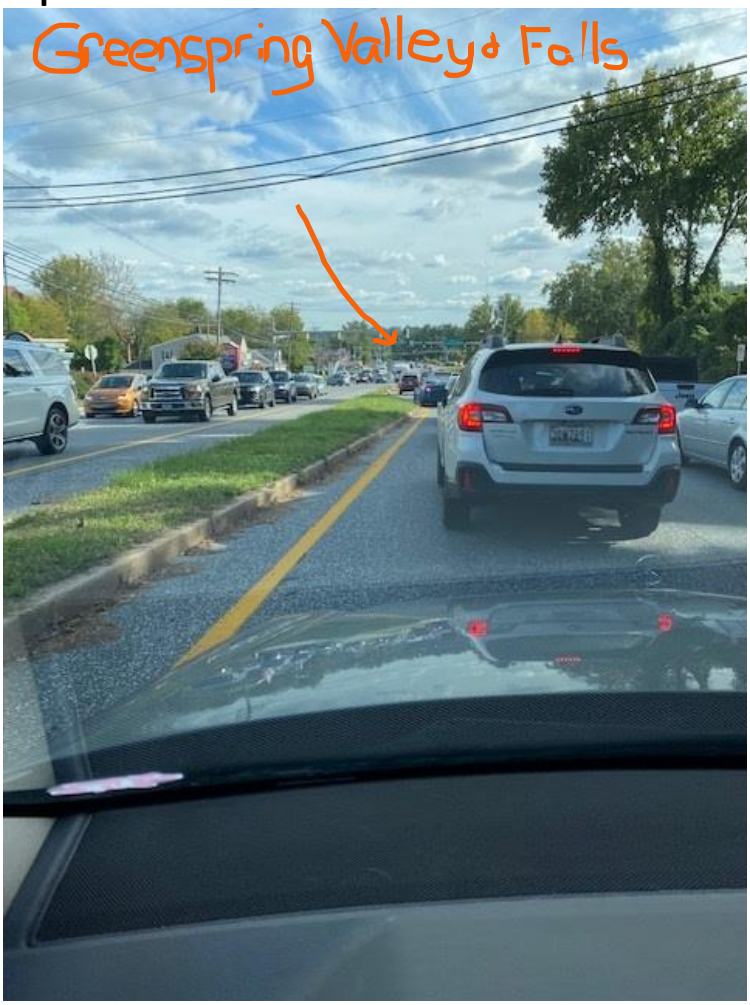

Seminary + Falls






Mays Chapel +
Seminary

September 28th at 3:34




Joppa + Falls


Greenspring Valley + Falls
GREEN SPRING
STATION
Shops Restaurants Offices
JOHNS HOPKINS
Patient First
Stone Mill Bakery/Cafe
Tark's Grill & Bar
GreenSpringStation.com
JOEY CHOU



1) PO
2) Marlow & McCrystle florist
3) St Paul’s School for girls
4) St Paul’s school for boys
5) St Paul’s Plus
6) The Korean Church
7) BCC FF
8) Pediatricians
9) Dermatology
10) Orthodontist
11) Patient First
12) Greenspring Station Hopkins Drs
13) Greenspring Montessori
14) Homeland Racquet Club





Green Towson Alliance

Development in the Jones Falls Watershed/Sewershed since 2012 RKK Capacity Report

1/30/23

Development	Location	Type	# of units residential	# beds residential	Sq. Ft. commerical	Year	Photo Key	Info Source	Notes
Proposed/Forecast									
Residential/mixed use									
Studious Apartments	100 W. Joppa Rd		112	482		2/22/21	A	ALJ opinion	
WRH Property Holding LLC	502-506 Baltimore Ave	apt	142	169		1/5/22	B	in BC development review process	
Greenspring Manor	2310 West Joppa Rd	SFD	61			2/12/21	C	in BC development review process	
Blakehurst independent living	1055 W. Joppa Ave	ILU	40	80		7/13/22	D	in BC development review process	material ammendment to major subdivision
Torch Hill	1400 W Seminary Ave	SFH	32			10/13/22	E	ALJ opinion	
Red Maple Place	407 E Joppa Rd	apt	54	107		3/8/21	F	ALJ opinion	
Lutherville Station TOD		apt	400		221,300	9/22/22	EE	Transit Oriented Development application submitted	major portions of the existing 269,000SF have been vacant. Caldors closed in 1999; Loehman's in 2014.
Under Construction									
Residential/mixed use									
Towson Hotel LLC	Towsontown Blvd	hotel	220				G	Permit PDM #: 09-0851 Tax Account #: 2500015192	
Commercial/retail/academic									
College of Health Professions	TU campus				240,000		H	TU website Permit Tax Account #: 0920551583	scheduled to open fall 2024
Existing									
Residential/mixed use									
Towson Mews	200 E. Penn Ave.	th	34		0	3/17/16 4/29/16 2017	I	BC website development MDAT structure built date	
Barnes and Marshall Halls Towson University west Village	TU campus			700	327,000	2016	J	Ayres Saint Gross Architects website	
Towson Flats	703 Washington Ave.	apt	105		0	2014 2017	K	BC website development search approval/MDAT structure built date	
Brightview Towson	20 E. Burke Ave	Assist Living		92		2012	L	MDAT structure built date	
Spencer's Crossing	200-210 Spencers Way	sfsd	7			2012-2014	M	BC website development search MDAT structure built date	5 bathroom homes
Meadowvale	8606 Westford Ave	sfh	41			2012-2014	N	MDAT structure built date BC website development search	
		sfsd	*62*						
Towson Row									
Altus student housing	22 W. Susquehanna Ave	sh	214		318,984	7/12/05	O	MDAT structure built date	
TR retail	20 W Susquehanna Ave				7,882	7/21/20		Towson Row website	
The York at Towson	301 York Rd/300 Towson Row	apt	442			1/14/22	P	The York at Towson website Whole Foods website	
Whole Foods plus retail	300 Towson Row				280,000				
101 York Road	101 York Road	sh	248	611	189,300	2020	Q	MDAT structure built date	
Quarry Lake at Greenspring			63						
The Highlands	7300 Travertine Drive	condo	41			2012	R	MDAT structure built date	
	7500 Travertine Drive	condo	41			2013		MDAT structure built date	
	7501 Travertine Drive	condo	41			2013		MDAT structure built date	
	7701 Travertine Drive	condo	41			2014		MDAT structure built date	
The Bluffs	2700 Stone Cliff Drive	condo	51			2012	S	MDAT structure built date	
	3100 Stone Cliff Drive	condo	51			2012		MDAT structure built date	
	2615 Quarry Lake Drive	retail				2016		MDAT structure built date	
Commercial/retail/medical									
Towson Square	103 E. Joppa Rd.				45,000	2014	T	MDAT structure built date	
SECU Arena	Towson University				117,000	2013	U	TU website	
Bare Hills Business Park	6252 Falls Rd				8,976	2016	V	MDAT Structure Built date	
Clarkview Road LLC	6300 Blair Hill Ln				88,204	2015	W	MDAT Structure Built date	
Bais Yaakov School for Girls	6300 Smith Ave				14,805	2017	X	Banta Campbell Architect's website Tax Account # 0319039400	
JHU Greenspring Station Pavillion III	10751 Falls Rd				110,000	2019 2021	Y	MDAT Structure Built Date	
TU Union addition	TU campus				85,000	4/8/22	Z	TU website	https://www.towson.edu/facilities/construction/union.html
Towson Armory TU StartUp	307 Washington Ave.				21,000	9/20/21	AA	TU website	vacant for several years
Towson U Science Complex	7801 York Road				320,000	2021	BB	TU website: open for 2021 academic year	
Loyola Blakefield Innovative Learning Center	500 Chestnut Ave				46,000	2021	CC	Catholic Review website	https://catholicreview.org/construction-boom-major-school-capital-projects-underway-in-archdiocese/
Felipe's Mexican Taqueria	842 Kenilworth Dr				3,600	2020	DD	Baltimore Fishbowl website	https://baltimorefishbowl.com/stories/felipes-mexican-taqueria-opens-towson-location-at-shops-at-kenilworth/
Church of the Reedemer, Inc. addition	11525 Greenspring Ave				13,500	2014	FF	Mullan Contracting Co. website Permit PDM # : 08-0903 Tax Account #: 1600010481	http://www.mullancontracting.com/project-category/religious/
Totals			2,543	2,241	2,457,551				

sfsd = single family semi-detached sh = student housing th = townhome sfh = single family home
MDAT = Maryland Department of Assessments and Taxation



G Towson Hotel LLC under construction



H College of Health Professionals under construction



I Towson Mews



J Barnes and Marshall Halls Towson University West Village



K Towson Flats



L Brightview Towson



O Altus Student Housing and retail



P The York at Towson, Whole Foods and retail



Q 101 York Road



T Towson Square



U Secu Arena, Towson University



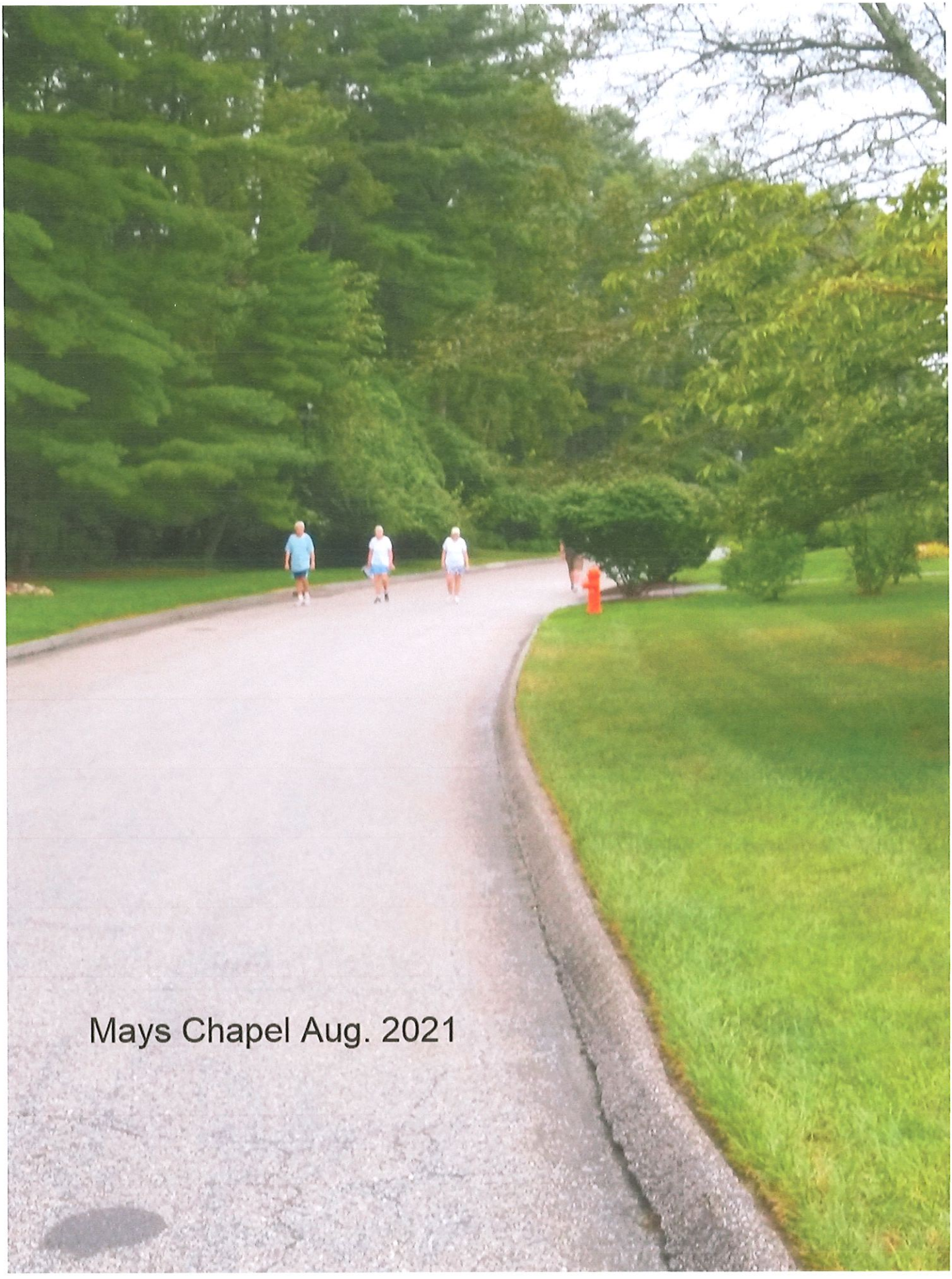
Y Greenspring Station Pavilion 3



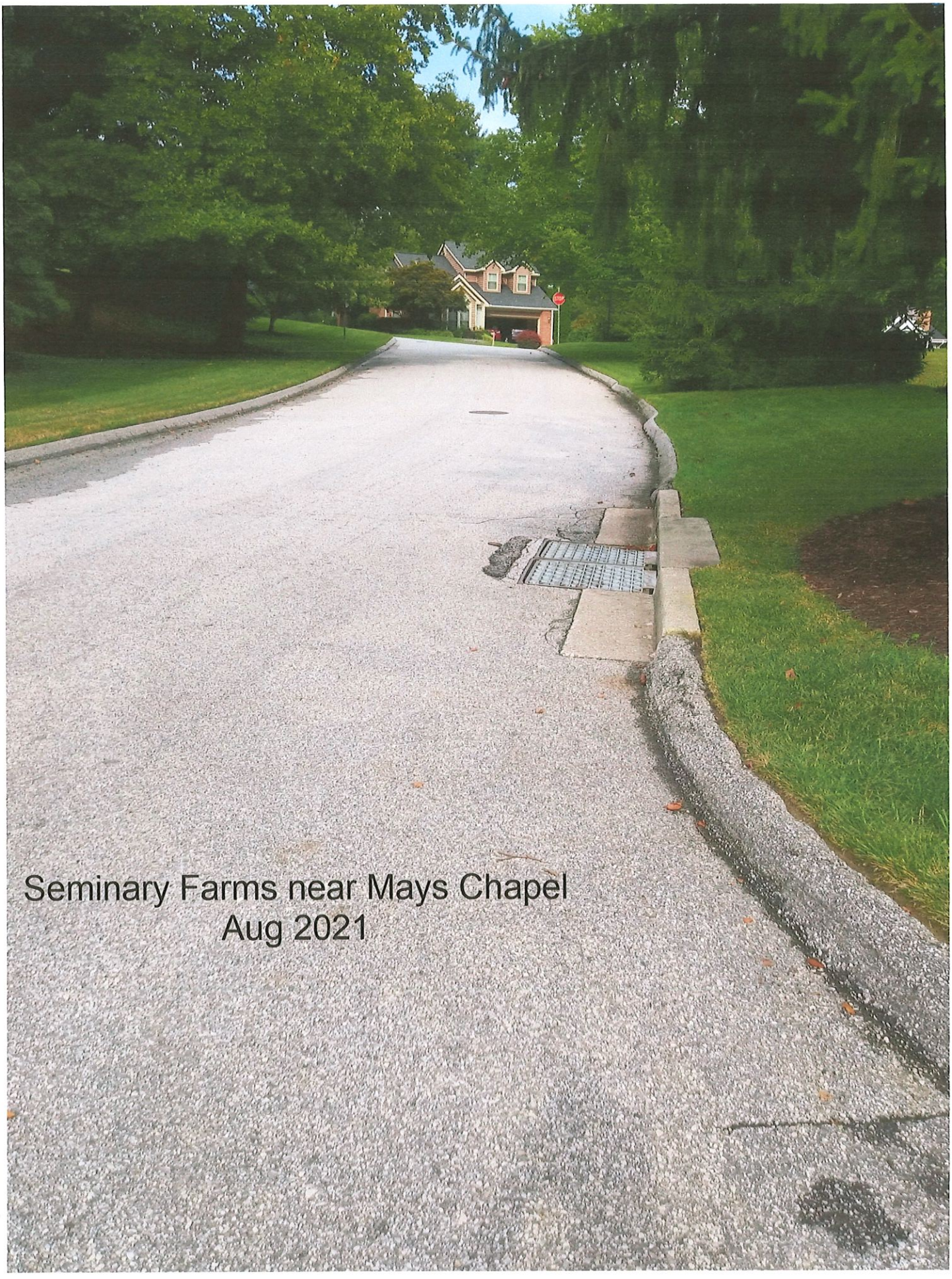
AA Towson University StartUp



BB Towson University Science Complex

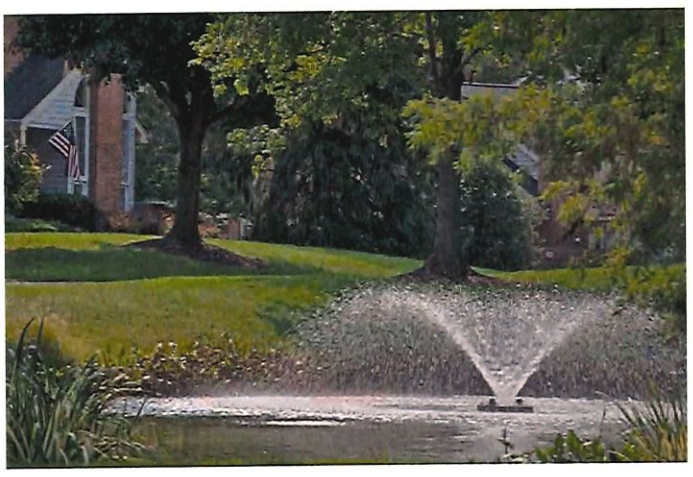


Mays Chapel Aug. 2021


Seminary Farms near Mays Chapel
Aug 2021


Community Party
Mays ChapelOoct 2021


Mays Chapel Aug 2021



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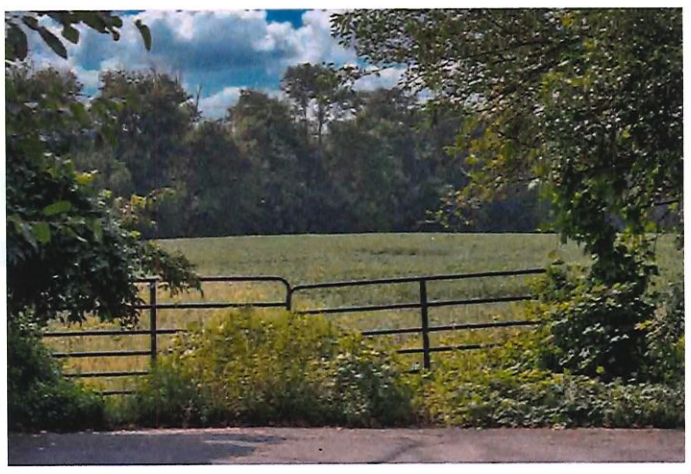

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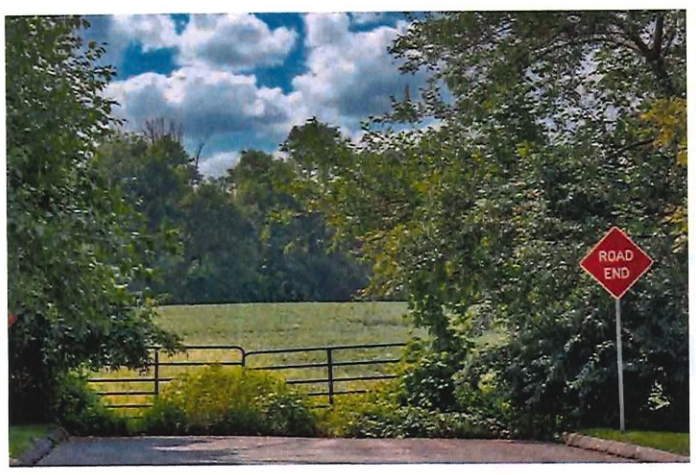

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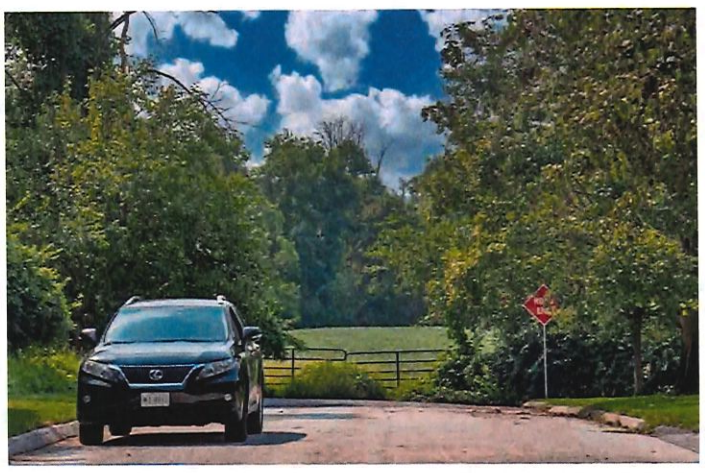

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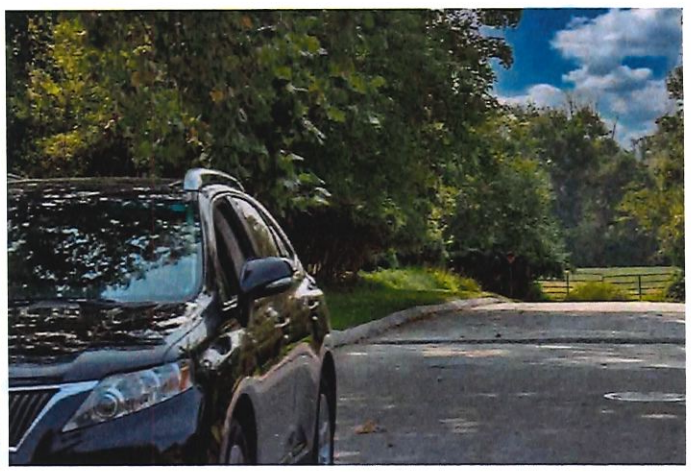

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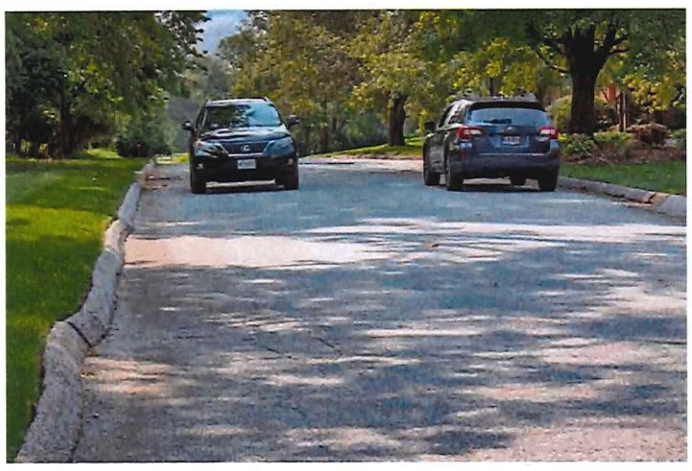

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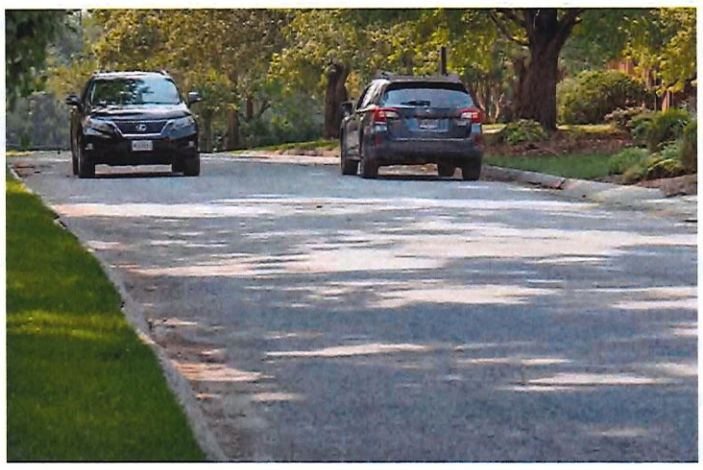

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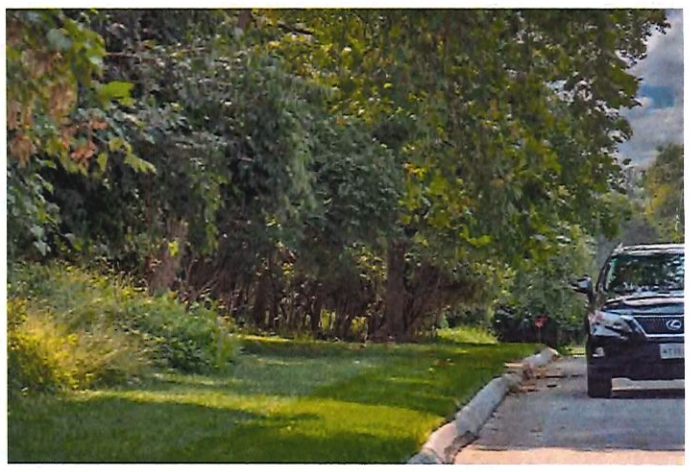

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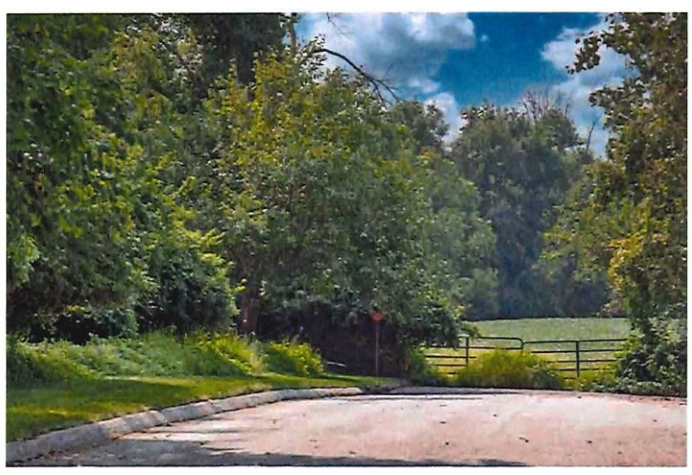

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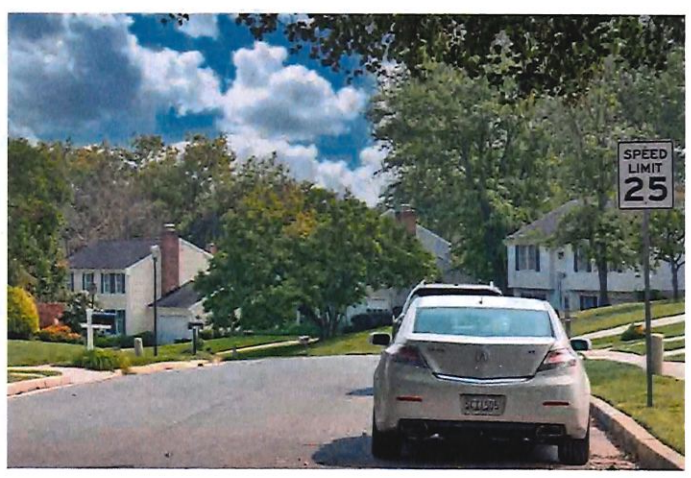

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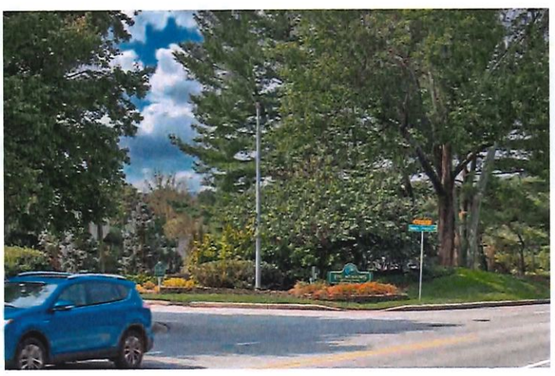

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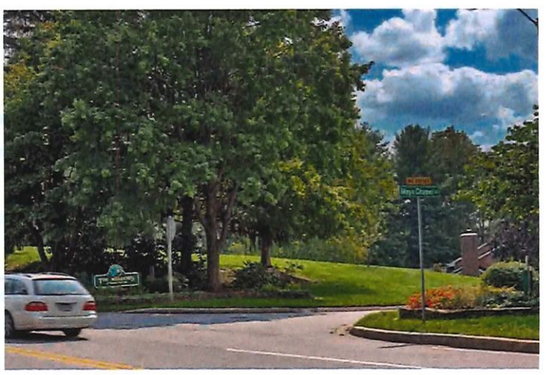

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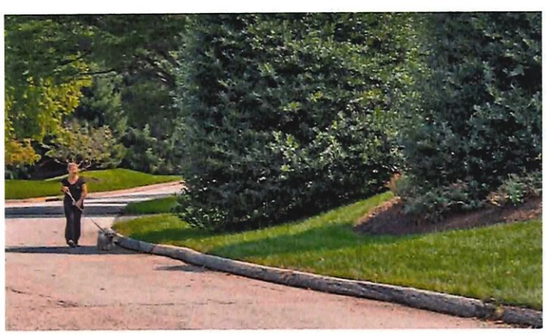

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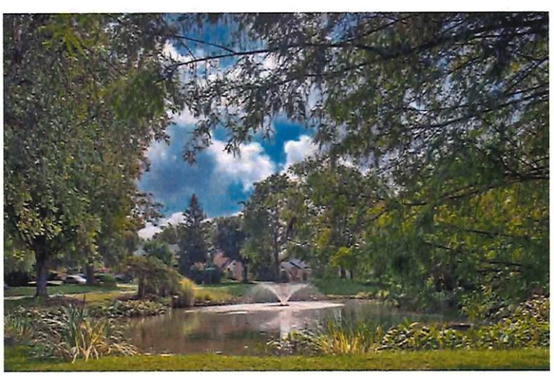

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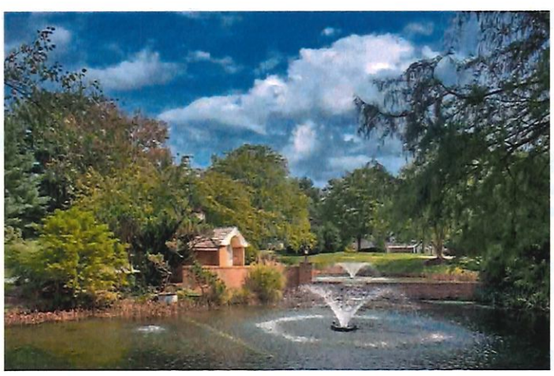

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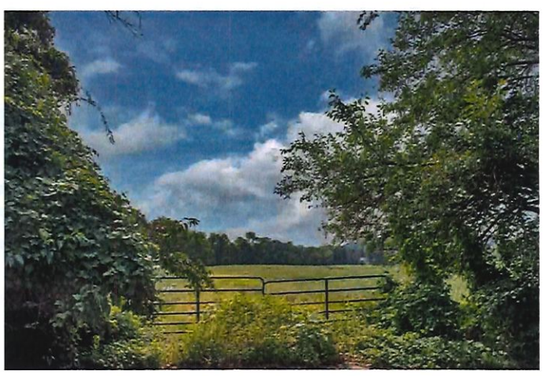

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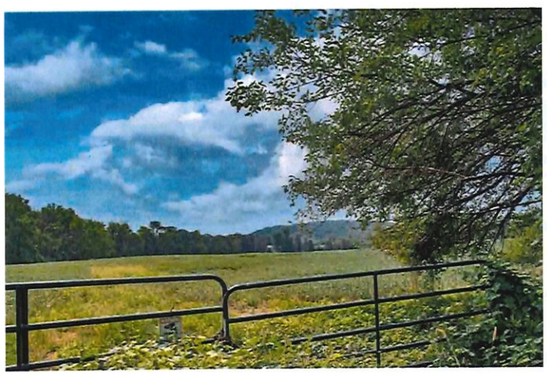

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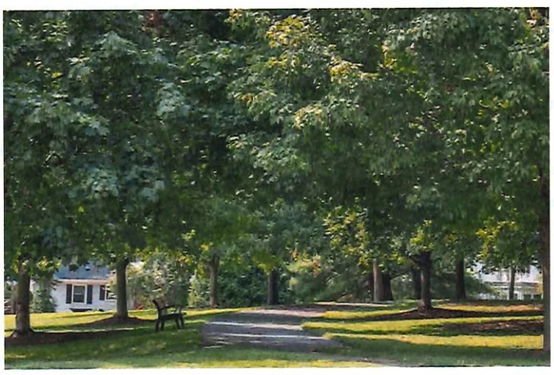

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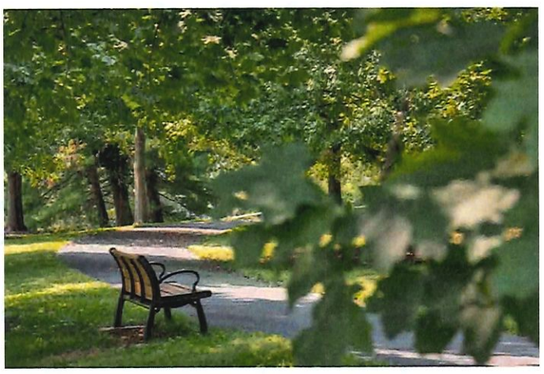

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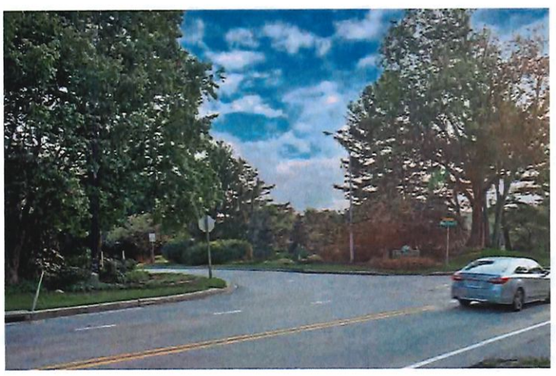

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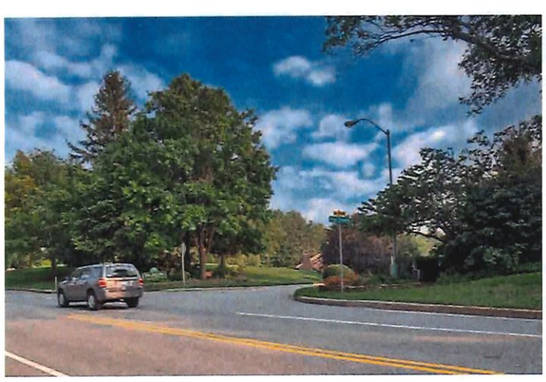
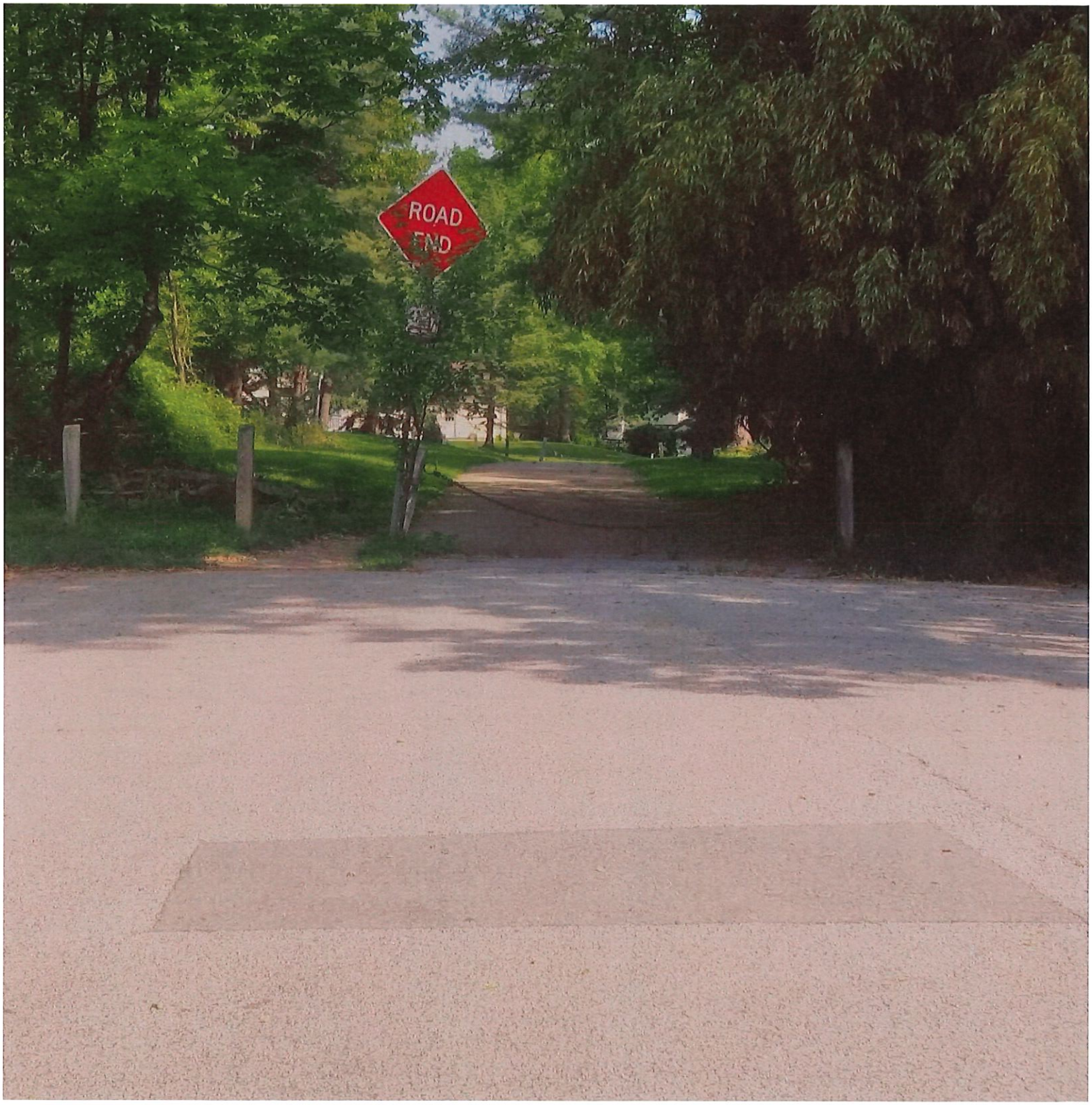


Meadows 0031.jpg



Meadows 0032.jpg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Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

We, the undersigned, are opposed to the development plan filed with Baltimore County for 61 single family homes at 2310 W. Joppa Road. We are also opposed to the granting of a special variance from the "F" level of service at the intersection of Joppa Road and Falls Road. We believe the plan and the special variance should be denied for many reasons, including traffic congestion, sewer capacity, and other issues that will make this development too impactful on and incompatible with the surrounding area.

Printed Name	Signature	Address		Date
H Ann VanHorn	H Ann VanHorn	6 Spring Ave Lutherville Md		9/24/22
Thomas Litz	Thomas Litz	8 Spring House Rd		9/24/22
Helen O'Neill	Helen O'Neill	4 Spring House Rd		9/24/22
Robert Anconn	Robert Anconn	7 Yearling Way		9/24/22
Juliette Eastwood	Juliette Eastwood	5 Yearling Way		9/24/22
Catherine Kodenski	Catherine Kodenski	2 Yearling Way		9/26/22
Patricia Hampton	Patricia Hampton	4 Yearling Way		9/26/22
Jeffrey Agnes	Jeffrey Agnes	3 Yearling Way		9/26/22
Dr Sharon Robbins	Sharon Robbins	6 Yearling Way		10/05/22
Corinne M. Lears	Corinne M. Lears	8 Yearling Way		10/4/22

Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

We, the undersigned, are opposed to the development plan filed with Baltimore County for 61 single family homes at 2310 W. Joppa Road. We are also opposed to the granting of a special variance from the "F" level of service at the intersection of Joppa Road and Falls Road. We believe the plan and the special variance should be denied for many reasons, including traffic congestion, sewer capacity, and other issues that will make this development too impactful on and incompatible with the surrounding area.

Printed Name	Signature	Address		Date
JOHN Picciotto		3 FOXLEIGH Green		9/22/22
[illegible]		7 Foxleigh Green, Lutherville, MD		9/22/22
GARY MULLANEY		1 FOXLEIGH GRN Lutherville MD		9/26/22
Stephen Kimball		1 Deep Run Rd. Lutherville, MD		9/26/22
Theresa Vance	Theresa Vance	2 Foxleigh Green, Lutherville, MD		9/26/22
Bill Howanski		5 FOXLEIGH GREEN LUTHERVILLE, MD		9/26/22
ROSETTA T-RIZZO		7 FOXLEIGH GREEN LUTHERVILLE, MD.		9/27/22
KEVIN ABELL		6 QUAIL HOLLOW ROAD, LUTHERVILLE, MD		9/27/22
BARBARA White		6 Foxleigh Green, Lutherville, MD		9/28/22
MATTHEW Conrest		5 QUAIL Hollow Rd, Lutherville MD		9/28/22

Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

We, the undersigned, are opposed to the development plan filed with Baltimore County for 61 single family homes at 2310 W. Joppa Road. We are also opposed to the granting of a special variance from the "F" level of service at the intersection of Joppa Road and Falls Road. We believe the plan and the special variance should be denied for many reasons, including traffic congestion, sewer capacity, and other issues that will make this development too impactful on and incompatible with the surrounding area.

Printed Name	Signature	Address		Date
PAUL deKOWZAN	Paul deKowzan	9 DEEP RUN RD 21093		9-29-22
Kathryn Robertson	Kathryn Robertson	13 Deep Run Rd. 21093		9/29/22
Leslie Gaertner	L P Gaertner	15 Deep Run Rd 21093		9/29/22
ROXANNE NEWTON	[illegible]	14 Deep Run Rd 21093		9/29/22
CLIFF FABER	C Fab	6 Deep Run Rd 21093		9/29/22
SHARON Heaphy	Sharon Heaphy	7 Deep Run Rd. 21093		9/29/22
Edith Wolpoff-Davis	Edith Wolpoff-Davis	10 Deep Run Rd 21093		9/29/22
NANCY Palmer	[illegible]	12 Deep Run Rd 21093		9/30/22
MONICA HAUSNER	[illegible]	8 Deep Run Rd 21093		10/1/22
Benjamin Prutow III	[illegible]	11 Deep Run Rd 21093		10/2/22

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Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

We, the undersigned, are opposed to the development plan filed with Baltimore County for 61 single family homes at 2310 W. Joppa Road. We are also opposed to the granting of a special variance from the "F" level of service at the intersection of Joppa Road and Falls Road. We believe the plan and the special variance should be denied for many reasons, including traffic congestion, sewer capacity, and other issues that will make this development too impactful on and incompatible with the surrounding area.

Printed Name	Signature	Address		Date
NANCY HUBBLE	Nancy Hubble	2 BROOKLAND RIDGE RD		9/24/22
FRED BACK	Fred Back	8 BROOKLAND RIDGE RD		9/24/22
JOE MONTALBANO	Joe Montalbano	5 BROOKLAND RIDGE RD.		9/24/22
GAILE CIVILETTI	Gaile L. Civiletti	4 BROOKLAND RIDGE RD		9/26/22
ANNETTE WINN	Annette Winn	3 SPRING HOUSE ROAD		9/26/22
Bruce McCall	Bruce McCall	2 NEARFIELD RD		9/26/22
JOHN DERUSSY	John DeRussy	1 SPRING HOUSE RD		9/28/22
Michael Glick	Mike	1 Yearling		9/28/22
DONNA Smith	Donna Smith	2 Spring House Rd.		9/30/22
MARY LUCIA MORRISON	Mary Lucia Morrison	7 BROOKLAND RIDGE RD.		10/3/22

Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

We, the undersigned, are opposed to the development plan filed with Baltimore County for 61 single family homes at 2310 W. Joppa Road. We are also opposed to the granting of a special variance from the "F" level of service at the intersection of Joppa Road and Falls Road. We believe the plan and the special variance should be denied for many reasons, including traffic congestion, sewer capacity, and other issues that will make this development too impactful on and incompatible with the surrounding area.

Printed Name	Signature	Address		Date
GIAN MARCO VALENTE		1 BROOKLAND RIDGE RD		10/3/22
Page Barrall	Page R. Barrall	4 Spring House Rd		10/3/22
Sally Heller	Sally S. Heller	1 Quail Hollow Road		10/6/22
Nancy Maitland	Nancy Maitland	8 Quail Hollow Rd.		10/6/22
Caroline Spinoza	Caroline Spinoza	3 Quail Hollow Rd		10/6/22
Stephen B Segner		3 Brookland Ridge Road		10/6/22

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Petition Opposing Pass-Thru to Mays Chapel Road and The Meadows Community (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

If the development plan is approved, we, the undersigned, are vigorously opposed to having a vehicular connection to Mays Chapel Road and The Meadows of Greenspring community. Among other reasons, we believe that a pass-thru would irrevocably diminish the security, safety, value and character of this neighborhood, home to mostly residents in their 60's, 70's and 80's, who have daily walked these roads for some 40 years.

The Meadows was neither designed for, nor is it now equipped to handle additional traffic, due to narrow roads in a state of some disrepair without sidewalks or walking trails. The Baltimore County Police have identified a single point of entry/exit as the best defense against criminal activity, and the Baltimore County Fire Department has had no problem in serving the needs of Meadows homeowners. We do not oppose a gate for emergency access only, as proposed by Atapco, but not a single community in close proximity, including the developer of Greenspring Manor, favors a pass-thru road. Any nominal benefit associated with vehicular "connectivity" would pale by comparison to the devastating effects to the quality of life for those living in the Meadows of Greenspring. And it is highly questionable if this would do anything to change the three failed intersections on Falls Road at Seminary Ave., Greenspring Ave. and Joppa Rd.

Printed Name	Signature	Address		Date
William Fusting	DocuSigned by: William Fusting 1193EDF085004DF...	4 Quail Hollow Road		10/8/2022
Philip Walls	Philip Walls	6 Brookland Ridge Rd		10/17/2022

Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

We, the undersigned, are opposed to the development plan filed with Baltimore County for 61 single family homes at 2310 W. Joppa Road. We are also opposed to the granting of a special variance from the "F" level of service at the intersection of Joppa Road and Falls Road. We believe the plan and the special variance should be denied for many reasons, including traffic congestion, sewer capacity, and other issues that will make this development too impactful on and incompatible with the surrounding area.

Printed Name	Signature	Address		Date
Jinni Fitzgerald	Jinni Fitzgerald	9 Laurie Hollow Rd 21093		10/8/22

Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

We, the undersigned, are opposed to the development plan filed with Baltimore County for 61 single family homes at 2310 W. Joppa Road. We are also opposed to the granting of a special variance from the "F" level of service at the intersection of Joppa Road and Falls Road. We believe the plan and the special variance should be denied for many reasons, including traffic congestion, sewer capacity, and other issues that will make this development too impactful on and incompatible with the surrounding area.

Printed Name	Signature	Address	Date
SUZANNE PRICE	Suzanne Price	49 SEMINARY FARM RD. LUTHERVILLE MD 21093	9/25/22
MARY SINGER	Mary Singer	10937 Mays Chapel Rd Lutherville MD 21093	9/25/22
GEORGE SCHUEBEL	George E. Schuebel	5 Bluestone Rd Lutherville, Md.	9-26-2022
PATRICIA SCHUEBEL	Patricia Schuebel	5 Bluestone Rd. Lutherville, Md.	9-26-2022
Marylynne Mullican	Marylynne Mullican	10934 Mays Chapel Rd Lutherville MD 21093	9.26.22
MARK A. MULLICAN	Mark A. Mullican	10934 Mays Chapel Rd Lutherville MD 21093	9.26.22
Michael Friedman	M Friedman	1 Bluestone Rd, Lutherville MD 21093	9-28-22
Betty CROSS	Betty Cross	7 BLUESTONE RD Lutherville MD 21093	9/30/22
Susan Tinanoff	Susan C. Tinanoff	10939 Mays Chapel Rd., Lutherville, MD 21093	9/30/22
MARY V. GAMBERDELLA		3 BLUESTONE RD LUTHERVILLE, MD 21093	10/2/22

Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address		Date
NORMAN TINANOFF	Tinanoff	10939 Mays Chapel Rd		10/3/22

Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address		Date
Susan Morstein	Susan Morstein	3 Nearfield Rd. Lutherville, Md. 21093		9-27-22
Tom Rhoades	Tom Rhoades	5 Nearfield Rd Lutherville MD 21093		9-27-22
Gail Dezube	Gail Dezube	1 Nearfield Rd Lutherville, MD 21093		9-27-22
Sharon Fogler	Sharon Fogler	6 Nearfield Rd. Lutherville, Md 21093		9-2722
robert law	Bobby Law	7 nearfield rd lutherville md 21093		9-28
Berit Killingsworth	Berit G. Killingsworth	7 Quail Hollow Rd 21093		9/30/22
Leslie Saxton	Leslie B. Saxton	10 Quail Hollow Rd 21093		9/30/22
ELAINE TIPTON		4 NEARFIELD RD 21093		9/30/2022

Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address		Date
Edward J. Consroe	Edward J Consroe	71 Seminary Farm Rd		9/22/22
Christine A. Consroe	Christine A Consroe	71 Seminary Farm Rd		9/22/22
Ann W Bruder	Ann W Bruder	74 Seminary Farm Rd		9/23/22
Al Lawrence F Bruder	Lawrence F Bruder	74 seminary Farm Rd		9/23/22
Kathryn & Arthur Rudo	Kathryn Rudo	69 seminary Farm Rd		9/23/22
Gary Woodruff	Gary Woodruff	70 Seminary Farm Rd		9/25/22
KAE ELK		72 SEMINARY FARM RD		9/24/22
HARJIT SINGH M.D	Harjit Singh	68 SEMINARY FARM ROAD		9/25/2022
BETTY R SWEREN Betty R Sweren	Betty R Sweren	74 Seminary Farm Road		9/25/2022
JOCHEN WURFL		73 SEMINARY FARM RD		9/26/22

Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address		Date
JAN WILLIAMS	Jan Williams	76 Seminary Farm Rd.		9/16/22

Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

We, the undersigned, are opposed to the development plan filed with Baltimore County for 61 single family homes at 2310 W. Joppa Road. We are also opposed to the granting of a special variance from the "F" level of service at the intersection of Joppa Road and Falls Road. We believe the plan and the special variance should be denied for many reasons, including traffic congestion, sewer capacity, and other issues that will make this development too impactful on and incompatible with the surrounding area.

Printed Name	Signature	Address		Date
Richard F. Compton	Richard F Compton	25 Seminary Farm Rd Lutherville MD 21093		9/24/22
Gibson E Hoshall	Gibson E Hoshall	23 Seminary Farm Rd Lutherville Md 21093		9/27/22
Matthew Margolies	Matthew Margolies	25 Seminary Farm Rd Lutherville MD 21093		9/27/22
Linda Wilk Tracy	L.W. Tracy	29 Seminary Farm Rd Lutherville 21093		9/28/22
Steven Kuppers	[illegible]	45 Seminary Farm Rd. Lutherville, MD 21093		9/28/22
Helen Good	Helen Good	43 Seminary Farm Rd. Lutherville 21093		9/30/22
Lynne O'Donnell	Lynne O'Donnell	41 Seminary Farm Rd. Lutherville 21093		10/3/22
Jon Thomas	[illegible]	47 Seminary Farm Rd. Lutherville MD 21093		10/7/22
Phil Kenney	[illegible]	21 Seminary Farm Rd Lutherville 21093		10/9/22

Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

We, the undersigned, are opposed to the development plan filed with Baltimore County for 61 single family homes at 2310 W. Joppa Road. We are also opposed to the granting of a special variance from the "F" level of service at the intersection of Joppa Road and Falls Road. We believe the plan and the special variance should be denied for many reasons, including traffic congestion, sewer capacity, and other issues that will make this development too impactful on and incompatible with the surrounding area.

Printed Name	Signature	Address		Date
KAREN McGRAW	Karen McGraw	65 SEMINARY FARM ROAD LUTHERVILLE 21093		9/21/22
DEBORAH CARSKI	Deborah M. Carski	55 SEMINARY FARM ROAD LUTHERVILLE 21093		9/22/22
Lauren Greenberg	Lauren Greenberg	51 Seminary Farm Road Lutherville 21093		9/22/22
PATRICIA EMERSON	Patricia Emerson	53 Seminary Farm Road Lutherville 21093		9/22/22
FARIBA ASRARI	Fariba Asrari	61 Seminary Farm Rd., Lutherville 21093		09/22/22
FARIBA ASRARI	Fariba Asrari	10932 Mays Chapel Rd, Lutherville 21093		09/22/22
Cindy Thurlow		59 Seminary Farm RD Lutherville 21093		9/23/2022
Dawn Kuppers	Dawn Kuppers	67 Seminary Farm Rd Lutherville 21093		9/23/2022
Philip Ghassemieh	Philip Ghassemieh	57 Seminary Farm Rd Lutherville 21093		9/23/22
Karen Ghassemieh	Karen Ghassemieh	5 Spring House Rd Lutherville 21093		9/23/22

Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address		Date
Chuck Yeagley	M. Chuck Yeagley	66 Seminary Farm Rd, Cockeysville MD 21030		9/23/22

Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address		Date
Lynda McDonald	Lynda McDonald	63 Seminary Farm Rd, Lutherville, MD 21093		10/10/2022

Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address		Date
Starr Arbaugh	Starr Arbaugh	5 Deep Run Road		10/10/22

Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address	Date
Robin and Brian Rubin		15 Old Boxwood Lane Lutherville MD 21093	9/14/22
DIANE/JAY WEISS		24 OLD BOXWOOD 21093	10/11/2022
G.P. Wilkinson		#1 Old Boxwood La 21093	10/11/22
Alice D. Wilkinson	Alice D. Wilkinson	#1 Old Boxwood Lane 21093	10/11/22
A.C. Alevizatos	A.C. ALEVIZATOS	8 Old Boxwood Lane 21093	10/11/22
Tom Davis	TOM DAVIS	22 OLD BOXWOOD LA 21093	10/1-2022
Bonnie Becker	BONNIE BECKER	22 OLD BOXWOOD LA 21093	10-11-2022
Bernadine Wyatt	Bernadine Wyatt	12 OLD Boxwood La 21093	10-11-2022
Carol Berman	Carol Berman	2 Old Boxwood Lane	10/11/22
C.N Berman	C.N. Berman	2 OLD BOXWOOD LA	10/11/22

Printed Name	Signature	Address		Date
[illegible]	[illegible]	8 Old Boxwood Lane		10-11-22
Robert Cohen	Robert Cohen	6 Old Boxwood Lane Lutherville 21093		10/11/22
Susan Cohen	Susan Cohen	" " " " " "		10/11/22
Howard Bronston	[illegible]	19 Old Boxwood Lane		10/11/22
Lorraine Bronston	Lorraine Bronston	19 Old Boxwood Lane		10/11/22
Robert L. McKinney	Robert L. McKinney	26 OLD BOXWOOD LANE Lutherville, MD 21093		10/11/22
MAXINE McKinj	Maxine McKinj	26 OLD Boxwood Lane Lutherville 21093		10/11/
MARI KALIN	Mari Kalin	21 Old Boxwood Lane		10/11
MARGARET STRAHAN	M Strahan	11 Old Boxwood Lane		10/11

Petition Opposing Pass-Thru to Mays Chapel Road and The Meadows Community (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

If the development plan is approved, we, the undersigned, are vigorously opposed to having a vehicular connection to Mays Chapel Road and The Meadows of Greenspring community. Among other reasons, we believe that a pass-thru would irrevocably diminish the security, safety, value and character of this neighborhood, home to mostly residents in their 60's, 70's and 80's, who have daily walked these roads for some 40 years.

The Meadows was neither designed for, nor is it now equipped to handle additional traffic, due to narrow roads in a state of some disrepair without sidewalks or walking trails. The Baltimore County Police have identified a single point of entry/exit as the best defense against criminal activity, and the Baltimore County Fire Department has had no problem in serving the needs of Meadows homeowners. We do not oppose a gate for emergency access only, as proposed by Atapco, but not a single community in close proximity, including the developer of Greenspring Manor, favors a pass-thru road. Any nominal benefit associated with vehicular "connectivity" would pale by comparison to the devastating effects to the quality of life for those living in the Meadows of Greenspring. And it is highly questionable if this would do anything to change the three failed intersections on Falls Road at Seminary Ave., Greenspring Ave. and Joppa Rd.

Printed Name	Signature	Address		Date
Helen A Van House	H. Ann Van House	6 Spring House Rd		9/24/22
Thomas S. Litz	Thomas S. Litz	8 Spring House Rd		9/24/22
Helen Otell	Helen Otell	7 Spring House Rd		9/24/22
Robert J. Ancona	[illegible]	7 Yearling Way		9/24/22
Juliette Eastwick	Juliette F Eastwick	5 Yearling Way		9/24/22
Catherine Kodenski	[illegible] Kodenski	2 Yearling Way		9/26/22
Patricia Hampton	[illegible]	4 Yearling Way		9/26/22

Petition Opposing Pass-Thru to Mays Chapel Road and The Meadows Community (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address		Date
Jeffrey Ayres	Jeffrey Ayres	3 Yearling Way	9	9/26/22
Sharon Robbins	Sharon Robbins	6 Yearling Way	10	05/22
Corinne Leary	Corinne McLeary	8 Yearling Way	10	4/22

Petition Opposing Pass-Thru to Mays Chapel Road and The Meadows Community (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address	Date
JOHN Piccioto		3 FOXLEIGH GREEN	9/22/22
Mon Murray		4 Foxleigh Green, Lutherville, MD	9/22/22
ROSETTA T. RIZZO		7 FOXLEIGH GREEN, LUTHERVILLE, MD	9/27/22
KEVIN ABELL		6 QUAIL HOLLOW ROAD, LUTHERVILLE, MD	9/27/22
Linda Mullaney		1 FOXLEIGH Green Lutherville, Md 21093	9/27/22
Bill Howanski		5 FOXLEIGH GREEN LUTHERVILLE, MD 21093	9/27/22
Barb White		6 Foxleigh Green Lutherville, Md 21093	9/28/22

Petition Opposing Pass-Thru to Mays Chapel Road and The Meadows Community (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address		Date
Theresa Vance	Theresa Vance	2 Foxleigh Green, Lutherville 21093		09/27/22
Matthew Currents	M Cur	5 Quail Hollow Rd Lutherville 21093		9/29/22

Petition Opposing Pass-Thru to Mays Chapel Road and The Meadows Community (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address		Date
PAUL DEKOWZAN	Paul deKowzan	9 DEEP RUN ROAD	21093	9-29-22
Kathryn Robertson	Kathryn Robertson	13 Deep Run Rd.	21093	9/29/22
Leslie Gartner	L P Gartner	15 Deep Run Rd	21093	9/29/22
ROBERT + [illegible]	[illegible]	16 Deep Run Rd	21093	9/29/22
CLIFF FABER	C Faber	6 Deep Run Rd	21093	9/29/22
SHARON Heaphy	Sharon Heaphy	7 Deep Run	21093	9/29/22
Edith WOLHOFF-DAVIS	Edith Wolhoff Davis	10 Deep Run Rd	21093	9/29/22

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Petition Opposing Pass-Thru to Mays Chapel Road and The Meadows Community (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address		Date
JEFF FOUNTAIN		3 DEEP RUN RD		9/30/22
NANCY Palmer		12 Deep Run Rd		9/30/22
MONICA HAUSER		8 Deep Run Rd.		10/1/22
Benjamin Procter, Jr		11 Deep Run Rd.		10/3/22

https://word-view.officeapps.live.com/wv/WordViewer/request.pd...

Petition Opposing Pass-Thru to Mays Chapel Road and The Meadows Community (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address		Date
NANCY HUBBLE	Nancy Hubble	2 BROOKLAND RIDGE RD		9/24/22
FRED BACK	Fred Back	8 BROOKLAND RIDGE RD		9/24/22
JOE MONTALBANO	Joe Montalbano	5 BROOKLAND RIDGE RD.		9/24/22
GAILE GIULETTI	Gaile L. Giulietti	4 BROOKLAND RIDGE RD		9/26/22
Annette Winn	ANNETTE WINN	3 Spring House rd		9/26-22
Bruce McCall	Bruce McCall	2 NEARFIELD RD		9/27/22
JOHN deRUSSY	John deRussy	1 SPRING HOUSE RD		9/28/22
Michael Glick	mgl	1 Yearling Way		9/28/22

Petition Opposing Pass-Thru to Mays Chapel Road and The Meadows Community (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address		Date
DONNA Smith	Donna Smith	2 Spring House Rd		9/30/22
MARY LUCIA MORRISON		7 BROOKLAND RIDGE RD		10/3/22
GIAN MARCO VALENTE		1 BROOKLAND RIDGE RD		10/3/22
Page Barroll	Page R. Barroll	4 Spring House Rd		10/3/22
Sally Heller	Sally S Heller	12 Quail Hollow Road		10/6/22
Nancy Maitland	Nancy Maitland	8 Quail Hollow Rd.		10/6/22
Carol Johnson	Carol Johnson	5 Quail Hollow Rd		10/6/22

Petition Opposing Pass-Thru to Mays Chapel Road and The Meadows Community (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address		Date
[illegible]	[illegible]	[illegible]		10/6/22

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Petition Opposing Development Plan and Special Variance for Greenspring Manor (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

We, the undersigned, are opposed to the development plan filed with Baltimore County for 61 single family homes at 2310 W. Joppa Road. We are also opposed to the granting of a special variance from the "F" level of service at the intersection of Joppa Road and Falls Road. We believe the plan and the special variance should be denied for many reasons, including traffic congestion, sewer capacity, and other issues that will make this development too impactful on and incompatible with the surrounding area.

Printed Name	Signature	Address	Date
William Fusting	DocuSigned by: William Fusting 1193EDF085004DF...	4 Quail Hollow Road	10/8/2022
Philip Walls	Philip Walls	6 Brookland Ridge Rd	10/17/2022

Petition Opposing Pass-Thru to Mays Chapel Road and The Meadows Community (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address		Date
Jinni Fitzgerald	Jinni Fitzgerald	9 Ivanhoe Hollow Rd 21093		10/8/22
Robb Merritt		8 Nearfield Rd 21093		10/8/22

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Printed Name	Signature	Address	Date
SUZANNE PRICE	Suzanne Price	49 SEMINARY FARM RD. LUTHERVILLE MD 21093	9/25/22
MARY SINGER	Mary Singer	10937 Mays Chapel Rd. Lutherville MD 21093	9/25/22
GEORGE Schuebel	George E Schuebel	5 Bluestone Rd. Md. 21093	9-26-2022
PATRICIA SCHUEBEL Patricia Schuebel		5 Bluestone Rd Md. 21093	9-26-2022
MaryLynna Mullican	MaryLynna Mullican	10934 Mays Chapel Rd Lutherville 21093	9.26-22
MARK MULLICAN	Mark G. Mullican	10934 Mays Chapel Rd Lutherville 21093	9-26-22
Michael Friedman		1 Bluestone Rd, Lutherville MD 21093	9/26/22

Petition Opposing Pass-Thru to Mays Chapel Road and The Meadows Community (2310 W. Joppa Road – Case nos. 08-0922 and 2021-0250-SPH)

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Printed Name	Signature	Address		Date
Betty CROSS	Betty Cross	7 BLUESTONE RD LUTHERVILLE MD 21093		9/30/22
Susan Tinanoff	Susan G. Tinanoff	10939 Mays Chapel Rd., Lutherville, MD 21093		9/30/22
MARY V. GAMBERDELLA		3 BLUESTONE RD LUTHERVILLE MD 21093		10/2/22
NORMAN TINANOFF	Tinanoff	10939 Mays Chapel Rd		10/3/22

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Printed Name	Signature	Address		Date
Susan Morstein	Susan Morstein	3 Nearfield Rd. Lutherville, Md. 21093		9-27-22
Tom Rhodes	Tom Rhodes	5 Nearfield Rd Lutherville, Md 21093		9-27-22
Gail Dezube	Gail Dezube	1 Nearfield Rd. Lutherville MD 21093		9-27-22
Sharon Fogler	Sharon Fogler	6 Nearfield Rd. Lutherville, Md 21093		9-27-22
robert law	Rlaw	7 nearfield rd lutherville md 21093		
Berit Killingstad	Berit A. Killingstad	7 Quail Hollow Rd Lutherville Md 21093		9/23/22
Leslie Saxton	Leslie B. Saxton	10 Quail Hollow Rd. 21093		9-22-22

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Printed Name	Signature	Address		Date
ELAINE TIPTON		4 NEARFIELD RD 21093		9/30/2022

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Printed Name	Signature	Address		Date
Edward J. Consroe	Edward Consroe	71 Seminary Farm Rd.		9/22/22
Christine A. Consroe	Christine Consroe	71 Seminary Farm Rd.		9/22/22
Ann W Bruder	Ann W Bruder	74 Seminary Farm Rd		9/23/22
Lawrence F Bruder	Lawrence F Bruder	74 Seminary Farm Rd		9/23/22
Kathryn & Arthur Rudo	Kathryn Rudo	69 Seminary Farm Rd		9/23/22
Gary Woodruff	Gary Woodruff	70 Seminary Farm Rd		9/25/22
RAE ELK		72 SEMINARY FARM RD		9/25/22

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Printed Name	Signature	Address		Date
HARJIT SINGH MD	[signature]	68 SEMINARY FARM ROAD		9/25/22
BETTY R SWEREN	Betty R Sweren	77 SEMINARY FARM ROAD		9/25/2022
JOCHEN WURFL	[signature]	73 SEMINARY FARM ROAD		9/24/22
JAN HALLAHAN	Jan Hallahan	76 Seminary Farm Rd.		9/26/22

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Printed Name	Signature	Address		Date
Richard F. Compton	Richard F Compton	25 Seminary Farm Rd, Lutherville MD 21093		9/24/22
GIBSON ELHOSHALL		23 SEMINARY FARM RD LUTHERVILLE MD 21093		9/24/22
1 MATTHEW MARGOLIES		75 SEMINARY FARM RD Lutherville 21093		9/9/22
Linda Wilk Tracy	Linda Wilk Tracy	29 Seminary Farm Rd Lutherville, Md 21093		9/28/22
STEVEN KAPPERS		45 SEMINARY FARM Rd. LUTHERVILLE MD		4/20/22
Helen Good	Helen M. Good	43 Seminary Farm Rd. Lutherville 21093		4/30/22
Lynne O'Donnell	Lynne O'Donnell	41 Seminary Farm Rd Timonium 21093		10/2/22

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Printed Name	Signature	Address		Date
Jon Thomas		47 Seminary Farm Rd. Lutherville, MD 21093		10/7/2022
Philip Kenney		21 Seminary Farm Rd. Lutherville Md 21093		10/8/22

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Printed Name	Signature	Address		Date
KAREN McGRAW	Karen McGraw	65 SEMINARY FARM ROAD LUTHERVILLE 21093		9/21/22
DEBORAH CARSKI	Deborah M. Carski	55 SEMINARY FARM ROAD LUTHERVILLE 21093		9/22/22
Lauren Greenberg	Lauren Greenberg	51 Seminary Farm Rd Lutherville 21093		9/22/22
PATRICIA EMERSON	Patricia Emerson	53 Seminary Farm Road Lutherville 21093		9/22/22
FARIBA ASRARI	Fariba Asrari	61 Seminary Farm Rd Lutherville 21093		09/22/22
FARIBA ASRARI	Fariba Asrari	10932 Seminary Farm Rd, Lutherville 21093		09/22/22
Cindy Thurlow		59 Seminary Farm Rd Lutherville 21093		9/23/2022

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Printed Name	Signature	Address		Date
Philip Ghassemieh		57 Seminary Farm Rd. Lutherville 21093		9/23/22
Kazem Ghassemieh		5 Spring House Rd, Lutherville 21093		9/23/22
Chuck Yearley		66 Seminary Farm Rd. Lutherville 21093		9/23/22

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Printed Name	Signature	Address		Date
Lynda McDonald	Lynda McDonald	63 Seminary Farm Rd, Lutherville, Md 21093		10/1/2022

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Printed Name	Signature	Address		Date
Eugene A Arbaugh	Eugene A Arbaugh	5 Deep Run Road		10/10/22

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Printed Name	Signature	Address		Date
HANS KUPPERS		67 SEMINARY FORM RD		10/5/2022

Land Use: 210
Single-Family Detached Housing

Description

A single-family detached housing site includes any single-family detached home on an individual lot. A typical site surveyed is a suburban subdivision.

Specialized Land Use

Data have been submitted for several single-family detached housing developments with homes that are commonly referred to as patio homes. A patio home is a detached housing unit that is located on a small lot with little (or no) front or back yard. In some subdivisions, communal maintenance of outside grounds is provided for the patio homes. The three patio home sites total 299 dwelling units with overall weighted average trip generation rates of 5.35 vehicle trips per dwelling unit for weekday, 0.26 for the AM adjacent street peak hour, and 0.47 for the PM adjacent street peak hour. These patio home rates based on a small sample of sites are lower than those for single-family detached housing (Land Use 210), lower than those for single-family attached housing (Land Use 251), and higher than those for senior adult housing -- single-family (Land Use 251). Further analysis of this housing type will be conducted in a future edition of *Trip Generation Manual*.

Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

For 30 of the study sites, data on the number of residents and number of household vehicles are available. The overall averages for the 30 sites are 3.6 residents per dwelling unit and 1.5 vehicles per dwelling unit.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Arizona, California, Connecticut, Delaware, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Minnesota, Montana, New Jersey, North Carolina, Ohio, Ontario (CAN), Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Vermont, Virginia, and West Virginia.

Source Numbers

100, 105, 114, 126, 157, 167, 177, 197, 207, 211, 217, 267, 275, 293, 300, 319, 320, 356, 357, 367, 384, 387, 407, 435, 522, 550, 552, 579, 598, 601, 603, 614, 637, 711, 716, 720, 728, 735, 868, 869, 903, 925, 936, 1005, 1007, 1008, 1010, 1033, 1066, 1077,1078, 1079

Single-Family Detached Housing
(210)

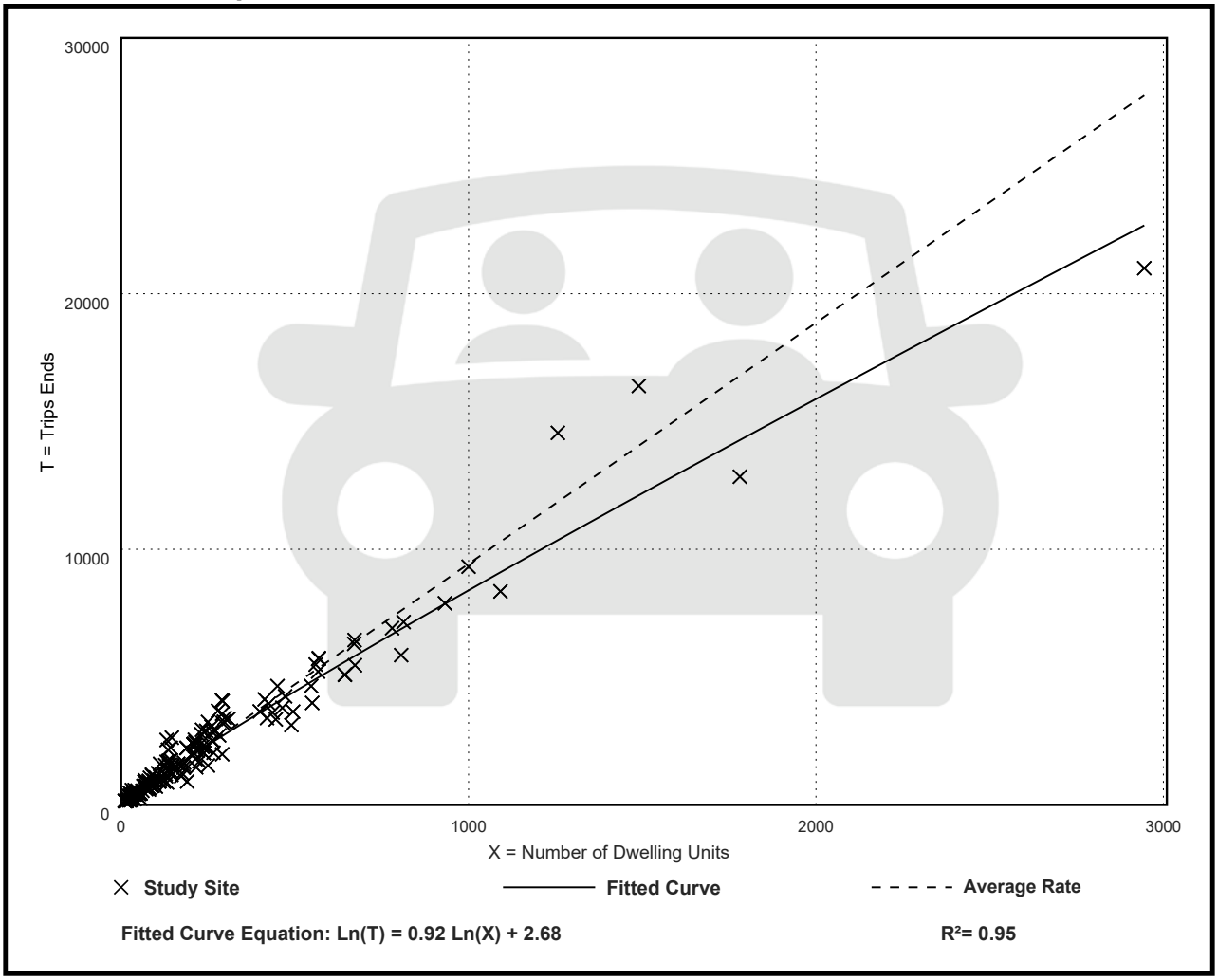
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 174
Avg. Num. of Dwelling Units: 246
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.92 Ln(X) + 2.68

R^2= 0.95

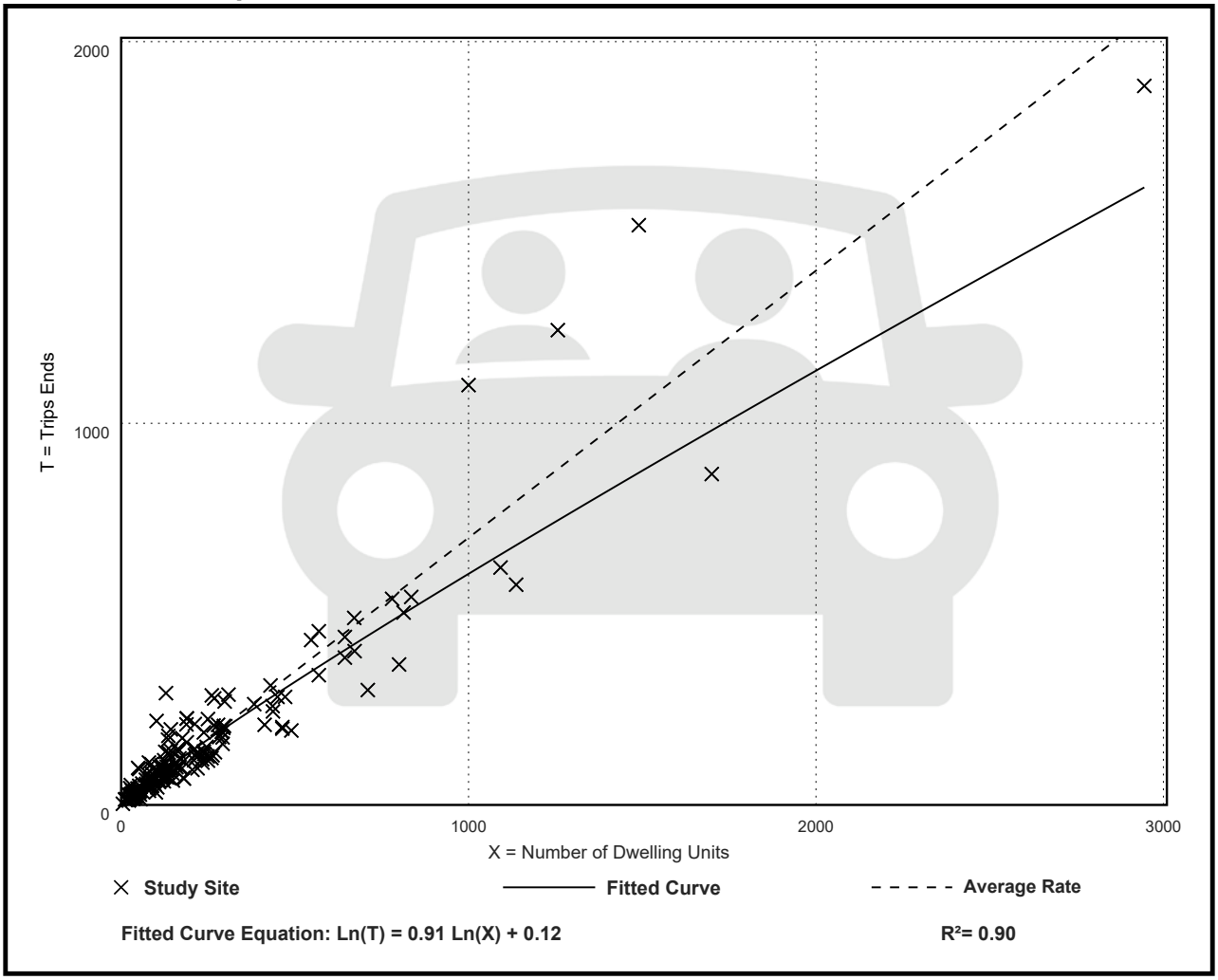
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 192
Avg. Num. of Dwelling Units: 226
Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



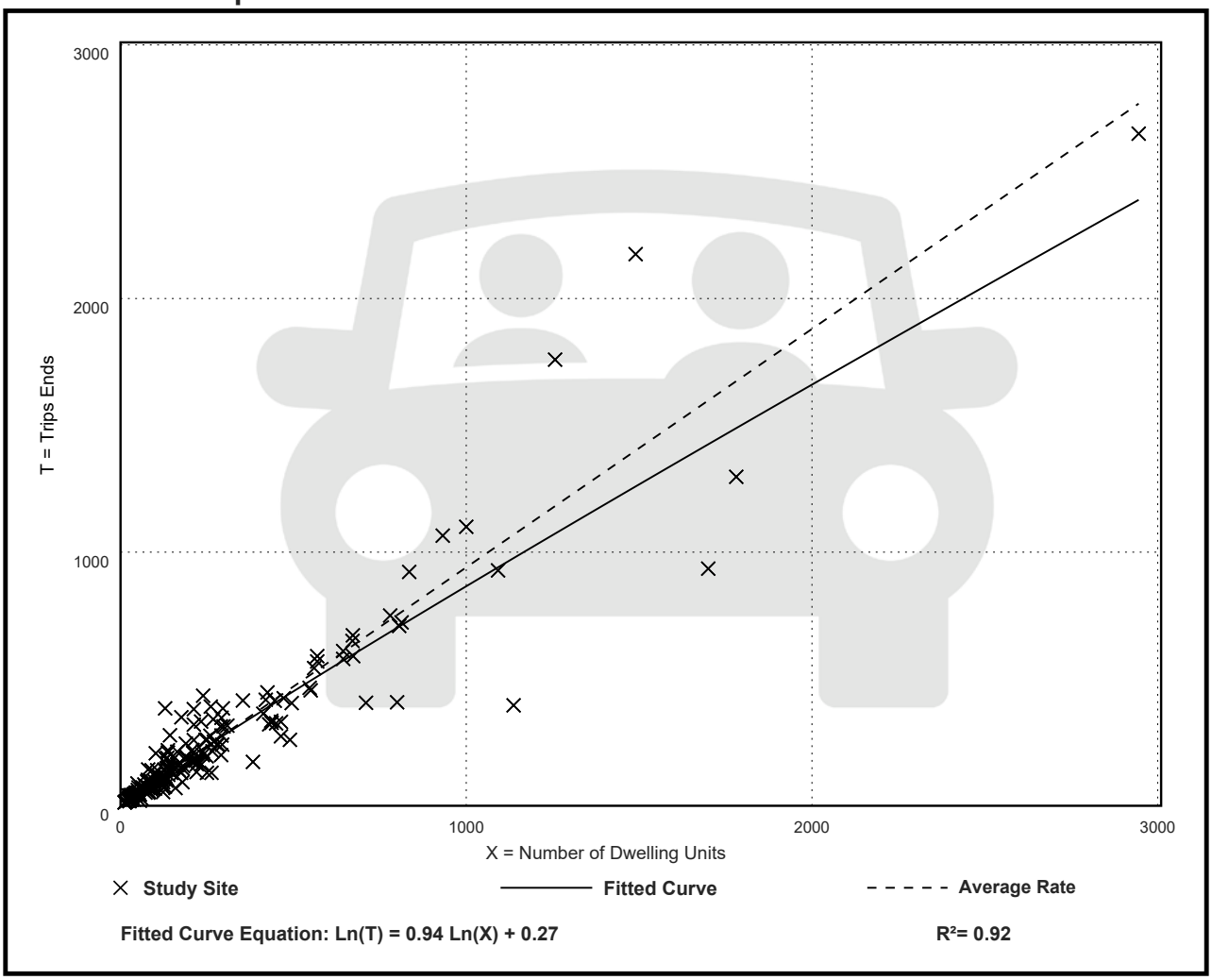
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 208
Avg. Num. of Dwelling Units: 248
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Data Plot and Equation



Single-Family Detached Housing
(210)

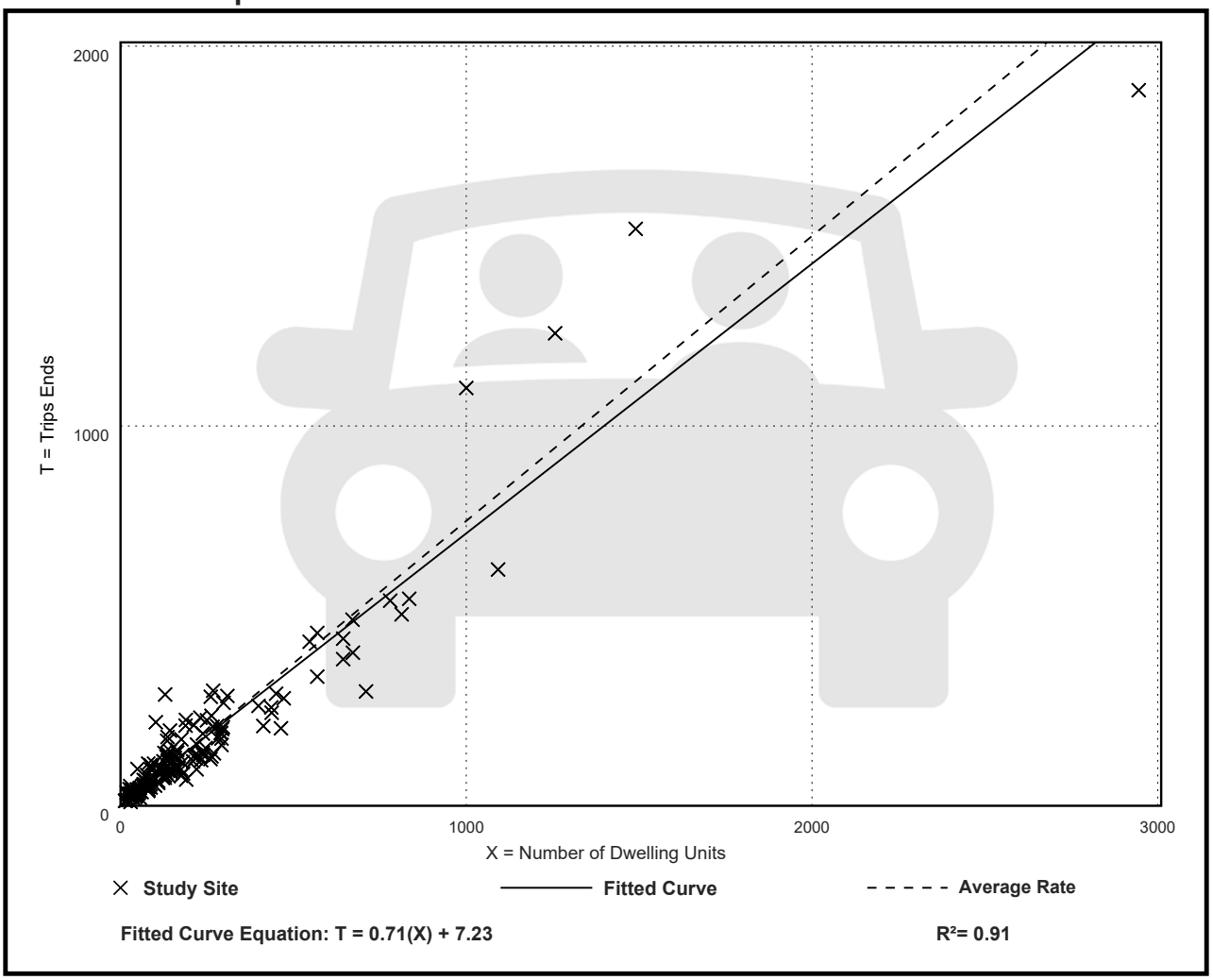
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 169
Avg. Num. of Dwelling Units: 217
Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.75	0.34 - 2.27	0.25

Data Plot and Equation



Fitted Curve Equation: T = 0.71(X) + 7.23

R^2= 0.91

Single-Family Detached Housing
(210)

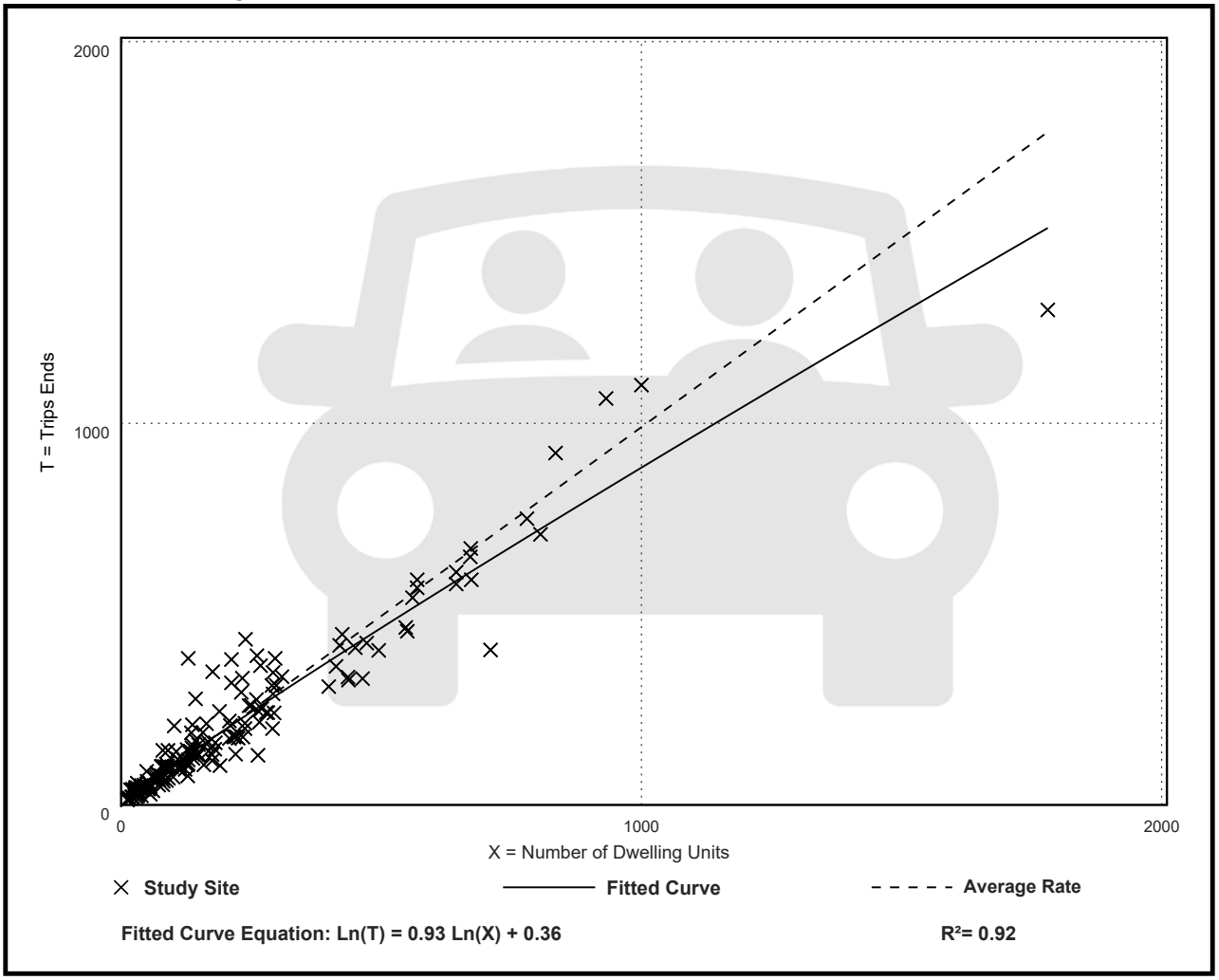
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 178
Avg. Num. of Dwelling Units: 203
Directional Distribution: 64% entering, 36% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.99	0.49 - 2.98	0.28

Data Plot and Equation



Single-Family Detached Housing
(210)

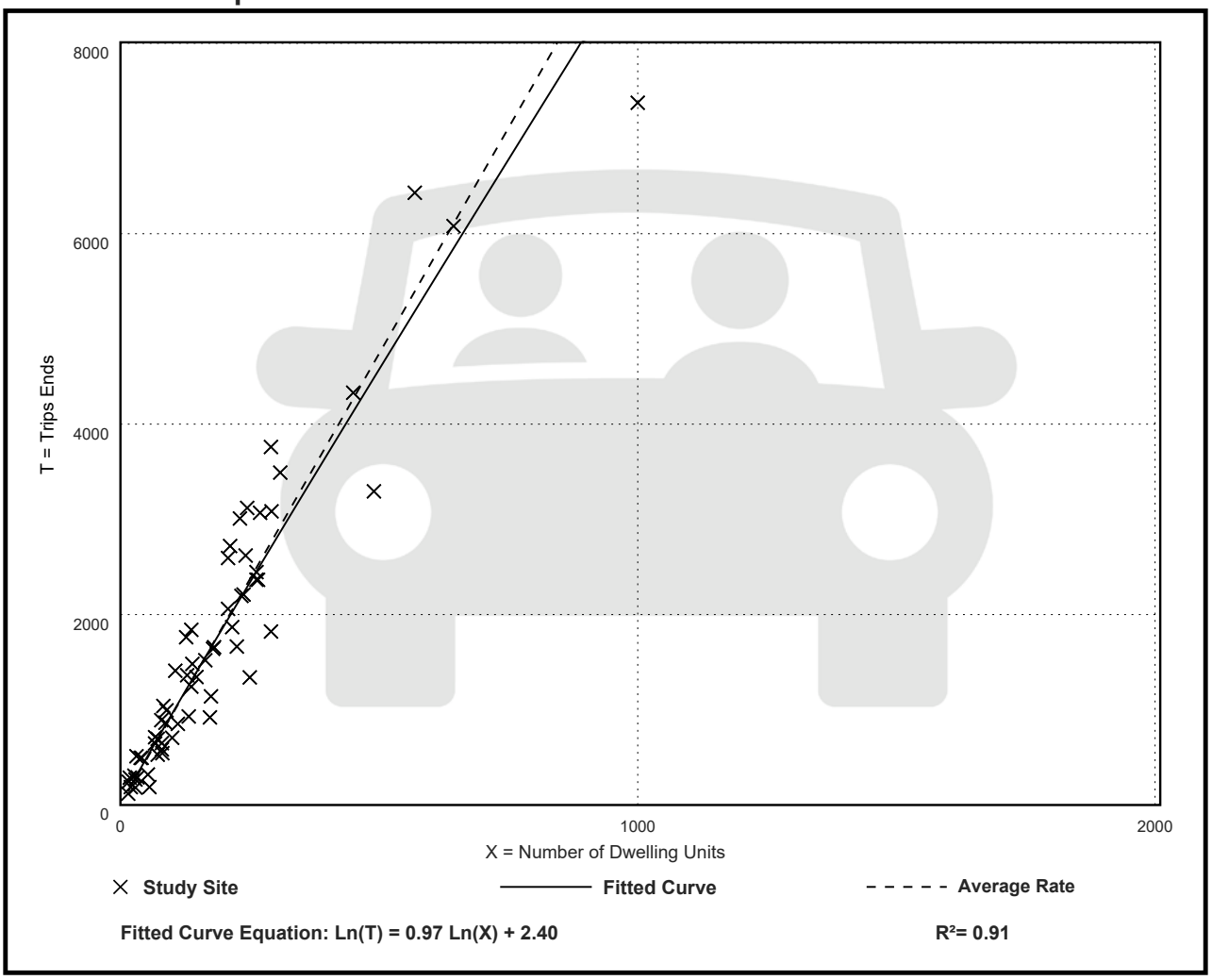
Vehicle Trip Ends vs: Dwelling Units
On a: Saturday

Setting/Location: General Urban/Suburban
Number of Studies: 63
Avg. Num. of Dwelling Units: 179
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.48	3.36 - 16.52	2.26

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.97 Ln(X) + 2.40

R^2= 0.91

Single-Family Detached Housing
(210)

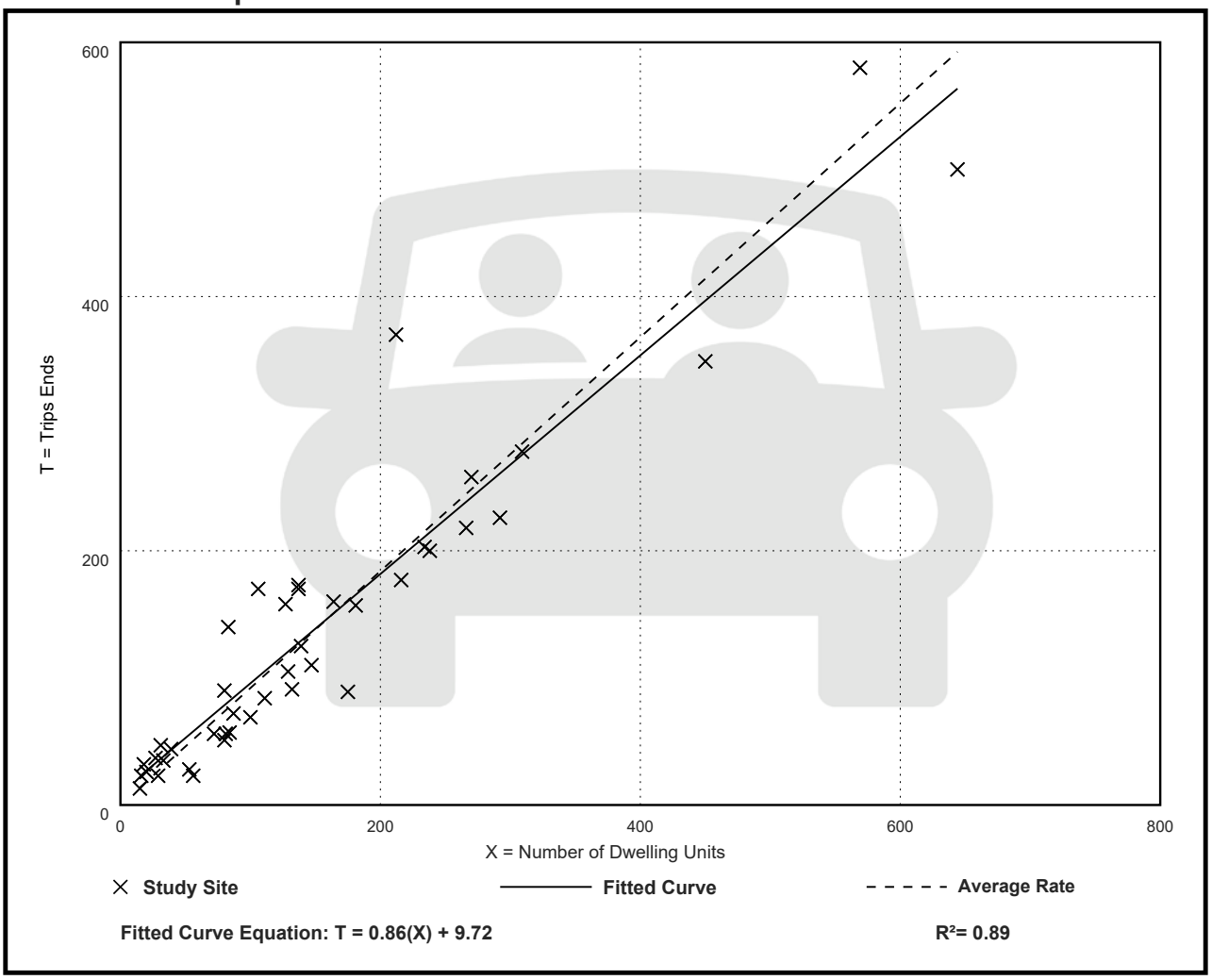
Vehicle Trip Ends vs: Dwelling Units
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 42
Avg. Num. of Dwelling Units: 152
Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.92	0.41 - 1.78	0.27

Data Plot and Equation



Fitted Curve Equation: T = 0.86(X) + 9.72

R^2= 0.89

Single-Family Detached Housing
(210)

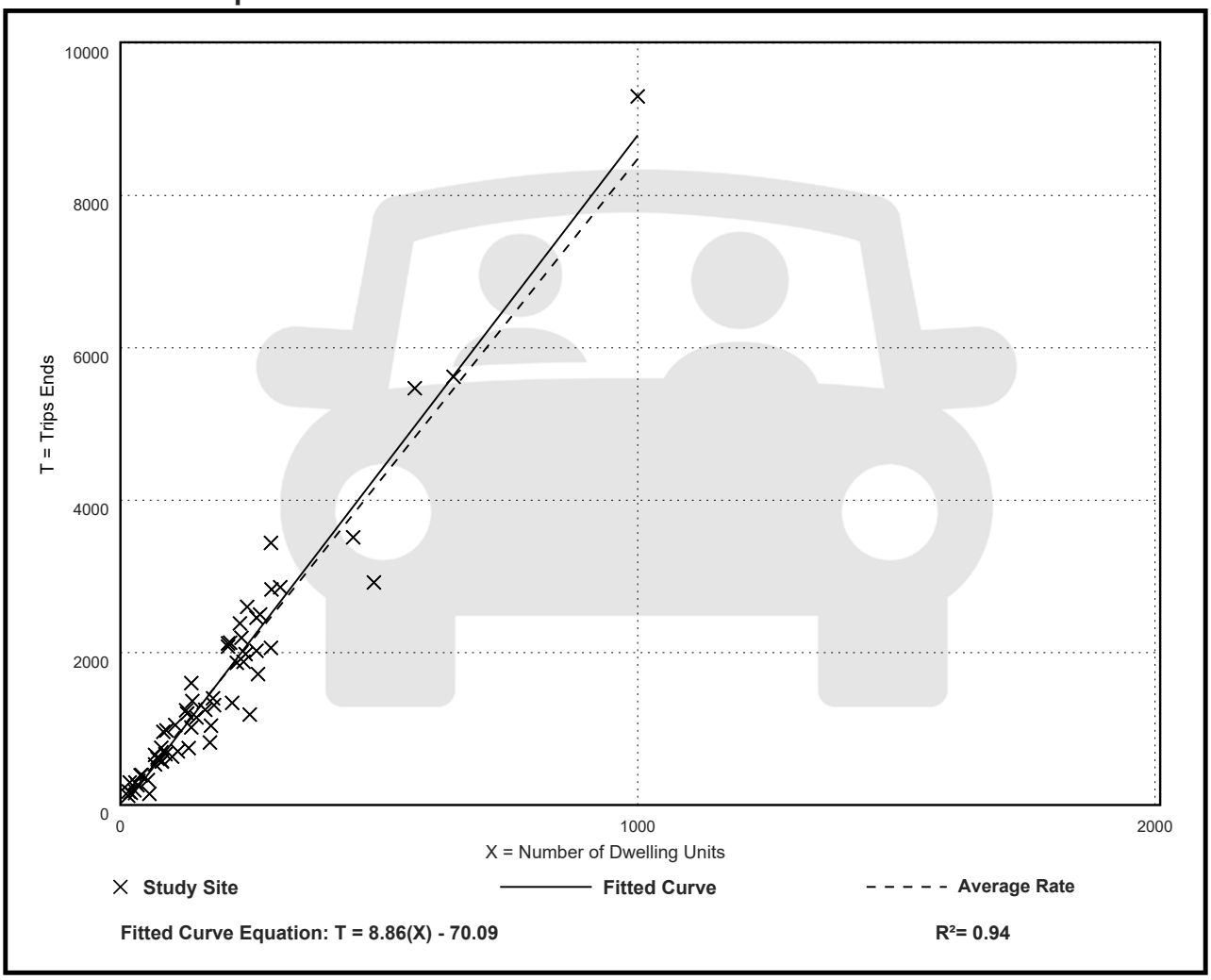
Vehicle Trip Ends vs: Dwelling Units
On a: Sunday

Setting/Location: General Urban/Suburban
Number of Studies: 60
Avg. Num. of Dwelling Units: 186
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
8.48	2.61 - 16.44	1.74

Data Plot and Equation



Single-Family Detached Housing
(210)

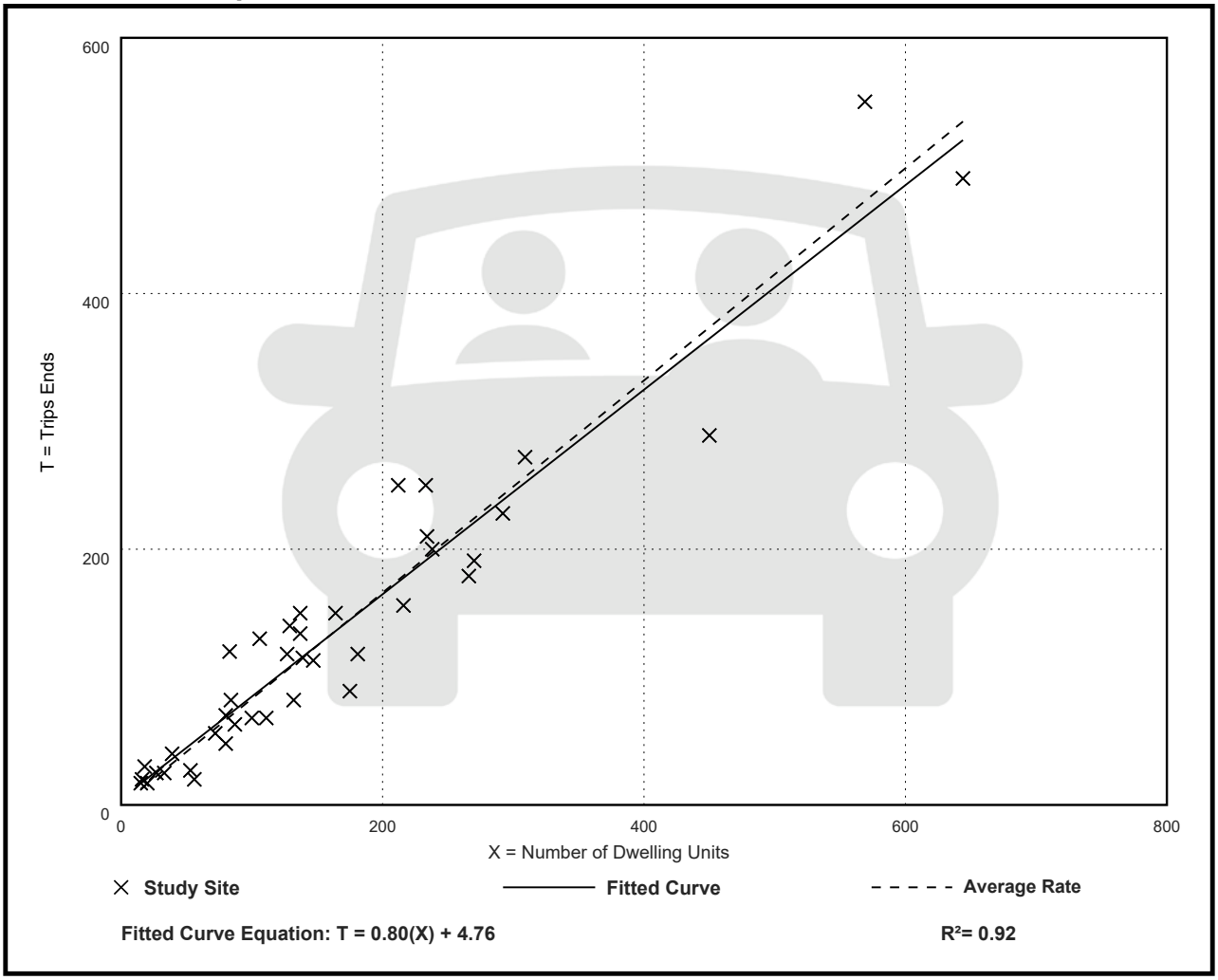
Vehicle Trip Ends vs: Dwelling Units
On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 40
Avg. Num. of Dwelling Units: 162
Directional Distribution: 53% entering, 47% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.83	0.36 - 1.67	0.19

Data Plot and Equation



Fitted Curve Equation: T = 0.80(X) + 4.76

R^2= 0.92

Single-Family Detached Housing
(210)

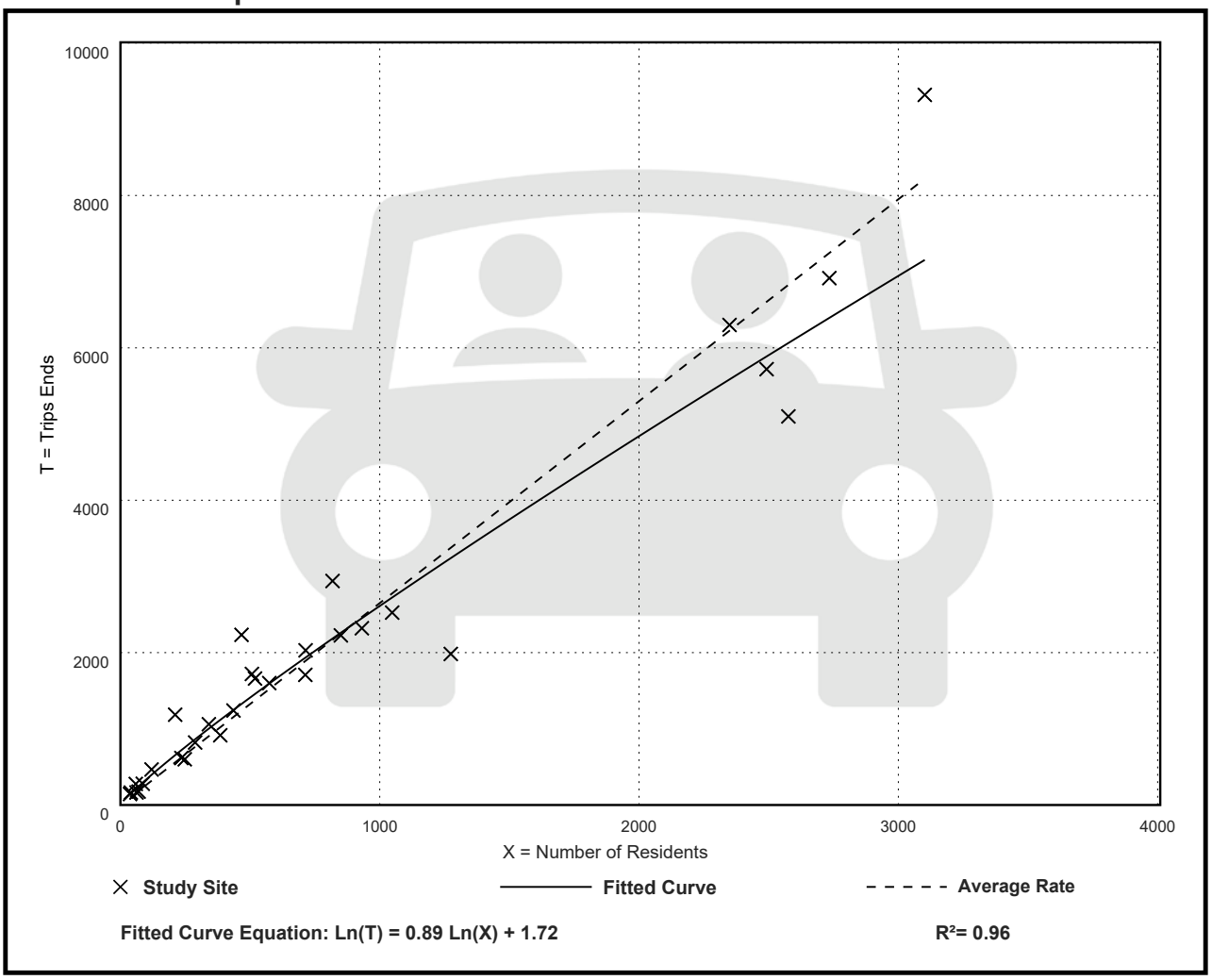
Vehicle Trip Ends vs: Residents
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 30
Avg. Num. of Residents: 810
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
2.65	1.56 - 5.62	0.64

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.89 Ln(X) + 1.72

R^2= 0.96

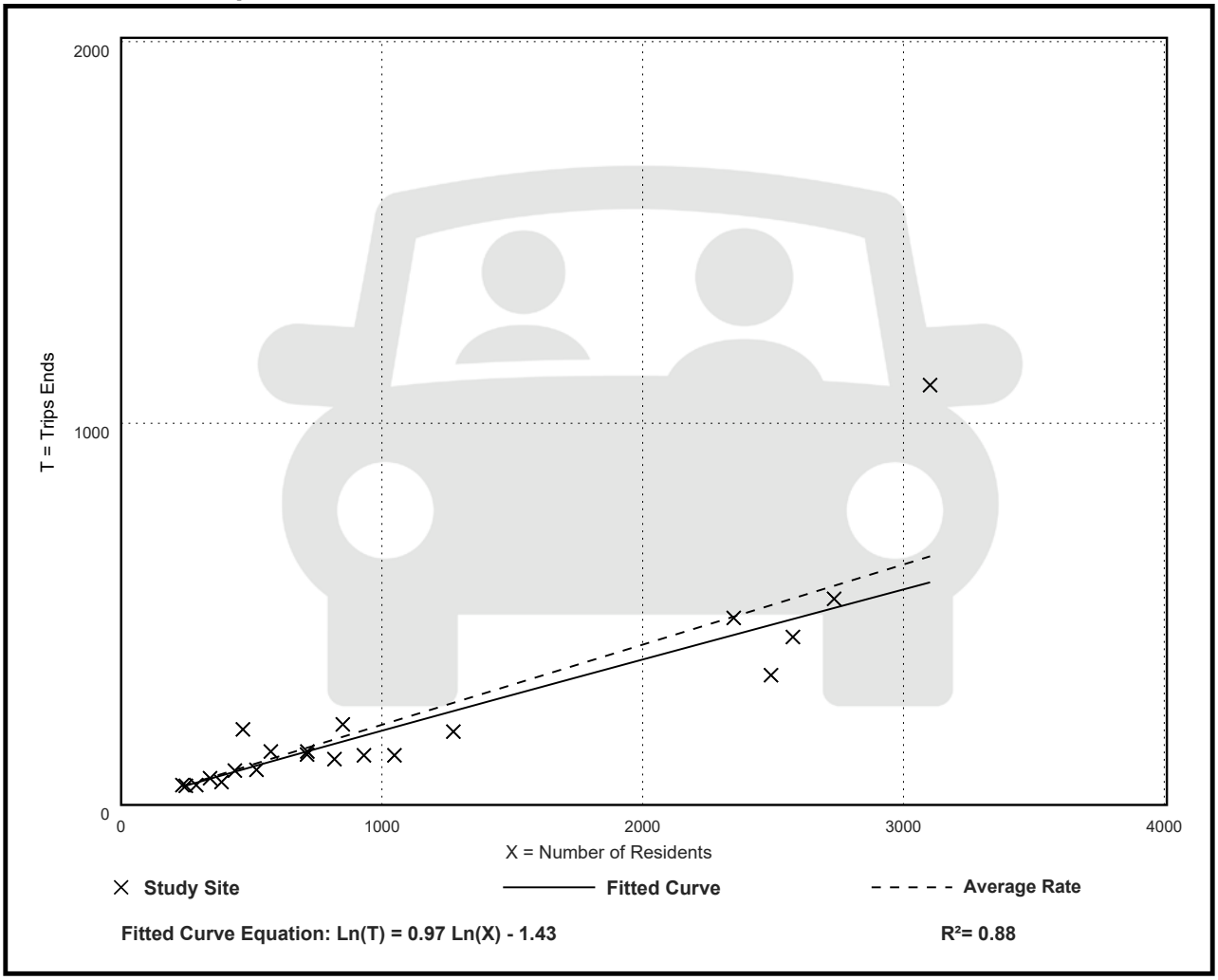
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: **Residents**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 21
Avg. Num. of Residents: 1100
Directional Distribution: 31% entering, 69% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.21	0.12 - 0.42	0.08

Data Plot and Equation



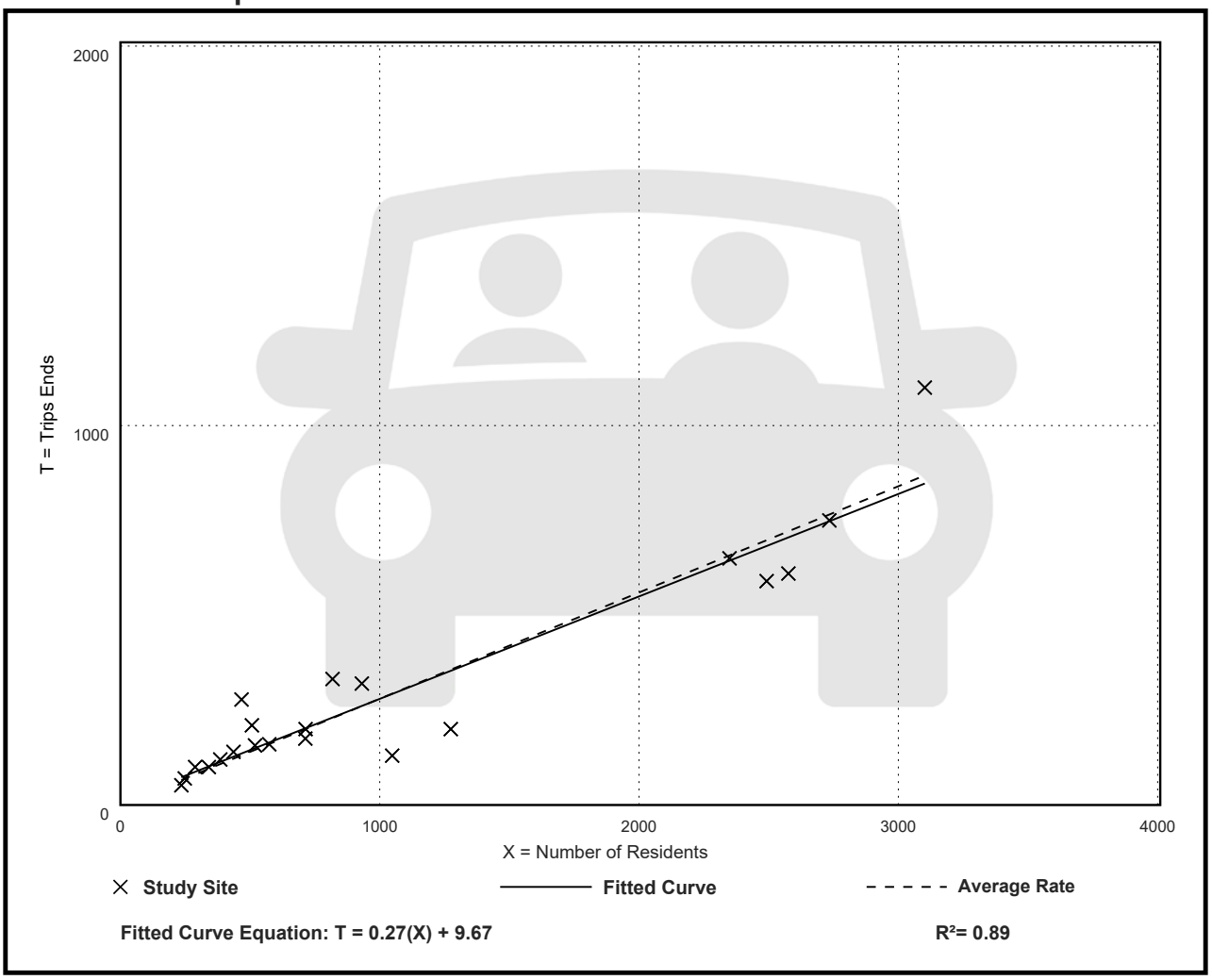
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: Residents
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 21
Avg. Num. of Residents: 1083
Directional Distribution: 66% entering, 34% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.28	0.12 - 0.60	0.08

Data Plot and Equation



Single-Family Detached Housing
(210)

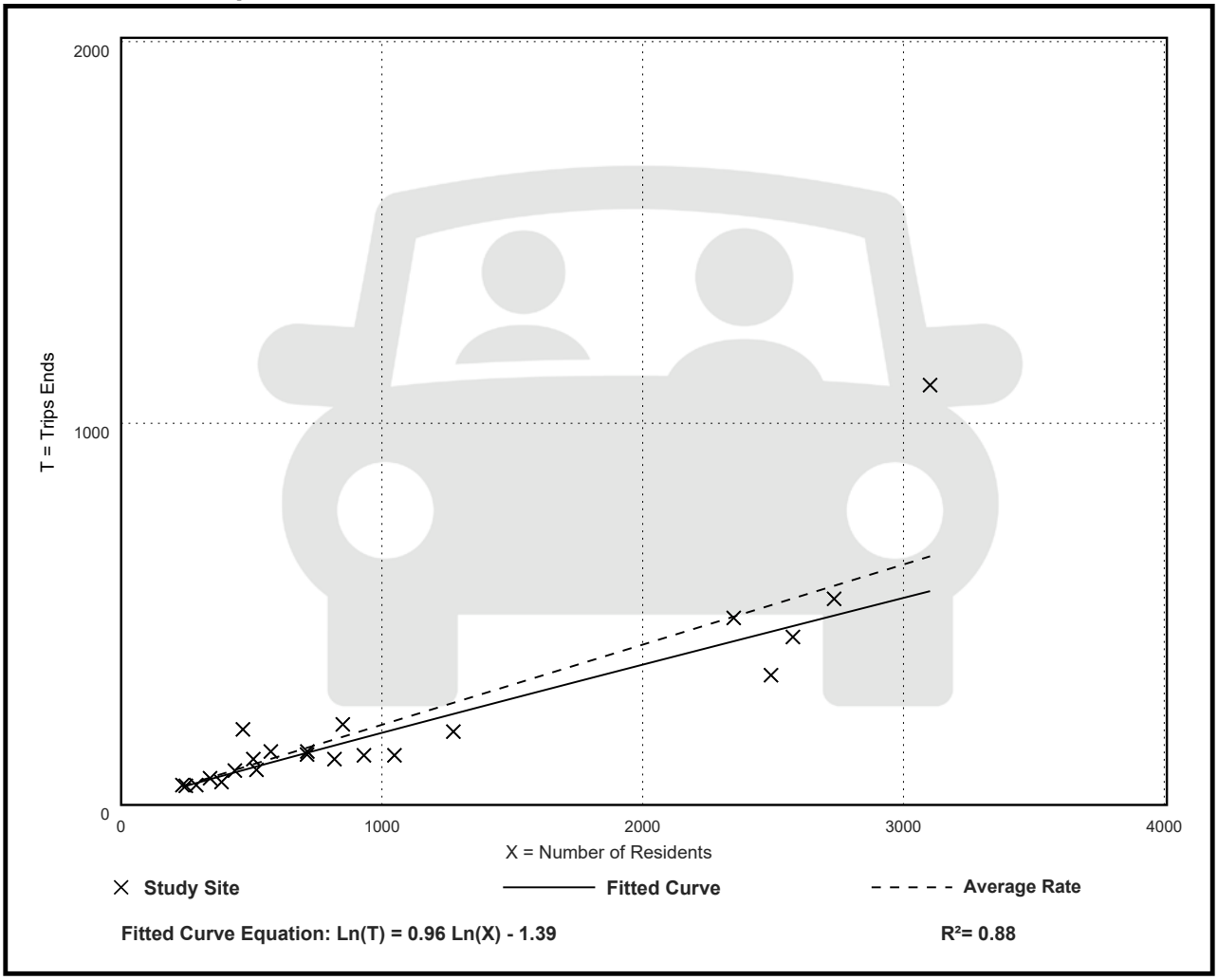
Vehicle Trip Ends vs: Residents
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 22
Avg. Num. of Residents: 1073
Directional Distribution: 30% entering, 70% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.21	0.12 - 0.42	0.08

Data Plot and Equation



Single-Family Detached Housing
(210)

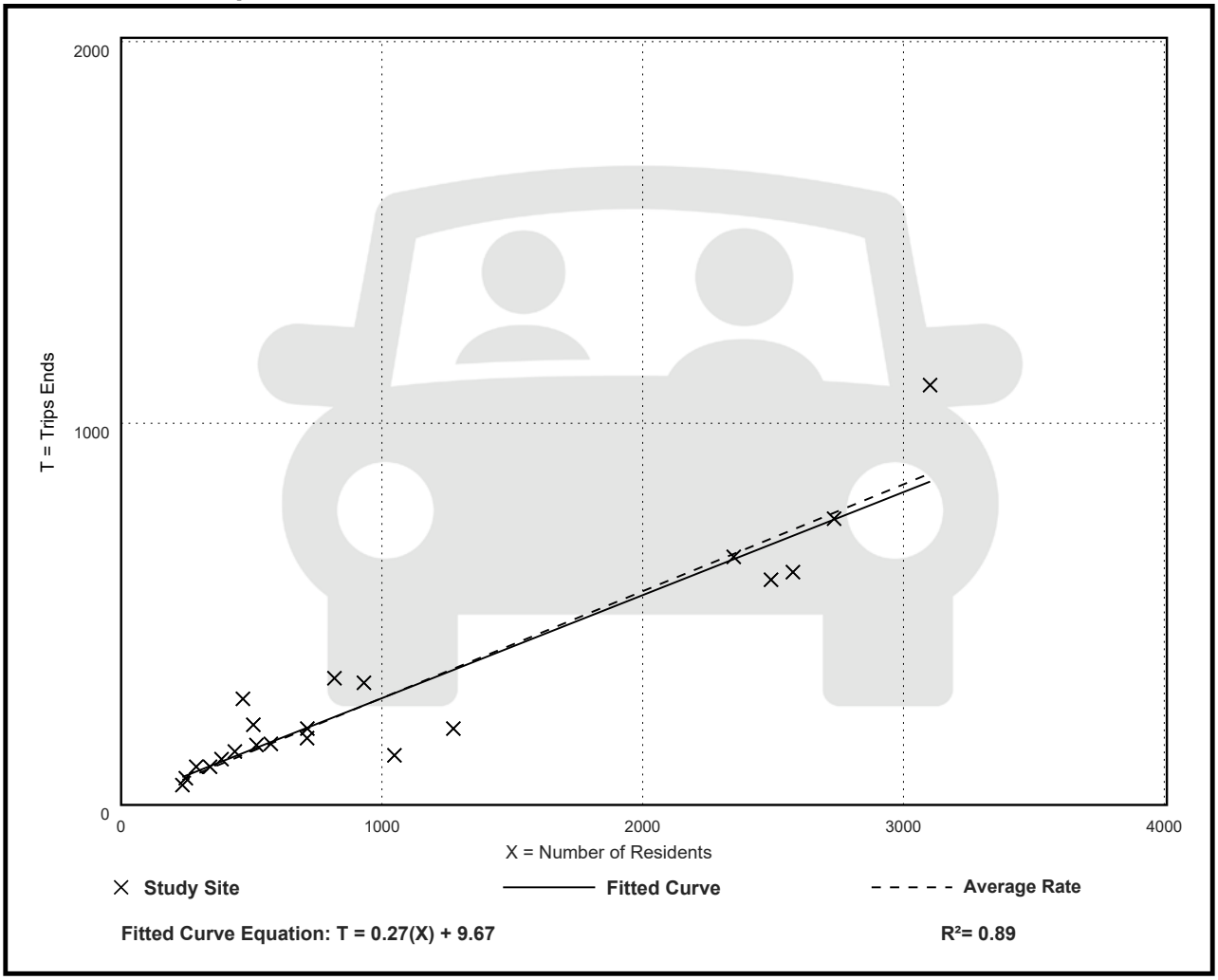
Vehicle Trip Ends vs: Residents
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 21
Avg. Num. of Residents: 1083
Directional Distribution: 66% entering, 34% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.28	0.12 - 0.60	0.08

Data Plot and Equation



Single-Family Detached Housing
(210)

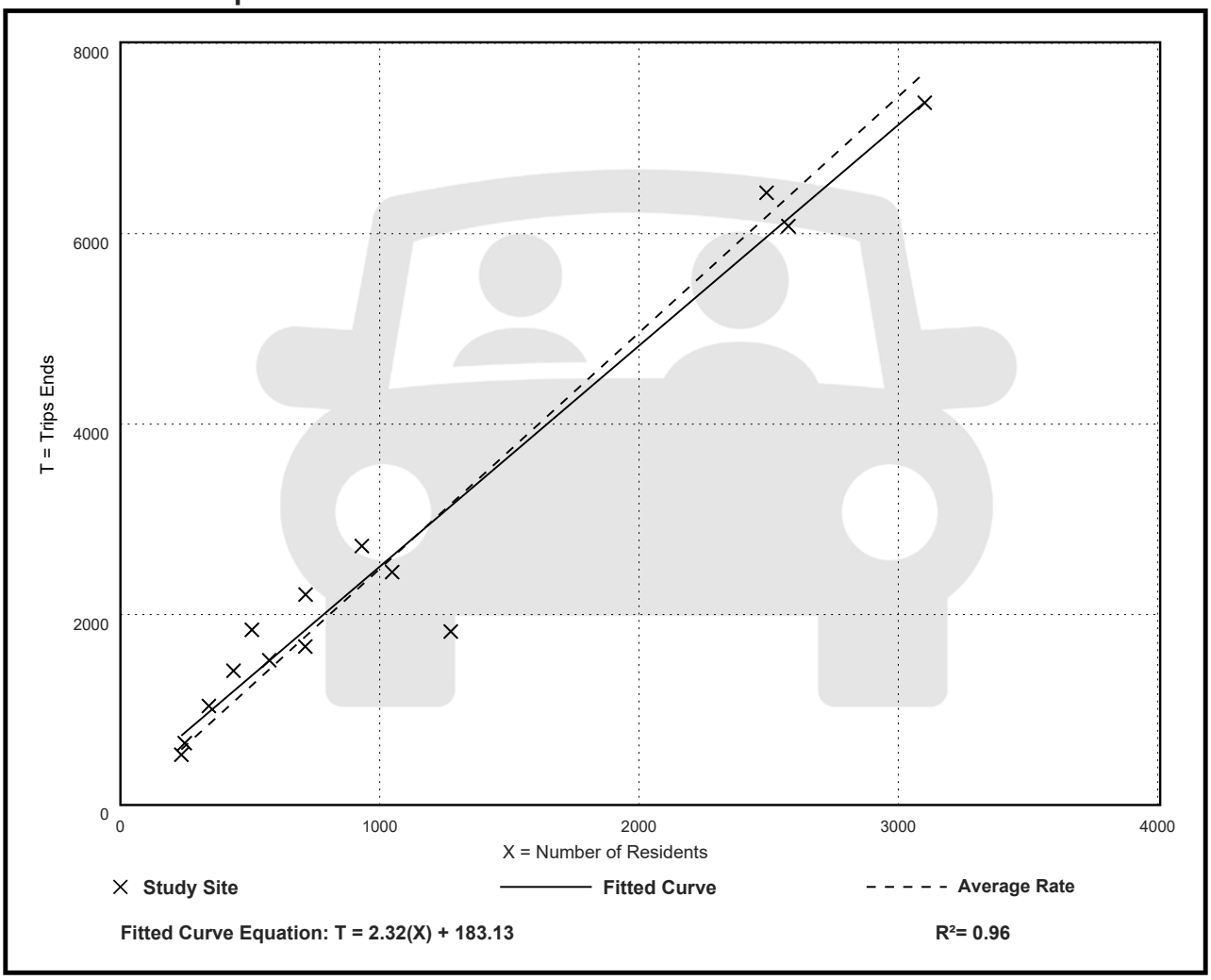
Vehicle Trip Ends vs: Residents
On a: Saturday

Setting/Location: General Urban/Suburban
Number of Studies: 14
Avg. Num. of Residents: 1085
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
2.48	1.43 - 3.63	0.46

Data Plot and Equation



Fitted Curve Equation: T = 2.32(X) + 183.13

R^2= 0.96

Single-Family Detached Housing
(210)

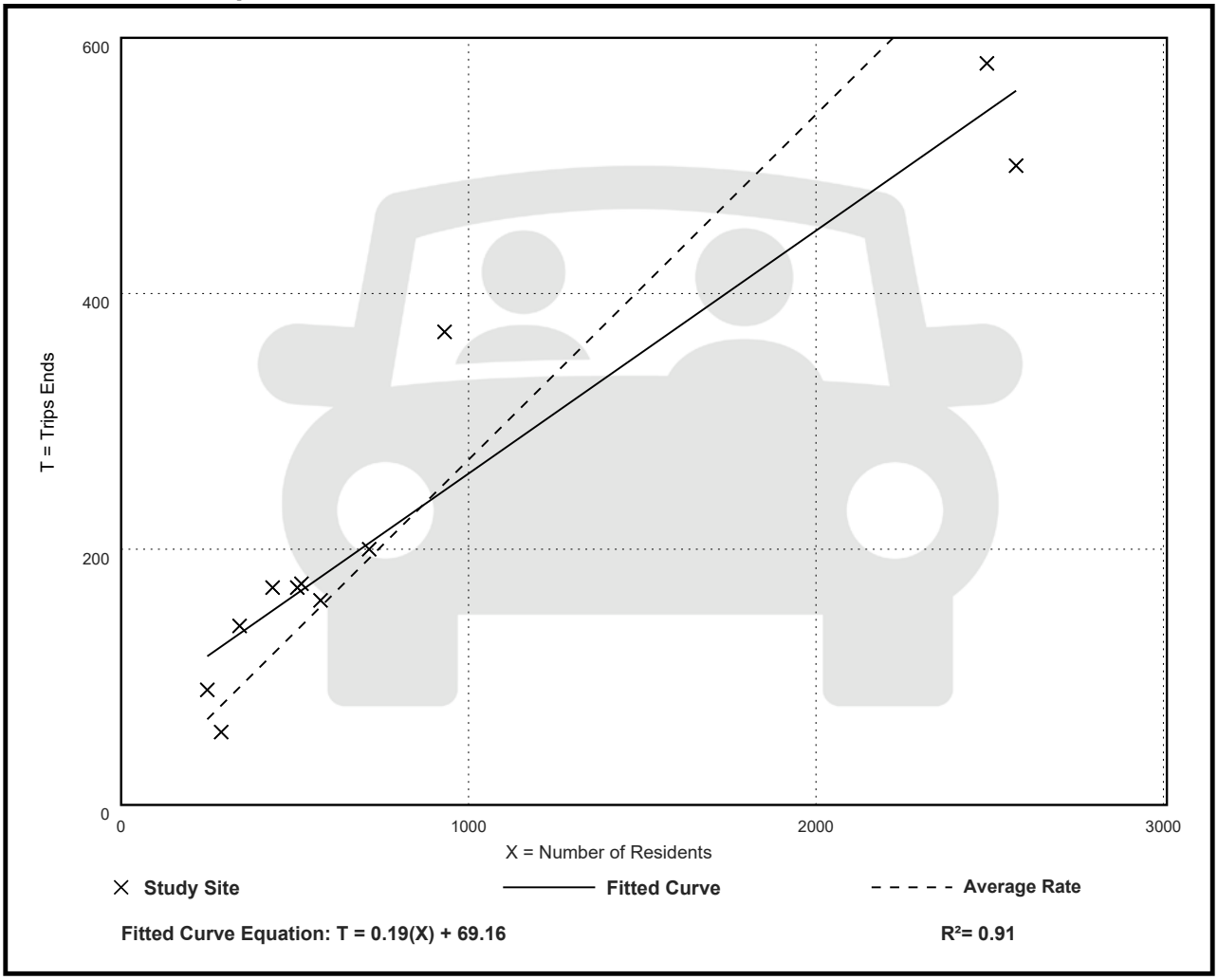
Vehicle Trip Ends vs: Residents
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 11
Avg. Num. of Residents: 875
Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.27	0.19 - 0.41	0.08

Data Plot and Equation



Single-Family Detached Housing
(210)

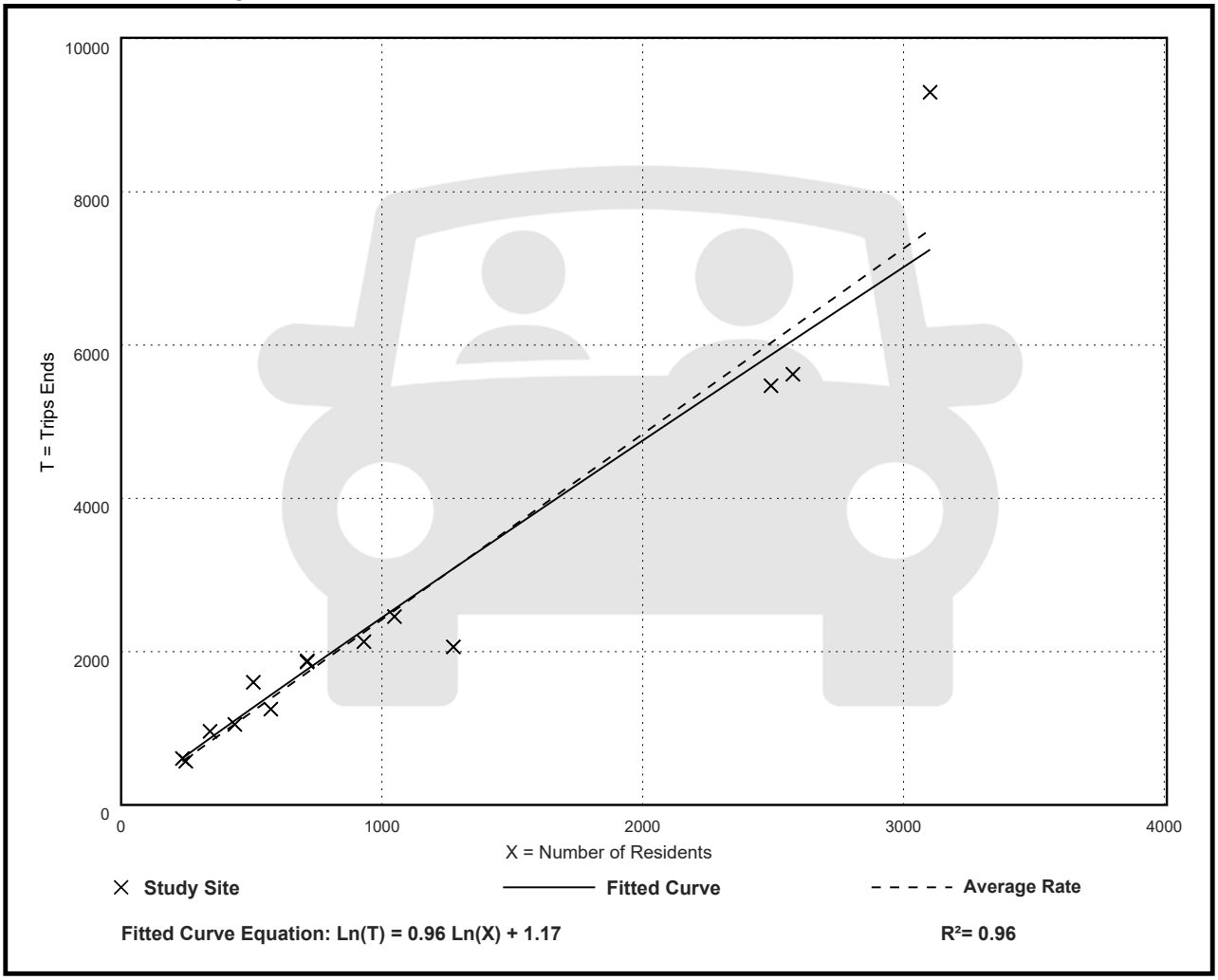
Vehicle Trip Ends vs: Residents
On a: Sunday

Setting/Location: General Urban/Suburban
Number of Studies: 14
Avg. Num. of Residents: 1085
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
2.42	1.62 - 3.16	0.43

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.96 Ln(X) + 1.17

R^2= 0.96

Single-Family Detached Housing
(210)

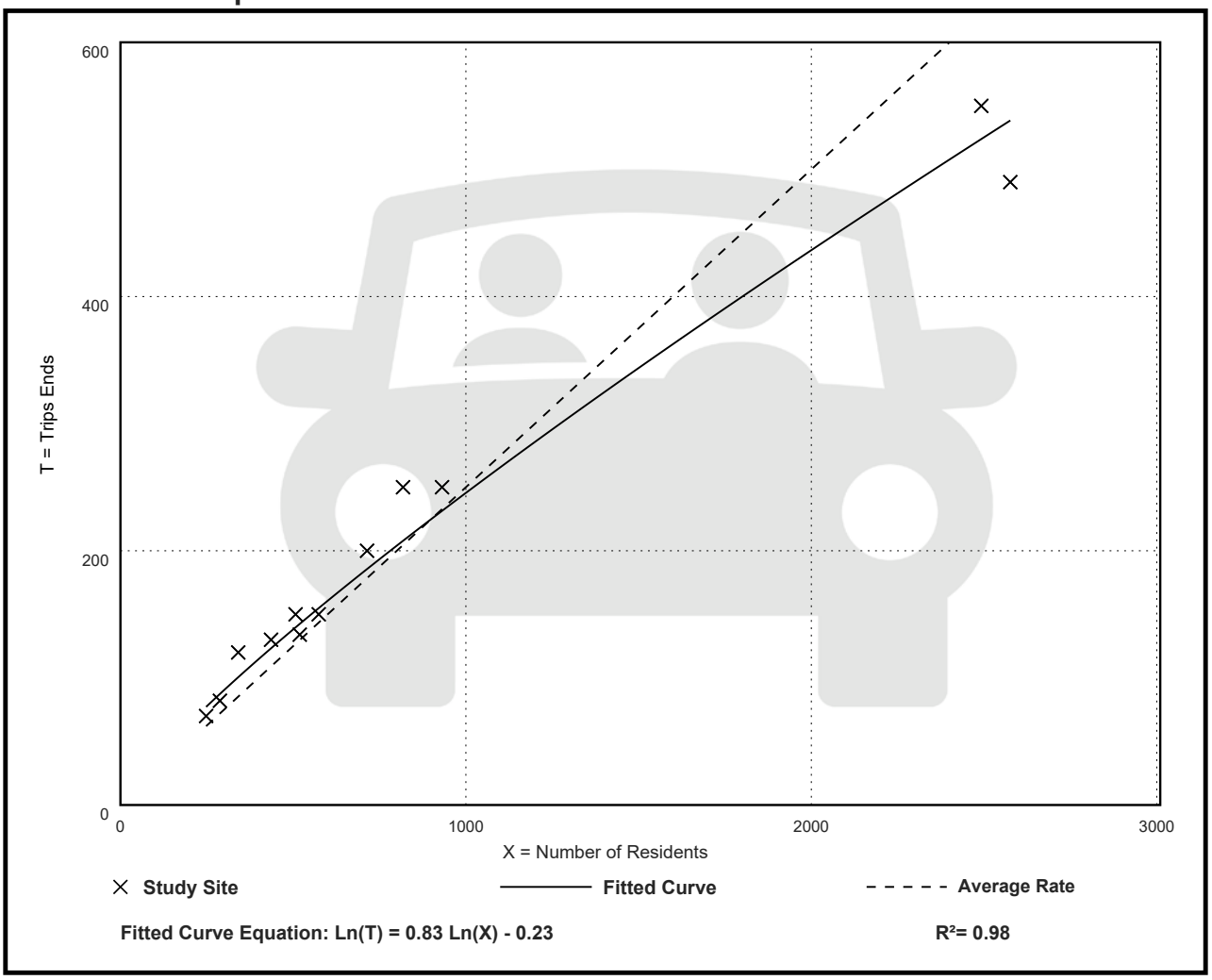
Vehicle Trip Ends vs: Residents
On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 12
Avg. Num. of Residents: 870
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Resident

Average Rate	Range of Rates	Standard Deviation
0.25	0.19 - 0.35	0.05

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.83 Ln(X) - 0.23

R^2= 0.98

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	58	5	249	106	230	420	814	548	371	1236	318
Future Volume (vph)	196	58	5	249	106	230	420	814	548	371	1236	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1715		1681	1734	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.98	1.00	0.07	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1715		1681	1734	1583	138	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	213	63	5	271	115	250	457	885	596	403	1343	346
RTOR Reduction (vph)	0	1	0	0	0	215	0	0	0	0	0	0
Lane Group Flow (vph)	138	142	0	190	196	35	457	885	596	403	1343	346
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	17.8	17.8		21.3	21.3	21.3	91.8	61.9	165.0	42.5	74.5	165.0
Effective Green, g (s)	19.8	19.8		23.3	23.3	23.3	95.8	65.4	165.0	44.5	78.0	165.0
Actuated g/C Ratio	0.12	0.12		0.14	0.14	0.14	0.58	0.40	1.00	0.27	0.47	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	201	205		237	244	223	395	1402	1583	477	1672	1583
v/s Ratio Prot	0.08	c0.08		0.11	c0.11		c0.22	0.25		c0.23	0.38	
v/s Ratio Perm						0.02	c0.45		0.38			0.22
v/c Ratio	0.69	0.69		0.80	0.80	0.16	1.16	0.63	0.38	0.84	0.80	0.22
Uniform Delay, d1	69.6	69.7		68.6	68.6	62.2	53.5	40.1	0.0	57.0	37.0	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.04	0.70	1.00
Incremental Delay, d2	9.3	9.7		17.5	17.2	0.3	95.5	2.2	0.7	12.0	3.7	0.3
Delay (s)	79.0	79.4		86.1	85.8	62.6	148.9	42.3	0.7	71.5	29.8	0.3
Level of Service	E	E		F	F	E	F	D	A	E	C	A
Approach Delay (s)		79.2			76.7			54.6			32.9	
Approach LOS		E			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	49.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	62	2	281	113	247	439	851	580	390	1292	333
Future Volume (vph)	205	62	2	281	113	247	439	851	580	390	1292	333
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1855		3433	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.14	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1855		3433	1863	1583	254	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	223	67	2	305	123	268	477	925	630	424	1404	362
RTOR Reduction (vph)	0	1	0	0	0	239	0	0	0	0	0	0
Lane Group Flow (vph)	223	68	0	305	123	29	477	925	630	424	1404	362
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	11.1	11.1		15.9	15.9	15.9	73.3	71.8	165.0	44.7	72.5	165.0
Effective Green, g (s)	13.1	13.1		17.9	17.9	17.9	75.3	75.3	165.0	46.7	76.0	165.0
Actuated g/C Ratio	0.08	0.08		0.11	0.11	0.11	0.46	0.46	1.00	0.28	0.46	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	272	147		372	202	171	538	1615	1583	500	1630	1583
v/s Ratio Prot	c0.06	0.04		c0.09	0.07		c0.25	0.26		0.24	c0.40	
v/s Ratio Perm						0.02	0.16		0.40			0.23
v/c Ratio	0.82	0.46		0.82	0.61	0.17	0.89	0.57	0.40	0.85	0.86	0.23
Uniform Delay, d1	74.8	72.6		72.0	70.2	66.8	47.7	33.0	0.0	55.8	39.8	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.80	0.70	1.00
Incremental Delay, d2	17.3	2.3		13.2	5.1	0.5	16.4	1.5	0.7	11.6	5.5	0.3
Delay (s)	92.1	74.9		85.2	75.3	67.3	64.1	34.5	0.7	56.3	33.5	0.3
Level of Service	F	E		F	E	E	E	C	A	E	C	A
Approach Delay (s)		88.0			76.5			31.0			32.4	
Approach LOS		F			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	78	3	339	95	292	248	1196	256	237	682	255
Future Volume (vph)	259	78	3	339	95	292	248	1196	256	237	682	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1720		1681	1721	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.97	1.00	0.33	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1720		1681	1721	1583	614	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	282	85	3	368	103	317	270	1300	278	258	741	277
RTOR Reduction (vph)	0	0	0	0	0	265	0	0	0	0	0	0
Lane Group Flow (vph)	183	187	0	232	239	52	270	1300	278	258	741	277
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	21.7	21.7		25.2	25.2	25.2	84.5	67.3	165.0	29.3	79.4	165.0
Effective Green, g (s)	23.7	23.7		27.2	27.2	27.2	88.5	70.8	165.0	31.3	82.9	165.0
Actuated g/C Ratio	0.14	0.14		0.16	0.16	0.16	0.54	0.43	1.00	0.19	0.50	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	241	247		277	283	260	463	1518	1583	335	1778	1583
v/s Ratio Prot	c0.11	0.11		0.14	c0.14		0.07	c0.37		c0.15	0.21	
v/s Ratio Perm						0.03	0.24		0.18			0.17
v/c Ratio	0.76	0.76		0.84	0.84	0.20	0.58	0.86	0.18	0.77	0.42	0.17
Uniform Delay, d1	67.9	67.9		66.8	66.8	59.5	21.2	42.5	0.0	63.4	25.8	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.30	0.42	1.00
Incremental Delay, d2	12.9	12.4		19.3	20.0	0.4	2.0	6.4	0.2	10.3	0.7	0.2
Delay (s)	80.8	80.3		86.1	86.8	59.9	23.2	48.9	0.2	92.5	11.5	0.2
Level of Service	F	F		F	F	E	C	D	A	F	B	A
Approach Delay (s)		80.5			75.8			37.9			25.4	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	44.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	271	84	3	368	100	308	259	1251	291	254	713	267
Future Volume (vph)	271	84	3	368	100	308	259	1251	291	254	713	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1854		3433	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.22	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1854		3433	1863	1583	404	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	295	91	3	400	109	335	282	1360	316	276	775	290
RTOR Reduction (vph)	0	1	0	0	0	263	0	0	0	0	0	0
Lane Group Flow (vph)	295	93	0	400	109	72	282	1360	316	276	775	290
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	16.5	16.5		22.1	22.1	22.1	72.9	72.9	165.0	32.0	87.2	165.0
Effective Green, g (s)	18.5	18.5		24.1	24.1	24.1	74.9	76.4	165.0	34.0	90.7	165.0
Actuated g/C Ratio	0.11	0.11		0.15	0.15	0.15	0.45	0.46	1.00	0.21	0.55	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	384	207		501	272	231	346	1638	1583	364	1945	1583
v/s Ratio Prot	c0.09	0.05		c0.12	0.06		0.10	c0.38		c0.16	0.22	
v/s Ratio Perm						0.05	0.27		0.20			0.18
v/c Ratio	0.77	0.45		0.80	0.40	0.31	0.82	0.83	0.20	0.76	0.40	0.18
Uniform Delay, d1	71.2	68.5		68.1	63.9	63.0	31.8	38.6	0.0	61.6	21.4	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.82	0.40	1.00
Incremental Delay, d2	8.9	1.6		8.7	1.0	0.8	14.0	5.0	0.3	8.5	0.6	0.2
Delay (s)	80.1	70.0		76.8	64.9	63.8	45.8	43.7	0.3	59.1	9.1	0.2
Level of Service	F	E		E	E	E	D	D	A	E	A	A
Approach Delay (s)		77.7			70.1			37.0			17.5	
Approach LOS		E			E			D			B	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group


The Maryland Pediatric Group
Deep Run
2310 W Joppa Rd
2D
Google
100%
Imagery date: 6/10/17
50 m
Camera: 388 m 39°25'10"N 76°40'13"W
95 m

Lenhart Traffic Consulting, Inc.

Transportation Planning & Traffic Engineering

Memorandum: ***Date:*** **July 8, 2021**

TO: Baltimore County
400 Washington Avenue
Towson, MD 21204

FROM: Mike Lenhart

RE: Greenspring Station Development – Mays Chapel Road Connection Analysis

Executive Summary

Purpose of Analysis:
This memorandum presents a supplemental analysis for the Greenspring Station development, located at 2310 W. Joppa Road, in Baltimore County. The subject development previously completed a Traffic Impact Study, dated December 9, 2020, which was reviewed and approved by both the Maryland State Highway Administration (SHA) and Baltimore County. In June, 2021, Baltimore County staff requested an analysis to review the potential for connection of Mays Chapel Road between Joppa Road and Seminary Avenue, through The Meadows of Green Spring existing neighborhood and the proposed Greenspring Station neighborhood. In response to this request, this supplemental memorandum presents the analysis and results of the potential connection along Mays Chapel Road between Joppa Road and Seminary Avenue.

Results:
Key findings of the analysis included:

- A sensitivity analysis was conducted in order to determine the potential volume of traffic that may be induced to divert through the Mays Chapel Road Connection, as opposed to traveling along Falls Road (MD 25), if the connection were to be constructed. The results of the sensitivity analysis show that the route through the Mays Chapel Road Connection would incentivize the diversion of up to approximately 250 vehicles during the AM peak hour and 389 vehicles during the PM peak hour, in addition to likely thousands of other vehicles per day during off peak times.
    - This translates to more than four vehicles per minute during the AM peak hour and more than six vehicles per minute, or one vehicle every nine seconds, during the PM peak hour that would be incentivized to cut through The Meadows of Green Spring residential neighborhood and proposed Greenspring Station residential neighborhood, as opposed to remaining on Falls Road.
- Falls Road is designated as a Minor Collector by the Maryland Department of Transportation-State Highway Administration (MDOT-SHA) and is designed to handle relatively high volumes of traffic, whereas the existing section of Mays Chapel Road within The Meadows of Green Spring neighborhood is a local street and is not designed for high volumes of traffic.

  - Specifically, the existing paved section of Mays Chapel road has a typical width of approximately 24-feet, with some locations where the width is slightly less. In addition, vehicles occasionally park on the street, thereby further reducing the functional pavement width.
    - This typical section is not designed to handle a high volume of traffic, and, with the potential growth in traffic associated with the Mays Chapel Road Connection, the typical section would not meet the County's minimum paved width requirement of 27 feet for an Urban Residential Street with an ADT greater than 750, as set forth in the Baltimore County Design Manual, Chapter 8, Roads and Streets, Plate R-A.
  - In addition to the above, there are no sidewalks or separated bicycle facilities present along the existing portion of Mays Chapel Road, and an increased volume of traffic would be likely to lead to an increase in conflicts between vehicles and pedestrians/bicyclists within the neighborhood, potentially impacting safety within the community.

- With respect to the intersection operations analysis for the potential Mays Chapel Road Connection, the results of the analysis show that with the Mays Chapel Road Connection, the intersection of Joppa Road & Mays Chapel Road will operate at a failing level of service (LOS), LOS E.
  - In the previously approved Traffic Impact Study, without the Mays Chapel Road Connection, all intersections were shown to operate at acceptable levels of service.
- Beyond the intersection of Joppa Road & Mays Chapel Road, the remaining intersections along Falls Road that were included in the original traffic impact study would operate similarly with and without the Mays Chapel Road Connection; the Mays Chapel Road Connection does not provide meaningful improvement to the intersections along Falls Road that were common to both the 'with connection' analysis and 'without connection' analysis.
- It should be noted that the improvement proposed for the intersection of Falls Road & Joppa Road by the Greenspring Station development improves operations at the intersection to better than existing conditions operations, regardless of whether the Mays Chapel Road Connection is completed or not.

Conclusion

The potential connection of Mays Chapel Road between Joppa Road and Seminary Avenue, through the existing Mays Chapel neighborhood and proposed Greenspring Station neighborhood is not recommended.

The Mays Chapel Road Connection is likely to result in a significant volume of traffic diverting from Falls Road to the Mays Chapel Road Connection, without providing meaningful improvement along Falls Road. Critically, whereas Falls Road is designed to handle significant traffic volumes, Mays Chapel Road is a local street, which is not designed sufficiently to accommodate high traffic volumes. The additional diverted traffic along Mays Chapel Road would result in the existing section of Mays Chapel Road no longer being in compliance with the Baltimore County Design Manual. The potential connection would be likely to result in safety concerns along Mays Chapel Road, in addition to negatively impacting residents of The Meadows of Green Spring and the proposed Greenspring Station neighborhoods. Furthermore, the intersection of Joppa Road & Mays Chapel Road will operate with a LOS "E" during the evening peak hour as a result of the connection, whereas all intersections operated acceptably under the original, approved traffic impact study, which did not include the Mays Chapel Road Connection.

Body of Report

Introduction

This memorandum presents a supplemental analysis for the Greenspring Station development, located at 2310 W. Joppa Road, in Baltimore County. The subject development previously completed a Traffic Impact Study, dated December 9, 2020, which was reviewed and approved by both the Maryland State Highway Administration (SHA) and Baltimore County. In June, 2021, Baltimore County staff requested an analysis to review the potential for connection of Mays Chapel Road between Joppa Road and Seminary Avenue, through The Meadows of Green Spring existing neighborhood and the proposed Greenspring Station neighborhood. In response to this request, this supplemental memorandum presents the analysis and results of the potential connection along Mays Chapel Road between Joppa Road and Seminary Avenue.

The original Traffic Impact Study included the following three intersections: MD 25 & MD 130, MD 25 at Falls Road/Joppa Road, and Joppa Road at the proposed Greenspring Station access. In order to analyze the impact of the potential Mays Chapel Road connection, the following intersections were included in addition to the three intersections from the original Traffic Impact Study: MD 25 at MD 131/W. Seminary Road and MD 131 at Mays Chapel Road. As the additional intersections were not required as part of the scope of the Traffic Impact Study, these intersections are included for informational purposes only.

Exhibit 1 — Exhibit 1 shows the Location Map of the intersections included in the supplemental analysis. Intersections 1, 2, and 3 were included in the original, approved Traffic Impact Study. Intersections 4 and 5 have been included in the supplemental analysis in order to determine the impact of the potential Mays Chapel Road Connection.

Existing Conditions

The volumes for Intersections 1, 2, and 3 were obtained from the original Traffic Impact Study. The volumes at Intersection 4 were obtained from an MDOT SHA traffic count dated February 27, 2020. No traffic data was available for Intersection 5. As such, the inbound and outbound volumes along Mays Chapel Road were obtained by using the ITE Trip Generation Manual to obtain the number of trips generated by the community located along Mays Chapel Road. The through volumes along MD 131 at Intersection 5 were flowed from Intersection 4. The MDOT SHA traffic count and the trip generation and assignment for the community along Mays Chapel Road are located in Appendix A.

Exhibit 2 — Exhibit 2 shows the Existing Lane Use & Traffic Control Devices at each of the study intersections.

Exhibit 3 — Exhibit 3 shows the Existing Peak Hour Volumes.

Background Conditions

A growth rate of 1.5% was applied to the volumes shown on Exhibit 3, the same rate used in the original Traffic Impact Study. Per the original Traffic Impact Study, there are no background developments that will impact the study intersections.

Exhibit 4 — Exhibit 4 shows the Background Peak Hour Volumes, which were obtained by applying the 1.5% growth rate to the volumes shown on Exhibit 3.

Total Conditions – Sensitivity Analysis

A sensitivity analysis was conducted to determine the volume of traffic that would be likely to divert through the Mays Chapel Connection, as opposed to traveling along Falls Road. The Mays Chapel Connection would provide a shorter, more-direct path to travel between Joppa Road and Seminary Avenue, while also providing the ability to avoid the traffic signals along Falls Road. This sensitivity analysis considers increasing diversion percentages to determine if/when using the Mays Chapel Connection would potentially incentivize drivers to utilize the new connection rather than staying on Falls Road. The diverting volumes were taken from the northbound right turn and westbound left turn movements at the intersection of Falls Road at Seminary Road for vehicles destined northbound and southbound along Falls Road, respectively. The diverted volumes were rerouted along Mays Chapel Road. The total amount of Highway Capacity Manual (HCM) delay along the respective travel routes was obtained, and the results are shown on the following exhibits:

Exhibit 5 — Exhibit 5 shows the HCM delay associated with the northbound travel route with varying levels of diversion from Falls Road to the Mays Chapel Connection. As shown, during the morning peak hour the Mays Chapel Connection route accrues less delay than the Falls Road route with up to 100% diversion. During the evening peak hour the Mays Chapel Connection accrues less delay than the Falls Road route with up to 66% diversion. The diversion volumes and subsequent total peak hour volumes are shown in Appendix B.

Exhibit 6 — Exhibit 6 shows the HCM delay associated with the southbound travel route with varying levels of diversion along the Mays Chapel Connection. As shown, the Falls Road route will accrue less delay than the Mays Chapel Connection route during both peak hours. The diversion volumes and subsequent total peak hour volumes are shown in Appendix B.

Based on the results of the sensitivity analysis, up to 100% of vehicles during the AM peak hour and up to 66% of vehicles during the PM peak hour of vehicles traveling in the northbound direction could be induced to utilize the Mays Chapel Road Connection. This equates to approximately 250 vehicles during the AM peak hour and 389 vehicles during the PM peak hour, in addition to likely thousands of other vehicles per day during off peak times. In the southbound direction, the results of the sensitivity analysis did not show any likely induced demand for vehicles to utilize the Mays Chapel Road Connection.

While the sensitivity analysis is instructive in terms of the volume of traffic that could be induced to utilize the Mays Chapel Road Connection, it is unlikely that 100% of traffic would actually divert from its current route in the northbound direction or that 0% of traffic would divert in the southbound direction. Therefore, for the purposes of providing a more-realistic analysis, it was assumed that 33% of northbound vehicles will divert to use the Mays Chapel Road Connection, while 15% of southbound vehicles will divert to the connection.

Total Conditions – Operational Analysis

The Greenspring Station development is proposed to consist of 62 single family units, with a single full movement site access point along Joppa Road, coinciding with the Mays Chapel Road Connection. The total conditions analyses for this supplemental document assume the completion of the Mays Chapel Road Connection as part of the development, as requested by Baltimore County Staff.

Exhibits 7 — Exhibit 7 shows the trip generation for the proposed development. This exhibit matches Exhibit 6 in the approved Traffic Impact Study.

Exhibit 8 Exhibit 8 shows the trip assignment for the site with the potential connection along Mays Chapel Road. The trip assignment percentages match those of the approved Traffic Impact Study.

Exhibit 9 Exhibit 9 shows the assumed diversion of the Mays Chapel neighborhood with the Mays Chapel Road Connection.

Exhibit 10 Exhibit 10 shows the assumed diversion of the background peak hour volumes as a result of the Mays Chapel Connection. As describe above, it is assumed that 33% of northbound traffic along Falls Road destined east along Seminary Avenue (northbound rights at Intersection 4) and 15% of westbound traffic along Seminary Avenue destined south on Falls Road (westbound lefts at Intersection 4) will divert to use the Mays Chapel Connection.

Exhibit 11 Exhibit 11 shows the total peak hour volumes with the Mays Chapel Connection. The volumes on this exhibit combine the background peak hour volumes on Exhibit 4 with the trip generation and diversions due to the connection on Exhibits 8, 9, and 10.

Exhibit 12 Exhibit 12 shows the results of Level-of-Service Analyses for the study intersections using CLV methodology. As shown, all intersections will operate at acceptable levels of service with the exception of the intersection of Joppa Road and Mays Chapel Road/Site Access, which will operate with a LOS "E" during the evening peak hour. It should be noted that the proposed improvement at Intersection 2, as part of the previously approved Traffic Impact Study, will continue to improve the overall operation of the intersection under total conditions beyond that of the existing conditions. The CLV worksheets have been included in Appendix C.

Exhibit 13 Exhibit 12 shows the results of Level-of-Service Analyses for the study intersections using HCM methodology. As shown, all intersections will operate at acceptable levels of service. It should be noted that the proposed improvement at Intersection 2, as part of the approved Traffic Impact Study, will continue to improve the overall operation of the intersection under total conditions beyond that of the existing conditions. The HCM worksheets have been included in Appendix C.

The results tables of the approved Traffic Impact Study have been included in Appendix D for reference.

Conclusion
Key findings of the analysis included:

- A sensitivity analysis was conducted in order to determine the potential volume of traffic that may be induced to divert through the Mays Chapel Road Connection, as opposed to traveling along Falls Road (MD 25), if the connection were to be constructed. The results of the sensitivity analysis show that the route through the Mays Chapel Road Connection would incentivize the diversion of up to approximately 250 vehicles during the AM peak hour and 389 vehicles during the PM peak hour, in addition to likely thousands of other vehicles per day during off peak times.
    - This translates to more than four vehicles per minute during the AM peak hour and more than six vehicles per minute, or one vehicle every nine seconds, during the PM peak hour

that would be incentivized to cut through The Meadows of Green Spring residential neighborhood and proposed Greenspring Station residential neighborhood, as opposed to remaining on Falls Road.

- Falls Road is designated as a Minor Collector by the Maryland Department of Transportation-State Highway Administration (MDOT-SHA) and is designed to handle relatively high volumes of traffic, whereas the existing section of Mays Chapel Road within The Meadows of Green Spring neighborhood is a local street and is not designed for high volumes of traffic.
    - Specifically, the existing paved section of Mays Chapel road has a typical width of approximately 24-feet, with some locations where the width is slightly less. In addition, vehicles occasionally park on the street, thereby further reducing the functional pavement width.
        - This typical section is not designed to handle a high volume of traffic, and, with the potential growth in traffic associated with the Mays Chapel Road Connection, the typical section would not meet the County's minimum paved width requirement of 27 feet for an Urban Residential Street with an ADT greater than 750, as set forth in the Baltimore County Design Manual, Chapter 8, Roads and Streets, Plate R-A.
    - In addition to the above, there are no sidewalks or separated bicycle facilities present along the existing portion of Mays Chapel Road, and an increased volume of traffic would be likely to lead to an increase in conflicts between vehicles and pedestrians/bicyclists within the neighborhood, potentially impacting safety within the community.
- With respect to the intersection operations analysis for the potential Mays Chapel Road Connection, the results of the analysis show that with the Mays Chapel Road Connection, the intersection of Joppa Road & Mays Chapel Road will operate at a failing level of service (LOS), LOS E.
    - In the previously approved Traffic Impact Study, without the Mays Chapel Road Connection, all intersections were shown to operate at acceptable levels of service.
- Beyond the intersection of Joppa Road & Mays Chapel Road, the remaining intersections along Falls Road that were included in the original traffic impact study would operate similarly with and without the Mays Chapel Road Connection; the Mays Chapel Road Connection does not provide meaningful improvement to the intersections along Falls Road that were common to both the 'with connection' analysis and 'without connection' analysis.
- It should be noted that the improvement proposed for the intersection of Falls Road & Joppa Road by the Greenspring Station development improves operations at the intersection to better than existing conditions operations, regardless of whether the Mays Chapel Road Connection is completed or not.

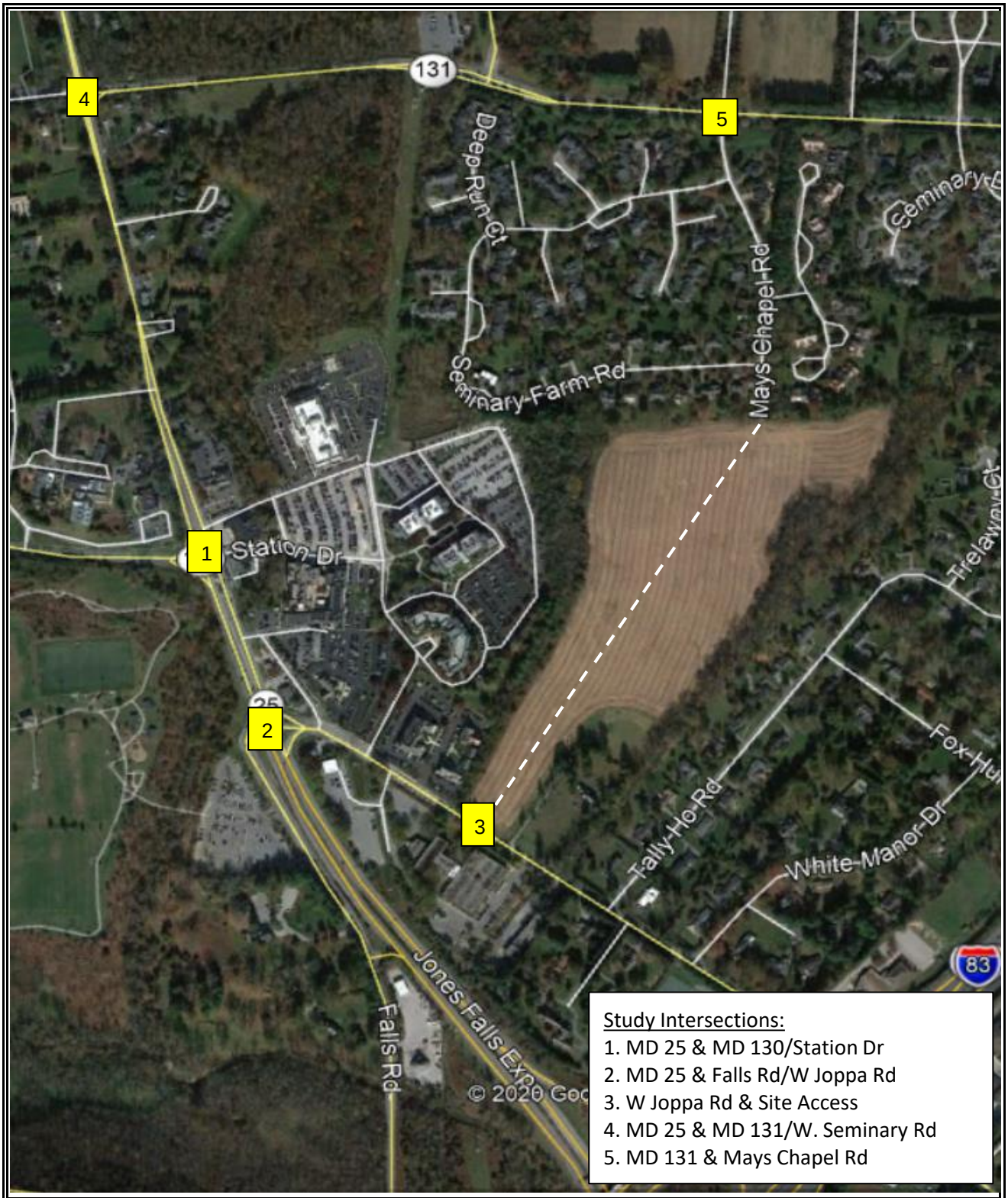
Based on the findings of the analysis, the potential connection of Mays Chapel Road between Joppa Road and Seminary Avenue, through the existing Mays Chapel neighborhood and proposed Greenspring Station neighborhood is not recommended.

The Mays Chapel Road Connection is likely to result in a significant volume of traffic diverting from Falls Road to the Mays Chapel Road Connection, without providing meaningful improvement along Falls Road. Critically, whereas Falls Road is designed to handle significant traffic volumes, Mays Chapel Road is a local street, which is not designed sufficiently to accommodate high traffic volumes. The additional diverted traffic along Mays Chapel Road would result in the existing section of Mays Chapel Road no longer being in compliance with the Baltimore County Design Manual. The potential connection would be likely to result in safety concerns along Mays Chapel Road, in addition to negatively impacting residents of The Meadows of Green Spring and the proposed Greenspring Station neighborhoods. Furthermore, the intersection of Joppa Road & Mays Chapel Road will operate with a LOS "E" during the evening peak hour as a result of the connection, whereas all intersections operated acceptably under the original, approved traffic impact study, which did not include the Mays Chapel Road Connection.

Thanks,
Mike

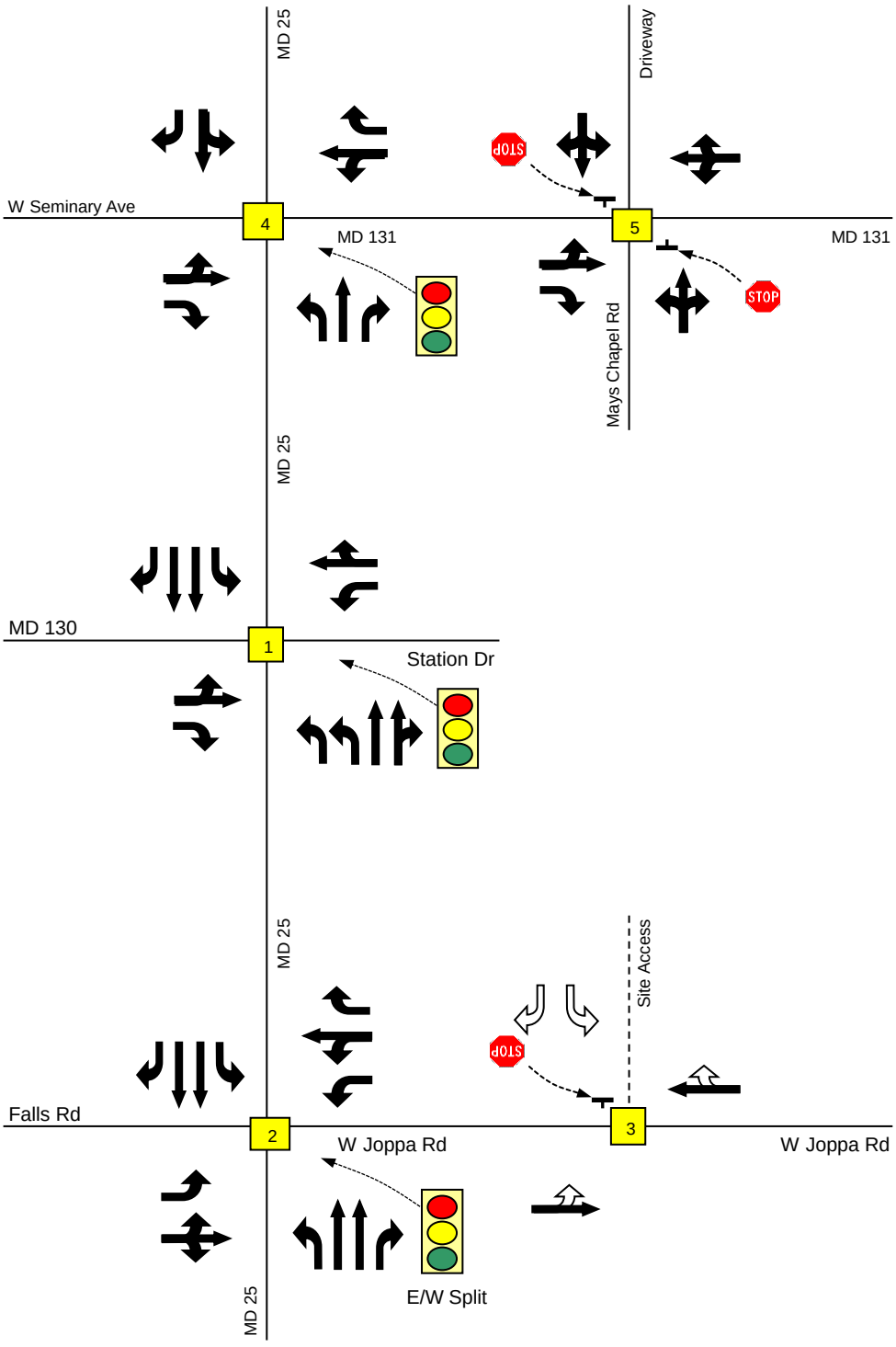
LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

OFFICE: (410) 216-3333
FAX: (443) 782-2288
EMAIL: mlenhart@lenharttraffic.com



Study Intersections:
1. MD 25 & MD 130/Station Dr
2. MD 25 & Falls Rd/W Joppa Rd
3. W Joppa Rd & Site Access
4. MD 25 & MD 131/W. Seminary Rd
5. MD 131 & Mays Chapel Rd

Traffic Impact Analysis	Location Map	**Exhibit 1**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com		



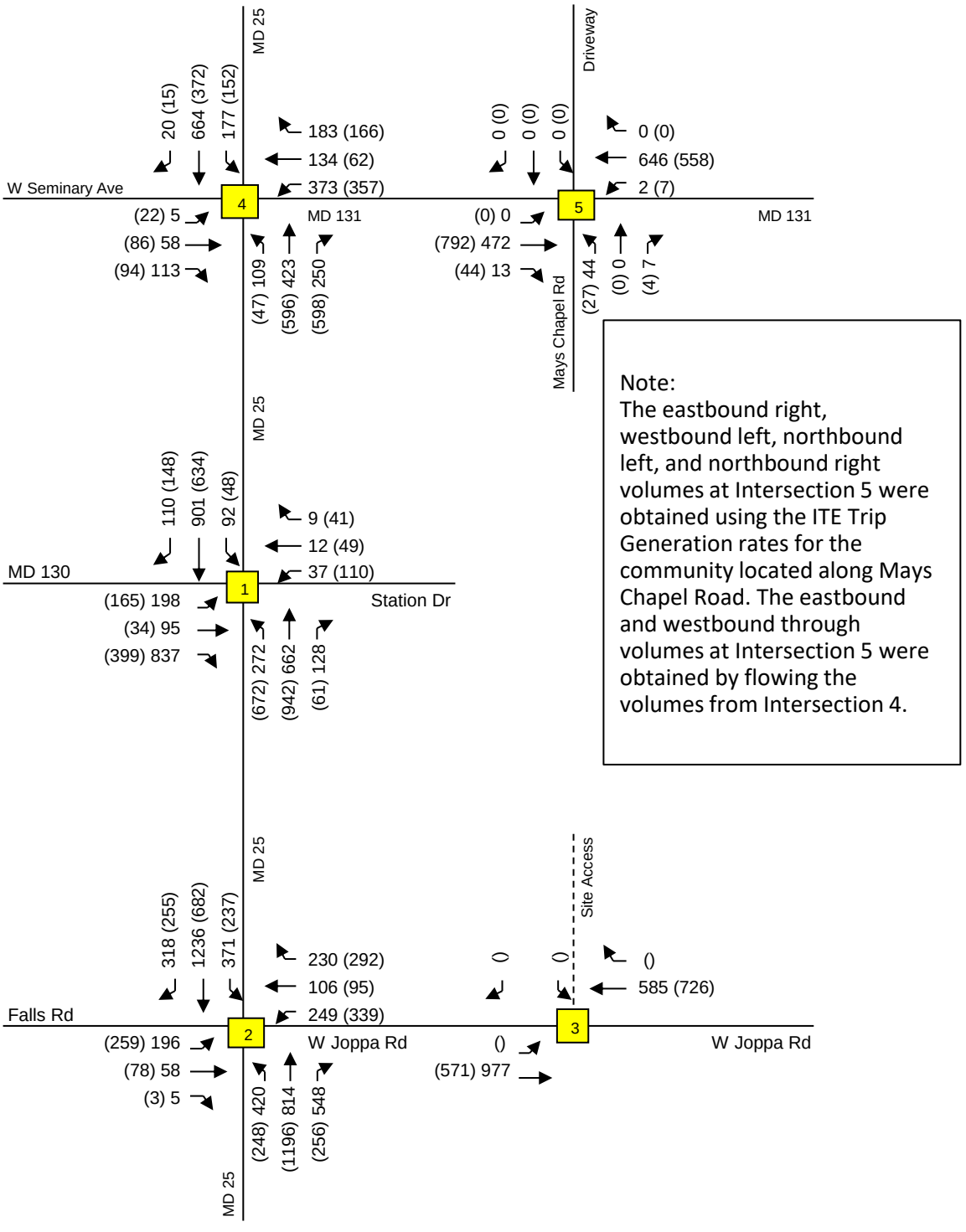
Traffic Impact Analysis

Existing Lane Use & Traffic Control Devices

Exhibit 2

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Key: Existing - ➡ Proposed - ⇨



Note:
The eastbound right, westbound left, northbound left, and northbound right volumes at Intersection 5 were obtained using the ITE Trip Generation rates for the community located along Mays Chapel Road. The eastbound and westbound through volumes at Intersection 5 were obtained by flowing the volumes from Intersection 4.

Traffic Impact Analysis

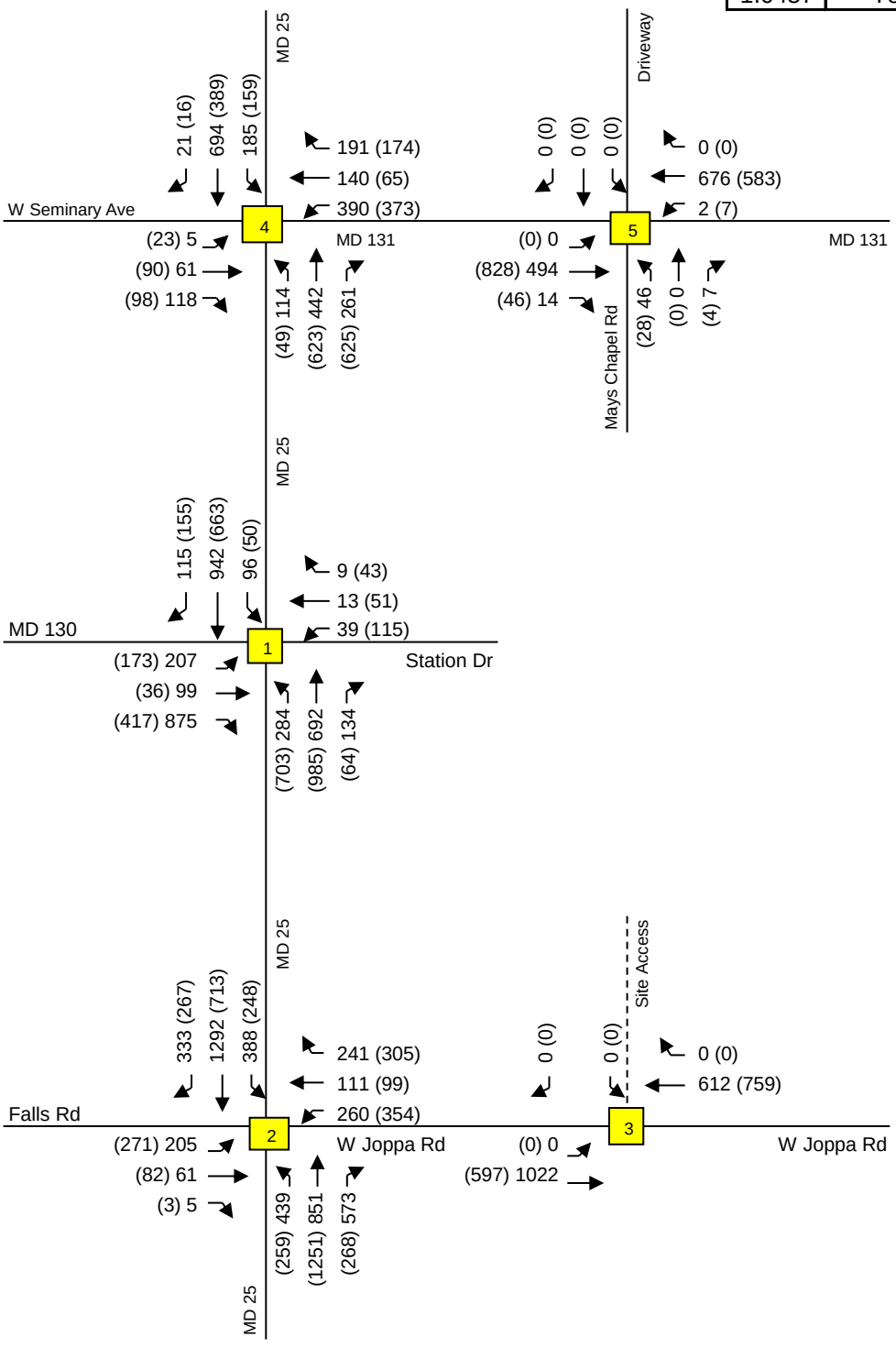
LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Existing Peak Hour Volumes

Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

Exhibit 3

1.5%	Growth Rate
3	Years of Growth
1.0457	Total Growth



Traffic Impact Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Background Peak Hour Volumes

Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

Exhibit 4

	Highway Capacity Manual (HCM) Delay for Northbound Vehicles							
	Morning Peak Hour				Evening Peak Hour			
	Intersection/Movement	33% Diversion Delay	66% Diversion Delay	100% Diversion Delay	Intersection/Movement	33% Diversion Delay	66% Diversion Delay	100% Diversion Delay
Using MD 25	2). Northbound Through	32.7	31.5	30.3	2). Northbound Through	37.9	34.0	30.9
	1). Northbound Through	10.5	10.7	10.9	1). Northbound Through	21.1	20.5	20.0
	4). Northbound Right	27.5	11.0	0.0	4). Northbound Right	16.1	18.8	0.0
	5). Eastbound Through	0.0	0.0	0.0	5). Eastbound Through	0.0	0.0	0.0
	Total Delay	**70.7**	**53.2**	**41.2**	**Total Delay**	**75.1**	**73.3**	**50.9**
	Morning Peak Hour				Evening Peak Hour			
	Intersection/Movement	33% Diversion Delay	66% Diversion Delay	100% Diversion Delay	Intersection/Movement	33% Diversion Delay	66% Diversion Delay	100% Diversion Delay
Using Mays Chapel Rd	2). Northbound Right	1.0	1.2	1.5	2). Northbound Right	0.6	1.1	1.9
	3). Eastbound Left	9.4	10.0	10.7	3). Eastbound Left	11.8	16.3	32.9
	5). Northbound Right	16.7	16.7	17.3	5). Northbound Right	25.7	34.1	38.4
	Total Delay	**27.1**	**27.9**	**29.5**	**Total Delay**	**38.1**	**51.5**	**73.2**
	Total Delay Using MD 25:	**70.7**	**53.2**	**41.2**	**Total Delay Using MD 25:**	**75.1**	**73.3**	**50.9**
	Total Delay Using Mays Chapel Rd:	**27.1**	**27.9**	**29.5**	**Total Delay Using Mays Chapel Rd:**	**38.1**	**51.5**	**73.2**

	Highway Capacity Manual (HCM) Delay for Southbound Vehicles							
	Morning Peak Hour				Evening Peak Hour			
	Intersection/Movement	33% Diversion Delay	66% Diversion Delay	100% Diversion Delay	Intersection/Movement	33% Diversion Delay	66% Diversion Delay	100% Diversion Delay
Using MD 25	5). Westbound Through	0.0	0.0	0.0	5). Westbound Through	0.0	0.0	0.0
	4). Westbound Left	53.5	53.4	0.0	4). Westbound Left	54.9	52.1	0.0
	1). Southbound Through	18.8	21.3	22.7	1). Southbound Through	35.3	42.0	46.4
	2). Southbound Through	28.1	24.8	23.5	2). Southbound Through	10.1	10.9	11.9
	Total Delay	**100.4**	**99.5**	**46.2**	**Total Delay**	**100.3**	**105.0**	**58.3**
	Using MD 25				**Using Mays Chapel Rd**			
	Intersection/Movement	**33% Diversion Delay**	**66% Diversion Delay**	**100% Diversion Delay**	**Intersection/Movement**	**33% Diversion Delay**	**66% Diversion Delay**	**100% Diversion Delay**
Using Mays Chapel Rd	5). Westbound Left	8.7	8.8	9.0	5). Westbound Left	9.7	9.4	6.7
	3). Southbound Right	30.8	75.4	221.6	3). Southbound Right	37.8	243.0	Error
	2). Westbound Left	130.2	348.3	503.2	2). Westbound Left	123.2	215.4	322.7
	Total Delay	**169.7**	**432.5**	**733.8**	**Total Delay**	**170.7**	**467.8**	**329.4**
	Total Delay Using MD 25:	**100.4**	**99.5**	**46.2**	**Total Delay Using MD 25:**	**100.3**	**105.0**	**58.3**
	Total Delay Using Mays Chapel Rd:	**169.7**	**432.5**	**733.8**	**Total Delay Using Mays Chapel Rd:**	**170.7**	**467.8**	**>500**

Trip Generation Rates

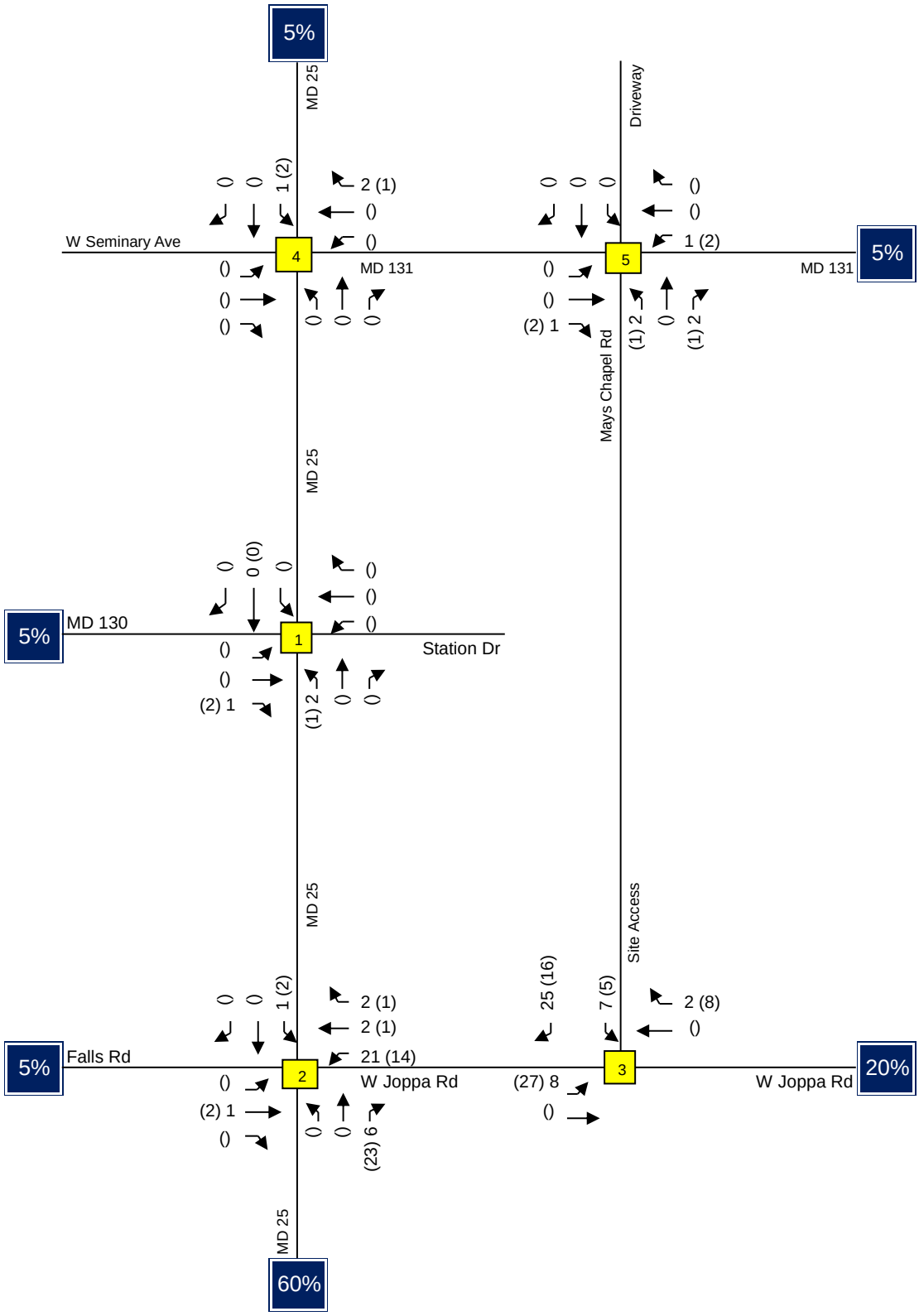
Single-Family Detached (ITE-210, Units)

	Trip Distribution (In/Out)
Morning Trips = 0.70 x (Units) + 9.74	25/75
Ln(Evening Trips) = 0.90 x Ln(Units) + 0.51	63/37

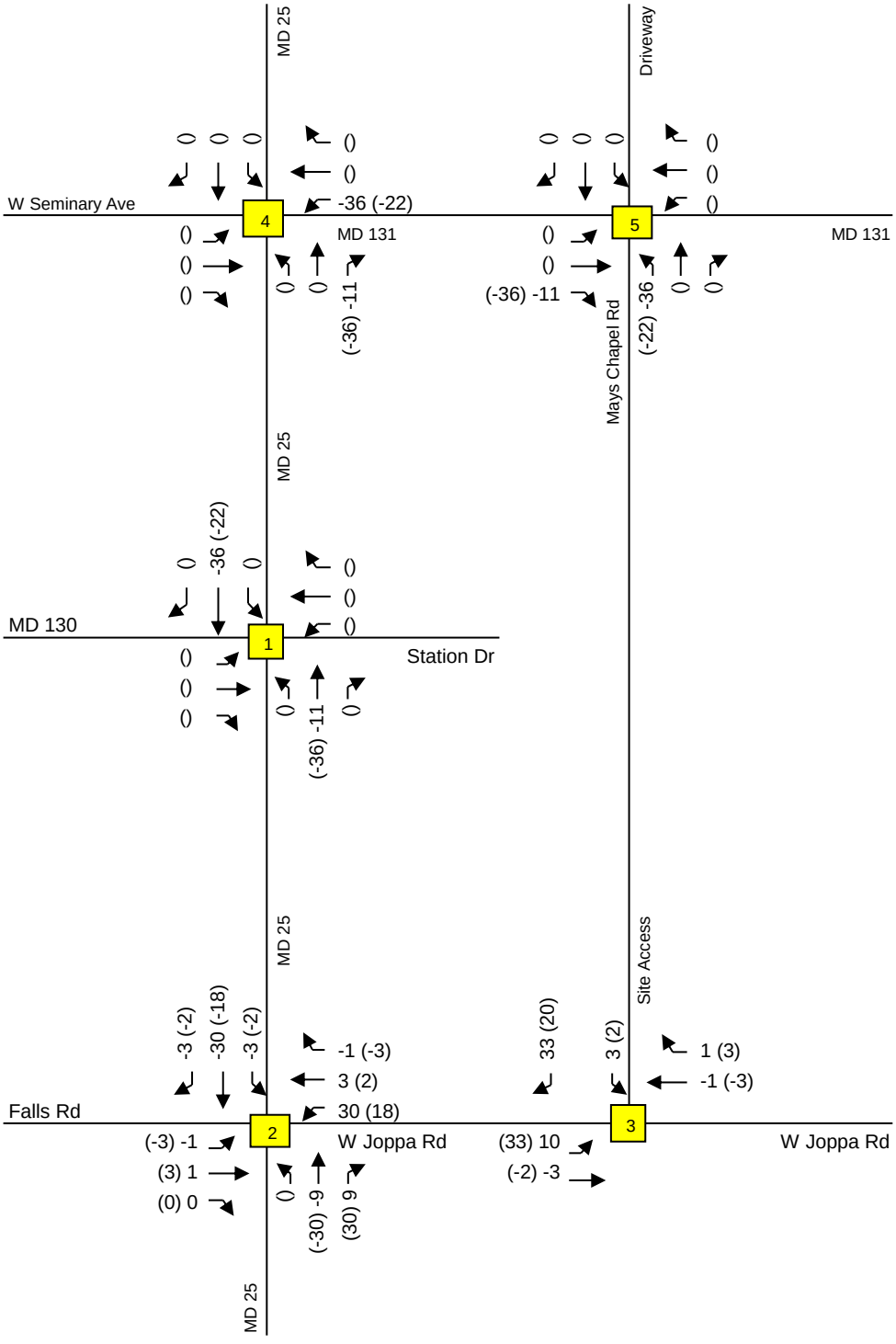
Trip Generation Totals

			AM Peak			PM Peak		
			In	Out	Total	In	Out	Total
LU Code 210	Single-Family Detached (ITE-210, Units)	62 units	11	35	46	38	23	61
		Total:	**11**	**35**	**46**	**38**	**23**	**61**

NOTE: Trip Generation Rates obtained from the ITE Trip Generation Manual, 10th Edition



Traffic Impact Analysis	Trip Assignment for Site with Connection	**Exhibit 8**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Key: xx = AM Peak Vol's (xx) = PM Peak Vol's	



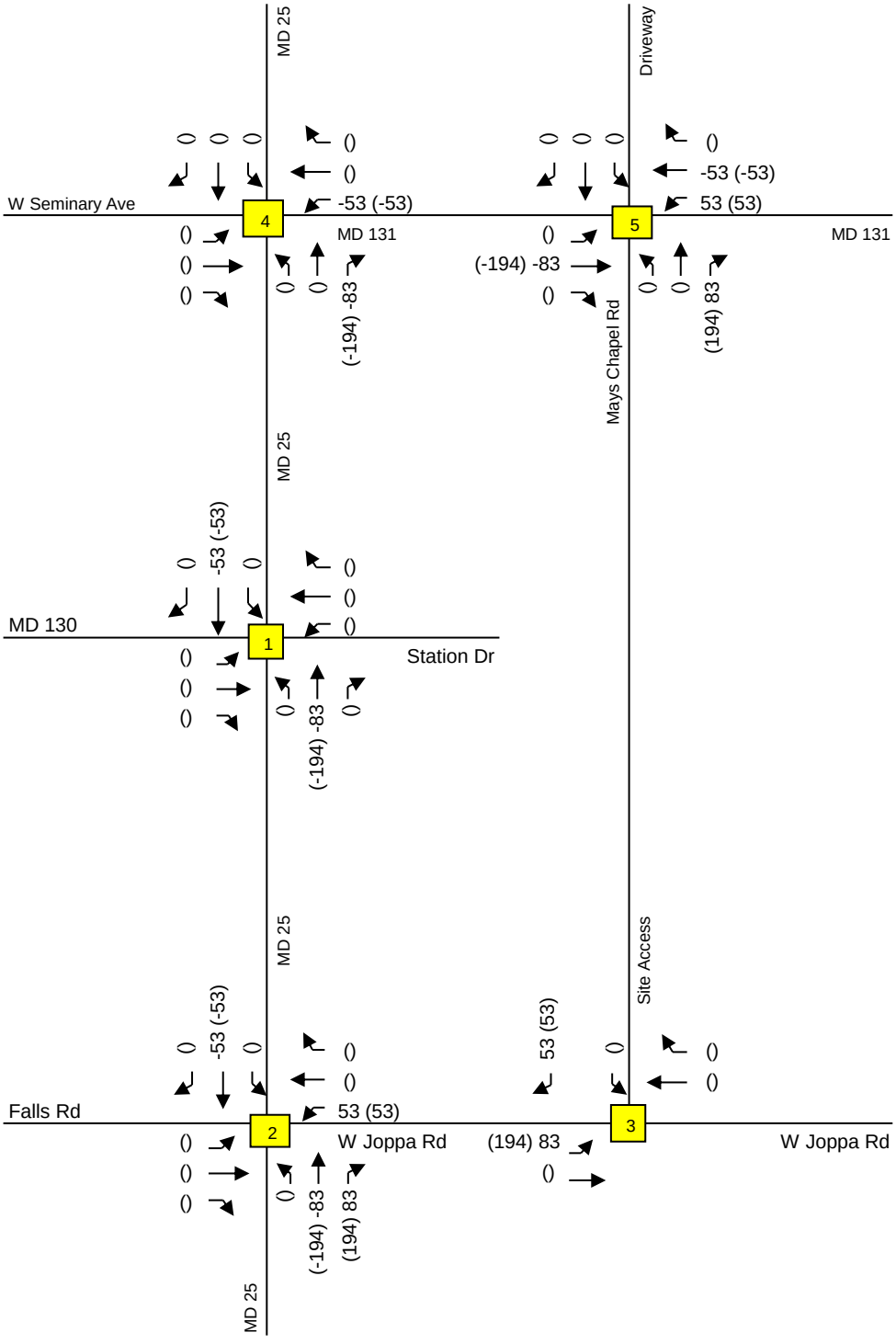
Traffic Impact Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Diversion for Mays Chapel Community

Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

Exhibit 9



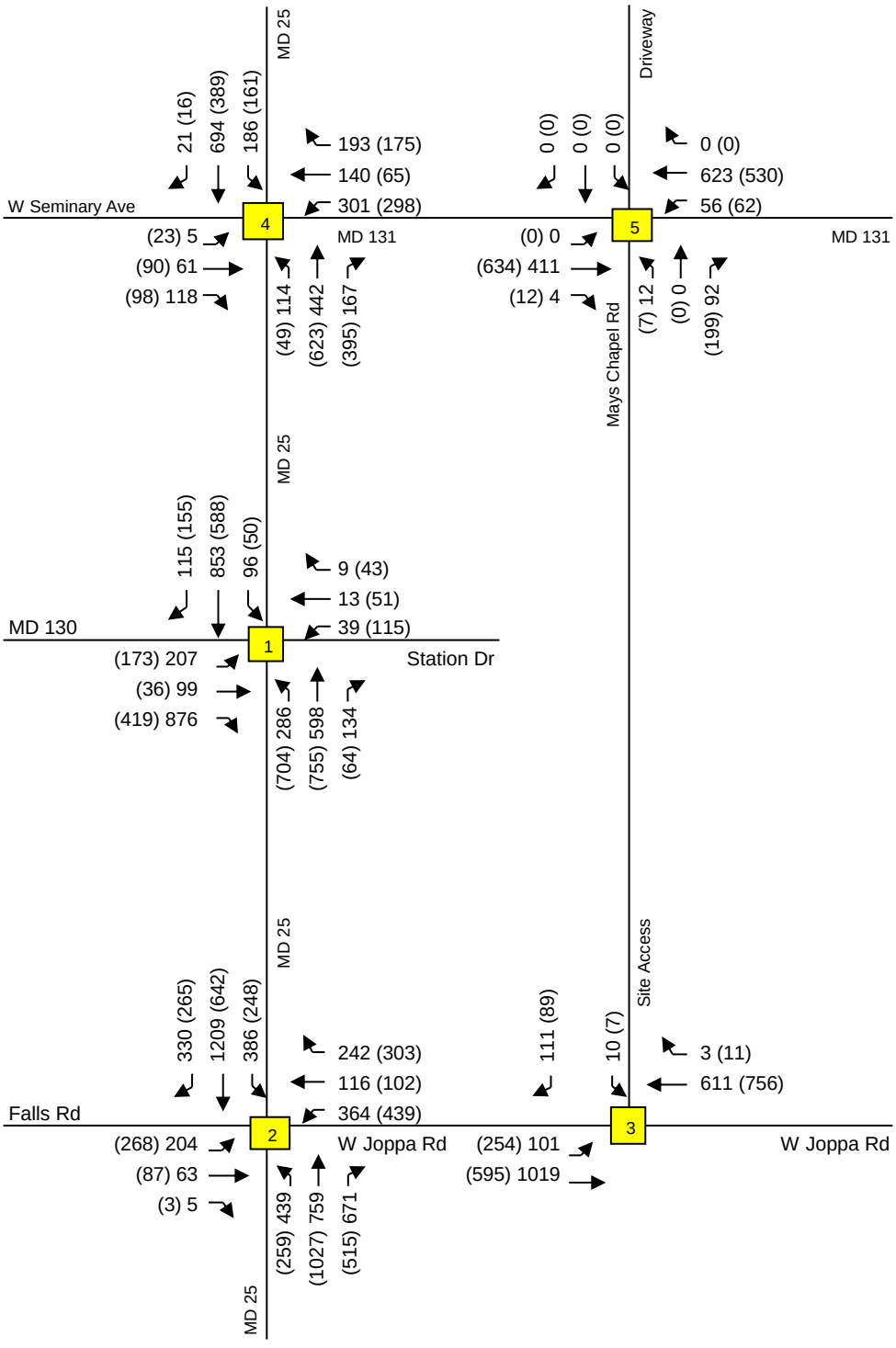
Traffic Impact Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Diversion for MD 25 Due to Connection

Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

Exhibit 10



Traffic Impact Analysis	Total Peak Hour Volumes with Connection	**Exhibit 11**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Key: xx = AM Peak Vol's (xx) = PM Peak Vol's	

Level-of-Service Results

Morning Peak Hour	Critical Lane Volume (CLV)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total	CLV Impact	Mitigates
1). MD 25 & MD 130/Station Dr	B / 1009	B / 1054	B / 1007	-47	--
2). MD 25 & Falls Rd/W Joppa Rd	E / 1468	E / 1536	E / 1555	19	--
Proposed New Improvements			D / 1426	-129	679%
3). W Joppa Rd & Site Access	N/A	N/A	D / 1443	--	--
4). MD 25 & MD 131/W. Seminary Ave	D / 1342	D / 1403	D / 1305	-98	--
5). MD 131 & Mays Chapel Rd/Driveway	A / 705	A / 738	A / 840	102	--

Evening Peak Hour	Critical Lane Volume (CLV)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total	CLV Impact	Mitigates
1). MD 25 & MD 130/Station Dr	B / 1078	B / 1128	B / 1086	-42	--
2). MD 25 & Falls Rd/W Joppa Rd	D / 1359	D / 1422	D / 1353	-69	--
Proposed New Improvements			C / 1215	-138	-200%
3). W Joppa Rd & Site Access	N/A	N/A	E / 1453	--	--
4). MD 25 & MD 131/W. Seminary Ave	C / 1235	C / 1291	C / 1218	-73	--
5). MD 131 & Mays Chapel Rd/Driveway	A / 833	A / 870	A / 923	53	--

Level-of-Service Results

Morning Peak Hour	Highway Capacity Manual (HCM)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total	Delay Impact	Mitigates
1). MD 25 & MD 130/Station Dr	C / 21.6	C / 21.8	B / 20.0	-1.8	--
2). MD 25 & Falls Rd/W Joppa Rd	D / 49.7	D / 54.8	E / 57.1	2.3	--
Proposed New Improvements			D / 42.6	-14.5	630%
3). W Joppa Rd & Site Access	N/A	N/A	A / 3.8	--	--
4). MD 25 & MD 131/W. Seminary Ave	D / 38.1	D / 40.4	D / 37.6	-2.8	--
5). MD 131 & Mays Chapel Rd/Driveway	A / 1.6	A / 1.7	A / 1.9	0.2	--

Evening Peak Hour	Highway Capacity Manual (HCM)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total	Delay Impact	Mitigates
1). MD 25 & MD 130/Station Dr	C / 27.3	C / 27.5	C / 28.9	1.4	--
2). MD 25 & Falls Rd/W Joppa Rd	D / 44.8	D / 47.7	D / 45.3	-2.4	--
Proposed New Improvements			D / 38.5	-6.8	-283%
3). W Joppa Rd & Site Access	N/A	N/A	A / 5.6	--	--
4). MD 25 & MD 131/W. Seminary Ave	C / 33.7	D / 36.1	C / 33.3	-2.8	--
5). MD 131 & Mays Chapel Rd/Driveway	A / 1.2	A / 1.3	A / 4.0	2.7	--

Appendix A

Supplemental Information
Turning Movement Counts

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030038 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 131/Ent to St. Pauls School Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:15	08:00	2509	C	0.77	12:00PM-19:00PM	17:00	17:45	2567	C	0.77

MD 25	MD 25	MD 131	Ent to St Pauls School
From North	From South	From East	From West

Begin Hour	U.Turn	Left	Through	Right	TOTAL	U.Turn	Left	Through	Right	TOTAL	U.Turn	Left	Through	Right	TOTAL	U.Turn	Left	Through	Right	TOTAL	GrandTotal
00:00	0	0	2	0	2	0	0	5	3	8	0	1	0	0	1	0	0	0	0	0	11
00:15	0	0	0	0	0	0	0	2	4	6	0	1	0	0	1	0	0	0	0	0	7
00:30	0	0	0	0	0	0	0	2	3	5	0	0	0	0	0	0	0	0	0	0	5
00:45	0	0	0	0	0	0	0	5	1	6	0	0	1	0	1	0	1	0	0	1	8
01:00	0	0	0	0	0	0	0	2	4	6	0	1	0	0	1	0	0	0	0	0	7
01:15	0	1	2	0	3	0	0	1	3	4	0	0	0	0	0	0	0	0	0	0	7
01:30	0	0	1	0	1	0	0	2	3	5	0	1	1	0	2	0	0	0	0	0	8
01:45	0	0	1	0	1	0	0	3	3	6	0	2	0	0	2	0	0	0	0	0	9
02:00	0	0	0	0	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	0	3
02:15	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
02:30	0	0	1	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
02:45	0	0	3	0	3	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	5
03:00	0	0	1	0	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	3
03:15	0	1	2	0	3	0	0	2	0	2	0	2	0	0	2	0	0	0	0	0	7
03:30	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	4
03:45	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	0	2	0	2	0	0	1	0	1	0	3	0	0	3	0	0	0	0	0	6
04:15	0	0	8	1	9	0	2	2	1	5	0	3	0	0	3	0	0	0	0	0	17
04:30	0	0	7	0	7	0	0	1	0	1	0	6	0	0	6	0	0	0	0	0	14
04:45	0	0	9	0	9	0	0	0	1	1	0	5	0	1	6	0	0	0	0	0	16
05:00	0	1	16	0	17	0	3	2	4	9	0	13	0	0	13	0	0	0	0	0	39
05:15	0	1	31	0	32	0	1	5	2	8	0	9	0	1	10	0	0	0	2	2	52
05:30	0	0	37	0	37	0	1	8	2	11	0	14	2	2	18	0	0	0	0	0	66
05:45	0	3	35	0	38	0	5	12	5	22	0	19	0	1	20	0	0	0	0	0	80
06:00	0	4	39	0	43	0	2	10	6	18	0	14	0	3	17	0	0	0	1	1	79
06:15	0	4	67	0	71	0	1	19	12	32	0	27	1	2	30	0	1	0	0	1	134
06:30	0	6	109	0	115	0	0	27	10	37	0	52	2	4	58	0	0	0	1	1	211

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030038 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 131/Ent to St. Pauls School Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:15	08:00	2509	C	0.77	12:00PM-19:00PM	17:00	17:45	2567	C	0.77

	MD 25 From North						MD 25 From South						MD 131 From East						Ent to St Pauls School From West					
06:45	0	9	155	3	167	0	6	27	18	51	0	67	2	12	81	0	0	0	1	1	300
07:00	0	16	192	2	210	0	12	44	19	75	0	77	7	18	102	0	0	1	6	7	394
07:15	0	45	201	4	250	0	32	115	43	190	0	103	21	55	179	0	0	7	13	20	639
07:30	0	63	161	2	226	0	28	112	48	188	0	88	23	53	164	0	2	14	43	59	637
07:45	0	38	161	10	209	0	15	109	82	206	0	108	35	45	188	0	2	13	25	40	643
08:00	0	31	141	4	176	0	34	87	77	198	0	74	55	30	159	0	1	24	32	57	590
08:15	0	39	127	9	175	0	24	76	84	184	0	72	45	39	156	0	1	39	53	93	608
08:30	0	44	134	2	180	0	13	60	96	169	0	85	8	17	110	0	4	19	16	39	498
08:45	0	35	123	3	161	0	8	68	80	156	0	71	5	16	92	0	7	5	5	17	426
09:00	0	25	75	0	100	0	2	42	65	109	0	79	3	6	88	0	0	7	4	11	308
09:15	0	14	95	3	112	0	2	39	56	97	0	59	3	9	71	0	0	2	6	8	288
09:30	0	7	85	1	93	0	4	48	56	108	0	57	0	13	70	0	0	2	3	5	276
09:45	0	14	67	2	83	1	1	42	58	102	0	38	7	9	54	0	1	0	6	7	246
10:00	0	9	50	0	59	0	3	44	53	100	0	58	2	6	66	0	1	5	0	6	231
10:15	0	10	42	2	54	0	3	42	56	101	0	47	0	13	60	0	1	0	1	2	217
10:30	0	20	65	1	86	0	3	38	45	86	0	47	0	8	55	0	0	2	13	15	242
10:45	0	10	37	0	47	0	3	36	56	95	0	51	1	8	60	0	2	2	5	9	211
11:00	0	14	42	0	56	0	5	41	45	91	0	32	1	10	43	0	0	2	5	7	197
11:15	0	11	48	1	60	0	6	43	67	116	0	56	0	15	71	0	0	0	5	5	252
11:30	0	6	63	0	69	1	2	52	50	105	0	53	2	14	69	0	1	5	2	8	251
11:45	0	10	54	1	65	0	0	52	83	135	0	45	0	16	61	0	0	2	7	9	270
12:00	0	11	49	0	60	0	2	62	88	152	0	40	0	11	51	0	0	0	4	4	267
12:15	0	6	52	0	58	0	5	45	72	122	0	50	3	17	70	0	0	0	1	1	251
12:30	0	13	52	0	65	0	1	40	76	117	0	46	2	12	60	0	1	4	4	9	251
12:45	0	15	47	1	63	0	4	50	68	122	0	47	0	10	57	0	2	3	3	8	250
13:00	0	5	49	0	54	0	3	54	57	114	0	45	1	10	56	0	0	0	2	2	226
13:15	0	15	36	2	53	0	1	59	60	120	0	58	2	11	71	0	1	1	4	6	250
13:30	0	13	41	0	54	0	4	40	60	104	0	52	1	14	67	0	0	4	4	8	233
13:45	0	10	46	1	57	0	6	51	72	129	0	58	0	13	71	0	0	5	2	7	264

MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030038 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 131/Ent to St. Pauls School Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:15	08:00	2509	C	0.77	12:00PM-19:00PM	17:00	17:45	2567	C	0.77

	MD 25 From North						MD 25 From South						MD 131 From East						Ent to St Pauls School From West					
14:00	0	12	53	0	65	0	2	60	66	128	0	56	2	8	66	0	1	4	4	9	268
14:15	0	14	55	1	70	0	5	72	63	140	0	45	2	12	59	0	3	2	6	11	280
14:30	0	14	50	0	64	0	1	97	103	201	0	53	3	22	78	0	0	0	5	5	348
14:45	0	14	50	1	65	0	11	91	99	201	0	59	6	28	93	0	3	8	6	17	376
15:00	0	54	79	5	138	0	9	85	99	193	0	54	12	29	95	0	3	7	8	18	444
15:15	0	45	74	5	124	0	17	135	112	264	1	66	18	50	135	0	16	7	22	45	568
15:30	0	50	84	2	136	0	17	128	143	288	0	63	14	29	106	0	19	33	37	89	619
15:45	0	31	61	6	98	0	10	106	126	242	0	66	10	30	106	0	3	32	21	56	502
16:00	0	39	72	5	116	0	17	116	137	270	0	85	14	48	147	0	2	11	13	26	559
16:15	0	34	73	5	112	0	15	134	135	284	0	93	15	32	140	0	7	27	21	55	591
16:30	0	47	83	4	134	0	15	137	144	296	0	76	8	32	116	0	7	38	23	68	614
16:45	0	31	61	3	95	0	15	129	162	306	0	93	13	52	158	0	5	16	26	47	606
17:00	0	37	74	6	117	0	8	158	160	326	0	73	13	39	125	0	3	10	28	41	609
17:15	0	47	88	2	137	0	7	144	154	305	0	102	19	38	159	0	7	24	17	48	649
17:30	0	33	134	3	170	0	16	145	141	302	0	80	10	33	123	0	2	20	20	42	637
17:45	0	35	76	4	115	0	16	149	143	308	0	102	20	56	178	0	10	32	29	71	672
18:00	0	34	65	1	100	0	19	141	123	283	0	52	6	37	95	0	5	12	23	40	518
18:15	0	20	57	0	77	0	8	98	117	223	0	59	8	19	86	0	3	7	20	30	416
18:30	0	12	49	1	62	0	12	92	110	214	1	39	5	13	58	0	0	10	27	37	371
18:45	0	9	40	0	49	0	16	63	78	157	0	39	3	21	63	0	1	3	9	13	282
19:00	0	11	44	0	55	0	4	101	51	156	0	33	2	13	48	0	2	9	7	18	277
19:15	0	22	66	0	88	0	2	70	71	143	0	32	2	13	47	0	0	1	1	2	280
19:30	0	18	55	0	73	0	1	47	43	91	0	22	1	16	39	0	0	0	1	1	204
19:45	0	15	60	0	75	0	7	60	66	133	0	20	1	9	30	0	1	1	1	3	241
20:00	0	8	30	0	38	0	4	56	37	97	0	20	1	6	27	0	0	1	9	10	172
20:15	0	4	30	0	34	0	1	44	38	83	0	10	0	8	18	0	1	0	3	4	139
20:30	0	0	18	1	19	0	6	53	39	98	0	8	1	6	15	0	0	1	8	9	141
20:45	0	8	18	1	27	0	15	33	49	97	0	7	2	11	20	0	0	0	1	1	145
21:00	0	7	23	1	31	0	5	43	31	79	0	5	0	4	9	1	1	8	45	55	174

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030038 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 131/Ent to St. Pauls School Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:15	08:00	2509	C	0.77	12:00PM-19:00PM	17:00	17:45	2567	C	0.77

	MD 25						MD 25				MD 131						Ent to St Pauls School					
	From North						From South				From East						From West					
21:15	0	6	12	0	18	0	1	40	31	72	0	10	0	6	16	0	4	13	25	42	148
21:30	0	1	13	0	14	0	0	34	20	54	0	5	0	1	6	0	1	1	1	3	77
21:45	0	1	12	0	13	0	0	16	35	51	0	11	0	2	13	0	0	0	1	1	78
22:00	0	1	10	0	11	0	0	26	17	43	0	5	0	1	6	0	0	0	1	1	61
22:15	0	2	5	0	7	0	0	20	19	39	0	8	0	1	9	0	0	0	0	0	55
22:30	0	0	4	0	4	0	0	17	15	32	0	3	0	1	4	0	0	0	0	0	40
22:45	0	0	5	0	5	0	0	8	7	15	0	3	0	2	5	0	0	1	0	1	26
23:00	0	0	7	0	7	0	1	24	8	33	0	6	0	3	9	0	0	0	1	1	50
23:15	0	1	4	0	5	0	0	9	10	19	0	2	0	0	2	0	0	0	0	0	26
23:30	0	0	3	0	3	0	0	7	9	16	0	1	0	1	2	0	0	0	0	0	21
23:45	0	0	0	0	0	0	0	9	5	14	0	3	0	0	3	0	0	0	0	0	17
TOTAL	**0**	**1296**	**4661**	**112**	**6069**	**2**	**530**	**4732**	**4879**	**10143**	**2**	**3506**	**447**	**1256**	**5211**	**1**	**139**	**507**	**749**	**1396**	**22819**
AMPEAK	**0**	**177**	**664**	**20**	**861**	**0**	**109**	**423**	**250**	**782**	**0**	**373**	**134**	**183**	**690**	**0**	**5**	**58**	**113**	**176**	**2509**
PMPEAK	**0**	**152**	**372**	**15**	**539**	**0**	**47**	**596**	**598**	**1241**	**0**	**357**	**62**	**166**	**585**	**0**	**22**	**86**	**94**	**202**	**2567**
	0	152	372	15	539	0	47	596	598	1241	0	357	62	166	585	0	22	86	94	202	2567

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030038 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 131/Ent to St. Pauls School Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:15	08:00	2509	C	0.77	12:00PM-19:00PM	17:00	17:45	2567	C	0.77

MD 25	MD 25	MD 131	Ent to St Pauls School
From North	From South	From East	From West

Begin Hour	School Children	Pedestrians	Bicycles	School Childer	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles
00:00	0	0	0	0	0	0	0	0	0	0	0	0
00:15	0	0	0	0	0	0	0	0	0	0	0	0
00:30	0	0	0	0	0	0	0	0	0	0	0	0
00:45	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0
01:15	0	0	0	0	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0
02:15	0	0	0	0	0	0	0	0	0	0	0	0
02:30	0	0	0	0	0	0	0	0	0	0	0	0
02:45	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0
03:15	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0
04:15	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0
05:15	0	0	0	0	0	0	0	0	0	0	0	0
05:30	0	0	0	0	0	0	0	0	0	0	0	0
05:45	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0	0	0	0	0

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030038 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 131/Ent to St. Pauls School Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:15	08:00	2509	C	0.77	12:00PM-19:00PM	17:00	17:45	2567	C	0.77

	MD 25			MD 25			MD 131			Ent to St Pauls School		
	From North			From South			From East			From West		
Begin Hour	**School Children**	**Pedestrians**	**Bicycles**	**School Childer**	**Pedestrians**	**Bicycles**	**School Children**	**Pedestrians**	**Bicycles**	**School Children**	**Pedestrians**	**Bicycles**
06:45	0	0	0	0	0	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	1	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	1	0	0	0
11:15	0	0	0	0	0	1	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	1
12:15	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0

Maryland Department of Transportation
State Highway Administration
Data Services Division

Turning Movement Summary Report

Station ID: S1999030038
County: Baltimore
Comments:

Date: 2/27/2020 12:00:00 AM
Town: none

Location: MD 25 at MD 131/Ent to St. Pauls School
Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:15	08:00	2509	C	0.77	12:00PM-19:00PM	17:00	17:45	2567	C	0.77

	MD 25			MD 25			MD 131			Ent to St Pauls School		
	From North			From South			From East			From West		
Begin Hour	School Children	Pedestrians	Bicycles	School Childer	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles
13:30	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	13	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	9	0	0	0	0	0	0	0	0	0	0
17:15	0	2	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0
19:00	0	0	0	0	0	0	0	0	0	0	0	0
19:15	0	0	0	0	0	0	0	0	0	0	0	0
19:30	0	0	0	0	0	0	0	0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0	0	0	0	0

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030038 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 131/Ent to St. Pauls School Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:15	08:00	2509	C	0.77	12:00PM-19:00PM	17:00	17:45	2567	C	0.77

MD 25	MD 25	MD 131	Ent to St Pauls School
From North	From South	From East	From West

Begin Hour	School Children	Pedestrians	Bicycles	School Childer	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles	School Children	Pedestrians	Bicycles
20:15	0	0	0	0	0	0	0	0	0	0	0	0
20:30	0	0	0	0	0	0	0	0	0	0	0	0
20:45	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0	0	0	0	0
21:15	0	0	0	0	0	0	0	0	0	0	0	0
21:30	0	0	0	0	0	0	0	0	0	0	0	0
21:45	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0
22:15	0	0	0	0	0	0	0	0	0	0	0	0
22:30	0	0	0	0	0	0	0	0	0	0	0	0
22:45	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0
23:15	0	0	0	0	0	0	0	0	0	0	0	0
23:30	0	0	0	0	0	0	0	0	0	0	0	0
23:45	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**24**	**0**	**0**	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**1**
AMPEAK	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
PMPEAK	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	0	11	0	0	0	0	0	0	0	0	0	0

Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030038 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 131/Ent to St. Pauls School Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:15	08:00	2509	C	0.77	12:00PM-19:00PM	17:00	17:45	2567	C	0.77

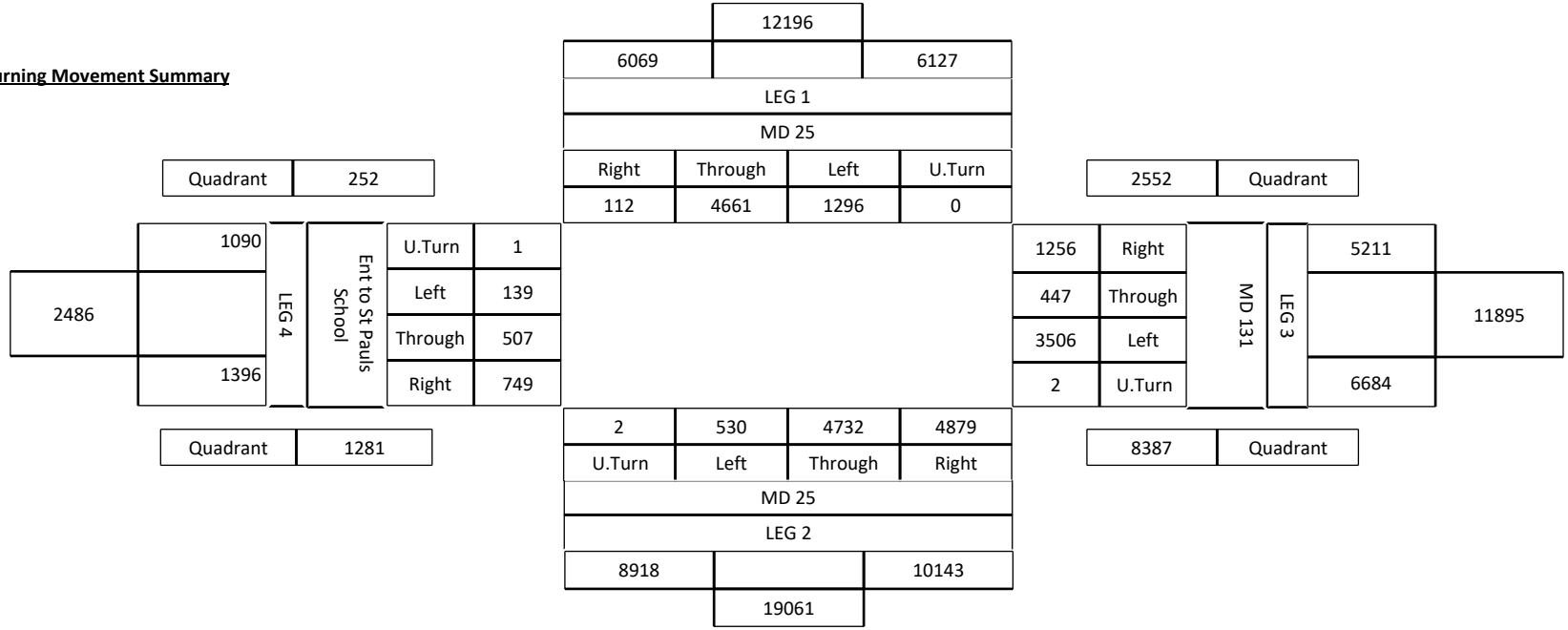
MD 25 — From North

MD 25 — From South

MD 131 — From East

Ent to St Pauls School — From West

Turning Movement Summary



Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030038 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

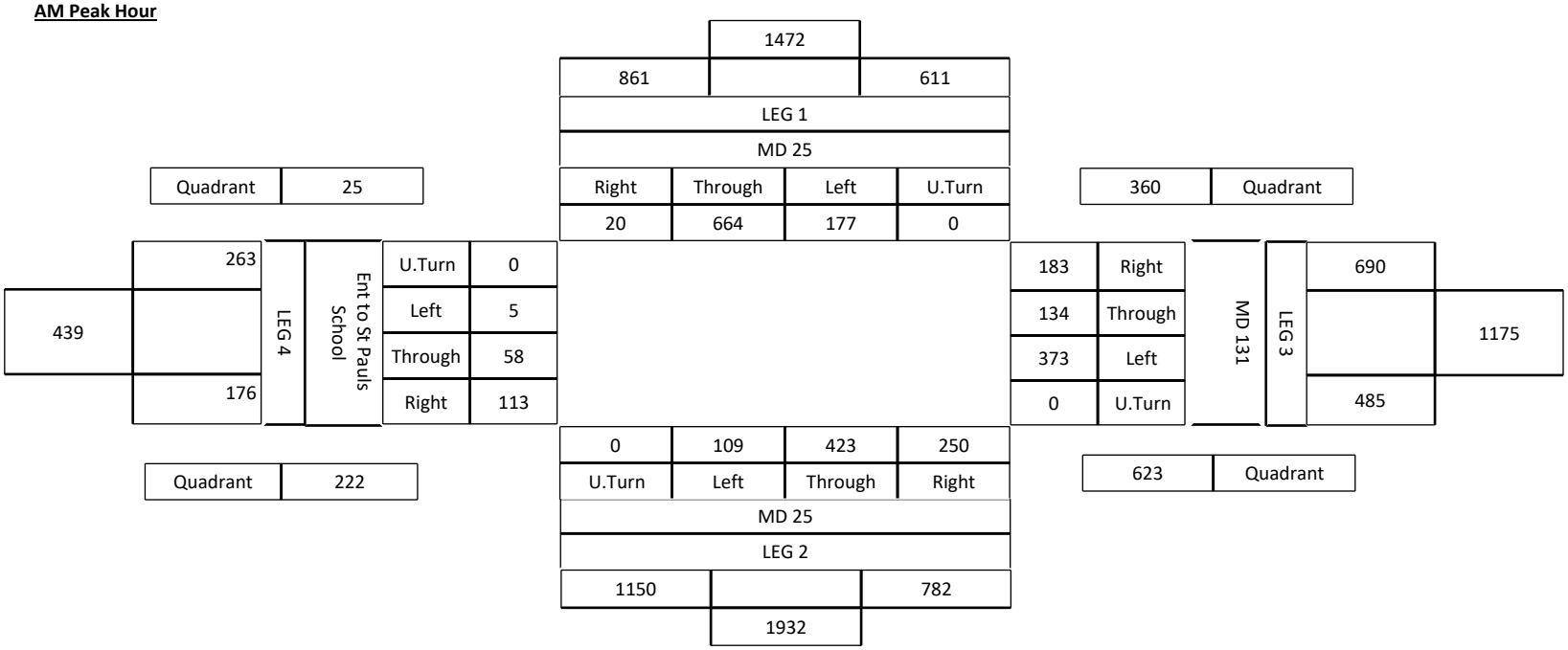
Location: MD 25 at MD 131/Ent to St. Pauls School Weather: Cloudy,Cold

Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:15	08:00	2509	C	0.77	12:00PM-19:00PM	17:00	17:45	2567	C	0.77

MD 25	MD 25	MD 131	Ent to St Pauls School
From North	From South	From East	From West

AM Peak Hour



Maryland Department of Transportation
State Highway Administration
Data Services Division
Turning Movement Summary Report

Station ID: S1999030038 County: Baltimore Comments:

Date: 2/27/2020 12:00:00 AM Town: none

Location: MD 25 at MD 131/Ent to St. Pauls School Weather: Cloudy,Cold

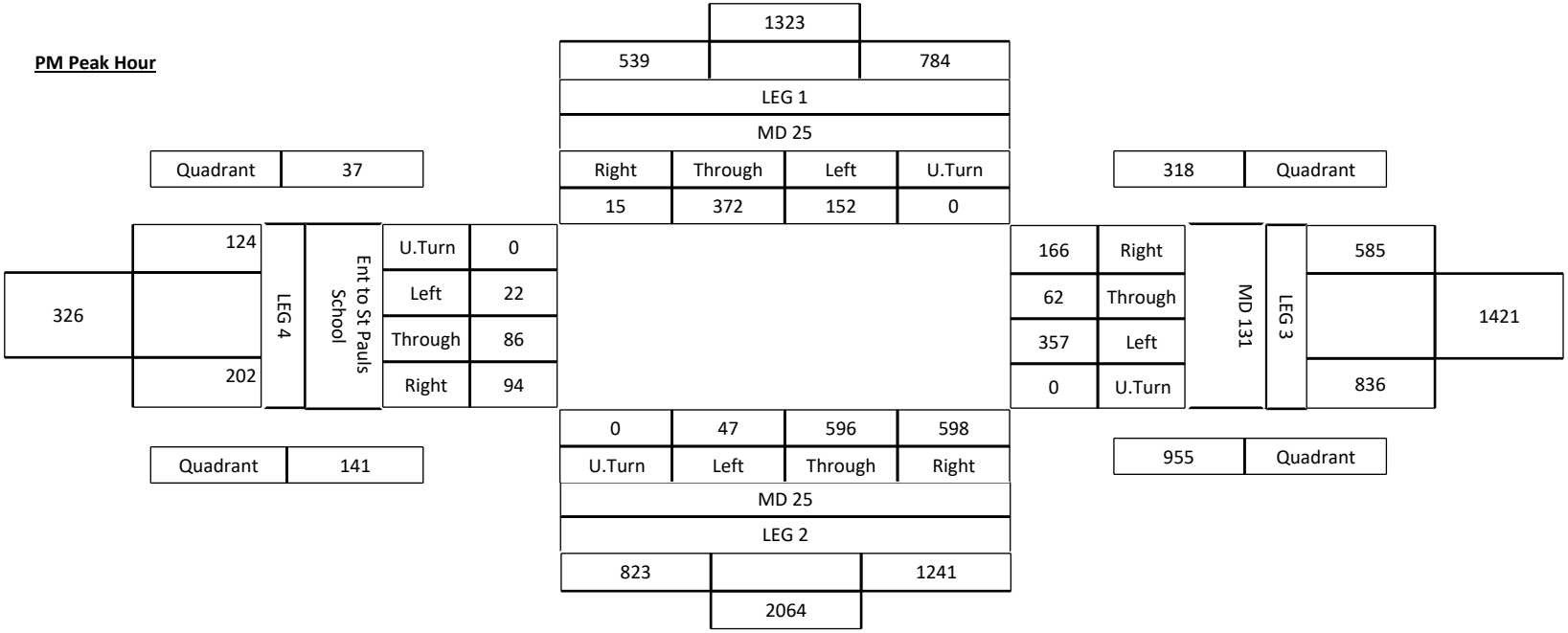
Interval: 15 Min

PEAK	AM PERIOD	Start	End	Volume	LOS	V/C	PM PERIOD	Start	End	Volume	LOS	V/C
Hours	6:00AM-12:00PM	07:15	08:00	2509	C	0.77	12:00PM-19:00PM	17:00	17:45	2567	C	0.77

MD 25 | MD 131 | Ent to St Pauls School

From North | From South | From East | From West

PM Peak Hour



Trip Generation Rates

	Trip Distribution (In/Out)
Single-Family Detached (ITE-210, Units)	
Morning Trips = 0.70 x (Units) + 9.74	25/75
Ln(Evening Trips) = 0.90 x Ln(Units) + 0.51	63/37
Multifamily Housing, Low-Rise (ITE-220, Units)	**Trip Distribution (In/Out)**
Ln(Morning Trips) = 0.95 x Ln(Units) - 0.51	23/77
Ln(Evening Trips) = 0.89 x Ln(Units) - 0.02	63/37

Trip Generation Totals

		AM Peak			PM Peak		
		In	Out	Total	In	Out	Total
Single-Family Detached (ITE-210, Units)	21 units	4	12	16	13	8	21
Multifamily Housing, Low-Rise (ITE-220, Units)	104 units	11	39	50	38	23	61
	Total:	**15**	**51**	**66**	**51**	**31**	**82**

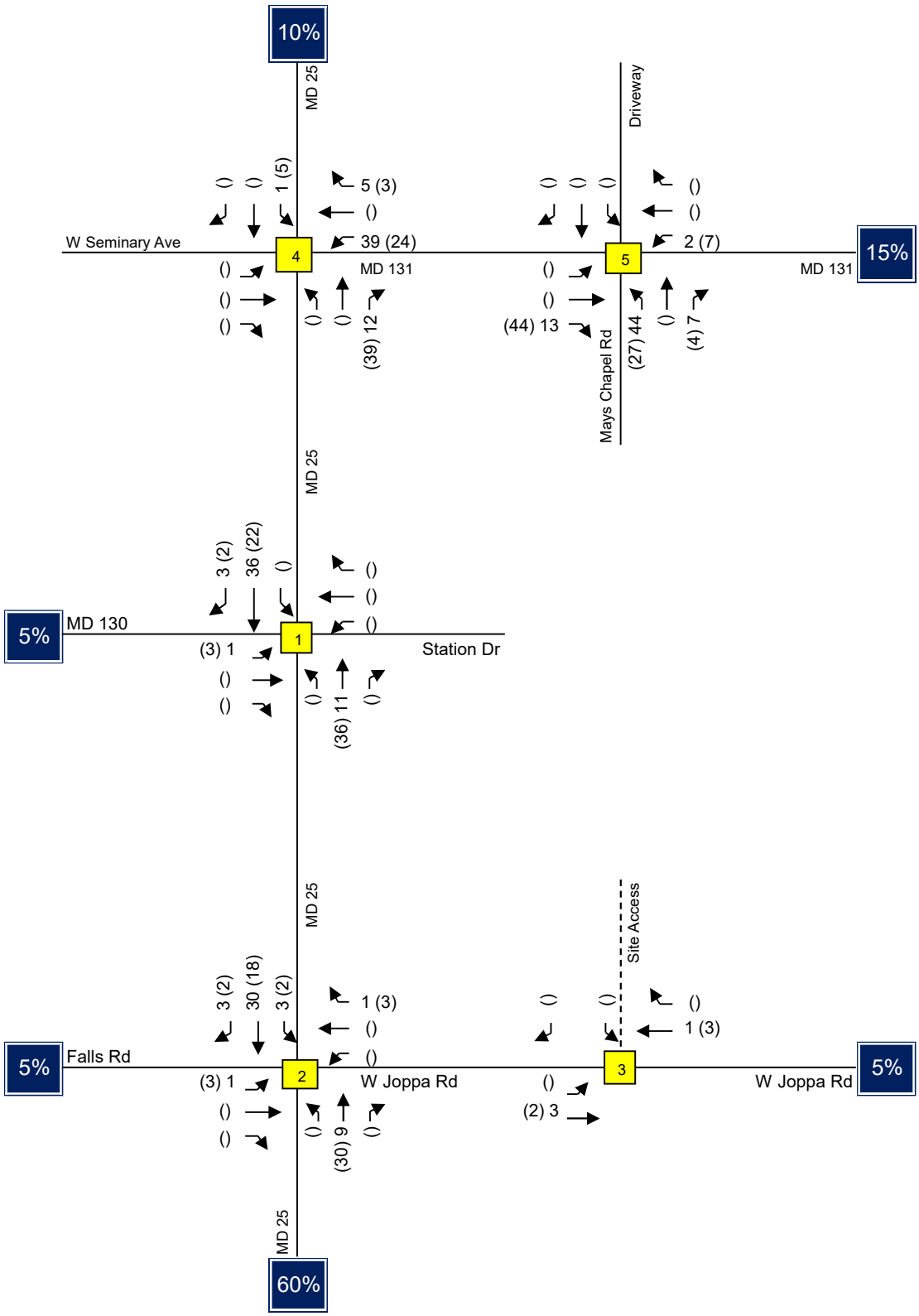
NOTE: Trip Generation Rates obtained from the ITE Trip Generation Manual, 10th Edition

Traffic Impact Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Trip Generation for
Mays Chapel Community

Exhibit A-1



Traffic Impact Analysis

Trip Assignment for Mays Chapel Community

Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

Exhibit A-2

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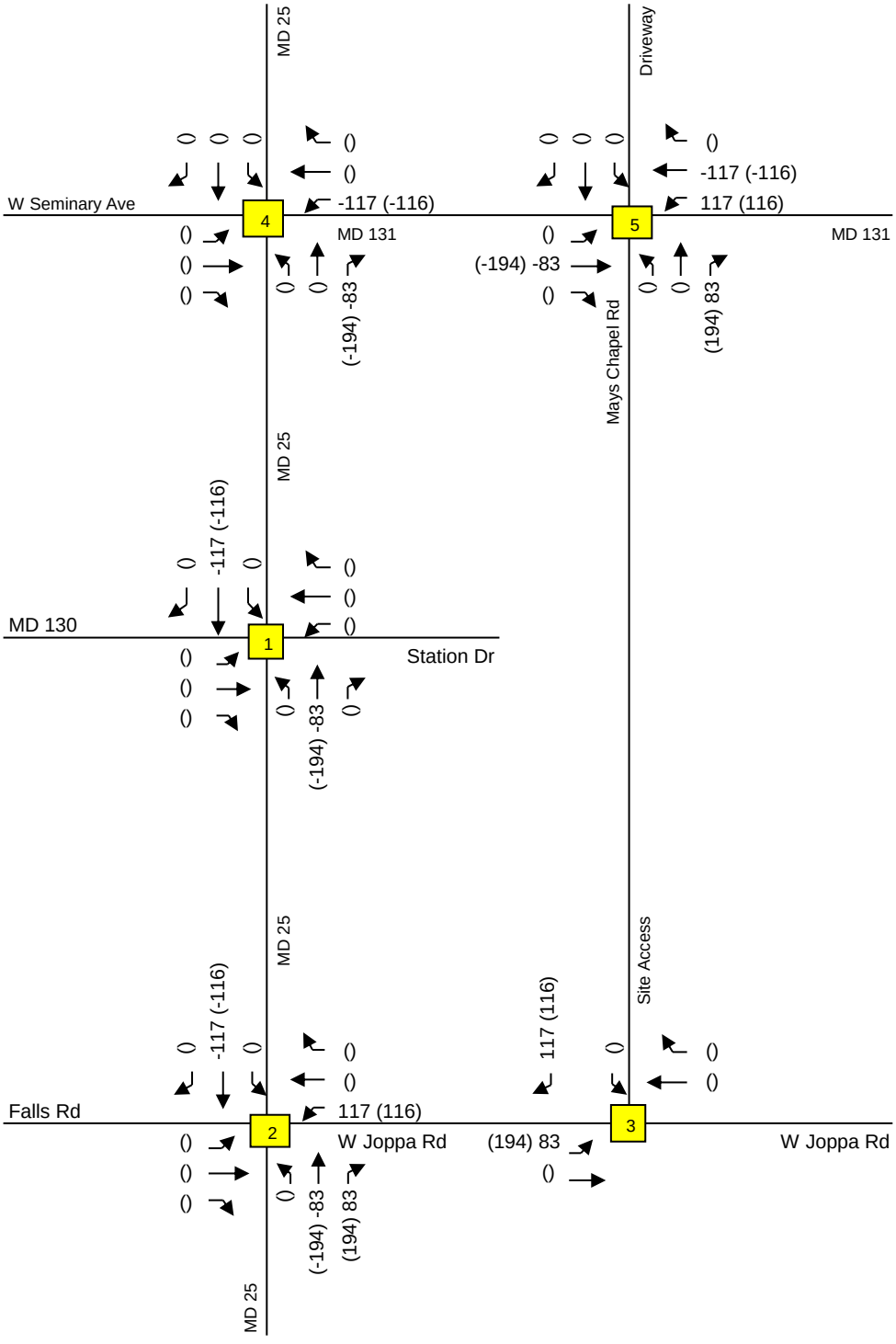
Appendix B

Sensitivity Analysis Exhibits



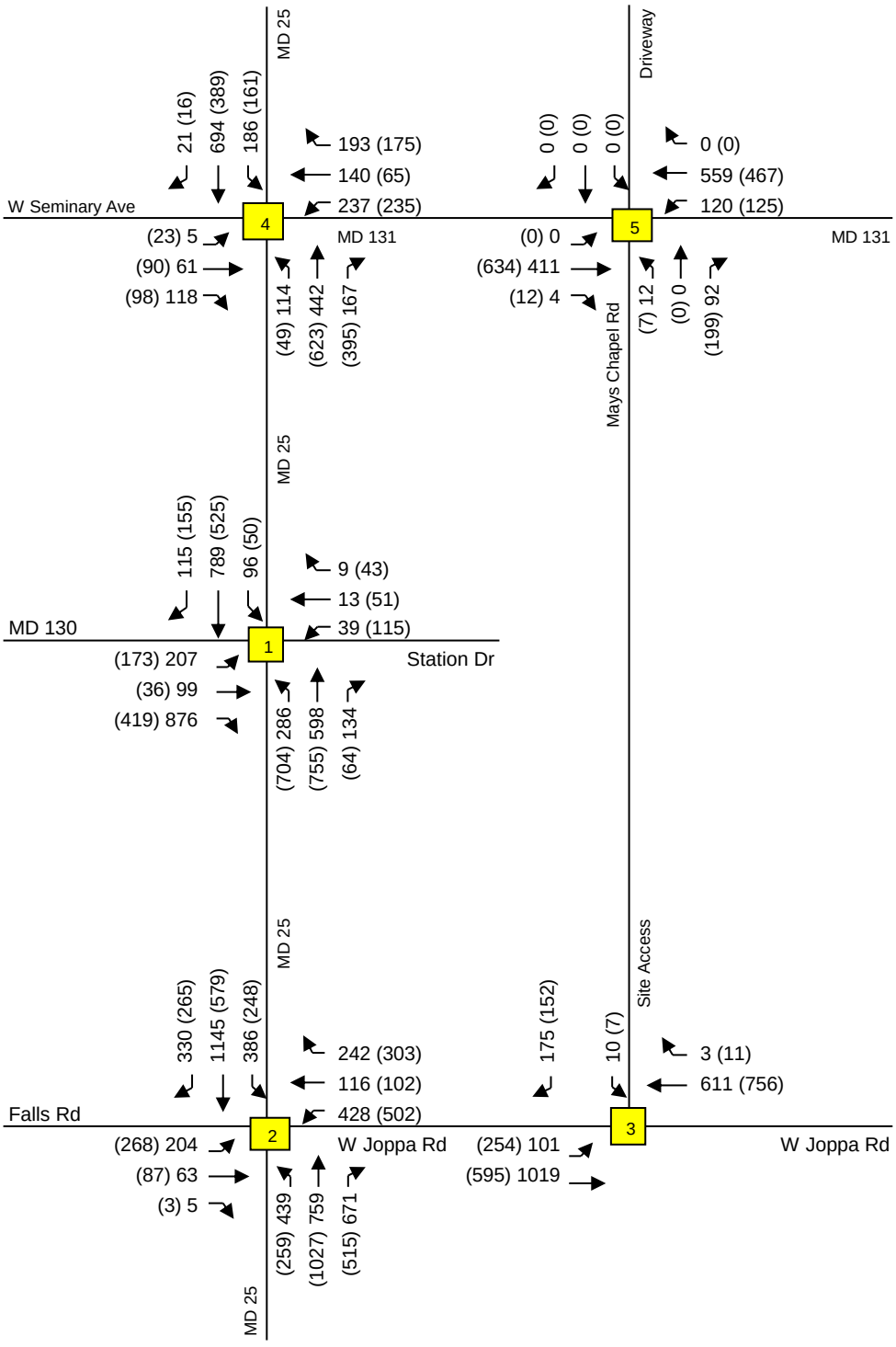
Traffic Impact Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

33% Diversion for MD 25 Due to Connection

Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

Exhibit B-1a



Traffic Impact Analysis

Total Peak Hour Volumes
33% Diversion

Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

Exhibit B-1b

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SEVERNA PARK, MD 21146
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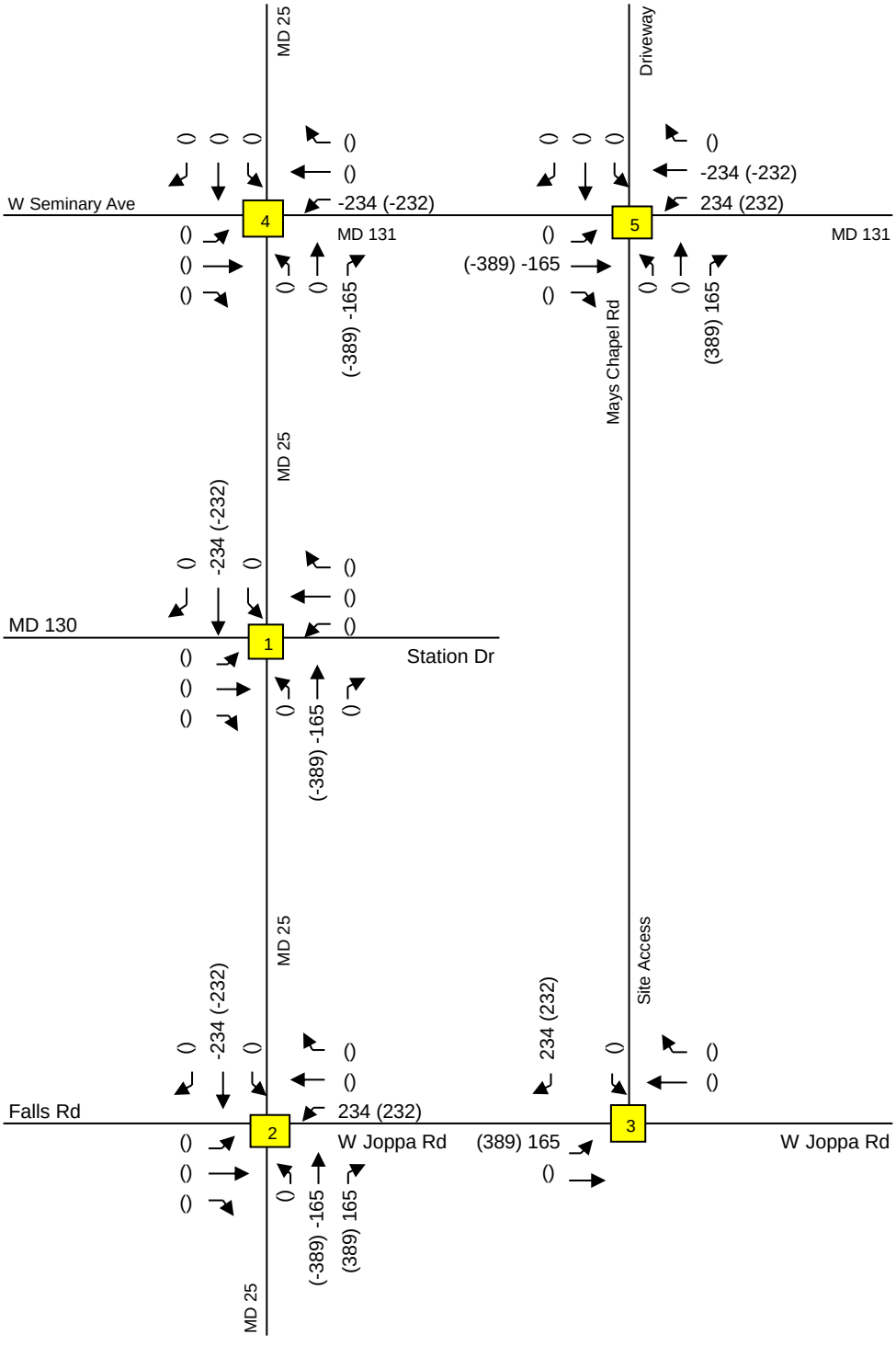


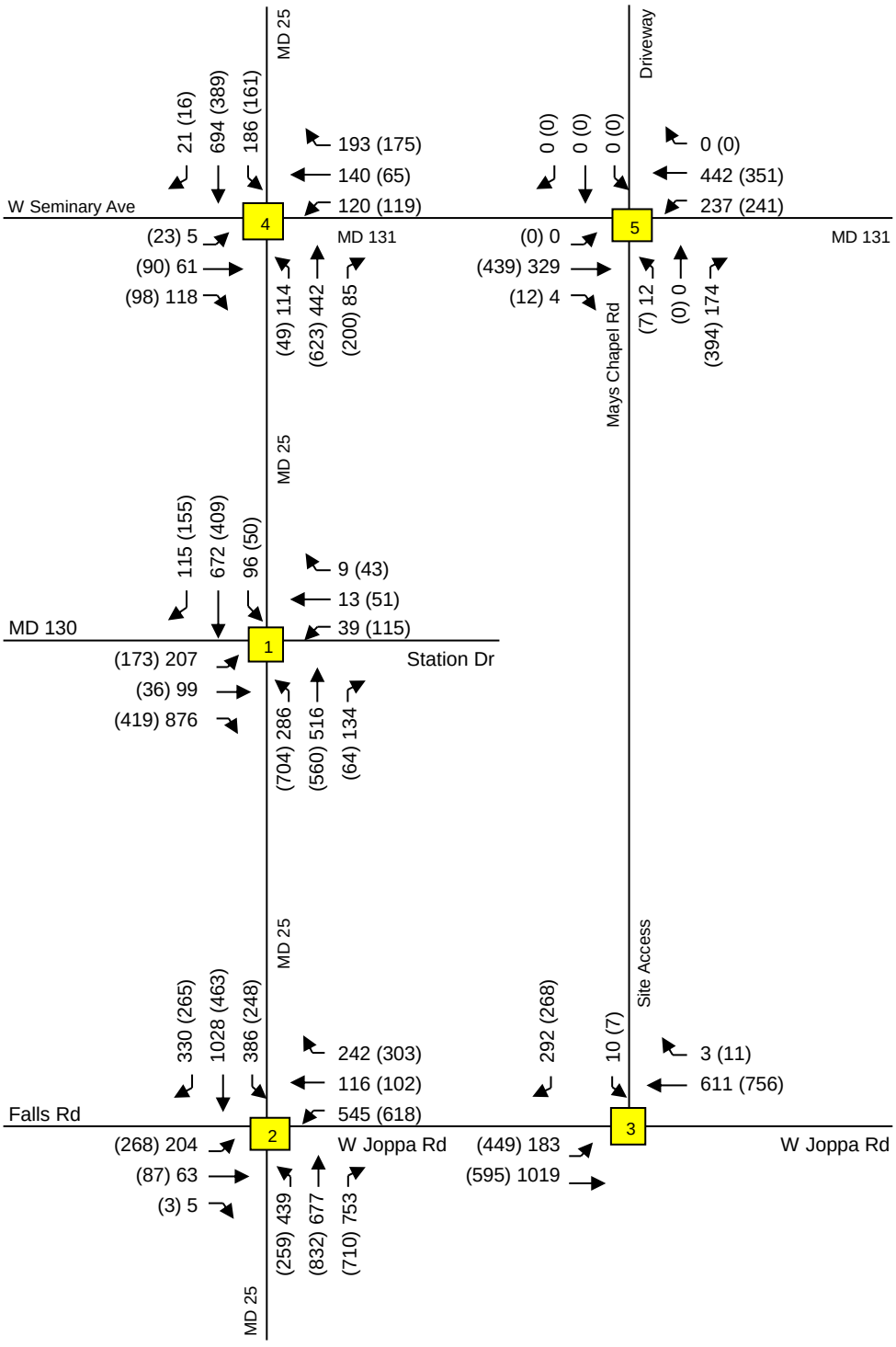
Traffic Impact Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

66% Diversion for MD 25 Due to Connection

Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

Exhibit B-2a



Traffic Impact Analysis

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SEVERNA PARK, MD 21146
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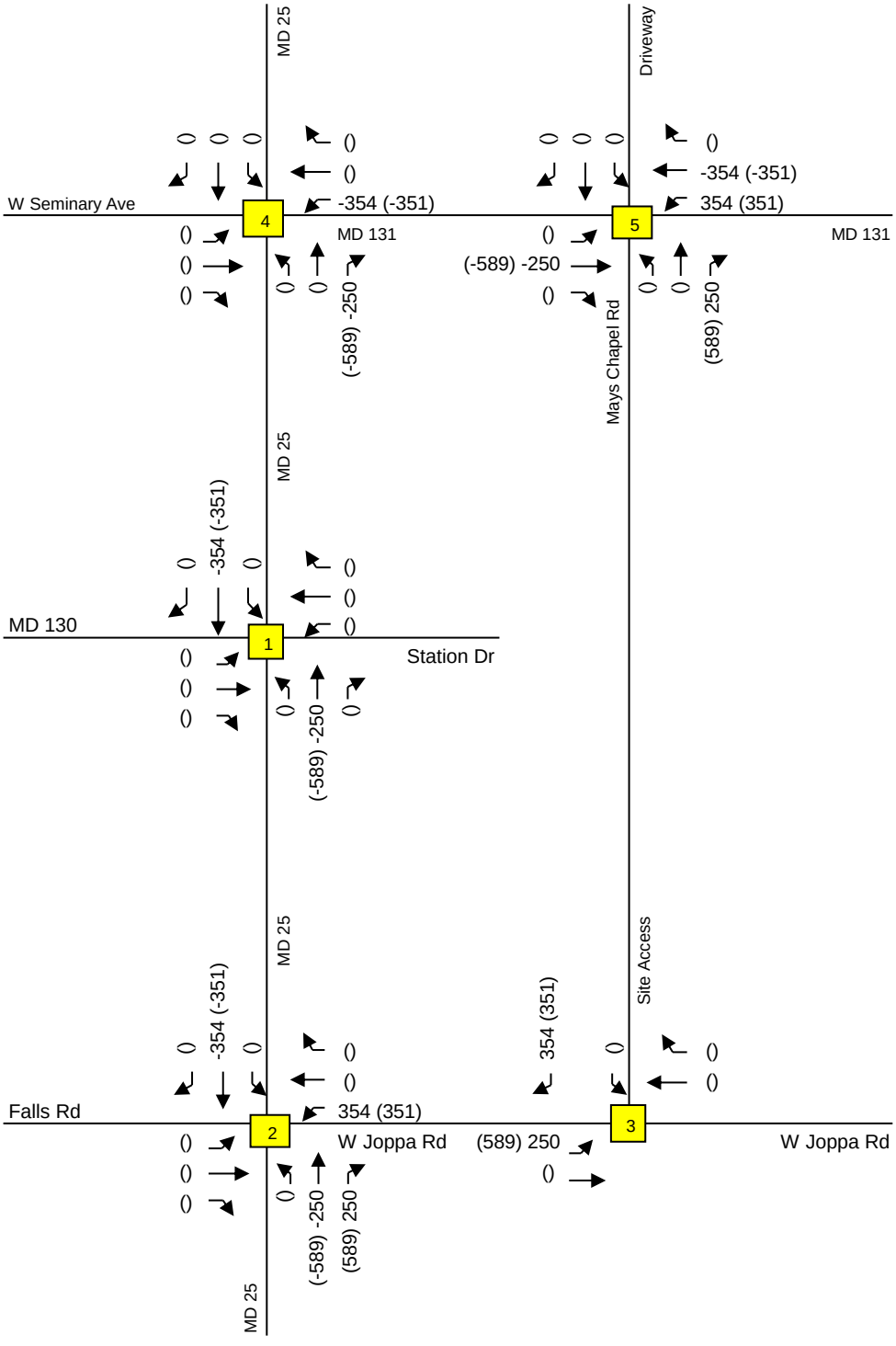
Total Peak Hour Volumes
66% Diversion

Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

Exhibit B-2b



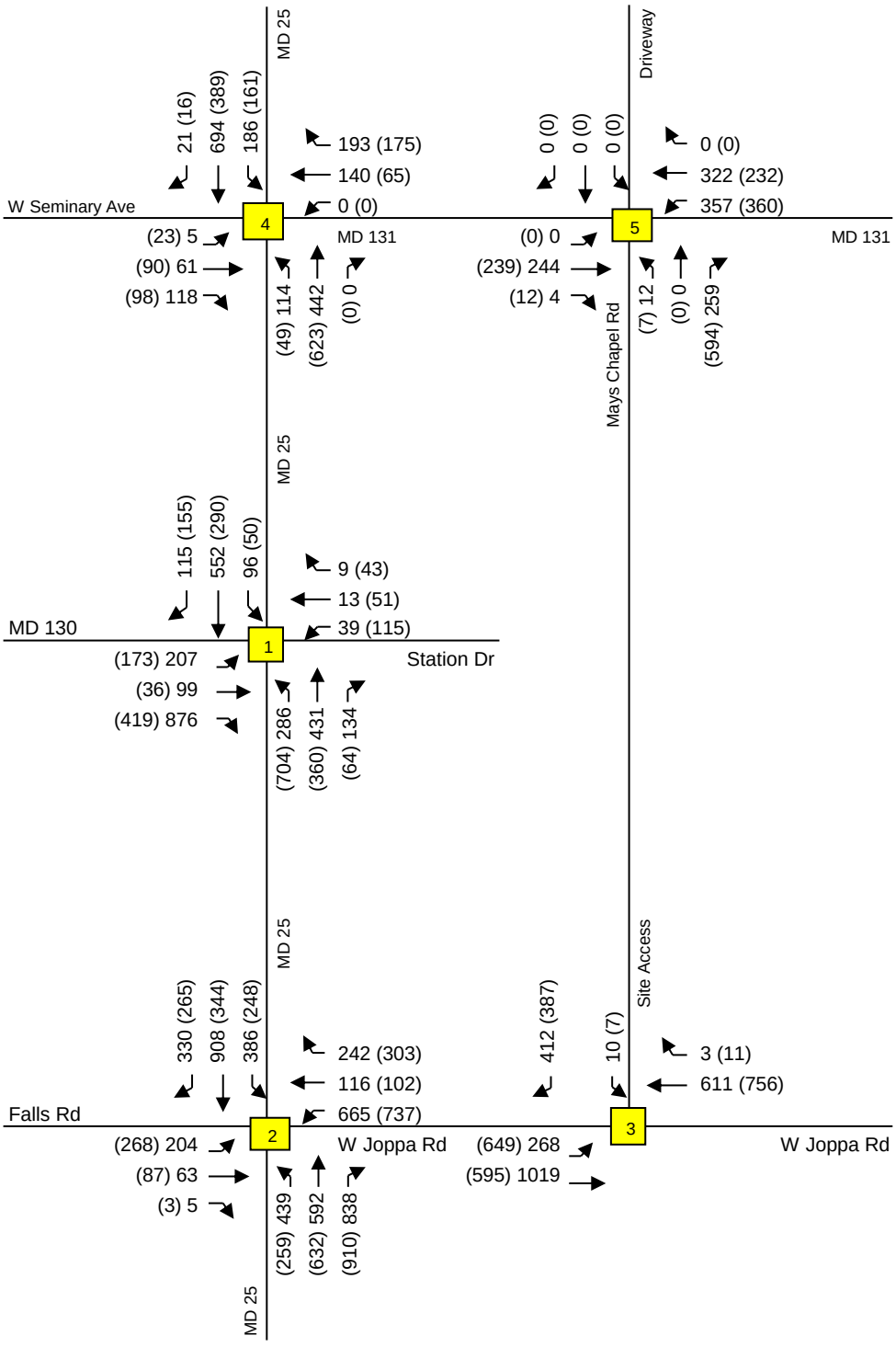
Traffic Impact Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

100% Diversion for MD 25 Due to Connection

Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

Exhibit B-3a



Traffic Impact Analysis

Total Peak Hour Volumes
100% Diversion

Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

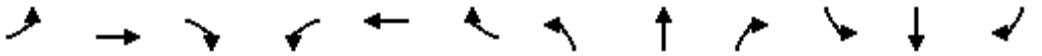
Exhibit B-3b

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	99	876	39	13	9	286	598	134	96	789	115
Future Volume (vph)	207	99	876	39	13	9	286	598	134	96	789	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1738	1583	1770	1746		3433	3442		1770	3539	1583
Flt Permitted	0.60	0.90	1.00	0.65	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1057	1592	1583	1202	1746		3433	3442		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	108	952	42	14	10	311	650	146	104	858	125
RTOR Reduction (vph)	0	0	0	0	9	0	0	9	0	0	0	0
Lane Group Flow (vph)	164	169	952	42	15	0	311	787	0	104	858	125
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	33.4	33.4	165.0	10.4	10.4		30.0	101.6		15.0	86.1	165.0
Effective Green, g (s)	35.4	35.4	165.0	12.4	12.4		32.0	104.1		17.0	88.6	165.0
Actuated g/C Ratio	0.21	0.21	1.00	0.08	0.08		0.19	0.63		0.10	0.54	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	302	359	1583	90	131		665	2171		182	1900	1583
v/s Ratio Prot	0.07	0.06			0.01		0.09	0.23		0.06	0.24	
v/s Ratio Perm	0.05	0.04	c0.60	0.03								0.08
v/c Ratio	0.54	0.47	0.60	0.47	0.11		0.47	0.36		0.57	0.45	0.08
Uniform Delay, d1	56.4	56.6	0.0	73.1	71.2		58.9	14.6		70.5	23.3	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.77	0.70		0.89	0.78	1.00
Incremental Delay, d2	2.0	1.2	1.7	4.5	0.5		1.8	0.4		3.1	0.6	0.1
Delay (s)	58.4	57.8	1.7	77.6	71.6		47.2	10.5		66.0	18.8	0.1
Level of Service	E	E	A	E	E		D	B		E	B	A
Approach Delay (s)		16.3			75.4			20.8			21.2	
Approach LOS		B			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

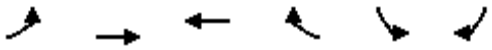
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	63	5	428	116	242	439	759	666	386	1145	330
Future Volume (vph)	204	63	5	428	116	242	439	759	666	386	1145	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1844		3433	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.22	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1844		3433	1863	1583	418	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	68	5	465	126	263	477	825	724	420	1245	359
RTOR Reduction (vph)	0	2	0	0	0	234	0	0	0	0	0	0
Lane Group Flow (vph)	222	71	0	465	126	29	477	825	724	420	1245	359
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	11.0	11.0		16.0	16.0	16.0	73.6	72.1	165.0	44.4	72.5	165.0
Effective Green, g (s)	13.0	13.0		18.0	18.0	18.0	75.6	75.6	165.0	46.4	76.0	165.0
Actuated g/C Ratio	0.08	0.08		0.11	0.11	0.11	0.46	0.46	1.00	0.28	0.46	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	270	145		374	203	172	568	1621	1583	497	1630	1583
v/s Ratio Prot	c0.06	0.04		c0.14	0.07		c0.23	0.23		c0.24	0.35	
v/s Ratio Perm						0.02	c0.15		0.46			0.23
v/c Ratio	0.82	0.49		1.24	0.62	0.17	0.84	0.51	0.46	0.85	0.76	0.23
Uniform Delay, d1	74.9	72.8		73.5	70.2	66.7	42.0	31.6	0.0	55.9	37.0	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.79	0.67	1.00
Incremental Delay, d2	17.9	2.6		130.2	5.8	0.5	10.8	1.1	1.0	11.7	3.1	0.3
Delay (s)	92.8	75.4		203.7	76.0	67.2	52.8	32.7	1.0	55.7	28.1	0.3
Level of Service	F	E		F	E	E	D	C	A	E	C	A
Approach Delay (s)		88.5			142.8			26.1			28.9	
Approach LOS		F			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	49.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		

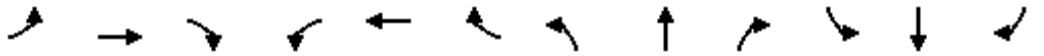
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	101	1019	611	3	10	175
Future Volume (Veh/h)	101	1019	611	3	10	175
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	110	1108	664	3	11	190
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1001				
pX, platoon unblocked						
vC, conflicting volume	667				1994	666
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	667				1994	666
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	88				81	59
cM capacity (veh/h)	923				59	460

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	110	1108	667	201
Volume Left	110	0	0	11
Volume Right	0	0	3	190
cSH	923	1700	1700	334
Volume to Capacity	0.12	0.65	0.39	0.60
Queue Length 95th (ft)	10	0	0	93
Control Delay (s)	9.4	0.0	0.0	30.8
Lane LOS	A			D
Approach Delay (s)	0.9		0.0	30.8
Approach LOS				D

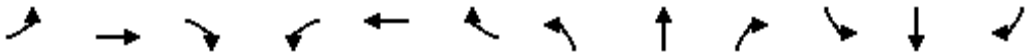
Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	61	118	237	140	193	114	442	467	186	694	21
Future Volume (vph)	5	61	118	237	140	193	114	442	467	186	694	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	4.0	3.5		3.0	3.0	3.0	3.0	4.5	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1856	1583	1770	1701		1770	1863	1583	1770	1854	
Flt Permitted		0.96	1.00	0.45	1.00		0.16	1.00	1.00	0.36	1.00	
Satd. Flow (perm)		1782	1583	830	1701		305	1863	1583	674	1854	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	66	128	258	152	210	124	480	508	202	754	23
RTOR Reduction (vph)	0	0	117	0	34	0	0	0	224	0	0	0
Lane Group Flow (vph)	0	71	11	258	328	0	124	480	284	202	777	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		11.9	11.9	45.2	45.2		102.1	89.4	89.4	101.0	88.1	
Effective Green, g (s)		14.4	14.4	47.2	47.7		107.1	92.4	92.4	106.0	91.1	
Actuated g/C Ratio		0.09	0.09	0.29	0.29		0.65	0.56	0.56	0.64	0.55	
Clearance Time (s)		6.0	6.0	6.0	6.0		5.5	6.0	6.0	5.5	7.5	
Vehicle Extension (s)		3.0	3.0	4.5	3.0		3.0	6.0	6.0	3.0	6.0	
Lane Grp Cap (vph)		155	138	404	491		332	1043	886	535	1023	
v/s Ratio Prot				0.11	c0.19		0.03	0.26		c0.04	c0.42	
v/s Ratio Perm		0.04	0.01	0.07			0.21		0.18	0.21		
v/c Ratio		0.46	0.08	0.64	0.67		0.37	0.46	0.32	0.38	0.76	
Uniform Delay, d1		71.6	69.2	49.4	51.7		20.7	21.5	19.5	14.1	28.5	
Progression Factor		1.00	1.00	1.00	1.00		0.59	0.65	1.37	1.00	1.00	
Incremental Delay, d2		2.1	0.3	4.1	3.4		0.7	1.4	0.9	0.4	5.3	
Delay (s)		73.7	69.5	53.5	55.1		13.0	15.4	27.5	14.5	33.8	
Level of Service		E	E	D	E		B	B	C	B	C	
Approach Delay (s)		71.0			54.4			20.7			29.8	
Approach LOS		E			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	411	4	120	559	0	12	0	92	0	0	0
Future Volume (Veh/h)	0	411	4	120	559	0	12	0	92	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	447	4	130	608	0	13	0	100	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	608			451			1315	1315	447	1415	1319	608
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	608			451			1315	1315	447	1415	1319	608
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			88			89	100	84	100	100	100
cM capacity (veh/h)	970			1109			123	139	612	88	139	496

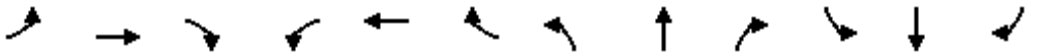
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	447	4	130	608	113	0
Volume Left	0	0	130	0	13	0
Volume Right	0	4	0	0	100	0
cSH	970	1700	1109	1700	419	1700
Volume to Capacity	0.00	0.00	0.12	0.36	0.27	0.00
Queue Length 95th (ft)	0	0	10	0	27	0
Control Delay (s)	0.0	0.0	8.7	0.0	16.7	0.0
Lane LOS			A		C	A
Approach Delay (s)	0.0		1.5		16.7	0.0
Approach LOS					C	A

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	67.4%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	99	876	39	13	9	286	516	134	96	672	115
Future Volume (vph)	207	99	876	39	13	9	286	516	134	96	672	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1738	1583	1770	1746		3433	3430		1770	3539	1583
Flt Permitted	0.60	0.90	1.00	0.65	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1057	1592	1583	1202	1746		3433	3430		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	108	952	42	14	10	311	561	146	104	730	125
RTOR Reduction (vph)	0	0	0	0	9	0	0	11	0	0	0	0
Lane Group Flow (vph)	164	169	952	42	15	0	311	696	0	104	730	125
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	33.4	33.4	165.0	10.4	10.4		29.8	101.6		15.0	86.3	165.0
Effective Green, g (s)	35.4	35.4	165.0	12.4	12.4		31.8	104.1		17.0	88.8	165.0
Actuated g/C Ratio	0.21	0.21	1.00	0.08	0.08		0.19	0.63		0.10	0.54	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	302	359	1583	90	131		661	2164		182	1904	1583
v/s Ratio Prot	0.07	0.06			0.01		0.09	0.20		0.06	0.21	
v/s Ratio Perm	0.05	0.04	c0.60	0.03								0.08
v/c Ratio	0.54	0.47	0.60	0.47	0.11		0.47	0.32		0.57	0.38	0.08
Uniform Delay, d1	56.4	56.6	0.0	73.1	71.2		59.1	14.1		70.5	22.2	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.81	0.74		0.85	0.94	1.00
Incremental Delay, d2	2.0	1.2	1.7	4.5	0.5		1.9	0.3		3.4	0.5	0.1
Delay (s)	58.4	57.8	1.7	77.6	71.6		49.6	10.7		63.1	21.3	0.1
Level of Service	E	E	A	E	E		D	B		E	C	A
Approach Delay (s)		16.3			75.4			22.6			23.1	
Approach LOS		B			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

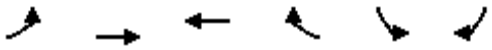
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	63	5	545	116	242	439	677	753	386	1028	330
Future Volume (vph)	204	63	5	545	116	242	439	677	753	386	1028	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1844		3433	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.26	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1844		3433	1863	1583	475	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	68	5	592	126	263	477	736	818	420	1117	359
RTOR Reduction (vph)	0	2	0	0	0	234	0	0	0	0	0	0
Lane Group Flow (vph)	222	71	0	592	126	29	477	736	818	420	1117	359
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	11.0	11.0		16.0	16.0	16.0	73.6	72.1	165.0	44.4	72.5	165.0
Effective Green, g (s)	13.0	13.0		18.0	18.0	18.0	75.6	75.6	165.0	46.4	76.0	165.0
Actuated g/C Ratio	0.08	0.08		0.11	0.11	0.11	0.46	0.46	1.00	0.28	0.46	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	270	145		374	203	172	578	1621	1583	497	1630	1583
v/s Ratio Prot	c0.06	0.04		c0.17	0.07		c0.23	0.21		c0.24	0.32	
v/s Ratio Perm						0.02	c0.15		0.52			0.23
v/c Ratio	0.82	0.49		1.58	0.62	0.17	0.83	0.45	0.52	0.85	0.69	0.23
Uniform Delay, d1	74.9	72.8		73.5	70.2	66.7	41.3	30.6	0.0	55.9	35.1	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.77	0.65	1.00
Incremental Delay, d2	17.9	2.6		274.8	5.8	0.5	9.6	0.9	1.2	11.9	2.1	0.3
Delay (s)	92.8	75.4		348.3	76.0	67.2	50.9	31.5	1.2	54.7	24.8	0.3
Level of Service	F	E		F	E	E	D	C	A	D	C	A
Approach Delay (s)		88.5			237.9			23.9			26.8	
Approach LOS		F			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	68.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		

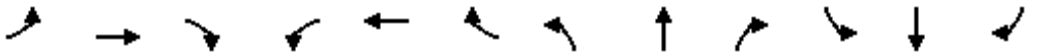
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	183	1019	611	3	10	292
Future Volume (Veh/h)	183	1019	611	3	10	292
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	199	1108	664	3	11	317
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1001				
pX, platoon unblocked						
vC, conflicting volume	667				2172	666
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	667				2172	666
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	78				73	31
cM capacity (veh/h)	923				40	460

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	199	1108	667	328
Volume Left	199	0	0	11
Volume Right	0	0	3	317
cSH	923	1700	1700	341
Volume to Capacity	0.22	0.65	0.39	0.96
Queue Length 95th (ft)	20	0	0	258
Control Delay (s)	10.0	0.0	0.0	75.4
Lane LOS	A			F
Approach Delay (s)	1.5		0.0	75.4
Approach LOS				F

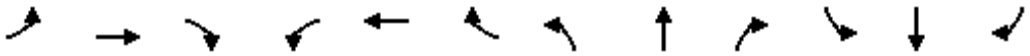
Intersection Summary			
Average Delay	11.6		
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	61	118	120	140	193	114	442	85	186	694	21
Future Volume (vph)	5	61	118	120	140	193	114	442	85	186	694	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	4.0	3.5		3.0	3.0	3.0	3.0	4.5	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1856	1583	1770	1701		1770	1863	1583	1770	1854	
Flt Permitted		0.96	1.00	0.48	1.00		0.20	1.00	1.00	0.39	1.00	
Satd. Flow (perm)		1788	1583	890	1701		375	1863	1583	733	1854	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	66	128	130	152	210	124	480	92	202	754	23
RTOR Reduction (vph)	0	0	115	0	36	0	0	0	35	0	0	0
Lane Group Flow (vph)	0	71	13	130	326	0	124	480	57	202	777	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		14.1	14.1	37.2	37.2		111.1	98.5	98.5	108.0	96.2	
Effective Green, g (s)		16.6	16.6	39.2	39.7		116.1	101.5	101.5	113.0	99.2	
Actuated g/C Ratio		0.10	0.10	0.24	0.24		0.70	0.62	0.62	0.68	0.60	
Clearance Time (s)		6.0	6.0	6.0	6.0		5.5	6.0	6.0	5.5	7.5	
Vehicle Extension (s)		3.0	3.0	4.5	3.0		3.0	6.0	6.0	3.0	6.0	
Lane Grp Cap (vph)		179	159	313	409		391	1146	973	591	1114	
v/s Ratio Prot				0.05	c0.19		c0.03	0.26		c0.03	c0.42	
v/s Ratio Perm		0.04	0.01	0.05			0.19		0.04	0.20		
v/c Ratio		0.40	0.08	0.42	0.80		0.32	0.42	0.06	0.34	0.70	
Uniform Delay, d1		69.5	67.3	51.9	58.8		15.7	16.5	12.7	10.7	22.6	
Progression Factor		1.00	1.00	1.00	1.00		0.56	0.61	0.86	1.00	1.00	
Incremental Delay, d2		1.4	0.2	1.5	10.3		0.4	1.1	0.1	0.3	3.6	
Delay (s)		71.0	67.5	53.4	69.1		9.2	11.1	11.0	11.0	26.2	
Level of Service		E	E	D	E		A	B	B	B	C	
Approach Delay (s)		68.7			65.0			10.7			23.1	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	329	4	237	442	0	12	0	174	0	0	0
Future Volume (Veh/h)	0	329	4	237	442	0	12	0	174	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	358	4	258	480	0	13	0	189	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	480			362			1354	1354	358	1543	1358	480
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	480			362			1354	1354	358	1543	1358	480
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			78			88	100	72	100	100	100
cM capacity (veh/h)	1082			1197			106	117	686	57	117	586

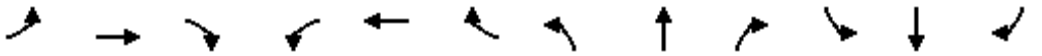
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	358	4	258	480	202	0
Volume Left	0	0	258	0	13	0
Volume Right	0	4	0	0	189	0
cSH	1082	1700	1197	1700	507	1700
Volume to Capacity	0.00	0.00	0.22	0.28	0.40	0.00
Queue Length 95th (ft)	0	0	20	0	47	0
Control Delay (s)	0.0	0.0	8.8	0.0	16.7	0.0
Lane LOS			A		C	A
Approach Delay (s)	0.0		3.1		16.7	0.0
Approach LOS					C	A

Intersection Summary				
Average Delay	4.3			
Intersection Capacity Utilization	62.0%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	99	876	39	13	9	286	431	134	96	552	115
Future Volume (vph)	207	99	876	39	13	9	286	431	134	96	552	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1738	1583	1770	1746		3433	3413		1770	3539	1583
Flt Permitted	0.60	0.90	1.00	0.65	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1057	1592	1583	1202	1746		3433	3413		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	108	952	42	14	10	311	468	146	104	600	125
RTOR Reduction (vph)	0	0	0	0	9	0	0	14	0	0	0	0
Lane Group Flow (vph)	164	169	952	42	15	0	311	600	0	104	600	125
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	33.3	33.3	165.0	10.4	10.4		29.5	101.7		15.0	86.7	165.0
Effective Green, g (s)	35.3	35.3	165.0	12.4	12.4		31.5	104.2		17.0	89.2	165.0
Actuated g/C Ratio	0.21	0.21	1.00	0.08	0.08		0.19	0.63		0.10	0.54	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	301	358	1583	90	131		655	2155		182	1913	1583
v/s Ratio Prot	0.07	0.06			0.01		0.09	0.18		0.06	0.17	
v/s Ratio Perm	0.05	0.04	c0.60	0.03								0.08
v/c Ratio	0.54	0.47	0.60	0.47	0.11		0.47	0.28		0.57	0.31	0.08
Uniform Delay, d1	56.5	56.7	0.0	73.1	71.2		59.4	13.6		70.5	21.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.85	0.79		0.74	1.07	1.00
Incremental Delay, d2	2.0	1.2	1.7	4.5	0.5		2.0	0.3		3.3	0.3	0.1
Delay (s)	58.5	57.9	1.7	77.6	71.6		52.2	10.9		55.6	22.7	0.1
Level of Service	E	E	A	E	E		D	B		E	C	A
Approach Delay (s)		16.3			75.4			24.8			23.4	
Approach LOS		B			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

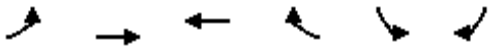
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	63	5	665	116	242	439	592	838	386	908	330
Future Volume (vph)	204	63	5	665	116	242	439	592	838	386	908	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1844		3433	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.29	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1844		3433	1863	1583	541	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	68	5	723	126	263	477	643	911	420	987	359
RTOR Reduction (vph)	0	2	0	0	0	234	0	0	0	0	0	0
Lane Group Flow (vph)	222	71	0	723	126	29	477	643	911	420	987	359
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	11.0	11.0		16.0	16.0	16.0	73.6	72.1	165.0	44.4	72.5	165.0
Effective Green, g (s)	13.0	13.0		18.0	18.0	18.0	75.6	75.6	165.0	46.4	76.0	165.0
Actuated g/C Ratio	0.08	0.08		0.11	0.11	0.11	0.46	0.46	1.00	0.28	0.46	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	270	145		374	203	172	590	1621	1583	497	1630	1583
v/s Ratio Prot	c0.06	0.04		c0.21	0.07		c0.23	0.18		c0.24	0.28	
v/s Ratio Perm						0.02	c0.14		0.58			0.23
v/c Ratio	0.82	0.49		1.93	0.62	0.17	0.81	0.40	0.58	0.85	0.61	0.23
Uniform Delay, d1	74.9	72.8		73.5	70.2	66.7	40.5	29.6	0.0	55.9	33.3	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.72	0.66	1.00
Incremental Delay, d2	17.9	2.6		429.7	5.8	0.5	8.2	0.7	1.5	12.0	1.5	0.3
Delay (s)	92.8	75.4		503.2	76.0	67.2	48.7	30.3	1.5	52.2	23.5	0.3
Level of Service	F	E		F	E	E	D	C	A	D	C	A
Approach Delay (s)		88.5			351.6			21.7			25.6	
Approach LOS		F			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	97.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		

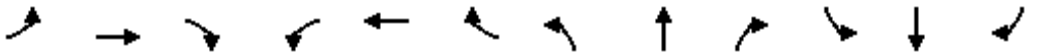
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	268	1019	611	3	10	412
Future Volume (Veh/h)	268	1019	611	3	10	412
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	291	1108	664	3	11	448
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1001				
pX, platoon unblocked						
vC, conflicting volume	667				2356	666
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	667				2356	666
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	68				59	3
cM capacity (veh/h)	923				27	460

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	291	1108	667	459
Volume Left	291	0	0	11
Volume Right	0	0	3	448
cSH	923	1700	1700	332
Volume to Capacity	0.32	0.65	0.39	1.38
Queue Length 95th (ft)	34	0	0	583
Control Delay (s)	10.7	0.0	0.0	221.6
Lane LOS	B			F
Approach Delay (s)	2.2		0.0	221.6
Approach LOS				F

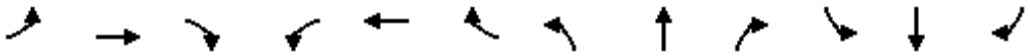
Intersection Summary			
Average Delay	41.5		
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	61	118	0	140	193	114	442	0	186	694	21
Future Volume (vph)	5	61	118	0	140	193	114	442	0	186	694	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5		3.5		3.0	3.0		3.0	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85		0.91		1.00	1.00		1.00	1.00	
Flt Protected		1.00	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1856	1583		1701		1770	1863		1770	1854	
Flt Permitted		0.86	1.00		1.00		0.20	1.00		0.39	1.00	
Satd. Flow (perm)		1603	1583		1701		373	1863		730	1854	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	66	128	0	152	210	124	480	0	202	754	23
RTOR Reduction (vph)	0	0	97	0	36	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	71	31	0	326	0	124	480	0	202	777	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		37.5	37.5		37.5		110.7	98.1		107.8	95.9	
Effective Green, g (s)		40.0	40.0		40.0		115.7	101.1		112.8	98.9	
Actuated g/C Ratio		0.24	0.24		0.24		0.70	0.61		0.68	0.60	
Clearance Time (s)		6.0	6.0		6.0		5.5	6.0		5.5	7.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	6.0		3.0	6.0	
Lane Grp Cap (vph)		388	383		412		389	1141		589	1111	
v/s Ratio Prot					c0.19		c0.03	0.26		c0.03	c0.42	
v/s Ratio Perm		0.04	0.02				0.19			0.20		
v/c Ratio		0.18	0.08		0.79		0.32	0.42		0.34	0.70	
Uniform Delay, d1		49.5	48.3		58.6		15.9	16.7		10.8	22.8	
Progression Factor		1.00	1.00		1.00		0.77	0.67		1.00	1.00	
Incremental Delay, d2		0.2	0.1		9.9		0.5	1.1		0.4	3.7	
Delay (s)		49.8	48.4		68.5		12.6	12.2		11.2	26.5	
Level of Service		D	D		E		B	B		B	C	
Approach Delay (s)		48.9			68.5			12.3			23.3	
Approach LOS		D			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	244	4	357	322	0	12	0	259	0	0	0
Future Volume (Veh/h)	0	244	4	357	322	0	12	0	259	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	265	4	388	350	0	13	0	282	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	350			269			1391	1391	265	1673	1395	350
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	350			269			1391	1391	265	1673	1395	350
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			70			86	100	64	100	100	100
cM capacity (veh/h)	1209			1295			92	100	774	37	99	693

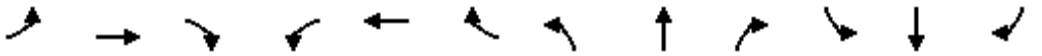
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	265	4	388	350	295	0
Volume Left	0	0	388	0	13	0
Volume Right	0	4	0	0	282	0
cSH	1209	1700	1295	1700	583	1700
Volume to Capacity	0.00	0.00	0.30	0.21	0.51	0.00
Queue Length 95th (ft)	0	0	32	0	71	0
Control Delay (s)	0.0	0.0	9.0	0.0	17.3	0.0
Lane LOS			A		C	A
Approach Delay (s)	0.0		4.7		17.3	0.0
Approach LOS					C	A

Intersection Summary				
Average Delay	6.6			
Intersection Capacity Utilization	59.3%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	36	419	115	51	43	704	755	64	50	525	155
Future Volume (vph)	173	36	419	115	51	43	704	755	64	50	525	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1713	1583	1770	1734		3433	3498		1770	3539	1583
Flt Permitted	0.47	0.63	1.00	0.68	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	824	1117	1583	1266	1734		3433	3498		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	188	39	455	125	55	47	765	821	70	54	571	168
RTOR Reduction (vph)	0	0	0	0	19	0	0	3	0	0	0	0
Lane Group Flow (vph)	113	114	455	125	83	0	765	888	0	54	571	168
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	41.9	41.9	165.0	21.1	21.1		45.0	99.0		9.1	62.6	165.0
Effective Green, g (s)	43.9	43.9	165.0	23.1	23.1		47.0	101.5		11.1	65.1	165.0
Actuated g/C Ratio	0.27	0.27	1.00	0.14	0.14		0.28	0.62		0.07	0.39	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	311	361	1583	177	242		977	2151		119	1396	1583
v/s Ratio Prot	c0.04	0.03			0.05		c0.22	0.25		c0.03	c0.16	
v/s Ratio Perm	0.06	0.05	0.29	c0.10								0.11
v/c Ratio	0.36	0.32	0.29	0.71	0.34		0.78	0.41		0.45	0.41	0.11
Uniform Delay, d1	47.9	48.5	0.0	67.7	64.1		54.3	16.4		74.0	36.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.27	1.26		1.12	0.96	1.00
Incremental Delay, d2	0.7	0.6	0.5	12.5	1.0		4.5	0.4		2.4	0.8	0.1
Delay (s)	48.6	49.1	0.5	80.2	65.1		73.6	21.1		85.5	35.3	0.1
Level of Service	D	D	A	F	E		E	C		F	D	A
Approach Delay (s)		16.6			73.4			45.4			31.3	
Approach LOS		B			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

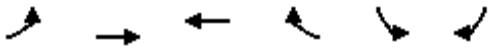
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	268	87	3	502	102	303	259	1027	515	248	579	265
Future Volume (vph)	268	87	3	502	102	303	259	1027	515	248	579	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1854		3433	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.28	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1854		3433	1863	1583	530	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	291	95	3	546	111	329	282	1116	560	270	629	288
RTOR Reduction (vph)	0	1	0	0	0	272	0	0	0	0	0	0
Lane Group Flow (vph)	291	97	0	546	111	57	282	1116	560	270	629	288
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	16.5	16.5		23.0	23.0	23.0	72.0	72.0	165.0	32.0	86.4	165.0
Effective Green, g (s)	18.5	18.5		25.0	25.0	25.0	74.0	75.5	165.0	34.0	89.9	165.0
Actuated g/C Ratio	0.11	0.11		0.15	0.15	0.15	0.45	0.46	1.00	0.21	0.54	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	384	207		520	282	239	384	1619	1583	364	1928	1583
v/s Ratio Prot	c0.08	0.05		c0.16	0.06		c0.09	0.32		c0.15	0.18	
v/s Ratio Perm						0.04	c0.24		0.35			0.18
v/c Ratio	0.76	0.47		1.05	0.39	0.24	0.73	0.69	0.35	0.74	0.33	0.18
Uniform Delay, d1	71.1	68.6		70.0	63.2	61.6	31.2	35.5	0.0	61.4	20.8	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.47	1.00
Incremental Delay, d2	8.3	1.7		53.2	0.9	0.5	7.3	2.4	0.6	8.0	0.4	0.2
Delay (s)	79.4	70.3		123.2	64.1	62.1	38.6	37.9	0.6	60.9	10.1	0.2
Level of Service	E	E		F	E	E	D	D	A	E	B	A
Approach Delay (s)		77.1			96.2			27.3			19.3	
Approach LOS		E			F			C			B	

Intersection Summary			
HCM 2000 Control Delay	44.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

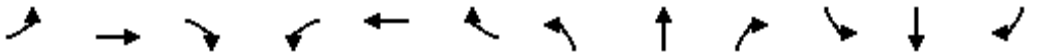
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	248	595	756	11	7	148
Future Volume (Veh/h)	248	595	756	11	7	148
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	270	647	822	12	8	161
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1001				
pX, platoon unblocked						
vC, conflicting volume	834				2015	828
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	834				2015	828
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	66				81	57
cM capacity (veh/h)	799				43	371

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	270	647	834	169
Volume Left	270	0	0	8
Volume Right	0	0	12	161
cSH	799	1700	1700	272
Volume to Capacity	0.34	0.38	0.49	0.62
Queue Length 95th (ft)	37	0	0	95
Control Delay (s)	11.8	0.0	0.0	37.8
Lane LOS	B			E
Approach Delay (s)	3.5		0.0	37.8
Approach LOS				E

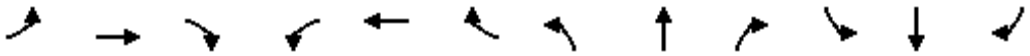
Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	90	98	235	65	175	49	623	395	161	389	16
Future Volume (vph)	23	90	98	235	65	175	49	623	395	161	389	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	4.0	3.5		3.0	3.0	3.0	3.0	4.5	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.89		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1844	1583	1770	1659		1770	1863	1583	1770	1852	
Flt Permitted		0.88	1.00	0.34	1.00		0.44	1.00	1.00	0.22	1.00	
Satd. Flow (perm)		1640	1583	627	1659		815	1863	1583	412	1852	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	98	107	255	71	190	53	677	429	175	423	17
RTOR Reduction (vph)	0	0	95	0	61	0	0	0	186	0	1	0
Lane Group Flow (vph)	0	123	12	255	200	0	53	677	243	175	439	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		16.3	16.3	46.2	46.2		96.5	90.4	90.4	104.6	93.7	
Effective Green, g (s)		18.8	18.8	48.2	48.7		101.5	93.4	93.4	107.8	96.7	
Actuated g/C Ratio		0.11	0.11	0.29	0.30		0.62	0.57	0.57	0.65	0.59	
Clearance Time (s)		6.0	6.0	6.0	6.0		5.5	6.0	6.0	5.5	7.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		186	180	362	489		551	1054	896	379	1085	
v/s Ratio Prot				c0.11	0.12		0.01	c0.36		c0.04	0.24	
v/s Ratio Perm		0.07	0.01	c0.09			0.05		0.15	0.26		
v/c Ratio		0.66	0.07	0.70	0.41		0.10	0.64	0.27	0.46	0.40	
Uniform Delay, d1		70.0	65.3	48.8	46.6		13.1	24.4	18.4	18.3	18.5	
Progression Factor		1.00	1.00	1.00	1.00		0.73	0.81	0.84	1.00	1.00	
Incremental Delay, d2		8.5	0.2	6.1	0.6		0.1	2.9	0.7	0.9	1.1	
Delay (s)		78.6	65.4	54.9	47.2		9.7	22.5	16.1	19.2	19.7	
Level of Service		E	E	D	D		A	C	B	B	B	
Approach Delay (s)		72.5			51.0			19.6			19.5	
Approach LOS		E			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	634	12	125	467	0	7	0	199	0	0	0
Future Volume (Veh/h)	0	634	12	125	467	0	7	0	199	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	689	13	136	508	0	8	0	216	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	508			702			1469	1469	689	1685	1482	508
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	508			702			1469	1469	689	1685	1482	508
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			85			91	100	52	100	100	100
cM capacity (veh/h)	1057			895			93	108	446	34	106	565

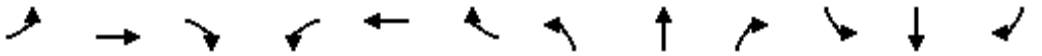
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	689	13	136	508	224	0
Volume Left	0	0	136	0	8	0
Volume Right	0	13	0	0	216	0
cSH	1057	1700	895	1700	393	1700
Volume to Capacity	0.00	0.01	0.15	0.30	0.57	0.00
Queue Length 95th (ft)	0	0	13	0	86	0
Control Delay (s)	0.0	0.0	9.7	0.0	25.7	0.0
Lane LOS			A		D	A
Approach Delay (s)	0.0		2.1		25.7	0.0
Approach LOS					D	A

Intersection Summary				
Average Delay	4.5			
Intersection Capacity Utilization	80.6%	ICU Level of Service		D
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	36	419	115	51	43	704	560	64	50	409	155
Future Volume (vph)	173	36	419	115	51	43	704	560	64	50	409	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1713	1583	1770	1734		3433	3484		1770	3539	1583
Flt Permitted	0.47	0.63	1.00	0.68	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	824	1117	1583	1266	1734		3433	3484		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	188	39	455	125	55	47	765	609	70	54	445	168
RTOR Reduction (vph)	0	0	0	0	19	0	0	4	0	0	0	0
Lane Group Flow (vph)	113	114	455	125	83	0	765	675	0	54	445	168
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	41.9	41.9	165.0	21.1	21.1		45.0	99.0		9.1	62.6	165.0
Effective Green, g (s)	43.9	43.9	165.0	23.1	23.1		47.0	101.5		11.1	65.1	165.0
Actuated g/C Ratio	0.27	0.27	1.00	0.14	0.14		0.28	0.62		0.07	0.39	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	311	361	1583	177	242		977	2143		119	1396	1583
v/s Ratio Prot	c0.04	0.03			0.05		c0.22	0.19		c0.03	c0.13	
v/s Ratio Perm	0.06	0.05	0.29	c0.10								0.11
v/c Ratio	0.36	0.32	0.29	0.71	0.34		0.78	0.31		0.45	0.32	0.11
Uniform Delay, d1	47.9	48.5	0.0	67.7	64.1		54.3	15.2		74.0	34.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.32	1.33		1.03	1.20	1.00
Incremental Delay, d2	0.7	0.6	0.5	12.5	1.0		5.0	0.3		2.6	0.6	0.1
Delay (s)	48.6	49.1	0.5	80.2	65.1		76.6	20.5		78.5	42.0	0.1
Level of Service	D	D	A	F	E		E	C		E	D	A
Approach Delay (s)		16.6			73.4			50.2			34.4	
Approach LOS		B			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

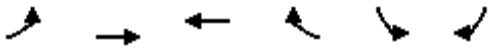
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	268	87	3	618	102	303	259	832	710	248	463	265
Future Volume (vph)	268	87	3	618	102	303	259	832	710	248	463	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1854		3433	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.36	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1854		3433	1863	1583	663	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	291	95	3	672	111	329	282	904	772	270	503	288
RTOR Reduction (vph)	0	1	0	0	0	279	0	0	0	0	0	0
Lane Group Flow (vph)	291	97	0	672	111	50	282	904	772	270	503	288
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	16.5	16.5		23.0	23.0	23.0	72.0	72.0	165.0	32.0	86.4	165.0
Effective Green, g (s)	18.5	18.5		25.0	25.0	25.0	74.0	75.5	165.0	34.0	89.9	165.0
Actuated g/C Ratio	0.11	0.11		0.15	0.15	0.15	0.45	0.46	1.00	0.21	0.54	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	384	207		520	282	239	428	1619	1583	364	1928	1583
v/s Ratio Prot	c0.08	0.05		c0.20	0.06		c0.08	0.26		c0.15	0.14	
v/s Ratio Perm						0.03	c0.22		0.49			0.18
v/c Ratio	0.76	0.47		1.29	0.39	0.21	0.66	0.56	0.49	0.74	0.26	0.18
Uniform Delay, d1	71.1	68.6		70.0	63.2	61.3	30.6	32.6	0.0	61.4	19.9	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.53	1.00
Incremental Delay, d2	8.3	1.7		145.4	0.9	0.4	3.8	1.4	1.1	8.1	0.3	0.2
Delay (s)	79.4	70.3		215.4	64.1	61.8	34.4	34.0	1.1	64.1	10.9	0.2
Level of Service	E	E		F	E	E	C	C	A	E	B	A
Approach Delay (s)		77.1			154.8			21.1			21.5	
Approach LOS		E			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	58.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		

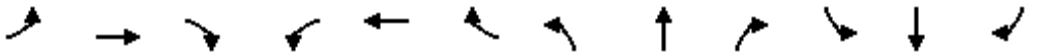
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	449	595	756	11	7	268
Future Volume (Veh/h)	449	595	756	11	7	268
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	488	647	822	12	8	291
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1001				
pX, platoon unblocked						
vC, conflicting volume	834				2451	828
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	834				2451	828
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	39				40	22
cM capacity (veh/h)	799				13	371

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	488	647	834	299
Volume Left	488	0	0	8
Volume Right	0	0	12	291
cSH	799	1700	1700	216
Volume to Capacity	0.61	0.38	0.49	1.39
Queue Length 95th (ft)	106	0	0	426
Control Delay (s)	16.3	0.0	0.0	243.0
Lane LOS	C			F
Approach Delay (s)	7.0		0.0	243.0
Approach LOS				F

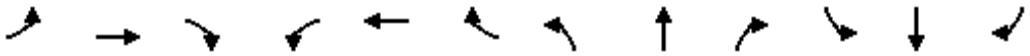
Intersection Summary			
Average Delay	35.6		
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	90	98	119	65	175	49	623	200	161	389	16
Future Volume (vph)	23	90	98	119	65	175	49	623	200	161	389	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	4.0	3.5		3.0	3.0	3.0	3.0	4.5	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.89		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1844	1583	1770	1659		1770	1863	1583	1770	1852	
Flt Permitted		0.88	1.00	0.36	1.00		0.46	1.00	1.00	0.25	1.00	
Satd. Flow (perm)		1644	1583	667	1659		851	1863	1583	471	1852	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	98	107	129	71	190	53	677	217	175	423	17
RTOR Reduction (vph)	0	0	94	0	65	0	0	0	84	0	1	0
Lane Group Flow (vph)	0	123	13	129	196	0	53	677	133	175	439	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		17.6	17.6	38.7	38.7		103.7	97.8	97.8	112.4	101.4	
Effective Green, g (s)		20.1	20.1	40.7	41.2		108.7	100.8	100.8	115.3	104.4	
Actuated g/C Ratio		0.12	0.12	0.25	0.25		0.66	0.61	0.61	0.70	0.63	
Clearance Time (s)		6.0	6.0	6.0	6.0		5.5	6.0	6.0	5.5	7.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		200	192	278	414		607	1138	967	435	1171	
v/s Ratio Prot				0.05	c0.12		0.00	c0.36		c0.03	0.24	
v/s Ratio Perm		c0.07	0.01	0.07			0.05		0.08	0.25		
v/c Ratio		0.61	0.07	0.46	0.47		0.09	0.59	0.14	0.40	0.38	
Uniform Delay, d1		68.8	64.2	50.9	52.7		10.2	19.6	13.6	14.2	14.6	
Progression Factor		1.00	1.00	1.00	1.00		0.89	0.95	1.36	1.00	1.00	
Incremental Delay, d2		5.5	0.2	1.2	0.9		0.1	2.2	0.3	0.6	0.9	
Delay (s)		74.3	64.3	52.1	53.5		9.1	20.9	18.8	14.8	15.5	
Level of Service		E	E	D	D		A	C	B	B	B	
Approach Delay (s)		69.6			53.1			19.7			15.3	
Approach LOS		E			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

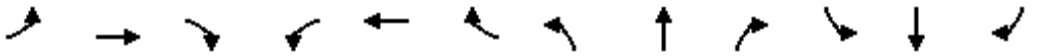
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	439	12	241	351	0	7	0	394	0	0	0
Future Volume (Veh/h)	0	439	12	241	351	0	7	0	394	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	477	13	262	382	0	8	0	428	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	382			490			1383	1383	477	1811	1396	382
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	382			490			1383	1383	477	1811	1396	382
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			76			92	100	27	100	100	100
cM capacity (veh/h)	1176			1073			98	109	588	13	107	665

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	477	13	262	382	436	0
Volume Left	0	0	262	0	8	0
Volume Right	0	13	0	0	428	0
cSH	1176	1700	1073	1700	539	1700
Volume to Capacity	0.00	0.01	0.24	0.22	0.81	0.00
Queue Length 95th (ft)	0	0	24	0	197	0
Control Delay (s)	0.0	0.0	9.4	0.0	34.1	0.0
Lane LOS			A		D	A
Approach Delay (s)	0.0		3.8		34.1	0.0
Approach LOS					D	A

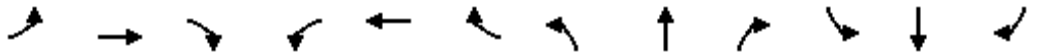
Intersection Summary				
Average Delay	11.1			
Intersection Capacity Utilization	76.3%	ICU Level of Service		D
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	36	419	115	51	43	704	360	64	50	290	155
Future Volume (vph)	173	36	419	115	51	43	704	360	64	50	290	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1713	1583	1770	1734		3433	3459		1770	3539	1583
Flt Permitted	0.47	0.63	1.00	0.68	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	824	1117	1583	1266	1734		3433	3459		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	188	39	455	125	55	47	765	391	70	54	315	168
RTOR Reduction (vph)	0	0	0	0	19	0	0	7	0	0	0	0
Lane Group Flow (vph)	113	114	455	125	83	0	765	454	0	54	315	168
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	41.9	41.9	165.0	21.1	21.1		45.0	99.0		9.1	62.6	165.0
Effective Green, g (s)	43.9	43.9	165.0	23.1	23.1		47.0	101.5		11.1	65.1	165.0
Actuated g/C Ratio	0.27	0.27	1.00	0.14	0.14		0.28	0.62		0.07	0.39	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	311	361	1583	177	242		977	2127		119	1396	1583
v/s Ratio Prot	c0.04	0.03			0.05		c0.22	0.13		c0.03	0.09	
v/s Ratio Perm	0.06	0.05	c0.29	c0.10								0.11
v/c Ratio	0.36	0.32	0.29	0.71	0.34		0.78	0.21		0.45	0.23	0.11
Uniform Delay, d1	47.9	48.5	0.0	67.7	64.1		54.3	14.1		74.0	33.2	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.36	1.41		0.95	1.39	1.00
Incremental Delay, d2	0.7	0.6	0.5	12.5	1.0		5.3	0.2		2.6	0.4	0.1
Delay (s)	48.6	49.1	0.5	80.2	65.1		79.1	20.0		72.8	46.4	0.1
Level of Service	D	D	A	F	E		E	C		E	D	A
Approach Delay (s)		16.6			73.4			56.9			34.6	
Approach LOS		B			E			E			C	

Intersection Summary			
HCM 2000 Control Delay	43.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

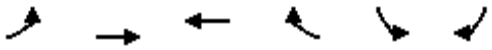
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	268	87	3	737	102	303	259	632	910	248	344	265
Future Volume (vph)	268	87	3	737	102	303	259	632	910	248	344	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1854		3433	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.44	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1854		3433	1863	1583	819	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	291	95	3	801	111	329	282	687	989	270	374	288
RTOR Reduction (vph)	0	1	0	0	0	279	0	0	0	0	0	0
Lane Group Flow (vph)	291	97	0	801	111	50	282	687	989	270	374	288
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	16.5	16.5		23.0	23.0	23.0	72.0	72.0	165.0	32.0	86.4	165.0
Effective Green, g (s)	18.5	18.5		25.0	25.0	25.0	74.0	75.5	165.0	34.0	89.9	165.0
Actuated g/C Ratio	0.11	0.11		0.15	0.15	0.15	0.45	0.46	1.00	0.21	0.54	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	384	207		520	282	239	480	1619	1583	364	1928	1583
v/s Ratio Prot	c0.08	0.05		c0.23	0.06		0.07	0.19		c0.15	0.11	
v/s Ratio Perm						0.03	0.19		c0.62			0.18
v/c Ratio	0.76	0.47		1.54	0.39	0.21	0.59	0.42	0.62	0.74	0.19	0.18
Uniform Delay, d1	71.1	68.6		70.0	63.2	61.3	30.2	30.1	0.0	61.4	19.1	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.61	1.00
Incremental Delay, d2	8.3	1.7		252.7	0.9	0.4	2.0	0.8	1.9	8.2	0.2	0.2
Delay (s)	79.4	70.3		322.7	64.1	61.8	32.2	30.9	1.9	65.8	11.9	0.2
Level of Service	E	E		F	E	E	C	C	A	E	B	A
Approach Delay (s)		77.1			230.4			16.4			23.9	
Approach LOS		E			F			B			C	

Intersection Summary			
HCM 2000 Control Delay	81.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

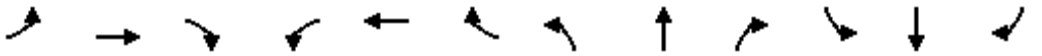
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	649	595	756	11	7	387
Future Volume (Veh/h)	649	595	756	11	7	387
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	705	647	822	12	8	421
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1001				
pX, platoon unblocked						
vC, conflicting volume	834				2885	828
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	834				2885	828
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	12				0	0
cM capacity (veh/h)	799				2	371

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	705	647	834	429
Volume Left	705	0	0	8
Volume Right	0	0	12	421
cSH	799	1700	1700	87
Volume to Capacity	0.88	0.38	0.49	4.93
Queue Length 95th (ft)	285	0	0	Err
Control Delay (s)	32.9	0.0	0.0	Err
Lane LOS	D			F
Approach Delay (s)	17.2		0.0	Err
Approach LOS				F

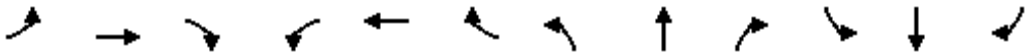
Intersection Summary			
Average Delay	1649.2		
Intersection Capacity Utilization	110.8%	ICU Level of Service	H
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	90	98	0	65	175	49	623	0	161	389	16
Future Volume (vph)	23	90	98	0	65	175	49	623	0	161	389	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5		3.5		3.0	3.0		3.0	4.5	
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Frt		1.00	0.85		0.89		1.00	1.00		1.00	0.99	
Flt Protected		0.99	1.00		1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1844	1583		1659		1770	1863		1770	1852	
Flt Permitted		0.40	1.00		1.00		0.48	1.00		0.31	1.00	
Satd. Flow (perm)		752	1583		1659		896	1863		578	1852	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	98	107	0	71	190	53	677	0	175	423	17
RTOR Reduction (vph)	0	0	90	0	73	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	123	17	0	188	0	53	677	0	175	439	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		23.2	23.2		23.2		120.5	115.0		126.6	117.3	
Effective Green, g (s)		25.7	25.7		25.7		125.5	118.0		130.8	120.3	
Actuated g/C Ratio		0.16	0.16		0.16		0.76	0.72		0.79	0.73	
Clearance Time (s)		6.0	6.0		6.0		5.5	6.0		5.5	7.5	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	5.0		3.0	5.0	
Lane Grp Cap (vph)		117	246		258		723	1332		543	1350	
v/s Ratio Prot					0.11		0.00	c0.36		c0.02	0.24	
v/s Ratio Perm		c0.16	0.01				0.05			0.23		
v/c Ratio		1.05	0.07		0.73		0.07	0.51		0.32	0.33	
Uniform Delay, d1		69.7	59.4		66.3		5.0	10.5		7.1	7.9	
Progression Factor		1.00	1.00		1.00		1.10	1.25		1.00	1.00	
Incremental Delay, d2		97.6	0.1		9.8		0.0	1.4		0.3	0.6	
Delay (s)		167.3	59.5		76.1		5.5	14.6		7.4	8.6	
Level of Service		F	E		E		A	B		A	A	
Approach Delay (s)		117.2			76.1			13.9			8.3	
Approach LOS		F			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	239	12	360	232	0	7	0	594	0	0	0
Future Volume (Veh/h)	0	239	12	360	232	0	7	0	594	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	260	13	391	252	0	8	0	646	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	252			273			1294	1294	260	1940	1307	252
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	252			273			1294	1294	260	1940	1307	252
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			70			93	100	17	100	100	100
cM capacity (veh/h)	1313			1290			107	113	779	6	111	787

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	260	13	643	654	0
Volume Left	0	0	391	8	0
Volume Right	0	13	0	646	0
cSH	1313	1700	1290	723	1700
Volume to Capacity	0.00	0.01	0.30	0.90	0.00
Queue Length 95th (ft)	0	0	32	298	0
Control Delay (s)	0.0	0.0	6.7	38.4	0.0
Lane LOS			A	E	A
Approach Delay (s)	0.0		6.7	38.4	0.0
Approach LOS				E	A

Intersection Summary				
Average Delay	18.7			
Intersection Capacity Utilization	91.9%	ICU Level of Service	F	
Analysis Period (min)	15			

Appendix C

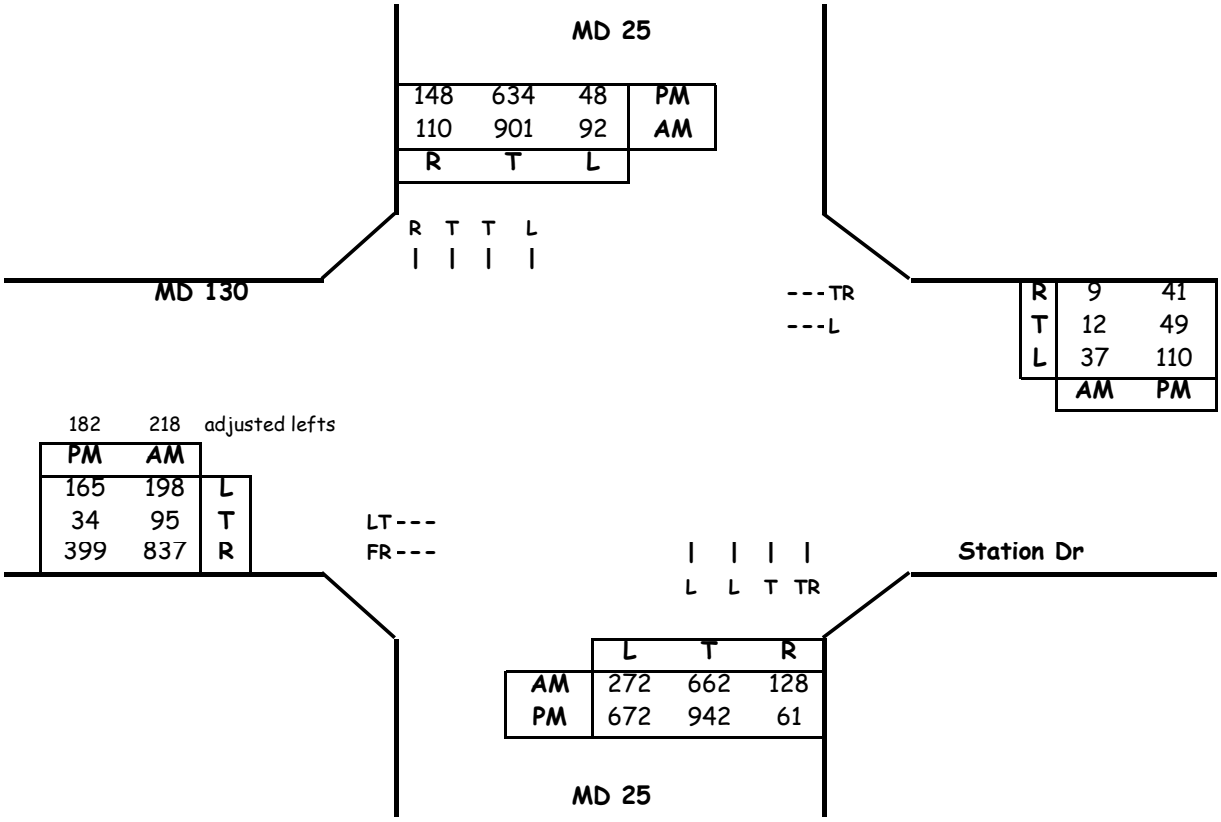
Critical Lane Volume (LOS) Worksheets
Highway Capacity Manual (HCM) Worksheets

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25
Minor Street: Station Dr
Study Period: EXISTING TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	790	0.55	435	92	1	92	659
SB	901	0.55	496	272	0.6	163	
EB	313	1	313	37	1	37	350
WB	21	1	21	198	1	198	

CLV TOTAL= **1009**
Level of Service (LOS)= **B**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1003	0.55	552	48	1	48	752
SB	634	0.55	349	672	0.6	403	
EB	216	1	216	110	1	110	326
WB	90	1	90	165	1	165	

CLV TOTAL= **1078**
Level of Service (LOS)= **B**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

MD 25 &
Station Dr
(EXISTING TRAFFIC)

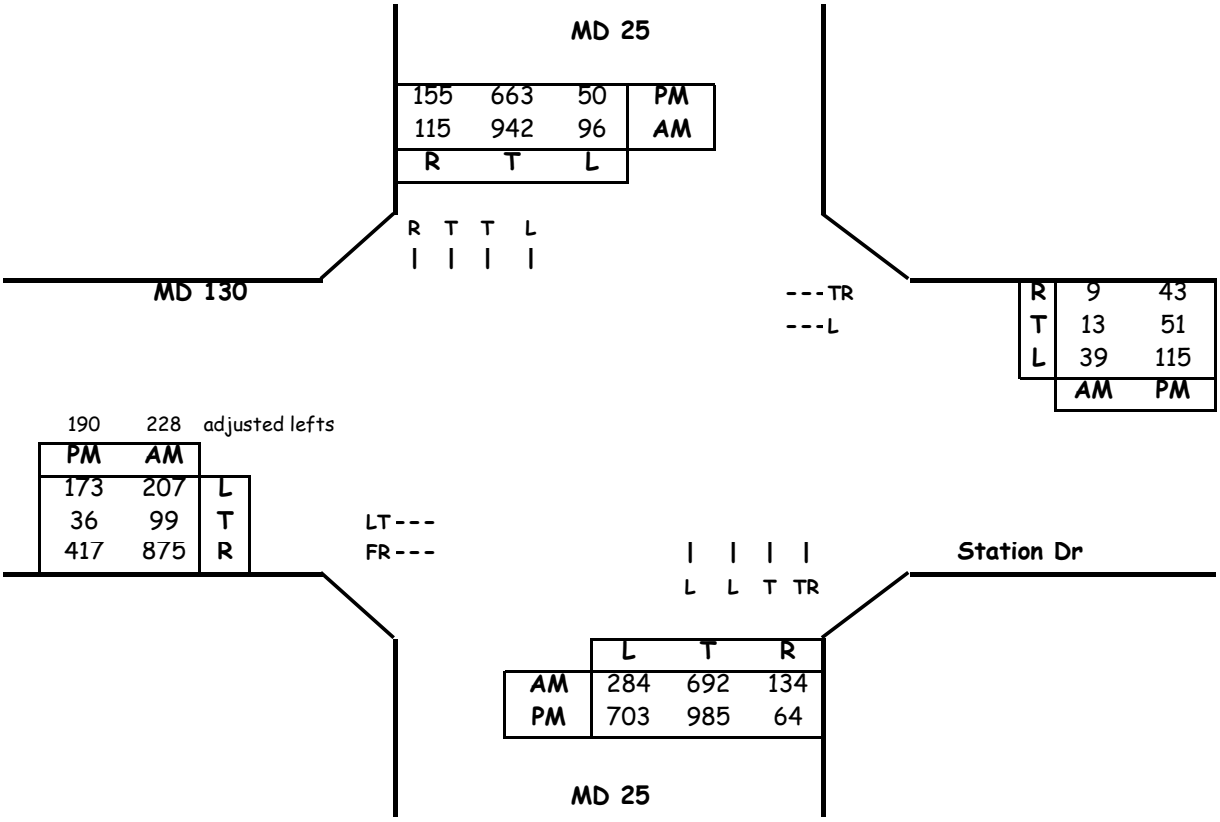
Intersection
1

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25
Minor Street: Station Dr
Study Period: BACKGROUND TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	826	0.55	454	96	1	96	688
SB	942	0.55	518	284	0.6	170	
EB	327	1	327	39	1	39	366
WB	22	1	22	207	1	207	

CLV TOTAL= **1054**
Level of Service (LOS)= **B**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1049	0.55	577	50	1	50	787
SB	663	0.55	365	703	0.6	422	
EB	226	1	226	115	1	115	341
WB	94	1	94	173	1	173	

CLV TOTAL= **1128**
Level of Service (LOS)= **B**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

MD 25 &
Station Dr
(BACKGROUND TRAFFIC)

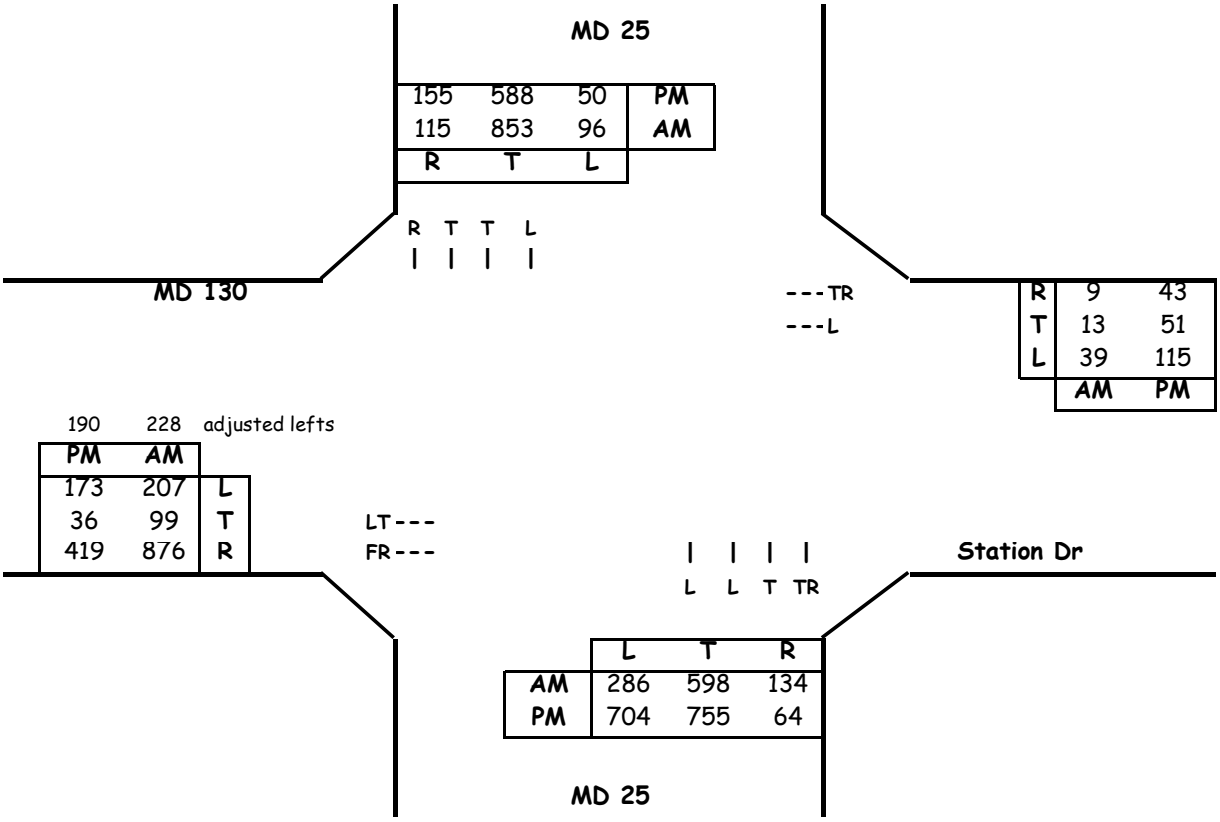
Intersection
1

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25
Minor Street: Station Dr
Study Period: TOTAL TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	732	0.55	403	96	1	96	641
SB	853	0.55	469	286	0.6	172	
EB	327	1	327	39	1	39	366
WB	22	1	22	207	1	207	

CLV TOTAL= **1007**
Level of Service (LOS)= **B**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	819	0.55	450	50	1	50	745
SB	588	0.55	323	704	0.6	422	
EB	226	1	226	115	1	115	341
WB	94	1	94	173	1	173	

CLV TOTAL= **1086**
Level of Service (LOS)= **B**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

MD 25 &
Station Dr
(TOTAL TRAFFIC)

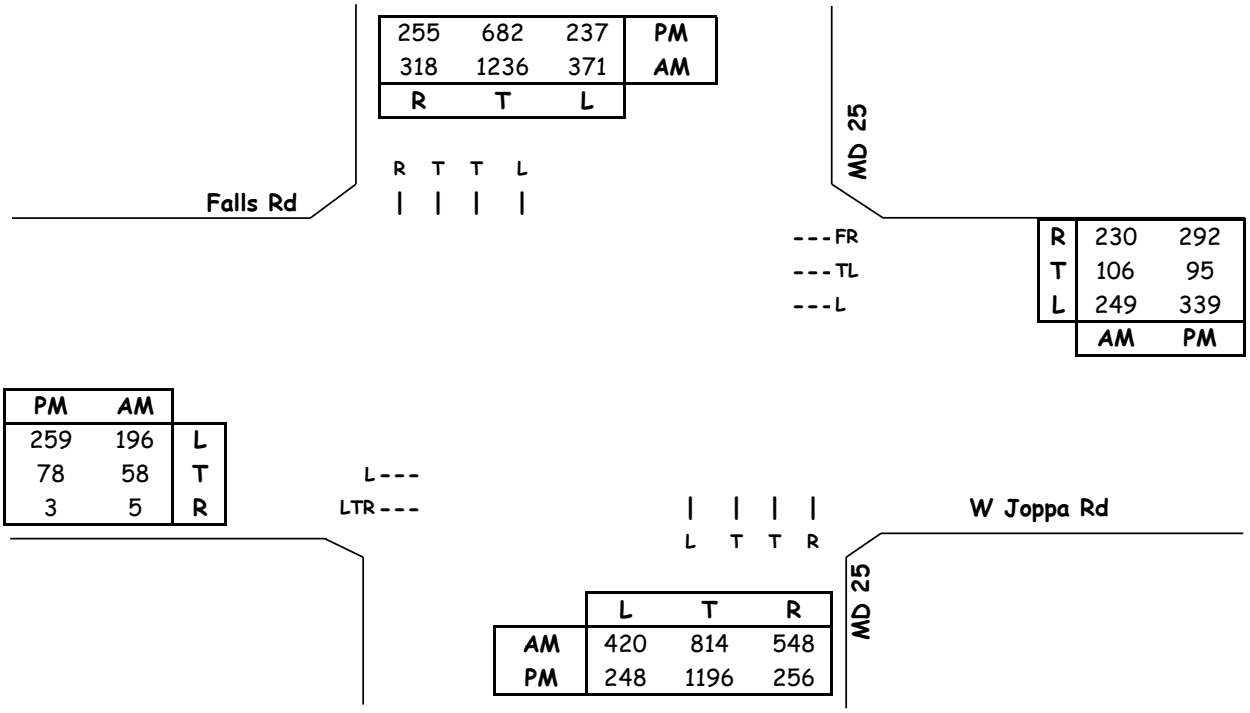
Intersection
1

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: MD 25
Minor Street: W Joppa Rd
Study Period: Existing Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	259	0.60	155				155
WB	355	0.60	213				213
NB	814	0.55	448	371	1.00	371	1100
SB	1236	0.55	680	420	1.00	420	

CLV TOTAL= **1468**
Level of Service (LOS)= **E**

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	340	0.60	204				204
WB	434	0.60	260				260
NB	1196	0.55	658	237	1.00	237	895
SB	682	0.55	375	248	1.00	248	

CLV TOTAL= **1359**
Level of Service (LOS)= **D**

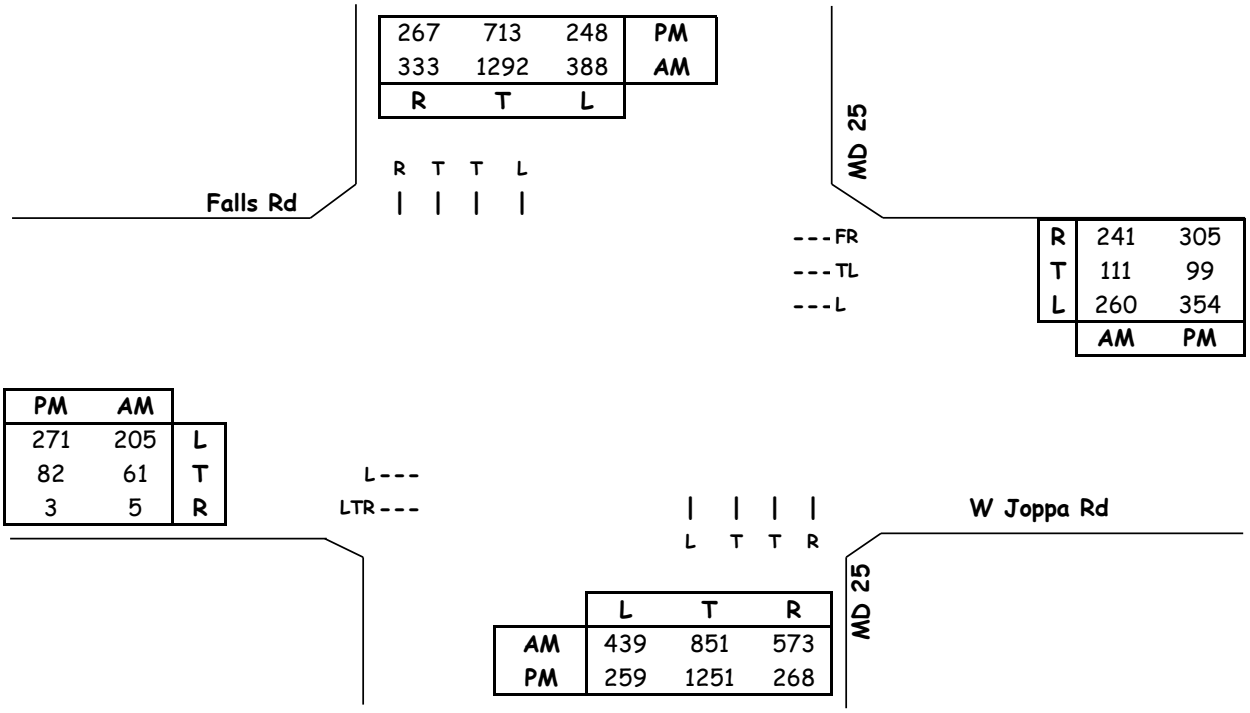
Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning		MD 25 & W Joppa Rd (Existing Traffic)	**Intersection** **2**

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: MD 25
Minor Street: W Joppa Rd
Study Period: Background Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	271	0.60	163				163
WB	371	0.60	223				223
NB	851	0.55	468	388	1.00	388	1150
SB	1292	0.55	711	439	1.00	439	
						CLV TOTAL=	**1536**
						Level of Service (LOS)=	**E**

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	356	0.60	214				214
WB	453	0.60	272				272
NB	1251	0.55	688	248	1.00	248	936
SB	713	0.55	392	259	1.00	259	
						CLV TOTAL=	**1422**
						Level of Service (LOS)=	**D**

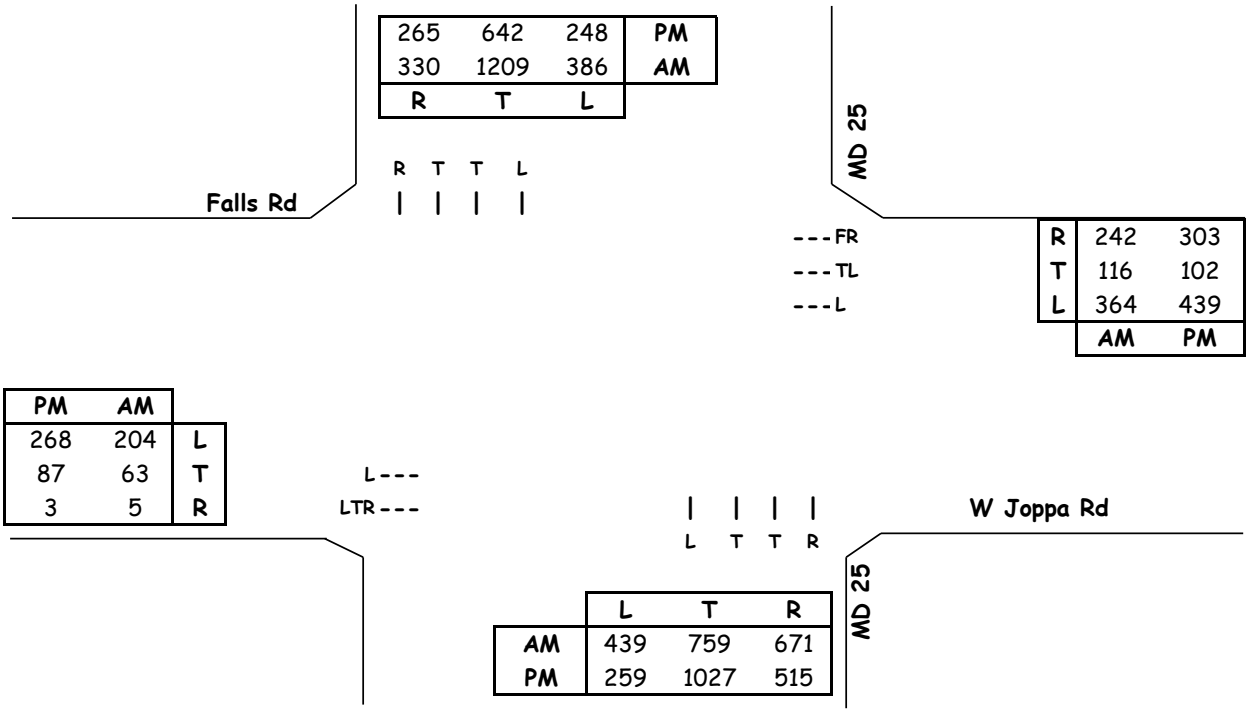
Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning		MD 25 & W Joppa Rd (Background Traffic)	**Intersection** **2**

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: MD 25
Minor Street: W Joppa Rd
Study Period: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	272	0.60	163				163
WB	480	0.60	288				288
NB	759	0.55	417	386	1.00	386	1104
SB	1209	0.55	665	439	1.00	439	

CLV TOTAL= **1555**
Level of Service (LOS)= **E**

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	358	0.60	215				215
WB	541	0.60	325				325
NB	1027	0.55	565	248	1.00	248	813
SB	642	0.55	353	259	1.00	259	

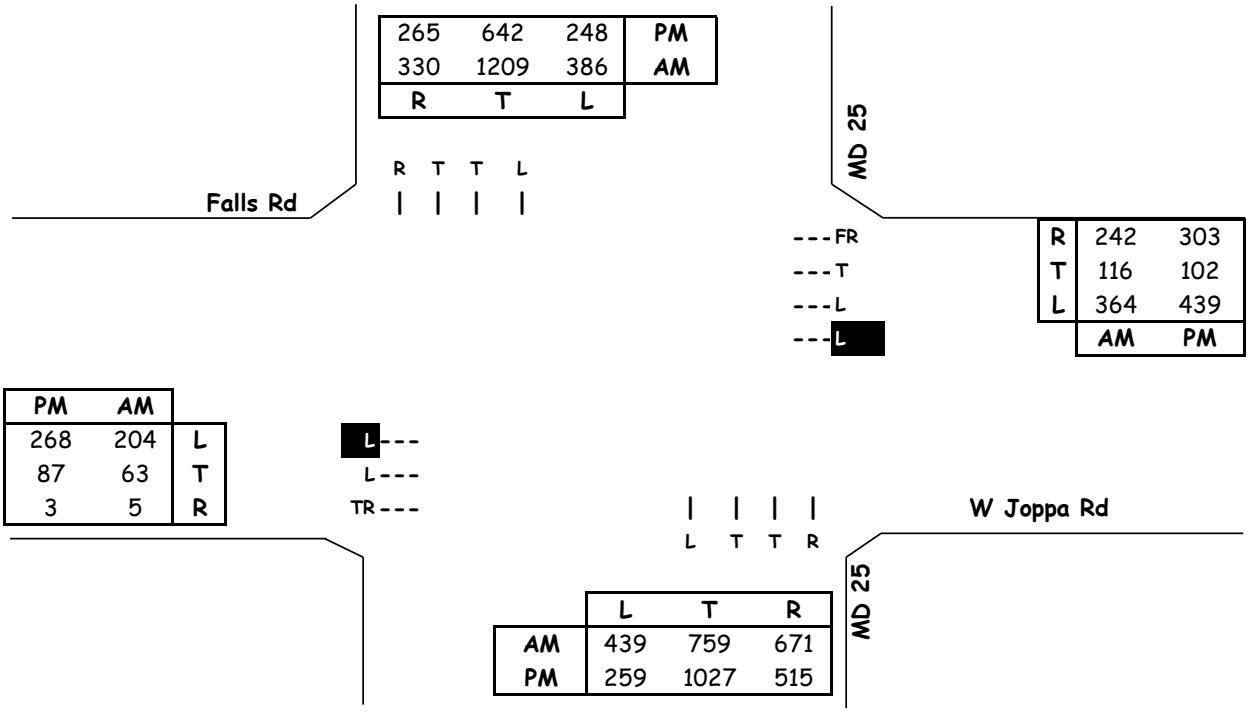
CLV TOTAL= **1353**
Level of Service (LOS)= **D**

Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning		MD 25 & W Joppa Rd (Total Traffic)	**Intersection** **2**

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: MD 25 **Analyst: Lenhart Traffic Consulting**
Minor Street: W Joppa Rd
Study Period: Total Traffic with Expanded Improvements and Intersection Widening

Lane Use + Traffic Volumes



Traffic Signal Phasing includes East/West Split Phase

AM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	204	0.60	122				122
WB	364	0.55	200				200
NB	759	0.55	417	386	1.00	386	1104
SB	1209	0.55	665	439	1.00	439	
						CLV TOTAL=	**1426**
						Level of Service (LOS)=	**D**

PM Peak Hour

Dir	Through Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	268	0.60	161				161
WB	439	0.55	241				241
NB	1027	0.55	565	248	1.00	248	813
SB	642	0.55	353	259	1.00	259	
						CLV TOTAL=	**1215**
						Level of Service (LOS)=	**C**

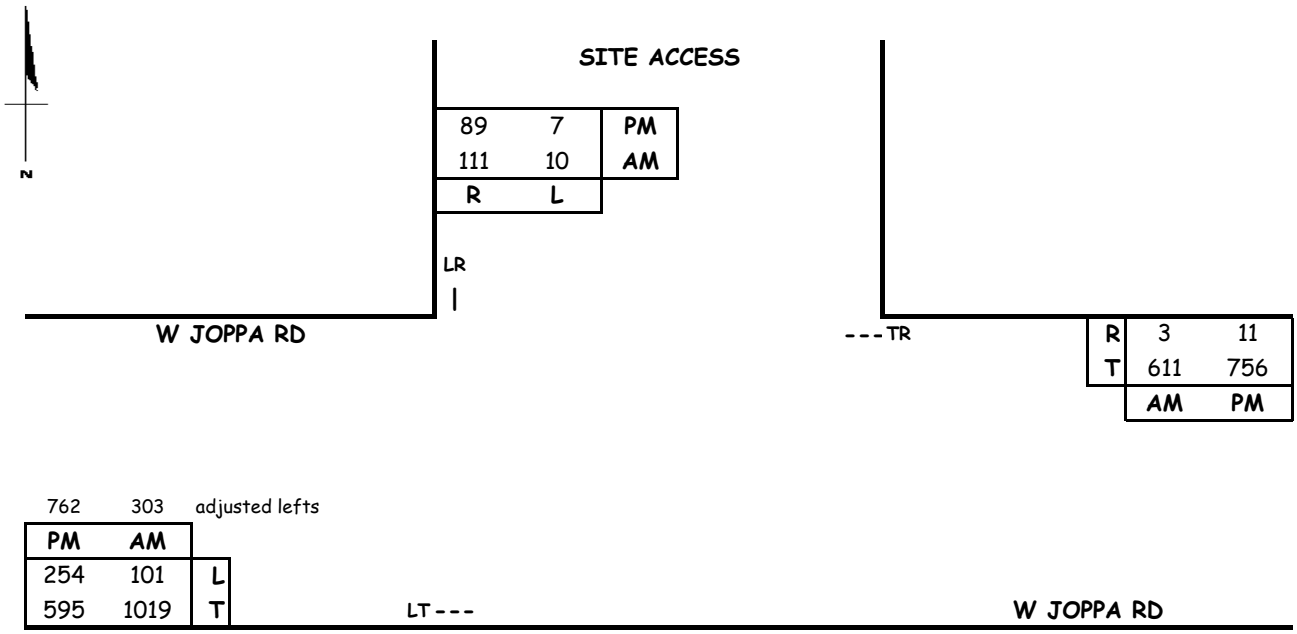
Critical Lane Volume Analysis Lenhart Traffic Consulting, Inc. Traffic Engineering & Transportation Planning		MD 25 & W Joppa Rd ïic with Expanded Improvements and Intersection	**Intersection** **2**

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Intersection of: Site Access
and: W Joppa Rd
Conditions: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
SB	121	1.00	121				121
EB	1322	1.00	1322				1322
WB	614	1.00	614	101	1.00	101	

CLV TOTAL= **1443**
Level of Service (LOS)= **D**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
SB	96	1.00	96				96
EB	1357	1.00	1357				1357
WB	767	1.00	767	254	1.00	254	

CLV TOTAL= **1453**
Level of Service (LOS)= **E**

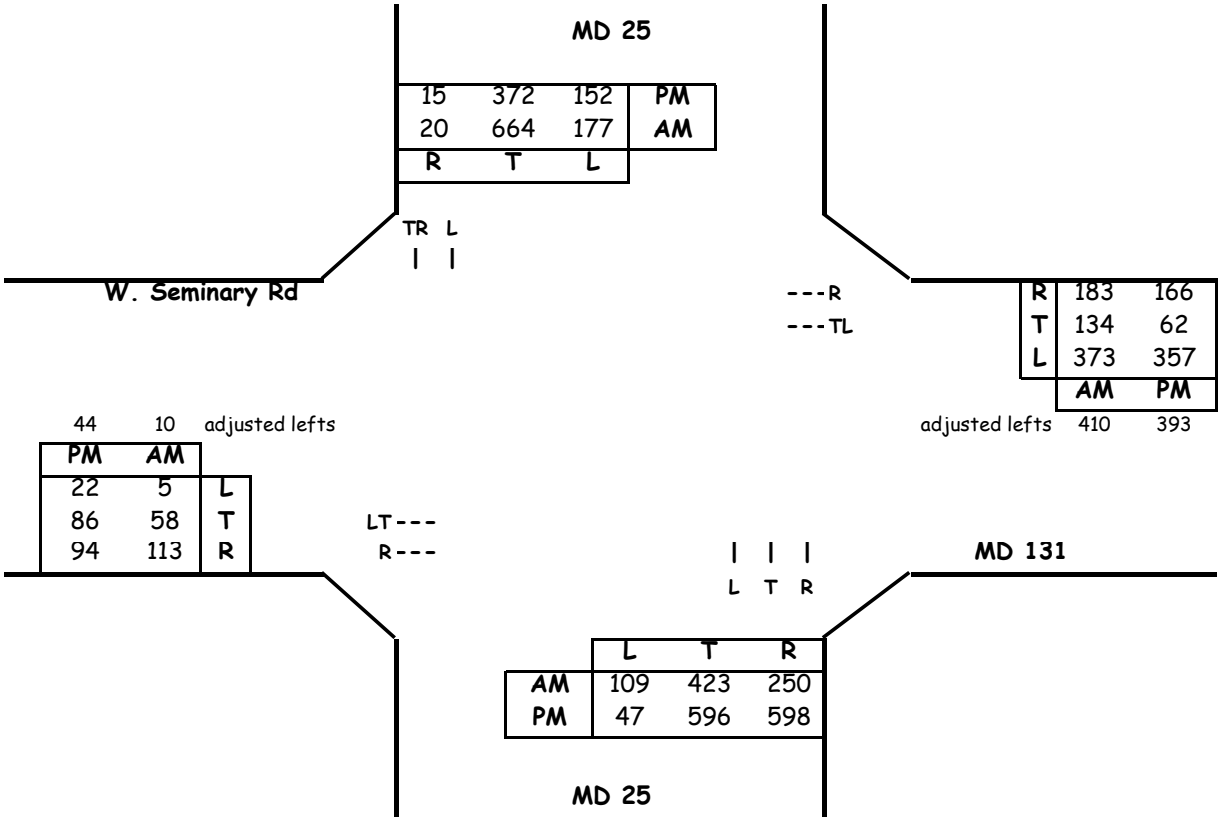
Critical Lane Volume Analysis LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Site Access & W Joppa Rd (Total Traffic)	**Intersection** **3**

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25
Minor Street: MD 131
Study Period: EXISTING TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	423	1.00	423	177	1	177	793
SB	684	1.00	684	109	1	109	
EB	68	1	68	373	1	373	549
WB	544	1	544	5	1	5	

CLV TOTAL= **1342**
Level of Service (LOS)= **D**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	596	1.00	596	152	1	152	748
SB	387	1.00	387	47	1	47	
EB	130	1	130	357	1	357	487
WB	455	1	455	22	1	22	

CLV TOTAL= **1235**
Level of Service (LOS)= **C**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

MD 25 &
MD 131
(EXISTING TRAFFIC)

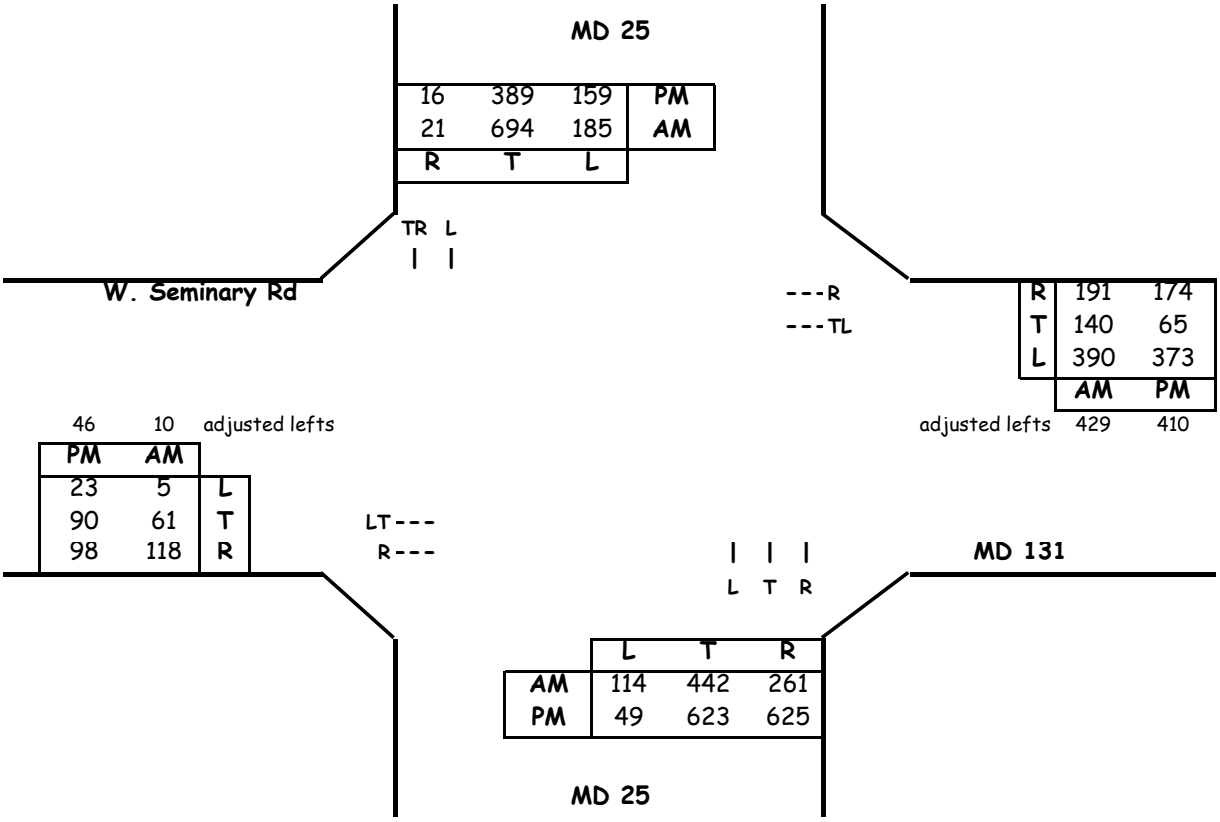
Intersection
4

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25
Minor Street: MD 131
Study Period: BACKGROUND TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	442	1.00	442	185	1	185	829
SB	715	1.00	715	114	1	114	
EB	71	1	71	390	1	390	574
WB	569	1	569	5	1	5	

CLV TOTAL= **1403**
Level of Service (LOS)= **D**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	623	1.00	623	159	1	159	782
SB	405	1.00	405	49	1	49	
EB	136	1	136	373	1	373	509
WB	475	1	475	23	1	23	

CLV TOTAL= **1291**
Level of Service (LOS)= **C**

Critical Lane Volume Analysis

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SEVERNA PARK, MD 21146
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MD 25 &
MD 131
(BACKGROUND TRAFFIC)

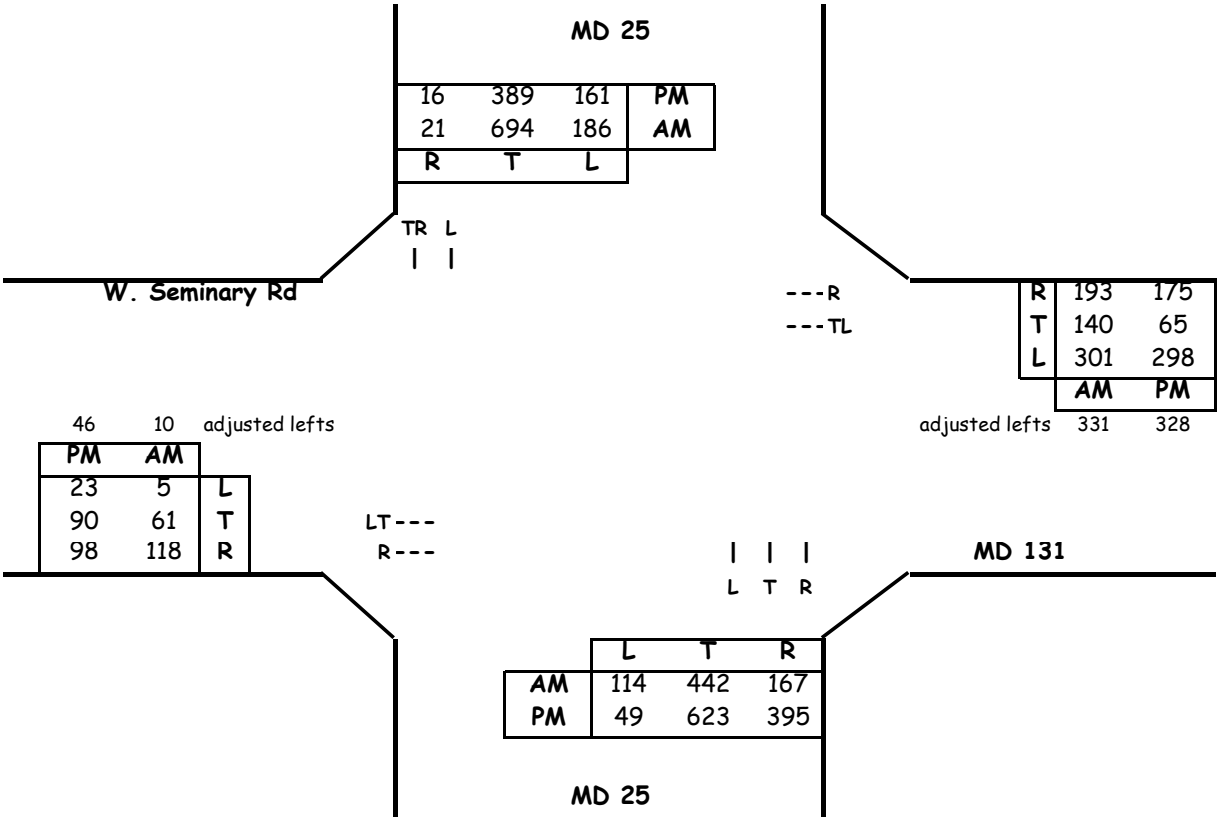
Intersection
4

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 25
Minor Street: MD 131
Study Period: TOTAL TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	442	1.00	442	186	1	186	829
SB	715	1.00	715	114	1	114	
EB	71	1	71	301	1	301	476
WB	471	1	471	5	1	5	

CLV TOTAL= **1305**
Level of Service (LOS)= **D**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	623	1.00	623	161	1	161	784
SB	405	1.00	405	49	1	49	
EB	136	1	136	298	1	298	434
WB	393	1	393	23	1	23	

CLV TOTAL= **1218**
Level of Service (LOS)= **C**

Critical Lane Volume Analysis

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645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
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MD 25 &
MD 131
(TOTAL TRAFFIC)

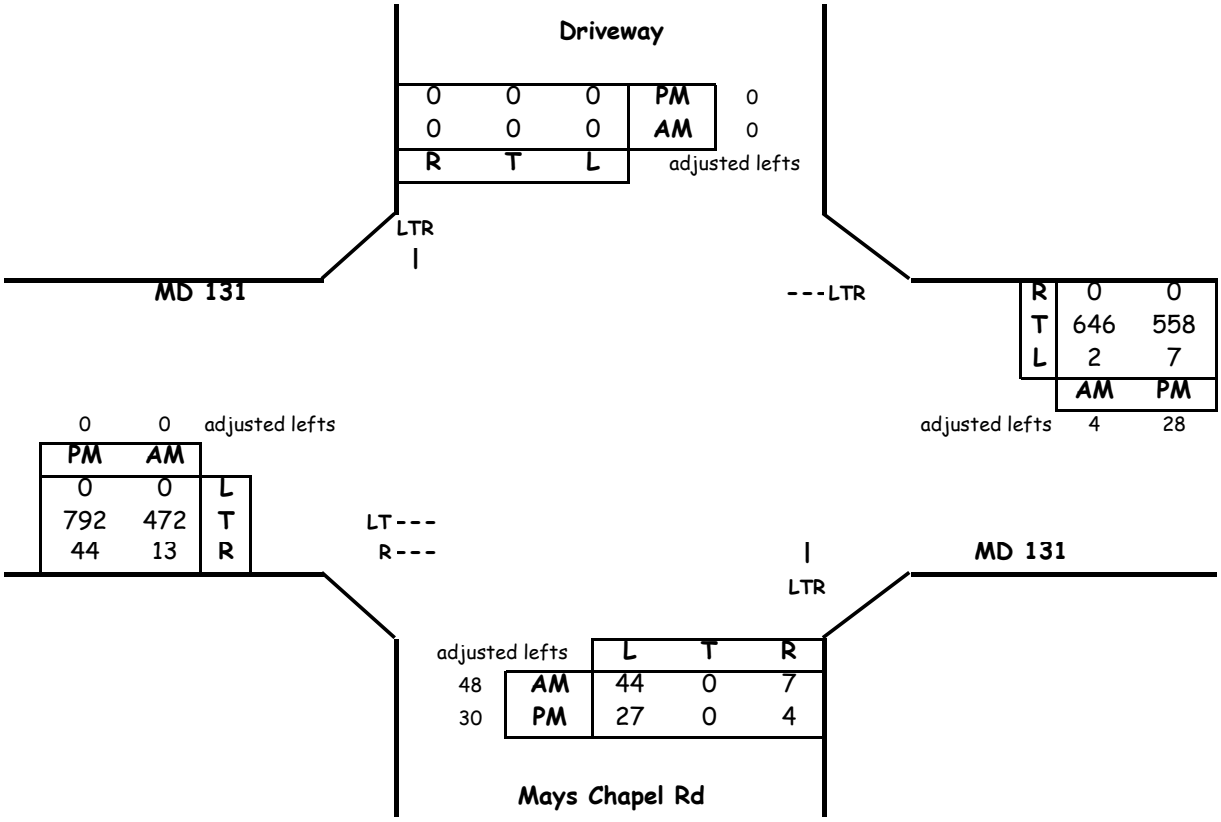
Intersection
4

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 131
Minor Street: Mays Chapel Rd
Study Period: EXISTING TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	55	1.00	55	0	1	0	55
SB	0	1.00	0	44	1	44	
EB	472	1	472	2	1	2	650
WB	650	1	650	0	1	0	

CLV TOTAL= **705**
Level of Service (LOS)= **A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	34	1.00	34	0	1	0	34
SB	0	1.00	0	27	1	27	
EB	792	1	792	7	1	7	799
WB	586	1	586	0	1	0	

CLV TOTAL= **833**
Level of Service (LOS)= **A**

Critical Lane Volume Analysis

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SEVERNA PARK, MD 21146
www.lenharttraffic.com

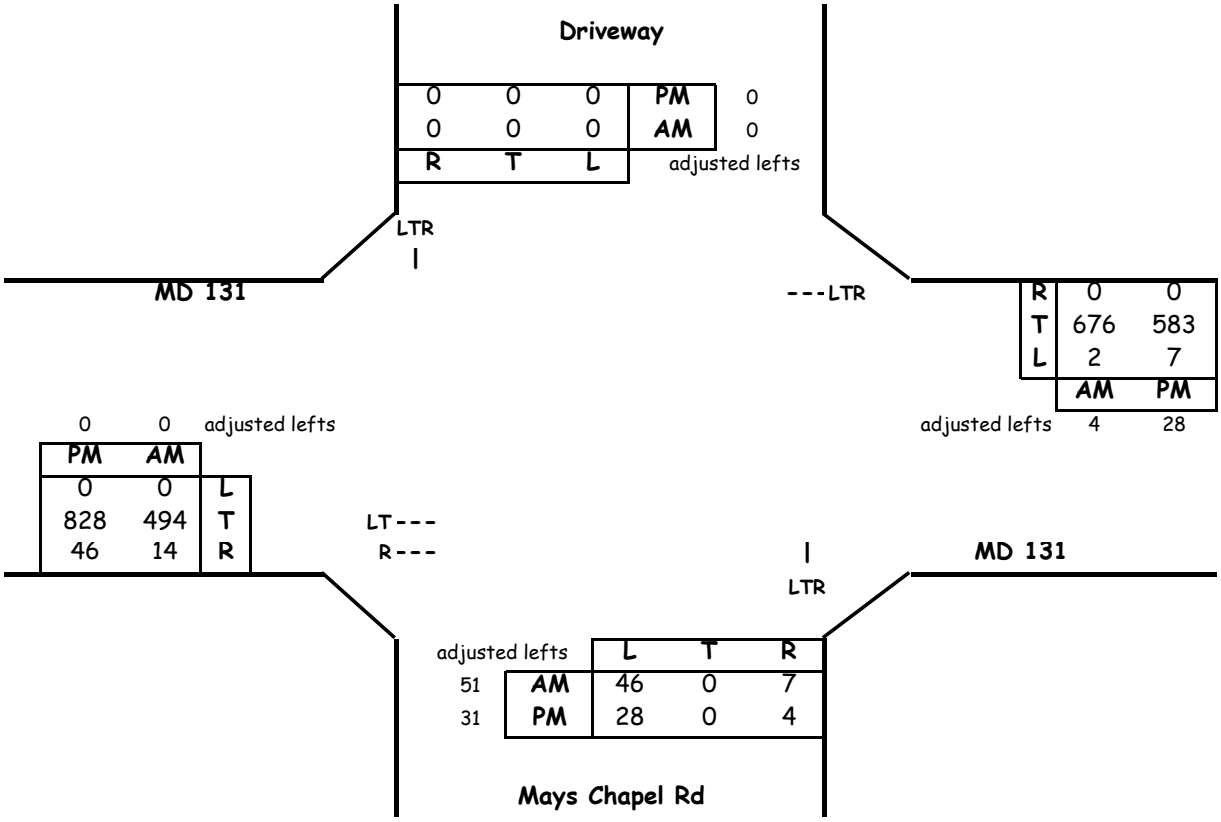
MD 131 &
Mays Chapel Rd
(EXISTING TRAFFIC)

Intersection
5

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 131 **Analyst:** Lenhart Traffic Consulting
Minor Street: Mays Chapel Rd
Study Period: BACKGROUND TRAFFIC

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	58	1.00	58	0	1	0	58
SB	0	1.00	0	46	1	46	
EB	494	1	494	2	1	2	680
WB	680	1	680	0	1	0	
						CLV TOTAL=	**738**
						Level of Service (LOS)=	**A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	35	1.00	35	0	1	0	35
SB	0	1.00	0	28	1	28	
EB	828	1	828	7	1	7	835
WB	611	1	611	0	1	0	
						CLV TOTAL=	**870**
						Level of Service (LOS)=	**A**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

MD 131 &
Mays Chapel Rd
(BACKGROUND TRAFFIC)

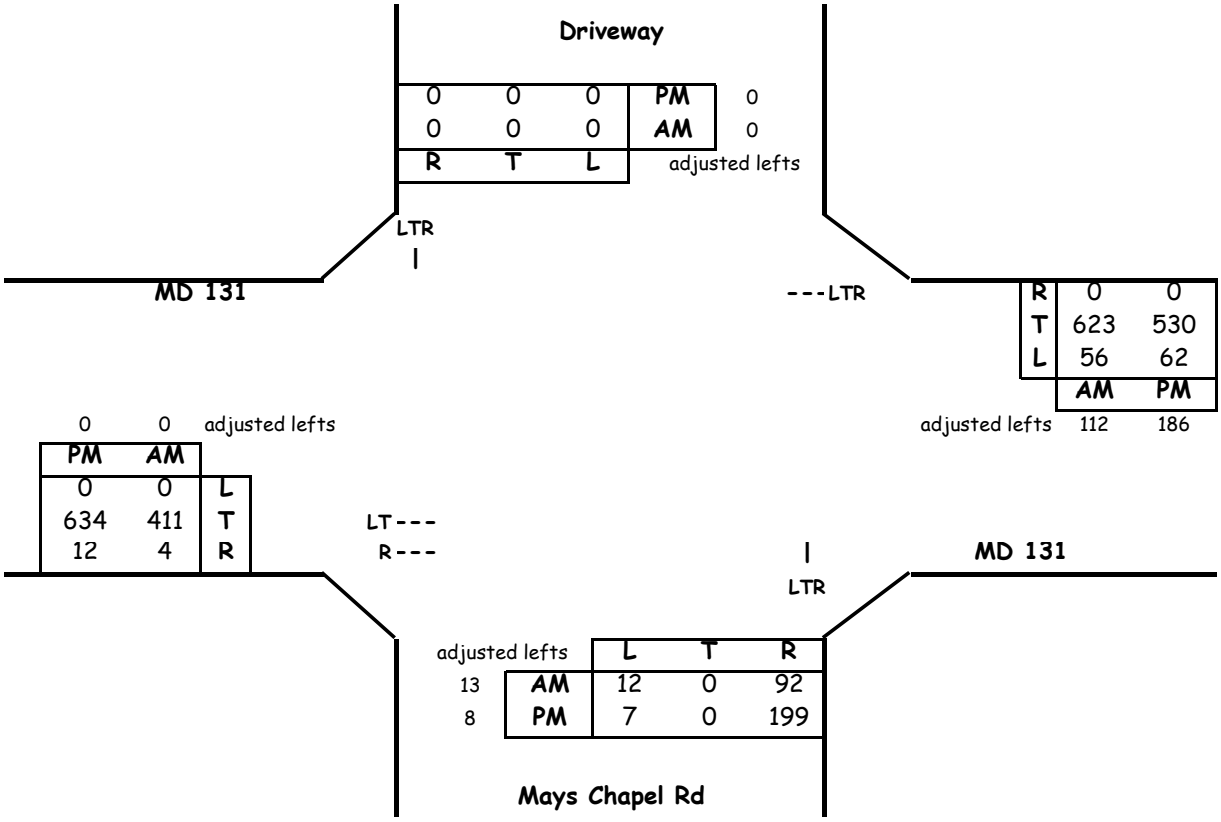
Intersection
5

CRITICAL LANE VOLUME (CLV) METHODOLOGY
for MSHA

Main Line: MD 131
Minor Street: Mays Chapel Rd
Study Period: TOTAL TRAFFIC

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	105	1.00	105	0	1	0	105
SB	0	1.00	0	12	1	12	
EB	411	1	411	56	1	56	735
WB	735	1	735	0	1	0	

CLV TOTAL= **840**
Level of Service (LOS)= **A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	207	1.00	207	0	1	0	207
SB	0	1.00	0	7	1	7	
EB	634	1	634	62	1	62	716
WB	716	1	716	0	1	0	

CLV TOTAL= **923**
Level of Service (LOS)= **A**

Critical Lane Volume Analysis

LENHART TRAFFIC CONSULTING, INC.
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MD 131 &
Mays Chapel Rd
(TOTAL TRAFFIC)

Intersection
5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	198	95	837	37	12	9	272	662	128	92	901	110
Future Volume (vph)	198	95	837	37	12	9	272	662	128	92	901	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1738	1583	1770	1741		3433	3453		1770	3539	1583
Flt Permitted	0.59	0.90	1.00	0.65	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1053	1598	1583	1211	1741		3433	3453		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	215	103	910	40	13	10	296	720	139	100	979	120
RTOR Reduction (vph)	0	0	0	0	9	0	0	7	0	0	0	0
Lane Group Flow (vph)	157	161	910	40	14	0	296	852	0	100	979	120
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	32.8	32.8	165.0	10.1	10.1		29.2	102.6		14.6	87.5	165.0
Effective Green, g (s)	34.8	34.8	165.0	12.1	12.1		31.2	105.1		16.6	90.0	165.0
Actuated g/C Ratio	0.21	0.21	1.00	0.07	0.07		0.19	0.64		0.10	0.55	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	297	353	1583	88	127		649	2199		178	1930	1583
v/s Ratio Prot	0.06	0.05			0.01		0.09	0.25		0.06	0.28	
v/s Ratio Perm	0.05	0.04	c0.57	0.03								0.08
v/c Ratio	0.53	0.46	0.57	0.45	0.11		0.46	0.39		0.56	0.51	0.08
Uniform Delay, d1	56.7	56.8	0.0	73.3	71.4		59.4	14.4		70.7	23.6	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.82	0.58		1.00	1.00	1.00
Incremental Delay, d2	1.7	1.1	1.5	4.4	0.4		1.7	0.4		4.0	1.0	0.1
Delay (s)	58.4	57.9	1.5	77.6	71.9		50.5	8.7		74.7	24.5	0.1
Level of Service	E	E	A	E	E		D	A		E	C	A
Approach Delay (s)		16.2			75.5			19.4			26.3	
Approach LOS		B			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	196	58	5	249	106	230	420	814	548	371	1236	318
Future Volume (vph)	196	58	5	249	106	230	420	814	548	371	1236	318
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1715		1681	1734	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.98	1.00	0.07	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1715		1681	1734	1583	138	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	213	63	5	271	115	250	457	885	596	403	1343	346
RTOR Reduction (vph)	0	1	0	0	0	215	0	0	0	0	0	0
Lane Group Flow (vph)	138	142	0	190	196	35	457	885	596	403	1343	346
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	17.8	17.8		21.3	21.3	21.3	91.8	61.9	165.0	42.5	74.5	165.0
Effective Green, g (s)	19.8	19.8		23.3	23.3	23.3	95.8	65.4	165.0	44.5	78.0	165.0
Actuated g/C Ratio	0.12	0.12		0.14	0.14	0.14	0.58	0.40	1.00	0.27	0.47	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	201	205		237	244	223	395	1402	1583	477	1672	1583
v/s Ratio Prot	0.08	c0.08		0.11	c0.11		c0.22	0.25		c0.23	0.38	
v/s Ratio Perm						0.02	c0.45		0.38			0.22
v/c Ratio	0.69	0.69		0.80	0.80	0.16	1.16	0.63	0.38	0.84	0.80	0.22
Uniform Delay, d1	69.6	69.7		68.6	68.6	62.2	53.5	40.1	0.0	57.0	37.0	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.04	0.70	1.00
Incremental Delay, d2	9.3	9.7		17.5	17.2	0.3	95.5	2.2	0.7	12.0	3.7	0.3
Delay (s)	79.0	79.4		86.1	85.8	62.6	148.9	42.3	0.7	71.5	29.8	0.3
Level of Service	E	E		F	F	E	F	D	A	E	C	A
Approach Delay (s)		79.2			76.7			54.6			32.9	
Approach LOS		E			E			D			C	

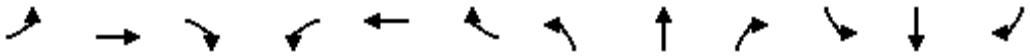
Intersection Summary			
HCM 2000 Control Delay	49.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	58	113	373	134	183	109	423	250	177	664	20
Future Volume (vph)	5	58	113	373	134	183	109	423	250	177	664	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	4.0	3.5		3.0	3.0	3.0	3.0	4.5	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1856	1583	1770	1702		1770	1863	1583	1770	1854	
Flt Permitted		0.96	1.00	0.45	1.00		0.15	1.00	1.00	0.35	1.00	
Satd. Flow (perm)		1781	1583	843	1702		286	1863	1583	653	1854	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	63	123	405	146	199	118	460	272	192	722	22
RTOR Reduction (vph)	0	0	112	0	32	0	0	0	131	0	0	0
Lane Group Flow (vph)	0	68	11	405	313	0	118	460	141	192	744	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		11.6	11.6	51.7	51.7		95.0	82.7	82.7	95.1	82.0	
Effective Green, g (s)		14.1	14.1	53.7	54.2		100.0	85.7	85.7	100.1	85.0	
Actuated g/C Ratio		0.09	0.09	0.33	0.33		0.61	0.52	0.52	0.61	0.52	
Clearance Time (s)		6.0	6.0	6.0	6.0		5.5	6.0	6.0	5.5	7.5	
Vehicle Extension (s)		3.0	3.0	4.5	3.0		3.0	6.0	6.0	3.0	6.0	
Lane Grp Cap (vph)		152	135	477	559		306	967	822	501	955	
v/s Ratio Prot				c0.19	0.18		0.03	0.25		c0.04	c0.40	
v/s Ratio Perm		0.04	0.01	c0.09			0.20		0.09	0.20		
v/c Ratio		0.45	0.08	0.85	0.56		0.39	0.48	0.17	0.38	0.78	
Uniform Delay, d1		71.7	69.5	48.9	45.6		23.2	25.3	20.9	16.7	32.4	
Progression Factor		1.00	1.00	1.00	1.00		0.61	0.64	1.13	1.00	1.00	
Incremental Delay, d2		2.1	0.2	14.2	1.3		0.8	1.6	0.4	0.5	6.2	
Delay (s)		73.8	69.7	63.0	46.9		14.9	17.7	24.1	17.2	38.6	
Level of Service		E	E	E	D		B	B	C	B	D	
Approach Delay (s)		71.2			55.6			19.3			34.2	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	38.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	472	13	2	646	0	44	0	7	0	0	0
Future Volume (Veh/h)	0	472	13	2	646	0	44	0	7	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	513	14	2	702	0	48	0	8	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	702			527			1219	1219	513	1227	1233	702
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	702			527			1219	1219	513	1227	1233	702
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			69	100	99	100	100	100
cM capacity (veh/h)	895			1040			157	180	561	153	176	438

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	513	14	704	56	0
Volume Left	0	0	2	48	0
Volume Right	0	14	0	8	0
cSH	895	1700	1040	175	1700
Volume to Capacity	0.00	0.01	0.00	0.32	0.00
Queue Length 95th (ft)	0	0	0	32	0
Control Delay (s)	0.0	0.0	0.1	35.0	0.0
Lane LOS			A	D	A
Approach Delay (s)	0.0		0.1	35.0	0.0
Approach LOS				D	A

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	45.6%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	99	875	39	13	9	284	692	134	96	942	115
Future Volume (vph)	207	99	875	39	13	9	284	692	134	96	942	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1738	1583	1770	1746		3433	3453		1770	3539	1583
Flt Permitted	0.60	0.90	1.00	0.65	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1057	1592	1583	1202	1746		3433	3453		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	108	951	42	14	10	309	752	146	104	1024	125
RTOR Reduction (vph)	0	0	0	0	9	0	0	7	0	0	0	0
Lane Group Flow (vph)	164	169	951	42	15	0	309	891	0	104	1024	125
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	33.3	33.3	165.0	10.4	10.4		29.5	101.7		15.0	86.7	165.0
Effective Green, g (s)	35.3	35.3	165.0	12.4	12.4		31.5	104.2		17.0	89.2	165.0
Actuated g/C Ratio	0.21	0.21	1.00	0.08	0.08		0.19	0.63		0.10	0.54	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	301	358	1583	90	131		655	2180		182	1913	1583
v/s Ratio Prot	0.07	0.06			0.01		0.09	0.26		0.06	0.29	
v/s Ratio Perm	0.05	0.04	c0.60	0.03								0.08
v/c Ratio	0.54	0.47	0.60	0.47	0.11		0.47	0.41		0.57	0.54	0.08
Uniform Delay, d1	56.5	56.7	0.0	73.1	71.2		59.4	15.1		70.5	24.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.80	0.56		1.00	1.00	1.00
Incremental Delay, d2	2.0	1.2	1.7	4.5	0.5		1.7	0.4		4.3	1.1	0.1
Delay (s)	58.5	57.9	1.7	77.6	71.6		49.3	8.9		74.8	25.6	0.1
Level of Service	E	E	A	E	E		D	A		E	C	A
Approach Delay (s)		16.3			75.4			19.3			27.1	
Approach LOS		B			E			B			C	

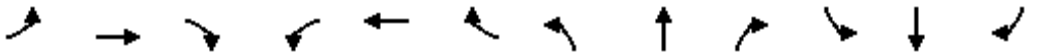
Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	205	61	5	260	111	241	439	851	573	388	1292	333
Future Volume (vph)	205	61	5	260	111	241	439	851	573	388	1292	333
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1716		1681	1734	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.98	1.00	0.06	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1716		1681	1734	1583	120	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	223	66	5	283	121	262	477	925	623	422	1404	362
RTOR Reduction (vph)	0	1	0	0	0	224	0	0	0	0	0	0
Lane Group Flow (vph)	145	148	0	198	206	38	477	925	623	422	1404	362
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	18.1	18.1		21.7	21.7	21.7	89.2	60.0	165.0	43.7	74.5	165.0
Effective Green, g (s)	20.1	20.1		23.7	23.7	23.7	93.2	63.5	165.0	45.7	78.0	165.0
Actuated g/C Ratio	0.12	0.12		0.14	0.14	0.14	0.56	0.38	1.00	0.28	0.47	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	204	209		241	249	227	379	1361	1583	490	1672	1583
v/s Ratio Prot	0.09	c0.09		0.12	c0.12		c0.24	0.26		c0.24	0.40	
v/s Ratio Perm						0.02	c0.47		0.39			0.23
v/c Ratio	0.71	0.71		0.82	0.83	0.17	1.26	0.68	0.39	0.86	0.84	0.23
Uniform Delay, d1	69.7	69.6		68.6	68.7	62.0	55.3	42.3	0.0	56.6	38.0	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.04	0.70	1.00
Incremental Delay, d2	11.1	10.5		19.7	19.7	0.3	136.1	2.8	0.7	13.2	4.6	0.3
Delay (s)	80.7	80.1		88.3	88.3	62.3	191.4	45.0	0.7	72.1	31.2	0.3
Level of Service	F	F		F	F	E	F	D	A	E	C	A
Approach Delay (s)		80.4			78.1			65.9			34.0	
Approach LOS		F			E			E			C	

Intersection Summary			
HCM 2000 Control Delay	54.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

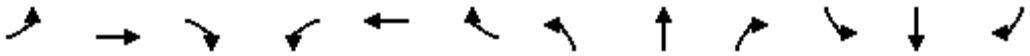
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	61	118	390	140	191	114	442	261	185	694	21
Future Volume (vph)	5	61	118	390	140	191	114	442	261	185	694	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	4.0	3.5		3.0	3.0	3.0	3.0	4.5	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1856	1583	1770	1701		1770	1863	1583	1770	1854	
Flt Permitted		0.96	1.00	0.45	1.00		0.12	1.00	1.00	0.33	1.00	
Satd. Flow (perm)		1783	1583	830	1701		229	1863	1583	616	1854	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	66	128	424	152	208	124	480	284	201	754	23
RTOR Reduction (vph)	0	0	117	0	32	0	0	0	138	0	0	0
Lane Group Flow (vph)	0	71	11	424	328	0	124	480	146	201	777	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		11.9	11.9	52.3	52.3		94.4	81.6	81.6	94.5	80.9	
Effective Green, g (s)		14.4	14.4	54.3	54.8		99.4	84.6	84.6	99.5	83.9	
Actuated g/C Ratio		0.09	0.09	0.33	0.33		0.60	0.51	0.51	0.60	0.51	
Clearance Time (s)		6.0	6.0	6.0	6.0		5.5	6.0	6.0	5.5	7.5	
Vehicle Extension (s)		3.0	3.0	4.5	3.0		3.0	6.0	6.0	3.0	6.0	
Lane Grp Cap (vph)		155	138	480	564		280	955	811	484	942	
v/s Ratio Prot				c0.19	0.19		c0.04	0.26		c0.04	c0.42	
v/s Ratio Perm		0.04	0.01	c0.10			0.23		0.09	0.21		
v/c Ratio		0.46	0.08	0.88	0.58		0.44	0.50	0.18	0.42	0.82	
Uniform Delay, d1		71.6	69.2	49.0	45.6		25.7	26.4	21.6	17.5	34.3	
Progression Factor		1.00	1.00	1.00	1.00		1.01	0.63	1.09	1.00	1.00	
Incremental Delay, d2		2.1	0.3	18.1	1.5		1.0	1.7	0.4	0.6	8.1	
Delay (s)		73.7	69.5	67.1	47.1		26.9	18.4	23.9	18.1	42.4	
Level of Service		E	E	E	D		C	B	C	B	D	
Approach Delay (s)		71.0			57.9			21.3			37.4	
Approach LOS		E			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	40.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	494	14	2	676	0	46	0	7	0	0	0
Future Volume (Veh/h)	0	494	14	2	676	0	46	0	7	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	537	15	2	735	0	50	0	8	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	735			552			1276	1276	537	1284	1291	735
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	735			552			1276	1276	537	1284	1291	735
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			65	100	99	100	100	100
cM capacity (veh/h)	870			1018			143	166	544	139	163	420

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	537	15	737	58	0
Volume Left	0	0	2	50	0
Volume Right	0	15	0	8	0
cSH	870	1700	1018	160	1700
Volume to Capacity	0.00	0.01	0.00	0.36	0.00
Queue Length 95th (ft)	0	0	0	38	0
Control Delay (s)	0.0	0.0	0.1	39.9	0.0
Lane LOS			A	E	A
Approach Delay (s)	0.0		0.1	39.9	0.0
Approach LOS				E	A

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	47.2%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	99	876	39	13	9	286	598	134	96	871	115
Future Volume (vph)	207	99	876	39	13	9	286	598	134	96	871	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1738	1583	1770	1746		3433	3442		1770	3539	1583
Flt Permitted	0.60	0.90	1.00	0.65	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1057	1592	1583	1202	1746		3433	3442		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	225	108	952	42	14	10	311	650	146	104	947	125
RTOR Reduction (vph)	0	0	0	0	9	0	0	9	0	0	0	0
Lane Group Flow (vph)	164	169	952	42	15	0	311	787	0	104	947	125
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	33.4	33.4	165.0	10.4	10.4		30.0	101.6		15.0	86.1	165.0
Effective Green, g (s)	35.4	35.4	165.0	12.4	12.4		32.0	104.1		17.0	88.6	165.0
Actuated g/C Ratio	0.21	0.21	1.00	0.08	0.08		0.19	0.63		0.10	0.54	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	302	359	1583	90	131		665	2171		182	1900	1583
v/s Ratio Prot	0.07	0.06			0.01		0.09	0.23		0.06	0.27	
v/s Ratio Perm	0.05	0.04	c0.60	0.03								0.08
v/c Ratio	0.54	0.47	0.60	0.47	0.11		0.47	0.36		0.57	0.50	0.08
Uniform Delay, d1	56.4	56.6	0.0	73.1	71.2		58.9	14.6		70.5	24.2	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.84	0.62		0.93	0.68	1.00
Incremental Delay, d2	2.0	1.2	1.7	4.5	0.5		1.8	0.4		2.8	0.6	0.1
Delay (s)	58.4	57.8	1.7	77.6	71.6		51.2	9.4		68.1	17.0	0.1
Level of Service	E	E	A	E	E		D	A		E	B	A
Approach Delay (s)		16.3			75.4			21.1			19.7	
Approach LOS		B			E			C			B	

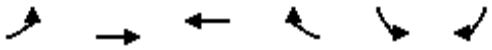
Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	63	5	346	116	242	439	759	671	386	1227	330
Future Volume (vph)	204	63	5	346	116	242	439	759	671	386	1227	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.98		0.95	0.98	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1717		1681	1726	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.98		0.95	0.98	1.00	0.08	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1717		1681	1726	1583	150	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	68	5	376	126	263	477	825	729	420	1334	359
RTOR Reduction (vph)	0	1	0	0	0	223	0	0	0	0	0	0
Lane Group Flow (vph)	147	147	0	248	254	40	477	825	729	420	1334	359
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	18.2	18.2		23.0	23.0	23.0	86.5	58.7	165.0	43.6	74.5	165.0
Effective Green, g (s)	20.2	20.2		25.0	25.0	25.0	90.5	62.2	165.0	45.6	78.0	165.0
Actuated g/C Ratio	0.12	0.12		0.15	0.15	0.15	0.55	0.38	1.00	0.28	0.47	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	205	210		254	261	239	374	1334	1583	489	1672	1583
v/s Ratio Prot	c0.09	0.09		c0.15	0.15		c0.23	0.23		c0.24	0.38	
v/s Ratio Perm						0.03	c0.47		0.46			0.23
v/c Ratio	0.72	0.70		0.98	0.97	0.17	1.28	0.62	0.46	0.86	0.80	0.23
Uniform Delay, d1	69.7	69.5		69.7	69.7	60.9	52.6	41.8	0.0	56.6	36.8	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.68	1.00
Incremental Delay, d2	11.3	10.1		49.4	47.9	0.3	143.2	2.2	1.0	12.9	3.6	0.3
Delay (s)	81.0	79.6		119.1	117.6	61.3	195.8	43.9	1.0	69.4	28.7	0.3
Level of Service	F	E		F	F	E	F	D	A	E	C	A
Approach Delay (s)		80.3			98.7			64.2			31.9	
Approach LOS		F			F			E			C	

Intersection Summary			
HCM 2000 Control Delay	57.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.5%	ICU Level of Service	E
Analysis Period (min)	15		

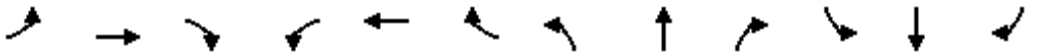
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	101	1019	611	3	10	93
Future Volume (Veh/h)	101	1019	611	3	10	93
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	110	1108	664	3	11	101
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1001				
pX, platoon unblocked						
vC, conflicting volume	667				1994	666
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	667				1994	666
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	88				81	78
cM capacity (veh/h)	923				59	460

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	1218	667	112
Volume Left	110	0	11
Volume Right	0	3	101
cSH	923	1700	275
Volume to Capacity	0.12	0.39	0.41
Queue Length 95th (ft)	10	0	47
Control Delay (s)	3.8	0.0	26.8
Lane LOS	A		D
Approach Delay (s)	3.8	0.0	26.8
Approach LOS			D

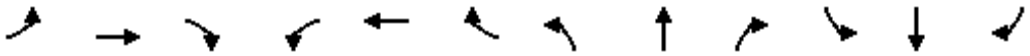
Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	107.9%	ICU Level of Service	G
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	61	118	319	140	193	114	442	167	186	694	21
Future Volume (vph)	5	61	118	319	140	193	114	442	167	186	694	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	4.0	3.5		3.0	3.0	3.0	3.0	4.5	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.91		1.00	1.00	0.85	1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1856	1583	1770	1701		1770	1863	1583	1770	1854	
Flt Permitted		0.96	1.00	0.45	1.00		0.14	1.00	1.00	0.34	1.00	
Satd. Flow (perm)		1782	1583	830	1701		252	1863	1583	633	1854	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	66	128	347	152	210	124	480	182	202	754	23
RTOR Reduction (vph)	0	0	117	0	33	0	0	0	86	0	0	0
Lane Group Flow (vph)	0	71	11	347	329	0	124	480	96	202	777	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		11.9	11.9	50.3	50.3		96.5	83.8	83.8	96.4	83.0	
Effective Green, g (s)		14.4	14.4	52.3	52.8		101.5	86.8	86.8	101.4	86.0	
Actuated g/C Ratio		0.09	0.09	0.32	0.32		0.62	0.53	0.53	0.61	0.52	
Clearance Time (s)		6.0	6.0	6.0	6.0		5.5	6.0	6.0	5.5	7.5	
Vehicle Extension (s)		3.0	3.0	4.5	3.0		3.0	6.0	6.0	3.0	6.0	
Lane Grp Cap (vph)		155	138	459	544		294	980	832	498	966	
v/s Ratio Prot				c0.16	0.19		c0.04	0.26		c0.04	c0.42	
v/s Ratio Perm		0.04	0.01	c0.08			0.22		0.06	0.21		
v/c Ratio		0.46	0.08	0.76	0.61		0.42	0.49	0.12	0.41	0.80	
Uniform Delay, d1		71.6	69.2	48.1	47.3		24.2	25.0	19.7	16.5	32.5	
Progression Factor		1.00	1.00	1.00	1.00		0.91	0.66	0.91	1.00	1.00	
Incremental Delay, d2		2.1	0.3	7.8	1.9		0.9	1.6	0.3	0.5	7.1	
Delay (s)		73.7	69.5	55.9	49.2		23.0	18.1	18.2	17.0	39.6	
Level of Service		E	E	E	D		C	B	B	B	D	
Approach Delay (s)		71.0			52.5			18.9			35.0	
Approach LOS		E			D			B			C	

Intersection Summary			
HCM 2000 Control Delay	37.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		

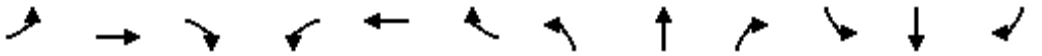
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	411	4	38	641	0	12	0	92	0	0	0
Future Volume (Veh/h)	0	411	4	38	641	0	12	0	92	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	447	4	41	697	0	13	0	100	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	697			451			1226	1226	447	1326	1230	697
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	697			451			1226	1226	447	1326	1230	697
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			91	100	84	100	100	100
cM capacity (veh/h)	899			1109			151	172	612	108	171	441

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	447	4	738	113	0
Volume Left	0	0	41	13	0
Volume Right	0	4	0	100	0
cSH	899	1700	1109	453	1700
Volume to Capacity	0.00	0.00	0.04	0.25	0.00
Queue Length 95th (ft)	0	0	3	24	0
Control Delay (s)	0.0	0.0	1.0	15.6	0.0
Lane LOS			A	C	A
Approach Delay (s)	0.0		1.0	15.6	0.0
Approach LOS				C	A

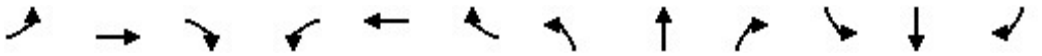
Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	73.8%	ICU Level of Service	D	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	63	5	346	116	242	439	759	671	386	1227	330
Future Volume (vph)	204	63	5	346	116	242	439	759	671	386	1227	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1844		3433	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.17	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1844		3433	1863	1583	324	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	222	68	5	376	126	263	477	825	729	420	1334	359
RTOR Reduction (vph)	0	2	0	0	0	234	0	0	0	0	0	0
Lane Group Flow (vph)	222	71	0	376	126	29	477	825	729	420	1334	359
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	11.0	11.0		16.0	16.0	16.0	73.6	72.1	165.0	44.4	72.5	165.0
Effective Green, g (s)	13.0	13.0		18.0	18.0	18.0	75.6	75.6	165.0	46.4	76.0	165.0
Actuated g/C Ratio	0.08	0.08		0.11	0.11	0.11	0.46	0.46	1.00	0.28	0.46	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	270	145		374	203	172	551	1621	1583	497	1630	1583
v/s Ratio Prot	c0.06	0.04		c0.11	0.07		c0.24	0.23		c0.24	c0.38	
v/s Ratio Perm						0.02	0.16		0.46			0.23
v/c Ratio	0.82	0.49		1.01	0.62	0.17	0.87	0.51	0.46	0.85	0.82	0.23
Uniform Delay, d1	74.9	72.8		73.5	70.2	66.7	44.9	31.6	0.0	55.9	38.5	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.81	0.73	1.00
Incremental Delay, d2	17.9	2.6		47.9	5.8	0.5	13.7	1.1	1.0	11.6	4.2	0.3
Delay (s)	92.8	75.4		121.4	76.0	67.2	58.6	32.7	1.0	56.6	32.2	0.3
Level of Service	F	E		F	E	E	E	C	A	E	C	A
Approach Delay (s)		88.5			95.3			27.4			31.6	
Approach LOS		F			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	42.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	34	399	110	49	41	672	942	61	48	634	148
Future Volume (vph)	165	34	399	110	49	41	672	942	61	48	634	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1713	1583	1770	1734		3433	3507		1770	3539	1583
Flt Permitted	0.47	0.64	1.00	0.68	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	832	1140	1583	1273	1734		3433	3507		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	179	37	434	120	53	45	730	1024	66	52	689	161
RTOR Reduction (vph)	0	0	0	0	18	0	0	2	0	0	0	0
Lane Group Flow (vph)	107	109	434	120	80	0	730	1088	0	52	689	161
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	40.8	40.8	165.0	20.5	20.5		45.0	100.2		9.0	63.7	165.0
Effective Green, g (s)	42.8	42.8	165.0	22.5	22.5		47.0	102.7		11.0	66.2	165.0
Actuated g/C Ratio	0.26	0.26	1.00	0.14	0.14		0.28	0.62		0.07	0.40	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	304	355	1583	173	236		977	2182		118	1419	1583
v/s Ratio Prot	c0.04	0.03			0.05		c0.21	0.31		0.03	c0.19	
v/s Ratio Perm	0.05	0.05	0.27	c0.09								0.10
v/c Ratio	0.35	0.31	0.27	0.69	0.34		0.75	0.50		0.44	0.49	0.10
Uniform Delay, d1	48.6	49.2	0.0	68.0	64.5		53.6	17.1		74.0	36.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.76	0.44		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.6	0.4	11.8	1.0		3.2	0.5		2.6	1.2	0.1
Delay (s)	49.3	49.7	0.4	79.8	65.5		44.0	8.0		76.7	37.9	0.1
Level of Service	D	D	A	E	E		D	A		E	D	A
Approach Delay (s)		16.7			73.4			22.5			33.4	
Approach LOS		B			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	78	3	339	95	292	248	1196	256	237	682	255
Future Volume (vph)	259	78	3	339	95	292	248	1196	256	237	682	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1720		1681	1721	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.97	1.00	0.33	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1720		1681	1721	1583	614	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	282	85	3	368	103	317	270	1300	278	258	741	277
RTOR Reduction (vph)	0	0	0	0	0	265	0	0	0	0	0	0
Lane Group Flow (vph)	183	187	0	232	239	52	270	1300	278	258	741	277
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	21.7	21.7		25.2	25.2	25.2	84.5	67.3	165.0	29.3	79.4	165.0
Effective Green, g (s)	23.7	23.7		27.2	27.2	27.2	88.5	70.8	165.0	31.3	82.9	165.0
Actuated g/C Ratio	0.14	0.14		0.16	0.16	0.16	0.54	0.43	1.00	0.19	0.50	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	241	247		277	283	260	463	1518	1583	335	1778	1583
v/s Ratio Prot	c0.11	0.11		0.14	c0.14		0.07	c0.37		c0.15	0.21	
v/s Ratio Perm						0.03	0.24		0.18			0.17
v/c Ratio	0.76	0.76		0.84	0.84	0.20	0.58	0.86	0.18	0.77	0.42	0.17
Uniform Delay, d1	67.9	67.9		66.8	66.8	59.5	21.2	42.5	0.0	63.4	25.8	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.30	0.42	1.00
Incremental Delay, d2	12.9	12.4		19.3	20.0	0.4	2.0	6.4	0.2	10.3	0.7	0.2
Delay (s)	80.8	80.3		86.1	86.8	59.9	23.2	48.9	0.2	92.5	11.5	0.2
Level of Service	F	F		F	F	E	C	D	A	F	B	A
Approach Delay (s)		80.5			75.8			37.9			25.4	
Approach LOS		F			E			D			C	

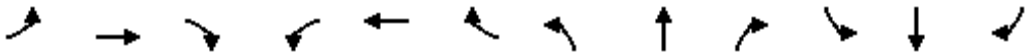
Intersection Summary			
HCM 2000 Control Delay	44.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	86	94	357	62	166	47	596	598	152	372	15
Future Volume (vph)	22	86	94	357	62	166	47	596	598	152	372	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	4.0	3.5		3.0	3.0	3.0	3.0	4.5	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.89		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1844	1583	1770	1659		1770	1863	1583	1770	1852	
Flt Permitted		0.88	1.00	0.35	1.00		0.45	1.00	1.00	0.23	1.00	
Satd. Flow (perm)		1646	1583	653	1659		832	1863	1583	423	1852	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	93	102	388	67	180	51	648	650	165	404	16
RTOR Reduction (vph)	0	0	91	0	61	0	0	0	293	0	1	0
Lane Group Flow (vph)	0	117	11	388	186	0	51	648	357	165	419	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		16.0	16.0	49.0	49.0		93.6	87.5	87.5	101.9	90.9	
Effective Green, g (s)		18.5	18.5	51.0	51.5		98.6	90.5	90.5	105.0	93.9	
Actuated g/C Ratio		0.11	0.11	0.31	0.31		0.60	0.55	0.55	0.64	0.57	
Clearance Time (s)		6.0	6.0	6.0	6.0		5.5	6.0	6.0	5.5	7.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		184	177	398	517		546	1021	868	379	1053	
v/s Ratio Prot				c0.17	0.11		0.00	c0.35		c0.04	0.23	
v/s Ratio Perm		0.07	0.01	c0.13			0.05		0.23	0.24		
v/c Ratio		0.64	0.06	0.97	0.36		0.09	0.63	0.41	0.44	0.40	
Uniform Delay, d1		70.0	65.5	52.0	44.0		14.2	25.8	21.7	18.8	19.8	
Progression Factor		1.00	1.00	1.00	1.00		0.64	0.52	0.59	1.00	1.00	
Incremental Delay, d2		7.0	0.2	38.2	0.4		0.1	2.8	1.3	0.8	1.1	
Delay (s)		77.0	65.7	90.2	44.4		9.2	16.2	14.2	19.6	20.9	
Level of Service		E	E	F	D		A	B	B	B	C	
Approach Delay (s)		71.7			72.4			15.0			20.6	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	33.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

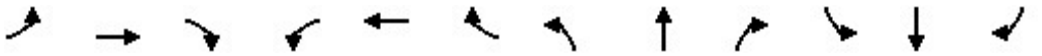
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	792	44	7	558	0	27	0	4	0	0	0
Future Volume (Veh/h)	0	792	44	7	558	0	27	0	4	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	861	48	8	607	0	29	0	4	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	607			909			1484	1484	861	1488	1532	607
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	607			909			1484	1484	861	1488	1532	607
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			72	100	99	100	100	100
cM capacity (veh/h)	971			749			102	123	355	100	115	496

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	861	48	615	33	0
Volume Left	0	0	8	29	0
Volume Right	0	48	0	4	0
cSH	971	1700	749	112	1700
Volume to Capacity	0.00	0.03	0.01	0.30	0.00
Queue Length 95th (ft)	0	0	1	28	0
Control Delay (s)	0.0	0.0	0.3	50.1	0.0
Lane LOS			A	F	A
Approach Delay (s)	0.0		0.3	50.1	0.0
Approach LOS				F	A

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	51.7%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	36	417	115	51	43	703	985	64	50	663	155
Future Volume (vph)	173	36	417	115	51	43	703	985	64	50	663	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1713	1583	1770	1734		3433	3507		1770	3539	1583
Flt Permitted	0.47	0.63	1.00	0.68	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	824	1117	1583	1266	1734		3433	3507		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	188	39	453	125	55	47	764	1071	70	54	721	168
RTOR Reduction (vph)	0	0	0	0	19	0	0	2	0	0	0	0
Lane Group Flow (vph)	113	114	453	125	83	0	764	1139	0	54	721	168
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	41.9	41.9	165.0	21.1	21.1		45.0	99.0		9.1	62.6	165.0
Effective Green, g (s)	43.9	43.9	165.0	23.1	23.1		47.0	101.5		11.1	65.1	165.0
Actuated g/C Ratio	0.27	0.27	1.00	0.14	0.14		0.28	0.62		0.07	0.39	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	311	361	1583	177	242		977	2157		119	1396	1583
v/s Ratio Prot	c0.04	0.03			0.05		c0.22	0.32		0.03	c0.20	
v/s Ratio Perm	0.06	0.05	0.29	c0.10								0.11
v/c Ratio	0.36	0.32	0.29	0.71	0.34		0.78	0.53		0.45	0.52	0.11
Uniform Delay, d1	47.9	48.5	0.0	67.7	64.1		54.3	18.1		74.0	38.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.74	0.43		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.6	0.5	12.5	1.0		3.3	0.5		2.7	1.4	0.1
Delay (s)	48.6	49.1	0.5	80.2	65.1		43.5	8.3		76.8	39.4	0.1
Level of Service	D	D	A	F	E		D	A		E	D	A
Approach Delay (s)		16.6			73.4			22.4			34.5	
Approach LOS		B			E			C			C	

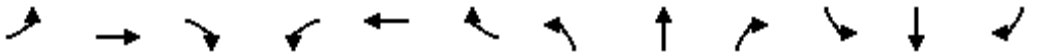
Intersection Summary			
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	271	82	3	354	99	305	259	1251	268	248	713	267
Future Volume (vph)	271	82	3	354	99	305	259	1251	268	248	713	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.97		0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1720		1681	1721	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.97		0.95	0.97	1.00	0.31	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1720		1681	1721	1583	569	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	295	89	3	385	108	332	282	1360	291	270	775	290
RTOR Reduction (vph)	0	0	0	0	0	265	0	0	0	0	0	0
Lane Group Flow (vph)	192	195	0	243	250	67	282	1360	291	270	775	290
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	22.1	22.1		25.8	25.8	25.8	83.8	65.5	165.0	30.1	77.3	165.0
Effective Green, g (s)	24.1	24.1		27.8	27.8	27.8	87.8	69.0	165.0	32.1	80.8	165.0
Actuated g/C Ratio	0.15	0.15		0.17	0.17	0.17	0.53	0.42	1.00	0.19	0.49	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	245	251		283	289	266	450	1479	1583	344	1733	1583
v/s Ratio Prot	c0.11	0.11		0.14	c0.15		0.08	c0.38		c0.15	0.22	
v/s Ratio Perm						0.04	0.26		0.18			0.18
v/c Ratio	0.78	0.78		0.86	0.87	0.25	0.63	0.92	0.18	0.78	0.45	0.18
Uniform Delay, d1	67.9	67.9		66.7	66.8	59.6	22.0	45.4	0.0	63.2	27.5	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.29	0.43	1.00
Incremental Delay, d2	15.0	14.0		21.9	22.6	0.5	2.9	10.7	0.3	10.9	0.8	0.2
Delay (s)	83.0	81.8		88.5	89.4	60.1	24.8	56.1	0.3	92.4	12.7	0.2
Level of Service	F	F		F	F	E	C	E	A	F	B	A
Approach Delay (s)		82.4			77.3			43.1			26.1	
Approach LOS		F			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	47.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

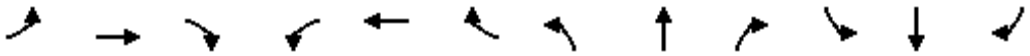
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	90	98	373	65	174	49	623	625	159	389	16
Future Volume (vph)	23	90	98	373	65	174	49	623	625	159	389	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	4.0	3.5		3.0	3.0	3.0	3.0	4.5	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.89		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1844	1583	1770	1660		1770	1863	1583	1770	1852	
Flt Permitted		0.88	1.00	0.34	1.00		0.43	1.00	1.00	0.21	1.00	
Satd. Flow (perm)		1641	1583	627	1660		800	1863	1583	383	1852	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	98	107	405	71	189	53	677	679	173	423	17
RTOR Reduction (vph)	0	0	95	0	60	0	0	0	308	0	1	0
Lane Group Flow (vph)	0	123	12	405	200	0	53	677	371	173	439	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		16.3	16.3	49.3	49.3		93.3	87.1	87.1	101.6	90.5	
Effective Green, g (s)		18.8	18.8	51.3	51.8		98.3	90.1	90.1	104.7	93.5	
Actuated g/C Ratio		0.11	0.11	0.31	0.31		0.60	0.55	0.55	0.63	0.57	
Clearance Time (s)		6.0	6.0	6.0	6.0		5.5	6.0	6.0	5.5	7.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		186	180	395	521		527	1017	864	357	1049	
v/s Ratio Prot				c0.18	0.12		0.01	c0.36		c0.04	0.24	
v/s Ratio Perm		0.07	0.01	c0.14			0.05		0.23	0.27		
v/c Ratio		0.66	0.07	1.03	0.38		0.10	0.67	0.43	0.48	0.42	
Uniform Delay, d1		70.0	65.3	52.3	44.2		14.5	26.7	22.2	20.2	20.3	
Progression Factor		1.00	1.00	1.00	1.00		0.64	0.51	0.59	1.00	1.00	
Incremental Delay, d2		8.5	0.2	51.9	0.5		0.1	3.1	1.4	1.0	1.2	
Delay (s)		78.6	65.4	104.2	44.6		9.3	16.8	14.5	21.3	21.5	
Level of Service		E	E	F	D		A	B	B	C	C	
Approach Delay (s)		72.5			80.9			15.4			21.5	
Approach LOS		E			F			B			C	

Intersection Summary			
HCM 2000 Control Delay	36.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	828	46	7	585	0	28	0	4	0	0	0
Future Volume (Veh/h)	0	828	46	7	585	0	28	0	4	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	900	50	8	636	0	30	0	4	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	636			950			1552	1552	900	1556	1602	636
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	636			950			1552	1552	900	1556	1602	636
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			67	100	99	100	100	100
cM capacity (veh/h)	947			723			92	112	337	90	105	478

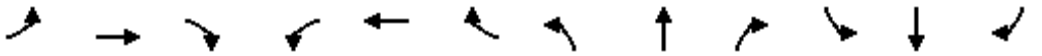
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	900	50	644	34	0
Volume Left	0	0	8	30	0
Volume Right	0	50	0	4	0
cSH	947	1700	723	100	1700
Volume to Capacity	0.00	0.03	0.01	0.34	0.00
Queue Length 95th (ft)	0	0	1	33	0
Control Delay (s)	0.0	0.0	0.3	58.4	0.0
Lane LOS			A	F	A
Approach Delay (s)	0.0		0.3	58.4	0.0
Approach LOS				F	A

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	53.6%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	36	419	115	51	43	704	755	64	50	606	155
Future Volume (vph)	173	36	419	115	51	43	704	755	64	50	606	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		0.97	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1713	1583	1770	1734		3433	3498		1770	3539	1583
Flt Permitted	0.47	0.63	1.00	0.68	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	824	1117	1583	1266	1734		3433	3498		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	188	39	455	125	55	47	765	821	70	54	659	168
RTOR Reduction (vph)	0	0	0	0	19	0	0	3	0	0	0	0
Lane Group Flow (vph)	113	114	455	125	83	0	765	888	0	54	659	168
Turn Type	pm+pt	NA	Free	Perm	NA		Prot	NA		Prot	NA	Free
Protected Phases	7	4			8		1	6 1		5	2	
Permitted Phases	4		Free	8								Free
Actuated Green, G (s)	41.9	41.9	165.0	21.1	21.1		45.0	99.0		9.1	62.6	165.0
Effective Green, g (s)	43.9	43.9	165.0	23.1	23.1		47.0	101.5		11.1	65.1	165.0
Actuated g/C Ratio	0.27	0.27	1.00	0.14	0.14		0.28	0.62		0.07	0.39	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0			5.0	5.5	
Vehicle Extension (s)	3.0	3.5		3.5	3.5		8.0			3.0	5.0	
Lane Grp Cap (vph)	311	361	1583	177	242		977	2151		119	1396	1583
v/s Ratio Prot	c0.04	0.03			0.05		c0.22	0.25		0.03	c0.19	
v/s Ratio Perm	0.06	0.05	0.29	c0.10								0.11
v/c Ratio	0.36	0.32	0.29	0.71	0.34		0.78	0.41		0.45	0.47	0.11
Uniform Delay, d1	47.9	48.5	0.0	67.7	64.1		54.3	16.4		74.0	37.2	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		0.80	0.52		1.18	0.89	1.00
Incremental Delay, d2	0.7	0.6	0.5	12.5	1.0		4.3	0.4		2.2	0.9	0.1
Delay (s)	48.6	49.1	0.5	80.2	65.1		47.8	8.9		89.5	34.0	0.1
Level of Service	D	D	A	F	E		D	A		F	C	A
Approach Delay (s)		16.6			73.4			26.9			31.0	
Approach LOS		B			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

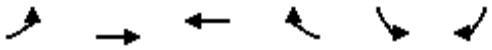
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	268	87	3	421	102	303	259	1027	515	248	660	265
Future Volume (vph)	268	87	3	421	102	303	259	1027	515	248	660	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.95	0.95		0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.98		0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1722		1681	1717	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	0.98		0.95	0.97	1.00	0.34	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1722		1681	1717	1583	625	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	291	95	3	458	111	329	282	1116	560	270	717	288
RTOR Reduction (vph)	0	0	0	0	0	268	0	0	0	0	0	0
Lane Group Flow (vph)	192	197	0	284	285	61	282	1116	560	270	717	288
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	22.2	22.2		27.0	27.0	27.0	82.3	64.2	165.0	30.1	76.2	165.0
Effective Green, g (s)	24.2	24.2		29.0	29.0	29.0	86.3	67.7	165.0	32.1	79.7	165.0
Actuated g/C Ratio	0.15	0.15		0.18	0.18	0.18	0.52	0.41	1.00	0.19	0.48	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	246	252		295	301	278	466	1452	1583	344	1709	1583
v/s Ratio Prot	0.11	c0.11		c0.17	0.17		0.07	c0.32		c0.15	0.20	
v/s Ratio Perm						0.04	0.24		0.35			0.18
v/c Ratio	0.78	0.78		0.96	0.95	0.22	0.61	0.77	0.35	0.78	0.42	0.18
Uniform Delay, d1	67.8	67.9		67.5	67.2	58.3	22.6	41.9	0.0	63.2	27.7	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.24	0.45	1.00
Incremental Delay, d2	14.8	14.5		42.1	37.5	0.4	2.3	4.0	0.6	11.0	0.7	0.2
Delay (s)	82.6	82.4		109.5	104.7	58.7	25.0	45.9	0.6	89.2	13.2	0.2
Level of Service	F	F		F	F	E	C	D	A	F	B	A
Approach Delay (s)		82.5			89.4			29.9			26.4	
Approach LOS		F			F			C			C	

Intersection Summary			
HCM 2000 Control Delay	45.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

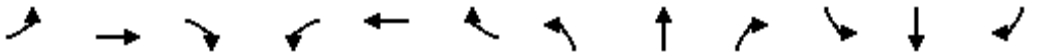
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	254	595	756	11	7	71
Future Volume (Veh/h)	254	595	756	11	7	71
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	276	647	822	12	8	77
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		1001				
pX, platoon unblocked						
vC, conflicting volume	834				2027	828
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	834				2027	828
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	65				81	79
cM capacity (veh/h)	799				41	371

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	923	834	85
Volume Left	276	0	8
Volume Right	0	12	77
cSH	799	1700	212
Volume to Capacity	0.35	0.49	0.40
Queue Length 95th (ft)	39	0	45
Control Delay (s)	8.2	0.0	32.9
Lane LOS	A		D
Approach Delay (s)	8.2	0.0	32.9
Approach LOS			D

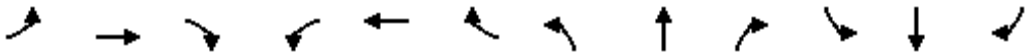
Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	100.6%	ICU Level of Service	G
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	90	98	316	65	175	49	623	395	161	389	16
Future Volume (vph)	23	90	98	316	65	175	49	623	395	161	389	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	3.5	4.0	3.5		3.0	3.0	3.0	3.0	4.5	
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	0.89		1.00	1.00	0.85	1.00	0.99	
Flt Protected		0.99	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1844	1583	1770	1659		1770	1863	1583	1770	1852	
Flt Permitted		0.88	1.00	0.34	1.00		0.43	1.00	1.00	0.21	1.00	
Satd. Flow (perm)		1640	1583	627	1659		803	1863	1583	386	1852	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	98	107	343	71	190	53	677	429	175	423	17
RTOR Reduction (vph)	0	0	95	0	60	0	0	0	194	0	1	0
Lane Group Flow (vph)	0	123	12	343	201	0	53	677	235	175	439	0
Turn Type	Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4		3	8		1	6		5	2	
Permitted Phases	4		4	8			6		6	2		
Actuated Green, G (s)		16.3	16.3	48.9	48.9		93.6	87.4	87.4	102.1	90.9	
Effective Green, g (s)		18.8	18.8	50.9	51.4		98.6	90.4	90.4	105.1	93.9	
Actuated g/C Ratio		0.11	0.11	0.31	0.31		0.60	0.55	0.55	0.64	0.57	
Clearance Time (s)		6.0	6.0	6.0	6.0		5.5	6.0	6.0	5.5	7.5	
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		186	180	391	516		530	1020	867	360	1053	
v/s Ratio Prot				c0.15	0.12		0.01	c0.36		c0.04	0.24	
v/s Ratio Perm		0.07	0.01	c0.12			0.05		0.15	0.27		
v/c Ratio		0.66	0.07	0.88	0.39		0.10	0.66	0.27	0.49	0.42	
Uniform Delay, d1		70.0	65.3	49.5	44.5		14.4	26.5	19.8	20.0	20.1	
Progression Factor		1.00	1.00	1.00	1.00		0.76	0.64	0.84	1.00	1.00	
Incremental Delay, d2		8.5	0.2	19.3	0.5		0.1	3.2	0.7	1.0	1.2	
Delay (s)		78.6	65.4	68.8	45.0		11.0	20.3	17.4	21.1	21.3	
Level of Service		E	E	E	D		B	C	B	C	C	
Approach Delay (s)		72.5			58.5			18.8			21.2	
Approach LOS		E			E			B			C	

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		

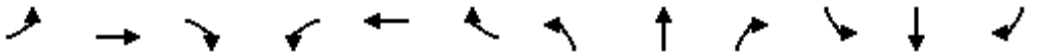
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	634	12	44	548	0	7	0	199	0	0	0
Future Volume (Veh/h)	0	634	12	44	548	0	7	0	199	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	689	13	48	596	0	8	0	216	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	596			702			1381	1381	689	1597	1394	596
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	596			702			1381	1381	689	1597	1394	596
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			95			93	100	52	100	100	100
cM capacity (veh/h)	980			895			116	136	446	42	134	504

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1
Volume Total	689	13	644	224	0
Volume Left	0	0	48	8	0
Volume Right	0	13	0	216	0
cSH	980	1700	895	405	1700
Volume to Capacity	0.00	0.01	0.05	0.55	0.00
Queue Length 95th (ft)	0	0	4	81	0
Control Delay (s)	0.0	0.0	1.4	24.4	0.0
Lane LOS			A	C	A
Approach Delay (s)	0.0		1.4	24.4	0.0
Approach LOS				C	A

Intersection Summary				
Average Delay	4.0			
Intersection Capacity Utilization	84.5%	ICU Level of Service		E
Analysis Period (min)	15			



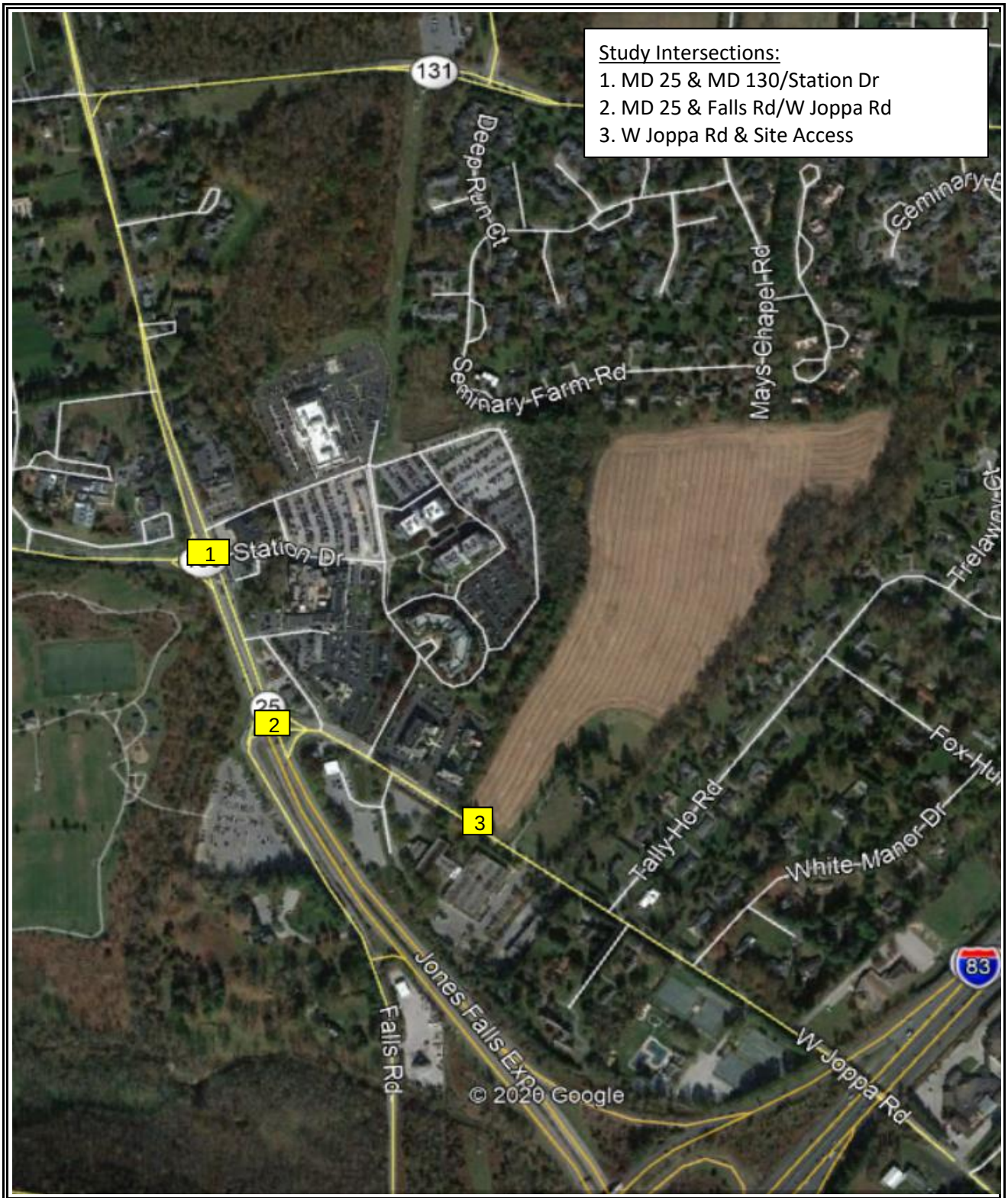
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	268	87	3	421	102	303	259	1027	515	248	660	265
Future Volume (vph)	268	87	3	421	102	303	259	1027	515	248	660	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Util. Factor	0.97	1.00		0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1854		3433	1863	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.24	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1854		3433	1863	1583	447	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	291	95	3	458	111	329	282	1116	560	270	717	288
RTOR Reduction (vph)	0	1	0	0	0	272	0	0	0	0	0	0
Lane Group Flow (vph)	291	97	0	458	111	57	282	1116	560	270	717	288
Turn Type	Split	NA		Split	NA	Perm	pm+pt	NA	Free	Prot	NA	Free
Protected Phases	4	4		3	3		1	6		5	2	
Permitted Phases						3	6		Free			Free
Actuated Green, G (s)	16.5	16.5		23.0	23.0	23.0	72.0	72.0	165.0	32.0	86.3	165.0
Effective Green, g (s)	18.5	18.5		25.0	25.0	25.0	74.0	75.5	165.0	34.0	89.8	165.0
Actuated g/C Ratio	0.11	0.11		0.15	0.15	0.15	0.45	0.46	1.00	0.21	0.54	1.00
Clearance Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.5		5.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.5	5.0		4.0	5.0	
Lane Grp Cap (vph)	384	207		520	282	239	358	1619	1583	364	1926	1583
v/s Ratio Prot	c0.08	0.05		c0.13	0.06		c0.09	0.32		c0.15	0.20	
v/s Ratio Perm						0.04	c0.26		0.35			0.18
v/c Ratio	0.76	0.47		0.88	0.39	0.24	0.79	0.69	0.35	0.74	0.37	0.18
Uniform Delay, d1	71.1	68.6		68.5	63.2	61.6	31.9	35.5	0.0	61.4	21.5	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	0.84	0.43	1.00
Incremental Delay, d2	8.3	1.7		15.9	0.9	0.5	11.2	2.4	0.6	7.9	0.5	0.2
Delay (s)	79.4	70.3		84.5	64.1	62.1	43.1	37.9	0.6	59.3	9.8	0.2
Level of Service	E	E		F	E	E	D	D	A	E	A	A
Approach Delay (s)		77.1			73.8			28.0			18.1	
Approach LOS		E			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	38.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	165.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		

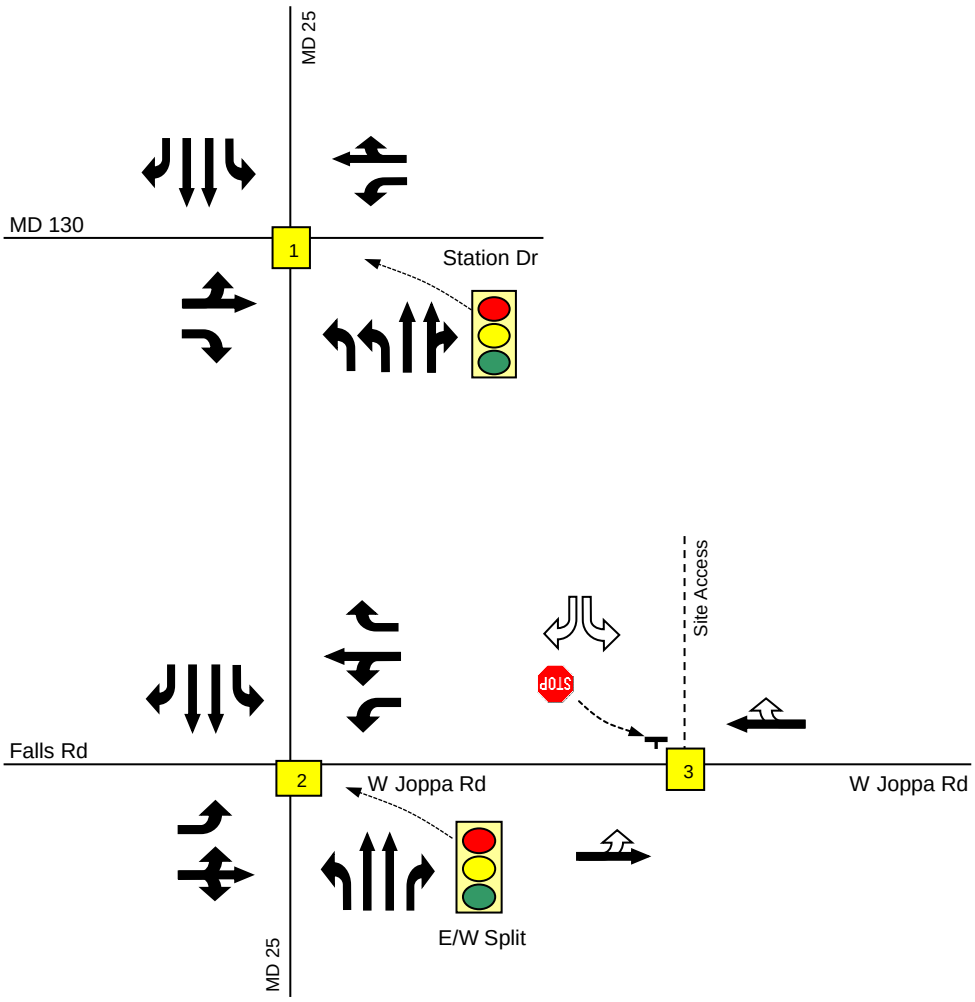
c Critical Lane Group

Appendix D

Exhibits from Approved Traffic Impact Study Dated December 7, 2020



Traffic Impact Analysis	Site Location Map	**Exhibit 1**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com		



Traffic Impact Analysis

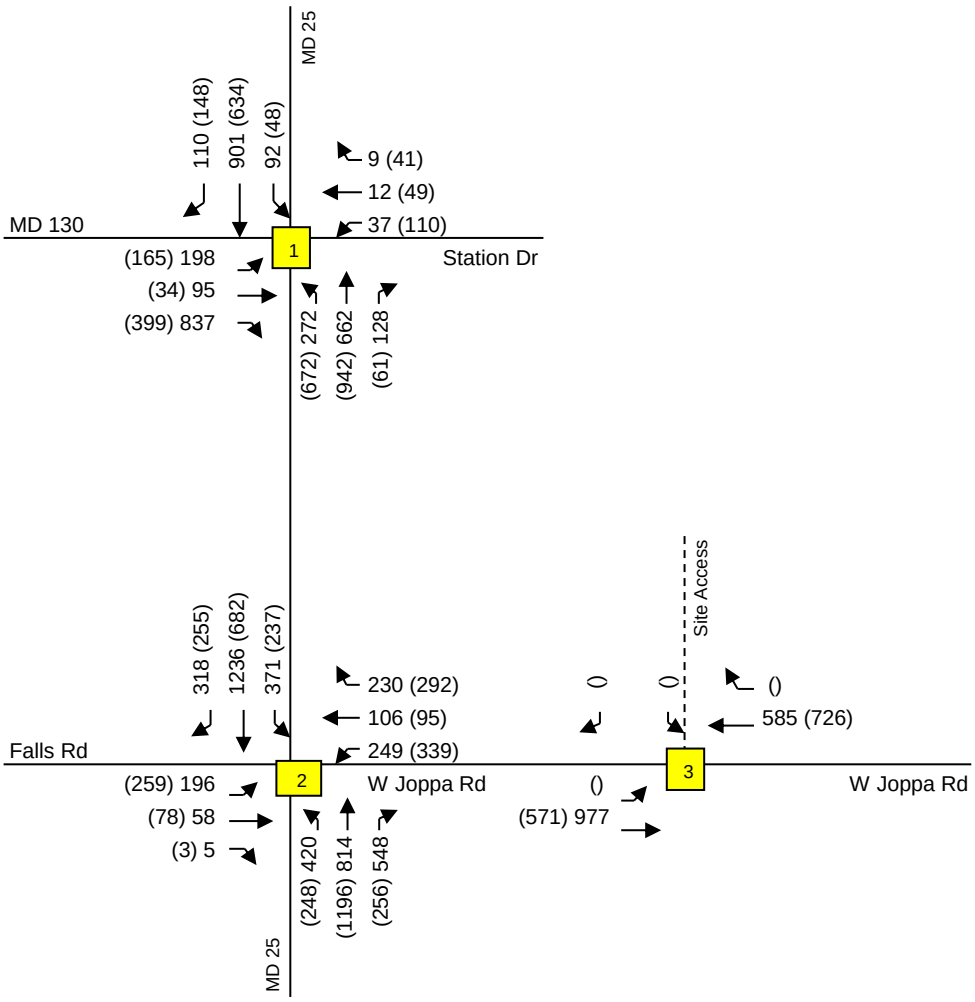
LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Lane Use & Traffic Control Devices

Key: Existing - Proposed -

Exhibit 2

Note: The volumes for Intersection 2 were provided by Baltimore County and are dated February 19, 2020.



Traffic Impact Analysis

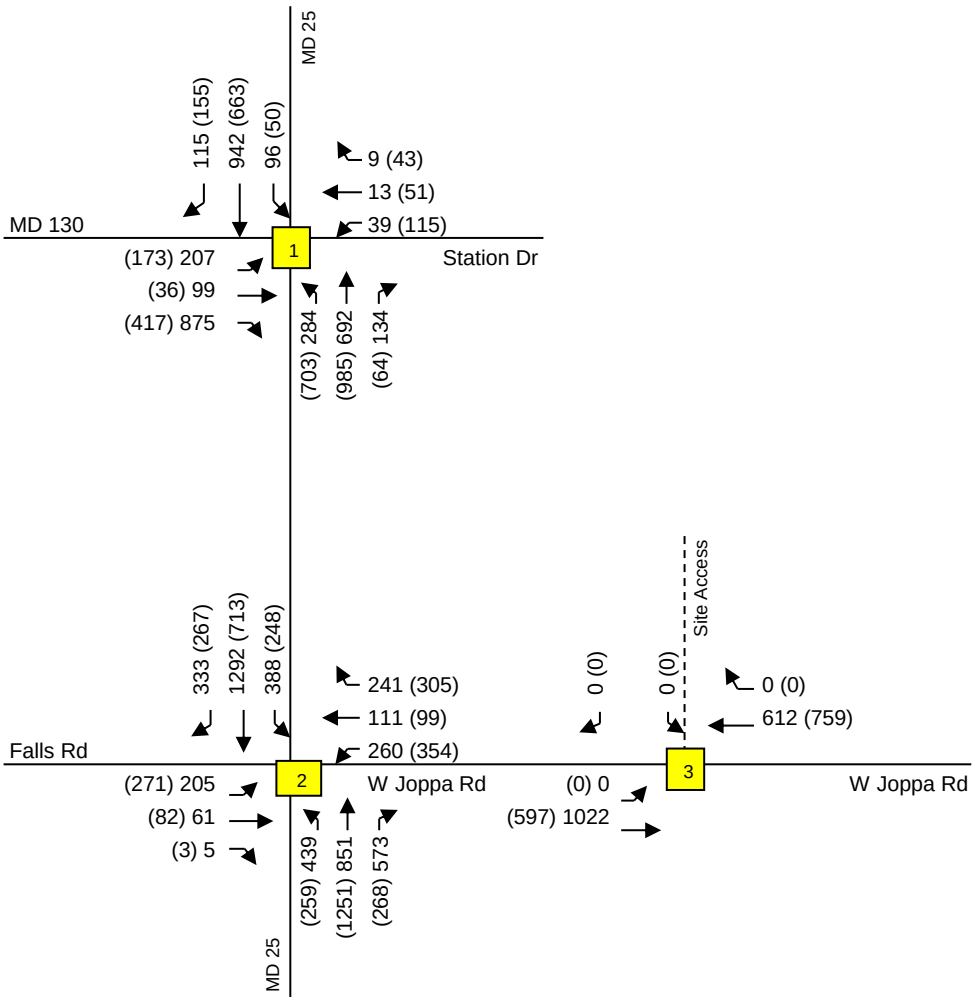
LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Existing Peak Hour Volumes

Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

Exhibit 3

1.5%	Growth Rate
3	Years of Growth
1.0457	Total Growth



Traffic Impact Analysis	Background Peak Hour Volumes	**Exhibit 4**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Key: xx = AM Peak Vol's (xx) = PM Peak Vol's	

Trip Generation Rates

Single-Family Detached (ITE-210, Units)

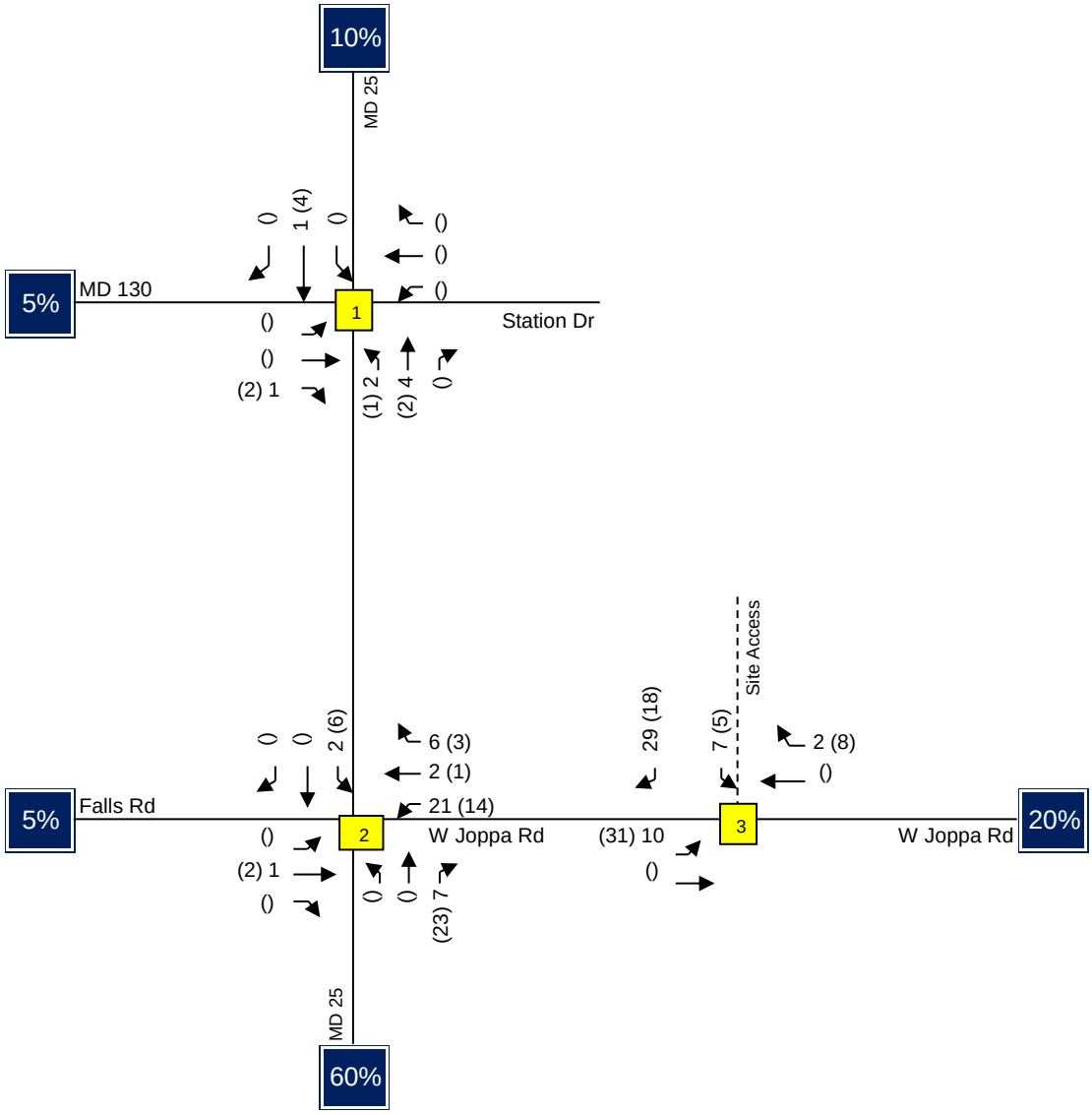
	Trip Distribution (In/Out)
Morning Trips = 0.70 x (Units) + 9.74	25/75
Ln(Evening Trips) = 0.90 x Ln(Units) + 0.51	63/37

Trip Generation Totals

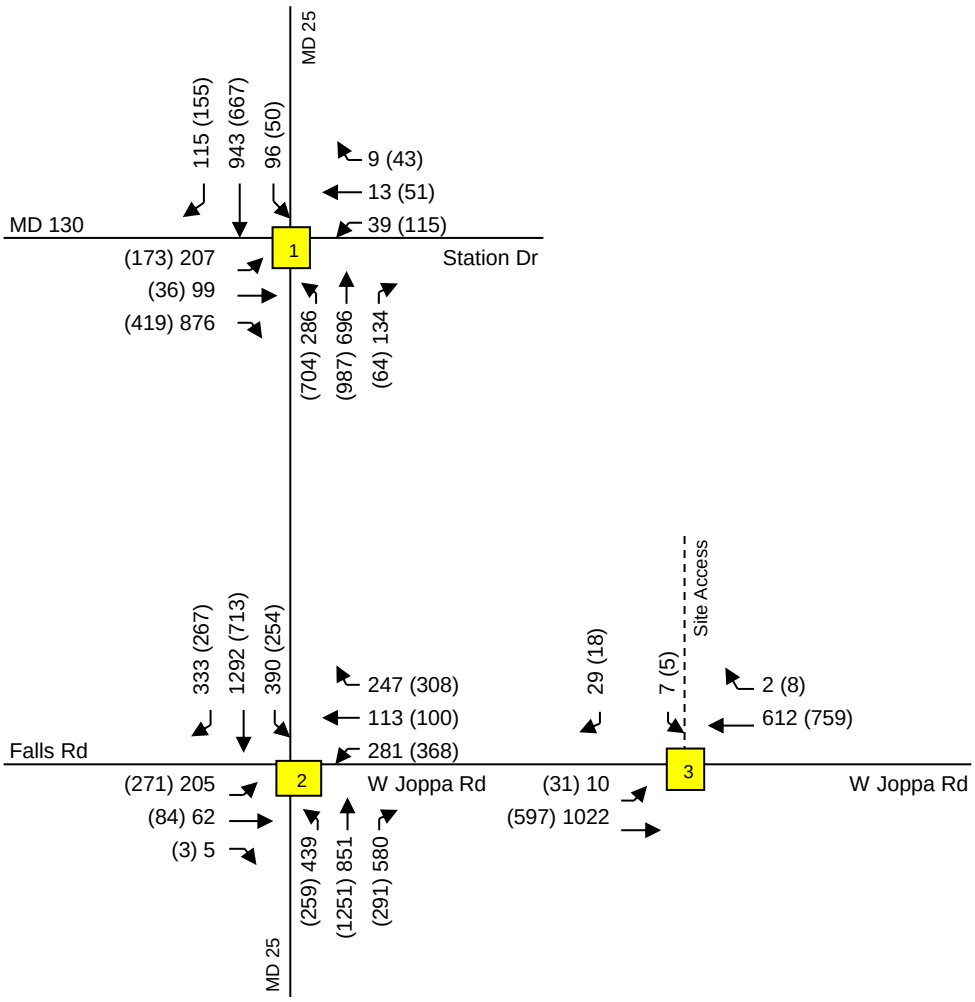
			AM Peak			PM Peak		
			In	Out	Total	In	Out	Total
LU Code 210	Single-Family Detached (ITE-210, Units)	62 units	11	35	46	38	23	61
		Total:	**11**	**35**	**46**	**38**	**23**	**61**

NOTE: Trip Generation Rates obtained from the ITE Trip Generation Manual, 10th Edition

Traffic Impact Analysis	Trip Generation for Site	**Exhibit 5**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com		



Traffic Impact Analysis	Trip Assignment for Site	**Exhibit 6**
LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Key: xx = AM Peak Vol's (xx) = PM Peak Vol's	



Traffic Impact Analysis

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645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
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Total Peak Hour Volumes

Key: xx = AM Peak Vol's (xx) = PM Peak Vol's

Exhibit 7

Level-of-Service Results

Morning Peak Hour	Critical Lane Volume (CLV)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total	CLV Impact	Mitigates
1). MD 25 & MD 130/Station Dr	B / 1009	B / 1054	B / 1057	3	--
2). MD 25 & Falls Rd/W Joppa Rd	E / 1468	E / 1536	E / 1549	13	--
Proposed New Improvements			D / 1428	-121	931%
3). W Joppa Rd & Site Access	N/A	N/A	B / 1088	--	--

Evening Peak Hour	Critical Lane Volume (CLV)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total	CLV Impact	Mitigates
1). MD 25 & MD 130/Station Dr	B / 1078	B / 1128	B / 1130	2	--
2). MD 25 & Falls Rd/W Joppa Rd	D / 1359	D / 1422	D / 1438	16	--
Proposed New Improvements			D / 1307	-131	819%
3). W Joppa Rd & Site Access	N/A	N/A	A / 821	--	--

Level-of-Service Results

Morning Peak Hour	Highway Capacity Manual (HCM)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total		
				Delay Impact	Mitigates
1). MD 25 & MD 130/Station Dr	C / 21.6	C / 21.8	C / 21.9	0.1	--
2). MD 25 & Falls Rd/W Joppa Rd	D / 49.7	D / 54.8	E / 55.9	1.1	--
Proposed New Improvements			D / 40.9	-15	1364%
3). W Joppa Rd & Site Access	N/A	N/A	A / 0.6	--	--

Evening Peak Hour	Highway Capacity Manual (HCM)			Mitigation as a result of Proposed Improvements	
	Existing	Background	Total		
				Delay Impact	Mitigates
1). MD 25 & MD 130/Station Dr	C / 27.3	C / 27.5	C / 27.4	-0.1	--
2). MD 25 & Falls Rd/W Joppa Rd	D / 44.8	D / 47.7	D / 48.7	1	--
Proposed New Improvements			D / 40.9	-7.8	780%
3). W Joppa Rd & Site Access	N/A	N/A	A / 0.8	--	--

SimTraffic 95th Percentile Queuing Results

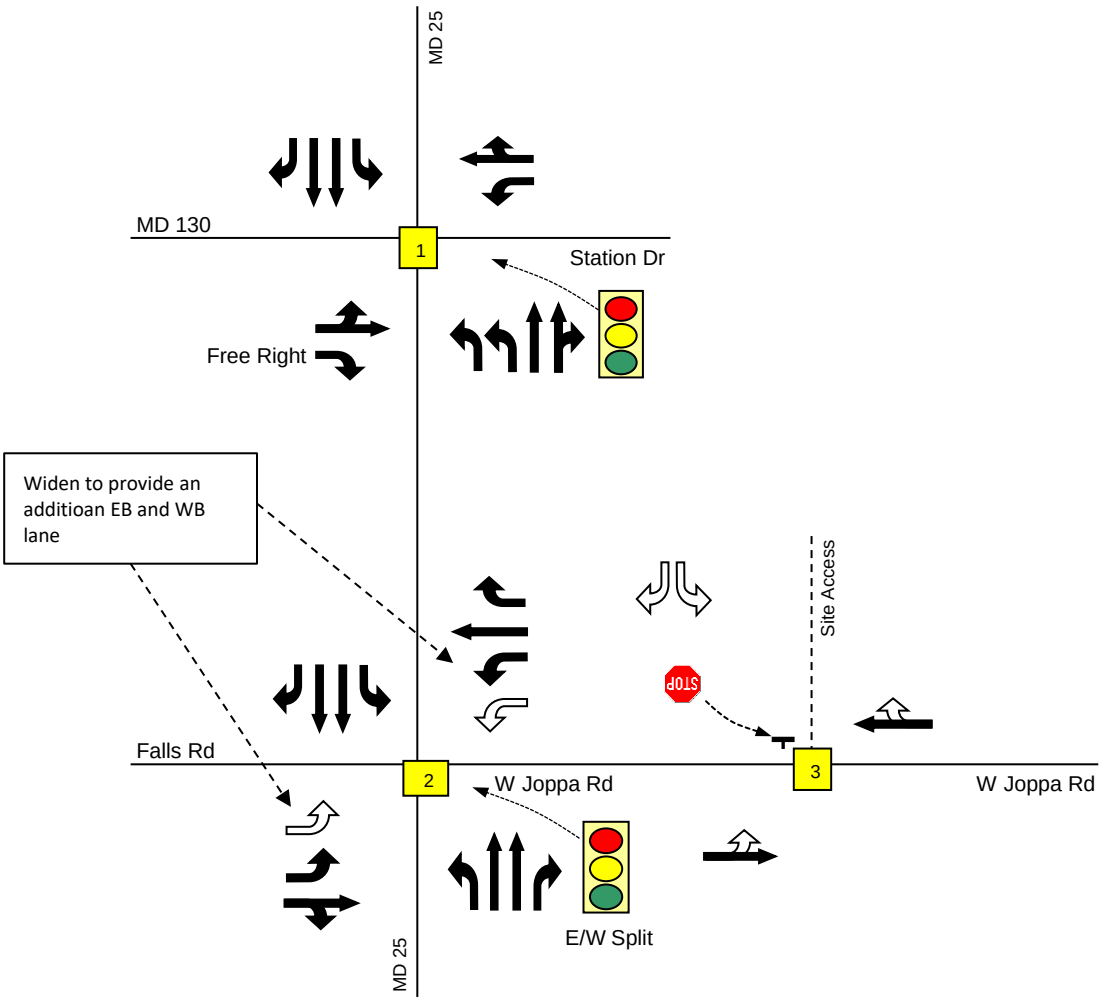
Morning Peak Hour	Storage Length (Feet)	Background (Feet)	Total (Feet)	Total with Imp's (Feet)
1). MD 25 & MD 130/Station Dr				
eastbound left	420	60	60	
westbound left	240	90	105	
northbound left	320	240	235	
southbound left	150	195	185	
2). MD 25 & Falls Rd/W Joppa Rd				
eastbound left	740	190	195	210
westbound left	540	255	270	160
northbound left	630	740	690	535
southbound left	355	440	440	435
3). W Joppa Rd & Site Access	N/A	N/A	N/A	N/A
southbound left				

Evening Peak Hour	Storage Length (feet)	Background (Feet)	Total (Feet)	Total with Imp's (Feet)
1). MD 25 & MD 130/Station Dr				
eastbound left	420	55	55	
westbound left	240	195	195	
northbound left	320	455	445	
southbound left	150	160	155	
2). MD 25 & Falls Rd/W Joppa Rd				
eastbound left	740	200	210	215
westbound left	540	305	295	270
northbound left	630	840	855	435
southbound left	355	310	360	330
3). W Joppa Rd & Site Access	N/A	N/A	N/A	N/A
southbound left				

Notes:

1. Only intersections and approaches containing dedicated storage lanes are shown.

Traffic Impact Analysis	Results of SimTraffic Queuing Analysis	**Exhibit 8c**



Traffic Impact Analysis

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Lane Use & Traffic Control Devices

Key: Existing - Proposed -

Exhibit 9a



LEGEND

FULL-DEPTH WIDENING

REMOVE PAVEMENT

RE-MARK PAVEMENT

CONCRETE CURB AND GUTTER

LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BOULEVARD, SUITE 214
SEVERNA PARK, MD 21146
TEL: (410) 216-3333
FAX: (443) 782-2288
www.lenharttraffic.com

2310 W. JOPPA ROAD

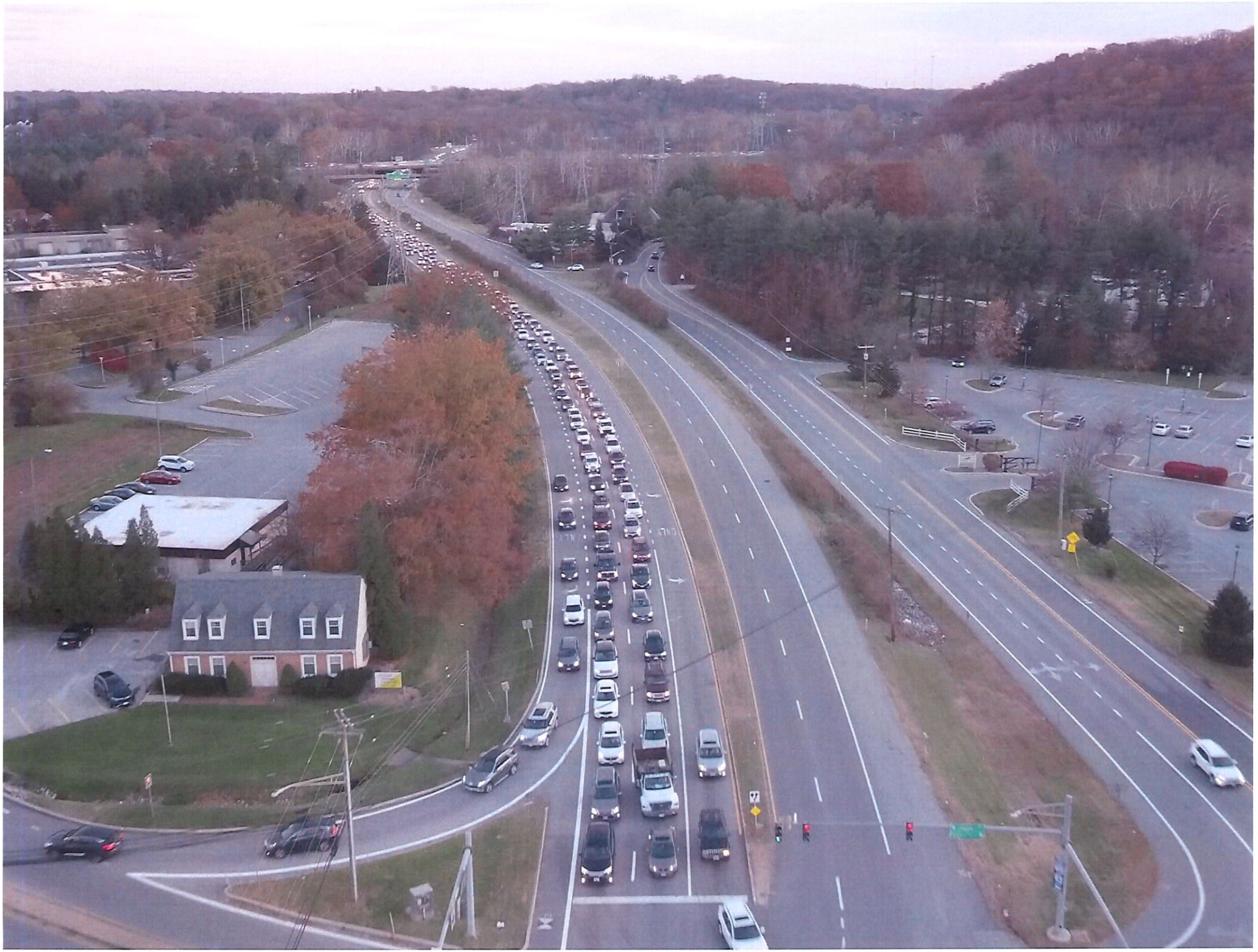
MD 25 AT WEST JOPPA ROAD CONCEPT GEOMETRIC IMPROVEMENTS

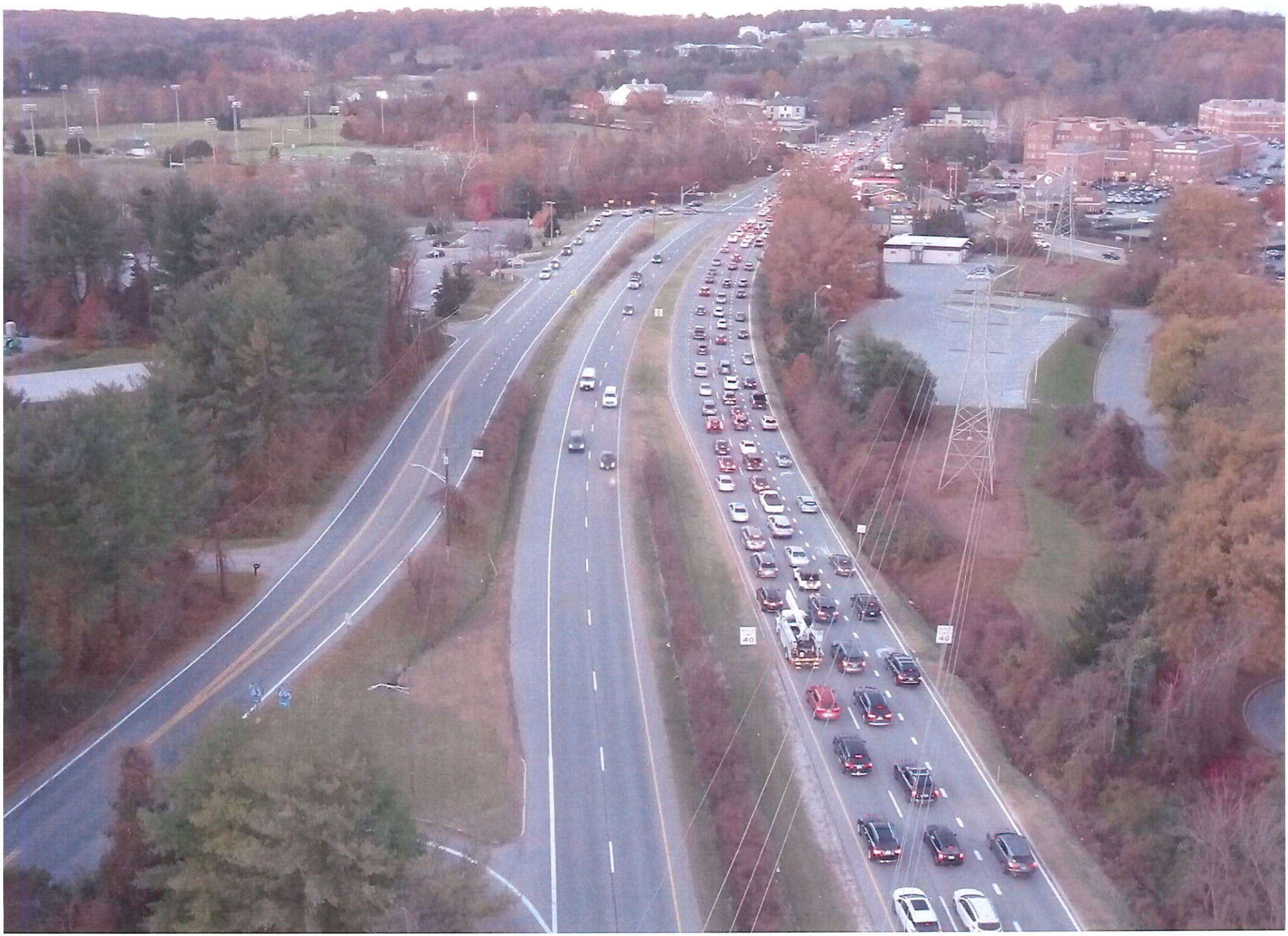
DATE	DRAWN BY	SCALE	SHEET
DEC. 2020	LTC/BCS	1"=50'	

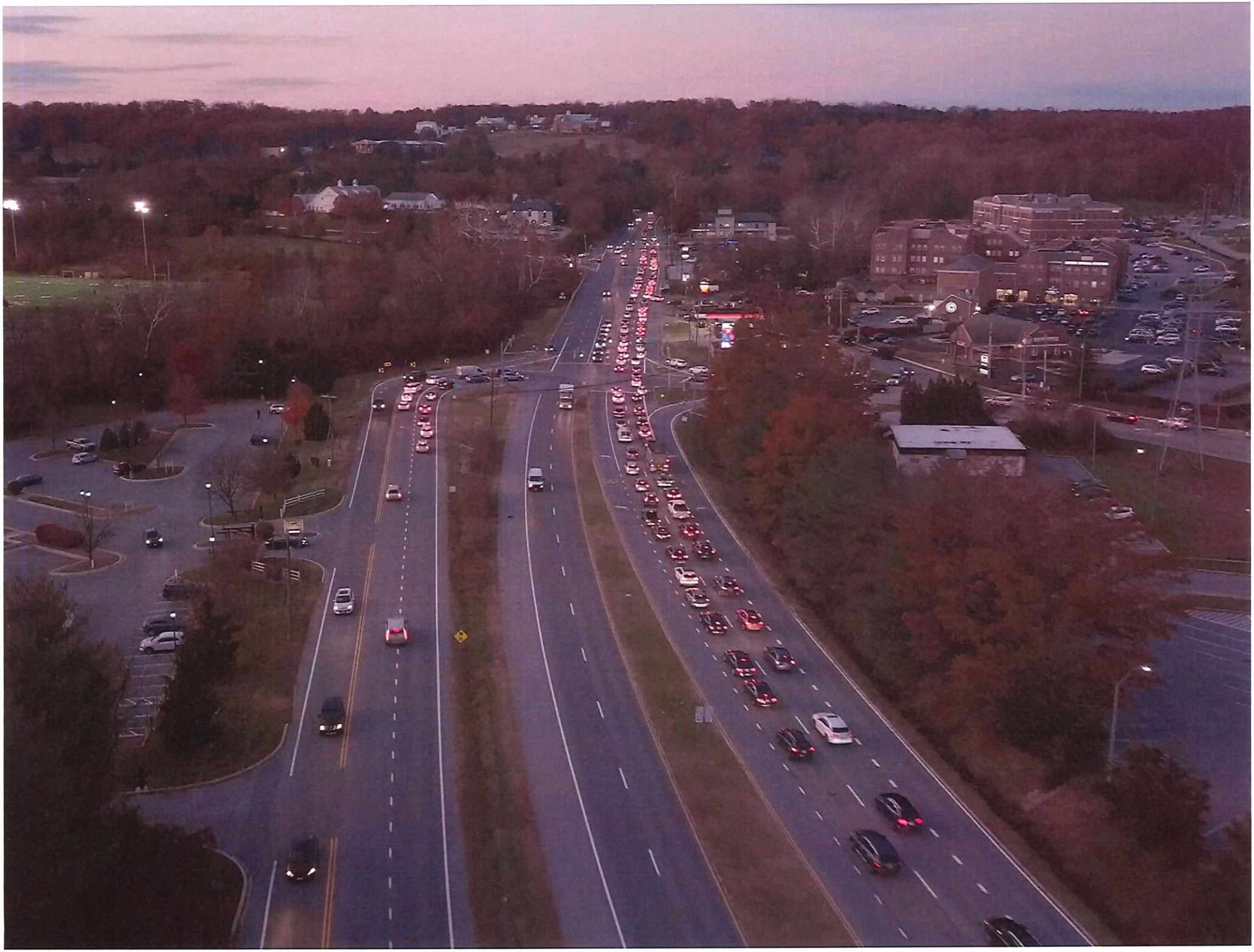

KOMATSU

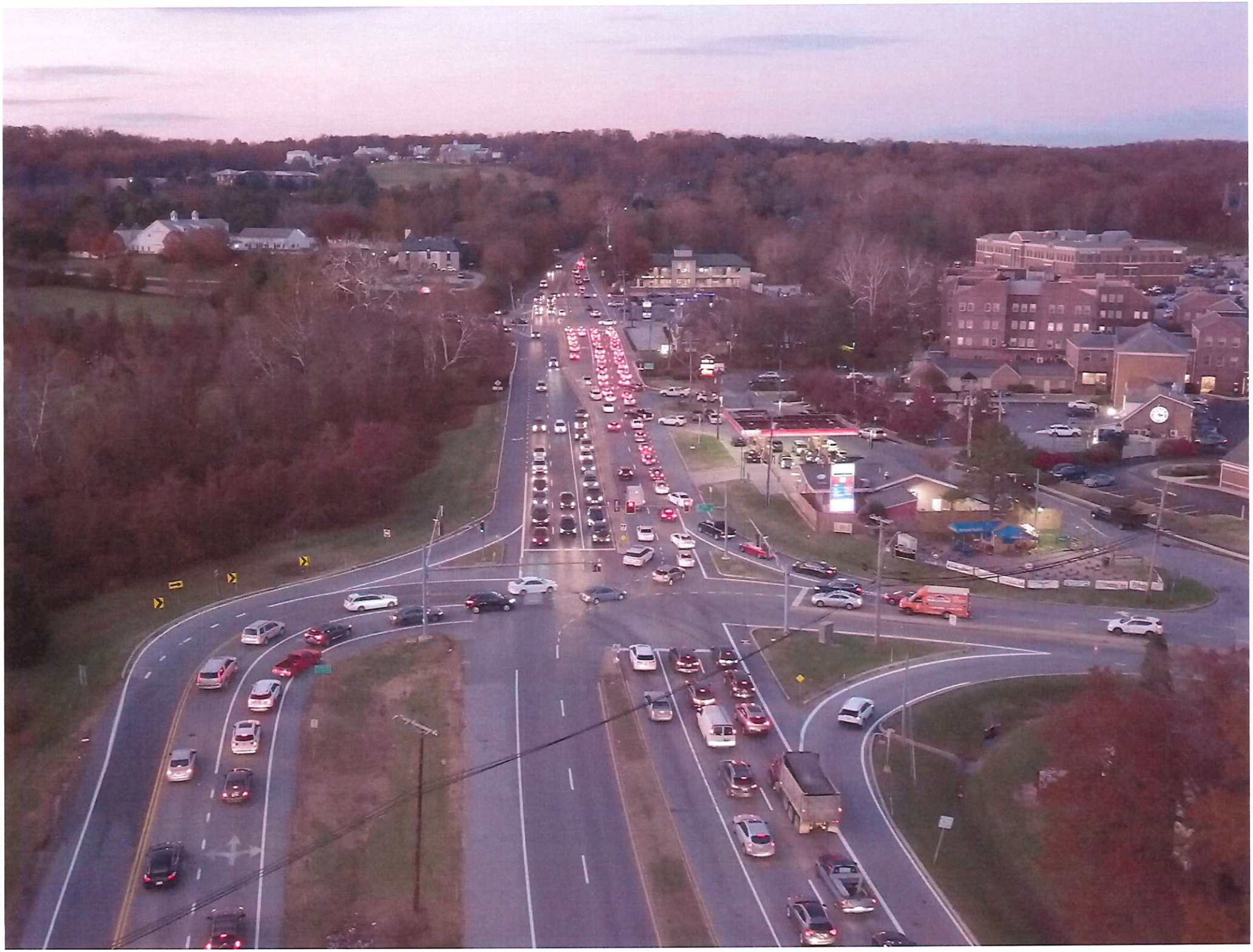

ONLY
NLY















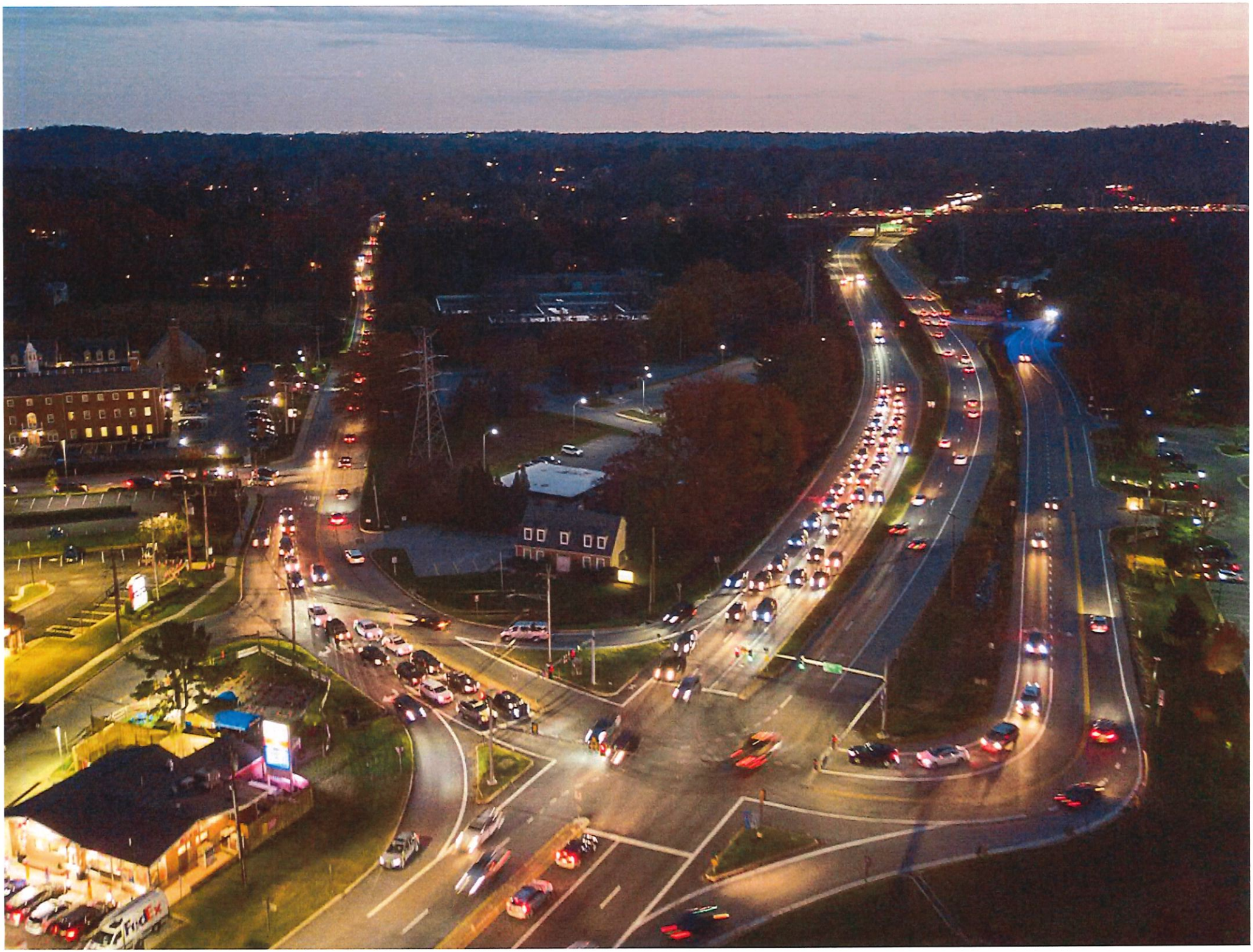








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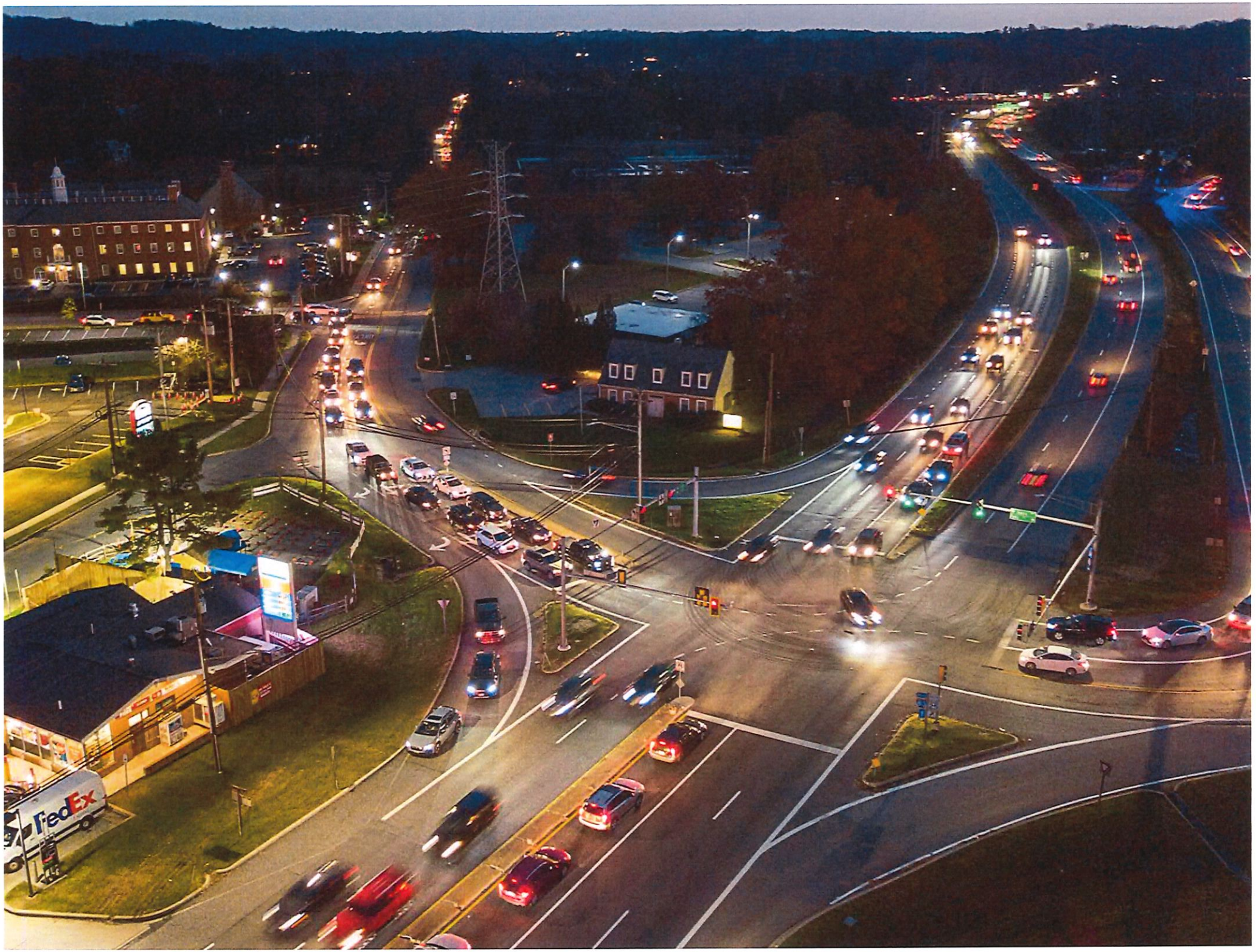
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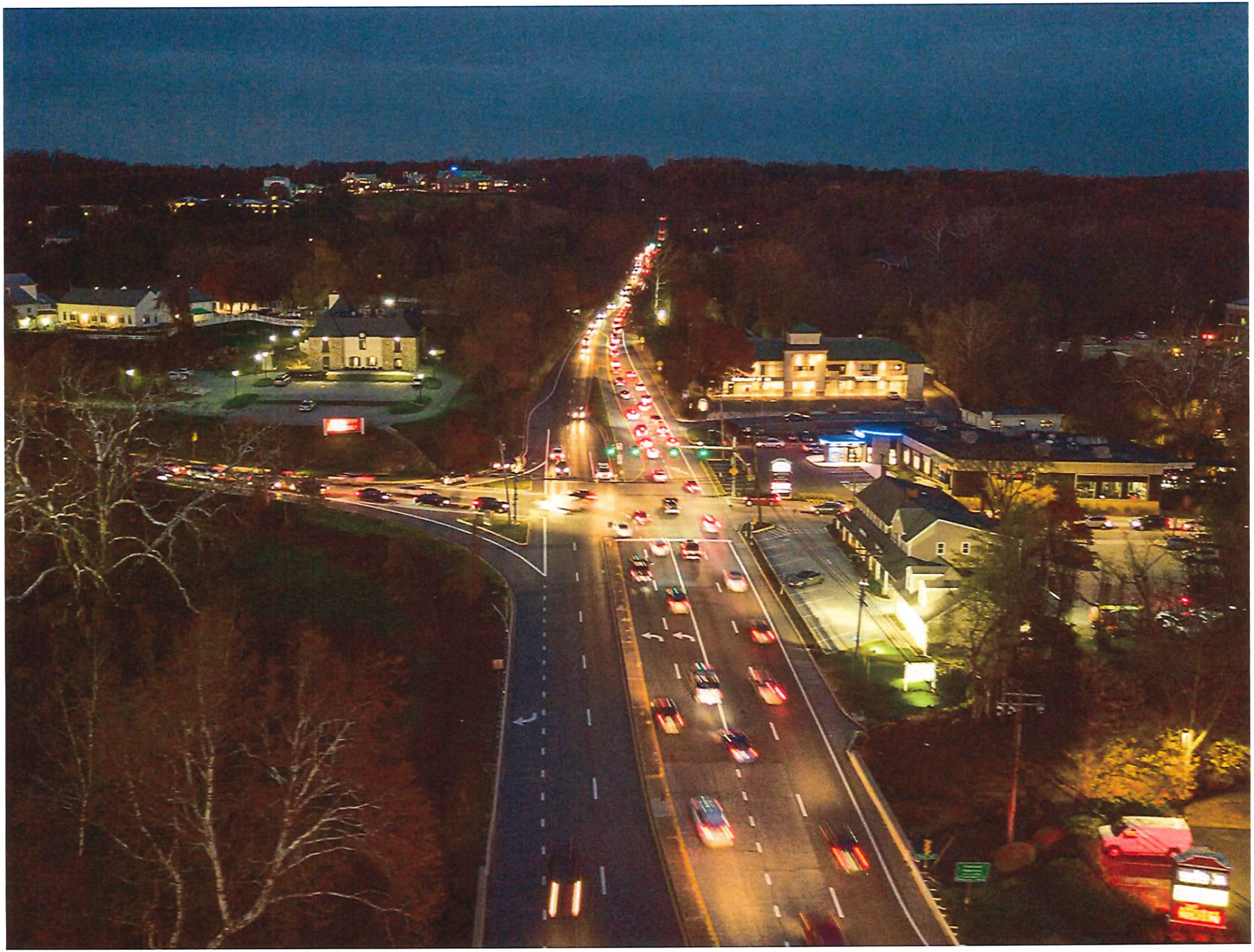
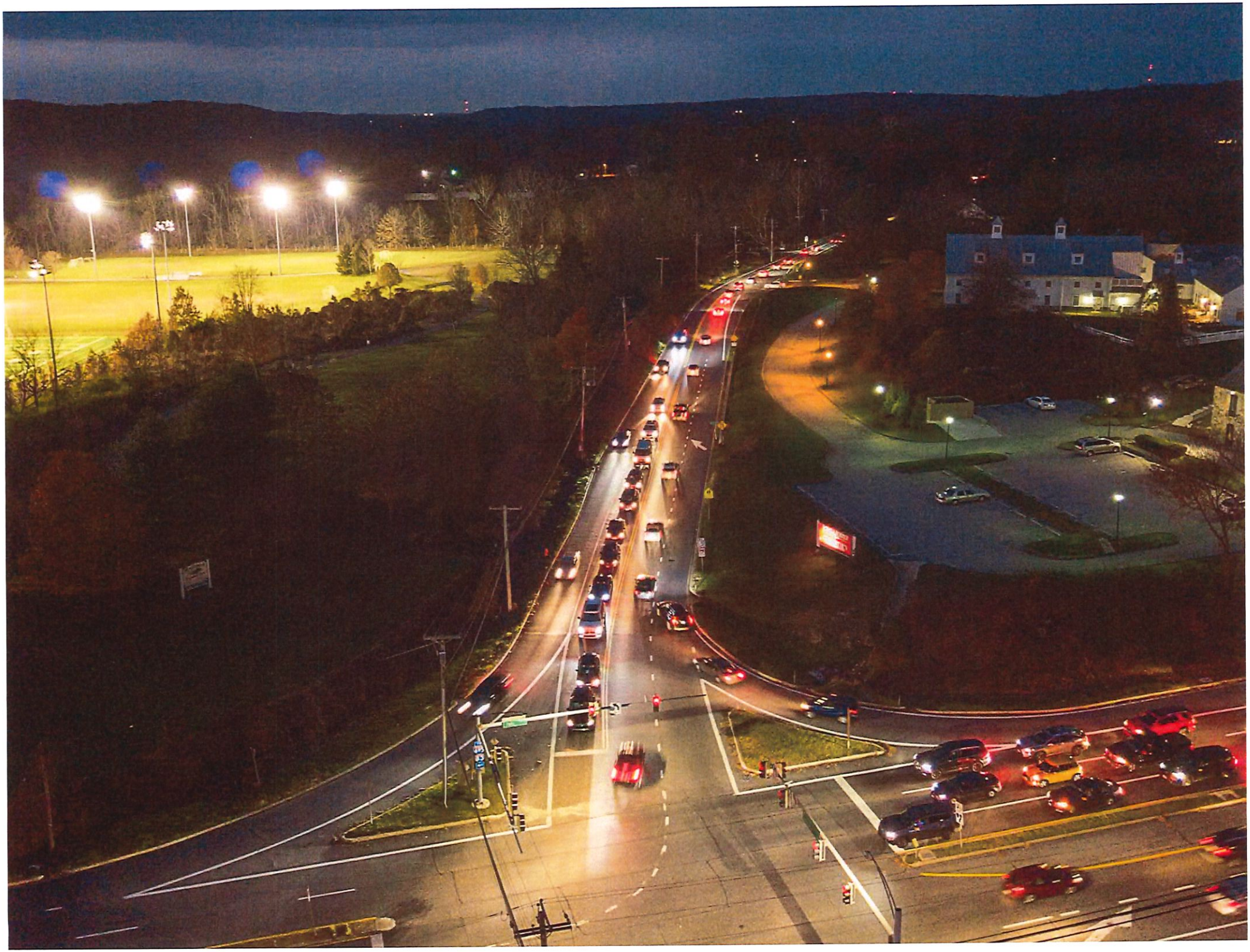

































































Baltimore
Orthodontic Group
Valley Presbyterian
Church: PCA
Benedictine Sisters
Jones Falls Expy
2D

The Heatherfield Association Incorporated

Lutherville, Maryland

November 15, 2022

RE: Heatherfield Association - Board Declaration – Greenspring Manor Development

To Whom it May Concern:

The Heatherfield Association board has met with various members of the community and conducted a meeting on November 15, 2022 to discuss the issues around the proposed Greenspring Manor Development. The Heatherfied Assocaition is comprised of homes on Tally Ho Road (8200 Block and 8300 and 8301), Fox Hunt Lane, White Manor Drive and Horseshoe Circle. The board has voted unanimously that President Dean Merritt (3 Horseshoe Circle) will testify on the board's and neighborhood's behalf. It also believes the primary concerns with the development include:

Density:

Most Heatherfield homes are on approx. 1 acre lots (43,560 sq ft) and more Heatherfield homes than any other neighborhood directly abut the proposed development. The proposed development average lot size of 11,400 sq ft is far too small in comparison to the surrounding homes. The Density concern is also reiterated in the below sections with concerns around traffic and sewer.

Traffic:

The neighborhood is concerned with the failing intersections along Falls Road as well as the other direction at Joppa and Bellona, and Joppa and Thornton roads. It has become difficult to turn out of our neighborhood and there are constant accidents and traffic backups from these intersections.

Safety of our residents which range from newborns to almost 100 years old is of great concern to the community. There are no sidewalks in our neighborhood and many families walk along Tally Ho rd, which was built as a straightaway prior to being connected to Seminary Ridge. The speeding and utter disregard for safety of people walking along the road has grown as outside travelers continue to travel through the area. This will only increase with more homes.

This traffic also uses Tally Ho Rd as a cut through and the neighborhood believes if any road is built on the property it should fully cut through to Mays Chapel Road as planned in the Baltimore County Master Plan.

Sewer and drainage:

Sewage infrastructure is of the utmost importance to all of the homes in the area and it is our understanding that the infrastructure has not been updated to handle the current homes and businesses.

The planned density of the project will increase the problems with the current inadequate sewer system. We should expect increases in the frequency and size of sewage overflows that will damage homes, the environment in the area and downstream in the Jones Falls valley and the Chesapeake Bay. Adding these new sewer users without enhancing the sewer system is counterproductive to the current state, federal and local efforts to clean and renew the stream systems and the bay.

We thank the County and Judge Murphy for allowing us to enter this into evidence and for our president Dean Merritt to speak on our behalf.

Sincerely,

Heatherfield Association Board

President: Dean Merritt

Vice President: Brian Heil

Secretary: Lynn Manthy

Treasurer: Jim Fabian

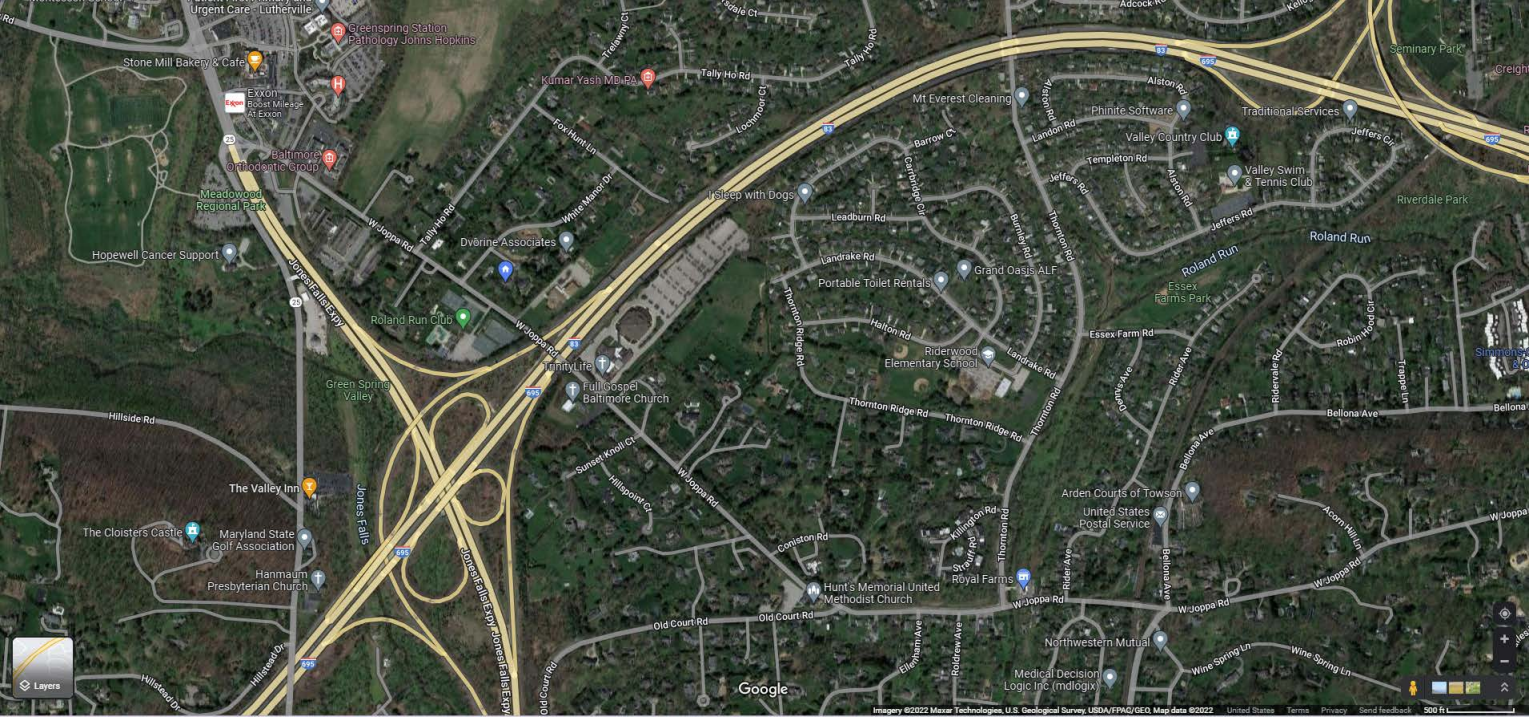
Immediarte Past President: Patrick McGee

Board Member: George Levanis

Board Member: Catherine Miller

Board Member: Lara Townsley

Board Member: Lorraine Hutt



Urgent Care - Lutherville
Greenspring Station Pathology Johns Hopkins
Stone Mill Bakery & Cafe
Exxon
Boost Mileage At Exxon
Baltimore Orthodontic Group
Meadowood Regional Park
Hopewell Cancer Support
Kumar Yash MD PA
Tally Ho Rd
Trelawny Ct
Lochmoor Ct
Fox Hunt Ln
White Manor Dr
W Joppa Rd
Dvorine Associates
Roland Run Club
Jones Falls Expy
Green Spring Valley
TrinityLife
Full Gospel Baltimore Church
Hillside Rd
The Valley Inn
Jones Falls
The Cloisters Castle
Maryland State Golf Association
Hanmaum Presbyterian Church
Hillstead Dr
Sunset Knoll Ct
Hillspoint Ct
Coniston Rd
Old Court Rd
Hunt's Memorial United Methodist Church
Mt Everest Cleaning
Alston Rd
Landon Rd
Phinite Software
Traditional Services
Valley Country Club
Jeffers Cir
Templeton Rd
Valley Swim & Tennis Club
Jeffers Rd
Riverdale Park
Barrow Ct
Carrbridge Cir
I Sleep with Dogs
Leadburn Rd
Burnley Rd
Thornton Rd
Landrake Rd
Grand Oasis ALF
Portable Toilet Rentals
Roland Run
Essex Farms Park
Halton Rd
Riderwood Elementary School
Essex Farm Rd
Thornton Ridge Rd
Dennis Ave
Rider Ave
Ridervale Rd
Robin Hood Cir
Trappe Ln
Bellona Ave
Seminary Park
Arden Courts of Towson
United States Postal Service
Killington Rd
Strauff Rd
Royal Farms
Acorn Hill Ln
Northwestern Mutual
Wine Spring Ln
Medical Decision Logic Inc (mdlogix)
Ellenham Ave
Roldrew Ave
Layers
Google
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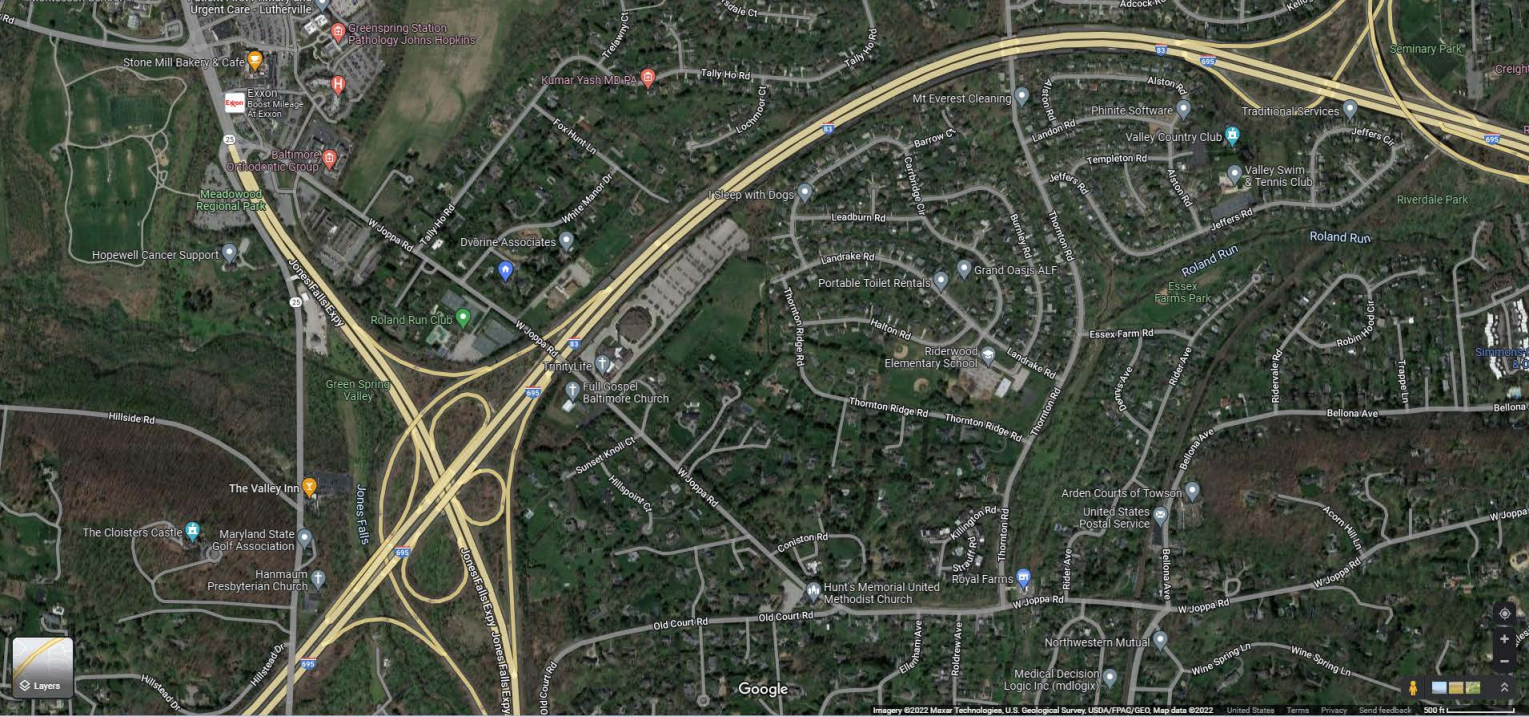

Urgent Care - Lutherville
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IBAK


2100


2100
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My Map

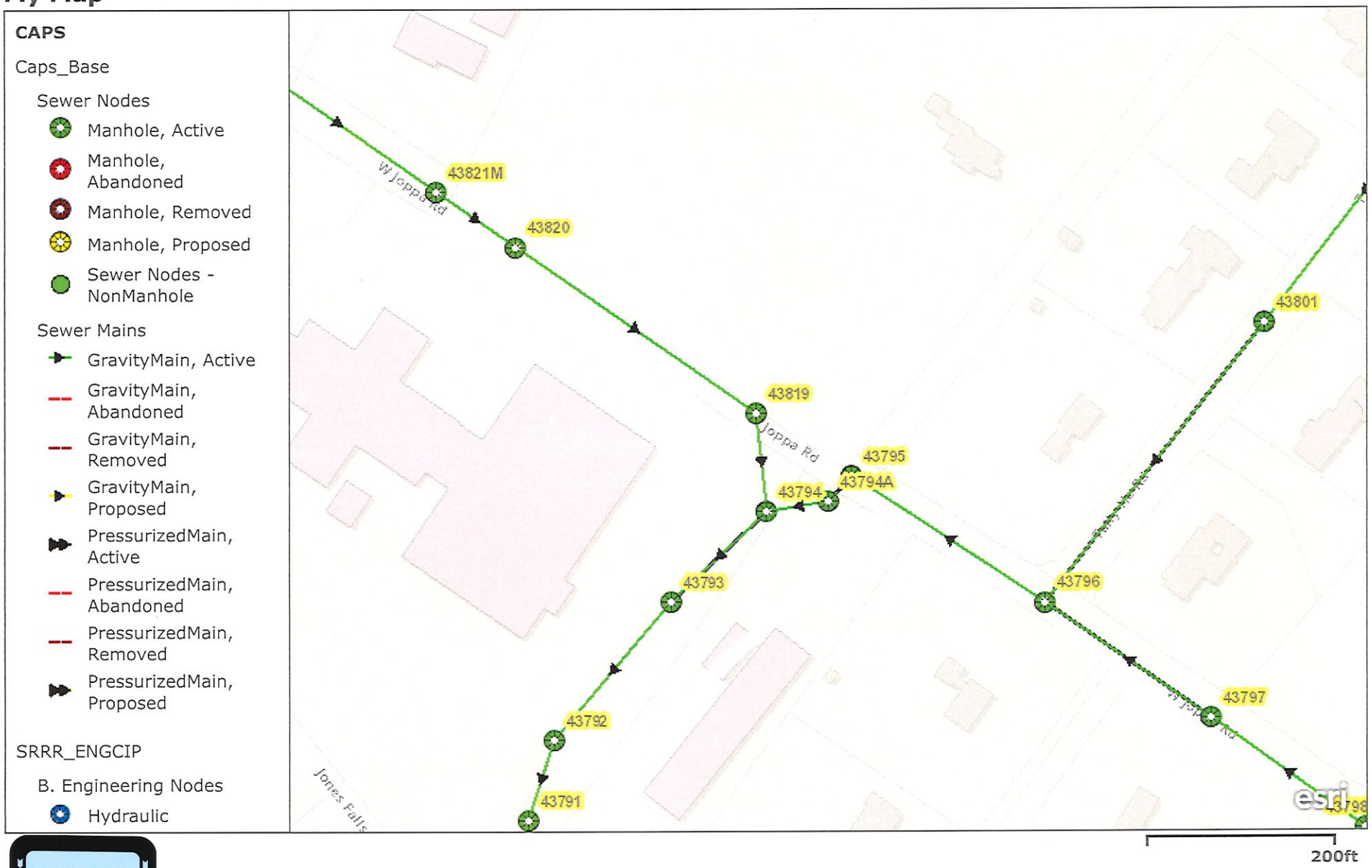

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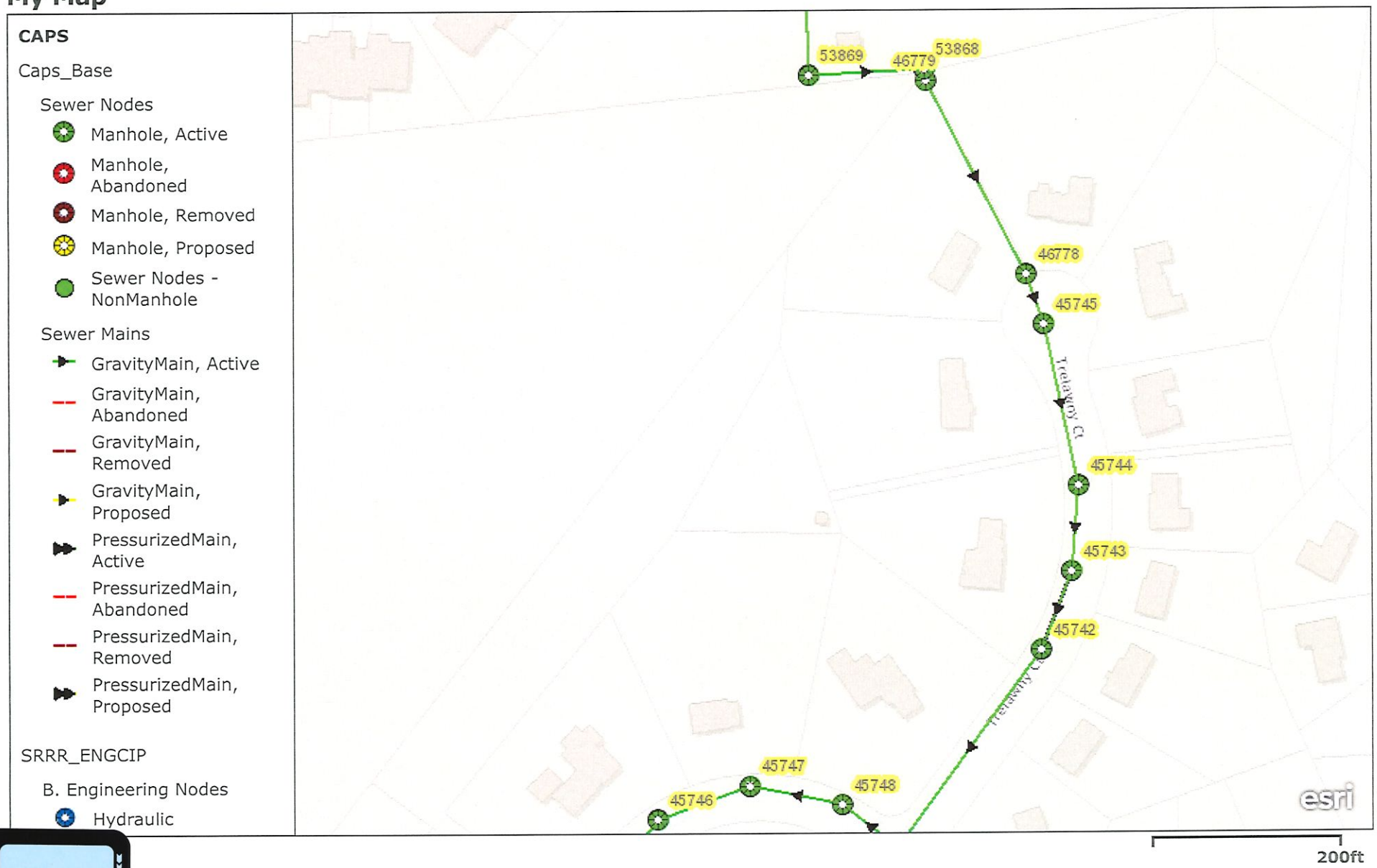
EXHIBIT 47D


BALTIMORE
SEWER



My Map



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My Map

CAPS

Caps_Base

Sewer Nodes
- Manhole, Active
- Manhole, Abandoned
- Manhole, Removed
- Manhole, Proposed
- Sewer Nodes - NonManhole

Sewer Mains
- GravityMain, Active
- GravityMain, Abandoned
- GravityMain, Removed
- GravityMain, Proposed
- PressurizedMain, Active
- PressurizedMain, Abandoned
- PressurizedMain, Removed
- PressurizedMain, Proposed

SRRR_ENGCIP

B. Engineering Nodes
- Hydraulic



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EXHIBIT 49

Section 2.4 Overbank Flood Protection Volume Requirements (Q_p)

The primary purpose of the overbank flood protection volume sizing criteria is to prevent an increase in the frequency and magnitude of out-of-bank flooding generated by development (e.g., flow events that exceed the bankfull capacity of the channel and therefore must spill over into the floodplain). Overbank flood protection for the ten-year storm shall only be required if local approval authorities have no control of floodplain development, no control over infrastructure and conveyance system capacity design, or determine that downstream flooding will occur as a result of the proposed development.

For most regions of the State, the overbank flood control criteria translates to preventing the post development ten-year, 24 hour storm peak discharge rate (Q_{p10}) from exceeding the pre development peak discharge rate.

On the Eastern Shore of Maryland, the overbank flood control criteria is defined as preventing the post development two-year, 24 hour storm peak discharge rate (Q_{p2}) from exceeding the pre development peak discharge rate. The rainfall depths associated with the two and ten-year, 24 hour storm events are shown in Table 2.2.

Basis for Determining Overbank Flood Protection Volume

When addressing the overbank flooding design criteria, the following represent the minimum basis for design:

- The models TR-55 and TR-20 (or an equivalent approved by the appropriate local authority) will be used for determining peak discharge rates. The Eastern Shore Dimensionless Hydrograph may be used for sites where appropriate (see Appendix D.14). Any adjustments for unique land features such as Karst topography shall be determined by the local approving authority.

- The standard for characterizing pre development hydrologic land use for non-forested vegetated areas (including agriculture) shall be meadow in good hydrologic condition.

- Off-site areas should be modeled as "present land use condition" in good hydrologic condition for both the 2 and 10-year storm events.

- The length of overland flow used in t_c calculations is limited to no more than 150 feet for pre development conditions and 100 feet for post development conditions. On the Eastern Shore (see Figure 2.4) this maximum distance is extended to 250 feet for pre development conditions and 150 feet for post development conditions.

- Overbank flood protection does not apply to direct discharges to tidal water.

Section 2.5 Extreme Flood Volume (Q_f)

The intent of the extreme flood criteria is to (a) prevent flood damage from large storm events, (b) maintain the boundaries of the pre development 100-year Federal Emergency Management Agency (FEMA) and/or locally designated floodplain, and (c) protect the physical integrity of BMP control structures. This is typically done in two ways:

100-Year Control: requires storage to attenuate the post development 100-year, 24 hour peak discharge (Q_f) to pre development rates. The Q_f is the most stringent and expensive level of flood control and is generally not needed if the downstream development is located out of the 100-year floodplain. In many cases, the conveyance system leading to a stormwater structure is designed based on the discharge rate for the ten-year storm (Qp_{10}). In these situations, the conveyance systems may be the limiting hydrologic control.

Reserve Ultimate 100-Year Floodplain: 100-year storm control may be required by an appropriate review authority if:

- buildings or development are located within the ultimate 100-year floodplain, or
- the reviewing authority does not completely control the 100-year floodplain.

Hydraulic/hydrologic investigations may be required to demonstrate that downstream roads, bridges and public utilities are adequately protected from the Q_f storm. These investigations typically extend to the first downstream tributary of equal or greater drainage area or to any downstream dam, highway, or natural point of restricted stream flow.

Basis for Determining Extreme Flood Criteria

- Consult with the appropriate review authority to determine the analyses required for the Q_f storm.
- The same hydrologic and hydraulic methods used for overbank flood control shall be used to analyze Q_f.
- In addition, off-site areas should be modeled as “ultimate condition” when the 100-year design storm event is analyzed. Table 2.2 indicates the depth of rainfall (24 hour) associated with the 100-year storm event for all counties in the State of Maryland

Report of
Concept Stormwater Management

Greenspring Manor

2310 West Joppa Road

Baltimore County, Maryland

May 2021

Prepared for:

Ron Snyder
ATAPCO Properties, Inc.
Director of Land Development
1 South Street, Suite 2800
Baltimore, MD 21202
Phone: 410-347-7217
rsnyder@atapco.com

RECEIVED
MAY 20 2021
Stormwater Management

Prepared by:

James Malico
Kimley-Horn and Associates, Inc.
210 W. Pennsylvania Ave., Suite 100
Towson, MD 21204
Phone: 443-884-5086
james.malico@kimley-horn.com



Professional Certification:
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 44113. Expiration Date 06/10/2021

Kimley»Horn

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Introduction

The project area is located at 2310 West Joppa Road, bound by Joppa Road to the south, a tributary to the Jones Falls with one residential property to the east, residential areas off Seminary Farm Road to the north and a large commercial property to the west. The property currently contains a single-family home and agricultural fields on approximately 39.5 acres currently zoned DR-1 and DR-2. 60 new single-family detached homes are being proposed.

This report summarizes the design strategies implemented to meet the Environmental Site Design Stormwater Management and Soil Erosion and Sediment Control requirements, and regulations of the Baltimore County Code and Maryland Department of the Environment (MDE).

Site Drainage Design Methodology

The stormwater management computations have been provided based on the requirements identified by the Baltimore County Code Article 33. Environmental Protection and Resource Management, Title 4 Stormwater Management and Supplement No. 1 to the 2000 Maryland Stormwater Design Manual. 100-year storm management is required for this site and a separate floodplain study has been prepared and is under County review.

Existing Site Drainage Conditions

In the existing condition, the site contains a single-family home and agricultural fields on approximately 39.5 acres. There are very few steep slopes and no soils classified as highly erodible soils. The soils on site are in hydrologic soil groups (HSG) B, C, and D. See Appendix A for the soil map. The site generally drains from the northwest to the southeast. The site is within the Jones Falls watershed. The entire site eventually drains to an existing culvert under Joppa Road which has been analyzed as the project study point.

Post Development Drainage Conditions

The proposed development will generally maintain the drainage patterns of the existing site; however, the proposed development efforts will result in changes to surface runoff conditions within residential areas, proposed roadways, and within proposed storm drain systems. The proposed site runoff will be managed through the implementation of Environmental Site Design practices, specifically 4 submerged gravel wetlands. A separate floodplain study has been prepared and is under County review. Quantity control for increased runoff will be managed within 3 of the 4 proposed submerged gravel wetland areas, including on-site detention for 100-year peak runoff rates.

Stormwater Management Narrative

Natural Resources Protection and Enhancement

All natural features have been depicted on the existing conditions plan. The existing tree line noted on the plans will be protected throughout construction.

Maintenance of Natural Flow Patterns

The proposed site drainage will maintain the existing condition of flow patterns as close as practical. All drainage from the proposed development will be directed to submerged gravel wetlands. The submerged gravel wetlands were located at natural low points, maintaining the natural flow pattern of the site. The 100-year storm flows will be managed on top of the ESD volume within the submerged gravel wetlands.

Reduction of Impervious Areas through better Site Design, Alternative surfaces, and non-structural practices

The proposed development has minimized impervious surfaces to those required to support the intended land-uses (roadways, driveways, and buildings). These areas have been minimized to provide minimum access paths for vehicles and parking areas.

Integration of Erosion and Sediment Controls into Stormwater Strategy

Soil erosion and sediment control practices have been developed in consideration of the proposed stormwater management strategies. The use of sediment basins will reduce sediment from being transported off-site. Temporary stabilization practices (stone, same day stabilization, etc.) will be implemented throughout construction per Soil Erosion and Sediment Control standards and specifications.

Implementation of ESD planning techniques and practices to the MEP

The proposed ESD facilities are located and designed to provide treatment as close to the drainage source as feasible. To minimize required treatment onsite, site planning techniques were utilized to minimize the proposed impervious surface coverage.

Conclusion

The proposed site will maintain the overall existing drainage patterns and will meet the requirements set forth by Baltimore County and the Maryland Department of the Environment. The project meets the requirements for both ESD to the MEP and water quantity (100-year management) through the implementation of 4 submerged gravel wetlands.

ESD Associates

WinTR-55 Current Data Description

--- Identification Data ---

User: DJO
Project: Greenspring Manor
SubTitle: Pre-Development
State: Maryland
County: Baltimore
Filename: C:\Users\Dan O\Desktop\22026.01_Expert Services_MMCC_Greenspring Manor\Greenspring Manor_202208

Date: 12/1/2022
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Existing		Outlet	39.47	63	.39

Total area: 39.47 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.27	4.2	5.01	6.27	7.38	8.65	2.7

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

Greenspring Manor
Pre-Development
Baltimore County, Maryland

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.27	4.2	5.01	6.27	7.38	8.65	2.7

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

DJO

Greenspring Manor
Pre-Development
Baltimore County, Maryland

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 10-Yr (cfs)	100-Yr (cfs)
SUBAREAS		
Existing	56.78	167.69
REACHES		
OUTLET	56.78	167.69

DJO

Greenspring Manor
Pre-Development
Baltimore County, Maryland

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 10-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)
SUBAREAS				
Existing	56.78	12.15	167.69	12.13
REACHES				
OUTLET	56.78		167.69	

DJO

Greenspring Manor
Pre-Development
Baltimore County, Maryland

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Existing	39.47	0.390	63	Outlet	

Total Area: 39.47 (ac)

Greenspring Manor
Pre-Development
Baltimore County, Maryland

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Existing							
SHEET	100	0.0200	0.240				0.235
SHALLOW	144	0.1069	0.050				0.008
SHALLOW	1129	0.0382	0.050				0.099
CHANNEL	863					5.000	0.048
					Time of Concentration		.39

Greenspring Manor
Pre-Development
Baltimore County, Maryland

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Existing	Open space; grass cover > 75%	(good)	B	2.83	61
	Open space; grass cover > 75%	(good)	C	1.72	74
	Open space; grass cover > 75%	(good)	D	.27	80
	Paved parking lots, roofs, driveways		B	.23	98
	Paved parking lots, roofs, driveways		C	.07	98
	Paved parking lots, roofs, driveways		D	.27	98
	Meadow -cont. grass (non grazed)		B	21.96	58
	Meadow -cont. grass (non grazed)		C	6.67	71
	Meadow -cont. grass (non grazed)		D	.11	78
	Woods	(good)	B	1.29	55
	Woods	(good)	C	4.04	70
	Woods	(good)	D	.01	77
	Total Area / Weighted Curve Number			39.47	63

Report of
Concept Stormwater Management

Greenspring Manor

2310 West Joppa Road

Baltimore County, Maryland

May 2021

Prepared for:

Ron Snyder
ATAPCO Properties, Inc.
Director of Land Development
1 South Street, Suite 2800
Baltimore, MD 21202
Phone: 410-347-7217
rsnyder@atapco.com

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Stormwater Management

Prepared by:

James Malico
Kimley-Horn and Associates, Inc.
210 W. Pennsylvania Ave., Suite 100
Towson, MD 21204
Phone: 443-884-5086
james.malico@kimley-horn.com



Professional Certification:
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 44113. Expiration Date 06/10/2021

Kimley»Horn

Kimley»Horn

Site Name: 2310 West Joppa Road
Project #: 114000001
County: Baltimore County

Date: 05/10/21
By: JPM
Checked: NJL

Performance Evaluation

G. Submerged Gravel Wetland (M-2)

Not shown on Development Plan

Facility Number: SGW-4
Drainage area, DA = 198,634 sq ft
4.56 ac
Impervious = 85,378 sq ft I%= 43%
1.96 ac
P_E = 2.60 in
R_V = 0.05+(0.009) I% (100) ;
R_V = 0.44

$$ESD_V = \frac{(P_E)(R_V)(A)}{12} = \frac{(2.60)\ (0.44)\ (198,634)}{12}$$

ESD_V = 18,801 cf could be treated in this facility

Volume Provided (Surface Storage) within the ESD Practice:

Elevation	Area	Volume
326.00	3,594	9,518
328.00	5,924	

Required Pretreatment = 10% of the provided ESD_V
= 951.8 cf

Elevation	Area	Volume
326.00	500	1,000
328.00	500	

Provided Pretreatment = 1,000 cf

Treatment Provided within the ESD Practice:

$$\text{Provided } ESD_V = \frac{(\text{Storage } ESD_V)}{0.75} = \frac{(9,518)}{0.75}$$

Provided ESD_V = 12,691 cf

$$\text{Provided } P_E = \frac{(\text{Provided } ESD_V)\ (12)}{(R_V)\ (DA)} = \frac{(12,691)\ (12)}{(0.44)\ (198,634)}$$

Provided P_E = 1.76 in

Appendix C - Quantity Management

TR-55

Hydraflow Hydrographs

WinTR-55 Current Data Description

--- Identification Data ---

User: NCS
Project: 2130 W Joppa Road
SubTitle: Pre-Development
State: Maryland
County: Baltimore NOAA_C
Filename: K:\BAL_CIV\114000001-2310 W Joppa Road\Production\SWM\Concept\TR-55\2021-02-22_Pre.w55

Date: 3/22/2021
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Existing		Outlet	39.47	77	0.233

Total area: 39.47 (ac)

Meadow 63 0.39

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.27	4.2	5.01	6.27	7.38	8.65	2.7

Acceptable

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

NOAA Atlas 14	3.34	4.29	5.13	6.41	7.56	8.86	2.76
TR-55 Preset Baltimore Co. and MDE Manual	3.2	4.2	5.1	5.5	6.3	7.1	2.6

NCS

2130 W Joppa Road
Pre-Development
Baltimore NOAA_C County, Maryland

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 2-Yr (cfs)	10-Yr (cfs)	100-Yr (cfs)	1-Yr (cfs)
SUBAREAS				
Existing	62.65	132.07	290.06	42.22
REACHES				
OUTLET	62.65	132.07	290.06	42.22
Meadow Land Use Instead of Row Crops		56.78	167.69	

NCS

2130 W Joppa Road
Pre-Development
Baltimore NOAA_C County, Maryland

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs) (hr)	10-Yr (cfs) (hr)	100-Yr (cfs) (hr)	1-Yr (cfs) (hr)
SUBAREAS				
Existing	62.65	132.07	290.06	42.22
	12.04	12.04	12.02	12.05
REACHES				
OUTLET	62.65	132.07	290.06	42.22

From ESDA TR-55

DJO

Greenspring Manor
Pre-Development
Baltimore County, Maryland

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 10-Yr (cfs) (hr)	100-Yr (cfs) (hr)
SUBAREAS		
Existing	56.78	167.69
	12.15	12.13
REACHES		
OUTLET	56.78	167.69

NCS

2130 W Joppa Road
Pre-Development
Baltimore NOAA_C County, Maryland

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Existing	39.47	0.233	77	Outlet	
	Meadow	0.39	63		
Total Area:	39.47 (ac)				

NCS

2130 W Joppa Road
Pre-Development
Baltimore NOAA_C County, Maryland

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Existing							
SHEET	100	0.0200	0.060				0.078
SHALLOW	144	0.1069	0.050				0.008
SHALLOW	1129	0.0382	0.050				0.099
CHANNEL	863					5.000	0.048
					Time of Concentration		0.233

Dense Grass
0.235 hr

Total
0.39 hr

NCS

2130 W Joppa Road
Pre-Development
Baltimore NOAA_C County, Maryland

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number		
						Meadow (Good)	
Existing	Open space; grass cover > 75%	(good)	B	2.83	61		171.41
	Open space; grass cover > 75%	(good)	C	1.72	74		127.28
	Open space; grass cover > 75%	(good)	D	.27	80		21.6
	Paved parking lots, roofs, driveways		B	.23	98		22.54
	Paved parking lots, roofs, driveways		C	.07	98		6.86
	Paved parking lots, roofs, driveways		D	.27	98		26.46
	Row Crop Straight row [SR]	(good)	B	21.96	78	58	1,273.68
	Row Crop Straight row [SR]	(good)	C	6.67	85	71	473.57
	Row Crop Straight row [SR]	(good)	D	.11	89	78	9.79
	Woods	(good)	B	1.29	55		70.95
	Woods	(good)	C	4.04	70		282.8
	Woods	(good)	D	.01	77		0.77
	Total Area / Weighted Curve Number			39.47	77		2,487.71/39.47 = 63

WinTR-55 Current Data Description

--- Identification Data ---

User: NCS
Project: 2130 W Joppa Rd
SubTitle: Post-Development
State: Maryland
County: Baltimore NOAA_C
Filename: K:\BAL_CIV\114000001-2310 W Joppa Road\Production\SWM\Concept\TR-55\2021-02-22_Post.w55

Date: 3/20/2021
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
Post		Outlet	39.47	80	0.100

Total area: 39.47 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.27	4.2	5.01	6.27	7.38	8.65	2.7

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

NCS

2130 W Joppa Rd
Post-Development
Baltimore NOAA_C County, Maryland

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
3.27	4.2	5.01	6.27	7.38	8.65	2.7

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type II
Dimensionless Unit Hydrograph: <standard>

NCS

2130 W Joppa Rd
Post-Development
Baltimore NOAA_C County, Maryland

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 2-Yr (cfs)	10-Yr (cfs)	100-Yr (cfs)	1-Yr (cfs)
SUBAREAS				
Post	88.20	176.21	370.10	61.58
REACHES				
OUTLET	88.20	176.21	370.10	61.58

NCS

2130 W Joppa Rd
Post-Development
Baltimore NOAA_C County, Maryland

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs)	(hr)	10-Yr (cfs)	(hr)	100-Yr (cfs)	(hr)	1-Yr (cfs)	(hr)
SUBAREAS								
Post	88.20	11.94	176.21	11.93	370.10	11.93	61.58	11.94
REACHES								
OUTLET	88.20		176.21		370.10		61.58	

Peak runoff management will be provided for the 100-year increase through on-site detention.

NCS

2130 W Joppa Rd
Post-Development
Baltimore NOAA_C County, Maryland

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
Post	39.47	0.100	80	Outlet	

Total Area: 39.47 (ac)

NCS

2130 W Joppa Rd
Post-Development
Baltimore NOAA_C County, Maryland

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
Post							
User-provided							0.100
					Time of Concentration		0.100

Conservative O.K.

NCS

2130 W Joppa Rd
Post-Development
Baltimore NOAA_C County, Maryland

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Post	Open space; grass cover > 75%	(good)	C	29.72	74
	Open space; grass cover > 75%	(good)	D	.2	80
	Paved parking lots, roofs, driveways		C	8.6	98
	Paved parking lots, roofs, driveways		D	.45	98
	Woods - grass combination	(good)	C	.5	72
	Total Area / Weighted Curve Number			39.47	80

Table 2-2a Runoff curve numbers for urban areas [1/]

From TR-55 Manual

Cover description: Cover type and hydrologic condition	Average percent impervious area [2/]	Curve numbers for hydrologic soil group: A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.) [3/]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) [4/]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82

Report of
Concept Stormwater Management

Greenspring Manor

2310 West Joppa Road

Baltimore County, Maryland

May 2021

Prepared for:

Ron Snyder
ATAPCO Properties, Inc.
Director of Land Development
1 South Street, Suite 2800
Baltimore, MD 21202
Phone: 410-347-7217
rsnyder@atapco.com

RECEIVED
MAY 20 2021
Stormwater Management

Prepared by:

James Malico
Kimley-Horn and Associates, Inc.
210 W. Pennsylvania Ave., Suite 100
Towson, MD 21204
Phone: 443-884-5086
james.malico@kimley-horn.com



Professional Certification:
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 44113. Expiration Date 06/10/2021

Kimley»Horn

Kimley»Horn

Site Name: 2310 West Joppa Road
Project #: 114000001
County: Baltimore County

Date: 05/10/21
By: JPM
Checked: NJL

Performance Evaluation

G. Submerged Gravel Wetland (M-2)

Not shown on Development Plan

Facility Number: SGW-4
Drainage area, DA = 198,634 sq ft
4.56 ac
Impervious = 85,378 sq ft I%= 43%
1.96 ac
P_E = 2.60 in
R_V = 0.05+(0.009) I% (100) ;
R_V = 0.44

$$ESD_V = \frac{(P_E)(R_V)(A)}{12} = \frac{(2.60)\ (0.44)\ (198,634)}{12}$$

ESD_V = 18,801 cf could be treated in this facility

Volume Provided (Surface Storage) within the ESD Practice:

Elevation	Area	Volume
326.00	3,594	9,518
328.00	5,924	

Required Pretreatment = 10% of the provided ESD_V
= 951.8 cf

Elevation	Area	Volume
326.00	500	1,000
328.00	500	

Provided Pretreatment = 1,000 cf

Treatment Provided within the ESD Practice:

$$\text{Provided } ESD_V = \frac{(\text{Storage } ESD_V)}{0.75} = \frac{(9,518)}{0.75}$$

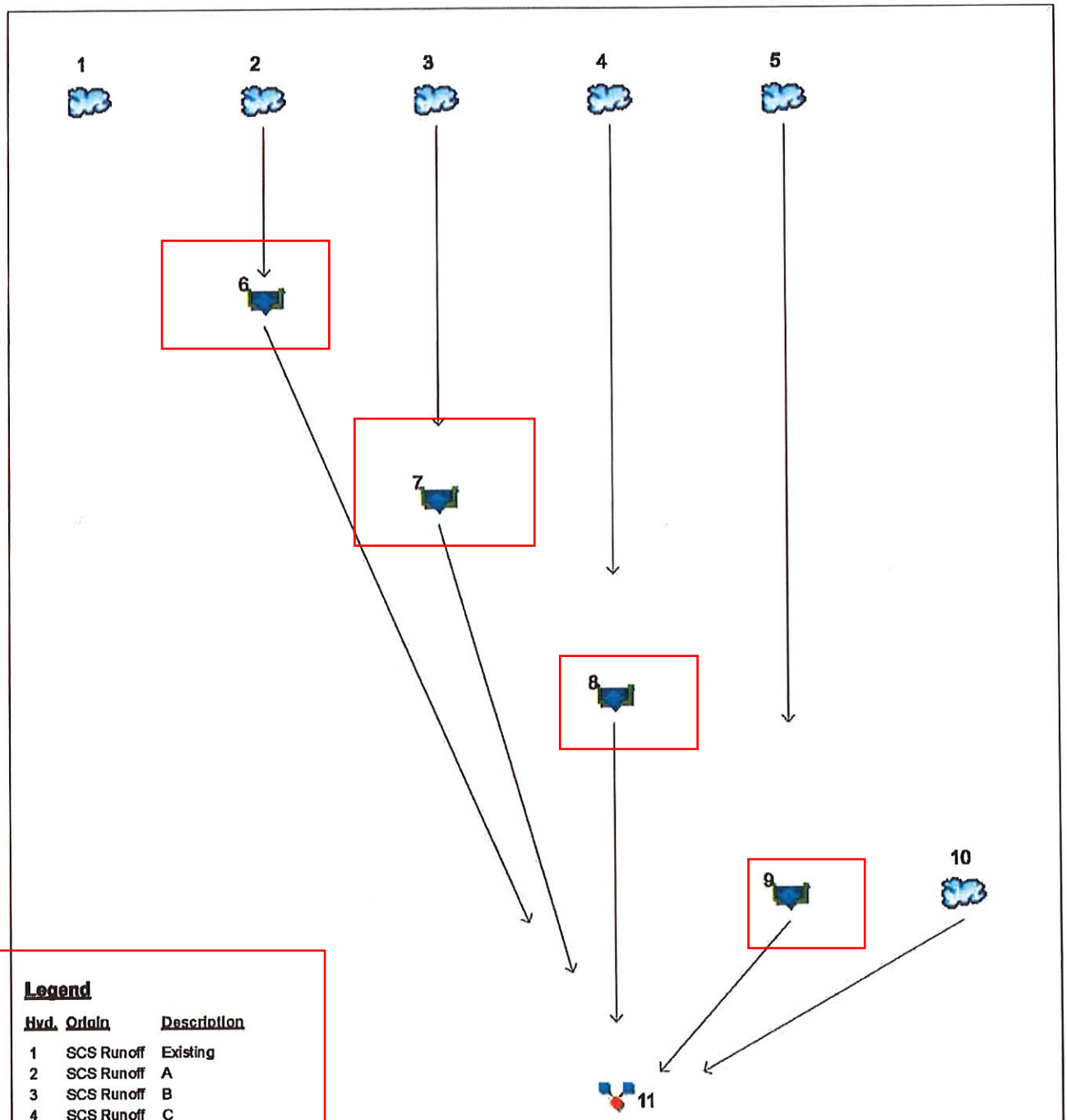
Provided ESD_V = 12,691 cf

$$\text{Provided } P_E = \frac{(\text{Provided } ESD_V)\ (12)}{(R_V)\ (DA)} = \frac{(12,691)\ (12)}{(0.44)\ (198,634)}$$

Provided P_E = 1.76 in

Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020



Legend

Hyd.	Origin	Description
1	SCS Runoff	Existing
2	SCS Runoff	A
3	SCS Runoff	B
4	SCS Runoff	C
5	SCS Runoff	D
6	Reservoir	SGW 1
7	Reservoir	SGW 2
8	Reservoir	SGW 3
9	Reservoir	SGW 4
10	SCS Runoff	By Pass
11	Combine	Proposed

Project: Greenspring Manor.gpw

Tuesday, 04 / 27 / 2021

Development Plan only shows SGW 1, 2 and 3

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 — Thursday, 05 / 6 / 2021

Pond No. 4 - SGW 4

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 328.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	328.00	2,930	0	0
1.00	329.00	7,174	4,896	4,896
2.00	330.00	8,480	7,817	12,713
3.00	331.00	9,843	9,152	21,865
4.00	332.00	11,263	10,544	32,409

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 48.00	0.00	0.00	0.00
Span (in)	= 48.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 325.00	0.00	0.00	0.00
Length (ft)	= 140.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 1.00	1.00	1.00	4.00
Crest El. (ft)	= 328.00	329.00	330.00	331.75
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	Rect	Rect
Multi-Stage	= Yes	Yes	Yes	Yes

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	328.00	0.00	---	---	---	0.00	0.00	0.00	0.00	---	---	0.000
0.10	490	328.10	47.89 oc	---	---	---	0.11	0.00	0.00	0.00	---	---	0.105
0.20	979	328.20	47.89 oc	---	---	---	0.30	0.00	0.00	0.00	---	---	0.298
0.30	1,469	328.30	47.89 oc	---	---	---	0.55	0.00	0.00	0.00	---	---	0.547
0.40	1,958	328.40	47.89 oc	---	---	---	0.84	0.00	0.00	0.00	---	---	0.842
0.50	2,448	328.50	47.89 oc	---	---	---	1.18	0.00	0.00	0.00	---	---	1.177
0.60	2,937	328.60	47.89 oc	---	---	---	1.55	0.00	0.00	0.00	---	---	1.548
0.70	3,427	328.70	47.89 oc	---	---	---	1.95	0.00	0.00	0.00	---	---	1.950
0.80	3,917	328.80	47.89 oc	---	---	---	2.38	0.00	0.00	0.00	---	---	2.383
0.90	4,406	328.90	47.89 oc	---	---	---	2.84	0.00	0.00	0.00	---	---	2.844
1.00	4,896	329.00	47.89 oc	---	---	---	3.33	0.00	0.00	0.00	---	---	3.330
1.10	5,677	329.10	47.89 oc	---	---	---	3.84	0.11	0.00	0.00	---	---	3.947
1.20	6,459	329.20	47.89 oc	---	---	---	4.38	0.30	0.00	0.00	---	---	4.675
1.30	7,241	329.30	47.89 oc	---	---	---	4.94	0.55	0.00	0.00	---	---	5.483
1.40	8,023	329.40	47.89 oc	---	---	---	5.52	0.84	0.00	0.00	---	---	6.359
1.50	8,804	329.50	47.89 oc	---	---	---	6.12	1.18	0.00	0.00	---	---	7.295
1.60	9,586	329.60	47.89 oc	---	---	---	6.74	1.55	0.00	0.00	---	---	8.287
1.70	10,368	329.70	47.89 oc	---	---	---	7.38	1.95	0.00	0.00	---	---	9.331
1.80	11,149	329.80	47.89 oc	---	---	---	8.04	2.38	0.00	0.00	---	---	10.42
1.90	11,931	329.90	47.89 oc	---	---	---	8.72	2.84	0.00	0.00	---	---	11.57
2.00	12,713	330.00	47.89 oc	---	---	---	9.42	3.33	0.00	0.00	---	---	12.75
2.10	13,628	330.10	47.89 oc	---	---	---	10.13	3.84	0.11	0.00	---	---	14.08
2.20	14,543	330.20	47.89 oc	---	---	---	10.87	4.38	0.30	0.00	---	---	15.54
2.30	15,459	330.30	47.89 oc	---	---	---	11.62	4.94	0.55	0.00	---	---	17.10
2.40	16,374	330.40	47.89 oc	---	---	---	12.38	5.52	0.84	0.00	---	---	18.74
2.50	17,289	330.50	47.89 oc	---	---	---	13.16	6.12	1.18	0.00	---	---	20.46
2.60	18,204	330.60	47.89 oc	---	---	---	13.96	6.74	1.55	0.00	---	---	22.25
2.70	19,119	330.70	47.89 oc	---	---	---	14.77	7.38	1.95	0.00	---	---	24.11
2.80	20,035	330.80	47.89 oc	---	---	---	15.60	8.04	2.38	0.00	---	---	26.03
2.90	20,950	330.90	47.89 oc	---	---	---	16.45	8.72	2.84	0.00	---	---	28.01
3.00	21,865	331.00	47.89 oc	---	---	---	17.30	9.42	3.33	0.00	---	---	30.05
3.10	22,919	331.10	47.89 oc	---	---	---	18.18	10.13	3.84	0.00	---	---	32.15
3.20	23,974	331.20	47.89 oc	---	---	---	19.06	10.87	4.38	0.00	---	---	34.31
3.30	25,028	331.30	47.89 oc	---	---	---	19.96	11.62	4.94	0.00	---	---	36.51
3.40	26,083	331.40	47.89 oc	---	---	---	20.88	12.38	5.52	0.00	---	---	38.77
3.50	27,137	331.50	47.89 oc	---	---	---	21.80	13.16	6.12	0.00	---	---	41.09
3.60	28,191	331.60	47.89 oc	---	---	---	22.75	13.96	6.74	0.00	---	---	43.45
3.70	29,246	331.70	47.89 oc	---	---	---	23.70	14.77	7.38	0.00	---	---	45.85

Continues on next page...

SGW 4

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.80	30,300	331.80	48.78 oc	---	---	---	24.65 s	15.60	8.04	0.15	---	---	48.45
3.90	31,355	331.90	51.56 oc	---	---	---	25.51 s	16.45	8.72	0.77	---	---	51.45
4.00	32,409	332.00	54.63 oc	---	---	---	26.24 s	17.30	9.42	1.66	---	---	54.62

...End

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time Interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	131.12	2	722	367,585	-----	-----	-----	Existing
2	SCS Runoff	25.19	2	716	51,248	-----	-----	-----	A
3	SCS Runoff	27.57	2	716	56,087	-----	-----	-----	B
4	SCS Runoff	32.42	2	716	65,961	-----	-----	-----	C
5	SCS Runoff	22.13	2	716	45,028	-----	-----	-----	D
6	Reservoir	16.85	2	720	51,247	2	287.24	11,206	SGW 1
7	Reservoir	15.56	2	722	56,081	3	307.20	16,108	SGW 2
8	Reservoir	8.874	2	724	65,939	4	312.42	26,711	SGW 3
9	Reservoir	12.19	2	722	45,023	5	329.95	12,344	SGW 4
10	SCS Runoff	84.26	2	716	171,420	-----	-----	-----	By Pass
11	Combine	128.15	2	718	389,710	6, 7, 8, 9, 10	-----	-----	Proposed

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	288.82	2	722	820,534	----	----	----	Existing
2	SCS Runoff	52.39	2	716	110,157	----	----	----	A
3	SCS Runoff	57.33	2	716	120,557	----	----	----	B
4	SCS Runoff	67.43	2	716	141,782	----	----	----	C
5	SCS Runoff	46.03	2	716	96,785	----	----	----	D
6	Reservoir	33.71	2	720	110,155	2	287.95	21,949	SGW 1
7	Reservoir	39.83	2	720	120,550	3	308.47	27,692	SGW 2
8	Reservoir	26.03	2	722	141,760	4	313.93	52,308	SGW 3
9	Reservoir	30.84	2	720	96,780	5	331.04	22,260	SGW 4
10	SCS Runoff	175.23	2	716	368,463	----	----	----	By Pass
11	Combine	287.75	2	718	837,709	6, 7, 8, 9, 10	----	----	Proposed

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Greenspring Manor2.gpw

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Thursday, 05 / 6 / 2021

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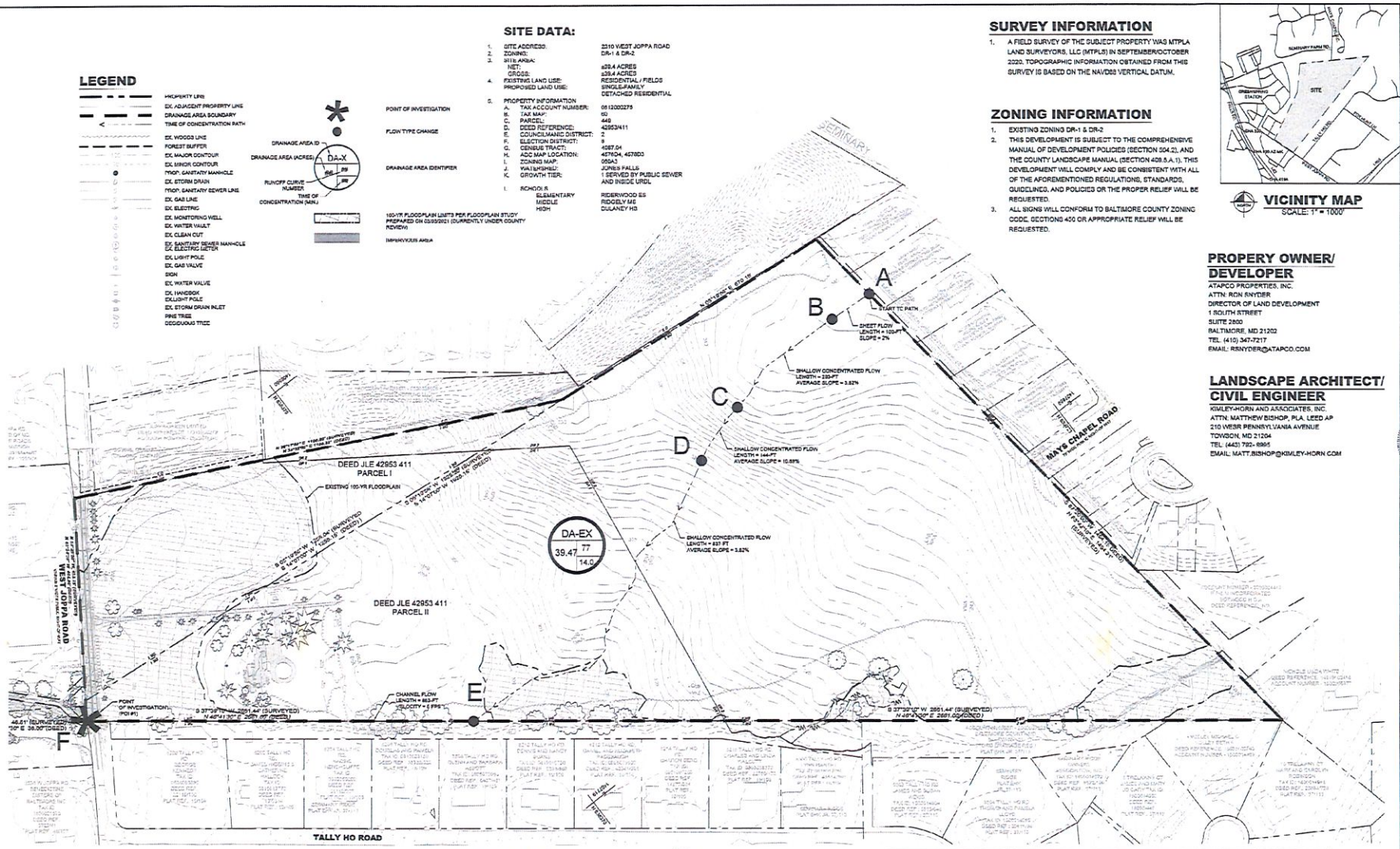

SITE DATA:

1.	SITE ADDRESS:	2310 WEST JOPPA ROAD
2.	ZONING:	DR-1 & DR-2
3.	SITE AREA:	
	NET:	±39.4 ACRES
	GROSS:	±39.4 ACRES
4.	EXISTING LAND USE:	RESIDENTIAL / FIELDS
	PROPOSED LAND USE:	SINGLE-FAMILY DETACHED RESIDENTIAL
5.	PROPERTY INFORMATION	
A.	TAX ACCOUNT NUMBER:	0612000275
B.	TAX MAP:	50
C.	PARCEL:	449
D.	DEED REFERENCE:	42953/411
E.	COUNCILMANIC DISTRICT:	2
F.	ELECTION DISTRICT:	9
G.	CENSUS TRACT:	4067.04
H.	ADC MAP LOCATION:	4076J4, 4078D3
I.	ZONING MAP:	050A3
J.	WATERSHED:	JONES FALLS
K.	GROWTH TIER:	1 SERVED BY PUBLIC SEWER AND INSIDE URDL
L.	SCHOOLS:	
	ELEMENTARY	RIDERWOOD ES
	MIDDLE	RIDGELY MS
	HIGH	DULANEY HS

SURVEY INFORMATION

1. A FIELD SURVEY OF THE SUBJECT PROPERTY WAS MTPLA LAND SURVEYORS, LLC (MTPLS) IN SEPTEMBER/OCTOBER 2020. TOPOGRAPHIC INFORMATION OBTAINED FROM THIS SURVEY IS BASED ON THE NAVD88 VERTICAL DATUM.

ZONING INFORMATION

1. EXISTING ZONING DR-1 & DR-2
2. THIS DEVELOPMENT IS SUBJECT TO THE COMPREHENSIVE MANUAL OF DEVELOPMENT POLICIES (SECTION 504.2), AND THE COUNTY LANDSCAPE MANUAL (SECTION 409.5.A.1). THIS DEVELOPMENT WILL COMPLY AND BE CONSISTENT WITH ALL OF THE AFOREMENTIONED REGULATIONS, STANDARDS, GUIDELINES, AND POLICIES OR THE PROPER RELIEF WILL BE REQUESTED.
3. ALL SIGNS WILL CONFORM TO BALTIMORE COUNTY ZONING CODE, SECTIONS 450 OR APPROPRIATE RELIEF WILL BE REQUESTED.

VICINITY MAP
SCALE: 1" = 1000'

PROPERY OWNER/ DEVELOPER

ATAPCO PROPERTIES, INC.
ATTN: RON SNYDER
DIRECTOR OF LAND DEVELOPMENT
1 SOUTH STREET
SUITE 2800
BALTIMORE, MD 21202
TEL: (410) 347-7217
EMAIL: RSNYDER@ATAPCO.COM

LANDSCAPE ARCHITECT/ CIVIL ENGINEER

KIMLEY-HORN AND ASSOCIATES, INC.
ATTN: MATTHEW BISHOP, PLA, LEED AP
210 WEST PENNSYLVANIA AVENUE
TOWSON, MD 21204
TEL: (443) 792-8905
EMAIL: MATT.BISHOP@KIMLEY-HORN.COM

Overall Flow Summary - Existing Conditions (TR-55)									
Condition	DA I.D.	Drainage Area (sf)	Drainage Area (ac)	Imp (ac)	RCN	Tc (hr)	Q1 (cfs)	Q2 (cfs)	Q10 (cfs)	Q100 (cfs)
Overall	POI #1	1719098	39.47	0.574	77	0.233	42.22	62.65	132.07	290.06
						Total	42.22	62.65	132.07	290.06

GRAPHIC SCALE IN FEET
0 50 100 200

PLAN
SCALE: 1" = 100'

SOILS DATA

SYMBOL	SOIL SERIES	SLOPE	HYDRIC	HIGHLY ERODIBLE?	HYDROLOGIC CLASSIFICATION
UaD	UDORTHENTS	15-25%	NO	NO	C
HoB	HOLLINGER SILT LOAM	2-5%	NO	NO	B
HoC	HOLLINGER SILT LOAM	5-15%	NO	NO	B
ChB	CONESTOGA SILT LOAM	2-5%	NO	NO	B
WhA	WILTSHIRE SILT LOAM	0-3%	NO	NO	C
WaD	WILTSHIRE-URBAN LAND COMPLEX	0-8%	NO	NO	C
BgA	BALTIMORE GRAVELLY LOAM	0-3%	NO	NO	B
UaB	URBAN LAND-UDORTHENTS COMPLEX	0-5%	NO	NO	D

SITE INFORMATION

ADDRESS	TAX ACCOUNT #	TAX MAP	PARCEL	ZONING	AREA (SF)	AREA (Ac.)
2310 W JOPPA ROAD	0612000275	50	449	DR-1 & DR-2	± 1,719,313	± 39.47

RECEIVED
APR 7 2021
Stormwater Management

LIMIT OF DISTURBANCE = 27.14 AC OR 1,182,044 SF

CALL 48 HOURS BEFORE YOU DIG
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811 Know what's below. Call before you dig.

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2021 KIMLEY-HORN AND ASSOCIATES, INC.
1801 PORTER ST., SUITE 401, BALTIMORE, MD 21230
PHONE: 443-743-3500
WWW.KIMLEY-HORN.COM

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THE SPECIFICATIONS HEREIN PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19113, EXPIRATION DATE 6/2/22
SIGNATURE

KHA PROJECT	111000201
DATE	03/25/2021
SCALE	
DESIGNED BY	JPW
DRAWN BY	NCS
CHECKED BY	MJL

EXISTING SITE CONDTIONS AND RESOURCE MAPPING PLAN

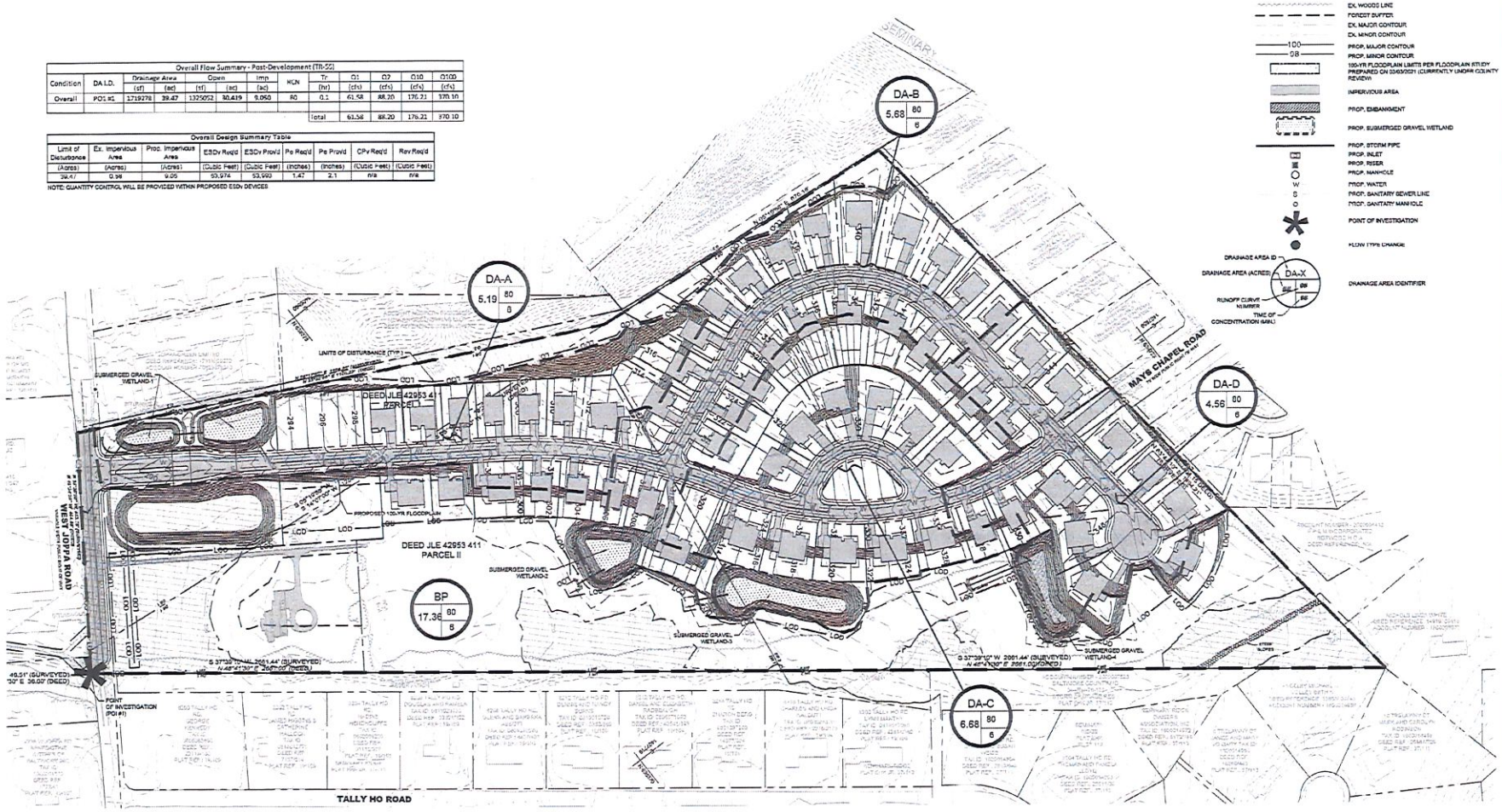
2310 W. JOPPA ROAD
PREPARED FOR
GREENSPRING JOPPA FALLS, LLC
BALTIMORE COUNTY MD

SHEET NUMBER
C-500

Overall Flow Summary - Post-Development (TR-55)												
Condition	DA I.D.	Drainage Area		Open		Imp	RCN	Tr	Q1	Q2	Q10	Q100
		(sf)	(ac)	(sf)	(ac)	(ac)		(hr)	(cfs)	(cfs)	(cfs)	(cfs)
Overall	PO1 #1	1719278	39.47	1325052	30.419	9.050	80	0.1	61.58	88.20	176.21	370.10
								Total	61.58	88.20	176.21	370.10

Overall Design Summary Table								
Limit of Disturbance	Ex. Impervious Area	Proc. Impervious Area	ESDv Req'd	ESDv Prov'd	Pe Req'd	Pe Prov'd	CPv Req'd	Rev Req'd
(Acres)	(Acres)	(Acres)	(Cubic Feet)	(Cubic Feet)	(Inches)	(Inches)	(Cubic Feet)	(Cubic Feet)
39.47	0.96	9.05	53,974	53,993	1.47	2.1	n/a	n/a

NOTE: QUANTITY CONTROL WILL BE PROVIDED WITHIN PROPOSED ESDv DEVICES



GRAPHIC SCALE IN FEET
0 50 100 200

PLAN
SCALE: 1" = 100'

NORTH

LEGEND

- PROPERTY LINE
- ULTIMATE RIGHT OF WAY
- EX. ADJACENT PROPERTY LINE
- LOD — LIMITS OF DISTURBANCE
- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION PATH
- CURB AND GUTTER
- EX. WOODS LINE
- FOREST BUFFER
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- 100 — PROP. MAJOR CONTOUR
- 98 — PROP. MINOR CONTOUR
- 100-YR FLOODPLAIN LIMITS PER FLOODPLAIN STUDY PREPARED ON 03/03/2021 (CURRENTLY UNDER COUNTY REVIEW)
- IMPERVIOUS AREA
- PROP. EMBANKMENT
- PROP. SUBMERGED GRAVEL WETLAND
- PROP. STORM PIPE
- PROP. INLET
- PROP. RISER
- PROP. MANHOLE
- W — PROP. WATER
- S — PROP. SANITARY SEWER LINE
- PROP. SANITARY MANHOLE
- POINT OF INVESTIGATION
- FLOW TYPE CHANGE
- DRAINAGE AREA ID / DRAINAGE AREA (ACRES) / RUNOFF CURVE NUMBER / TIME OF CONCENTRATION (MIN.) — DA-X — DRAINAGE AREA IDENTIFIER

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LIMIT OF DISTURBANCE = 27.14 AC OR 1,182,044 SF

No.	REVISIONS	DATE	BY

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PHONE: 443-743-3470
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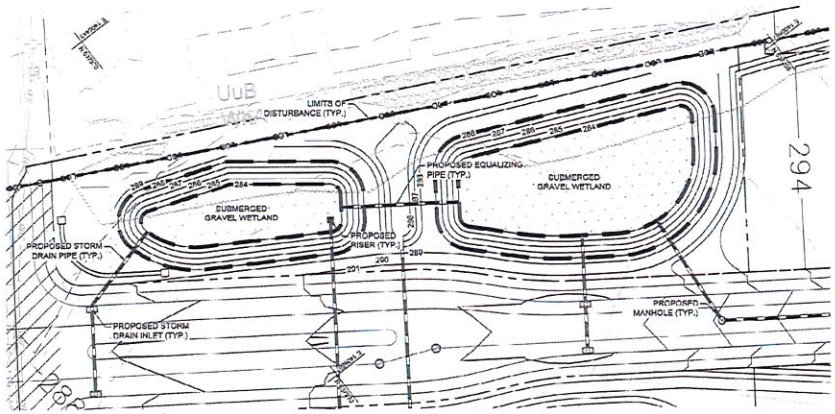
STATE OF MARYLAND
JOHN TEDDY
PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO. 44113
EXPIRATION DATE 01/19/2021

KHA PROJECT 114300001
DATE 03/25/2021
SCALE
DESIGNED BY JPV
DRAWN BY VCS
CHECKED BY NJL

ESD DRAINAGE AREA MAP

2310 W. JOPPA ROAD
PREPARED FOR
GREENSPRING JOPPA FALLS, LLC
BALTIMORE COUNTY MD

SHEET NUMBER
C-510

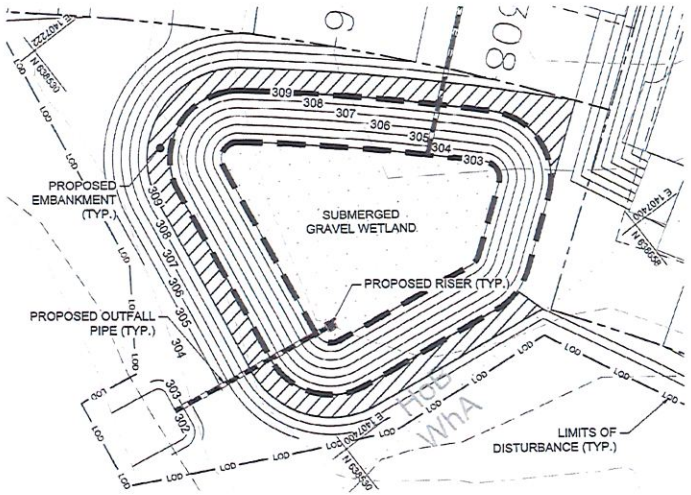


NORTH

SUBMERGED GRAVEL WETLAND-1

SCALE: 1" = 30'

GRAPHIC SCALE IN FEET 0 15 30 60

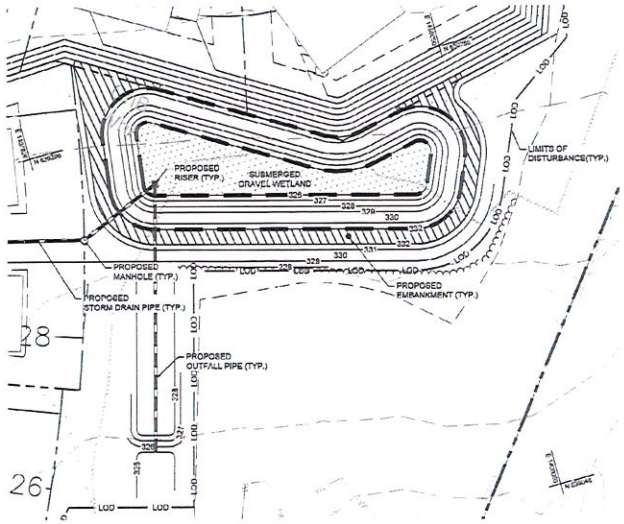


NORTH

SUBMERGED GRAVEL WETLAND-2

SCALE: 1" = 30'

GRAPHIC SCALE IN FEET 0 15 30 60

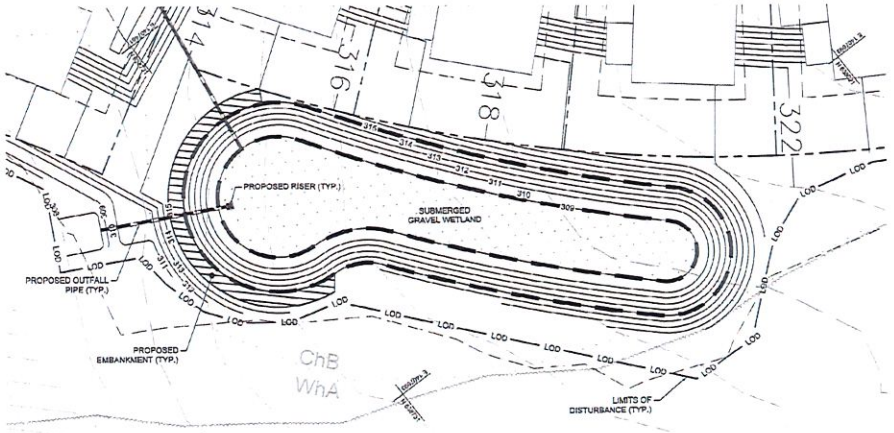


NORTH

SUBMERGED GRAVEL WETLAND-4

SCALE: 1" = 30'

GRAPHIC SCALE IN FEET 0 15 30 60



NORTH

SUBMERGED GRAVEL WETLAND-3

SCALE: 1" = 30'

GRAPHIC SCALE IN FEET 0 15 30 60

ESD Practice Summary Table				
Practice Number	SGW-1	SGW-2	SGW-3	SGW-4
Type of Practice	M-2	M-2	M-2	M-2
Treated Impervious	79,713	92,783	91,476	85,376
Total Drainage Area	226,076	247,421	200,981	108,634
Facility Owner	Private	Private	Private	Private

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LIMIT OF DISTURBANCE = 27.14 AC OR 1,182,044 SF

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PHONE: 443-743-3500
WWW.KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY

STATE OF MARYLAND — RICHARD J. LEWIS — 44115 — PROFESSIONAL ENGINEER

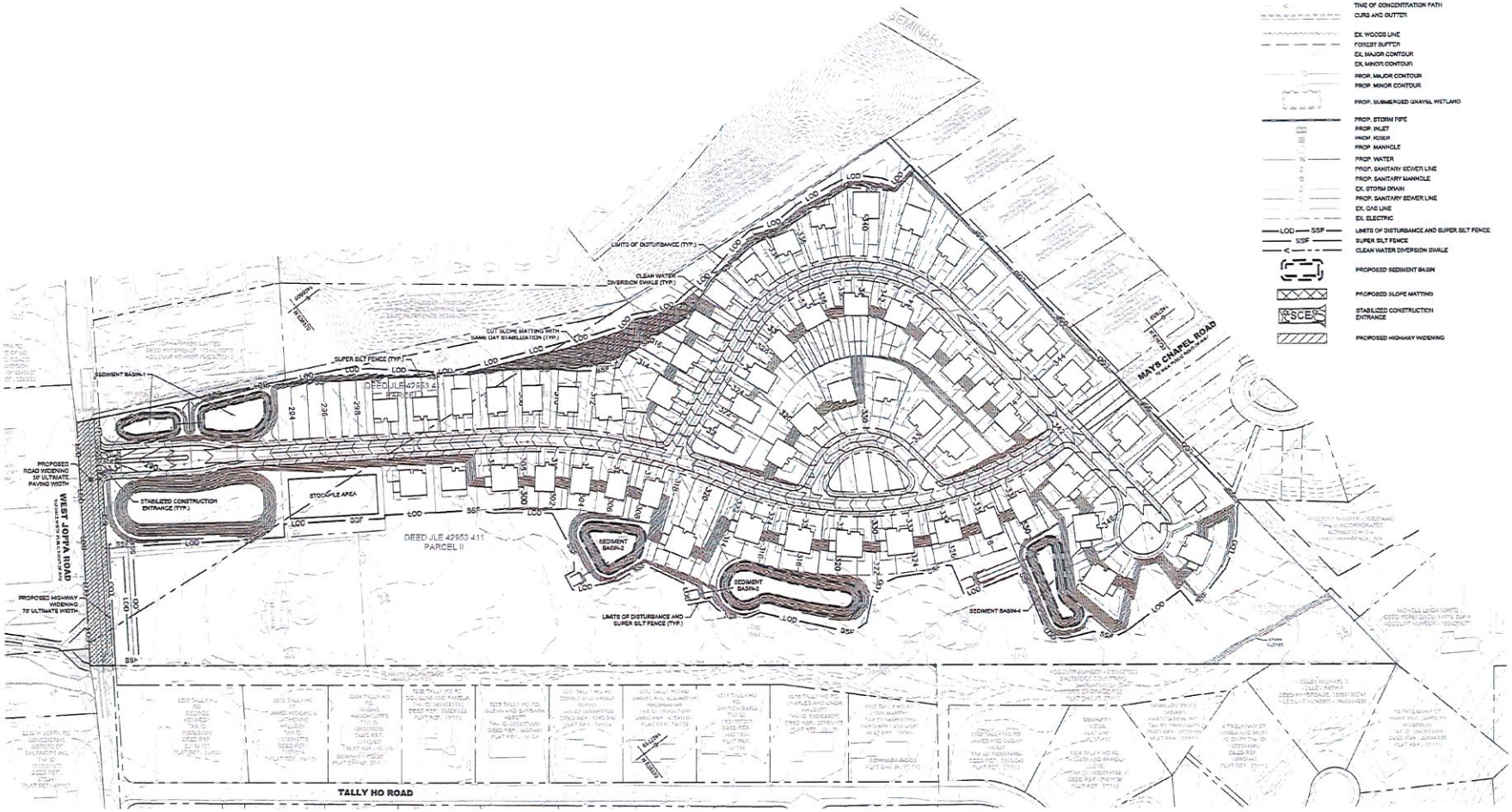
PROFESSIONAL ENGINEER'S CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 44115, EXPIRATION DATE: 09/21/2022

KHA PROJECT	114C0001
DATE	02/25/2021
SCALE	AS SHOWN
DESIGNED BY	JPM
DRAWN BY	NCS
CHECKED BY	RJL

STORMWATER MANAGEMENT DETAILS

2310 W. JOPPA ROAD
PREPARED FOR
GREENSPRING JOPPA FALLS, LLC
BALTIMORE COUNTY MD

SHEET NUMBER
C-520



GRAPHIC SCALE IN FEET
0 50 100 200

PLAN
SCALE: 1" = 100'

NORTH

LEGEND

- PROPERTY LINE
- ULTIMATE RIGHT OF WAY
- EX. ADJACENT PROPERTY LINE
- LOD — LIMITS OF DISTURBANCE
- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION PATH
- CURB AND GUTTER
- EX. WOODS LINE
- FOREST BUFFER
- EX. MAJOR CONTOUR
- EX. MINOR CONTOUR
- PROP. MAJOR CONTOUR
- PROP. MINOR CONTOUR
- PROP. SUBMERGED GRAVEL WETLAND
- PROP. STORM PIPE
- PROP. INLET
- PROP. RISER
- PROP. MANHOLE
- PROP. WATER
- PROP. SANITARY SEWER LINE
- PROP. SANITARY MANHOLE
- EX. STORM DRAIN
- PROP. SANITARY SEWER LINE
- EX. GAS LINE
- EX. ELECTRIC
- LOD — SSF — LIMITS OF DISTURBANCE AND SUPER SILT FENCE
- SSF — SUPER SILT FENCE
- CLEAN WATER DIVERSION SWALE
- PROPOSED SEDIMENT BASIN
- PROPOSED SLOPE MATTING
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED HIGHWAY WIDENING

LIMIT OF DISTURBANCE = 27.14 AC OR 1,182,044 SF

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PHONE: 410-415-1510
WWW.KIMLEY-HORN.COM

NO.	REVISIONS	DATE	BY

STATE OF MARYLAND — JOSEPH MICHAEL MCCANN — 30115 — REGISTERED PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 30115 EXPIRATION DATE: 10/14/2022

KHA PROJECT	114000001
DATE	03/25/2021
SCALE	AS SHOWN
DESIGNED BY	JPW
DRAWN BY	NCS
CHECKED BY	N.A.

EROSION AND SEDIMENT CONTROL PLAN

2310 W. JOPPA ROAD

PREPARED FOR
GREENSPRING JOPPA FALLS, LLC

BALTIMORE COUNTY MD

SHEET NUMBER
C-530

Kimley»Horn

Site Name:	2310 West Joppa Road	Date:	11/10/21
Project #:	114000001	By:	JPM
County:	Baltimore County	Checked:	NJL

Stormwater Management - Environmental Site Design

Site Drainage Area Data:

Step 1. Determine Area Requiring Treatment

Limit of Disturbance:	*1,182,044*	*sq ft*	
	27.14	*acres*	
Existing Impervious Area:	*25,103*	*sq ft*	
	0.58	*acres*	
Existing % Impervious:	*2%*		*< 40%,therefore New Development*
Proposed Impervious Area:	*394,218*	*sq ft*	
	9.05	*acres*	
Proposed % Impervious:	*34%*		

Step 2. Determine Required Treatment Volume

A. Determine Target P_E & ESD_V Using Table 5.3 (MDE SWM Manual Section 5-page 5.21)

Target PE:

HSG	% Imperv.	Area (ac)	PE	Area * P_E	Area (sf)
A	34%	0.00	1.0	0.00	0
B	34%	21.58	1.6	34.53	940,064
C	34%	4.94	1.6	7.90	215,120
D	34%	0.62	1.2	0.74	26,860
Total		27.14		43.17	

Target P_E = (Total Area * P_E)/Area

Target P_E = 1.59

Target ESDv:

I = $(A_E/A)*100\%$

I = *34%*

R_v = *0.05 + (0.009 * (I))*

R_v = *0.36*

P_E = *1.59*

A = *27.14*

$ESDv$ = *[(P_E) (R_v) (A)] /12*

Target ESDv = 1.281 ac-ft = 55,789 cf

Kimley»Horn

Site Name:	2310 West Joppa Road	Date:	11/10/21
Project #:	114000001	By:	JPM
County:	Baltimore County	Checked:	NJL

Stormwater Management - Environmental Site Design

B. Confirm Stormwater Management Treatment

Target ESDv = 55,789 cf

Prov'd ESDv = 62,240 cf

C. Calculate Recharge (R_{EV}) Requirements

Requirements are met with ESD to the MEP

D. Calculate Channel Protection (C_{PV}) Requirements

Requirements are met with ESD to the MEP

E. Calculate Overbank Flood Protection (Q_{P10}) Requirements

Refer to TR-55 Peak Flow Computation Summary

F. Calculate Extreme Flood Protection (Q_{P100}) Requirements

Refer to TR-55 Peak Flow Computation Summary

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Site Name:	2310 West Joppa Road	Date:	11/10/21
Project #:	114000001	By:	JPM
County:	Baltimore County	Checked:	NJL

Performance Evaluation

G. Submerged Gravel Wetland (M-2)

Facility Number: SGW-1

Drainage area, DA = 226,076 sq ft
5.19 ac

Impervious = 79,715 sq ft I%= 35%
1.83 ac

P_E = 2.60 in

R_V = 0.05+(0.009) I% (100) ;

R_V = 0.37

$$ESD_V = \frac{(P_E)(R_V)(A)}{12} = \frac{(2.60)\ (0.37)\ (226,076)}{12}$$

ESD_V = 17,994 cf could be treated in this facility

Volume Provided (Surface Storage) within the ESD Practice:

Elevation	Area	Volume
286.00	12,672	6,582
286.50	13,656	

Required Pretreatment = 10% of the provided ESD_V

= 658.2 cf

Elevation	Area	Volume
286.00	1,500	750
286.50	1,500	

Provided Pretreatment = 750 cf

Treatment Provided within the ESD Practice:

$$\text{Provided } ESD_V = \frac{(\text{Storage } ESD_V)}{0.75} = \frac{(6,582)}{0.75}$$

Provided ESD_V = 8,776 cf

$$\text{Provided } P_E = \frac{(\text{Provided } ESD_V)\ (12)}{(R_V)\ (DA)} = \frac{(8,776)\ (12)}{(0.37)\ (226,076)}$$

Provided P_E = 1.27 in

Kimley»Horn

Site Name:	2310 West Joppa Road	Date:	11/10/21
Project #:	114000001	By:	JPM
County:	Baltimore County	Checked:	NJL

Performance Evaluation

G. Submerged Gravel Wetland (M-2)

Facility Number: SGW-2

Drainage area, DA = 247,421 sq ft
5.68 ac

Impervious = 92,783 sq ft I%= 38%
2.13 ac

P_E = 2.60 in

R_V = 0.05+(0.009) I% (100) ;

R_V = 0.39

$$ESD_V = \frac{(P_E)(R_V)(A)}{12} = \frac{(2.60)\ (0.39)\ (247,421)}{12}$$

ESD_V = 20,773 cf could be treated in this facility

Volume Provided (Surface Storage) within the ESD Practice:

Elevation	Area	Volume
303.00	4,480	10,696
305.00	6,216	

Required Pretreatment = 10% of the provided ESD_V

= 1069.6 cf

Elevation	Area	Volume
303.00	550	1,100
305.00	550	

Provided Pretreatment = 1,100 cf

Treatment Provided within the ESD Practice:

$$\text{Provided } ESD_V = \frac{(\text{Storage } ESD_V)}{0.75} = \frac{(10,696)}{0.75}$$

Provided ESD_V = 14,261 cf

$$\text{Provided } P_E = \frac{(\text{Provided } ESD_V)\ (12)}{(R_V)\ (DA)} = \frac{(14,261)\ (12)}{(0.39)\ (247,421)}$$

Provided P_E = 1.78 in

Kimley»Horn

Site Name:	2310 West Joppa Road	Date:	11/10/21
Project #:	114000001	By:	JPM
County:	Baltimore County	Checked:	NJL

Performance Evaluation

G. Submerged Gravel Wetland (M-2)

Facility Number: SGW-3

Drainage area, DA = 489,615 sq ft
= 11.24 ac

Impervious = 176,854 sq ft I%= 36%
= 4.06 ac

P_E = 2.60 in

R_V = 0.05+(0.009) I% (100) ;

R_V = 0.38

$$ESD_V = \frac{(P_E)(R_V)(A)}{12} = \frac{(2.60)\ (0.38)\ (489{,}615)}{12}$$

ESD_V = 39,791 cf could be treated in this facility

Volume Provided (Surface Storage) within the ESD Practice:

Elevation	Area	Volume
309.00	12,902	29,402
311.00	16,500	

Required Pretreatment = 10% of the provided ESD_V

= 2940.2 cf

Elevation	Area	Volume
309.00	1,500	3,000
311.00	1,500	

Provided Pretreatment = 3,000 cf

Treatment Provided within the ESD Practice:

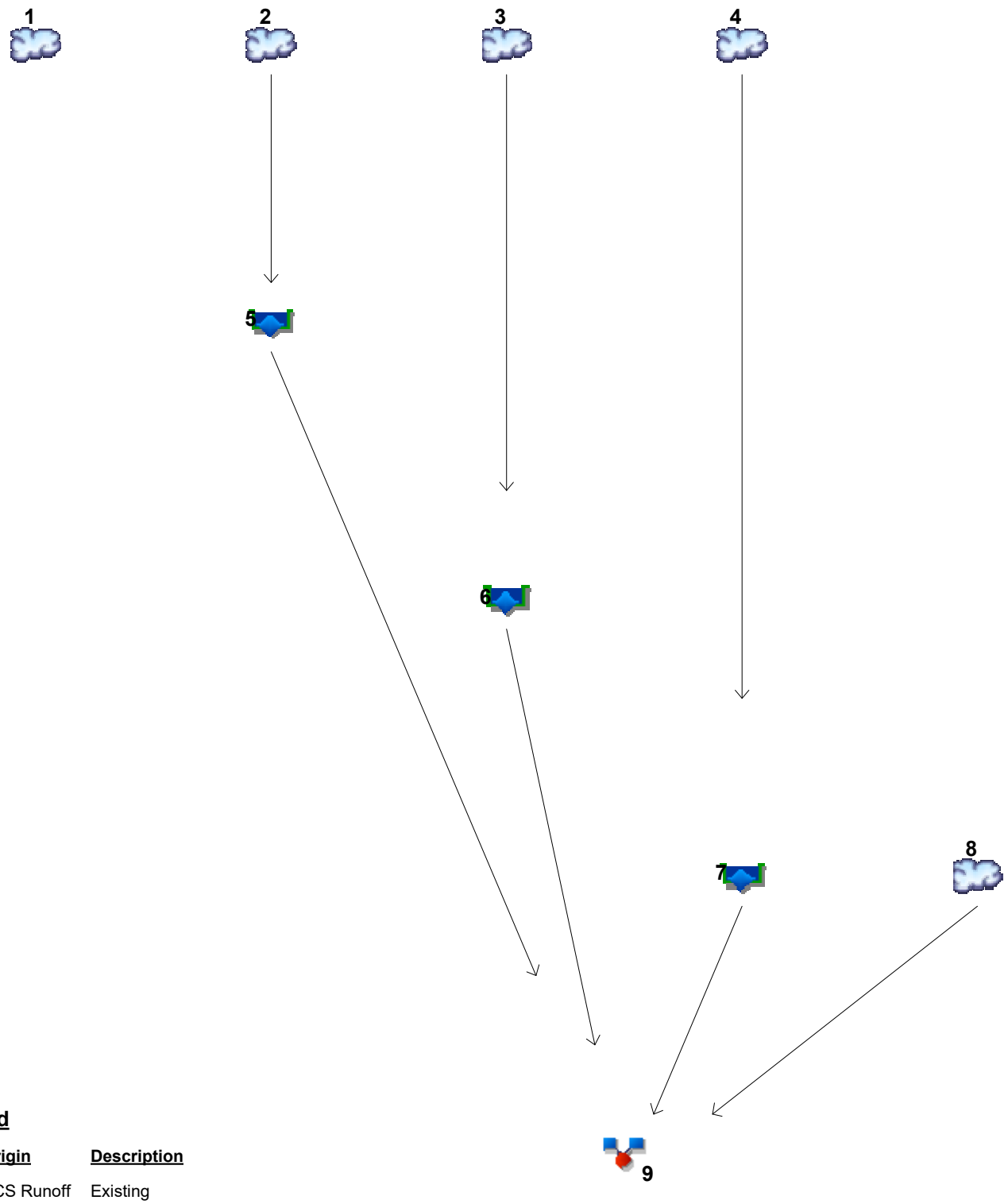
$$\text{Provided } ESD_V = \frac{(\text{Storage } ESD_V)}{0.75} = \frac{(29{,}402)}{0.75}$$

Provided ESD_V = 39,203 cf

$$\text{Provided } P_E = \frac{(\text{Provided } ESD_V)\ (12)}{(R_V)\ (DA)} = \frac{(39{,}203)\ (12)}{(0.38)\ (489{,}615)}$$

Provided P_E = 2.56 in

Watershed Model Schematic



Legend

Hyd.	Origin	Description
1	SCS Runoff	Existing
2	SCS Runoff	A
3	SCS Runoff	B
4	SCS Runoff	C
5	Reservoir	SGW 1
6	Reservoir	SGW 2
7	Reservoir	SGW 3
8	SCS Runoff	By Pass
9	Combine	Proposed

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)							Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	41.40	61.53	-------	-------	131.12	-------	-------	288.82	Existing
2	SCS Runoff	------	9.094	12.79	-------	-------	25.19	-------	-------	52.39	A
3	SCS Runoff	------	9.952	14.00	-------	-------	27.57	-------	-------	57.33	B
4	SCS Runoff	------	19.69	27.70	-------	-------	54.56	-------	-------	113.45	C
5	Reservoir	2	4.506	7.262	-------	-------	16.85	-------	-------	33.71	SGW 1
6	Reservoir	3	3.189	5.550	-------	-------	15.56	-------	-------	39.83	SGW 2
7	Reservoir	4	2.788	5.125	-------	-------	17.35	-------	-------	60.83	SGW 3
8	SCS Runoff	------	30.42	42.79	-------	-------	84.26	-------	-------	175.23	By Pass
9	Combine	5, 6, 7, 8	37.97	56.15	-------	-------	124.05	-------	-------	288.23	Proposed

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

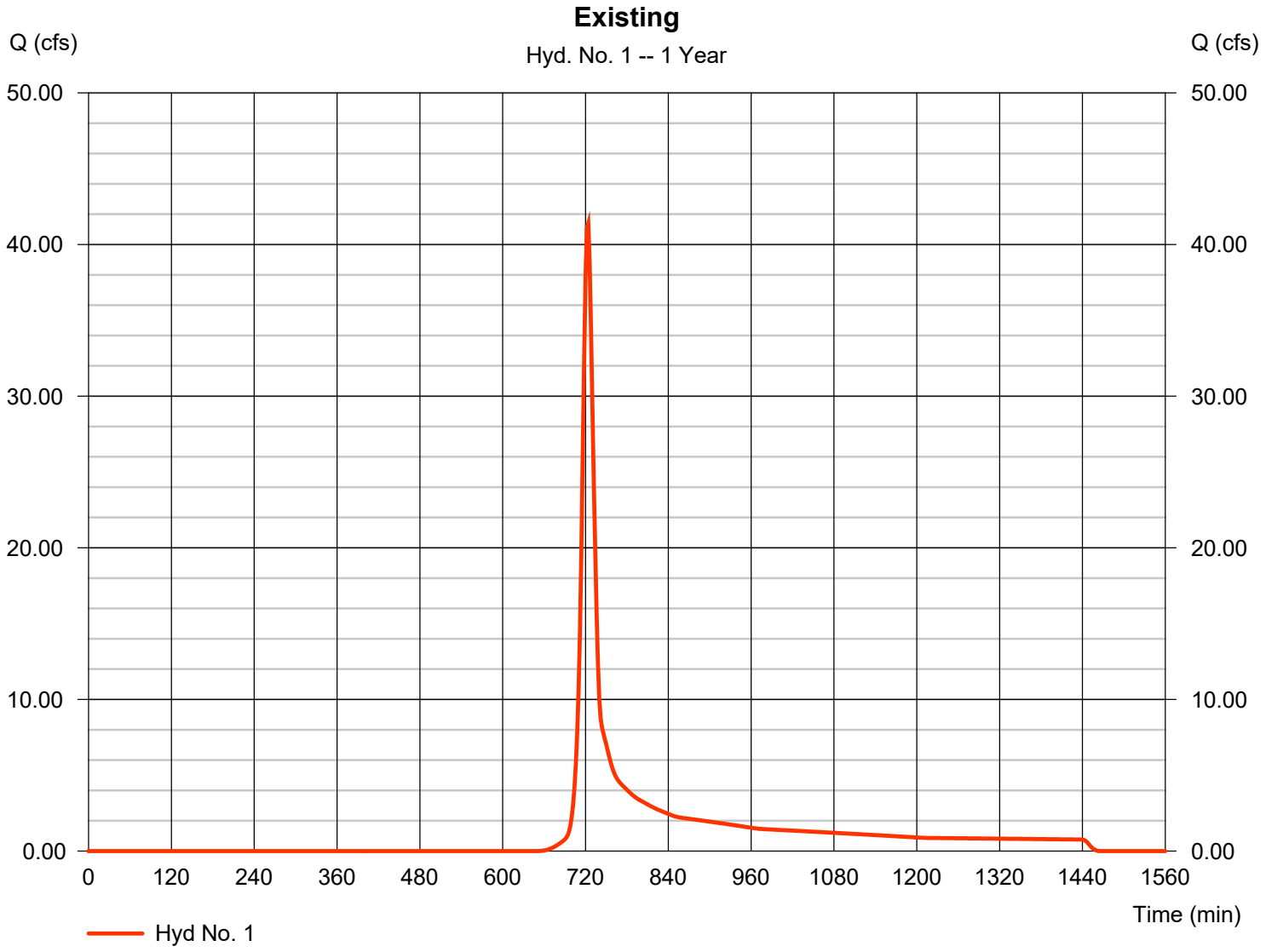
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	41.40	2	724	121,341	------	------	------	Existing
2	SCS Runoff	9.094	2	718	18,188	------	------	------	A
3	SCS Runoff	9.952	2	718	19,906	------	------	------	B
4	SCS Runoff	19.69	2	718	39,391	------	------	------	C
5	Reservoir	4.506	2	722	18,187	2	286.81	4,637	SGW 1
6	Reservoir	3.189	2	724	19,899	3	305.97	6,494	SGW 2
7	Reservoir	2.788	2	732	39,374	4	311.89	15,478	SGW 3
8	SCS Runoff	30.42	2	718	60,838	------	------	------	By Pass
9	Combine	37.97	2	718	138,298	5, 6, 7, 8	------	------	Proposed

Hydrograph Report

Hyd. No. 1

Existing

Hydrograph type	= SCS Runoff	Peak discharge	= 41.40 cfs
Storm frequency	= 1 yrs	Time to peak	= 724 min
Time interval	= 2 min	Hyd. volume	= 121,341 cuft
Drainage area	= 39.470 ac	Curve number	= 77
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 13.98 min
Total precip.	= 2.70 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

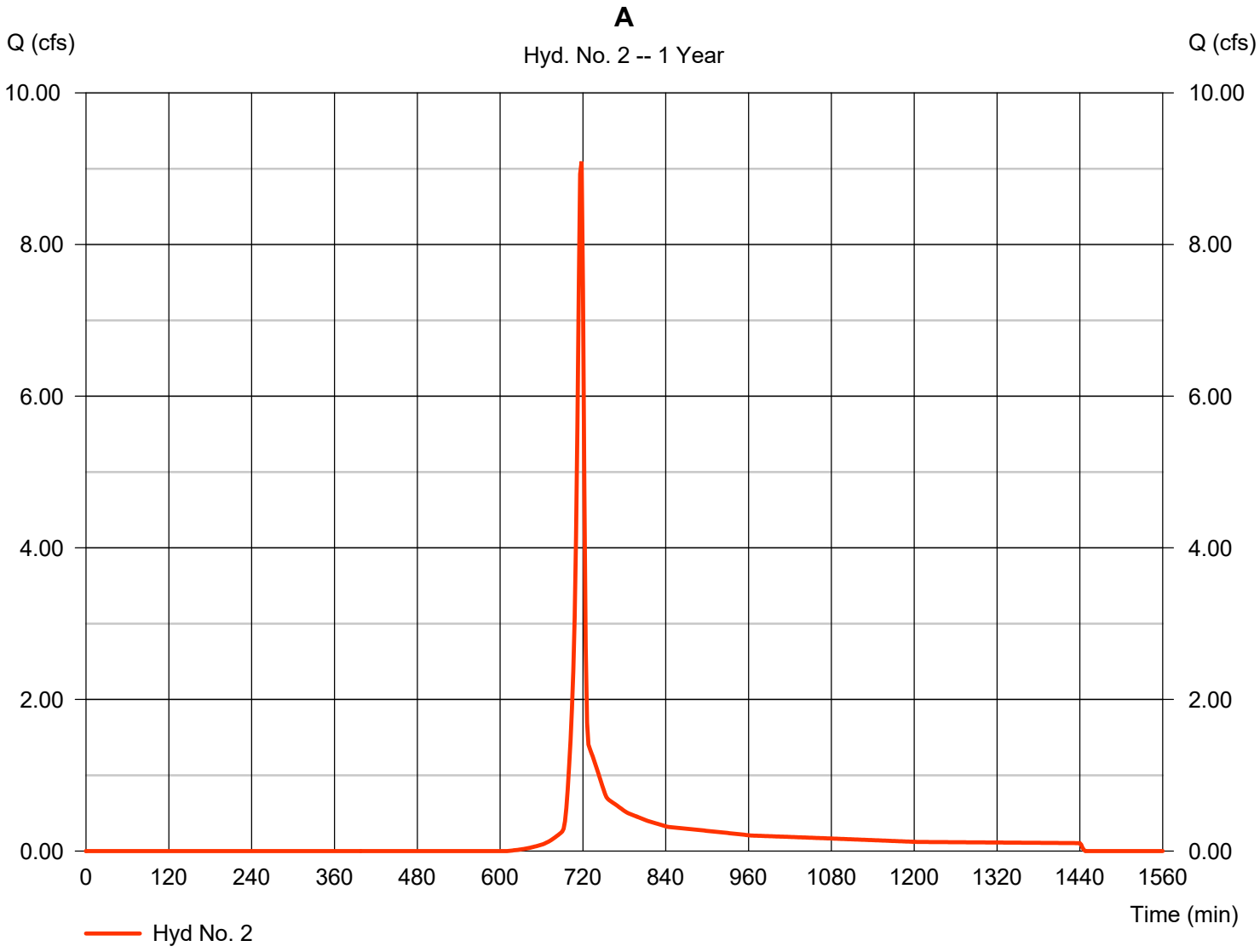


Hydrograph Report

Hyd. No. 2

A

Hydrograph type	=	SCS Runoff	Peak discharge	=	9.094 cfs
Storm frequency	=	1 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	18,188 cuft
Drainage area	=	5.190 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	2.70 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

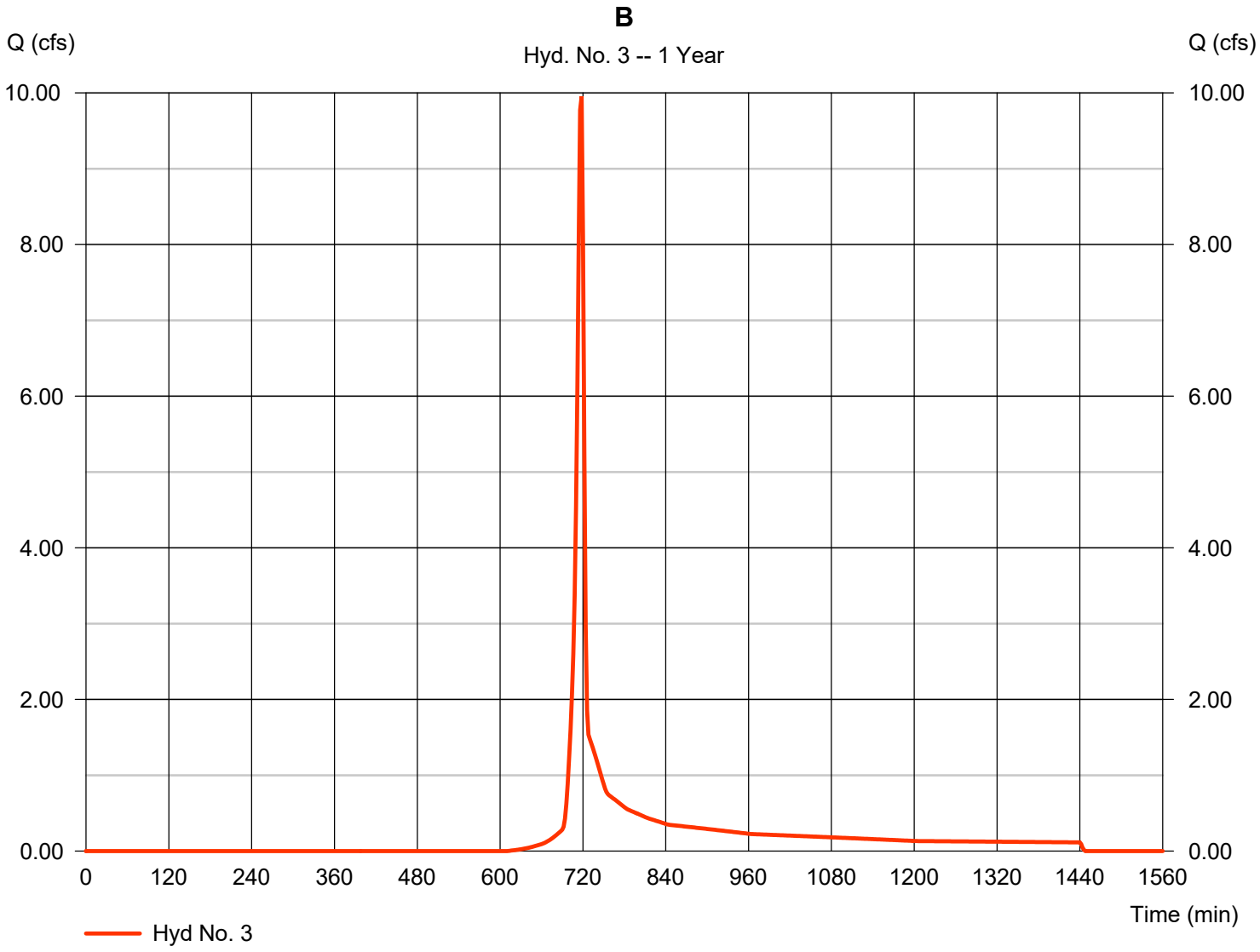


Hydrograph Report

Hyd. No. 3

B

Hydrograph type	=	SCS Runoff	Peak discharge	=	9.952 cfs
Storm frequency	=	1 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	19,906 cuft
Drainage area	=	5.680 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	2.70 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

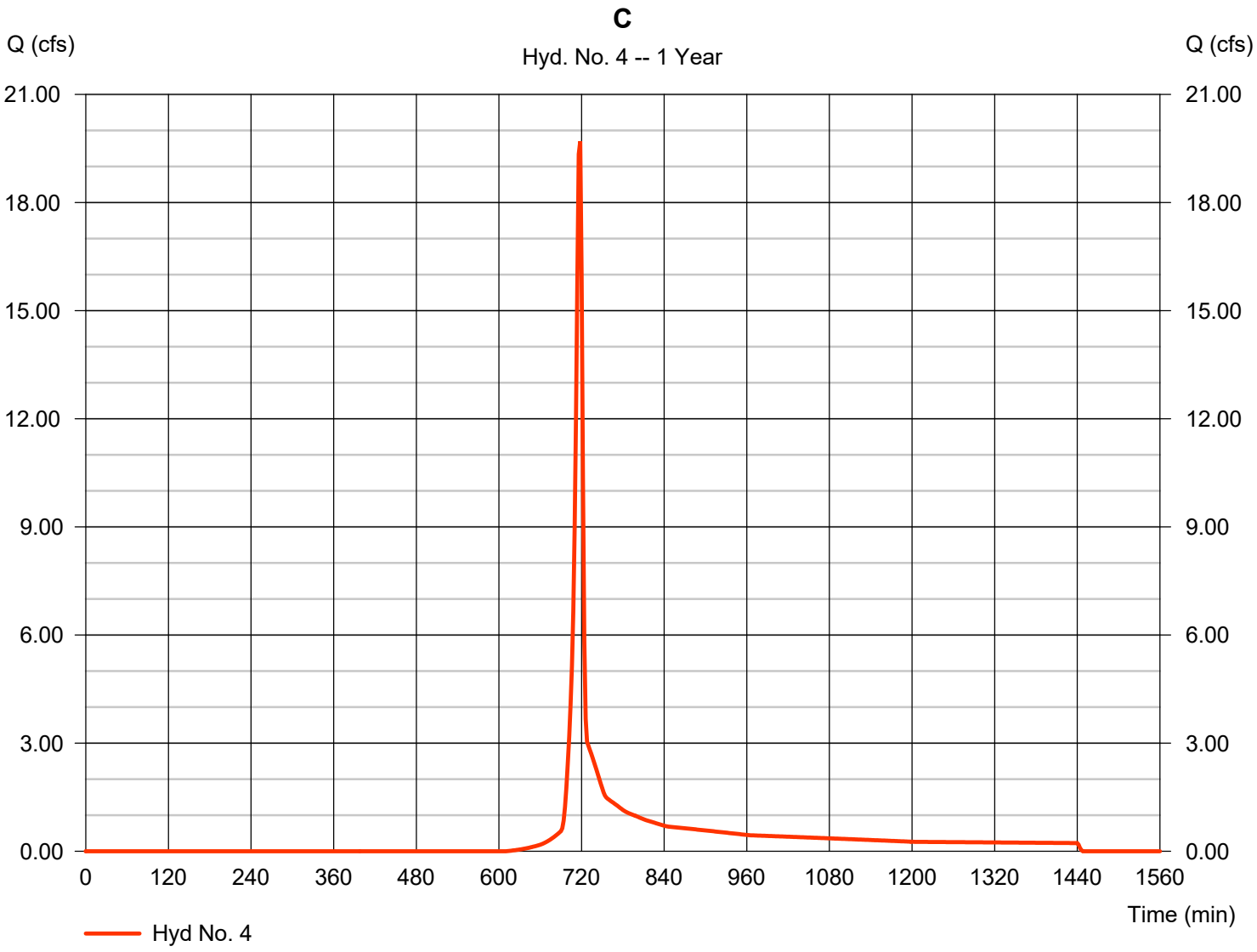


Hydrograph Report

Hyd. No. 4

C

Hydrograph type	=	SCS Runoff	Peak discharge	=	19.69 cfs
Storm frequency	=	1 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	39,391 cuft
Drainage area	=	11.240 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	2.70 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



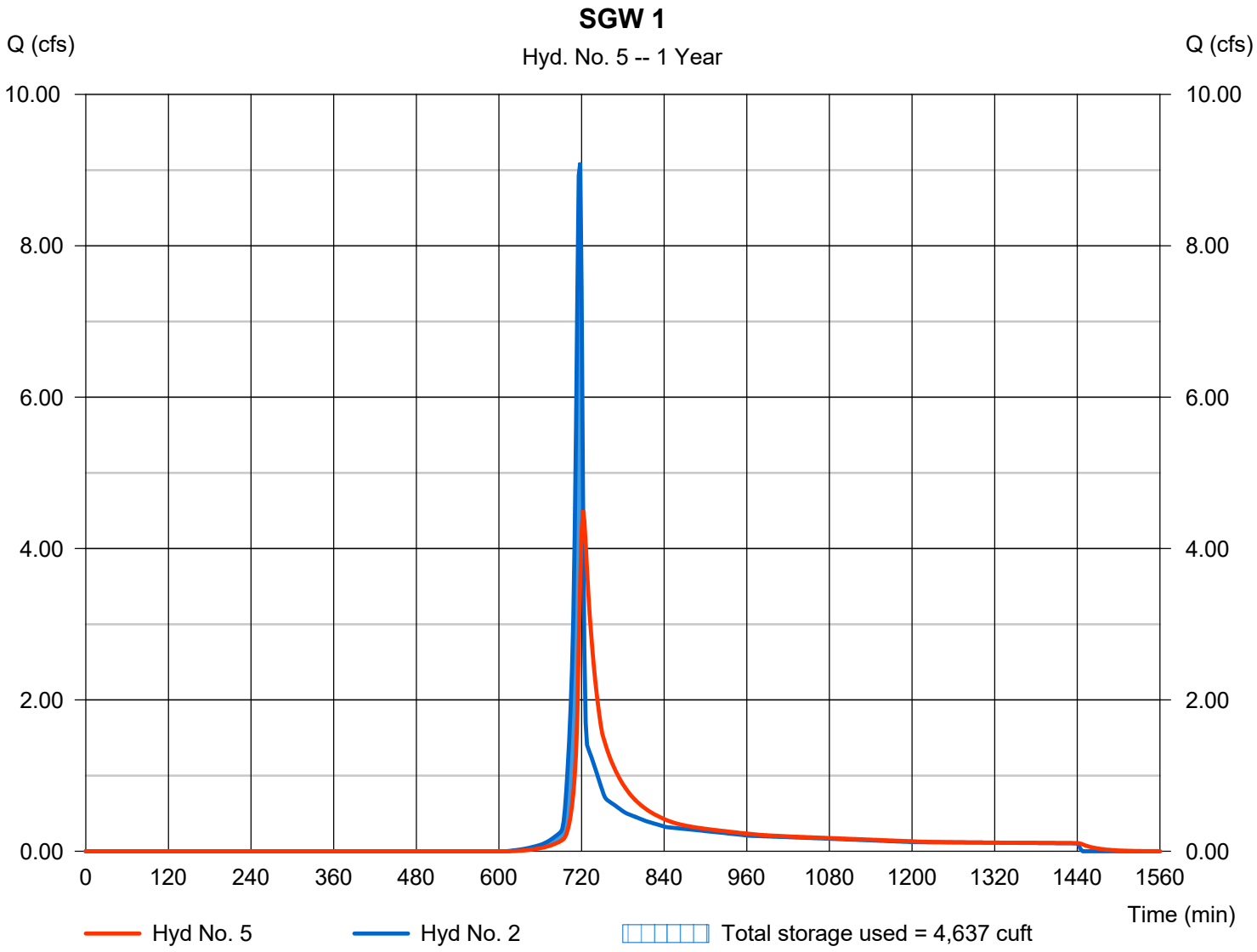
Hydrograph Report

Hyd. No. 5

SGW 1

Hydrograph type	= Reservoir	Peak discharge	= 4.506 cfs
Storm frequency	= 1 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 18,187 cuft
Inflow hyd. No.	= 2 - A	Max. Elevation	= 286.81 ft
Reservoir name	= SGW 1	Max. Storage	= 4,637 cuft

Storage Indication method used.



Pond Report

Pond No. 1 - SGW 1

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 286.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	286.50	13,656	0	0
1.50	288.00	16,779	22,784	22,784

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 48.00	0.00	0.00	0.00
Span (in)	= 48.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 285.00	0.00	0.00	0.00
Length (ft)	= 100.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 8.00	0.00	0.00	0.00
Crest El. (ft)	= 286.50	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	Rect	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	286.50	0.00	---	---	---	0.00	---	---	---	---	---	0.000
0.15	2,278	286.65	16.73 oc	---	---	---	1.55	---	---	---	---	---	1.548
0.30	4,557	286.80	16.73 oc	---	---	---	4.38	---	---	---	---	---	4.377
0.45	6,835	286.95	16.73 oc	---	---	---	8.04	---	---	---	---	---	8.041
0.60	9,114	287.10	16.73 oc	---	---	---	12.38	---	---	---	---	---	12.38
0.75	11,392	287.25	17.24 oc	---	---	---	17.24 s	---	---	---	---	---	17.24
0.90	13,670	287.40	21.46 oc	---	---	---	21.40 s	---	---	---	---	---	21.40
1.05	15,949	287.55	25.27 oc	---	---	---	25.01 s	---	---	---	---	---	25.01
1.20	18,227	287.70	28.55 oc	---	---	---	28.54 s	---	---	---	---	---	28.54
1.35	20,505	287.85	31.76 oc	---	---	---	31.76 s	---	---	---	---	---	31.76
1.50	22,784	288.00	34.85 oc	---	---	---	34.85 s	---	---	---	---	---	34.85

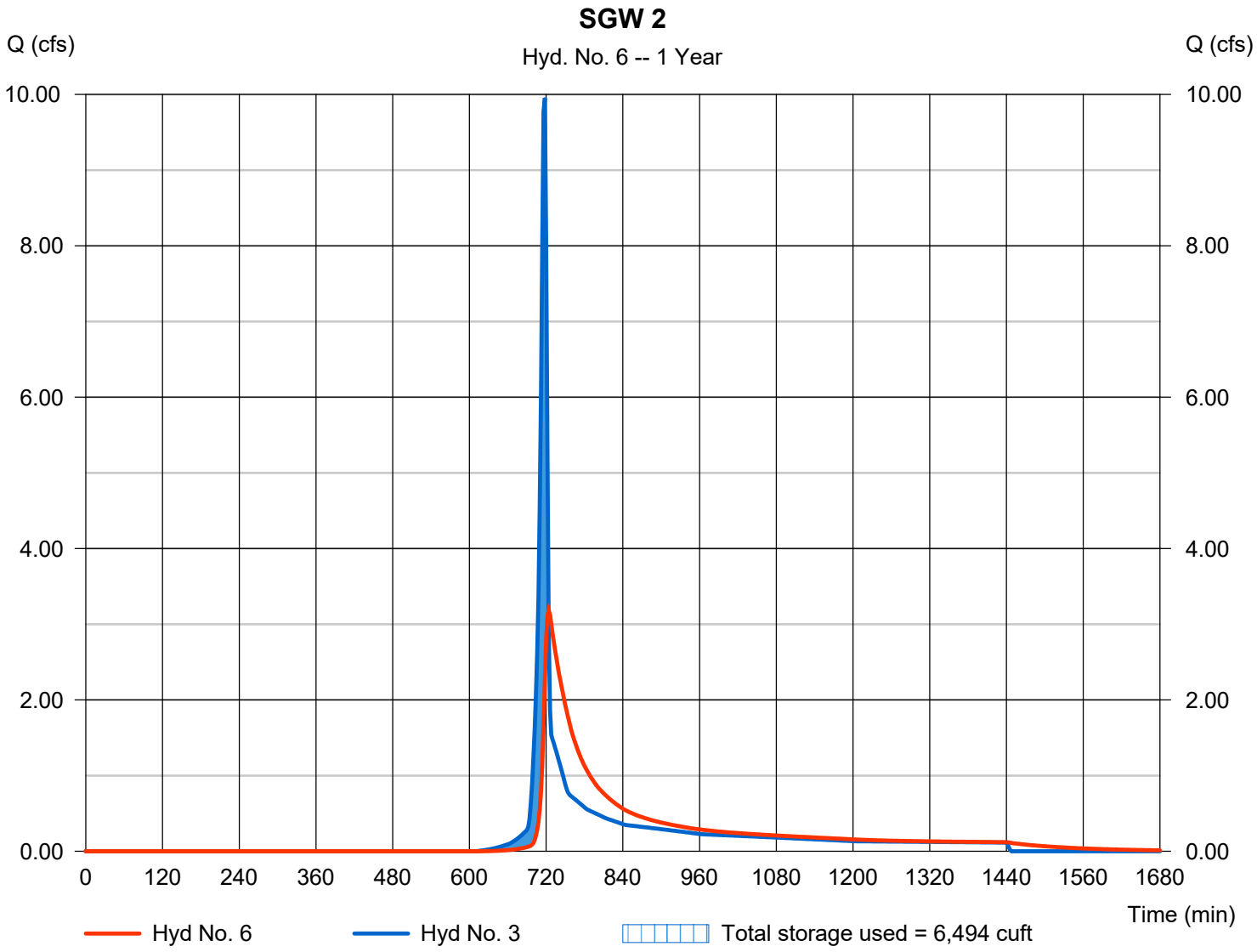
Hydrograph Report

Hyd. No. 6

SGW 2

Hydrograph type	=	Reservoir	Peak discharge	=	3.189 cfs
Storm frequency	=	1 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	19,899 cuft
Inflow hyd. No.	=	3 - B	Max. Elevation	=	305.97 ft
Reservoir name	=	SGW 2	Max. Storage	=	6,494 cuft

Storage Indication method used.



Pond No. 2 - SGW 2

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 305.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	305.00	6,220	0	0
1.00	306.00	7,169	6,688	6,688
2.00	307.00	8,178	7,667	14,355
3.00	308.00	9,244	8,705	23,060
4.00	309.00	10,366	9,799	32,859

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 48.00	0.00	0.00	0.00
Span (in)	= 48.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 302.00	0.00	0.00	0.00
Length (ft)	= 60.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 1.00	1.00	1.00	4.00
Crest El. (ft)	= 305.00	306.00	307.00	308.75
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	Rect	Rect
Multi-Stage	= Yes	Yes	Yes	Yes

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	305.00	0.00	---	---	---	0.00	0.00	0.00	0.00	---	---	0.000
0.10	669	305.10	34.01 oc	---	---	---	0.11	0.00	0.00	0.00	---	---	0.105
0.20	1,338	305.20	34.01 oc	---	---	---	0.30	0.00	0.00	0.00	---	---	0.298
0.30	2,006	305.30	34.01 oc	---	---	---	0.55	0.00	0.00	0.00	---	---	0.547
0.40	2,675	305.40	34.01 oc	---	---	---	0.84	0.00	0.00	0.00	---	---	0.842
0.50	3,344	305.50	34.01 oc	---	---	---	1.18	0.00	0.00	0.00	---	---	1.177
0.60	4,013	305.60	34.01 oc	---	---	---	1.55	0.00	0.00	0.00	---	---	1.548
0.70	4,682	305.70	34.01 oc	---	---	---	1.95	0.00	0.00	0.00	---	---	1.950
0.80	5,351	305.80	34.01 oc	---	---	---	2.38	0.00	0.00	0.00	---	---	2.383
0.90	6,019	305.90	34.01 oc	---	---	---	2.84	0.00	0.00	0.00	---	---	2.844
1.00	6,688	306.00	34.01 oc	---	---	---	3.33	0.00	0.00	0.00	---	---	3.330
1.10	7,455	306.10	34.01 oc	---	---	---	3.84	0.11	0.00	0.00	---	---	3.947
1.20	8,222	306.20	34.01 oc	---	---	---	4.38	0.30	0.00	0.00	---	---	4.675
1.30	8,988	306.30	34.01 oc	---	---	---	4.94	0.55	0.00	0.00	---	---	5.483
1.40	9,755	306.40	34.01 oc	---	---	---	5.52	0.84	0.00	0.00	---	---	6.359
1.50	10,522	306.50	34.01 oc	---	---	---	6.12	1.18	0.00	0.00	---	---	7.295
1.60	11,289	306.60	34.01 oc	---	---	---	6.74	1.55	0.00	0.00	---	---	8.287
1.70	12,055	306.70	34.01 oc	---	---	---	7.38	1.95	0.00	0.00	---	---	9.331
1.80	12,822	306.80	34.01 oc	---	---	---	8.04	2.38	0.00	0.00	---	---	10.42
1.90	13,589	306.90	34.01 oc	---	---	---	8.72	2.84	0.00	0.00	---	---	11.57
2.00	14,355	307.00	34.01 oc	---	---	---	9.42	3.33	0.00	0.00	---	---	12.75
2.10	15,226	307.10	34.01 oc	---	---	---	10.13	3.84	0.11	0.00	---	---	14.08
2.20	16,096	307.20	34.01 oc	---	---	---	10.87	4.38	0.30	0.00	---	---	15.54
2.30	16,967	307.30	34.01 oc	---	---	---	11.62	4.94	0.55	0.00	---	---	17.10
2.40	17,837	307.40	34.01 oc	---	---	---	12.38	5.52	0.84	0.00	---	---	18.74
2.50	18,708	307.50	34.01 oc	---	---	---	13.16	6.12	1.18	0.00	---	---	20.46
2.60	19,578	307.60	34.01 oc	---	---	---	13.96	6.74	1.55	0.00	---	---	22.25
2.70	20,449	307.70	34.01 oc	---	---	---	14.77	7.38	1.95	0.00	---	---	24.11
2.80	21,319	307.80	34.01 oc	---	---	---	15.60	8.04	2.38	0.00	---	---	26.03
2.90	22,190	307.90	34.01 oc	---	---	---	16.45	8.72	2.84	0.00	---	---	28.01
3.00	23,060	308.00	34.01 oc	---	---	---	17.30	9.42	3.33	0.00	---	---	30.05
3.10	24,040	308.10	34.01 oc	---	---	---	18.18	10.13	3.84	0.00	---	---	32.15
3.20	25,020	308.20	34.32 oc	---	---	---	19.06 s	10.87	4.38	0.00	---	---	34.30
3.30	26,000	308.30	36.59 oc	---	---	---	19.82 s	11.62	4.94	0.00	---	---	36.38
3.40	26,980	308.40	38.41 oc	---	---	---	20.51 s	12.38	5.52	0.00	---	---	38.41
3.50	27,959	308.50	40.40 oc	---	---	---	21.08 s	13.16	6.12	0.00	---	---	40.36
3.60	28,939	308.60	42.08 oc	---	---	---	21.37 s	13.96 s	6.74	0.00	---	---	42.07
3.70	29,919	308.70	44.40 oc	---	---	---	22.26 s	14.76 s	7.38	0.00	---	---	44.40

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SGW 2

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.80	30,899	308.80	46.90 oc	---	---	---	23.14 s	15.57 s	8.04	0.15	---	---	46.90
3.90	31,879	308.90	49.89 oc	---	---	---	24.01 s	16.38 s	8.72	0.77	---	---	49.88
4.00	32,859	309.00	53.14 oc	---	---	---	24.87 s	17.19 s	9.42	1.66	---	---	53.14

...End

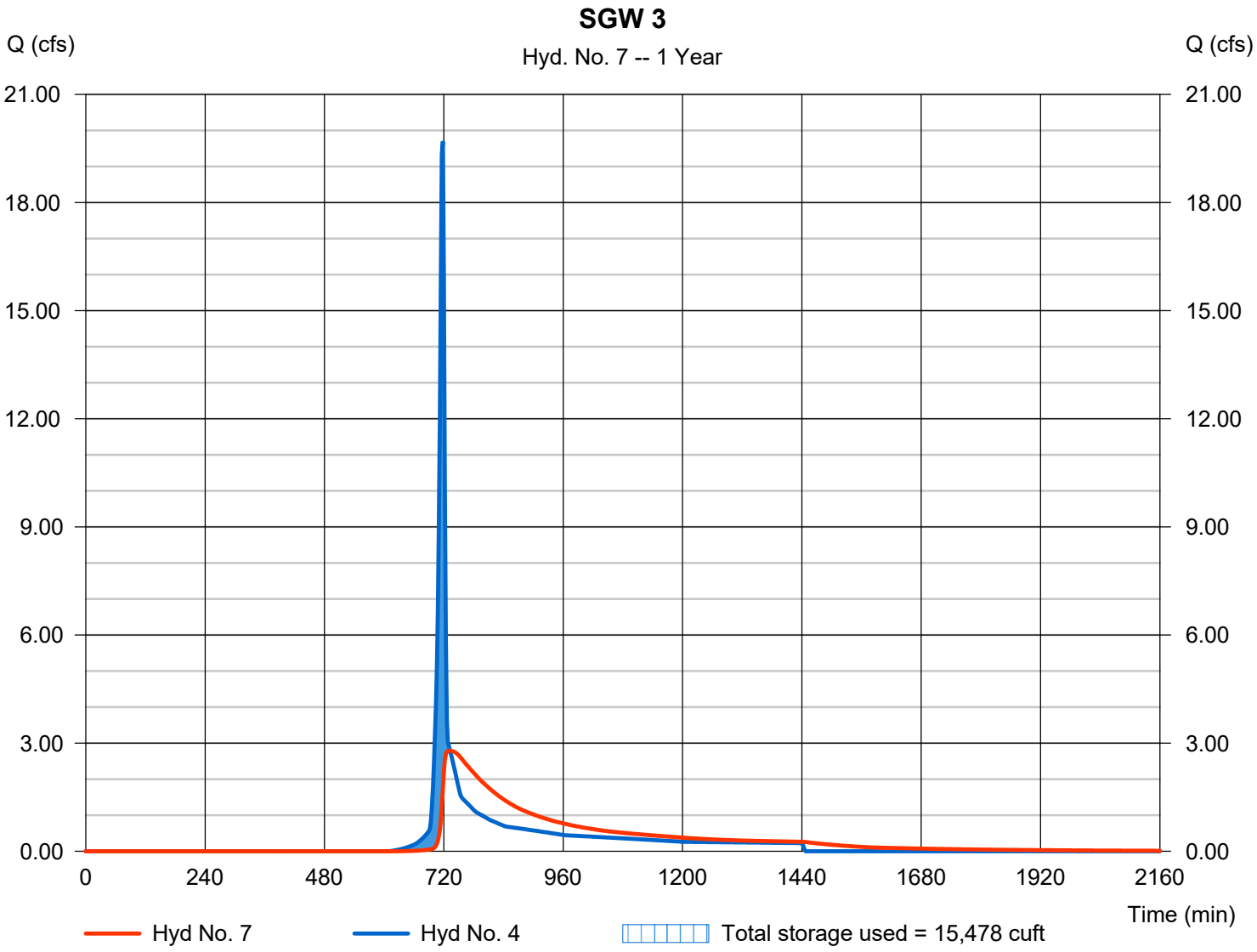
Hydrograph Report

Hyd. No. 7

SGW 3

Hydrograph type	=	Reservoir	Peak discharge	=	2.788 cfs
Storm frequency	=	1 yrs	Time to peak	=	732 min
Time interval	=	2 min	Hyd. volume	=	39,374 cuft
Inflow hyd. No.	=	4 - C	Max. Elevation	=	311.89 ft
Reservoir name	=	SGW 3	Max. Storage	=	15,478 cuft

Storage Indication method used.



Pond No. 3 - SGW 3

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 311.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	311.00	16,500	0	0
1.00	312.00	18,384	17,432	17,432
2.00	313.00	20,325	19,344	36,776
3.00	314.00	22,323	21,314	58,090
4.00	315.00	24,378	23,341	81,431
5.00	316.00	26,490	25,424	106,855

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 48.00	0.00	0.00	0.00
Span (in)	= 48.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 308.00	0.00	0.00	0.00
Length (ft)	= 65.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 1.00	1.00	1.00	4.00
Crest El. (ft)	= 311.00	312.00	313.00	314.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	Rect	Rect
Multi-Stage	= Yes	Yes	Yes	Yes

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	311.00	0.00	---	---	---	0.00	0.00	0.00	0.00	---	---	0.000
0.10	1,743	311.10	35.20 oc	---	---	---	0.11	0.00	0.00	0.00	---	---	0.105
0.20	3,486	311.20	35.20 oc	---	---	---	0.30	0.00	0.00	0.00	---	---	0.298
0.30	5,230	311.30	35.20 oc	---	---	---	0.55	0.00	0.00	0.00	---	---	0.547
0.40	6,973	311.40	35.20 oc	---	---	---	0.84	0.00	0.00	0.00	---	---	0.843
0.50	8,716	311.50	35.20 oc	---	---	---	1.18	0.00	0.00	0.00	---	---	1.177
0.60	10,459	311.60	35.20 oc	---	---	---	1.55	0.00	0.00	0.00	---	---	1.548
0.70	12,202	311.70	35.20 oc	---	---	---	1.95	0.00	0.00	0.00	---	---	1.950
0.80	13,945	311.80	35.20 oc	---	---	---	2.38	0.00	0.00	0.00	---	---	2.383
0.90	15,689	311.90	35.20 oc	---	---	---	2.84	0.00	0.00	0.00	---	---	2.843
1.00	17,432	312.00	35.20 oc	---	---	---	3.33	0.00	0.00	0.00	---	---	3.330
1.10	19,366	312.10	35.20 oc	---	---	---	3.84	0.11	0.00	0.00	---	---	3.947
1.20	21,301	312.20	35.20 oc	---	---	---	4.38	0.30	0.00	0.00	---	---	4.675
1.30	23,235	312.30	35.20 oc	---	---	---	4.94	0.55	0.00	0.00	---	---	5.483
1.40	25,170	312.40	35.20 oc	---	---	---	5.52	0.84	0.00	0.00	---	---	6.359
1.50	27,104	312.50	35.20 oc	---	---	---	6.12	1.18	0.00	0.00	---	---	7.295
1.60	29,038	312.60	35.20 oc	---	---	---	6.74	1.55	0.00	0.00	---	---	8.287
1.70	30,973	312.70	35.20 oc	---	---	---	7.38	1.95	0.00	0.00	---	---	9.332
1.80	32,907	312.80	35.20 oc	---	---	---	8.04	2.38	0.00	0.00	---	---	10.43
1.90	34,842	312.90	35.20 oc	---	---	---	8.72	2.84	0.00	0.00	---	---	11.57
2.00	36,776	313.00	35.20 oc	---	---	---	9.42	3.33	0.00	0.00	---	---	12.75
2.10	38,908	313.10	35.20 oc	---	---	---	10.13	3.84	0.11	0.00	---	---	14.08
2.20	41,039	313.20	35.20 oc	---	---	---	10.87	4.38	0.30	0.00	---	---	15.54
2.30	43,170	313.30	35.20 oc	---	---	---	11.62	4.94	0.55	0.00	---	---	17.10
2.40	45,302	313.40	35.20 oc	---	---	---	12.38	5.52	0.84	0.00	---	---	18.74
2.50	47,433	313.50	35.20 oc	---	---	---	13.16	6.12	1.18	0.00	---	---	20.46
2.60	49,565	313.60	35.20 oc	---	---	---	13.96	6.74	1.55	0.00	---	---	22.25
2.70	51,696	313.70	35.20 oc	---	---	---	14.77	7.38	1.95	0.00	---	---	24.11
2.80	53,827	313.80	35.20 oc	---	---	---	15.60	8.04	2.38	0.00	---	---	26.03
2.90	55,959	313.90	35.20 oc	---	---	---	16.45	8.72	2.84	0.00	---	---	28.01
3.00	58,090	314.00	35.20 oc	---	---	---	17.30	9.42	3.33	0.00	---	---	30.05
3.10	60,424	314.10	35.20 oc	---	---	---	18.18	10.13	3.84	0.42	---	---	32.57
3.20	62,758	314.20	35.53 oc	---	---	---	19.06 s	10.87	4.38	1.19	---	---	35.49
3.30	65,092	314.30	38.64 oc	---	---	---	19.75 s	11.62	4.94	2.19	---	---	38.49
3.40	67,427	314.40	41.57 oc	---	---	---	20.21 s	12.38	5.52	3.37	---	---	41.48
3.50	69,761	314.50	44.39 oc	---	---	---	20.40 s	13.16 s	6.12	4.71	---	---	44.38
3.60	72,095	314.60	48.07 oc	---	---	---	21.21 s	13.93 s	6.74	6.19	---	---	48.07

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SGW 3

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
3.70	74,429	314.70	51.89 oc	---	---	---	22.01 s	14.69 s	7.38	7.80	---	---	51.89
3.80	76,763	314.80	55.83 oc	---	---	---	22.80 s	15.46 s	8.04	9.53	---	---	55.83
3.90	79,097	314.90	59.89 oc	---	---	---	23.58 s	16.21 s	8.72	11.37	---	---	59.89
4.00	81,431	315.00	64.05 oc	---	---	---	24.34 s	16.96 s	9.42	13.32	---	---	64.04
4.10	83,973	315.10	68.28 oc	---	---	---	25.08 s	17.70 s	10.13	15.37	---	---	68.28
4.20	86,516	315.20	72.60 oc	---	---	---	25.80 s	18.42 s	10.87	17.51	---	---	72.60
4.30	89,058	315.30	76.98 oc	---	---	---	26.49 s	19.13 s	11.62	19.74	---	---	76.98
4.40	91,601	315.40	81.41 oc	---	---	---	27.16 s	19.81 s	12.38	22.07	---	---	81.41
4.50	94,143	315.50	85.89 oc	---	---	---	27.78 s	20.47 s	13.16	24.47	---	---	85.89
4.60	96,685	315.60	90.34 oc	---	---	---	28.38 s	21.10 s	13.90 s	26.96	---	---	90.34
4.70	99,228	315.70	94.76 oc	---	---	---	28.95 s	21.71 s	14.58 s	29.53	---	---	94.76
4.80	101,770	315.80	99.16 oc	---	---	---	29.47 s	22.29 s	15.23 s	32.17	---	---	99.16
4.90	104,313	315.90	103.52 oc	---	---	---	29.96 s	22.83 s	15.84 s	34.89	---	---	103.52
5.00	106,855	316.00	107.85 oc	---	---	---	30.40 s	23.34 s	16.43 s	37.67	---	---	107.84

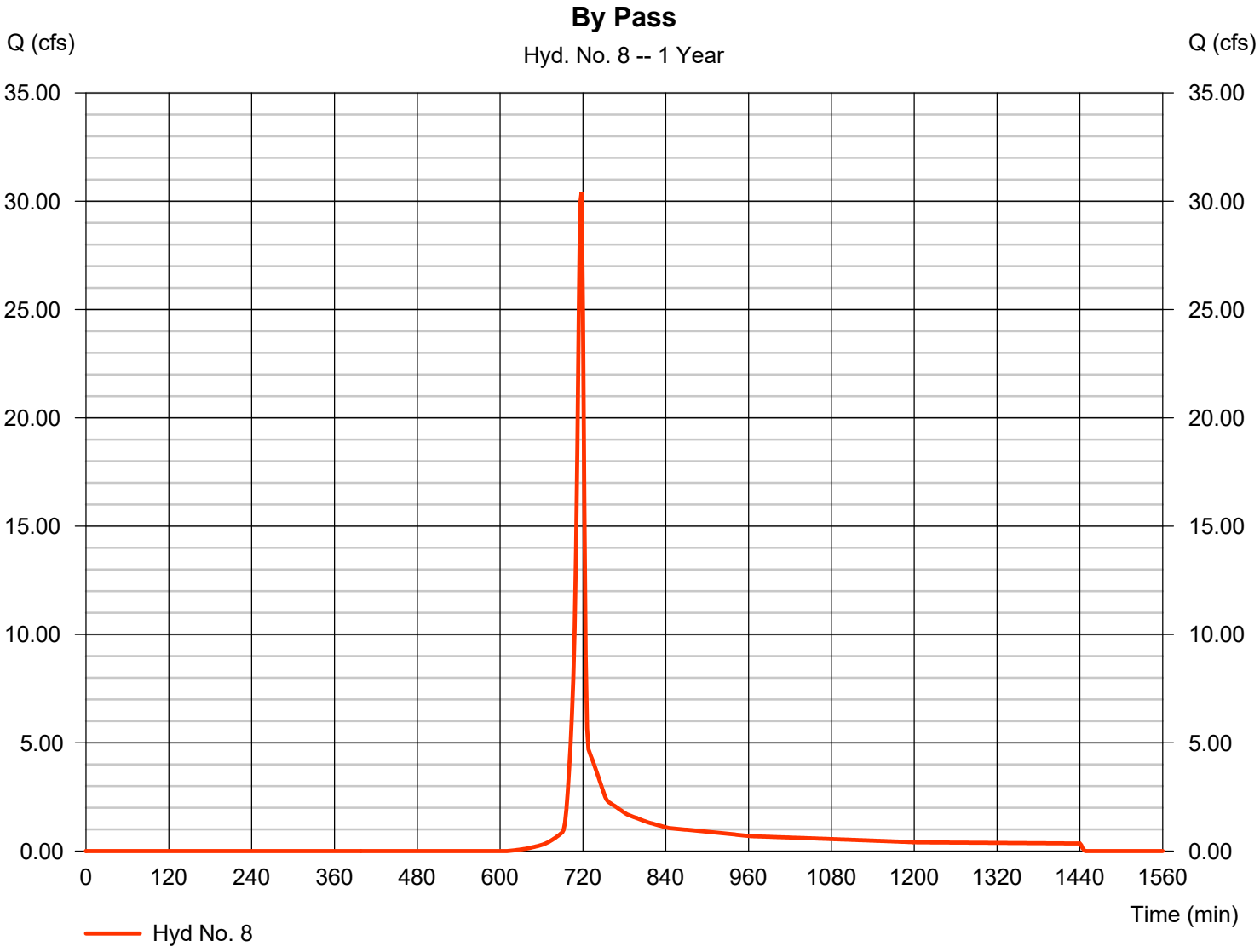
...End

Hydrograph Report

Hyd. No. 8

By Pass

Hydrograph type	=	SCS Runoff	Peak discharge	=	30.42 cfs
Storm frequency	=	1 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	60,838 cuft
Drainage area	=	17.360 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	2.70 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

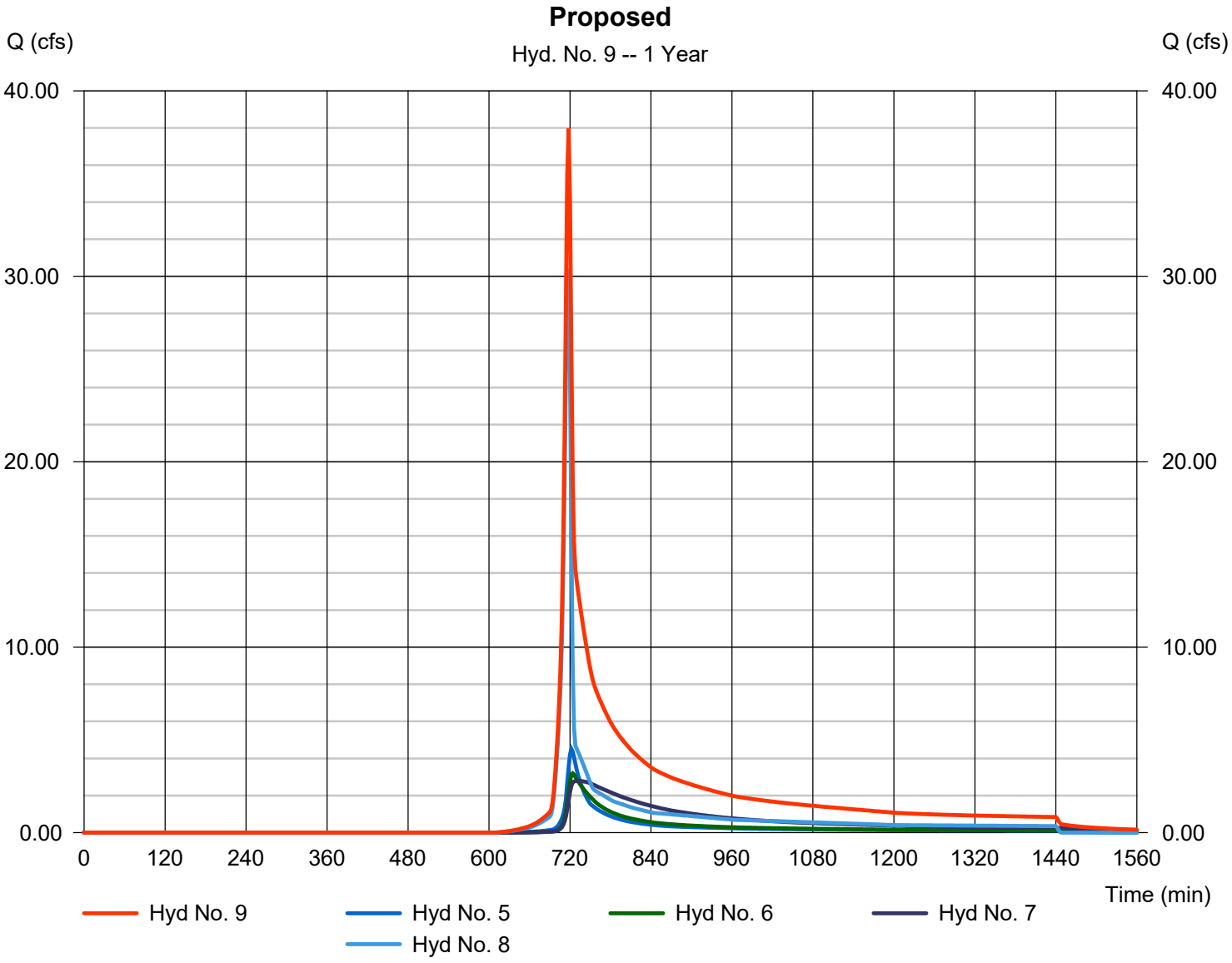


Hydrograph Report

Hyd. No. 9

Proposed

Hydrograph type	=	Combine	Peak discharge	=	37.97 cfs
Storm frequency	=	1 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	138,298 cuft
Inflow hyds.	=	5, 6, 7, 8	Contrib. drain. area	=	17.360 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

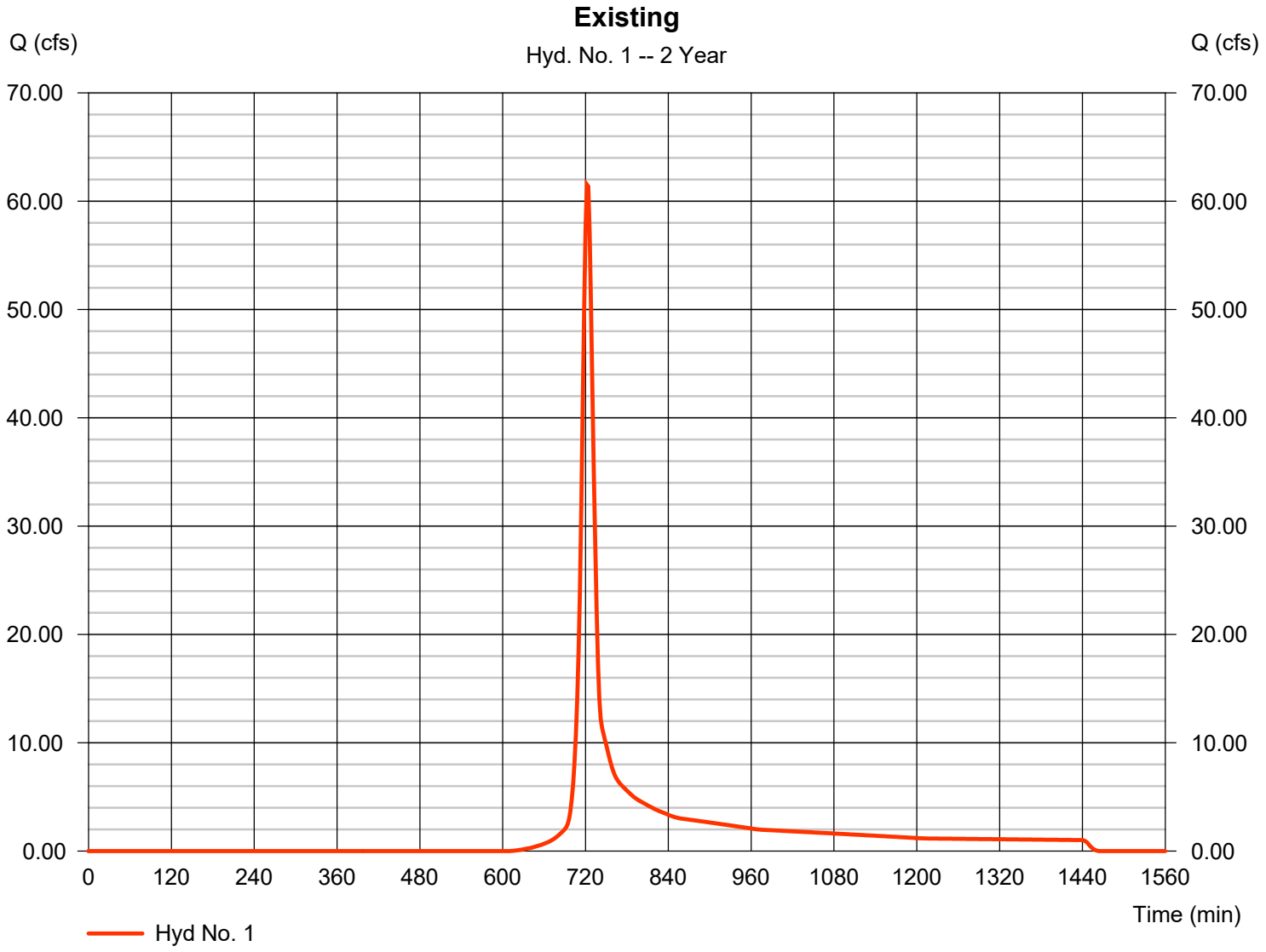
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	61.53	2	722	176,303	------	------	------	Existing
2	SCS Runoff	12.79	2	718	25,715	------	------	------	A
3	SCS Runoff	14.00	2	718	28,143	------	------	------	B
4	SCS Runoff	27.70	2	718	55,692	------	------	------	C
5	Reservoir	7.262	2	722	25,714	2	286.92	6,351	SGW 1
6	Reservoir	5.550	2	724	28,137	3	306.31	9,047	SGW 2
7	Reservoir	5.125	2	726	55,675	4	312.26	22,377	SGW 3
8	SCS Runoff	42.79	2	718	86,015	------	------	------	By Pass
9	Combine	56.15	2	718	195,542	5, 6, 7, 8	------	------	Proposed

Hydrograph Report

Hyd. No. 1

Existing

Hydrograph type	=	SCS Runoff	Peak discharge	=	61.53 cfs
Storm frequency	=	2 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	176,303 cuft
Drainage area	=	39.470 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	13.98 min
Total precip.	=	3.27 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

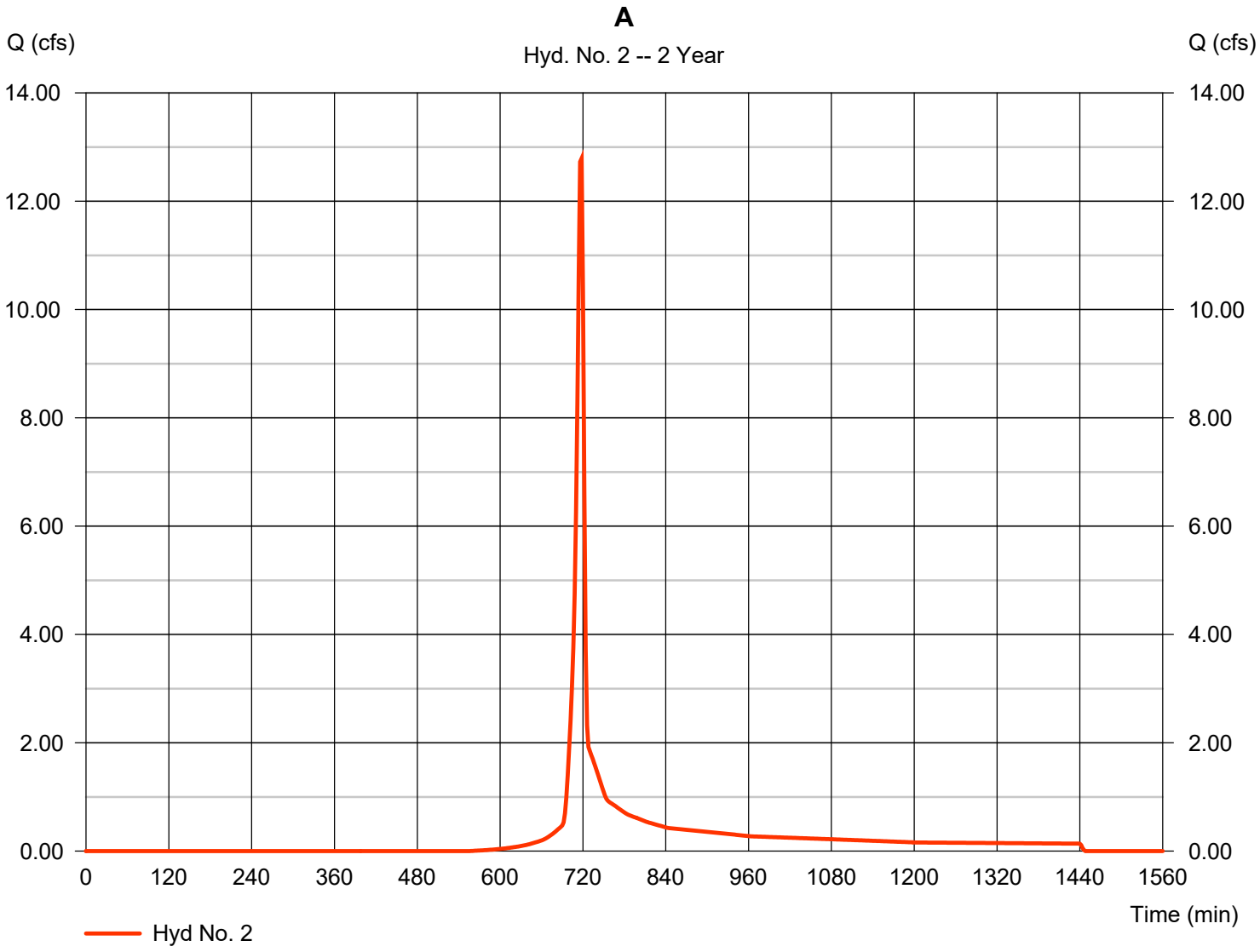


Hydrograph Report

Hyd. No. 2

A

Hydrograph type	=	SCS Runoff	Peak discharge	=	12.79 cfs
Storm frequency	=	2 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	25,715 cuft
Drainage area	=	5.190 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	3.27 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

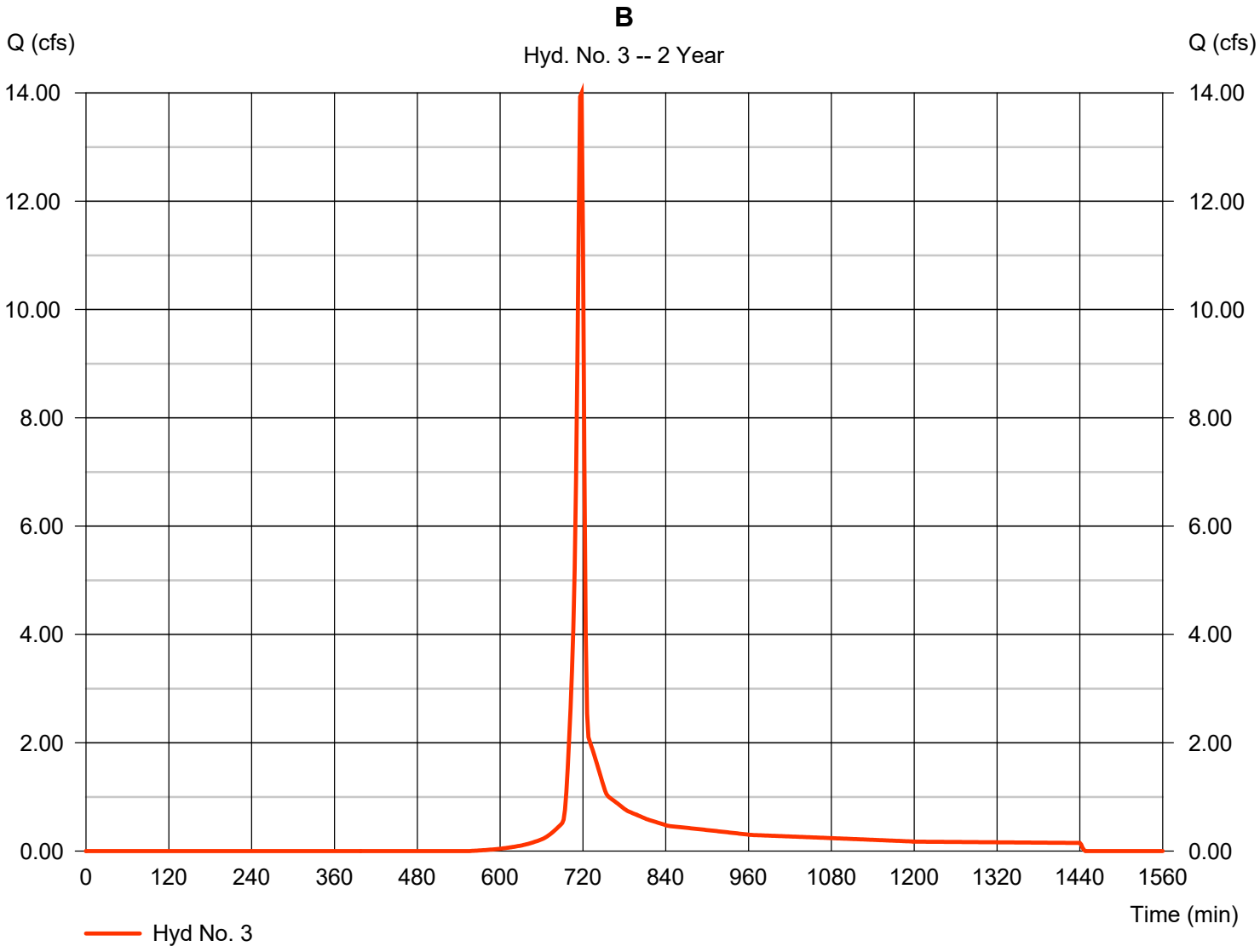


Hydrograph Report

Hyd. No. 3

B

Hydrograph type	=	SCS Runoff	Peak discharge	=	14.00 cfs
Storm frequency	=	2 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	28,143 cuft
Drainage area	=	5.680 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	3.27 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

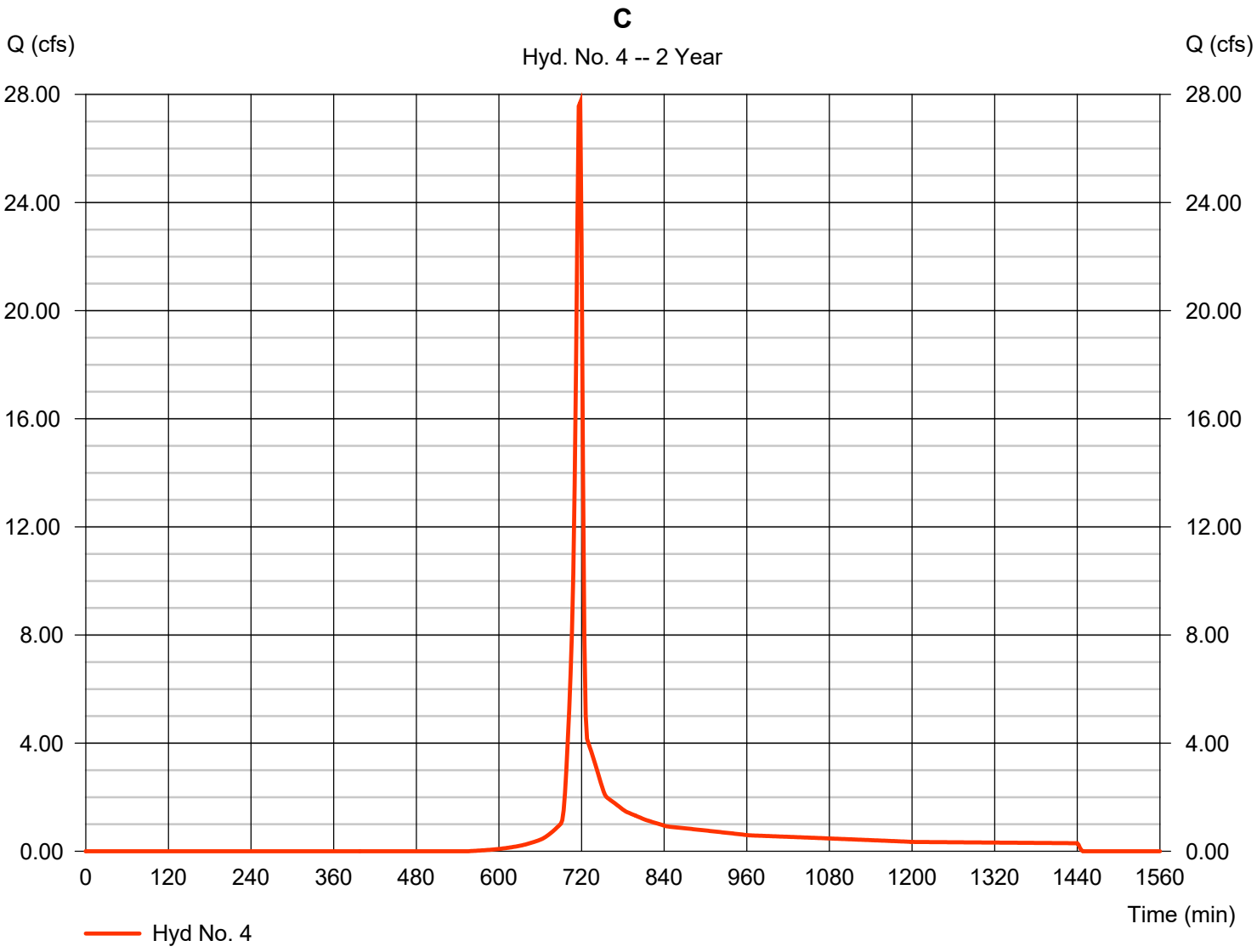


Hydrograph Report

Hyd. No. 4

C

Hydrograph type	=	SCS Runoff	Peak discharge	=	27.70 cfs
Storm frequency	=	2 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	55,692 cuft
Drainage area	=	11.240 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	3.27 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



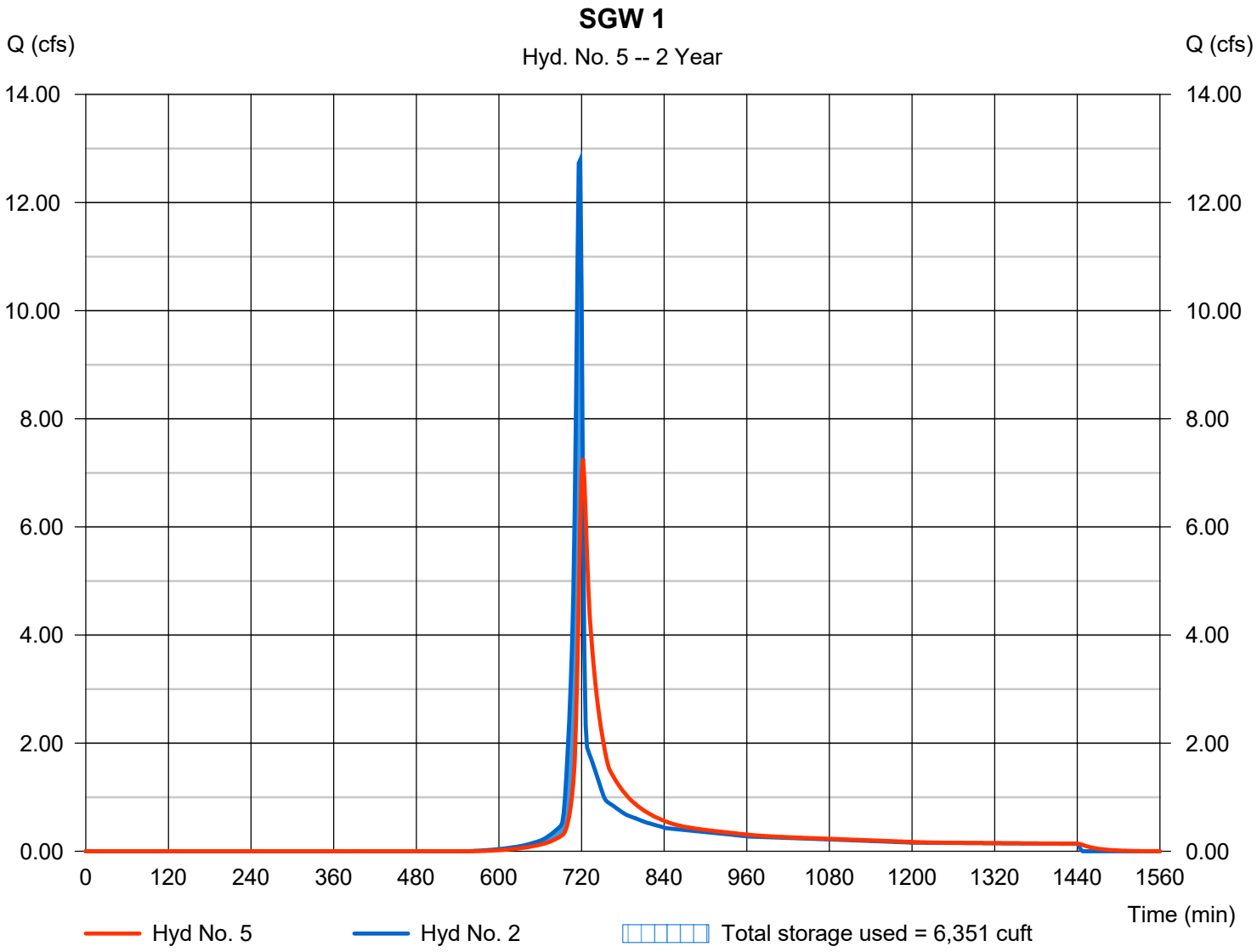
Hydrograph Report

Hyd. No. 5

SGW 1

Hydrograph type	=	Reservoir	Peak discharge	=	7.262 cfs
Storm frequency	=	2 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	25,714 cuft
Inflow hyd. No.	=	2 - A	Max. Elevation	=	286.92 ft
Reservoir name	=	SGW 1	Max. Storage	=	6,351 cuft

Storage Indication method used.



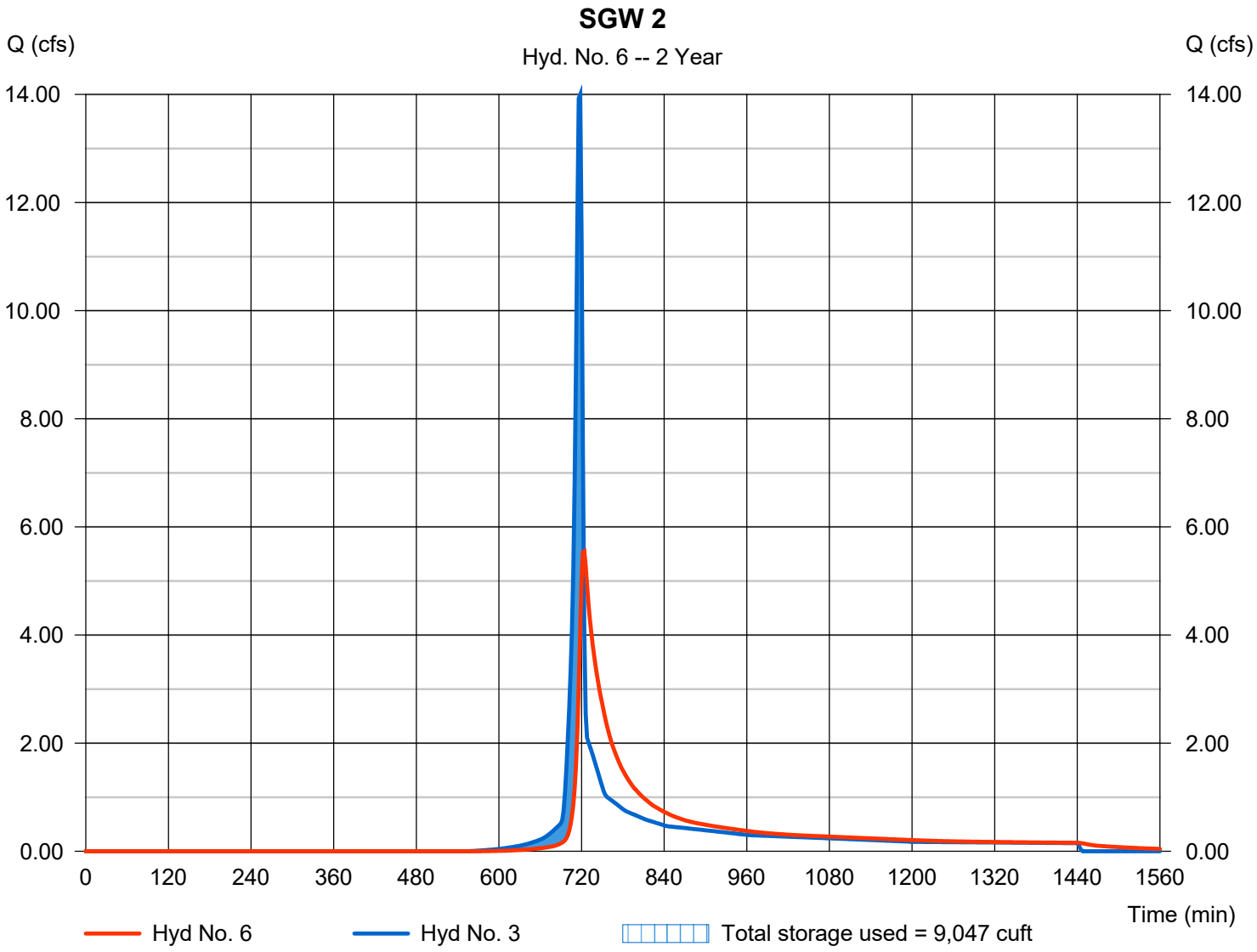
Hydrograph Report

Hyd. No. 6

SGW 2

Hydrograph type	=	Reservoir	Peak discharge	=	5.550 cfs
Storm frequency	=	2 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	28,137 cuft
Inflow hyd. No.	=	3 - B	Max. Elevation	=	306.31 ft
Reservoir name	=	SGW 2	Max. Storage	=	9,047 cuft

Storage Indication method used.



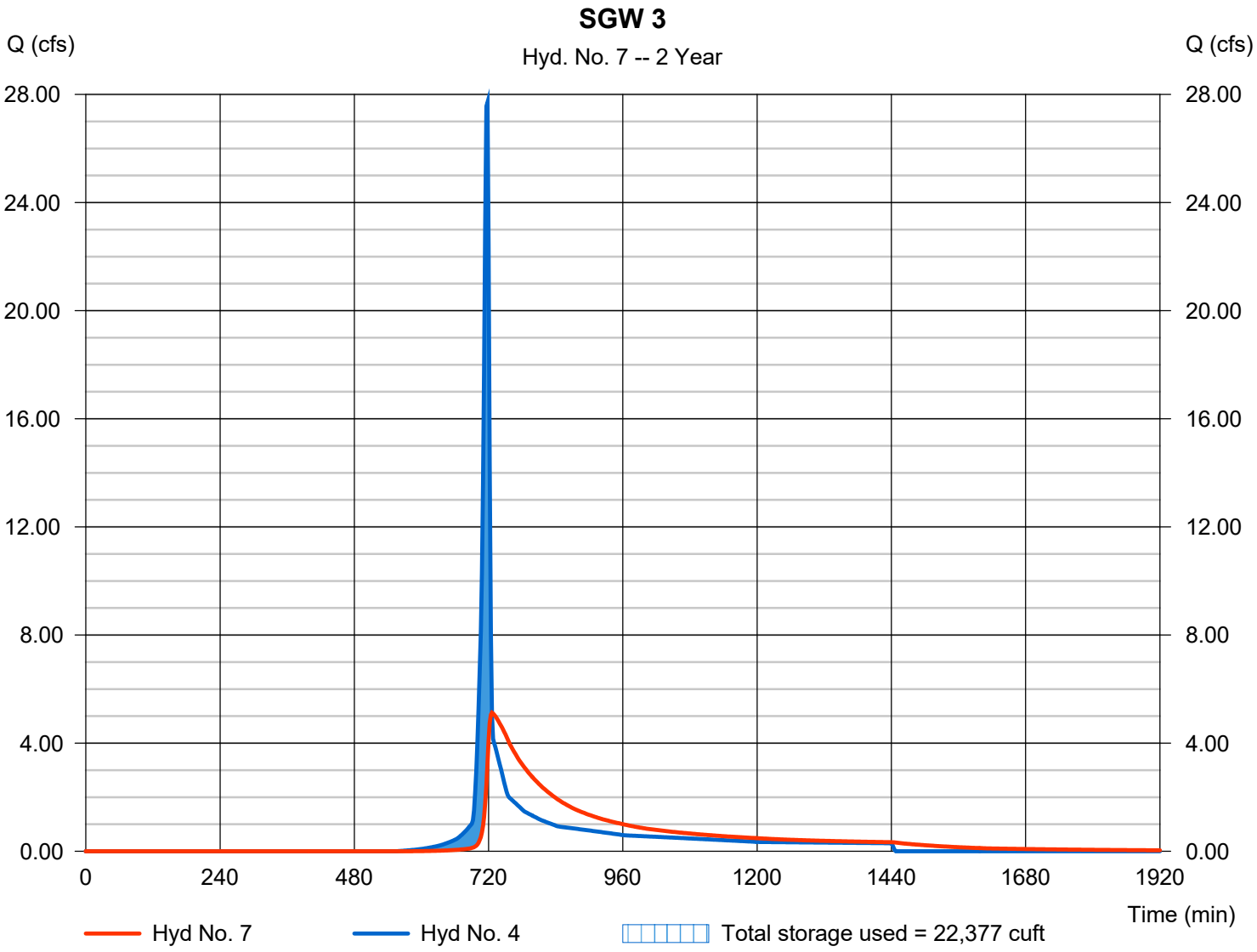
Hydrograph Report

Hyd. No. 7

SGW 3

Hydrograph type	=	Reservoir	Peak discharge	=	5.125 cfs
Storm frequency	=	2 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	55,675 cuft
Inflow hyd. No.	=	4 - C	Max. Elevation	=	312.26 ft
Reservoir name	=	SGW 3	Max. Storage	=	22,377 cuft

Storage Indication method used.

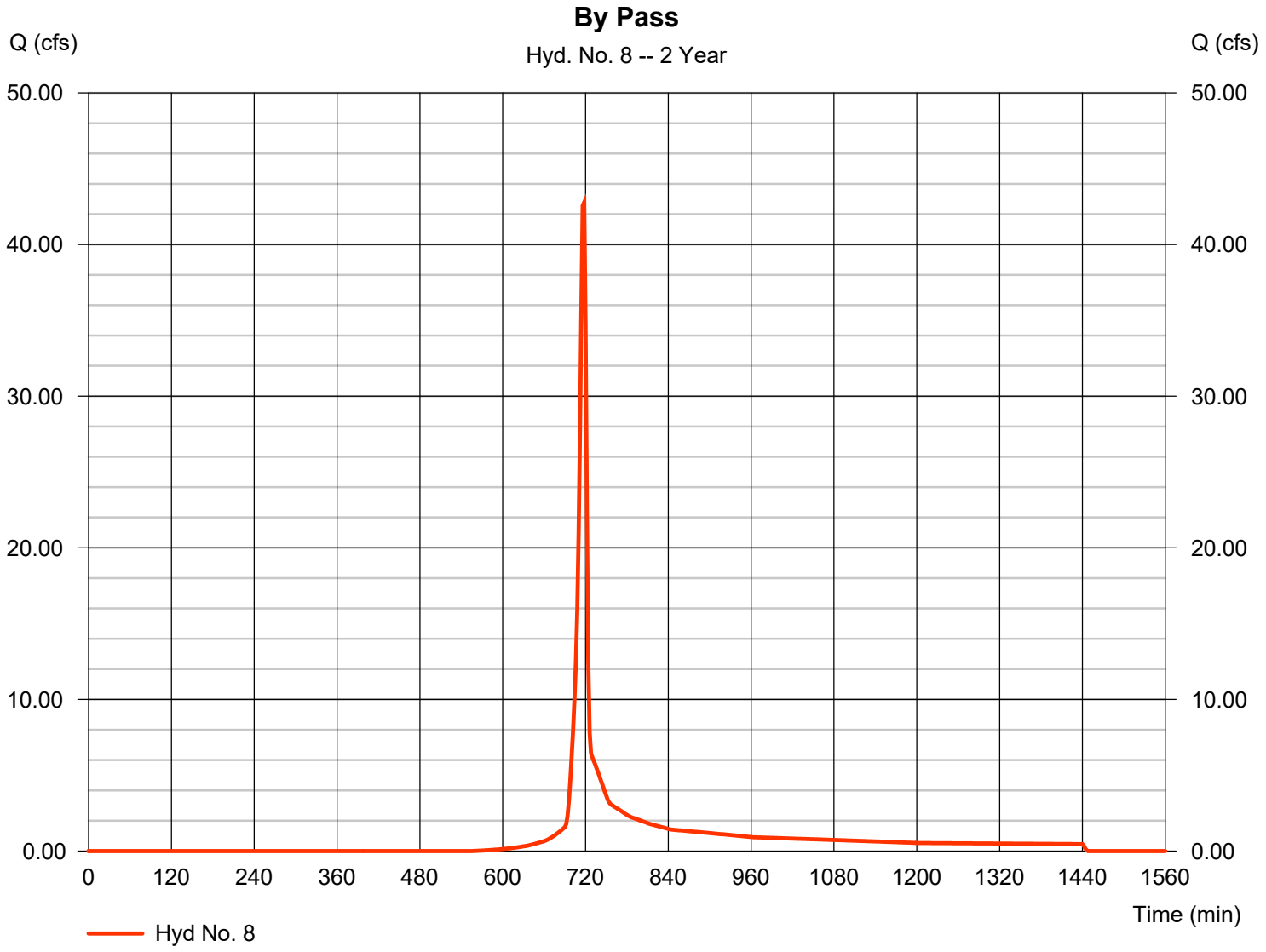


Hydrograph Report

Hyd. No. 8

By Pass

Hydrograph type	=	SCS Runoff	Peak discharge	=	42.79 cfs
Storm frequency	=	2 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	86,015 cuft
Drainage area	=	17.360 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	3.27 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

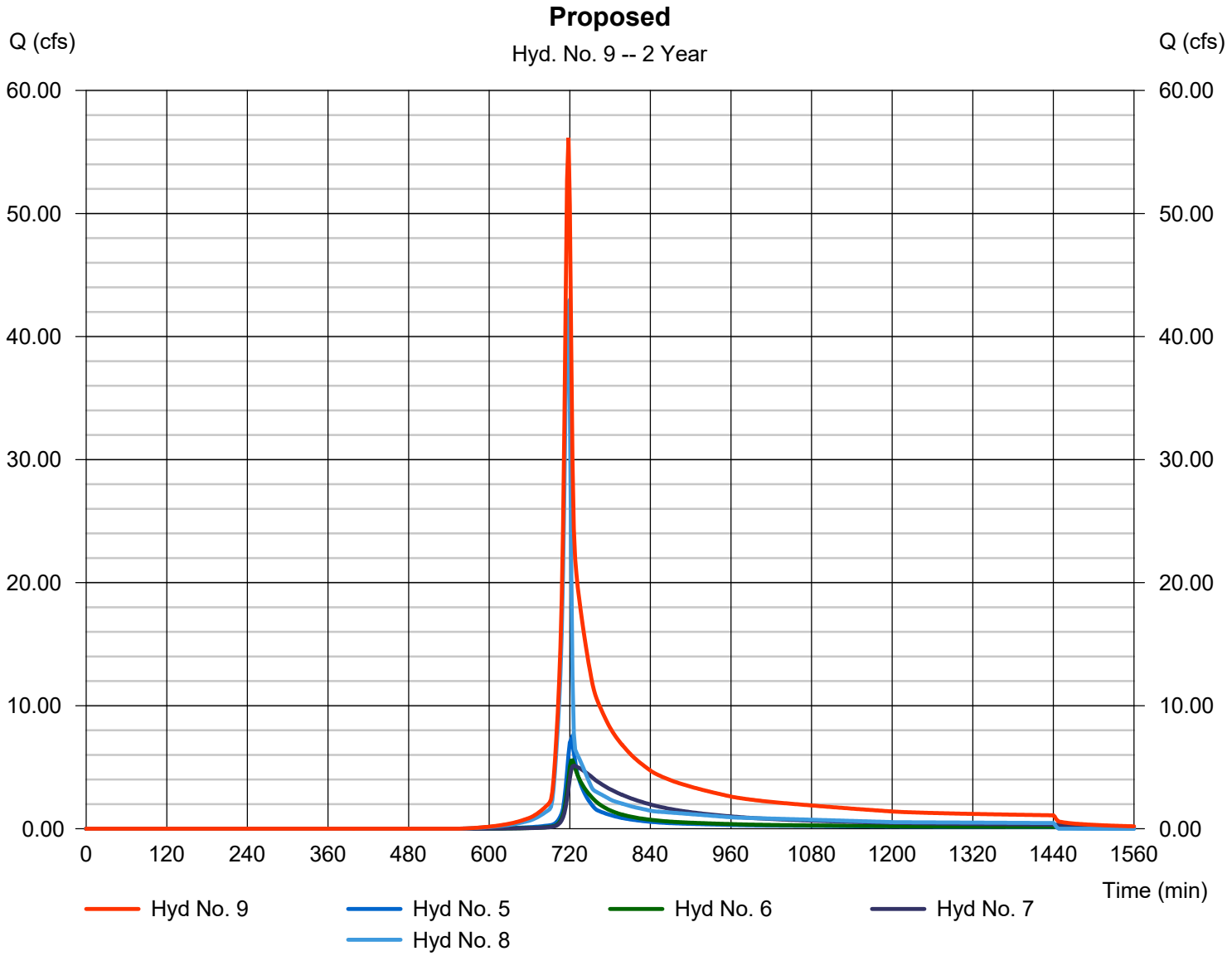


Hydrograph Report

Hyd. No. 9

Proposed

Hydrograph type	= Combine	Peak discharge	= 56.15 cfs
Storm frequency	= 2 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 195,542 cuft
Inflow hyds.	= 5, 6, 7, 8	Contrib. drain. area	= 17.360 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

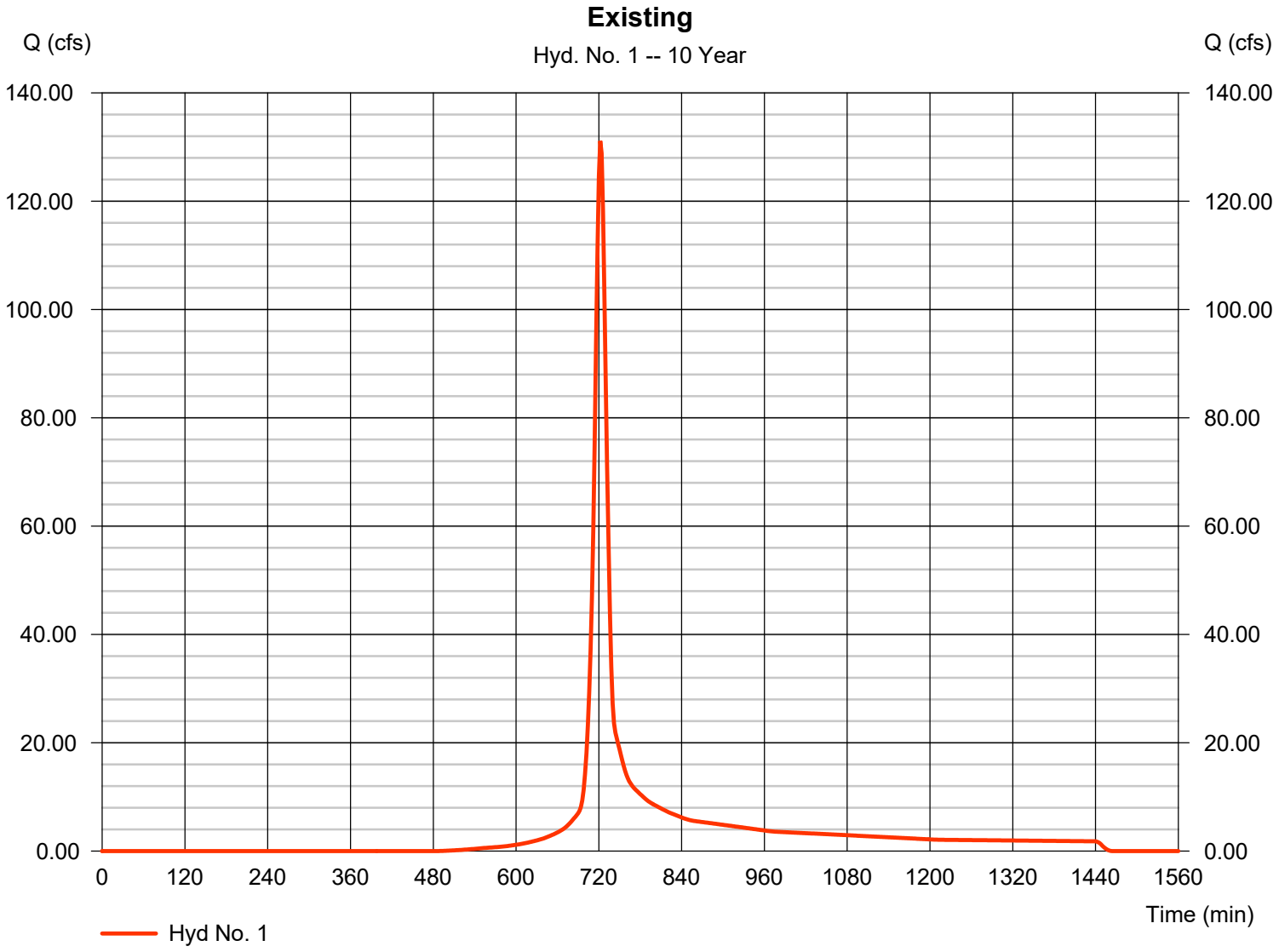
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	131.12	2	722	367,585	------	------	------	Existing
2	SCS Runoff	25.19	2	716	51,248	------	------	------	A
3	SCS Runoff	27.57	2	716	56,087	------	------	------	B
4	SCS Runoff	54.56	2	716	110,989	------	------	------	C
5	Reservoir	16.85	2	720	51,247	2	287.24	11,206	SGW 1
6	Reservoir	15.56	2	722	56,081	3	307.20	16,108	SGW 2
7	Reservoir	17.35	2	724	110,972	4	313.32	43,497	SGW 3
8	SCS Runoff	84.26	2	716	171,420	------	------	------	By Pass
9	Combine	124.05	2	718	389,720	5, 6, 7, 8	------	------	Proposed

Hydrograph Report

Hyd. No. 1

Existing

Hydrograph type	=	SCS Runoff	Peak discharge	=	131.12 cfs
Storm frequency	=	10 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	367,585 cuft
Drainage area	=	39.470 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	13.98 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

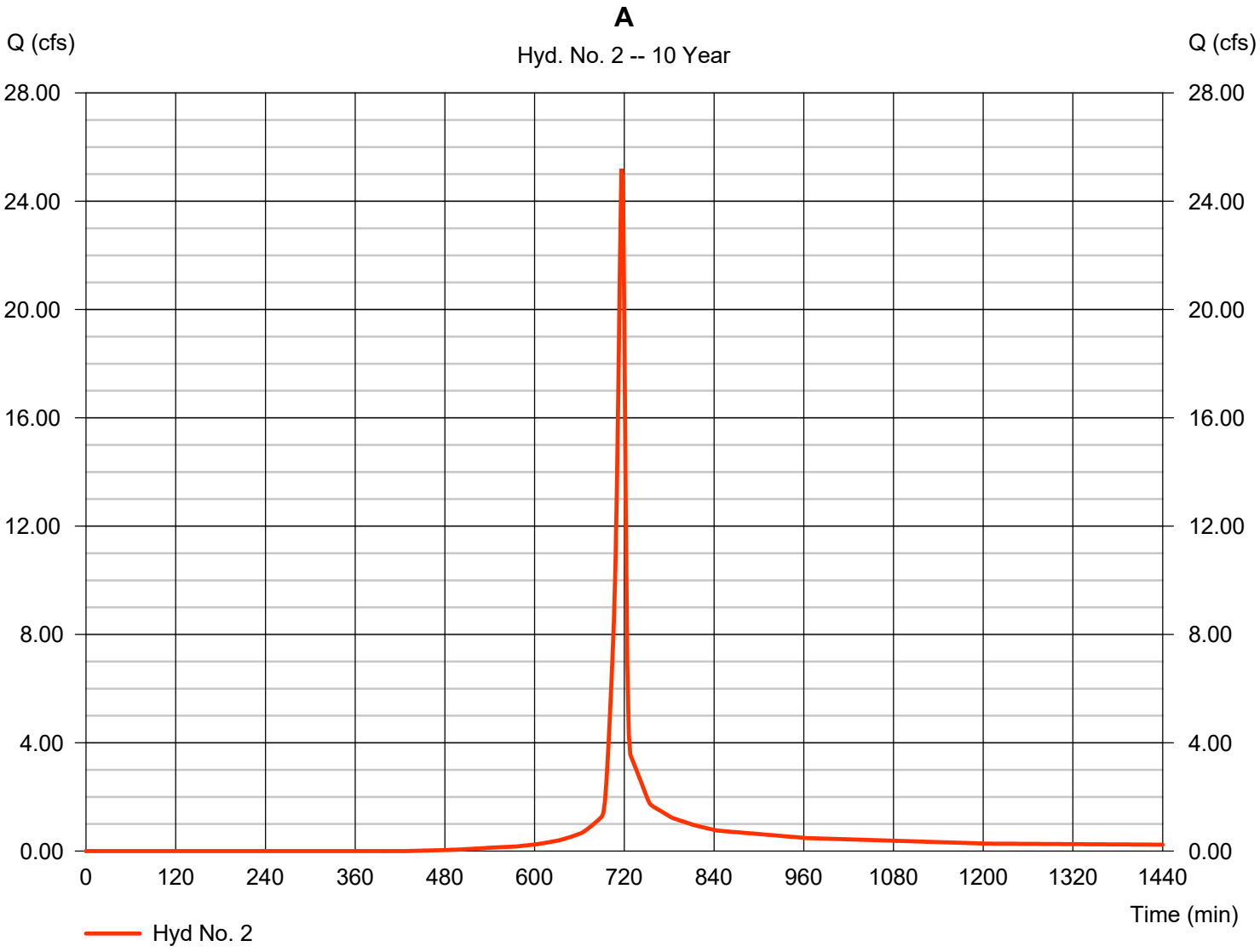


Hydrograph Report

Hyd. No. 2

A

Hydrograph type	=	SCS Runoff	Peak discharge	=	25.19 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	51,248 cuft
Drainage area	=	5.190 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

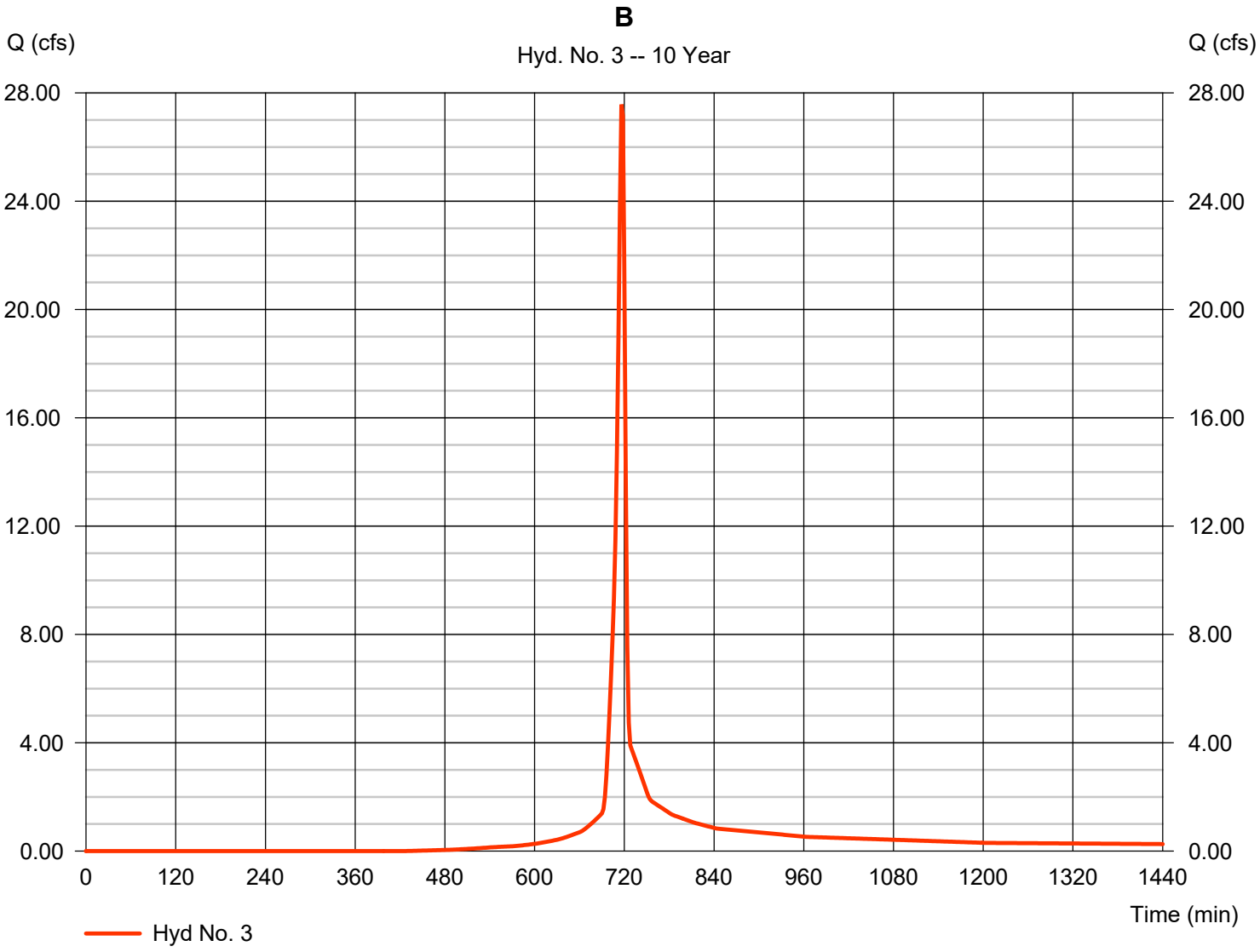


Hydrograph Report

Hyd. No. 3

B

Hydrograph type	=	SCS Runoff	Peak discharge	=	27.57 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	56,087 cuft
Drainage area	=	5.680 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

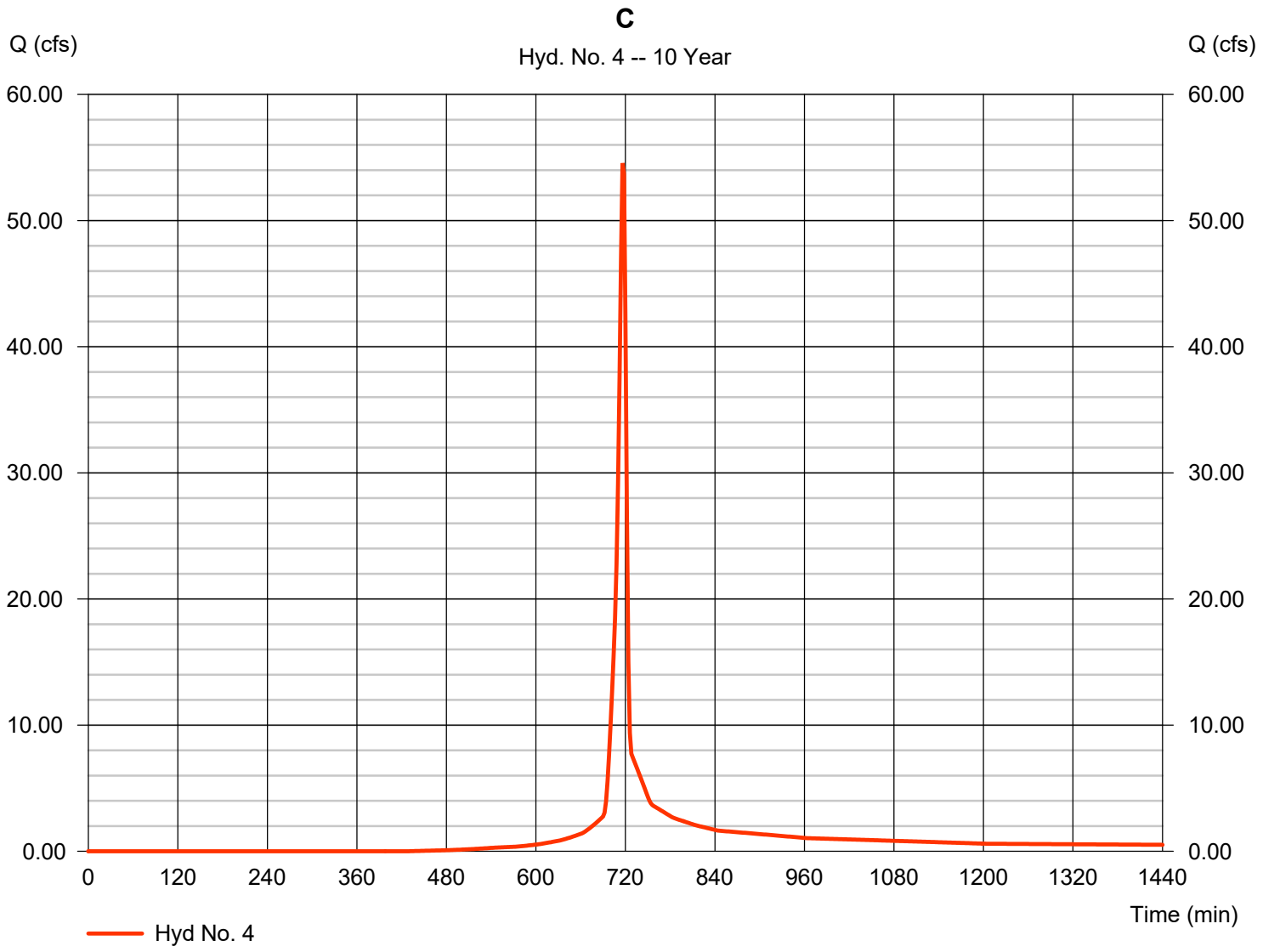


Hydrograph Report

Hyd. No. 4

C

Hydrograph type	=	SCS Runoff	Peak discharge	=	54.56 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	110,989 cuft
Drainage area	=	11.240 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



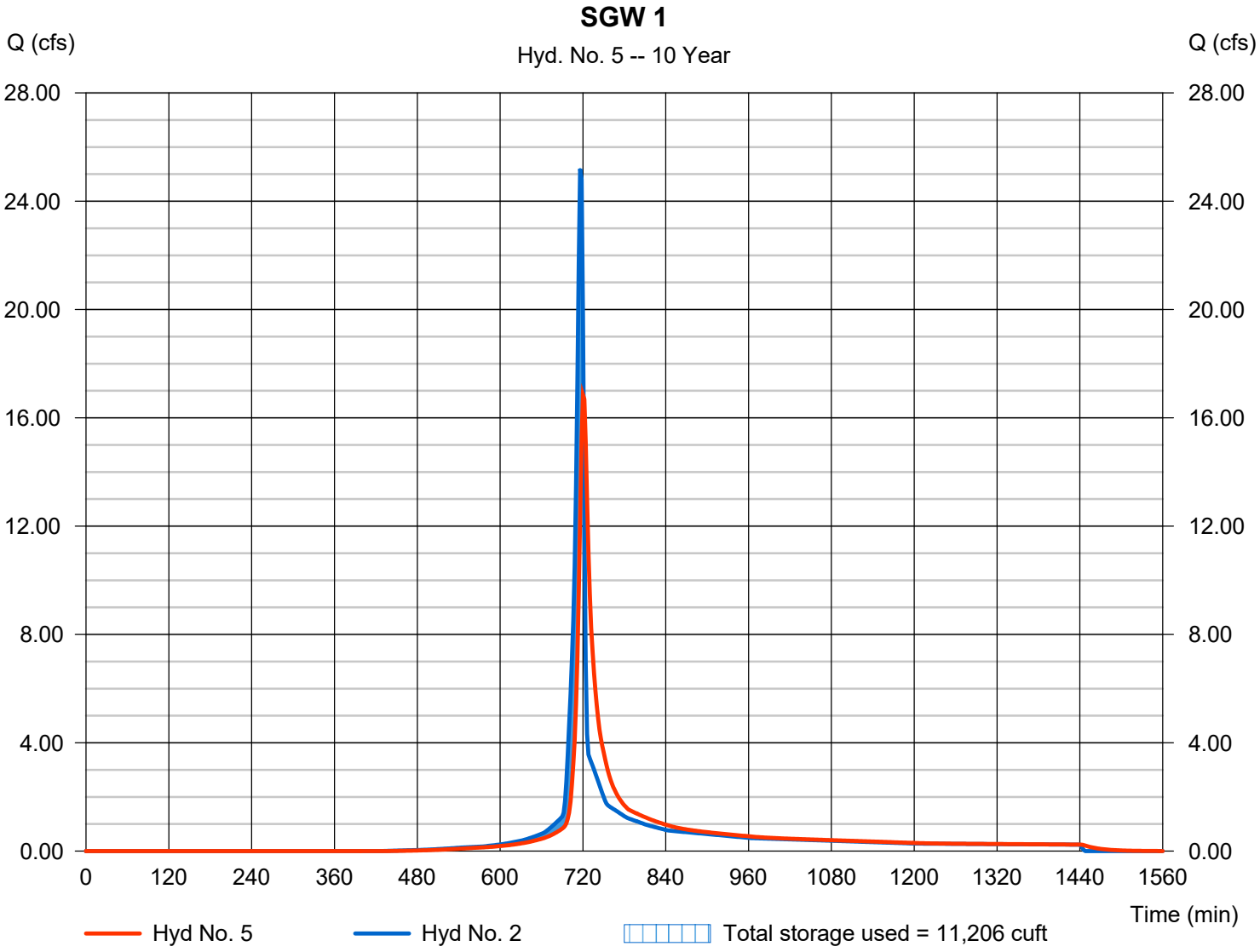
Hydrograph Report

Hyd. No. 5

SGW 1

Hydrograph type	=	Reservoir	Peak discharge	=	16.85 cfs
Storm frequency	=	10 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	51,247 cuft
Inflow hyd. No.	=	2 - A	Max. Elevation	=	287.24 ft
Reservoir name	=	SGW 1	Max. Storage	=	11,206 cuft

Storage Indication method used.



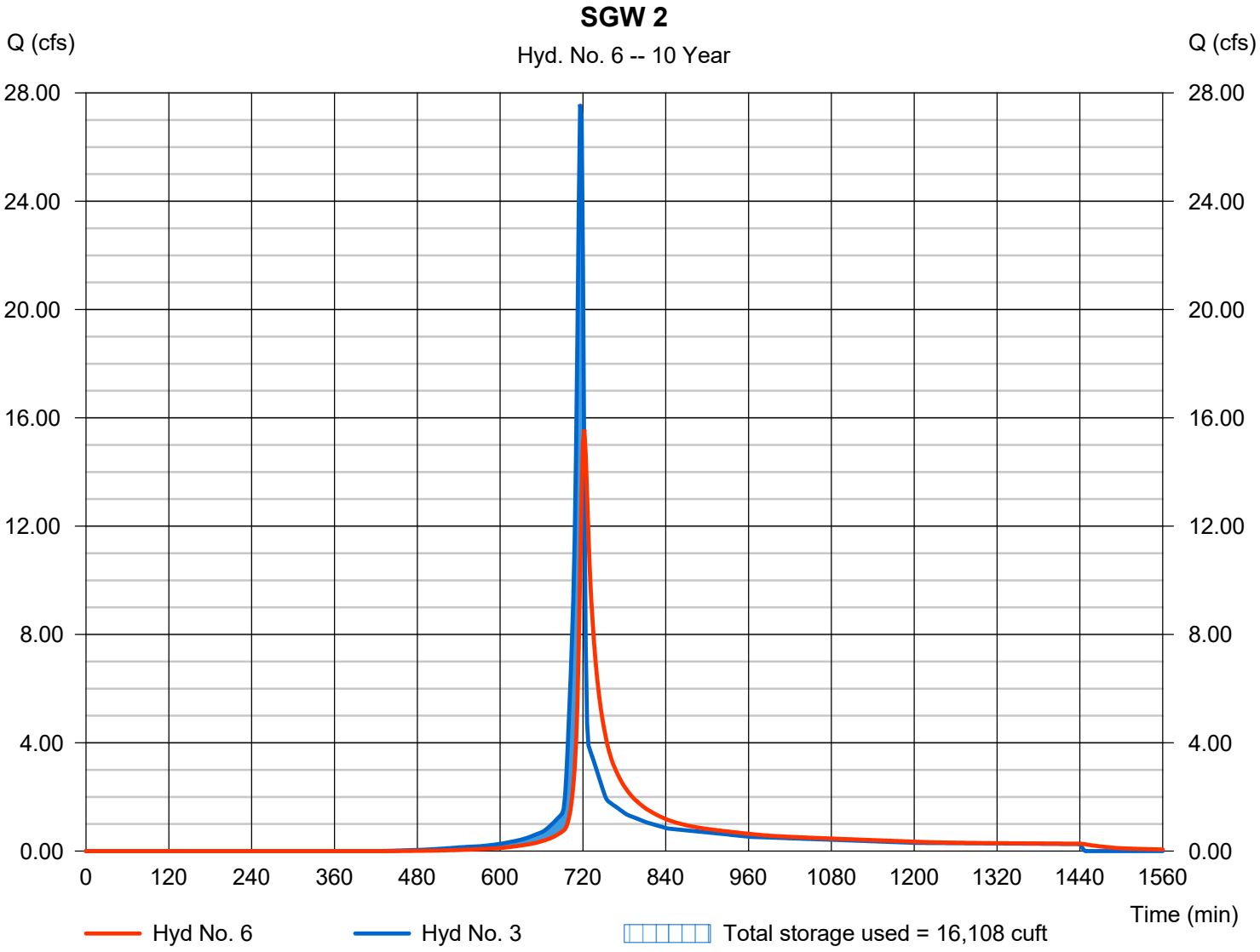
Hydrograph Report

Hyd. No. 6

SGW 2

Hydrograph type	=	Reservoir	Peak discharge	=	15.56 cfs
Storm frequency	=	10 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	56,081 cuft
Inflow hyd. No.	=	3 - B	Max. Elevation	=	307.20 ft
Reservoir name	=	SGW 2	Max. Storage	=	16,108 cuft

Storage Indication method used.



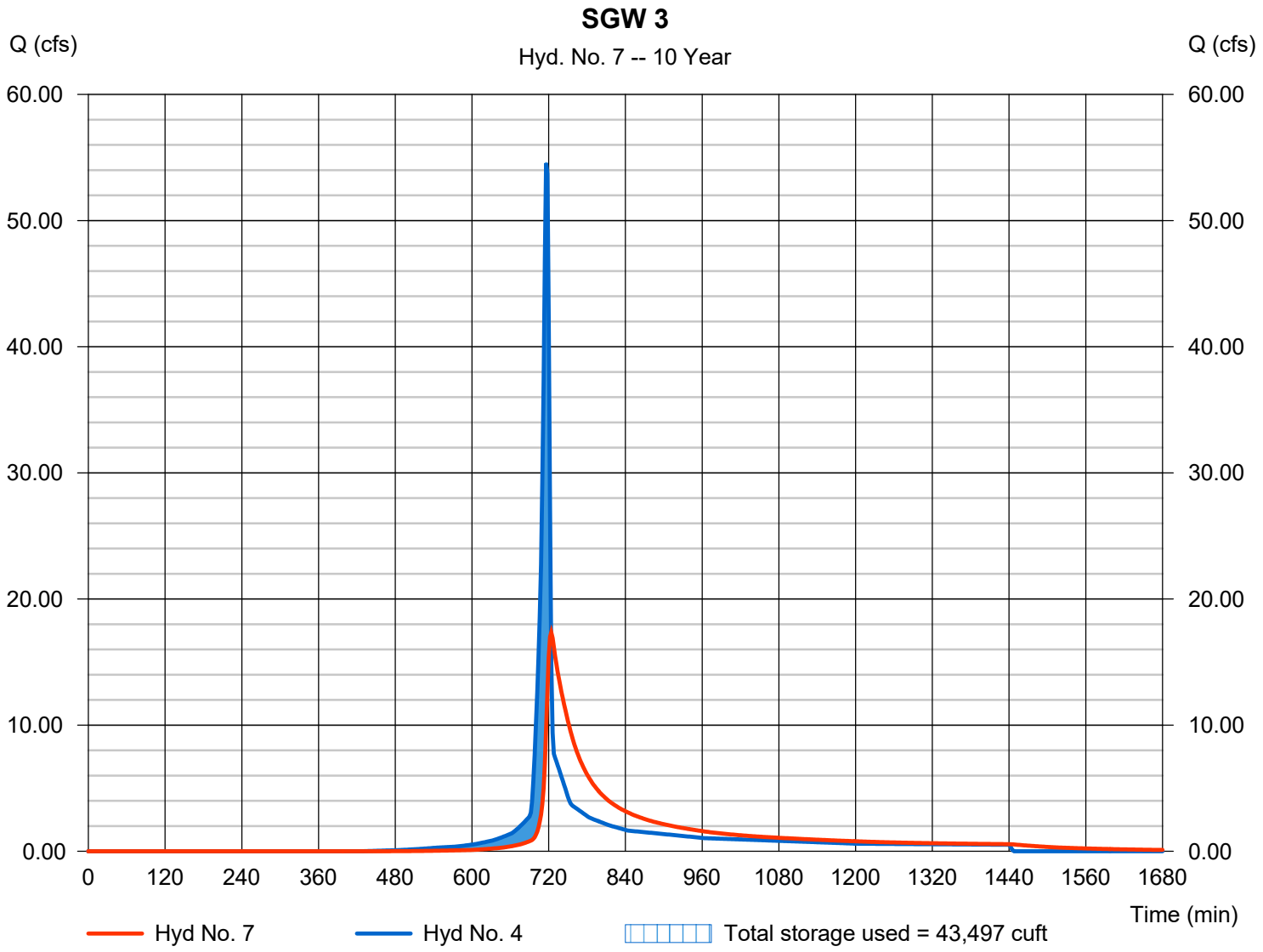
Hydrograph Report

Hyd. No. 7

SGW 3

Hydrograph type	=	Reservoir	Peak discharge	=	17.35 cfs
Storm frequency	=	10 yrs	Time to peak	=	724 min
Time interval	=	2 min	Hyd. volume	=	110,972 cuft
Inflow hyd. No.	=	4 - C	Max. Elevation	=	313.32 ft
Reservoir name	=	SGW 3	Max. Storage	=	43,497 cuft

Storage Indication method used.

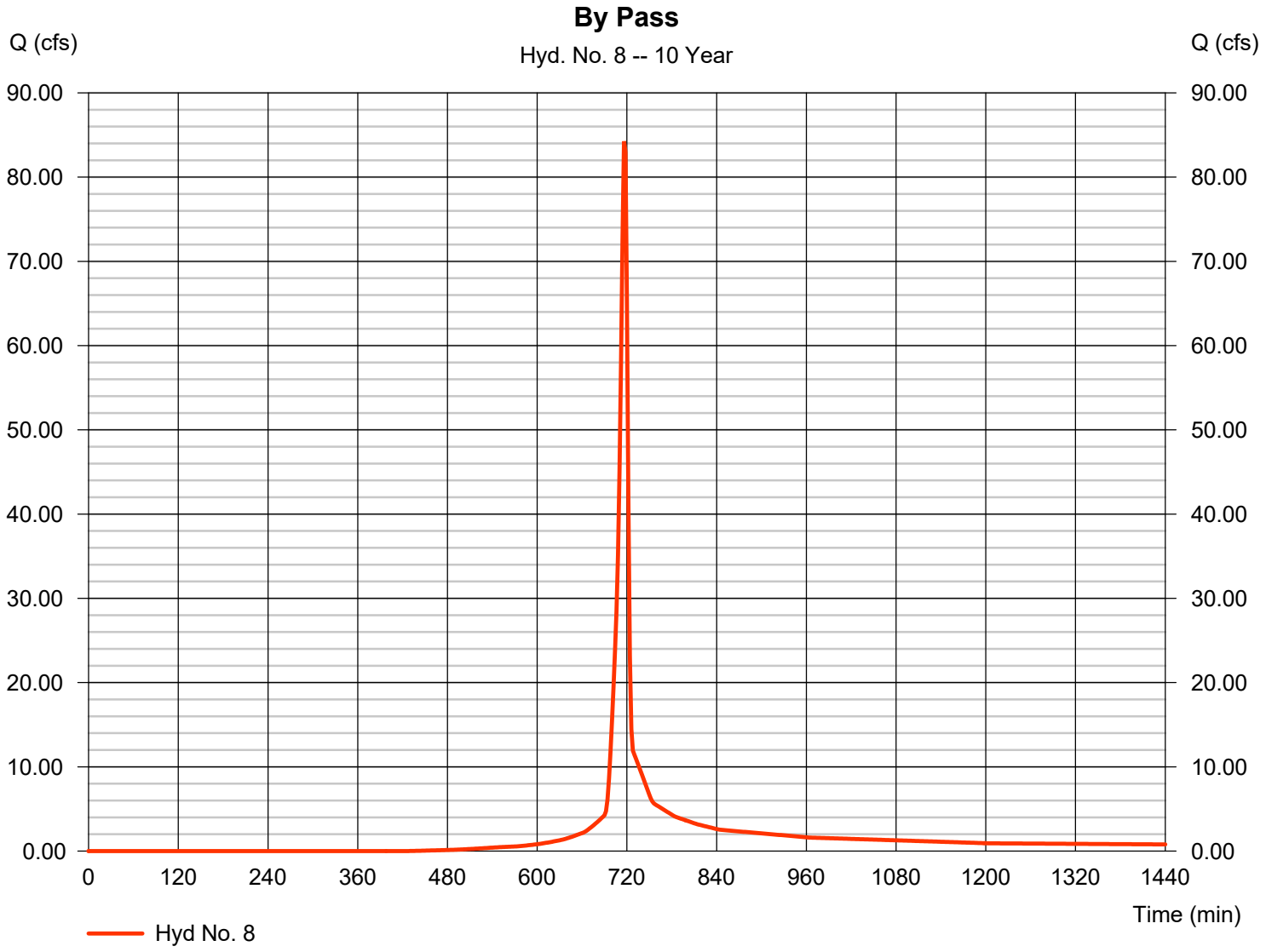


Hydrograph Report

Hyd. No. 8

By Pass

Hydrograph type	=	SCS Runoff	Peak discharge	=	84.26 cfs
Storm frequency	=	10 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	171,420 cuft
Drainage area	=	17.360 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	5.01 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

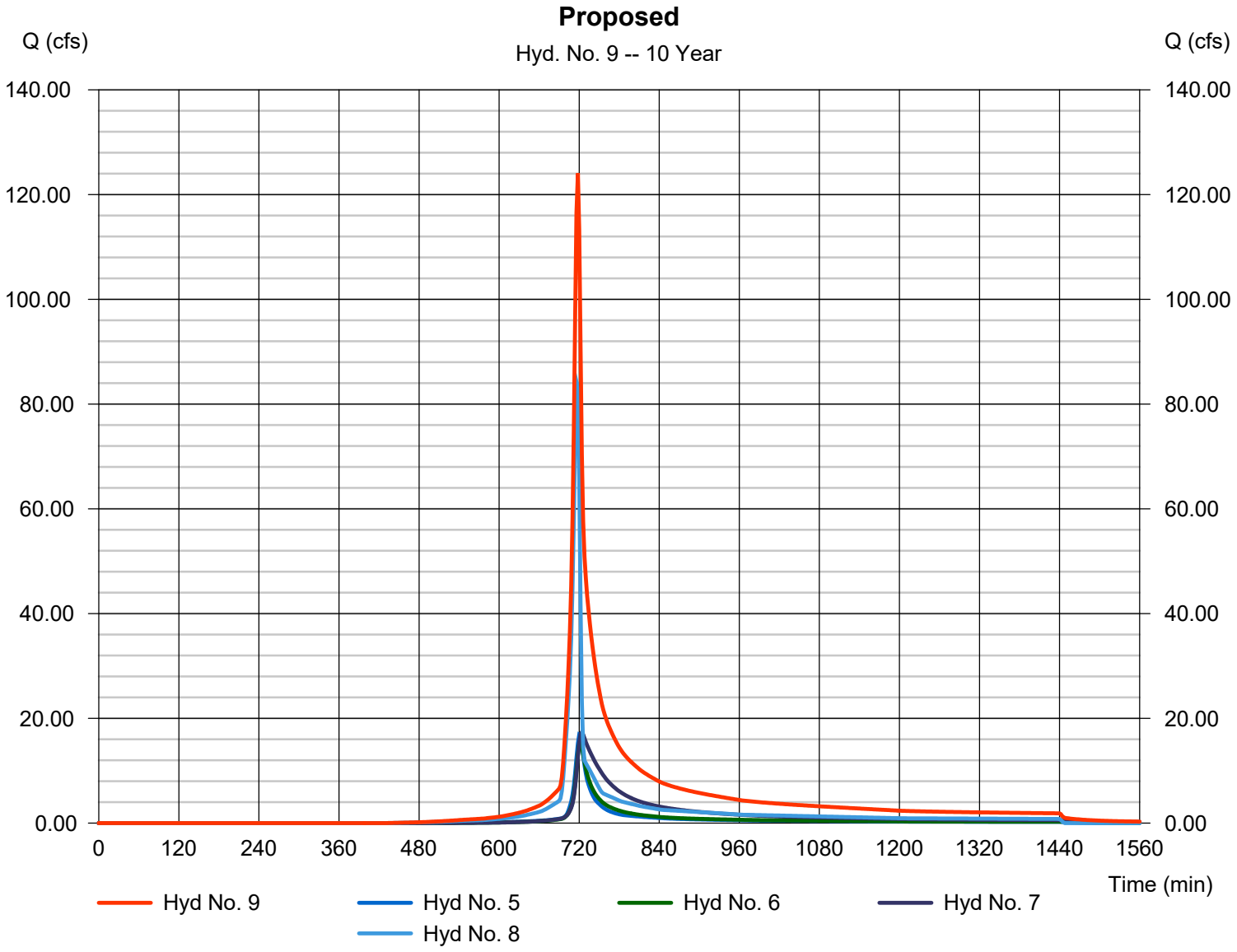


Hydrograph Report

Hyd. No. 9

Proposed

Hydrograph type	=	Combine	Peak discharge	=	124.05 cfs
Storm frequency	=	10 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	389,720 cuft
Inflow hyds.	=	5, 6, 7, 8	Contrib. drain. area	=	17.360 ac



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020.4

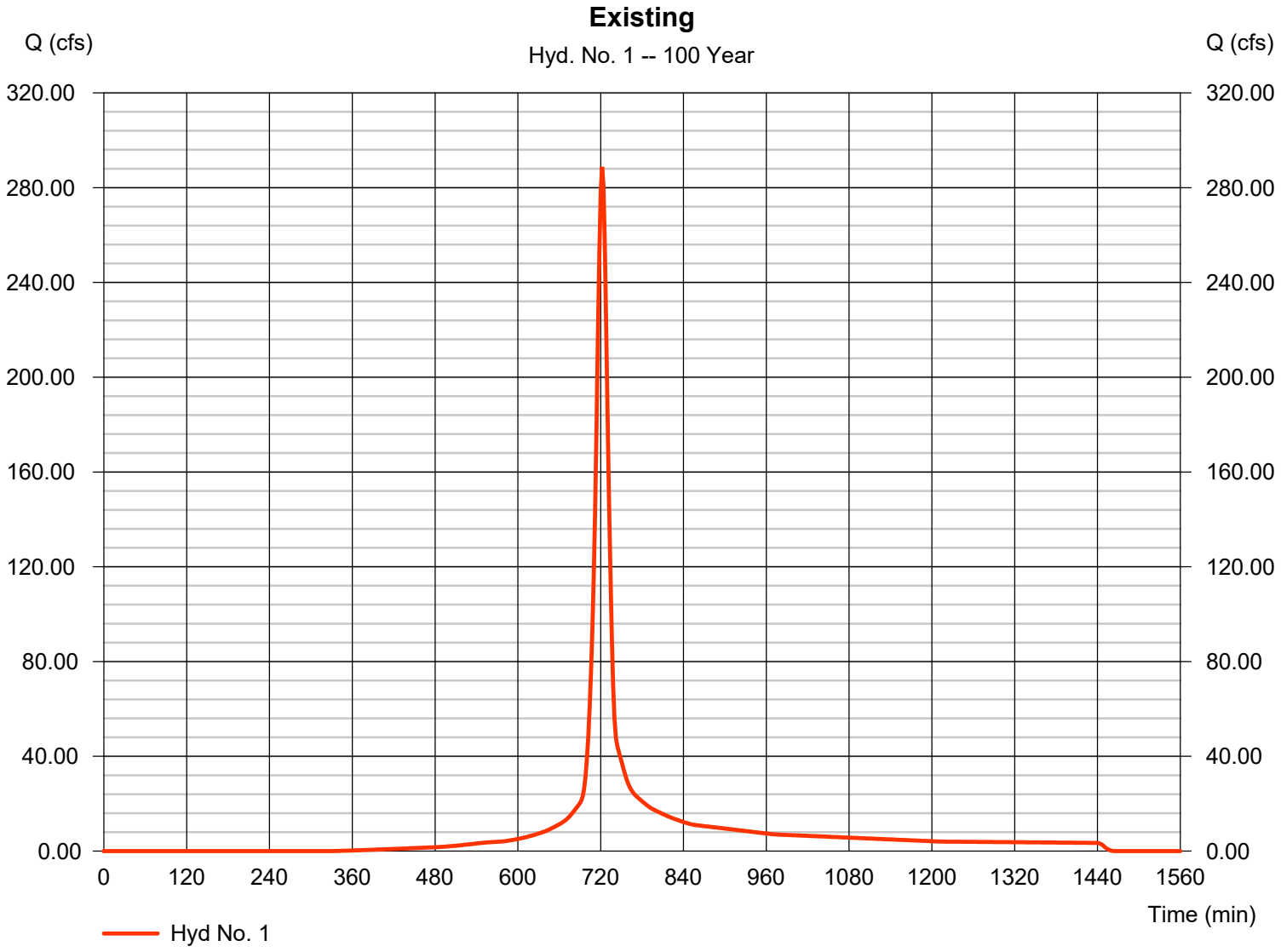
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	288.82	2	722	820,534	------	------	------	Existing
2	SCS Runoff	52.39	2	716	110,157	------	------	------	A
3	SCS Runoff	57.33	2	716	120,557	------	------	------	B
4	SCS Runoff	113.45	2	716	238,567	------	------	------	C
5	Reservoir	33.71	2	720	110,155	2	287.95	21,949	SGW 1
6	Reservoir	39.83	2	720	120,550	3	308.47	27,692	SGW 2
7	Reservoir	60.83	2	722	238,550	4	314.92	79,624	SGW 3
8	SCS Runoff	175.23	2	716	368,463	------	------	------	By Pass
9	Combine	288.23	2	718	837,717	5, 6, 7, 8	------	------	Proposed

Hydrograph Report

Hyd. No. 1

Existing

Hydrograph type	=	SCS Runoff	Peak discharge	=	288.82 cfs
Storm frequency	=	100 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	820,534 cuft
Drainage area	=	39.470 ac	Curve number	=	77
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	13.98 min
Total precip.	=	8.65 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

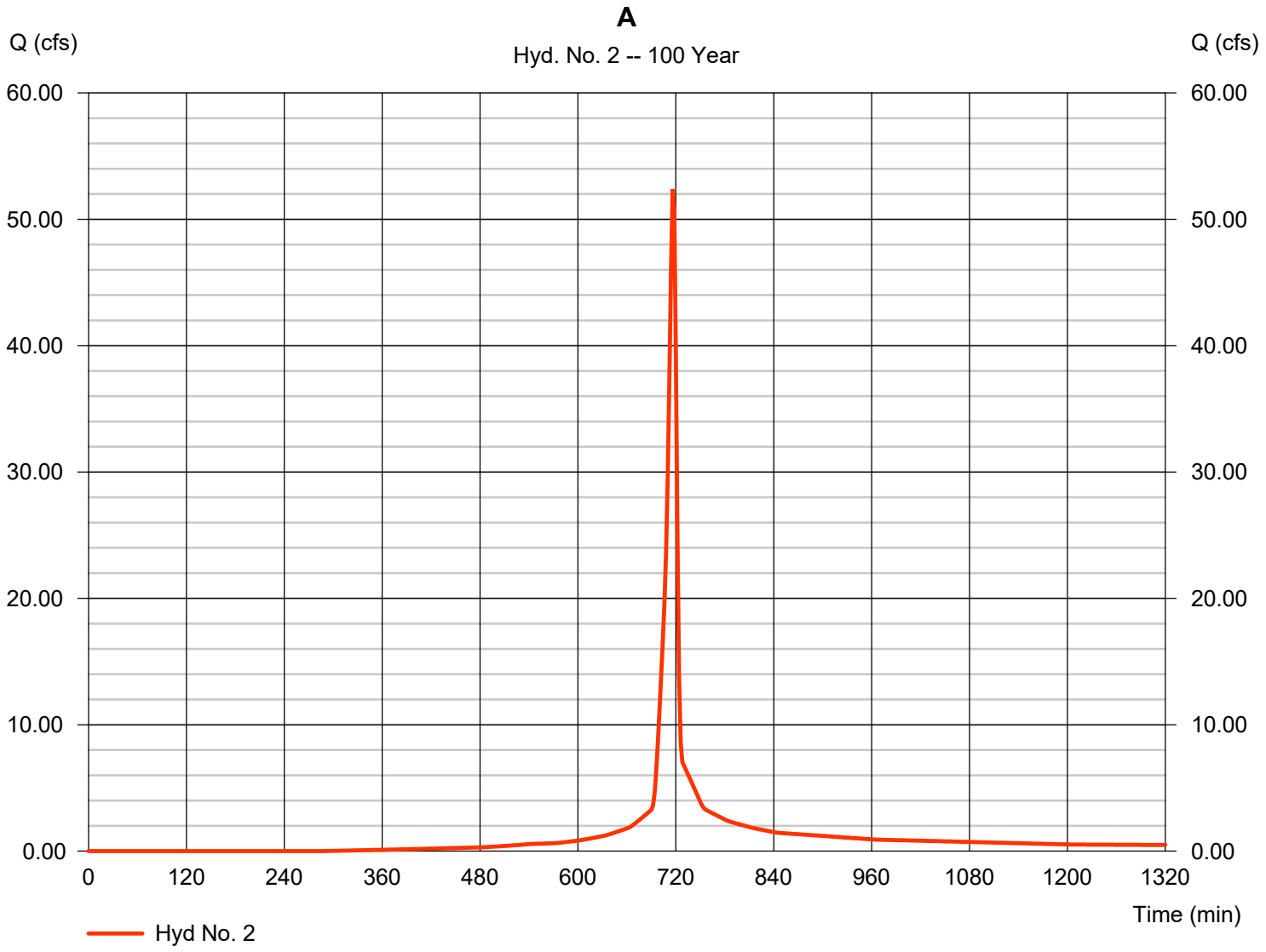


Hydrograph Report

Hyd. No. 2

A

Hydrograph type	=	SCS Runoff	Peak discharge	=	52.39 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	110,157 cuft
Drainage area	=	5.190 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	8.65 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

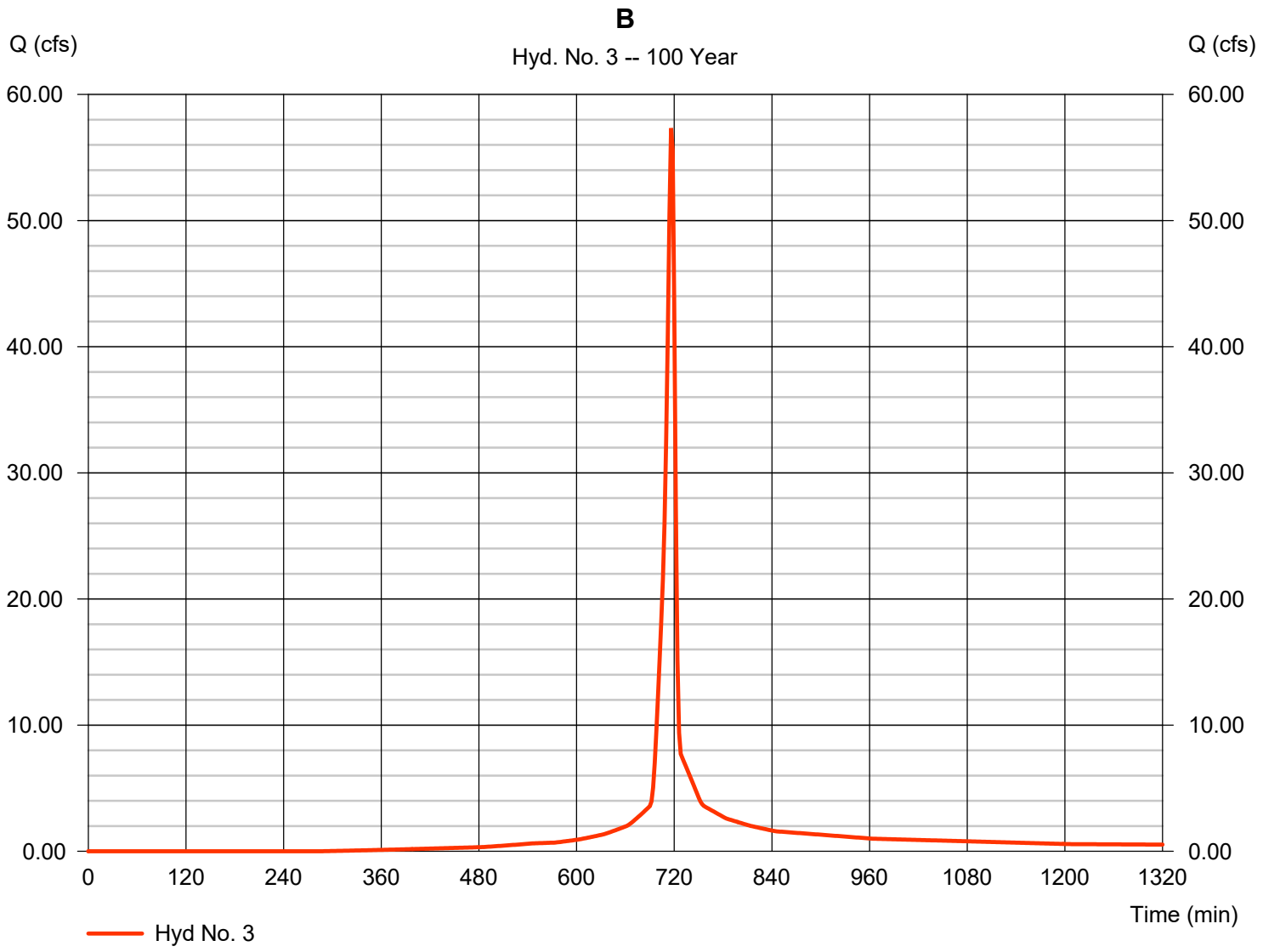


Hydrograph Report

Hyd. No. 3

B

Hydrograph type	=	SCS Runoff	Peak discharge	=	57.33 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	120,557 cuft
Drainage area	=	5.680 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	8.65 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

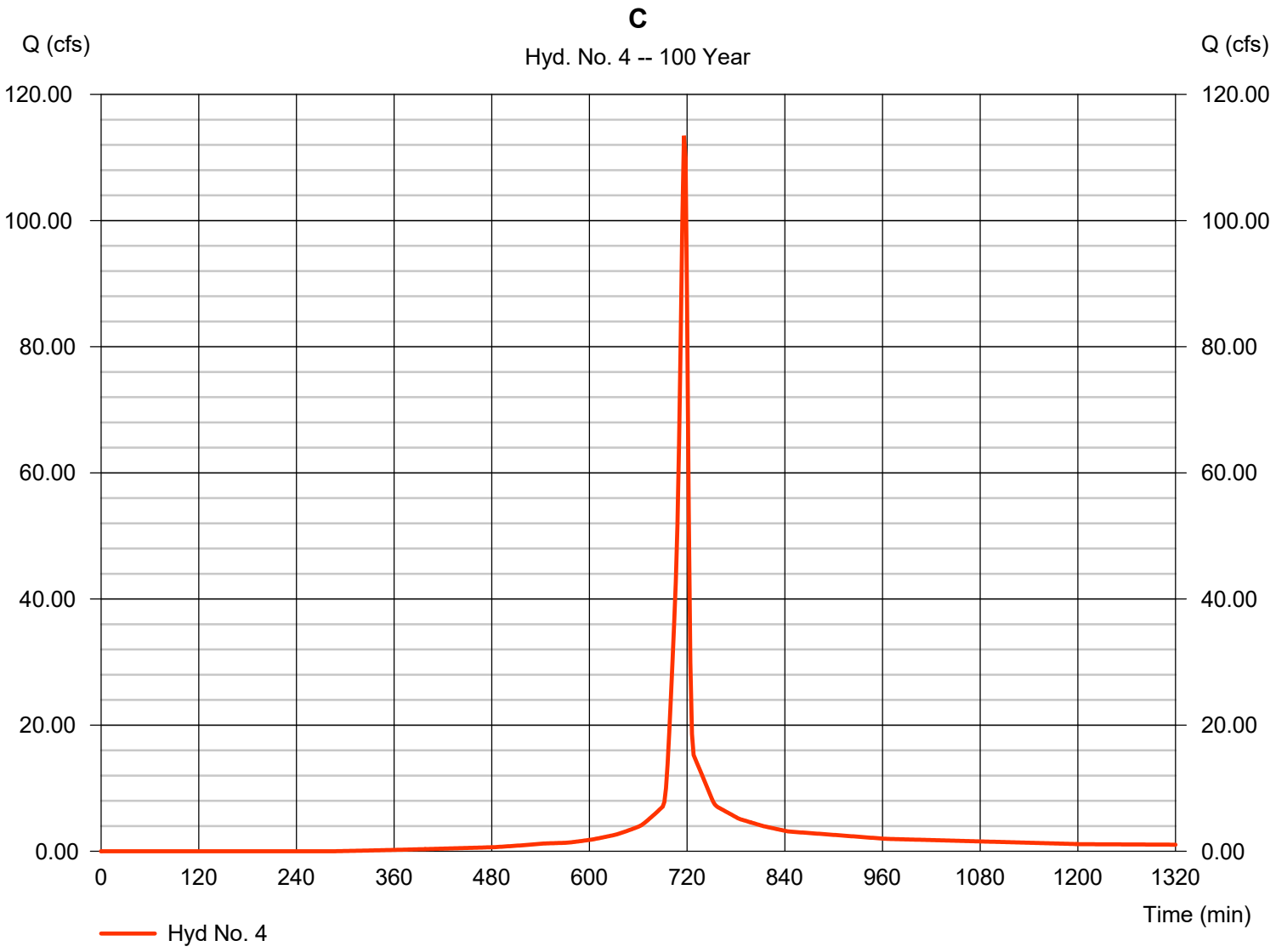


Hydrograph Report

Hyd. No. 4

C

Hydrograph type	=	SCS Runoff	Peak discharge	=	113.45 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	238,567 cuft
Drainage area	=	11.240 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	8.65 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484



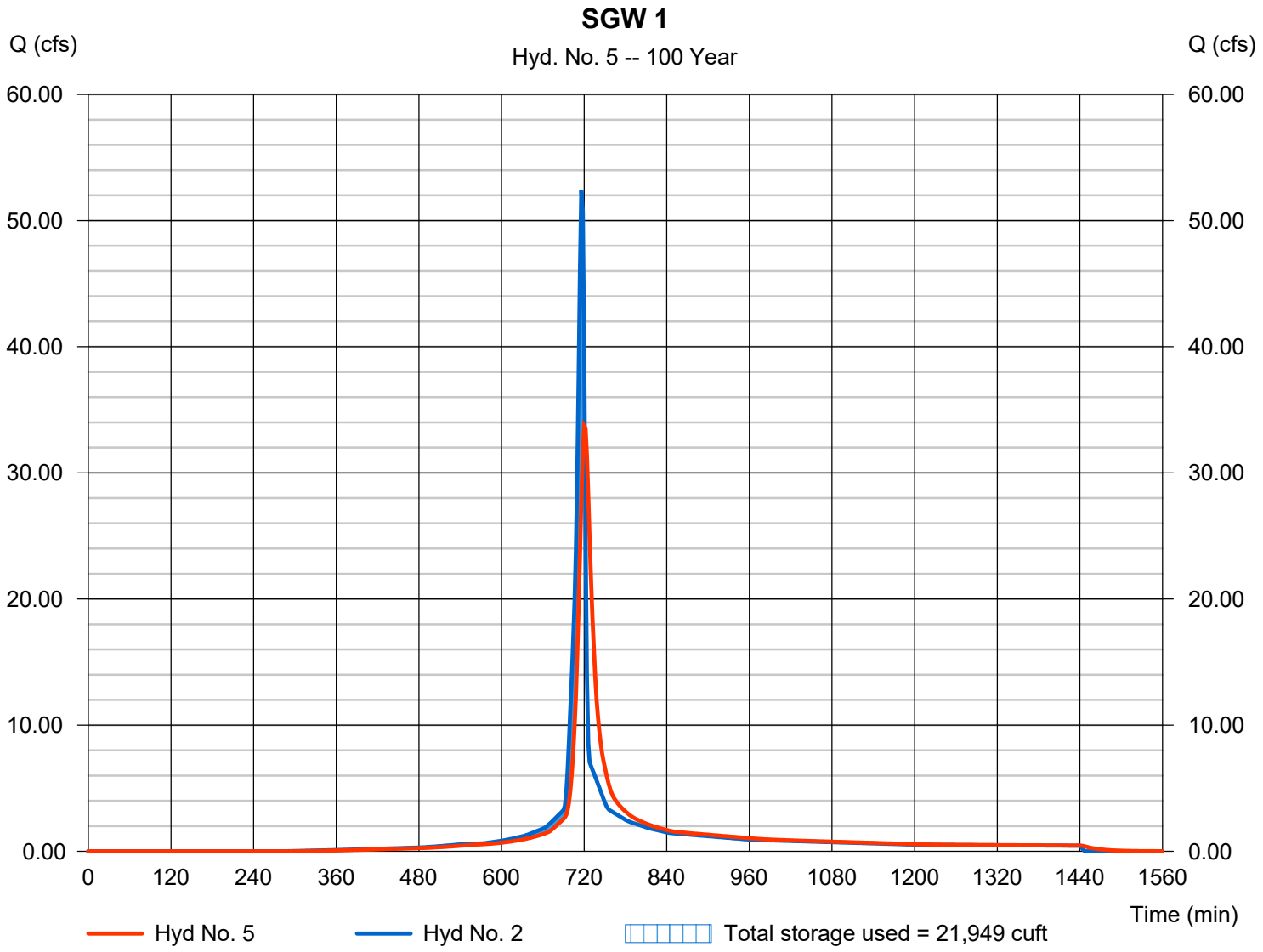
Hydrograph Report

Hyd. No. 5

SGW 1

Hydrograph type	=	Reservoir	Peak discharge	=	33.71 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	110,155 cuft
Inflow hyd. No.	=	2 - A	Max. Elevation	=	287.95 ft
Reservoir name	=	SGW 1	Max. Storage	=	21,949 cuft

Storage Indication method used.



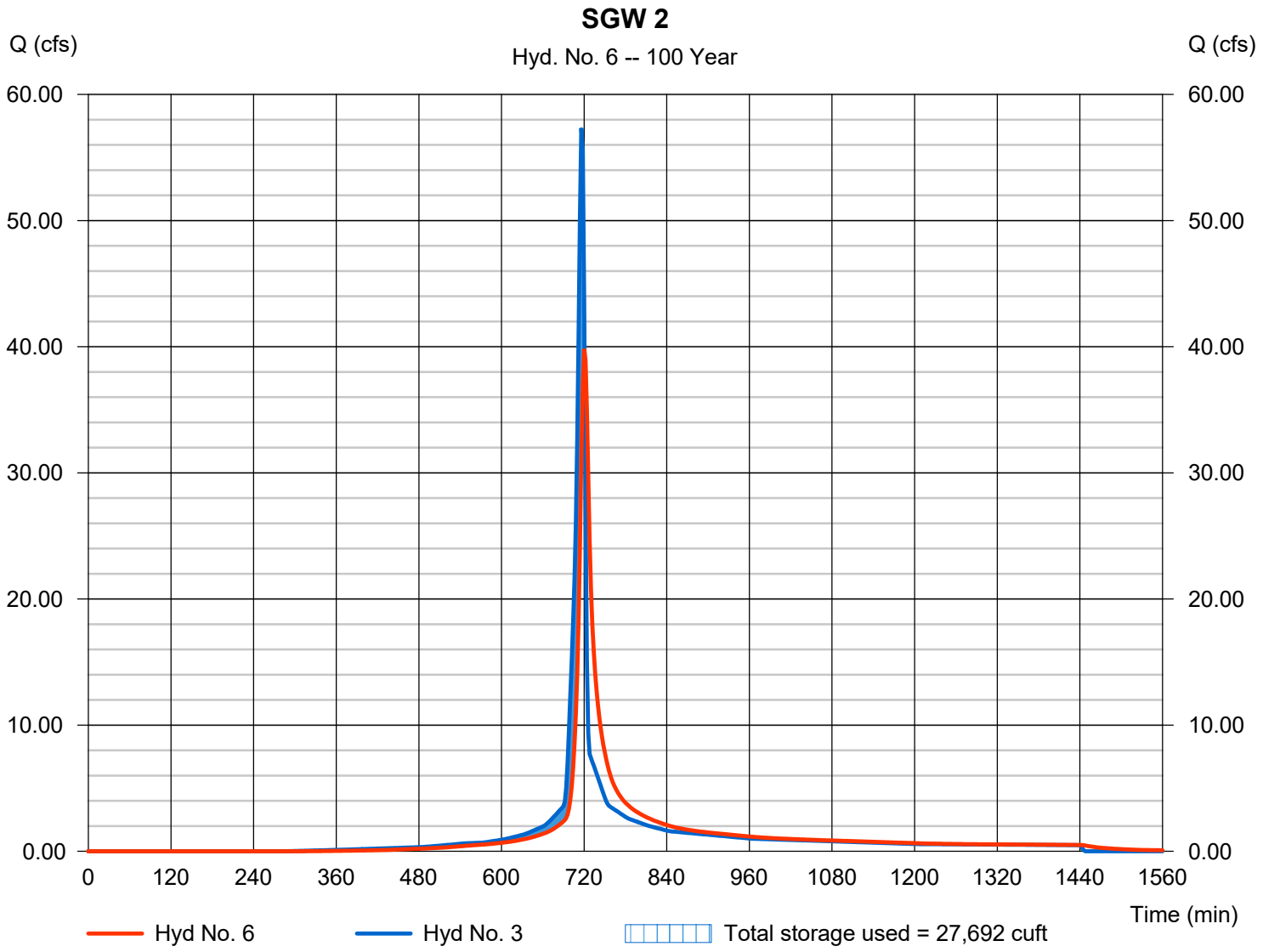
Hydrograph Report

Hyd. No. 6

SGW 2

Hydrograph type	=	Reservoir	Peak discharge	=	39.83 cfs
Storm frequency	=	100 yrs	Time to peak	=	720 min
Time interval	=	2 min	Hyd. volume	=	120,550 cuft
Inflow hyd. No.	=	3 - B	Max. Elevation	=	308.47 ft
Reservoir name	=	SGW 2	Max. Storage	=	27,692 cuft

Storage Indication method used.



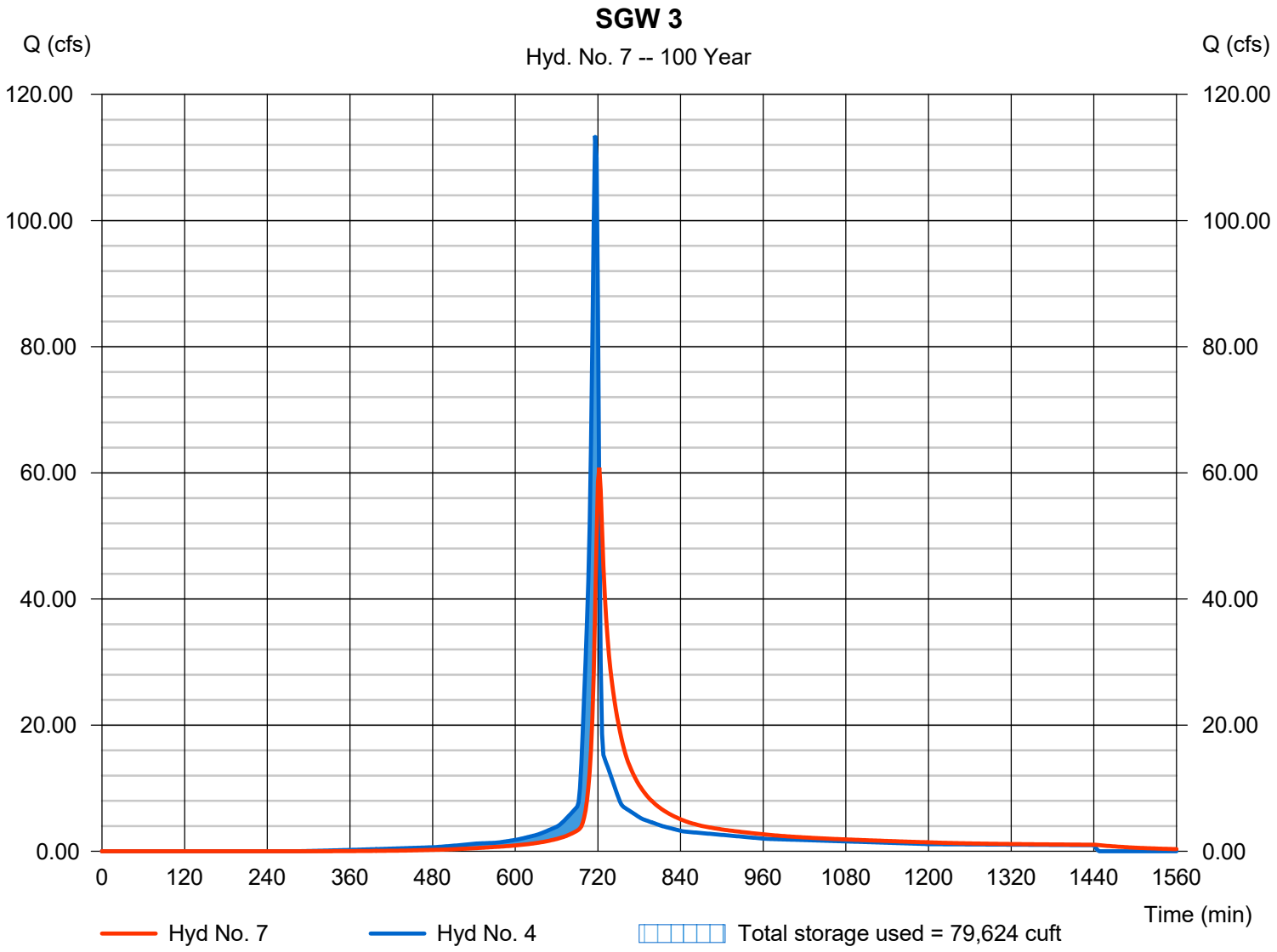
Hydrograph Report

Hyd. No. 7

SGW 3

Hydrograph type	=	Reservoir	Peak discharge	=	60.83 cfs
Storm frequency	=	100 yrs	Time to peak	=	722 min
Time interval	=	2 min	Hyd. volume	=	238,550 cuft
Inflow hyd. No.	=	4 - C	Max. Elevation	=	314.92 ft
Reservoir name	=	SGW 3	Max. Storage	=	79,624 cuft

Storage Indication method used.

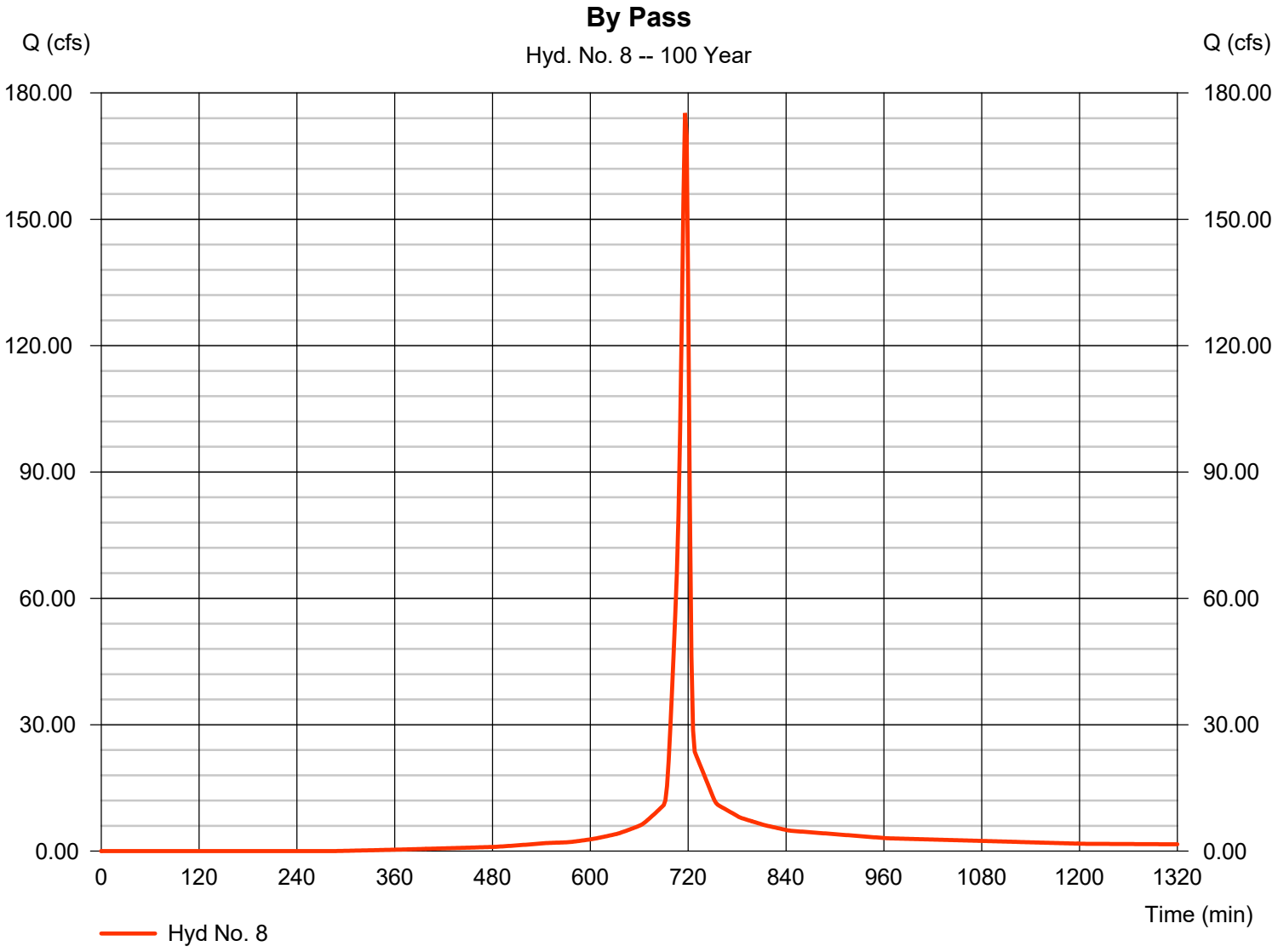


Hydrograph Report

Hyd. No. 8

By Pass

Hydrograph type	=	SCS Runoff	Peak discharge	=	175.23 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	368,463 cuft
Drainage area	=	17.360 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	8.65 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

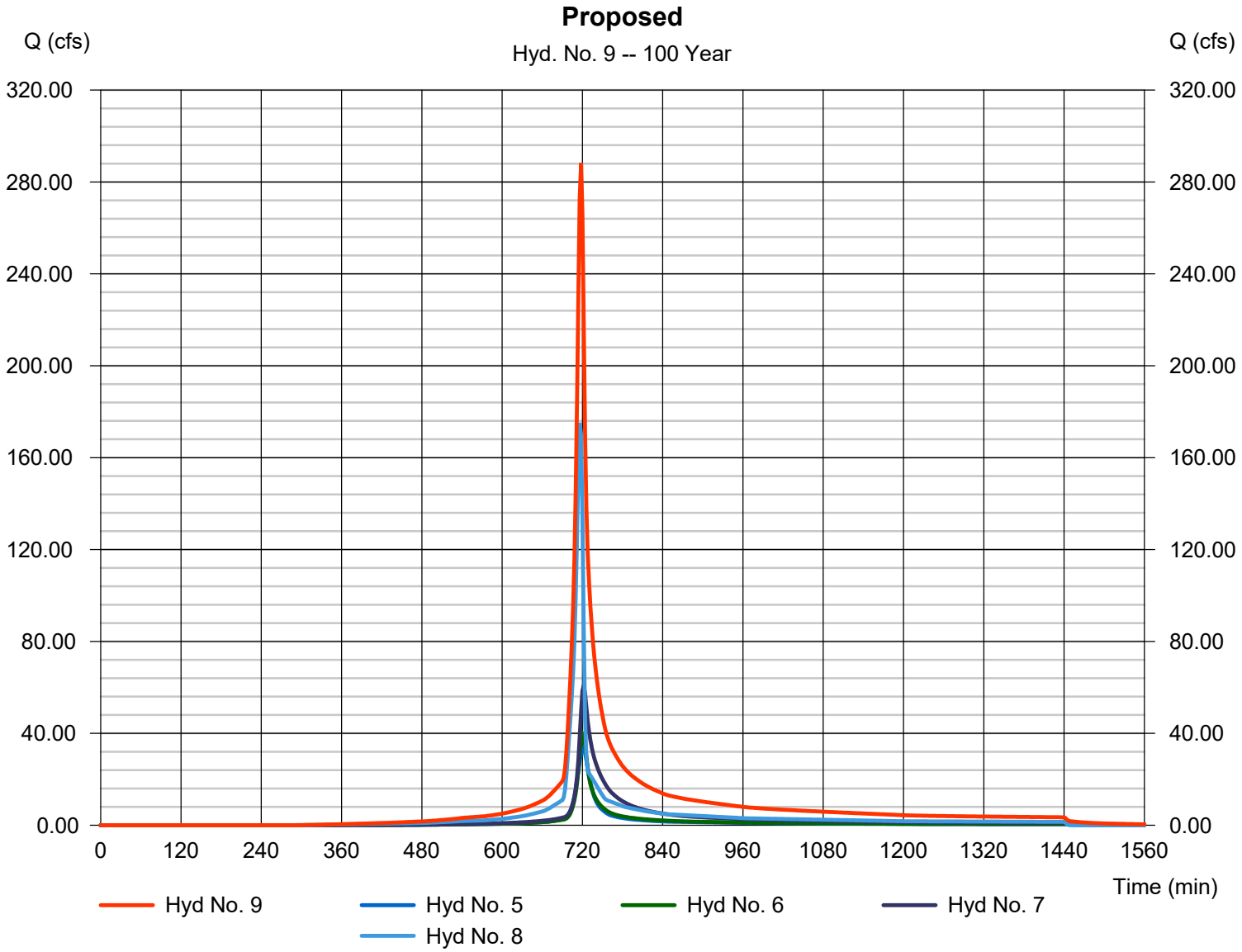


Hydrograph Report

Hyd. No. 9

Proposed

Hydrograph type	=	Combine	Peak discharge	=	288.23 cfs
Storm frequency	=	100 yrs	Time to peak	=	718 min
Time interval	=	2 min	Hyd. volume	=	837,717 cuft
Inflow hyds.	=	5, 6, 7, 8	Contrib. drain. area	=	17.360 ac



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	69.8703	13.1000	0.8658	--------
3	0.0000	0.0000	0.0000	--------
5	79.2597	14.6000	0.8369	--------
10	88.2351	15.5000	0.8279	--------
25	102.6072	16.5000	0.8217	--------
50	114.8193	17.2000	0.8199	--------
100	127.1596	17.8000	0.8186	--------

File name: SampleFHA.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Precip. file name: Sample.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.70	3.27	0.00	3.30	5.01	5.77	6.80	8.65
SCS 6-Hr	0.00	1.80	0.00	0.00	2.60	0.00	0.00	4.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	1.75	0.00	2.80	3.90	5.25	6.00	7.10

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RANDALL GRACHEK, PE

Partner, NewFields, LLC.

1349 West Peachtree Street, Suite 1950
Atlanta, Georgia 30309

rgrachek@newfields.com
404-347-9050

Certifications and Professional Affiliations

Professional Engineer: Nebraska, Florida, Arkansas, Puerto Rico, Alabama, South Carolina

Education and Training

MS (1985) Civil/Environmental/Water/Wastewater Engineering - University of Nebraska, Lincoln Nebraska

BS (1983) Civil Engineering, University of Nebraska, Lincoln Nebraska

HAZWOPER 40-hr. Health and Safety Certified

NewFields GIS and Statistical Methods Training

Professional Summary

Mr. Grachek has 37 years of experience in the Civil/Environmental Engineering Field and has managed the technical and regulatory aspects of a diverse portfolio of engineering and environmental projects over his career. Mr. Grachek has specific expertise in environmental remediation; water/wastewater process design and treatment/collection system evaluation; CERCLA and RCRA investigations; feasibility studies and strategy development; landfill closure design and construction; groundwater and leachate investigations/analysis; wood treating site remediation; and pesticide plant remediation. Other expertise includes probabilistic cost analysis and technology evaluations for site remediation and corrective action.

Experience Summary

Mr. Grachek has specific experience and expertise in the following Engineering/Environmental Disciplines:

- Environmental Engineering
- Remedial Design/Remedial Action Management
- Landfill Closure Design and Construction
- Civil Engineering/Engineering Design
- Environmental Cost Analysis
- Data Analysis and Evaluation
- Water and Wastewater Engineering

- Remedial Investigation/Feasibility Study Management
- RCRA Facilities Investigations/Corrective Action and Designs
- HSRA Studies and Design
- Litigation Support Engineering
- Civil Engineering Management
- Wood Treating Facility RD/RA

Project Experience/Summary

NewFields, Atlanta GA (1997 – Present).

Responsible for the execution, management and direction of Engineering Investigation, Design, and Construction activities. Selected current projects and past experience with NewFields include:

- Lead Project Engineer for the remediation for a former Ethanol Facility in Nebraska. Included in this ongoing project are all aspects of Civil Engineering design and construction including site work and lagoon construction as well as industrial wastewater design and treatment.

- Engineer and Manager for the implementation of improvements to the Bayer Goff Mountain Landfill in Institute West Virginia. The project includes the performance of engineering and hydrogeological analysis of the hazardous waste landfill, development of alternatives for long-term landfill management and leachate reduction, and performance of design and construction for the improvements.

- Expert Witness and consultant for plaintiff verses a large textile dying facility. Case involved discharge of wastewater to protected waterways and suggested engineering remedies for such.

- Expert Witness and consultant for numerous actions against several large municipal wastewater systems. Cases involved actions to get the municipalities to comply with regulatory requirements and/or consent decrees regarding compliance with stormwater/wastewater standards and to provide adequate wastewater conveyance and treatment capacity.

- Lead Engineer for the construction of an industrial wastewater treatment plant at a major oil terminal facility in Puerto Rico. Currently managing the construction of the plant.

- Senior Engineer for the design of a tertiary wastewater treatment plant in Washington State for a confidential client.

- Lead Engineer and Manager for the design and implementation of a landfill closure for the Bayer Woodbine Facility in Woodbine Georgia. The project includes economic analysis, design and construction management for the closure of a solid waste landfill.

- Lead Engineer for the development of probabilistic cost analysis for industrial and refinery sites worldwide, using Monte Carlo simulations and Oracle Crystal Ball©. Estimates were used for property management and transactions.

- Development of an expert report and recommendation letter for the Potomac Riverkeeper, used to support compelling the City of Alexandria Virginia to implement improvements to their CSO management Program in a timely manner for protection of the receiving waters around Alexandria Virginia.

- Lead Engineer and cost evaluator for several environmental projects (Landfills, removal actions, remediation) in Brazil for large chemical and petrochemical companies.

- Development of expert reports supporting environmental clients in evaluating the adequacy of a power company wastewater treatment process and remediation plans for coal ash wastes in Virginia and the Carolinas. The expert documentation supported timely settlements in these cases.

- Development of an expert report supporting environmental clients in evaluating the proposed capping of contaminated sediments in the Congaree River in South Carolina. The evaluation challenged the adequacy of the technical solution proposed by the local utility.

- Provided support to environmental groups for challenging the adequacy of the permit requirements for the East CSS NPDES permit (Intrenchment Creek) in Atlanta, Georgia and other CSOs in the area.

- Member of the steering committee for the implementation of the City of Atlanta CSO management program involving the construction of a tunnel system under the city to provide storage capacity and direct combined flows to available treatment capacity. This was a part of the City's long-term sewer separation program. Received an award from the City of Atlanta for service to the City.

- Manager of a RCRA corrective Program for Hercules, Inc. at Hercules' Brunswick, Georgia facility. This project includes the performance of a RCRA Facilities Investigation (RFI) and the development of a Corrective Measures Study (CMS); Corrective Action Plans (CAP); Groundwater Remediation; Risk Analysis and detailed cost estimates for this toxaphene affected plant and the surrounding area.

- Lead Engineer and Manager for the design and remediation of the Saraland Superfund Site in Saraland, Alabama. This project involves the demolition and remediation of a government housing project that was built on land contaminated with waste sludge and materials from a former trucking operation. This site was excavated to remove soils that cause an exceedance in the 90% UCL concentrations of constituents in soil protective of groundwater and surface exposure. Groundwater on the site is naturally attenuating to background conditions.

- Lead Engineer and Manager for the final design of the selected remedial action for the Virginia Wood Preserving Site in Richmond, Virginia. This project involves the remediation of a former wood treating facility including such technologies as horizontal directional well installation, surface and groundwater treatment, slurry wall design and construction, wetland mitigation, and design and construction of RCRA capping systems. Performed as Owner's agent, cost control manager and construction manager for the site remedial action. Prepared a CERCLA Feasibility Study for the site for additional remedial measures needed after the initial remedial action.

- Environmental Engineer for the analysis of alternatives for the remediation of a major gulf coast sea terminal on the Gulf of Mexico. This project involves the evaluation of engineering and environmental data and the coordination of pre-design work, potentially leading to design and remediation.

- Lead Engineer and Manager for the delisting of the Rentokil Norcross site from the Georgia Hazardous Sites Inventory. This project involved the investigation and remediation of chromium contaminated soils from this office/warehouse facility in Norcross Georgia, including CSR and CMS development. Detailed soils and groundwater analysis were performed and the site. Guided the project through the HSRA delisting process with the Georgia EPD.

- Design Engineer and Construction Engineer for the remediation of the Bayer Sao Leopoldo pesticides site in Sao Leopoldo, Brazil. Developed design documents and performed bidding, contractor selection, and construction over-site for the excavation and disposal project.
- Design Engineer and Construction Engineer for the Bayer Woodbine Landfill Leachate System Improvements. Developed design documents and performed bidding, contractor selection, and construction over-site for the project.

- Lead Engineer and Manager for the Hercules Savannah HSRA site in Savannah Georgia. This project involved the investigation and development of CSR and CMS documents for the site as well as management of field data.

- Engineer involved in the development of remedial elements for the Bofors-Nobel Superfund Site in Muskegon, Michigan. This project involves the installation of a RCRA Cap and Barrier Wall on a former chemical manufacturing facility. Other involvement on the project includes evaluation of the operation and maintenance of the existing groundwater treatment plant for the site.

- Engineer for the remedial program at a major petroleum terminal facility. Responsibilities include engineering design and analysis of environmental control and remediation plans and the development of cost estimates for the environmental program. Included in this evaluation is the closure of several RCRA units and the potential for the use of barrier and containment technologies in their closure. This project also includes evaluation of previous contractor's plans and cost estimates.

- Technical lead for legal support on closed municipal landfill litigation for a confidential client.

- Consultant to the Lake Lanier Association for the evaluation of existing wastewater treatment operations in the vicinity of Lake Lanier.

Engineering Manager, Dames & Moore, Inc., Atlanta GA (1993-1997)

Environmental Engineering and Engineering Management for major PRP lead Superfund Site Remedial Action Programs, Site Investigations and Environmental Process Engineering.

- Developed with other team members the Remedial Design/Remedial Action Work Plan for the Aberdeen Pesticides Dumps Site in Aberdeen, North Carolina. Reviewed the site Record of Decision and developed a strategic plan to perform the specified remedial action of the former pesticide manufacturing facility.

- Developed the Remedial Action Work Plan and performed the preliminary remedial design for the ROD selected remedy. This project involves the remediation of a former wood treating facility including such technologies as horizontal directional well installation, surface and groundwater treatment, slurry wall construction, wetland mitigation, and RCRA capping. Performed post ROD Risk Analysis for reduction of RA scope and cost.

- Performed an analysis of a potential catastrophic tank spill involving tall oil and black liquor for the Mead Paper Company in Mahrt, Alabama. Evaluated the ability of the current activated sludge treatment plant to handle a large tank spill through the treatment system.

- Manager of the Remedial Program at the Newport Wellfield Site in Newport Ohio. Developed RD Work Plans and detailed cost estimates, conducted the site investigation, and was the lead engineer and consultant during the site removal action and the attainment of a natural attenuation

remedy for groundwater. This site is a State of Ohio lead involving soil and groundwater contaminated with BTEX, TCE and its breakdown products and PAHs.

- Lead Environmental Engineer for RCRA corrective action analysis and design of an aquifer pump and treat system for pesticide (toxaphene) contaminated groundwater at the Hercules-Brunswick plant in Brunswick, GA.

- Project Manager and Lead Engineer for development of a CERCLA Feasibility Study for Beazer East/DuPont at the former Koppers Wood Treatment Facility in Newport, DE. The site involves creosote and PCP contamination of soils and groundwater as well as sensitive ecological and wetland issues.

- Project Manager and Lead Engineer on a Feasibility Study for a HSRA site in Americus, GA. This former manufactured gas plant is undergoing a HSRA Corrective Action process.

- Project Manager for the RCRA compliance and Corrective Action at the Beazer/Koppers Wood Treatment Project facility in Montgomery, Alabama. This project involves corrective action for creosote; PCP and CCA contaminated soil and groundwater. Developed a corrective action strategy for the plant involving the conceptual design of sheet pile and jet grouted barrier walls with hydraulic containment support.

Project Manager, U.S. Army Corps of Engineers, Omaha District, Omaha NE (1988-1993).

Managed and performed Engineering work on numerous major hazardous waste sites for USEPA and the U.S. Department of Defense. Responsibilities included the development of remedial investigation and remedial action (construction) scope of services documents and cost estimates for execution of environmental projects. Projects include:

- Fort Ord Federal Facility, Monterey, CA. Performed preliminary assessments, site investigations and RCRA investigations at numerous military HTRW sites within the military reservation. Developed the draft work plan for the installation wide RI/FS. Sites included municipal/industrial landfills, fire training areas, motor pools, USTs, and an abandoned wastewater treatment facility. Key member of the Army's negotiating team during Federal Facility Agreement negotiations with state and local agencies and EPA Region IV.

- Dover AFB Federal Facility, Dover, DE. Managed the development of a treatability work plan and laboratory and field testing of an air sparging/soil vapor extraction system for a TCE contaminated aquifer on base. This work was in response to a state RCRA Notice of Violation (NOV) to Dover AFB involving remediation of this aquifer. Supported Base personnel in negotiation of a resolution to the NOV. Results of this program in EPA Region III indicate successful remediation of groundwater using this technology.

- Morgantown Ordinance Works, Morgantown, WV. Supported the Army and the PRP group in negotiations with EPA regarding the remedial program at this former ordnance plant. Served as the lead technical coordinator for all technical work on the project. Developed the scope and managed the performance of a legal, historical, and cost recovery study for the Army involving their roles as a PRP on the site. Represented the Army with the site PRP group (Olin, DuPont, and Tenneco) in negotiations with EPA Region III regarding potential site remedies and the site RI/FS.

- Operating Industries Superfund Site, Monterey Park, CA. Developed and managed an operation & maintenance program for a 192-acre hazardous/municipal landfill in east Los

Angeles, California. Issues addressed included gas production and destruction, toxic volatile gas emissions, landfill subsidence, underground fires and slope stability. Performed a detailed analysis of the existing cap and barrier elements of the landfill including subsidence monitoring and cap integrity analysis.

- Rhinehart Tire Fire Superfund Site, Winchester, VA. Managed the design of a remedial system for the site of a 1983 tire fire involving the burning of over 7,000,000 tires, producing over 800,000 gallons of oil/sludge. This work included design and construction of a containment dam, slope stabilization using shot-crete, oil collection, oil/water separators and a 100-gpm water/leachate treatment system for metals. The water treatment system utilized chemical precipitation of zinc, aluminum and other metals as well as clarification and sand filtration. This site is a major EPA lead site in Region III.

- Southern Maryland Wood Preservers Superfund Site, Hollywood, MD. Managed and performed pre-design, design and design reviews for the remedial action program at a major former wood treating site involving over 150,000 cubic yards of creosote and PCP contaminated soil and contaminated groundwater. The first phase of the project involved the design and construction of a sheet pile barrier wall system for the containment of the area for the site containing DNAPL creosote. The second phase involved the design of a thermal treatment remedy, excavation and associated civil engineering, groundwater treatment and air emissions control. The water treatment design included pretreatment (Oil/Water Separation, flocculation, clarification, filtration), UV/Oxidation treatment, post aeration and sludge handling. Wetland restoration design was a key element to this project. Also involved were extensive thermal (soil) and groundwater treatability tests to support design.

- Norwood PCB Superfund Site, Norwood, MA. Evaluated the feasibility of using the BEST Technology soil washing system for use at this PCB contaminated site. The BEST technology is a solvent extraction system utilizing a mobile solvent (triethylamine (TEA)) to separate contaminants from soils and sludges.

- Kane and Lombard Superfund Site, Baltimore, MD. Managed the design and the construction of a soil-bentonite slurry wall and RCRA cap system for this inner-city Baltimore Superfund Site. Site contaminants included priority pollutant metals.

- Auto Ion Superfund Site, Kalamazoo; MI. Supported EPA Region V in evaluating plans (implemented by site PRPs) for the remediation of arsenic and chromium contaminated soils at this former battery and plating facility.

Managed and developed an innovative project management system for the Omaha District's environmental programs. This system included aspects of project management philosophy as well as total quality management.

Managed a section of environmental project managers in the Environmental Branch, Omaha District. Duties included supervision and monitoring of junior staff as well as appraisals of performance and budget considerations.

Project Engineer, HDR Engineering Inc., Omaha NE (1985-1988).

Project Engineer on various municipal wastewater treatment system projects including:

- Batavia WWTP, Batavia, IL. Performed a sanitary sewer system evaluation using computer modeling for this Chicago area city. This computer model allows the city to predict flow variations and to size appropriate piping systems for their municipal sewer.

- Gillette WWTP, Gillette WY. Project engineer for the design of a 2-mgd activated sludge treatment plant. Responsible for development of drawings, specifications, and the bid package for competitive bidding of this project. Designed unit processes included screening, grit removal, activated sludge, clarification, disinfection, and sludge digestion.

- Texarkana WWTP, Texarkana, TX. Performed a value engineering study during the design of this activated sludge treatment plant. Focus was on innovative sludge management systems.

- Papio WWTP, Omaha, NE. Performed shop drawing reviews and construction oversight on this large, activated sludge treatment plant. Review included primary clarification, settling basins and sludge handling/Incineration.

- Sidney WWTP, Sidney, NE. Prepared bid documents and provided construction oversight on this 1 mgd trickling filter plant. Designed unit processes including screening, grit removal, clarification, sludge digestion, trickling filters, and disinfection.

Project Engineer on various hazardous waste projects including:

- Basin F, Rocky Mountain Arsenal Federal Facility, Denver, CO. Lead engineer in the development of the remedial action design for the 93-acre hazardous waste lagoon at the arsenal. Engineer for the elements of the remedial design including soil excavation and treatment, water treatment and storage, enhanced evaporation, waste pile and RCRA Cap installation. Contaminants included pesticides, demilitarized nerve gas agents and mustard gas. Also unexploded ordnance situations were encountered.

- Monroe Plant, Cozad, NE. Field engineer during the installation of recovery wells in a TCE contaminated aquifer. Project engineer for construction of an Air Stripping System to remove TCE from groundwater. Provided field oversight for sludge dewatering and closure of waste lagoons contaminated with TCE and heavy metals. This was a PRP Lead Project in EPA Region VII.

- Rural Ridge Nike Site, Pittsburgh, PA. Performed site investigation activities at this former Nike Missile site to characterize contamination from military operations including propellants, BTEX and TPH.

Graduate Assistant - University of Nebraska - Lincoln, NE (1983-1985)

- Assisted in teaching environmental/sanitary engineering courses and laboratories to undergraduate students. Teaching concentrated on chemical and biological water and wastewater treatment.

- Performed research involving Biological Denitrification of Water Supplies using Packed Bed Reactors. This Thesis research involved the use of facultative Aerobic (Anoxic) Microorganisms to convert Nitrate in water to nitrogen gas through microorganism's metabolic pathways.

PUBLICATIONS

MS Thesis, "Biological Denitrification using Packed Bed Reactors," (1985). Presented to Nebraska State AWWA Conference in Lincoln, NE.

"Sheet Pile Barrier Walls as an alternative to Slurry Walls for Temporary Containment at Hazardous

Waste Sites," (1990). Presented to HMCRI's "Superfund 90" conference in Washington, D.C.
"Case Study, Rhinehart Tire Fire Superfund Site," (1991). Presented to AWMA's annual conference in Vancouver, BC.

"Community Relations Actions at Federal Facilities," (1992). Presented at the ADPA annual environmental symposium in Alexandria, VA.

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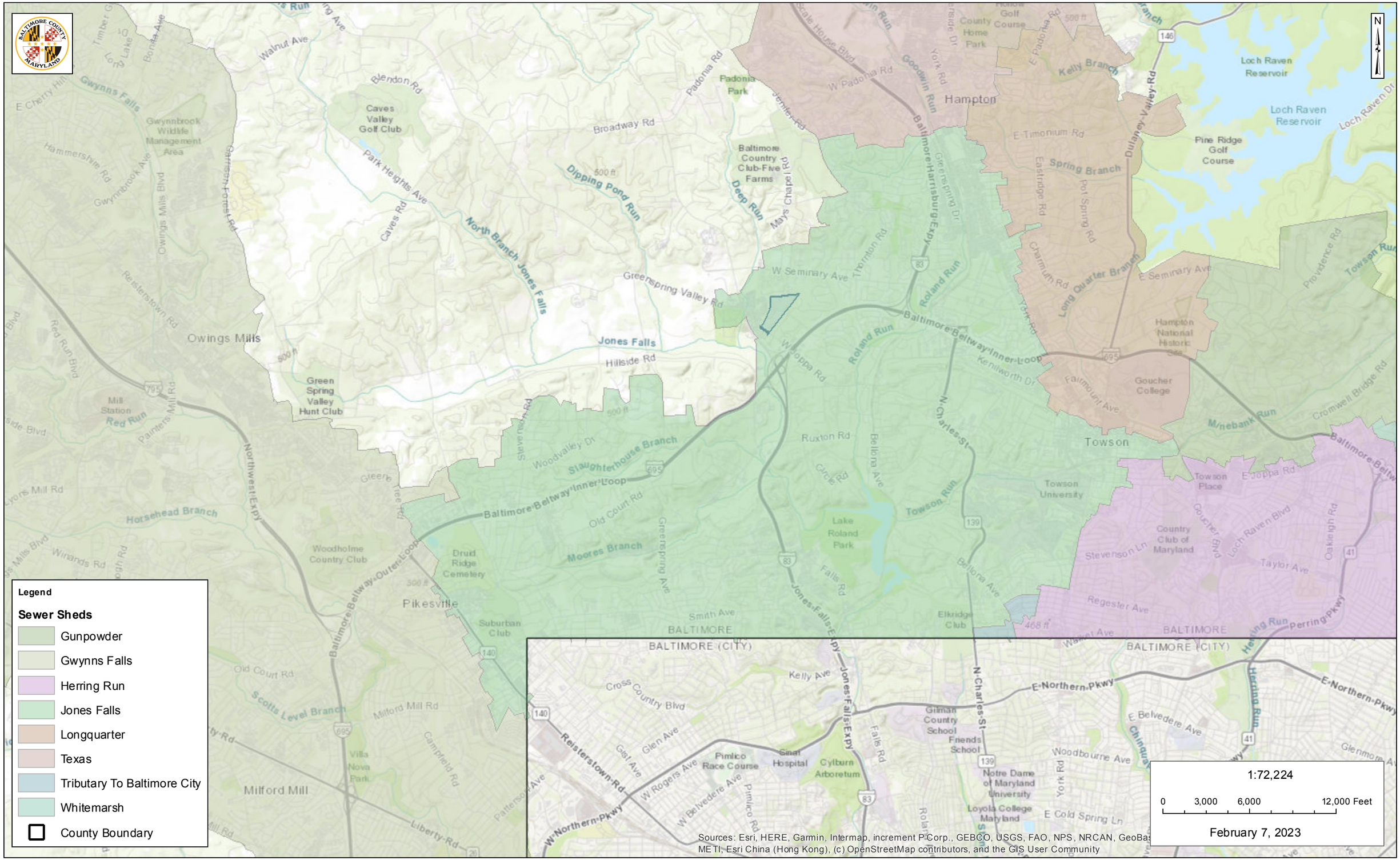

Baltimore County Government, VITA, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, NGA, EPA, USDA |

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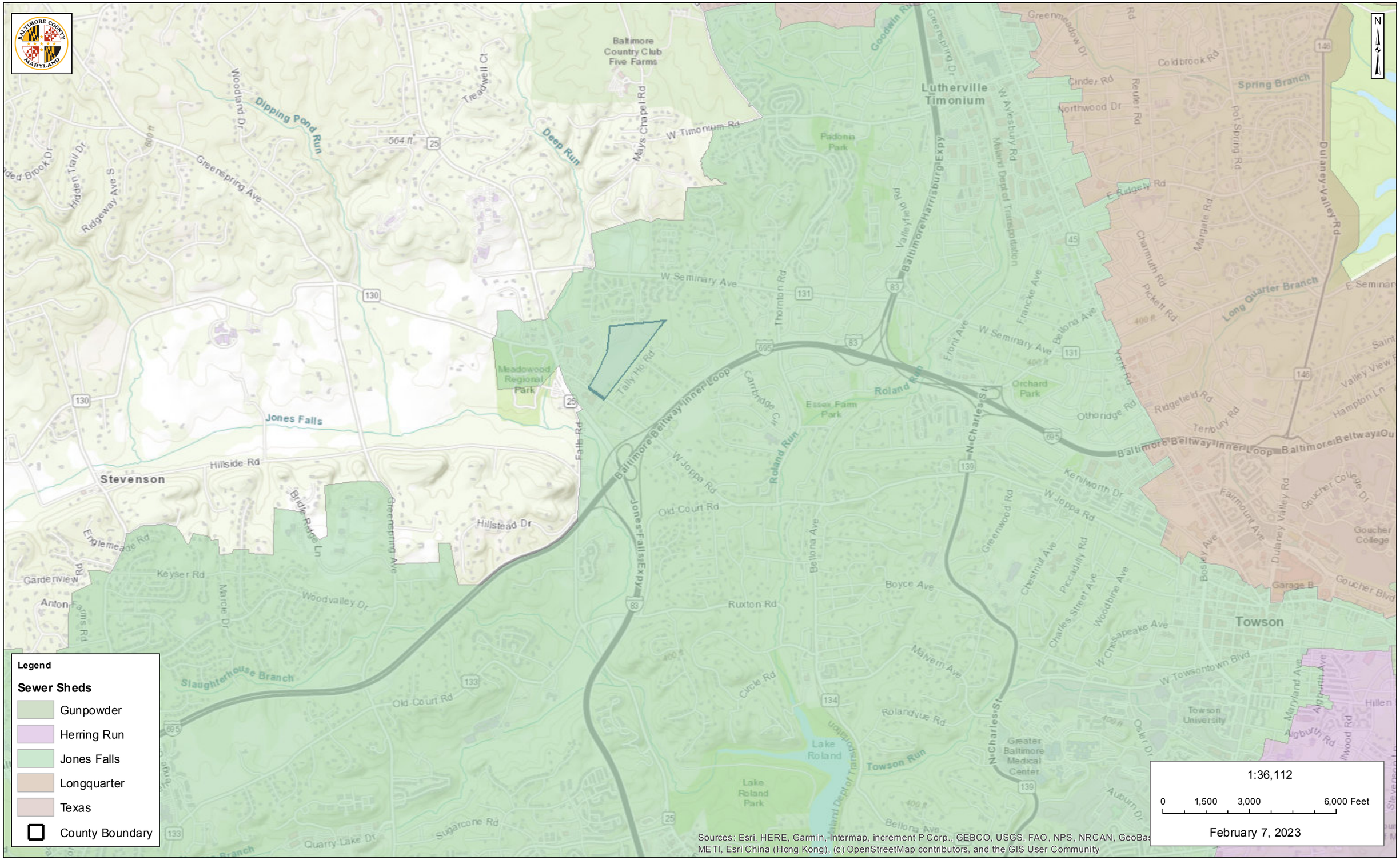

Baltimore County Government, VITA, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA |

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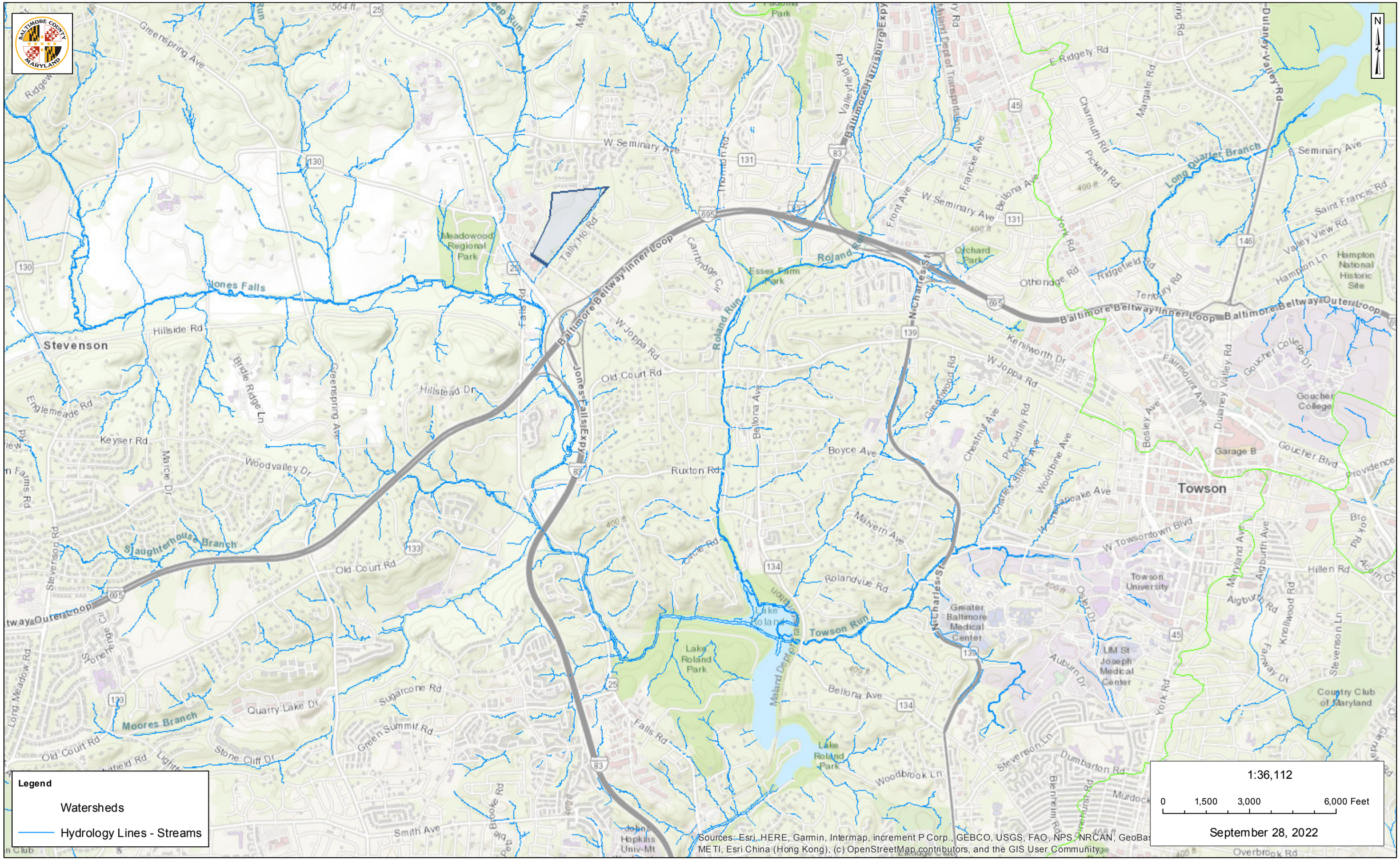
Legend
Watersheds
Hydrology Lines - Streams
1:36,112
0 1,500 3,000 6,000 Feet
September 28, 2022
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
Stevenson
Towson
Jones Falls
Roland Run
Towson Run
Long Quarter Branch
Slaughterhouse Branch
Moores Branch
Meadowood Regional Park
Lake Roland Park
Essex Farm Park
Orchard Park
Hampton National Historic Site
Goucher College
Towson University
Greater Baltimore Medical Center
UM St Joseph Medical Center
Country Club of Maryland
Baltimore Beltway Inner Loop
Baltimore Beltway Outer Loop
Jones Falls Expy
Baltimore Harrisburg Expy
W Seminary Ave
Seminary Ave
Old Court Rd
Falls Rd
York Rd
Charles St
Dulaney Valley Rd
Ruxton Rd
Boyce Ave
Rolandvue Rd
Bellona Ave
Malvern Ave
W Joppa Rd
Kenilworth Dr
Ridgely Rd
Valleyfield Rd
Thornton Rd
Tally Ho Rd
Hillside Rd
Hillstead Dr
Keyser Rd
Woodvalley Dr
Quarry Lake Dr
Sugarcone Rd
Green Summit Rd
Stone Cliff Dr
Smith Ave
Woodbrook Ln
Dumbarton Rd
Garage B
Goucher Blvd
W Towsontown Blvd
Hillen Rd
Overbrook Rd
Providence Rd
Saint Francis Rd
Valley View Rd
Hampton Ln
Ridgefield Rd
Tenbury Rd
Othoridge Rd
Auburn Rd
Aigburth Rd
Knollwood Rd
Stevenson Ln
Fairway Dr
Fairmount Ave
Bosley Ave
Chesapeake Ave
Woodbine Ave
Piccadilly Rd
Chestnut Ave
Greenwood Rd
Maryland Ave
Aigburth Ave
Oakley Dr
Pickett Rd
Charmuth Rd
Margate Rd
Francke Ave
Front Ave
Valleyfield Rd
Maryland Dept of Transportation
Greenspring Ave
Bridle Ridge Ln
Marcie Dr
Stevenson Rd
Englemeade Rd
Long Meadow Rd
Circle Rd
Cargbridge Cir
Jones Falls Expy
Falls Rd
Brook Rd
Bloomsbury Rd
Blenheim Rd
Murdock Rd
Providence Rd
Brook Rd
Acorn Cir
Stevenson Ln
Knollwood Rd
Fairway Dr
Auburn Dr
Oakley Dr
Piccadilly Rd
Chestnut Ave
Greenwood Rd
Bosley Ave
Fairmount Ave
Dulaney Valley Rd
Goucher College Dr
Garage B
Goucher Blvd
Providence Rd
Brook Rd
Acorn Cir
Stevenson Ln
Knollwood Rd
Fairway Dr
Auburn Dr

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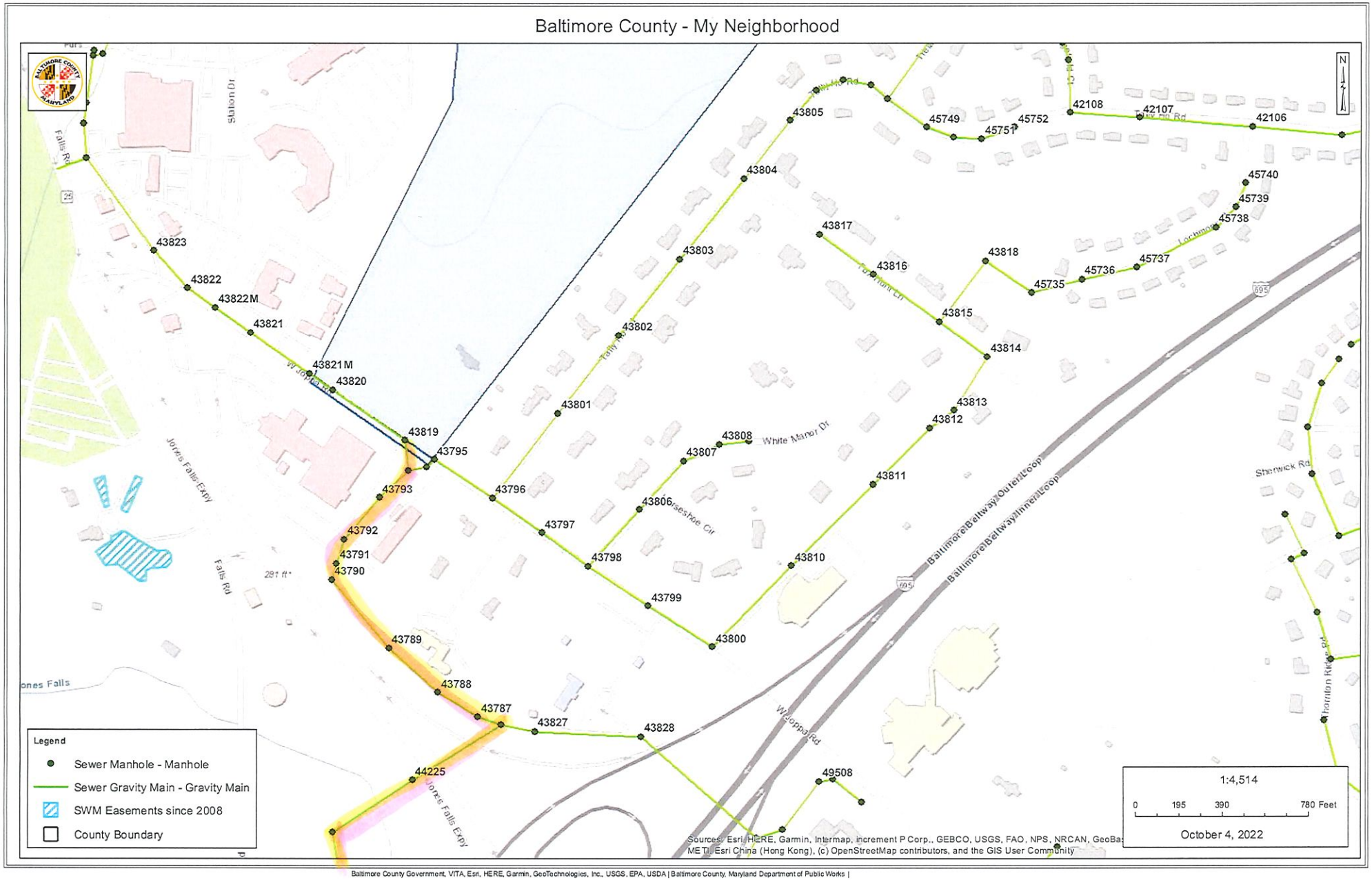

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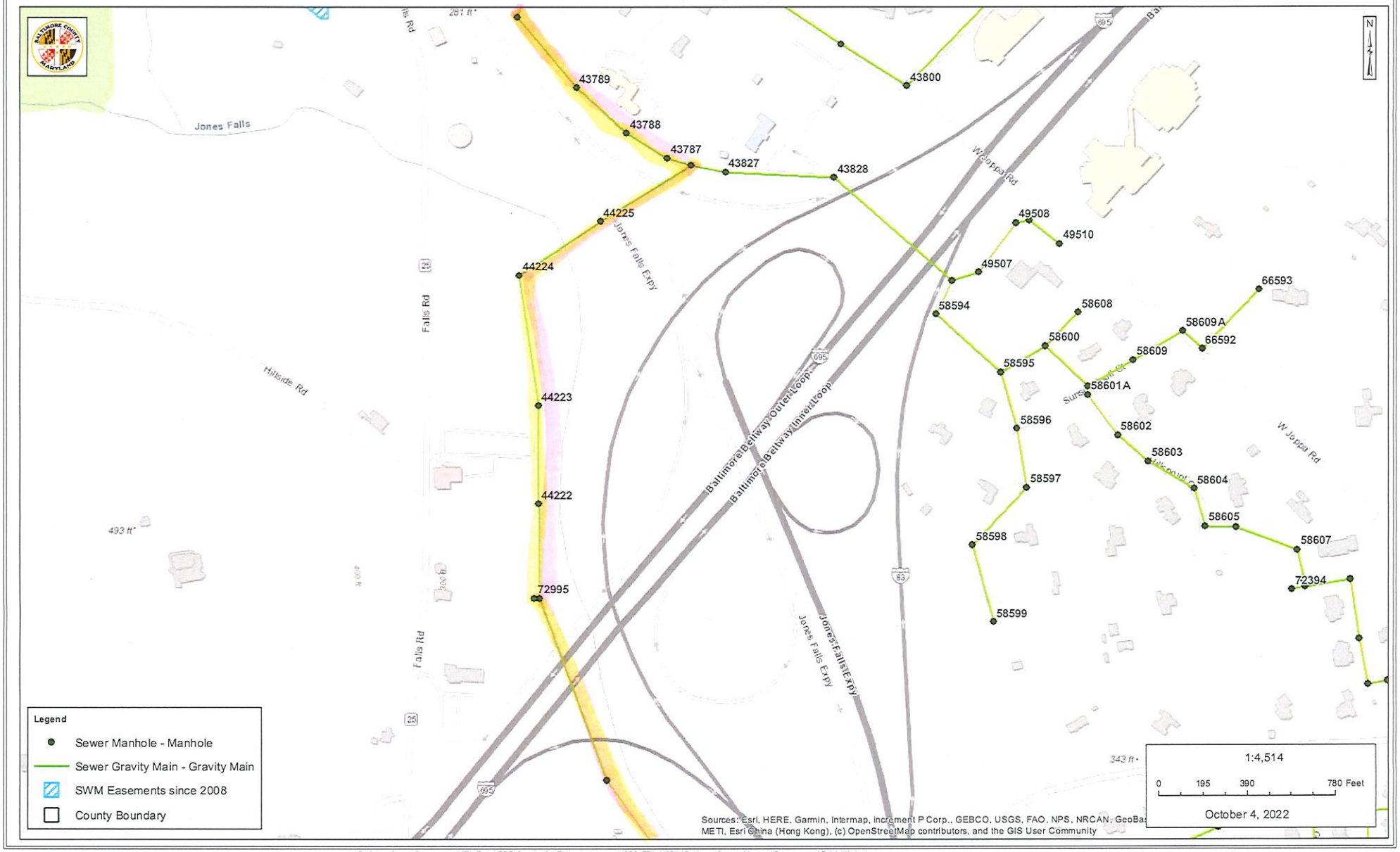

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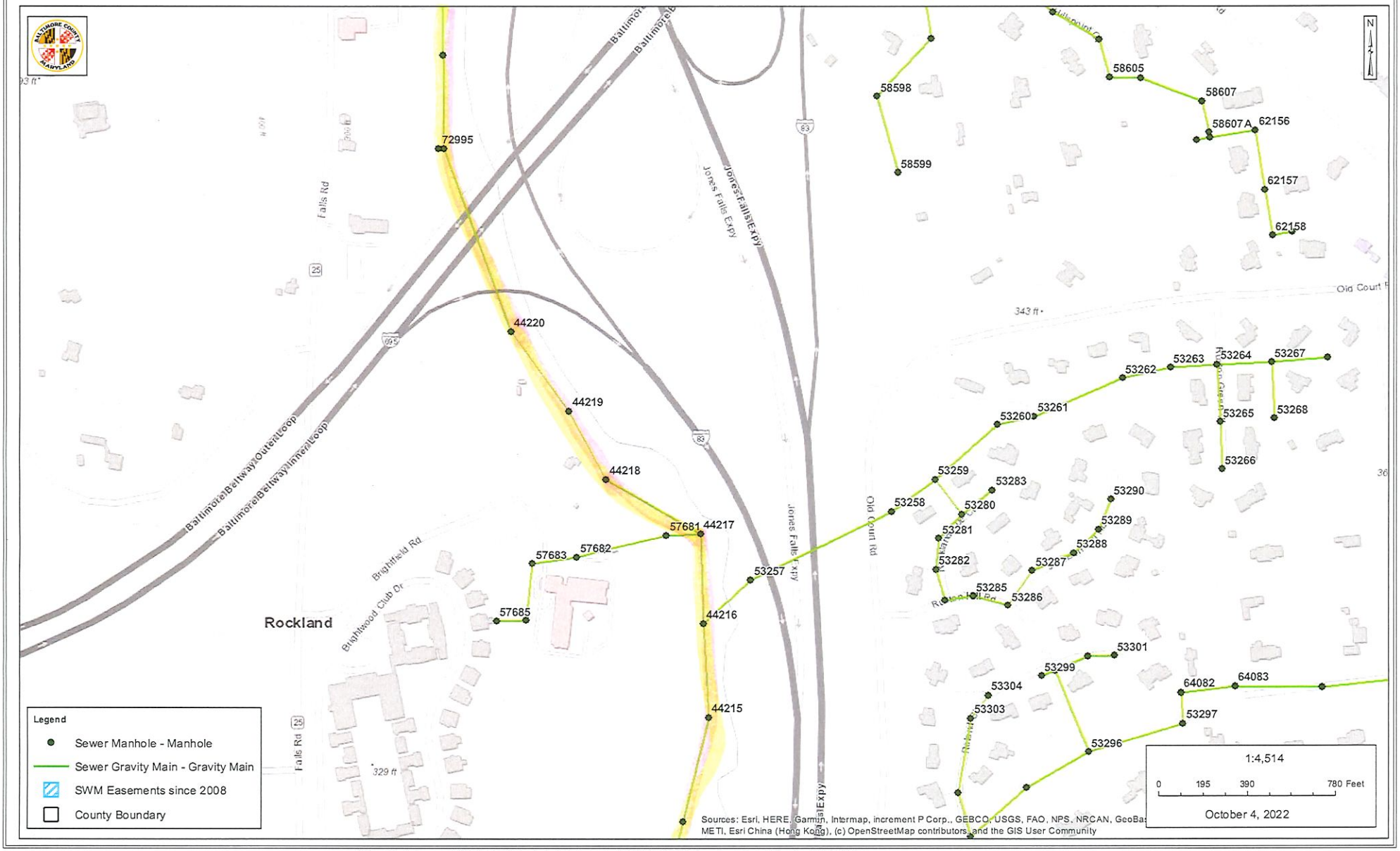

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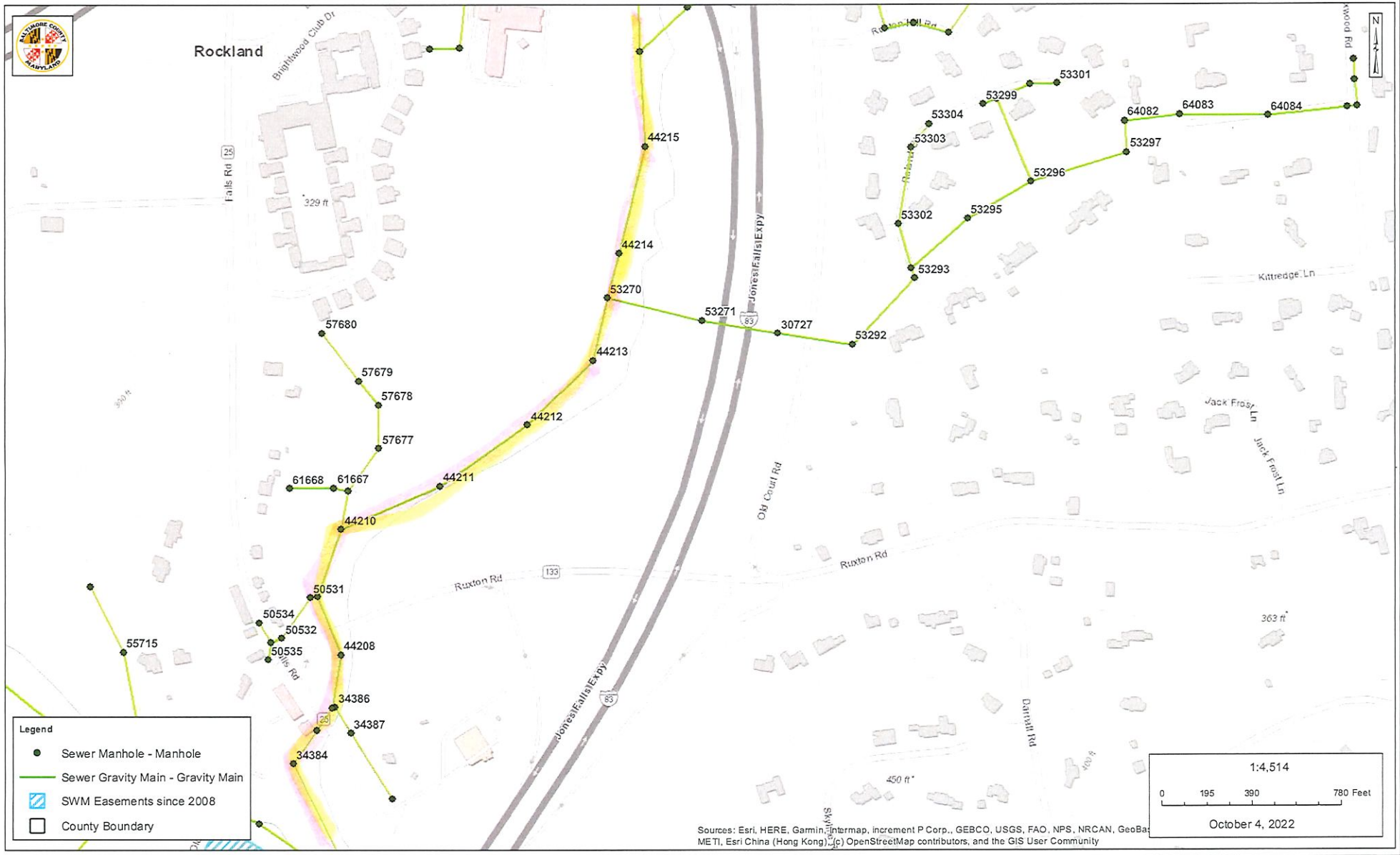

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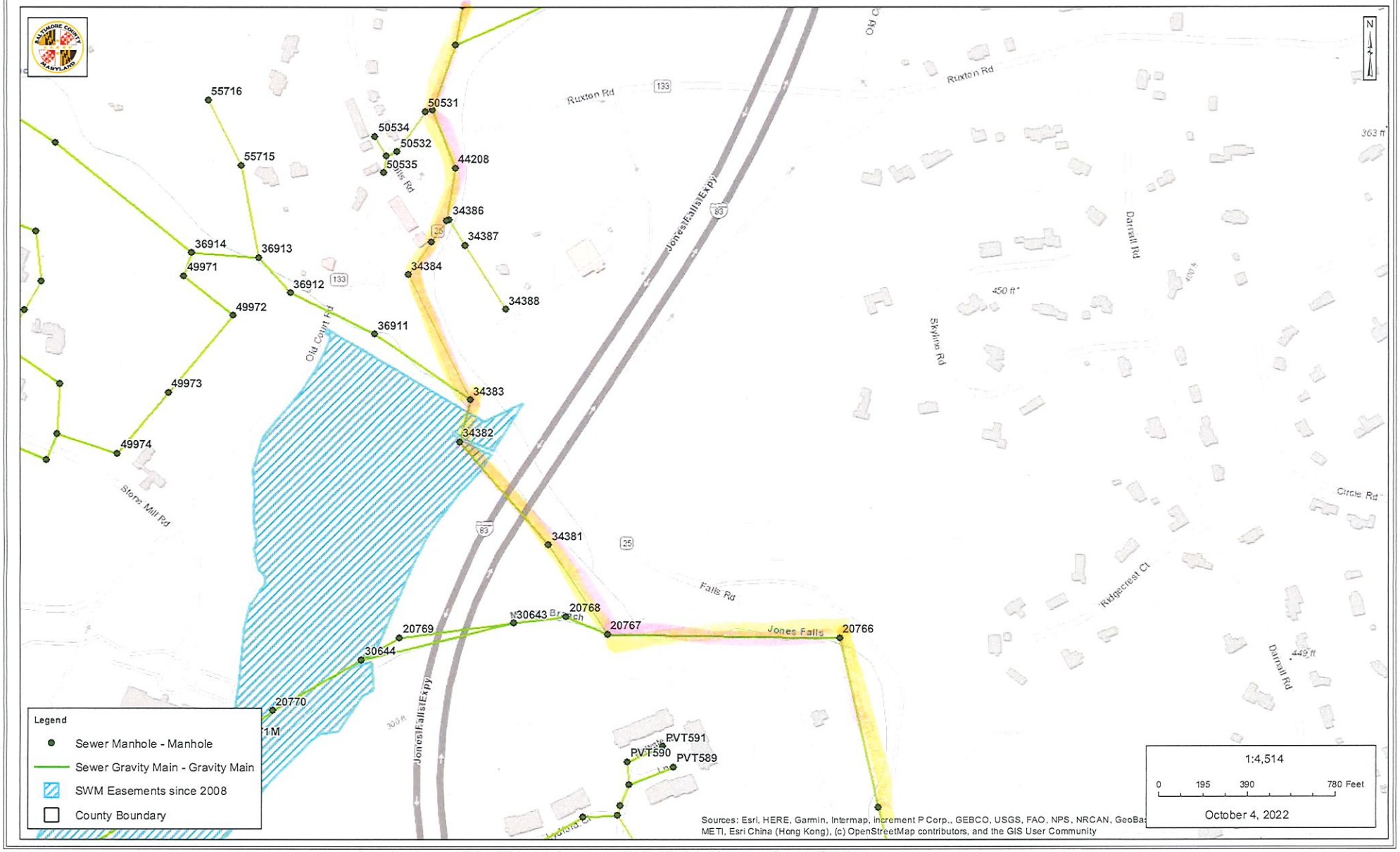

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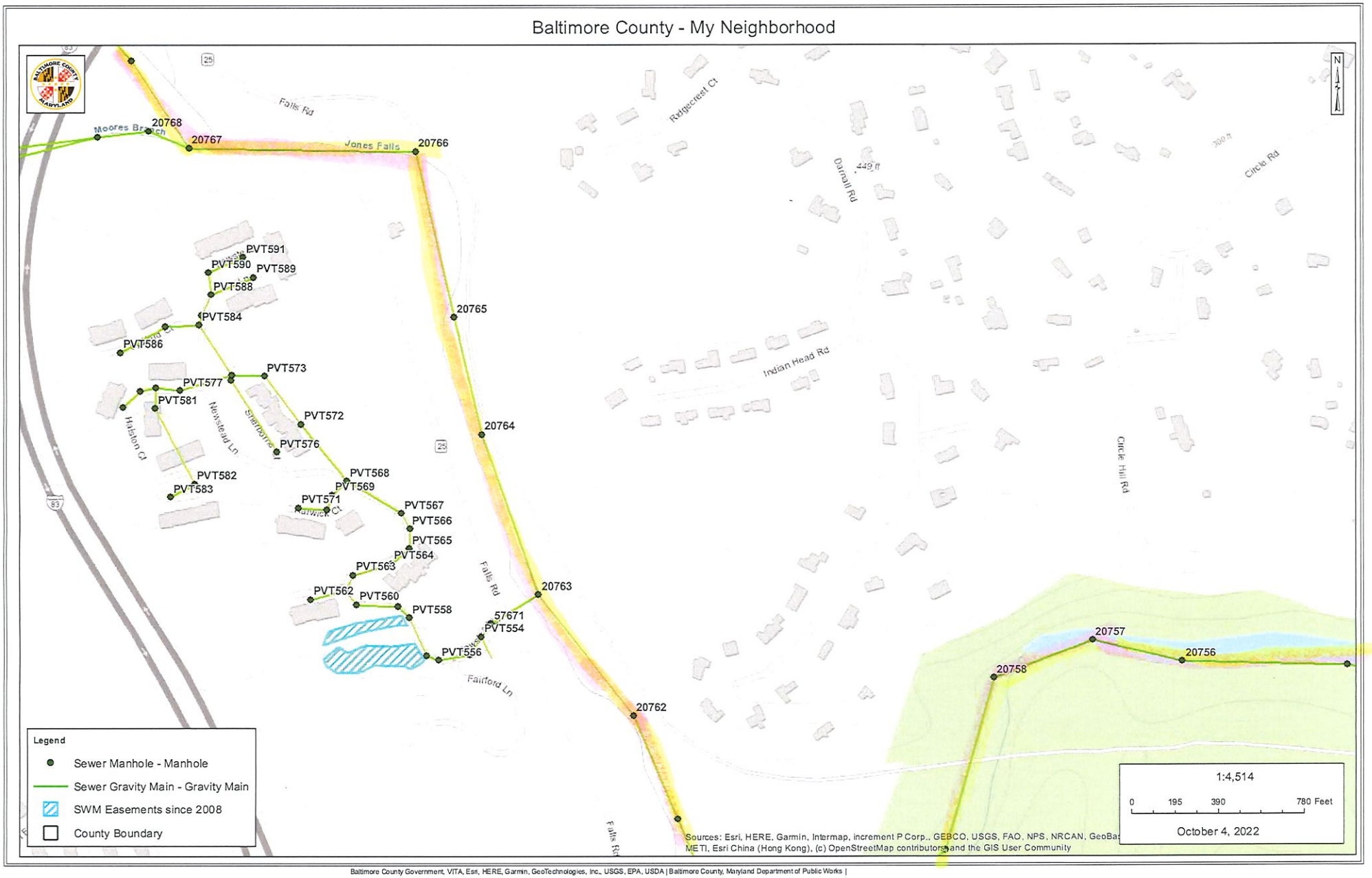

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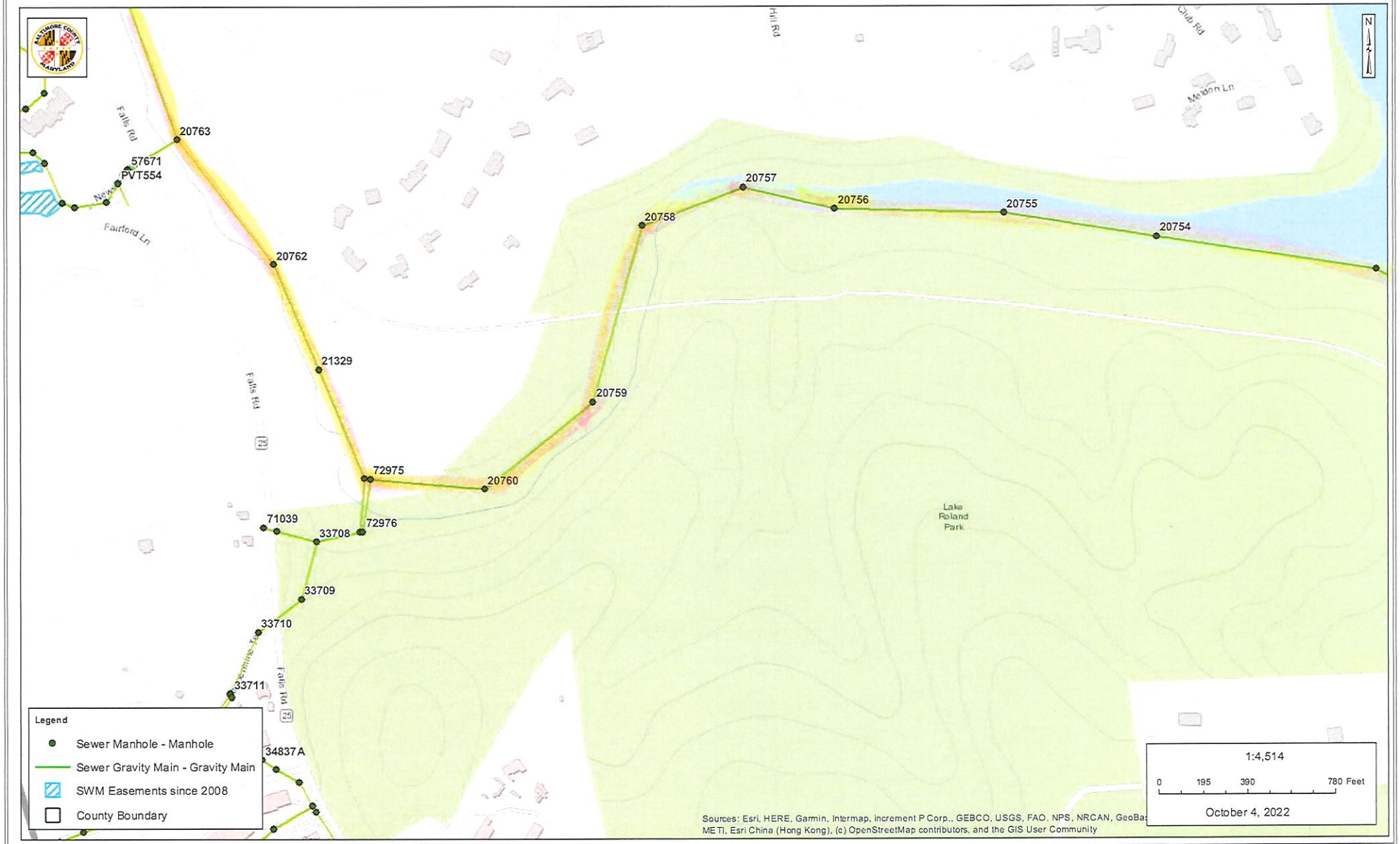

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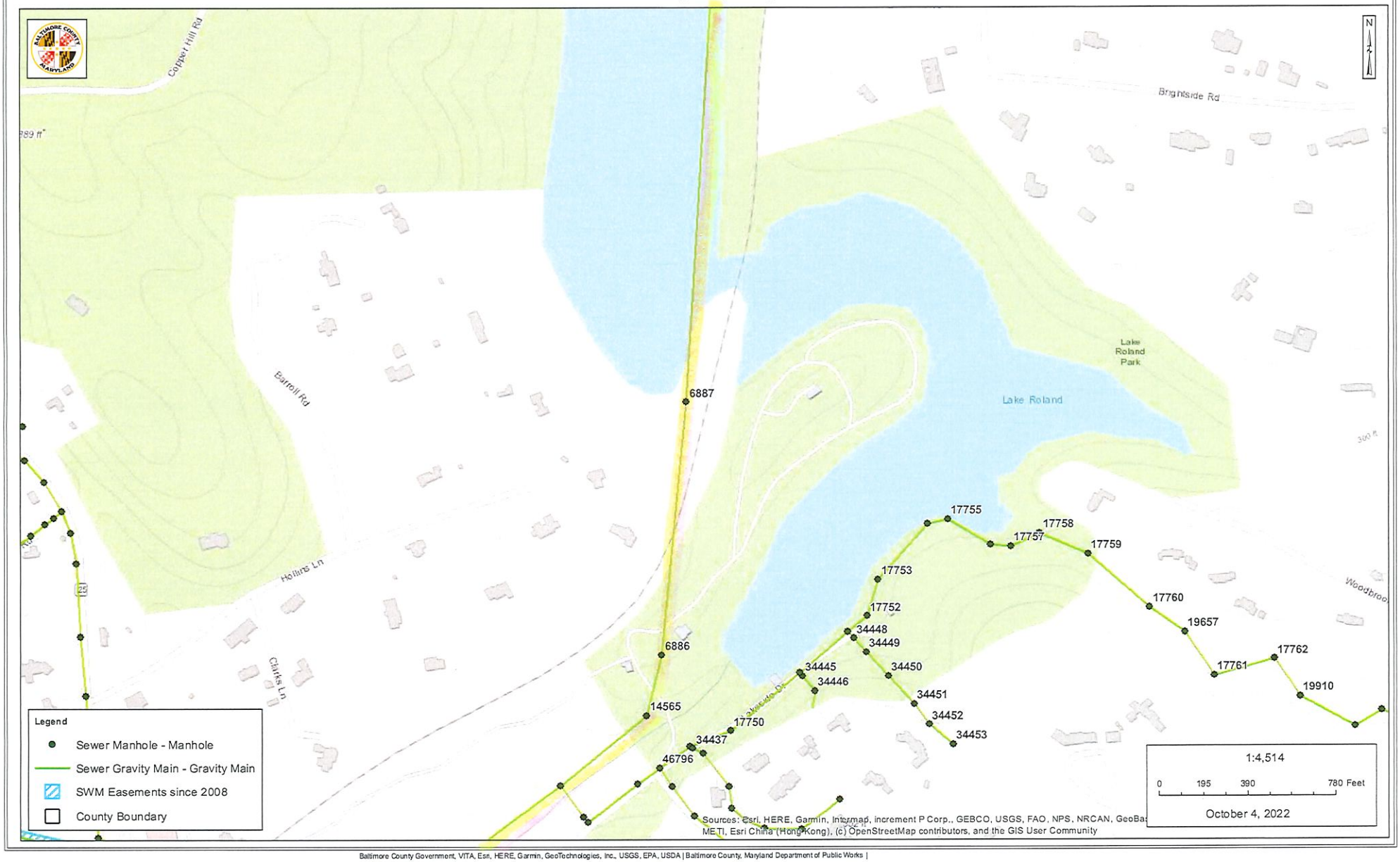

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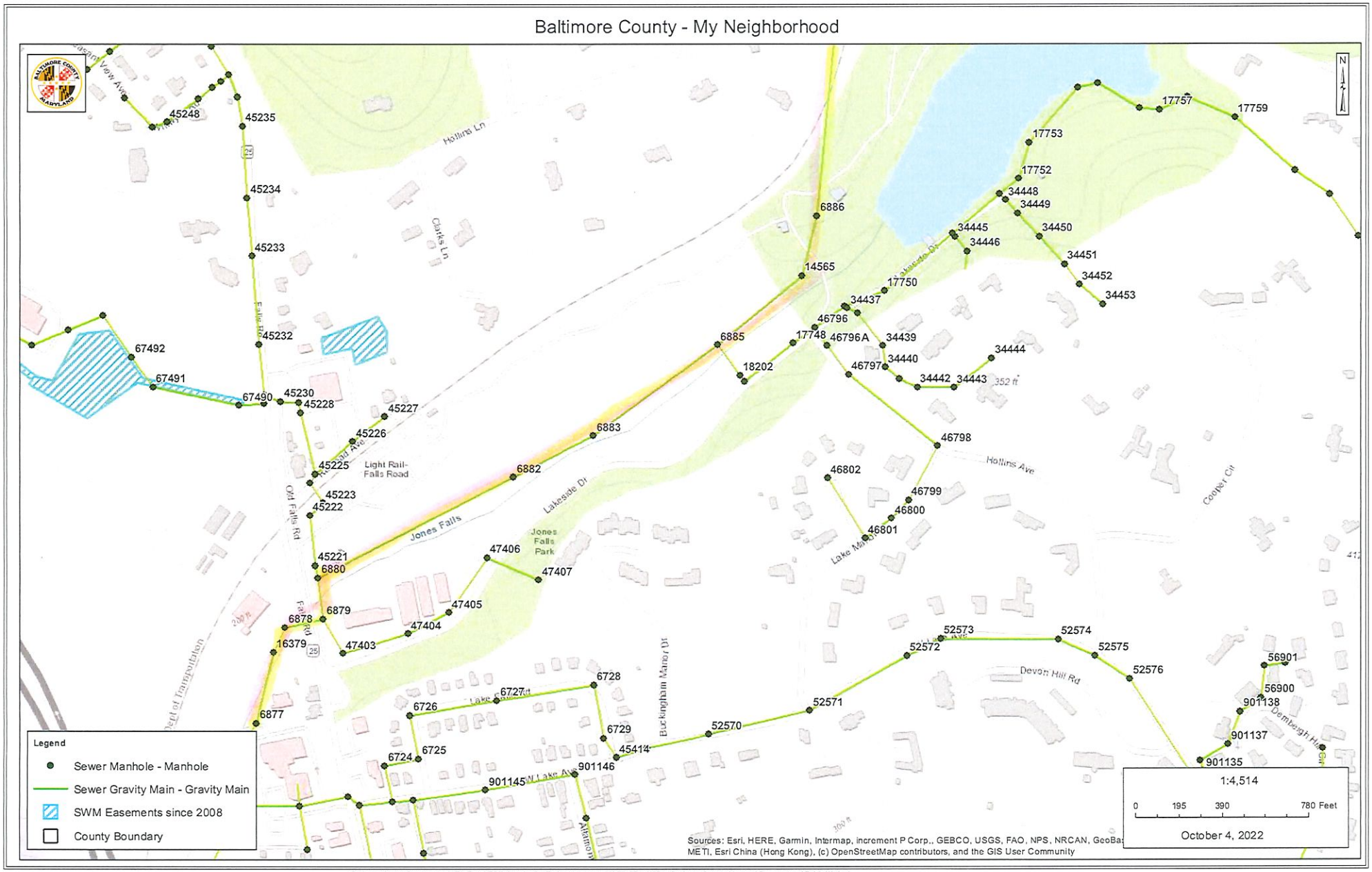

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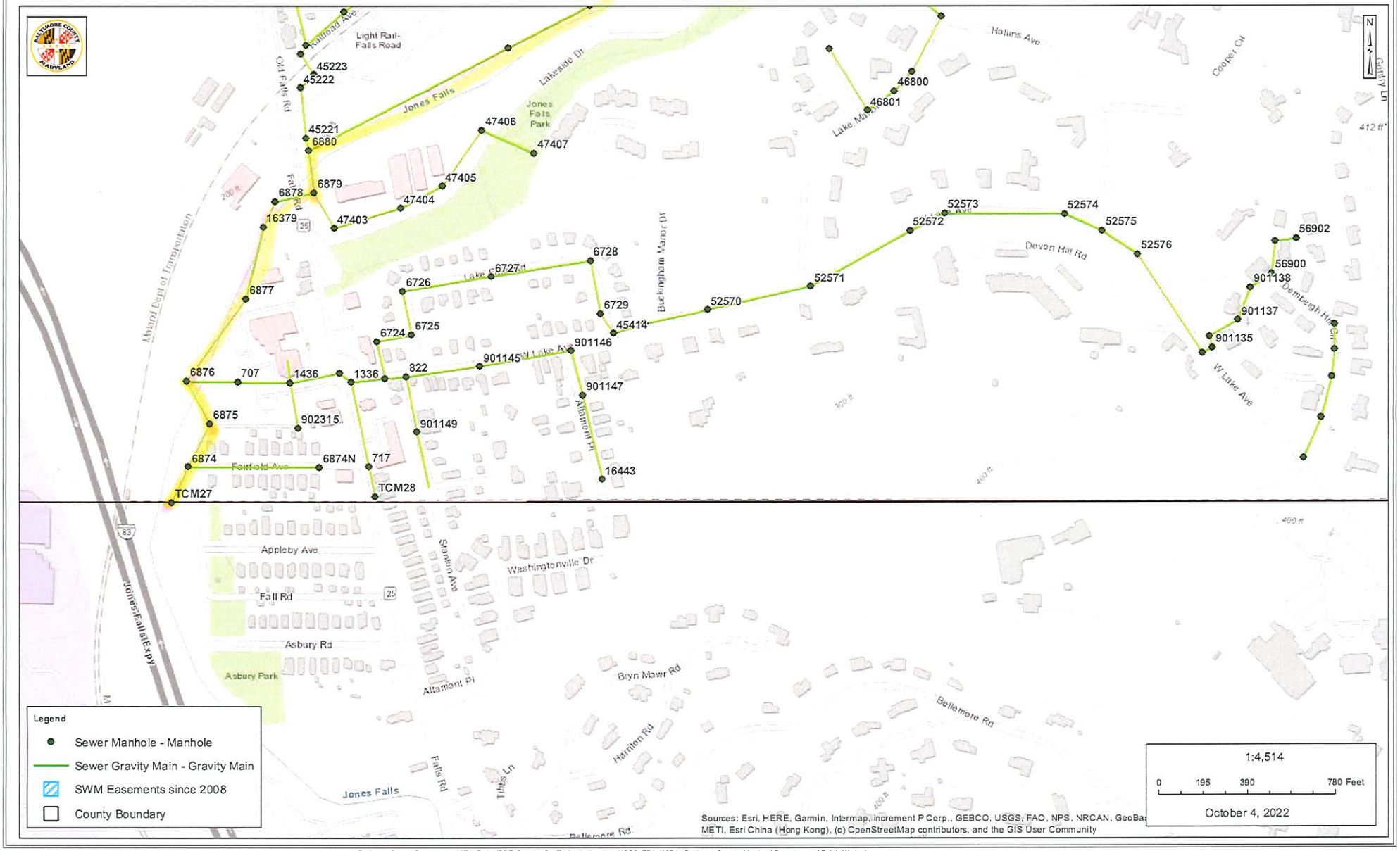

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JONES FALLS INTERCEPTOR 45000000 (JF450000) w/ Johns Hopkins existing use credits

MANNING N FOR EXISTING PIPES = .011 NUMBER OF AREAS = 26 SEWER PROGRAM = 3
MANNING N FOR RELIEF PIPES = .013 NUMBER OF MANHOLES = 79 PEAKING CURVE = 1
ALLOWABLE SURCHARGE HEAD = .000 NUMBER OF PIPES = 78 ANALYSIS CAP. = 0

AREA PARAMETERS FOR 2013

SEWER SERVICE AREA	AREA ACRES	CUMUL. AREA ACRES	POPUL.	CUMUL. POPUL.	NON-DOM AVERAGE FLOW MGD	DOMESTIC AVERAGE FLOW MGD	PEAK FLOW CUMUL. MGD	INFIL. MGD	INFLOW MGD	REMOTE PUMP STAT. MGD	PK.INDUST FLOW MGD	2013 FLOW CUMULATIVE MGD
45730400	29.	29.	348.	348.	.0953	.0224	.47	.0141	.0000	.0000	.0000	.48
45730300	85.	114.	416.	764.	.0003	.0331	.60	.0121	.0000	.0000	.0000	.63
45730200	1.	115.	0.	764.	.0093	.0000	.64	.0000	.0000	.0000	.0000	.67
45730100	10.	125.	60.	824.	.0075	.0079	.70	.0006	.0000	.0000	.0000	.73
45720000	1.	126.	0.	824.	.0001	.0000	.70	.0000	.0000	.0000	.0000	.73
45710000	10.	136.	128.	952.	.0081	.0086	.77	.0050	.0000	.0000	.0000	.80
45700000	10.	146.	49.	1001.	.0000	.0062	.80	.0018	.0000	.0000	.0000	.83
45690000	10.	156.	207.	1208.	.0028	.0001	.81	.0082	.0000	.0000	.0000	.85
45680000	795.	951.	2834.	4042.	.0178	.1244	1.31	.0819	.0000	.7560	.0000	2.19
45670000	5.	956.	0.	4042.	.0004	.0001	1.32	.0000	.0000	.0000	.0000	2.20
45660000	973.	1929.	7340.	11382.	.1305	.3734	2.79	.2712	.0000	.0000	.0000	3.94
45650000	10.	1939.	16.	11398.	.0000	.0001	2.79	.0008	.0000	.0000	.0000	3.94
45640000	0.	1939.	0.	11398.	.0000	.0000	2.79	.0000	.0000	.0000	.0000	3.94
45630000	0.	1939.	0.	11398.	.0000	.0000	2.79	.0000	.0000	.0000	.0000	3.94
45620000	305.	2244.	6404.	17802.	.0240	.1979	3.39	.7862	.0000	.0000	.0023	5.33
45610000	0.	2244.	0.	17802.	.0000	.0000	3.39	.0000	.0000	.0000	.0000	5.33
45600000	0.	2244.	0.	17802.	.0000	.0000	3.39	.0000	.0000	.0000	.0000	5.33
45590000	3092.	5336.	19979.	37781.	.5064	1.2456	7.60	.8319	.0000	.0000	.0273	10.40
45580000	1256.	6592.	12204.	49985.	.6198	.5825	10.21	.4765	.0000	.0000	.2634	13.75
45570000	2.	6594.	3.	49988.	.0000	.0002	10.21	.0001	.0000	.0000	.0000	13.75
45560000	0.	6594.	0.	49988.	.0000	.0000	10.21	.0000	.0000	.0000	.0000	13.75
45550000	392.	6986.	2681.	52669.	.0787	.2953	11.00	.1069	.0000	.0000	.0000	14.64
45540000	1.	6987.	0.	52669.	.0000	.0002	11.00	.0000	.0000	.0000	.0000	14.64
45530000	50.	7037.	75.	52744.	.0017	.0055	11.01	.0031	.0000	.0000	.0000	14.66
45520000	0.	7037.	0.	52744.	.0000	.0000	11.01	.0000	.0000	.0000	.0000	14.66
45510000	58.	7095.	368.	53112.	.0074	.0332	11.10	.0146	.0000	.0000	.0000	14.76
TOTAL FOR AREA		7095.		53112.	1.5101	2.9367		2.6150	.0000	.7560	.2930	

JONES FALLS INTERCEPTOR 45000000 (JF450000) w/ Johns Hopkins 10/8/15 credits

PIPE SCHEDULE

SEWER SERVICE AREA	UPSTREAM MANHOLE NUM.	UPSTREAM MANHOLE INVERT	DOWNSTREAM MANHOLE NUM.	DOWNSTREAM MANHOLE INVERT	PIPE LENGTH (FT.)	SLOPE (FT/FT)	EXISTING N	DESIGN N	DIA. (IN.)	FULL PIPE VELOCITY (FT/SEC)	FULL PIPE CAPACITY (MGD)	DRWG NUMBER
45730400	52028	301.47	52027	299.67	301.50	.0060	.011	.013	10.00	3.67	1.30	820310
45730400	52027	299.57	52026	297.22	294.00	.0080	.011	.013	10.00	4.24	1.50	820310
45730400	52026	297.12	52025	294.86	180.25	.0125	.011	.013	10.00	5.32	1.88	820310
45730400	52025	294.76	52024	294.04	32.00	.0225	.011	.013	10.00	7.12	2.52	820310
45730400	52024	293.44	43825	291.66	248.00	.0072	.011	.013	15.00	5.27	4.19	710726
45730400	43825	291.56	43824	290.69	121.00	.0072	.011	.013	15.00	5.28	4.19	710726
45730400	43824	290.59	43823	288.50	402.65	.0052	.011	.013	8.00	2.95	.67	710726
45730400	43823	288.40	43822	287.48	176.86	.0052	.011	.013	8.00	2.95	.67	710726
45730400	43822	287.38	43821	285.97	276.00	.0051	.011	.013	8.00	2.92	.66	710725
45730400	43821	285.87	43820	282.63	354.00	.0092	.011	.013	8.00	3.91	.89	710725
45730400	43820	279.72	43819	278.11	306.68	.0052	.011	.013	8.00	2.96	.67	710725
45730400	43819	278.01	43794	277.47	103.06	.0052	.011	.013	8.00	2.96	.67	710725
45730300	43794	272.03	43793	271.31	137.96	.0052	.011	.013	8.00	2.96	.67	710718
45730300	43793	271.21	43792	270.21	192.31	.0052	.011	.013	8.00	2.95	.67	710718
45730200	43792	270.11	43791	269.66	87.36	.0052	.011	.013	8.00	2.94	.66	710718
45730200	43791	269.56	43790	269.25	60.00	.0052	.011	.013	8.00	2.94	.67	710718
45730200	43790	269.15	43789	267.50	316.80	.0052	.011	.013	8.00	2.95	.67	710718
45730200	43789	267.32	43788	266.12	232.57	.0052	.011	.013	8.00	2.94	.66	710717
45730200	43788	266.02	43787	265.20	159.01	.0052	.011	.013	8.00	2.94	.66	710717
45730200	43787	265.10	43786	264.71	76.00	.0051	.011	.013	8.00	2.93	.66	710717
45730100	43786	261.24	44225	259.00	374.00	.0060	.011	.013	12.00	4.15	2.11	610456
45730100	44225	258.90	44224	257.98	328.80	.0028	.011	.013	10.00	2.51	.89	720561
45730100	44224	257.88	44223	256.80	451.40	.0024	.011	.013	10.00	2.32	.82	720561
45720000	44223	256.70	44222	255.91	330.30	.0024	.011	.013	10.00	2.32	.82	720560
45720000	44222	255.81	44221	255.02	330.30	.0024	.011	.013	10.00	2.32	.82	720560
45720000	44221	254.92	44220	253.38	642.00	.0024	.011	.013	10.00	2.33	.82	720560
45720000	44220	253.28	44219	252.19	340.80	.0032	.011	.013	10.00	2.68	.95	720559
45720000	44219	252.09	44218	251.21	276.90	.0032	.011	.013	10.00	2.68	.95	720559
45720000	44218	251.11	44217	249.90	378.20	.0032	.011	.013	10.00	2.69	.95	720559
45720000	44217	249.80	44216	248.79	317.10	.0032	.011	.013	10.00	2.68	.95	720559
45710000	44216	248.69	44215	247.68	317.10	.0032	.011	.013	10.00	2.68	.95	720558
45710000	44215	247.58	44214	246.39	372.20	.0032	.011	.013	10.00	2.68	.95	720558
45710000	44214	246.29	53270	245.79	156.35	.0032	.011	.013	10.00	2.68	.95	720558
45700000	53270	245.79	44213	245.10	215.85	.0032	.011	.013	10.00	2.68	.95	840646
45700000	44213	245.00	44212	243.98	318.60	.0032	.011	.013	10.00	2.69	.95	720558
45700000	44212	243.88	44211	242.74	355.80	.0032	.011	.013	10.00	2.69	.95	720557
45700000	44211	242.64	44210	241.48	362.00	.0032	.011	.013	10.00	2.69	.95	720557
45690000	44210	241.38	44209	240.61	240.60	.0032	.011	.013	10.00	2.69	.95	720557

JONES FALLS INTERCEPTOR 45000000 (JF450000) w/ Johns Hopkins 10/8/15 credits

PIPE SCHEDULE

SEWER SERVICE AREA	UPSTREAM MANHOLE NUM.	UPSTREAM MANHOLE INVERT	DOWNSTREAM MANHOLE NUM.	DOWNSTREAM MANHOLE INVERT	PIPE LENGTH (FT.)	SLOPE (FT/FT)	EXISTING N	DESIGN N	DIA. (IN.)	FULL PIPE VELOCITY (FT/SEC)	FULL PIPE CAPACITY (MGD)	DRWG NUMBER
45690000	44209	239.52	44208	238.85	210.59	.0032	.011	.013	24.00	4.80	9.77	720557
45690000	44208	238.75	34385	238.31	186.00	.0024	.011	.013	24.00	4.14	8.43	720557
45690000	34385	238.16	34384	237.50	225.00	.0029	.011	.013	24.00	4.61	9.38	640904
45690000	34384	237.40	34383	235.95	484.00	.0030	.011	.013	24.00	4.66	9.48	640903
45680000	34383	235.84	34382	235.10	150.00	.0049	.011	.013	24.00	5.98	12.17	640903
45680000	34382	235.00	34381	233.90	460.00	.0024	.011	.013	24.00	4.16	8.47	640903
45670000	34381	233.79	20767	233.06	366.00	.0020	.011	.013	24.00	3.80	7.74	640903
45660000	20767	232.70	20766	230.14	798.80	.0032	.011	.013	27.00	5.21	13.43	570646
45660000	20766	230.14	20765	228.94	600.00	.0020	.011	.013	27.00	4.12	10.61	570646
45660000	20765	228.94	20764	228.11	417.53	.0020	.011	.013	27.00	4.10	10.57	570645
45650000	20764	228.11	20763	226.92	595.11	.0020	.011	.013	27.00	4.12	10.61	570645
45640000	20763	226.92	20762	225.17	545.42	.0032	.011	.013	27.00	5.21	13.43	570645
45640000	20762	224.65	21329	223.85	400.00	.0020	.011	.013	27.00	4.12	10.61	570645
45630000	21329	223.85	20761	223.05	400.00	.0020	.011	.013	27.00	4.12	10.61	570644
45620000	20761	223.05	20760	222.22	415.57	.0020	.011	.013	27.00	4.11	10.60	570644
45620000	20760	221.97	20759	221.39	478.75	.0012	.011	.013	30.00	3.44	10.93	570641
45620000	20759	221.39	20758	220.64	625.73	.0012	.011	.013	30.00	3.42	10.87	570641
45610000	20758	220.64	20757	220.20	368.19	.0012	.011	.013	30.00	3.41	10.86	570641
45610000	20757	220.20	20756	219.81	322.50	.0012	.011	.013	30.00	3.43	10.92	570640
45610000	20756	219.81	20755	219.12	574.64	.0012	.011	.013	30.00	3.42	10.88	570640
45610000	20755	219.12	20754	218.49	532.52	.0012	.011	.013	30.00	3.40	10.80	570640
45600000	20754	218.49	20753	217.57	764.75	.0012	.011	.013	30.00	3.43	10.89	570639
45600000	20753	217.57	21328	216.98	494.30	.0012	.011	.013	30.00	3.41	10.85	570639
45600000	21328	216.78	61946	216.01	307.61	.0025	.011	.013	30.00	4.94	15.72	570639
45600000	61946	216.01	6888	215.92	25.11	.0036	.011	.013	30.00	5.91	18.81	930217
45580000	6888	214.53	6887	208.64	2927.00	.0020	.011	.013	42.00	5.54	34.56	531202
45570000	6887	208.33	6886	206.60	866.00	.0020	.011	.013	42.00	5.52	34.44	531311
45560000	6886	206.37	14565	197.73	222.00	.0389	.011	.013	42.00	24.38	152.00	530431
45560000	14565	197.73	6885	189.51	387.00	.0212	.011	.013	42.00	18.01	112.29	530431
45550000	6885	189.51	6883	186.76	537.00	.0051	.011	.013	42.00	8.84	55.14	530431
45540000	6883	186.76	6882	186.13	315.00	.0020	.011	.013	42.00	5.53	34.46	530430
45540000	6882	186.13	6880	184.60	765.00	.0020	.011	.013	42.00	5.53	34.46	530430
45530000	6880	184.50	6879	184.15	143.00	.0024	.011	.013	42.00	6.11	38.12	530429
45530000	6879	184.04	6878	183.72	135.00	.0024	.011	.013	42.00	6.02	37.51	530429
45530000	6878	183.62	16379	183.43	96.05	.0020	.011	.013	42.00	5.50	34.27	530429
45520000	16379	183.43	6877	182.91	256.00	.0020	.011	.013	42.00	5.57	34.73	530429
45520000	6877	182.91	6876	182.21	350.00	.0020	.011	.013	42.00	5.53	34.46	530429
45510000	6876	182.18	6875	181.87	167.00	.0019	.011	.013	42.00	5.32	33.20	530429
45510000	6875	181.84	6874	181.51	165.00	.0020	.011	.013	42.00	5.53	34.46	530429
45510000	6874	181.51	EXMH	181.24	134.61	.0020	.011	.013	42.00	5.53	34.51	530429

TOTAL SEWER LENGTH = 28380.09 FT. = 5.38 MILES

EQUIVALENT SEWER = 134.37 MILES/IN.-DIA.

JONES FALLS INTERCEPTOR 45000000 (JF450000) w/ Johns Hopkins 10/8/15 credits

SYSTEM ANALYSIS

SEWER SERVICE AREA	MH	TO MH	PIPE LENGTH (FT.)	********FULL PIPE********* CAPACITY (MGD)	VELOCITY (FPS)	DIA. (IN.)	******2013 FLOW******* RATE (MGD)	VELOCITY (FPS)	DEPTH (IN.)	(2013) PERCENT FULL	RESERVE CAPACITY (MGD)	REQUIRED RELIEF (MGD)	YEAR RELIEF REQUIRED
45730400	52028	52027	301.50	1.30	3.67	10.00	.48	3.41	4.26	37.40	.81	.00	0
45730400	52027	52026	294.00	1.50	4.24	10.00	.48	3.80	3.95	32.32	1.02	.00	0
45730400	52026	52025	180.25	1.88	5.32	10.00	.48	4.45	3.46	25.81	1.39	.00	0
45730400	52025	52024	32.00	2.52	7.12	10.00	.48	5.52	2.99	19.27	2.03	.00	0
45730400	52024	43825	248.00	4.19	5.27	15.00	.48	3.51	3.43	11.57	3.71	.00	0
45730400	43825	43824	121.00	4.19	5.28	15.00	.48	3.51	3.43	11.56	3.71	.00	0
45730400	43824	43823	402.65	.67	2.95	8.00	.48	3.22	5.06	72.73	.18	.00	0
45730400	43823	43822	176.86	.67	2.95	8.00	.48	3.22	5.06	72.65	.18	.00	0
45730400	43822	43821	276.00	.66	2.92	8.00	.48	3.19	5.06	73.31	.18	.00	0
45730400	43821	43820	354.00	.89	3.91	8.00	.48	4.00	4.22	54.77	.40	.00	0
45730400	43820	43819	306.68	.67	2.96	8.00	.48	3.23	5.06	72.32	.19	.00	0
45730400	43819	43794	103.06	.67	2.96	8.00	.48	3.23	5.06	72.39	.18	.00	0
45730300	43794	43793	137.96	.67	2.96	8.00	.63	3.36	6.19	94.32	.04	.00	0
45730300	43793	43792	192.31	.67	2.95	8.00	.63	3.36	6.19	94.50	.04	.00	0
45730200	43792	43791	87.36	.66	2.94	8.00	.67	2.94	8.00	100.54	.00	.00	2013
45730200	43791	43790	60.00	.67	2.94	8.00	.67	2.94	8.00	100.39	.00	.00	2013
45730200	43790	43789	316.80	.67	2.95	8.00	.67	3.37	6.56	99.99	.00	.00	0
45730200	43789	43788	232.57	.66	2.94	8.00	.67	2.94	8.00	100.46	.00	.00	2013
45730200	43788	43787	159.01	.66	2.94	8.00	.67	2.94	8.00	100.49	.00	.00	2013
45730200	43787	43786	76.00	.66	2.93	8.00	.67	2.93	8.00	100.73	.00	.00	2013
45730100	43786	44225	374.00	2.11	4.15	12.00	.73	3.76	4.85	34.57	1.38	.00	0
45730100	44225	44224	328.80	.89	2.51	10.00	.73	2.80	6.91	82.25	.16	.00	0
45730100	44224	44223	451.40	.82	2.32	10.00	.73	2.63	7.42	88.95	.09	.00	0
45720000	44223	44222	330.30	.82	2.32	10.00	.73	2.63	7.42	89.01	.09	.00	0
45720000	44222	44221	330.30	.82	2.32	10.00	.73	2.63	7.42	89.01	.09	.00	0
45720000	44221	44220	642.00	.82	2.33	10.00	.73	2.62	7.27	88.88	.09	.00	0
45720000	44220	44219	340.80	.95	2.68	10.00	.73	2.96	6.60	76.97	.22	.00	0
45720000	44219	44218	276.90	.95	2.68	10.00	.73	2.95	6.60	77.22	.22	.00	0
45720000	44218	44217	378.20	.95	2.69	10.00	.73	2.96	6.60	76.96	.22	.00	0
45720000	44217	44216	317.10	.95	2.68	10.00	.73	2.96	6.60	77.13	.22	.00	0
45710000	44216	44215	317.10	.95	2.68	10.00	.80	3.01	7.07	84.71	.14	.00	0
45710000	44215	44214	372.20	.95	2.68	10.00	.80	3.01	7.07	84.55	.15	.00	0
45710000	44214	53270	156.35	.95	2.68	10.00	.80	3.01	7.07	84.54	.15	.00	0
45700000	53270	44213	215.85	.95	2.68	10.00	.83	3.02	7.23	87.36	.12	.00	0
45700000	44213	44212	318.60	.95	2.69	10.00	.83	3.03	7.23	87.30	.12	.00	0
45700000	44212	44211	355.80	.95	2.69	10.00	.83	3.03	7.23	87.26	.12	.00	0
45700000	44211	44210	362.00	.95	2.69	10.00	.83	3.03	7.23	87.26	.12	.00	0
45690000	44210	44209	240.60	.95	2.69	10.00	.85	3.04	7.38	89.40	.10	.00	0
45690000	44209	44208	210.59	9.77	4.80	24.00	.85	2.94	4.76	8.68	8.92	.00	0

JONES FALLS INTERCEPTOR 45000000 (JF450000) w/ Johns Hopkins 10/8/15 credits

SYSTEM ANALYSIS

SEWER SERVICE AREA	MH	TO MH	PIPE LENGTH (FT.)	********FULL PIPE********* CAPACITY (MGD)	VELOCITY (FPS)	DIA. (IN.)	******2013 FLOW******* RATE (MGD)	VELOCITY (FPS)	DEPTH (IN.)	(2013) PERCENT FULL	RESERVE CAPACITY (MGD)	REQUIRED RELIEF (MGD)	YEAR RELIEF REQUIRED
45690000	44208	34385	186.00	8.43	4.14	24.00	.85	2.65	5.13	10.07	7.58	.00	0
45690000	34385	34384	225.00	9.38	4.61	24.00	.85	2.87	4.90	9.04	8.53	.00	0
45690000	34384	34383	484.00	9.48	4.66	24.00	.85	2.88	4.85	8.95	8.63	.00	0
45680000	34383	34382	150.00	12.17	5.98	24.00	2.19	4.53	6.90	18.03	9.97	.00	0
45680000	34382	34381	460.00	8.47	4.16	24.00	2.19	3.49	8.33	25.90	6.28	.00	0
45670000	34381	20767	366.00	7.74	3.80	24.00	2.20	3.27	8.75	28.38	5.54	.00	0
45660000	20767	20766	798.80	13.43	5.21	27.00	3.94	4.53	10.03	29.35	9.49	.00	0
45660000	20766	20765	600.00	10.61	4.12	27.00	3.94	3.81	11.40	37.15	6.67	.00	0
45660000	20765	20764	417.53	10.57	4.10	27.00	3.94	3.80	11.40	37.27	6.63	.00	0
45650000	20764	20763	595.11	10.61	4.12	27.00	3.94	3.81	11.40	37.17	6.66	.00	0
45640000	20763	20762	545.42	13.43	5.21	27.00	3.94	4.53	10.03	29.34	9.49	.00	0
45640000	20762	21329	400.00	10.61	4.12	27.00	3.94	3.81	11.40	37.16	6.66	.00	0
45630000	21329	20761	400.00	10.61	4.12	27.00	3.94	3.81	11.40	37.16	6.66	.00	0
45620000	20761	20760	415.57	10.60	4.11	27.00	5.33	4.12	13.54	50.25	5.27	.00	0
45620000	20760	20759	478.75	10.93	3.44	30.00	5.33	3.42	14.78	48.72	5.61	.00	0
45620000	20759	20758	625.73	10.87	3.42	30.00	5.33	3.40	14.81	48.98	5.55	.00	0
45610000	20758	20757	368.19	10.86	3.41	30.00	5.33	3.40	14.84	49.05	5.53	.00	0
45610000	20757	20756	322.50	10.92	3.43	30.00	5.33	3.41	14.78	48.76	5.60	.00	0
45610000	20756	20755	574.64	10.88	3.42	30.00	5.33	3.40	14.81	48.94	5.56	.00	0
45610000	20755	20754	532.52	10.80	3.40	30.00	5.33	3.38	14.87	49.30	5.48	.00	0
45600000	20754	20753	764.75	10.89	3.43	30.00	5.33	3.41	14.81	48.89	5.57	.00	0
45600000	20753	21328	494.30	10.85	3.41	30.00	5.33	3.40	14.84	49.08	5.53	.00	0
45600000	21328	61946	307.61	15.72	4.94	30.00	5.33	4.46	12.03	33.89	10.39	.00	0
45600000	61946	6888	25.11	18.81	5.91	30.00	5.33	5.09	10.92	28.32	13.48	.00	0
45580000	6888	6887	2927.00	34.56	5.54	42.00	13.75	5.23	18.42	39.78	20.81	.00	0
45570000	6887	6886	866.00	34.44	5.52	42.00	13.75	5.21	18.45	39.93	20.69	.00	0
45560000	6886	14565	222.00	152.00	24.38	42.00	13.75	15.14	8.53	9.05	138.25	.00	0
45560000	14565	6885	387.00	112.29	18.01	42.00	13.75	12.22	9.92	12.25	98.54	.00	0
45550000	6885	6883	537.00	55.14	8.84	42.00	14.64	7.48	14.78	26.56	40.49	.00	0
45540000	6883	6882	315.00	34.46	5.53	42.00	14.64	5.30	19.12	42.50	19.81	.00	0
45540000	6882	6880	765.00	34.46	5.53	42.00	14.64	5.30	19.12	42.50	19.81	.00	0
45530000	6880	6879	143.00	38.12	6.11	42.00	14.66	5.71	18.07	38.46	23.46	.00	0
45530000	6879	6878	135.00	37.51	6.02	42.00	14.66	5.65	18.24	39.08	22.85	.00	0
45530000	6878	16379	96.05	34.27	5.50	42.00	14.66	5.28	19.19	42.78	19.61	.00	0
45520000	16379	6877	256.00	34.73	5.57	42.00	14.66	5.33	19.05	42.22	20.06	.00	0
45520000	6877	6876	350.00	34.46	5.53	42.00	14.66	5.30	19.13	42.55	19.80	.00	0
45510000	6876	6875	167.00	33.20	5.32	42.00	14.76	5.17	19.62	44.46	18.44	.00	0
45510000	6875	6874	165.00	34.46	5.53	42.00	14.76	5.31	19.20	42.84	19.70	.00	0
45510000	6874	EXMH	134.61	34.51	5.53	42.00	14.76	5.32	19.19	42.78	19.75	.00	0

Michael McCann

From: Michael McCann
Sent: Wednesday, November 10, 2021 11:42 AM
To: D'Andrea Walker; Jennifer Frankovich
Subject: RE: PIA Request

Thank you for the clarification. Have a nice day.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: D'Andrea Walker [mailto:dwalker2@baltimorecountymd.gov]
Sent: Wednesday, November 10, 2021 9:55 AM
To: Michael McCann <michael@mmccannlaw.net>; Jennifer Frankovich <jfrankovich@baltimorecountymd.gov>
Subject: RE: PIA Request

Good Morning McCann:
The file that you have is the correct file....it is the one we used for Greenspring Manor.

From: Michael McCann <michael@mmccannlaw.net>
Sent: Wednesday, November 10, 2021 8:31 AM
To: D'Andrea Walker <dwalker2@baltimorecountymd.gov>; Jennifer Frankovich <jfrankovich@baltimorecountymd.gov>
Subject: RE: PIA Request

CAUTION: This message from michael@mmccannlaw.net originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

It is helps, attached is the sewer capacity analysis that was produced for Greenspring Station. As I said, there should be the same document for Greenspring Manor.

Thank you!

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Michael McCann
Sent: Tuesday, November 9, 2021 4:30 PM
To: D'Andrea Walker <dwalker2@baltimorecountymd.gov>; Jennifer Frankovich <jfrankovich@baltimorecountymd.gov>
Subject: RE: PIA Request

Thank you. If all documents have been produced, then they have been produced. As I said, I did not see any sewer capacity analysis for Greenspring Manor project amongst the documents. That is surprising but it may be because the analysis was performed after the cd was produced to me. Can someone please confirm that none exists? I suspect it would be very easy to do.

If someone is not willing to do that, I am hereby submitting a new PIA request asking again for:

6. All documents reflecting, referring or relating to the current capacity of any other sewer segments (other than those in #1 above) downstream of Greenspring Station and/or downstream of the proposed Greenspring Manor development, including the sewer capacity analysis for Greenspring Manor.

Thank you.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: D'Andrea Walker [mailto:dwalker2@baltimorecountymd.gov]
Sent: Tuesday, November 9, 2021 10:33 AM

To: Michael McCann <michael@mmccannlaw.net>; Jennifer Frankovich <jfrankovich@baltimorecountymd.gov>
Subject: RE: PIA Request

Good Morning Mr. McCann:
The Agency has completed the request.
Item #6 was included on the DVD and item #7 was withdrawn from the request. Therefore we feel that request has been fulfilled.

D'Andrea

From: Michael McCann <michael@mmccannlaw.net>
Sent: Tuesday, November 9, 2021 8:46 AM
To: D'Andrea Walker <dwalker2@baltimorecountymd.gov>; Jennifer Frankovich <jfrankovich@baltimorecountymd.gov>
Subject: RE: PIA Request

CAUTION: This message from michael@mmccannlaw.net originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Hi Jennifer. Sorry to be a pain. I really need to hear back from you on this, either way.

If it is a new request, please confirm. It is below, sent on 11/5.

If it not a new request, as I think is pretty clear, please let me know when the documents will be produced.

Thank you.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Michael McCann
Sent: Friday, November 5, 2021 12:49 PM
To: dwalker2@baltimorecountymd.gov; Jennifer Frankovich <jfrankovich@baltimorecountymd.gov>
Subject: FW: PIA Request

I am resending because the email to Ms. Walker kicked back. Tx

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Michael McCann
Sent: Friday, November 5, 2021 12:47 PM
To: Jennifer Frankovich <jfrankovich@baltimorecountymd.gov>
Cc: dwalker2@baltimorecountyd.gov
Subject: PIA Request

Hi Jennifer. I did not hear back from you in response to my email below, and continue to believe that DPW's documents pertaining to the sewer associated with the proposed Greenspring Manor project are already covered by my PIA request submitted in May, specifically the following:

6. All documents reflecting, referring or relating to the current capacity of any other sewer segments (other than those in #1 above) downstream of Greenspring Station and/or downstream of the proposed Greenspring Manor development.

7. All documents reflecting, referring or relating to any other repairs, replacement or maintenance of other sewer segments (other than those in #1 above) downstream of Greenspring Station and/or downstream of the proposed Greenspring Manor development.

Please confirm as soon as possible all docs pertain to the project will be produced.

Sorry, but the hearing in this case is fast approaching.

Thanks. Have a nice weekend.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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strictly prohibited. If you have received this communication in error, please delete/destroy any copy of this message and notify Michael R. McCann at 410 825-2150.

From: Michael McCann
Sent: Wednesday, November 3, 2021 3:26 PM
To: Jennifer Frankovich <jfrankovich@baltimorecountymd.gov>
Subject: RE: PIA Request

Thanks Jennifer. Are you saying this is a new PIA request? Happy to talk to you about it, but I really don't think it is.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Jennifer Frankovich [mailto:jfrankovich@baltimorecountymd.gov]
Sent: Wednesday, November 3, 2021 3:06 PM
To: Michael McCann <michael@mmccannlaw.net>
Subject: RE: PIA Request

Good Afternoon Michael:

Hope this finds you well. Please direct your request to the Custodian of Records you would like that relate to DPWT's review of Greenspring Manor to Director Walker:

D'Andrea L. Walker
County Office Building
111 West Chesapeake Avenue, Suite 307
Towson, Maryland 21204

Phone: 410-887-3300
Fax: 410-887-3406

dwalker2@baltimorecountymd.gov

Thank You, Jen

Jennifer R. Frankovich

Chief, Affirmative Litigation
Assistant County Attorney
Baltimore County Office of Law
400 Washington Avenue
Towson, Maryland 21204
Work: (410) 887-5668
Cell: (410) 428-2471
jfrankovich@baltimorecountymd.gov

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From: Michael McCann <michael@mmccannlaw.net>
Sent: Wednesday, November 3, 2021 9:50 AM
To: Jennifer Frankovich <jfrankovich@baltimorecountymd.gov>
Subject: RE: PIA Request

CAUTION: This message from michael@mmccannlaw.net originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Jennifer: I should mention, specifically and as an example, that a "capacity analysis" for Greenspring Manor was not amongst the documents. Thanks.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Michael McCann
Sent: Wednesday, November 3, 2021 9:45 AM
To: Jennifer Frankovich <jfrankovich@baltimorecountymd.gov>
Subject: FW: PIA Request

Hi Jennifer. I finally had some time to review the cd that was produced. I saw few, if any, documents pertaining specifically to the Greenspring Manor development. That may be because my request preceded DPW's review of that project. Can you let me know the quickest way to get those documents? I imagine there would be a limited number and relatively easy to locate.

Thank you!

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
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From: Michael McCann
Sent: Tuesday, May 18, 2021 2:25 PM
To: dwalker2@baltimorecountyd.gov
Subject: PIA Request

Mr. Walker: Per the Public Information Act, I am requesting the following documents:

1. All documents reflecting, referring or relating to the current capacity of the following sewer segments:

upstream manhole	downstream manhole
43794	43793
43793	43792
43792	43791
43791	43790
43790	43789
43789	43788
43788	43787
43787	43786

2. All documents reflecting, referring or relating to any requirement or agreement that the capacity of some or all of the above sewer segments was to be addressed by Johns Hopkins in connection with improvements made at Greenspring Station.

3. All documents reflecting, referring or relating to whether John Hopkins in fact addressed the capacity issues in some or all of the above sewer segments in connection with improvements made at Greenspring Station.

4. All documents reflecting, referring or relating to the repairs, replacements or other manner in which the capacity in the above sewer segments was addressed, including information relating to when the work was performed, who performed the work, and any description of the work.

5. All correspondence between the County and Johns Hopkins, or its consultants or other representatives, regarding the above sewer segments and/or repairs or replacements to them.

6. All documents reflecting, referring or relating to the current capacity of any other sewer segments (other than those in #1 above) downstream of Greenspring Station and/or downstream of the proposed Greenspring Manor development.

7. All documents reflecting, referring or relating to any other repairs, replacement or maintenance of other sewer segments (other than those in #1 above) downstream of Greenspring Station and/or downstream of the proposed Greenspring Manor development.

8. All reports submitted to the MDE and/or EPA, beginning in 2019, pursuant to the Consent Decree entered in 2005 in the matter of *United States of America et al. v. Baltimore County, Maryland*.

Thank you.

Please contact me if you have any questions.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
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(f) 410-825-2149

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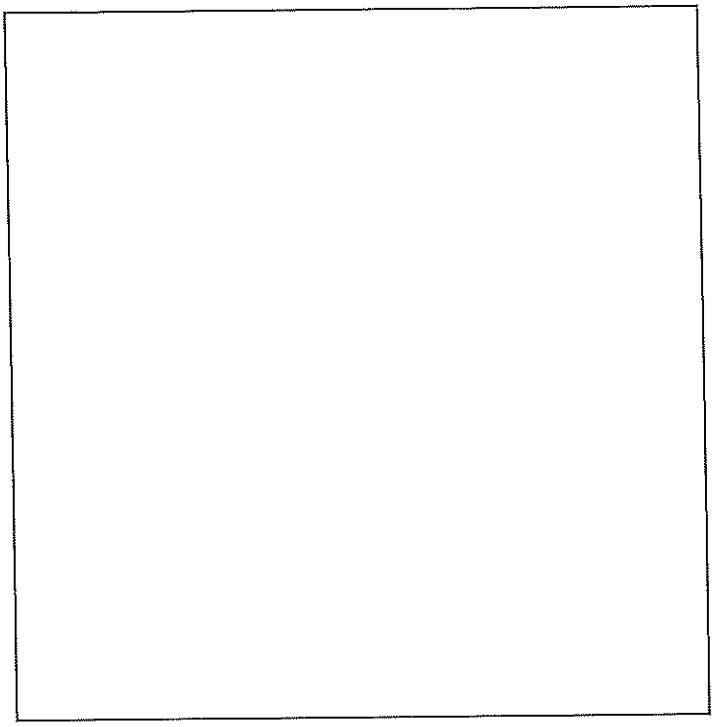

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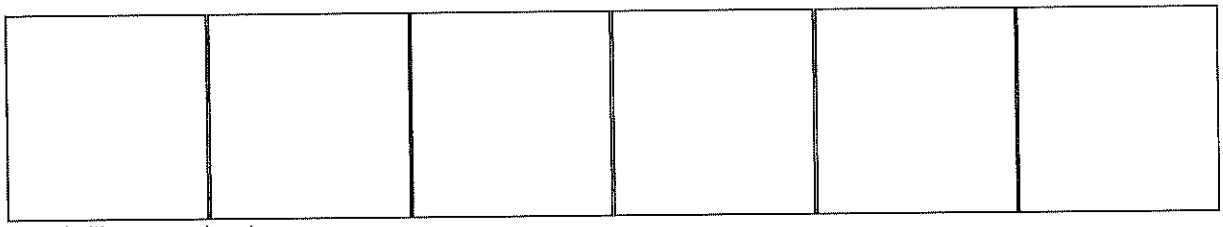

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JONES FALLS INTERCEPTOR 45000000 (JF450000) w/ Johns Hopkins 10/8/15 credits

PIPE SCHEDULE

SEWER SERVICE AREA	UPSTREAM MANHOLE NUM.	UPSTREAM MANHOLE INVERT	DOWNSTREAM MANHOLE NUM.	DOWNSTREAM MANHOLE INVERT	PIPE LENGTH (FT.)	SLOPE (FT/FT)	EXISTING N	DESIGN N	DIA. (IN.)	FULL PIPE VELOCITY (FT/SEC)	FULL PIPE CAPACITY (MGD)	DRWG NUMBER
45690000	44209	239.52	44208	238.85	210.59	.0032	.011	.013	24.00	4.80	9.77	720557
45690000	44208	238.75	34385	238.31	186.00	.0024	.011	.013	24.00	4.14	8.43	720557
45690000	34385	238.16	34384	237.50	225.00	.0029	.011	.013	24.00	4.61	9.38	640904
45690000	34384	237.40	34383	235.95	484.00	.0030	.011	.013	24.00	4.66	9.48	640903
45680000	34383	235.84	34382	235.10	150.00	.0049	.011	.013	24.00	5.98	12.17	640903
45680000	34382	235.00	34381	233.90	460.00	.0024	.011	.013	24.00	4.16	8.47	640903
45670000	34381	233.79	20767	233.06	366.00	.0020	.011	.013	24.00	3.80	7.74	640903
45660000	20767	232.70	20766	230.14	798.80	.0032	.011	.013	27.00	5.21	13.43	570646
45660000	20766	230.14	20765	228.94	600.00	.0020	.011	.013	27.00	4.12	10.61	570646
45660000	20765	228.94	20764	228.11	417.53	.0020	.011	.013	27.00	4.10	10.57	570645
45650000	20764	228.11	20763	226.92	595.11	.0020	.011	.013	27.00	4.12	10.61	570645
45640000	20763	226.92	20762	225.17	545.42	.0032	.011	.013	27.00	5.21	13.43	570645
45640000	20762	224.65	21329	223.85	400.00	.0020	.011	.013	27.00	4.12	10.61	570645
45630000	21329	223.85	20761	223.05	400.00	.0020	.011	.013	27.00	4.12	10.61	570644
45620000	20761	223.05	20760	222.22	415.57	.0020	.011	.013	27.00	4.11	10.60	570644
45620000	20760	221.97	20759	221.39	478.75	.0012	.011	.013	30.00	3.44	10.93	570641
45620000	20759	221.39	20758	220.64	625.73	.0012	.011	.013	30.00	3.42	10.87	570641
45610000	20758	220.64	20757	220.20	368.19	.0012	.011	.013	30.00	3.41	10.86	570641
45610000	20757	220.20	20756	219.81	322.50	.0012	.011	.013	30.00	3.43	10.92	570640
45610000	20756	219.81	20755	219.12	574.64	.0012	.011	.013	30.00	3.42	10.88	570640
45610000	20755	219.12	20754	218.49	532.52	.0012	.011	.013	30.00	3.40	10.80	570640
45600000	20754	218.49	20753	217.57	764.75	.0012	.011	.013	30.00	3.43	10.89	570639
45600000	20753	217.57	21328	216.98	494.30	.0012	.011	.013	30.00	3.41	10.85	570639
45600000	21328	216.78	61946	216.01	307.61	.0025	.011	.013	30.00	4.94	15.72	570639
45600000	61946	216.01	6888	215.92	25.11	.0036	.011	.013	30.00	5.91	18.81	930217
45580000	6888	214.53	6887	208.64	2927.00	.0020	.011	.013	42.00	5.54	34.56	531202
45570000	6887	208.33	6886	206.60	866.00	.0020	.011	.013	42.00	5.52	34.44	531311
45560000	6886	206.37	14565	197.73	222.00	.0389	.011	.013	42.00	24.38	152.00	530431
45560000	14565	197.73	6885	189.51	387.00	.0212	.011	.013	42.00	18.01	112.29	530431
45550000	6885	189.51	6883	186.76	537.00	.0051	.011	.013	42.00	8.84	55.14	530431
45540000	6883	186.76	6882	186.13	315.00	.0020	.011	.013	42.00	5.53	34.46	530430
45540000	6882	186.13	6880	184.60	765.00	.0020	.011	.013	42.00	5.53	34.46	530430
45530000	6880	184.50	6879	184.15	143.00	.0024	.011	.013	42.00	6.11	38.12	530429
45530000	6879	184.04	6878	183.72	135.00	.0024	.011	.013	42.00	6.02	37.51	530429
45530000	6878	183.62	16379	183.43	96.05	.0020	.011	.013	42.00	5.50	34.27	530429
45520000	16379	183.43	6877	182.91	256.00	.0020	.011	.013	42.00	5.57	34.73	530429
45520000	6877	182.91	6876	182.21	350.00	.0020	.011	.013	42.00	5.53	34.46	530429
45510000	6876	182.18	6875	181.87	167.00	.0019	.011	.013	42.00	5.32	33.20	530429
45510000	6875	181.84	6874	181.51	165.00	.0020	.011	.013	42.00	5.53	34.46	530429
45510000	6874	181.51	EXMH	181.24	134.61	.0020	.011	.013	42.00	5.53	34.51	530429

TOTAL SEWER LENGTH = 28380.09 FT. = 5.38 MILES

EQUIVALENT SEWER = 134.37 MILES/IN.-DIA.

JONES FALLS INTERCEPTOR 45000000 (JF450000) w/ Johns Hopkins 10/8/15 credits

SYSTEM ANALYSIS

SEWER SERVICE AREA	MH	TO MH	PIPE LENGTH (FT.)	********FULL PIPE********* CAPACITY (MGD)	VELOCITY (FPS)	DIA. (IN.)	******2013 FLOW******* RATE (MGD)	VELOCITY (FPS)	DEPTH (IN.)	(2013) PERCENT FULL	RESERVE CAPACITY (MGD)	REQUIRED RELIEF (MGD)	YEAR RELIEF REQUIRED
45730400	52028	52027	301.50	1.30	3.67	10.00	.48	3.41	4.26	37.40	.81	.00	0
45730400	52027	52026	294.00	1.50	4.24	10.00	.48	3.80	3.95	32.32	1.02	.00	0
45730400	52026	52025	180.25	1.88	5.32	10.00	.48	4.45	3.46	25.81	1.39	.00	0
45730400	52025	52024	32.00	2.52	7.12	10.00	.48	5.52	2.99	19.27	2.03	.00	0
45730400	52024	43825	248.00	4.19	5.27	15.00	.48	3.51	3.43	11.57	3.71	.00	0
45730400	43825	43824	121.00	4.19	5.28	15.00	.48	3.51	3.43	11.56	3.71	.00	0
45730400	43824	43823	402.65	.67	2.95	8.00	.48	3.22	5.06	72.73	.18	.00	0
45730400	43823	43822	176.86	.67	2.95	8.00	.48	3.22	5.06	72.65	.18	.00	0
45730400	43822	43821	276.00	.66	2.92	8.00	.48	3.19	5.06	73.31	.18	.00	0
45730400	43821	43820	354.00	.89	3.91	8.00	.48	4.00	4.22	54.77	.40	.00	0
45730400	43820	43819	306.68	.67	2.96	8.00	.48	3.23	5.06	72.32	.19	.00	0
45730400	43819	43794	103.06	.67	2.96	8.00	.48	3.23	5.06	72.39	.18	.00	0
45730300	43794	43793	137.96	.67	2.96	8.00	.63	3.36	6.19	94.32	.04	.00	0
45730300	43793	43792	192.31	.67	2.95	8.00	.63	3.36	6.19	94.50	.04	.00	0
45730200	43792	43791	87.36	.66	2.94	8.00	.67	2.94	8.00	100.54	.00	.00	2013
45730200	43791	43790	60.00	.67	2.94	8.00	.67	2.94	8.00	100.39	.00	.00	2013
45730200	43790	43789	316.80	.67	2.95	8.00	.67	3.37	6.56	99.99	.00	.00	0
45730200	43789	43788	232.57	.66	2.94	8.00	.67	2.94	8.00	100.46	.00	.00	2013
45730200	43788	43787	159.01	.66	2.94	8.00	.67	2.94	8.00	100.49	.00	.00	2013
45730200	43787	43786	76.00	.66	2.93	8.00	.67	2.93	8.00	100.73	.00	.00	2013
45730100	43786	44225	374.00	2.11	4.15	12.00	.73	3.76	4.85	34.57	1.38	.00	0
45730100	44225	44224	328.80	.89	2.51	10.00	.73	2.80	6.91	82.25	.16	.00	0
45730100	44224	44223	451.40	.82	2.32	10.00	.73	2.63	7.42	88.95	.09	.00	0
45720000	44223	44222	330.30	.82	2.32	10.00	.73	2.63	7.42	89.01	.09	.00	0
45720000	44222	44221	330.30	.82	2.32	10.00	.73	2.63	7.42	89.01	.09	.00	0
45720000	44221	44220	642.00	.82	2.33	10.00	.73	2.62	7.27	88.88	.09	.00	0
45720000	44220	44219	340.80	.95	2.68	10.00	.73	2.96	6.60	76.97	.22	.00	0
45720000	44219	44218	276.90	.95	2.68	10.00	.73	2.95	6.60	77.22	.22	.00	0
45720000	44218	44217	378.20	.95	2.69	10.00	.73	2.96	6.60	76.96	.22	.00	0
45720000	44217	44216	317.10	.95	2.68	10.00	.73	2.96	6.60	77.13	.22	.00	0
45710000	44216	44215	317.10	.95	2.68	10.00	.80	3.01	7.07	84.71	.14	.00	0
45710000	44215	44214	372.20	.95	2.68	10.00	.80	3.01	7.07	84.55	.15	.00	0
45710000	44214	53270	156.35	.95	2.68	10.00	.80	3.01	7.07	84.54	.15	.00	0
45700000	53270	44213	215.85	.95	2.68	10.00	.83	3.02	7.23	87.36	.12	.00	0
45700000	44213	44212	318.60	.95	2.69	10.00	.83	3.03	7.23	87.30	.12	.00	0
45700000	44212	44211	355.80	.95	2.69	10.00	.83	3.03	7.23	87.26	.12	.00	0
45700000	44211	44210	362.00	.95	2.69	10.00	.83	3.03	7.23	87.26	.12	.00	0
45690000	44210	44209	240.60	.95	2.69	10.00	.85	3.04	7.38	89.40	.10	.00	0
45690000	44209	44208	210.59	9.77	4.80	24.00	.85	2.94	4.76	8.68	8.92	.00	0

JONES FALLS INTERCEPTOR 45000000 (JF450000) w/ Johns Hopkins 10/8/15 credits

SYSTEM ANALYSIS

SEWER SERVICE AREA	MH	TO MH	PIPE LENGTH (FT.)	********FULL PIPE********* CAPACITY (MGD)	VELOCITY (FPS)	DIA. (IN.)	******2013 FLOW******* RATE (MGD)	VELOCITY (FPS)	DEPTH (IN.)	(2013) PERCENT FULL	RESERVE CAPACITY (MGD)	REQUIRED RELIEF (MGD)	YEAR RELIEF REQUIRED
45690000	44208	34385	186.00	8.43	4.14	24.00	.85	2.65	5.13	10.07	7.58	.00	0
45690000	34385	34384	225.00	9.38	4.61	24.00	.85	2.87	4.90	9.04	8.53	.00	0
45690000	34384	34383	484.00	9.48	4.66	24.00	.85	2.88	4.85	8.95	8.63	.00	0
45680000	34383	34382	150.00	12.17	5.98	24.00	2.19	4.53	6.90	18.03	9.97	.00	0
45680000	34382	34381	460.00	8.47	4.16	24.00	2.19	3.49	8.33	25.90	6.28	.00	0
45670000	34381	20767	366.00	7.74	3.80	24.00	2.20	3.27	8.75	28.38	5.54	.00	0
45660000	20767	20766	798.80	13.43	5.21	27.00	3.94	4.53	10.03	29.35	9.49	.00	0
45660000	20766	20765	600.00	10.61	4.12	27.00	3.94	3.81	11.40	37.15	6.67	.00	0
45660000	20765	20764	417.53	10.57	4.10	27.00	3.94	3.80	11.40	37.27	6.63	.00	0
45650000	20764	20763	595.11	10.61	4.12	27.00	3.94	3.81	11.40	37.17	6.66	.00	0
45640000	20763	20762	545.42	13.43	5.21	27.00	3.94	4.53	10.03	29.34	9.49	.00	0
45640000	20762	21329	400.00	10.61	4.12	27.00	3.94	3.81	11.40	37.16	6.66	.00	0
45630000	21329	20761	400.00	10.61	4.12	27.00	3.94	3.81	11.40	37.16	6.66	.00	0
45620000	20761	20760	415.57	10.60	4.11	27.00	5.33	4.12	13.54	50.25	5.27	.00	0
45620000	20760	20759	478.75	10.93	3.44	30.00	5.33	3.42	14.78	48.72	5.61	.00	0
45620000	20759	20758	625.73	10.87	3.42	30.00	5.33	3.40	14.81	48.98	5.55	.00	0
45610000	20758	20757	368.19	10.86	3.41	30.00	5.33	3.40	14.84	49.05	5.53	.00	0
45610000	20757	20756	322.50	10.92	3.43	30.00	5.33	3.41	14.78	48.76	5.60	.00	0
45610000	20756	20755	574.64	10.88	3.42	30.00	5.33	3.40	14.81	48.94	5.56	.00	0
45610000	20755	20754	532.52	10.80	3.40	30.00	5.33	3.38	14.87	49.30	5.48	.00	0
45600000	20754	20753	764.75	10.89	3.43	30.00	5.33	3.41	14.81	48.89	5.57	.00	0
45600000	20753	21328	494.30	10.85	3.41	30.00	5.33	3.40	14.84	49.08	5.53	.00	0
45600000	21328	61946	307.61	15.72	4.94	30.00	5.33	4.46	12.03	33.89	10.39	.00	0
45600000	61946	6888	25.11	18.81	5.91	30.00	5.33	5.09	10.92	28.32	13.48	.00	0
45580000	6888	6887	2927.00	34.56	5.54	42.00	13.75	5.23	18.42	39.78	20.81	.00	0
45570000	6887	6886	866.00	34.44	5.52	42.00	13.75	5.21	18.45	39.93	20.69	.00	0
45560000	6886	14565	222.00	152.00	24.38	42.00	13.75	15.14	8.53	9.05	138.25	.00	0
45560000	14565	6885	387.00	112.29	18.01	42.00	13.75	12.22	9.92	12.25	98.54	.00	0
45550000	6885	6883	537.00	55.14	8.84	42.00	14.64	7.48	14.78	26.56	40.49	.00	0
45540000	6883	6882	315.00	34.46	5.53	42.00	14.64	5.30	19.12	42.50	19.81	.00	0
45540000	6882	6880	765.00	34.46	5.53	42.00	14.64	5.30	19.12	42.50	19.81	.00	0
45530000	6880	6879	143.00	38.12	6.11	42.00	14.66	5.71	18.07	38.46	23.46	.00	0
45530000	6879	6878	135.00	37.51	6.02	42.00	14.66	5.65	18.24	39.08	22.85	.00	0
45530000	6878	16379	96.05	34.27	5.50	42.00	14.66	5.28	19.19	42.78	19.61	.00	0
45520000	16379	6877	256.00	34.73	5.57	42.00	14.66	5.33	19.05	42.22	20.06	.00	0
45520000	6877	6876	350.00	34.46	5.53	42.00	14.66	5.30	19.13	42.55	19.80	.00	0
45510000	6876	6875	167.00	33.20	5.32	42.00	14.76	5.17	19.62	44.46	18.44	.00	0
45510000	6875	6874	165.00	34.46	5.53	42.00	14.76	5.31	19.20	42.84	19.70	.00	0
45510000	6874	EXMH	134.61	34.51	5.53	42.00	14.76	5.32	19.19	42.78	19.75	.00	0

JONES FALLS INTERCEPTOR 45000000 (JF450000) w/ Johns Hopkins existing use credits

MANNING N FOR EXISTING PIPES = .011
MANNING N FOR RELIEF PIPES = .013
ALLOWABLE SURCHARGE HEAD = .000

NUMBER OF AREAS = 26
NUMBER OF MANHOLES = 79
NUMBER OF PIPES = 78

SEWER PROGRAM = 3
PEAKING CURVE = 1
ANALYSIS CAP. = 0

AREA PARAMETERS FOR 2013

SEWER SERVICE AREA	AREA ACRES	CUMUL. AREA ACRES	POPUL.	CUMUL. POPUL.	NON-DOM AVERAGE FLOW MGD	DOMESTIC AVERAGE FLOW MGD	PEAK FLOW CUMUL. MGD	INFIL. MGD	INFLOW MGD	REMOTE PUMP STAT. MGD	PK.INDUST FLOW MGD	2013 FLOW CUMULATIVE MGD
45730400	29.	29.	348.	348.	.0953	.0224	.47	.0141	.0000	.0000	.0000	.48
45730300	85.	114.	416.	764.	.0003	.0331	.60	.0121	.0000	.0000	.0000	.63
45730200	1.	115.	0.	764.	.0093	.0000	.64	.0000	.0000	.0000	.0000	.67
45730100	10.	125.	60.	824.	.0075	.0079	.70	.0006	.0000	.0000	.0000	.73
45720000	1.	126.	0.	824.	.0001	.0000	.70	.0000	.0000	.0000	.0000	.73
45710000	10.	136.	128.	952.	.0081	.0086	.77	.0050	.0000	.0000	.0000	.80
45700000	10.	146.	49.	1001.	.0000	.0062	.80	.0018	.0000	.0000	.0000	.83
45690000	10.	156.	207.	1208.	.0028	.0001	.81	.0082	.0000	.0000	.0000	.85
45680000	795.	951.	2834.	4042.	.0178	.1244	1.31	.0819	.0000	.7560	.0000	2.19
45670000	5.	956.	0.	4042.	.0004	.0001	1.32	.0000	.0000	.0000	.0000	2.20
45660000	973.	1929.	7340.	11382.	.1305	.3734	2.79	.2712	.0000	.0000	.0000	3.94
45650000	10.	1939.	16.	11398.	.0000	.0001	2.79	.0008	.0000	.0000	.0000	3.94
45640000	0.	1939.	0.	11398.	.0000	.0000	2.79	.0000	.0000	.0000	.0000	3.94
45630000	0.	1939.	0.	11398.	.0000	.0000	2.79	.0000	.0000	.0000	.0000	3.94
45620000	305.	2244.	6404.	17802.	.0240	.1979	3.39	.7862	.0000	.0000	.0023	5.33
45610000	0.	2244.	0.	17802.	.0000	.0000	3.39	.0000	.0000	.0000	.0000	5.33
45600000	0.	2244.	0.	17802.	.0000	.0000	3.39	.0000	.0000	.0000	.0000	5.33
45590000	3092.	5336.	19979.	37781.	.5064	1.2456	7.60	.8319	.0000	.0000	.0273	10.40
45580000	1256.	6592.	12204.	49985.	.6198	.5825	10.21	.4765	.0000	.0000	.2634	13.75
45570000	2.	6594.	3.	49988.	.0000	.0002	10.21	.0001	.0000	.0000	.0000	13.75
45560000	0.	6594.	0.	49988.	.0000	.0000	10.21	.0000	.0000	.0000	.0000	13.75
45550000	392.	6986.	2681.	52669.	.0787	.2953	11.00	.1069	.0000	.0000	.0000	14.64
45540000	1.	6987.	0.	52669.	.0000	.0002	11.00	.0000	.0000	.0000	.0000	14.64
45530000	50.	7037.	75.	52744.	.0017	.0055	11.01	.0031	.0000	.0000	.0000	14.66
45520000	0.	7037.	0.	52744.	.0000	.0000	11.01	.0000	.0000	.0000	.0000	14.66
45510000	58.	7095.	368.	53112.	.0074	.0332	11.10	.0146	.0000	.0000	.0000	14.76
TOTAL FOR AREA		7095.		53112.	1.5101	2.9367		2.6150	.0000	.7560	.2930	

JONES FALLS INTERCEPTOR 45000000 (JF450000) w/ Johns Hopkins 10/8/15 credits

PIPE SCHEDULE

SEWER SERVICE AREA	UPSTREAM MANHOLE NUM.	UPSTREAM MANHOLE INVERT	DOWNSTREAM MANHOLE NUM.	DOWNSTREAM MANHOLE INVERT	PIPE LENGTH (FT.)	SLOPE (FT/FT)	EXISTING N	DESIGN N	DIA. (IN.)	FULL PIPE VELOCITY (FT/SEC)	FULL PIPE CAPACITY (MGD)	DRWG NUMBER
45730400	52028	301.47	52027	299.67	301.50	.0060	.011	.013	10.00	3.67	1.30	820310
45730400	52027	299.57	52026	297.22	294.00	.0080	.011	.013	10.00	4.24	1.50	820310
45730400	52026	297.12	52025	294.86	180.25	.0125	.011	.013	10.00	5.32	1.88	820310
45730400	52025	294.76	52024	294.04	32.00	.0225	.011	.013	10.00	7.12	2.52	820310
45730400	52024	293.44	43825	291.66	248.00	.0072	.011	.013	15.00	5.27	4.19	710726
45730400	43825	291.56	43824	290.69	121.00	.0072	.011	.013	15.00	5.28	4.19	710726
45730400	43824	290.59	43823	288.50	402.65	.0052	.011	.013	8.00	2.95	.67	710726
45730400	43823	288.40	43822	287.48	176.86	.0052	.011	.013	8.00	2.95	.67	710726
45730400	43822	287.38	43821	285.97	276.00	.0051	.011	.013	8.00	2.92	.66	710725
45730400	43821	285.87	43820	282.63	354.00	.0092	.011	.013	8.00	3.91	.89	710725
45730400	43820	279.72	43819	278.11	306.68	.0052	.011	.013	8.00	2.96	.67	710725
45730400	43819	278.01	43794	277.47	103.06	.0052	.011	.013	8.00	2.96	.67	710725
45730300	43794	272.03	43793	271.31	137.96	.0052	.011	.013	8.00	2.96	.67	710718
45730300	43793	271.21	43792	270.21	192.31	.0052	.011	.013	8.00	2.95	.67	710718
45730200	43792	270.11	43791	269.66	87.36	.0052	.011	.013	8.00	2.94	.66	710718
45730200	43791	269.56	43790	269.25	60.00	.0052	.011	.013	8.00	2.94	.67	710718
45730200	43790	269.15	43789	267.50	316.80	.0052	.011	.013	8.00	2.95	.67	710718
45730200	43789	267.32	43788	266.12	232.57	.0052	.011	.013	8.00	2.94	.66	710717
45730200	43788	266.02	43787	265.20	159.01	.0052	.011	.013	8.00	2.94	.66	710717
45730200	43787	265.10	43786	264.71	76.00	.0051	.011	.013	8.00	2.93	.66	710717
45730100	43786	261.24	44225	259.00	374.00	.0060	.011	.013	12.00	4.15	2.11	610456
45730100	44225	258.90	44224	257.98	328.80	.0028	.011	.013	10.00	2.51	.89	720561
45730100	44224	257.88	44223	256.80	451.40	.0024	.011	.013	10.00	2.32	.82	720561
45720000	44223	256.70	44222	255.91	330.30	.0024	.011	.013	10.00	2.32	.82	720560
45720000	44222	255.81	44221	255.02	330.30	.0024	.011	.013	10.00	2.32	.82	720560
45720000	44221	254.92	44220	253.38	642.00	.0024	.011	.013	10.00	2.33	.82	720560
45720000	44220	253.28	44219	252.19	340.80	.0032	.011	.013	10.00	2.68	.95	720559
45720000	44219	252.09	44218	251.21	276.90	.0032	.011	.013	10.00	2.68	.95	720559
45720000	44218	251.11	44217	249.90	378.20	.0032	.011	.013	10.00	2.69	.95	720559
45720000	44217	249.80	44216	248.79	317.10	.0032	.011	.013	10.00	2.68	.95	720559
45710000	44216	248.69	44215	247.68	317.10	.0032	.011	.013	10.00	2.68	.95	720558
45710000	44215	247.58	44214	246.39	372.20	.0032	.011	.013	10.00	2.68	.95	720558
45710000	44214	246.29	53270	245.79	156.35	.0032	.011	.013	10.00	2.68	.95	720558
45700000	53270	245.79	44213	245.10	215.85	.0032	.011	.013	10.00	2.68	.95	840646
45700000	44213	245.00	44212	243.98	318.60	.0032	.011	.013	10.00	2.69	.95	720558
45700000	44212	243.88	44211	242.74	355.80	.0032	.011	.013	10.00	2.69	.95	720557
45700000	44211	242.64	44210	241.48	362.00	.0032	.011	.013	10.00	2.69	.95	720557
45690000	44210	241.38	44209	240.61	240.60	.0032	.011	.013	10.00	2.69	.95	720557

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MARYLAND
NORTHERN DIVISION

UNITED STATES OF AMERICA and STATE OF MARYLAND, Plaintiffs, v. BALTIMORE COUNTY, MARYLAND, Defendant.	)	Civil Action No.

CONSENT DECREE

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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MARYLAND
NORTHERN DIVISION

UNITED STATES OF AMERICA and STATE OF MARYLAND, Plaintiffs, v. BALTIMORE COUNTY, MARYLAND, Defendant.	)	Civil Action No.

CONSENT DECREE

WHEREAS, Plaintiff, the United States of America ("United States"), by the authority of the Attorney General of the United States and through its undersigned counsel, acting at the request and on behalf of the Administrator of the United States Environmental Protection Agency ("EPA"), has filed the Complaint in this action seeking injunctive relief and civil penalties pursuant to Section 309 of the Clean Water Act, 33 U.S.C. § 1319, naming as defendant Baltimore County, Maryland ("Baltimore County") pursuant to Section 309(b) of the Clean Water Act, 33 U.S.C. § 1319(b);

WHEREAS, Plaintiff, the State of Maryland, Department of the Environment ("MDE"), has joined in the Complaint and seeks injunctive relief and civil penalties for Baltimore County's alleged violations of Title 9, Subtitle 3 of the Environment Article, Annotated Code of Maryland;

WHEREAS, Baltimore County operates a sanitary sewer collection system that serves most citizens of Baltimore County who live inside the urban-rural demarcation line, some citizens of Anne Arundel and Howard Counties, and the facilities located at Baltimore-Washington International Airport owned by the State of Maryland;

WHEREAS, the United States and the State of Maryland allege that Baltimore County has violated and continues to violate Section 301 of the Clean Water Act, 33 U.S.C. § 1311, and Sections 9-322 and 9-323 of the Environment Article, Annotated Code of Maryland, by discharging untreated sewage from its sanitary sewer collection system to waters of the United States and to waters of the State of Maryland;

WHEREAS, Baltimore County asserts that it professionally and competently operates and maintains its sanitary sewer collection system;

WHEREAS, the Parties have negotiated in good faith and have reached a settlement of the issues raised in the Complaint. Baltimore County's agreement to this Consent Decree is not an admission of liability, nor is it an adjudication of any fact or law;

WHEREAS, the Parties agree, and the Court finds, that settlement of the claims alleged in the Complaint without further litigation or trial of any issues is fair, reasonable and in the public interest and that the entry of this Consent Decree is the most appropriate way of resolving the claims alleged in the Complaint.

NOW THEREFORE, it is hereby ORDERED, ADJUDGED and DECREED as follows:

I. JURISDICTION AND VENUE

1. This Court has jurisdiction over the subject matter of this action and over the Parties to this action pursuant to Section 309(b) of the Clean Water Act, 33 U.S.C. § 1319(b), and 28 U.S.C. §§ 1331, 1345, 1355, and 1367. The Complaint states claims upon which relief may be granted against Baltimore County under Section 309 of the Clean Water Act, 33 U.S.C. § 1319, and Sections 9-339 and 9-342 of the Environment Article, Annotated Code of Maryland, for injunctive relief and civil penalties. Venue is proper in this District pursuant to Section 309(b) of the Clean Water Act, 33 U.S.C. § 1319(b), and 28 U.S.C. §§ 1391(b) and 1395(a). Baltimore County waives any and all objections or defenses that it might have to the Court's jurisdiction to enter and enforce this Consent Decree or to venue in this

District.

II. BINDING EFFECT

2. The provisions of this Consent Decree shall apply to and be binding on the United States and the State of Maryland, and on Baltimore County, its agents, successors, and assigns.

3. Effective from the Date of Lodging of this Consent Decree until its termination, Baltimore County shall give written notice of and provide a copy of this Consent Decree to any person or entity to whom Baltimore County may transfer ownership or operation of any portion of its Collection System. Baltimore County shall notify EPA, MDE and the United States Department of Justice in writing of any successor in interest at least twenty-one (21) days prior to any such transfer. No transfer of ownership or operation of the Collection System shall relieve Baltimore County of its obligations to ensure that the terms of this Consent Decree are implemented.

4. Baltimore County shall be solely responsible for ensuring that performance of the work contemplated under this Consent Decree is undertaken in accordance with the deadlines and requirements contained in this Consent Decree, and any exhibits hereto. Any action taken by any contractor or consultant retained to implement Baltimore County's duties under this Consent Decree shall be considered an action of Baltimore County for purposes of determining compliance with this Consent Decree. In an action to enforce this Consent Decree, Baltimore County shall not assert as a defense against the United States, EPA or MDE any act or failure to act by any of its officers, council members, managers, commissioners, employees, agents, contractors, successors and assigns; however, this Consent Decree shall not limit Baltimore County's right to employ contractors and consultants and to take all appropriate action against any person or entity that causes or contributes to Baltimore County's failure to perform.

III. PURPOSE

5. The express purpose of the Parties entering into this Consent Decree is for Baltimore

County to take all measures necessary to comply with the Clean Water Act and the regulations promulgated thereunder, and the Maryland water pollution control laws and the regulations promulgated under such laws, with the goal of eliminating Sanitary Sewer Overflows.

IV. DEFINITIONS

6. Unless otherwise defined herein, the terms used in this Consent Decree will have the meaning given to those terms in the Clean Water Act, 33 U.S.C. §§ 1251 et seq., and the regulations promulgated thereunder or, if not defined in the Clean Water Act or its regulations, then as defined in Title 9, Subtitle 3 of the Environment Article, Annotated Code of Maryland, and the regulations promulgated thereunder. Any other words shall be given their ordinary meaning.

The following terms used in this Consent Decree, its appendices, and studies and plans submitted by Baltimore County and approved by EPA and MDE will be defined as follows:

A. "Annual Report" shall mean the annual progress report to be submitted by Baltimore County pursuant to Paragraph 20 of this Consent Decree.

B. "Building Backup" shall mean a release from the Collection System, through a lateral to a building or structure.

C. "Collection System" or "Separate Sanitary Sewer Collection System" shall mean the collection and transmission system (including all pipes, Force Mains, sanitary sewer lines, SSO Structures, Pump Stations, manholes, and appurtenances thereto) owned by Baltimore County and designed to convey only sewage, and not storm water, from residences, commercial buildings, industrial plants and institutions for treatment at Baltimore City's Patapsco or Back River wastewater treatment plants, including portions of the system added after the Effective Date.

D. "Date of Lodging of the Consent Decree" or "Date of Lodging" shall mean the date on which the Consent Decree is lodged with the United States District Court for the District of Maryland.

E. "Day" or "days" shall mean a calendar day or calendar days. When the day a report or other deliverable is due under this Consent Decree falls on a Saturday, Sunday or any Federal, State of Maryland or Baltimore County legal holiday, Baltimore County shall have until the next calendar day that is not one of the aforementioned days for submittal of such report or other deliverable, with the exception of overflow reports required by Paragraph 18 of this Consent Decree.

F. "Deliverable" shall mean any written plan, report, map, or other document required to be submitted by Baltimore County pursuant to Section V (Remedial Measures) identified on Appendix H to this Consent Decree. The Quarterly Reports and Annual Reports required to be submitted by Baltimore County pursuant to Section VI (Reporting Requirements), and any certification required to be submitted pursuant to this Consent Decree, are not "Deliverables" as defined in this Consent Decree.

G. "DEPRM" shall mean the Baltimore County Department of Environmental Protection and Resource Management, and any successor agency.

H. "Discharge" shall mean any "discharge of a pollutant" as defined in 40 C.F.R. § 122.2, and/or any "discharge" as defined in Section 9-101(b) of the Maryland Environment Code Annotated (1996 Repl. Vol.) ("(1) The addition, introduction, leaking, spilling or emitting of a pollutant into waters of this State; or (2) The placing of a pollutant in a location where the pollutant is likely to pollute."), from the Collection System.

I. "DPW" shall mean the Baltimore County Department of Public Works, and any successor agency.

J. "Effective Date" shall mean the effective date of this Consent Decree as provided in Paragraph 79.

K. "Eligible SEP Costs" shall mean the costs of designing, planning, and implementing supplemental environmental projects ("SEPs"), but shall not include Baltimore County's

overhead, administrative expenses, legal fees, and contractor oversight.

L. “Force Main” shall mean any pipe that receives and conveys wastewater under pressure from the discharge side of a pump installed in a Pump Station.

M. “Gravity Sewer Line” shall mean a pipe that receives, contains and conveys wastewater not normally under pressure, but is intended to flow unassisted under the influence of gravity.

N. “Gravity Line Segment” shall mean that part of a Gravity Sewer Line that is between one manhole and the next closest manhole on the sewer line in question.

O. "Grease Generating Facility" shall mean any facility, including but not limited to food preparation, handling, and processing establishments, which conducts activities that routinely generate fats, oils and greases. The term “Grease Generating Facility” does not include a kitchen in an individual residential unit.

P. "Hydrograph" shall mean the graphical representation of flow volume over time of wastewater, infiltration, and inflow at a particular point in the Collection System. Hydrographs characterize diurnal variations in wastewater flow rates, as well as flow response to a wet weather event, at a particular point in the Collection System.

Q. “Hyetograph” shall mean the graphical representation showing the average rainfall distribution over the Baltimore County area. The graphs show rainfall intensity or volume as a function of time.

R. “Illegal Storm Water Discharge” shall mean the unauthorized discharge of storm water to the Collection System, whether such discharge occurs through an illegal connection or through an authorized connection, from a privately-owned source of inflow and/or infiltration, including but not limited to areaway drains, sump pumps, foundation drains, roof drains, and defective laterals.

S. "Major Gravity Line" shall mean any of the following:

i. all Gravity Sewer Lines that are ten inches in diameter or larger;

ii. all eight-inch lines that are necessary to accurately represent flow attributable to a specific service area in any Collection System Sewershed;

iii. all Gravity Sewer Lines that convey wastewater from one Pump Station service area to another Pump Station service area;

and

iv. All Gravity Sewer Lines that have caused or contributed, or that Baltimore County knows are likely to cause or contribute, to capacity-related Sanitary Sewer Overflows.

T. "Non-Pump Station SSO Structure" shall mean any SSO Structure located anywhere in the Collection System other than at a Pump Station.

U. "Parties" shall mean the United States of America, the State of Maryland, and Baltimore County.

V. "Pump Station" shall mean facilities owned by Baltimore County and comprised of pumps which lift wastewater to a higher hydraulic elevation, including all related electrical, mechanical, and structural systems necessary to the operation of the pump(s), but shall not include grinder pumps.

W. "Pump Station Design Capacity" shall mean the capacity that a Pump Station is designed to pump with its largest pump out of service.

X. "Pump Station SSO Structure" shall mean any SSO Structure located at a Pump Station.

Y. "Quarterly Report" shall mean the quarterly progress report to be submitted by Baltimore County pursuant to Paragraph 19 of this Consent Decree.

Z. "Sanitary Sewer Overflow" or "SSO" shall mean any spill, release, or Discharge

from the Collection System, including all Building Backups.

AA. "Sanitary Sewer Overflow Structure" or "SSO Structure" shall mean any structure in Baltimore County constructed for the purpose of allowing discharge from the Separate Sanitary Sewer Collection System at a point prior to connection with the Baltimore City collection system or the headworks of either the Patapsco or Back River wastewater treatment plants.

BB. "Sewer Basin" or "Sewershed" shall mean a section of Baltimore County's Collection System that is a distinct drainage and/or wastewater collection area and designated as such by Baltimore County.

CC. "Substantial Completion" shall mean, when used in reference to construction projects required under this Consent Decree, the date, as certified by the Engineer in charge of a construction project, when the construction project or specified part thereof is sufficiently completed, in accordance with the contract documents, such that the project or specified part thereof can be used to accomplish the purposes for which it was intended.

DD. "United States" shall mean the United States of America, acting on behalf of EPA.

V. REMEDIAL MEASURES

7. Elimination of Sanitary Sewer Overflows.

A. **General Requirements**. Baltimore County shall develop and implement the measures set forth in Paragraphs 7 through 18 with the goal of eliminating all SSOs from Baltimore County's Collection System.

B. **Sanitary Sewer Overflow Characterization Report**.

i. No later than ninety (90) days after the Effective Date of this Consent Decree, Baltimore County shall submit to EPA and MDE a Sanitary Sewer Overflow Characterization

Report that includes:

(a) A map depicting the Collection System and all of its appurtenances as described below. The map shall depict the locations of all known SSO Structures and the sanitary sewers associated with those SSO Structures, as well as all outfalls, manholes, and Pump Stations;

(b) Identification of the Sewersheds that contribute flow to the Baltimore County Collection System;

(c) Identification, including mapping, of the location, frequency, date, duration, and volume (measured durations and volumes where available, or best estimates) of SSOs (on a per event basis) since June 2000 to the extent such information is available; and

(d) Identification of each known cause or condition that contributed to each SSO identified in Paragraph 7.B.i(c).

ii. Baltimore County shall update the Sanitary Sewer Overflow Characterization Report on an annual basis to include SSO events and other new or corrected information identified during the prior year. Baltimore County shall submit the updated Sanitary Sewer Overflow Characterization Report as part of the applicable Annual Report.

C. **Monitoring and Elimination of Sanitary Sewer Overflow Structures**. Baltimore County shall monitor all Sanitary Sewer Overflow Structures ("SSO Structures") in its Collection System in accord with the procedures set forth below. Baltimore County shall eliminate all Non-Pump Station SSO Structures in accord with the procedures and schedules set forth below.

i. **Monitoring of SSO Structures**. As of the Date of Lodging of this Consent Decree, Baltimore County had identified 64 SSO Structures located at or relating to Pump Stations ("Pump Station SSO Structures") (identified on Appendix A1 to this Consent Decree) and 38 additional SSO Structures located within its Collection System ("Non-Pump Station SSO Structures") (identified on Appendix A2 to this Consent Decree). Baltimore County shall conduct monitoring of

each Pump Station and Non-Pump Station SSO Structure as set forth in this Paragraph 7.C.i, and shall report the results of such monitoring for each SSO Structure pursuant to Paragraph 7.C.ii., below, for Non-Pump Station SSO Structures until such time as Baltimore County certifies elimination of the respective SSO Structure pursuant to Paragraph 7.C.iv., below, and for Pump Station SSO Structures until termination of the Consent Decree.

(a) Monitoring of Pump Station SSO Structures. Baltimore County shall monitor each Pump Station SSO Structure for potential discharges by monitoring wet well levels and activation of the wet well high level alarms at the Pump Station. By 270 days from the Effective Date, Pump Station SSO Structures shall be monitored by a level sensing device (e.g., Red Cap probe or liquid level chart) connected to the SCADA system and set to trigger an alarm before or when the wet well level reaches the invert elevation of the SSO Structure. Baltimore County shall conduct periodic field tests of the level sensing device and SCADA system to ensure the accuracy of the elevation and the proper transmission of information regarding a discharge from the SSO Structure.

(b) Monitoring of Non-Pump Station SSO Structures. As of the Date of Lodging of this Consent Decree, Baltimore County is monitoring 9 Non-Pump Station SSO Structures through the use of a level monitor capable of recording the presence or absence of discharge, and 29 Non-Pump Station SSO Structures through the use of continuous flow meters. The method of monitoring for each Non-Pump Station SSO Structure as of the Date of Lodging is identified on Appendix A2 to this Consent Decree.

(1) Baltimore County shall monitor all Non-Pump Station SSO Structures that are not equipped with flow meters by inspecting the level monitors at least monthly, and within 5 days of any rainfall event that is one inch or greater in a 24-hour period ("one inch, 24-hour rainfall event"). If any of these SSO Structures show evidence of discharge, Baltimore County shall, within 30 days of discovery of such discharge, install a flow meter at the SSO Structure and report the

installation of such meter to EPA and MDE in the next quarterly report required pursuant to Paragraph 7.C.ii., below.

(2) Baltimore County shall monitor all Non-Pump Station SSO Structures that are equipped with flow meters by continuous use of such flow meters.

ii. **Reporting of Monitoring Information**. Baltimore County shall record, maintain, and submit to EPA and MDE in each Quarterly Report the following information regarding any discharges from SSO Structures during the prior calendar quarter.

(a) With respect to Pump Station SSO Structures and Non-Pump Station SSO Structures that are not equipped with flow meters:

(1) name, corresponding number, and full address of the SSO Structure;
(2) date of monitoring event;
(3) reason for monitoring event (e.g., routine monitoring or rain event)
(4) date of relevant weather conditions (if applicable)
(5) description of relevant weather conditions (e.g., type of precipitation, location of rain gauge and storm event);
(6) presence/absence of discharge;
(7) receiving waters (if applicable);
(8) identified cause (if applicable);
(9) details of corrective action taken or planned.

(b) With respect to Non-Pump Station SSO Structures that are equipped with flow meters:

(1) name, corresponding number, and full address of the SSO Structure;
(2) date of discharge;
(3) duration of overflow;
(4) date of relevant weather conditions (if applicable);
(5) description of relevant weather conditions (e.g., type of precipitation);
(6) gallons discharged;
(7) receiving waters;
(8) identified cause; and
(9) details of corrective action taken or planned.

(c) In addition to the above reporting requirements, Baltimore County must also report any discharges from the SSO Structures as required by Paragraph 18 of this Consent Decree and with any applicable federal and state reporting requirements.

iii. **Submission of Non-Pump Station SSO Structures Elimination Plan**. Within one year of the Date of Lodging of the Consent Decree, Baltimore County shall submit to EPA and MDE for review and approval a Non-Pump Station SSO Structures Elimination Plan for the Elm Road and Ripple Road Non-Pump Station SSO Structures that shall provide for the elimination of those SSO Structures as set forth below. Within two years of the Effective Date, Baltimore County shall submit to EPA and MDE for review and approval a Non-Pump Station SSO Structures Elimination Plan that shall provide for the elimination of all other known Non-Pump Station SSO Structures in the Collection System that have not been eliminated at the time of submission of the Elimination Plan. For each Non-Pump Station SSO Structure, the Elimination Plans shall include each of the following elements:

(a) Summary of Monitoring and Evaluation Data. Baltimore County shall provide:

(1) a summary of all available monitoring data, including an analysis of the activation threshold, frequency of activation, duration and volume of discharges during the monitoring period, and instances of flow metering inoperability (including period of inoperability, cause, corrective action, and projected return to service);

(2) identification of the receiving waters or other discharge area;

(3) an analysis of the likely underlying cause of the capacity issue(s) being alleviated by the SSO Structure discharges, including a summary of any available information regarding the original reason for installation of the SSO Structure; and

(4) a preliminary assessment of the potential impacts of immediate closure of the SSO Structure.

(b) Evaluation of Mitigation Activities. Baltimore County shall conduct an evaluation of potential mitigation measures to reduce the amount and duration of discharges from the SSO Structure and to mitigate the impacts associated with such discharges. The mitigation measures evaluated should include short-term collection activities (*e.g.*, the use of vacuum trucks), the use of temporary constructed bypasses of lines with insufficient capacity to reduce the amount and duration of discharges, and the implementation of more rapid and effective containment and removal response activities to mitigate the impacts of discharges. Baltimore County shall implement the mitigation measures most appropriate to mitigate impacts of discharges from the relevant SSO Structure until the SSO Structure is eliminated. Baltimore County shall report in each Quarterly Report any mitigation measures taken with respect to a discharge from an SSO Structure during the prior calendar quarter.

(c) Plan and Schedule for Elimination. Baltimore County shall develop a proposed plan and schedule that provides for elimination of each Non-Pump Station SSO Structure as follows:

(1) for the Elm Road Non-Pump Station SSO Structure, no later than 18 months from the Date of Lodging of the Consent Decree;

(2) for the Ripple Road Non-Pump Station SSO Structure, no later than 24 months from the Date of Lodging of the Consent Decree;

(3) for all other Non-Pump Station SSO Structures included in the Elimination Plan, as soon as practicable but no later than the earlier of one year after the completion of the I/I Evaluation and Long-Term Capacity Evaluation required by Paragraph 9 for the Sewershed in which the Non-Pump Station SSO Structure is located, or six years after the Effective Date. EPA and

MDE may extend the schedule for elimination of any individual Non-Pump Station SSO Structure upon a demonstration by Baltimore County that the specific circumstances relevant to that Non-Pump Station SSO Structure justify an extension.

iv. **Implementation of Elimination Plan and Certification of Elimination**. Within 30 days after approval or approval with conditions by EPA and MDE of the Elimination Plans, as provided in Section VIII (Review and Approval Procedures) of this Consent Decree, Baltimore County shall implement the Elimination Plans as approved and consistent with the approved scheduled contained therein, and the approved Elimination Plans shall be incorporated into, and become enforceable under, this Consent Decree. For each Non-Pump Station SSO Structure eliminated pursuant to this Paragraph 7.C., Baltimore County shall certify to EPA and MDE that such Non-Pump Station SSO Structure has been eliminated and shall summarize the actions taken by the County to eliminate the Non-Pump Station SSO Structure in the Quarterly Report for the calendar quarter in which the Non-Pump Station SSO Structure was eliminated.

v. **Post-Elimination Monitoring**. For each Non-Pump Station SSO Structure eliminated pursuant to this Paragraph 7.C., Baltimore County shall evaluate the hydraulic impacts, such as related SSOs, of the elimination of the SSO Structure on the relevant portions of the Collection System for a period of 18 months following elimination of the SSO Structure. By agreement of the parties, the hydraulic impacts evaluation period may be shortened to less than 18 months. Baltimore County shall consider this information in its evaluation of the long-term capacity and peak flow management of its Collection System as required by Paragraph 9.

vi. **Required Response to Certain Discharges from Pump Station SSO Structures**. If, during the monitoring of Pump Station SSO Structures required pursuant to Paragraph 7.C.i. above, Baltimore County identifies a discharge from a Pump Station SSO Structure that is caused by an event other than the complete loss of pumping capacity at the Pump Station, Baltimore County

shall conduct an analysis of the likely underlying cause of the discharge and, within 90 days of detection of the discharge, submit to EPA and MDE for review and approval a proposed plan and schedule for preventing further discharges arising from the same cause. This requirement shall include discharges from a Pump Station SSO Structure that result from exceeding the Pump Station Design Capacity.

vii. **Application to Newly-Discovered SSO Structures**. The requirements of this Paragraph 7.C. shall also apply to any SSO Structures that are identified after the Date of Lodging of the Consent Decree. To the extent that a Non-Pump Station SSO Structure is discovered after submission of the original Elimination Plan required by Paragraph 7.C.iii., Baltimore County shall submit to EPA and MDE, within 180 days of discovery of the additional Non-Pump Station SSO Structure, a supplement to the original Elimination Plan that contains the same information for, and proposes a plan and schedule for, elimination of the newly-discovered Non-Pump Station SSO Structure.

D. **Construction Projects**. Baltimore County shall complete the Collection System construction projects identified in Appendix B according to the milestone dates set forth therein. The milestone dates set forth in Appendix B are incorporated into, and enforceable under, the Consent Decree as if fully set forth herein. In each Quarterly Report, Baltimore County shall summarize the status of the projects required by Paragraph 7.D. (as listed on Appendix B) as of the end of the prior calendar quarter. Following completion of each construction project identified on Appendix B, Baltimore County shall certify to EPA and MDE that construction has been completed and shall provide a plan for post-construction monitoring consistent with Paragraph 7.D.iii., below, in the Quarterly Report for the calendar quarter in which construction was completed.

i. For construction projects listed on Appendix B that have commenced or are scheduled to commence prior to two years from the Effective Date, Baltimore County shall retain any relevant rainfall and flow monitoring data collected prior to commencement of construction of such

project.

ii. For construction projects listed on Appendix B and scheduled to commence construction after two years from the Effective Date, Baltimore County shall monitor flow and rainfall for eighteen (18) months prior to commencement of construction as necessary to allow the characterization of flow in the portions of the Collection System and overflows impacted by such construction project(s). Such flow and rainfall monitoring shall be performed in accordance with the requirements of Paragraph 9.

iii. Following completion of any construction project listed on Appendix B, Baltimore County shall monitor flow and rainfall for a period of eighteen (18) months to ascertain the effectiveness of the construction project. Such flow and rainfall monitoring shall be performed in accordance with the requirements of Paragraph 9.

iv. By agreement of the Parties, the flow and rainfall monitoring period(s) required by Paragraph 7.D.ii and iii may be shortened to less than 18 months.

v. Any flow and rainfall monitoring data collected by Baltimore County pursuant to this Paragraph prior to the submission of the Sewershed Repair, Replacement, and Rehabilitation Plan for the Sewershed in which the relevant construction project is located shall be considered in developing the relevant SRRR Plan, and shall be made available to EPA and MDE upon request. Any flow and rainfall monitoring data collected by Baltimore County pursuant to this Paragraph after the submission of the SRRR Plan for the Sewershed in which the relevant construction project is located shall be considered by Baltimore County as part of its ongoing evaluation of Collection System performance and shall be made available to EPA and MDE upon request.

E. **Reporting Requirements**. Baltimore County shall report to EPA and MDE on its performance of the requirements in this Paragraph 7 as specifically set forth in Section VI (Reporting Requirements) of this Consent Decree.

8. **Collection System Inspection**.

A. **General Requirements.** Baltimore County shall conduct a comprehensive inspection of its Collection System in accord with the criteria set forth in this Paragraph in order to identify causes or potential causes of SSOs.

B. **Submission of Inspection Plan.** Within 60 days of the Effective Date, Baltimore County shall submit a proposed Collection System Inspection Plan to EPA and MDE for approval pursuant to Section VIII (Review and Approval Procedures) of this Consent Decree. Baltimore County's Inspection Plan shall provide for the inspection of Gravity Sewer Lines, Force Mains, manholes, and other appurtenances as set forth in Paragraph 8.C. and D. below, and shall specifically include:

i. Specific inspection activities directed at identifying system defects that may cause SSOs, including but not limited to, design and construction defects, structural defects, debris, root intrusion and grease accumulation, that should be given priority consideration for future repair, replacement or rehabilitation or more frequent maintenance.

ii. A list of all sewer sub-basins that will be inspected pursuant to Paragraph 8.C.i.-iii. below, and a proposed schedule for completing those inspections.

iii. A list of all Gravity Line Segments that Baltimore County believes are subject to the exemptions from CCTV inspection requirements set forth in Paragraph 8.C.vi.

C. **Gravity Sewer Line Inspection.**

i. Within 18 months of the Effective Date:

(a) Baltimore County shall perform closed circuit television ("CCTV") inspections of all Gravity Sewer Lines greater than or equal to 8 inches and less than or equal to 27 inches in diameter that are located within sewer sub-basins in which non-Pump Station SSO Structures are located and/or in which Baltimore County has identified potential structural defects based

on the presence of SSOs or on demonstrated insufficient capacity occurring prior to the Effective Date.

(b) Baltimore County shall perform CCTV inspections, or inspections using comparable methods accepted as industry standard for larger lines, of all Gravity Sewer Lines greater than 27 inches in diameter that are located within sewer sub-basins in which Non-Pump Station SSO Structures are located and/or in which Baltimore County has identified potential structural defects based on the presence of SSOs or on demonstrated insufficient capacity occurring prior to the Effective Date. In performing these inspections, Baltimore County shall not be required to disrupt service in these lines.

(c) Following completion of the requirements set forth in Paragraphs 8.C.i.a. & b., above, Baltimore County shall certify that all such requirements have been completed and summarize the actions taken by Baltimore County to complete these requirements in the Quarterly Report for the calendar quarter in which the requirements were completed.

ii. Within 6 years of the Effective Date, Baltimore County shall perform CCTV inspections of all Gravity Sewer Lines greater than or equal to 8 inches and less than or equal to 27 inches in diameter that are located within sewer sub-basins in which the average year of original pipe installation is 1960 or earlier and/or in which Baltimore County has identified potential structural defects based on the presence of root blockages or other blockages occurring prior to the Effective Date, and which are located within the following Sewer Basins:

Herring Run
Jones Falls
Patapsco
Gwynns Falls
Dead Run
West Low Level
Stemmers Run

Following completion of the inspection requirements of Paragraphs 8.C.ii., 8.C.iv., 8.D.i., and 8.D.ii(b)(1) for any Sewershed, Baltimore County shall certify that all such requirements have been

completed for that Sewershed and summarize the actions taken by Baltimore County to complete these requirements in the Quarterly Report for the calendar quarter in which the requirements were completed.

iii. Within 9 years, 6 months of the Effective Date, Baltimore County shall perform CCTV inspections of all Gravity Sewer Lines greater than or equal to 8 inches and less than or equal to 27 inches in diameter that are located within sewer sub-basins in which the average year of original pipe installation is 1960 or earlier and/or in which Baltimore County has identified potential structural defects based on the presence of root blockages or other blockages occurring prior to the Effective Date, and which are located in any Sewer Basin other than those basins listed in Paragraph 8.C.ii. above. Following completion of the inspection requirements of Paragraphs 8.C.iii., 8.C.iv., 8.D.i., and 8.D.ii(b)(1) for any Sewershed, Baltimore County shall certify that all such requirements have been completed for that Sewershed and summarize the actions taken by Baltimore County to complete these requirements in the Quarterly Report for the calendar quarter in which the requirements were completed.

iv. **CCTV Inspection of Gravity Lines Larger than 27" in Diameter**. Baltimore County shall perform CCTV inspections, or inspections using comparable methods accepted as industry standard for larger lines, of all Gravity Sewer Lines greater than 27 inches in diameter. In performing these inspections, Baltimore County shall not be required to disrupt service in these lines. Baltimore County shall complete such inspections in each Sewer Basin within the time period provided for completion of CCTV inspection in that basin pursuant to Paragraph 8.C.ii. & iii. above.

v. **CCTV Inspection Following SSOs**. Beginning 75 days from the Date of Lodging of the Consent Decree, Baltimore County shall conduct CCTV inspection of any Gravity Line Segment of the Collection System where an SSO has occurred within 10 working days of when Baltimore County discovers or has knowledge of the occurrence of the SSO, unless

(a) Baltimore County identifies the cause of the SSO as a blockage in a County-owned lateral adjacent to the Gravity Line Segment and cleans the County-owned lateral;

(b) Baltimore County identifies the cause of the SSO as a blockage in the Gravity Line Segment directly visible from the manhole; or

(c) Baltimore County has previously inspected the Gravity Line Segment with CCTV pursuant to this Paragraph 8.C.v. due to a prior SSO for which Baltimore County is in the process of developing or implementing corrective action.

vi. **Exceptions to CCTV Requirements**.

(a) Specific Segments. The following Gravity Line Segments shall be exempt from the inspection requirements set forth in Paragraph 8.C.i.-iv. above:

(1) Any Gravity Line Segment that has been structurally rehabilitated by pipe relining or replacement within the 10-year period prior to the Effective Date.

(2) Any Gravity Line Segment that has been inspected by CCTV as part of a rehabilitation or construction project that is ongoing as of the Effective Date.

(b) Alternative Methods. Prior to performing CCTV inspection of any gravity line pursuant to Paragraph 8.C.i.-iii. above, Baltimore County may seek approval from EPA and MDE to use one or more alternative methods of inspection that will provide comparable or equivalent information.

vii. **Inspection Criteria**. Baltimore County shall perform CCTV inspections required by this Paragraph in accordance with "Specification Guidelines: Wastewater Collection Systems Maintenance and Rehabilitation" prepared by the National Association of Sewer Service Companies ("NASSCO"); the "Handbook: Sewer System Infrastructure Analysis and Rehabilitation, EPA/625/6-91/030," Oct. 1991 (hereinafter "SSES Handbook"); and sound engineering practice.

D. **Other Inspections**.

i. Manholes and Other Appurtenances. Baltimore County shall perform inspections, using appropriate methodologies, of all manholes and other appurtenances located within or immediately adjacent to the gravity line segments to be inspected pursuant to Paragraph 8.C.i.-iv. above. Inspection of these manholes and other appurtenances shall be completed within the time periods set forth in Paragraph 8.C.i.-iv. above for inspection of the related gravity line segments.

ii. **Force Mains**.

(a) Inspection/Evaluation. Baltimore County shall perform inspections, or other appropriate evaluations, of all Force Mains in its Collection System. Inspection/evaluation of Force Mains shall be carried out utilizing one or more methodologies appropriate to the specific characteristics of each Force Main, which methodologies may include, but are not limited to, visual/CCTV, radiography, ultrasonic/sonar and coupon sampling. Baltimore County shall determine the appropriate inspection/evaluation methodology by performing a risk assessment for each Force Main to determine the risk of failure, based on criteria such as pipe material, diameter, age, depth, profile, flow conditions, operating conditions, soil conditions, internal/external corrosion protection, past performance, transient analysis, and consequence of failure. Force Main inspections/evaluations shall be carried out in such a manner as to allow adequate assessment of the condition of each Force Main. Baltimore County shall consider alternatives for integrating Force Main location information developed during the inspection process into its "Miss Utility" locator program.

(b) Timing.

(1) Baltimore County shall perform the requirements set forth in Paragraph 8.D.ii.(a) above for all Force Mains installed prior to 1980 and the Dundalk, Forge Acres, and Bird River Force Mains within the time periods set forth in Paragraph 8.C.ii.-iii. above for completion of inspections within the Sewershed in which the Force Main is located.

(2) Baltimore County shall perform the requirements set forth in Paragraph 8.D.ii.(a) above for all Force Mains not covered by 8.D.ii(b)(1) above prior to termination of the Consent Decree. Following completion of these inspection requirements, Baltimore County shall certify that all such requirements have been completed and summarize the actions taken by Baltimore County to complete these requirements in the Quarterly Report for the calendar quarter in which the requirements were completed.

E. **Implementation of Inspection Plan.** Within 30 days after approval or approval with conditions by EPA and MDE of the Inspection Plan, as provided in Section VIII (Review and Approval Procedures) of this Consent Decree, Baltimore County shall implement the Inspection Plan as approved consistent with the approved schedules contained therein, and the approved Inspection Plan shall be incorporated into, and become enforceable under, this Consent Decree. Baltimore County shall identify and record all deficiencies identified through the inspections required by this Paragraph for purposes of reporting and addressing those deficiencies in the SRRR Plans as required by Paragraph 10.

F. **Reporting Requirements**. Baltimore County shall report to EPA and MDE on its performance of the requirements in this Paragraph 8 as specifically set forth in Section VI (Reporting Requirements) of this Consent Decree.

9. **Rainfall and Flow Monitoring**.

A. **General Requirements**. Baltimore County shall collect rainfall and flow monitoring data as set forth below and utilize that data to perform evaluations of (i) inflow/infiltration ("I/I") into the Collection System, (ii) the Collection System's capacity to collect and convey peak flows experienced by or predicted for the Collection System without causing dry-weather and wet-weather SSOs, and (iii) the effectiveness of measures implemented by Baltimore County pursuant to this Consent Decree to reduce I/I and to increase system capacity.

B. **Rainfall and Flow Monitoring**. Baltimore County shall submit a Rainfall and Flow Monitoring Plan as required by Paragraph 9.B.v. below, and shall collect rainfall and flow monitoring data pursuant to this Paragraph 9.B. and its Rainfall and Flow Monitoring Plan as approved by EPA and MDE.

i. **Rainfall Monitoring**. Baltimore County shall collect rainfall data as necessary to allow the characterization of flow from each Sewershed service area, the characterization of every known SSO, the development of the Model as required by Paragraph 14, and evaluation of the effectiveness of measures implemented by Baltimore County pursuant to this Consent Decree to reduce I/I and to increase system capacity. Baltimore County shall monitor the contribution from rainfall to each Sewershed within Baltimore County's jurisdictional boundary by using (a) a distribution of rain gauges, (b) multiple rain gauges in concert with Doppler radar, or (c) other monitoring methodologies, subject to review and approval by EPA and MDE, that produce information at least as representative as the use of rain gauges in concert with Doppler radar. If Baltimore County elects to use rain gauges only, Baltimore County shall use a network of appropriately distributed rain gauge stations with a minimum coverage of one rain gauge station per two (2) square miles with no fewer than three (3) rain gauge stations per Sewershed. If Baltimore County elects to use rain gauges in concert with Doppler radar, Baltimore County shall use a network of appropriately distributed rain gauge stations with a minimum coverage of one (1) rain gauge station per ten (10) square miles as well as data collected using Doppler radar that provides a minimum resolution of one (1) pixel per four (4) square kilometers. Baltimore County shall also measure rainfall occurring in portions of the Collection System Sewersheds outside the Baltimore County limits by using appropriately distributed rain gauges located at the upstream jurisdictional boundary(s) (i.e., Baltimore County/Howard County and/or Baltimore County/Anne Arundel County) in the respective Sewershed(s), and, if Baltimore County is proceeding under subparagraph (b) above, by using Doppler radar, to achieve a resolution as close to one pixel per four

square kilometers as is practical. Baltimore County shall also, where practical and appropriate, locate additional rain gauges within Sewershed areas outside its jurisdiction, on properties owned or operated by Baltimore County (such as water treatment facilities), or where practical and appropriate, by agreement with third parties. Baltimore County shall locate, install, operate, calibrate, and maintain all rain gauges, and shall utilize Doppler radar data (if utilized), in accordance with the manufacturer's/service provider's recommendations and good industry practices.

ii. **Flow Monitoring.** Flow data shall be collected using a system of permanent and temporary flow monitors, including the flow or the pump run time records available from all Pump Stations located in the Collection System.

(a) Baltimore County shall collect flow data at such locations in the Collection System as are necessary to allow the characterization of flow from each Sewershed service area, the characterization of every known SSO, the development of the Model as required by Paragraph 14, and evaluation of the effectiveness of measures implemented by Baltimore County pursuant to this Consent Decree to reduce I/I and to increase system capacity.

(b) Baltimore County shall inspect all flow meters with sufficient frequency to meet the data requirements set forth in Paragraph 9.B.iii., below. Baltimore County shall maintain and calibrate all flow meters per the manufacturer's specifications or shall propose alternative maintenance or calibration procedures and criteria for approval by EPA and MDE.

iii. Baltimore County shall conduct its flow and rainfall monitoring in accordance with the SSES Handbook, the NASSCO Guidelines, and sound engineering practices. Baltimore County's flow and rainfall monitoring network shall be designed, installed, operated and maintained to provide data representative of actual rainfall and flow conditions and of sufficient quality for use in the development, calibration, and verification of the Model as required by Paragraph 14, for at least ninety percent (90%) of the time each meter experiences measurable flow. Monitoring site

selection, equipment selection and installation, calibration, and maintenance, and data quality assurance checks shall all be carried out to optimize monitoring accuracy, to minimize the loss of data due to meter downtime, and shall all conform with the equipment manufacturers' recommendations and current, good engineering practice. Field calibration results for each meter, along with an evaluation of the accuracy for each meter, shall be retained consistent with Section XVIII (Record Keeping) of this Consent Decree. These shall include (for flow monitoring) monitoring site diagrams, scattergraph plots of field data sets, manual field depth and velocity measurements, and (if the site is free flowing) the appropriate pipe curve.

iv. Rainfall and flow data shall be handled and analyzed using appropriate, industry-accepted quality assurance and quality control procedures that will assure that the measurements are representative of actual rainfall and flow conditions and that the data are of sufficient quality for use in the development, calibration, and verification of the Model as required by Paragraph 14.

v. By no later than 180 days from the Effective Date, Baltimore County shall submit a Rainfall and Flow Monitoring Plan, and accompanying implementation schedule, to EPA and MDE for review and approval. This Plan shall describe in detail the approach that Baltimore County will utilize to monitor rainfall and flow in each Sewershed, including any areas of the Sewershed outside of Baltimore County's jurisdiction. The Plan also will provide a detailed discussion of the technical basis for the proposed approach to rainfall monitoring, including the number of rain gauges to be used in each Sewershed and their approximate locations. The Plan shall also identify the estimated number and general location of flow monitoring points in each Sewershed and provide a map that identifies the location of each rain gauge and flow monitor. It is recognized that details such as particular monitoring locations may change based upon field inspection activities; however, the Plan shall describe how the proposed flow monitoring points will allow the collection of data that is adequate to support successful

calibration and verification of the Model, as required by Paragraph 14.B., and characterization of the Collection System's response to wet weather events as required by Paragraph 9.C.ii. The Plan shall also describe how Baltimore County, consistent with Paragraph 9.B.vi. below, proposes to ensure that its monitoring program will be capable of evaluating the effectiveness of measures implemented by Baltimore County pursuant to this Consent Decree (including Paragraphs 7, 10, and 13) to reduce I/I and to increase system capacity.

vi. Within one year of approval of its Rainfall and Flow Monitoring Plan, and on an annual basis thereafter until termination of the Consent Decree, Baltimore County shall evaluate the number and placement of flow monitors and rain gauges throughout the Collection System and in each Sewershed and make any modifications necessary to ensure that the then-current number and placement of flow monitors and rain gauges capture representative wastewater flow and rainfall data sufficient to satisfy the requirements of this Paragraph 9.B., including evaluation of the impact on the Collection System or Sewershed of the completion of any repair, replacement or rehabilitation projects designed to reduce I/I or to increase capacity. In each Annual Report, Baltimore County shall summarize the results of the evaluation for the prior year, including the location of rain gauges or flow monitors changed during the prior calendar year, and provide a revised location map.

C. **Evaluation of Monitoring Data**. Baltimore County shall complete an Inflow/Infiltration Evaluation and a Long-Term Capacity/Peak Flow Management Evaluation for each Sewershed as set forth in Paragraphs 9.C.i. and ii. below. Baltimore County shall complete each Evaluation no later than 60 days prior to the date by which it is required to submit the SRRR Plan for the relevant Sewershed pursuant to Paragraph 10, and shall summarize and incorporate the results of the Evaluations in the SRRR Plan for the relevant Sewershed.

i. **Inflow/Infiltration Evaluation**. For each Sewershed, Baltimore County shall complete the evaluation of I/I into the Collection System within that Sewershed. These evaluations

shall include identification of sources of infiltration, sources of inflow, and methods for reducing I/I into the Collection System. As part of these required I/I evaluations, Baltimore County shall utilize the rainfall and flow monitoring data collected pursuant to this Paragraph: (a) to determine baseline normalized (e.g., gallons/inch-mile) I/I rates in each Sewershed; (b) to determine the efficacy of the capital projects completed pursuant to Paragraph 7 to reduce I/I rates; and (c) to predict the effectiveness of the capital projects required by Paragraph 7 but not yet completed, and any additional rehabilitation or other corrective action proposed by Baltimore County in each SRRR Plan to reduce peak wet weather flows and/or to address portions of the Collection System with insufficient capacity, including actual or potential SSOs. For purposes of this Paragraph 9 only, the term "evaluation" shall be interpreted in accordance with the meaning ascribed to that term in sub-chapters 3.3, 3.4, 3.5, 3.6 and Chapter 4 of the SSES Handbook and in accordance with the technical procedures for identification of I/I set forth in sub-chapters 3.3, 3.4, 3.5, 3.6, and Chapter 4 of the SSES Handbook. Following completion of the I/I Evaluation for any Sewershed, Baltimore County shall certify that the I/I Evaluation has been completed for that Sewershed and summarize the actions taken by Baltimore County to complete the I/I Evaluation in the Quarterly Report for the calendar quarter in which I/I Evaluation was completed.

ii. **Long-Term Capacity/Peak Flow Management Evaluation**. Baltimore County shall use the data and information collected and analyzed in Paragraphs 8 and 9 to evaluate whether the construction projects required by Paragraph 7.D. of the Consent Decree and the projects Baltimore County proposes to complete pursuant to Paragraph 10 will ensure adequate long-term transmission capacity in the Collection System. At a minimum, Baltimore County shall evaluate the hydraulic capacity of all Major Gravity Lines, Force Mains, Pump Stations, and relevant appurtenances (collectively referred to as “Modeled Components” for purposes of this Paragraph 9.C.ii.).

(a) As part of the evaluation required by this subparagraph, Baltimore County shall use the information, including I/I rates, that it is required to develop pursuant to this

Paragraph of the Consent Decree to assess existing and long-term capacity of the Collection System, to evaluate the ability of the Collection System to transmit peak flows experienced by and predicted for the Collection System, and to identify appropriate measures to address capacity issues with the goal of eliminating capacity-related SSOs. Baltimore County shall use flow data and rainfall data collected pursuant to this Paragraph and the Model required by Paragraph 14 both to accurately represent wastewater flow attributable to each service area and to estimate the impact of peak flows experienced by the Collection System on the capacity of the Modeled Components to manage peak flows. Peak flows shall be determined using flow monitoring conducted pursuant to this Paragraph and shall take into account variables including, but not limited to: the average age of the gravity sewer system; soil-type and porosity (where applicable); maximum, minimum and average yearly groundwater elevations; proximity to surface water bodies; tidal influence; amount of drainage area; service area size; land use; historic I/I data; seasonal population patterns (where applicable); Collection System construction materials; and year 2025 predicted population and land uses.

(b) Baltimore County shall determine predicted peak flows for each of its Sewersheds under baseline and future flow conditions for, at a minimum, 2, 10, and 20 year/24-hour storm events. In developing the Hyetographs and Hydrographs for these storm events, Baltimore County shall utilize either (i) an SCS Type II rainfall distribution, or (ii) an alternative rainfall distribution that is more representative of actual Baltimore County rainfall patterns than the SCS Type II distribution. If Baltimore County utilizes an alternative rainfall distribution pursuant to Paragraph 9.C.ii(b)ii., Baltimore County shall provide with its analysis an explanation of its determination that the alternative rainfall distribution was more representative. Baseline conditions shall be those in effect at the time flow metering is completed in each Sewershed. Future conditions shall be based on reasonable population projections for year 2025. Baltimore County shall include in its evaluation the effects of completion of the capital projects required under Paragraph 7 and any projects that it proposes to

complete pursuant to each SRRR Plan developed pursuant to Paragraph 10. The baseline reference for those projects shall be the period during which rainfall and flow monitoring were last carried out. Baltimore County may consider the utilization of existing, practical in-line storage capacity (i.e., storage capacity that can be used without modification to the existing system and that does not cause any SSOs) in evaluating the capacity of the Collection System and the ability of the Modeled Components to manage peak flows resulting from storm events.

(c) Baltimore County shall develop rainfall Hyetographs and I/I Hydrographs for each Sewershed. The Hyetographs and Hydrographs shall be developed using:

(1) Available historical rainfall and flow data;

(2) Rainfall and flow data collected pursuant to this Paragraph, or otherwise;

(3) Population data;

(4) Winter water use records; and

(5) Other appropriate information.

Baltimore County shall identify and apply widely-used and accepted engineering methodologies to determine baseflow rates and diurnal baseflow variation, dry weather infiltration, relationships between rainfall and wet weather flow volumes and rates in each portion of each Sewershed, and to identify a representative Hydrograph shape(s). The Hyetographs and I/I Hydrographs shall be developed for the storm recurrence frequencies identified in subparagraph (b) above. The I/I Hydrographs shall be integrated with baseline wastewater, rainfall, and flow data and used in the Model to understand the flow through the Modeled Components.

(d) In evaluating the impact of the capital improvement projects required by Paragraphs 7.D. and 13.B. of the Consent Decree, and the capital projects that Baltimore County proposes in any SRRR Plan, on the adequacy of long-term transmission capacity and the ability

of the Collection System to transmit peak flows, Baltimore County shall account for the Collection System's existing and modeled capacity, the estimated population and wastewater flow rates for the year 2025, and estimated sewer deterioration rates, and shall use the results of that evaluation to:

(1) Identify any Modeled Components that restrict flow of wastewater through the Collection System that cause or contribute, or are likely to cause or contribute, to SSOs from the Collection System;

(2) Quantify the maximum flow that any Modeled Component identified in 9B.ii.(d)(1) above can convey without causing or contributing to an SSO;

(3) Identify all Modeled Components that cannot manage peak flows during a full range of storm events listed in Paragraph 9.B.ii(b) without causing or contributing to an SSO; and

(4) Identify the improvements to the Collection System necessary to ensure adequate long-term capacity consistent with the SSES Handbook during a full range of storm events specified in this Paragraph 9.C.ii.

(e) The improvements Baltimore County shall consider to assure adequate capacity shall include expansion and/or replacement of Modeled Components, including Pump Stations, reduction of inflow and infiltration, and installation of larger replacement sewers or relief sewers.

(f) Following completion of the long-term capacity/peak flow management evaluation for any Sewershed, Baltimore County shall certify that the long-term capacity/peak flow management evaluation has been completed for that Sewershed and summarize the actions taken by Baltimore County to complete the long-term capacity/peak flow management evaluation in the Quarterly Report for the calendar quarter in which the long-term capacity/peak flow management evaluation was completed.

(g) It is not the purpose of this Consent Decree to require Baltimore County to design or otherwise construct its Collection System to any specific recurring storm interval, or any particular event modeled pursuant to this Consent Decree.

D. **Reporting Requirements**. Baltimore County shall report to EPA and MDE on its performance of the requirements in this Paragraph 9 as specifically set forth in Section VI (Reporting Requirements) of this Consent Decree.

10. **Sewershed Repair, Replacement and Rehabilitation Plans**.

A. **General Requirements**. Following completion of the Collection System Inspection required by Paragraph 8, and considering the rainfall and flow monitoring data collected pursuant to Paragraphs 7.D. and 9, Baltimore County shall prepare a Sewershed Repair, Replacement and Rehabilitation Plan ("SRRR Plan") for each Sewershed that describes the deficiencies identified through the Collection System Inspection and provides for the performance of any repair, replacement, rehabilitation or other corrective action necessary to address those deficiencies. Baltimore County shall complete implementation of the SRRR Plans for all 32 Sewersheds in its Collection System by no later than 14 years, six months from the Effective Date.

B. **Development and Submission of SRRR Plans and Schedules.** Within one year of completion of the Collection System Inspection for each Sewershed as required by Paragraph 8, Baltimore County shall prepare and submit to EPA and MDE for approval, pursuant to Section VIII (Review and Approval Procedures) of this Consent Decree, a SRRR Plan for that Sewershed. Each SRRR Plan shall provide for future repair, replacement, and rehabilitation of Collection System components within that Sewershed in accordance with a prescribed schedule that provides for completion of construction and implementation of each project to be performed pursuant to the approved SRRR Plan by no later than 4 years from EPA and MDE approval or approval with conditions

of the SRRR Plan pursuant to Section VIII (Review and Approval Procedures) of this Consent Decree. In proposing schedules for implementation of the SRRR Plans, Baltimore County shall prioritize the work to be performed in each Sewershed based on an evaluation of the rehabilitation activities that are expected to contribute most effectively to the prevention of SSOs.

C. **Criteria for SRRR Plans.** Within each SRRR Plan, Baltimore County shall:

i. Evaluate the effectiveness of the projects completed or proposed to be completed pursuant to Paragraph 7.D. for the relevant Sewershed. Baltimore County shall use rainfall and flow monitoring data collected in accordance with requirements of Paragraphs 7.D. and 9 of the Consent Decree, and shall use the Model developed in accordance with Paragraph 14 of the Consent Decree, to demonstrate the effectiveness of the construction projects;

ii. Identify all deficiencies in the relevant Sewershed discovered during the Collection System Inspection conducted pursuant to Paragraph 8;

iii. Identify all corrective actions taken (including date completed), or to be taken, by Baltimore County (including but not limited to preventative maintenance, repair, replacement, or rehabilitation) to address the deficiencies identified during inspection of the relevant Sewershed;

iv. Describe the priority scheme used to set priorities for correcting identified deficiencies within each Sewershed, including any decision not to correct an identified deficiency;

v. Describe the decision-making criteria used to select future corrective action;

vi. Propose a plan and schedule for implementing rehabilitation and other corrective action determined necessary to correct deficiencies in the relevant Sewershed identified during the inspections required by Paragraph 8, taking into consideration the Long-Term Capacity/Peak Flow Management analysis performed for the relevant Sewershed pursuant to Paragraph 9; the prioritization scheme to be applied to correction of these deficiencies; and an estimate of the cost

necessary to complete any proposed rehabilitation and other corrective actions. For purposes of this Paragraph only, the term "rehabilitation" shall be interpreted in accordance with the meaning ascribed to that term in Chapters 5.4 and 6 of the SSES Handbook, and in accordance with the technical procedures for sewer system rehabilitation set forth in Chapter 6 of the SSES Handbook.

vii. Propose a plan and schedule for eliminating those physical connections (i.e., cross connections) between the Collection System and the storm water collection system that allow or have the potential to allow sanitary waste to be discharged to the storm water collection system;

viii. Present the results of the long-term capacity/peak flow management evaluation conducted pursuant to Paragraph 9.C.ii, and determine for each Sewershed the range of storm events as specified in Paragraph 9.C.ii(b) for which the Collection System in its existing condition can convey peak flows without the occurrence of SSOs. As part of its analysis, Baltimore County shall identify all modeled Collection System Components and Pump Stations that cause or contribute to flow restrictions or that have the potential to cause or contribute to overflows;

ix. Consistent with the results of the long-term capacity/peak flow management evaluation conducted pursuant to Paragraph 9.C.ii, project for each Sewershed the range of storm events as specified in Paragraph 9.C.ii(b) for which the Collection System will be able to convey peak flows without the occurrence of SSOs. Such projection shall assume completion of the construction projects required by Paragraph 7 of this Consent Decree, and completion of the proposed rehabilitation or other corrective action projects recommended by the SRRR Plan required by this Paragraph 10. As part of its analysis, Baltimore County shall identify all modeled Collection System components and Pump Stations that cause or contribute to flow restrictions or that have the potential to cause or contribute to overflows;

x. Present the results of the rainfall and flow monitoring conducted in the Sewershed, including a map that depicts all monitored locations, dates of monitoring, a description of

quality assurance and quality control analyses performed for samples collected and data analyzed and the results of those analyses (i.e., summarize data quality assurance and data "lost" or "qualified"), and present the results of the I/I evaluation performed pursuant to Paragraph 9.C.i., including a description of the smoke testing and dye testing activities performed in the Sewershed, a summary of the results of such testing, a quantification of the rates of I/I for the Sewershed and the portions of the Sewershed's Collection System impacted by I/I, and any identified sources of I/I to the Collection System located in the Sewershed;

xi. Baltimore County shall incorporate into each SRRR Plan a description of additional data collection activities that will be implemented after the completion of rehabilitation and other corrective action(s) proposed pursuant to Paragraphs 10.B. and 10.C. to evaluate their effectiveness consistent with Paragraph 10.E. (Performance Assessment) below.

D. **Approval and Implementation of SRRR Plans**. Within 30 days after approval or approval with conditions by EPA and MDE of an SRRR Plan for a specific Sewershed, as provided in Section VIII (Review and Approval Procedures) of this Consent Decree, Baltimore County shall implement the SRRR Plan as approved and consistent with the approved schedules contained therein. Each approved SRRR Plan shall be incorporated into, and become enforceable under, this Consent Decree. In each Quarterly Report, Baltimore County shall provide a summary of Baltimore County's progress in completing implementation of each SRRR Plan during the prior calendar quarter. Following completion of the implementation of the SRRR Plan for any Sewershed, Baltimore County shall certify that the SRRR Plan has been implemented for that Sewershed and summarize the actions taken by Baltimore County to complete the SRRR Plan in the Quarterly Report for the calendar quarter in which the SRRR Plan was completed.

E. **Performance Assessment**. Baltimore County shall conduct a Performance Assessment of the work performed in each Sewershed as required under Paragraphs 7, 10, and 13 to

determine the effectiveness of the evaluation and corrective action work performed.

i. The Performance Assessment shall, at a minimum,

(a) evaluate the number and causes of SSOs that occur on an annual basis in each Sewershed;

(b) quantify the reduction of I/I in each Sewershed;

(c) evaluate the effectiveness of repair, replacement, and rehabilitation projects in addressing identified structural and/or capacity issues;

(d) evaluate the effectiveness of preventative and proactive maintenance practices in reducing root, grease, and other blockages.

ii. The Performance Assessment shall be completed for each Sewershed within 18 months after complete implementation of the SRRR Plan for that Sewershed.

iii. Baltimore County shall submit a Performance Assessment report for each Sewershed summarizing the results of the Performance Assessment for that Sewershed to EPA and MDE for review and comment within 90 days after completion of the Performance Assessment for that Sewershed.

iv. Following completion of the Performance Assessment, Baltimore County shall modify its Collection System operation and maintenance program as appropriate to achieve the purpose of this Consent Decree.

F. **Reporting Requirements**. Baltimore County shall report to EPA and MDE on its performance of the requirements in this Paragraph 10 as specifically set forth in Section VI (Reporting Requirements) of this Consent Decree.

11. **Fats, Oils, and Grease Control Program**.

A. **Summary of Requirements.** Baltimore County shall perform a comprehensive

review of its current procedures for the control of fats, oils, and grease ("FOG Program") within its Collection System and implement specific modifications to its FOG Program to improve its effectiveness, with the goal of eliminating SSOs caused or contributed to by fats, oils, and grease (hereinafter collectively "grease") blockages.

B. **Continuation of Current FOG Program**. Until such time as more stringent FOG controls are implemented through the FOG Program Modification Plan developed pursuant to this Paragraph 11, Baltimore County shall continue to enforce its current FOG Program, including specifically the County requirements authorized by the Code of Baltimore County, Food Service Facility Regulations § 1.01.01, which requires, among other things, that all new and certain remodeled Grease Generating Facilities must install a grease abatement system as a prerequisite to qualification for an operating permit; the Code of Baltimore County, Article 20, Title 5, Waste Water Regulation; and the National Standards of Plumbing Code Illustrated (1996 and 1998 Supplement), Sec. 6.1.1, Interceptors.

C. **Review of Current FOG Program and Evaluation of Potential Improvements**. Within 180 days of the Date of Lodging, Baltimore County shall complete a preliminary review of its current FOG program to identify deficiencies in the Program, including conflicts regarding inter-departmental requirements, and to make recommendations to ensure that the requirements of this Paragraph 11 can be satisfied within the time frames provided. Within 30 days of completing this preliminary review, the County shall submit a report on the findings of the review to MDE and EPA for review and comment. In conducting its review, Baltimore County shall, at a minimum:

i. Review applicable statutes and regulations to determine whether the County has sufficient statutory and regulatory authority to effectively identify and control sources of fats, oils and grease that may enter the Collection System, including the authority to require grease abatement devices and best management practices ("BMP's") and to assess penalties for non-

compliance, and identify and evaluate potential modifications to resolve any identified deficiencies.

ii. Review current DEPRM and DPW enforcement practices, including but not limited to, field inspection methodologies, violation notification, penalty assessment, and administrative and judicial enforcement processes.

iii. Review current DEPRM and DPW database assets to ascertain the type of information available, frequency of data collection and entry, and accessibility of data.

D. **Database and GIS Mapping of Grease Generating Facilities**.

i. Within one year of the Effective Date, Baltimore County shall create a database of Grease Generating Facilities that includes for each Facility the address, owner/responsible party, presence or absence of a grease abatement system, history of violations, inspection history, and any other information relevant to assessing the Facility's potential contribution to grease-related blockages and/or SSOs.

ii. Within one year of the Effective Date, Baltimore County shall use its geographical information system ("GIS") to develop a map that identifies the following: (a) SSOs caused or contributed to by grease blockages since June 30, 2000; (b) the locations of all known Grease Generating Facilities; and (c) the locations of any Grease Generating Facilities that have been the subject of enforcement actions by Baltimore County due to FOG-related blockages since June 30, 2000.

iii. The database and map required in Paragraph 11.D.i. & ii., above, shall be updated at least semi-annually to reflect the ongoing inspection and enforcement histories of all new and existing Grease Generating Facilities. Baltimore County shall provide the most recent version of the database and map to EPA and MDE as part of each Annual Report.

E. **Survey and Inspection of Potential Grease Generating Facilities**.

i. Within one year of the Effective Date, Baltimore County shall develop and incorporate criteria for FOG evaluation, including criteria for assessing the risk that a Grease

Generating Facility will cause or contribute to a grease blockage in the Collection System, into the protocol for routine inspections of permitted food service facilities and inspection of other Grease Generating Facilities over which Baltimore County exercises FOG-related jurisdiction, and develop revised inspection forms for recording FOG-related information;

ii. Within one year of the Effective Date, Baltimore County shall conduct a baseline FOG inspection of each Grease Generating Facility in the County's service area. The baseline inspection, which may be conducted concurrently with other routine Facility inspections, shall determine whether the Facility(ies) are equipped with a grease abatement system, whether the systems are being operated and maintained properly, and whether grease hauler removal information is being maintained; and

iii. Within eighteen (18) months of the Effective Date, Baltimore County shall enter all FOG information obtained from the baseline inspections into the database and GIS maps developed pursuant to Paragraph 11.D.

iv. Following completion of the baseline inspection requirements set forth in Paragraph 11.E.ii., Baltimore County shall certify completion of such requirements and summarize the actions taken by Baltimore County to complete such requirements in the Quarterly Report for the calendar quarter in which such requirements were completed.

F. **Notice to Responsible Parties**.

i. Within one year of the Effective Date, Baltimore County shall notify in writing the responsible party(ies) for each Grease Generating Facility of the general obligation to prevent the discharge of fats, oils and grease to the Collection System.

ii. Following EPA and MDE approval of Baltimore County's FOG Program Modification Plan under Paragraph 11.G., and no later than 90 days after completion of the requirements of Paragraph 11.E.ii., Baltimore County shall notify in writing each responsible party for each Grease

Generating Facility of the obligations under the County's FOG Program and provide additional information to assist in achieving compliance with those obligations, including contact information for approved grease transport services. Baltimore County shall thereafter provide such notice on an annual basis.

iii. Following completion of the notice requirements set forth in Paragraph 11.F.i. and ii.(excluding the annual notice requirement), Baltimore County shall certify completion of such requirements and summarize the actions taken by Baltimore County to complete such requirements in the Quarterly Report for the calendar quarter in which such requirements were completed.

G. **Review and Modification of Current FOG Program**. Baltimore County shall complete a comprehensive review of its current FOG Program, as well as the information collected during the baseline inspections required by Paragraph 11.E., to determine the Program's effectiveness, to evaluate potential improvements and alternatives, and to propose specific modifications to improve the Program's effectiveness in preventing grease blockages within the Collection System. By no later than 60 days after the completion of the baseline inspections required by Paragraph 11.E., Baltimore County shall submit to EPA and MDE, for approval pursuant to Section VIII (Review and Approval Procedures) of this Consent Decree, a FOG Program Modification Plan that summarizes the results of Baltimore County's FOG Program review; proposes specific modifications, implementation plans and schedules for, at a minimum, each of the Program components identified in this Paragraph 11.G.; and provides for full implementation of the proposed modifications by no later than two years from final approval by EPA and MDE pursuant to Section VIII (Review and Approval Procedures) of this Consent Decree of Baltimore County's FOG Program Modification Plan. In developing its FOG Program Modification Plan, Baltimore County shall:

i. Propose specific modifications to address any conflicts or deficiencies in Baltimore County's statutory and regulatory authority identified during or subsequent to Baltimore

County's review conducted pursuant to Paragraph 11.C., and a schedule for development and enactment of such modifications;

ii. Evaluate alternative methods, including permitting and contract programs, for assigning specific, enforceable responsibilities to Grease Generating Facilities to eliminate discharges of fats, oils and grease to the Collection System, and propose a specific plan and schedule for implementing such a program (including procedures for timely notification of violations, escalation of enforcement actions, and the imposition of civil penalties and injunctive relief) within Baltimore County's service area;

iii. Evaluate alternative methods for implementing grease abatement system management, operation and maintenance standards, including best management practices that address acceptable technology (including type, size and proper installation of abatement systems), on-site record keeping requirements, cleaning frequency, cleaning standards, use of additives, and ultimate disposal of grease removed, and propose a specific plan and schedule for adopting and implementing such standards and practices within Baltimore County's service area;

iv. Evaluate all methods of effecting grease management, including best management practices ("BMPs") and cleaning practices, at Grease Generating Facilities not currently required to implement a grease abatement system, and propose a specific plan and schedule for implementing such standards and practices within Baltimore County's service area. Baltimore County shall also consider additional steps for such Facilities, including whether (a) to revise regulations to require installation and operation of grease abatement systems, (b) to implement a program for increased cleaning by Baltimore County of the main into which the relevant lateral connects, (c) to require the Grease Generating Facilities to regularly clean the lateral pipes that connect to Baltimore County's Collection System, and/or (d) to implement any other equally effective program or remedial measure for reducing FOG blockages. As part of this evaluation, Baltimore County shall also consider the extent to

which multi-person residential buildings contribute FOG to the Collection System and consider alternatives for reducing such FOG contributions;

v. Evaluate alternative methods for scheduling, prioritizing, and conducting regular inspections to assess compliance by Grease Generating Facilities with prohibitions on the discharge of fats, oils and grease to the Collection System, and propose a specific plan and schedule for incorporating revised compliance requirements into the inspection protocol and database design and for implementing ongoing FOG inspections within Baltimore County's service area;

vi. Evaluate staffing and ancillary requirements necessary to improve the effectiveness of Baltimore County's FOG Program, and propose a plan and schedule for securing funding for and training the necessary staff;

vii. Evaluate potential performance indicators that may be used to measure the effectiveness of the FOG Program, including measurements for the reduction in the frequency of FOG-related SSOs and blockages, and propose a plan for tracking effectiveness under Baltimore County's modified FOG Program to be used in conducting ongoing FOG Program evaluations under Paragraph 11.I; and

viii. Evaluate public education and outreach and compliance assistance efforts necessary to inform commercial and residential property owners and occupants about the need to minimize the introduction of grease into the Collection System, and propose a plan for implementing such efforts within Baltimore County's service area, consistent with Paragraph 11.F.

H. **Implementation of FOG Program Modification Plan**. Upon approval or approval with conditions by EPA and MDE of Baltimore County's FOG Program Modification Plan, pursuant to Section VIII (Review and Approval Procedures) of this Consent Decree, Baltimore County shall implement the Plan as approved and according to the approved schedule(s), and the FOG Program Modification Plan shall be incorporated into, and become enforceable under, this Consent Decree. In

each Quarterly Report, Baltimore County shall provide a summary of Baltimore County's progress in completing implementation of its approved FOG Program Modification Plan during the prior calendar quarter. Following implementation of the FOG Program Modification Plan, Baltimore County shall certify completion and summarize the actions taken by Baltimore County to implement the FOG Program Modification Plan in the Quarterly Report for the calendar quarter in which such requirements were completed.

I. **Annual Evaluations of Modified FOG Program**. Within one year of implementation of the FOG Program Modification Plan pursuant to Paragraph 11.H., above, and on an annual basis thereafter, Baltimore County shall evaluate the effectiveness of its modified FOG Program using the performance indicators developed pursuant to Paragraph 11.G.vii., above. The results of each annual evaluation should be included in the next Annual Report submitted to EPA and MDE pursuant to Section VI (Reporting Requirements).

J. **Reporting Requirements**. Baltimore County shall report to EPA and MDE on its performance of the requirements in this Paragraph 11 as specifically set forth in Section VI (Reporting Requirements) of this Consent Decree.

12. **Illegal Storm Water Discharges**.

A. **General Requirements**. Baltimore County shall, through the use of methodologies such as CCTV and smoke and dye testing during the performance of the Collection System inspections required pursuant to Paragraph 8, seek to identify Illegal Storm Water Discharges to the Collection System, and upon identification shall eliminate such discharges, where such discharges, individually or cumulatively, are likely to cause or contribute to an SSO.

B. **Specific Requirements**.

i. Elimination of Illegal Storm Water Discharges.

(a) Within 30 days of identifying an Illegal Storm Water Discharge into the Collection System, Baltimore County shall notify the owner of the connection (including all associated laterals or other privately-owned conduits used to transport discharge to the connection) that is the source of such discharge that the connection is the source of an illegal discharge, and shall require the owner to take all appropriate steps to eliminate the illegal discharge.

(b) Within 180 days after notifying the owner to eliminate the Illegal Storm Water Discharge, if the owner has failed to eliminate the illegal discharge, Baltimore County shall take all lawful and appropriate steps including, but not limited to, repairing, rehabilitating, or replacing the connection that is the source of the discharge, or initiating enforcement action to cause the repair, rehabilitation, replacement, or termination of that service connection.

(c) Alternatively, Baltimore County may require the owner to pay the appropriate fines and/or authorize the discharge if Baltimore County ensures through the provision of adequate sewer system capacity that the discharge will not cause or contribute to an SSO.

(d) The foregoing remedies shall not be exclusive of other administrative or judicial remedies provided by law or regulation.

ii. **Reporting Requirements**. Baltimore County shall report to EPA and MDE on its performance of the requirements in this Paragraph 12 as specifically set forth in Section VI (Reporting Requirements) of this Consent Decree.

13. **Pump Station Inspection, Rehabilitation, Repair and Replacement**.

A. **General Requirement**. Baltimore County shall undertake the measures set forth in this Paragraph, with the goal of eliminating SSOs related to Pump Stations in the Baltimore County Collection System.

B. **Pump Station Rehabilitation/Repair**. Baltimore County shall complete the specific Pump Station rehabilitation, repair, and replacement projects identified in Appendix C in

accordance with the milestone dates set forth in Appendix C. The milestone dates set forth in Appendix C are incorporated into, and enforceable under, the Consent Decree as if fully set forth herein. In each Quarterly Report, Baltimore County shall summarize the status of the projects required by this Paragraph 13.B. (as listed on Appendix C) as of the end of the prior calendar quarter. Following completion of each construction project identified on Appendix C, Baltimore County shall certify to EPA and MDE that construction has been completed in the Quarterly Report for the calendar quarter in which construction was completed.

C. **Pump Station Backup Power**. Baltimore County shall ensure that adequate backup power is maintained for each Pump Station.

i. Within one year of the Effective Date, and for each calendar year thereafter during the period that this Consent Decree is in effect, Baltimore County shall complete an evaluation of the effectiveness of its existing Pump Station backup power program, including the use of portable generators as backup power for multiple stations, in preventing SSOs relating to power outages at Pump Stations during the preceding year. Baltimore County shall submit the results of the annual evaluation to EPA and MDE in the applicable Annual Report.

ii. If any Pump Station experiences an SSO due to loss of power Baltimore County shall, within 180 days of the discovering the SSO, submit a plan to EPA and MDE for review and approval that provides for either (1) installation of a permanent backup generator or other on-site backup power source at the affected Pump Station, (2) procurement of additional portable generators sufficient to prevent future SSOs due to loss of power at the affected Pump Station, or (3) implementation of other measures, approved by EPA and MDE, designed to prevent further SSOs relating to power outages at the affected Pump Station. Upon approval or approval with conditions by EPA and MDE of Baltimore County's plan under this Paragraph 13.C.ii., Baltimore County shall implement the Plan as approved and according to the approved schedule(s). Following implementation

of the approved plan, Baltimore County shall certify completion and summarize the actions taken by Baltimore County to implement the approved plan in the Quarterly Report for the calendar quarter in which the plan requirements were completed.

D. **Pump Station Remote Monitoring**.

i. By agreement of the Parties, Baltimore County shall install a supervisory control and data acquisition ("SCADA") system for remote monitoring of Pump Stations as provided for in its Contract No. 02119 with Hartwell Engineering, Inc. ("SCADA Contract"). Baltimore County shall ensure, and shall certify to EPA and MDE in the applicable Quarterly Report, that the SCADA system is installed, operational, and capable of satisfying the requirements of this Paragraph 13.D. with respect to each Pump Station by no later than the Effective Date of this Consent Decree.

(a) For each Pump Station, the SCADA system shall continuously poll, report, and transmit, at a minimum, the following parameters, where the referenced attributes are present:

(1) Wet well high level and low level alarms;

(2) Dry well flood alarms;

(3) Dry well sump pumping failure, where available;

(4) Flow (instantaneous and average) determined from a flow meter;

(5) Failure of any one of the following parameters (as a single alarm):

(i) loss of three-phase power;

(ii) single phase condition;

(iii) phase reversal;

(iv) over-voltage and under-voltage;

(v) use of standby power;

(vi) failure of standby power; and

(vii) second power source;

(6) Pump failure (for each pump);

(7) Pump running times;

(8) Pump starts; and

(9) Remote signal failure alarms.

(b) With respect to all Pump Stations, system monitoring data of wet well levels shall be stored in an archival data base for a period of five years. In addition, the Pump Station operating hours for each pump shall be recorded monthly and entered into an archival data base. Baltimore County shall retain for each month the 24-hour maximum and the monthly average flow data for each Pump Station in accord with Section XVIII (Record Keeping).

(c) The new SCADA system shall enable Baltimore County to store a record of each alarm generated by the SCADA system that includes the date, time, location, and parameter of the alarm. Baltimore County shall maintain alarm information for a minimum of five years and make this information available to MDE or EPA upon request.

ii. Prior to the implementation of the SCADA system required by this Paragraph 13.D., Baltimore County shall continue to monitor its Pump Stations using its existing system. Baltimore County shall archive all available alarm data generated by its current system for the five-year period prior to implementation of the new SCADA system.

E. **Pump Station Inspection and Evaluation**.

i. **Pump Station Classification**. For purposes of this Paragraph, each of the Pump Stations in Baltimore County's Collection System has been designated as either Tier 1, 2, or 3. The listing of Pump Stations by tier is attached to this Consent Decree as Appendix D.

ii. **Pump Station Inspection**. Until such time as Baltimore County fully implements the SCADA system required by Paragraph 13.D., Baltimore County shall conduct a physical inspection of each Pump Station at least once per week. Following implementation of continuous monitoring of each Pump Station under the new SCADA system, Baltimore County shall conduct a physical inspection of each Tier 1 Pump Station at least once per week, each Tier 2 Pump Station at least once every two weeks, and each Tier 3 Pump Station at least once per month.

(a) Baltimore County shall conduct the inspections required by this Paragraph 13.E.ii. in accordance with the inspection checklists attached to this Consent Decree as Appendix E. Baltimore County may modify the inspection checklists consistent with appropriate engineering and operation standards. Baltimore County shall provide EPA and MDE with a description of any modifications to the inspection checklists and an updated version of the checklists within the Annual Report for any year in which such modifications were made.

(b) Upon completion of the engineering evaluation/condition assessment required by Paragraph 13.F. below, Baltimore County shall update the inspection checklist(s) to ensure that the inspection protocol is sufficient to verify that each Pump Station is in good working order.

(c) Completed checklists and inspection reports shall be maintained by Baltimore County in accordance with the requirements of Section XVIII (Recordkeeping).

iii. For each deficiency identified during an inspection conducted in accordance with requirements of this Paragraph 13.E., Baltimore County shall either correct the deficiency within twenty-four hours, or, alternatively, issue a work order for the correction of the deficiency, in which Baltimore County shall assign a priority ranking in accordance with the ranking system attached to this Consent Decree as Appendix F, and complete action necessary to correct such deficiency consistent with the priority ranking and the impact of the deficiency on the functionality of

Baltimore County's Collection System. All identified deficiencies within Priority Classifications 2, 3, or 4 shall be corrected by no later than six (6) months from the date of the inspection in which that deficiency was first observed, unless such deficiencies are otherwise scheduled for correction pursuant to a separate requirement under this Consent Decree. Baltimore County may seek approval from EPA and MDE for an extension of time to correct any deficiency within Priority Classification 2 based on the limited availability of remedial materials.

iv. In addition to the actions required by subparagraph iii., above, in the event that any deficiency is identified that results in an SSO, Baltimore County shall act immediately to implement emergency measures to prevent or mitigate an SSO until the deficiency is corrected.

F. **Pump Station Engineering Evaluation/Condition Assessment**. Baltimore County shall perform or arrange for performance of an engineering evaluation and condition assessment by a professional engineer licensed in the State of Maryland for each Pump Station in its Collection System, except as set forth in Paragraph 13.F.v., below.

i. Each engineering evaluation/condition assessment required by this Paragraph 13.F. shall, at a minimum, include an assessment of the Pump Station's pumping system and mechanical, electrical, structural, and architectural condition. The engineering evaluation/condition assessment shall also determine whether the Pump Station utilizes an SSO Structure and, if so, evaluate whether such SSO Structure can be eliminated or modified so as to mitigate the potential impacts of discharges from the SSO Structure.

ii. Baltimore County shall complete each required engineering evaluation/ condition assessment within the time frames set forth below.

Tier 1 Pump Stations:	Within one year of Effective Date.
All Tier 2 or Tier 3 Pump Stations That Were Placed Into Service More Than 25 Years Prior to the Date of Lodging and That Have Experienced a Non-Power-Related SSO Since June 2000:	Within two years of Effective Date.
All Remaining Tier 2 Pump Stations:	Within three years of Effective Date.
All Remaining Tier 3 Pump Stations:	Within five years of Effective Date.

iii. Within 30 days of the completion of an engineering evaluation/condition assessment, Baltimore County shall submit to EPA and MDE for review and comment a report that identifies the scope of the evaluation and condition assessment, identifies the specific criteria applied during the evaluation, provides a summary of deficiencies identified, provides a summary of items due for scheduled replacement, and identifies appropriate remedial responses, including a summary of anticipated remedial costs.

iv. For each deficiency or instance of non-performing equipment identified during an engineering evaluation/condition assessment conducted in accordance with requirements of this Paragraph 13.F, Baltimore County shall assign a priority ranking in accordance with the following ranking system focusing on the prevention, mitigation, and correction of SSOs:

Priority 1	Impact on capability of Pump Station to operate at full capacity, personnel safety, or structural or building integrity issues.
Priority 2	Station equipment reliability issues, chronic maintenance problems, and Mechanical and Electrical Code issues.
Priority 3	Housekeeping, station appearance, or minor station operation or maintenance issues.

(a) For each identified Priority 1 or Priority 2 deficiency, Baltimore County shall include in or with its report a specific schedule that provides for completion of a remedial response to such deficiency consistent with its assigned priority, but not later than two years from completion of the engineering evaluation/condition assessment. Baltimore County shall implement each

remedial response under this subparagraph (a) consistent with the proposed schedule, and each such schedule shall be incorporated into and enforceable under this Consent Decree. EPA and MDE may extend the schedule for completion of a remedial response activity upon demonstration by Baltimore County that the specific circumstances relevant to that response activity justify an extension. Following implementation of the required repairs for each Pump Station, Baltimore County shall certify completion and summarize the actions taken by Baltimore County in the Quarterly Report for the calendar quarter in which the repair requirements were completed.

(b) In the event that any deficiencies identified during the engineering evaluation/condition assessment result in an SSO, Baltimore County shall act immediately to correct the deficiency or to implement emergency measures to prevent or mitigate an SSO until the deficiency is corrected.

v. Baltimore County shall not be required to perform an engineering evaluation/condition assessment pursuant to this Paragraph 13.F. for the following Pump Stations:

(a) The following Pump Stations that were placed into service less than 10 years prior to the Date of Lodging of this Consent Decree:

Middle Back River Neck
Rosalie Avenue
Bowleys Quarters
Holly Neck
Vincent Farms
Back River Neck
Beachwood Estates
Beachwood Estates North
Reistertown Village
Franklin Station
Hopewell Point

(b) The following Pump Stations for which Baltimore County has completed a recent engineering evaluation,

Whitemarsh
Hawthorne #1
Woodwind
Texas
Cockeysville

provided that Baltimore County certifies that it has complied or will comply with the

requirements of Paragraph 13.F.iv., above, for each such Pump Station within two (2) years of the Effective Date.

(c) Any Pump Station that Baltimore County has committed, through specific allocation of capital budget funding, to replace in its entirety, where such commitment occurs prior to the deadline for completion of an engineering evaluation/condition assessment under this Paragraph. Baltimore County shall provide notice to EPA and MDE, including appropriate documentation, regarding any Pump Stations for which it intends to utilize this exemption at least 30 days prior to the date when the engineering analysis and condition assessment would otherwise be due pursuant to Paragraph 13.F.ii., above.

vi. Notwithstanding Paragraph 13.F.v. above, EPA and MDE may direct that Baltimore County perform an engineering evaluation/condition assessment pursuant to this Paragraph 13.F. for any of the Pump Stations identified in Paragraph 13.F.v(a) or (b) in the event that performance data, including the occurrence of SSOs, for that Pump Station collected after the Date of Lodging indicates that such an evaluation is necessary.

G. **Pump Station Equipment Inventory**.

i. Within two hundred seventy days (270) of the Effective Date, Baltimore County shall complete an asset inventory and attribute database for all equipment and systems in each Pump Station and update its maintenance records to include all new information. Following completion of the requirements of this Paragraph 13.G.i., Baltimore County shall certify that all such requirements have been completed and summarize the actions taken by Baltimore County to complete these requirements in the Quarterly Report for the calendar quarter in which the requirements were completed.

ii. Within two hundred seventy days (270) of the County's selection of a Pump Station information management system pursuant to Paragraph 13.H. and identification of the relevant system specifications, Baltimore County shall assign a unique identification number to each

critical component at each Pump Station and update its maintenance records to include the identification numbers. If physically practicable, Baltimore County shall place an identification tag on each critical component. Following completion of the requirements of this Paragraph 13.G.ii. Baltimore County shall certify that all such requirements have been completed and summarize the actions taken by Baltimore County to complete these requirements in the Quarterly Report for the calendar quarter in which the requirements were completed.

iii. In the event that a rehabilitation, repair, or replacement project requires replacement of a critical component at a Pump Station, Baltimore County shall assign identification numbers to the new components and update its maintenance records within thirty (30) days of project completion.

H. **Pump Station Information Management System**. Within three years of the Effective Date, Baltimore County shall convert or transfer its existing Pump Station maintenance record keeping system, including all equipment inventory information, into an electronic information management system capable of collecting and tracking information regarding the operation, performance and maintenance of all Pump Stations. Baltimore County may accomplish this conversion or transfer either by expanding its Collection System Utilities Management Application to include Pump Station information or through use of an independent management system that is compatible with the Utilities Management Application. Following completion of the requirements of this Paragraph 13.H., Baltimore County shall certify that such requirements have been completed and summarize the actions taken by Baltimore County to complete these requirements in the Quarterly Report for the calendar quarter in which the requirements were completed.

I. **Pump Station Preventative Maintenance**. Baltimore County shall implement a Pump Station preventative maintenance program to ensure the proper operation and maintenance of its Pump Stations that includes the following measures:

i. Within ninety (90) days of completion of each rehabilitation/repair project required under Paragraph 13.B, Baltimore County shall update its preventative maintenance standard operating procedures and schedules to reflect all new and/or rehabilitated equipment.

ii. Within ninety (90) days of the Effective Date, Baltimore County shall develop a procedure (or document existing procedures) for determining the cause of equipment and/or system failures at Pump Stations and identifying preventive maintenance measures for minimizing future failures.

iii. Routinely track preventative maintenance of Pump Stations, including, but not limited to, the following:

(a) Appropriate, necessary and periodic service and calibration of all instrumentation, including flow meters, liquid level sensors, alarm systems, elapsed time meters, and remote monitoring equipment;

(b) Appropriate, necessary and periodic inspection and service for each Pump Station, including engines, motors, generators, pumps, wet wells, Pump Station valves, and related equipment; and

(c) Appropriate, necessary and periodic inspection and testing and, if necessary, servicing of all pumps including impellers, seals and bearings, wear clearances, couplings, drives and motors.

J. **Pump Station Operation and Maintenance Manuals**. Within one year of the Effective Date, Baltimore County shall ensure that an updated operation and maintenance manual is maintained for and located at each Tier 1 and Tier 2 Pump Station. Each operation and maintenance manual shall reflect current station configuration, equipment, and characteristics, and shall provide operating parameter value ranges representing recommended operating levels, a summary of historical pump run times, and detailed procedures to prevent overflows or spills while performing repairs at each

Pump Station. Baltimore County shall update the operation and maintenance manual for each Pump Station at which a rehabilitation, repair, or replacement project has been performed no later than 90 days after the date for completion of the project.

K. **Reporting Requirements**. Baltimore County shall report to EPA and MDE on its performance of the requirements in this Paragraph 13 as specifically set forth in Section VI (Reporting Requirements) of this Consent Decree.

14. **Collection and Transmission System Model**.

A. Using the INFOWORKS CS computerized collection and transmission system modeling program for its Collection System, Baltimore County shall implement and maintain a computerized collection and transmission system model or models (the "Model") for the Collection System to evaluate the impact of I/I rehabilitation projects, proposed system modifications, upgrades, and expansions to the transmission capacity and performance of the Collection System. Baltimore County shall develop a Model or Models meeting the requirements of this Paragraph for each Sewershed that includes the Model elements identified in Paragraph 14.B. To the extent practical, Baltimore County shall coordinate the development of its Model(s) with the City of Baltimore's modeling efforts. The Model(s) and the data collection activities upon which they are based, shall be developed and implemented so as to ensure that the Model(s) are integrated to the extent necessary to function in a hydraulically representative fashion for the Collection System. The integrated Model(s) shall allow Baltimore County to assess the capacity of its Collection System, as provided herein, and to identify the measures necessary to address capacity limitations as required by Paragraph 9.

B. **Model Elements.**

i. The Model required by this Paragraph shall, at a minimum, be used for predicting:

(a) Rate of wastewater flow and temporal variation of rate of flow in the Force Mains and the Major Gravity Lines;

(b) Hydraulic pressure (psig) or hydraulic grade line ("HGL") of wastewater at any point in Force Mains and the Major Gravity Lines;

(c) Flow capacity of each of the Pump Stations in the Collection System;

(d) Flow capacity of each Pump Station with its back-up pump out-of-service;

(e) Peak flows to and/or from each Pump Station during storm events of a magnitude of up to 20 years; and

(f) Likelihood and location of SSOs within those portions of each Sewershed modeled under high flow conditions, including Pump Station service areas where the Pump Station's back-up pump is out-of-service, and considering available wet well capacity, existing, functional off-line storage capacity, and normal in-line storage capacity.

ii. The Model shall also be:

(a) Configured based on representative, accurate and verified system attribute data (i.e., pipe sizes and invert elevations, manhole rim elevations, etc.);

(b) Calibrated using spatially and temporally representative rainfall data and flow data, either existing or obtained under this Consent Decree pursuant to Paragraph 9; and

(c) Verified using spatially and temporally representative rainfall data and flow data; that data shall be independent of the data used to calibrate the Model.

C. **Model Project Approach Report**.

i. Within one hundred and fifty (150) days from the Effective Date of this Consent Decree, Baltimore County shall submit to EPA and MDE for approval pursuant to Section VIII

(Review and Approval Procedures) of this Consent Decree a report that sets forth a project approach and detailed schedule of development, installation and implementation of the Model for the Collection System (the "Project Approach Report"). The Project Approach Report shall include, at a minimum, the following information:

(a) Identification of all input parameters, constants, assumed values and expected outputs; and

(b) A digital map of the Collection System that identifies and characterizes both the portions of the Collection System that shall be included in the Model and the portions of the Collection System that shall be excluded from the Model.

ii. The Project Approach Report required by this Paragraph 14.C. shall also identify how the Model will be adapted to predict wastewater flows through the Collection System, including:

(a) Identification of specific types of input data that are to be used and how attribute data accuracy and representativeness will be assured;

(b) Configuration of the Model;

(c) Procedures and protocols for performance of sensitivity analyses (i.e., how the Model responds to changes in input parameters and variables);

(d) Procedures for calibrating the Model to account for values representative of the Collection System using actual system data (e.g., precipitation and flow data), which include measures to assure that calibration variables such as pipe friction factors, are kept within generally-accepted realistic ranges;

(e) Procedures for verification of the Model's performance using actual system data (e.g., precipitation and flow data);

(f) Procedures and methodologies for the generation of wet weather Hydrographs for each Sewershed flow monitoring basin; and

(g) Approach to documenting the implementation of the above procedures and the results of calibration and verification efforts.

D. Within sixty (60) days of approval or approval with conditions by EPA and MDE, as provided in Section VIII (Review and Approval Procedures), Baltimore County shall begin implementation of the Project Approach Report, and the Project Approach Report as approved shall be incorporated into, and become enforceable under this Consent Decree.

E. **Model Certification.** Baltimore County shall complete implementation of the Model for each Sewershed, on or before submission of the SRRR Plan for the respective Sewershed required under Paragraph 10, and shall certify to EPA and MDE that:

i. The Model includes the elements required by Paragraph 14.A. and B. to complete the work required by Paragraph 9.C.; and

ii. The Model has been calibrated (including the performance of sensitivity analyses) and verified in accordance with the Project Approach Report using actual system data (e.g., flow data) from permanent and temporary monitoring points in the Collection System.

Baltimore County shall provide its certification and shall describe the results of the Model calibration and verification for each Sewershed in the applicable Quarterly Report.

15. **Collection System Operation and Maintenance.**

A. **General Requirements.** Baltimore County shall develop and implement a comprehensive maintenance program for the Collection System and Collection System components to provide for the proper operation and maintenance of equipment while minimizing failures, malfunctions, line blockages, and SSOs.

B. **Submission of Operation and Maintenance Plan**. Within 120 days of the Effective Date, Baltimore County shall submit for review and comment by EPA and MDE a comprehensive operation and maintenance plan that shall provide for, at a minimum, the following:

i. A gravity line inspection program that provides for

(a) CCTV or other inspection of Gravity Sewer Lines as required by Paragraph 8 of this Consent Decree;

(b) CCTV inspection, consistent with the requirements of Paragraph 8.C., of all Gravity Sewer Lines greater than or equal to 8 inches and less than or equal to 27 inches in diameter that were constructed prior to 1980, to be completed within 15 years of the Effective Date. Baltimore County shall not be required to re-inspect gravity line segments inspected pursuant to the requirements of Paragraph 8.C. solely for the purpose of complying with the requirements of this Paragraph 15.B.i(b). In each Annual Report, Baltimore County shall summarize its progress toward completion of the requirements set forth in Paragraphs 15.B.i(b) and 15.B.v(b) as of the end of the prior calendar year. Following completion of the requirements set forth in Paragraphs 15.B.i(b) and 15.B.v(b), Baltimore County shall certify that all such requirements have been completed and summarize the actions taken by Baltimore County to complete these requirements in the Quarterly Report for the calendar quarter in which the requirements were completed.

(c) Ongoing CCTV or comparable inspection of the Collection System necessary to maintain a current assessment of the condition of the Collection System, including a program goal of inspecting all Gravity Sewer Lines greater than 8 inches in diameter on a regular, scheduled basis that provides for inspection of the entire Collection System every 15 years.

ii. A sewer line cleaning program adequate to address blockages and potential blockages within the Collection System. In addition to addressing ongoing cleaning requirements, the cleaning program shall provide for the cleaning of all Gravity Sewer Lines greater

than 8 inches in diameter within 7 years of the Effective Date, and shall provide for the regular, scheduled cleaning of all such lines thereafter at least every 7 years. In each Annual Report, Baltimore County shall summarize its progress toward completion of the initial cleaning requirements set forth in this Paragraph 15.B.ii. as of the end of the prior calendar year. Following completion of the requirement for cleaning all Gravity Sewer Lines greater than 8 inches in diameter within 7 years of the Effective Date, Baltimore County shall certify that such requirement has been completed and summarize the actions taken by Baltimore County to complete the requirement in the Quarterly Report for the calendar quarter in which the requirement was completed.

iii. Routine preventative maintenance of Pump Stations consistent with Paragraph 13.I.;

iv. Routine preventative maintenance of grinder pumps;

v. Inspection of manholes

(a) Inspection of manholes as provided in Paragraph 8.D;

(b) Inspection of manholes located within or immediately adjacent to gravity line segments to be inspected pursuant to Paragraph 15.B.i.b. above;

(c) Routine inspection of manholes that are entered for the purposes of cleaning, inspection, or other routine maintenance activities.

vi. Procedures for ensuring that new sewers and connections are properly designed and constructed (including testing of new sewer installations) to prevent SSOs and to ensure that new connections of inflow sources are prohibited;

vii. Procedures for ensuring that rehabilitation projects are properly designed and constructed (including testing of rehabilitation installations) to prevent SSOs;

viii. A root control program that addresses, at minimum, scheduling and performing corrective measures including both short-term mitigation of root intrusion (i.e., routine

maintenance) and rehabilitation of the areas in which root intrusion has caused recurring blockages (i.e., sewer replacement or relining), and a proposal that includes scheduled inspection and cleaning of known problem areas;

ix. Procedures for responding to, investigating, mitigating, correcting, and preventing Building Backups.

x. Procedures for identification of all known locations where Baltimore County does not have ready physical and legal access to the Collection System, the causes for lack of access, and its strategy for obtaining and maintaining access to such location;

xi. Procedures for documenting complaints (including procedures for ensuring that complaints reach the appropriate departments), work orders, updates to equipment inventory, and changes to Collection System components, as well as entry of such data into databases comprising the information management system required under Paragraph 16;

xii. Procedures for corrective maintenance response and reporting;

xiii. Procedures to ensure that staff receive regular training, including wastewater operator certification as required, to avoid potential SSOs relating to operator error; and

xiv. A FOG program consistent with the requirements of Paragraph 11.

C. **Implementation of Operation and Maintenance Program**. Baltimore County shall begin implementation of its operation and maintenance plan within 90 days of submittal to EPA and MDE for comment.

D. **Reporting Requirements**. Baltimore County shall report to EPA and MDE on its performance of the requirements in this Paragraph 15 as specifically set forth in Section VI (Reporting Requirements), Paragraph 20.B.xiii. & ix., of this Consent Decree.

16. **Information Management System Program**.

A. **Utilities Management Application for Collection System**. By agreement of the Parties, Baltimore County shall implement its planned Utilities Management Application to establish, update, and coordinate data systems used to collect information regarding the operation, maintenance and performance of the Collection System, as provided in Baltimore County Contract No. 42235, attached as Appendix G. Baltimore County shall install all hardware and software necessary for the Utilities Management Application and ensure that such hardware and software are operational and that the County has beneficial use of the specified features by no later than September 1, 2005. Baltimore County shall certify completion of these requirements in the applicable Quarterly Report.

B. **Geographic Information System**. As part of its information management system programs above, Baltimore County shall use a computerized geographic information system ("GIS") to map the Collection System.

i. The GIS shall be able to:

(a) Display all Collection System components and Pump Stations;

(b) Use embedded objects (or other alternative, equivalent methods) to link to schematic diagrams and attribute data (including inventory information) for Collection System components;

(c) Display by color coding the portions of the Collection System that have been inspected and rehabilitated; and

(d) Display the location(s) at which samples from flow meters and rain gauges have been collected for development of the model required under Paragraph 14.

ii. Baltimore County shall install all hardware and software necessary for the GIS system and ensure that the system is operational and that the County has beneficial use of the specified features by no later than one year from the Effective Date. Following completion of these

requirements, Baltimore County shall certify in the applicable Quarterly Report, and, if requested, demonstrate to EPA and MDE, that the GIS is fully functioning and capable of displaying the information described in Paragraph 16.B.i., above. Baltimore County shall complete the installation of, and transfer of all relevant data to, the GIS System for each Sewershed by no later than the date that the SRRR Plan for such Sewershed is due under Paragraph 10.

C. **Global Positioning System**.

i. Within one hundred and twenty (120) days of the Effective Date of this Consent Decree, Baltimore County shall have global positioning system (GPS) units available to its Utilities Maintenance Division for use to correct and/or update component information on the Collection System maps. Baltimore County shall certify completion of this requirement in the applicable Quarterly Report.

ii. Baltimore County shall use GPS units or other equivalent methods to record the location of sewer maintenance work related to the removal of tree roots and/or grease. Baltimore County shall track and plot this information as part of its root and grease programs required by Paragraph 15.

D. **Inventory of Collection System Components**.

i. Within two (2) years of the Effective Date, the Utilities Management Application shall include an inventory database of the Collection System components. Following completion of this requirement, Baltimore County shall certify in the applicable Quarterly Report, and, if requested, demonstrate to EPA and MDE, that the Utilities Management Application is functioning and capable of displaying the information identified in Paragraph 16.D.ii., below.

ii. By no later than the date that the SRRR Plan for the relevant Sewershed is due pursuant to Paragraph 10, the inventory database shall include, for each component in such Sewershed, a unique identification number and a corresponding data file that stores the following

information:

(a) Identification number;

(b) Capacity (e.g., for pipes: diameter, for valves: flow rate);

(c) Date of installation;

(d) Location of installation (address and/or latitude and longitude);

(e) Useful life and scheduled date for repair, replacement, or rehabilitation;

(f) Repair history;

(g) Make and model, if applicable;

(h) Type (e.g., material of construction, configuration of valve, etc.); and

(i) Service status (i.e., whether or not component is in service).

E. **Update Inventory of Collection System Components.** Beginning two years from the Effective Date, Baltimore County shall update, within ninety (90) days of completion of any inspection, condition assessment, or rehabilitation of a Collection System component required pursuant to the terms of this Consent Decree, the Utilities Management Application inventory database such that the updated inventory database includes, for the relevant component, the information described in Paragraph 16.D.ii.

F. **Reporting Requirements**. Baltimore County shall report to EPA and MDE on its performance of the requirements in this Paragraph 16 as specifically set forth in Section VI (Reporting Requirements) of this Consent Decree.

17. **Emergency Response Plan**

A. Baltimore County shall develop and implement an Emergency Response Plan to

respond adequately to the occurrence of Discharges from its Collection System and to protect the health and welfare of persons in the event of Discharges.

B. **Specific Requirements**. Within sixty (60) days of the Effective Date of this Consent Decree, Baltimore County shall provide to EPA and MDE, for approval pursuant to Section VIII (Review and Approval Procedures) of this Consent Decree, an Emergency Response Plan that addresses the actions to be taken by Baltimore County in the event of a Discharge. The Emergency Response Plan shall include, but not be limited to, the following:

i. A detailed description of the actions Baltimore County will undertake to provide notice to the public in the event of a Discharge in accordance with Environment Article, Section 9-331.1, Annotated Code of Maryland and regulations promulgated thereunder;

ii. A description of how Baltimore County shall notify MDE and EPA when Discharges occur. Baltimore County shall notify MDE of the occurrence of Discharges in accordance with Environment Article, Section 9-331.1, Annotated Code of Maryland and regulations promulgated thereunder;

iii. A description of how Baltimore County shall coordinate with local health departments regarding the posting of waters where a Discharge has occurred in accordance with the regulations promulgated under the Environment Article, Section 9-331.1, Annotated Code of Maryland;

iv. A detailed plan describing the standard operating procedures to be followed by Baltimore County personnel in responding to a Discharge, including the steps to be taken to minimize the volume of untreated wastewater discharge as a result of a Discharge;

v. A general identification of resources that Baltimore County shall make available to correct or repair conditions causing or contributing to the Discharge. This shall include an organizational chart identifying the operational units responsible for conducting such tasks;

vi. A plan to ensure adequate training of Baltimore County personnel

responding to a Discharge.

C. Upon learning of an Discharge, Baltimore County shall perform monitoring, sampling, and analysis in accordance with the regulations promulgated under the Environment Article, Section 9-331.1, Annotated Code of Maryland. Baltimore County shall provide copies of field sample reports and laboratory analysis results to EPA and MDE upon request.

D. Upon approval or approval with conditions by EPA and MDE of Baltimore County's Emergency Response Plan, pursuant to Section VIII (Review and Approval Procedures) of this Consent Decree, Baltimore County shall implement the Plan as approved, and the Emergency Response Plan shall be incorporated into, and shall become enforceable under, this Consent Decree. The Parties agree to meet and confer, as needed, to discuss the development and implementation of Baltimore County's Emergency Response Plan.

E. Baltimore County shall review the Emergency Response Plan on an annual basis and update the Plan as necessary. Each annual update of the Emergency Response Plan shall be submitted to EPA and MDE for approval pursuant to Section VIII (Review and Approval Procedures) of this Consent Decree, and upon EPA and MDE approval shall be incorporated into, and become enforceable under, this Consent Decree. Baltimore County shall maintain a copy of the Emergency Response Plan required by this Paragraph 17 at each of its Tier 1 and Tier 2 Pump Stations.

F. Any dispute with respect to any portion of the Emergency Response Plan required by this Paragraph shall not delay the development or implementation of the undisputed portions of the Emergency Response Plan.

G. **Reporting Requirements**. Baltimore County shall report to EPA and MDE on its implementation of its Emergency Response Plan as specifically set forth in Section VI (Reporting Requirements) of this Consent Decree.

H. **Response to Building Backups**. Consistent with Paragraph 15.B.ix., Baltimore County shall also develop and implement procedures for responding to, investigating, mitigating, and correcting Building Backups.

18. **Reporting of Discharges and Building Backups and Record Keeping**.

A. **General Requirement**. Baltimore County shall report information about Discharges and Building Backups to MDE and EPA and keep appropriate records related to Discharges and Building Backups.

B. **Specific Requirements for Discharges**.

i. Baltimore County shall report to MDE by oral notification any Discharges within twenty-four (24) hours of the time Baltimore County first becomes aware of the Discharge.

ii. A written report shall also be provided to EPA and MDE within five (5) days of the time Baltimore County first became aware of the Discharge. Any written report shall be made to the Water Protection Division, United States Environmental Protection Agency, Region III and to the Compliance Program, Water Management Administration, MDE, and shall contain the information required under Code of Maryland Regulations (COMAR) 26.08.10.04 & .05.

C. **Specific Requirements for Building Backups**. On an annual basis, as part of each Annual Report to be submitted pursuant to this Consent Decree, Baltimore County shall report any known Building Backups. The report should include:

i. the location of the Building Backup;

ii. the cause of the Building Backup, if known;

iii. an estimate of the amount of sewage released into the building; and

iv. the location of sewage disposal (if known).

D. Baltimore County shall maintain for at least five years a list and description of any complaints from customers or others related to reported Building Backups.

E. Until termination of the Consent Decree, Baltimore County shall maintain records of the written reports required by Paragraph 18.B. and C., above, as set forth in Section XVIII (Record Keeping) of this Consent Decree.

VI. REPORTING REQUIREMENTS

19. **Quarterly Reporting**.

A. **Timing**. Beginning with the first full calendar quarter after the Effective Date, and for each calendar quarter thereafter until termination of the Consent Decree, Baltimore County shall submit to EPA and MDE a Quarterly Report containing the information set forth in Paragraph 19.B., below. The Quarterly Report shall be postmarked and sent by the 45th day after the end of the calendar quarter (which shall be May 15, August 14, November 14, or February 14, respectively, or the next business day consistent with the definition of "day" in Section IV of this Consent Decree). In lieu of submitting a separate Quarterly Report for any fourth calendar quarter, Baltimore County may submit a combined Quarterly and Annual Report, provided that the combined Report is submitted no later than the due date for the relevant Quarterly Report and includes all information required to be included in the Quarterly Report pursuant to this Paragraph 19 and all information required to be included in the Annual Report pursuant to Paragraph 20, below.

B. **Contents**. The Quarterly Report shall include the information set forth below regarding activities performed in the prior calendar quarter (or, in the case of the first Quarterly Report, activities performed since the Effective Date):

i. **SSO Structures**.

(a) Report the information required by Paragraph 7.C.ii.(a) & (b) with respect to any discharges from SSO Structures during the previous quarter;

(b) Identify any SSO Structure where a flow meter has been installed pursuant to Paragraph 7.C.i(b)(1) during the previous quarter and when such meter was installed; and

(c) Report mitigation measures undertaken pursuant to Paragraph 7.C.iii(b) with respect to any discharges from SSO Structures during the previous quarter.

ii. **Construction Projects**. Summarize the status of each of the projects identified on Appendices B and C, including whether Baltimore County anticipates completing the projects by the applicable deadlines.

iii. **Collection System Inspection**.

(a) Summarize Baltimore County's progress in completing the inspection requirements of Paragraph 8.C.i., including the total miles of gravity line and number of manholes and other appurtenances to be inspected, the miles of gravity line and number of manholes and other appurtenances inspected in the preceding quarter, and the miles of gravity line and number of manholes and other appurtenances remaining to be inspected, and report whether Baltimore County anticipates completing the required inspections by the applicable deadline;

(b) For each Sewershed, summarize Baltimore County's progress in completing the inspection requirements of Paragraphs 8.C.ii., 8.C.iii., 8.C.iv., and 8.D., including the total miles of gravity line and number of Force Mains, manholes and other appurtenances to be inspected, the miles of gravity line and number of manholes and other appurtenances inspected in the preceding quarter, and the miles of gravity line and number of manholes and other appurtenances remaining to be inspected, and report whether Baltimore County anticipates completing the required inspections by the applicable deadline; and

(c) Summarize Baltimore County's compliance during the previous quarter with the requirements in Paragraph 8.C.v. (CCTV Inspection Following SSOs), including the date of the SSO, the date of inspection of the corresponding Gravity Line Segment, the number of and

location of Gravity Line Segments that were not inspected with CCTV within 10 working days following an SSO, and an explanation of any applicable exemptions asserted by Baltimore County.

iv. **SRRR Plan Implementation**. For each Sewershed, summarize Baltimore County's progress in implementing its approved SRRR Plan pursuant to Paragraph 10.D., and report whether Baltimore County anticipates completing implementation by the applicable deadline.

v. **FOG Program Modification**. Summarize Baltimore County's progress in implementing its approved FOG Program Modification Plan pursuant to Paragraph 11.H., and report whether Baltimore County anticipates completing implementation of the required modifications by the applicable deadline.

vi. **Supplemental Environmental Projects**. Summarize Baltimore County's efforts and progress in completing the SEP requirements pursuant to Section X, including the total expenditures for each SEP through the reporting period, any delays or problems encountered and the steps taken to resolve and prevent such delays and problems from continuing, and report whether Baltimore County anticipates completing its obligations with respect to each SEP by the applicable deadline.

vii. **Compliance Issues**.

(a) If Baltimore County completes a project or requirement during the previous quarter that is subject to a requirement that Baltimore County certify completion, Baltimore County shall be deemed to have certified completion of any such project or requirement by specifically identifying the project or requirement in the Quarterly Report and stating the date on which the project or requirement was completed.

(b) If a requirement due to be completed during the reporting period was not completed, Baltimore County shall provide an explanation for why the requirement was not completed, what steps are being taken to ensure prompt completion, and when Baltimore County

anticipates completing the requirement.

(c) If Baltimore County becomes aware of any problems that may prevent it from meeting future compliance deadlines under any provision of this Consent Decree, Baltimore County should notify EPA and MDE of those anticipated problems in the next Quarterly Report, including an explanation of the problem, what steps are being taken to minimize delay, and when Baltimore County anticipates completing the requirement.

20. **Annual Reporting**.

A. **Timing**. By April 1 of the calendar year following the calendar year of the Effective Date, and on April 1 of each calendar year thereafter until termination of this Consent Decree, Baltimore County shall submit an Annual Report. The Annual Report shall cover the activities identified in Paragraph 20.B., below, that were performed in the preceding calendar year through December 31.

B. **Contents**. The Annual Report shall address the following subject areas as follows:

i. **SSO Structures**.

(a) Summarize Baltimore County's progress in implementing its approved Non-Pump Station SSO Structures Elimination Plan pursuant to Paragraph 7.C.iv., and report whether Baltimore County anticipates completing implementation by the applicable deadline;

(b) Summarize the results of any post-elimination monitoring conducted by Baltimore County pursuant to Paragraph 7.C.v. following elimination of any Non-Pump Station SSO Structure.

(c) Summarize Baltimore County's progress in implementing any plans required pursuant to Paragraph 7.C.vi. in response to certain discharges from Pump Station SSO Structures.

ii. **Rainfall and Flow Monitoring Plan**.

(a) Summarize the results of the annual evaluation required by Paragraph 9.B.vi. of the number and placement of flow monitors and rain gauges;

(b) Report whether and how the location of rain gauges and flow monitors have changed during the prior year and provide a revised location map as required by Paragraph 9.B.vi.

(c) Report and briefly explain any deviations during the prior year from the requirements in Paragraphs 9.B.i.-iv. or from Baltimore County's approved Rainfall and Flow Monitoring Plan submitted pursuant to Paragraph 9.B.v.

iii. **Evaluation of Rainfall and Flow Monitoring Data**.

(a) For each Sewershed, summarize Baltimore County's progress in completing the Inflow/Infiltration Evaluation required by Paragraph 9.C.i., and report whether Baltimore County anticipates completing implementation by the applicable deadline.

(b) For each Sewershed, summarize Baltimore County's progress in completing the Long-Term Capacity/Peak Flow Management Evaluation required by Paragraph 9.C.ii., and report whether Baltimore County anticipates completing implementation by the applicable deadline.

iv. **FOG Program**.

(a) Provide the results of the annual evaluation required by Paragraph 11.I. of the effectiveness of the modified FOG Program.

(b) Provide an updated database and map of Grease Generating Facilities as required by Paragraph 11.D.iii.

v. **Illegal Storm Water Discharges**. Identify any Illegal Storm Water Discharges to the Collection System that occurred during the reporting period and summarize the actions taken by Baltimore County in response to each such discharge, including Baltimore County's

specific actions taken in compliance with Paragraph 12.

vi. **Pump Stations**.

(a) Report the results of the annual evaluation required by Paragraph 13.C.ii. of the effectiveness of Baltimore County's backup power program.

(b) Summarize Baltimore County's progress in implementing any plan required by Paragraph 13.C.iii. to address SSOs related to power outages at Pump Stations.

(c) For each Pump Station, list any deficiencies identified during the reporting period through the inspections required pursuant to Paragraph 13.E.ii. and assigned Priority Classification 2, 3, or 4 from Appendix F, and identify the date of the inspection in which that deficiency was first observed, the date on which the deficiency was corrected or is expected to be corrected, the nature of the correction, and, if the deficiency was not corrected within six months, an explanation of the reasons for the delay in correction.

(d) For each Pump Station, list any deficiencies identified during the reporting period through the Engineering Evaluations/Condition Assessments required pursuant to Paragraph 13.F. and assigned Priority Classification 1 or 2 pursuant to Paragraph 13.F.iv., and identify the date the deficiency was first identified, the date on which the deficiency was corrected or is expected to be corrected, the nature of the correction, and, if the deficiency was not corrected within two years, an explanation of the reasons for the delay in correction.

(e) Summarize Baltimore County's progress in completing the implementation of the Pump Station Information Management System as required by Paragraph 13.H., and report whether Baltimore County anticipates completing implementation by the applicable deadline.

vii. **Collection and Transmission System Model**. Summarize Baltimore County's progress in completing implementation of the Collection and Transmission System Model in each Sewershed as required by Paragraph 14.E., and report whether Baltimore County anticipates

completing implementation by the applicable deadline.

viii. **Supplemental Collection System Inspection**. Summarize Baltimore County's progress in completing the inspection requirements of Paragraphs 15.B.i(b) and 15.B.v., including the total miles of gravity line and number of manholes and other appurtenances to be inspected, the miles of gravity line and number of manholes and other appurtenances inspected in the preceding year, and the miles of gravity line and number of manholes and other appurtenances remaining to be inspected, and report whether Baltimore County anticipates completing the required inspections by the applicable deadline.

ix. **Cleaning of Gravity Line Segments**. Summarize Baltimore County's progress in completing the requirement in Paragraph 15.B.ii. for cleaning of all Gravity Sewer Lines greater than 8 inches in diameter within 7 years of the Effective Date, including the total miles of gravity line to be cleaned pursuant to this requirement, the miles of gravity line cleaned during the reporting period, and miles of gravity line remaining to be cleaned to meet this requirement, and report whether Baltimore County anticipates completing the required cleaning by the applicable deadline.

x. **Collection System Inventory**. Summarize Baltimore County's progress in completing the implementation of the inventory database of Collection System components as required by Paragraph 16.D., and report whether Baltimore County anticipates completing implementation by the applicable deadline.

xi. **Emergency Response**. Report and briefly explain any deviations during the reporting period from Baltimore County's approved Emergency Response Plan submitted pursuant to Paragraph 17.

xii. **Reporting of Building Backups Consistent with Paragraph 18.C.**. Baltimore County shall report any known Building Backups, including for each such Building Backup:

(a) the location of the Building Backup;

(b) the cause of the Building Backup, if known;

(c) an estimate of the amount of sewage released into the building; and

(d) the location of sewage disposal, if known.

21. General Provisions.

A. All Quarterly and Annual Reports shall be submitted to the persons designated in Section XIX (Form of Notice) of this Consent Decree. Baltimore County shall provide at least one original executed copy of each Report to EPA (Sharon Fang, Water Protection Division, USEPA Region III) and to MDE (Chief, Enforcement Division, Compliance Program, Water Management Administration, MDE). All other copies may be provided electronically.

B. The Quarterly and Annual Reports shall be certified, consistent with the requirements of 40 C.F.R. § 122.22(a)(3), by the person responsible for compliance or by a person responsible for overseeing implementation of this Consent Decree, as follows:

> I certify under penalty of law that this information was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my directions and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

C. Baltimore County shall not object to the authenticity of any certified Quarterly or Annual Report in any proceeding to enforce this Consent Decree.

VII. RIGHT OF ENTRY

22. A. EPA and MDE, together with their authorized representatives and contractors, shall each have authority at all reasonable times, upon the presentation of credentials, to enter the premises of Baltimore County to:

i. Monitor the progress of activities required by this Consent Decree;

ii. Verify any data or information submitted to the United States and Maryland;

iii. Obtain samples;

iv. Observe performance tests;

v. Inspect and evaluate any portion of the Collection System; and

vi. Review and copy any record required to be kept under the terms and conditions of this Consent Decree.

B. Upon request, Baltimore County shall provide EPA or MDE or their authorized representatives splits of any samples collected by Baltimore County or its consultants and contractors. Upon request, EPA or MDE shall provide Baltimore County splits of any samples collected by EPA or MDE.

C. These inspection rights are in addition to, and in no way limit or otherwise affect, EPA's and MDE's statutory authorities to conduct inspections, to require monitoring and to obtain information from Baltimore County as authorized by law.

VIII. REVIEW AND APPROVAL PROCEDURES

23. A. After receipt and review of any plan, program or other document which is required to be submitted for approval pursuant to this Consent Decree, EPA and MDE may (1) approve the submission; (2) approve the submission or portions of the submission upon specified conditions; (3) approve part of the submission and disapprove the remainder; or (4) disapprove the submission and direct Baltimore County to modify the submission.

B. In the event of approval of the complete submission, Baltimore County shall proceed to take any actions required by the plan, program or other approved document, as approved in writing by EPA and MDE.

C. In the event of written approval of portions of the submission or approval upon specified conditions, Baltimore County shall proceed to take the actions identified in the non-deficient portion of the plan, program, other document, or portion thereof, in accordance with any applicable

conditions specified by EPA and MDE, subject only to Baltimore County's right to invoke the Dispute Resolution procedures set forth in Section XIII of this Consent Decree with respect to the conditions imposed or the disapproved portions. Implementation of any non-deficient portion of the submission shall not eliminate the potential of Baltimore County to incur stipulated penalties pursuant to Section XI.

24. Upon receipt of a notice of disapproval of all or part of a submission from EPA and MDE, Baltimore County shall, within 30 days, correct the deficiencies as directed by EPA's and MDE's written comments and resubmit the plan, program or other document for approval. Any stipulated penalties applicable to the original submission, as provided in Section XI of this Consent Decree, shall accrue during the 30-day period, but shall not be payable unless the resubmission is untimely or is disapproved in whole or in part.

25. In the event that a resubmitted plan, program or other document, or portion thereof, is disapproved by EPA and MDE, EPA and MDE may again require Baltimore County to correct the deficiencies in accord with Paragraph 24, subject to Baltimore County's right to invoke the Dispute Resolution Procedures set forth in Section XIII of this Consent Decree and the right of EPA and MDE to seek stipulated penalties as provided in this Section VIII.

IX. CIVIL PENALTY

26. Baltimore County shall pay a total civil penalty in the amount of $750,000.00 to the United States and the State of Maryland for violations as alleged by the United States and the State of Maryland in the Complaint. Baltimore County shall pay fifty percent (50%) of the civil penalty to the United States within thirty (30) days of the Effective Date of this Consent Decree in accordance with the procedures described in Paragraph 28, below. Baltimore County shall pay fifty percent (50%) of the civil penalty to the State of Maryland within thirty (30) days of the Effective Date in accordance with the procedures described in Paragraph 29, below.

27. The United States and the State of Maryland shall be deemed judgment creditors for purposes of collection of this penalty.

28. Payment of the civil penalty to the United States shall be made by Electronic Funds Transfer ("EFT") to the U.S. Department of Justice ("DOJ") lockbox bank, referencing DOJ No. 90-5-1-1-4402/2 and USAO File Number 2002V00703. Payment shall be made in accordance with instructions provided by the United States to Baltimore County following execution of this Consent Decree. Any EFT received at the DOJ lockbox bank after 11:00 A.M. Eastern Time will be credited on the next business day. Notice of the EFT shall simultaneously be mailed to the following:

Docket Clerk (3RC00)
U.S. EPA - Region III
1650 Arch Street
Philadelphia, PA 19103-2029;

Deane Bartlett (3RC20)
U.S. EPA - Region III
1650 Arch Street
Philadelphia, PA 19103-2029; and

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611
Re: DOJ No. 90-5-1-1-4402/2.

The transmittal letter forwarding such notice shall include the caption, civil action number and judicial district of this action.

29. Payment to the State of Maryland shall be made by tendering to the Maryland Department of the Environment, P.O. Box 2057, Baltimore County, MD 21203-2057, check made payable to: “Maryland Clean Water Fund.”

30. If Baltimore County fails to tender all or any portion of the civil penalty payment owed to the United States within thirty (30) days of the Effective Date, interest on the unpaid amount shall accrue in accordance with the provisions of 28 U.S.C. § 1961 and be paid from the date said payment is

due until all amounts owed are paid.

X. SUPPLEMENTAL ENVIRONMENTAL PROJECTS

31. Baltimore County shall perform the following supplemental environmental projects ("SEPs"), which the Parties agree are intended to secure significant environmental protection and improvements that are not otherwise required by law. As described below, Baltimore County shall expend at least $4,500,000 to complete the SEPs in accordance with the provisions of this Section X of the Consent Decree and Appendices I, J, and K, which are attached hereto and incorporated by reference into and enforceable under this Consent Decree.

A. **Patapsco BNR/ENR Design Project.** Baltimore County shall participate as appropriate in, and contribute funding in an amount up to $3,000,000, for the design of the Biological Nutrient Removal/Enhanced Nutrient Removal project at the Patapsco Wastewater Treatment Plant in Baltimore City ("Patapsco BNR/ENR Design Project"), as described more fully in Appendix I. Baltimore County shall complete the SEP in accordance with the procedures and schedule identified in Appendix I.

B. **Back River Debris Removal Project**.

i. Baltimore County shall design, install, and operate a trash collection system in Moore's Run (a tributary to Back River) near the Red House Run Pump Station to remove floating debris for landfill disposal, as described more fully in Appendix J. This SEP shall be completed within five (5) years of the Effective Date. Baltimore County's expenditures for design and implementation of this SEP shall not be less than, but may exceed, $200,000 in Eligible SEP Costs.

ii. Within 180 days after the Effective Date, Baltimore County shall submit a Statement of Work ("SOW") for this SEP to EPA and MDE, for review and approval pursuant to Section VIII (Review and Approval Procedures) of the Consent Decree, that includes a plan for implementation of the SEP, a schedule for implementation of the SEP including interim milestones, cost

estimates for the various phases of the project, and a certification of the truth and accuracy of the statements in Paragraph 33 below. Upon approval by EPA and MDE of the SOW, the SOW shall be incorporated by reference into and enforceable under this Consent Decree.

C. **Stream Restoration Projects.**

i. Baltimore County shall design and implement the following stream restoration SEPs, as described more fully in Appendix K.

Gwynns Falls at Gwynnbrook Avenue

Paradise Avenue (tributary to West Branch of Herbert's Run)

Minebank Run Tributary at Waller Court

Herring Run at Collinsdale.

Construction of these SEPs shall be completed within five (5) years of the Effective Date.

ii. Baltimore County's expenditures for the SEPs identified in Paragraph 31.C.i. shall not be less than, but may exceed, $1,300,000 in Eligible SEP Costs. For purposes of the SEPs identified in Paragraph 31.C.i. and Appendix K, Eligible SEP Costs shall also include costs expended by Baltimore County for inspection, right-of-way acquisition, and monitoring. At the time that Baltimore County submits its SEP Completion Report(s) for the SEPs identified in Paragraph 31.C.i. and Appendix K, Baltimore County shall certify, consistent with the language set forth in Paragraph 21.B., that the Eligible SEP Costs identified by Baltimore County do not include costs that Baltimore County would have otherwise expended to preserve any aspect of its Collection System or other infrastructure from stream impacts in the affected areas.

iii. Within 180 days after the Effective Date, Baltimore County shall submit a Statement of Work ("SOW") for each of the SEPs identified in Paragraph 31.C.i. to EPA and MDE, for review and approval pursuant to Section VIII (Review and Approval Procedures) of the Consent Decree, that includes a plan for implementation of the SEP, a schedule for implementation of the SEP including

interim milestones, cost estimates for the various phases of the project, and a certification of the truth and accuracy of the statements in Paragraph 33 below. Upon approval by EPA and MDE of the SOWs, each SOW shall be incorporated by reference into and enforceable under this Consent Decree.

D. In the event that Baltimore County has not expended $4,500,000 in Eligible SEP Costs, as required by Paragraph 31, within five years plus 180 days of the Effective Date, Baltimore County shall propose a substitute project or projects requiring expenditures of Eligible SEP Costs in an amount equal to or greater than the difference between $4,500,000 and the amount of Eligible SEP Costs actually paid by Baltimore County pursuant to this Paragraph 31. All proposed substitute projects are subject to the approval of EPA and MDE and must be consistent with EPA guidance regarding SEPs. In the event that EPA and MDE approve a substitute project or projects, Baltimore County shall, within 90 days of such approval, submit a Statement of Work ("SOW") for the SEP(s) to EPA and MDE, for review and approval pursuant to Section VIII (Review and Approval Procedures) of the Consent Decree, that includes a plan for implementation of the SEP(s), a schedule for implementation of the SEP(s) including interim milestones, cost estimates for the various phases of the project(s), and a certification of the truth and accuracy of the statements in Paragraph 33 below. Upon approval by EPA and MDE of the SOW(s), the SOW(s) shall be incorporated by reference into and enforceable under this Consent Decree. Disputes regarding EPA's and MDE's determination to approve or disapprove a substitute project or projects shall not be subject to Section XIII (Dispute Resolution) of this Consent Decree.

32. Baltimore County is responsible for the satisfactory completion of each SEP in accordance with the requirements of the Consent Decree. "Satisfactory completion" means that Baltimore County shall complete the project requirements in accord with all specifications in the relevant Appendices and in the approved SOWs. Baltimore County shall also ensure that it spends not less than the total SEP amount set forth in Paragraph 31, and the specific SEP amounts set forth in

Paragraph 31.B.i. (for the Back River Debris Removal Project), and in Paragraph 31.C.ii. (for the Stream Restoration Projects). Baltimore County recognizes and agrees that no part of Baltimore County's expenditures for these SEPs shall include or be reimbursed by federal or state funds, including federal or state low interest loans, contracts, or grants, or be specifically reimbursed by Howard County or Anne Arundel County. Baltimore County may use contractors and/or consultants in planning and implementing the SEPs.

33. With regard to the SEP, Baltimore County certifies the truth and accuracy of each of the following:

A. That all cost information provided to EPA and MDE in connection with EPA's and MDE's approval of the SEPs is complete and accurate and represents a fair estimate of the costs necessary to implement the SEPs;

B. That, as of the Date of Lodging of this Decree, Baltimore County is not required to perform or develop the SEPs by any federal, state, or local law or regulation, or as injunctive relief awarded in any other action in any forum, except that the Parties recognize that Baltimore County's payment of funds for the Patapsco BNR/ENR Design Project identified in Paragraph 31.A. will be undertaken consistent with the current Sewerage Agreement between Baltimore County and Baltimore City providing for the contribution by Baltimore County of a percentage of certain expenses relating to operation of Baltimore City's sewer system;

C. That Baltimore County has not received, and is not negotiating to receive, credit for the SEPs in any other enforcement action; and

D. That Baltimore County will not receive any reimbursement for any portion of the SEPs from any other person.

34. **SEP Completion Report.**

A. Within 30 days after the date set for completion of each SEP, Baltimore County

shall submit a SEP Completion Report to EPA and MDE. The SEP Completion Report shall contain the following information regarding the relevant SEP:

i. A detailed description of the SEP as implemented;

ii. A description of any problems encountered in completing the SEP and the solutions thereto;

iii. An itemized list of all Eligible SEP Costs;

iv. Certification that the SEP has been fully implemented pursuant to the provisions of this Decree; and

v. A description of the environmental and public health benefits resulting from implementation of the SEP (with a quantification of the benefits and pollutant reductions, if feasible).

B. EPA and MDE may, in their sole discretion, require information in addition to that described in Paragraph 34.A., in order to determine the adequacy of SEP completion or eligibility of SEP costs.

C. After receiving the SEP Completion Report, EPA and MDE shall notify Baltimore County whether or not Baltimore County has satisfactorily completed the SEP. If the SEP has not been satisfactorily completed in accordance with all schedules, or if the total amount expended on performance of all SEPs is less than the amount set forth in Paragraph 31, or if the amount expended on the Back River Debris Removal Project is less than amount set forth in Paragraph 31.B.i., or if the amount expended on the Stream Restoration Projects is less than the amount set forth in Paragraph 31.C.ii., stipulated penalties may be assessed under Section XI (Stipulated Penalties) of this Consent Decree.

D. Disputes concerning the satisfactory completion of the SEPs and the amount of Eligible SEP Costs shall be resolved under Section XIII (Dispute Resolution) of this Decree.

35. Each submission required under this Section shall be signed by an official with knowledge of the SEP and shall bear the certification language set forth in Paragraph 21.B., above.

36. Any public statement, oral or written, in print, film, or other media, made by Baltimore County making reference to any SEP under this Decree shall include the following language:

> This project was undertaken in connection with the settlement of an enforcement action, United States and the State of Maryland v. Baltimore County, Maryland (D. Md.), taken on behalf of the U.S. Environmental Protection Agency under the Clean Water Act and by the State of Maryland under the Maryland Environment Article.

37. **Reporting Requirements**. Baltimore County shall report to EPA and MDE on its performance of the SEPs as specifically set forth in Section VI (Reporting Requirements) of this Consent Decree.

XI. STIPULATED PENALTIES

38. Baltimore County shall be liable to the United States and the State of Maryland for stipulated penalties for the following violations of this Consent Decree as specified below. Baltimore County shall not be liable for any stipulated penalties under this Consent Decree except as set forth in this Section XI.

A. **Designated Rehabilitation and Replacement Projects**. For each day that Baltimore County fails to achieve Substantial Completion of any project identified in Paragraph 7.D. and Appendix B, or in Paragraph 13.B. and Appendix C, in accordance with the applicable schedules set forth in those Paragraphs and Appendices, Baltimore County shall be liable for stipulated penalties as set forth below:

Period of Non-Compliance	Penalty per Day for Failure to Timely Complete
1st to 30th Day	$1,000
31st to 60th Day	$2,500
After 60 Days	$6,000

B. **Delays in Submission of Deliverables**. Baltimore County shall be liable for stipulated penalties for each failure to timely submit to the United States and the State of Maryland a Deliverable, including any required revision, update, or supplement to a Deliverable, subject to a deadline under Section V (Remedial Measures) or Section VI (Review and Approval Procedures) of this Consent Decree as set forth below:

Period of Non-Compliance	Penalty per Day for Failure to Timely Submit
1st to 30th Day	$1,000
31st to 60th Day	$1,500
After 60 Days	$2,250

In the event that Baltimore County is potentially liable for stipulated penalties under this Paragraph 38.B. and under another provision of this Paragraph 38 for failure to timely submit the same Deliverable, EPA and/or MDE, in their sole discretion, may demand payment of stipulated penalties from Baltimore County pursuant to either, but not both, of the applicable provisions.

C. **SSO Structures**.

i. For each day that Baltimore County fails to timely submit the Non-Pump Station SSO Structures Elimination Plan as required by Paragraph 7.C.iii., a supplemental Elimination Plan as required by Paragraph 7.C.vii., or a proposed plan and schedule regarding Pump Station SSO Structures as required by Paragraph 7.C.vi., Baltimore County shall be liable for stipulated penalties as set forth below:

Period of Non-Compliance	Penalty per Day for Failure to Timely Submit
1st to 30th Day	$1,000
31st to 60th Day	$2,500
After 60 Days	$6,000

ii. For each day that Baltimore County fails to timely complete elimination of a Non-Pump Station SSO Structure pursuant to the schedule set forth in the Non-Pump Station SSO Structures Elimination Plan required by Paragraph 7.C.iii., or a supplemental Elimination Plan as required by Paragraph 7.C.vii., Baltimore County shall be liable for stipulated penalties as set forth below:

Period of Non-Compliance	Penalty per Day per SSO Structure for Failure to Timely Complete
1st to 30th Day	$1,000
31st to 60th Day	$2,500
After 60 Days	$6,000

iii. For each failure to monitor an SSO Structure as required by Paragraph 7.C.i., including each failure to install and operate a continuous flow monitor as required, Baltimore County shall be liable for stipulated penalties as set forth below:

Period of Non-Compliance	Penalty per Day for Failure to Monitor
1st to 30th Day	$1,000
31st to 60th Day	$2,000
After 60 Days	$3,000

D. **Collection System Inspection**.

i. If Baltimore County fails to complete CCTV inspection of all required Gravity Line Segments or inspection of other components in a sewer sub-basin as required by Baltimore County's approved Collection System Inspection Plan and schedule, Baltimore County shall be liable for stipulated penalties of $250 per day for each mile of pipe not inspected and $50 per day for each manhole or other appurtenance or Force Main not inspected.

ii. For each failure to timely inspect with CCTV a Gravity Line Segment following an SSO as required by Paragraph 8.C.v., Baltimore County shall be liable for stipulated

penalties as set forth below:

Period of Non-Compliance	Penalty per Day for Failure to Timely Complete
1st to 30th Day	$200
31st to 60th Day	$500
After 60 Days	$1,000

E. **Rainfall and Flow Monitoring**.

i. For each failure to comply with the requirements of its Rainfall and Flow Monitoring Plan, Baltimore County shall be liable for stipulated penalties as set forth below:

Period of Non-Compliance	Penalty per Day for Failure to Comply
1st to 30th Day	$250
31st to 60th Day	$500
After 60 Days	$1,000

ii. For each failure to comply with any requirements set forth in Paragraph 9.B.i. & ii., or the post-construction monitoring requirements set forth in Paragraphs 7.C.v. and 7.D.iii., Baltimore County shall be liable for stipulated penalties in the amount of $250.

iii. For each day that Baltimore County fails to timely complete and certify completion of an Inflow/Infiltration Evaluation or a Long-Term Capacity/Peak Flow Management Evaluation for a Sewershed as required by Paragraph 9.C., Baltimore County shall be liable for stipulated penalties as set forth below:

Period of Non-Compliance	Penalty per Day for Failure to Timely Complete
1st to 30th Day	$1,000
31st to 60th Day	$1,500
After 60 Days	$2,250

F. **SRRR Plans**. For each day that Baltimore County fails to timely complete construction and implementation of a project to be performed pursuant to an approved SRRR Plan and schedule, Baltimore County shall be liable for stipulated penalties as set forth below:

Period of Non-Compliance	Penalty per Day for Failure to Timely Complete
1st to 30th Day	$1,500
31st to 60th Day	$3,000
After 60 Days	$6,000

G. **FOG Program**.

i. For each failure to timely inspect a Grease Generating Facility as required by Paragraph 11.E.ii. or to timely provide written notice to a Grease Generating Establishment as required by Paragraph 11.F., Baltimore County shall be liable for stipulated penalties of $250 per Grease Generating Facility not timely inspected or notified. Baltimore County shall not be liable for stipulated penalties under this Paragraph in the event that it demonstrates that it sought to timely inspect, but was denied access to, a Grease Generating Facility owned or operated by the United States or the State of Maryland.

ii. For each day that Baltimore County fails to timely complete implementation of its approved FOG Program Modification Plan consistent with Paragraph 11.H., Baltimore County shall be liable for stipulated penalties as set forth below:

Period of Non-Compliance	Penalty per Day for Failure to Timely Complete
1st to 30th Day	$1,000
31st to 60th Day	$2,500
After 60 Days	$5,000

H. **Illegal Storm Water Discharges**. For each failure to comply with the requirements of Paragraph 12.B.i. regarding the elimination of Illegal Storm Water Discharges that are

likely to cause or contribute to an SSO, Baltimore County shall be liable for stipulated penalties as set forth below:

Period of Non-Compliance	Penalty per Day for Failure to Comply
1st to 30th Day	$250
31st to 60th Day	$500
After 60 Days	$1,000

I. **Pump Stations**.

i. For each day that Baltimore County fails to timely complete implementation of an approved plan submitted pursuant to Paragraph 13.C.iii. regarding an SSO due to loss of power, Baltimore County shall be liable for stipulated penalties as set forth below:

Period of Non-Compliance	Penalty per Day for Failure to Timely Complete
1st to 30th Day	$1,000
31st to 60th Day	$1,500
After 60 Days	$2,250

ii. For each failure to timely correct a Pump Station deficiency as required by Paragraph 13.E.iii. or Paragraph 13.F.iv(a), Baltimore County shall be liable for stipulated penalties as set forth below:

Period of Non-Compliance	Penalty per Day for Failure to Timely Complete
1st to 30th Day	$1,000
31st to 60th Day	$1,500
After 60 Days	$2,250

J. **Operation and Maintenance Inspection and Cleaning Requirements**.

i. If Baltimore County fails to timely complete CCTV inspection of all Gravity Sewer Lines as required by Paragraph 15.B.i(b) or inspection of all manholes as required by

Paragraph 15.B.v(b), Baltimore County shall be liable for stipulated penalties of $250 per day for each mile of pipe not inspected and $50 per day for each manhole or other appurtenance not inspected.

ii. If Baltimore County fails to timely complete cleaning of all Gravity Sewer Lines greater than 8 inches in diameter within 7 years of the Effective Date as required by Paragraph 15.B.ii., Baltimore County shall be liable for stipulated penalties of $250 per day for each mile of pipe not cleaned.

K. **Emergency Response Plan**. For each failure to comply with the requirements of its approved Emergency Response Plan submitted pursuant to Paragraph 17, Baltimore County shall be liable for stipulated penalties in the amount of $1,000.

L. **Reporting of Discharges**. For each failure to provide oral or written notification of a Discharge as required by Paragraph 18.B., Baltimore County shall be liable for stipulated penalties of $2000.

M. **Quarterly and Annual Reporting**. For each failure to timely submit a complete Quarterly Report or Annual Report as required by Paragraphs 19 or 20, Baltimore County shall be liable for stipulated penalties as set forth below:

Period of Non-Compliance	Penalty per Day for Failure to Timely Submit
1st to 60th Day	$750
After 60 Days	$2,000

N. **Certifications**. For each failure to timely submit a certification required under Paragraphs 7.C.iv., 7.D., 8.C.i(c), 8.C.ii, 8.C.iii., 8.D.ii(b)(2), 9.C.i., 9.C.ii(f), 10.D, 11.E.iv., 11.F.iii., 11.H., 13.B., 13.C.iii., 13.D., 13.F.iv(a), 13.G.i., 13.G.ii, 13.H., 14.E., 15.B.i(b), 15.B.ii, 16.A., 16.B.ii., 16.C.i., or 16.Di.. of this Consent Decree, Baltimore County shall be liable for stipulated penalties as set forth below:

Period of Non-Compliance	Penalty per Day for Failure to Timely Submit
1st to 60th Day	$750
After 60 Days	$2,000

In the event that Baltimore County is potentially liable for penalties under any provision of Paragraph 38 for failure to timely perform a requirement of the Consent Decree and is also potentially liable for penalties under this Paragraph 38.N. for failure to timely certify performance of that same requirement, EPA and/or MDE, in their sole discretion, may demand payment of stipulated penalties from Baltimore County pursuant to either, but not both, of the applicable provisions.

O. **Civil Penalty**. For each day that Baltimore County fails to timely pay the civil penalty required under Section IX in accord with the schedule therein, Baltimore County shall be liable for stipulated penalties in the amount of $1000.

P. **Supplemental Environmental Projects**. In the event that Baltimore County fails to perform or complete a SEP in accordance with the terms of Section X (Supplemental Environmental Projects) of this Consent Decree, Appendices I, J, and K, as applicable, and any approved SOW, and/or to the extent that Baltimore County's expenditures of Eligible SEP Costs for the SEP do not equal or exceed the required cost for the relevant SEP(s) as set forth in Paragraph 31, Baltimore County shall be liable for stipulated penalties according to the provisions set forth below:

i. Except as set forth in Paragraph 38.P.ii. below, if Baltimore County fails to satisfactorily complete a SEP identified in Paragraph 31.B. or 31.C. above, Baltimore County shall be liable for a stipulated penalty in the amount of the difference between the amount required to be spent for the SEP pursuant to Paragraph 31 and the Eligible SEP Costs actually expended by the County on the SEP, plus an additional stipulated penalty in the amount of 15% of the estimated cost of the SEP as set forth in Paragraph 31 and/or the applicable SOW.

ii. If Baltimore County fails to satisfactorily complete a SEP, but EPA and

MDE determine that Baltimore County has made good faith efforts to complete the SEP, Baltimore County shall be liable for a stipulated penalty in the amount of the difference between the amount required to be spent for the SEP pursuant to Paragraph 31 and the Eligible SEP Costs actually expended by the County on the SEP.

iii. If Baltimore County satisfactorily completes all SEPs, but fails to expend the total amount required under Paragraph 31, or the specific amounts required under Paragraphs 31.B.i. or 31.C.ii., Baltimore County shall be liable for a stipulated penalty in the amount of the difference between the amount required to be spent for the SEPs pursuant to Paragraph 31 and the Eligible SEP Costs actually expended by the County on the SEPs.

iv. For each day Baltimore County fails to timely complete a SEP, Baltimore County shall be liable for stipulated penalties as follows:

Period of Non-Compliance	Penalty per Day for Failure to Comply
1st to 30th Day	$150
31st to 60th Day	$300
After 60 Days	$600

The penalties under this subparagraph shall accrue until such time as Baltimore County notifies EPA and MDE that it no longer intends to complete the relevant SEP, at which time the stipulated penalties set forth in Paragraphs 38.P.i. or ii. immediately above shall apply.

v. **SEP Deliverables.** For failure to submit a SEP Completion Report as required by Paragraph 34, or to submit a SEP SOW as required by Paragraph 31, Baltimore County shall be liable for stipulated penalties in the amount of $500 for each day after the submission was originally due until the document is submitted.

39. **Discharges**.

A. For the first three years following the Effective Date of this Consent Decree, and

as a result of the need to make numerous system, operational and procedural changes to implement the remedial measures required by this Consent Decree and to develop the logistical infrastructure necessary to implement these measures, Baltimore County shall be liable for stipulated penalties to the United States and the State of Maryland for each Discharge in the amounts set forth below:

Less than 100 gallons	$50
100 to 2,499 gallons	$250
2,500 to 9,999 gallons	$500
10,000 to 99,999 gallons	$1,875
100,000 to 999,999 gallons	$5,000
1 million or more gallons	$7,500

B. Commencing three years after the Effective Date of this Consent Decree, Baltimore County shall be liable for stipulated penalties to the United States and the State of Maryland for each Discharge in the amounts set forth below:

Less than 100 gallons	$125
100 to 2,499 gallons	$750
2,500 to 9,999 gallons	$1,250
10,000 to 99,999 gallons	$4,500
100,000 to 999,999 gallons	$10,000
1 million or more gallons	$15,000

C. For purposes of this Paragraph 39, when a Discharge subject to a stipulated penalty as set forth above is reported by someone other than a member of Baltimore County's inspection crews, and Baltimore County, upon inspection, determines that a Discharge is occurring, the Discharge shall be considered to have commenced at the date and time that Baltimore County first received the report of the Discharge for purposes of calculating the volume of the Discharge.

D. Notwithstanding Paragraphs 39.A. & B. above, Baltimore County shall not be liable for stipulated penalties for Discharges where such Discharges are from Non-Pump Station SSO Structures identified in Appendix A2 that have not been certified as eliminated pursuant to Paragraph 7.C.iv., are caused by wet weather events, and occur within six (6) years of the Effective Date. Baltimore County shall demonstrate that a Discharge was caused by a wet weather event using flow

monitoring records or other engineering data.

40. Stipulated civil penalties shall automatically begin to accrue on the first day after performance is due, or on the day a violation occurs, whichever is applicable, and shall continue to accrue until the violation or deficiency is corrected. Stipulated penalties shall accrue simultaneously for separate violations of the Consent Decree.

41. Following written demand by EPA or MDE, stipulated penalties incurred by Baltimore County under this Consent Decree shall be paid fifty percent (50%) to the United States and fifty percent (50%) to the State of Maryland. All stipulated penalties payable to the United States shall be paid in accordance with the procedures set forth in Paragraph 28, and all stipulated penalties payable to the State of Maryland shall be paid in accordance with the procedures set forth in Paragraph 29.

42. Stipulated penalties incurred under this Consent Decree shall be tendered within thirty (30) days of Baltimore County's receipt of a demand for payment of such penalties by EPA and/or MDE, unless Baltimore County contests the demand in accordance with the dispute resolution provisions of this Consent Decree. If Baltimore County invokes the dispute resolution provisions in Section XIII of this Consent Decree, it shall deposit any disputed penalty in an interest-bearing escrow account within ten (10) days of invoking dispute resolution. The stipulated penalties that are the subject of the dispute, as well as interest earned thereon, shall be released in a manner consistent with the terms of the resolution of the dispute within sixty (60) days after the dispute is resolved. Stipulated penalties for any continuing violation shall accrue during the resolution of any dispute.

43. The stipulated civil penalties set forth above shall be in addition to any other rights or remedies which may be available to the United States and the State of Maryland or their agencies by reason of Baltimore County's failure to comply with the requirements of this Consent Decree, and all applicable federal, state or local laws, regulations, or permits.

44. In the event that a stipulated civil penalty is not paid when due, the stipulated civil penalty owed to the United States shall be payable with interest from the original due date to the date of payment at the statutory judgment rate set forth at 28 U.S.C. § 1961(a).

45. The United States or Maryland may, in their own behalf and in their unreviewable exercise of discretion, reduce or waive stipulated penalties otherwise due that sovereign under this Consent Decree.

XII. FORCE MAJEURE

46. "Force Majeure" for the purposes of this Consent Decree is defined as an event arising from causes beyond the control of Baltimore County or the control of any entity controlled by Baltimore County, including its agents, consultants and contractors, which delays or prevents the performance of any obligation under this Consent Decree. Unanticipated or increased costs or expenses associated with implementation of this Consent Decree and changed financial circumstances shall not, in any event, be considered "force majeure" events. Baltimore County shall adopt all reasonable measures to avoid or minimize such delay.

47. When Baltimore County knows or if Baltimore County should have known, by the exercise of reasonable diligence, of an event that might delay completion of any requirement of this Consent Decree, whether or not the event is a "force majeure" event, Baltimore County shall notify EPA and MDE, in writing, within thirty (30) days after Baltimore County first knew, or in the exercise of reasonable diligence under the circumstances, should have known of such event. The notice shall provide a description of the event and an explanation of the reasons for the delay, the anticipated duration of the delay, all actions taken or to be taken to prevent or mitigate the delay or the effect of the delay, the timetable by which those measures will be implemented, whether Baltimore County claims that the delay should be excused as a "force majeure" event, and its rationale for attributing such delay to a "force majeure" event if it intends to assert such a claim. Baltimore County shall include all

available documentation supporting its claim that the delay was attributable to a "force majeure" event. Further, where a contractor or subcontractor has not completed a construction project on time, Baltimore County shall state what steps it is taking to ensure performance by the contractor or subcontractor in question, and shall supply any documentation available to show the steps it has taken.

48. **Permits**. Where any compliance obligation under this Section requires Baltimore County to obtain a federal, state, or local permit or approval, Baltimore County shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals. Baltimore County may seek relief under the provisions of this Section XII (Force Majeure) of this Consent Decree for any delay in the performance of any such obligation resulting from a failure to obtain, or a delay in obtaining, any permit or approval required to fulfill such obligation, if Baltimore County has submitted timely and complete applications and has taken all other actions necessary to obtain all such permits or approvals.

49. Failure to provide the required written notice to EPA and MDE shall render this Section void and of no effect as to the event in question, and shall be a waiver of Baltimore County's right to obtain an extension of time for its obligations based on such event.

50. If EPA and MDE find that a delay in performance is, or was, caused by a "force majeure" event, the time for performance of the specific obligation(s) under this Consent Decree that are caused by the "force majeure" event shall be extended for a period to compensate for the delay resulting from such event, and stipulated penalties shall not be due for such period. EPA and MDE will notify Baltimore County in writing of the length of the extension for performance of the obligation(s) caused by the "force majeure" event. An extension of one compliance date based on a particular event shall not automatically extend any other compliance date. Baltimore County shall make an individual showing of proof by a preponderance of the evidence that the "force majeure" event was the cause of the delay in performance for each requirement or compliance date for which an extension is sought.

51. In the event of a dispute regarding application of these provisions to a delay in performance, the dispute resolution provisions of Section XIII (Dispute Resolution) shall apply, and Baltimore County shall have the burden of proving by a preponderance of the evidence that the delay is, or was, caused by a "force majeure" event, and that the amount of additional time requested is necessary to compensate for that event. Baltimore County shall not be liable for stipulated penalties for any period of delay which was excused by the Court or EPA and MDE pursuant to this "Force Majeure" Section.

XIII. DISPUTE RESOLUTION

52. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes between Baltimore County and EPA/MDE arising under or with respect to this Consent Decree. However, the procedures set forth in this Section shall not apply to actions by the United States and the State of Maryland to enforce obligations of Baltimore County that have not been disputed in accordance with this Section.

53. **Informal Dispute Resolution**. Any dispute which arises under or with respect to this Consent Decree shall in the first instance be the subject of informal negotiations between Baltimore County, EPA and MDE. The period for informal negotiations shall not exceed twenty (20) days from the time Baltimore County sends EPA and MDE a written Notice of Dispute, unless that period is modified by written agreement of Baltimore County, EPA and MDE. The Notice of Dispute shall state clearly the matter in dispute. If the parties cannot resolve their dispute within the informal negotiation period, then the position advanced by EPA and MDE shall be considered binding unless, within thirty (30) days of the conclusion of the informal negotiation period, Baltimore County invokes the formal dispute resolution procedures as set forth below.

54. **Formal Dispute Resolution**. Baltimore County shall invoke formal dispute resolution procedures, within the time period provided in the preceding Paragraph, by serving on the United States and Maryland a written Statement of Position regarding the matter in dispute. The Statement of Position

shall include, but may not necessarily be limited to, any factual data, analysis, or opinion supporting Baltimore County's position and any supporting documentation relied upon by Baltimore County.

55. The United States and Maryland shall serve a Statement of Position within forty-five (45) days of receipt of Baltimore County's Statement of Position. The United States' and Maryland's Statement of Position shall include, but may not necessarily be limited to, any factual data, analysis, or opinion supporting that position and all supporting documents relied upon by the United States and Maryland. The United States' and Maryland's Statement of Position will be binding on Baltimore County unless, within thirty (30) days of its receipt, Baltimore County serves on the United States and Maryland a motion for judicial review setting forth the matter in dispute, the efforts made to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of this Consent Decree.

56. The United States and Maryland shall respond to Baltimore County's motion within the time period allowed by the Local Rules of this Court, unless the parties stipulate otherwise. Baltimore County may file a reply memorandum, to the extent permitted by the Local Rules or the parties' stipulation, as applicable.

57. In any dispute under this Paragraph, Baltimore County shall bear the burden of demonstrating that Baltimore County's position best complies with the terms and conditions of, and furthers the objectives of, this Consent Decree. The United States and Maryland may argue that their position is reviewable only on the administrative record and must be upheld unless arbitrary and capricious or otherwise not in accordance with law.

58. Submission of any matter to the Court for resolution shall not extend any deadline set forth in this Consent Decree unless the Parties agree to such extension in writing or the Court grants an order extending such deadline. Stipulated penalties with respect to the disputed matter shall continue to accrue but payment shall be stayed pending resolution of the dispute as provided in Section XI

(Stipulated Penalties). Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Consent Decree. In the event that Baltimore County does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XI (Stipulated Penalties) and consistent with the Court's ruling.

XIV. EFFECT OF SETTLEMENT

59. Upon the Effective Date, this Consent Decree shall resolve the United States' and the State of Maryland's civil claims for violations of Section 301 of the Clean Water Act, 33 U.S.C. § 1311, and Sections 9-322 and 9-323 of the Environment Article, Annotated Code of Maryland, as alleged in the Complaint filed in this matter, through the Date of Lodging of this Consent Decree.

XV. NON-WAIVER PROVISIONS

60. The Parties agree that Baltimore County is responsible for achieving and maintaining complete compliance with all applicable federal and state laws, regulations, and permits, and that compliance with this Consent Decree shall be no defense to any actions commenced pursuant to said laws, regulations, or permits, except as otherwise expressly specified in the Consent Decree.

61. The United States and the State of Maryland, do not, by their consent to the entry of this Consent Decree, warrant or aver in any manner that Baltimore County's complete compliance with this Consent Decree will result in compliance with the provisions of the Clean Water Act, 33 U.S.C. §§ 1251 et seq. or with Maryland's water pollution control laws. Notwithstanding EPA's and MDE's review or approval of any plans, reports, policies, or procedures formulated pursuant to this Consent Decree, or any delay in such review or approval, Baltimore County shall remain solely responsible for any non-compliance with the terms of this Consent Decree, the Clean Water Act and regulations promulgated under that Act, and Maryland's Environment Article and implementing regulations.

62. The Parties reserve any and all legal and equitable remedies available to enforce the provisions of this Consent Decree.

63. This Consent Decree shall not limit any authority of EPA and MDE under the Clean Water Act or any applicable statute, including the authority to seek information from Baltimore County or to seek access to the property of Baltimore County.

64. Performance of the terms of this Consent Decree by Baltimore County is not conditioned on the receipt of any federal, state or local funds. Application for construction grants, state revolving loan funds, or any other grants or loans, or delays caused by inadequate facility planning or plans and specifications on the part of Baltimore County shall not be cause for extension of any required compliance date in this Consent Decree.

65. It is the intent of the Parties hereto that the clauses hereof are severable, and should any clause(s) be declared by a court of competent jurisdiction to be invalid and unenforceable, the remaining clauses shall remain in full force and effect.

66. The United States and the State of Maryland reserve all remedies available to them for violations of the Clean Water Act and the Maryland water pollution control laws by Baltimore County which are not alleged in the Complaint or which occur after the Date of Lodging of this Consent Decree.

67. This Consent Decree does not resolve criminal liability, if any, that any person might have for violations of the Clean Water Act.

68. Nothing in this Consent Decree shall be construed to limit the authority of the United States or the State of Maryland to undertake any action against any person, including Baltimore County, in response to conditions that may present an imminent and substantial endangerment to the health of persons or to the welfare of persons where such endangerment is to the livelihood of such persons. 33 U.S.C. § 1364.

69. Nothing in this Consent Decree shall limit Baltimore County's ability to modify its program for the design, planning, construction, operation and maintenance of its Collection System in any fashion not inconsistent with the Consent Decree.

XVI. NOT A PERMIT/ COMPLIANCE WITH OTHER STATUTES/REGULATIONS

70. This Consent Decree is not and shall not be construed as a permit issued pursuant to Section 402 of the Clean Water Act, 33 U.S.C. § 1342, nor as a modification of any existing permit so issued, nor shall it in any way relieve Baltimore County of its obligations to comply with permits, if any, otherwise required for any portion of its Collection System or related sanitary sewage treatment facilities, and with any other applicable federal or state law or regulation. Baltimore County must comply with any new permit, or modification of existing permits, in accordance with applicable federal and state laws and regulations.

71. Nothing herein shall be construed as relieving Baltimore County of the duty to comply with the Clean Water Act and the Maryland water pollution control laws, the regulations promulgated under those acts, and all applicable permits issued under those acts and regulations.

XVII. COSTS OF SUIT

72. Each party shall bear its own costs and attorney's fees with respect to matters resolved by this Consent Decree. Should Baltimore County subsequently be determined by the Court to have violated the terms and conditions of this Consent Decree, Baltimore County may be liable to the United States and the State of Maryland for any costs and attorney's fees incurred by the United States and the State of Maryland in prosecuting actions against Baltimore County for non-compliance with this Consent Decree.

XVIII. RECORD KEEPING

73. A. Baltimore County shall maintain copies of any reports, plans, permits and documents, submitted to EPA and MDE pursuant to this Consent Decree, including any underlying research and data, for a period of five (5) years from date of submission, except that all underlying research and data relating to any SRRR Plan shall be maintained until termination of the Consent Decree. Baltimore County shall require any independent contractor operating any portion of the

Baltimore County Collection System or implementing any portion of this Consent Decree to also retain such materials as set forth in this Paragraph 73.A. Baltimore County shall submit such supporting documents to EPA and MDE upon request.

B. In addition to the reports and documentation required to be provided by Baltimore County under the terms of this Consent Decree, Baltimore County shall also provide, upon the reasonable demand of EPA or MDE, any analytical data or any other documents requested by EPA or MDE to review work done, or to be done, by Baltimore County or to determine Baltimore County's compliance with the terms of this Consent Decree.

74. Baltimore County shall notify EPA and MDE thirty (30) days prior to the disposal or destruction of such records at the end of this five year period and shall, upon EPA's and MDE's request, make such records available to EPA and MDE prior to such disposal or destruction.

XIX. FORM OF NOTICE

75. Unless otherwise specified, all reports, notices, or any other written communications required to be submitted under this Consent Decree shall be sent to the respective Parties at the following addresses:

As to the United States:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
1425 New York Avenue, N.W.
Washington, D.C. 20005
(Reference DOJ Case No. 90-5-1-1-4402/2)

As to EPA:

Deane Bartlett (3RC20)
Senior Assistant Regional Counsel
United States Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103

Chief, NPDES Branch (3WP31)
Water Protection Division
United States Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103

As to State of Maryland:

Principal Counsel
Office of the Attorney General
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230

Chief,
Enforcement Division, Compliance Program
Water Management Administration
Maryland Department of Environment
1800 Washington Boulevard
Baltimore, MD 21230

As to Baltimore County:

Edward C. Adams, Jr. (or his successor), Director
Department of Public Works
111 W. Chesapeake
Towson, MD 21204

Jay L. Liner (or his successor), County Attorney
Office of Law
400 Washington Avenue
Towson, MD 21204

Notifications to or communications with any party shall be deemed submitted on the date they are received.

XX. MODIFICATION

76. This Consent Decree contains the entire agreement of the Parties and shall not be modified by any prior written agreement, representation or understanding. The Consent Decree may be modified by written consent of all of the Parties or, if the Parties cannot agree, by written Order of this Court. All modifications, with the exception of modifications deemed non-material by mutual

agreement of EPA, MDE, and Baltimore County, shall be in writing and must be filed with the Court before such modification will be deemed effective.

XXI. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT

77. This Consent Decree shall be lodged with the Court for a period of thirty (30) days for public notice and comment, pursuant to the requirements of 28 C.F.R. § 50.7. The United States and the State of Maryland reserve the right to withdraw or withhold their consent if the comments regarding the Consent Decree disclose facts or considerations which indicate that this Consent Decree is inappropriate, improper, or inadequate. Baltimore County consents to the entry of this Consent Decree without further notice.

78. If for any reason this Court should decline to approve this Consent Decree in the form presented, this agreement is voidable at the sole discretion of any Party and the terms of the agreement may not be used as evidence in any litigation between the Parties.

XXII. EFFECTIVE DATE

79. The Effective Date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court.

XXIII. RETENTION OF JURISDICTION

80. This Court shall retain jurisdiction of this matter for the purposes of implementing and enforcing the terms and conditions of this Consent Decree and for the purpose of adjudicating all disputes among the Parties that may arise under the provisions of this Consent Decree, to the extent that this Consent Decree provides for resolution of disputes by the Court. Such jurisdiction shall not terminate until all requirements of this Consent Decree have been fulfilled and all disputes arising under this Consent Decree have been resolved.

XXIV. TERMINATION

81. The Consent Decree shall terminate when all of the following events have occurred:

A. Baltimore County certifies that it has completed all obligations under Section V (Remedial Measures) and Section X (Supplemental Environmental Projects) of this Consent Decree, and that it has maintained compliance with all other requirements of the Consent Decree for a period of one year following completion of its obligations under Section V. For purposes of this Paragraph 81.A., the obligations under Paragraph 11 (Fat, Oil and Grease Program), Paragraph 12 (Illegal Storm Water Discharges), Paragraph 13.I. (Pump Station Preventive Maintenance), Paragraph 15 (Collection System Operation and Maintenance), and Paragraph 17 (Emergency Response Plan) shall be considered to be completed provided that Baltimore County has developed and fully implemented the plans or programs required by those Paragraphs in accordance with the schedules approved by EPA and MDE up to the date of the filing of the Joint Motion for Termination.

B. Baltimore County has paid all civil penalties, costs, damages, stipulated penalties, and other sums due under this Consent Decree; and

C. the Parties file a Joint Motion to Terminate the Consent Decree with the Court and the Court grants the Motion.

82. The Consent Decree shall not terminate if, following certification by Baltimore County of compliance pursuant to Paragraph 81.A. above, the United States or the State of Maryland assert in writing that full compliance has not been achieved. If the United States or the State of Maryland dispute Baltimore County's full compliance, this Consent Decree shall remain in effect pending resolution of the dispute by the Parties or the Court in accordance with the Dispute Resolution provisions of this Consent Decree.

XXV. SIGNATORIES/SERVICE

83. The Acting Assistant Attorney General on behalf of the United States and the undersigned representatives of Baltimore County and the State of Maryland certify that they are fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind

such party to this document.

84. Baltimore County hereby agrees not to oppose entry of this Consent Decree by the Court or to challenge any provision of this Consent Decree unless the United States has notified Baltimore County in writing that it no longer supports entry of the Consent Decree.

85. Baltimore County agrees to accept service of process by mail with respect to all matters arising under or relating to this Consent Decree and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable Local Rules of this Court including, but not limited to, service of a summons.

XXVI. INTEGRATION/APPENDICES

86. This Consent Decree and its Appendices constitute the final, complete, and exclusive agreement and understanding among the Parties with respect to the settlement embodied in the Decree and supercede all prior agreements and understandings, whether oral or written. Other than the Appendices, which are attached to and incorporated into this Decree, no other document, nor any representation, inducement, agreement, understanding, or promise, constitutes any part of this Decree or the settlement it represents, nor shall it be used in construing the terms of this Decree.

87. The following Appendices are attached to and incorporated into this Decree:

"Appendix A1" is the list of Pump Station SSO Structures

"Appendix A2" is the list of Non-Pump Station SSO Structures

"Appendix B" is the list of Collection System Construction Projects

"Appendix C" is the list of Pump Station Rehabilitation, Repair, and Replacement Projects

"Appendix D" is the list of Pump Stations by Tier

"Appendix E" is the Pump Station Inspection Checklist

"Appendix F" is the Pump Station Priority Ranking

"Appendix G" is the Utilities Management Application Contract

"Appendix H" is the list of Deliverables

"Appendix I" is the description of the Patapsco BNR/ENR Design SEP

"Appendix J" is the description of the Back River Debris Removal SEP

"Appendix K" is the description of the Stream Restoration SEPs

XXVII. FINAL JUDGMENT

88. Upon approval and entry of this Consent Decree by the Court, this Consent Decree shall constitute a final judgment between the United States, the State of Maryland, and Baltimore County. The Court finds that there is no just reason for delay and therefore enters this judgment as a final judgment under Fed. R. Civ. P. 54 and 58.

SO ORDERED this _____ day of _____ 200__.

_____
UNITED STATES DISTRICT JUDGE

WE HEREBY CONSENT to the entry of the Consent Decree in the matter of *United States and State of Maryland v. Baltimore County, Maryland*, Case No. _____ (D. Md.), subject to the public notice and comment requirements of 28 C.F.R. § 50.7.

FOR THE UNITED STATES OF AMERICA

_____
Date

KELLY A. JOHNSON
Acting Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

_____
Date

JOHN C. CRUDEN
Deputy Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

7-22-05
Date

A. KENT MAYO
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611

ROD J. ROSENSTEIN
United States Attorney
District of Maryland

7-22-05
Date

LARRY D. ADAMS (Bar No. 03118)
Assistant United States Attorney
Office of the United States Attorney
36 S. Charles Street, 4th Floor
Baltimore, MD 21201
Tel: 410-209-4801
Fax: 410-962-9947
E-mail: larry.adams@usdoj.gov

WE HEREBY CONSENT to the entry of the Consent Decree in the matter of *United States and State of Maryland v. Baltimore County, Maryland*, Case No. _____ (D. Md.), subject to the public notice and comment requirements of 28 C.F.R. § 50.7.

7/20/05
Date

Donald S. Welsh

DONALD S. WELSH
Regional Administrator
U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103

7/9/05
Date

WILLIAM C. EARLY
Regional Counsel
U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103

6/27/05
Date

DEANE BARTLETT
Senior Assistant Regional Counsel
U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103

WE HEREBY CONSENT to the entry of the Consent Decree in the matter of *United States and State of Maryland v. Baltimore County, Maryland*, Case No. _____ (D. Md.), subject to the public notice and comment requirements of 28 C.F.R. § 50.7.

7.21.05
Date

THOMAS V. SKINNER
Acting Assistant Administrator
Office of Enforcement and Compliance Assurance
U.S. Environmental Protection Agency
Washington, DC 20460

WE HEREBY CONSENT to the entry of the Consent Decree in the matter of *United States and State of Maryland v. Baltimore County, Maryland*, Case No. _____ (D. Md.), subject to the public notice and comment requirements of 28 C.F.R. § 50.7.

FOR THE STATE OF MARYLAND

7/1/05
Date

KENDL P. PHILBRICK
Secretary
Maryland Department of the Environment

7/1/05
Date

M. ROSEWIN SWEENEY
Principal Counsel
Maryland Department of the Environment

7/1/05
Date

JENNIFER L. WAZENSKI (Bar No. 12564)
Assistant Attorney General
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, MD 21230
Tel: 410-537-3058
Fax: 410-537-3943
E-mail: jwazenski@mde.state.md.us

WE HEREBY CONSENT to the entry of the Consent Decree in the matter of *United States and State of Maryland v. Baltimore County, Maryland*, Case No. _____ (D. Md.), subject to the public notice and comment requirements of 28 C.F.R. § 50.7.

FOR BALTIMORE COUNTY

6/29/05
Date

Signature: _____
Name (print): James T. Smith, Jr.
Title: County Executive
Address: 400 Washington Avenue
Towson, MD 21204

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Jay L. Liner
Title: County Attorney
Address: 400 Washington Avenue
Towson, Maryland 21204

Ph. Number: (410) 887-4420

APPROVED FOR LEGAL FORM AND SUFFICIENCY*
(SUBJECT TO EXECUTION BY THE DULY AUTHORIZED ADMINISTRATIVE OFFICIAL AND CHAIRMAN OF THE COUNTY COUNCIL, AS INDICATED)

Office of the County Attorney

*Approval of Legal Form and Sufficiency Does Not Convey Approval Or Disapproval of the Substantive Nature of This Transaction. Approval Is Based Upon Typeset Document-All Modifications Require Re-Approval

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MARYLAND
NORTHERN DIVISION

UNITED STATES OF AMERICA,	)	
and	)	
STATE OF MARYLAND,	)	
Plaintiffs,	)	
v.	)	**Civil Action No.**
BALTIMORE COUNTY, MARYLAND,	)	
Defendant.	)	

COMPLAINT

The United States of America ("United States"), by the authority of the Attorney General of the United States and through its undersigned counsel, acting at the request and on behalf of the Administrator of the United States Environmental Protection Agency ("EPA"), and the State of Maryland, acting by the authority of the Attorney General of Maryland and through its undersigned counsel, and acting at the request and on behalf of the Maryland Department of the Environment ("Department" or "MDE"), file this complaint and allege as follows:

NATURE OF THE ACTION

1. This is a civil action brought pursuant to Section 309(b) and (d) of the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977 and the Water Quality Act of 1987 (the "Clean Water Act" or "the Act"), 33 U.S.C. § 1319(b) and (d), for injunctive relief and the assessment of civil penalties against Baltimore County, Maryland ("Baltimore County"), for the discharge of pollutants in violation of Section 301(a) of the Act, 33 U.S.C. § 1311(a). Baltimore County has violated Section 301(a) of the Act by discharging pollutants without permit authority.

2. Plaintiff State of Maryland also brings supplemental state claims for violations of Sections 9-322 and 9-323 of the Environment Article, Annotated Code of Maryland.

JURISDICTION, VENUE, NOTICE, AND AUTHORITY

3. This Court has jurisdiction over the subject matter of this action pursuant to Section 309(b) of the Act, 33 U.S.C. § 1319(b), and 28 U.S.C. §§ 1331, 1345, and 1355. This Court has jurisdiction over the claims of the State of Maryland asserted under the Environment Article pursuant to 28 U.S.C. § 1367 (supplemental jurisdiction).

4. Venue is proper in the District of Maryland pursuant to 28 U.S.C. § 1391(b), and Section 309(b) of the Act, 33 U.S.C. § 1319(b), because it is the judicial district where Baltimore County is located and where the alleged violations occurred.

5. Pursuant to Section 309(b) of the Act, 33 U.S.C. § 1319(b), notice of the commencement of this action has been given to the State of Maryland, which joins in this action as a co-plaintiff.

6. Authority to bring this action is vested in the United States Department of Justice by 28 U.S.C. §§ 516, 519, and Section 506 of the Clean Water Act, 33 U.S.C. § 1366.

7. Authority to bring the supplemental claims identified in this action is vested in the Office of the Attorney General of Maryland by § 9-344 of the Environment Article, Annotated Code of Maryland.

DEFENDANT

8. Defendant Baltimore County is a political subdivision of the State of Maryland, formed under the laws of the State of Maryland, and is a "municipality" within the meaning of Section 502(4) of the Act, 33 U.S.C. § 1362(4), and a "person" within the meaning of Section 502(5) of the Act, 33 U.S.C. § 1362(5).

FEDERAL STATUTES AND REGULATIONS

9. Section 301(a) of the Act, 33 U.S.C. § 1311(a), prohibits the "discharge of pollutants" into navigable waters except in compliance with a National Pollutant Discharge Elimination System ("NPDES") permit issued by U.S. EPA or an authorized state pursuant to Section 402 of the Act, 33 U.S.C. § 1342.

10. The term "discharge of pollutants" is defined in Section 502(12) of the Act, 33 U.S.C. § 1362(12), to mean "any addition of any pollutant to navigable waters from any point source . . . ."

11. The term "navigable waters" is defined in Section 502(7) of the Act, 33 U.S.C. § 1362(12) to mean "the waters of the United States, including the territorial seas."

12. The term "point source" is defined in Section 502(14) of the Act, 33 U.S.C. § 1362(14), to mean "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel . . . from which pollutants are or may be discharged."

13. Section 309(b) of the Clean Water Act, 33 U.S.C. § 1319(b), authorizes EPA to commence a civil action for appropriate relief, including a permanent or temporary injunction, when any person is in violation of, inter alia, Section 301 of the Clean Water Act, 33 U.S.C. § 1311.

14. Section 309(d) of the Clean Water Act, 33 U.S.C. § 1319(d), as modified by 40 C.F.R. Part 19, provides that any person who violates, inter alia, Section 301 of the Clean Water Act, 33 U.S.C. § 1311, shall be subject to a civil penalty not to exceed $27,500 per day for each such violation occurring after January 31, 1997 through and including March 15, 2004, or not to exceed $32,500 per day for each such violation thereafter.

MARYLAND STATUTES AND REGULATIONS

15. Section 9-253 of the Environment Article, Annotated Code of Maryland, confers upon the Secretary of MDE all powers that are necessary to comply with and represent the State of Maryland (referred to throughout the Environment Article as "this State") under the federal

Clean Water Act.

16. Pursuant to Section 9-322 of the Environment Article, "a person may not discharge any pollutant into waters of this State" except in compliance with certain provisions of the Environment Article, including Section 9-323.

17. Section 9-323 of the Environment Article requires a person to hold a discharge permit issued by the Department before the person may, among other things, operate any disposal system the operation of which could cause or increase the discharge of pollutants to waters of this State.

18. The term "discharge" is defined in Section 9-101(b) of the Environment Article as "(1) The addition, introduction, leaking, spilling, or emitting of a pollutant into the waters of this State; or (2) The placing of a pollutant in a location where the pollutant is likely to pollute."

19. The term "pollutant" means: " (1) Any waste or wastewater that is discharged from: (i) A publicly owned treatment works; or (ii) An industrial source; or (2) Any other liquid, gaseous, solid, or other substance that will pollute any waters of this State." Environment Article § 9-101(g).

20. The term "waters of this State" is defined by Section 9-101(l) to include "(1) both surface and underground waters within the boundaries of this State subject to its jurisdiction, including parts of the Atlantic Ocean within the boundaries of this State, the Chesapeake Bay, and its tributaries, and all ponds, lakes, rivers, streams, public ditches, tax ditches, and public drainage systems within this State, other than those designed to collect, convey, or dispose of sanitary waste; and (2) the flood plain of free-flowing waters determined by the Department of Natural Resources on the basis of the 100-year flood."

21. Section 9-339 of the Environment Article authorizes MDE to bring an action for an injunction against any person who violated any provision of Title 9, Subtitle 3 of the Environment Article or any rule, regulation, order or permit adopted or issued by the Department thereunder.

22. Section 9-342(a) of the Environment Article provides that a person who violates any provision of Title 9, Subtitle 3 of the Environment Article or any rule, regulation, order or permit

adopted or issued by the Department thereunder, is subject to a civil penalty of up to $10,000 per violation, with each day a violation occurs constituting a separate violation.

GENERAL ALLEGATIONS

23. Baltimore County owns and operates a municipal wastewater collection system that includes almost 3,000 miles of sewer lines and over 100 pump stations (hereinafter, the "Collection System"). The Collection System conveys wastewater generated by Baltimore County residents and businesses, as well as wastewater from neighboring Anne Arundel and Howard Counties, to the border Baltimore County shares with Baltimore City.

24. At various locations along the County/City border, Baltimore County's wastewater enters connecting sewage lines owned by Baltimore City and is conveyed for treatment at the Back River and Patapsco Waste Water Treatment Plants owned and operated by Baltimore City.

25. Baltimore County does not hold a National Pollutant Discharge Elimination System (NPDES) permit or a State discharge permit authorizing it to discharge wastewater from the Collection System to navigable waters or waters of the State.

26. At all times relevant to this Complaint, Baltimore County has discharged and continues to discharge untreated wastewater containing raw sewage from the Collection System through "point sources" to navigable waters and waters of the State, including, inter alia, Lynch Cove, Mardella Branch, Towson Run, Stemmers Run, Back River, Lake Roland, Patapsco River, North Point Creek, Bear Creek, Merrymans Branch, Loch Raven, White Marsh Creek, White Marsh Run, Northeast Creek, Bens Run, Gunpowder Falls, Herring Run, Jones Falls, Gwynns Falls and Jones Creek.

27. Wastewater collected by and transported through the Collection System is a "pollutant" as that term is defined at Section 502(6) of the Clean Water Act, 33 U.S.C. § 1362(6), and at Section 9-101(g) of the Environment Article.

28. The waters identified in Paragraph 26, above, as well as other such surface waters to which pollutants have been discharged, are "navigable waters" within the meaning of Section 502(7) of the Clean Water Act, 33 U.S.C. § 1362(7), and "waters of this State" within the meaning of Section 9-101(l) of the Environment Article.

29. The waters identified in Paragraph 26, above, are tributaries to the Chesapeake Bay. The Chesapeake Bay is the nation's largest estuary, "a national treasure and a resource of worldwide significance," and for that reason accorded special recognition under Section 117 of the Clean Water Act, 33 U.S.C. § 1267.

30. Between July 1997 and the present, Baltimore County has discharged tens of millions of gallons of untreated wastewater containing raw sewage from its Collection System without NPDES permit authority. Unpermitted discharges from Baltimore County's Collection System have resulted from multiple causes including, inter alia, inadequate flow capacity, inadequate pumping capacity, inadequate maintenance of the collection system including pumping stations, and excessive infiltration and inflow to the sanitary sewers.

31. Untreated wastewater containing raw sewage can carry bacteria, viruses, parasitic organisms, intestinal worms, and borroughs (inhaled molds and fungi) and may cause a number of diseases in those persons who may come in contact with such wastewater. These diseases include, but are not limited to, highly communicable enteric diseases such as gastroenteritis, dysentery, and cholera.

32. Unpermitted discharges of raw sewage from the Collection System to certain receiving water bodies in and around Baltimore County have caused and/or contributed to the presence of elevated levels of coliform bacteria in these water bodies. Coliform bacteria is an indicator that unacceptable levels of disease-causing organisms may be present in receiving water bodies.

FIRST CLAIM FOR RELIEF (CLEAN WATER ACT)

33. Paragraphs 1 through 14 and 23 through 32 are re-alleged and incorporated herein by reference.

34. On various dates from July 8, 1997, and continuing periodically to the present, Baltimore County has discharged pollutants from its Collection System into navigable waters without the authorization of a NPDES permit in violation of Section 301(a) of the Act, 33 U.S.C. § 1311(a).

35. Each day of each unpermitted discharge of pollutants is a separate violation of Section 301(a) of the Act, 33 U.S.C. § 1311(a).

36. Unless enjoined by the Court, Baltimore County will continue to discharge pollutants to navigable waters in violation of Section 301(a) of the Act, 33 U.S.C. § 1311(a).

37. Pursuant to Sections 309(b) and (d) of the Act, 33 U.S.C. §§ 1319 (b) and (d), as modified by 40 C.F.R. Part 19, Baltimore County is liable for injunctive relief and civil penalties of up to $27,500 per day for each such violation occurring after January 31, 1997 through and including March 15, 2004, and up to $32,500 per day for each such violation thereafter.

STATE OF MARYLAND'S FIRST SUPPLEMENTAL CLAIM FOR RELIEF

38. Paragraphs 1 through 32 are re-alleged and incorporated herein by reference.

39. At least since July 1997, Baltimore County has discharged, and on occasion continues to discharge, pollutants from its Collection System into waters of this State without the authorization of a State discharge permit.

40. The unpermitted discharges include, without limitation, the unpermitted discharges identified in Paragraph 26, above.

41. Each day of each unpermitted discharge of pollutants is a separate violation of Sections 9-322 and 9-323 of the Environment Article, Annotated Code of Maryland.

42. Pursuant to Section 9-342(a) of the Environment Article, Plaintiff State of Maryland is entitled to a civil penalty of up to $10,000 for each day of each of Baltimore County's violation of Sections 9-322 and 9-323 of the Environment Article.

43. Unless enjoined by the Court, Baltimore County will continue to discharge pollutants to waters of this State without a permit in violation of Sections 9-322 and 9-323 of the Environment Article.

PRAYER FOR RELIEF

WHEREFORE, Plaintiffs, the United States of America and the State of Maryland, respectfully pray that this Court provide the following relief:

1. A permanent injunction enjoining Baltimore County from any further violations of, and directing Baltimore County to take all steps necessary to come into permanent, consistent compliance with, the Clean Water Act and Title 9, Subtitle 3 of the Environment Article, and the regulations promulgated thereunder.

2. A judgment assessing civil penalties against Baltimore County of up to $27,500 per day for each violation of the Clean Water Act occurring after January 31, 1997 through and including March 15, 2004, and up to $32,500 per day for each such violation thereafter;

3. A judgment awarding the United States and the State of Maryland the costs of this action; and

4. Such further relief as this Court may deem appropriate.

Respectfully submitted,

FOR THE UNITED STATES OF AMERICA

Kelly A Johnson

KELLY A. JOHNSON
Acting Assistant Attorney General
Environment and Natural Resources Division

A. KENT MAYO
Environmental Enforcement Section
Environment and Natural Resources
Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611
Tel: (202) 616-6557
Fax: (202) 616-6583
E-mail: kent.mayo@usdoj.gov

ROD J. ROSENSTEIN
United States Attorney
District of Maryland

By: Larry D. Adams / by Kent Mayo

LARRY D. ADAMS (Bar No. 03118)
Assistant United States Attorney
Office of the United States Attorney
36 S. Charles Street, 4th Floor
Baltimore, MD 21201
Tel: (410) 209-4801
Fax: (410) 962-9947
E-mail: larry.adams@usdoj.gov

OF COUNSEL:

DEANE H. BARTLETT
Senior Assistant Regional Counsel
U.S. Environmental Protection Agency
Region 3
1650 Arch Street
Philadelphia, PA 19107
(215) 814-2776

FOR THE STATE OF MARYLAND

J. JOSEPH CURRAN, JR.
Attorney General of Maryland

JENNIFER L. WAZENSKI (Bar No. 12564)
Assistant Attorney General
Office of the Attorney General
Maryland Department of the Environment
1800 Washington Boulevard, Suite 6048
Baltimore, Maryland 21230
Tel: (410) 537-3058
Fax: (410) 537-3943
E-mail: jwazenski@mde.state.md.us

BALTIMORE COUNTY

DEPARTMENT OF PUBLIC WORKS

Sewershed Repair, Replacement and Rehabilitation (SRRR) Plan for the Jones Falls Sewershed

Job Order No. 201-077-7031

December 2012







RUMMEL, KLEPPER & KAHL, LLP
CONSULTING ENGINEERS
BALTIMORE, MARYLAND

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Executive Summary

Baltimore County entered into a Consent Decree (CD) on September 20, 2005 with the United States Environmental Protection Agency (EPA), the State of Maryland Department of the Environment (MDE), and the Department of Justice (DOJ). The objective of Paragraph 10 of the CD was to prepare a Sewershed Repair, Replacement, and Rehabilitation (SRRR) Plan that describes the deficiencies identified through Collection System Inspection and the Long Term Capacity/Peak Flow Management Evaluation (LTC/PFME), and recommends repair, replacement, rehabilitation, or other corrective actions necessary to address those deficiencies. This SRRR Plan is for the Jones Falls Sewershed.

The Jones Falls Sewershed is located in the north-central portion of Baltimore County along the City-County line from the northwest corner to York Road. Adjacent sewersheds include the Texas Sewershed to the north, the Longquarter and Herring Run Sewersheds to the east and the Gwynns Falls Sewershed to the west. Baltimore County's portion of the Jones Falls Sewershed drains to the south entering the City of Baltimore's Jones Falls Sewershed at seven (7) separate locations, before ultimately being treated at the Back River Wastewater Treatment Plan. The sewershed measures approximately 13,440 acres in size and is primarily composed of residential properties, with some areas of industrial, commercial, educational and institutional development. The sanitary collection system includes over 1,124,000 linear feet (LF) of circular gravity sewer piping, ranging in size from 6 to 48-inches in diameter; approximately 6,200 manholes and/or other sewer structures; and approximately 19,000 LF of force main and pressure sewer. The sewershed contains four (4) pumping stations. These are the Buchanan Road Pumping Station, the Stanton Woods Pumping Station, the Templegate Pumping Station, and the Stevenson Pumping Station.

Data analysis, evaluation, and decision-making criteria were utilized to identify collection system defects and deficiencies and prioritize the corrective actions. The recommended Corrective Action Plan consists of various structural and hydraulic corrective actions that are needed to address the deficiencies that were identified during the sewershed collection system inspection work. The plan also identifies specific rehabilitation and other corrective actions needed to eliminate model predicted sanitary sewer overflows (SSOs) that were determined by the simulations completed during the Long-Term Capacity/Peak Flow Management Evaluation (LTC/PFME). These condition related corrective action recommendations were defined based on review of field inspection and SSES data that was completed, which included sewer and manhole inspections, smoke and dyed-water testing and night-time flow isolation investigations. The hydraulic corrective actions were determined by model simulations and the inflow and infiltration (I/I) analysis. Some identified structural and condition related corrective actions to correct defects were superseded by the hydraulic corrective action recommendations, and these defects will be corrected when the hydraulic corrective actions are completed.

The County's approach to addressing model-predicted SSOs is to:

1. Complete I/I reduction improvements based on the 10-year/6-hour SCS Type II storm event.
2. Complete select capacity improvements based on the 10-year/6-hour SCS Type II storm event and model-confirmation flow monitoring data.
3. Correct structural deficiencies through collection system rehabilitation or replacement.
4. Complete post-construction flow monitoring and analysis to confirm the effectiveness of the RDII reductions.
5. Confirm model simulations and revise or recalibrate the hydraulic model accordingly, if needed.
6. Determine if additional improvements are needed based on the updated hydraulic model.

Baltimore County has implemented several remedial measures to eliminate SSOs as required by Paragraph 7 of the CD within the Jones Falls Sewershed. The sewershed contains three (3) non-pumping station SSOs. These include SSO 31A (Rider Avenue), SSO 113 (Marnat Road), and SSO 120 (Charles Street Avenue). SSO 31A was eliminated on May 11, 2007 and post elimination flow monitoring of the overflow was conducted in accordance with the CD. There has been no evidence of activity in this SSO since February of 2004. In November of 2009, the County began work on an extensive collection system rehabilitation contract located upstream of SSO 113 aimed at eliminating this SSO. The rehabilitation project was completed in June 2012 and post-rehabilitation flow monitoring of the SSO is currently being conducted. Monitoring of the overflow shows that SSO 113 remains active during wet-weather events. As determined by the LTC/PFME, the overflow is believed to activate as a result of capacity restrictions in the downstream sewers in the City of Baltimore's collection system. The County continues to coordinate with the City of Baltimore regarding capacity improvements that are needed to several of the City's receiving sewers. In June 2010, the County began a rehabilitation contract upstream of SSO 120 aimed at removing I/I from the collection system and eliminating the SSO. The work was completed in July of 2011 and SSO 120 was eliminated on September 20, 2011. The County continues to monitor flow in the sewer to verify that the wet-weather flow is not surcharging the collection system.

The capacity improvements that address items 1 and 2 above, and the structural condition improvements that will address item 3 in the Jones Falls Sewershed are graphically shown on **Map 6-1** and the specific corrective actions defined by meter basin are presented in **Tables 6-5.3** and **6-6.1**. The estimated cost to implement the collection system improvements is $28,300,000, which contains a 40% contingency cost for engineering, construction inspection and estimating.

The recommended schedule for completing the corrective actions within the Jones Falls

Sewershed's collection, pumping and transmission system will be within six (6) years of the EPA and MDE's approval of the Plan per Paragraph 10.B. of the CD.

In accordance with Paragraphs 9, 10, and 11 of the CD, the County will also implement several continuous programs to determine the effectiveness of the corrective actions when completed, and enhance the collection system's operation and maintenance efforts. These programs will include a long-term corrective action flow monitoring and evaluation plan, a sewer cleaning program, and root and grease control programs. The County will also evaluate data collected through post-rehabilitation closed-circuit television (CCTV) inspection of the collection system and review of record drawings, work orders and reported complaints to evaluate the effectiveness of the completed corrective actions, update the collection system model, and determine any subsequent work that is needed as appropriate.

END OF SECTION

Section 1

Introduction

1.0 Introduction (CD Ref. P10.A-C)

1.1 Background

On September 20, 2005, Baltimore County entered into a Consent Decree (CD) with the United States Environmental Protection Agency (EPA), the State of Maryland Department of the Environment (MDE), and the Department of Justice (DOJ). Paragraph 10 of the CD requires the County to prepare a Sewershed Repair, Replacement, and Rehabilitation (SRRR) Plan that describes the deficiencies identified through collection system inspections and the Long Term Capacity/Peak Flow Management Evaluation (LTC/PFME), and provides for the determination of any repair, replacement, rehabilitation, or other corrective actions necessary to correct identified deficiencies. This SRRR Plan is for the Jones Falls Sewershed.

Flow monitoring, Inflow and Infiltration (I/I) analysis, modeling, and inspection of manholes and sanitary sewers were performed in the Jones Falls Sewershed from 2008 through 2012. The County performed all Sewer System Evaluation Survey (SSES) tasks in accordance with Paragraph 8 of the CD. These included closed circuit television (CCTV) inspection of the sanitary sewers, manhole inspections, smoke testing, dyed-water testing and night-time flow isolation testing.

The SRRR Plan addresses each of the criteria defined in Paragraph 10.C of the CD. This criteria is as follows:

i. Evaluate the effectiveness of the projects completed or proposed to be completed pursuant to Paragraph 7.D for the relevant Sewershed. Baltimore County shall use rainfall and flow monitoring data collected in accordance with requirements of Paragraphs 7.D and 9 of the Consent Decree, and shall use the Model developed in accordance with Paragraph 14 of the Consent Decree, to demonstrate the effectiveness of the construction projects.

ii. Identify all deficiencies in the relevant Sewershed discovered during the Collection System Inspection conducted pursuant to Paragraph 8.

iii. Identify all corrective actions taken (including date completed), or to be taken, by Baltimore County (including but not limited to preventive maintenance, repair, replacement, or rehabilitation) to address deficiencies identified during inspection of the relevant Sewershed.

iv. Describe the priority scheme used to set priorities for correcting identified deficiencies within each Sewershed, including any decision not to correct an identified deficiency.

v. Describe the decision-making criteria used to select future corrective action.

vi. Propose a plan and schedule for implementing rehabilitation and other corrective action determined necessary to correct deficiencies in the relevant Sewershed identified during the inspections required by Paragraph 8, taking into consideration the Long-Term Capacity/Peak Flow Management analysis performed for the relevant Sewershed pursuant to Paragraph 9; the prioritization scheme to be applied to correction of these

deficiencies; and an estimate of the cost necessary to complete any proposed rehabilitation and other corrective actions.

vii. Propose a plan and schedule for eliminating those physical connections (i.e. cross connections) between the Collection System and the storm water collection system that allow or have the potential to allow sanitary waste to be discharged to the storm water collection system.

viii. Present the results of the Long-Term Capacity/Peak Flow Management Evaluation conducted pursuant to Paragraph 9.C.ii, and determine for each Sewershed the range of storm events as specified in Paragraph 9.C.ii(b) for which the Collection System in its existing condition can convey peak flows without the occurrence of SSOs. As part of its analysis, Baltimore County shall identify all modeled Collection System Components and Pump Stations that cause or contribute to flow restrictions or that have the potential to cause or contribute to overflows.

ix. Consistent with the results of the Long-Term Capacity/Peak Flow Management Evaluation conducted pursuant to Paragraph 9.C.ii, project for each Sewershed the range of storm events as specified in Paragraph 9.C.ii(b) for which the Collection System will be able to convey peak flows without occurrence of SSOs. Such projection shall assume completion of the construction projects required by Paragraph 7 of this Consent Decree and completion of the proposed rehabilitative or other corrective action projects recommended by the SRRR Plan required by Paragraph 10. As part of its analysis, Baltimore County shall identify all modeled Collection System components and Pump Stations that cause or contribute to flow restrictions or that have the potential to cause or contribute to overflows.

x. Present the results of the rainfall and flow monitoring conducted in the Sewershed, including a map that depicts all monitored locations, dates of monitoring, a description of the quality assurance and quality control analyses performed for samples collected and data analyzed and the results of those analyses (i.e., summarize data quality assurance and data "lost" or "qualified"), and present the results of the I/I evaluation performed pursuant to Paragraph 9.C.i., including a description of the smoke testing and dye testing activities performed in the Sewershed, a summary of the results of such testing, a quantification of the rates of I/I for the Sewershed and the portions of the Sewershed's Collection System impacted by I/I, and any identified sources of I/I to the Collection System located in the Sewershed.

xi. Incorporate into each SRRR Plan a description of additional data collection activities that will be implemented after completion of rehabilitative and other corrective action(s) proposed pursuant to Paragraphs 10.B and 10.C to evaluate their effectiveness consistent with Paragraph 10.E (Performance Assessment).

1.2 Sewershed Meter Basin Summary

As shown in **Map 1-1**, the Jones Falls Sewershed is located in the north-central portion of Baltimore County along the City-County line from the northwest corner to York Road. Adjacent sewersheds include the Texas Sewershed to the north, the Longquarter and Herring Run

Sewersheds to the east and the Gwynns Falls Sewershed to the west. The Jones Falls Sewershed measures approximately 13,440 acres and is primarily composed of residential properties, with some areas of industrial, commercial, educational and institutional development. The sanitary sewer collection system includes over 1,124,000 linear feet (LF) of circular gravity sewer conveyance piping ranging in size from 6- to 48-inches in diameter; approximately 6,200 manholes and other sewer structures; and approximately 19,000 LF of force main and pressure sewer. The Jones Falls Sewershed has four (4) existing pumping stations:

The **Buchanan Road Pumping Station**, located at the terminus of Buchanan Road, is designed to pump flows of 200 gallons per minute (GPM) under existing and ultimate capacity conditions.

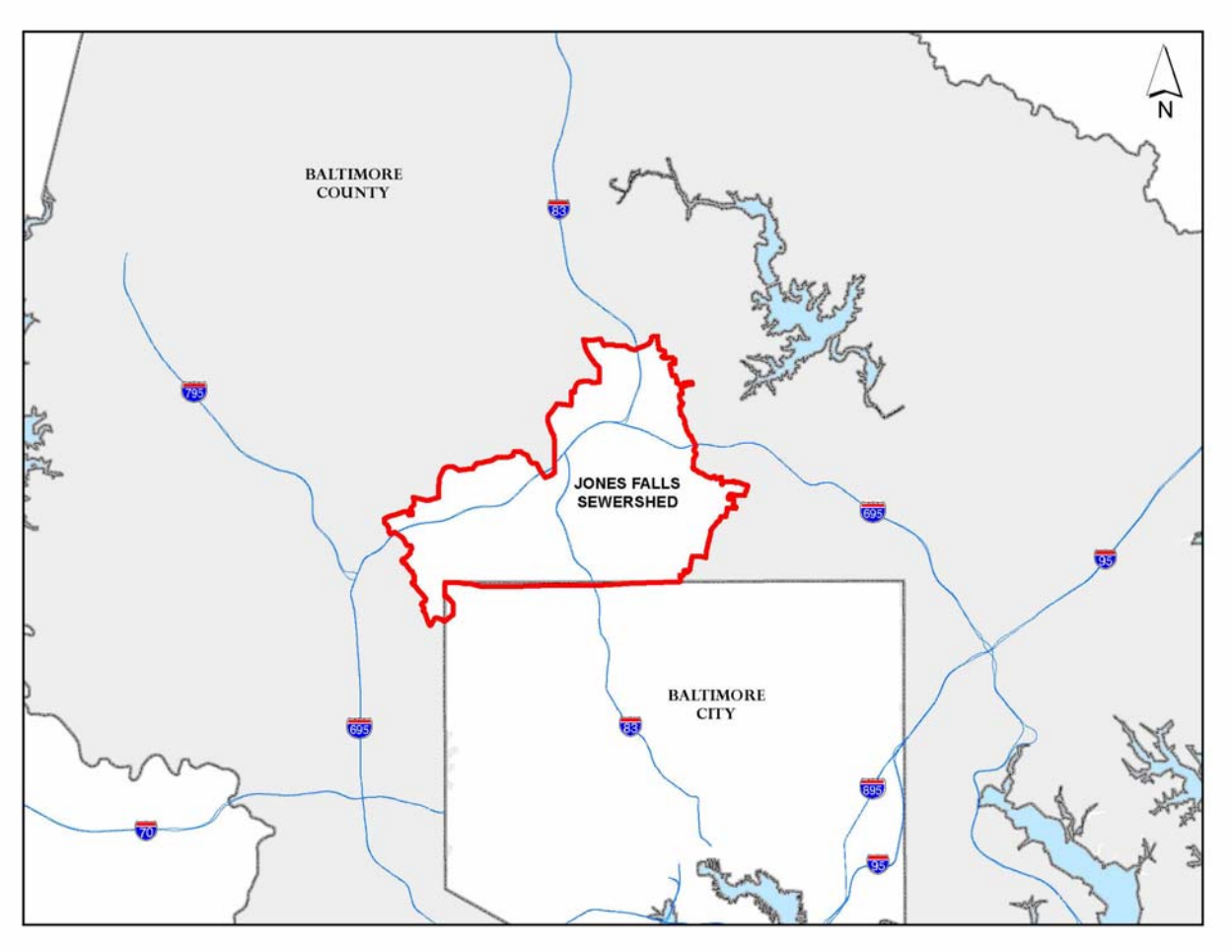
The **Stanton Woods Pumping Station**, located at the terminus of Topping Road, is designed to pump 252 GPM under existing and ultimate capacity conditions.

The **Templegate Pumping Station**, located at the terminus of E Court, which is between Breton Way and Woodvalley Drive has an ultimate capacity of 300 GPM, which is an increase from the existing capacity of 118 GPM.

The **Stevenson Pumping Station**, which was reconstructed in May 2011, is located off the intersection of Keyser Road and Windsong Court. This station is designed to pump 180 GPM, which is a slight increase from the previous capacity of 170 GPM.

The Buchanan Road, Stanton Woods and Templegate Pumping Stations are currently being evaluated in separate engineering evaluation and condition assessment (EE/CA) studies and future improvements will be recommended for those pumping stations.

The sanitary collection system in the Jones Falls Sewershed conveys wastewater to the City of Baltimore's Jones Falls Sewershed at seven (7) separate locations, before ultimately being treated at the Back River Wastewater Treatment Plant.

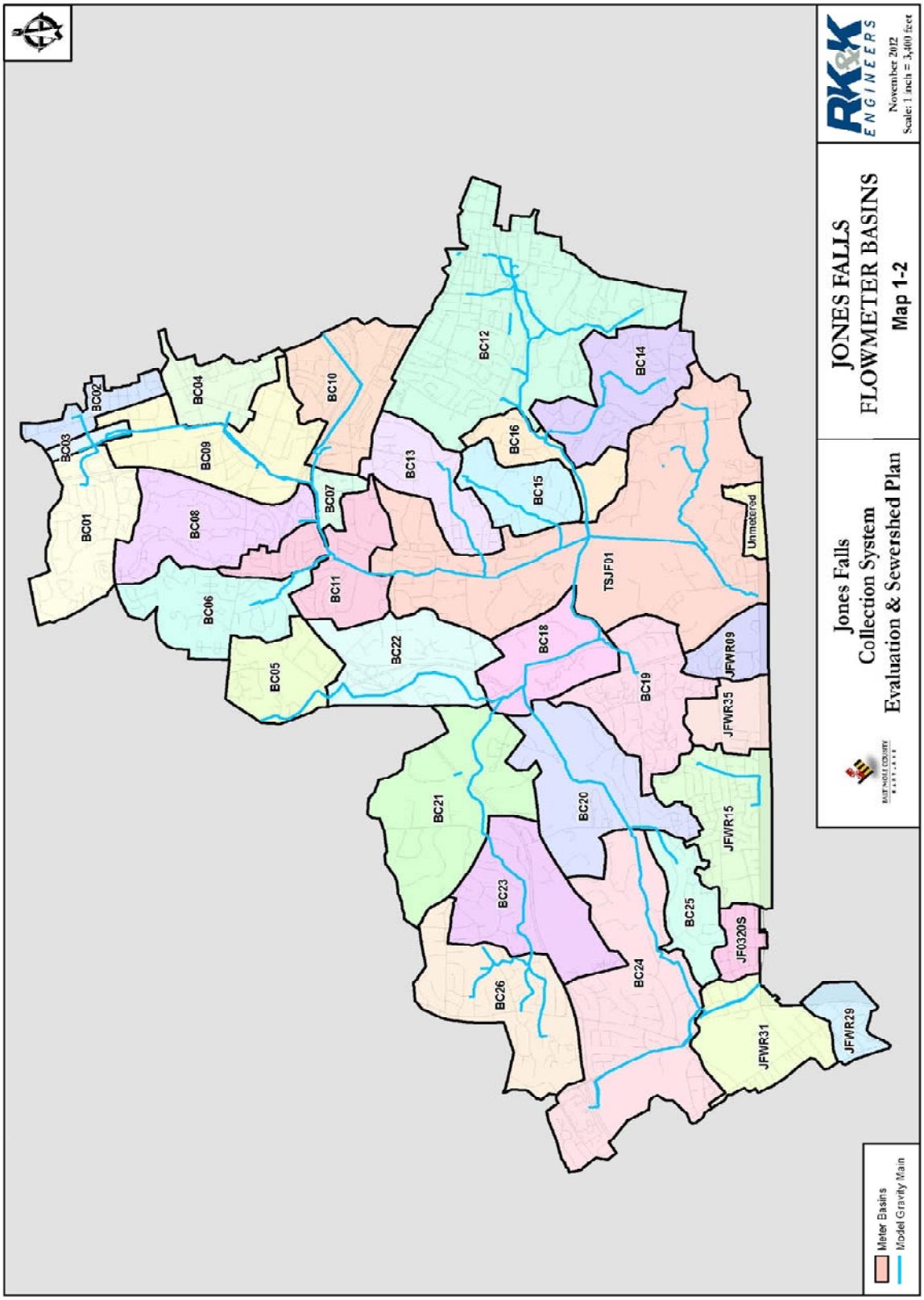


Map 1-1 Jones Falls Sewershed Location Map

During the flow monitoring, the Jones Falls Sewershed was divided into thirty-two (32) flow meter basins as shown in **Map 1-2**, and as described below. The flow meter basin boundaries are generally defined by their associated tributary area, logical division locations within the collection system and at locations where the County's sanitary sewer collection system enters the City of Baltimore's sanitary sewer system.

BC01

Meter Basin BC01 is located in the northern corner of the Jones Falls Sewershed, north of Timonium Road. This meter basin measures approximately 428 acres and is primarily composed of residential with some commercial development. The wastewater collection system in this meter basin consists of approximately 54,543 LF of sewers ranging in size between 8- and 16-inches in diameter and contains 363 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC03. The flow exiting BC01 was measured by a flow meter installed in MH 37990.



Map 1-2 – Jones Falls Sewershed Flow Meter Basins

BC02

Meter Basin BC02 is located in the northeast corner of the Jones Falls Sewershed, north of Timonium Road and east of the Baltimore Light Rail Line. This meter basin measures approximately 138 acres and is primarily composed of commercial development with some residential development. The wastewater collection system in this meter basin consists of approximately 16,434 LF of sewers ranging in size between 8- and 12-inches in diameter and contains 64 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC03. The flow exiting BC02 was measured by a flow meter installed in MH 7253.

BC03

Meter Basin BC03 is located in the northeastern area of the Jones Falls Sewershed. This meter basin measures approximately 43 acres and is primarily composed of industrial and commercial development. This meter basin is south of Timonium Road along the Baltimore Light Rail corridor. The wastewater collection system in this basin consists of approximately 4,440 LF of sewers ranging in size between 8- and 30-inches in diameter and contains 24 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC09. The flow exiting BC03 was measured by a flow meter installed in MH 33463.

BC04

Meter Basin BC04 is located in the northeastern area of the Jones Falls Sewershed, south of W. Ridgely Road between the Baltimore Light Rail and York Road. This meter basin measures approximately 228 acres and is primarily composed of residential and commercial properties. The wastewater collection system in this meter basin consists of approximately 21,558 LF of sewers ranging in size between 8- and 10-inches in diameter and contains 102 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC09. The flow exiting BC04 was measured by a flow meter installed in MH 6977.

BC05

Meter Basin BC05 is located in the northwest area of the Jones Falls Sewershed, in the Brooklandville area. This meter basin measures approximately 294 acres and is primarily composed of residential with some commercial development. The wastewater collection system in this meter basin consists of approximately 22,661 LF of 8-inch diameter sewers and 130 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC22. The flow exiting BC05 was measured by a flow meter installed in MH 43791.

BC06

Meter Basin BC06 is located in the northwest area of the Jones Falls Sewershed, from Timonium Road to south of Interstate I-695, east of Interstate I-83. This meter basin measures approximately 414 acres and is primarily composed of residential development. The wastewater collection system in this meter basin consists of approximately 40,680 LF of sewers ranging in size between 8- and 18-inches in diameter and contains 289 manhole structures.

Gravity flow from this meter basin is conveyed to Meter Basin BC11. The flow exiting BC06 was measured by a flow meter installed in MH 38526.

BC07

Meter Basin BC07 is located in the northeast area of the Jones Falls Sewershed, south of Interstate I-695 near the Interstate I-83/I-695 interchange. This meter basin measures approximately 74 acres and is primarily composed of residential development. The wastewater collection system in this meter basin consists of approximately 8,785 LF of sewers ranging in size between 8- and 24-inches in diameter and contains 53 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC11. The flow exiting BC07 was measured by a flow meter installed in MH 18586.

BC08

Meter Basin BC08 is located in the northern area of the Jones Falls Sewershed, west of Interstate I-83 from Timonium Road to south of Interstate I-695. This meter basin measures approximately 467 acres and is primarily composed of residential development. The wastewater collection system in this meter basin consists of approximately 42,155 LF of sewers ranging in size between 8- and 24-inches in diameter and contains 284 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC07. The flow exiting BC08 was measured by a flow meter installed in MH 19873.

BC09

Meter Basin BC09 is located in the northeast area of the Jones Falls Sewershed, in the Lutherville area. This meter basin measures approximately 539 acres and is primarily composed of residential and commercial properties. The wastewater collection system in this meter basin consists of approximately 56,559 LF of sewers ranging in size between 6- and 30-inches in diameter and contains 272 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC07. The flow exiting BC09 was measured by a flow meter installed in MH NS1079.

BC10

Meter Basin BC10 is located in the eastern area of the Jones Falls Sewershed, along Interstate I-695 from Charles Street to York Road. This meter basin measures approximately 430 acres and is primarily composed of residential with some commercial development. The wastewater collection system in this meter basin consists of approximately 48,902 LF of sewers ranging in size between 8- and 24-inches in diameter and contains 256 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC07. The flow exiting BC10 was measured by a flow meter installed in MH 42231.

BC11

Meter Basin BC11 is located in the northwestern area of the Jones Falls Sewershed, in the Riderwood area. This meter basin measures approximately 404 acres and is primarily composed of residential with some institutional development. The wastewater collection system in this meter basin consists of approximately 41,649 LF of sewers ranging in size between 8- and 27-inches in diameter and contains 235 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin TSJF01. The flow exiting BC11 was measured by a flow meter installed in MH 6944.

BC12

Meter Basin BC12 is located in the eastern area of the Jones Falls Sewershed, in the vicinity of Towson University. This meter basin measures approximately 1,296 acres and is primarily composed of residential, institutional and commercial development. The wastewater collection system in this meter basin consists of approximately 140,464 LF of sewers ranging in size between 6- and 21-inches in diameter and contains 689 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC16. The flow exiting BC12 was measured by a flow meter installed in MH 22222.

BC13

Meter Basin BC13 is located in the eastern area of the Jones Falls Sewershed, from Bellona Avenue to Charles Street, south of Joppa Road. This meter basin measures approximately 315 acres and is primarily composed of residential and commercial properties. The wastewater collection system in this meter basin consists of approximately 30,486 LF of sewers ranging in size between 8- and 12-inches in diameter and contains 192 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin TSJF01. The flow exiting BC13 was measured by a flow meter installed in MH 18456.

BC14

Meter Basin BC14 is located in the southeast area of the Jones Falls Sewershed, and includes the Sheppard-Pratt Health System and St. Joseph's Medical Center. This meter basin measures approximately 445 acres and is primarily composed of residential and institutional properties. The wastewater collection system in this meter basin consists of approximately 27,154 LF of sewers ranging in size between 6- and 12-inches in diameter and contains 153 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC16. The flow exiting BC14 was measured by a flow meter installed in MH 34177.

BC15

Meter Basin BC15 is located in the southeastern area of the Jones Falls Sewershed, from Bellona Avenue to Charles Street. This meter basin measures approximately 254 acres and is primarily composed of residential development. The wastewater collection system in this meter basin consists of approximately 13,638 LF of sewers ranging in size between 8- and 12-inches

in diameter and contains 92 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin TSJF01. The flow exiting BC15 was measured by a flow meter installed in MH 22456.

BC16

Meter Basin BC16 is located in the southeastern area of the Jones Falls Sewershed, between Bellona Avenue and Charles Street, south of Rolandvue Road. This meter basin measures approximately 210 acres and is primarily composed of residential development. The wastewater collection system in this meter basin consists of approximately 20,705 LF of sewers ranging in size between 8- and 36-inches in diameter and contains 107 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin TSJF01. The flow exiting BC16 was measured by a flow meter installed in MH 61947.

BC18

Meter Basin BC18 is located in the southwestern area of the Jones Falls Sewershed, west of Lake Roland and includes Robert E. Lee Park. This meter basin measures approximately 343 acres and is primarily composed of residential development. The wastewater collection system in this meter basin consists of approximately 11,815 LF of sewers ranging in size between 8- and 30-inches in diameter and contains 29 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin TSJF01. The flow exiting BC18 was measured by a flow meter installed in MH 20755.

BC19

Meter Basin BC19 is located in the southwestern area of the Jones Falls Sewershed, along Interstate I-83 north of the City-County line. This meter basin measures approximately 445 acres and is primarily composed of residential with some commercial development. The wastewater collection system in this meter basin consists of approximately 41,580 LF of sewers ranging in size between 6- and 12-inches in diameter and contains 274 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC18. The flow exiting BC19 was measured by a flow meter installed in MH 33711.

BC20

Meter Basin BC20 is located in the southwestern area of the Jones Falls Sewershed, west of Interstate I-83 and north of Old Pimlico Road. This meter basin measures approximately 590 acres and is primarily composed of residential with some institutional development. The wastewater collection system in this meter basin consists of approximately 44,098 LF of sewers ranging in size between 8- and 18-inches in diameter and contains 250 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC18. The flow exiting BC20 was measured by a flow meter installed in MH 20770.

BC21

Meter Basin BC21 is located in the western area of the Jones Falls Sewershed, between Interstate I-83 and Greenspring Avenue, south of Interstate I-695. This meter basin measures approximately 721 acres and is primarily composed of residential with some institutional development. The wastewater collection system in this meter basin consists of approximately 16,989 LF of sewers ranging in size between 8- and 18-inches in diameter and contains 98 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC18. The flow exiting BC21 was measured by a flow meter installed in MH 36912.

BC22

Meter Basin BC22 is located in the western area of the Jones Falls Sewershed, between Interstate I-83 and Falls Road, near Interstate I-695. This meter basin measures approximately 464 acres and is primarily composed of residential and institutional development. The wastewater collection system in this meter basin consists of approximately 23,854 LF of sewers ranging in size between 8- and 24-inches in diameter and contains 122 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC18. The flow exiting BC22 was measured by a flow meter installed in MH 34385.

BC23

Meter Basin BC23 is located in the western area of the Jones Falls Sewershed, west of Greenspring Avenue and north of Interstate I-695. This meter basin measures approximately 542 acres and is primarily composed of residential development. The wastewater collection system in this meter basin consists of approximately 28,858 LF of sewers ranging in size between 8- and 15-inches in diameter and contains 159 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC21. The flow exiting BC23 was measured by a flow meter installed in MH 36930.

BC24

Meter Basin BC24 is located in the western area of the Jones Falls Sewershed, between Park Heights Avenue and Greenspring Avenue, north of Smith Avenue. This meter basin measures approximately 1,071 acres and is primarily composed of residential, commercial and institutional development. The wastewater collection system in this meter basin consists of approximately 87,268 LF of sewers ranging in size between 6- and 16-inches in diameter and contains 522 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC20. The flow exiting BC24 was measured by a flow meter installed in MH 33527.

BC25

Meter Basin BC25 is located in the southwestern area of the Jones Falls Sewershed, between Park Heights Avenue and Greenspring Avenue, north of Smith Avenue. This meter basin measures approximately 227 acres and is primarily composed of residential development. The wastewater collection system in this meter basin consists of approximately 17,895 LF of sewers

ranging in size between 8- and 12-inches in diameter and contains 126 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC20. The flow exiting BC25 was measured by a flow meter installed in MH 32254.

BC26

Meter Basin BC26 is located in the western area of the Jones Falls Sewershed, north of Interstate I-695 and east of Park Heights Avenue. This meter basin measures approximately 575 acres and is primarily composed of residential development. The wastewater collection system in this meter basin consists of approximately 52,871 LF of sewers ranging in size between 8- and 15-inches in diameter and contains 321 manhole structures. Gravity flow from this meter basin is conveyed to Meter Basin BC23. The flow exiting BC26 was measured by a flow meter installed in MH 36951.

The Stanton Woods, Stevenson and Templegate Wastewater Pumping Stations are located in Meter Basin BC26. Wastewater from the Stanton Woods Pumping Station is conveyed through a 6-inch diameter force main to gravity MH 45855 located in Meter Basin BC26. Wastewater from the Stevenson Pumping Station is conveyed through a 6-inch diameter force main to gravity MH 41040 located in Meter Basin BC26, and the wastewater from the Templegate Pumping Station is conveyed through a 6-inch diameter force main to gravity MH 46749 located in Meter Basin BC26.

TSJF01

Meter Basin TSJF01 is located in the southern area of the Jones Falls Sewershed, north of the City-County line from Interstate I-83 to York Road. This meter basin measures approximately 1,817 acres and is primarily composed of residential with some institutional development. The wastewater collection system in this meter basin consists of approximately 80,001 LF of sewers ranging in size between 6- and 42-inches in diameter and contains 442 manhole structures. Gravity flow from this meter basin is conveyed to Baltimore City's gravity system. The flow exiting TSJF01 was measured by a flow meter installed in manhole S19II2017MH (County MH TCM27).

The Buchanan Road Wastewater Pumping Station is located in Meter Basin TSJF01. Wastewater from this pumping station is conveyed through a 6-inch diameter force main to gravity MH 48253 located in Meter Basin TSJF01.

JF0320S

Meter Basin JF0320S is located in the southern area of the Jones Falls Sewershed, north of the City-County line from Seven Mile Lane to Labyrinth Road. This meter basin measures approximately 83 acres and is primarily composed of residential development. The wastewater collection system in this meter basin consists of approximately 9,283 LF of sewers ranging in size between 8- and 10-inches in diameter and contains 68 manhole structures. Gravity flow from this meter basin is conveyed to Baltimore City's gravity sewer system. The flow exiting JF0320S was measured by a flow meter installed in Baltimore City manhole S04II2004MH.

JFWR09

Meter Basin JFWR09 is located in the southern area of the Jones Falls Sewershed, north of the City-County line west of Interstate I-83. This meter basin measures approximately 204 acres and is primarily composed of residential and commercial properties. The wastewater collection system in this meter basin consists of approximately 11,616 LF of 8-inch diameter sewers and contains 23 manhole structures. Gravity flow from this meter basin is conveyed to Baltimore City's gravity sewer system. The flow exiting JFWR09 was measured by a flow meter installed in Baltimore City manhole S17GG2004MH.

JFWR15

Meter Basin JFWR15 is located in the southern area of the Jones Falls Sewershed, north of the City-County line from Labyrinth Road to Greenspring Avenue. This meter basin measures approximately 234 acres and is primarily composed of residential with some commercial and institutional development. The wastewater collection system in this meter basin consists of approximately 33,853 LF of sewers ranging in size between 8- and 15-inches in diameter and contains 297 manhole structures. Gravity flow from this meter basin is conveyed to Baltimore City's gravity sewer system. The flow exiting JFWR15 was measured by a flow meter installed in Baltimore City manhole S05II2003MH.

JFWR29

Meter Basin JFWR29 is located in the southwestern area of the Jones Falls Sewershed, west of the City-County line and west of Reisterstown Road. This meter basin measures approximately 268 acres and is primarily composed of residential, institutional and commercial development. The wastewater collection system in this meter basin consists of approximately 24,983 LF of sewers ranging in size between 8- and 10-inches in diameter and contains 60 manhole structures. Gravity flow from this meter basin is conveyed to Baltimore City's gravity sewer system. The flow exiting JFWR29 was measured by a flow meter installed in Baltimore City manhole S04EE2004MH.

JFWR31

Meter Basin JFWR31 is located in the southwestern area of the Jones Falls Sewershed, near the northwest corner of the City-County line, and east of Old Pimlico Road. This meter basin measures approximately 398 acres and is primarily composed of residential with some institutional development. The wastewater collection system in this meter basin consists of approximately 53,415 LF of sewers ranging in size between 6- and 15-inches in diameter and contains 101 manhole structures. Gravity flow from this meter basin is conveyed to Baltimore City's gravity sewer system. The flow exiting JFWR31 was measured by a flow meter installed in Baltimore City manhole S06II2012MH.

JFWR35

Meter Basin JFWR35 is located in the southern area of the Jones Falls Sewershed, north of the City-County line, east of Old Pimlico Road. This meter basin measures approximately 216 acres and is primarily composed of residential development. The wastewater collection system in this meter basin consists of approximately 25,684 LF of sewers ranging in size between 6- and 10-inches in diameter and contains 134 manhole structures. Gravity flow from this meter basin is conveyed to Baltimore City's gravity sewer system. The flow exiting JFWR35 was measured by a flow meter installed in Baltimore City manhole S13GG2016MH.

END OF SECTION

Section 2

Effectiveness of Paragraph 7 Projects

2.0 Effectiveness of Remedial Corrective Actions Required by Paragraph 7 Projects (CD Ref. P10.C.i)

Paragraph 10.C of Baltimore County's Consent Decree (CD) requires that the effectiveness of the projects completed in accordance with Paragraph 7 be evaluated. The purpose of the corrective actions completed in accordance with Paragraph 7 was to eliminate Pumping Station and Non-Pumping Station Sanitary Sewer Overflows (SSOs) in the sewershed. An "SSO Structure", as defined in Section IV AA of the County's CD, is any structure constructed in Baltimore County for the purpose of allowing discharge from the separate sanitary sewer collection system at a point prior to the systems connection with the City of Baltimore's collection system or the head works of either the Patapsco or Back River Wastewater Treatment Plants. Three (3) Non-Pumping Station SSOs existed in the Jones Falls Sewershed. These SSOs include: SSO 31A (Rider Avenue), SSO 113 (Marnat Road) and SSO 120 (Charles Street Avenue). Information pertaining to these SSOs is detailed below:

2.1 SSO Locations

SSO 31A (Rider Avenue) was located at 8206 Rider Avenue in the Riderwood area of Baltimore County. This SSO contained an 18-inch diameter overflow pipe that was located in MH 6954 in SSA 45-59-16-01 (Meter Basin BC11) and discharged to Roland Run.

SSO 113 (Marnat Road) is located at the intersection of Marnat Road and Hattan Road in the Pikesville area of Baltimore County. This SSO contains a 12-inch diameter overflow pipe constructed in MH 793 in SSA 45-10-22-01 (Meter Basin JF0320S). The SSO discharges to a storm drain, which ultimately drains to the Western Run branch of the Jones Falls.

SSO 120 (Charles Street Avenue) was located at 442 Charles Street Avenue in the Towson area of Baltimore County. This SSO contained an 8-inch diameter overflow pipe constructed in MH 2402A in SSA 45-58-06-02 (Meter Basin BC12). This manhole is located 600-feet downstream of MH 2402 and the overflow discharged into Towson Run.

Figure 2-1 below shows the manholes containing SSOs 31A, 113 and 120.

Figure 2-1



SSO 31A (MH 6956) SSO 113 (MH 793) SSO 120 (MH 2402A)

2.2 Elimination Plan and Implementation

Baltimore County has implemented remedial measures to eliminate these SSOs. The following is an overview of the remedial measures including the elimination plans that have been implemented for SSO 31A, SSO 113 and SSO 120.

SSO 31A

Flow monitoring of SSO 31A began on February 12, 2004. No overflows were recorded since the overflow monitoring device was installed. The County's elimination plan for the Rider Avenue non-pumping station SSO 31A, consisted of sealing the 18-inch diameter overflow pipe. SSO 31A was sealed on May 11, 2007. Post elimination flow monitoring of the overflow was conducted in accordance with Section V.7.C.v of the CD and there has been no evidence of SSO activity since February of 2004. No additional field work was performed at this location.

SSO 113

Flow monitoring associated with SSO 113 began on February 12, 2004. Since the flow monitoring program began, thirteen (13) recorded overflow events have occurred. The County's elimination plan for the Marnat Road non-pumping station SSO 113, consists of implementing a rehabilitation program in the SSO 113 meter basin for the sanitary sewers and manhole structures that were identified as exhibiting defects that could contribute to wet-weather sources of peak flow. In support of the SSO elimination efforts, the County inspected 14,713 linear feet (LF) of 8-inch and 300 LF of 10-inch diameter sanitary sewer in the vicinity of SSO 113. In November 2008, RK&K completed a comprehensive review of this information and prepared rehabilitation documents to address the system deficiencies identified in an attempt to eliminate wet-weather sources contributing to peak flows to SSO 113. As part of Contract 09124 SXO, forty-four (44) sanitary manholes were rehabilitated; approximately 7,149 LF of sanitary collector sewer was lined and seventy-two (72) sewer house connection seals were installed to address sewer connection defects. Rehabilitation of the SSA was completed in June 2012. Post rehabilitation flow monitoring of SSO 113 is being conducted in accordance with Section V.7.C.v of the CD and shows that SSO 113 still remains active during wet-weather events. The current SSO elimination date is September 20, 2016. The County continues to coordinate with the City of Baltimore regarding the capacity improvements of the sewers located downstream of the SSO in the City, and is evaluating options for design and construction of a County relief sewer.

SSO 120

Flow monitoring for SSO 120 also began on February 12, 2004. During the flow monitoring program, six (6) overflows occurred. The County's elimination plan for the Charles Street Avenue non-pumping station SSO 120 consisted of placing a 6-inch diameter siphon, located immediately downstream of the SSO, on a "special" cleaning and maintenance list. This requires that the siphon be cleaned a minimum of once every six (6) months. This siphon was identified during inspections as having maintenance issues and creating surcharge conditions in

the sewer and activating SSO 120. In addition, in December 2009, Baltimore County replaced a collapsed segment of collector sewer that was located downstream of SSO 120 (MH 901893 to MH 16595). This was also believed to be creating a restriction in the conveyance system. Completion of this work assisted in reducing flow levels; however, it did not eliminate activation of the SSO. In June 2010, Baltimore County bid Contract 10034 SX0 – Charles Street Avenue, SSO No. 120 – Sanitary Sewer Rehabilitation to address wet-weather sources of peak flow contribution that resulted in the continued activation of SSO 120. As part of Contract 10034 SXO, forty-eight (48) manholes were rehabilitated, seven (7) point repairs were completed, approximately 13,826 LF of sanitary collector sewer was rehabilitated using CIPP lining and 323 sewer house connections were air tested and chemically sealed to address house connection defects. The work was substantially complete in July of 2011. SSO 120 was sealed on September 20, 2011 and the County continues to monitor flow in the sewer in accordance with Section V.7.C.v of the CD to evaluate the collection system response to wet-weather flow and to evaluate the impacts of elimination of SSO 120 on the collection system.

2.3 Post–Construction Flow Monitoring

Per Section V.7.C.v of the CD, the County is required to monitor and evaluate impacts of the elimination of an SSO structure for 18 months following elimination. The County eliminated SSO 31A in May of 2007 following no recorded overflow activity since metering activities began at the overflow manhole in February 12, 2004. The County continues to monitor SSO 113, which remains active with several wet-weather discharges occurring in 2012. The County also continues to monitor SSO 120 to evaluate the impacts of elimination of SSO 120 on the collection system.

2.4 Evaluation of Construction Projects

At the time of this report, sanitary sewer and manhole rehabilitation in SSA 45-10-22-01 (SSO 113 – Marnat Road) and SSA 45-58-06-02 (SSO 120 - Charles Street Avenue) have been completed and the rehabilitation work and the SSO pipes removed and incorporated into the Long-Term Capacity/Peak Flow Management Evaluation (LTC/PFME) modeling simulations. The modeling simulations incorporated the reduction of RDII volume, RDII peak flow and base infiltration (BI). Also, the friction coefficient of the rehabilitated sewers has been revised to match that of a smoother pipe surface (reduced Manning's "n" value) that is a result of the CIPP lining installed in these sewers.

This methodology was only applied to the modeling simulations to verify the effectiveness of the rehabilitation work under future flow conditions. In the baseline flow conditions (the conditions during flow monitoring), the non-pumping station SSOs were modeled as open without rehabilitation in the SSA where the SSOs are located. The following is a summary of the evaluation of the SSOs in the Jones Falls Sewershed:

SSO 31A

Baltimore County eliminated SSO 31A in May of 2007 following no evidence of SSO activity in more than three (3) years. Further evaluation of the SSO was not required.

SSO 113

SSO 113 continues to activate following a comprehensive rehabilitation effort completed in early 2012 to remove wet-weather sources of Inflow and Infiltration (I/I) from the collection system. Based on post-rehabilitation flow metering results, I/I was reduced in the collection system in this SSA as a result of the rehabilitation; however, downstream restrictions in the City sewers continue to impact the collection system associated with SSO 113. RK&K provided analysis of the overflows at SSO 113. The analysis included comparison of the monitored flow data for the September 7, 2011 storm (peak intensity of 2.88 in/hr) to the model predicted post-rehabilitation results for the SSO 113 area. Using the model, it was determined that if the SSO 113 overflow pipe was eliminated, the collection system would be able to store and convey the additional flow generated by the September 7, 2011 storm; however, the Hydraulic Grade Line (HGL) would be elevated above the SSO and could potentially cause sewer backups in the basements of nearby homes located along the sewer's alignment. An alternative to prevent elevation of the HGL would be to add capacity to the collection system by constructing relief sewers or increasing the size of the existing sewers that are located in the City's collection system downstream of SSO 113. The following manhole to manhole sewer segments would require additional capacity:

- MH 793 – MH TCM85 (Baltimore City Sewer)
- MH TCM85 – MH SO4II2004MH (Baltimore City Sewer)
- MH S04II2004MH – MH S04II2008MH (Baltimore City Sewer)

These existing sewers have a diameter of 8-inches and replacement of the sewers with approximately 596 LF of new 12-inch diameter sewer is expected to add sufficient capacity to reduce the HGL compared to the existing system, allowing the SSO to be eliminated.

The County is also contemplating a diversion of flow away from the SSO. The County believes that because of the basement elevations of the properties located nearest to the SSO, a diversion of the upstream flow away from the SSO manhole may create a more effective solution with less system maintenance requirements. A time of performance extension was granted by the regulators for elimination of SSO 113. The revised elimination date for removal of the SSO is September 20, 2016.

SSO 120

Baltimore County closed SSO 120 on September 20, 2011, following implementation of a specialized sewer cleaning program and rehabilitation activities completed within the SSA. The County continues to monitor this SSO in accordance with Section V.7.C.v of the CD to verify

that the flow is not surcharging during wet-weather events. The hydraulic model simulations of the 10-year/6-hour synthetic design storm indicate that the HGL does not exceed the top of the sewer and the manholes do not surcharge.

Model simulations predict that the expected discharge, resulting from the implementation of the corrective actions completed for SSO 113 and SSO 120, will be reduced and the corrective actions have been effective in reducing overflows by reducing wet-weather sources of I/I from the collection system.

END OF SECTION

Section 3

Infiltration and Inflow Analysis

3.0 Infiltration and Inflow Analysis (P.9.C.i)

Paragraph 9 of the CD requires that the County perform rainfall and flow monitoring with the purpose of: (i) quantifying inflow and infiltration, (ii) evaluating the impact of inflow and infiltration on the collection system, and (iii) completing a Long-Term Capacity/Peak Flow Management Evaluation, including development of a hydraulic model.

Meter basins that were noted as exhibiting excessive I/I, were included in County Sanitary Sewer Evaluation Survey (SSES) investigations.

3.1 Overall Description

To characterize flows within the sewage collection system and correlate rainfall to inflow and infiltration (I/I), the County completed a flow monitoring program within the Jones Falls Sewershed. The monitoring program consisted of the installation of twenty-six (26) flow meters within the sewershed that were installed from February 1, 2008 through November 30, 2008. These flow meters are referred to as the County Meters. In addition to the flow meters installed by the County, data from six (6) flow meters installed as part of the City of Baltimore's Jones Falls flow monitoring program were also utilized. These flow meters were located along or near the City-County line and are referred to as the Boundary Meters. The metering period for these six (6) flow meters was from May 9, 2006 through May 18, 2007. RK&K utilized rainfall data from six (6) rain gauges located in the vicinity of the Jones Falls Sewershed. **Table 3-1.1** provides a list of all Jones Falls Sewer Service Areas (SSA's), their assigned meter basins, and the associated flow monitoring sites.

Table 3-1.1
Jones Falls SRRR: Corrective Action Recommendation Plan
JONES FALLS METER BASINS, FLOW METER SITES AND SSA's

Meter Basin	Meter Site	SSA
BC01	37990	45-59-35-01, 45-59-35-02, 45-59-35-03, 45-59-35-04, 45-59-35-05, 45-59-35-06, 45-59-35-07, 45-59-35-08, 45-59-35-09
BC02	7253	45-59-34-00*
BC03	33463	45-59-33-00*, 45-59-34-00*
BC04	6977	45-59-30-01, 45-59-30-02, 45-59-30-03
BC05	43791	45-73-03-01, 45-73-03-02, 45-73-04-00
BC06	38526	45-59-15-01, 45-59-15-02, 45-59-15-03, 45-59-15-04, 45-59-15-05
BC07	18586	45-59-16-01, 45-59-16-02, 45-59-17-01*, 45-59-18-00, 45-59-19-00, 45-59-20-01*
BC08	19873	45-59-17-01*, 45-59-17-02, 45-59-17-03, 45-59-17-04, 45-59-17-05, 45-59-17-06, 45-59-17-07, 45-59-17-08
BC09	NS1079	45-59-21-00, 45-59-22-00, 45-59-23-00, 45-59-24-00, 45-59-25-00, 45-59-26-00, 45-59-27-00, 45-59-28-00,

Table 3-1.1
Jones Falls SRRR: Corrective Action Recommendation Plan
JONES FALLS METER BASINS, FLOW METER SITES AND SSA's

Meter Basin	Meter Site	SSA
		45-59-29-00, 45-59-31-00, 45-59-32-00, 45-59-33-00*
BC10	42231	45-59-20-01*, 45-59-20-02, 45-59-20-03, 45-59-20-04, 45-59-20-05, 45-59-20-06
BC11	6944	45-59-10-00, 45-59-11-00, 45-59-12-00, 45-59-13-00, 45-59-14-00
BC12	22222	45-58-06-01, 45-58-06-02, 45-58-06-03, 45-58-06-04, 45-58-06-05, 45-58-06-06, 45-58-06-07, 45-58-06-08, 45-58-07-00, 45-58-08-00, 45-58-09-01, 45-58-09-02, 45-58-09-03, 45-58-10-00, 45-58-11-00, 45-58-20-01, 45-58-20-02, 45-58-20-03, 45-58-20-04, 45-58-20-05, 45-58-20-06, 45-58-21-01, 45-58-21-02, 45-58-21-03, 45-58-21-04, 45-58-21-05, 45-58-21-06, 45-58-21-07, 45-58-22-00, 45-58-23-01, 45-58-23-02, 45-58-23-03, 45-58-23-04, 45-58-24-00, 45-58-25-00, 45-58-26-01, 45-58-26-02, 45-58-27-00, 45-58-28-00
BC13	18456	45-59-05-02, 45-59-05-03, 45-59-05-04
BC14	34177	45-55-07-00, 45-58-02-00
BC15	22456	45-59-01-00
BC16	61947	45-58-01-00, 45-58-03-00, 45-58-04-00, 45-58-05-00
BC18	20755	45-61-00-00, 45-62-01-00, 45-63-00-00, 45-64-00-00, 45-65-00-00, 45-67-00-00
BC19	33711	45-62-02-00, 45-62-03-01, 45-62-03-02, 45-62-03-03, 45-62-03-04, 45-62-03-05, 45-62-03-06, 45-62-03-07, 45-62-03-08
BC20	20770	45-66-01-00, 45-66-02-00, 45-66-03-00, 45-66-04-00, 45-66-05-00, 45-66-06-00, 45-66-07-00, 45-66-08-00, 45-66-09-01*
BC21	36912	45-68-01-00, 45-68-02-00, 45-68-03-00, 45-68-04-01, 45-68-04-02, 45-68-05-00, 45-68-06-01, 45-68-06-03, 45-68-06-04
BC22	34385	45-69-00-00, 45-70-00-00, 45-71-00-00, 45-72-00-00, 45-73-01-00, 45-73-02-00
BC23	36930	45-68-07-00, 45-68-08-00, 45-68-09-00, 45-68-10-00, 45-68-11-00, 45-68-12-01, 45-68-13-00, 45-68-14-00
BC24	33527	45-66-10-00, 45-66-11-00, 45-66-12-00, 45-66-13-00, 45-66-14-00, 45-66-16-00, 45-66-17-00, 45-66-18-01, 45-66-18-02, 45-66-18-03, 45-66-18-04
BC25	32254	45-66-09-01*, 45-66-09-02, 45-66-09-03, 45-66-15-00
BC26	36951	45-68-06-02, 45-68-15-01, 45-68-15-02, 45-68-15-03, 45-68-16-01, 45-68-16-02, 45-68-17-01, 45-68-18-00

Table 3-1.1 Jones Falls SRRR: Corrective Action Recommendation Plan JONES FALLS METER BASINS, FLOW METER SITES AND SSA's		
Meter Basin	Meter Site	SSA
TSJF01	S19II2017	45-51-00-00, 45-52-00-00, 45-53-00-00, 45-54-00-00, 45-55-01-00, 45-55-02-00, 45-55-03-00, 45-55-04-00, 45-55-04-01, 45-55-04-02, 45-55-06-00, 45-56-00-00, 45-57-00-00, 45-59-02-00, 45-59-03-00, 45-59-04-00, 45-59-05-01, 45-59-06-00, 45-59-07-00, 45-59-08-00, 45-59-09-00, 45-60-00-00
JF0320S	S04II2004	45-10-22-01
JFWR09	S17GG2004	45-10-01-01
JFWR15	S05II2003	45-10-02-06
JFWR29	S04EE2004	45-10-21-00
JFWR31	S06II2012	45-10-22-02, 45-10-22-03
JFWR35	S13GG2016	45-10-02-01

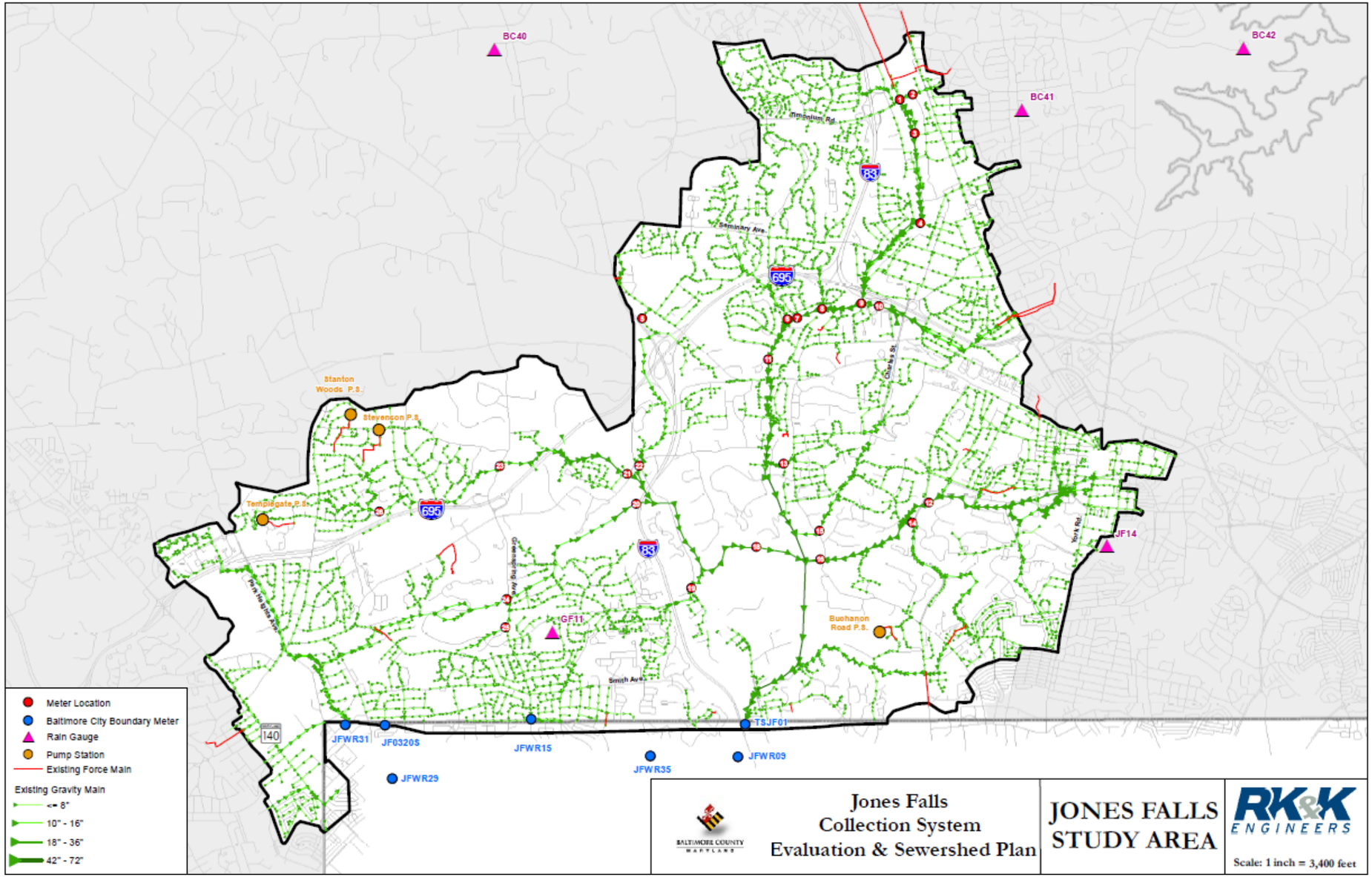
*A few SSAs discharge to multiple Flow Meters. SSAs were split during modeling efforts according to the Flow Meter location to better represent field conditions.

3.2 Rain Gauge Monitoring Program (CD Ref. P9.B.i, P10.C.x)

Rainfall within the County was measured using a network of forty-five (45) separate rain gauge stations with a minimum coverage of one (1) rain gauge station per ten (10) square miles as well as data compiled by Doppler radar for the project area, as required by the CD, utilizing a minimum resolution of one (1) pixel per four (4) square kilometers. Calamar software was used to create calibrated radar rainfall images for storm events that exceeded 0.5-inches. Rain gauges BC40RG, BC41RG, BC42RG, BC49RG, GF11RG and JF14RG were used for the I/I analysis of the data gathered within the flow meter basins in the Jones Falls collection system. **Map 3-1** depicts the locations of the rain gauges.

The rain gauges were installed as part of the County's overall rainfall monitoring program. Each rain gauge records 0.01-inch increments of precipitation at 5-minute intervals. For the purposes of analysis, a qualifying rainfall event was defined as a minimum of 0.50-inches of rain occurring without a break of more than 300 minutes.

There were a total of twenty (20) storm events exceeding 0.5-inches that occurred during the flow monitoring period for the County Meters. The dates of these storm events and the average rainfall measured at the rain gauge stations are listed in **Table 3-2.1**. The storm of September 27, 2008 was the most significant storm event that occurred during the flow monitoring period, measuring over 6-inches of rain at one (1) of the rain gauge stations and averaging 4.62 inches. There were also three (3) other storm events within the monitoring period that measured an average of at least 2-inches of rainfall.



Map 3-1: Jones Falls Sewershed Rain Gauge Locations

Table 3-2.1
Jones Falls SRRR: Corrective Action Recommendation Plan
LIST OF STORMS AND RAINFALL AMOUNTS FOR THE COUNTY METERS

Date	Average Depth (in)	Peak Intensity (in/hr)	Duration (hr)
February 1, 2008	2.00	1.99	12
February 12, 2008	0.99	0.57	11
March 4, 2008	0.62	0.07	13
March 7, 2008	0.83	0.07	28
March 19, 2008	0.66	0.09	13
April 3, 2008	0.65	0.23	22
April 20, 2008	1.87	0.45	24
April 28, 2008	1.29	0.18	17
May 8, 2008	1.52	0.12	34
May 11, 2008	2.24	2.24	30
May 16, 2008	0.75	0.07	12
June 3, 2008	0.95	0.34	27
July 30, 2008	0.59	0.49	64
August 13, 2008	1.00	0.78	12
August 29, 2008	0.94	0.26	37
September 5, 2008	2.21	1.59	19
September 12, 2008	1.30	0.24	11
September 27, 2008	4.62	3.94	34
October 25, 2008	1.21	0.28	18
November 13, 2008	1.25	0.07	14

There were twenty-seven (27) storm events exceeding 0.5-inches that occurred during the metering period of the Boundary Meters. The dates of these storm events and the average rainfall measured at the rain gauge stations are listed in **Table 3-2.2**. The storm of June 25, 2006 resulted in the highest rainfall, with a rainfall amount of 5.24-inches. There were also four (4) additional storm events that generated rainfall amounts between 2- and 3-inches.

Table 3-2.2
Jones Falls SRRR: Corrective Action Recommendation Plan
LIST OF STORM AND RAINFALL AMOUNTS FOR BOUNDARY METERS

Date	Average Depth (in)	Peak Intensity (in/hr)	Duration (hr)
May 11, 2006	1.68	2.52	12
May 14, 2006	0.79	1.04	18
June 19, 2006	0.55	1.99	14
June 24, 2006	0.85	1.52	18
June 25, 2006	5.24	3.91	120
July 5, 2006	2.31	2.07	14
July 22, 2006	1.28	2.33	5
September 1, 2006	1.94	0.41	48
September 5, 2006	1.63	1.29	16
September 14, 2006	1.64	0.77	44
September 28, 2006	1.02	1.12	6
October 5, 2006	1.73	0.40	48
October 17, 2006	1.14	0.36	16
October 19, 2006	0.56	0.39	14
October 27, 2006	1.63	0.48	18
November 7, 2006	1.47	0.49	18
November 16, 2006	2.24	2.63	6
November 22, 2006	0.55	0.27	18
December 22, 2006	0.94	0.31	18
December 25, 2006	0.57	0.21	12
December 31, 2006	0.84	0.55	18
January 7, 2007	0.83	0.24	18
March 1, 2007	0.92	0.32	18
March 15, 2007	2.00	0.24	60
March 23, 2007	0.53	0.16	22
April 11, 2007	0.62	0.45	16
April 14, 2007	2.66	0.63	40

3.3 Flow Monitoring Program (CD Ref. P9.B.ii, P10.C.X)

The flow monitoring program consisted of installing twenty-six (26) flow meters within the County's collection system. The flow meters measured both depth and velocity, from which, flow was calculated at consistent 15-minute intervals.

Data Quality Control/Quality Assurance is discussed in the Inflow and Infiltration Evaluation Report, found in **Appendix B** of this report.

Figure 3-1 depicts a schematic of the Jones Falls Sewershed flow monitoring plan and **Table 3-3.1** provides a list of the flow monitors, including the location and installation period. See **Appendix A** for site reports of the flow meter locations.

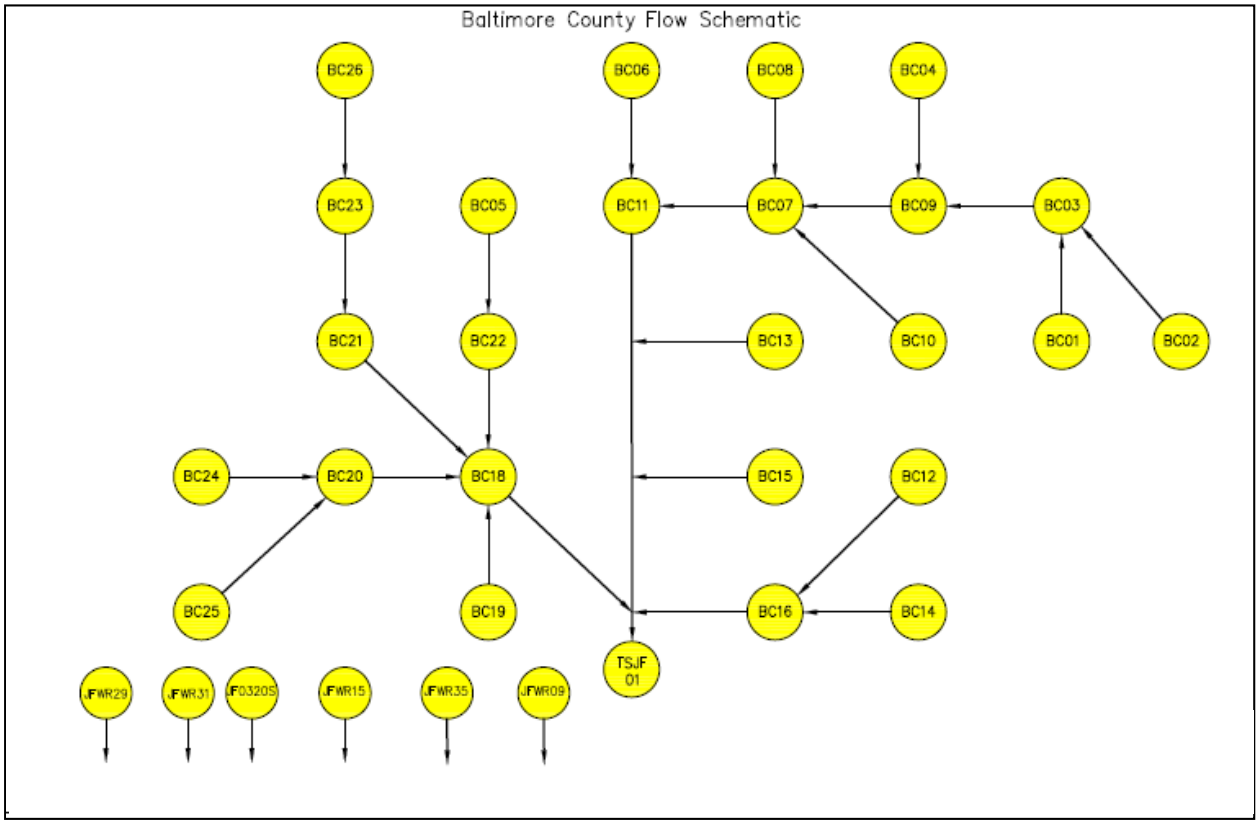


Figure 3-1 Jones Falls Sewershed Monitoring Plan Schematic

Table 3-3.1 Jones Falls SRRR: Corrective Action Recommendation Plan JONES FALLS SEWERSHED METER LOCATIONS AND INSTALLATION HISTORY		
Meter Site	MH Location	Installation Period
BC01	37990	02/01/2008 – 11/30/2008
BC02	7253	02/01/2008 – 11/30/2008
BC03	33463	02/01/2008 – 11/30/2008
BC04	6977	02/01/2008 – 11/30/2008
BC05	43791	02/01/2008 – 11/30/2008
BC06	38526	02/01/2008 – 11/30/2008
BC07	18586	02/01/2008 – 11/30/2008
BC08	19873	02/01/2008 – 11/30/2008
BC09	NS1079	02/01/2008 – 11/30/2008
BC10	42231	02/01/2008 – 11/30/2008
BC11	6944	02/01/2008 – 11/30/2008
BC12	22222	02/01/2008 – 11/30/2008
BC13	18456	02/01/2008 – 11/30/2008
BC14	34177	02/01/2008 – 11/30/2008
BC15	22456	02/01/2008 – 11/30/2008
BC16	61947	02/01/2008 – 11/30/2008
BC18	20755	02/01/2008 – 11/30/2008
BC19	33711	02/01/2008 – 11/30/2008
BC20	20770	02/01/2008 – 11/30/2008
BC21	36912	02/01/2008 – 11/30/2008
BC22	34385	02/01/2008 – 11/30/2008
BC23	36930	02/01/2008 – 11/30/2008
BC24	33527	02/01/2008 – 11/30/2008
BC25	32254	02/01/2008 – 11/30/2008
BC26	36951	02/01/2008 – 11/30/2008
TSJF01	City MH S19II2017	02/01/2008 – 11/30/2008
JF03_20S	City MH S04II2004	05/09/2006 – 05/18/2007
JFWR09	City MH S17GG2004	05/09/2006 – 05/18/2007
JFWR15	City MH S05II2003	05/09/2006 – 05/18/2007
JFWR29	City MH S04EE2004	05/09/2006 – 05/18/2007
JFWR31	City MH S06II2012	05/09/2006 – 05/18/2007
JFWR35	City MH S13GG2016	05/09/2006 – 05/18/2007

3.4 Weather Analysis (CD Ref. P9.C.ii)

Dry-weather flow (DWF) is defined as flow in a sanitary sewer during periods of dry-weather in which the sanitary sewer is under minimum influence of I/I. DWF consists of base sanitary flow

(BSF) and base infiltration (BI). BSF is comprised of residential, commercial, and institutional wastewater discharges as well as wastewater discharges from industrial properties. BI is flow that enters the sanitary sewer system through pipe joints, sewer pipe defects and defective manhole walls, benches, and pipe seals. Sources of data used in determining the dry-weather flows included water consumption records; the rainfall/flow monitoring data; population estimates; estimates of the collection system tributary to each flow monitor; and estimates of the sewershed area tributary to each flow monitor.

Using Sliicer, an analysis tool developed by ADS® Environmental Services, Inc., RK&K established parameters to generate flow components for analysis of I/I in the Jones Falls Sewershed's collection system. The flow analyses obtained using the Sliicer.com™ software provided estimates of the components of the DWF, which consists of the BSF and the BI rate. Typically, minimum sewer flows occur during the summer and during the night, between the hours of 2 a.m. and 4 a.m. During these hours, it is assumed that most of the sewer flow is due to BI. The Stevens/Schutzbach equation was used to estimate BI. The Stevens-Schutzbach Method is an iterative regression technique used to fit the Manning Equation to flow monitoring data. The Stevens/Schutzbach equation used to estimate BI is as follows:

*BI = (0.4*Min. Daily Flow)/(1-0.6(Min. Daily Flow/Average Daily Flow)^(Min. Daily Flow^0.7)).*

The BSF was then estimated as the DWF rate less the BI estimate. Dry days were defined according to the following criteria:

Number of Prior Days	Cumulative Antecedent Rain (Inches)
1	0.1
3	0.4
5	1.0

For meter basins that exhibited negative or zero net BI, the BI was calculated as 90 percent of the minimum flow. Negative BI could be due to a difference in dry-weather days selected between cumulative flow meters and a possible blockage in the collection system. The following flow meters had the BI computed as 90 percent of the minimum flow: BC07; BC11; BC18; BC21; BC22; and TSJF01. **Table 3-4.1** summarizes the BI and average DWF calculated during the dry-weather analysis for each meter basin.

Table 3-4.1
Jones Falls SRRR: Corrective Action Recommendation Plan
INFILTRATION AND INFLOW ANALYSIS AVERAGE DRY-WEATHER FLOW

Basin	Summer				Winter			
	Weekday		Weekend		Weekday		Weekend	
	BI (mgd)	ADF (mgd)	BI (mgd)	ADF (mgd)	BI (mgd)	ADF (mgd)	BI (mgd)	ADF (mgd)
County Meters								
BC01	0.049	0.240	0.048	0.244	0.065	0.316	0.067	0.323
BC02	0.033	0.094	0.031	0.094	0.040	0.107	0.035	0.108
BC03	0.296	0.535	0.217	0.463	0.314	0.367	0.293	0.383
BC04	0.057	0.127	0.062	0.121	0.099	0.176	0.108	0.178
BC05	0.079	0.163	0.084	0.141	0.100	0.184	0.100	0.160
BC06	0.090	0.211	0.093	0.224	0.103	0.228	0.108	0.248
BC07*	0.001	0.227	0.004	0.321	0.006	0.049	0.004	0.028
BC08	0.101	0.288	0.100	0.323	0.154	0.367	0.159	0.414
BC09	0.396	0.892	0.312	0.725	1.079	1.328	1.087	1.336
BC10	0.156	0.452	0.173	0.428	0.176	0.502	0.179	0.449
BC11*	0.143	0.604	0.016	0.354	0.060	0.146	0.048	0.110
BC12	0.471	1.546	0.514	1.354	0.528	1.681	0.576	1.467
BC13	0.051	0.143	0.051	0.138	0.076	0.190	0.074	0.181
BC14	0.225	0.464	0.226	0.431	0.259	0.456	0.261	0.428
BC15	0.012	0.028	0.012	0.029	0.012	0.031	0.012	0.032
BC16	0.018	0.345	0.060	0.295	0.156	0.523	0.147	0.425
BC18*	0.051	0.147	0.061	0.169	0.047	0.126	0.056	0.146
BC19	0.115	0.436	0.125	0.451	0.126	0.448	0.139	0.456
BC20	0.006	0.221	0.006	0.226	0.016	0.253	0.009	0.241
BC21*	0.013	0.028	0.005	0.010	0.024	0.056	0.020	0.047
BC22*	0.011	0.027	0.014	0.029	0.018	0.041	0.019	0.037
BC23	0.066	0.128	0.059	0.128	0.081	0.174	0.085	0.185
BC24	0.201	0.400	0.206	0.379	0.245	0.493	0.264	0.492
BC25	0.091	0.169	0.091	0.164	0.130	0.197	0.125	0.197
BC26	0.125	0.270	0.129	0.269	0.122	0.253	0.122	0.249
TSJF01*	0.001	0.022	0.002	0.005	0.017	0.042	0.061	0.148
Boundary Meters								
JF03_20S	0.042	0.086	0.051	0.105	0.058	0.100	0.055	0.100
JFWR09	0.141	0.287	0.151	0.270	0.104	0.240	0.103	0.220
JFWR15	0.074	0.281	0.101	0.305	0.129	0.328	0.125	0.346
JFWR29	0.188	0.601	0.198	0.570	0.016	0.462	0.172	0.444
JFWR31	0.183	0.259	0.185	0.270	0.446	0.515	0.471	0.521
JFWR35	0.038	0.087	0.042	0.092	0.051	0.111	0.052	0.116

* For Meter Basins that exhibited negative or zero net BI, the BI was calculated as 90 percent of the minimum flow.

3.4.1 Infiltration Analysis

The BI was normalized based on gallons per day per inch-diameter mile (gpd/in/d/m) to compare the meter basins and to identify those with severe infiltration. The inch-diameter miles of a meter basin are determined by multiplying the length of sewer pipes in miles. The criteria to determine if a meter basin exhibited excessive BI comes from the EPA handbook Facilities Planning, 1982. This criteria is defined below:

CRITERIA FOR NORMALIZED BI	
Size of Basin(LF)	Non-Excessive Rate (gpd/in/d/m)
> 100,000	< 3,000
10,000-100,000	< 6,000
< 10,000	< 10,000

For summer weekdays, there are two (2) meter basins which exceed the criteria for normalized BI: Meter Basins BC03 and BC14. For winter weekdays, Meter Basins BC03, BC09 and BC14 exceed the BI criteria. None of the Boundary Meters exceed the criteria for either summer or winter. The dry-weather results indicate that the meter basin draining to Meter BC03 has higher than expected rates of wastewater production and BI during the summer season. This is likely due to the valve controlling the flow from the Texas Pumping Station was probably not completely closed during most of the flow monitoring. This valve is normally in the closed position and flow from the Texas Pumping Station travels to the Longquarter Pumping Station outside of the Jones Falls Sewershed.

Occasionally the County will open the by-pass valve, which allows the flow from the Texas Pumping Station to enter into the Jones Falls Sewershed upstream of Flow Meter BC03. From the metering data, it appears that flow was passing through this valve during the monitoring period prior to September of 2008. Beginning in early September 2008, the flow rates measured at BC03 drop considerably and BI is not considered high for the winter months. Meter Basin BC14 shows excessive BI for both summer and winter.

Map 5 contained in the Inflow and Infiltration Evaluation Report depicts the severity of the BI for the summer season, normalized by gpd/in/m. **Map 6** contained in the Inflow and Infiltration Evaluation Report depicts the BI for the winter season. The infiltration rate was divided into three (3) different ranges. As shown, the BI doesn't change drastically between the two seasons and the BI in the west side of the sewershed is relatively low. Refer to the Inflow and Infiltration Evaluation Report for the Jones Falls Sewershed, which is contained in **Appendix B** of this report, for a more detailed description of the infiltration analysis and the referenced maps.

3.5 Wet-Weather Analysis (CD Ref. P9.C.ii)

Wet-weather analysis was used to quantify the rainfall-dependent infiltration and inflow (RDII) in the Jones Falls Sewershed. Each qualified storm from **Tables 3-2.1** and **3-2.2** were analyzed for each flow meter using the Sliicer.com software. For each storm, a pre-composition period (typically 24-hours prior to the storm event) was established to adjust the dry-day hydrograph to match the actual hydrograph immediately prior to the start of the storm. This either raises or lowers the dry-day hydrograph so that the calculated RDII is a result of only the storm event. To estimate RDII, the Sliicer program overlays the typical dry-day hydrograph on the storm's hydrograph. The difference between the two hydrographs represents the RDII.

3.5.1 Inflow Analysis

The RDII was normalized by linear feet (LF) of pipe and inches of rainfall. For RDII, a criterion of 10 gallons per linear foot of pipe, per inch of rainfall (gal/lf/in of rainfall) was selected for identifying meter basins exhibiting excessive rates of RDII. The County Meter basins with a normalized RDII rate greater than 10 gal/lf/in of rainfall are Meter Basins BC03, BC07, BC09, BC16, BC18 and TSJF01. The Boundary Meter basins with a normalized RDII rate greater than 10 gal/lf/in of rainfall are Meter Basins JF0320S, JFWR09 and JFWR29. The RDII severity for the Jones Falls Sewershed is depicted in **Map 7**, which is contained in the Inflow and Infiltration Evaluation Report in **Appendix B** of this report.

Although Meter Basins BC03 and BC07 show a normalized RDII rate of greater than 10 gal/lf/in of rainfall, it is believed that the results for these relatively small meter basins are highly influenced by the flow that was by-passed from the Texas Pumping Station, and therefore the consideration as basins exhibiting excessive I/I is questionable. To be conservative, both of these meter basins are shown as having excessive RDII in **Map 7**. Furthermore, although BC09 shows a normalized RDII rate less than 10 gal/lf/in, the normalized RDII (8.44 gal/lf/in) is close to the criteria threshold, and because BC09 is located on a main interceptor sewer comprising a significant area (approximately 539 acres), BC09 is a meter basin considered as exhibiting excessive I/I. However, in **Map 7**, BC09 will be included in the "5–10 gal/lf/in of rain" category and not in the ">10 gal/lf/in of rain" category due to the normalized RDII being 8.44 gal/lf/in.

The RDII was also analyzed using capture coefficient. The criteria for this metric are derived from the Interim Inflow and Infiltration Report, West and Cadden, 1994. This report indicates that meter basins with a capture coefficient of 10 percent or greater are considered to exhibit excessive RDII, meter basins between 5 and 10 percent possibly exhibit excessive RDII, and meter basins with less than 5 percent are considered as not exhibiting excessive RDII. Using this metric, the only meter basins with a capture coefficient greater than 10 percent are BC03 and BC07. Based on the preceding discussion, Meter Basins BC03, BC07, BC09, BC16, BC18, TSJF01, JF0320S, JFWR09 and JFWR29 are considered to exhibit excessive RDII. Results of the wet-weather analysis are summarized in **Table 3-5.1**. Refer to **Appendix B,** Inflow and Infiltration Evaluation Report for the Jones Falls Sewershed, for a more detailed discussion of the inflow analysis.

Table 3-5.1
Jones Falls SRRR: Corrective Action Recommendation Plan
JONES FALLS SEWERSHED WET-WEATHER ANALYSIS

Meter Basin	RDII (gal/lf/in)	Capture Coefficient (R)		Meter Basin	RDII Ranking	Capture Coefficient Ranking
County Meters						
BC01	2.06	0.94%		BC07	1	1
BC02	7.92	3.47%		BC03	2	2
BC03	38.29	22.05%		BC18	3	7
BC04	9.74	3.38%		BC16	4	3
BC05	2.21	0.64%		TSJF01	5	8
BC06	1.97	0.70%		BC04	6	5
BC07	51.22	32.67%		BC09	7	6
BC08	5.22	1.62%		BC02	8	4
BC09	9.01	3.18%		BC08	9	9
BC10	3.27	1.35%		BC22	10	14
BC11	3.60	1.59%		BC25	11	12
BC12	1.78	0.71%		BC11	12	10
BC13	1.97	0.73%		BC10	13	11
BC14	1.10	0.36%		BC21	14	25
BC15	0.73	0.13%		BC05	15	19
BC16	12.56	4.50%		BC19	16	16
BC18	16.08	2.31%		BC01	17	13
BC19	2.16	0.72%		BC06	18	18
BC20	1.13	0.30%		BC13	19	15
BC21	2.94	0.26%		BC12	20	17
BC22	4.62	0.88%		BC23	21	23
BC23	1.74	0.34%		BC24	22	20
BC24	1.38	0.42%		BC20	23	24
BC25	4.47	1.25%		BC26	24	23
BC26	1.14	0.38%		BC14	25	22
TSJF01	11.62	1.79%		BC15	26	26
Boundary Meters						
JF0320S	18.31	7.54%		JF0320S	1	2
JFWR09	10.33	2.17%		JFWR29	2	1
JFWR15	9.16	4.87%		JFWR09	3	5
JFWR29	14.95	8.71%		JFWR15	4	3
JFWR31	6.55	3.24%		JFWR31	5	4
JFWR35	3.89	1.70%		JFWR35	6	6

The scattergraphs developed for each meter basin show that the flow, in most meter basins, is contained within 50 percent of the pipe's diameter. Nine (9) of the twenty-five (25) County Meters experienced surcharging at some period during the flow monitoring. Of the nine (9) flow monitoring sites, five (5) experienced surcharging on more than one occasion. The nine (9) metering sites that experienced surcharging are: BC02; BC04; BC05; BC06; BC07; BC08; BC09; BC11 and BC12. Surcharging occurred when flow was by-passed from the Texas Pumping Station and during storm events. The storm events that caused surcharging were the February 1, 2008, July 23, 2008, and the September 27, 2008 storms. Flow by-passing from the Texas Pumping Station that caused surcharging occurred on the following dates: April 9, 2008; May 7, 2008; July 31, 2008; and August 26, 2008. Although none of the flow monitoring sites recorded overflows, non-pumping station SSO 120, located along Charles Street Avenue, overflowed during the September 27, 2008 storm.

3.6 Infiltration/Inflow Evaluation (CD Ref. P9.C.ii)

For dry-weather flow, the criteria for identifying meter basins with excessive BI rates were based upon gallons per day per inch-diameter mile (gpd/in/d/m) using the table from the EPA Handbook - Facilities Planning, 1982, which is shown in Section 3.4.1. Using the established criteria, the meter basins that exhibit excessive BI rates are BC03, BC09 and BC14.

For wet-weather flow, a criterion of 10 gallons/linear foot per inch of rain (gal/lf/in) was selected for identifying meter basins exhibiting excessive normalized rates of RDII. A capture coefficient criterion of 10 percent was also used. Using this criteria, meter basins that exhibit excessive RDII are BC03, BC07, BC09, BC16, BC18, TSJF01, JF0320S, JFWR09 and JFWR29.

Meter basins that exhibited excessive I/I were investigated further by sanitary sewer evaluation surveys (SSES).

For the complete Inflow and Infiltration Evaluation Report, see **Appendix B** of this report.

END OF SECTION

Section 4

Collection System Inspection

4.0 Collection System Inspection (CD Ref. P8 & P10.C.ii)

4.1 Overview

Baltimore County's portion of the Jones Falls Sewershed measures approximately 13,440 acres in size and contains over 1,124,000 linear feet (LF) of gravity sewer pipe ranging in size from 6-inches to 48-inches in diameter. The sewershed also contains approximately 6,200 manhole structures; 19,000 LF of force main and pressure sewer, and four (4) pumping stations. The sewershed's collection system conveys wastewater from Baltimore County to the City of Baltimore's Jones Falls Sewershed at seven (7) separate locations before being treated at the City of Baltimore's Back River Wastewater Treatment Plant.

In accordance with Paragraph 8 of the Consent Decree (CD) and the approved inspection plan, the sanitary collection system piping, 8-inches in diameter and larger and associated manhole structures were identified for inspection in the Jones Falls Sewershed. From March 2006 through September 2012, sanitary sewers and manholes in 177 Sewershed Service Areas (SSA's) in thirty-one (31) flow meter basins were inspected. All inspections were completed in accordance with Baltimore County's standard closed-circuit television (CCTV) and manhole inspection protocols.

Review of the data collected as part of this inspection effort was completed in accordance with the criteria set forth in Paragraph 8 of the CD. Reviews included all Paragraph 8.C.ii, 8.C.ia, and 8.C.iv sanitary sewers and manholes that had condition rankings of either 4 or 5, and all Paragraph 8C.ii, 8.C.ia, 8.C.iv and 15.B.ib sanitary sewers and manholes that were located within SSA's that were identified by analysis as exhibiting excessive inflow and infiltration (I/I). The inspection data collected by Baltimore County's Bureau of Utilities was accessed for review utilizing Baltimore County's Consent Decree Web Portal. This data included CCTV inspections of sanitary collection system piping 8-inches in diameter and larger, manhole inspection data, including inspection photographs and other Sanitary Sewer Evaluation Survey (SSES) type data including night-time flow isolation testing, and smoke and dyed-water testing information. Review of this data, in concert with the modeling and Inflow and Infiltration (I/I) evaluation information, will allow development of a comprehensive rehabilitation and corrective action plan to address collection system defects and deficiencies that contribute to model predicted collection system Sanitary Sewer Overflows (SSO) in the Jones Falls Sewershed.

The collection system and SSES investigation work that was reviewed in accordance with Paragraph 8 of the CD included:

- 715 manhole inspections
- 251,000 LF of CCTV sewer inspections
- Four (4) pumping stations inspections
- 3,176 LF of force main inspections
- 132,008 LF of smoke testing
- 121 night-time flow isolation tests in 18 SSA's
- 66 scheduled dyed-water tests to be completed in 21 SSA's

4.2 Manhole Inspections

Manhole inspection characterizes the condition and connectivity of a sanitary collection system. Manholes were inspected as required by Paragraph 8 of the CD. The manhole inspection data reviewed typically served multiple purposes, which included characterizing the general condition of the structure, identifying collection system connectivity, assisted in defining the general condition of the sewer segments that were connected to the structure, provided defect observation data required for condition assessment, identified potential sources of I/I to the collection system, and allowed development of subsequent repair recommendations.

Manhole inspections were completed by Baltimore County's Bureau of Utilities and recorded on standard manhole inspection forms in accordance with the County's standard manhole inspection protocols. To avoid manned-entry of the manholes for inspection and possible safety risks, the inspections were completed using specialized pole mounted manhole inspection cameras.

715 manhole inspections were reviewed in accordance with the CD requirements; however, three (3) of manholes included in this review were not assigned a rating by the original inspection crews. The inspection data reviewed was contained on the County's Consent Decree Web Portal and included inspection forms and condition photographs taken during the inspections. Each manhole was defined by a specific County manhole ID, SSA location and the CD paragraph reference. The inspection forms also indicated the date when the inspection was completed and the manhole's structural condition rating.

Map 4-1 – Sewer and Manhole Inspections Completed - shows the collection system manholes that were inspected and reviewed in accordance with the priority identification scheme described in Section 6 of this report.

Table 4-2.1 – Manhole Defect Summary Table provides an overview of the common defects that were observed in the manholes that were reviewed.

Table 4-2.1
Jones Falls SRRR: Collection System Investigation
MANHOLE DEFECT SUMMARY TABLE

Defect Type	Quantity of Defects	Percent
Cover	64	9%
Frame	82	12%
Frame Seal	82	12%
Corbel	184	26%
Wall	179	25%
Bench	31	4%
Trough	17	2%
Pipe Seals	46	6%

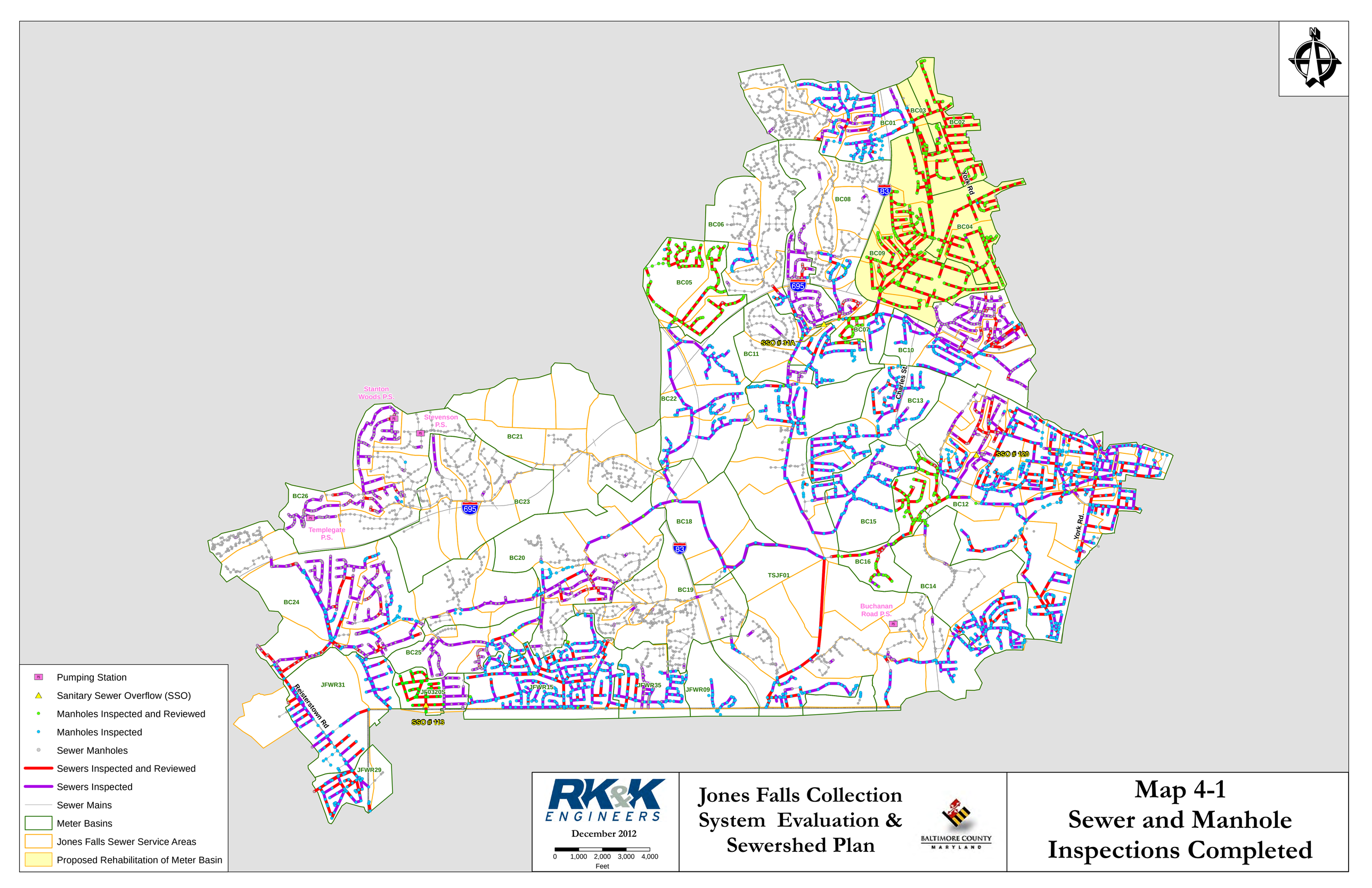

BC01
BC02
BC03
BC04
BC05
BC06
BC07
BC08
BC09
BC10
BC11
BC12
BC13
BC14
BC15
BC16
BC18
BC19
BC20
BC21
BC22
BC23
BC24
BC25
BC26
TSJF01
JFWR09
JFWR15
JFWR29
JFWR31
JFWR35
JF0320S
SSO # 31A
SSO # 113
SSO # 120
Stanton Woods P.S.
Stevenson P.S.
Templegate P.S.
Buchanan Road P.S.
York Rd.
Charles St.
Reisterstown Rd
83
695
Pumping Station
Sanitary Sewer Overflow (SSO)
Manholes Inspected and Reviewed
Manholes Inspected
Sewer Manholes
Sewers Inspected and Reviewed
Sewers Inspected
Sewer Mains
Meter Basins
Jones Falls Sewer Service Areas
Proposed Rehabilitation of Meter Basin
RK&K ENGINEERS
December 2012
0 1,000 2,000 3,000 4,000
Feet
Jones Falls Collection System Evaluation & Sewershed Plan
BALTIMORE COUNTY MARYLAND
Map 4-1
Sewer and Manhole Inspections Completed

Table 4-2.2 – Summary of Manhole Defects by Manhole provided in **Appendix E** of this report identifies all manholes contained in the Jones Falls Sewershed by meter basin and SSA, and identifies the specific defects that were contained in each manhole reviewed and if corrective action is required.

4.3 Closed Circuit Television (CCTV) Inspections (CD Ref. P10.C.ii)

CCTV inspection is a process of internally inspecting sewers in the collection system to assess the condition of the piping and identify conditions that require action. Baltimore County's Bureau of Utilities conducted CCTV inspections of all sewers that were required to be inspected under Paragraph 8.ci or Paragraph 8.cii of the CD. In addition, sewers in meter basins that were located within SSA's that were identified by analysis as exhibiting excessive I/I and/or model predicted SSOs were also inspected and included in the review.

The CCTV inspection data reviewed served multiple purposes, which included characterizing the general condition and maintenance requirements of the sewers, identifying system connectivity, identifying potential sources of I/I to the collection system, and allowing development of subsequent repair and/or maintenance recommendations.

The collection system inspections were completed in accordance with the National Association of Sewer Service Companies (NASSCO) utilizing the Pipeline Assessment Certification Program (PACP) coding requirements. Where field conditions precluded the use of standard CCTV inspection equipment, specialized equipment or heavy cleaning was utilized to complete the work. Approximately 46,977 LF of sewers inspected required heavy cleaning to remove roots, grease and/or other heavy debris that initially precluded the inspection of these sewers.

CCTV inspections were completed in thirty-one (31) of the thirty-two (32) flow meter basins within the Jones Falls Sewershed. A total of 251,000 linear feet (LF) of CCTV inspection was reviewed by NASSCO PACP certified technicians using inspection data contained on the County's Web Portal. The CCTV inspection data archived on the portal was cataloged by SSA and manhole to manhole sewer segment number for ease of access. The portal also provided the status of the pipe segments (i.e. active or inactive), the utility owner (i.e. public or private), type of sewer (i.e. collector, force main, etc.), pipe size, length, date of sewer installation, CD Paragraph reference number and any pertinent repair or maintenance history.

Map 4-1 – Sewer and Manhole Inspections Completed - shows the collection system sanitary sewers that were inspected and reviewed in accordance with the priority identification scheme described in Section 6 of this report.

Table 4-3.1 – **Summary of CCTV Inspections** contained in **Appendix C** of this report provides an overview of the CCTV inspection reviews performed in each SSA of the Jones Falls Sewershed. The Table identifies the SSA and flow meter basin where the sewer is located, the sewer segments CD Paragraph reference number, identification of sewers that are located in areas identified by evaluation as high I/I SSA's, the total length of the sewer as

contained in the County's GIS, and the length of sewer that was actually inspected and reviewed.

Table 4-3.2 – Sewer Defect Summary Table categorizes the defects recorded during the CCTV inspections and identified during subsequent review of the data. **Table 4-3.3 – Summary of Sewer Defect PACP Codes** contained in **Appendix D** of this report details each specific defect type, whether the defect is classified as a constructional, structural or operation and maintenance related, PACP inspection codes recorded, a brief description of the defect, the number of defects that occurred and the number of affected sewer segments.

Table 4-3.4 – Summary of Sewer Defects by Sewer Segment contained in **Appendix E** of this report identifies all sewer segments contained in the Jones Falls Sewershed by meter basin and SSA, and details each specific defect that was contained in the sewer segment reviewed and if corrective action is required.

Table 4-3.2
Jones Falls SRRR: Collection System Investigation
SEWER DEFECT SUMMARY TABLE

Defect Type	Quantity of Defects	Percent
Break-in Tap/Connections	699	5.2%
Broken Pipe	398	3.0%
Collapsed Pipe	3	0.0%
Cracks in Pipe	1,109	8.3%
Defective Joints	2,645	19.8%
Deformed Pipe	17	0.1%
Deposits	103	0.8%
Pipe Fractures	1,424	10.7%
Grease	2,064	15.5%
Hole in Pipe	167	1.3%
Infiltration	503	3.8%
Missing Wall	24	0.2%
Roots	612	4.6%
Surface Deterioration	3,559	26.7%

Defects were considered to be structural deficiencies that existed in the collection system manholes and sewers, which either, had the potential to contribute I/I to the collection system, cause an SSO, or could jeopardize the continuity or conveyance of flow through the collection system.

4.4 Smoke Testing (CD Ref. P10.C.ii)

Smoke tests were completed as part of the SSES work in forty-eight (48) of the SSA's in the Jones Falls Sewershed and the results from these tests recorded in accordance

with the County's standard smoke testing protocols. 132,008 LF of the smoke testing was completed within the sewershed and the results contained on the County's web portal for review. The results of these reviews are outlined in **Table 4-4.1 – Smoke Testing Critical Defect Summary**. The locations selected for smoke testing were based on the I/I evaluation, which is described in Section 3 of the SRRR Plan.

Smoke testing observations that were identified at manhole covers and clean-out locations were generally considered insignificant contributors of I/I to the collection system. These sources are not indicative of significant sources of inflow to the collection system that smoke testing seeks to identify. For example, if smoke is emitted from a house connection lateral's clean-out that has a missing or damaged cover, it is typically not indicative of a significant inflow source to the collection system, unless the clean-out is located in a low lying area and subject to significant ponding or run-off during a wet-weather event. Smoke that originates through pick holes in a manhole cover were also not considered significant contributors of I/I to the collections system.

Smoke testing observations that were identified at illicit down spout and drain connections; storm drain inlets or from mainline sewer defects were considered significant and likely sources of I/I to the collection system. Defects identified through smoke testing were either forwarded to the County's plumbing inspection division for correction or recommended for additional confirmatory testing utilizing dyed-water.

Table 4-4.1 - **Smoke Testing Critical Defect Summary Table** summarizes the defects that were identified during the review of the smoke testing data.

Table 4-4.1
Jones Falls SRRR: Collection System Investigation
SMOKE TESTING CRITICAL DEFECT SUMMARY TABLE

Source Type	Quantity of Defects	Percent
Down Spout	3	8%
Basement Drain	11	29%
Water Valve Vault	1	2%
Storm Drain Inlet	14	37%
Storm Drain Manhole	4	12%
Foundation Drain	2	5%
Mainline Sewer	2	5%
Verizon Box Smoking	1	2%

4.5 Dyed-Water Testing

Potential defects that were identified during the smoke testing or other field inspections were put on a list for confirmatory dyed-water testing. The County is currently completing dyed-water testing at sixty-six (66) separate locations throughout the Jones Falls Sewershed. These

tests will be used to better isolate and identify collection system defects and sources of I/I. All dyed-water tests are being completed in accordance with the County's standard testing protocols and the results recorded and forwarded to the County's Bureau of Utilities for corrective action.

Table 4-5.1 – Dyed-Water Testing Summary Table summarizes the defects that were identified during the review of the smoke testing data and scheduled for dyed-water testing. **Appendix F** of this report contains the complete listing of locations scheduled for dyed-water testing.

Table 4-5.1
Jones Falls SRRR: Collection System Investigation
DYED-WATER TESTING SUMMARY TABLE

Source Type	Quantity	Percent
Cleanout Cap Broken	1	1%
Cleanout Cap Missing	6	10%
House Downspout	2	3%
Foundation Drain	2	3%
House Mainline Cleanout	1	1%
House Cleanout	4	6%
MH – Surrounding Area	21	32%
MH - Cover	21	32%
Mainline Sewer	5	7%
Storm Drain Inlet	3	4%
Unknown	1	1%

4.6 Night-Time Flow Isolation Testing

Night-time Flow isolation testing was performed by Baltimore County in eighteen (18) SSA's within the Jones Falls Sewershed. Night-time flow isolation was used to identify and measure possible Base Infiltration (BI) that exists in the sewer segments tested and identify areas where additional SSES inspection work should be completed. The objective of the testing is to isolate specific sewer segments and measure flow that occurs during early morning hours, typically between midnight and 5:00 a.m. Flow in the isolated sewer segment should be minimal at that time and observed flow is typically found to be infiltration in the sewer. **Table 4-6.1 – Night-Time Flow Isolation Testing Summary Table** summarizes the meter basins that exhibited elevated levels of BI and were recommended for additional SSES investigations. **Appendix G** of this report contains a complete listing of the locations where night-time flow isolation tests were performed and the results of the testing.

Table 4-6.1
Jones Falls SRRR: Collection System Investigation
NIGHT-TIME FLOW ISOLATION TESTING SUMMARY TABLE

Meter Basin	Pipe Segments Tested	No. of Segments w/ gpd/im > 10,000	No. of Segments w/ gpd/im > 10,000
BC02	22	0	0.0%
BC03	3	0	0.0%
BC04	24	4	16.7%
BC05	18	2	11.1%
BC09	54	9	16.7%
Total:	121	15	12.4%

4.7 Force Main Condition Assessment

The Jones Falls Sewershed contains four (4) force mains. These include the 6-inch diameter ductile iron pipe (DIP) force main from the Buchanan Road Pumping Station, which was constructed in 1980 and is 1,076 linear feet (LF) in length; the 6-inch diameter Cast Iron (CI) force main from the Stanton Woods Pumping Station, which was constructed in 1974 and is 2,100 LF in length; the 6-inch diameter CI force main from the Templegate Pumping Station, which was constructed in 1975 and is 1,270 LF in length; and the 6-inch diameter CI force main from the Stevenson Pumping Station, which was constructed in 1970 and is 1,788 LF in length.

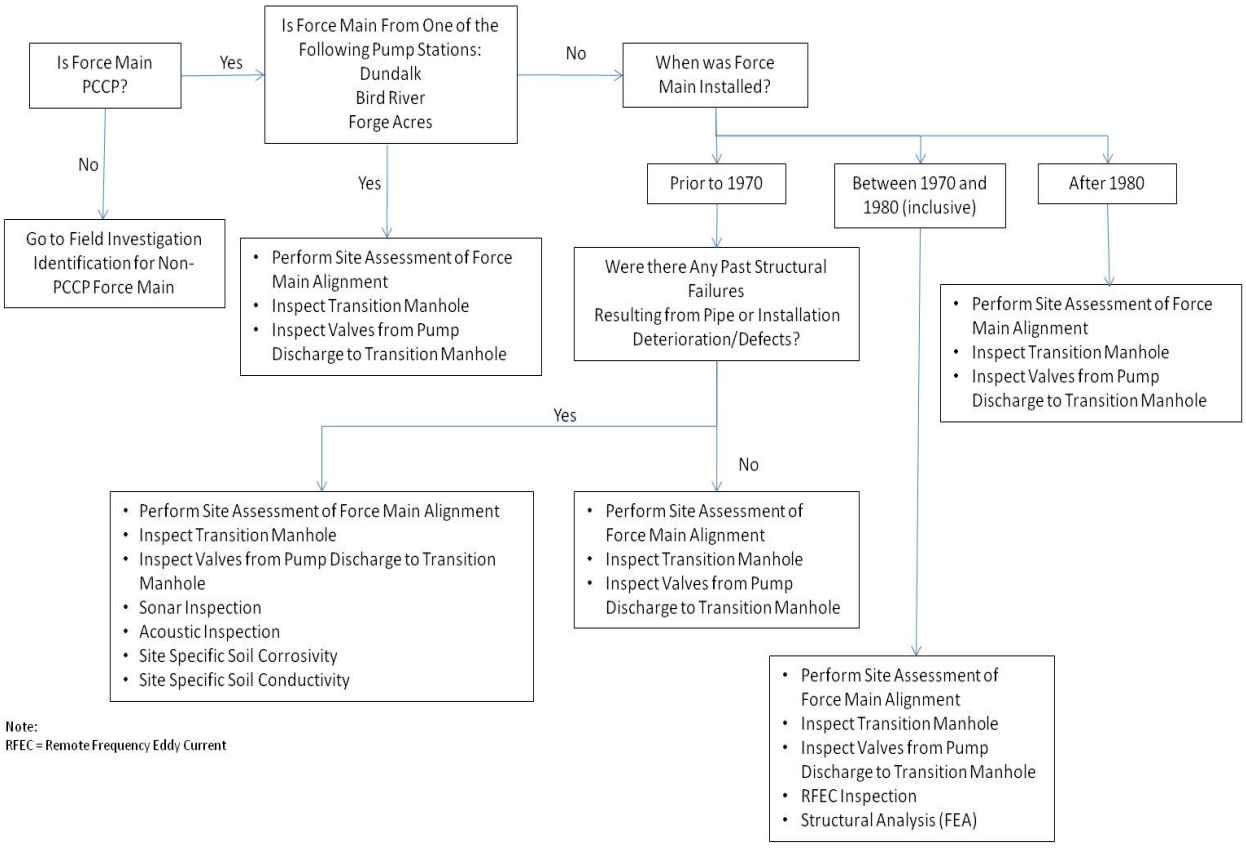
In accordance with Paragraph 8D.ii.of the CD, the County developed a standard process to determine the appropriate inspection/evaluation methodology to be used to adequately assess the condition of each force main in their collection system. The process was developed for two main pipe material categories: pre-stressed concrete cylinder pipe (PCCP) and non pre-stressed concrete cylinder pipe. A separate process was developed specifically for PCCP force mains due to the possibility of sudden and catastrophic structural failure that is typically associated with this type of pipe material. The review process is based upon the following risk assessment criteria:

1. Pipe Material
2. Age
3. Break History
4. Consequence of Failure
5. Current Available Technology

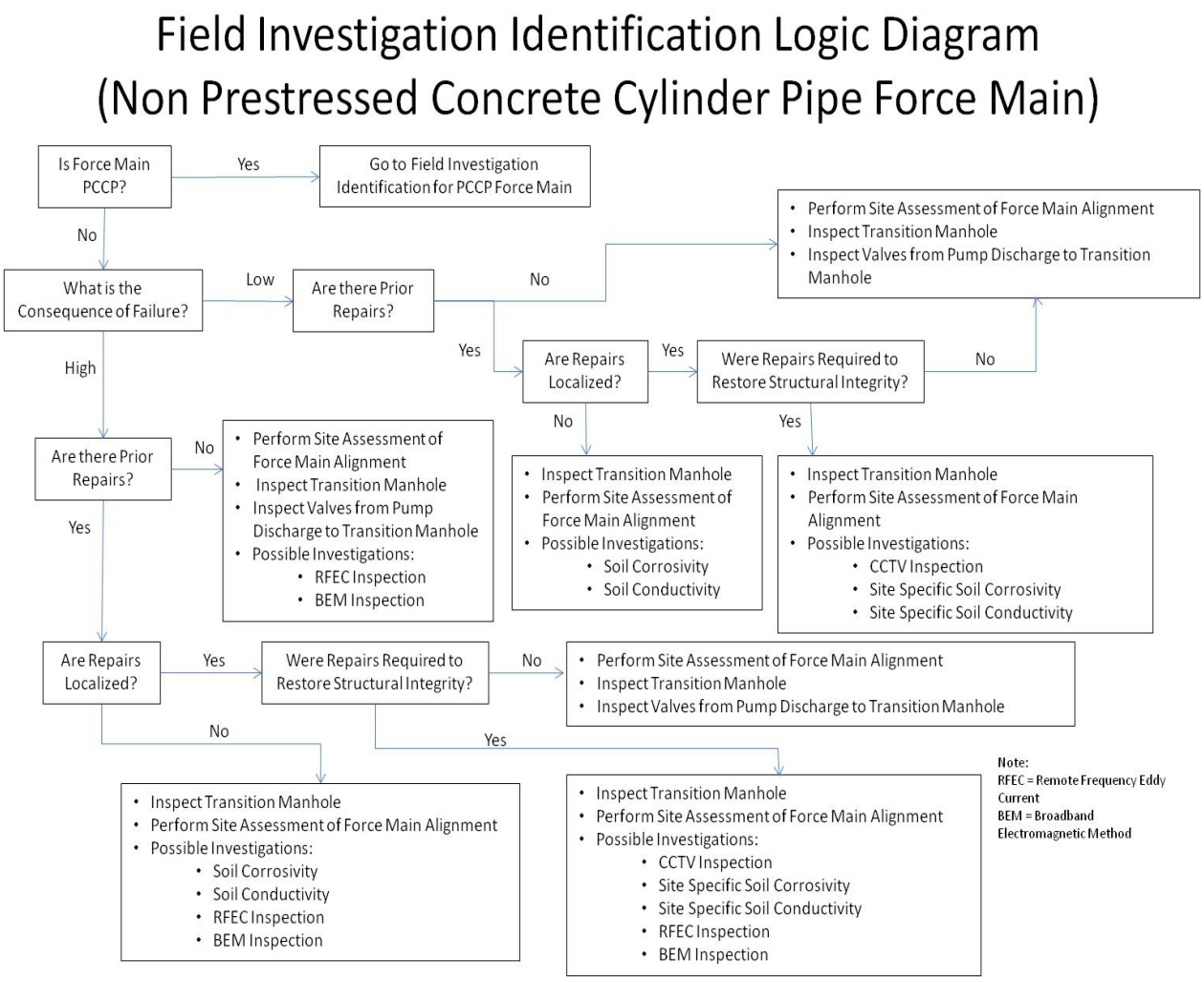
Equipment availability, supplemental information, existing site conditions and/or pumping station operating conditions may require an inspection method that differs somewhat from those identified by the County's standard process.

The two inspection identification/evaluation methodologies are summarized in the logic diagrams provided on the following pages. Since the force mains in the Jones Falls Sewershed are 6-inches in diameter and smaller and constructed of either CI or DIP, the process used for review was based on the non pre-stressed concrete cylinder pipe criteria.

Field Investigation Identification Logic Diagram (Prestressed Concrete Cylinder Pipe Force Main)



Note:
RFEC = Remote Frequency Eddy Current



Consequence of Failure

The consequence of force main failure is determined based on the following criteria:

1. Accessibility (i.e. surface features such as a stream or highway that would delay the repair of a broken force main)
2. Pipe Diameter (SSO volume from a broken force main is a function of pipe diameter)
3. Response time (i.e. the maximum time required to fill the pumping station wet well and surcharge the collection system without causing a sanitary sewer overflow or basement backup)

Each criterion is assigned a weighted value and a Relative Importance Factor as summarized in **Table 4-7.1 – Force Main Consequence of Failure Index Rating** to calculate the Consequence of Failure Index Rating.

Table 4-7.1
Force Main Consequence of Failure Index Rating

Criteria	Weighting	Normalized Weighting	Relative Importance Factor
Accessibility			
Accessible	0	0.00	2
Inaccessible	1	1.00	
Diameter			
≤ 6"	1	0.2	
7" to 11"	2	0.4	3
12" to 16"	3	0.6	
17" to 24"	4	0.8	
≥ 25"	5	1.00	
Response Time			
Response Time > Inspection Time	0	0.00	1
Retention Time < Inspection Time	1	1.00	

Force Main Inspections

Condition assessment investigations were performed for the Buchanan Road, Stanton Woods, Templegate and Stevenson Force Mains and associated transition manholes. These inspections consisted of the following activities:

1. Site assessment of the force main's alignment
2. Inspection of existing appurtenances
3. Inspection of the force main's transition manhole

Additionally the following information was reviewed:

1. Force main break history
2. Pumping station operating conditions (current and future)
3. Record drawings

The results of the force main investigations in the Jones Falls Sewershed can be found in the individual Force Main Condition Assessment Reports included in **Appendix H** of this report. A summary of these reports are provided below:

Buchanan Road Force Main: A survey of the 6-inch diameter DIP force main associated with this pumping station was conducted on April 11, 2011. Review of the information and investigation findings shows that this force main is in good structural and operational condition and there were no improvements recommended for continued use of the force main.

The force main's transition manhole inspection was performed on April 29, 2011. Based on the review of the inspection findings, the force main's transition manhole is in good structural condition.

Stanton Woods Force Main: A survey of the 6-inch diameter CI force main associated with this pumping station was conducted on April 11, 2011. Review of information and investigation findings shows that this force main is in good structural and operational condition and there were no improvements recommended for continued use of this force main.

The force main's transition manhole inspection was performed on April 29, 2011. Based on the review of the inspection findings, the force main's transition manhole is in good structural condition.

Templegate Force Main: A survey of the 6-inch diameter CI force main associated with this pumping station was conducted on April 11, 2011. Review of information and the investigation findings shows that this force main is in good structural and operational condition and there were no improvements recommended for continued use of this force main.

The force main's transition manhole inspection was performed on April 29, 2011. Based on a review of available information and investigation findings, the force main's transition manhole is in good structural and operational condition.

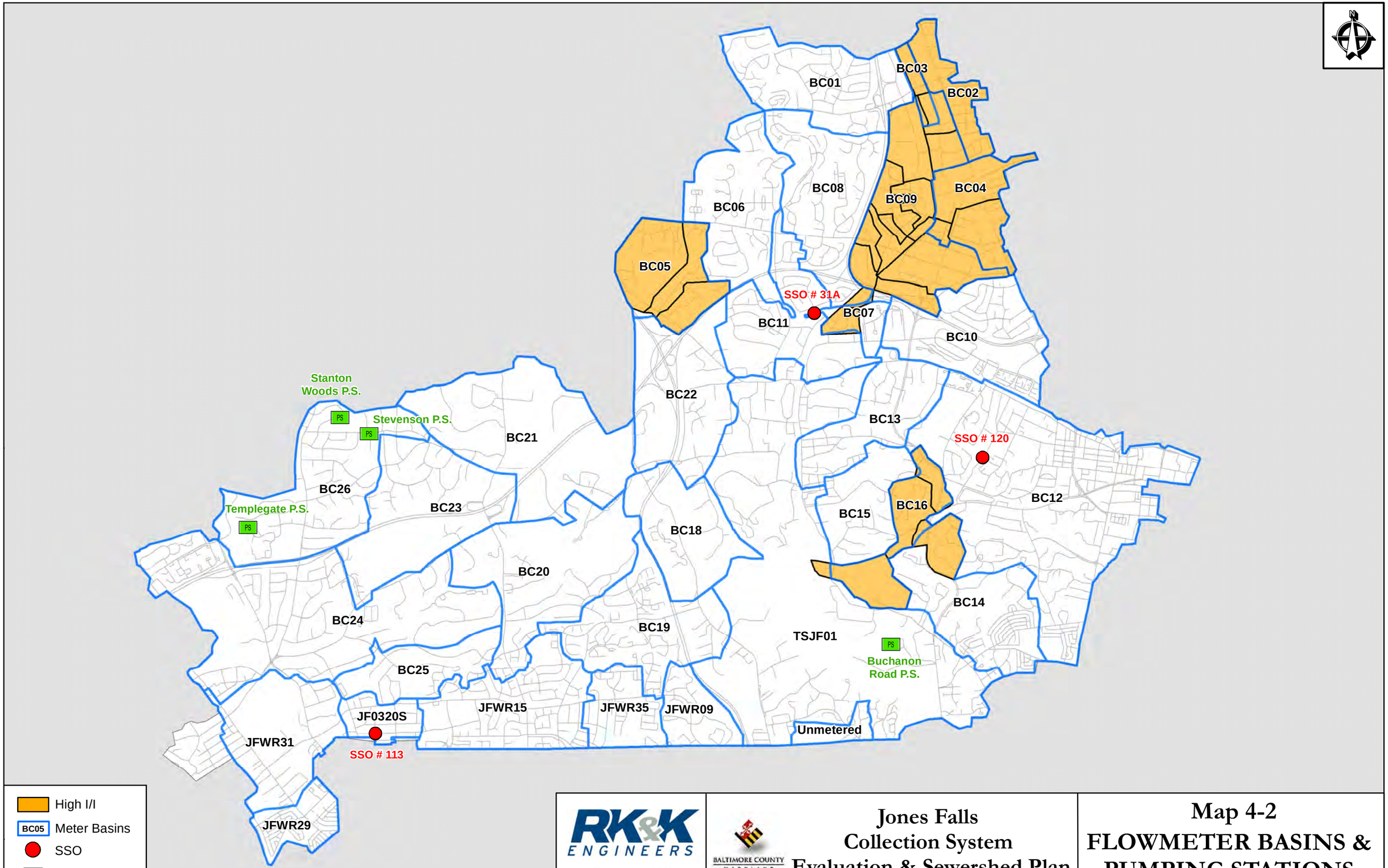
Stevenson Force Main: A survey of the 6-inch diameter DIP force main associated with this pumping station was conducted on April 11, 2011. Review of information and the investigation findings shows that this force main is in good structural and operational condition and there were no improvements recommended for the continued use of the force main.

The force main's transition manhole inspection was performed on April 29, 2011. Based on a review of available information and investigation findings, the force main's transition manhole is in good structural and operational condition.

4.8 Pumping Station Review and Assessment

The Jones Falls Sewershed collection pumping and transmission system contains four (4) pumping stations. These include the Buchanan Road Pumping Station, which is located at the terminus of Buchanan Road and designed to pump flows of 200 gallons per minute (GPM) under existing and ultimate capacity conditions; the Stanton Woods Pumping Station, which is located at the terminus of Topping Road and designed to pump 252 GPM under existing and ultimate capacity conditions; the Templegate Pumping Station, which is located at the terminus of E Court, between Breton Way and Woodvalley Drive and designed to pump 300 GPM under ultimate capacity conditions; and the Stevenson Pumping Station, which is located at the intersection of Keyser Road and Windsong Court and designed to pump 180 GPM under existing and ultimate capacity conditions.

Map 4-2 – Flow Meter Basins & Pumping Stations shows the location of the pumping stations within the Jones Falls Sewershed.



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December 2012

BALTIMORE COUNTY MARYLAND

Jones Falls Collection System Evaluation & Sewershed Plan

Map 4-2
FLOWMETER BASINS & PUMPING STATIONS

Baltimore County is currently undertaking, or has previously completed all of the measures set forth in Paragraph 13 of the CD. Baltimore County is in the process of ensuring that adequate backup power systems are installed and maintained for each of the pumping stations in accordance with Paragraph 13.C, installing a Supervisory Control and Data Acquisition (SCADA) system for remote monitoring of each of the pumping stations in accordance with Paragraph 13.D, and conducting inspections of the pumping stations in accordance with Paragraph 13.E of the CD.

Baltimore County has also completed an Engineering Evaluation and Condition Assessment (EE/CA) of all four (4) of the pumping stations in the Jones Falls Sewershed as required by Paragraph 13.F of the CD. The reports have been submitted under separate cover for review and approval in accordance with Paragraph 13.F.iii of the CD. The Stevenson Pumping Station was designated as a Tier 2 station in Appendix D of the CD. The County completely replaced this pumping station with a new station, which included backup power and a SCADA system. Construction was completed in 2011. The Buchanan Road, Stanton Woods and the Templegate Pumping Stations were designated as Tier 3 pumping stations. Improvements to these pumping stations to correct all Priority 1 and 2 ranked deficiencies, as defined in Paragraph 13.F.iv of the CD, and outlined in the EE/CA reports are intended to be completed in accordance with specific schedules as approved

Baltimore County has also completed a pumping station equipment inventory, transferred its pump maintenance record keeping system into an electronic information management system, and implemented a pumping station preventative maintenance program in accordance with Paragraphs 13.G-I of the CD. In addition, the County has ensured that an updated operation and maintenance manual is being maintained, at the Stevenson Pumping Station in accordance with Paragraph 13.J. of the CD.

END OF SECTION

Section 5

Collection, Pumping & Transmission System Modeling

5.0 Collection, Pumping and Transmission System Modeling (CD Ref. P.10.C.viii/ix)

5.1 Background

Paragraph 14A of the Consent Decree (CD) requires Baltimore County to develop and maintain a computerized collection, pumping and transmission system model for each sewershed to evaluate the impact of recommended corrective actions including I/I rehabilitation projects, proposed system modifications, upgrades and expansions to the transmission system's capacity and assess the capacity of and performance of the collection system during dry- and wet-weather. Furthermore, Paragraph 10 of the CD requires that the SRRR Plan present the results of the Long-Term Capacity/Peak Flow Management Evaluation (LTC/PFME) using the collection, pumping and transmission system model.

Paragraphs 10.C.viii and ix of the CD require the following be included in the SRRR Plan:

- Determine for each Sewershed the range of storm events as specified in Paragraph 9.C.ii(b) for which the collection system in its existing condition can convey peak flows without the occurrence of SSOs.
- Project for each Sewershed, the range of storm events as specified in Paragraph 9.C.ii(b) for which the collection system will be able to convey peak flows without the occurrence of SSOs. Such projection shall assume completion of the construction projects required by Paragraph 7 of the CD, and completion of the proposed rehabilitative or other corrective action projects recommended by the SRRR Plan required by Paragraph 10 of the CD.
- Identify all modeled collection system components and pumping stations that cause or contribute to flow restrictions or that have the potential to cause or contribute to overflows.

This section summarizes the development of the collection, pumping and transmission system model for the Jones Falls Sewershed, the calibration of this model, the hydraulic capacity analysis and the LTC/PFME.

5.2 Hydraulic Model Development

The collection, pumping and transmission system model of the Jones Falls Sewershed includes:

- All gravity sewers 10-inches in diameter and larger.
- All 8-inch diameter sewers included as necessary for system connectivity or to improve the accuracy of the model.
- All gravity sewers that have caused or contributed, or that are likely to cause or contribute, to capacity related SSOs.
- All manholes, junctions and sewer structures located along the modeled sewers.
- All gravity sewers that convey wastewater from one pumping station service area to another sewer service area.

- Two (2) weir structures.
- Two (2) non-pumping station SSOs.
- Four (4) existing pumping stations.
- The force mains that convey wastewater from the four (4) existing pumping stations.
- The gravity sewers that convey wastewater through the Texas by-pass valve into the Jones Falls Sewershed.

The developed model is capable of predicting the following:

- Rate of wastewater and temporal variation of rate of flow in the force mains and the major gravity sewers.
- Hydraulic pressure (psig) or hydraulic grade line (HGL) of wastewater at any point in force mains and the major gravity sewers.
- Flow capacity of each of the pumping stations in the collection system.
- Flow capacity of each pumping station with its back-up pump out-of-service.
- Peak flows to and/or from each pumping station during storm events of a magnitude of up to 20 years.
- Likelihood and location of SSOs within those portions of each sewershed modeled under high flow conditions, including pumping station service areas where the pumping station's back-up pump is out-of-service, and considering available wet-well capacity, existing functional off-line storage capacity, and normal in-line storage capacity.
- If adequate capacity exists for future growth.
- Performance of planned system improvements.

The hydraulic model also includes the diurnal flow pattern and base infiltration (BI) for each flow meter basin. There are 1,410 separate nodes and links and approximately 328,000 LF of sewer pipe contained in the calibrated model. The two (2) weir structures that were incorporated into the model are located along the Towson Run Interceptor at Manhole 33296 and at Manhole 37986 in the main trunk sewer within Meter Basin BC03. Pipe sediment and debris has also been accounted for in the model based on review of sonar and laser profiling data provided by Baltimore County. The County's wastewater geodatabase was used as the initial source of information for populating the pipes and node networks of the hydraulic model. Data was also used from field survey efforts, along with record and as-built documents to make editing changes to the hydraulic model. The invert and rim elevations of manholes, and location coordinates from the field survey data was used to supplement the GIS data. Data obtained from the record documents included: incoming and outgoing pipe sizes, shapes and types; invert elevations; manhole locations; and pumping station data, which included the number of pumps and their respective capacities. This data was utilized if field survey data was not available for a particular manhole. Where necessary, elevations from record drawings were adjusted to NAVD 88 datum. Additionally, field investigations were also conducted to confirm pump curve data and performance.

The model is also:

- Configured based on representative, accurate and verified system attribute data (i.e., pipe sizes and invert elevations, manhole rim elevations, etc.).
- Calibrated using spatially and temporally representative rainfall data and flow data, either existing or obtained under this CD pursuant to Paragraph 9.
- Verified using spatially and temporally representative rainfall data and flow data independent of the data used to calibrate the model.

Refer to **Appendix I** in this report for the Model Development and Calibration Report for the Jones Falls Sewershed, for a complete description of the development and calibration of the model.

5.3 Model Calibration (CD Ref P14.B.ii)

The model calibration consisted of two steps; dry-weather calibration and wet-weather calibration.

5.3.1 Dry-Weather Calibration

The dry-weather calibration process consisted of adjusting sub-catchment parameters until the model predictions closely match the results of the flow monitoring. Dry-weather flow consists of base sanitary flow (BSF) and base infiltration (BI).

The criteria established for the dry-weather calibration are:

- The modeled peak flow rate should be within -10 to +20 percent of the observed peak flow rate.
- The modeled volume of flow should be within -10 to +20 percent of the observed flow volume.
- Simulated diurnal pattern and hydrograph shape should reasonably match the observed.
- The timing of the peaks should be within one hour.

5.3.2 Wet-Weather Calibration

Following completion of the dry-weather calibration, wet-weather calibration was performed. The wet-weather flow component in sanitary sewers is referred to as rainfall-dependent infiltration and inflow (RDII). Simulation of wet-weather flow uses the SWMM RUNOFF routine in the InfoWorks CS program as a synthetic storm hydrograph generator. Several sub-catchment parameters, including the runoff coefficient, basin slope, runoff routing value and basin width, were adjusted to yield observed-simulated comparisons within calibration parameters noted below.

The following seven (7) storms were selected for calibrating the model for the County Meters (the County and Boundary Meters are defined in Section 1 of the SRRR Plan):

- February 1, 2008
- March 4, 2008
- March 7, 2008
- March 19, 2008
- April 3, 2008
- April 28, 2008
- May 8, 2008

For the model including the Boundary Meters, the following six (6) storms were used for calibrating the model:

- June 24, 2006
- July 5, 2006
- October 5, 2006
- October 17, 2006
- October 19, 2006
- October 27, 2006

These storms, selected for calibration for both the County and Boundary Meters provide a range of durations, intensities and volumes.

The following guidelines were used for the wet-weather calibration:

- The modeled peak flow rate should be within -10 percent and +25 percent of the observed peak flow rate.
- The modeled volume of flow should be within -10 percent and +20 percent of the observed.
- The shape and timing of the hydrographs should be similar.
- The modeled depth of flow at surcharged and non-surcharged pipe segments is similar to the observed depths of flow.

Storms that occurred during the winter season show a greater response to rainfall, resulting in greater RDII than storms that occur during the summer, and would provide more conservative model predictions. The model, calibrated using winter storms, is accurate for winter storms; however, it will likely over-predict for summer storms. Since a design storm could occur at any time during the year, the winter storms were deemed sufficient and used to calibrate the model. Summer storms typically are of shorter duration and higher intensity than winter storm events. In addition, the ground is typically dryer and the water table is lower in the summer than the winter season. This leads to less runoff per rain volume compared to winter storms. Winter storms are typically longer in duration, but lower in intensity than summer storm events. When the ground is saturated and the water table higher, more runoff occurs per the same amount of rain for winter storms compared to the summer storms.

The calibrated model of the Jones Falls Sewershed is capable of reproducing the dry-weather and wet-weather flow at each meter. A detailed description of the model development and calibration is provided in the Model Development and Calibration Report for the Jones Falls sewershed, which is included in **Appendix I** of this report.

Table 5-3.1 provides a summary of the dry- and wet-weather calibration at each meter. This table provides a comparison between observed and simulated values for dry- and wet-weather conditions. It also provides a description of the classification of the vulnerability and lists reasons for instances where the model results do not fall within the desired range for calibration.

TABLE 5-3.1 MODEL CALIBRATION SUMMARY TABLE

Meter Basin ID	Meter Manhole No.	Identified as Exhibiting High I/I (yes/no)[1]	Contributing Meter Basin(s)		Dry-Weather Calibration Percent Difference between Observed vs. Calibrated		Summer Wet-Weather Calibration Percent of Storms Outside Acceptable Range[2]		Winter Wet-Weather Calibration Percent of Storms Outside Acceptable Range[2]		Vulnerability and Reason for Over/Under Prediction in Basin [3]	
			Meter Basin ID	Identified as Exhibiting High I/I (yes/no)[1]	Total Volume	Peak Flow	RDII Volume	Peak Flow	Peak Flow	RDII Volume		
BC01	37990	No	None	N/A	-1%	-16%	22% (2 under-predict by as much as -27%, 0 over-predict)	44% (3 under-predict, 1 over-predicts, from -37% low to +38% high)	43% (3 under-predict from -12% to -20%)	0%	Low - No SSOs for storms up to and including a 20-year storm	For the 3 storms where the model under-predicts the peak, the observed data has a higher response to the event than the other storms
BC02	7253	No	None	N/A	-1%	-22%	33% (3 under-predict as much -65%, 0 over predict)	89% (5 over-predict, 3 under-predict from -73% low to +69% high)	14% (1 over-predicts 29%)	43% (3 over-predict from 21% to 52%)	Significant - Model predicts SSOs beginning with the 2-yr storm	For the 2 storms where the model over-predicts the volume and the one storm where the model over-predicts the peak, the observed data does not have much of a response to the event as the other storms
BC03	33463	Yes	BC01, BC02	No	14%	-18%	57% (2 under-predict, 2 over-predict, from -28% low to +52% high)	43% (1 under-predicts, 2 over-predict, from -30% low to +41% high)	29% (2 over-predict from 33% to 56%)	57% (4 under-predict from -13% to -33%)	Significant - Model predicts SSOs beginning with the 2-yr storm	Monitored data may be questionable due to over and under-predictions in the model. This irregularity is potentially impacted by the Texas Bypass.
BC04	6977	No	None	N/A	-3%	-15%	45% (2 under-predict, 2 over-predict, from -29% to +71%)	78% (5 under-predict, 2 over-predict from -49% low to +80% high)	43% (2 under-predict from -14% to -11% & 1 over-predict 29%)	29% (1 under-predicts -15% & 1 over-predicts 27%)	Low - No SSOs for storms up to and including a 20-year storm	For the 2 storms where the model under-predicts the peak & the 1 storm where the model under-predicts the volume, the observed data has a higher response to the event than the other storms. For the 1 event where the volume over-predicts and the 1 event where the peak over-predicts the monitored data does not have much of response to the event
BC05	43791	No	None	N/A	-4%	-19%	25% (2 under-predicted by as much -17% low, 0 over-predict)	50% (four under-predict by as much as - 53%)	43% (3 under-predict from -13% to -35%)	0%	Low - No SSOs for storms up to and including a 20-year storm	For the 3 storm events were the model peak under-predicts, the observed data has a higher response to the event
BC06	38526	No	None	N/A	0%	-12%	38% (2 under-predict, 1 over-predicts, from -15% low to +23% high)	62% (2 under-predict, 3 over-predict, from -23% low to + 54% high)	29% (2 under-predict from -13% to -15%)	0%	Low - No SSOs for storms up to and including a 20-year storm	For the 2 storm events were the model peak under-predicts, the observed data has a slightly higher response to the event
BC07	18586	No	BC01 thru BC04, BC08 thru BC10	BC03 & BC09 Only	8%	-7%	75% (5 over predict, 1 under-predicts from -37% low to +111% high)	62% (5 over predict, 0 under predict, with 4 >= +77%)	33% (1 over-predicts 27%)	0%	Significant - Model predicts SSOs beginning with the 2-yr storm	There appears to be some irregularity in this meter basin. For most of the storm used for calibration, the model over-predicts. Irregularity can be attributed to the Texas bypass.
BC08	19873	No	None	N/A	1%	-6%	44% (2 under-predict, 2 over-predict from -39% low to +48% high)	44% (3 under-predict, 1 over-predicts, from -29% to +74%)	57% (1 under-predict -20% & 3 over-predict from 42% to 54%)	71% (4 over-predict from 32% to 36% and 1 under-predicts -22%)	Low - No SSOs for storms up to and including a 20-year storm	For the storms where the model under-predicts the peak and/or volume, the observed data has a slightly higher response to the events. For the 2 storms where the model over-predicts the peak and/or volume, the observed data doesn't have much of a response to the event to the rainfall event.
BC09	NS1079	Yes	BC01 thru BC04	BC03 Only	-14%	-14%	44% (1 under-predicts, 3 over-predict, from -45% low to +106% high)	89% (over predicts >100% for 4 of 9 storms)	43% (3 over-predict from 25% to 46%)	43% (3 under-predict from -12% to -24%)	Low - No SSOs for storms up to and including a 20-year storm	There appears to be some irregularity in this meter basin. For most of the storm used for calibration, the model will under-predict the volume but over-predict the peak and vice versa. Irregularity can be attributed to the Texas bypass.
BC10	42231	No	None	N/A	-3%	-6%	11% (1 under-predicts 12%, 0 over-predict)	22% (2 under-predict as much as 34%, 0 over-predict)	14% (1 under-predicts -17%)	14% (1 under-predicts -25%)	Low - No SSOs for storms up to and including a 20-year storm	For the 1 storm where the model under-predicts the peak and the volume, the observed data shows a higher response to the event
BC11	6944	No	BC01 thru BC04, BC06 thru BC11	BC03 & BC09 Only	-12%	-6%	75% (1 under-predicts, 5 over-predict from -11% low to +108% high)	75% (over-predicts > 76% on 4 of 9 storms)	33% (2 over-predict from 41% to 46%)	17% (1 over-predicts 23%)	Significant - Model predicts SSOs beginning with the 2-yr storm	For the 2 storms where the model over-predicts the peak, the observed data does not have much of a response to the event as the other storms.
BC12	22222	No	None	N/A	-4%	-13%	11% (1 under-predicts by 16%, 0 over-predict)	22% (1 under-predicts by -21%, 1 over-predicts by +39%)	50% (3 under-predict from -16% to -20%)	17% (1 under-predicts 14%)	Moderate - Model predicts SSOs beginning with the 20-yr storm	For the 3 storms where the model under-predicts the peak and 1 storm where the model under-predicts the peak and volume, the observed data has a higher response to the event than the other storms

TABLE 5-3.1 MODEL CALIBRATION SUMMARY TABLE

Meter Basin ID	Meter Manhole No.	Identified as Exhibiting High I/I (yes/no)[1]	Contributing Meter Basin(s)		Dry Weather Calibration Percent Difference between Observed vs. Calibrated		Summer Wet Weather Calibration Percent of Storms Outside Acceptable Range[2]		Winter Wet Weather Calibration Percent of Storms Outside Acceptable Range[2]		Vulnerability and Reason for Over/Under Prediction in Basin	
			Meter Basin ID	Identified as Exhibiting High I/I (yes/no)[1]	Total Volume	Peak Flow	RDII Volume	Peak Flow	Peak Flow	RDII Volume		
BC13	18456	No	None	N/A	-26%	-40%	33% (2 under-predict, 1 over-predicts, from -35% low to +33% high)	44% (1 under-predicts by -18%, 3 over-predict with 2 >75% high)	57% (4 under-predict from -20% to -29%)	43% (3 under-predict from -15% to -24%)	Low - No SSOs for storms up to and including a 20-year storm	For the 4 storms where the model under-predicts the peak and volume and the 1 storm where the model under-predicts the peak, the observed data has a higher response to the event than the other storms
BC14	34177	Yes	None	N/A	-2%	-7%	33% (0 under-predict, 3 over-predict from +28% to +33%)	67% (3 under-predict, 3 over-predict, from -17% low to +45% high)	29% (2 under-predict from -11% to -12%)	0%	Low - No SSOs for storms up to and including a 20-year storm	For the 2 storms where the model under-predicts the peak, the observed data has a higher response to the event than the other storms
BC15	22456	No	None	N/A	-1%	-20%	43% (1 under-predicts, 2 over-predict, from -15% low to +29% high)	57% (4 under-predict, from -22% to -62%, 0 over-predict)	67% (4 under-predict from -13% to -29%)	16% (1 over-predicts 22%)	Low - No SSOs for storms up to and including a 20-year storm	Irregular data causes meter basin to under-predict peak and to be close to over-predict volume
BC16	61947	Yes	BC12, BC14	BC14 Only	-3%	-16%	11% (0 under-predict, 1 over-predicts by +27%)	44% (1 under-predicts, 3 over-predict from -22% low to +54% high)	0%	0%	Moderate - Model predicts SSOs beginning with the 10-yr storm	All events within calibration parameters
BC18	20755	Yes	BC05, BC19 thru BC26	No	-1%	-3%	22% (2 under-predict as much as -14%, 0 over-predict)	22% (2 under-predict by as much as -20%, 0 over-predict)	0%	0%	Moderate - Model predicts SSOs beginning with the 10-yr storm	All events within calibration parameters
BC19	33711	No	None	N/A	1%	-8%	0% (all within range)	11% (1 under-predicts by -11%, 0 over-predict)	0%	0%	Moderate - Model predicts SSOs beginning with the 10-yr storm	All events within calibration parameters
BC20	20770	No	BC24, BC25	No	1%	-8%	44% (1 under predicts by -15%, 3 over-predict from +21% to +26%)	22% (2 under-predict by as much as -24% low, 0 over-predict)	29% (2 under-predict -19%)	0%	Moderate - Model predicts SSOs beginning with the 10-yr storm	For the 2 storms where the model under-predicts the peak, the observed data shows a higher response to the event
BC21	36912	No	BC23, BC26	No	-4%	-8%	56% (2 under-predict, 3 over-predict, from -24% low to +35% high)	44% (3 under-predict, 1 over-predicts, from -40% low to +30% high)	29% (2 under-predict from -11% to -31%)	14% (1 over-predicts 38%)	Low - No SSOs for storms up to and including a 20-year storm	For the 2 storms where the model under-predicts the peak and 1 storm under-predicts the volume, the observed data shows a higher response to the event
BC22	34385	No	BC05	No	-4%	-21%	56% (2 under-predict, 3 over-predict, from -53% low to +42% high)	44% (2 under predict, 2 over-predict, from -43% low to +44% high)	29% (2 under predict -20%)	14% (1 over-predicts 24%)	Significant - Model predicts SSOs beginning with the 2-yr storm	For the 2 storms where the model under-predicts the peak, the observed has a higher response to the event. For the 1 storm where the volume over-predicts, the observed data doesn't have much of a response to the event
BC23	36930	No	BC26	No	0%	-4%	22% (2 under-predicted by as much as 19%, 0 over-predict)	22% (2 under predicted by as much as 43%, 0 over-predict)	43% (2 under-predict from -19% to -27% & 1 over-predict 27%)	0%	Low - No SSOs for storms up to and including a 20-year storm	Observed data responds irregularly to the storm events causing the meter basin to over-predict and under-predict the peaks. Volume within calibration parameters.
BC24	33527	No	None	N/A	1%	-13%	33% (1 under-predicts by -16%, 2 over-predict by as much as +40%)	33% (2 under-predict, 1 over-predicts from -28% low to +31% high)	29% (2 under-predict from -13% to -26%)	0%	Low - No SSOs for storms up to and including a 20-year storm	For the 2 storms where the model under-predicts the peak, the observed data shows a higher response to the event
BC25	32254	No	None	N/A	0%	-7%	44% (1 under-predicts, 3 over-predict, from -16% low to +30% high)	33% (2 under-predict, 1 over-predicts, from -35% low to +50% high)	17% (1 under-predicts -25 %)	0%	Moderate - Model predicts SSOs beginning with the 20-yr storm	For the 1 storms where the model under-predicts the peak, the observed data shows a higher response to the event
BC26	36951	No	None	N/A	-1%	4%	11% (one under-predicts by -29%, 0 over-predict)	56% (5 under-predict by as much as -40%, 0 over-predict)	29% (2 under-predict from -18% to -27%)	14% (1 under-predicts -12%)	Low - No SSOs for storms up to and including a 20-year storm	For the 2 storms where the model under-predicts the peak and 1 storm where the model under-predicts the peak and volume, the observed data shows a higher response to the event
TSJF01	TCM27	Yes	BC01 thru BC26	BC03, BC09, BC14, BC16 & BC18	-3%	-6%	40% (0 under-predict, two over-predict by as much as 62%)	60% (0 under-predict, 3 over-predict by as much as 96%)	14% (1 over-predicts 28%)	29% (2 over-predict from 23% to 25%)	Moderate - Model predicts SSOs beginning with the 10-yr storm	For the 1 storm where the model over-predicts the peak and the 2 storms where the model over-predicts the volume, the observed data does not have much of a response to the event as the other storms

[1] Based on Jones Falls Inflow/Infiltration Report
[2] Acceptable Range is defined as: +25/-15% (peak flow) and +20/-10% (total volume)
[3] Winter Wet-Weather Calibration discussion focus (more conservative approach)

TABLE 5-3.1 MODEL CALIBRATION SUMMARY TABLE

Meter Basin ID	Meter Manhole No.	Identified as Exhibiting High I/I (yes/no)[1]	Contributing Meter Basin(s)		Dry-Weather Calibration Percent Difference between Observed vs. Calibrated		Wet-Weather Calibration Percent of Storms Outside Acceptable Range[2]		Vulnerability and Reason for Over/Under Prediction in Basin	
			Meter Basin ID	Identified as Exhibiting High I/I (yes/no)[1]	Total Volume	Peak Flow	Peak Flow	RDII Volume		
JF0320S	S04II2004	Yes	None	N/A	-23%	0%	67% (2 under-predict -35% to -20% and 2 over predict 36% to 45%)	33% (1 under-predicts -17% and 1 over-predicts 30%)	Significant - Model predicts SSOs beginning with the 2-yr storm	Monitored data flow appears to be impacted differently by each storm event, causing the model to over and under predict.
JFWR09	S17GG2004	Yes	None	N/A	-6%	1%	67% (2 under-predict from -40% to -14% and 2 over-predicts 20% to 191%)	50% (1 under-predicts -20% and 2 over-predict 60% to 25%)	Low - No SSOs for storms up to and including a 20-year storm	Monitored data flow appears to be impacted differently by each storm event, causing the model to over and under predict.
JFWR15	S05II2003	No	None	N/A	-13%	6%	17% (1 over-predict 525%)	33% (1 under-predicts -21%, 1 over-predicts 99%)	Low - No SSOs for storms up to and including a 20-year storm	Model over-predicts drastically only during the 7/5/2006 storm. The only other volume under-prediction is slightly outside criteria which could have been caused by rounding.
JFWR29	S04EE2004	Yes	None	N/A	-13%	9%	16% (1 over-predict from 203%)	50% (3over-predict 31% to 51%)	Significant - Model predicts SSOs beginning with the 2-yr storm	The only over-prediction in the peak is during the 7/5/2006 storm. The volume over-prediction (besides the one caused by the 7/5/2006 storm) is close to the volume tolerance and could have been impacted by less flow being recorded during the storms in question by the flow monitor
JFWR31	S06II2012	No	None	N/A	-17%	-7%	50% (3 over-predict 52% to 287%)	83% (2 under-predict -15% and 3 over-predict 34% to 42%)	Significant - Model predicts SSOs beginning with the 2-yr storm	Monitored data flow appears to be impacted differently by each storm event, causing the model to over and under predict.
JFWR35	S13GG2016	No	None	N/A	-28%	9%	50% (2 under-predict -47% to -28% and 1 over-predicts 679%)	22% (1 under-predicts -27% and 1 over-predicts 113%)	Low - No SSOs for storms up to and including a 20-year storm	Model over-predicts drastically only during the 7/5/2006 storm. The model under-predicts peak and volume during the 10/19/2006 storm but it is slightly outside of the criteria. The flow monitored could have recorded additional flow during that particular storm only. The over model under-prediction could have also been impacted by flow monitoring recording additional flow.

**In the 7/5/2006 storm all the boundary meters monitored data (listed above) did not respond to the storm causing significant over-predictions in the model

5.4 Baseline Capacity Analysis (CD Ref P10.C.viii)

An evaluation and assessment of the existing and future capacity of the collection, pumping and transmission system is required using the calibrated model. The calibrated model was used to analyze the response of the collection system under dry-weather flow and during five (5) design storm events under baseline and future (Year 2025) flow conditions and to evaluate the ability of the collection, pumping and transmission system to convey peak flows under both dry- and wet-weather conditions. These design storms include the following:

DESIGN STORM DATA					
Design Storm	2-Year/ 6-Hour Storm	2-Year/ 24-Hour Storm	10-Year/ 6-Hour Storm	10-Year/ 24-Hour Storm	20-Year/ 24-Hour Storm
Total Rainfall (in.)	2.37	3.38	3.50	5.19	5.80
*Peak Intensity (in/hr)	1.84	4.63	2.71	7.11	7.95
**Average Intensity (in/hr)	0.39	0.14	0.58	0.22	0.24

*Peak Intensity based on 0.1 hour increment
**Average Intensity based on entire duration of the storm

The rainfall distribution used is the SCS Type II distribution developed by the U.S. Natural Resources Conservation Service (NRCS).

As stated in the CD, Paragraph 9, the baseline condition is defined as the conditions in effect at the time flow metering is completed.

Boundary conditions were applied in the model at the model's connection points with the City of Baltimore. These boundary conditions are time series data for each design storm event that were provided by the City of Baltimore based on the City's modeling of the Jones Falls collection system. The boundary conditions represent the flow level expected at the connection points between the City of Baltimore and Baltimore County. The boundary conditions were provided on June 9, 2011 and were applied for both baseline and future conditions. The boundary conditions received from the City of Baltimore are provided in **Appendix J** of this report.

The baseline and future conditions differ in several parameters:

- Population and employment will increase from the baseline conditions (Year 2008) to the future conditions (Year 2025). Based on population and employment projections provided by Baltimore County, the population will increase approximately 4.7 percent from the baseline to future conditions and employment will increase by approximately 2.9 percent.

- Non-Pumping Station SSOs 113 (Marnat Avenue) and 120 (Charles Street Avenue) were open during the flow metering period and were included in the baseline model. A third SSO, SSO 31A (Rider Avenue), was eliminated by Baltimore County prior to the start of the flow metering and was therefore not included in the baseline model. SSO 120 (Charles Street Avenue) was sealed on September 20, 2011 and SSO 113 (Marnat Avenue) will be eliminated in the future. None of the Non-Pumping Station SSOs are included in the future conditions model.
- The future conditions model includes the rehabilitation of sewers and manholes in SSA's 45-10-22-01 and 45-58-06-02, which are located upstream of SSOs 113 and 120, respectively. Following the Baltimore County SRRR guidelines, the modeling of rehabilitated pipes included a 35 percent reduction of RDII and a 23 percent reduction of the BI. Additionally, the friction coefficient was revised to match that of a smoother pipe surface (reduced Manning's "n" value) that is the result of installation of the cured-in-place pipe lining (CIPP).
- Pumping station capacities under baseline conditions reflect the conditions that existed during the flow metering period. The future (Year 2025) conditions model incorporates the ultimate pumping station capacities.

Capacity Analysis Results

There are no model-predicted overflows or surcharges that occur during dry-weather conditions in the baseline model. Furthermore, the model predicts that none of the non-pumping station SSOs would activate during dry-weather.

Under baseline conditions, the model predicts SSOs for design storms beginning with the 2-year/24-hour storm. The model predicts that Non-Pumping Station SSOs 113 and 120 become active during wet-weather under baseline conditions. SSO 113 becomes active during the 2-year/6-hour storm and SSO 120 becomes active during the 10-year/24-hour storm. A summary of the model results under baseline conditions is presented in **Table 5-4.1**:

Table 5-4.1
Jones Falls SRRR: Corrective Action Recommendation Plan
SUMMARY OF BASELINE MODEL ANALYSIS

Storm Event	Total Number of SSOs	Total Volume of Overflows (MG)
2-Year/6-Hour Storm	8	0.1111
2-Year/24-Hour Storm	14	0.5258
10-Year/6-Hour Storm	14	0.8483
10-Year/24-Hour Storm	29	3.5005
20-Year/24-Hour Storm	38	5.1425

The model-predicted overflows listed in the Hydraulic Capacity Assessment Report, provided in **Appendix K** of this report and in **Table 5-4.1**, were reduced by the incorporation of additional 8-inch diameter collection system piping and revisions to the flow loading locations into the model. The addition of these 8-inch diameter pipes eliminate falsely predicted SSOs in the model that were caused by isolated flow loading points rather than actual collection system deficiencies.

Table 5-4.2 lists the manhole number and volume of overflow for each design storm event under baseline conditions. A complete description of the capacity analysis is presented in the Jones Falls Hydraulic Capacity Assessment Report, included in **Appendix K** of this report.

Table 5-4.2
Jones Falls SRRR: Corrective Action Recommendation Plan
BASELINE CONDITIONS - MODEL PREDICTED SSO VOLUMES (MG)

	Manhole No.	SSA	2-Year/ 6-Hour Storm	2-Year/ 24-Hour Storm	10-Year/ 6-Hour Storm	10-Year/ 24-Hour Storm	20-Year/ 24-Hour Storm
1	6883	45-54-00-00	0	0	0	1.1382	1.8882
2	6954	45-59-16-01	0.0024[1]	0.0354	0.0688	0.1827	0.2433
3	7252	45-59-34-00	0.0018[1]	0.0451[1]	0.0514[1]	0.1506[1]	0.1902[1]
4	7254	45-59-34-00	0.0006[1]	0.0038[1]	0.0062[1]	0.0082[1]	0.0101[1]
5	7289	45-59-34-00	0.0008[1]	0.0017[1]	0.0026[1]	0.0028[1]	0.0032[1]
6	7298	45-58-01-00	0	0	0	0.0221[1]	0.0465[1]
7	7315	45-58-05-00	0	0	0	0	0.0152[1]
8	7332	45-58-06-01	0	0	0	0	0.0024[1]
9	17752	45-55-01-00	0	0	0	0	0.0006
10	17755	45-55-02-00	0	0	0	0.0506[1]	0.0824
11	17757	45-55-02-00	0	0	0	0.0017	0.0123
12	20756	45-60-00-00	0	0	0	0.0827	0.1365
13	20758	45-60-00-00	0	0	0	0.2274	0.2828
14	20768	45-65-00-00	0	0	0	0.0894	0.1592
15	20775	45-66-04-00	0	0	0	0	0.001
16	22010	45-59-18-00	0.0544[1]	0.1203	0.1887	0.2237	0.2568
17	22012	45-59-19-00	0.0196[1]	0.1419	0.2206	0.2745	0.3117
18	22013	45-59-19-00	0	0.0759	0.1258	0.3429	0.4334
19	30726	45-66-03-00	0	0	0	0.0087	0.021
20	32258	45-66-09-02	0	0	0	0	0.0082
21	32260	45-66-09-02	0	0	0	0	0.0027
22	33527	45-66-08-00	0	0	0	0.0317	0.0766
23	33530	45-66-09-02	0	0	0	0	0.0002[1]
24	33531	45-66-09-02	0	0	0	0	0.0001[1]
25	33707	45-62-01-00	0	0	0	0.1496	0.2051
26	33708	45-62-01-00	0	0	0	0.0239	0.0466
27	44213	45-70-00-00	0	0	0	0.0117	0.0168
28	44215	45-70-00-00	0	0	0	0	0.0002
29	44219	45-71-00-00	0	0.0142	0.034	0.0802	0.1045

Table 5-4.2
Jones Falls SRRR: Corrective Action Recommendation Plan
BASELINE CONDITIONS - MODEL PREDICTED SSO VOLUMES (MG)

	Manhole No.	SSA	2-Year/ 6-Hour Storm	2-Year/ 24-Hour Storm	10-Year/ 6-Hour Storm	10-Year/ 24-Hour Storm	20-Year/ 24-Hour Storm
30	53270	45-69-00-00	0	0	0	0.0085	0.0123
31	55251	45-58-01-00	0	0	0	0.0595[1]	0.1453[1]
32	7052M	45-59-30-01	0	0	0	0.002[1]	0.0038[1]
33	1583	45-10-22-02	0	0.0052	0.009	0.0146	0.0148
34	1585	45-68-15-01	0	0.003	0.0062	0.0352	0.0519
35	3410	45-10-21-00	0	0.0009[1]	0.0036[1]	0.0112[1]	0.0111[1]
36	15756	45-10-22-01	0.0234[1]	0.0655[1]	0.1081[1]	0.1803[1]	0.223[1]
37	15754	45-10-22-01	0.0081[1]	0.0126[1]	0.0209[1]	0.0207[1]	0.0227[1]
38	901644	45-10-21-00	0	0.0003[1]	0.0024[1]	0.0652[1]	0.0998[1]
		TOTALS:	0.1111	0.5258	0.8483	3.5005	5.1425

[1] Model-predicted SSOs eliminated by inclusion of additional network and revisions to flow loading locations

5.5 Future Condition Capacity Analysis (CD Ref P10.C.ix)

Future conditions are defined as the expected hydraulic conditions that would exist in Year 2025, using population and employment projections. Section 5.4 describes the differences between the baseline and the future conditions. For future conditions, it has been assumed that the BI due to pipe deterioration will be minimal, so the same value for BI is used for baseline and future conditions, except in those areas where pipe and manhole rehabilitation is planned or has been completed.

Boundary conditions were applied in the model at the model's connection points with the City of Baltimore. These boundary conditions are time series data for each design storm event that were provided by the City of Baltimore based on the City's modeling of the Jones Falls collection system. The boundary conditions represent the flow level expected at the connection points between the City of Baltimore and Baltimore County. The boundary conditions were provided on June 9, 2011 and were applied for both baseline and future conditions. The boundary conditions received from the City are provided in **Appendix J** of this report.

Capacity Analysis Results

Similar to the baseline conditions model, there are no model-predicted overflows or surcharges during dry-weather conditions for the future conditions model. A summary of the model results under future conditions is presented in **Table 5-5.1**:

Table 5-5.1 Jones Falls SRRR: Corrective Action Recommendation Plan SUMMARY OF FUTURE MODEL ANALYSIS		
Storm Event	Total Number of SSOs	Total Volume of Overflows (MG)
2-Year/6-Hour Storm	9	0.1356
2-Year/24-Hour Storm	15	0.5609
10-Year/6-Hour Storm	15	0.8773
10-Year/24-Hour Storm	30	3.3431
20-Year/24-Hour Storm	37	4.9449

The model-predicted overflows listed in the Hydraulic Capacity Assessment Report, provided in **Appendix K** of this report and in **Table 5-5.1**, were reduced by the incorporation of additional 8-inch diameter collection system pipes and revisions to the flow loading locations into the model. The addition of these 8-inch diameter pipes eliminate falsely predicted SSOs that were caused by isolated flow loading points in the model rather than actual collection system deficiencies.

Table 5-5.2 lists the manhole number and the volume of overflow for each design storm event under future conditions. A complete description of the capacity analysis is presented in the Jones Falls Hydraulic Capacity Assessment Report, included in **Appendix K** of this report.

Table 5-5.2 Jones Falls SRRR: Corrective Action Recommendation Plan FUTURE CONDITIONS - MODEL PREDICTED SSO VOLUMES (MG)							
	Manhole No.	SSA	2-Year/ 6-Hour Storm	2-Year/ 24-Hour Storm	10-Year/ 6-Hour Storm	10-Year/ 24-Hour Storm	20-Year/ 24-Hour Storm
1	6883	45-54-00-00	0	0	0	1.031	1.7816
2	6954	45-59-16-01	0.003[1]	0.0374	0.0597	0.1832	0.2441
3	7252	45-59-34-00	0.0019[1]	0.046[1]	0.053[1]	0.1515[1]	0.1915[1]
4	7254	45-59-34-00	0.0005[1]	0.0033[1]	0.0049[1]	0.0077[1]	0.009[1]
5	7289	45-59-34-00	0.0008[1]	0.0017[1]	0.0025[1]	0.0028[1]	0.0031[1]
6	7298	45-58-01-00	0	0	0	0.0034[1]	0.0249[1]
7	17752	45-55-01-00	0	0	0	0	0.0006
8	17755	45-55-02-00	0	0	0	0.0507	0.0826
9	17757	45-55-02-00	0	0	0	0.0016	0.0121
10	20756	45-60-00-00	0	0	0	0.0558	0.109
11	20758	45-60-00-00	0	0	0	0.2067	0.262
12	20768	45-65-00-00	0	0	0	0.0966	0.1681
13	20775	45-66-04-00	0	0	0	0	0.001
14	22010	45-59-18-00	0.0568[1]	0.1235	0.1909	0.228	0.261
15	22012	45-59-19-00	0.0223[1]	0.1455	0.2238	0.2785	0.3156

Table 5-5.2
Jones Falls SRRR: Corrective Action Recommendation Plan
FUTURE CONDITIONS - MODEL PREDICTED SSO VOLUMES (MG)

	Manhole No.	SSA	2-Year/ 6-Hour Storm	2-Year/ 24-Hour Storm	10-Year/ 6-Hour Storm	10-Year/ 24-Hour Storm	20-Year/ 24-Hour Storm
16	22013	45-59-19-00	0	0.0802	0.1286	0.3492	0.4397
17	30726	45-66-03-00	0	0	0	0.01	0.0225
18	32258	45-66-09-02	0	0	0	0	0.009
19	32260	45-66-09-02	0	0	0	0	0.0034
20	33527	45-66-08-00	0	0	0	0.0382	0.0837
21	33530	45-66-09-02	0	0	0	0	0.0003[1]
22	33531	45-66-09-02	0	0	0	0	0.0003[1]
23	33707	45-62-01-00		0	0	0.1572	0.2129
24	33708	45-62-01-00	0	0	0	0.0275	0.0515
25	44213	45-70-00-00	0	0	0	0.0121	0.0173
26	44215	45-70-00-00	0	0	0	0	0.0002
27	44219	45-71-00-00	0	0.0156	0.0344	0.0815	0.106
28	53270	45-69-00-00	0	0	0	0.0087	0.0124
29	55251	45-58-01-00	0	0	0	0.0014[1]	0.0585[1]
30	7052M	45-59-30-01	0	0	0	0.002[1]	0.0038[1]
31	1583	45-10-22-02	0	0.0053	0.0089	0.0129	0.0148
32	1585	45-68-15-01	0	0.003	0.0063	0.0369	0.052
33	3410	45-10-21-00	0	0.0012[1]	0.0038[1]	0.0094[1]	0.0113[1]
34	15753	45-10-22-01	0.0093[1]	0.0103[1]	0.0156[1]	0.0158[1]	0.0176[1]
35	15754	45-10-22-01	0.0168[1]	0.0203[1]	0.0324[1]	0.0313[1]	0.0341[1]
36	15756	45-10-22-01	0.0242[1]	0.067[1]	0.1097[1]	0.1827[1]	0.2256[1]
37	901644	45-10-21-00	0	0.0006[1]	0.0028[1]	0.0688[1]	0.1018[1]
		TOTALS	0.1356	0.5609	0.8773	3.3431	4.9449

[1] Model-predicted SSOs eliminated by inclusion of additional network and revisions to flow loading locations

5.6 Long Term Capacity/Peak Flow Management Evaluation (CD Ref P10.C.ii)

In accordance with Paragraph 9 of the CD, calibrated model simulations and analyses were conducted to identify, evaluate and recommend the corrective actions necessary to eliminate model-predicted SSOs for each of the five (5) design storms. The future conditions (Year 2025) model was used for this alternative analysis.

The expanded model network and revisions to the flow loading locations discussed in Sections 5.4 and 5.5 impacted the model results for the five (5) synthetic design storm simulations. For the 2-year/6-hour design storm, the expanded model network and revisions to the flow loading locations eliminated all the model-predicted SSOs and therefore no corrective actions are necessary for this design storm. The LTC/PFME Report provided in **Appendix L** of this report summarizes the recommended corrective actions for each design storm.
A description of the complete alternative analysis results and cost estimates is included in the

Jones Falls Sewershed's LTC/PFME Report, which is provided in **Appendix L** of this report.

5.6.1 SSO Control Improvement

Paragraph 9.C.ii.d of the CD indicates that improvements to the collection system to ensure adequate capacity must be identified and the improvements considered should include:

- Increasing pumping station capacity
- Rehabilitation of sewers and manholes to reduce I/I
- Installation of larger replacement pipes or relief sewers

The future conditions model incorporates the closure of Non-Pumping Station SSOs 31A, 113 and 120, and the completion of Paragraph 7 projects for rehabilitation of SSA's 45-10-22-01 and 45-58-06-02, which drain to SSOs 113 and 120, respectively. Rehabilitation of SSA 45-10-22-01 (SSO 113) was completed under Contract 09124 SXO in early 2012 and rehabilitation of SSA 45-58-06-02 (SSO 120) was completed under Contract 10034 SXO in July 2011. Two (2) of the three (3) non-pumping station SSOs have already been eliminated. These include Non-Pumping Station SSO 31A, which was closed on May 11, 2007 and Non-Pumping Station SSO 120, which was sealed on September 20, 2011. The County continues to coordinate with the City of Baltimore regarding the capacity improvements of the sewers located downstream of SSO 113 in the City, and is evaluating options for design and construction of a County relief sewer to eliminate activation of this SSO.

5.6.2 Assumptions

The following assumptions were made during the analysis of the LTC/PFME:

- Following the Baltimore County SRRR Guidelines, it was assumed that rehabilitation would reduce BI by 23 percent, the total RDII volume by 35 percent and the peak RDII flow by 37 percent when possible. Due to the complexity of the collection system, in some cases a reduction of 36 percent of the capture coefficient was implemented.
- BI due to pipe deterioration will be minimal, so the same value for BI is used for baseline and future conditions, except in those areas where pipe and manhole rehabilitation is planned or has already been completed.
- The ultimate pumping station capacities were used.

5.6.3 Cost Estimation

To estimate the corrective action costs for elimination of model-predicted SSOs, Table 4-5 from the Baltimore County SRRR Plan Guidelines was used. This table includes unit costs for corrective actions including: in-situ (in-place) sewer repairs; lateral connection repairs; sewer lining; pipe replacement; pipe bursting; sewer point repairs; sliplining; installation of manhole frame seals; manhole inflow inserts; manhole lining and manhole replacement. Cost estimates were prepared for each design storm event.

A complete description of the corrective action analyses is presented in the Jones Falls Sewershed LTC/PFME Report, which is included in **Appendix L** of this report.

END OF SECTION

Section 6

Corrective Action Recommendation Plan

6.0 Corrective Action Recommendation Plan (CD Ref. P.10.C.iii-vii)

6.1 Overview

The Corrective Action Recommendation Plan discussed in this section consists of various structural and hydraulic corrective action recommendations needed to address the deficiencies identified during the collection system investigations and modeling activities for the Jones Falls Sewershed. The Plan also identifies specific rehabilitation and other corrective actions needed to eliminate model predicted sanitary sewer overflows (SSOs) that were determined by the Long-Term Capacity/Peak Flow Management Evaluation (LTC/PFME). Previous chapters of this SRRR Plan present detailed discussions of the various investigations that were completed, and provide a summary of the deficiencies that were identified. The condition related corrective action recommendations were defined based on review of field inspection and SSES data such as sewer and manhole inspections, smoke and dyed-water testing and night-flow isolation investigations as discussed in Section 4 of this report. As discussed in Sections 3 and 5 of this report, the hydraulic corrective actions were determined by modeling and the inflow and infiltration (I/I) analysis. Data analysis and evaluation was utilized to identify the necessary corrective actions required to address the deficiencies identified within the collection system. Some identified condition corrective actions were superseded by hydraulic corrective action recommendations. As an example, a recommended sewer insitu spot repair (repair to correct a specific defective area in a segment of pipe) would not be necessary if the sewer segment was recommended for cured-in-place (CIPP) lining to address hydraulic capacity deficiencies.

This section provides a brief discussion of the corrective actions that have or is in the process of being completed within the Jones Falls Sewershed to address collection system deficiencies, followed by the recommended corrective actions. Estimates of probable construction costs required to implement the recommended corrective actions have also been provided.

6.2 Completed Corrective Actions (CD Ref. P.10.Ciii)

Baltimore County has completed several remedial corrective actions within the Jones Falls Sewershed as required by Paragraph 7 of the Consent Decree (CD). These include I/I reduction and pumping station and force main assessment and upgrade projects. The County has also eliminated several Non-Pumping Station SSO structures.

The total cost of the projects implemented to date by Baltimore County in the Jones Falls Sewershed is approximately $6.35 Million. The following is an overview of the corrective actions that have been completed in the Jones Falls Sewershed to date.

6.2.1 Pumping Station Improvements

As detailed in Section 4, the Jones Falls Sewershed contains four (4) pumping stations. These include the Buchanan Road Pumping Station; the Stanton Woods Pumping Station; the Templegate Pumping Station and the Stevenson Pumping Station. The County is currently undertaking, or has previously completed, measures set forth in Paragraph 13 of the CD for

these pumping stations. The County has completed an Engineering Evaluation and Condition Assessment (EE/CA) for all four (4) of the pumping stations as required by Paragraph 13.F of the CD. Reports have been submitted for review and approval in accordance with Paragraph 13.F.iii of the CD. All deficiencies defined in Paragraph 13.F.iv of the CD, and outlined in the EE/CA reports for the Buchanan Road, Stanton Woods and the Templegate Pumping Stations are being completed in accordance with Paragraph 13.F.iv.(a) of the CD. The work and costs associated with these pumping stations is summarized below:

- Buchanan Road Pumping Station - The conceptual cost estimate for the upgrades to the Buchanan Road Pumping Station is $1,580,525.
- Stanton Woods Pumping Station - The conceptual cost estimate for the upgrades to the Stanton Woods Pumping Station is $1,135,000.
- Templegate Pumping Station - The conceptual cost estimate for the upgrades to the Templegate Pumping Station is $1,687,033.
- Stevenson Pumping Station - Construction of the new Stevenson Pumping Station was completed in May of 2011. The cost for the upgrades to this station was $921,000.

6.2.2 Sewer/Manhole Rehabilitation for Non-Pumping Station SSO Structure Elimination

As detailed in Section 2, the Jones Falls Sewershed contains three (3) Non-Pumping Station SSOs. These include SSO 31A (Rider Avenue), located in Meter Basin BC11; SSO 113 (Marnat Road), located in Meter Basin JF0320S; and SSO 120 (Charles Street Avenue), which is located in Meter Basin BC12. The County has completed sewer and manhole rehabilitation projects in several of the SSA's that are tributary to these SSOs to eliminate overflows. This work is summarized below:

- Rider Avenue Non-Pumping Station **SSO 31A** – The SSO was eliminated on May 11, 2007 by the County at nominal cost, and post elimination flow monitoring of the SSO was conducted in accordance with Section V.7.C.v of the CD.

- Marnat Road Non-Pumping Station **SSO 113** – Under Contract 09124 SXO, forty-four (44) manholes were rehabilitated, 7,149 linear feet (LF) of sewer was lined and seventy-two (72) sewer house connections were sealed. The work was completed in June 2012 at a cost of $442,928 and post-rehabilitation flow monitoring of the SSO is currently being conducted in accordance with Section V.7.C.v of the CD.

- Charles Street Avenue Non-Pumping Station **SSO 120** – Under Contract 10034 SX0, forty-eight (48) manholes were rehabilitated, seven (7) point repairs were completed, 13,826 LF of sewer was lined and 323 sewer house connections were sealed. The work was completed in July of 2011 at a cost of $585,022 and the SSO was eliminated on September 20, 2011. The County continues to monitor the SSO in accordance with Section V.7.C.v of the CD.

6.3 Priority Scheme Identification

For the purpose of prioritizing defects identified through the collection system investigations, the County prioritized the inspection data review to address sewer and manhole defects that may contribute to SSOs in the collection system. This prioritization process included review of the CCTV and manhole inspection data in accordance with the criteria set forth in Paragraph 8 of the CD. Reviews included all Paragraph 8.C.ii, 8.C.ia, and 8.C.iv sanitary sewers and manholes that had Bureau of Utilities (BU) or National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) ratings of 4 or 5. The PACP ratings were used when a BU rating was not available. Manholes were rated by the inspection crews and review of the data prioritized using the structural and I/I ratings to develop pertinent corrective actions to address the deficiencies identified.

Reviews were also completed for all sewers and manholes that were located in meter basins that exhibited excessive I/I identified through the I/I analysis, regardless of CD Paragraph designation or rating. These priority basins included: BC02, BC03, BC04, BC05, BC07, BC09, BC14 and BC16.

The County has also identified specific sewer defects that, based on the County's experience, may compromise the structural integrity of the sewer. **Table 6-3.1 – Critical Defect Summary** provides a listing of these specific defects. Sewers with critical defects were also reviewed.

Table 6-3.1
Jones Falls SRRR: Corrective Action Recommendation Plan
CRITICAL DEFECT SUMMARY

Structural Defect Description			
Defect Group	Defect Descriptor/Modifier	Value Reference	PACP Code
Lining Failure	Detached	---	LFD
Surface Damage	---	---	S
	Aggregate Missing	---	SAM
	Reinforcement Visible	---	SRV
	Reinforcement Projecting	---	SRP
	Reinforcement Corroded	---	SRC
	Missing Wall	---	SMW
	Corrosion	---	SCP
Hole	---	---	H
	Soil Visible	---	HSV
	Void Visible	---	HVV
Deformed	---	---	D
	Vertical	---	DV
	Horizontal	---	DH
Collapse	---	---	P
	Pipe	---	XP

Table 6-3.1 Jones Falls SRRR: Corrective Action Recommendation Plan CRITICAL DEFECT SUMMARY			
Structural Defect Description			
Defect Group	Defect Descriptor/Modifier	Value Reference	PACP Code
	Brick	---	XB
Weld Failure	Longitudinal	---	WFL
	Circumferential	---	WFC
	Multiple	---	WFM
	Spiral	---	WFS
Fracture	Multiple	---	FM
Broken	---	---	B
	Soil Visible	---	BSV
	Void Visible	---	BVV
Brickwork	Missing	---	MB
	Dropped Invert	Large	DI
	Missing Mortar	Large	MM

6.4 Structural Deficiency Corrective Action Plan

Structural defects identified in the sewers and manholes in the County's Priority Scheme Identification Plan as described in Section 6.3 of this report may contribute to a SSO, and therefore will be addressed by the County.

Table 6-4.1 – Manhole Condition Rating Summary summarizes the condition ratings of the manholes that were reviewed in support of the Jones Falls Sewershed SRRR Plan.

Table 6-4.1 Jones Falls SRRR: Corrective Action Recommendation Plan MANHOLE CONDITION RATING SUMMARY			
Overall Rating	Rating Description	Manhole Count	Percent
1	Excellent Condition	464	65.2%
2	Good Condition	165	23.2%
3	Fair Condition	50	7.0%
4	Poor Condition	29	4.1%
5	Immediate Attention Required	4	0.6%
	Totals:	712	100%

Table 6-4.2 – Manhole Condition Rating Summary By Meter Basin further defines and summarizes the condition ratings of the manholes that were reviewed by flow meter basin.

Table 6-4.2
Jones Falls SRRR: Corrective Action Recommendation Plan
MANHOLE CONDITION RATING SUMMARY BY METER BASIN

Flow Meter Basin	Manholes Reviewed	No. of Manholes by Overall Condition Rating				
		1	2	3	4	5
BC02	64	52	5	7	0	0
BC03	17	15	1	1	0	0
BC04	97	71	16	10	0	0
BC05	125	51	65	6	3	0
BC07	24	22	1	1	0	0
BC08	2	0	0	0	2	0
BC09	256	170	61	22	3	0
BC11	6	1	1	0	3	1
BC12	10	3	0	0	6	1
BC14	4	0	3	1	0	0
BC15	1	0	1	0	0	0
BC16	94	79	11	2	2	0
BC18	1	0	0	0	0	1
BC20	1	0	0	0	1	0
BC25	1	0	0	0	1	0
JFWR15	4	0	0	0	4	0
TSJF01	5	0	0	0	4	1
Totals:	712	464	165	50	29	4

Table 6-4.3 – Manhole Condition Rating Summary By SSA contained in **Appendix M** of this report summarizes the condition ratings of the manholes that were reviewed by SSA.

Table 6-4.4 – Sewer Condition Rating Summary summarizes the condition ratings of the sanitary sewers that were reviewed as part of the Jones Falls Sewershed SRRR Plan.

Table 6-4.4
Jones Falls SRRR: Corrective Action Recommendation Plan
SEWER CONDITION RATING SUMMARY

Overall Rating	Rating Description	Sewer Count	Percent
1	Excellent Condition	488	42.3%
2	Good Condition	275	23.9%
3	Fair Condition	220	19.1%
4	Poor Condition	92	8.0%
5	Immediate Attention Required	78	6.8%
	Totals:	1,153	100%

Table 6-4.5 – Sewer Condition Rating Summary By Meter Basin further defines and summarizes the condition ratings of the sanitary sewers that were reviewed by flow meter basin.

Table 6-4.5
Jones Falls SRRR: Corrective Action Recommendation Plan
SEWER CONDITION RATING SUMMARY BY METER BASIN

Flow Meter Basin	Sewer Segments Reviewed	No. of Sewers by Overall Rating				
		1	2	3	4	5
BC01	15	2	5	5	2	1
BC02	64	40	17	4	1	2
BC03	20	18	0	1	0	1
BC04	94	46	21	17	5	5
BC05	118	102	9	3	3	1
BC06	4	1	0	0	1	2
BC07	27	16	1	6	3	1
BC08	11	4	6	0	1	0
BC09	267	150	59	36	13	9
BC10	30	3	9	10	5	3
BC11	16	1	6	8	0	1
BC12	167	19	40	54	30	24
BC13	24	4	11	7	1	1
BC14	19	5	6	4	3	1
BC15	1	1	0	0	0	0
BC16	69	43	9	4	7	6
BC20	13	1	8	3	1	0
BC24	38	6	17	10	4	1
BC25	7	2	2	3	0	0
BC26	12	4	4	2	1	1
JFWR15	55	9	24	16	1	5
JFWR29	29	2	11	14	0	2
JFWR31	17	3	4	6	3	1
JFWR35	8	1	1	5	1	0
TSJF01	28	5	5	2	6	10
Totals:	1,153	488	275	220	92	78

Table 6-4.6 – Sewer Condition Rating Summary By SSA contained in **Appendix N** of this report defines and summarizes the ratings of the sanitary sewers that were reviewed by SSA.

6.5 Recommended Collection System Improvements

After the manhole, sewer and capacity deficiencies were determined, rehabilitation methods were reviewed and pertinent rehabilitation and repair technologies and corrective actions were selected to address the specific manhole and sanitary sewers that contained defects.

6.5.1 Recommended Manhole Improvements

The following manhole repair or rehabilitation methods were selected to address structural and/or operational and maintenance (O&M) deficiencies identified in the manhole structures:

- Clean Manhole was recommended for manholes that contained excess debris and/or root intrusion that would not be addressed under the manhole lining work or when additional repair work was not specified for the manhole.
- Frame Seals were recommended when infiltration was identified in either the frame and cover adjustment area or at the interface between the structure and the frame and cover. The frame seal could be either internally or externally installed.
- Inflow Inserts were recommended when inflow was observed around the manhole cover or when the cover was subject to ponding.
- Manhole Lining was recommended for manholes with significant cracks, fractures, infiltration defects, or surface damage (chemical and mechanical)
- Replacement of the Manhole was recommended for manholes that were so severely deteriorated that rehabilitation was not an option.
- Replacement of the Frame and Cover was recommended for manholes that contained defective manhole frame and covers. This could also be referenced to install water-tight frames and covers when sealing of the manhole was required to prevent an SSO.
- Resetting of the Frame and Cover was recommended when the existing frame and cover was in serviceable condition, but dislodged and not affixed to the structure.

Table 6-5.1 contained in **Appendix O** of this report lists all recommended manhole improvements.

6.5.2 Recommended Sanitary Sewer Improvements

The following sewer repairs and/or sewer rehabilitation methods were selected to address structural and/or O&M type deficiencies that were identified in the sanitary sewers:

- Sewer Lining (CIPP) was recommended for pipes containing cracks, fractures or infiltration defects. CIPP lining was also recommended for pipes that contained encrustations or root defects because encrustation indicates infiltration and roots are a source of infiltration. This is a trenchless method that reinstates the structural integrity of the sewer and reduces infiltration in a pipe segment. As part of the lining process, lateral reinstatements shall be air tested and grouted to provide a watertight connection to the liner system.

- Insitu (in-place) Repairs were recommended when short sections of pipe contained holes, fractures of other isolated defects that could be addressed without the need for excavation. Spot repairs are a modified form of CIPP pipe lining, which can be used for

localized pipe repairs (3 to 20 feet in length) instead of open cut excavation.

- Point Repairs ("Excavate and Replace") were recommended for pipe segments that contained holes, offset joints, breaks, multiple fractures or pipe ovality that was greater than 10% and could not be rehabilitated using a CIPP liner. This work typically involves open-cut excavation to replace the damaged pipe with a new pipe segment. In open-cut situations, PVC pipe of the same or larger diameter as the existing pipe will be installed and reconnected to existing service laterals.

  It should be noted, that a combination of defects may require the use of several repair methods to correct the deficiencies identified in a pipe segment. This could include completing a "Dig-Up and Replace Point Repair, an Insitu (in-place) Spot Repair and CIPP Lining of the entire sewer segment. For example, if a pipe segment was identified to have a break and significant (40%) loss of cross-sectional area in addition to other structural defects, an open-cut point repair may be required to repair the break prior to CIPP lining the sewer segment to address the remaining defects in the sewer segment.

- Lateral Connection Repairs were recommended for each defective or leaking service connection to reduce infiltration. The sewer house connection repair consisted of the CIPP lining of the first 2 to 3 feet of the lateral pipe and the full circumference of the mainline sewer at the connection with a one-piece sewer house connection seal. Depending on the condition of the lateral connection at the time of design, CIPP lining, chemical or structural grouting or open-cut lateral connection replacement are also options that should be considered. All defective connections should be assessed during the design phase to determine the most appropriate method of repair/rehabilitation.

Table 6-5.2 in **Appendix O** contains all of the recommended mainline sewer repairs by sewer segment.

A summary of the recommended sewer and manhole corrective action improvements by flow meter basin are shown in **Table 6-5.3 – Recommended Sewer and Manhole Condition Improvements By Meter Basin**.

Table 6-5.3
Jones Falls SRRR: Corrective Action Recommendation Plan
RECOMMENDED SEWER AND MANHOLE CONDITION IMPROVEMENTS BY METER BASIN

Flow Meter Basin	Sewers				Manholes						
	In-Situ Repair all sizes (LF)	Sewer Lining all sizes (LF)	Point Repair all sizes (Ea.)	Lateral Conn. Repair (Ea.)	Clean Manhole (Ea.)	Replace MH Frame and Cover (Ea.)	Reset MH Frame and Cover (Ea.)	Install Frame Seal (Ea.)	Install Inflow Insert (Ea.)	Replace Manhole (Ea.)	MH Lining (Ea.)
BC01	0	1,806	0	9	0	0	0	0	0	0	0
BC02	0	0	0	69	26	0	0	27	5	0	0
BC03	0	0	0	2	0	0	3	12	0	0	0
BC04	0	0	1	87	16	0	2	61	3	0	0

Table 6-5.3

Jones Falls SRRR: Corrective Action Recommendation Plan

RECOMMENDED SEWER AND MANHOLE CONDITION IMPROVEMENTS BY METER BASIN

Flow Meter Basin	Sewers				Manholes						
	In-Situ Repair all sizes (LF)	Sewer Lining all sizes (LF)	Point Repair all sizes (Ea.)	Lateral Conn. Repair (Ea.)	Clean Manhole (Ea.)	Replace MH Frame and Cover (Ea.)	Reset MH Frame and Cover (Ea.)	Install Frame Seal (Ea.)	Install Inflow Insert (Ea.)	Replace Manhole (Ea.)	MH Lining (Ea.)
BC05	5	1232	0	5	10	14	4	82	68	0	42
BC06	5	0	0	1	0	0	0	0	0	0	0
BC07	4	1,383	1	1	2	0	3	4	1	0	16
BC08	0	1,798	0	20	1	0	0	1	0	0	2
BC09	0	0	3	90	51	2	15	123	6	1	0
BC10	0	4,455	0	31	0	0	0	0	0	0	0
BC11	0	2,821	0	15	1	0	2	2	0	0	6
BC12	78	33,129	3	317	4	0	2	4	0	0	9
BC13	0	3,453	0	15	0	0	0	0	0	0	0
BC14	5	3,071	0	36	0	0	1	0	0	0	2
BC15	0	0	0	0	0	0	0	0	0	0	0
BC16	8	3,272	0	0	10	0	13	10	4	0	37
BC18	0	0	0	0	0	0	1	0	0	0	1
BC19	0	0	0	0	0	0	0	0	0	0	0
BC20	6	2,355	0	18	1	0	1	0	0	0	1
BC21	0	0	0	0	0	0	0	0	0	0	0
BC22	0	0	0	0	0	0	0	0	0	0	0
BC23	0	0	0	0	0	0	0	0	0	0	0
BC24	8	7,601	0	41	0	0	0	0	0	0	0
BC25	0	465	0	3	1	0	1	1	0	0	2
BC26	13	1,265	0	3	0	0	0	0	0	0	0
JF0320S	0	0	0	0	0	0	0	0	0	0	0
JFWR09	0	0	0	0	0	0	0	0	0	0	0
JFWR15	21	9,985	0	44	0	0	2	1	0	0	2
JFWR29	7	5,925	0	50	0	0	0	0	0	0	0
JFWR31	0	3,600	0	36	0	0	0	0	0	0	0
JFWR35	2	2,242	0	5	0	0	0	0	0	0	0
TSJF01	15	3,226	2	14	0	1	0	4	0	0	5
Total:	177	93,084	10	912	123	17	50	332	87	1	125

A summary of the recommended sewer and manhole improvements by SSA are shown in **Table 6-5.4 – Recommended Sewer and Manhole Condition Improvements By SSA** in **Appendix O** of this report.

6.5.3 Recommended Pumping Station Improvements

As previously indicated, the Jones Falls Sewershed contains four (4) pumping stations. These include the Buchanan Road Pumping Station; the Stanton Woods Pumping Station; the Templegate Pumping Station and the Stevenson Pumping Station.

As described in Sections 4 and 6.2.1, the County is currently undertaking, or has previously completed all of the measures set forth in Paragraph 13 of the CD for the pumping stations in the Jones Falls Sewershed.

The County is in the process of ensuring that adequate backup power systems are installed and maintained for each of the pumping stations in accordance with Paragraph 13.C, installing a Supervisory Control And Data Acquisition (SCADA) system for remote monitoring of each of the pumping stations in accordance with Paragraph 13.D, and conducting inspections of the pumping stations in accordance with Paragraph 13.E of the CD.

The County has completed EE/CA inspections of all four (4) of the pumping stations as required by Paragraph 13.F of the CD. The reports have been submitted for review and approval in accordance with Paragraph 13.F.iii of the CD. The County has also completely replaced the Stevenson Pumping Station with a new station, which includes backup power generation and a SCADA system. Construction of the Stevenson Pumping Station was completed in 2011. The Buchanan Road, Stanton Woods and the Templegate Pumping Stations were designated as Tier 3 pumping stations. Improvements to these pumping stations to correct all Priority 1 and 2 ranked deficiencies, as defined in Paragraph 13.F.iv of the CD, and outlined in the EE/CA reports will be completed in accordance with the approved schedules.

The County has also completed a pumping station equipment inventory, transferred its pump maintenance record keeping system into an electronic information management system, and implemented a pumping station preventative maintenance program in accordance with Paragraphs 13.G-I of the CD. In addition, the County has ensured that an updated operation and maintenance manual is being maintained, at the new Stevenson Pumping Station in accordance with Paragraph 13.J. of the CD.

All pumping stations are currently being addressed in accordance with the CD requirements and are of adequate capacity to handle peak flows resulting from a 20-year/24-hour design storm based on the results of the LTC/PFME.

6.5.4 Recommended Force Main Improvements

The Jones Falls Sewershed contains four (4) pumping station force mains. These include a 6-inch diameter ductile iron pipe (DIP) force main from the Buchanan Road Pumping Station; a 6-inch diameter Cast Iron (CI) force main from the Stanton Woods Pumping Station; a 6-inch diameter CI force main from the Templegate Pumping Station; and a 6-inch diameter CI force main from the new Stevenson Pumping Station.

In accordance with Paragraph 8D.ii. of the CD, Baltimore County developed a standard process to inspect and evaluate the condition of the force mains in their collection system. The results of the force main investigations can be found in the individual Force Main Condition Assessment Reports located in **Appendix H** of this report. No corrective actions are recommended for the force mains in the Jones Falls Sewershed.

6.6 Recommended Sewer Capacity Improvements

Baltimore County's method to evaluate the collection system's capacity deficiencies and identify and evaluate proposed corrective actions focuses on eliminating model-predicted SSOs by reducing sources of wet-weather induced I/I and improving collection system maintenance. This process includes completion of the following:

1. Identify SSA's exhibiting excessive I/I.
2. Identify model-predicted SSOs.
3. Complete SSES investigations in SSA's exhibiting excessive I/I that contribute to model-predicted SSOs to locate wet-weather sources of I/I.
4. Complete model-verification flow monitoring at model-predicted SSO locations.

   The goal of the flow monitoring is to:

   - Confirm model simulation results.
   - Quantify wet-weather flow contributing to model-predicted SSOs.
5. Complete comprehensive collection system improvements that focus on:
   - Dry-weather flow I/I reduction (i.e. excessive base inflow).
   - Wet-weather flow I/I reduction.
   - Dry-weather flow capacity relief (i.e. undersized pipes).
   - Wet-weather flow capacity relief (i.e. undersized pipes).
   - Dry-weather flow preventive maintenance (i.e. cleaning, root control, etc.).
   - Wet-weather flow preventive maintenance (i.e. cleaning, root control, etc.).
6. Complete post-construction flow monitoring to determine the effectiveness of the system improvements/corrective actions.
7. Based on the post-construction flow monitoring data, update and recalibrate the collection system model as necessary.

Based on extensive and continuing pre- and post-construction I/I reduction flow monitoring and analysis, the County estimates that I/I can be significantly reduced as a result of a comprehensive sewer/manhole rehabilitation program of the public collection system. Conservatively, the model simulations completed to fulfill the LTC/PFME requirements included in Section 5 of this report assume a 35-percent reduction in peak inflow and a 23-percent reduction in groundwater infiltration.

Comprehensive I/I reduction rehabilitation in an area consists of rehabilitating all sewer pipes, including grouting of service connection reinstatements to the mainline sewer, and complete rehabilitation of all manholes.

A detailed description of the basis of I/I reduction and model-predicted capacity corrective actions is provided in the Long Term Capacity/Peak Flow Management Evaluation Report, provided in **Appendix L** of this report. A summary of the recommended capacity improvements by meter basin is shown in **Table 6-6.1 – Recommended Sewer and Manhole Capacity Improvements By Meter Basin**. The capacity improvements that will be implemented by the County in Meter Basins BC02, BC03, BC04, BC09, BC22, JFWR31 and TSJF01 are shown on **Map 6-1**.

Table 6-6.1
Jones Falls SRRR: Corrective Action Rehabilitation Plan
RECOMMENDED SEWER AND MANHOLE CAPACITY IMPROVEMENTS BY METER BASIN

Meter Basin	Pipe Rehabilitation	Manhole Rehabilitation	
	Sewer Lining All Sizes, Including Service Reinstatement Sealing (LF)	Manhole Lining (EA)	Seal Manholes (EA)
BC02	16,434	64	
BC03	5,311	28	
BC04	21,475	101	
BC09	62,891	291	
BC22			3
TSJF01			1
JFWR31			7

6.7 Alternative Storm Distribution

In accordance with Paragraph 9.C.ii(b) of the CD, model simulation results for the 2, 10 and 20-year/24-hour SCS Type II stom1 events are presented in the Capacity Assessment and Long Term Capacity/Peak Flow Management Evaluation report. However, as stipulated in Paragraph 9.C.ii(b) of the CD, the County may utilize an alternative rainfall distribution. The County has reviewed various rainfall distribution methodologies and believes the recommendations outlined in the Maryland Hydrology Panel's *Application of Hydrologic Methods in Maryland* report are more representative of actual storm events experienced in Baltimore County and will result in more accurate predictions of the synthetic design events compared to the SCS Type II storm events.

The Maryland Hydrology Panel, convened by the Maryland State Highway Administration and the Maryland Department of Environment, prepared the report to present "a set of hydrologic modeling procedures that are designed to ensure optimal balance between preserving the environmental quality of Maryland streams and (infrastructure) hydraulic performance and

safety. "In Section 3.6 of the report, the Panel details their experiments, which indicate that "the 2-, 5-, and 10-year flood peaks generated by the TR-20 model using the 24-hour design storm duration are often significantly higher than those predicted by the USGS-based equations. " Based on their analysis, the Panel recommends that the "10-, 5-, and 2-year storm events should be derived using either the 6-hour or 12-hour design storm duration."

Based on a review of the Panel's analysis, the County recognizes that deficiencies exist in the synthetic design storm procedure and concurs that the 2- and 10-year/6-hour design storms are more representative of actual County rainfall patterns. Additionally, an analysis of the County's sewersheds indicated that the largest sewersheds (i.e. Gwynns Falls, Patapsco and Jones Falls) all have times of concentration less than six (6) hours. The majority of the County's sewersheds are smaller and will have times of concentration that are significantly less than six (6) hours.

Figure 3.22 of the Panel's report indicates spatial distribution adjustments required based on sewershed area. Since most of the County sewersheds are less than 10 square miles in area and in accordance with the SCS National Engineering Handbook, Section 4, the County has not applied the distribution adjustment.

6.8 Baltimore City/County Boundary Conditions

This Recommendation Plan to eliminate the model-predicted SSOs is based on boundary conditions agreed upon by the City of Baltimore and Baltimore County. A copy of the City's hydraulic condition at each boundary location for the 10-year/6-hour storm event is provided in **Appendix J** (Boundary Conditions Time Series) of this report. The County may re-analyze and/or revise this Corrective Action Recommendation Plan if there is any deviation from these boundary conditions or delay in implementing the boundary conditions.

6.9 Wastewater/Storm Water Cross Connection Elimination (CD Ref. P.10.C.vii)

In accordance with Paragraph 9.C of the CD, the County must develop a plan for elimination of physical cross connections between the sanitary sewer collection system and the storm water collection system that allows, or has the potential to allow, sanitary waste to be discharged to the storm water collection system.

SSO 113 (Marnat Road) is the remaining non-pumping station SSO in the Jones Falls Seweshed's collection system. This SSO consists of a 12-inch diameter overflow pipe constructed in MH 793 in SSA 45-10-22-01 (Meter Basin JF0320S). When active, the SSO discharges to a storm drain that enters the Western Run branch of the Jones Falls.

As indicated in Section 2, the County began work on Contract 09124 SXO in November of 2009, which consisted of completing an extensive rehabilitation program upstream of SSO 113 aimed at reducing I/I in the collection system that contributes to the activation of this SSO. As part of this contract, forty-four (44) sanitary manholes were rehabilitated, 7,149 linear feet (LF) of sewer was lined and seventy-two (72) sewer house connection seals were installed. The project was

completed in June 2012 and post-rehabilitation flow monitoring of the SSO is currently being conducted in accordance with Section V.7.C.v of the CD. Monitoring shows that SSO 113 remains active during wet-weather events and the County continues to coordinate with the City of Baltimore regarding capacity improvements that are needed to several of the receiving sewers located downstream of the SSO in the City. The County has filed a time of performance extension request with the EPA and committed to completing additional investigations and developing system improvements to correct collection system deficiencies required to eliminate this SSO. The additional investigations that the County has completed include CCTV, SSES investigations, cleaning and capacity analysis and modeling. The County continues to work to determine how the collection system surrounding this SSO functions during wet- and dry-weather to determine the cause of the continued activation of this SSO during wet-weather.

6.10 Performance Assessment Program (CD Ref. P.10.E)

In accordance with Paragraph 10.E of the CD, the County must conduct a performance assessment of the work performed in the Jones Falls Sewershed to determine the effectiveness of the corrective action work that has been performed.

The following additional data collection activities may be implemented after completion of the rehabilitation and corrective action work per CD Reference Paragraph 10.c.xi:

- Rainfall Monitoring
- Flow Monitoring
- Post-Rehabilitation CCTV
- Review of Record Drawings
- Review of Reported Complaint Data
- Review of Work Orders

Post-rehabilitation flow monitoring is recommended to be performed in areas in which rehabilitation projects have already been completed by the County and in those meter basins that have been recommended for rehabilitation upon completion of the rehabilitation work.

Flow monitoring should preferably be performed at the same locations where flow monitoring was previously performed for this study. Collection of data at the same locations will allow for pre- and post-rehabilitation flow comparisons and recalibration of the hydraulic model to post-rehabilitation conditions if necessary. An I/I analysis should be performed subsequently to quantify the reduction of I/I in the rehabilitated areas. Per Baltimore County's SRRR Guidelines, it is recommended that post-rehabilitation flow monitoring capture at least six (6) measurable rain events of varying intensity and duration for the I/I analysis.

The County will evaluate the data collected at each location to determine the effectiveness of the completed corrective actions and to determine the subsequent work as appropriate.

6.11 Sewer Cleaning Program (CD Ref. P.10.C.iii)

The County's approved Collection System O&M Plan, dated January 12, 2006, requires the County to clean all gravity sewers that are 8-inches in diameter or larger on a seven (7) year cycle, subject to future cleaning frequency re-evaluations.

In addition to the O&M Plan, the County's Bureau of Utilities maintains a recurring specials cleaning list, which identifies specific sewer segments that require routine cleaning. A copy of this specials list, including a map which shows specific SSA's that are cleaned on a regular basis is contained in **Appendix P** of this report. The recurring specials list is reviewed and revised on a regular basis based on historical customer complaints, recorded historical O&M defects/observations and sewer location.

This cleaning program typically addresses conditions, which cause or contribute to water quality concerns or public health degradation, occur in high public use or public access areas or can be avoided through preventive maintenance.

6.12 Fats, Oils and Grease Control Program (CD Ref. P.10.C.iii)

The County's Fats, Oils and Grease (FOG) control program is detailed in the approved revised FOG Program Modification Plan, dated August 21, 2009. In accordance with the Plan, the County inspects FOG generating facilities using the risk scoring system and FOG generator identification evaluation developed by the County for the program. The inspection findings and FOG generating facility enforcement history is recorded in the County's FOG database for use in the County's annual FOG control program effectiveness evaluation. Program/analysis revisions that are identified by the effectiveness evaluation are addressed accordingly.

In addition to the FOG program, the County's Bureau of Utilities maintains a recurring specials cleaning list, which identifies specific sewer segments that experience grease deposition and require routine cleaning. A copy of this specials list, including a map showing the SSA's that require frequent cleaning, is contained in **Appendix P** of this report. The recurring specials list is reviewed and revised on a regular basis based on historical customer complaints, recorded historical O&M defects/observations and FOG control program inspection findings.

On September 16, 2010, the County posted on its Department of Environmental Protection & Sustainability website, a FOG manual to be used by local Food Service Facilities as a guide for complying with the County's revised Food Service Facilities Regulations. The County continues inspecting FOG generating facilities using the revised risk scoring system and the FOG generator identification evaluation. To address residential FOG generators, the County will develop informational material that describes the effects of FOG on the wastewater collection system. The material will also be distributed to residential property owners.

The regular cleaning associated with the FOG program will aid in addressing conditions which cause or contribute significantly to water quality or public health degradation, occur in high public use or public access areas or can be avoided through preventive maintenance.

6.13 Root Control Program (CD Ref. P.10.C.iii)

The County's Bureau of Utilities maintains a root control program as detailed in the approved Collection System Operation and Maintenance Plan, dated January 12, 2006. The root control program consists primarily of mechanical root cutting and the application of chemical root inhibitors to treat root growth in the sewers on an as-needed basis. Additionally, the Bureau of Utilities maintains a specials list, which identifies specific sewer segments that require routine root control. The specials list is reviewed and revised by the County on a regular basis, based on historical customer complaints, recorded historical O&M defects/observations and sewer location. A copy of the specials cleaning list is contained in **Appendix P** of this report.

Regular root cutting and/or chemical root treatment and maintenance will be applied to these sewers to prevent continued root intrusion as outlined in the approved County O&M Plan. The root control program will assist in addressing conditions that cause or contribute significantly to water quality or public health degradation, occur in high public use or public access areas or can be avoided through preventive maintenance.

6.14 Corrective Action Recommendation Plan

The County believes the most logical approach to addressing model-predicted SSOs in the Jones Falls Sewershed is to:

1. Complete comprehensive I/I reduction rehabilitation of public manholes and sewers within SSA's exhibiting excessive I/I or other areas that contribute to model predicted SSOs determined by model simulations using the 10-Year/6-Hour SCS Type II storm event.
2. Complete select capacity improvements based on a model simulation of the 10-Year/6-Hour SCS Type II storm event.
3. Correct identified structural deficiencies through rehabilitation or replacement.
4. Complete post-construction flow monitoring and analysis to confirm the I/I reduction effectiveness.
5. Confirm model simulations or revise the collection system model, if necessary.
6. Determine if additional improvements are needed based on the updated collection system model.

Areas selected for comprehensive I/I reduction in the Jones Falls Sewershed include Meter Basins BC02, BC03, BC04 and BC09. These meter basins and all structural recommendations are shown on **Map 6-1**.

The capacity improvements that address Items 1 and 2 above will be implemented by the County are described as follows:

- I/I reduction through rehabilitation - Perform comprehensive I/I rehabilitation of the public collection system in Meter Basins BC02, BC03, BC04 and BC09.

- In-Line Storage – Seal manholes and increase the hydraulic grade line (HGL) in the sewer segments upstream of the sealed manholes.

6.15 Corrective Action Implementation Schedule (CD Ref. P.10.Cvi)

The recommended improvements to the Jones Falls Sewershed's collection system which are contained in this SRRR Plan are estimated to be completed within six (6) years of the EPA and MDE's approval of this Plan per Paragraph 10.B. of the CD.

6.16 Corrective Action Recommendation Plan Cost Estimate (CD Ref. P.10.C.vi)

To estimate the corrective action costs, unit costs for the recommended corrective actions were utilized from Table 4-5 from the Baltimore County SRRR Plan Guidelines to develop the estimates provided in this report.

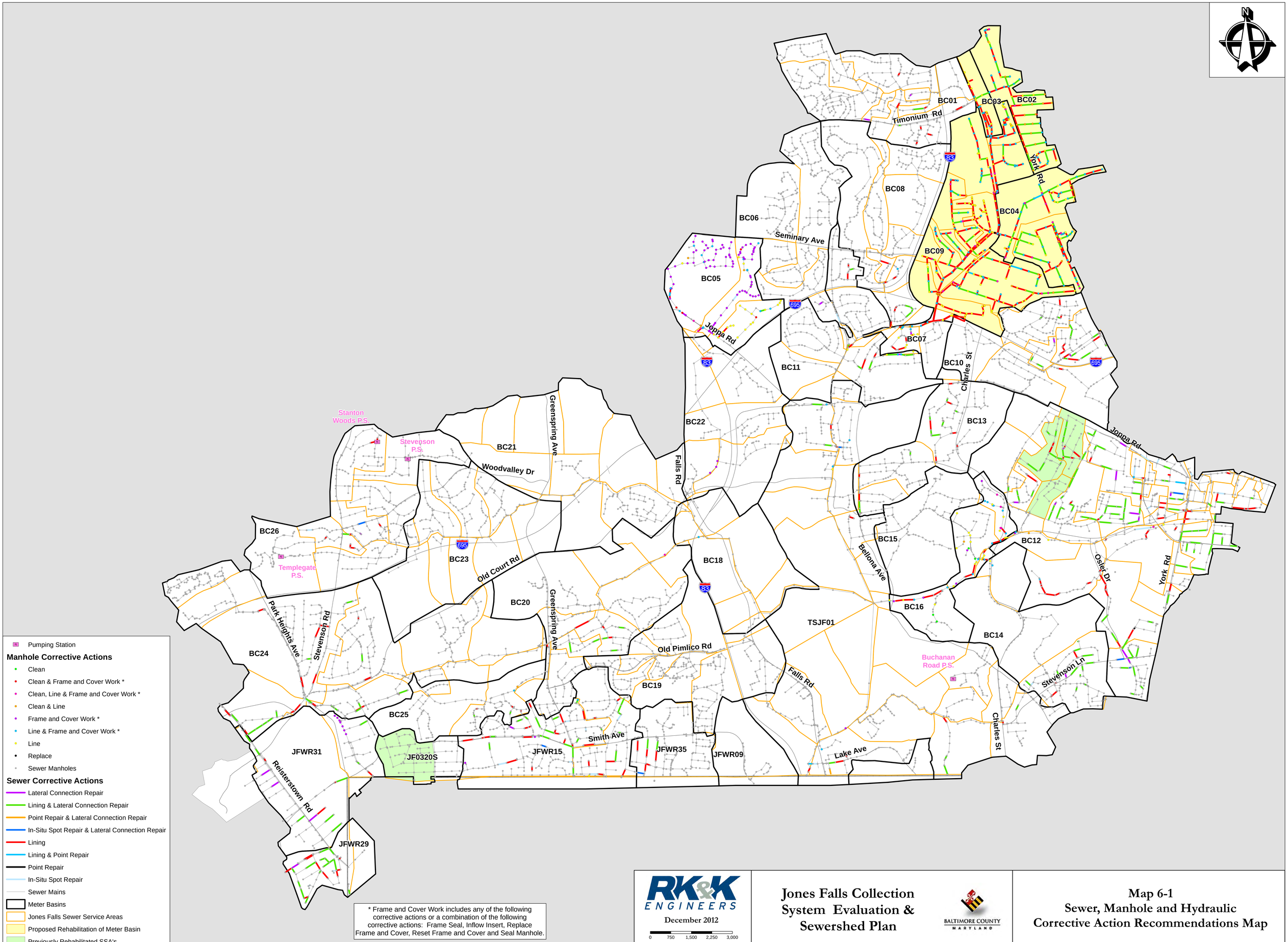
The estimated cost to implement the corrective actions identified in this report is $28,300,000. **Table 6-16.1 – Cost Estimate For All Corrective Action Improvements** summarizes these corrective action costs for the Jones Falls Sewershed. Detailed cost estimates by Meter Basin are provided in **Table 6-16.2** in **Appendix Q** of this report.

Table 6-16.1
Jones Falls SRRR: Corrective Action Recommendation Plan
COST ESTIMATE FOR ALL CORRECTIVE ACTION IMPROVEMENTS

Item	Total Cost
Capacity Recommendations (Basins 02, 03, 04, 09)	
Pipe Rehabilitation	$ 8,110,964.00
Manhole Rehabilitation	$ 2,144,092.00
Subtotal:	$ 10,255,056.00
Structural Recommendations	
Pipe	$ 5,842,586.00
Lateral	$ 2,808,960.00
Manholes	$ 1,249,145.00
Subtotal:	$ 9,900,691.00
Engineering, Construction Inspection, Administration, Contingency (40%):	$ 8,062,298.80
Total Estimated Cost:	$ 28,218,045.80
Cost:	$ 28,300,000.00

Map 6-1 shows the collection system improvements that have been completed in the Jones Falls Sewershed as well as the corrective actions that have been recommended in this report.

END OF SECTION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JFWR29
JFWR31
JFWR35
JF0320S
Timonium Rd
York Rd
Seminary Ave
Jeppa Rd
Charles St
Falls Rd
Greenspring Ave
Woodvalley Dr
Old Court Rd
Park Heights Ave
Stevenson Rd
Reisterstown Rd
Smith Ave
Old Pimlico Rd
Lake Ave
Bellona Ave
Osler Dr
Stevenson Ln
Joppa Rd
Stanton Woods P.S.
Stevenson P.S.
Templegate P.S.
Buchanan Road P.S.
695
83
Pumping Station
Manhole Corrective Actions
Clean
Clean & Frame and Cover Work *
Clean, Line & Frame and Cover Work *
Clean & Line
Frame and Cover Work *
Line & Frame and Cover Work *
Line
Replace
Sewer Manholes
Sewer Corrective Actions
Lateral Connection Repair
Lining & Lateral Connection Repair
Point Repair & Lateral Connection Repair
In-Situ Spot Repair & Lateral Connection Repair
Lining
Lining & Point Repair
Point Repair
In-Situ Spot Repair
Sewer Mains
Meter Basins
Jones Falls Sewer Service Areas
Proposed Rehabilitation of Meter Basin
Previously Rehabilitated SSA's
* Frame and Cover Work includes any of the following corrective actions or a combination of the following corrective actions: Frame Seal, Inflow Insert, Replace Frame and Cover, Reset Frame and Cover and Seal Manhole.
RK&K ENGINEERS
December 2012
0 750 1,500 2,250 3,000
Feet
Jones Falls Collection System Evaluation & Sewershed Plan
BALTIMORE COUNTY MARYLAND
Map 6-1
Sewer, Manhole and Hydraulic Corrective Action Recommendations Map

Appendices

Appendix Sections A through Q

Appendices A through Q are contained on a separate disk that has been included with this report.

BALTIMORE COUNTY

DEPARTMENT OF PUBLIC WORKS

On Call Engineering Services

Contract No. 42925

Long Term Capacity/Peak Flow Management Evaluation Report For The Jones Falls Sewershed Hydraulic Model

Job Order No. 201-077-7031

November 2012

RUMMEL, KLEPPER & KAHL, LLP
CONSULTING ENGINEERS
BALTIMORE, MARYLAND

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EXECUTIVE SUMMARY

The Long Term Capacity/Peak Flow Management Evaluation (LTC/PFME) Report provides the analysis of results from the model simulations of the Jones Falls Sewershed's collection system in response to dry- and wet-weather flows under existing and projected 2025 population and employment. The report also outlines the corrective actions necessary to eliminate capacity deficiencies and sanitary sewer overflows (SSOs) predicted by the hydraulic model simulations developed for the sewershed. This report also includes cost opinions for correcting model-predicted SSOs. Corrective actions and the associated cost estimates were developed for the 2-year/6-hour; 2-year/24-hour; 10-year/6-hour; 10-year/24-hour and the 20-year/24-hour design storms.

Before the corrective actions were implemented, each of the model-predicted SSOs was analyzed to determine if the limited network of conveyance system piping impacted the results. It was determined that a few of the model-predicted SSOs would be eliminated by adding additional collection system piping to the hydraulic model than were required by the Consent Decree (CD). The additional network of collection system nodes and piping impacted the modeling results of the five (5) design storms, but for the 2-year/6-hour design storm, the inclusion of the additional network eliminated all the model-predicted SSOs and therefore no corrective actions were necessary to accommodate that storm.

For the 2-year/24-hour design storm simulation, the recommended corrective actions include rehabilitation of sixteen (16) sewershed service areas (SSA) that exhibit excessive Inflow and Infiltration (I/I). It is also recommended to add capacity to the collection system by increasing the diameter of 1,377 LF of 10-inch diameter sewer to 18-inches and for five (5) manholes to be sealed to eliminate the model-predicted SSOs. The estimated cost for completing the recommendations made for the 2-year/24-hour design storm is approximately $9,601,000 in 2012 dollars.

For the 10-year/6-hour design storm simulation, in addition to the recommendations made for the 2-year/24-hour design storm, it is also recommended that 2,046 LF of 27-inch diameter relief sewer be constructed and six (6) additional manholes be sealed to eliminate all model-predicted SSOs for this design storm. The estimated cost for completing the recommendations made for the 10-year/6-hour design storm is approximately $10,753,000 in 2012 dollars.

For the 10-year/24-hour design storm simulation, in addition to the recommendations made for the 10-year/6-hour design storm, it is recommended that 11,577 LF of 10-inch to 30-inch diameter relief sewer be constructed and eighty-nine (89) additional manholes be sealed. The estimated cost for implementing the recommendations made for the 10-year/24-hour design storm is approximately $16,364,000 in 2012 dollars.

For the 20-year/24-hour design storm, in addition to the recommendations made for the 10-year/24-hour design storm, it is recommended that 1,915 LF of 21-inch to 30-inch diameter relief sewer be constructed and twenty-two (22) additional manholes be sealed. The estimated cost for completing the recommendations made for the 20-year/24-hour design storm is approximately $17,258,000 in 2012 dollars.

A table summarizing the recommended improvements for each design storm is provided below:

SUMMARY OF RECOMMENDED HYDRAULIC IMPROVEMENTS

Design Storm	Meter Basins to be Rehabilitated	SSAs to be Rehabilitated	Length of Relief Sewer (LF)	Length of Upsized Sewer (LF)	Manholes to be Sealed	Cost Estimate
2-year/6-hour	0	0	0	0	0	$0
2-year/24-hour	4	16	0	1,377	5	$9,601,027
10-year/6-hour	4	16	2,046	1,377	11	$10,753,255
10-year/24-hour	4	16	13,603	1,377	100	$16,364,322
20-year/24-hour	4	16	15,518	1,377	122	$17,257,718

During the five (5) design storms previously mentioned, the pumping stations (Buchanan, Stanton Woods, Templegate and Stevenson) and the force mains which convey the flow from these pumping stations to the gravity collection system where the pumping stations discharge into the Jones Falls Sewershed's collection system are capable of handling the dry- and wet-weather flows under both baseline and future flow conditions.

Boundary conditions, which represent the flow level expected, have been applied to the model at the model's connection points with the City of Baltimore's collection system. The existing boundary conditions were used for the baseline and future flow scenarios.

The Jones Falls Sewershed has two non-pumping station SSOs, SSO 113 and SSO 120, which were modeled as being open during baseline conditions and closed with the rehabilitation improvements in future flow conditions during all five (5) design storms.

1.0 INTRODUCTION

1.1 Sewershed Information

The Jones Falls Sewershed encompasses approximately 21 square miles, as depicted on **Map 1.1**. The Jones Falls Sewershed is located in the north-central portion of Baltimore County. The boundaries of the sewershed are roughly York Road to the east, Reisterstown Road to the west, the City-County line to the south, and Seminary Avenue and Greenspring Valley Road to the north. The development within the Jones Falls Sewershed is primarily residential with some areas of industrial, commercial and institutional development. The most significant area of commercial and institutional development is located along York Road corridor, between Timonium Road and Seminary Avenue. Areas of institutional development include Towson University, Saint Joseph's Medical Center, the Sheppard Pratt Health System and the Greater Baltimore Medical Center.

Sanitary flow generated in the County's Jones Falls Sewershed flows into the City of Baltimore's Jones Falls Sewershed at several locations as shown on **Map 1.1**. The current sewershed population within the County is approximately 90,000 residents and the projected population for Year 2025 is expected to increase slightly to approximately 99,000 residents, representing an increase of approximately 10 percent. The current sewershed employment is approximately 104,000 and the projected employment for Year 2025 is also expected to increase slightly to approximately 107,000 workers.

The Jones Falls Sewershed includes over 1,124,000 linear feet (LF) of circular gravity sewer ranging in size from 6- to 48-inches in diameter; approximately 6,200 manholes and other sewer structures; and approximately 19,000 LF of force main and pressure sewer. Four (4) pumping stations are also located within the sewershed. These stations include: the Buchanan Road Pumping Station; the Stanton Woods Pumping Station; the Templegate Pumping Station; and the Stevenson Pumping Station. The locations of these pumping stations are depicted on **Map 1.1**.

There are two (2) non-pumping station SSOs constructed in the Jones Falls Sewershed collection system: SSO 113 (Marnat Road) and SSO 120 (Charles Street Avenue). The location of these non-pumping station SSOs are depicted on **Map 1.1.**

2.0 HYDRAULIC MODELING SUMMARY

2.1 Model Development and Calibration

Dry-weather flow and wet-weather flow conditions were input into the calibrated model and were based on the data gathered during two (2) separate flow monitoring programs. One monitoring period consisted of the installation of twenty-six (26) flow meters that were installed in the collection system from February 1, 2008 through November 30, 2008. These flow meters are referred to as "County Meters". In addition to the flow meters installed by the County, data from six (6) flow meters installed as part of the City of Baltimore's Jones Falls Sewershed flow monitoring program were also utilized. These meters were located along or near the City-County line. The second monitoring period for these flow meters was from May 9, 2006 through May 18, 2007. These flow meters are referred to as the "Boundary Meters". Refer to **Map 1.1** for locations of the County and Boundary Meters.

The calibrated model was used to evaluate the County's collection, pumping and transmission systems to determine where improvements are needed to eliminate SSOs and prevent model-predicted SSOs from occurring.

The Model Development and Calibration Report for the Jones Falls Sewershed Hydraulic Model includes a detailed discussion of the calibration criteria. The dry-weather calibration criteria was met for volume for all but one of the flow meters and the peak flow criteria was met for twenty-seven (27) of the thirty-two (32) flow meters. For the wet-weather calibration, the criteria for volume was met for 84 percent of the modeled storms and the peak flow criteria met for 70 percent of the modeled storms. The model's calibration was impacted by the discovery of a diversion of flow into the Jones Falls Sewershed through the valve controlling flow from the Texas Pumping Station. This valve was not closed completely during most of the flow monitoring. This valve is normally in the closed position and flow from the Texas Pumping Station travels to the Longquarter Pumping Station and does not enter the Jones Falls Sewershed. Occasionally, Baltimore County's maintenance staff will open this valve allowing flow from Texas Pumping Station to enter the Jones Falls Sewershed upstream of where Flow Meter BC03 was installed. From review of the flow metering data, it appears that flow was being by-passed through this connection during most of the flow metering period. The Texas bypass could have caused the monitored flow data to be interpreted as having higher levels of base infiltration (BI) than was actually occurring. This BI was used to develop the per capita flow and diurnal flow patterns for the hydraulic model. Therefore, the hydraulic model can potentially be over-estimating the flow in the collection system

resulting in model predicted SSOs. The hydraulic model development and calibration is discussed in more detail in the Model Development and Calibration Report for the Jones Falls Sewershed Hydraulic Model.

Boundary conditions have been applied to the model at the model's connection points with the City of Baltimore. These boundary conditions are time series data for each design storm event that were provided by Baltimore City based on the City's modeling of the Jones Falls collection system. The boundary conditions represent the flow level expected at the connection points between the City of Baltimore and Baltimore County. The boundary conditions were provided on June 9, 2011 and were applied for both baseline and future flow conditions. The boundary conditions time series used in the hydraulic model for each of the five (5) design storms can be found in Appendix HCAR-3, Boundary Conditions Time Series.

2.2 Dry-Weather Flow Capacity Assessment Summary

Dry-weather flow simulations were run under both baseline and future (Year 2025) flow conditions to assess the collection system's performance. Baseline conditions are defined as the conditions that were in effect at the time of completion of the flow monitoring. No model predicted overflows or surcharges occur during dry-weather under either baseline or future conditions; however, some pipe segments are flowing more than 50 percent full during dry-weather conditions. For details of the model-predicted performance of the collection system under dry-weather conditions, please refer to the Model Development and Calibration Report for the Jones Falls Sewershed Hydraulic Model.

Data used in modeling the pumping stations include system and pump curves; wet-well storage; pump on and off elevations; and the force main data from the pumping station to the gravity collection system. The flow from the contributing SSAs was directed into the pumping station's wet-well. The future pumping station capacities are capable of passing, at a minimum, the flows under ultimate build-out of the area draining to the pumping station. In the case of the Stevenson Pumping Station, the capacity was set by the flow necessary to maintain a minimum velocity of 2-feet per second in the force main. The Buchanan Road, Stanton Woods and Templegate Pumping Stations are currently being evaluated in separate engineering evaluation and condition assessment (EE/CA) studies and future improvements will be recommended for those pumping stations. In the hydraulic model, the baseline and the future conditions were modeled with the existing pump curve and pump information. The pumping stations are capable of handling the dry- and wet-weather flows under both baseline and future flow conditions. A summary of the pumping station data is presented in the following table:

TABLE 2.1
PUMPING STATION SUMMARY

	Buchanan Road P.S.	Templegate P.S.	Stevenson P.S.	Stanton Woods P.S.
SSA Draining to PS	45-55-04-02	45-68-16-02	45-68-16-02	45-68-15-03
Meter Basin	TSJF01	BC26	BC26	BC26
Year 2025 Population	261	569	383	347
Baseline P.S. Capacity (GPM)	200	118	170	252
Future P.S. Capacity (GPM)	200	300	180	252
Pump On Elevation	318.50	468.50	450.87	451.75
Pump Off Elevation	315.50	465.50	447.37	448.25
Type of Pump - Baseline	Constant Speed	Constant Speed	Constant Speed	Constant Speed
Type of Pump - Future	Constant Speed	VFD or Constant Speed	Constant Speed	Constant Speed
Baseline Design Point	200 GPM at 78 Ft	118 GPM at 82 Ft	180 GPM at 54 Ft	252 GPM at 90 Ft

There are no current plans to upgrade force mains within the Jones Falls collection system. The force mains which convey flow from the pumping stations to the gravity collection system where the pumping stations discharge are capable of handling the dry- and wet-weather flows in the hydraulic model.

During the baseline conditions scenarios, non-pumping station SSOs 113 and 120 have been modeled as being open, without rehabilitation, which were the conditions in effect during the flow monitoring. However, both non-pumping station SSOs were removed during all future flow conditions scenarios. Also, rehabilitation to the SSAs where non-pumping station SSOs 113 and 120 are located, have only been applied during the future flow conditions scenarios. Neither of the non-pumping station SSOs activate during dry-weather flow conditions. Under baseline conditions, the population estimate is approximately 90,000 residents and the Year 2025 employment estimate is approximately 104,000 workers.

Future (Year 2025) flow conditions incorporate the increased projections in population and employment. The Year 2025 population estimate is approximately 99,000 residents and the Year 2025 employment estimate is approximately 107,000 workers. The future conditions also account that Non-Pumping Stations SSOs 113 (Marnat Road) and 120 (Charles Street Avenue) will be closed. The Paragraph 7 projects for the rehabilitation of SSAs 45-10-22-01 and 45-58-06-02, which drain to SSOs 113 and 120 respectively, are incorporated in the future flow conditions model.

Appendices HCAR-4A, HCAR-4B, HCAR-5A and HCAR-5B lists each pipe segment in the model and the simulated peak flow, full pipe capacity, percent of capacity used under baseline and future (Year 2025) flow conditions.

An analysis was conducted to determine the maximum flow from the Texas Pumping Station that the collection system could convey without causing a model-predicted SSO under dry-weather flow conditions. It was determined that approximately 13 MGD could be by-passed into the Jones Falls Sewershed without causing a dry-weather model-predicted SSO. The flow from the Texas Pumping Station was input as a constant flow and the model simulations were completed using several days of dry-weather. When the model simulation is completed with a flow of 14 MGD from the Texas Pumping Station, an SSO is predicted to occur at MH 22012.

2.3 Wet-Weather Flow Capacity Assessment Summary

Model simulations using the calibrated model were completed for five (5) synthetic rain events to provide an understanding of the collection system's response and performance during wet-weather flow. As part of the hydraulic capacity assessment, a Return Period Analysis (RPA) was conducted for both baseline and future flow conditions. The RPA identified the minimum storm that can potentially cause a model-predicted SSO within a portion of the collection system. The RPA simulation was completed using five (5) design storm events: the 2-year/6-hour storm; 2-year/24-hour storm; 10-year/6-hour storm; 10-year/24-hour storm and the 20-year/24-hour storm. The RPA is discussed in detail in the Hydraulic Capacity Assessment Report for the Jones Falls Sewershed Hydraulic Model.

Components of the wastewater collection system that exhibit hydraulic restrictions have also been identified for both baseline and future (Year 2025) flow conditions. This analysis is performed by InfoWorks, where the slope of each sewer segment is compared to the slope of the hydraulic grade line at peak flow. A surcharged sewer with a pipe slope that is flatter than the slope of the hydraulic grade line indicates that the sewer is restricting flow. In addition to the hydraulic grade line and pipe slope comparison, the pipe capacity is taken into account to classify segments of pipes as having hydraulic

restrictions. The hydraulic capacity assessment is discussed in detail in the Hydraulic Capacity Assessment Report for the Jones Falls Sewershed Hydraulic Model. A Pipe Capacity and a Manhole Surcharge Summary under wet-weather flow conditions is provided in Appendix LTC-1.

3.0 MODELING APPROACH FOR DETERMINING CORRECTIVE ACTIONS

3.1 Procedure and Assumptions

In determining the corrective actions recommended to eliminate model-predicted SSOs, several alternatives have been considered. The preferred method to eliminate model-predicted SSOs is to reduce inflow and infiltration (I/I) in the collection system(s) impacting an SSO by completing a comprehensive rehabilitation program of the public sanitary sewers and manholes within the identified SSAs. Rehabilitation of the sewers and manholes were modeled by reducing the Manning's "n" value of the pipe roughness coefficient to 0.01, assuming sewer rehabilitation was completed using cured-in-place-pipe (CIPP). Rehabilitation would also reduce the BI and the rainfall-dependent inflow and infiltration (RDII). Following the Baltimore County SRRR Guidelines, it was assumed that rehabilitation would reduce the BI by 23 percent, the total RDII volume by 35 percent and the peak RDII flow by 37 percent. Because of the complexity of the sanitary sewer systems, reduction of 35 percent in total RDII volume and reduction of 37 percent of the peak RDII flow were not always achieved. In these cases, a reduction of 36 percent of the capture coefficient (R value) was then used. The reduction in the R value will not always impact peak and volumes the same. For instance, when the entire sewer network within an SSA is rehabilitated using CIPP lining, the friction losses are reduced and therefore an increase in the velocity and reduction in the time of concentration of the sewerage can often be experienced. The increased velocities will sometimes correlate to a lesser extent in the decrease of peak flows than compared to the RDII volume.

Under all future flow condition scenarios, non-pumping station SSOs 113 and 120 are modeled as closed, and the Paragraph 7 projects for the rehabilitation of SSAs 45-10-22-01 and 45-58-06-02, which drain to SSOs 113 and 120 respectively, are incorporated in the future conditions model. Additionally, the pumping stations have been modeled with the ultimate pumping capacities under future conditions.

If rehabilitation of the wastewater collection system was not sufficient to eliminate model-predicted SSOs, then providing additional corrective actions within the collection system was considered. The following corrective actions were considered, listed in order of preference:

- In-line storage (i.e. seal manholes and increase the hydraulic grade line (HGL) in the pipe segments upstream of the sealed manholes)
- Increase pipe capacity and system storage by increasing the size of the sewer pipe.
- Construction of a relief sewer to add capacity and temporarily store peak wet-weather flow in the collection system

- Off-line storage (i.e. construction of a wastewater equalization storage facility)

Additionally, relevant Sanitary Sewer Evaluation Survey (SSES) data for the collection system was reviewed, including CCTV videos, the results of SSES investigations, smoke and dyed-water testing results, night-time flow isolation monitoring and sonar and laser profiling data to identify areas of sedimentation, sources of I/I and pipe defects.

3.2 Design Storm Events

One of the requirements of the CD is to complete a corrective actions analysis for each of the five (5) synthetic design storms. These design storms include the following:

TABLE 3.1
DESIGN STORM DATA

Design Storm	2-Year/ 6-Hour Storm	2-Year/ 24-Hour Storm	10-Year/ 6-Hour Storm	10-Year/ 24-Hour Storm	20-Year/ 24-Hour Storm
Total Rainfall (in)	2.37	3.38	3.50	5.19	5.80
*Peak Intensity (in/Hour)	1.84	4.63	2.71	7.11	7.95
**Average Intensity (in/Hour)	0.39	0.14	0.58	0.22	0.24

*Peak Intensity based on 0.1 hr increment
**Average Intensity based on entire duration of the storm

The Soil Conservation Service (SCS) Type II rainfall distribution, developed by the U.S. Natural Resources Conservation Service (NRCS), was used. Distribution increment is important in the representation of the peak intensity even if the same rainfall distribution is implemented. For instance, a peak intensity computed using a 0.1 hour increment will be higher than the peak intensity computed using a 0.5 hour increment. During a larger increment (0.5 hour) the peak is averaged over a larger period which will result in a lower peak intensity than that derived using a 0.1 hour time increment. Both increments will use the same amount of total rainfall and will have the same average rainfall and therefore the results will be comparable.

4.0 MODEL-PREDICTED CORRECTIVE ACTION SUMMARY (2-YEAR/6-HOUR DESIGN STORM EVENT)

4.1 Corrective Action Summary

Using future (Year 2025) flow conditions for the collection system, the model predicts that there will be only two (2) overflows during the 2-year/6-hour design storm. All of the other model-predicted overflows listed in the Hydraulic Capacity Assessment Report were eliminated by including additional 8-inch diameter collection system pipes to the model and by revising the flow loading points. The addition of these 8-inch diameter pipes and revisions to the flow loading points eliminate most false SSOs that were caused by isolated loading points rather than actual collection system deficiencies. The two (2) model-predicted SSOs that remain are located upstream of Non-Pumping Station SSO 113. These model-predicted SSOs are judged to be false SSOs, caused by a hydraulic restriction within the City of Baltimore's collection system and partly by having only one (1) loading point within this SSA, causing an over-prediction of flow in one (1) sewer segment included in the model. Refer to the Hydraulic Capacity Assessment Report for a discussion of the collection system performance under baseline and future flow conditions.

5.0 MODEL-PREDICTED CORRECTIVE ACTION SUMMARY (2-YEAR/24-HOUR DESIGN STORM EVENT)

5.1 Corrective Action Summary

Using future (Year 2025) flow conditions, the model predicts that seven (7) manholes overflow during the 2-year/24-hour design storm. The combined overflow volume is approximately 0.4105 MG. **Table 5.1** shows the model-predicted overflow volumes and the manholes where SSOs are predicted to occur for the 2-year/24-hour design storm simulation. Refer to the Hydraulic Capacity Assessment Report for a discussion of the collection system performance under baseline and future conditions. The longitudinal profiles for the model-predicted SSOs of the 2-year, 6-hour; 10-year, 6-hour and 20-year 24-hour design storm events that caused a model-predicted SSO are provided in Appendices HCAR-8A and HCAR-8B.

TABLE 5.1
FUTURE CONDITIONS MANHOLE PREDICTED SSO VOLUMES (MG) – 2-YEAR/24-HOUR DESIGN STORM

Manhole No.	SSA	Meter Basin ID	Overflow Volume
1583	45-10-22-02	JFWR31	0.0053
1585	45-10-22-02	JFWR31	0.0030
6954	45-59-16-01	BC11	0.0374
22010	45-59-18-00	BC07	0.1235
22012	45-59-19-00	BC07	0.1455
22013	45-59-19-00	BC07	0.0802
44219	45-71-00-00	BC22	0.0156
TOTAL			0.4105

After several model-predicted SSOs were eliminated after the additional collection system network was included into the model, the remaining SSOs were investigated. Two (2) model-predicted SSOs located upstream of Non-Pumping Station SSO 113 are judged to be false SSOs, caused by a hydraulic restriction within the City of Baltimore's collection system and partly by having only one loading point within this SSA, causing an over-prediction of flow in the one (1) sewer segment included in the model.

Except for the overflow at Manhole (MH) 44219, the model-predicted overflows in BC02, BC03, BC07 and BC11 listed in **Table 5.1** could be eliminated by simulating the rehabilitation of the wastewater collection system within four (4) Flow Meter Basins identified as exhibiting excessive I/I. The Meter Basins identified as exhibiting excessive I/I that have been simulated with rehabilitation are: BC02, BC03, BC04 and BC09. The cost of rehabilitation of these four (4) meter basins is approximately $8,920,025 in 2012 dollars.

Those four (4) meter basins are composed of the following sixteen (16) SSAs:

Flow Meter Basin	SSA
BC02	45-59-34-00
BC03	45-59-33-00
BC04	45-59-30-01 45-59-30-02 45-59-30-03
BC09	45-59-21-00 45-59-22-00 45-59-23-00 45-59-24-00 45-59-25-00 45-59-26-00 45-59-27-00 45-59-28-00 45-59-29-00 45-59-31-00 45-59-32-00

To eliminate the model-predicted overflow at MH 44219, it is recommended to increase the sewer size of five (5) sewer segments in Meter Basin BC22 from 10-inches to 18-inches in diameter, totaling 1,377 LF from MH 44216 to MH 44212, as shown on **Map 5.1**. The estimated cost for the pipe replacement is approximately $674,730 in 2012 dollars.

The model-predicted SSOs within Meter Basin JFWR31 can be eliminated by sealing five (5) manholes. These manholes include: MH1582; MH1583; MH1584; MH1585 and MH 29858.

The proposed hydraulic improvements for the 2-year/24-hour design storm are depicted on **Map 5.1**. The meter basins and SSAs to be rehabilitated are listed in Appendix LTC-2A, and the manholes to be sealed are listed in Appendix LTC-2B. Sewer segments where capacity improvements are recommended are listed in Appendix LTC-2C.

5.2 Corrective Action Cost Estimate Summary

The total estimated cost for the rehabilitative and capacity improvements required to eliminate model-predicted SSOs during the 2-year/24-hour design storm under future

(Year 2025) flow conditions is approximately $9,601,000 in 2012 dollars, as indicted in **Table 5.2**. A detailed breakdown of the cost estimate is provided in Appendix LTC-3A.

TABLE 5.2
FUTURE CONDITIONS MODEL-PREDICTED CORRECTIVE ACTION COST ESTIMATE FOR THE 2-YEAR/24-HOUR DESIGN STORM

Corrective Action ID	Meter Basin	Description	Total Cost
1	BC09	Rehabilitation of SSA 45-59-21-00	$216,316
2	BC09	Rehabilitation of SSA 45-59-22-00	$796,460
3	BC09	Rehabilitation of SSA 45-59-23-00	$258,124
4	BC09	Rehabilitation of SSA 45-59-24-00	$120,392
5	BC09	Rehabilitation of SSA 45-59-25-00	$686,086
6	BC09	Rehabilitation of SSA 45-59-26-00	$177,322
7	BC09	Rehabilitation of SSA 45-59-27-00	$475,260
8	BC04/BC09	Rehabilitation of SSA 45-59-28-00	$88,930
9	BC09	Rehabilitation of SSA 45-59-29-00	$660,452
10	BC04	Rehabilitation of SSA 45-59-30-01	$110,971
11	BC04/BC09	Rehabilitation of SSA 45-59-30-02	$1,126,428
12	BC04	Rehabilitation of SSA 45-59-30-03	$758,590
13	BC09	Rehabilitation of SSA 45-59-31-00	$369,320

TABLE 5.2
FUTURE CONDITIONS MODEL-PREDICTED CORRECTIVE ACTION COST ESTIMATE FOR THE 2-YEAR/24-HOUR DESIGN STORM

Corrective Action ID	Meter Basin	Description	Total Cost
14	BC09	Rehabilitation of SSA 45-59-32-00	$750,550
15	BC03/BC09	Rehabilitation of SSA 45-59-33-00	$905,072
16	BC02/BC03	Rehabilitation of SSA 45-59-34-00	$1,164,998
17	BC03	Rehabilitation of Portion of SSA 45-59-35-01	$96,612
18	BC03	Rehabilitation of Portion of SSA 45-59-35-02	$159,024
19	BC22	1,377 LF of 18-Inch Diameter Pipe Replacement	$674,730
20	JFWR31	Seal 5 Manholes	$5,390
TOTAL			$9,601,027

*Reference "Summary of Hydraulic Improvements", Appendix LTC-4

TABLE 5.3
I/I REMOVAL COST SUMMARY
FOR 2-YEAR/24-HOUR DESIGN STORM (FUTURE CONDITIONS)

Meter Basin	Total Cost	Avg. Volume Reduction (GPD)	I/I Removed/$
BC02	$987,336	30,267	0.031
BC03	$773,242	95,079	0.123
BC04	$1,409,814	93,820	0.067
BC09	$5,749,633	514,005	0.089
TOTAL	$8,920,025	733,170	0.082

6.0 MODEL-PREDICTED CORRECTIVE ACTION SUMMARY (10-YEAR/6-HOUR DESIGN STORM EVENT)

6.1 Model-Predicted Corrective Actions

In the future (Year 2025) flow conditions, the model predicts that seven (7) manholes overflow during the 10-year/6-hour design storm. The combined overflow volume is approximately 0.6526 MG. **Table 6.1** shows the model-predicted overflow volumes and the manholes where the SSOs are predicted to occur for the 10-year/6-hour design storm simulation.

TABLE 6.1
FUTURE CONDITIONS MANHOLE PREDICTED SSO VOLUMES (MG) – 10-YEAR/6-HOUR DESIGN STORM

Manhole No.	SSA	Meter Basin ID	Overflow Volume (MG)
1583	45-10-22-02	JFWR31	0.0089
1585	45-10-22-02	JFWR31	0.0063
6954	45-59-16-01	BC11	0.0597
22010	45-59-18-00	BC07	0.1909
22012	45-59-19-00	BC07	0.2238
22013	45-59-19-00	BC07	0.1286
44219	45-71-00-00	BC22	0.0344
TOTAL			0.6526

After several model-predicted SSOs were eliminated by adding the additional network of collection system nodes and piping into the model, the remaining SSOs were investigated. Two (2) model-predicted SSOs located upstream of Non-Pumping Station SSO 113 are judged to be false SSOs caused by a hydraulic restriction within City of Baltimore's collection system and partly by having only one (1) loading point within this SSA, causing an over-prediction of flow in the one (1) sewer segment included in the model.

To eliminate the remaining model-predicted SSOs during the 10-year/6-hour design storm simulation, it is recommended that 2,046 LF of 27-inch diameter relief sewer be installed and that six (6) manholes be sealed, in addition to the recommendations made for the 2-year/24-hour design storm. The recommended relief sewer would parallel the sewer between manholes 22009 and 6950. The manholes to be sealed are 1580, 1581, 6883, 44212, 44213 and 53270.

The proposed hydraulic improvements for the 10-year/6-hour design storm are depicted on **Map 6.1** and the details can be found in Appendices LTC-2A, LTC-2B, LTC-2C and LTC-2D.

6.2 Corrective Action Cost Estimate Summary

The total estimated cost for the hydraulic improvements required to eliminate model-predicted SSOs during the 10-year/6-hour design storm for future flow conditions is approximately $10,753,000 in 2012 dollars, as indicated in **Table 6.2**. A detailed breakdown of the estimated cost to complete this work is provided in Appendix LTC-1B.

TABLE 6.2
FUTURE FLOW CONDITIONS MODEL-PREDICTED CORRECTIVE ACTION COST ESTIMATE FOR THE 10-YEAR/6-HOUR DESIGN STORM

Corrective Action ID	Meter Basin	Description	Total Cost
1	BC09	Rehabilitation of SSA 45-59-21-00	$216,316
2	BC09	Rehabilitation of SSA 45-59-22-00	$796,460
3	BC09	Rehabilitation of SSA 45-59-23-00	$258,124
4	BC09	Rehabilitation of SSA 45-59-24-00	$120,392
5	BC09	Rehabilitation of SSA 45-59-25-00	$686,086
6	BC09	Rehabilitation of SSA 45-59-26-00	$177,322
7	BC09	Rehabilitation of SSA 45-59-27-00	$475,260
8	BC04/BC09	Rehabilitation of SSA 45-59-28-00	$88,930
9	BC09	Rehabilitation of SSA 45-59-29-00	$660,452
10	BC04	Rehabilitation of SSA 45-59-30-01	$110,971

TABLE 6.2
FUTURE FLOW CONDITIONS MODEL-PREDICTED CORRECTIVE ACTION COST ESTIMATE FOR THE 10-YEAR/6-HOUR DESIGN STORM

Corrective Action ID	Meter Basin	Description	Total Cost
11	BC04/BC09	Rehabilitation of SSA 45-59-30-02	$1,126,428
12	BC04	Rehabilitation of SSA 45-59-30-03	$758,590
13	BC09	Rehabilitation of SSA 45-59-31-00	$369,320
14	BC09	Rehabilitation of SSA 45-59-32-00	$750,550
15	BC03/BC09	Rehabilitation of SSA 45-59-33-00	$905,072
16	BC02/BC03	Rehabilitation of SSA 45-59-34-00	$1,164,998
17	BC03	Rehabilitation of Portion of SSA 45-59-35-01	$96,612
18	BC03	Rehabilitation of Portion of SSA 45-59-35-02	$159,024
19	BC22	1,377 LF of 18-Inch Diameter Pipe Replacement	$674,730
20	Multiple*	2,046 LF of 27-Inch Parallel Sewer	$1,145,760
21	Multiple*	Seal 11 Manholes	$11,858
TOTAL			$10,753,255

*Reference "Summary of Hydraulic Improvements", Appendix LTC-4

TABLE 6.3
I/I REMOVAL COST SUMMARY
FOR THE 10-YEAR/6-HR DESIGN STORM

Meter Basin	Total Cost	Avg. Volume Reduction (GPD)	I/I Removed/$
BC02	$987,336	23,356	0.024
BC03	$773,242	60,661	0.078
BC04	$1,409,814	79,632	0.056
BC09	$5,749,633	402,809	0.070
TOTAL	$8,920,025	566,458	0.064

7.0 MODEL-PREDICTED CORRECTIVE ACTION SUMMARY (10-YEAR/24-HOUR DESIGN STORM EVENT)

7.1 Model-Predicted Corrective Actions

Using future (Year 2025) flow conditions, the model predicts that nineteen (19) manholes overflow during the 10-year/24-hour design storm. The combined overflow volume is approximately 2.8663 MG. **Table 7.1** shows the model-predicted overflow volumes and the manholes where the SSOs are predicted to occur for the 10-year/24-hour design storm simulation.

TABLE 7.1
FUTURE CONDITIONS MANHOLE PREDICTED SSO VOLUMES (MG) – 10-YEAR/24-HOUR DESIGN STORM

Manhole No.	SSA	Meter Basin ID	Overflow Volume (MG)
1583	45-10-22-02	JFWR31	0.0129
1585	45-10-22-02	JFWR31	0.0369
6883	45-54-00-00	TSJF01	1.0310
6954	45-59-16-01	BC11	0.1832
17755	45-55-02-00	TSJF01	0.0507
17757	45-55-02-00	TSJF01	0.0016
20756	45-60-00-00	TSJF01	0.0558
20758	45-60-00-00	TSJF01	0.2067
20768	45-65-00-00	BC18	0.0966
22010	45-59-18-00	BC07	0.2280
22012	45-59-19-00	BC07	0.2785
22013	45-59-19-00	BC07	0.3492
30726	45-66-03-00	BC20	0.0100
33527	45-66-08-00	BC20	0.0382
33707	45-62-01-00	BC19	0.1572
33708	45-62-01-00	BC19	0.0275
44213	45-70-00-00	BC22	0.0121
44219	45-71-00-00	BC22	0.0815
53270	45-69-00-00	BC22	0.0087
TOTAL			2.8663

After several model-predicted SSOs were eliminated by adding additional collection system network of nodes and piping to the model, the remaining SSOs were investigated. Two (2) model-predicted SSOs located upstream of Non-Pumping Station SSO 113 are judged to be false SSOs caused by a hydraulic restriction within the City of Baltimore's

collection syatem and partly by having only one (1) loading point within this SSA, causing an over-prediction of flow in the one (1) sewer segment included in the model.

To eliminate the remaining model-predicted SSOs during the 10-year/24-hour design storm, improvements are recommended in addition to those recommendations made for the 10-year/6-hour design storm. Construction of relief sewers totaling 11,557 LF ranging in size from 10- to 30-inches in diameter and sealing of eighty-nine (89) manholes are recommended in addition to the recommendations made for the 10-year/6-hour design storm.

The proposed rehabilitative and capacity improvements for the 10-year/24-hour design storm are depicted on **Map 7.1** and the details can be found in Appendices LTC-2A, LTC-2B, LTC-2C and LTC-2D.

7.2 Corrective Action Cost Estimate Summary

The total estimated cost for the hydraulic improvements to eliminate model-predicted SSOs during the 10-year/24-hour design storm is approximately $16,364,000 in 2012 dollars, as indicated in **Table 7.2**. A detailed breakdown of these costs is provided in Appendix LTC-3C.

TABLE 7.2
FUTURE CONDITIONS MODEL-PREDICTED CORRECTIVE ACTION COST ESTIMATE FOR THE 10-YEAR/24-HOUR DESIGN STORM

Corrective Action ID	Meter Basin	Description	Total Cost
1	BC09	Rehabilitation of SSA 45-59-21-00	$216,316
2	BC09	Rehabilitation of SSA 45-59-22-00	$796,460
3	BC09	Rehabilitation of SSA 45-59-23-00	$258,124
4	BC09	Rehabilitation of SSA 45-59-24-00	$120,392
5	BC09	Rehabilitation of SSA 45-59-25-00	$686,086
6	BC09	Rehabilitation of SSA 45-59-26-00	$177,322

TABLE 7.2
FUTURE CONDITIONS MODEL-PREDICTED CORRECTIVE ACTION COST ESTIMATE FOR THE 10-YEAR/24-HOUR DESIGN STORM

Corrective Action ID	Meter Basin	Description	Total Cost
7	BC09	Rehabilitation of SSA 45-59-27-00	$475,260
8	BC04/BC09	Rehabilitation of SSA 45-59-28-00	$88,930
9	BC09	Rehabilitation of SSA 45-59-29-00	$660,452
10	BC04	Rehabilitation of SSA 45-59-30-01	$110,971
11	BC04/BC09	Rehabilitation of SSA 45-59-30-02	$1,126,428
12	BC04	Rehabilitation of SSA 45-59-30-03	$758,590
13	BC09	Rehabilitation of SSA 45-59-31-00	$369,320
14	BC09	Rehabilitation of SSA 45-59-32-00	$750,550
15	BC03/BC09	Rehabilitation of SSA 45-59-33-00	$905,072
16	BC02/BC03	Rehabilitation of SSA 45-59-34-00	$1,164,998
17	BC03	Rehabilitation of Portion of SSA 45-59-35-01	$96,612
18	BC03	Rehabilitation of Portion of SSA 45-59-35-02	$159,024
19	BC22	1,377 LF of 18-Inch Diameter Pipe Replacement	$674,730
20	Multiple*	1,900 LF of 10-Inch Diameter Parallel Sewer	$665,700

TABLE 7.2
FUTURE CONDITIONS MODEL-PREDICTED CORRECTIVE ACTION COST ESTIMATE FOR THE 10-YEAR/24-HOUR DESIGN STORM

Corrective Action ID	Meter Basin	Description	Total Cost
21	Multiple*	3,533 LF of 15-Inch Diameter Parallel Sewer	$1,483,440
22	Multiple*	1,798 LF of 21-Inch Diameter Relief Sewer	$943,425
23	Multiple*	2,046 LF of 27-Inch Relief Sewer	$1,145,760
24	Multiple*	4,326 LF of 30-Inch Relief Sewer	$2,422,560
25	Multiple*	Seal 100 Manholes	$107,800
TOTAL			$16,364,322

*Reference "Summary of Hydraulic Improvements", Appendix LTC-4

TABLE 7.3
I/I REMOVAL COST SUMMARY FOR THE 10-YEAR/24-HR DESIGN STORM

Meter Basin	Total Cost	Avg. Volume Reduction (GPD)	I/I Removed/$
BC02	$987,336	34,082	0.035
BC03	$773,242	125,024	0.162
BC04	$1,409,814	103,148	0.073
BC09	$5,749,633	595,283	0.104
TOTAL	$8,920,025	857,536	0.096

8.0 MODEL-PREDICTED CORRECTIVE ACTION SUMMARY (20-YEAR/24-HOUR DESIGN STORM EVENT)

8.1 Model-Predicted Corrective Actions

In the future (Year 2025) flow conditions, the model predicts that twenty-four (24) manholes overflow during the 20-year/24-hour design storm. The combined overflow volume is approximately 4.2631 MG. **Table 8.1** shows the model-predicted overflow volumes and the manholes where the SSOs are predicted to occur for the 20-year/24-hour design storm simulation.

TABLE 8.1
FUTURE CONDITIONS MANHOLE PREDICTED SSO VOLUMES (MG) – 20-YEAR/24-HOUR DESIGN STORM

Manhole No.	SSA	Meter Basin ID	Overflow Volume (MG)
1583	45-10-22-02	JFWR31	0.0148
1585	45-10-22-02	JFWR31	0.0520
6883	45-54-00-00	TSJF01	1.7816
6954	45-59-16-01	BC11	0.2441
17752	45-55-01-00	BC101	0.0006
17755	45-55-02-00	TSJF01	0.0826
17757	45-55-02-00	TSJF01	0.0121
20756	45-60-00-00	TSJF01	0.1090
20758	45-60-00-00	TSJF01	0.2620
20768	45-65-00-00	BC18	0.1681
20775	45-66-04-00	BC20	0.0010
22010	45-59-18-00	BC07	0.2610
22012	45-59-19-00	BC07	0.3156
22013	45-59-19-00	BC07	0.4397
30726	45-66-03-00	BC20	0.0225
32258	45-66-09-02	BC25	0.0090
32260	45-66-09-02	BC25	0.0034
33527	45-66-08-00	BC20	0.0837
33707	45-62-01-00	BC19	0.2129
33708	45-62-01-00	BC19	0.0515
44213	45-70-00-00	BC22	0.0173
44215	45-70-00-00	BC22	0.0002
44219	45-71-00-00	BC22	0.1060
53270	45-69-00-00	BC22	0.0124
TOTAL			4.2631

After several model-predicted SSOs were eliminated by adding the additional collection system network nodes and piping into the model, the remaining SSOs were investigated. Two (2) model-predicted SSOs located upstream of Non-Pumping Station SSO 113 are judged to be false SSOs caused by a hydraulic restriction within the City of Baltimore's collection system and partly by having only one (1) loading point within this SSA, causing an over-prediction of flow in the one (1) sewer segment included in the model.

To eliminate the remaining model-predicted SSOs during the 20-year/24-hour design storm, improvements are recommended in addition to those made for the 10-year/24-hour design storm. Construction of relief sewers totaling 1,915 LF ranging from 21- to 30-inches in diameter and sealing of twenty-two (22) manholes are recommended in addition to the recommendations made for the 10-year/24-hour design storm. The additional cost for the 20-year/24-hour storm improvements above the improvements for the 10-year/24-hour storm is approximately $893,000 in 2012 dollars.

The proposed hydraulic improvements for the 20-year/24-hour design storm are depicted on **Map 8.1** and the details can be found in Appendices LTC-2A, LTC-2B, LTC-2C and LTC-2D.

8.2 Corrective Action Cost Estimate Summary

The total estimated cost for hydraulic improvements to eliminate model-predicted SSOs during the 20-year/24-hour design storm is approximately $17,258,000 in 2012 dollars, as indicated in **Table 8.2**. A detailed breakdown of these costs is provided in Appendix LTC-1D.

TABLE 8.2
FUTURE CONDITIONS MODEL-PREDICTED CORRECTIVE ACTION COST ESTIMATE FOR THE 20-YEAR/24-HOUR DESIGN STORM

Corrective Action ID	Meter Basin	Description	Total Cost
1	BC09	Rehabilitation of SSA 45-59-21-00	$216,316
2	BC09	Rehabilitation of SSA 45-59-22-00	$796,460
3	BC09	Rehabilitation of SSA 45-59-23-00	$258,124

TABLE 8.2
FUTURE CONDITIONS MODEL-PREDICTED CORRECTIVE ACTION COST ESTIMATE FOR THE 20-YEAR/24-HOUR DESIGN STORM

Corrective Action ID	Meter Basin	Description	Total Cost
4	BC09	Rehabilitation of SSA 45-59-24-00	$120,392
5	BC09	Rehabilitation of SSA 45-59-25-00	$686,086
6	BC09	Rehabilitation of SSA 45-59-26-00	$177,322
7	BC09	Rehabilitation of SSA 45-59-27-00	$475,260
8	BC04/BC09	Rehabilitation of SSA 45-59-28-00	$88,930
9	BC09	Rehabilitation of SSA 45-59-29-00	$660,452
10	BC04	Rehabilitation of SSA 45-59-30-01	$110,971
11	BC04/BC09	Rehabilitation of SSA 45-59-30-02	$1,126,428
12	BC04	Rehabilitation of SSA 45-59-30-03	$758,590
13	BC09	Rehabilitation of SSA 45-59-31-00	$369,320
14	BC09	Rehabilitation of SSA 45-59-32-00	$750,550
15	BC03/BC09	Rehabilitation of SSA 45-59-33-00	$905,072
16	BC02/BC03	Rehabilitation of SSA 45-59-34-00	$1,164,998
17	BC03	Rehabilitation of Portion of SSA 45-59-35-01	$96,612
18	BC03	Rehabilitation of Portion of SSA 45-59-35-02	$159,024

TABLE 8.2
FUTURE CONDITIONS MODEL-PREDICTED CORRECTIVE ACTION COST ESTIMATE FOR THE 20-YEAR/24-HOUR DESIGN STORM

Corrective Action ID	Meter Basin	Description	Total Cost
19	BC22	1,377 LF of 18-Inch Diameter Pipe Replacement	$674,730
20	Multiple*	1,900 LF of 10-Inch Diameter Parallel Sewer	$665,700
21	Multiple*	3,533 LF of 15-Inch Diameter Parallel Sewer	$1,483,440
22	Multiple*	1,798 LF of 21-Inch Diameter Parallel Sewer	$1,133,475
23	Multiple*	2,046 LF of 27-Inch Dia. Parallel Sewer	$1,145,760
24	Multiple*	5,879 LF of 30-Inch Dia. Parallel Sewer	$3,292,240
25	Multiple*	Seal 122 Manholes	$131,516
TOTAL			$17,257,718

*Reference "Summary of Hydraulic Improvements", Appendix LTC-4

TABLE 8.3
I/I REMOVAL COST SUMMARYANALYSIS
FOR THE 20-YEAR/24-HR DESIGN STORM

Meter Basin	Total Cost	Avg. Volume Reduction (GPD)	I/I Removed/$
BC02	$987,336	35,979	0.036
BC03	$773,242	134,600	0.174
BC04	$1,409,814	107,850	0.076
BC09	$5,749,633	648,083	0.113
Total	$8,920,025	926,511	0.104

9.0 SUMMARY OF CORRECTIVE ACTION ANALYSES

This report evaluates the corrective actions necessary to eliminate model-predicted SSOs within the Jones Falls Sewershed. This report also provides the analysis of results from the model simulations of the collection system in response to dry- and wet-weather flows under existing and proposed 2025 population and employment. Also included are cost opinions to complete the recommended improvements for each model-predicted overflow condition. Corrective actions and the associated costs were determined for the 2-year/6-hour; 2-year/24-hour; 10-year/6-hour; 10-year/24-hour and the 20-year/24-hour synthetic design storm simulations under future (Year 2025) conditions.

For the 2-year/6-hour design storm, there are no model-predicted SSOs. For the 2-year/24-hour design storm, the recommendations include rehabilitation of sixteen (16) SSAs that exhibit excessive I/I, adding capacity to the collection system by increasing the size of 1,377 LF of 10-inch diameter sewer to 18-inches in diameter, and sealing of five (5) manholes. The estimated cost for completing the recommendations for the 2-year/24-hour design storm is approximately $9,601,000 in 2012 dollars.

For the 10-year/6-hour design storm, in addition to the recommendations made for the 2-year/24-hour design storm, it is also recommended that 2,046 LF of 27-inch relief sewer be constructed and six (6) additional manholes sealed to eliminate all of the model-predicted SSOs for this design storm. The estimated cost for completing the recommendations for the 10-year/6-hour design storm is approximately $10,753,000 in 2012 dollars.

For the 10-year/24-hour design storm, in addition to the recommendations made for the 10-year/6-hour design storm, it is recommended that 11,577 LF of 10-inch to 30-inch diameter relief sewer be constructed and eighty-nine (89) additional manholes be sealed. The estimated cost for implementing the recommendations made for the 10-year/24-hour design storm is approximately $16,364,000 in 2012 dollars.

For the 20-year/24-hour design storm, in addition to the recommendations made for the 10-year/24-hour design storm, it is recommended that 1,915 LF of 21-inch to 30-inch diameter relief sewer be constructed and twenty-two (22) additional manholes be sealed. The estimated cost for completing the recommendations for the 20-year/24-hour design storm is approximately $17,258,000 in 2012 dollars.

Table 9.1 summarizes the recommended improvements for each design storm. A summary of the hydraulic improvement by meter basin is provided in Appendix LTC-4.

TABLE 9.1
SUMMARY OF RECOMMENDED HYDRAULIC IMPROVEMENTS

Design Storm	Meter Basins to be Rehabilitated	SSAs to be Rehabilitated	Length of Relief Sewer (LF)	Length of Upsized Sewer (LF)	Manholes to be Sealed	Cost Estimate
2-year/6-hour	0	0	0	0	0	$0
2-year/24-hour	4	16	0	1,377	5	$9,601,027
10-year/6-hour	4	16	2,046	1,377	11	$10,753,255
10-year/24-hour	4	16	13,603	1,377	100	$16,364,322
20-year/24-hour	4	16	15,518	1,377	122	$17,257,718

BC40

BC42

BC41

Timonium Rd.

Seminary Ave.

Charles St.

York Rd.

Greenspring Ave.

Park Heights Ave.

Smith Ave.

Stanton Woods P.S.

Stevenson P.S.

Templegate P.S.

Buchanon Road P.S.

JF14

GF11

JFWR31

JF0320S

JFWR15

JFWR35

TSJF01

JFWR09

JFWR29

N

W

E

S

0 850 1,700 3,400

Scale - Feet

County Meter Location

Boundary Meter Location

Rain Gauge

Pump Station

Existing Force Main

Existing Gravity Main

<= 8"

10" - 16"

18" - 36"

42" - 72"

RK&K ENGINEERS

November 2012

Scale: 1 inch = 1,700 feet

Jones Falls Collection System Evaluation & Sewershed Plan

BALTIMORE COUNTY MARYLAND

JONES FALLS STUDY AREA

Map 1.1

HYDRAULIC IMPROVEMENT SUMMARY
2 YEAR - 6 HOUR EVENT

Meter Basins to Be Rehabilitated = 0
Manholes to Be Sealed = 0
Relief Sewer Added = NONE

BC01
BC02
BC03
BC04
BC05
BC06
BC07
BC08
BC09
BC10A
BC11
BC12
BC13
BC14
BC15
BC16
BC18
BC19
BC20
BC21
BC22
BC23
BC24
BC25
BC26
TSJF01
JFWR09
JFWR15
JFWR29
JFWR31
JFWR35
JF0320S
Timonium Rd.
Seminary Ave.
Greenspring Ave.
Charles St.
York Rd.
Park Heights Ave.
Smith Ave.
Stanton Woods P.S.
Stevenson P.S.
Templegate P.S.
Buchanon Road P.S.
SSO # 120 Closed
SSO # 113 Closed
83
695

SSA to Be Rehabbed
Manhole to Be Sealed
SSO Manhole
Relief Sewers Added
Pipes Upsized to 18"
Engineered SSO
Meter Basin
Existing Force Main
Pump Station
Existing Gravity Main
<= 8"
10" - 16"
18" - 36"
42" - 72"

N
W
E
S

0 850 1,700 3,400
Scale - Feet

RK&K ENGINEERS
November 2012
Scale: 1 inch = 1,700 feet

Jones Falls Collection System Evaluation & Sewershed Plan

BALTIMORE COUNTY MARYLAND

HYDRAULIC IMPROVEMENTS
2 YEAR - 6 HOUR EVENT
FUTURE CONDITIONS

Map 4.1

HYDRAULIC IMPROVEMENT SUMMARY
2 YEAR - 24 HOUR EVENT

Meter Basins to Be Rehabilitated = 4
Manholes to Be Sealed = 5
Relief Sewer Added = NONE
Upsize Pipes from 10" to 18" = 1,377 LF

BC01
BC02
BC03
BC04
BC05
BC06
BC07
BC08
BC09
BC10A
BC11
BC12
BC13
BC14
BC15
BC16
BC18
BC19
BC20
BC21
BC22
BC23
BC24
BC25
BC26
TSJF01
JF0320S
JFWR09
JFWR15
JFWR29
JFWR31
JFWR35

Timonium Rd.
Seminary Ave.
Greenspring Ave.
Park Heights Ave.
Smith Ave.
Charles St.
York Rd.

83
695

Stanton Woods P.S.
Stevenson P.S.
Templegate P.S.
Buchanon Road P.S.

SSO # 120 Closed
SSO # 113 Closed

SSA to Be Rehabbed
Manhole to Be Sealed
SSO Manhole
Relief Sewers Added
Pipes Upsized to 18"
Engineered SSO
Meter Basin
Existing Force Main
Pump Station
Existing Gravity Main
<= 8"
10" - 16"
18" - 36"
42" - 72"

N
W
E
S

0 850 1,700 3,400
Scale - Feet

RK&K ENGINEERS
November 2012
Scale: 1 inch = 1,700 feet

Jones Falls Collection System Evaluation & Sewershed Plan

BALTIMORE COUNTY MARYLAND

HYDRAULIC IMPROVEMENTS 2 YEAR - 24 HOUR EVENT FUTURE CONDITIONS

Map 5.1

HYDRAULIC IMPROVEMENT SUMMARY
10 YEAR - 6 HOUR EVENT

Meter Basins to Be Rehabilitated = 4
Manholes to Be Sealed = 11
Relief Sewer Added = 2,046 LF
Upsize Pipes from 10" to 18" = 1,377 LF

BC01
BC02
BC03
BC04
BC05
BC06
BC07
BC08
BC09
BC10A
BC11
BC12
BC13
BC14
BC15
BC16
BC18
BC19
BC20
BC21
BC22
BC23
BC24
BC25
BC26
TSJF01
JFWR09
JFWR15
JFWR29
JFWR31
JFWR35
JF0320S

Timonium Rd.
Seminary Ave.
Greenspring Ave.
Charles St.
Park Heights Ave.
Smith Ave.
York Rd.

Stanton Woods P.S.
Stevenson P.S.
Templegate P.S.
Buchanon Road P.S.

SSO # 113 Closed
SSO # 120 Closed

SSA to Be Rehabbed
Manhole to Be Sealed
SSO Manhole
Relief Sewers Added
Pipes Upsized to 18"
Engineered SSO
Meter Basin
Existing Force Main
Pump Station
Existing Gravity Main
<= 8"
10" - 16"
18" - 36"
42" - 72"

N
W
E
S

0 850 1,700 3,400
Scale - Feet

RK&K ENGINEERS
November 2012
Scale: 1 inch = 1,700 feet

Jones Falls Collection System Evaluation & Sewershed Plan

BALTIMORE COUNTY MARYLAND

HYDRAULIC IMPROVEMENTS
10 YEAR - 6 HOUR EVENT
FUTURE CONDITIONS

Map 6.1

HYDRAULIC IMPROVEMENT SUMMARY
10 YEAR - 24 HOUR EVENT

Meter Basins to Be Rehabilitated = 4
Manholes to Be Sealed = 100
Relief Sewer Added = 13,603 LF
Upsize Pipes from 10" to 18" = 1,377 LF

BC01
BC02
BC03
BC04
BC05
BC06
BC07
BC08
BC09
BC10A
BC11
BC12
BC13
BC14
BC15
BC16
BC18
BC19
BC20
BC21
BC22
BC23
BC24
BC25
BC26
TSJF01
JFWR09
JFWR15
JFWR29
JFWR31
JFWR35
JF0320S

Timonium Rd.
Seminary Ave.
Greenspring Ave.
Charles St.
York Rd.
Park Heights Ave.
Smith Ave.

83
695

Stanton Woods P.S.
Stevenson P.S.
Templegate P.S.
Buchanon Road P.S.

SSO # 120
Closed

SSO # 113
Closed

SSA to Be Rehabbed
Manhole to Be Sealed
SSO Manhole
Relief Sewers Added
Pipes Upsized to 18"
Engineered SSO
Meter Basin
Existing Force Main
Pump Station
Existing Gravity Main
<= 8"
10" - 16"
18" - 36"
42" - 72"

N
W
E
S

0 850 1,700 3,400
Scale - Feet

RK&K ENGINEERS
November 2012
Scale: 1 inch = 1,700 feet

Jones Falls Collection System Evaluation & Sewershed Plan

BALTIMORE COUNTY MARYLAND

HYDRAULIC IMPROVEMENTS 10 YEAR - 24 HOUR EVENT FUTURE CONDITIONS

Map 7.1

HYDRAULIC IMPROVEMENT SUMMARY
20 YEAR - 24 HOUR EVENT

Meter Basins to Be Rehabilitated = 4
Manholes to Be Sealed = 122
Relief Sewer Added = 15,518 LF
Upsize Pipes from 10" to 18" = 1,377 LF

BC01
BC02
BC03
BC04
BC05
BC06
BC07
BC08
BC09
BC10A
BC11
BC12
BC13
BC14
BC15
BC16
BC18
BC19
BC20
BC21
BC22
BC23
BC24
BC25
BC26
TSJF01
JFWR09
JFWR15
JFWR29
JFWR31
JFWR35
JF0320S

Timonium Rd.
Seminary Ave.
Greenspring Ave.
Park Heights Ave.
Smith Ave.
Charles St.
York Rd.

83
695

Stanton Woods P.S.
Stevenson P.S.
Templegate P.S.
Buchanon Road P.S.

SSO # 120 Closed
SSO # 113 Closed

SSA to Be Rehabbed
Manhole to Be Sealed
SSO Manhole
Relief Sewers Added
Pipes Upsized to 18"
Engineered SSO
Meter Basin
Existing Force Main
Pump Station
Existing Gravity Main
<= 8"
10" - 16"
18" - 36"
42" - 72"

N
W
E
S

0 850 1,700 3,400
Scale - Feet

RK&K ENGINEERS
November 2012
Scale: 1 inch = 1,700 feet

Jones Falls Collection System Evaluation & Sewershed Plan

BALTIMORE COUNTY MARYLAND

HYDRAULIC IMPROVEMENTS 20 YEAR - 24 HOUR EVENT FUTURE CONDITIONS

Map 8.1

6

DESIGN MANUAL

SANITARY SEWER

BALTIMORE COUNTY
DEPARTMENT OF PUBLIC WORKS DESIGN MANUAL

WASTEWATER COLLECTION AND PUMPING

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Baltimore County Department of Public Works
Design Manual

WASTEWATER COLLECTION AND PUMPING

I. GENERAL

A. Purpose and Scope

This document contains the minimum design criteria, information and guidance to properly design the components of the Baltimore County sanitary sewer system. This information outlines the approach, requirements, considerations and hydraulic calculations used in the design of the components of the gravity sewers and pumping stations. The Baltimore County Department of Public Works has the complete authority for the design, construction, operation, and maintenance of the public sewer collection system within its political boundaries.

B. Applicability

While the requirements described for the various components of sewer design will include and cover the majority of the conditions encountered, there is no intention to relieve the Engineer of responsibility to recognize when conditions are not favorable for the application of standards. In the preparation of the contract documents, the Engineer shall take into account such matters as constructability, system maintenance, and environmental impacts. The Engineer shall be continually alert to conditions that cannot be satisfied by the application of the standard criteria.

C. References

All construction plans and specifications for the extension or rehabilitation of the sanitary sewer system within the State of Maryland are subject to the guidelines contained in the latest edition of the *Maryland Department of the Environment's Design Guidelines for Sewerage Facilities*. It is the responsibility of the Engineer to refer to this document.

D. Glossary

The following abbreviations and definitions are beneficial in the reading and understanding of this design section.

Abbreviations

ACI	American Concrete Institute
ACP	Asbestos Cement Pipe
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials

BGE	Baltimore Gas and Electric Company
CAD	Computer-aided Drafting
CIP	Cast Iron Pipe
COMAR	Code of Maryland Regulations
DIP	Ductile Iron Pipe
GIS	Geographic Information System
GPAD	Gallons Per Acre Per Day
GPCD	Gallons Per Capita Per Day
GPM	Gallons Per Minute
HDD	Horizontal Directional Drilling
HDPE	High Density Polyethylene
HS-20, H-20	Truck Loading Designations
LPSS	Low Pressure Sewer System
MCC	Motor Control Center
MDE	Maryland Department of the Environment
MGD	Million Gallons Per Day
MOSH	Maryland Occupational Safety and Health
NSF	National Sanitation Foundation
NPSHR	Net Positive Suction Head Required
OSHA	Occupational Safety and Health Administration
PCCP	Prestressed Concrete Cylinder Pipe
PLC	Programmable Logic Controller
PRV	Pressure Reducing Valve
PSI	Pounds Per Square Inch
PVC	Polyvinyl Chloride
RCP	Reinforced Concrete Pipe
SCADA	Supervisory Control and Data Acquisition
SDR	Standard Dimension Ratio
SHA	State Highway Administration
SHC	Sewer House Connection
USGS	United States Geological Survey
VCP	Vitrified Clay Pipe
VFD	Variable Frequency Drive
WWTP	Waste Water Treatment Plant

Definitions

Engineer: A professional engineer, registered in the State of Maryland, who is responsible for the design of the project.

E. Design Objectives

The objective of these design standards is to provide a sanitary sewer system that safely collects and transports wastewater without harm to human health or environment; requires a minimal amount of maintenance; provides reliable service; and is cost effective.

F. Special Wastes

The Baltimore County sanitary sewer system is designed to collect and transport domestic wastewater. Any waste that differs in physical, biological, or chemical composition from normal domestic wastewater will not be allowed to be discharged into the sanitary sewer without written approval from the Department of Public Works, Bureau of Utilities, Engineering and Regulation Division.

G. Limitations

It is not possible to include in these guidelines all features of design that are necessary to accomplish the development of construction documents for all projects. The topics addressed are limited to those that will help the Engineer perform most tasks in an efficient manner while complying with County practice.

H. Alternative to Gravity Systems

It is the policy of the Department of Public Works to promote the use of gravity sewer systems to the extent possible due to the reliability and low maintenance associated with gravity sewer systems. All proposals to use grinder pumps/low pressure sewer systems shall be approved by the Director of Public Works in accordance with approved policies.

II. PRELIMINARY DESIGN CONSIDERATIONS

A. Existing Conditions

An important initial step in the design process is to obtain all existing maps, drawings, surveys, boring logs, and other data containing pertinent information on existing conditions in the area being served. Possible sources of such information include the following:

- Baltimore County Department of Public Works
- Local, State, and Federal Agencies, such as: Soil Conservation Service and USGS
- Public Utilities
- Commercial Businesses and Private Companies
- Planning Board

B. Field Investigations

1. Field Surveys*:* Field surveys shall be performed. Depending on the magnitude and complexity of the project, subsurface information, such as soil borings, may be required. Topographic information shall show locations of all streets, buildings, pavements, sidewalks, vegetation, drainage channels, and other land surface features, such as utility manholes or structures, which may influence the design and layout of the collection or conveyance system. Information on existing utilities shall include the location of underground water lines, sanitary sewers, storm drains, gas mains, electric conduit, and similar facilities.

    a. Items to Include in Topographic Surveys:
        1) All buildings and other structures, within and immediately adjacent to the project limits, together with all improvements including wells, springs, septic tanks, drain fields, dry wells, etc.
        2) Property and right-of-way lines (proposed and existing) including right-of-way widths and identifying road names.
        3) Property information:
            - owner name(s)
            - deed and recording references including parcel number, lot number, subdivision name and record plat reference(s)
            - property pipes, monuments or markers
            - street address
        4) Roadway pavements, curb lines, driveway entrances, walkways, fences, walls, etc., including types of materials, widths, heights, and all other descriptive data.
        5) Guardrails, sign posts, retaining walls, traffic lights, and other features related to the roadway safety.
        6) Horizontal and vertical location of existing utilities, including but not limited to, water mains, valves, cap and blow-offs, vaults, fire

hydrants, water meters, cub stops, sewer mains, manholes, cleanouts, storm drains, storm drain inlets, culverts, gas mains, utility poles, telecommunication utilities, and other located utilities. These utilities shall include those that are overhead, surface and subsurface.

7) Trees:
   - Trees, 12-inches in diameter and larger within proposed rights-of-way, shall be individually located and identified by type.
   - For existing developed properties, all trees, regardless of size, shall be located and identified by size and type that exist on the landscaped area of the property including hedges, shrubs, flower beds, gardens, planting boxes, etc.
   - For trees whose foliage overhangs the right-of-way or construction strip, the extent and diameter of the foliage (fall line) shall also be shown.
   - The tree line shall be located, and general characteristics of the wooden area shall be given including approximate average size of the trees, density, and general type of trees represented.
8) Water courses, such as streams, springs, swales and ditch areas shall be shown and located including edge of water and bottom of stream/ditch elevations at the deepest section.
9) Vehicular access routes for off-road or undeveloped areas shall be identified for use during construction.
10) Mail boxes.
11) Curb cuts.
12) Railroad tracks, bridges and ballast.
13) In addition to the above items, the following shall also be shown in conjunction with the topography:
   - 100-year floodplain
   - Natural Resources District Boundary
   - wetlands
   - 25-foot wetland buffer
   - traverse points and references (capital projects)
   - existing and proposed drainage and utility easements
   - Chesapeake Bay Critical Area Boundary
14) Identify and reference construction drawing numbers of all existing and proposed water and sewer utilities within and adjacent to the project limits.
15) On projects requiring permanent structures (i.e., pumping stations, water booster stations, etc.), the extent of the area shown outside of the anticipated property or right-of-way shall be determined by the Engineer on a case-by-case basis but shall not be less than 100 feet.
16) In new developments, where the terrain is being transformed, most of the information shall be obtained directly from approved plans prepared to satisfy proposed improvements including curbs, storm drains, street rights of-way and lots, as taken from the record plat and

construction plans and shall show all existing features that are to remain undisturbed.

b. Method of Locating Topography:
   1) The method of locating topography shall be by field surveys utilizing the radial survey method, the GPS Real-Time Kinematic (RTK) method or the cross-section method.
   2) Aerial photogrammetry may not be used for the preparation of construction plans. The Baltimore County topographic information shown on the County geographical information system (GIS) shall not be utilized as topography for contract drawings.
   3) Surveys may not be performed while snow cover is present on the ground.

c. Existing and Proposed Contour Lines:
   For capital projects, existing and proposed contour lines shall be shown on the plans. Sufficient information shall be obtained in order to allow the contours to be shown at 2-foot intervals or less. In areas of steep slopes (greater than 20%), contours may be shown at 5-foot intervals with the approval of the Sewer Design Section. For developer projects, contours do not need to be shown within the proposed road right-of-way; however, the above requirements for capital projects apply to all other areas.

2. Survey Controls:

   a. All surveys shall be in accordance with *The Maryland Standards of Practice for Professional Land Surveyors and Property Line Surveyors,* as adopted March 3, 1995 and as amended.

   b. Control points shall be referenced to the Maryland Coordinate System (NAD83/1991) horizontally and based on the County's survey control system. All other control points, whether National Geodetic Survey or State Highway Administration, shall be permitted as long as they are in the National Geodetic Survey database and are either first or second order points. All control loops to sites shall have a minimum closure of 1:15,000. For capital projects, all control points shall be referenced in the field to three (3) fixed objects that will not be disturbed during the construction of the project. These objects shall be well identifiable points (such as a tack in a 36" *oak* tree in lieu of a 36" tree). Also, it is desirable that these reference points be within 100 feet of the control station where possible. All control points, with their corresponding coordinate values, shall be shown upon the plan sheets in their relative position to the project by scale. Values may be shown at the corresponding location of the point or in tabular form

   c. Vertical control shall be referred to the National Geodetic Vertical Datum of 1988 (NGVD '88) with local reference to the County's survey control

system or other designated bench marks available in the National Geodetic Survey database. A closed level loop shall be used to establish benchmarks on the site using a minimum of two known benchmarks to verify the elevations clearly shown and referenced in detail on the plans. For capital projects, a minimum of two (2) benchmarks shall be shown on each plan sheet. As the vertical datum has changed over the years, the Engineer shall not use elevations from as-built plans without field verification.

d. Survey baselines shall be extended for the full length of the project and a minimum of 200-linear feet beyond anticipated limits of work. Station equalities shall be shown for all common intersecting control points. Bearings and distances between control points shall be shown. Coordinates of all control points shall be either shown at the control point in a neat manner or in tabulation form on each plan sheet for which the control points occur.

3. Soil Conditions: For larger projects, the character of the soil in which sewers or pumping stations will be constructed should be determined. The presence of rock, unfavorable soil conditions, or high groundwater table should be clearly established. The soil bearing capacity should be determined as needed for designing footings. Soil tests used to determine the need for corrosion control include earth resistivity, ph, oxidation-reduction potential, and relative moisture content and shall be completed if required.

4. Corrosion: If metal pipe, structures, or appurtenances are to be buried, the need for corrosion control must be assessed. The need for corrosion control should be based on data obtained from corrosion surveys, operating records, visual observations, inspections, and tests of existing facilities in the area and from manufacturers recommendations.

5. Construction Survey:

   a. General: The County shall provide the necessary stakeout controls on the plans for setting the alignment, both horizontally and vertically, to construct the proposed public utility. The Developer shall provide the necessary stakeout controls on the plans for setting the alignment, both horizontally and vertically, to construct the proposed private utility.

   b. Sewer Mains: Dimensioning shall be shown for gravity sewers by providing a table listing the manholes with their respective numbers and coordinate values. Dimensioning shall be shown for sewer force mains and appurtenances in the same manner as for water mains.

C. Layout

1. Service Area: The requirement that an area be served by a gravity collection, conveyance system, or a pumping system will, in most cases, be determined by topography. Building and grade elevations shall be evaluated for gravity drainage to an existing or proposed sewer collection system. In addition to topographic considerations, natural boundaries (like waterways, rivers, streams, etc.), and property lines of Federal, State, and local property also play a role in determining the size and limits of service areas.

2. Sewer System: The development of final sewer plans must await a final site plan, the completion of field surveys, and, to some extent, the establishment of floor grades. However, the development of economical site plans often requires concurrent preliminary planning of the sewer system. The location of building and lateral sewers will depend not only upon topography, but also upon the type and layout of the buildings to be served. Main, trunk, and interceptor sewers will follow the most feasible route to the point of discharge. The following general criteria will be used where possible to provide a layout that is practical, economical, and meets hydraulic requirements:

    - follow slopes of natural topography for gravity sewers
    - check existing maps or field surveys along prospective sewer routes to assure that adequate slopes are available
    - avoid routing sewers through heavily wooded areas and areas which require extensive restoration after construction and which limit access for future maintenance
    - check subsurface investigations for groundwater levels and types of subsoil encountered; if possible, avoid areas of high groundwater and the placement of sewers below the groundwater table
    - locate manholes at changes in direction, size, or slope of gravity sewers
    - sewer sections between manholes should be straight; the use of curved sewer alignments are not recommended
    - manholes should be located at intersections of streets when possible
    - avoid placing manholes adjacent to watercourses and in locations where the tops will be submerged or subject to surface water inflow
    - designer shall evaluate alternative sewer routes where applicable
    - verify that final routing selected is the most cost effective alternative that meets service requirements

3. Geographic Information System: Information on existing utilities may be available on the County's GIS system; and the new design and the as-built drawings must be incorporated into the GIS system. A CAD/GIS standard has been adopted and shall be used for all designs.

D. Summary of Procedure

1. The person desiring to provide sewer facilities shall engage the services of a Registered Professional Engineer in the State of Maryland skilled in designing sewer facilities.

2. The Engineer should evaluate the situation and shall prepare a preliminary report and design. The design shall conform to the standards herein.

3. The Engineer shall hold a preliminary engineering conference with representatives of the Bureau of Engineering and Construction to insure that the proposed design will conform to the requirements of the Bureau.

4. Based upon the results of the conference, the Engineer may proceed to the preparation of a final report, plans, and specifications.

E. Preliminary Engineering Conference

1. When Conference is Necessary: A preliminary conference with the Engineer will, in general, be required for the more important projects. A conference will not be required in cases of minor extensions to existing sewer systems or where prior provision has been made for such extension when conditions have not materially changed since such approval. The County will decide when a preliminary engineering conference or preliminary report will or will not be required. It is important that proper consideration of comprehensive planning be given to a project early in the development stages. The aspects of a project should be discussed with the County to assure that all Department planning requirements will be met.

2. Project Proposal: At the preliminary engineering conference, the Engineer is expected to set forth the sewerage problem and the proposed solution in such a manner as to support the recommendations made and the conclusions reached.

3. Plans: Location maps, layout sketches, and other illustrative material shall be presented. A summary of the major topics for discussion is given below:
    - locations, origin, and purpose and scope of the project
    - existing project conditions
    - County population projections
    - design analysis, including all design criteria employed
    - design computations
    - function, layout and siting requirements of the proposed facilities
    - evaluation of alternatives (feasibility, construction restraints, project costs, environmental constraints, non-economic factors, ease of operation and maintenance and maintenance costs)

- cost estimates and comparison of alternatives, including rights-of-way requirements
- if required, present worth cost determination and comparison based on engineering economics methods
- required permits and approvals of other agencies
- conclusions and recommendations
- schedule for implementation
- project illustrations
- additional subject matter, as required by DPW, whenever the specifics of each project dictates

A more detailed list of important design criteria is given in other chapters of this document. A review of the criteria outlined in this document as they relate to the particular project will be done. It is understood that at the time of this preliminary engineering conference, many of the criteria may not have been determined for a particular project.

4. Scope of Conference: Subjects appropriate to the project should be covered in the conference.

5. Preliminary Report: Copies of sketches, computations, and other written notes referred to by the Engineer at a preliminary conference shall be provided to the County. Supplementing the conference in cases of larger and more complicated works, the County may require submission of a written preliminary report detailing the agreement reached or elaborating on any of the subjects or design criteria discussed.

6. Scope of Advice From the County: Advice provided by the County is advisory only and does not constitute final approval by DPW. Favorable consideration of design data submitted at a preliminary engineering conference or in a preliminary report in no manner waives the legal requirement for the submission of final plans and an Engineer's report. DPW reserves the right to require modifications to the plans that do not conform to good engineering practice.

F. Designer's Report

The purpose of the report is to record for permanent reference the controlling assumptions made and factors used in the functional design of the sewerage works. Two copies of the report shall be submitted.

G. Drainage and Utility Easements

1. Legal Depictions:

a. New Subdivisions: Sewer mains within new subdivisions are typically located within the proposed County road right-of-way within the subdivision. When sewer mains within new subdivisions must be extended outside of the proposed County road right-of-way, the utility shall be placed within a drainage and utility easement. These easement areas shall be shown on the record plat for the proposed subdivision. The Bureau of Development Plans Review in the Department of Permits and Development Management will review and approve the proposed record plat after the contract drawings have been approved. The record plat shall meet the requirements of the Department of Permits and Development Management. Record plats shall be prepared on mylar.

b. SHA Road Right-of-Way: Longitudinal alignments and perpendicular crossings within the State Highway Administration road right-of-way are discussed in Chapter V.

c. Existing Subdivision: Sewer mains traversing property within the area of an existing recorded record plat which require new easements or modification of existing easements will require a revised record plat. The Bureau of Engineering & Construction will not approve sewer contract drawings until the revised record plat has been recorded and a copy is submitted to the Sewer Design Section. Temporary construction easements shall not be shown on a revised record plat but, instead, shall require the preparation of a standard drainage and utility easement plat. Revised record plats shall be prepared on mylar.

d. Private Property: Sewer mains traversing private property that is not recorded by record plat nor within any road right of way shall be placed within drainage and utility easements. Information depicting the exact location of the easement shall be presented on an 8½" x 14" standard drainage and utility easement plat or mylar. A written deed of easement shall accompany the plat for submission to the Bureau of Engineering & Construction for review and comment prior to the property owner signing the easement documents. For developers' projects, a deed of easement shall be prepared by an attorney. For a developer's project, once the plat and deed have been reviewed and approved, they will be returned to the developer's engineer for acquiring the necessary signatures. It will be the developer's responsibility to obtain the necessary signatures on the easement documents and to record them. Construction drawings for developer projects will not be approved until all necessary easement documents have been recorded and copies have been submitted to the Bureau of Engineering & Construction. For capital projects, once the drainage utility easement plat has been reviewed and approved, the Bureau of Land Acquisition will prepare the deed of easement and will be responsible for obtaining the necessary signatures and subsequent recordation.

In all cases, the deed of easement shall state the grantor as the property owner and the grantee as Baltimore County, Maryland.

Standard drainage and utility easement plats shall be prepared in accordance with the Bureau of Land Acquisition standards and will be subject to the review and approval of the Bureau of Land Acquisition.

2. Purpose: The legal depiction of drainage and utility easements and the documents associated with them provide permission for the construction, reconstruction, maintenance, repair and ownership of the proposed utility within the area designated on the plat. The property owner retains ownership of the land in all cases; however, the placement of landscaping and permanent structures within the easement areas is restricted.

3. Location:

   a. The location of drainage and utility easements shall be determined, in general, by the location and depth of the sewer main to be placed within the easement. Before establishing the location of the easement and associated sewer, the Engineer shall consider the property owner's interests in positioning the easement within the property. Easements which split or angle across the property's building envelope shall be avoided. Easement locations shall be fixed by surveys.

   b. Drainage and utility easements may not be located within landscape buffer areas, forest retention areas, forest mitigation areas, stormwater management areas including, but not limited to, stormwater management ponds, water quality traps, water quality swales, rain gardens, recharge areas, embankments, riprap areas, spillway, outfall channel or fenced-in areas, or ingress/egress easements unless prior approval is obtained by the Bureau of Engineering & Construction.

4. Width: The width of drainage and utility easements shall be large enough to ensure that they are adequate to construct, access, repair and/or replace the sewer. The topography of the sewer alignment, anticipated soil conditions, and required excavation depths shall be taken into consideration when easements are required. Additionally, other considerations include size of equipment and material required for the excavation and repair of the sewer. Consideration also shall be given to the requirement of future pipeline installations within the same easement.

   The following minimum easement widths shall be provided:

   a. Sanitary sewers and force mains shall be centered within a minimum twenty-foot (20') wide easement. For any larger pipe sizes and special

circumstances (such as depth nearing 20'), the width shall be determined on a case-by-case basis by the Bureau of Engineering & Construction. Sewers located adjacent and parallel to lot lines shall be centered within a thirty-foot (30') wide easement.

b. For longitudinal alignments along, but outside of, the SHA and County road rights-of-way, generally the centerline of sewers shall be no less than five feet (5') from the edge of a road right-of-way. The easement boundary line opposite of the road right-of-way shall be no less than ten feet (10') from the utility centerline. In all cases, the easement shall extend to the edge of the right-of-way for access.

c. Centerline of sewers shall be no closer than fifteen feet (15') from the edge of easements that are within the building envelope.

d. For utilities over ten feet (10') in depth, the easement width shall be equal to twice the depth of the sewer with the sewer centered within the easement.

5. Access: Adequate access shall be provided to the easement for both construction and maintenance purposes. In determining adequate access, the Engineer shall evaluate the contractor's and the County's abilities to deliver the required materials and equipment to every location along the pipeline alignment without traversing through private properties. The maximum distance between access points shall be 1,500 feet unless otherwise directed by the Bureau of Engineering & Construction. In selecting points of access, the Engineer shall avoid environmentally sensitive areas such as: wetlands, slopes over 10%, and heavily wooded areas. Access shall be provided by means of a drainage and utility easement no less than twenty feet (20') wide. For developer projects, if the contractor requires access through private property during construction, the developer shall be required to obtain – in writing – all rights of entry for temporary access.

III. ENGINEERING REPORTS AND FACILITY PLANS

A. General

The Engineering Report or Facility Plan

- identifies and evaluates wastewater related problems
- assembles basic information
- presents criteria and assumptions
- examines alternate projects with preliminary layouts and cost estimates
- describes financing methods
- sets forth anticipated charges for users
- offers a conclusion with a proposed project for consideration
- outlines official actions and procedures to implement the project

The planning document must include sufficient detail to demonstrate that the proposed project meets the applicable criteria.

The concept, factual data, and controlling assumptions and considerations for the functional planning of facilities are presented. These data form the continuing technical basis for the detailed design and preparation of construction plans and specifications.

Sketches may be provided to aid in presentation of a project. Outline specifications of special materials or equipment are occasionally included.

Engineering Reports must be completed for collection system, pump station, and interceptor projects. Comprehensive Facility Plans must be completed or have been completed for projects involving new, expanded, upgraded, or rehabilitated wastewater treatment facilities and major collection, interceptor, and pump station projects. The determination of classification as major or minor collection, interceptor, and pump station projects will be made by DPW.

B. Engineering Reports

Engineering Reports for minor sewer extension and pumping stations shall contain the following and other pertinent information as required by DPW:

1. Problem Definition: The description of the existing system should include an evaluation of the conditions and problems requiring correction.

2. Design Flow: The anticipated design average and design peak flows for the existing and ultimate conditions must be established. The basis of the projection of initial and future flows must be included, and must reflect, the existing or initial service area and the anticipated future service area. Flow data needed for design of new facilities is included in Chapter V.

3. Impact on Existing Wastewater Facilities: The impact of the proposed project on all existing wastewater facilities, including gravity sewers, left stations, and treatment facilities must be evaluated.

4. Project Description: A written description of the project is required.

5. Drawings: Drawings identifying the site of the project and anticipated location and alignment of all the proposed facilities are required.

6. Engineering Criteria: Engineering criteria to be used in design of the project shall be included.

7. Site Information: Project site information should include topography, soils, geologic conditions, depth to bedrock, groundwater level, floodplain considerations, and other pertinent site information.

8. Alternative Selection: The reasons for selection of the proposed alternative, including any lift station sites, feasibility, and how the project fits into a long-term plan, shall be discussed.

C. Facility Plans

1. General: Facility plans must be completed for wastewater treatment facilities, major collection systems, and those interceptor sewers and pumping stations serving major areas. Facility Plans shall contain the following and other pertinent information as required by DPW:

   a. Problem Evaluation and Existing Facility Review
      - descriptions of existing system, including condition and evaluation of problems requiring correction
      - summary of existing and previous local and regional wastewater facility and related planning documents

   b. Planning and Service Area: Planning area and existing and potential future service area.

   c. Population Projection and Planning Period: Present and predicted population shall be based on a 20-year planning period. Phased construction of wastewater facilities shall be considered in rapid growth areas. Sewers, and other facilities, with a design life in excess of 20 years shall be designed for the extended period.

   d. Hydraulic Capacity: The flows for the design year shall be identified and used as a basis for design of sewers, pumping stations, wastewater treatment plants, treatment units, and other wastewater handling facilities. The various design flows have been defined in Chapter V.

e. Hydraulic Capacity to Serve Existing Collection Systems:

1) Projections shall be made from actual flow data to the extent possible.

2) The accuracy of data and projections shall be evaluated. This reliability estimation shall include an evaluation of the accuracy of existing data as well as an evaluation of the reliability of estimates of flow reduction anticipated due to infiltration/inflow reduction or flow increases due to elimination of sewer bypasses and backups.

3) Critical data and methodology used shall be included. It is recommended that graphical displays of critical peak wet weather flow data be included for a wet weather flow period of significance to the project.

f. Hydraulic Capacity to Serve New Collection Systems:

1) The sizing of wastewater facilities receiving flows from new wastewater collection systems shall be based on an average daily flow of ninety (90) gallons per capita per day (gpcd) plus wastewater from industrial plants and institutional and commercial facilities, as outlined in Chapter V, unless water use data or other justification upon which to better estimate flow is provided.

2) The 90 gpcd figure shall be used which, in conjunction with the peaking factor from the Maryland Department of the Environment (MDE) curves shown in the Appendix, is intended to include infiltration for systems built with modern construction techniques.

3) If the new collection system is to serve existing development, the likelihood of infiltration/inflow contributions from existing service lines, and non-wastewater connections to those service lines, shall be evaluated; and wastewater facilities designed accordingly.

g. Initial Alternative Development: The process of selection of wastewater collection system alternatives for detailed evaluation shall be discussed. All alternatives, including no action, and the basis for the engineering judgement for selection of the alternatives chosen for detailed evaluation, shall be included.

h. Detailed Alternative Evaluation: The following shall be included for the alternatives to be evaluated in detail:

1) Sewer System Revisions: Proposed revisions to the existing sewer system, including the adequacy of portions of the system not being changed by the project, must be provided.

2) Wet Weather Flows: Facilities to transport and treat wet weather flows in a manner that complies with Local, State, and Federal regulations must be provided.

i. Final Project Section: The project selected from the alternatives considered under "h," shall be set forth in the final facility plan document to be forwarded to DPW for review and approval including the financing considerations and recommendations for implementation of the plan.

IV. ENGINEERING PLANS AND SPECIFICATIONS

A. Plans and Supporting Documents

Submissions to DPW shall include sealed plans, design criteria, the appropriate construction permit applications, review forms, and permit fees, if required.

1. General

   a. Plan Title: All plans for wastewater facilities shall bear a suitable title showing the name of the project. They shall show the scale in feet, a graphical scale, the North arrow, State plane grids, date, name of the Engineer with the certificate number and imprint of the registration seal. A space should be provided for signature by the appropriate County agencies. The County standard title block for all drawings is available electronically or from the Engineering Records Office.

   b. Plan Format: The plans shall be clear and legible (suitable for scanning). They shall be drawn to scale that will permit all necessary information to be plainly shown. The size of plans should be 24” x 36”. The datum used shall be indicated. Locations and logs of test borings, when required, shall be shown on the plans.

   c. Plan Contents: Detail plans shall consist of: plan views, profiles, elevations, sections, and supplementary views which, together with the specifications and general layouts, provide the working information for the Contract and construction of the facilities. They also shall include: dimensions and relative elevations of structures, the location and outline of equipment, location and size of piping, water levels, and ground elevations.

   d. Design Criteria: Design criteria shall be included with all plans and specifications, and a hydraulic profile shall be provided for force mains and all wastewater treatment facilities.

   e. Operation During Construction: Project construction documents shall specify the procedure for operation during construction.

2. Plans of Sewers

   a. General Plan: A comprehensive plan of existing and proposed sewers shall be submitted for projects involving new sewer systems and substantial additions to existing systems. This plan shall show the following:

      1) Geographical Features:

a) Topography and elevations – existing or proposed streets and all streams or water surfaces shall be clearly shown. Contour lines, at suitable intervals, should be included.

b) Streams – the direction of flow in all streams and high and low water elevations of all water surfaces shall be shown.

c) Boundaries – the boundary lines of the County and the area to be sewered shall be shown.

2. Sewers: The plan shall show the location, size, and direction of flow of all existing and proposed sanitary sewers.

b. Detailed Plans: Detailed plans shall be submitted. Profiles shall have a horizontal scale of not more than 50 feet to the inch, and a vertical scale of not more than 5 feet to one inch. Plan views shall be drawn to a corresponding horizontal scale and must be shown on the same sheet. Plans and profiles shall show:

- location of streets and sewers
- line of ground surface, size, material, and type of pipe
- length between manholes
- invert and surface elevation at each manhole
- grade of sewer between each two adjacent manholes (all manholes shall be numbered on the profile)
- elevation and location of the basement floor shall be plotted on the profile of the sewer which is to serve the house in question; the Engineer shall state that all sewers are sufficiently deep to serve adjacent basements except where otherwise noted on the plans
- locations of all special features, such as inverted siphons, concrete encasements, elevated sewers, etc.
- all known existing structures and utilities (above and below ground) which might interfere with the proposed construction or require isolation setback, particularly water mains and water supply structures (wells), gas mains, storm drains, and telephone and power conduits
- special detail drawings, made to scale to clearly show the nature of the design, shall be furnished to show the following:
  - all stream crossings and sewer outfalls with elevations of the streambed and normal and extreme high and low water levels
  - details of all special sewer joints and cross sections
  - details of all sewer appurtenances, such as manholes, inspection chambers, vaults, inverted siphons, and elevated sewers

3. Plans of Pumping Stations

a. Location Plan: A location plan shall be submitted for projects involving construction or revision of pumping stations. This plan shall show the following:
   - the location and extent of the tributary area
   - any boundaries within the tributary area
   - the location of the pumping station and force main and pertinent elevations

b. Detailed Plans: Detailed plans shall show the following, where applicable:
   - topography of the site
   - existing pumping station
   - proposed pumping station, including provisions for installation of future pumps
   - elevation of high water at the site and maximum elevation of wastewater in the collection system upon occasion of a power failure
   - maximum hydraulic gradient in downstream gravity sewers when all installed pumps are in operation
   - test borings and groundwater elevations

B. Specifications

Complete, sealed, technical specifications shall be submitted for the construction of sewers, wastewater pumping station, and all other appurtenances and shall accompany the plans.

The Specifications accompanying construction drawings shall include, but not be limited to:

- specifications for the approved procedures for operation during construction in accordance with this Chapter
- all construction information not shown on the drawings which are necessary to inform the builder in detail of the design requirements for the quality of materials, workmanship, and fabrication of the project.

The Specifications shall also include:

- the type, size, strength of operating characteristics and rating of equipment
- the complete requirements for all mechanical and electrical equipment, including machinery, valves, piping, and jointing of pipe
- electrical apparatus, wiring, instrumentation and meters
- laboratory fixtures and equipment, operating tools, construction materials
- special filter materials, such as: stone, sand, gravel, or slag
- miscellaneous appurtenances
- chemicals when used
- instructions for testing materials and equipment, as necessary, to meet the design standards

- performance tests for the completed works and component units (it is suggested that these performance tests be conducted at design load conditions wherever practical)

C. Revisions to Approved Plans

Any deviations from approved plans or specifications affecting capacity, flow, operation of units, or point-of-discharge shall be approved, in writing, before such changes are made. Plans or specifications so revised should, therefore, be submitted well in advance of any construction work that will be affected by such changes to permit sufficient time for review and approval. Structural revisions or other minor changes not affecting capacities, flows, or operation will be permitted during construction without written approval. “As Built” plans, clearly showing such alterations, shall be submitted to the reviewing agency at the completion of the work.

D. Standard Details

All work shall be completed in accordance with the *Standard Details for Construction*, latest revision. The Engineer shall refer to these details during the design of the project and during the preparation of the construction drawings.

V. DESIGN OF SEWERS

A. Approval of Sewers

In general, the Bureau of Engineering and Construction will approve construction plans for new sewer systems, extensions to new areas or replacement sewers. Separate systems are required for sanitary sewers and storm drains. Storm water runoff from roofs, streets, and other areas, including groundwater drains and foundation drains, must be excluded from sanitary sewers.

Constructed overflows shall not be permitted at any time.

B. Design Capacity and Design Flow

1. General

   a. The sizing of major components of the County's collection, conveyance, and pumping systems, such as major pumping stations, force mains, and interceptor sewers, are generally the responsibility of the Bureau of Engineering and Construction.

   b. The Master Plan generally shows the major existing and planned wastewater collection, conveyance, and pumping system components. The Engineer shall be familiar with design facilities in accordance with the Master Plan.

   c. The sewer design guidelines presented herein shall apply to Developer and Capital Projects.

   d. In general, sewer capacities shall be designed for the estimated ultimate tributary population except in considering parts of systems that may be readily increased in capacity. Consideration shall be given to the maximum anticipated capacity of institutions, industrial parks, etc. Where future relief sewers are planned, economic analysis of alternatives must accompany designs.

2. Design Period

   In general, sewer systems shall be designed for the design life of the pipeline material.

3. Design Factors and Design Flow

   a. General: The anticipated design average and design peak flows for the existing and ultimate conditions must be established. The basis of the

projection of initial and future flows must be provided and must reflect the existing or initial service area and the anticipated future service area.

b. Flow Definitions and Identification*:* The following flows for the design year shall be identified and used as a basis for design of sewers, pumping stations, lift stations, wastewater treatment plants, treatment units, and other wastewater handling facilities.

   Where any of the terms defined in this section are used in these design standards, the definition contained in this section applies.

   1) Design Average Flow*:* The design average flow is the average of the daily volumes to be received for a continuous 12-month period expressed as a volume per unit time. However, the design average flow for facilities having critical seasonal high hydraulic loading periods (eg, recreational areas, campuses, industrial facilities) shall be based on the daily average flow during the seasonal period.

   2) Design Maximum Day Flow: The design maximum day flow is the largest volume of flow to be received during a continuous 24-hour period expressed as a volume per unit time.

   3) Design Peak Hourly Flow*:* The design peak hourly flow is the largest volume of flow to be received during a one-hour period expressed as a volume per unit time.

   4) Design Peak Instantaneous Flow: The design peak instantaneous flow is the instantaneous maximum flow to be received.

c. Quantity of Wastewater: For any segment of the proposed sewer system the design wastewater flow must be determined. Sanitary or domestic wastes based on the population served by a given sewer segment, extraneous infiltration/inflow, and contributing commercial and industrial flows must be added to produce the design flow. The design flow rate shall be the sum of the peaked residential, peaked institutional, peaked commercial and industrial flow rates for the service area plus the corresponding infiltration and inflow components within the service area. The methods and criteria outlined below shall be used to develop design flows:

   1) Tributary Area: This is the area contributing wastewater to a particular sewer segment.

   2) Sanitary or Domestic Wastes:

a) Contributing Population: Domestic wastewater quantities normally are to be computed on a contributing population basis except as noted in the subparagraphs below. The population to be used in design depends upon the zoning of the area that the sewer serves. If the area contains residential zoning, the design population is based on full occupancy of all housing to be served at the population density shown on the following table. If the area contains non-residential zoning, the design contributing population for non-residential areas is based on the population per acre and dwelling units per acre densities in the following table:

Zoning Classification	Dwelling Units per Acre	Population per Acre
RC 2		
RC 5	0.667	2.33
DR 1	1.0	3.5
DR 2	2.0	7.0
DR 3.5	3.5	12.25
DR 5.5	5.5	19.25
DR 10.5	10.5	36.75
DR 16	16.0	56.0
R 0	5.5	19.25
BL	--	12.0
BM	--	10.0
BR	--	12.0
MR	--	10.0
ML	--	10.0
MLR	--	10.0
MH	--	16.0

b) Average Daily Flow:

1. Residential: The average daily per capita wastewater quantity for residential areas shall be 90 gallons per capita per day. The average daily residential flow rate shall be determined by multiplying the applicable population densities by the average daily per capita wastewater quantity of 90 gpcd.

2. Commercial and Institutional: The average daily wastewater quantities for commercial and institutional areas are given in the following table. The average daily commercial and institutional flow rate shall be determined by multiplying the applicable annual water use shown in the table by the selected parameter for the particular type of establishment.

Type of Establishment or Institution	Selected Parameter	Annual Water Use (gpd/unit)
Apartments		
High Rise	Gpd/occupied unit	218
Garden Type	Gpd/occupied unit	213
Banks	Gpd/gross sq. foot	0.04
Barber Shops	Gpd/chair	54.6
Beauty Salons	Gpd/station	269
Boarding Houses	Gpd/person	40
Car Washes	Gpd/sq. foot	4.78
Churches	Gpd/member	0.138
Clubs		
Golf Clubs	Gpd/membership	66.1
Swimming Clubs	Gpd/membership	16.5
Boating Clubs	Gpd/membership	10.5
Colleges		
Students in residence	Gpd/student	106
Non-resident students	Gpd/student	15.2
Department Stores	Gpd/sq. foot of total sales area	0.216
Shopping Centers	Gpd/sq. foot of total sales area	0.16
Drug Stores	Gpd/gross sq. foot	0.13
Hospitals	Gpd/bed	346
Hotels	Gpd/sq.foot	0.256
Laundries		
Commercial Laundries and Dry Cleaners	Gpd/sq. foot	0.253
Laundromats	Gpd/sq.foot	2.17
Motels	Gpd/sq. foot	0.224
Movie Theaters	Gpd/seat	5
Nursing Homes and Institutions	Gpd/bed	133
Office Buildings		
General Office	Gpd/gross sq. foot	0.093
Medical Office	Gpd/gross sq. foot	0.62
Primary and Secondary Schools		
Public Elementary	Gpd/student	5.38
Public Junior High	Gpd/student	5.64
Public Senior High	Gpd/student	6.63
Private Elementary	Gpd/student	2.27
Private Senior High	Gpd/student	10.4
Combined (grades 1-12)	Gpd/student	8.49
Restaurants		
Drive Ins (parking only)	Gpd/car space	109
Drive Ins (seating and parking)	Gpd/seat	40.6
Conventional Restaurants	Gpd/seat	24.2
Retail Stores	Gpd/gross sq. foot	0.16
Rooming Houses	Gpd/person	40
Service Stations	Gpd/sq.foot of garage and office space	0.251
Supermarkets	Gpd/gross sq. foot	0.20
Warehouses	Gpd/gross sq. foot	0.03

3. Industrial: The average daily wastewater quantities for industrial steady flow are given in the following table. The average daily flow rate shall be determined by multiplying the applicable gallons/acre per day by the total acres of industrially zoned area. This flow represents the design contributing population that includes the population employed at any time. Industrial flow cannot be computed on a population basis. Flows from industrial facilities depend upon the type and extent of the activities. Industrial waste sewers and sanitary sewers will be designed for the peak industrial flow as determined for the particular industrial process or activity involved.

Acres	Gallons per Acre
0-25	4,000
26-100	3,000
101-200	2,000
201-500	1,500
Over 500	1,000

c) Average Hourly Flow: When designing sewers to serve small areas and where the majority of wastewater is generated by commercial, institutional, or industrial users or other short term wastewater generators, the average hourly flow rate shall be used. The average hourly flow rate shall be computed based on the actual period of waste generation.

d) Peak Diurnal Flow Rate: The normal daily range of flow, or the diurnal pattern, is from approximately 40% to 250% of the average daily flow. The peak daily, or diurnal, flow rate is an important factor in sewer design especially when minimum velocities are to be provided on a daily basis. The peak diurnal flow rate shall be one half of the extreme peak flow rate.

e) Peak Residential Flow: The peak residential wastewater flow is determined by the peaking factor as shown in the empirical curves published by the Maryland Department of the Environment (MDE) formerly the Maryland State Department of Health and Mental Hygiene.

4. Infiltration and Inflow

a. General: Extraneous flows from groundwater infiltration enter the sewer system through defective pipe, joints, fittings, and manhole walls. Sources of inflow include connections from roof leaders, yard drains,

storm drains, cooling water discharges and foundation drains in addition to submerged manhole covers.

b. Design Allowance for New Sewers*:* Where infiltration and inflow must be calculated for an area that is currently served by a collection system, the allowance for infiltration and inflow will be provided by the Bureau of Engineering and Construction and is based on flow records.

C. Hydraulic Design of Sewers

1. General

a. Hydraulic Design: As discussed in previous sections, the Bureau of Engineering and Construction reserves the right to determine the size of major wastewater conveyance and pumping facilities. Sewers shall be designed to discharge the wastewater flows as required by Section V,B. Generally, it is desirable to design sewers for full flow, even at the peak rates. Flows above 90-95% of full depth are considered unstable and may result in a sudden loss of carrying capacity with surcharging at manholes. In addition, large trunk and interceptor sewers laid at flat grades are less subject to wide fluctuations in flow; and if designed to flow full, may lack sufficient air space above the liquid to assure proper ventilation. Adequate sewer ventilation is a desirable method of preventing the accumulation of explosive, corrosive, or odorous gasses, and of reducing the generation of hydrogen sulfide. Therefore, trunk and interceptor sewers shall be designed to flow at depths not exceeding 90% of full depth; laterals and main sewers, 80%; and building connections, 70%. However, regardless of flow and depth, the minimum sizes to be used are 6-inch for building connections and 8-inch for all other sewers. Industrial applications shall use the same design criteria as sanitary sewers, except pipe material that is resistant to the waste, shall be specified. The following formula, charts, procedures and criteria shall be used for design.

b. Design Formula and Charts:

1) The Manning Formula shall be used for design of gravity flow sewers.

2) Roughness: In all cases, Manning's "n" shall be 0.013. Due to uncertainties in design and construction and a desire to provide a margin of safety, "n" values smaller than 0.013 will not permitted. Variation of "n" with depth may be considered in designing sewers to flow partially full.

3) Velocity: Sewers will be designed to provide a minimum velocity of 2.0 feet per second at the average daily flow, or average hourly flow rate, and a minimum velocity of 2.5 – 3.5 feet per second at the peak

diurnal flow rate. When velocities drop below 1.0 foot per second during periods of low flow, organic solids suspended in the wastewater can be expected to settle out in the sewer. Sufficient velocity (2.5 – 3.5 feet per second) must be developed regularly, once or twice daily as a minimum, to re-suspend and flush out solids that may have been deposited during low flows. A velocity of 2.5 feet per second is required to keep grit and sand suspended. However, new sewers that are properly designed and constructed should contain only minor quantities of grit or sand. Maximum velocity is set at 10.0 feet per second in the event that grit becomes a problem.

4) Slope: The minimum slopes for sewers of various sizes shall be as follows:

Pipe Size (inches)	*Minimum Slope (feet per 100 feet)*
8	0.60
12	0.40
15	0.25
18	0.18
21	0.12
24	0.10
36	0.10

Assuming uniform flow, the value of "S" in the Manning Formula is equivalent to the sewer invert slope. Pipe slopes must be sufficient to provide required minimum velocities and depths of cover on the pipe. Although it is desirable to install large trunk and interceptor sewers on flat slopes to reduce excavation and construction costs, the resulting low velocities may cause objectionable solids to be deposited in the pipe creating a buildup of hydrogen sulfide.

Laying pipes on slopes that provide minimum velocities shall be avoided whenever possible. Minimum velocities have been outlined in Section C.

Pipeline slopes exceeding 20% are permitted only with the approval of the Bureau of Engineering and Construction. Special anchor requirements for steep slope pipelines are required, and these requirements are outlined in other sections of these guidelines.

If practical, suitable drop manholes or other structures or methods to dissipate energy and reducing erosive velocities shall be provided as approved by the Bureau of Engineering and Construction.

In instances where the Bureau of Engineering and Construction approves slopes less than the allowed minimum slopes, the Engineer

shall add the following notes to the respective profile(s) in **bold** lettering:

"NOTE: The Contractor shall assure that the minimum slope of the sewer main shown on the above profile to be no less than designed. The slope shall be computed by using the actual constructed distances between manholes and elevation differences of the manhole inverts. The survey rod must be completely plumb during readings.

If the manhole cone section prevents a plumb reading of each pipe invert, then a level must be used within the manhole to project the invert for a plumb rod reading. The Contractor shall have each manhole run surveyed by a Maryland Registered Land Surveyor, and the results shall be submitted in writing to the County Inspector. A second copy shall be submitted to the Sewer Design Section for verification. The Sewer Design Section shall approve the information submitted by the Contractor's surveyor prior to constructing any subsequent manhole runs. Constructed slopes, which result in a pipe capacity less than the design flow rate or result in velocities less than scouring velocity to naturally cleanse the sewer, shall be reconstructed to the proper slope before constructing any subsequent manhole runs."

5) Cover: Adequate cover must be provided for frost protection. Generally, a minimum of three and one-half feet (3.5') of earth will be required to protect the sewer against freezing. Where frost penetrates to a considerably greater depth and lasts for an appreciable period of time, the waste may not contain sufficient heat to prevent the gradual cooling of surrounding earth and the buildup of an ice film inside the pipe. Under these conditions, greater cover shall be required. Sufficient cover also must be provided to protect the pipe against structural damage due to superimposed surface loadings. Concentrated and uniformly distributed loads are discussed in this chapter.

c. Design Procedure: After a preliminary layout has been made, a tabulation will be prepared, in convenient form, setting forth the following information for each sewer section:
   - designation of manhole by numerals
   - contributing populations – residential and non-residential
   - design flows – average, daily peak, and extreme peak
   - length of sewer
   - invert elevations
   - invert slope or gradient

- pipe diameter and roughness coefficient
- flow depths at design flows
- velocities at design flows
- depths of cover on the pipe – maximum and minimum

d. Hydraulic Profile: In most situations where small or medium-sized gravity sewers are installed in long runs, it will be safe to assume uniform flow throughout the entire length of conduit. However, in cases where larger sewers (24-inch diameter and above) are constructed in runs of less than 100 feet and with a number of control sections where non-uniform flow may occur, a plot of the hydraulic profile is recommended. Methods used to calculate and plot hydraulic profiles, including backwater curves, drawdown curves, and hydraulic jumps, will conform to those presented in standard textbooks.

e. Critical Flow: Gravity sewers ordinarily will be designed to maintain subcritical flow conditions in the pipe throughout the normal range of design flows. However, there are exceptions in which supercritical flow may be required and will be justified. Minimum sized sewers, 6 and 8-inch designed to discharge very low flows, must occasionally be placed on slopes steeper than critical in order to provide minimum velocities. In addition, small to medium sized sewers, when required to discharge unusually large flows, may necessitate super-critical slopes. Finally, steep slopes may be unavoidable due to natural topography and ground conditions. Where super-critical flow will occur, care must be taken in the design to insure that downstream pipe conditions do not induce a hydraulic jump or other flow disturbance. Depths of flow within 10-15% of critical are likely to be unstable and will be avoided where pipes will flow from 50-90% full. Critical depths for various flows and pipe diameters may be obtained from standard hydraulic textbooks.

f. Computer Programs: Numerous commercial computer programs are available for modeling, data management (such as location, diameter, depth, slope, and capacity of each component), design, and analysis of sewer systems. As well as being used to design new collection systems, these programs are able to assist with assessing the impacts of changes and additions to existing collection systems thus helping to optimize designs.

D. Details of Design and Construction

1. Gravity Sewer Design

a. General: The layout of a gravity sewer system of collectors and interceptors is a function of the topography. Collector and interceptor sewers shall be designed to serve all areas up to the drainage area limits

within the current development envelope. The plan and profile alignments of the sewer system shall provide for future connections within the drainage area limits while minimizing both expense and modifications to the existing system.

Consideration shall be given to space requirements for future utilities, particularly water and storm drains. In the absence of water and storm drain design, the Engineer shall recommend the space requirements for future water or drainage facilities and shall provide the necessary clearances. This requirement is particularly important at roadway intersections. When plans of existing facilities are insufficient to accurately locate existing underground obstructions that may alter the final design, the Engineer shall perform test pit excavations during the design to uncover the subject facilities so that horizontal and vertical positions of existing utilities may be accurately determined. During test pitting, the Engineer shall be responsible for providing all traffic control and public safety measures necessary to locate the utilities and shall be responsible for restoring the surface. The Engineer shall coordinate the test pit operations and shall provide a field survey crew to physically locate the subject facility.

In general, sewers 24-inches in diameter or less shall be laid with straight alignment between manholes. Use a laser beam to check for straight alignment.

Curvilinear alignment of sewers larger than 24 inches may be considered on a case-by-case basis, provided compression joints are specified and ASTM or specific pipe manufacturer's maximum allowable pipe joint deflection limits are not exceeded. Curvilinear sewers shall be limited to simple curves that start and end at manholes. When curvilinear sewers are proposed, minimum slopes indicated in Section V-C-4 must be increased accordingly to provide a recommended minimum velocity of 2.0 feet per second when flowing full.

b. Horizontal Alignment – Location: The horizontal alignment shall take into account the following general alignment guidelines. Pipelines greater than 12 inches in diameter may have other limitations and requirements that alter these general alignment guidelines.

    1) Due to the greater depth of the sewer in relation to most other utilities, the location for the sewer main shall be given first priority.

    2) Sanitary sewer shall be designed with a straight horizontal alignment between manholes.

3) For Developer's projects, the design of the public water, sewer force mains, and storm drain utilities within proposed developments, shall be prepared concurrently to ensure compatibility of the utilities.

4) In new developments where sewers are constructed in advance of the road pavements, the sewer shall be placed on the lower side of the street, seven feet (7') from the street centerline. On curved streets, this location must be compromised since straight horizontal alignments are required between manholes.

   For road widths 24 feet or less, sewer mains shall be designed five feet (5') from the road right-of-way centerline in lieu of the seven feet (7') stated above.

   In all cases, manholes must be placed within the pavement area wherever possible. Within closed section roadways, manholes shall not be closer than three feet (3') from the face of the curb; the manhole cone section shall be rotated away from the face of the curb. Manholes shall not be located within designated parking areas within townhouse and condominium subdivisions.

5) If public water and sewer mains cannot be located within the paved roadway section, the Engineer shall request a waiver of these design standards from the Bureau of Engineering and Construction, providing reasons why the standards cannot be met.

6) For developer projects, whenever the system is planned to be extended by either future phases within the subdivision or by other parties, the sewer main shall be extended beyond the edge of paving by means of a manhole to avoid future cutting of the pavement.

7) In existing development with curbs, the sewer mains shall be generally located as in new subdivisions.

8) Where sewers in residential developments are constructed between or across lot lines, the centerline of the pipe shall be constructed on the lot line between lots or along the rear property line. Generally, the sewers or required easements shall not cut across building envelopes. In cases where sewer mains are between or behind lots where access from public roads is limited, access easements from the nearest public roadway shall be provided between lots. All such easements shall allow adequate access to the seer by maintenance personnel and equipment. See the section entitled, *Rights-of-Way, Easements and Construction Strips,* within this design manual for additional information regarding easement and access requirements.

9) In proposed subdivisions where easements are required between two adjacent lots for the extension of the sewer system, a sewer main shall be provided within the easement between the adjacent lots. The sewer main shall extend the full length of the easement between the lots.

   In cases where a utility easement is required to be extended to the limits of the property being developed through a lot or open space to provide future service to an adjacent property, that easement shall be cleared of trees and otherwise shall be prepared for the future extension of the main. For Developer Projects, whenever the proposed sewer system is planned to also serve an adjoining future service area, drainage and utility easements shall be provided to enable the future sewer extension.

10) Within private roads, public sewer mains shall be located within the paved roadway sections. When a sewer main cannot be located within the private road, the Engineer shall obtain prior approval by the Sewer Design Section for its location.

11) When sewer mains are proposed for locations adjacent to existing buildings, the minimum distance away from the building foundation shall be fifteen feet (15') as long as the sewer depth is not greater than the bottom of the building foundation. The horizontal distance to the building shall be no greater than the depth of sewer.

12) Generally, all sewers crossing waterways shall be encased in concrete, a minimum of six inches (6") thick. Limits of concrete encasement shall extend from top of bank to top of bank. The entire manhole run, which encompasses the encasement, shall consist of ductile iron pipe. The design shall incorporate restoration with riprap placed from bottom of stream to top of bank. Although in many cases MDE guidelines require Class I riprap, Baltimore County has found this size of riprap to be insufficient to withstand the stream velocities encountered during rainfall events. Therefore, the minimum size riprap shall be Class II.

13) Sewer mains shall not be located within stormwater management facilities. Likewise, any drainage and utility easement for a sewer main shall not be located within stormwater management facilities. These areas include, but are not limited to, stormwater management ponds, water quality traps, swales, rain gardens, and recharge areas and the associated embankments, riprap areas, spillway outfall channel, fenced-in areas or other features associated with the stormwater management facility.

14) When a sewer main is proposed parallel to or adjacent to a stream or other waterway, it shall be located so that future movement of the waterway due to streambank erosion will not encroach upon the sewer main. Generally, this shall be accomplished by locating the sewer main away from the outside meander bend of the stream. If it is not possible to locate the sewer main away from the outside meander bend, the Sewer Design Section will only reconsider the sewer main location if the Engineer incorporates permanent streambank stabilization measures which satisfies the Sewer Design Section.

15) The alignment within existing roadways shall avoid high traffic volume roads if other options are available. The alignment shall be designed to allow the construction of the pipeline without the need to have road closings. When a sewer main is required to cross a Baltimore County road right-of-way, after considering the type and condition of the road, traffic volumes, disruption to traffic and possible conflicts with existing utilities, the Engineer shall recommend to open cut, tunnel, or jack and bore the utility across the roadway on a case-by-case basis. Baltimore County DPW's Bureau of Engineering and Construction shall make the final decision as to the method used. The approval method shall be noted on the plans and profile.

16) Longitudinal alignments within the State Highway Administration road right-of-way shall be avoided. Approval on such longitudinal alignments must receive prior written approval from the Sewer Design Section and the State Highway Administration.

17) In existing road rights-of-way, the alignment shall try to avoid the removal of trees or landscaped areas. In parks and public rights-of-way where the alignment will require the removal of trees, the Engineer shall obtain the approval of the appropriate agency or agencies for tree removal. When the alignment is located outside of rights-of-way, it shall minimize disturbance to environmental features. In addition to trees, the alignment shall attempt to avoid wetlands, steep slopes, and other sensitive/difficult areas to work within. The alignment shall follow property lines to the extent practical and feasible.

18) When existing roadways are involved with the alignment, the horizontal alignment of the road must be evaluated for acceptable geometry; and the sewer main must be designed with respect to possible roadway improvements to avoid costly relocations. The Engineer shall evaluate the plane geometry of the road with respect to movement of traffic and available right-of-way width for the accommodation of the sewer main.

19) Sewer mains proposed to cross State Highway Administration or County road rights-of-way must be placed within a tunnel or sleeve if required by the appropriate agencies. DIP shall be used for the entire manhole run in applications where a tunnel or sleeve is required. The design and construction of the carrier pipe and casing pipe within railroad rights-of-way shall be designed in accordance with the requirements of the railroad being crossed. Manholes shall be no closer than ten feet (10') from both ends of the sleeve.

20) Sewer mains may not be located within existing or proposed wetland mitigation areas, forest retention areas, or reforestation areas.

21) If the Master Water and Sewer Plan identifies a proposed interceptor or collector sewer within a proposed subdivision, the Developer shall construct the proposed sewer as part of the onsite utility construction. If the sewer main must be increased in size to accommodate the remaining drainage area above and beyond that required for the subdivison, the larger size sewer main shall be constructed. If a larger size sewer main is constructed, the PWUA will discuss potential recoupments to recover the cost of the pipe size increase.

22) Sewers on twenty percent (20%) slopes or greater, if permitted, shall be anchored in accordance with the following schedule and in accordance with the Standard Specifications. Drop manholes are not allowed. The Engineer shall ensure that an inflatable plug can be fully inserted within the pipe.

- Grades 20% - 35%
  20 ft. length pipe – anchor at each joint
  13 ft. length pipe – anchor at every other joint
  Anchor spacing shall not exceed 36 feet.

- Grades 35% - 50%
  20 ft. length pipe – anchor at each joint
  13 ft. length pipe – anchor at each joint
  Anchor spacing shall not exceed 24 feet.

- Grades >50%
  Custom Design
  Anchor spacing shall not exceed 16 feet.

23) The Engineer shall show a detail on how the pipe will enter manholes for sewer slopes twenty percent (20%) or greater. The detail shall demonstrate that an inflatable plug will be capable of being inserted into the sewer with the brick channel in place. The length of sewer plugs is as follows:

6 –10-inch diameter plug: 24-inch length
8 –12-inch diameter plug: 25.5-inch length
12 –18-inch diameter plug: 27-inch length

24) If locating sewers in roadways is deemed impractical by Baltimore County, the following criteria will be met:

a. Maximum Slope above the pipe is 15%
b. Cross slope is to be a minimum of 2% and a maximum of 5%

c. Vertical Alignment – Location

Grades: The vertical position of gravity sewers is determined by the rate of fall between the unit to be served and the collector sewer, by the rate of fall of the ground along the course of the pipeline, and by the existence of obstructions that cannot be economically relocated. All sewer grades shall be established to require the least excavation while satisfying minimum and maximum velocity requirements, design flow conditions, clearances, and depth requirements. All sanitary sewers shall be designed on a continuous grade between manholes.

The minimum slopes are presented in Section V-C-4 herein.

Sewer house connections (SHCs) shall have the minimum slopes as discussed in Section VI-C, *Building Connections*, in these design guidelines.

For gravity systems, the pipeline layout is directly affected by the minimum acceptable fluid velocities as determined by the design flow, pipe size, slope and Manning roughness “n” coefficients. (See Section V-C, Hydraulic Design of Sewers.)

Where different diameter pipes meet at manholes, the crown of all upstream pipes shall be set at the same elevation as the crown of the downstream pipe unless hydraulic gradient computations require a higher setting.

d. Sewer Depths – General*:* The collector sewer shall be designed at a sufficient depth to provide gravity sewer service to the basement or lowest floor level of all buildings and to cross streams and waterways with a minimum 3.5-feet depth of cover unless otherwise directed by the Sewer Design Section. The minimum cover over any sewer shall be three and one-half feet (3.5’). Sewers greater than twenty feet (20’) deep will require written approval from the Sewer Design Section.

1) Sewer Depths at Stream Crossings: Where a sewer parallels a water course, the Designer shall ensure that the proposed sewer depth will

be adequate to facilitate future crossings of the stream while maintaining a minimum 3.5-feet of cover over any future stream crossings. Where sewer mains cross streams, the crossing angle shall be as close to ninety degrees (90°) as possible, and the crossing pipe shall be set at an elevation to provide a minimum of 3.5 feet of cover over the pipe measured from the bottom of the deepest section of the stream channel to the top of the pipe.

2) Sewer Depths Adjacent to Buildings: As previously noted, if sewers are parallel to an existing building, they shall be located no closer than fifteen feet (15') from an existing building foundation. This distance must increase if the building has a basement and the sewer depth is beneath the basement foundation. The horizontal distance to the building shall be no greater than the depth of the sewer.

e. Buoyancy: Buoyancy of sewers shall be considered, and flotation of the pipe shall be prevented where high groundwater conditions are expected.

f. Flow Depth-Minimum: Slopes slightly less than those required in Section V.C.1.b.4 may be permitted when approved by DPW. Such decreased slopes only will be considered when the depth of flow will be 0.3 of the diameter, or greater, for design average flow.

g. Minimize Solids Deposition: The pipe diameter and slope shall be selected to obtain the greatest practical velocities to minimize settling problems. Oversized sewers will not be approved to justify using flatter slopes. If the proposed slope is less than the minimum slope of the smallest pipe which can accommodate the design peak hourly flow, the actual depths and velocities at minimum, average, and design maximum day and peak hourly flow for each design section of the sewer shall be calculated by the Design Engineer to be included with the information submitted with the preliminary report at the preliminary engineering conference or shall be included with the plans if a conference is not required.

h. High Velocity Protection: Where velocities greater than fifteen feet (15') per second are attained, special provision shall be made to protect against displacement by erosion and impact.

2. Sewer Mains – Plan:

a. Sewer main plans shall be drawn to a scale of 1" = 50' or 1" = 30'.

b. All proposed pipes shall be shown and symbolized as noted in the Standard Details. More specifically, the pipe is to be identified by two (2) parallel lines with shading in between. Pipe lines 24 inches in diameter

and smaller shall be shown symbolically as two feet (2') wide as a minimum based on a scale of 1" – 50'. Pipe lines over 24 inches in diameter shall be shown to scale.

c. The plan location of the pipeline and appurtenances shall be carefully dimensioned so that its route is clearly identified. Dimensioning of the proposed pipeline, including appurtenances, shall be as noted in *Control, Topographic and Construction Surveys.* Appurtenances shall be called by symbols and notes and dimensioned both in respect to pipeline arrangements and in respect to required positions in relation to surface features.

d. Manholes shall not be shaded. Manholes shall be numbered in consecutive order with the numbers placed within a standard circle. The numbering shall start with the connection to existing sewer. The slope of frames and covers that are proposed to be flush with grade shall conform to the proposed finished grade. The type of manhole shall conform to the Standard Details.

e. All pipe sizes shall be clearly identified together with flow directional arrows.

f. The 100-year floodplain NRD, wetlands, and the 25-foot wetland buffer shall clearly be shown on the plans.

g. Sewer Service Chart: The following tabulated data shall be shown for all house and building connections:

SEWER SERVICE
(Example Only)

Lot No.	Sewer Main Station (EX MH1-MH2)	Invert at Main	Drop House Connec-tion	Length of Service	Slope of Service	Inv. @ RW Line	Prop. Fin. Grade @ RW Line	Depth of Service @ RW Line
79	0+23	267.98	--	20	2%	268.38	275.00	7.0
78	0+27	268.41	--	11	2%	268.63	274.13	5.5
77	1+01	276.38	--	42	2%	277.22	288.75	11.5
76	1+10	277.35	287.96	51	2%	288.68	292.68	4.0
75	@ MH2	278.47	--	53	2%	279.53	284.53	5.0

3. Sewer Mains: Profile

a. Profiles shall be drawn for all public sewer mains at a scale of 1" = 50' horizontal and a scale of 1" = 5' vertical.

b. Profiles shall be shown below the sewer plan view.

c. Manholes in profile shall be numbered to correspond to the manhole numbering on the plan. The numbers shall be within a standard circle together with the manhole top elevation. The type of manhole with a reference to the Standard Detail shall be called out. The type of frame and cover also shall be called out. The top of manhole elevation and ground elevation also shall be called out. Manholes shall be numbered in consecutive order and shall start with the connection to existing sewer and shall be oriented in the same direction as the plan.

d. Profile match lines shall correspond to centerline of manhole locations.

e. When a proposed sewer is located on a lot line between two lots, the limits and lot numbers shall be designated in the profile along with the street name to which the lot fronts.

f. Profiles Not Within Proposed Roads*:* In developing the profile information within or outside existing roads, the centerline of the sewer main in plan shall be used for the profile stationing which will provide true length profiles.

g. For minimum vertical clearances, see Section V-D-8-a-*4*, *Crossings* on page 44*.*

h. Utilities that cross sewer mains with the minimum vertical clearance shall be plotted to horizontal and vertical scale and identified in order to advise the contractor of their specific locations. For these utilities, stations and invert elevations shall be provided at every pipeline crossing for each pipe shown. If the elevation of the existing pipeline to be crossed is unknown or when the proposed clearance between an existing utility and the proposed utility is one foot (1') or less, the Engineer shall arrange to have a test pit excavated to determine the exact horizontal and vertical location of the existing utility or utilities prior to submission of preliminary construction drawings.

i. When a proposed or existing storm drain parallels a proposed sewer main, the storm drain shall be shown dashed in the background of the profile.

j. For existing developed properties, the finished floor or basement elevation of the dwelling to be served shall be projected on the profile along with the elevation relative to the house connection and to the correct vertical scale.

k. Sewer house connections into manholes shall only be permitted for terminal manholes. The connections to terminal manholes will be shown with the appropriate invert and lot number shown. All services within terminal manholes shall have the invert match top of bench.

l. The following information as minimum requirements shall be shown on the profile:
   - first floor and basement elevations for existing developed properties
   - road names
   - existing and proposed utilities, including storm drains
   - existing ground elevation line
   - proposed ground elevation line
   - bottom of stream or swale that parallels proposed sewer
   - 100-year flood elevation line with elevations
   - relocations of conflicting utilities
   - proposed finished road grade line
   - centerline of existing and proposed road crossings
   - date of topographical survey
   - centerline and name of intersecting street
   - limits of proposed fill and certified compaction

   The Engineer shall clearly note that the construction of the proposed sewer may not occur until the grade is within ± 0.2 feet of finished grade.

4. Pipeline Materials

   a. General: Pipeline design practices and materials used in the Baltimore County Sewer System are employed to ensure maximum service capacity with the least costs of installation and maintenance.

      The Engineer must be aware of the particular properties of each type of pipe so as to include or exclude the possibility of its employment under the greatest range of applications, leaving the construction contractor as many options as possible for the selection of the type of pipe to be installed. Any special design features and/or special materials required due to the specific nature of the project shall be submitted for approval to the Sewer Design Section.

      The following table presents the pipe materials that are acceptable to Baltimore County for interceptor and collector sewer construction. These materials are acceptable when supplied in conformance with the material and installation requirements of the Standard Specifications and this Design Manual.

PIPE TYPE MATERIAL	SPECIFICATION	SIZE ALLOWED
Polyvinyl Chloride (PVC) SDR35	ASTM D 3034 ASTM F 1336	6 thru 15-inch
Polyvinyl Chloride (PVC)	ASTM F 679 T-1 wall thickness ASTM 1336	18 thru 24-inch
Ductile Iron Class 52	AWWA C151	6 inches and larger
Reinforced Concrete Pipe (RCP)	ASTM C76	24 inches and larger
Prestressed Concrete Cylinder Pipe	AWWA C301	24 inches and larger

b. Special Circumstances

1) In addition to the types of pipe shown above, other pipe materials may be considered on a case-by-case basis when recommended by the Engineer and approved in writing by the Sewer Design Section.

2) The Sewer Design Section will require the use of DIP under the following circumstances:
   - for all open cut stream crossings (see *Pipeline Design in Wetlands, Stream Crossings and Tree Protection* for additional considerations for stream crossings)
   - sewers within casing pipes or tunnels shall be DIP
   - sewers greater than eighteen feet (18') deep
   - sewers proposed in fill areas

3) In areas where significant hydrogen sulfide concentrations are expected to exist, such as downstream from a pumping station or pressure sewer discharge, hydrogen sulfide resistant pipe materials, such as PVC, shall be used if available in the required diameter. If PVC is not an option in the required diameter, the Engineer shall investigate other solutions, such as special protective linings.

c. Underdrains: If groundwater conditions exist at the site which will be above the sewer main, the Engineer shall incorporate underdrains into the design if opportunities exist to drain the groundwater to storm drains, stormwater management ponds, or existing grades.

5. Change in Pipe Size

a. When a smaller sewer joins a larger one, the invert of the larger sewer should be lowered sufficiently to maintain the same energy gradient.

b. Sewer extensions shall be designed for projected flows even when the diameter of the receiving sewer is less than the diameter of the proposed extension at a manhole constructed in accordance with Section VI – A, *Manholes*, with special consideration of an appropriate flow channel to minimize turbulence when there is a change in sewer size. A schedule for construction of future downstream sewer relief must be provided.

6. Installation

a. Standards: Installation specifications shall contain appropriate requirements based on the criteria, standards, and the requirements established by industry in its technical publications. Requirements shall be set forth in the specifications for the pipe and methods of bedding and backfilling thereof so as not to damage the pipe or its joints, impeded cleaning operations and future connections, nor create excessive side fill pressures and ovulation of the pipe nor seriously impair flow capacity.

b. Trenching: The width of the trench shall be ample to allow the pipe to be laid and jointed properly and to allow the bedding and hunching to be placed and compacted to adequately support the pipe. Appropriate trench widths are shown in the Baltimore County Standard Details. The trench sides shall be kept as nearly vertical as possible. When wider trenches are specified, appropriate bedding class and pipe strength shall be used.

   In unsupported unstable soil, the size and stiffness of the pipe, the stiffness of the embedment and insitu soil, and the depth of cover shall be considered in determining the minimum trench width necessary to adequately support the pipe.

   Ledge rock, boulders, and large stones shall be removed to provide a minimum clearance of four inches (4”) below and on each side of the pipe(s).

c. Bedding, Haunching and Initial Backfill: Bedding classes A, B, C, or crushed stone, as described in ASTM C12, shall be used and carefully compacted for all rigid pipe provided the proper strength pipe is used with the specified bedding to support the anticipated load based on the type of soil encountered and potential groundwater conditions.

   Embedment materials for bedding, haunching, and initial backfill, Classes I, II, or III, as described in ASTM D2321, shall be used and carefully compacted for all flexible pipe provided the proper strength pipe is used with the specified bedding to support the anticipated load based on the type of soil encountered and potential groundwater conditions.

   All water entering the excavations or other parts of the work shall be removed until all the work has been completed. No sanitary sewer shall be used for the disposal of trench water unless specifically approved by the Engineer, and then only if the trench water does not ultimately arrive at existing pumping or wastewater treatment facilities.

d. Final Backfill: Final backfill shall be of a suitable material removed from the excavation except where other material is specified. Debris, frozen material, large clods or stones, organic matter, or other unstable materials shall not be used for final backfill with two feet (2') of the top of the pipe. Final backfill shall be placed in such a manner as not to disturb the alignment of the pipe.

e. CCTV Inspection: CCTV inspection must be performed in accordance with the Standard Specifications and *Specification Guidelines: Wastewater Collection Systems Maintenance and Rehabilitation* prepared by the National Association of Sewer Service Companies (NASSCO) and the *Handbook: Sewer Infrastructure Analysis and Rehabilitation,* EPA/625/6-91/030, October 1991.

7. Joints and Infiltration

a. Joints: The installation of joints and the materials used shall be included in the Specifications. Sewer joints shall be designed to minimize infiltration and to prevent the entrance of roots throughout the life of the system.

b. Leakage Tests: Leakage tests shall be specified. This may include appropriate water or low pressure air testing. The testing methods selected should take into consideration the range in groundwater elevations during the test and anticipated during the design life of the sewer.

c. Water (Hydrostatic) Test: The leakage exfiltration or infiltration shall not exceed 200-gallons per inch of pipe diameter per mile per day for any section of the system. An exfiltration or infiltration test shall be performed with a minimum positive head of two feet (2').

d. Air Test: The air test shall, as a minimum, conform to the test procedure described in ASTM C924 for concrete pipe; and for other materials, procedures approved by DPW.

8. Protection of Water Supplies

General: When wastewater systems are proposed in the vicinity of any water supply facilities, requirements of these design guidelines shall be used to maintain acceptable isolation distances. The following requirements shall also be followed:

a. Cross Connections Are Prohibited: There shall be no physical connections between a public or private potable water supply system and a sewer or appurtenance thereto which would permit the passage

of any wastewater or polluted water into the potable supply. No water pipe shall pass through or come into contact with any part of a sewer manhole.

b. Relation to Water Works Structures: While no general statement can be made to cover all conditions, it is generally recognized that sewers shall meet the requirements of these guidelines and the Maryland Department of the Environment (MDE) *Design Guidelines for Sewerage Facilities* with respect to the minimum distances from public water supply wells or other water supply sources and structures.

c. Relation to Water Mains: Sewers shall be laid at least ten feet (10') horizontally from any existing or proposed water main. The distance shall be measured from the outside diameter of each pipeline. In cases where it is not practical to maintain a 10' separation, DPW may allow deviation on a case-by-case basis if supported by data from the Design Engineer. Such deviation may allow installation of the sewer closer to the water main provided that the water main is in a separate trench and at an elevation so that the bottom of the water main is at least eighteen inches (18") above the top of the sewer measured from the outside diameter of both pipelines.

   If it is impossible to obtain proper horizontal and vertical separation, as described above, both the water main and the sewer must be constructed of mechanical joint pipe complying with the Standard Specifications; pipe must be pressure tested to 150 psi to assure watertightness before backfilling.

d. Crossings: Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18" between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints shall be equidistant and as far as possible from the water main joints and will not be closer horizontally than 3' to the crossing, unless the joints are fully encased in concrete as required below. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade.

   When it is impossible to obtain proper horizontal and vertical separation as stipulated above, one of the following methods must be specified:

   1) The sewer shall be designed and constructed equal to the water pipe and shall be pressure tested at 150 psi to assure watertightness prior to backfilling.

2) Either the water main or the sewer line may be encased in a watertight carrier pipe that extends 10' on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials approved by DPW for use in water main construction.

e. Relation to Wells and Reservoirs: Sewers shall be located no closer than 50' horizontally to water wells or reservoirs to be used for potable water supply.

f. Relation to Force Mains: Force mains will have no joint closer horizontally than 3' to the crossing, unless the joint is encased in concrete. The thickness of the concrete encasement will be a minimum of 4" at pipe joints.

g. Relation to Depressed Sewers: Depressed sewers crossing potable water lines must be installed below the water line with a minimum vertical clearance of 2'. .

E. Hydrogen Sulfide in Sewers

The corrosion of sewers and appurtenances and the impacts of odor and toxic gases are two important problems occurring in wastewater collection systems. Both of these problems can be attributed in large part to the generation of hydrogen sulfide (H_2S) in sewers. The EPA publication, *Process Design Manual for Sulfide Control in Sanitary Sewerage Systems*, contains a complete discussion of this topic.

Sewers shall be designed hydraulically to prevent excessive generations of H_2S. In general, small diameter sewers designed to maintain velocities greater than two feet (2') per second providing sufficient air-to-wastewater contact, normally do not experience a significant buildup of H_2S. Larger sized sewers may be susceptible to H_2S formation, but rates of generation can be reduced through proper design with concentrations limited to less than one (1) milligram per liter.

1. Corrosion Control: Where it is determined that the potential exists for damaging H_2S concentrations that will cause microbiologically induced corrosion, pipe materials must be selected to resist the microbiological corrosion and attack from sulfuric acid. Locations of concern may be where new sewer connections are made to older systems with a history of H_2S problems and deteriorating sewers and outfalls from pressure sewers and force mains. Chapter V lists various pipe materials and applications suitable for sewer use. As indicated, PVC and ABS, fiberglass, and vitrified clay are best suited for corrosive environments whereas concrete, ductile iron, and

cast iron soil pipe should be avoided unless special protective linings, coatings, or treatment are provided.

2. Sewer Gases: In designing the sewer system, consideration shall be given to the possibility of objectionable odors being emitted from manholes and sewers. As noted above, new sewer connections to older systems with a history of H_2S problems will very likely experience similar difficulties. In these cases, sewers and manholes will be located such that emissions of odorous sewer gases, and in particular H_2S, do not create a nuisance or hazard for nearby building occupants.

F. Low Pressure Sanitary Sewer Design

1. Policy
    a. It is the policy of DPW to promote the use of gravity sewer systems to the extent practical and feasible due to the reliability and low maintenance associated with gravity sewer systems. LPSS systems will not be considered as a method of providing sewer service that could otherwise be furnished by conventional gravity sewer systems.
    b. The grinder pump/low pressure sewer system shall be considered as a supplemental method for wastewater collection and not as a replacement for conventional gravity collection systems.
    c. Where the design of the low-pressure sewer system requires the use of pumping stations, the number of pumping stations and linear feet of force mains should be minimized.
    d. Grinder pumps on private property and connecting to County maintained gravity service connections to gravity sewers are privately owned and maintained and are subject to review and approval under the plumbing permit process.
    e. Grinder pump/pressure sewer systems are not to be used on an interim or temporary basis in anticipation of conventional gravity systems being installed in the future except under extraordinary circumstances.

2. Approval Required
    a. Submission to the Department – Requests for grinder pump/low pressure sewer systems must be submitted in writing to the Director of the Department of Public Works.
    b. Requirements for Approval – To receive approval from the Department of Public Works for the installation of a grinder pump/low pressure sewer system, the area to be served must have environmental, topographic or subsurface conditions which make it very difficult for potential users to be served by a gravity collection system or such conditions that make it very difficult or impractical to construct and maintain a gravity system.

c. Evidence Required –When submitting the request to the Department of Public Works, the applicant shall provide overwhelming evidence that gravity sewer installation is not feasible.
d. Review by Director
    1) Requests for grinder pump/low pressure sewer systems will be reviewed on a case-by-case basis and must be approved by the Director.
    2) Determinations of feasibility, difficulty or practicality shall be made by the Director based on the facts of each particular situation and the design of sewer systems must meet the needs of a particular situation.
    3) See Baltimore County Code Title 4, Subtitle 1 for additional information.

3. Design
   Hydraulic Calculation
    a. The design of the low-pressure sewer system shall be based on the probability method using HDPE Pipe (SDR-11) and Progressive Cavity Type Grinder Pump only.
    b. Minimum velocity shall be 2.0 feet per second
    c. Minimum size of pipe is one and one-half inches (1.5”)
    d. The Hazen-Williams friction coefficient (C Factor) shall be 150

4. Low Pressure Sewer Pipe Installation
   The method of pressure sewer pipe installation is the option of the Contractor unless otherwise stated in the Special Provisions or on the plans. Methods of installation allowed are:
    a. Open Cut
    b. Directional Drilling

5. Pipe Material
    a. For low-pressure lines, open trench construction, the material shall be Schedule 40, Schedule 80, SDR-21 polyvinyl chloride (PVC) pipe or high density polyethylene (HDPE) pipe, ASTM D1248, SDR 11.
    b. For low-pressure lines, directional drilling, the materials shall be high density polyethylene (HDPE) pipe, ASTM D1248, SDR-11.

6. Construction Drawings
   Construction drawings shall be drawn at a horizontal scale of 1” = 50’

    a. Grinder Pump
        1) In selecting a suitable location for our grinder pump on an owner’s property, Baltimore County requires that the grinder pump be:
            a) located as close to the road as possible

b) at least eight feet (8') away from any permanent structures
c) not located in the drip line of large trees or where tree roots may be damaged
d) within depth limitations to serve all existing plumbing, including the basement
e) not located in owner's sidewalks, access or driveways
f) if lot size limits grinder pump location to driveways, the grinder pump must be protected by railroad ties or concrete curb stops to prevent damage from vehicles

2) Grinder pumps shall be shown on the drawings and located with coordinates and labeled as simplex or duplex.
3) For each grinder pump, provide existing ground elevation at the grinder pump location and invert of the proposed inlet pipe.
4) The maximum depth of the inlet pipe is ten feet (10') from the existing/proposed ground.
5) All service lines between the grinder pump and low-pressure sewer shall be one and one half inches (1 ½").
6) Duplex grinder pumps, if used, must be located on or near the property line dividing two properties. Two (2), four-inch (4") inlets are required – one for each property.
7) Simplex grinder pumps, if used, must be located a minimum of seven and one half feet (7.5') from the property lines. One (1), four-inch (4") inlet is required.
8) Commercial property shall require a larger duplex grinder pump and must be located a minimum of seven and one half feet (7.5') from the property lines. One (1), six-inch (6") inlet is required.
9) Show the proposed electrical cable between the BGE meter and the grinder pump.
10) The disconnect panel is connected directly to the BGE meter.
11) On all plans in large bold lettering add either:
    - "**COUNTY MAINTAINED GRINDER PUMP**" or
    - "**PRIVATELY MAINTAINED GRINDER PUMP**"
12) The service valve assembly shall be located on the property line between the low-pressure pipe in the road and the grinder pump.
13) Electrical service between the house and the grinder pump shall not exceed two hundred feet (200').
14) All applicable Baltimore County standard grinder pump/low pressure sewer details shall be included on the Construction Drawings.
15) Record Plats
    For Developer projects, the record plat for the subdivision shall clearly and **boldly** identify all lots that will be served by a grinder

pump and shall note that these grinder pumps will be privately owned and maintained by the property owner.

b. Low Pressure Pipes
    1) Proposed low-pressure sewer pipe shall be located a minimum of ten feet (10') horizontally from water lines.
    2) Proposed low-pressure sewer pipe shall be a minimum of six feet (6') from all other utilities.

c. Manholes
    1) Show all manholes on drawings and locate with coordinates.
    2) Label all manholes as one of the following:
        a) Inline Cleanout/Flushing Connection Manhole
        b) Combination Flushing Connection and Air/Vacuum Release Valve Manhole
        c) Terminal Combination Flushing Connection and Air/ Vacuum Release Valve Manhole
        d) Intersection Flushing Connection Manhole

7. Profiles
   Profiles will be drawn with a horizontal scale of 1" = 50' and a vertical scale of 1" = 5'.

    a. Show proposed low-pressure sewer pipe in profile.
    b. Show stations for the low-pressure sewer every fifty feet (50') starting at a manhole with 0+00.
    c. At each fifty-foot (50') station, show the invert of the proposed low-pressure sewer pipe.
    d. Show all manholes, with station, inverts, type and coordinates.
    e. Manholes shall be located as follows:
        1) All high points shall have air/vacuum release valve manhole.
        2) All low points shall have inline cleanout manhole.
        3) All intersections shall intersection flushing connection manhole.
        4) All ends of pipe shall have terminal flushing connection manhole or, if required, a terminal air/vacuum release valve.
        5) At the end of County maintenance and beginning of private maintenance, an inline cleanout shall be required.
    f. The maximum horizontal distance between low-pressure sewer manholes hall be eight hundred feet (800').
    g. All utility crossings must be shown.
    h. All utility crossings shall have a minimum one-foot (1') vertical clearance.
    i. All existing or proposed utilities that parallel the proposed sewer shall be shown.
    j. The depth of proposed low pressure sewers shall be at least:

1) A minimum of six inches (6”) below any parallel water lines and
2) A minimum of four and one half feet (4.5’) below existing or proposed grade.

8. Maintenance of Grinder Pumps
   See Baltimore County Code Title 4, Subtitle 1

9. The Engineer/Designer shall become familiar with Baltimore County Special Provisions Part-B Specifications for the Pressure Sewer System.

VI. SEWER SYSTEM LAYOUT AND APPURTENANCES

A. Manholes

1. General

   a. Manhole Details are shown in the *Standard Details for Construction*. The Engineer shall use these standards as required to meet the design situation and shall designate the type on the profiles.

   b. When the pipe size entering and exiting manholes are the same, a minimum drop between invert in and invert out shall be one tenth of a foot (0.1'), and the maximum drop shall be one foot-eight inches (1'8"). For pipelines of different sizes, the pipeline crowns shall be matched. For interceptor sewers, the invert elevation of collector sewers and services shall match the crown elevation of the interceptor sewer. For manholes where vertical drops are required, see Section VI.A.12, Drop Manholes.

   c. The centerline of the manhole shall be located a minimum of three feet (3') from face of curb.

   d. Generally, manholes located within paved and mowed areas shall be constructed to proposed finished grade. Generally, manholes located within open space areas shall be a minimum of one foot (1') above existing ground.

   e. Manholes shall be placed where waterways are not likely to change direction or erode the area around the manhole, and locating manholes within streams shall be avoided. Manholes located within a floodplain shall be constructed with a watertight frame and cover.

   f. The crown of the outlet pipe from a manhole will be on line with or below the crown of the inlet pipe.

2. Locations

   Manholes shall be constructed at the following locations:
   - changes in alignment
   - changes in grade
   - change in pipe size
   - change in pipe material
   - pipeline junctions or intersections
   - at distances not to exceed 400 feet for sewer 15 inches or less and at distances 500 feet for sewers 18 inches to 30 inches except that distances up to 600 feet may be approved; greater spacing may be

approved in larger sewers provided the velocity is sufficient to prevent solids deposition
- at the terminal end of all sewers
- at locations along the sewer where future extensions are planned
- at locations where there is a change from public to private maintenance

3. Materials of Construction

   Manholes shall be pre-cast or poured-in-place concrete type. Manhole lift holes and grade adjustment rings shall be sealed with non-shrinking mortar or other approved material.

4. Size

   The minimum inside diameter of manholes shall be 48 inches for sewers less than 24 inches in diameter. For sewers 24 inches in diameter and larger, the minimum inside diameter shall be 60 inches. Larger diameter manholes may be required depending upon the locations of the sewers entering and exiting the manhole. A minimum one foot (1') of manhole wall is required between the outside diameters of pipelines where entering or existing the manhole. A minimum access diameter of 24 inches shall be provided as shown on the standard details.

5. Channel and Bench

   a. Typical manhole channels are shown in the standard details. If channeling for standard manholes that differs from what is shown in the standard details is required, the Engineer shall detail the channel on the plans, showing curve data, invert and bench elevations, and bench slopes, etc. This detailed information also shall be provided for all manholes over five feet (5') in diameter, bend structures, and junction chambers.

   b. Manhole channels shall not have a centerline radius of less than 2.5 times the pipe diameter.

   c. A bench shall be provided on each side of any manhole channel when the pipe diameter(s) are less than the manhole diameter.

   d. The diameter of the manhole installed must be large enough to accommodate a 12-inch wide bench on either side of the channel.

   e. The bench shall be sloped no less than one-half inch (½ ") per foot (4%). No lateral sewer, service connection, or drop manhole pipe shall discharge onto the surface of the bench.

f. The channel straight through a manhole shall be made to conform as closely as possible in shape and slope to that of the connecting sewers. The channel walls should be formed or shaped to the full height of the crown of the outlet sewer in such a manner to not obstruct maintenance, inspection, or flow in the sewers.

g. When curved flow channels are required or specified in manholes, including branch inlets, minimum pipe slopes shall be increased to maintain acceptable velocities.

6. Corrosion Protection

Where corrosive conditions exist or are anticipated, corrosion protection on the interior of manholes will be required. When corrosion protection is required by the Bureau of Engineering & Construction, the Engineer shall identify on the sewer profile where special manhole coating materials are to be used. One location where corrosion protection will be required is the discharge manhole for sewage force mains and pressure sewers. For new manholes, the coating shall consist of a minimum 16-mil factory-applied coal tar polyamide epoxy on all interior surfaces. For existing manholes, the manhole shall first be thoroughly cleaned by high-pressure washing (2000 psi minimum). The manhole walls shall then be lined pneumatically with Permacast by APM Permaform, high performance mix by Stron Seal, Sewper Coat by Lafarge Calcium Aluminates, or approved equal.

7. Watertightness

a. Watertight manhole covers are to be used whenever the manhole covers may be flooded by surface water runoff, ponding, or high water to prevent storm water inflow. Manhole top elevations will be set to avoid submergence of the cover.

b. Manholes located within the 100-year floodplain shall extend above existing ground or proposed grade and shall be constructed with a watertight frame and cover as indicated in the Standard Details.

c. A stainless steel insert dish shall be installed within all manholes when the edge of the cover is five feet (5') or less to the face of the curb or center of the gutter flow line. A stainless steel insert dish also shall be installed in all manholes within the vertical sump of roadways, when the manhole is within a swale or ditch, and when the manhole is located between homes on a side lot line. The Engineer shall identify on the construction drawings which manholes will receive an insert dish. A stainless steel insert dish also may be required at other locations that may be determined as necessary by the Bureau of Engineering & Construction

on a case-by-case basis. If an insert dish is installed, then a watertight frame and cover is not required.

d. Inlet and outlet pipes shall be joined to the manhole with a gasketed flexible watertight connection or any watertight connection arrangement that allows differential settlement of the pipe and manhole wall to occur.

e. In areas subject to high groundwater tables, manholes will be constructed of materials resistant to groundwater infiltration.

8. Deep Manholes

The manhole depth is defined from the lowest invert to the top of the frame and cover. Approval of the Bureau of Engineering & Construction is required for manhole depths exceeding thirty feet (30'). If the manhole depth exceeds thirty feet (30'), the Engineer shall take into consideration the following design requirements:

- provide computations from a Professional Engineer indicating that flotation will not occur
- verify that the groundwater pressure on the pre-cast concrete manhole section joints will not exceed the requirements of ASTM C443 latest revision and the standard specifications
- verify that the groundwater pressure on the pipe to manhole connections will not exceed the requirements of ASTM C923 latest revision and the standard specifications
- identify any modifications necessary to the standard manhole details as a result of the manhole depth and groundwater pressure
- where deep manholes are approved by the Bureau of Engineering & Construction, manholes over thirty feet (30') deep shall have a minimum five-foot (5') inside diameter, from invert to the cone section (the inside diameter from the invert to the cone section may be larger depending upon the pipe sizes entering and exiting the manhole as outlined in Section VI.A.4, Size)
- an intermediate landing or platform is required to be installed in all manholes exceeding twenty feet (20') deep; a landing or platform shall be provided for each ten feet (10') of height or fraction thereof

9. Terminal Manholes

a. Terminal manholes shall be constructed at the end of a sewer that will not be extended in the future. Terminal manholes shall meet the requirements of the standard details.

b. A maximum of three (3) sewer service connections shall enter a terminal manhole. A minimum of thirty degrees (30º) shall be provided between each service. The connections shall not spill over the bench.

10. Doghouse Manholes

    Doghouse manholes will be approved by the Bureau of Engineering & Construction only on a case-by-case basis. Doghouse manholes shall meet all requirements of the Standard Details.

11. Drop Manholes

    a. Design details, as well as maximum and minimum allowable drops, are indicated for drop manholes in the Standard Details for various sewer sizes. When the drop required is less than the minimum indicated on the Standard Details, no drop manhole is required. In lieu of a drop manhole, the slopes of the connecting pipelines and manhole channel shall be adjusted and sloped to limit the difference between the invert in and invert out of the manhole to less than one foot eight inches (1' 8").

    b. The channel shall be shaped to prevent solids deposition.

12. Inspection and Testing

    The standard specifications include a requirement for inspection and testing for watertightness and damage to the manhole prior to being placed in service.

B. Siphons

1. General

   Inverted siphons should have not less than two (2) barrels with a minimum size of six inches (6"). They shall be provided with the necessary appurtenances for maintenance, convenient flushing, and cleaning equipment. The inlet and discharge structures shall have adequate clearances for cleaning equipment, inspection, and flushing.

2. Design

   a. Design shall provide sufficient head and appropriate pipe sizes to provide velocities of at least three feet per second (3 fps) for average design flows.

   b. The inlet and outlet details shall be so arranged that the design average flow is diverted to one (1) barrel and so that either barrel may be removed from service for cleaning.

   c. The vertical alignment should permit cleaning and maintenance.

C. Building Connections

1. General

   a. Building connections are to be provided to connect individual buildings to the collector sewer main. Unless otherwise approved, one (1) building connection shall be allowed per lot. Building connections shall be shown on the plan and profile as described in Section V-D, *Details of Design and Construction,* page 29.

   b. Building connections shall be planned to eliminate as many bends are practical and to provide convenience in cleaning. Bends greater than forty-five degrees (45º) made with one (1) fitting should be avoided. Combinations of elbows, such as 45º-45º or 30º-60º, should be used with a cleanout provided. Generally, connections to other sewers will be made directly to the pipe with standard fittings rather than through manholes. However, a manhole must be used if the connection is more than 100 feet from the building cleanout. Normally, the cleanout inside the building will not be adequate for cleaning; thus, outside cleanouts will be provided. Installation of a two-way cleanout at the building connection five feet (5') from the footing is recommended. Manholes will be installed where cleanouts are not feasible.

2. Location

   a. The County-owned and maintained portion of the sanitary sewer building connection shall be built to the property line or edge of the drainage and utility easement, whichever applies.

   b. For Capital Projects, all building connections for improved lots shall be located so as to readily serve the basement or lowest floor of the existing dwellings or buildings in a cost effective manner. If it is not feasible, practical or economical, the Engineer shall propose first floor service in lieu of basement service. Where the location or depth of the sewer main is established by a crucial building house connection, this connection shall be located by the Engineer in the most advantageous position to minimize costs while providing basement service to the lot. In non-critical areas, the actual location of the building connection shall be determined after discussion with the property owner in the field prior to construction as long as the location is compatible with the collection system as designed. However, it shall be the responsibility of the Engineer to propose a feasible location for the building connection based on the location of existing wells, septic tank facilities, topography, and other features.

c. For developer projects, all building connections shall be designed to provide basement service. If it is not feasible or practical, or the building connection will drive the sewer main excessively deep, the Engineer shall propose first floor service in lieu of basement service. All improved properties having frontage on the collector sewer that are not a part of the proposed subdivision, but which may be served by the sewer main, shall be shown on the Contract Drawings. Connections to these lots, whether negotiated by the developer or required by the Bureau Engineering & Construction, shall be installed on the Contract Drawings.

d. Cleanouts are required to be installed on all building connections and must be located and constructed in accordance with the Standard Details.

e. When adjacent to a building connection, the entire stormwater management facility shall be shown on the plan view of the Construction Drawing. The location of the building connection shall not cause the private on-site service to pass through stormwater management facilities.

f. For residentially zoned properties, if the type of dwelling unit changes after design approval, then the building connection shall be revised on the Construction Drawings to meet the configuration of the proposed developments.

g. If a sewer main traverses between two adjacent lots, the building connection shall not be located adjacent to the building.

h. For new subdivisions, all proposed driveways shall be shown in plan view on the Construction Drawings.

i. Connections shall be located on the downstream side of the property.

3. Size

The size of all building connections shall be six inch (6”) or eight inch (8”) in diameter depending on the proposed use and type and the discharge flow requirements established by the Engineer. The size of the building connection for condominiums or apartments shall be no less than eight inches (8”).

4. Grades

Building connections shall be designed for a two percent (2%) minimum grade. The maximum allowable grade for a building connection shall be ten percent (10%). Drop connections shall be laid on a fixed grade of two percent (2%).

5. Depth

   Minimum cover over the building connection at the property line or easement shall be three and one-half feet (3½'). Where storm drains have not been proposed or installed, building connections shall have a minimum cover within the street right-of-way of six and one-half feet (6½'). The maximum depth at the property line shall not exceed twelve feet (12').

6. Type

   Connections for the various types of development shall be as follows:
   - single-family detached and attached – individual sewer services
   - townhouse condominium – individual sewer service
   - multi-family (apartments) – sewer service to the property line with private on-site sewers unless public sewers are required to traverse the property to serve other properties
   - multi-family (apartment style condominiums) – one sewer service to each building; on-site sewers shall be publicly owned only if the sewer mains will provide service to adjoining properties
   - single-family – panhandle lots – individual sewer service connections shall extend to the edge if the road right-of-way unless otherwise approved by the Bureau of Engineering & Construction. Publicly owned sewer mains shall extend within the panhandle lots if the sewer is required to be extended to adjoining properties.
   - boat pump-out facilities – boat pump-out facilities at marinas shall include semi-positive displacement pumps equipped with hour meters. The grinder pump shall be owned and maintained by the property owner. A meter agreement shall be prepared and executed by both Baltimore County and the property owner.

7. Materials

   Building connection materials shall meet the requirements of the Standard Specifications and the approved source of supply.

8. Alignment

   Service connections shall be perpendicular to mains and have no change in direction between the main or manhole and the cleanout at the property line. Services can only be connected to manhole if the structure is a terminal manhole. Services entering a terminal manhole must be placed at an angle ninety degrees (90º) or greater than the outgoing sewer main alignment. In general, services entering a manhole shall be designed so that the crown of the service main matches the crown of the incoming main.

9. Clearance

    a. Crossing Water Main: Clearance shall be measured between outside of pipes. Sewer house and building connections crossing water mains (existing or future) shall have a minimum of twelve inches (12") clearance below water mains. Sewer house and building connections crossing above water mains shall have a minimum of twelve inches (12") clearance and be encased in concrete ten feet (10') each side of water main.

    b. Parallel to Water House Service: Sewer house and building connections shall ordinarily be not less than seven feet (7') horizontally from water house services and a minimum of twelve inches (12") clear below water house services.

    c. Crossing Storm Drains and Other Utilities: Sewer house and building connections crossing storm drains and other utilities (existing or future) shall have a minimum clearance of twelve inches (12") from these utilities.

10. Abandonment

    When a property is developed, all unused service connections shall be abandoned at the property line. Cleanouts shall be removed and watertight caps shall be installed on the service.

D. Cleanouts

1. Cleanouts must be installed on all sewer building connections to provide a means for cleaning the connection. An acceptable cleanout is shown in Standard Detail S-12A.

2. Cleanouts shall not be located within sidewalks, driveways, or steps. If allowed, sewer services placed within a paved area for non-residential properties shall have a frame and cover placed over the cleanout in accordance with the Standard Details.

3. Cleanouts shall not be located any closer to a building than the depth of the building connection at the cleanout. In no case shall the cleanout be closer than fifteen feet (15') from the structure.

E. Sewers in Relation to Streams

1. Cover Depth

    a. The top of all sewers entering or crossing steams shall be at a sufficient depth below the natural bottom of the streambed to protect the sewer line. In general, the following cover requirements must be met:

- Two feet (2') of cover where the sewer is located in rock.
- Three and one-half feet (3½') of cover in other material. In major streams, more than 3½' of cover may be required.
- In paved steam channels, the top of the sewer line should be placed below the bottom of the channel pavement.

b. Less cover may be approved only if the proposed sewer crossing will not interfere with the future improvements to the stream channel. Reasons for requesting less cover shall be provided in any request for deviation from these guidelines.

2. Horizontal Location

Sewers located along streams shall be located outside of the streambed and sufficiently removed to provide for future possible stream widening and to prevent pollution by siltation during construction.

3. Structures

The sewer outfalls, headwalls, manholes, gate boxes, or other structures shall be located so that they do not interfere with the free discharge of flood flows of the stream.

4. Alignment

Sewers crossing streams shall be designed to cross the stream as nearly perpendicular to the stream flow as possible and shall be free from change in grade. Sewer systems shall be designed to minimize the number of stream crossings.

5. Construction

a. Materials

Sewers entering or crossing streams shall be constructed of ductile iron pipe with mechanical joints; otherwise, they shall be constructed so that they will remain watertight and free from changes in alignment or grade. Material used to backfill the trench shall be stone, coarse aggregate, washed gravel, or other materials that will not readily erode, cause siltation damage to the pipe during placement, or corrode the pipe.

b. Siltation and Erosion

Construction methods that will minimize siltation and erosion shall be employed. The design Engineer shall include in the project specifications the method(s) to be employed in the construction of sewers in or near

streams. Such methods shall provide adequate control of siltation and erosion by limiting unnecessary excavation, disturbing or uprooting trees and vegetation, dumping of soil or debris, or pumping silt-laden water into the stream. Specifications shall require that cleanup, grading, seeding, and planting or restoration of all work areas shall begin immediately. Exposed areas shall not remain unprotected for more than seven (7) days.

F. Aerial Crossings

1. General

   Approval from the Bureau of Engineering & Construction is required for the use of aerial crossings.

2. Support

   Support shall be provided for all joints in pipes utilized for aerial crossings. The supports shall be designed to prevent frost heave overturning and settlement.

3. Freezing

   Precautions against freezing, such as insulation and increased slope, shall be provided. Expansion jointing shall be provided between above and below ground sewers. Where buried sewers change to aerial sewers, special construction techniques shall be used to minimize frost heaving.

4. Impact of Flood Waters

   For aerial stream crossings, the impact of floodwaters and debris shall be considered. The bottom of the pipe should be placed no lower than the elevation of the 100-year flood elevation. Ductile iron pipe with mechanical joints is required.

VII. PIPING - Pipe Materials, Fittings, and Joints

A. Factors to be considered in the selection of pipe materials and piping systems for sewers or force mains are:

- flow characteristics or friction coefficient,
- life expectancy and history of use,
- resistance to scour and abrasion,
- resistance to acids, alkalis, high temperature, corrosive wastes and soils,
- ease of handling and installation,
- physical strength and pressure ratings,
- joint water tightness and ease of installation,
- availability of pipe in required sizes, strengths, etc.,
- availability of fittings, connections, and adapters.

Pipe, fittings, and joints serving as part of force mains will be selected to withstand the maximum internal operating pressures, including transient surges. The project specifications will indicate the appropriate pressure class and rating for each pipe application. No pipe manufactured is suitable for all installation requirements and conditions. Each type of pipe will be evaluated to determine its suitability for the particular design. Pipe materials that are determined to be inappropriate for use will be deleted from the project specifications.

B. Where iron or concrete pipe are to be considered, special attention will be paid to subsurface and soil conditions. The characteristics of the soil in which a pipe is placed affect the rates of corrosion, with the most corrosive soils being those having poor aeration and high values of acidity, electrical conductivity, dissolved salts, and moisture content.

C. In areas where problems with root penetration are anticipated, pipe with a joint that will successfully resist root penetration shall be specified. Generally speaking, the more watertight the joint, the greater will be the resistance to root penetration. Rubber-gasketed and compression-type joints are considered to provide the tightest joints. Also, pipe that comes in longer lengths are preferred.

VIII. FORCE MAINS

A. General

The pipeline, which receives wastewater from a pumping station and conveys it to the point of discharge, is called a force main. The design of the force main must be coordinated with the pumping station design. Force mains will be designed as pressure pipe and must be adequate in strength to withstand an internal operating pressure equal to the pump discharge head plus an allowance for transient pressures caused by water hammer. The internal operating pressure is maximum at the pumping station and is reduced by friction to atmospheric pressure, or near atmospheric pressure, at the point of force main discharge. The primary consideration in the hydraulic design of force mains is to select a pipe size that will provide the required minimum velocities without creating excessive energy losses due to pipe friction. The most economical size of force main should be determined on the basis of power costs required for pumping and capital investment costs for piping and equipment. In practice, however, the size usually is governed by the need to maintain minimum velocities at low flows to prevent deposition of solids and to develop sufficient velocity at least once a day to re-suspend any solids that may have settled in the line. Regardless of pipe sizes required for minimum velocities, the minimum diameters to be used are 1½ inches for pressure sewers at grinder pump installations, 4 inches for force mains serving small pump stations and pneumatic ejectors, and 6 inches for all other force mains.

B. Hydraulic Calculations

The system curve for the force main, showing the total energy losses associated with the range of possible pumping rates, shall be developed and shall be shown on the plans. Design velocities in force mains shall generally be between 2 and 6 feet per second. The maximum velocity shall be based on the ultimate design pumping rate.

C. Plan View

1. When installed parallel to a water main, the force main shall be designed per the horizontal and vertical clearances indicated between water and sewer mains in Chapter V.

2. When installed parallel to an existing sewer pipeline, provide 5 feet minimum horizontal clearance as measured from the outside edges of the pipes.

D. Profile

1. The Engineer shall strive to achieve a vertical profile that rises continuously from the pumping station toward the discharge manhole.

2. Ideally, the force main shall be designed without intermediate high points and with the top of the force main below the hydraulic grade line at the minimum pumping rate so that air release valves will not be needed. If the elimination of high points is not feasible, or if the design requires long, relatively flat vertical alignments, the design may require air release and air and vacuum valves.

3. Continuous uphill pumping shall be achieved in order to keep the force main full.

4. Force mains, with intermediate high points above the gravity sewer discharge point, can create partial vacuum conditions in the force main under circumstance such as draining conditions that occur due to intermittent pumping or when the HGL profile drops below the pipeline profile. The Engineer shall provide appropriate air release and air vacuum valves to protect the force main against damage under these conditions.

5. Downhill pumping is prohibited.

6. All force mains shall have a minimum of 3.5 feet of cover. In street rights-of-way, cover shall be measured from the top of the force main to the proposed grade; or in cases when the proposed grade is above the existing ground surface, the depth of cover shall be measured from the existing ground line. In easements across private property, future development in the area shall be given consideration when developing the force main profile and possible future development grades shall be evaluated to ensure that the minimum depth of cover is met. In situations where the force main parallels a water main, the force main depth shall be no less than 4.5 feet to avoid conflicts with water services.

7. The top of the force main and its appurtenances shall generally be designed to be lower than the HGL.

8. The following minimum information shall be shown on the profile:
   - existing and proposed utilities (longitudinal parallel utilities shall be “ghosted” in profile) including storm drains
   - road names
   - existing ground elevation line
   - proposed ground elevation line
   - existing and proposed road grade profile
   - areas requiring fill with certified compaction

- centerline and name of intersecting streets
- limits of restrained joint pipe

E. Appurtenances

1. Air Release and Air and Vacuum Valves: Force mains shall ideally be designed to rise continuously in profile from the pumping station to the point of discharge. To minimize installation and maintenance costs, the Designer shall evaluate the feasibility of eliminating intermediate high points by installing the main deeper below grade. Where this is not practical, the Designer shall include an automatic combination of air and vacuum valves at the intermediate high points to expel accumulated air under pressure to allow air into the force mains to prevent vacuum conditions and to expel larger quantities of air when the mains are filled. Air release and vacuum valves on wastewater force mains shall be specifically manufactured for wastewater service, be sized according to manufacturer's recommendations, and shall be placed in pre-cast manholes per the Standard Details.

2. Discharge Manholes: The connection between the force main and gravity sewer shall be designed with a discharge manhole. The termination of the force main in the discharge manhole shall be designed so that the force main will be flowing full at all times. See the Standard Details for discharge manhole details.

    a. For new manholes, the interior of the discharge manhole shall receive two coats of a factory-applied polyamide coal tar epoxy for a total dry film thickness of 16-mils. Existing manholes shall be lined in accordance with the Sewer Design Section manhole-lining specifications. Additional manholes further downstream also may require coatings. This determination will be made based on pipe slopes, flow and manhole spacing.

    b. Odor control may need to be provided at every discharge manhole.

    c. There shall be no branch laterals or SHCs at a discharge manhole.

F. Pipeline Materials

Force Mains, 6-inches in diameter and larger, shall be DIP, minimum Class 54, or PCCP in accordance with the Standard Specifications.

G. Pipe Restraint

1. Thrust Restraint Design for Buried Pipelines

Force mains shall be restrained to resist thrusts that develop at bends, tees, wye connections, reducers, and plugs in the pipe. The magnitude of such forces can be calculated with the use of formulas found in standard hydraulic textbooks. Required methods of restraint will consist of mechanical joint restraints or concrete thrust blocks and anchors.

Buttresses are shown in the Standard Details and are to be used in all cases compatible with design conditions. The Engineer shall verify that the standard buttresses, shown in the Standard Details, apply to the specific conditions of each particular design. If required, the Designer shall prepare and submit thrust restraint calculations based on internal hydraulic surge pressures and soil bearing capacities as determined by field measurements.

2. Alternate Buttress/Restrained Joint Design

   a. Special or Modified Thrust Blocks: Special or modified thrust block details are to be employed for conditions not covered by the Standard Details. All buttresses shall be designed based on actual soil conditions, groundwater depths, and design pressures.

      Horizontal bends, reducers, tees, tapping sleeves and valves (TS&V), plugs and caps shall be designed using one of the appropriate earth pressure theories available. *Design Method for Vertical Anchor Slabs in Sand* by N. Krebs Oversen and Helle Stormann is recommended. (See Pages 1481 to 1500, *Performance of Earth and Earth-Supported Structures*, Volume 1, Part 2, ASCE, 1972.) A design concept based on bearing capacity shall not be used. For blocks in cohesive soils, the soil resistance shall be evaluated in terms of short and long-term shear strengths. The lowest resistance between the two shall be used for the design. The calculated net soil resistance for the block to be used shall be at least 1.5 times the design thrust force. Design criteria for pipe anchors for vertical bends shall neglect the weight of the earth over the pipe. The weight of the pipe, and water in the pipe, also shall be considered negligible for pipe 16 inches in diameter and smaller.

   b. Restrained Joints: In lieu of special or modified thrust blocks, restrained joint pipe may be allowed in conjunction with the standard thrust blocks.

      All design of restrained joint systems shall be in accordance with the Ductile Iron Pipe Research Association (DIPRA) Thrust Restraint Design for Ductile Iron Pipe (1997) or Concrete Pressure Pipe Manual of Water Supply Practices M9. All restrained joint designs shall have a factor of safety of 1.5. All design parameters for restrained joint designs shall be based on actual field conditions, including soil types, groundwater conditions, design depths, and pipeline pressures.

Computations must be submitted for all restrained joint conditions. The limits of restrained joint pipe shall clearly be shown on the profile. The actual length of restrained joint pipe limits shall be rounded up to the next standard length of pipe or to the nearest fitting, whichever is greater.

H. Water Hammer

1. When the velocity of a fluid is changed, a phenomenon known a water hammer may result leading to fractures of the pipe and fittings and other damage.

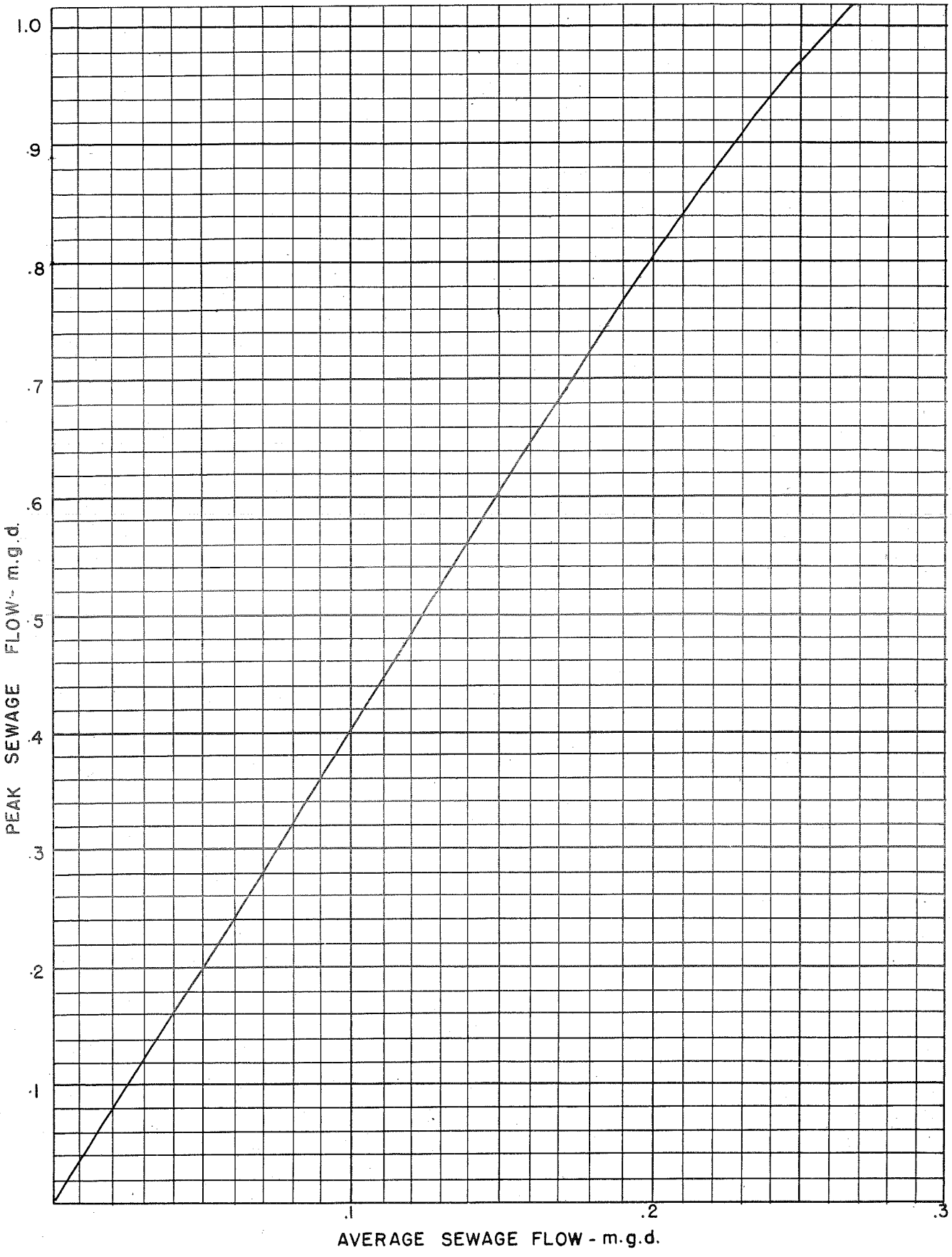
2. The Engineer shall prepare a complete study of each force main design in conjunction with related pumping station. A written detailed analysis, along with supporting calculations, shall be submitted to the Sewer Design Section for approval during the engineering report phase of the project. This analysis shall include, and is not necessarily limited to, the following:
   - transient pressures due to water hammer and the effect of these pressures on the entire system
   - investigation of the pipeline profile to determine the possibility of water column separation
   - reverse rotation characteristics of the pumps
   - shut-off characteristics of the proposed pump control valves
   - a computer analysis of the transient pressures combined with the total system characteristics
   - substantiation for the use of surge valves, extraordinary pipe supports and bracing, when necessary, listing recommended size and computed discharge pressures

I. Identification

When force mains are constructed of material that might cause the force main to be confused with potable water mains, the force main shall be appropriately identified.

APPENDIX

Maryland Department of the Environment Peaking Curves



DEPARTMENT OF PUBLIC WORKS

SANITARY SEWER DESIGN STANDARDS

PEAK FLOW CURVE

0 TO 0.3 mgd

Maryland State Department of Health

ISSUED: AUGUST 22, 1955

REVISED: JANUARY 7, 2010

REVISED:

PLATE

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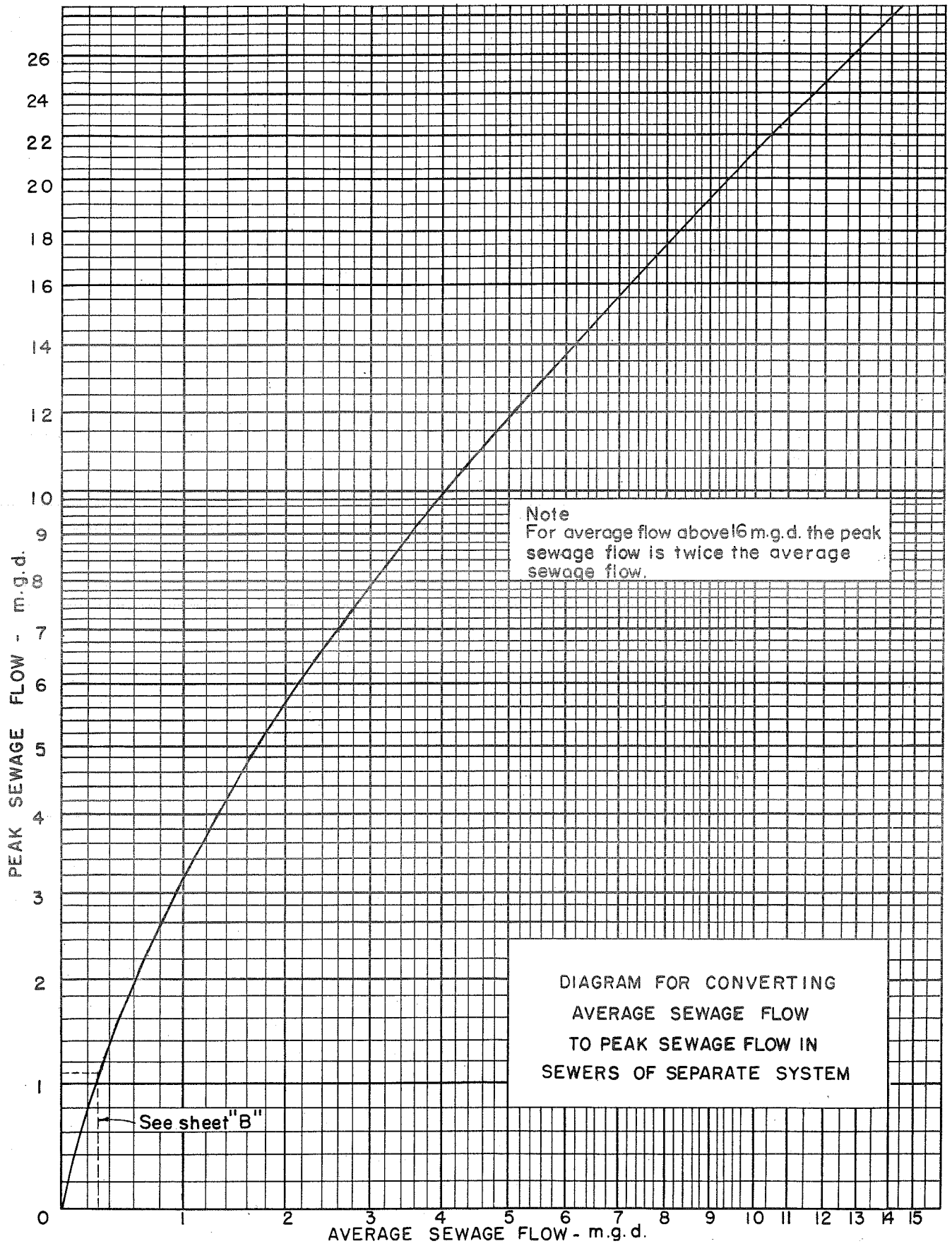

DEPARTMENT OF PUBLIC WORKS

SANITARY SEWER DESIGN STANDARDS

PEAK FLOW CURVE

0 TO 14 mgd

Maryland State Department of Health

ISSUED: AUGUST 22, 1955

REVISED: JANUARY 7, 2010

REVISED:

PLATE

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DEVELOPER'S
EXHIBIT
24


BALTIMORE
COUNTY
SANITARY
SEWER
MADE IN USA


WT42339011
02/03/20

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
7052M	7051	10	0.00	9.95	6.51	*	0.00	5.68
6876N	6875	42	22.90	3.50	3.56	142%	0.00	0.06
54453A	54453	12	1.73	11.75	0.18	6%	1.63	-
54452A	54452	12	2.91	9.32	0.16	4%	2.81	-
45564A	45564	12	1.55	8.49	0.19	7%	1.45	-
38538A	38538	15	7.64	8.51	0.25	6%	7.17	-
38530A	38530	15	0.00	10.41	0.44	*	0.00	-
30590B	30590A	15	5.72	16.16	0.34	14%	4.93	-
30590A	30590	15	3.71	10.12	0.40	21%	2.92	-
30588A	30588	15	4.48	11.73	0.37	18%	3.69	-
22463A	22463	12	2.96	7.72	0.16	3%	2.86	-
16379N	6877	42	21.44	3.50	5.55	150%	0.00	2.05
902054	43825	15	4.58	6.13	0.23	5%	4.35	-
902012	6953	24	11.03	9.22	3.89	121%	0.00	1.89
902012	6953	24	11.03	9.22	1.38	33%	7.43	-
901871	52661	12	3.61	20.98	0.27	14%	3.10	-
901676	15751	27	18.70	16.02	2.12	89%	2.08	-
901391	901390	16	1.95	7.56	0.63	50%	0.98	-
901390	37990	15	9.04	8.68	0.30	11%	8.07	-
69152	69151	15	3.43	10.84	0.48	31%	2.36	-
69151	69150	15	5.47	23.51	0.39	20%	4.40	-
69150	69149	15	3.07	24.18	0.52	35%	2.00	-
69149	69147	15	3.51	27.33	0.48	30%	2.44	-
69147	69146	15	3.81	25.05	0.46	28%	2.74	-
69146	69145	16	3.74	21.10	0.49	29%	2.67	-
69145	69144	15	3.33	18.83	0.49	32%	2.26	-
69144	69143	16	4.25	16.85	0.46	25%	3.18	-
69143	69140	16	4.26	15.71	0.47	26%	3.15	-
69140	69139	16	4.55	16.05	0.46	24%	3.44	-
69139	69138	16	5.97	16.81	0.41	19%	4.86	-
69138	69136	16	2.70	19.89	0.60	41%	1.58	-
69136	69133	16	2.71	22.37	0.59	41%	1.59	-
69133	69132	16	2.69	21.85	0.60	41%	1.57	-
69132	69131	16	6.04	16.07	0.41	18%	4.92	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
69131	33527	15	2.68	23.44	0.57	42%	1.56	-
65511	65510	16	3.72	20.98	0.42	21%	2.95	-
65510	65509	16	3.88	25.72	0.41	20%	3.11	-
65509	65508	16	3.66	22.19	0.42	21%	2.89	-
65508	65507	16	3.57	18.58	0.43	22%	2.80	-
65507	65506	16	4.69	15.86	0.37	16%	3.92	-
65506	65505	16	3.47	14.82	0.43	22%	2.70	-
65505	65504	16	6.74	9.14	0.33	11%	5.97	-
65504	65503	16	2.31	9.61	0.52	33%	1.54	-
65503	65502	16	3.50	8.41	0.43	22%	2.73	-
65502	65501	16	2.62	7.90	0.49	29%	1.85	-
65501	65500	16	2.95	8.45	0.47	26%	2.18	-
65500	65499	16	4.25	9.65	0.39	18%	3.48	-
65499	65498	16	4.18	10.65	0.39	18%	3.41	-
65498	65497	16	6.97	11.34	0.33	11%	6.20	-
65497	34179	16	6.62	12.33	0.33	12%	5.85	-
65375	65374	18	4.33	15.58	0.33	10%	3.89	-
65374	65373	18	5.93	14.64	0.29	7%	5.49	-
65373	6990	18	9.53	17.22	0.26	5%	9.09	-
65333	65332	15	3.92	9.54	0.34	15%	3.32	-
65332	65331	15	2.41	16.48	0.43	25%	1.81	-
65331	65330	15	2.95	26.03	0.39	20%	2.35	-
65330	65329	15	6.57	10.88	0.28	9%	5.97	-
65329	65328	15	5.93	11.77	0.29	10%	5.33	-
65328	65327	15	3.83	11.30	0.34	16%	3.23	-
65327	65326	15	2.48	11.60	0.43	24%	1.88	-
65326	65325	15	3.02	24.96	0.38	20%	2.42	-
65325	65324	15	2.95	15.70	0.39	20%	2.35	-
65324	65323	15	6.73	18.66	0.28	9%	6.13	-
65323	65322	15	1.63	11.36	0.53	37%	1.03	-
65322	65321	15	7.51	17.20	0.27	8%	6.91	-
65321	65320	15	5.85	16.42	0.30	10%	5.25	-
65320	65319	15	5.95	14.96	0.29	10%	5.35	-
65319	65318	15	5.60	16.72	0.30	11%	5.00	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
65318	65317	15	5.60	13.60	0.30	11%	5.00	-
65317	65316	15	3.16	15.65	0.37	19%	2.56	-
65316	65315	15	2.34	15.41	0.44	26%	1.74	-
65315	65511	15	2.99	12.51	0.38	20%	2.39	-
61948	61947	36	33.24	17.39	0.87	18%	27.26	-
61947	61946	36	27.53	13.63	1.05	22%	21.55	-
61946	6888	42	80.26	17.46	3.12	30%	56.39	-
59276	59275	20	3.80	15.36	0.64	35%	2.46	-
59275	59274	20	7.24	18.18	0.49	19%	5.90	-
59274	34175	20	9.20	20.63	0.54	22%	7.20	-
59222	59221	12	1.68	15.58	0.25	12%	1.47	-
59221	70	10	1.78	9.60	0.21	12%	1.57	-
57167	43386	12	5.70	8.95	0.16	3%	5.51	-
57146	44548	15	3.94	11.19	0.66	55%	1.78	-
56841	33296	18	3.73	14.72	0.40	15%	3.16	-
56667	20782	15	3.16	11.30	0.71	60%	1.26	-
55251	7298	24	14.53	9.08	0.90	41%	8.55	-
54556	53962	10	1.07	22.61	0.36	38%	0.66	-
54456	54455	12	1.32	11.40	0.20	8%	1.22	-
54455	54454	12	3.36	13.79	0.15	3%	3.26	-
54454	54453A	12	3.99	10.52	0.15	3%	3.89	-
54453	54452A	12	2.31	12.20	0.17	4%	2.21	-
54452	54451	12	4.02	15.01	0.15	3%	3.92	-
54451	45568	12	4.09	12.89	0.15	3%	3.99	-
53962	53961	10	0.89	14.80	0.41	46%	0.48	-
53961	53960	10	0.94	8.87	0.39	44%	0.53	-
53960	53959	10	0.97	11.50	0.38	42%	0.56	-
53959	53958	10	0.88	15.72	0.41	47%	0.47	-
53958	53957	10	1.04	20.67	0.37	39%	0.63	-
53957	53956	10	0.85	22.02	0.41	48%	0.44	-
53956	53955	10	1.15	24.87	0.35	36%	0.74	-
53955	41133	10	0.84	20.33	0.76	49%	0.43	-
53270	44213	10	0.71	10.54	5.84	143%	0.00	5.01
52661	52660	12	7.21	18.44	0.21	7%	6.70	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
52660	52659	21	36.86	11.84	0.26	3%	35.79	-
52659	52658	21	9.16	14.29	0.41	12%	8.09	-
52658	52657	21	5.62	17.66	0.52	19%	4.55	-
52657	52656	24	8.42	18.15	0.52	14%	7.23	-
52656	52655	24	4.65	19.10	0.69	26%	3.46	-
52655	52654	24	56.68	18.73	0.28	2%	55.49	-
52654	52653	24	15.09	11.22	0.43	8%	13.90	-
52653	52652	24	57.57	13.97	0.28	2%	56.38	-
52652	52651	24	14.94	17.83	0.43	8%	13.75	-
52651	7324	18	6.85	12.30	0.55	26%	5.04	-
52364	36947	15	5.29	10.80	0.37	17%	4.37	-
52182	66	10	2.57	7.11	0.19	10%	2.33	-
52175	52174	16	10.45	7.79	0.14	0%	10.43	-
52174	52173	16	11.60	8.01	0.14	0%	11.58	-
52173	52172	16	5.32	7.86	0.14	0%	5.30	-
52172	52171	16	3.50	23.69	0.09	0%	3.48	-
52171	52170	16	4.18	21.63	0.09	0%	4.16	-
52170	18	16	22.42	18.25	0.14	0%	22.40	-
52089	52088	15	3.02	11.00	0.53	36%	1.95	-
52088	36931	15	1.98	11.28	0.64	54%	0.91	-
52028	52027	10	1.03	11.67	0.28	23%	0.80	-
52027	52026	10	1.40	11.59	0.24	17%	1.17	-
52026	52025	10	1.63	8.40	0.23	14%	1.40	-
52025	52024	10	1.79	8.30	0.22	13%	1.56	-
52024	902054	15	4.53	8.27	0.23	5%	4.30	-
49997	36917	18	10.27	7.05	0.38	12%	9.05	-
48242	17297	12	5.79	10.95	0.29	17%	4.83	-
48063	42229	24	24.93	120.22	2.59	9%	22.71	0.59
47036	36944	15	5.09	8.11	0.40	20%	4.09	-
47025	36942	15	3.62	11.75	0.45	28%	2.62	-
46796	17748	12	4.95	4.40	0.35	25%	3.74	-
46789	6931	30	19.86	11.02	1.80	87%	2.50	-
45753	6937	30	18.97	11.34	1.81	88%	2.19	-
45724	18455	12	4.10	10.01	0.36	26%	3.03	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
45592	22464	12	2.38	8.25	0.17	4%	2.28	-
45585	22457	12	1.16	11.39	0.21	9%	1.06	-
45568	22490	12	4.47	11.05	0.14	2%	4.37	-
45567	45566	12	4.46	14.37	0.14	2%	4.36	-
45566	45565	12	4.75	10.08	0.14	2%	4.65	-
45565	45564A	12	3.59	9.68	0.15	3%	3.49	-
45564	45563	12	2.73	11.65	0.16	4%	2.63	-
45563	22466	12	4.74	8.74	0.14	2%	4.64	-
44548	20777	15	4.28	9.03	0.65	52%	2.06	-
44225	44224	10	0.69	12.98	1.29	81%	0.13	0.46
44224	44223	10	0.63	14.85	1.83	88%	0.08	1.00
44223	44222	10	0.78	14.30	2.10	78%	0.17	1.27
44222	44221	10	0.65	16.04	2.55	95%	0.04	1.72
44221	44220	10	0.72	17.71	2.74	86%	0.10	1.91
44220	44219	10	0.68	10.99	3.50	92%	0.05	2.66
44219	44218	10	0.79	8.59	3.75	80%	0.16	2.92
44218	44217	10	0.78	15.42	4.30	82%	0.14	3.46
44217	44216	10	0.84	12.02	4.84	76%	0.20	4.01
44216	44215	10	0.80	11.87	5.39	97%	0.02	4.56
44215	44214	10	0.80	11.29	5.51	98%	0.02	4.68
44214	53270	10	0.87	12.30	5.68	91%	0.08	4.85
44213	44212	10	0.81	9.79	5.29	126%	0.00	4.46
44212	44211	10	0.80	10.62	4.74	127%	0.00	3.90
44211	44210	10	0.80	11.54	4.05	127%	0.00	3.22
44210	44209	10	0.52	15.76	3.30	211%	0.00	2.47
44209	44208	24	5.12	13.54	0.64	21%	4.02	-
44208	34385	24	4.66	13.72	0.66	24%	3.56	-
43865	42055	12	1.94	18.39	0.29	17%	1.61	-
43826	52024	15	3.12	8.28	0.11	0%	3.12	-
43825	43824	15	3.07	8.08	0.24	8%	2.84	-
43786	44225	12	1.79	11.00	0.39	31%	1.23	-
43502	43501	16	3.68	6.59	0.42	21%	2.92	-
43501	18555	18	4.20	6.75	0.44	18%	3.44	-
43387	57167	12	4.32	10.56	0.17	4%	4.13	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
43386	43385	12	3.22	10.71	0.19	6%	3.03	-
43385	43384	12	2.33	9.59	0.26	13%	2.03	-
43384	43383	12	5.32	7.57	0.22	9%	4.85	-
43383	43382	15	7.89	13.32	0.25	6%	7.40	-
43382	43381	15	2.12	13.27	0.41	23%	1.63	-
43381	150	15	46.14	9.53	0.15	1%	45.65	-
42603	36945	15	4.16	7.77	0.41	23%	3.21	-
42234	42228	30	29.98	40.38	4.56	39%	18.35	2.06
42233	42232	24	7.28	28.20	0.71	27%	5.32	-
42232	42231	24	12.99	102.54	0.54	15%	11.03	-
42231	42230	24	22.99	106.64	0.44	9%	21.03	-
42230	48063	24	24.44	116.70	0.43	8%	22.48	-
42229	42228	24	18.63	18.16	5.04	12%	16.44	3.04
42228	22013	24	11.46	35.56	6.86	119%	0.00	4.86
42055	42054	15	4.56	20.59	0.38	19%	3.72	-
42054	42053	15	3.67	19.39	0.42	23%	2.83	-
42053	42052	15	2.46	16.20	0.50	34%	1.62	-
42052	42051	15	5.81	14.83	0.35	15%	4.97	-
42051	42050	14	42.09	17.01	0.16	2%	41.25	-
42050	34836	14	11.24	14.13	0.25	8%	10.40	-
41530	43502	16	2.58	9.90	0.50	30%	1.82	-
41529	41530	16	4.32	8.90	0.38	18%	3.56	-
41429	41116	10	2.16	7.59	0.35	33%	1.44	-
41428	41427	12	1.36	6.34	0.54	53%	0.64	-
41427	1593	12	2.48	6.10	0.78	29%	1.76	-
41252	20781	15	3.10	8.85	0.72	62%	1.17	-
41133	41132	10	2.04	21.77	0.27	20%	1.63	-
41132	41131	10	0.90	21.25	0.40	45%	0.49	-
41131	41130	10	1.12	16.09	0.36	37%	0.71	-
41130	41129	10	1.11	11.55	0.36	37%	0.70	-
41129	41128	10	1.14	11.85	0.35	36%	0.73	-
41128	41127	10	1.33	12.65	0.32	31%	0.92	-
41127	41126	10	1.57	12.20	0.37	40%	0.94	-
41126	41125	10	1.62	12.30	0.37	39%	0.99	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
41125	41124	10	0.38	12.69	0.55	165%	0.00	-
41124	41123	10	1.17	12.15	0.44	54%	0.54	-
41123	41122	10	1.44	9.80	0.40	44%	0.81	-
41122	41121	10	2.00	8.47	0.33	31%	1.37	-
41121	41120	10	0.95	8.85	0.51	66%	0.32	-
41120	41119	10	0.94	8.20	0.55	77%	0.22	-
41119	41118	10	1.44	8.17	0.42	50%	0.72	-
41118	41117	10	2.21	8.41	0.34	33%	1.49	-
41117	41429	10	0.92	8.87	0.55	78%	0.20	-
41116	41115	10	0.67	9.19	0.79	108%	0.00	-
41115	41114	10	0.92	8.01	0.55	78%	0.20	-
41114	41428	10	1.28	6.72	0.46	56%	0.56	-
40488	6941	27	10.59	18.46	2.72	157%	0.00	0.47
39741	39739	12	1.45	7.65	0.36	28%	1.05	-
39739	39738	12	0.84	11.80	0.44	48%	0.44	-
39738	39737	12	2.12	10.57	0.30	19%	1.72	-
39737	39736	12	0.90	12.25	0.75	45%	0.50	-
39736	39735	12	2.70	5.04	0.28	15%	2.30	-
39735	39734	12	0.30	8.01	0.62	134%	0.00	-
39734	39733	12	1.58	9.80	0.35	25%	1.18	-
39733	23779	12	3.90	7.95	0.24	10%	3.50	-
39458	38645	15	2.80	9.55	0.33	14%	2.40	-
39224	20126	15	1.32	7.64	0.60	62%	0.50	-
39118	39117	12	1.77	9.52	0.18	6%	1.66	-
39117	38084	12	3.22	3.55	0.16	3%	3.11	-
38839	38533	15	3.01	10.13	0.35	17%	2.50	-
38838	38532	15	5.33	9.46	0.29	10%	4.82	-
38773	33440	27	19.80	9.20	1.14	50%	9.96	-
38649	38648	15	3.52	10.35	0.21	5%	3.33	-
38648	38647	15	3.94	7.15	0.27	10%	3.54	-
38647	38646	15	4.58	13.09	0.28	9%	4.18	-
38646	39458	15	2.95	12.75	0.32	13%	2.55	-
38645	38644	15	2.19	11.01	0.36	18%	1.79	-
38644	38643	15	6.81	11.89	0.26	7%	6.34	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
38643	38642	15	2.96	6.51	0.35	16%	2.49	-
38642	38539	15	8.05	8.80	0.24	6%	7.58	-
38539	38538A	15	4.52	8.01	0.30	10%	4.05	-
38538	38537	15	3.79	6.92	0.30	12%	3.32	-
38537	38536	15	3.28	5.18	0.34	16%	2.77	-
38536	38535	15	1.48	9.72	0.52	35%	0.97	-
38535	38534	15	3.32	11.48	0.34	15%	2.81	-
38534	38839	15	5.70	10.35	0.28	9%	5.19	-
38533	38838	15	6.21	9.20	0.27	8%	5.70	-
38532	38531	15	3.29	9.31	0.34	16%	2.78	-
38531	38530A	15	3.54	8.55	0.33	14%	3.03	-
38530	38529	15	4.42	10.64	0.31	12%	3.91	-
38529	38528	15	5.03	6.75	0.29	10%	4.52	-
38528	38527	15	4.15	7.18	0.30	12%	3.64	-
38527	38526	15	4.76	7.35	0.30	11%	4.25	-
38526	38525	15	5.43	6.70	0.28	9%	4.92	-
38525	6952	24	11.66	8.66	3.48	138%	0.00	1.48
38085	36954	12	2.22	8.39	0.16	5%	2.11	-
38084	38083	12	4.52	7.36	0.14	2%	4.41	-
38083	38081	12	1.68	8.01	0.36	27%	1.23	-
38081	38080	12	1.91	10.66	0.34	23%	1.46	-
38080	38079	12	2.52	7.56	0.30	17%	2.08	-
38079	38078	12	2.08	7.63	0.32	21%	1.64	-
38078	38077	12	2.84	16.52	0.28	15%	2.42	-
38077	38076	12	3.23	7.51	0.27	13%	2.81	-
38076	38075	12	2.89	9.52	0.28	15%	2.47	-
38075	38074	12	3.21	7.63	0.27	13%	2.79	-
38074	38073	12	2.48	8.21	0.29	17%	2.07	-
38073	38072	12	3.17	10.79	0.26	13%	2.76	-
38072	36952	15	3.11	13.97	0.44	26%	2.30	-
37991	37990	30	16.93	11.72	0.49	6%	15.87	-
37990	37989	30	19.62	10.38	0.66	15%	16.77	-
37989	37988	30	16.71	11.32	0.71	17%	13.86	-
37988	37987	30	16.97	11.80	0.70	17%	14.12	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
37987	37986	30	16.78	13.18	0.71	17%	13.93	-
37986	33466	27	23.90	12.86	0.57	12%	21.05	-
37148	20794	15	4.20	10.61	0.43	23%	3.24	-
37032	37031	12	2.70	9.08	0.34	22%	2.10	-
37031	37030	12	1.24	8.03	0.47	48%	0.64	-
37030	65333	15	7.16	8.17	0.27	8%	6.56	-
37014	20553	27	22.86	11.88	0.88	30%	15.98	-
37013	37012	27	17.06	15.10	1.07	45%	9.42	-
37012	37011	27	24.41	14.15	0.87	31%	16.77	-
37011	37010	27	20.31	11.37	0.96	38%	12.67	-
37010	37009	27	22.18	9.00	0.93	34%	14.54	-
37009	33448	27	19.98	8.93	0.98	39%	12.22	-
36990	20793	15	5.49	9.63	0.38	18%	4.51	-
36963	36962	12	4.46	10.91	0.13	1%	4.40	-
36962	36961	12	4.30	9.41	0.13	1%	4.24	-
36961	36960	12	4.21	13.14	0.13	1%	4.15	-
36960	36959	12	3.62	8.33	0.13	2%	3.56	-
36959	36958	12	3.94	12.25	0.13	2%	3.88	-
36958	36957	12	4.14	8.75	0.13	1%	4.08	-
36957	36956	12	2.57	12.55	0.14	2%	2.51	-
36956	36955	12	4.12	9.31	0.13	2%	4.06	-
36955	38085	12	2.09	11.54	0.14	3%	2.03	-
36954	36953	12	2.97	8.62	0.16	4%	2.86	-
36953	38072	15	4.09	8.82	0.29	12%	3.62	-
36952	36951	15	4.34	10.40	0.38	18%	3.54	-
36951	36950	15	4.48	9.31	0.37	18%	3.69	-
36950	36949	15	4.39	9.95	0.41	21%	3.46	-
36949	36948	15	3.44	9.72	0.45	27%	2.52	-
36948	52364	15	4.97	9.60	0.38	18%	4.05	-
36947	36946	15	5.72	10.64	0.36	16%	4.81	-
36946	42603	15	2.44	9.03	0.51	38%	1.52	-
36945	47036	15	4.92	8.29	0.39	19%	3.97	-
36944	47025	15	3.80	14.15	0.44	26%	2.80	-
36942	36941	15	3.72	15.34	0.45	28%	2.69	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
36941	36940	15	3.75	13.63	0.45	27%	2.72	-
36940	36939	15	5.73	10.89	0.38	18%	4.71	-
36939	36938	15	5.95	14.26	0.37	17%	4.93	-
36938	36937	15	6.60	11.53	0.36	16%	5.54	-
36937	36936	15	4.05	11.22	0.45	26%	2.99	-
36936	36935	15	3.71	10.80	0.47	28%	2.66	-
36935	36934	15	3.90	10.50	0.46	27%	2.85	-
36934	36933	15	3.60	5.34	0.48	29%	2.55	-
36933	52089	15	3.55	8.45	0.49	30%	2.47	-
36931	36930	15	2.72	14.94	0.56	39%	1.65	-
36930	36929	15	2.67	25.41	0.55	40%	1.60	-
36929	36928	15	3.54	9.48	0.49	31%	2.46	-
36928	36927	15	3.61	11.35	0.49	30%	2.53	-
36927	36926	18	5.67	15.92	0.47	19%	4.57	-
36926	36925	15	3.48	10.59	0.50	32%	2.38	-
36925	36924	18	6.74	10.96	0.43	16%	5.64	-
36924	36923	12	2.78	14.55	0.47	42%	1.61	-
36923	36922	18	8.14	9.74	0.41	14%	6.97	-
36922	36921	18	9.32	13.10	0.39	13%	8.15	-
36921	36920	18	12.20	12.90	0.34	10%	11.03	-
36920	36919	18	10.12	12.97	0.38	12%	8.91	-
36919	36918	18	10.38	10.69	0.38	12%	9.17	-
36918	49997	18	10.39	1.65	0.38	12%	9.17	-
36917	36916	18	8.06	13.08	0.42	15%	6.84	-
36916	36915	18	8.92	10.69	0.41	14%	7.70	-
36915	36914	18	9.59	12.09	0.39	13%	8.37	-
36914	36913	18	8.51	11.48	0.41	14%	7.29	-
36913	36912	18	6.21	9.89	0.45	20%	4.99	-
36912	36911	18	8.66	11.16	0.41	14%	7.44	-
36911	34383	18	7.13	10.71	0.44	17%	5.91	-
34836	33711	12	4.08	12.09	0.33	23%	3.16	-
34447	17751	12	1.53	9.36	0.68	80%	0.30	-
34385	34384	24	5.19	15.86	0.71	26%	3.83	-
34384	34383	24	4.98	11.75	0.72	27%	3.62	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
34383	34382	24	8.82	13.59	0.74	29%	6.29	-
34382	34381	24	7.10	14.22	0.84	36%	4.57	-
34381	20767	24	6.52	15.43	0.86	39%	4.00	-
34180	34179	12	3.15	10.06	0.14	2%	3.08	-
34179	34178	12	4.06	14.19	0.32	20%	3.25	-
34178	34177	12	4.55	15.64	0.30	18%	3.74	-
34177	34176	12	6.86	15.67	0.25	12%	6.05	-
34176	59274	12	6.12	14.60	0.27	13%	5.31	-
34175	19141	21	10.96	15.94	0.72	33%	7.35	-
33711	33710	12	3.43	7.58	0.37	27%	2.51	-
33710	33709	12	3.48	9.37	0.36	26%	2.56	-
33709	33708	12	3.79	6.90	0.35	25%	2.86	-
33708	33707	12	3.34	7.80	0.37	28%	2.41	-
33707	20761	12	0.62	11.42	0.86	150%	0.00	-
33532	33531	10	1.79	14.71	0.37	39%	1.09	-
33531	33530	10	1.75	13.29	0.37	40%	1.05	-
33530	33529	10	1.58	12.80	0.40	44%	0.88	-
33529	33528	12	1.23	13.86	0.53	57%	0.53	-
33528	33527	12	1.53	12.70	0.49	46%	0.83	-
33527	20783	15	2.88	10.40	0.72	62%	1.10	-
33470	30342	30	18.45	12.82	0.14	0%	18.45	-
33466	33465	27	16.23	10.66	0.69	20%	12.97	-
33465	33464	27	17.18	11.61	0.67	19%	13.92	-
33464	33463	27	17.12	12.19	0.67	19%	13.86	-
33463	33462	27	17.85	16.38	0.66	18%	14.59	-
33462	33461	27	17.65	11.58	0.66	18%	14.39	-
33461	33460	27	17.50	6.44	0.66	19%	14.24	-
33460	33459	27	20.33	14.09	0.65	16%	17.07	-
33459	33458	27	13.75	8.23	0.76	24%	10.49	-
33458	33457	27	36.06	9.12	0.50	9%	32.80	-
33457	33456	27	24.53	12.04	0.60	13%	21.27	-
33456	33455	27	24.22	11.65	0.61	13%	20.96	-
33455	33454	27	23.87	12.06	0.61	14%	20.61	-
33454	33453	27	20.32	11.89	0.65	16%	17.06	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
33453	33452	27	19.63	10.05	0.63	17%	16.37	-
33452	33451	27	17.72	11.90	0.93	18%	14.46	-
33451	37014	27	14.56	12.10	1.10	47%	7.68	-
33448	33447	27	34.51	10.17	0.80	25%	25.95	-
33447	33446	27	32.04	8.94	0.82	27%	23.48	-
33446	33445	27	27.09	9.63	0.92	32%	18.31	-
33445	33444	27	23.23	10.06	0.97	38%	14.45	-
33444	33443	27	22.20	12.98	1.03	42%	12.80	-
33443	33442	27	21.67	10.65	1.05	43%	12.27	-
33442	38773	27	23.12	9.88	1.00	41%	13.72	-
33440	33439	27	15.04	10.63	2.06	65%	5.20	-
33439	33438	27	23.73	11.03	2.21	41%	13.89	-
33438	33437	30	33.56	9.94	0.93	29%	23.72	-
33437	42234	30	29.00	11.52	1.18	34%	19.17	-
33296	52660	18	7.17	9.01	0.32	8%	6.60	-
32475	6989	15	3.44	10.76	0.31	13%	3.00	-
32394	19706	24	20.96	13.24	2.38	77%	4.75	0.38
32263	32262	12	2.03	11.10	0.37	28%	1.46	-
32262	32261	12	2.57	10.20	0.34	22%	2.00	-
32261	32260	12	2.35	28.96	0.35	24%	1.78	-
32260	32259	12	0.19	12.30	0.73	330%	0.00	-
32259	32258	12	1.75	12.95	0.42	36%	1.12	-
32258	32257	12	0.91	11.86	0.62	69%	0.28	-
32257	32254	12	1.03	12.18	0.57	61%	0.40	-
32254	33532	12	0.60	9.71	0.66	105%	0.00	-
30726	20776	15	4.20	9.39	0.66	53%	1.98	-
30594	30593	15	6.25	10.79	0.22	5%	5.95	-
30593	30592	15	7.17	11.40	0.62	4%	6.87	-
30592	15271	15	5.96	11.14	0.23	5%	5.66	-
30591	30590B	15	3.67	11.40	0.40	22%	2.88	-
30590	30589	15	4.56	7.61	0.37	17%	3.77	-
30589	30588A	15	5.48	9.00	0.35	14%	4.69	-
30588	16037	18	5.35	13.60	0.40	15%	4.56	-
30342	37991	30	16.87	11.82	0.29	0%	16.87	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
29873	20799	10	3.12	6.54	0.16	5%	2.95	-
29862	29861	10	0.78	6.42	0.63	93%	0.06	-
29861	20812	12	0.51	6.58	0.53	142%	0.00	-
22538	15270	15	7.91	12.49	0.33	13%	6.91	-
22490	22489	12	3.54	14.52	0.15	3%	3.44	-
22489	22482	12	3.79	11.84	0.15	3%	3.69	-
22482	45567	12	3.26	14.72	0.15	3%	3.16	-
22466	22465	12	1.49	9.40	0.19	7%	1.39	-
22465	45592	12	1.79	7.80	0.17	6%	1.69	-
22464	22463A	12	2.89	7.41	0.16	4%	2.79	-
22463	22462	12	3.24	5.39	0.15	3%	3.14	-
22462	22458	12	1.67	7.24	0.20	6%	1.57	-
22458	45585	12	1.66	6.88	0.20	6%	1.56	-
22457	22456	12	1.01	8.77	0.22	10%	0.91	-
22456	22455	12	1.49	7.25	0.19	7%	1.39	-
22455	22454	12	0.95	9.94	0.23	11%	0.85	-
22454	6921	12	1.33	13.48	0.20	8%	1.23	-
22225	19142	21	6.53	15.80	0.60	25%	4.92	-
22223	22222	21	5.79	13.16	0.79	42%	3.38	-
22222	7314	21	6.07	20.57	0.80	40%	3.66	-
22013	22012	24	15.07	12.31	6.74	91%	1.32	4.74
22012	22011	24	14.71	11.45	6.83	93%	0.97	4.83
22011	22010	24	14.74	11.68	7.09	93%	1.01	5.09
22010	22009	24	11.99	11.14	7.10	114%	0.00	5.10
22009	6957	24	13.03	11.60	6.89	107%	0.00	4.89
21329	20761	27	8.83	14.86	1.40	62%	3.39	-
21328	6888	30	14.98	16.92	1.50	44%	8.37	-
21046	21045	15	1.39	11.79	0.40	26%	1.02	-
21045	21043	15	4.05	12.26	0.26	9%	3.68	-
21043	21042	15	2.51	12.75	0.47	30%	1.75	-
21042	41529	15	2.52	10.08	0.47	30%	1.76	-
20812	20811	12	1.93	6.50	0.43	37%	1.21	-
20811	20810	12	1.77	8.20	0.45	41%	1.05	-
20810	20809	12	1.60	12.88	0.48	45%	0.88	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
20809	20808	12	1.97	20.42	0.43	37%	1.25	-
20808	20807	12	1.49	16.48	0.50	48%	0.77	-
20807	20806	12	2.48	9.94	0.38	29%	1.76	-
20806	20805	12	4.45	7.64	0.29	16%	3.73	-
20805	20804	12	2.12	12.25	0.43	37%	1.33	-
20804	20803	12	5.48	8.30	0.28	14%	4.69	-
20803	20799	12	3.67	12.60	0.33	22%	2.88	-
20799	20798	12	3.58	9.80	0.36	26%	2.63	-
20798	20797	12	3.49	15.04	0.37	27%	2.54	-
20797	20796	12	3.16	8.44	0.39	30%	2.21	-
20796	20795	12	3.21	8.55	0.39	29%	2.26	-
20795	37148	15	6.37	10.03	0.36	15%	5.41	-
20794	36990	15	5.91	9.12	0.36	16%	4.95	-
20793	69152	16	5.36	12.49	0.43	20%	4.29	-
20783	56667	15	3.47	17.40	0.65	51%	1.69	-
20782	41252	15	2.55	11.48	0.81	75%	0.65	-
20781	20780	15	4.47	9.25	0.59	43%	2.54	-
20780	20779	15	4.87	8.28	0.56	40%	2.94	-
20779	20778	15	5.14	9.24	0.55	39%	3.15	-
20778	57146	15	4.29	10.35	0.62	46%	2.30	-
20777	30726	15	5.71	9.89	0.56	39%	3.49	-
20776	20775	15	5.61	11.33	0.56	40%	3.36	-
20775	20774	15	4.60	9.62	0.63	49%	2.35	-
20774	20773	15	4.19	10.65	0.67	54%	1.94	-
20773	20772	15	4.54	8.23	0.63	50%	2.29	-
20772	20771	15	4.55	10.38	0.64	50%	2.27	-
20771	20770	18	3.80	10.31	0.85	60%	1.51	-
20770	20769	18	5.65	10.75	0.67	41%	3.36	-
20769	20768	18	6.76	12.44	0.61	34%	4.47	-
20768	20767	18	6.95	9.26	0.62	33%	4.66	-
20767	20766	27	11.25	16.52	1.02	42%	6.56	-
20766	20765	27	8.57	16.61	1.18	55%	3.89	-
20765	20764	27	8.31	17.81	1.21	56%	3.64	-
20764	20763	27	8.55	18.48	1.25	59%	3.47	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
20763	20762	27	11.21	15.83	1.10	47%	5.89	-
20762	21329	27	8.72	17.03	1.28	61%	3.40	-
20761	20760	27	8.89	15.66	1.74	69%	2.72	-
20760	20759	30	5.75	13.73	2.40	106%	0.00	-
20759	20758	30	5.53	16.37	2.39	111%	0.00	-
20758	20757	30	6.00	11.11	2.29	102%	0.00	-
20757	20756	30	4.99	10.80	2.23	122%	0.00	-
20756	20755	30	5.78	10.35	2.11	106%	0.00	-
20755	20754	30	8.76	27.22	2.07	71%	2.51	-
20754	20753	30	1.77	23.92	2.72	371%	0.00	0.22
20753	21328	30	8.76	16.59	1.54	75%	2.18	-
20553	37013	27	21.67	15.36	1.50	35%	14.03	-
20314	18454	12	4.89	7.66	0.34	22%	3.82	-
20127	18554	15	2.28	7.43	0.49	33%	1.52	-
20126	18553	15	3.22	8.10	0.44	25%	2.40	-
19910	17762	12	3.43	11.13	0.37	27%	2.49	-
19876	19875	12	1.73	9.78	0.77	92%	0.13	-
19875	19874	12	2.38	9.73	0.62	67%	0.78	-
19874	19873	12	3.96	11.93	1.07	41%	2.35	0.07
19873	6955	24	11.35	10.88	6.61	136%	0.00	4.61
19706	6947	24	16.10	13.34	2.37	102%	0.00	0.37
19657	17760	12	6.10	12.46	0.28	15%	5.17	-
19143	22225	21	4.35	13.52	0.69	37%	2.74	-
19143	59276	21	19.39	13.52	0.39	7%	18.05	-
19142	34175	21	11.95	14.33	0.48	13%	10.34	-
19141	7308	21	11.40	13.25	0.85	44%	6.34	-
18586	902012	24	10.73	9.16	3.82	126%	0.00	1.82
18586	902012	24	10.73	9.16	1.17	42%	6.19	-
18555	20127	15	3.00	6.77	0.44	25%	2.24	-
18554	39224	15	2.91	7.65	0.47	26%	2.15	-
18553	18552	15	2.45	7.63	0.51	33%	1.63	-
18552	18496	15	2.73	10.35	0.47	30%	1.91	-
18496	901391	15	1.34	9.20	0.78	72%	0.37	-
18463	18458	10	2.32	15.95	0.33	31%	1.60	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
18458	18457	12	5.30	9.19	0.29	16%	4.46	-
18457	18456	12	5.79	10.72	0.28	15%	4.95	-
18456	45724	12	4.19	8.64	0.32	20%	3.35	-
18455	20314	12	4.78	8.25	0.34	22%	3.71	-
18454	18453	12	5.17	7.86	0.33	21%	4.10	-
18453	18452	12	2.75	8.76	0.44	39%	1.68	-
18452	6928	42	7.10	11.49	2.62	258%	0.00	-
18322	18321	21	13.13	10.28	0.60	23%	10.17	-
18321	7309	21	9.56	13.32	0.67	31%	6.60	-
18241	7311	21	7.28	21.26	0.80	41%	4.32	-
18202	6885	12	1.79	19.43	3.63	67%	0.59	2.63
18064	18063	12	2.00	13.12	0.44	22%	1.55	-
18063	17775	12	1.55	14.10	0.92	29%	1.10	-
17969	9040	15	3.87	9.20	0.35	16%	3.24	-
17949	9039	15	5.30	16.00	0.32	12%	4.67	-
17775	17774	12	2.18	22.74	0.31	20%	1.73	-
17774	17773	12	6.84	12.74	0.20	7%	6.39	-
17773	17772	12	2.76	16.50	0.29	16%	2.31	-
17772	17771	12	4.84	8.94	0.23	9%	4.39	-
17771	17770	12	5.05	8.65	0.22	9%	4.60	-
17770	17769	12	4.29	10.53	0.24	10%	3.84	-
17769	17768	12	4.61	9.15	0.23	10%	4.16	-
17768	17767	12	2.47	8.97	0.30	18%	2.02	-
17767	17766	12	0.63	11.00	0.60	71%	0.18	-
17766	17765	12	2.84	6.93	0.29	16%	2.39	-
17765	48242	12	5.59	14.08	0.21	8%	5.14	-
17764	17763	12	2.76	9.80	0.42	34%	1.81	-
17763	19910	12	3.22	12.88	0.38	29%	2.28	-
17762	17761	12	4.35	9.39	0.33	21%	3.42	-
17761	19657	12	5.56	2.96	0.29	17%	4.63	-
17760	17759	12	4.26	13.40	0.34	22%	3.33	-
17759	17758	12	1.27	10.90	0.63	72%	0.35	-
17758	17757	12	4.94	26.73	0.31	18%	4.03	-
17757	17756	12	1.90	7.53	0.49	48%	0.99	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
17756	17755	12	1.10	13.16	0.68	82%	0.20	-
17755	17754	12	1.40	6.10	0.63	76%	0.34	-
17754	17753	12	1.51	6.85	0.63	70%	0.45	-
17753	17752	12	1.51	7.37	0.63	70%	0.46	-
17752	34447	12	1.28	5.60	0.69	81%	0.24	-
17751	17750	12	1.38	9.45	0.73	88%	0.16	-
17750	17749	12	1.49	7.73	0.69	82%	0.27	-
17749	46796	12	5.48	4.63	0.34	22%	4.26	-
17748	17747	12	2.92	5.00	0.46	42%	1.71	-
17747	18202	12	14.96	6.12	0.22	8%	13.75	-
17375	45753	30	38.12	10.90	1.57	44%	21.34	-
17297	17764	12	2.92	9.64	0.41	33%	1.96	-
16604	7320	10	2.61	14.88	0.17	6%	2.44	-
16596	7333	10	1.00	17.80	0.28	22%	0.78	-
16581	7328	10	2.95	13.15	0.27	20%	2.37	-
16535	7330	15	5.93	15.92	0.16	1%	5.85	-
16379	16379N	42	20.88	17.22	5.94	154%	0.00	2.44
16038	16037	18	8.81	16.89	0.50	10%	7.94	-
16037	16036	18	6.69	12.93	0.52	25%	5.04	-
16036	42233	18	6.58	17.71	0.56	30%	4.62	-
15872	15871	30	20.58	13.36	1.90	82%	3.80	-
15871	6936	30	17.56	15.08	2.32	96%	0.78	-
15751	40488	27	21.21	16.43	2.09	78%	4.59	-
15271	22538	15	6.83	12.27	0.22	4%	6.53	-
15270	30591	15	4.91	14.11	0.36	16%	4.12	-
15270	9042	15	5.74	14.11	0.20	4%	5.54	-
15269	42234	18	10.33	11.33	0.61	21%	8.15	-
14937	5134	10	1.05	8.81	0.32	30%	0.74	-
14565	6885	42	77.24	11.66	1.66	40%	46.60	-
14458	14456	12	2.32	4.94	0.59	64%	0.84	-
14456	14455	12	2.91	5.04	0.54	55%	1.31	-
14455	14454	12	2.78	5.04	0.56	57%	1.18	-
14454	19876	12	5.21	5.28	0.40	31%	3.61	-
13939	20805	12	7.90	11.48	0.13	1%	7.80	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
9042	9041	15	4.28	13.90	0.22	5%	4.08	-
9041	17969	15	4.48	9.87	0.26	7%	4.15	-
9040	17949	15	4.86	9.47	0.33	13%	4.23	-
9039	16038	18	6.50	9.50	0.38	13%	5.63	-
8195	37032	12	1.14	9.27	0.50	53%	0.54	-
7335	7334	10	2.75	12.20	0.16	6%	2.58	-
7334	16604	10	2.50	9.74	0.17	7%	2.33	-
7333	7332	10	2.63	9.80	0.25	18%	2.15	-
7332	7316	10	1.89	10.83	0.30	25%	1.41	-
7330	7329	15	3.73	12.56	0.14	2%	3.65	-
7329	7328	15	5.22	15.72	0.17	2%	5.14	-
7328	7327	18	5.83	17.40	0.34	11%	5.21	-
7327	7326	18	5.89	19.36	0.33	11%	5.27	-
7326	7325	18	6.13	21.58	0.33	10%	5.51	-
7325	52651	18	6.84	11.66	0.35	9%	6.22	-
7324	7323	18	7.79	15.10	0.52	23%	5.98	-
7323	7322	18	6.48	16.67	0.54	28%	4.67	-
7322	7321	18	7.33	14.03	0.53	25%	5.52	-
7321	7320	18	7.90	14.30	0.52	23%	6.09	-
7320	7319	21	11.54	16.31	0.52	17%	9.57	-
7319	7318	21	9.80	18.35	0.54	20%	7.83	-
7318	7317	21	7.59	11.74	0.62	26%	5.62	-
7317	7316	21	8.38	13.97	0.59	24%	6.41	-
7316	7315	21	10.03	16.37	0.59	24%	7.64	-
7315	22223	21	4.64	12.81	0.84	52%	2.25	-
7314	18241	21	3.91	13.05	1.11	76%	0.95	-
7311	18322	21	7.06	22.19	0.81	42%	4.10	-
7309	19143	21	9.14	12.67	0.69	32%	6.18	-
7308	7305	21	12.52	11.52	0.79	40%	7.46	-
7305	7303	21	14.82	14.39	0.73	34%	9.76	-
7303	7302	21	17.06	15.30	0.68	30%	12.00	-
7302	7301	24	22.65	12.32	0.68	22%	17.59	-
7301	7300	24	20.70	12.41	0.71	24%	15.64	-
7300	55251	24	11.77	12.86	0.92	43%	6.71	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
7298	7297	24	9.58	9.60	1.15	62%	3.60	-
7297	7296	24	12.77	8.72	0.98	47%	6.79	-
7296	7295	24	9.00	9.45	1.19	66%	3.02	-
7295	61948	24	18.62	10.07	0.81	32%	12.64	-
7289	7256	10	0.68	5.89	1.69	122%	0.00	0.86
7256	7255	12	0.84	8.90	0.77	99%	0.01	-
7255	7254	12	0.98	10.50	0.71	85%	0.15	-
7254	7253	12	0.89	9.16	0.77	93%	0.06	-
7253	7252	12	1.53	11.25	0.53	54%	0.70	-
7252	6995	12	2.61	11.35	0.40	32%	1.78	-
7071	33444	10	1.58	9.54	0.41	42%	0.92	-
7051	7050	10	1.89	10.30	6.41	117%	0.00	5.57
7050	7049	10	1.77	10.10	4.56	125%	0.00	3.72
7049	6977	10	1.22	9.79	2.72	182%	0.00	1.89
6995	37990	12	5.29	9.44	0.29	16%	4.46	-
6990	32475	15	3.80	20.83	0.29	12%	3.36	-
6989	6988	15	4.13	9.12	0.28	11%	3.69	-
6988	6987	15	4.47	11.54	0.29	10%	4.03	-
6987	6985	15	4.20	12.34	0.38	18%	3.44	-
6985	6984	15	4.15	15.95	0.37	18%	3.39	-
6984	6983	15	3.71	11.11	0.39	20%	2.95	-
6983	6982	16	4.84	9.30	0.37	16%	4.08	-
6982	6981	15	5.06	10.96	0.47	28%	3.62	-
6981	6980	15	5.04	10.79	0.47	29%	3.60	-
6980	6979	18	8.55	11.17	0.44	17%	7.11	-
6979	6978	18	6.74	11.19	0.48	21%	5.30	-
6978	33451	18	6.70	9.18	0.48	21%	5.26	-
6977	33451	18	6.09	10.57	0.63	36%	3.87	-
6967	6966	15	4.14	9.40	0.34	15%	3.53	-
6966	6965	18	6.25	10.81	0.52	25%	4.69	-
6965	15269	18	7.40	11.76	0.47	21%	5.84	-
6958	22009	24	30.51	11.88	7.07	1%	30.30	5.07
6957	6956	24	10.33	11.15	6.67	112%	0.00	4.67
6957	6956	24	10.33	11.15	4.40	34%	6.80	2.40

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
6956	19873	24	12.41	11.45	6.54	97%	0.42	4.54
6956	19873	24	12.41	11.45	3.75	26%	9.14	1.75
6955	6954	24	12.80	10.65	5.65	121%	0.00	3.65
6954	18586	24	13.00	8.05	4.63	119%	0.00	2.63
6953	38525	24	13.33	8.60	3.44	105%	0.00	1.44
6953	38525	24	13.33	8.60	1.22	33%	8.99	-
6952	6950	24	5.72	9.30	2.79	175%	0.00	0.79
6952	6951	24	11.09	9.30	2.71	74%	2.92	0.71
6951	6950	24	16.01	13.74	2.84	51%	7.89	0.84
6950	6949	24	14.83	14.06	3.23	108%	0.00	1.23
6949	6948	24	16.75	12.32	2.91	96%	0.70	0.91
6948	32394	24	9.21	13.46	2.86	174%	0.00	0.86
6947	6946	24	14.95	13.49	2.20	110%	0.00	0.20
6946	6945	27	20.33	12.04	1.58	81%	3.80	-
6945	6944	27	16.62	11.80	1.81	99%	0.09	-
6944	6943	27	18.87	13.02	1.66	88%	2.29	-
6943	901676	27	19.93	13.83	1.69	83%	3.36	-
6942	6939	30	21.32	12.08	1.73	78%	4.70	-
6941	6940	30	23.41	10.86	1.69	71%	6.79	-
6940	6942	30	20.90	11.22	1.70	80%	4.28	-
6939	6938	30	21.47	9.84	2.10	77%	4.85	-
6938	17375	30	19.60	10.28	1.78	86%	2.82	-
6937	15872	30	21.00	12.03	1.76	80%	4.22	-
6936	6935	30	18.47	11.35	2.09	91%	1.69	-
6935	6934	30	19.87	14.62	1.85	86%	2.71	-
6934	6929	30	17.76	14.36	1.86	97%	0.60	-
6933	6932	30	18.44	10.96	1.83	93%	1.28	-
6932	46789	30	23.89	10.81	1.62	72%	6.73	-
6931	6930	42	45.11	14.79	1.65	38%	27.75	-
6930	18452	42	26.69	21.91	2.30	65%	9.33	-
6929	6933	30	21.17	10.90	1.74	81%	4.01	-
6928	6927	42	25.54	11.96	2.49	73%	7.02	-
6927	6926	42	6.87	14.45	2.71	269%	0.00	-
6926	6925	42	19.18	15.73	2.64	97%	0.67	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
6925	6924	42	19.29	15.13	2.60	97%	0.58	-
6924	6923	42	19.15	15.38	2.46	99%	0.28	-
6923	6921	42	23.10	21.73	2.23	82%	4.23	-
6921	61946	42	29.09	14.92	2.29	65%	10.15	-
6888	6887	42	29.56	17.66	3.37	102%	0.00	-
6887	6886	42	28.63	24.15	2.97	107%	0.00	-
6886	14565	42	129.77	15.48	1.22	24%	99.13	-
6885	6883	42	48.09	15.06	6.61	67%	16.03	3.11
6883	6882	42	8.98	14.90	8.53	357%	0.00	5.03
6882	6880	42	28.91	15.09	7.74	111%	0.00	4.24
6880	6879	42	26.91	14.80	6.75	120%	0.00	3.25
6879	6878	42	43.91	14.97	6.52	73%	11.69	3.02
6878	16379	42	23.28	17.47	6.42	138%	0.00	2.92

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
6877	6876	42	26.94	26.54	4.99	120%	0.00	1.49
6876	6876N	42	21.82	15.34	4.18	149%	0.00	0.68
6875	6874	42	21.73	14.86	3.16	149%	0.00	-
6874	JP1	42	21.31	13.83	2.74	152%	0.00	-
5134	18064	12	2.07	13.15	0.27	15%	1.76	-
4971	4970	10	2.22	8.71	0.27	20%	1.77	-
4970	2942	10	0.88	13.98	0.43	51%	0.43	-
2947	2946	10	1.97	13.55	0.29	23%	1.52	-
2946	2945	10	1.91	8.00	0.29	23%	1.46	-
2945	2943	10	1.37	14.28	0.34	33%	0.92	-
2943	4971	10	1.71	8.57	0.30	26%	1.26	-
2942	2941	10	0.84	19.97	0.44	53%	0.39	-
2941	2940	10	1.96	8.26	0.29	23%	1.51	-
2940	2939	10	2.38	10.67	0.26	19%	1.93	-
2939	2938	10	1.10	12.14	0.38	41%	0.65	-
2938	2937	10	0.94	15.90	0.41	48%	0.49	-
2937	2936	10	1.02	8.30	0.40	44%	0.57	-
2936	1508	10	1.02	10.49	0.40	44%	0.57	-
2900	7335	10	5.58	6.66	0.13	3%	5.41	-
1593	29862	12	0.43	7.93	0.78	168%	0.00	-
1507	16581	10	5.45	4.58	0.20	11%	4.87	-
150	901871	16	8.66	26.32	0.26	6%	8.15	-
70	52182	10	3.04	7.67	0.18	8%	2.80	-
66	61	10	2.42	6.06	0.20	10%	2.18	-
61	27	10	3.91	5.14	0.17	7%	3.65	-
27	23	15	4.64	22.26	0.32	12%	4.09	-
23	22	15	4.55	22.55	0.32	12%	4.00	-
22	19	15	2.66	24.63	0.39	21%	2.11	-
21	20	12	3.72	9.00	0.11	0%	3.70	-
20	19	12	0.42	9.49	0.50	4%	0.40	-
19	18	15	2.08	11.30	0.45	27%	1.52	-
18	56841	18	5.14	13.99	0.84	11%	4.57	-

*Slope of pipe is zero therefore calculated capacity is zero

Hydraulic restrictions will impact capacity and surcharge conditon calculations causing cases where there is capacity in the pipe and there is also a surcharge

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
7052M	7051	10	0.00	9.95	7.82	*	0.00	6.99
6876N	6875	42	22.90	3.50	4.99	175%	0.00	1.49
54453A	54453	12	1.73	11.75	0.20	8%	1.60	-
54452A	54452	12	2.91	9.32	0.17	4%	2.78	-
45564A	45564	12	1.55	8.49	0.21	8%	1.42	-
38538A	38538	15	7.64	8.51	0.28	9%	6.95	-
38530A	38530	15	0.00	10.41	0.53	-	0.00	-
30590B	30590A	15	5.72	16.16	0.41	21%	4.55	-
30590A	30590	15	3.71	10.12	0.49	32%	2.54	-
30588A	30588	15	4.48	11.73	0.45	*	3.31	-
22463A	22463	12	2.96	7.72	0.17	4%	2.83	-
16379N	6877	42	21.44	3.50	8.63	185%	0.00	5.13
902054	43825	15	4.58	6.13	0.27	8%	4.21	-
902012	6953	24	11.03	9.22	6.99	121%	0.00	4.99
902012	6953	24	11.03	9.22	4.46	35%	7.15	2.46
901871	52661	12	3.61	20.98	0.31	18%	2.95	-
901676	15751	27	18.70	16.02	5.32	96%	0.67	3.07
901391	901390	16	1.95	7.56	0.89	94%	0.12	-
901390	37990	15	9.04	8.68	0.40	20%	7.21	-
69152	69151	15	3.43	10.84	0.61	48%	1.80	-
69151	69150	15	5.47	23.51	0.49	30%	3.84	-
69150	69149	15	3.07	24.18	0.65	53%	1.44	-
69149	69147	15	3.51	27.33	0.61	46%	1.88	-
69147	69146	15	3.81	25.05	0.58	43%	2.18	-
69146	69145	16	3.74	21.10	0.62	44%	2.11	-
69145	69144	15	3.33	18.83	0.62	49%	1.70	-
69144	69143	16	4.25	16.85	0.58	38%	2.62	-
69143	69140	16	4.26	15.71	0.59	40%	2.55	-
69140	69139	16	4.55	16.05	0.57	38%	2.84	-
69139	69138	16	5.97	16.81	0.51	29%	4.26	-
69138	69136	16	2.70	19.89	0.78	65%	0.94	-
69136	69133	16	2.71	22.37	0.77	65%	0.95	-
69133	69132	16	2.69	21.85	0.78	65%	0.93	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
69132	69131	16	6.04	16.07	0.51	29%	4.28	-
69131	33527	15	2.68	23.44	1.13	66%	0.92	-
65511	65510	16	3.72	20.98	0.47	26%	2.76	-
65510	65509	16	3.88	25.72	0.46	25%	2.92	-
65509	65508	16	3.66	22.19	0.47	26%	2.70	-
65508	65507	16	3.57	18.58	0.48	27%	2.61	-
65507	65506	16	4.69	15.86	0.41	20%	3.73	-
65506	65505	16	3.47	14.82	0.48	28%	2.51	-
65505	65504	16	6.74	9.14	0.37	14%	5.78	-
65504	65503	16	2.31	9.61	0.58	41%	1.35	-
65503	65502	16	3.50	8.41	0.48	27%	2.54	-
65502	65501	16	2.62	7.90	0.56	37%	1.66	-
65501	65500	16	2.95	8.45	0.53	32%	1.99	-
65500	65499	16	4.25	9.65	0.44	23%	3.29	-
65499	65498	16	4.18	10.65	0.44	23%	3.22	-
65498	65497	16	6.97	11.34	0.36	14%	6.01	-
65497	34179	16	6.62	12.33	0.37	14%	5.66	-
65375	65374	18	4.33	15.58	0.41	16%	3.64	-
65374	65373	18	5.93	14.64	0.35	12%	5.24	-
65373	6990	18	9.53	17.22	0.31	7%	8.84	-
65333	65332	15	3.92	9.54	0.34	15%	3.31	-
65332	65331	15	2.41	16.48	0.43	25%	1.80	-
65331	65330	15	2.95	26.03	0.39	21%	2.34	-
65330	65329	15	6.57	10.88	0.28	9%	5.96	-
65329	65328	15	5.93	11.77	0.29	10%	5.32	-
65328	65327	15	3.83	11.30	0.35	16%	3.22	-
65327	65326	15	2.48	11.60	0.43	24%	1.87	-
65326	65325	15	3.02	24.96	0.38	20%	2.41	-
65325	65324	15	2.95	15.70	0.39	21%	2.34	-
65324	65323	15	6.73	18.66	0.28	9%	6.12	-
65323	65322	15	1.63	11.36	0.53	37%	1.02	-
65322	65321	15	7.51	17.20	0.27	8%	6.90	-
65321	65320	15	5.85	16.42	0.30	10%	5.24	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
65320	65319	15	5.95	14.96	0.29	10%	5.34	-
65319	65318	15	5.60	16.72	0.30	11%	5.00	-
65318	65317	15	5.60	13.60	0.30	11%	5.00	-
65317	65316	15	3.16	15.65	0.37	19%	2.56	-
65316	65315	15	2.34	15.41	0.44	26%	1.74	-
65315	65511	15	2.99	12.51	0.39	20%	2.39	-
61948	61947	36	33.24	17.39	3.78	28%	24.08	0.78
61947	61946	36	27.53	13.63	5.02	33%	18.40	2.02
61946	6888	42	80.26	17.46	7.22	34%	52.59	3.72
59276	59275	20	3.80	15.36	0.87	65%	1.31	-
59275	59274	20	7.24	18.18	0.69	34%	4.75	-
59274	34175	20	9.20	20.63	0.75	38%	5.66	-
59222	59221	12	1.68	15.58	0.32	21%	1.32	-
59221	70	10	1.78	9.60	0.27	20%	1.42	-
57167	43386	12	5.70	8.95	0.16	4%	5.48	-
57146	44548	15	3.94	11.19	0.92	89%	0.43	-
56841	33296	18	3.73	14.72	0.51	24%	2.83	-
56667	20782	15	3.16	11.30	2.08	98%	0.08	0.83
55251	7298	24	14.53	9.08	1.16	63%	5.31	-
54556	53962	10	1.07	22.61	0.43	51%	0.52	-
54456	54455	12	1.32	11.40	0.22	10%	1.19	-
54455	54454	12	3.36	13.79	0.17	4%	3.23	-
54454	54453A	12	3.99	10.52	0.16	3%	3.86	-
54453	54452A	12	2.31	12.20	0.19	6%	2.18	-
54452	54451	12	4.02	15.01	0.16	3%	3.89	-
54451	45568	12	4.09	12.89	0.15	3%	3.96	-
53962	53961	10	0.89	14.80	0.48	62%	0.34	-
53961	53960	10	0.94	8.87	0.47	59%	0.39	-
53960	53959	10	0.97	11.50	0.46	57%	0.42	-
53959	53958	10	0.88	15.72	0.48	63%	0.33	-
53958	53957	10	1.04	20.67	0.44	53%	0.49	-
53957	53956	10	0.85	22.02	0.49	65%	0.30	-
53956	53955	10	1.15	24.87	0.41	48%	0.60	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
53955	41133	10	0.84	20.33	0.81	66%	0.29	-
53270	44213	10	0.71	10.54	10.33	170%	0.00	9.50
52661	52660	12	7.21	18.44	0.23	9%	6.55	-
52660	52659	21	36.86	11.84	0.30	4%	35.30	-
52659	52658	21	9.16	14.29	0.50	17%	7.60	-
52658	52657	21	5.62	17.66	0.63	28%	4.06	-
52657	52656	24	8.42	18.15	0.61	20%	6.74	-
52656	52655	24	4.65	19.10	0.81	36%	2.97	-
52655	52654	24	56.68	18.73	0.30	3%	55.00	-
52654	52653	24	15.09	11.22	0.49	11%	13.41	-
52653	52652	24	57.57	13.97	0.30	3%	55.89	-
52652	52651	24	14.94	17.83	0.49	11%	13.26	-
52651	7324	18	6.85	12.30	0.66	38%	4.24	-
52364	36947	15	5.29	10.80	0.43	23%	4.06	-
52182	66	10	2.57	7.11	0.24	16%	2.15	-
52175	52174	16	10.45	7.79	0.14	0%	10.42	-
52174	52173	16	11.60	8.01	0.14	0%	11.57	-
52173	52172	16	5.32	7.86	0.15	1%	5.29	-
52172	52171	16	3.50	23.69	0.10	1%	3.47	-
52171	52170	16	4.18	21.63	0.10	1%	4.15	-
52170	18	16	22.42	18.25	0.14	0%	22.39	-
52089	52088	15	3.02	11.00	0.64	50%	1.51	-
52088	36931	15	1.98	11.28	0.78	76%	0.48	-
52028	52027	10	1.03	11.67	0.35	36%	0.66	-
52027	52026	10	1.40	11.59	0.30	27%	1.03	-
52026	52025	10	1.63	8.40	0.29	23%	1.26	-
52025	52024	10	1.79	8.30	0.27	21%	1.42	-
52024	902054	15	4.53	8.27	0.27	8%	4.16	-
49997	36917	18	10.27	7.05	0.44	17%	8.50	-
48242	17297	12	5.79	10.95	0.36	25%	4.33	-
48063	42229	24	24.93	120.22	9.13	15%	21.10	7.13
47036	36944	15	5.09	8.11	0.46	27%	3.69	-
47025	36942	15	3.62	11.75	0.54	38%	2.23	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
46796	17748	12	4.95	4.40	0.43	37%	3.13	-
46789	6931	30	19.86	11.02	4.35	95%	1.07	1.85
45753	6937	30	18.97	11.34	4.87	95%	0.97	2.37
45724	18455	12	4.10	10.01	0.48	43%	2.32	-
45592	22464	12	2.38	8.25	0.19	5%	2.25	-
45585	22457	12	1.16	11.39	0.23	11%	1.03	-
45568	22490	12	4.47	11.05	0.15	3%	4.34	-
45567	45566	12	4.46	14.37	0.15	3%	4.33	-
45566	45565	12	4.75	10.08	0.15	3%	4.62	-
45565	45564A	12	3.59	9.68	0.16	4%	3.46	-
45564	45563	12	2.73	11.65	0.18	5%	2.60	-
45563	22466	12	4.74	8.74	0.15	3%	4.61	-
44548	20777	15	4.28	9.03	0.90	84%	0.67	-
44225	44224	10	0.69	12.98	9.06	102%	0.00	8.23
44224	44223	10	0.63	14.85	9.25	112%	0.00	8.42
44223	44222	10	0.78	14.30	9.06	100%	0.00	8.22
44222	44221	10	0.65	16.04	9.08	120%	0.00	8.25
44221	44220	10	0.72	17.71	8.85	108%	0.00	8.01
44220	44219	10	0.68	10.99	8.78	114%	0.00	7.95
44219	44218	10	0.79	8.59	8.62	98%	0.02	7.79
44218	44217	10	0.78	15.42	9.24	99%	0.00	8.41
44217	44216	10	0.84	12.02	9.89	93%	0.06	9.06
44216	44215	10	0.80	11.87	10.51	116%	0.00	9.68
44215	44214	10	0.80	11.29	10.41	117%	0.00	9.57
44214	53270	10	0.87	12.30	10.30	108%	0.00	9.47
44213	44212	10	0.81	9.79	9.31	149%	0.00	8.48
44212	44211	10	0.80	10.62	8.09	151%	0.00	7.26
44211	44210	10	0.80	11.54	6.63	151%	0.00	5.80
44210	44209	10	0.52	15.76	5.08	259%	0.00	4.24
44209	44208	24	5.12	13.54	0.79	26%	3.78	-
44208	34385	24	4.66	13.72	1.22	29%	3.32	-
43865	42055	12	1.94	18.39	0.29	18%	1.60	-
43826	52024	15	3.12	8.28	0.15	0%	3.12	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
43825	43824	15	3.07	8.08	0.30	12%	2.70	-
43786	44225	12	1.79	11.00	7.13	39%	1.08	6.13
43502	43501	16	3.68	6.59	0.59	40%	2.19	-
43501	18555	18	4.20	6.75	0.63	35%	2.71	-
43387	57167	12	4.32	10.56	0.18	5%	4.10	-
43386	43385	12	3.22	10.71	0.20	7%	3.00	-
43385	43384	12	2.33	9.59	0.27	14%	2.00	-
43384	43383	12	5.32	7.57	0.24	11%	4.76	-
43383	43382	15	7.89	13.32	0.27	8%	7.28	-
43382	43381	15	2.12	13.27	0.46	29%	1.51	-
43381	150	15	46.14	9.53	0.16	1%	45.53	-
42603	36945	15	4.16	7.77	0.49	32%	2.84	-
42234	42228	30	29.98	40.38	11.20	47%	15.88	8.70
42233	42232	24	7.28	28.20	0.94	47%	3.89	-
42232	42231	24	12.99	102.54	0.71	26%	9.60	-
42231	42230	24	22.99	106.64	0.56	15%	19.60	-
42230	48063	24	24.44	116.70	5.69	14%	21.06	3.69
42229	42228	24	18.63	18.16	11.53	19%	15.05	9.53
42228	22013	24	11.46	35.56	13.07	154%	0.00	11.07
42055	42054	15	4.56	20.59	0.46	27%	3.31	-
42054	42053	15	3.67	19.39	0.51	34%	2.42	-
42053	42052	15	2.46	16.20	0.62	51%	1.21	-
42052	42051	15	5.81	14.83	0.42	22%	4.56	-
42051	42050	14	42.09	17.01	0.18	3%	40.84	-
42050	34836	14	11.24	14.13	0.29	11%	9.99	-
41530	43502	16	2.58	9.90	0.74	58%	1.09	-
41529	41530	16	4.32	8.90	0.55	34%	2.83	-
41429	41116	10	2.16	7.59	0.44	45%	1.19	-
41428	41427	12	1.36	6.34	0.67	71%	0.39	-
41427	1593	12	2.48	6.10	0.91	39%	1.51	-
41252	20781	15	3.10	8.85	1.09	101%	0.00	-
41133	41132	10	2.04	21.77	0.31	27%	1.49	-
41132	41131	10	0.90	21.25	0.48	61%	0.35	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
41131	41130	10	1.12	16.09	0.42	49%	0.57	-
41130	41129	10	1.11	11.55	0.42	50%	0.56	-
41129	41128	10	1.14	11.85	0.42	48%	0.59	-
41128	41127	10	1.33	12.65	0.38	41%	0.78	-
41127	41126	10	1.57	12.20	0.45	54%	0.72	-
41126	41125	10	1.62	12.30	0.44	52%	0.77	-
41125	41124	10	0.38	12.69	0.66	223%	0.00	-
41124	41123	10	1.17	12.15	0.53	72%	0.32	-
41123	41122	10	1.44	9.80	0.47	59%	0.59	-
41122	41121	10	2.00	8.47	0.39	42%	1.15	-
41121	41120	10	0.95	8.85	0.81	89%	0.10	-
41120	41119	10	0.94	8.20	0.82	104%	0.00	-
41119	41118	10	1.44	8.17	0.52	68%	0.47	-
41118	41117	10	2.21	8.41	0.40	44%	1.24	-
41117	41429	10	0.92	8.87	0.72	106%	0.00	-
41116	41115	10	0.67	9.19	1.52	145%	0.00	0.69
41115	41114	10	0.92	8.01	0.69	106%	0.00	-
41114	41428	10	1.28	6.72	0.57	76%	0.31	-
40488	6941	27	10.59	18.46	5.75	170%	0.00	3.50
39741	39739	12	1.45	7.65	0.49	46%	0.78	-
39739	39738	12	0.84	11.80	0.58	80%	0.17	-
39738	39737	12	2.12	10.57	0.39	32%	1.45	-
39737	39736	12	0.90	12.25	0.93	75%	0.23	-
39736	39735	12	2.70	5.04	0.36	25%	2.03	-
39735	39734	12	0.30	8.01	0.80	224%	0.00	-
39734	39733	12	1.58	9.80	0.46	43%	0.91	-
39733	23779	12	3.90	7.95	0.31	17%	3.23	-
39458	38645	15	2.80	9.55	0.38	20%	2.25	-
39224	20126	15	1.32	7.64	0.84	120%	0.00	-
39118	39117	12	1.77	9.52	0.22	9%	1.61	-
39117	38084	12	3.22	3.55	0.18	5%	3.06	-
38839	38533	15	3.01	10.13	0.43	25%	2.25	-
38838	38532	15	5.33	9.46	0.34	14%	4.57	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
38773	33440	27	19.80	9.20	4.39	61%	7.72	2.14
38649	38648	15	3.52	10.35	0.24	7%	3.27	-
38648	38647	15	3.94	7.15	0.32	14%	3.39	-
38647	38646	15	4.58	13.09	0.32	12%	4.03	-
38646	39458	15	2.95	12.75	0.37	19%	2.40	-
38645	38644	15	2.19	11.01	0.42	25%	1.64	-
38644	38643	15	6.81	11.89	0.29	10%	6.12	-
38643	38642	15	2.96	6.51	0.42	23%	2.27	-
38642	38539	15	8.05	8.80	0.27	9%	7.36	-
38539	38538A	15	4.52	8.01	0.35	15%	3.83	-
38538	38537	15	3.79	6.92	0.36	18%	3.10	-
38537	38536	15	3.28	5.18	0.42	23%	2.52	-
38536	38535	15	1.48	9.72	0.61	51%	0.72	-
38535	38534	15	3.32	11.48	0.41	23%	2.56	-
38534	38839	15	5.70	10.35	0.34	13%	4.94	-
38533	38838	15	6.21	9.20	0.32	12%	5.45	-
38532	38531	15	3.29	9.31	0.42	23%	2.53	-
38531	38530A	15	3.54	8.55	0.40	21%	2.78	-
38530	38529	15	4.42	10.64	0.37	17%	3.66	-
38529	38528	15	5.03	6.75	0.35	15%	4.27	-
38528	38527	15	4.15	7.18	0.37	18%	3.39	-
38527	38526	15	4.76	7.35	0.61	16%	4.00	-
38526	38525	15	5.43	6.70	2.95	14%	4.68	1.70
38525	6952	24	11.66	8.66	6.63	152%	0.00	4.63
38085	36954	12	2.22	8.39	0.20	8%	2.04	-
38084	38083	12	4.52	7.36	0.16	4%	4.36	-
38083	38081	12	1.68	8.01	0.41	34%	1.10	-
38081	38080	12	1.91	10.66	0.38	30%	1.35	-
38080	38079	12	2.52	7.56	0.34	22%	1.96	-
38079	38078	12	2.08	7.63	0.36	27%	1.52	-
38078	38077	12	2.84	16.52	0.31	19%	2.29	-
38077	38076	12	3.23	7.51	0.29	17%	2.69	-
38076	38075	12	2.89	9.52	0.31	19%	2.35	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
38075	38074	12	3.21	7.63	0.29	17%	2.68	-
38074	38073	12	2.48	8.21	0.33	21%	1.95	-
38073	38072	12	3.17	10.79	0.29	17%	2.64	-
38072	36952	15	3.11	13.97	0.52	36%	2.00	-
37991	37990	30	16.93	11.72	0.53	6%	15.87	-
37990	37989	30	19.62	10.38	0.74	19%	15.91	-
37989	37988	30	16.71	11.32	0.81	22%	13.00	-
37988	37987	30	16.97	11.80	0.80	22%	13.26	-
37987	37986	30	16.78	13.18	0.81	22%	13.07	-
37986	33466	27	23.90	12.86	0.64	16%	20.19	-
37148	20794	15	4.20	10.61	0.52	33%	2.79	-
37032	37031	12	2.70	9.08	0.34	22%	2.09	-
37031	37030	12	1.24	8.03	0.47	49%	0.63	-
37030	65333	15	7.16	8.17	0.27	8%	6.55	-
37014	20553	27	22.86	11.88	1.00	37%	14.40	-
37013	37012	27	17.06	15.10	1.20	55%	7.65	-
37012	37011	27	24.41	14.15	0.97	39%	15.00	-
37011	37010	27	20.31	11.37	1.09	46%	10.90	-
37010	37009	27	22.18	9.00	1.03	42%	12.77	-
37009	33448	27	19.98	8.93	1.11	48%	10.40	-
36990	20793	15	5.49	9.63	0.45	26%	4.05	-
36963	36962	12	4.46	10.91	0.14	2%	4.36	-
36962	36961	12	4.30	9.41	0.14	2%	4.20	-
36961	36960	12	4.21	13.14	0.14	2%	4.11	-
36960	36959	12	3.62	8.33	0.15	3%	3.52	-
36959	36958	12	3.94	12.25	0.15	3%	3.84	-
36958	36957	12	4.14	8.75	0.15	2%	4.04	-
36957	36956	12	2.57	12.55	0.17	4%	2.47	-
36956	36955	12	4.12	9.31	0.15	2%	4.02	-
36955	38085	12	2.09	11.54	0.16	5%	1.99	-
36954	36953	12	2.97	8.62	0.20	6%	2.79	-
36953	38072	15	4.09	8.82	0.35	16%	3.42	-
36952	36951	15	4.34	10.40	0.45	26%	3.23	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
36951	36950	15	4.48	9.31	0.44	25%	3.38	-
36950	36949	15	4.39	9.95	0.47	28%	3.14	-
36949	36948	15	3.44	9.72	0.53	36%	2.20	-
36948	52364	15	4.97	9.60	0.44	25%	3.74	-
36947	36946	15	5.72	10.64	0.42	22%	4.49	-
36946	42603	15	2.44	9.03	0.60	52%	1.17	-
36945	47036	15	4.92	8.29	0.46	27%	3.59	-
36944	47025	15	3.80	14.15	0.53	37%	2.41	-
36942	36941	15	3.72	15.34	0.54	39%	2.28	-
36941	36940	15	3.75	13.63	0.54	38%	2.32	-
36940	36939	15	5.73	10.89	0.45	25%	4.30	-
36939	36938	15	5.95	14.26	0.44	24%	4.52	-
36938	36937	15	6.60	11.53	0.43	22%	5.12	-
36937	36936	15	4.05	11.22	0.54	37%	2.57	-
36936	36935	15	3.71	10.80	0.56	40%	2.23	-
36935	36934	15	3.90	10.50	0.55	38%	2.42	-
36934	36933	15	3.60	5.34	0.57	41%	2.12	-
36933	52089	15	3.55	8.45	0.59	43%	2.03	-
36931	36930	15	2.72	14.94	0.68	55%	1.22	-
36930	36929	15	2.67	25.41	0.67	56%	1.18	-
36929	36928	15	3.54	9.48	0.59	43%	2.02	-
36928	36927	15	3.61	11.35	0.58	42%	2.09	-
36927	36926	18	5.67	15.92	0.56	27%	4.11	-
36926	36925	15	3.48	10.59	0.61	45%	1.93	-
36925	36924	18	6.74	10.96	0.52	23%	5.19	-
36924	36923	12	2.78	14.55	0.58	61%	1.08	-
36923	36922	18	8.14	9.74	0.49	21%	6.44	-
36922	36921	18	9.32	13.10	0.46	18%	7.62	-
36921	36920	18	12.20	12.90	0.41	14%	10.50	-
36920	36919	18	10.12	12.97	0.45	17%	8.37	-
36919	36918	18	10.38	10.69	0.44	17%	8.63	-
36918	49997	18	10.39	1.65	0.44	17%	8.62	-
36917	36916	18	8.06	13.08	0.50	22%	6.29	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
36916	36915	18	8.92	10.69	0.48	20%	7.15	-
36915	36914	18	9.59	12.09	0.46	18%	7.82	-
36914	36913	18	8.51	11.48	0.49	21%	6.75	-
36913	36912	18	6.21	9.89	0.55	29%	4.44	-
36912	36911	18	8.66	11.16	0.49	20%	6.89	-
36911	34383	18	7.13	10.71	0.53	25%	5.36	-
34836	33711	12	4.08	12.09	0.42	36%	2.61	-
34447	17751	12	1.53	9.36	2.34	119%	0.00	1.34
34385	34384	24	5.19	15.86	1.87	33%	3.45	-
34384	34383	24	4.98	11.75	2.57	35%	3.24	0.57
34383	34382	24	8.82	13.59	4.18	39%	5.41	2.18
34382	34381	24	7.10	14.22	4.72	48%	3.70	2.72
34381	20767	24	6.52	15.43	5.71	52%	3.13	3.71
34180	34179	12	3.15	10.06	0.16	3%	3.04	-
34179	34178	12	4.06	14.19	0.36	26%	3.00	-
34178	34177	12	4.55	15.64	0.35	23%	3.49	-
34177	34176	12	6.86	15.67	0.28	15%	5.80	-
34176	59274	12	6.12	14.60	0.30	17%	5.06	-
34175	19141	21	10.96	15.94	0.96	55%	4.91	-
33711	33710	12	3.43	7.58	0.47	43%	1.96	-
33710	33709	12	3.48	9.37	0.47	42%	2.01	-
33709	33708	12	3.79	6.90	0.62	40%	2.26	-
33708	33707	12	3.34	7.80	5.71	46%	1.81	4.71
33707	20761	12	0.62	11.42	9.62	247%	0.00	8.62
33532	33531	10	1.79	14.71	0.53	70%	0.54	-
33531	33530	10	1.75	13.29	0.53	71%	0.50	-
33530	33529	10	1.58	12.80	0.58	79%	0.33	-
33529	33528	12	1.23	13.86	0.80	102%	0.00	-
33528	33527	12	1.53	12.70	0.73	82%	0.28	-
33527	20783	15	2.88	10.40	1.62	103%	0.00	0.37
33470	30342	30	18.45	12.82	0.17	0%	18.45	-
33466	33465	27	16.23	10.66	0.80	26%	11.98	-
33465	33464	27	17.18	11.61	0.78	25%	12.93	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
33464	33463	27	17.12	12.19	0.78	25%	12.87	-
33463	33462	27	17.85	16.38	0.76	24%	13.60	-
33462	33461	27	17.65	11.58	0.77	24%	13.40	-
33461	33460	27	17.50	6.44	0.77	24%	13.25	-
33460	33459	27	20.33	14.09	0.74	21%	16.08	-
33459	33458	27	13.75	8.23	0.86	31%	9.50	-
33458	33457	27	36.06	9.12	0.57	12%	31.81	-
33457	33456	27	24.53	12.04	0.67	17%	20.28	-
33456	33455	27	24.22	11.65	0.67	18%	19.97	-
33455	33454	27	23.87	12.06	0.68	18%	19.62	-
33454	33453	27	20.32	11.89	0.74	21%	16.07	-
33453	33452	27	19.63	10.05	0.72	22%	15.38	-
33452	33451	27	17.72	11.90	1.11	24%	13.47	-
33451	37014	27	14.56	12.10	1.25	58%	6.10	-
33448	33447	27	34.51	10.17	0.88	30%	24.13	-
33447	33446	27	32.04	8.94	0.92	32%	21.66	-
33446	33445	27	27.09	9.63	1.00	39%	16.45	-
33445	33444	27	23.23	10.06	1.08	46%	12.59	-
33444	33443	27	22.20	12.98	1.17	52%	10.76	-
33443	33442	27	21.67	10.65	1.73	53%	10.23	-
33442	38773	27	23.12	9.88	3.54	49%	11.78	1.29
33440	33439	27	15.04	10.63	6.01	80%	3.03	3.76
33439	33438	27	23.73	11.03	6.01	51%	11.72	3.76
33438	33437	30	33.56	9.94	5.17	36%	21.61	2.67
33437	42234	30	29.00	11.52	7.65	40%	17.26	5.15
33296	52660	18	7.17	9.01	0.39	13%	6.27	-
32475	6989	15	3.44	10.76	0.38	20%	2.75	-
32394	19706	24	20.96	13.24	5.61	85%	3.21	3.61
32263	32262	12	2.03	11.10	0.48	45%	1.12	-
32262	32261	12	2.57	10.20	0.43	35%	1.66	-
32261	32260	12	2.35	28.96	0.44	39%	1.44	-
32260	32259	12	0.19	12.30	0.98	527%	0.00	-
32259	32258	12	1.75	12.95	0.55	57%	0.75	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
32258	32257	12	0.91	11.86	1.17	109%	0.00	0.17
32257	32254	12	1.03	12.18	0.89	97%	0.04	-
32254	33532	12	0.60	9.71	1.05	166%	0.00	0.05
30726	20776	15	4.20	9.39	0.90	86%	0.59	-
30594	30593	15	6.25	10.79	0.27	8%	5.74	-
30593	30592	15	7.17	11.40	0.70	7%	6.66	-
30592	15271	15	5.96	11.14	0.27	9%	5.45	-
30591	30590B	15	3.67	11.40	0.49	32%	2.50	-
30590	30589	15	4.56	7.61	0.45	26%	3.39	-
30589	30588A	15	5.48	9.00	0.42	21%	4.31	-
30588	16037	18	5.35	13.60	0.48	22%	4.18	-
30342	37991	30	16.87	11.82	0.33	0%	16.87	-
29873	20799	10	3.12	6.54	0.18	8%	2.86	-
29862	29861	10	0.78	6.42	0.96	124%	0.00	0.12
29861	20812	12	0.51	6.58	0.62	190%	0.00	-
22538	15270	15	7.91	12.49	0.41	21%	6.22	-
22490	22489	12	3.54	14.52	0.16	4%	3.41	-
22489	22482	12	3.79	11.84	0.16	3%	3.66	-
22482	45567	12	3.26	14.72	0.17	4%	3.13	-
22466	22465	12	1.49	9.40	0.21	9%	1.36	-
22465	45592	12	1.79	7.80	0.20	7%	1.66	-
22464	22463A	12	2.89	7.41	0.17	5%	2.76	-
22463	22462	12	3.24	5.39	0.17	4%	3.11	-
22462	22458	12	1.67	7.24	0.21	8%	1.54	-
22458	45585	12	1.66	6.88	0.21	8%	1.53	-
22457	22456	12	1.01	8.77	0.25	13%	0.88	-
22456	22455	12	1.49	7.25	0.21	9%	1.36	-
22455	22454	12	0.95	9.94	0.26	14%	0.82	-
22454	6921	12	1.33	13.48	0.35	10%	1.20	-
22225	19142	21	6.53	15.80	0.75	38%	4.02	-
22223	22222	21	5.79	13.16	1.02	65%	2.04	-
22222	7314	21	6.07	20.57	1.36	62%	2.31	-
22013	22012	24	15.07	12.31	12.16	115%	0.00	10.16

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
22012	22011	24	14.71	11.45	11.38	104%	0.00	9.38
22011	22010	24	14.74	11.68	11.27	104%	0.00	9.27
22010	22009	24	11.99	11.14	10.93	127%	0.00	8.93
22009	6957	24	13.03	11.60	10.71	118%	0.00	8.71
21329	20761	27	8.83	14.86	11.15	87%	1.18	8.90
21328	6888	30	14.98	16.92	5.79	63%	5.49	3.29
21046	21045	15	1.39	11.79	0.53	46%	0.76	-
21045	21043	15	4.05	12.26	0.34	16%	3.42	-
21043	21042	15	2.51	12.75	0.69	59%	1.02	-
21042	41529	15	2.52	10.08	0.69	59%	1.03	-
20812	20811	12	1.93	6.50	0.51	50%	0.96	-
20811	20810	12	1.77	8.20	0.53	55%	0.80	-
20810	20809	12	1.60	12.88	0.57	61%	0.63	-
20809	20808	12	1.97	20.42	0.50	49%	1.00	-
20808	20807	12	1.49	16.48	0.59	65%	0.52	-
20807	20806	12	2.48	9.94	0.44	39%	1.51	-
20806	20805	12	4.45	7.64	0.34	22%	3.48	-
20805	20804	12	2.12	12.25	0.52	53%	0.99	-
20804	20803	12	5.48	8.30	0.33	21%	4.35	-
20803	20799	12	3.67	12.60	0.40	31%	2.54	-
20799	20798	12	3.58	9.80	0.44	39%	2.20	-
20798	20797	12	3.49	15.04	0.45	40%	2.11	-
20797	20796	12	3.16	8.44	0.48	44%	1.78	-
20796	20795	12	3.21	8.55	0.48	43%	1.83	-
20795	37148	15	6.37	10.03	0.44	22%	4.96	-
20794	36990	15	5.91	9.12	0.44	24%	4.50	-
20793	69152	16	5.36	12.49	0.52	30%	3.73	-
20783	56667	15	3.47	17.40	1.55	85%	0.52	0.30
20782	41252	15	2.55	11.48	2.13	121%	0.00	0.88
20781	20780	15	4.47	9.25	0.79	70%	1.35	-
20780	20779	15	4.87	8.28	0.74	64%	1.75	-
20779	20778	15	5.14	9.24	0.73	62%	1.93	-
20778	57146	15	4.29	10.35	0.82	75%	1.08	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	Downstream Manhole	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
20777	30726	15	5.71	9.89	0.73	63%	2.10	-
20776	20775	15	5.61	11.33	0.75	66%	1.92	-
20775	20774	15	4.60	9.62	0.87	80%	0.91	-
20774	20773	15	4.19	10.65	0.92	88%	0.50	-
20773	20772	15	4.54	8.23	0.88	81%	0.85	-
20772	20771	15	4.55	10.38	0.89	82%	0.80	-
20771	20770	18	3.80	10.31	1.37	99%	0.02	-
20770	20769	18	5.65	10.75	0.90	67%	1.87	-
20769	20768	18	6.76	12.44	0.81	56%	2.98	-
20768	20767	18	6.95	9.26	4.49	54%	3.20	2.99
20767	20766	27	11.25	16.52	6.56	63%	4.20	4.31
20766	20765	27	8.57	16.61	8.22	81%	1.65	5.97
20765	20764	27	8.31	17.81	8.76	81%	1.56	6.51
20764	20763	27	8.55	18.48	9.10	84%	1.37	6.85
20763	20762	27	11.21	15.83	9.49	67%	3.73	7.24
20762	21329	27	8.72	17.03	10.91	86%	1.23	8.66
20761	20760	27	8.89	15.66	11.23	99%	0.08	8.98
20760	20759	30	5.75	13.73	11.41	153%	0.00	8.91
20759	20758	30	5.53	16.37	10.73	160%	0.00	8.23
20758	20757	30	6.00	11.11	9.76	147%	0.00	7.26
20757	20756	30	4.99	10.80	9.20	177%	0.00	6.70
20756	20755	30	5.78	10.35	8.65	153%	0.00	6.15
20755	20754	30	8.76	27.22	7.89	104%	0.00	5.39
20754	20753	30	1.77	23.92	7.80	535%	0.00	5.30
20753	21328	30	8.76	16.59	5.70	108%	0.00	3.20
20553	37013	27	21.67	15.36	1.64	43%	12.26	-
20314	18454	12	4.89	7.66	0.43	36%	3.11	-
20127	18554	15	2.28	7.43	0.71	65%	0.79	-
20126	18553	15	3.22	8.10	0.63	49%	1.64	-
19910	17762	12	3.43	11.13	0.47	42%	1.98	-
19876	19875	12	1.73	9.78	4.51	108%	0.00	3.51
19875	19874	12	2.38	9.73	4.53	79%	0.50	3.53
19874	19873	12	3.96	11.93	5.03	49%	2.00	4.03

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
19873	6955	24	11.35	10.88	10.30	149%	0.00	8.30
19706	6947	24	16.10	13.34	5.63	112%	0.00	3.63
19657	17760	12	6.10	12.46	0.35	24%	4.66	-
19143	22225	21	4.35	13.52	0.86	58%	1.84	-
19143	59276	21	19.39	13.52	0.56	13%	16.90	-
19142	34175	21	11.95	14.33	0.61	21%	9.44	-
19141	7308	21	11.40	13.25	1.13	73%	3.11	-
18586	902012	24	10.73	9.16	6.90	128%	0.00	4.90
18586	902012	24	10.73	9.16	4.23	45%	5.94	2.23
18555	20127	15	3.00	6.77	0.63	50%	1.51	-
18554	39224	15	2.91	7.65	0.70	51%	1.42	-
18553	18552	15	2.45	7.63	0.73	65%	0.87	-
18552	18496	15	2.73	10.35	0.74	58%	1.15	-
18496	901391	15	1.34	9.20	1.44	136%	0.00	0.19
18463	18458	10	2.32	15.95	0.44	53%	1.09	-
18458	18457	12	5.30	9.19	0.37	27%	3.86	-
18457	18456	12	5.79	10.72	0.36	25%	4.35	-
18456	45724	12	4.19	8.64	0.42	34%	2.75	-
18455	20314	12	4.78	8.25	0.43	37%	3.00	-
18454	18453	12	5.17	7.86	0.42	34%	3.39	-
18453	18452	12	2.75	8.76	1.56	65%	0.97	0.56
18452	6928	42	7.10	11.49	6.22	284%	0.00	2.72
18322	18321	21	13.13	10.28	0.77	38%	8.13	-
18321	7309	21	9.56	13.32	0.90	52%	4.56	-
18241	7311	21	7.28	21.26	1.10	69%	2.28	-
18202	6885	12	1.79	19.43	9.82	100%	0.01	8.82
18064	18063	12	2.00	13.12	0.58	34%	1.32	-
18063	17775	12	1.55	14.10	1.06	44%	0.87	0.06
17969	9040	15	3.87	9.20	0.50	32%	2.62	-
17949	9039	15	5.30	16.00	0.44	24%	4.05	-
17775	17774	12	2.18	22.74	0.39	31%	1.50	-
17774	17773	12	6.84	12.74	0.23	10%	6.16	-
17773	17772	12	2.76	16.50	0.35	25%	2.08	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
17772	17771	12	4.84	8.94	0.27	14%	4.16	-
17771	17770	12	5.05	8.65	0.27	13%	4.37	-
17770	17769	12	4.29	10.53	0.29	16%	3.61	-
17769	17768	12	4.61	9.15	0.28	15%	3.93	-
17768	17767	12	2.47	8.97	0.37	27%	1.79	-
17767	17766	12	0.63	11.00	0.73	107%	0.00	-
17766	17765	12	2.84	6.93	0.35	24%	2.16	-
17765	48242	12	5.59	14.08	0.26	12%	4.91	-
17764	17763	12	2.76	9.80	0.53	53%	1.30	-
17763	19910	12	3.22	12.88	0.49	45%	1.77	-
17762	17761	12	4.35	9.39	0.41	33%	2.90	-
17761	19657	12	5.56	2.96	0.36	26%	4.12	-
17760	17759	12	4.26	13.40	0.42	34%	2.82	-
17759	17758	12	1.27	10.90	0.92	113%	0.00	-
17758	17757	12	4.94	26.73	0.38	29%	3.53	-
17757	17756	12	1.90	7.53	2.24	70%	0.56	1.24
17756	17755	12	1.10	13.16	2.71	119%	0.00	1.71
17755	17754	12	1.40	6.10	2.48	112%	0.00	1.48
17754	17753	12	1.51	6.85	2.55	103%	0.00	1.55
17753	17752	12	1.51	7.37	2.53	102%	0.00	1.53
17752	34447	12	1.28	5.60	2.48	120%	0.00	1.48
17751	17750	12	1.38	9.45	1.98	132%	0.00	0.98
17750	17749	12	1.49	7.73	1.11	122%	0.00	0.11
17749	46796	12	5.48	4.63	0.41	33%	3.66	-
17748	17747	12	2.92	5.00	0.58	62%	1.10	-
17747	18202	12	14.96	6.12	0.26	12%	13.14	-
17375	45753	30	38.12	10.90	4.67	47%	20.12	2.17
17297	17764	12	2.92	9.64	0.51	50%	1.46	-
16604	7320	10	2.61	14.88	0.20	11%	2.32	-
16596	7333	10	1.00	17.80	0.36	37%	0.63	-
16581	7328	10	2.95	13.15	0.31	27%	2.14	-
16535	7330	15	5.93	15.92	0.18	2%	5.80	-
16379	16379N	42	20.88	17.22	9.17	190%	0.00	5.67

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
16038	16037	18	8.81	16.89	0.68	19%	7.12	-
16037	16036	18	6.69	12.93	0.69	43%	3.83	-
16036	42233	18	6.58	17.71	0.76	52%	3.19	-
15872	15871	30	20.58	13.36	5.01	87%	2.59	2.51
15871	6936	30	17.56	15.08	5.34	102%	0.00	2.84
15751	40488	27	21.21	16.43	5.21	85%	3.18	2.96
15271	22538	15	6.83	12.27	0.26	8%	6.32	-
15270	30591	15	4.91	14.11	0.44	24%	3.73	-
15270	9042	15	5.74	14.11	0.28	9%	5.23	-
15269	42234	18	10.33	11.33	7.16	26%	7.61	5.66
14937	5134	10	1.05	8.81	0.40	44%	0.59	-
14565	6885	42	77.24	11.66	6.51	49%	39.61	3.01
14458	14456	12	2.32	4.94	0.64	73%	0.64	-
14456	14455	12	2.91	5.04	0.59	64%	1.04	-
14455	14454	12	2.78	5.04	0.62	67%	0.91	-
14454	19876	12	5.21	5.28	0.72	36%	3.34	-
13939	20805	12	7.90	11.48	0.14	2%	7.73	-
9042	9041	15	4.28	13.90	0.32	12%	3.77	-
9041	17969	15	4.48	9.87	0.36	16%	3.77	-
9040	17949	15	4.86	9.47	0.45	26%	3.61	-
9039	16038	18	6.50	9.50	0.53	26%	4.81	-
8195	37032	12	1.14	9.27	0.50	53%	0.53	-
7335	7334	10	2.75	12.20	0.20	11%	2.46	-
7334	16604	10	2.50	9.74	0.21	12%	2.21	-
7333	7332	10	2.63	9.80	0.33	31%	1.80	-
7332	7316	10	1.89	10.83	0.40	44%	1.06	-
7330	7329	15	3.73	12.56	0.17	4%	3.60	-
7329	7328	15	5.22	15.72	0.18	3%	5.09	-
7328	7327	18	5.83	17.40	0.42	16%	4.89	-
7327	7326	18	5.89	19.36	0.41	16%	4.95	-
7326	7325	18	6.13	21.58	0.41	15%	5.19	-
7325	52651	18	6.84	11.66	0.43	14%	5.90	-
7324	7323	18	7.79	15.10	0.62	34%	5.18	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
7323	7322	18	6.48	16.67	0.66	40%	3.87	-
7322	7321	18	7.33	14.03	0.64	36%	4.72	-
7321	7320	18	7.90	14.30	0.62	33%	5.29	-
7320	7319	21	11.54	16.31	0.62	25%	8.64	-
7319	7318	21	9.80	18.35	0.65	30%	6.90	-
7318	7317	21	7.59	11.74	0.75	38%	4.69	-
7317	7316	21	8.38	13.97	0.72	35%	5.48	-
7316	7315	21	10.03	16.37	0.76	37%	6.32	-
7315	22223	21	4.64	12.81	1.09	80%	0.93	-
7314	18241	21	3.91	13.05	1.71	128%	0.00	-
7311	18322	21	7.06	22.19	1.12	71%	2.06	-
7309	19143	21	9.14	12.67	0.93	55%	4.14	-
7308	7305	21	12.52	11.52	1.07	66%	4.23	-
7305	7303	21	14.82	14.39	1.04	67%	4.82	-
7303	7302	21	17.06	15.30	0.88	49%	8.76	-
7302	7301	24	22.65	12.32	0.86	37%	14.31	-
7301	7300	24	20.70	12.41	0.91	40%	12.32	-
7300	55251	24	11.77	12.86	1.26	71%	3.45	-
7298	7297	24	9.58	9.60	1.57	96%	0.38	-
7297	7296	24	12.77	8.72	1.27	72%	3.58	-
7296	7295	24	9.00	9.45	1.69	102%	0.00	-
7295	61948	24	18.62	10.07	1.01	49%	9.46	-
7289	7256	10	0.68	5.89	1.69	122%	0.00	0.86
7256	7255	12	0.84	8.90	0.77	99%	0.01	-
7255	7254	12	0.98	10.50	0.71	85%	0.15	-
7254	7253	12	0.89	9.16	0.77	93%	0.06	-
7253	7252	12	1.53	11.25	0.53	54%	0.70	-
7252	6995	12	2.61	11.35	0.40	32%	1.78	-
7071	33444	10	1.58	9.54	0.46	51%	0.78	-
7051	7050	10	1.89	10.30	7.71	123%	0.00	6.87
7050	7049	10	1.77	10.10	5.25	131%	0.00	4.42
7049	6977	10	1.22	9.79	2.98	190%	0.00	2.15
6995	37990	12	5.29	9.44	0.29	16%	4.46	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
6990	32475	15	3.80	20.83	0.36	18%	3.11	-
6989	6988	15	4.13	9.12	0.35	17%	3.44	-
6988	6987	15	4.47	11.54	0.35	15%	3.79	-
6987	6985	15	4.20	12.34	0.47	28%	3.02	-
6985	6984	15	4.15	15.95	0.46	28%	2.97	-
6984	6983	15	3.71	11.11	0.49	32%	2.53	-
6983	6982	16	4.84	9.30	0.46	24%	3.66	-
6982	6981	15	5.06	10.96	0.55	38%	3.15	-
6981	6980	15	5.04	10.79	0.55	38%	3.13	-
6980	6979	18	8.55	11.17	0.51	22%	6.64	-
6979	6978	18	6.74	11.19	0.55	28%	4.83	-
6978	33451	18	6.70	9.18	0.55	29%	4.79	-
6977	33451	18	6.09	10.57	0.65	38%	3.77	-
6968	6967	15	3.35	9.37	0.08	0%	3.35	-
6967	6966	15	4.14	9.40	3.80	22%	3.23	2.55
6966	6965	18	6.25	10.81	4.43	30%	4.39	2.93
6965	15269	18	7.40	11.76	4.84	25%	5.54	3.34
6958	22009	24	30.51	11.88	10.88	1%	30.16	8.88
6957	6956	24	10.33	11.15	10.43	112%	0.00	8.43
6957	6956	24	10.33	11.15	8.17	38%	6.45	6.17
6956	19873	24	12.41	11.45	10.27	99%	0.12	8.27
6956	19873	24	12.41	11.45	7.49	29%	8.76	5.49
6955	6954	24	12.80	10.65	9.19	132%	0.00	7.19
6954	18586	24	13.00	8.05	7.89	130%	0.00	5.89
6953	38525	24	13.33	8.60	6.58	105%	0.00	4.58
6953	38525	24	13.33	8.60	4.26	35%	8.70	2.26
6952	6950	24	5.72	9.30	5.90	185%	0.00	3.90
6952	6951	24	11.09	9.30	5.82	76%	2.61	3.82
6951	6950	24	16.01	13.74	5.98	51%	7.78	3.98
6950	6949	24	14.83	14.06	6.46	119%	0.00	4.46
6949	6948	24	16.75	12.32	6.20	105%	0.00	4.20
6948	32394	24	9.21	13.46	6.05	191%	0.00	4.05
6947	6946	24	14.95	13.49	5.34	120%	0.00	3.34

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
6946	6945	27	20.33	12.04	4.69	89%	2.28	2.44
6945	6944	27	16.62	11.80	5.08	108%	0.00	2.83
6944	6943	27	18.87	13.02	4.95	95%	0.92	2.70
6943	901676	27	19.93	13.83	4.98	90%	1.98	2.73
6942	6939	30	21.32	12.08	4.63	84%	3.48	2.13
6941	6940	30	23.41	10.86	4.42	77%	5.39	1.92
6940	6942	30	20.90	11.22	4.28	86%	2.92	1.78
6939	6938	30	21.47	9.84	5.12	83%	3.68	2.62
6938	17375	30	19.60	10.28	4.62	92%	1.58	2.12
6937	15872	30	21.00	12.03	4.82	86%	3.01	2.32
6936	6935	30	18.47	11.35	4.93	97%	0.48	2.43
6935	6934	30	19.87	14.62	4.40	93%	1.34	1.90
6934	6929	30	17.76	14.36	4.26	104%	0.00	1.76
6933	6932	30	18.44	10.96	4.47	100%	0.00	1.97
6932	46789	30	23.89	10.81	4.04	77%	5.38	1.54
6931	6930	42	45.11	14.79	4.65	42%	26.34	1.15
6930	18452	42	26.69	21.91	5.86	70%	8.05	2.36
6929	6933	30	21.17	10.90	3.99	88%	2.65	1.49
6928	6927	42	25.54	11.96	6.08	80%	5.17	2.58
6927	6926	42	6.87	14.45	6.16	295%	0.00	2.66
6926	6925	42	19.18	15.73	5.96	106%	0.00	2.46
6925	6924	42	19.29	15.13	5.95	106%	0.00	2.45
6924	6923	42	19.15	15.38	5.90	107%	0.00	2.40
6923	6921	42	23.10	21.73	5.83	88%	2.68	2.33
6921	61946	42	29.09	14.92	6.57	71%	8.54	3.07
6890	6889	24	8.73	16.24	3.34	0%	8.74	1.34
6889	6888	24	9.51	12.79	3.96	-4%	9.86	1.96
6888	6887	42	29.56	17.66	7.30	125%	0.00	3.80
6887	6886	42	28.63	24.15	3.99	132%	0.00	0.49
6886	14565	42	129.77	15.48	1.41	29%	92.11	-
6885	6883	42	48.09	15.06	12.58	82%	8.60	9.08
6883	6882	42	8.98	14.90	13.77	440%	0.00	10.27
6882	6880	42	28.91	15.09	12.56	137%	0.00	9.06

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
6880	6879	42	26.91	14.80	10.52	148%	0.00	7.02
6879	6878	42	43.91	14.97	10.06	90%	4.21	6.56
6878	16379	42	23.28	17.47	9.76	171%	0.00	6.26
6877	6876	42	26.94	26.54	7.77	147%	0.00	4.27
6876	6876N	42	21.82	15.34	6.33	183%	0.00	2.83
6875	6874	42	21.73	14.86	3.93	184%	0.00	0.43
6874	JP1	42	21.31	13.83	3.20	188%	0.00	-
5134	18064	12	2.07	13.15	0.33	22%	1.61	-
4971	4970	10	2.22	8.71	0.28	22%	1.73	-
4970	2942	10	0.88	13.98	0.45	55%	0.39	-
2947	2946	10	1.97	13.55	0.30	25%	1.48	-
2946	2945	10	1.91	8.00	0.30	26%	1.42	-
2945	2943	10	1.37	14.28	0.35	36%	0.88	-
2943	4971	10	1.71	8.57	0.32	29%	1.22	-
2942	2941	10	0.84	19.97	0.47	58%	0.35	-
2941	2940	10	1.96	8.26	0.30	25%	1.47	-
2940	2939	10	2.38	10.67	0.27	21%	1.89	-
2939	2938	10	1.10	12.14	0.40	44%	0.61	-
2938	2937	10	0.94	15.90	0.43	52%	0.45	-
2937	2936	10	1.02	8.30	0.41	48%	0.53	-
2936	1508	10	1.02	10.49	0.41	48%	0.53	-
2900	7335	10	5.58	6.66	0.15	5%	5.29	-
1593	29862	12	0.43	7.93	1.18	226%	0.00	0.18
1507	16581	10	5.45	4.58	0.23	15%	4.64	-
150	901871	16	8.66	26.32	0.28	8%	8.00	-
70	52182	10	3.04	7.67	0.23	14%	2.62	-
66	61	10	2.42	6.06	0.25	17%	2.00	-
61	27	10	3.91	5.14	0.21	12%	3.46	-
27	23	15	4.64	22.26	0.38	18%	3.79	-
23	22	15	4.55	22.55	0.39	19%	3.70	-
22	19	15	2.66	24.63	0.49	32%	1.81	-
21	20	12	3.72	9.00	0.12	1%	3.69	-
20	19	12	0.42	9.49	0.62	6%	0.39	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 2-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
19	18	15	2.08	11.30	0.57	42%	1.21	-
18	56841	18	5.14	13.99	0.94	17%	4.24	-

*Slope of pipe is zero therefore calculated capacity is zero

Hydraulic restrictions will impact capacity and surcharge conditon calculations causing cases where there is capacity in the pipe and there is also a surcharge

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
7052M	7051	10	0.00	9.95	8.26	*	0.00	7.43
6876N	6875	42	22.90	3.50	5.23	179%	0.00	1.73
54453A	54453	12	1.73	11.75	0.20	8%	1.60	-
54452A	54452	12	2.91	9.32	0.18	5%	2.78	-
45564A	45564	12	1.55	8.49	0.21	8%	1.42	-
38538A	38538	15	7.64	8.51	0.26	7%	7.07	-
38530A	38530	15	0.00	10.41	0.48	-	0.00	-
30590B	30590A	15	5.72	16.16	0.40	20%	4.57	-
30590A	30590	15	3.71	10.12	0.48	31%	2.56	-
30588A	30588	15	4.48	11.73	0.45	*	3.34	-
22463A	22463	12	2.96	7.72	0.17	4%	2.83	-
16379N	6877	42	21.44	3.50	9.01	190%	0.00	5.51
902054	43825	15	4.58	6.13	0.26	8%	4.24	-
902012	6953	24	11.03	9.22	7.11	121%	0.00	5.11
902012	6953	24	11.03	9.22	4.58	35%	7.13	2.58
901871	52661	12	3.61	20.98	0.28	14%	3.10	-
901676	15751	27	18.70	16.02	5.58	97%	0.60	3.33
901391	901390	16	1.95	7.56	0.83	82%	0.35	-
901390	37990	15	9.04	8.68	0.37	18%	7.44	-
69152	69151	15	3.43	10.84	0.58	44%	1.93	-
69151	69150	15	5.47	23.51	0.46	27%	3.97	-
69150	69149	15	3.07	24.18	0.62	49%	1.57	-
69149	69147	15	3.51	27.33	0.58	43%	2.01	-
69147	69146	15	3.81	25.05	0.55	39%	2.31	-
69146	69145	16	3.74	21.10	0.59	40%	2.24	-
69145	69144	15	3.33	18.83	0.60	45%	1.83	-
69144	69143	16	4.25	16.85	0.56	35%	2.75	-
69143	69140	16	4.26	15.71	0.57	38%	2.66	-
69140	69139	16	4.55	16.05	0.55	35%	2.95	-
69139	69138	16	5.97	16.81	0.49	27%	4.37	-
69138	69136	16	2.70	19.89	0.76	61%	1.05	-
69136	69133	16	2.71	22.37	0.75	61%	1.06	-
69133	69132	16	2.69	21.85	0.76	61%	1.04	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
69132	69131	16	6.04	16.07	0.49	27%	4.39	-
69131	33527	15	2.68	23.44	0.72	62%	1.03	-
65511	65510	16	3.72	20.98	0.45	24%	2.84	-
65510	65509	16	3.88	25.72	0.44	23%	3.00	-
65509	65508	16	3.66	22.19	0.45	24%	2.78	-
65508	65507	16	3.57	18.58	0.46	25%	2.69	-
65507	65506	16	4.69	15.86	0.39	19%	3.81	-
65506	65505	16	3.47	14.82	0.46	25%	2.59	-
65505	65504	16	6.74	9.14	0.35	13%	5.86	-
65504	65503	16	2.31	9.61	0.56	38%	1.43	-
65503	65502	16	3.50	8.41	0.46	25%	2.62	-
65502	65501	16	2.62	7.90	0.53	33%	1.74	-
65501	65500	16	2.95	8.45	0.50	30%	2.07	-
65500	65499	16	4.25	9.65	0.41	21%	3.37	-
65499	65498	16	4.18	10.65	0.42	21%	3.30	-
65498	65497	16	6.97	11.34	0.35	13%	6.09	-
65497	34179	16	6.62	12.33	0.36	13%	5.74	-
65375	65374	18	4.33	15.58	0.43	17%	3.58	-
65374	65373	18	5.93	14.64	0.37	13%	5.18	-
65373	6990	18	9.53	17.22	0.32	8%	8.78	-
65333	65332	15	3.92	9.54	0.35	16%	3.29	-
65332	65331	15	2.41	16.48	0.44	26%	1.78	-
65331	65330	15	2.95	26.03	0.40	21%	2.32	-
65330	65329	15	6.57	10.88	0.29	10%	5.94	-
65329	65328	15	5.93	11.77	0.30	11%	5.30	-
65328	65327	15	3.83	11.30	0.35	16%	3.20	-
65327	65326	15	2.48	11.60	0.44	25%	1.85	-
65326	65325	15	3.02	24.96	0.39	21%	2.39	-
65325	65324	15	2.95	15.70	0.40	21%	2.32	-
65324	65323	15	6.73	18.66	0.28	9%	6.10	-
65323	65322	15	1.63	11.36	0.54	39%	1.00	-
65322	65321	15	7.51	17.20	0.27	8%	6.88	-
65321	65320	15	5.85	16.42	0.30	11%	5.22	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
65320	65319	15	5.95	14.96	0.30	11%	5.32	-
65319	65318	15	5.60	16.72	0.31	11%	4.97	-
65318	65317	15	5.60	13.60	0.31	11%	4.97	-
65317	65316	15	3.16	15.65	0.38	20%	2.53	-
65316	65315	15	2.34	15.41	0.45	27%	1.71	-
65315	65511	15	2.99	12.51	0.40	21%	2.36	-
61948	61947	36	33.24	17.39	3.85	25%	24.89	0.85
61947	61946	36	27.53	13.63	5.11	30%	19.19	2.11
61946	6888	42	80.26	17.46	7.35	35%	52.36	3.85
59276	59275	20	3.80	15.36	0.80	54%	1.73	-
59275	59274	20	7.24	18.18	0.62	29%	5.17	-
59274	34175	20	9.20	20.63	0.67	32%	6.26	-
59222	59221	12	1.68	15.58	0.29	18%	1.38	-
59221	70	10	1.78	9.60	0.25	17%	1.48	-
57167	43386	12	5.70	8.95	0.16	3%	5.51	-
57146	44548	15	3.94	11.19	0.85	79%	0.81	-
56841	33296	18	3.73	14.72	0.45	19%	3.02	-
56667	20782	15	3.16	11.30	0.92	88%	0.39	-
55251	7298	24	14.53	9.08	1.10	58%	6.17	-
54556	53962	10	1.07	22.61	0.37	40%	0.64	-
54456	54455	12	1.32	11.40	0.22	10%	1.19	-
54455	54454	12	3.36	13.79	0.17	4%	3.23	-
54454	54453A	12	3.99	10.52	0.16	3%	3.86	-
54453	54452A	12	2.31	12.20	0.19	6%	2.18	-
54452	54451	12	4.02	15.01	0.16	3%	3.89	-
54451	45568	12	4.09	12.89	0.16	3%	3.96	-
53962	53961	10	0.89	14.80	0.42	48%	0.46	-
53961	53960	10	0.94	8.87	0.41	46%	0.51	-
53960	53959	10	0.97	11.50	0.40	44%	0.54	-
53959	53958	10	0.88	15.72	0.42	49%	0.45	-
53958	53957	10	1.04	20.67	0.38	41%	0.61	-
53957	53956	10	0.85	22.02	0.42	50%	0.42	-
53956	53955	10	1.15	24.87	0.36	37%	0.72	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
53955	41133	10	0.84	20.33	0.77	51%	0.41	-
53270	44213	10	0.71	10.54	10.43	171%	0.00	9.60
52661	52660	12	7.21	18.44	0.21	7%	6.70	-
52660	52659	21	36.86	11.84	0.27	3%	35.69	-
52659	52658	21	9.16	14.29	0.43	13%	7.99	-
52658	52657	21	5.62	17.66	0.55	21%	4.45	-
52657	52656	24	8.42	18.15	0.53	15%	7.18	-
52656	52655	24	4.65	19.10	0.70	27%	3.41	-
52655	52654	24	56.68	18.73	0.28	2%	55.44	-
52654	52653	24	15.09	11.22	0.43	8%	13.85	-
52653	52652	24	57.57	13.97	0.28	2%	56.33	-
52652	52651	24	14.94	17.83	0.43	8%	13.70	-
52651	7324	18	6.85	12.30	0.57	29%	4.86	-
52364	36947	15	5.29	10.80	0.41	21%	4.17	-
52182	66	10	2.57	7.11	0.23	14%	2.21	-
52175	52174	16	10.45	7.79	0.14	0%	10.42	-
52174	52173	16	11.60	8.01	0.14	0%	11.57	-
52173	52172	16	5.32	7.86	0.15	1%	5.29	-
52172	52171	16	3.50	23.69	0.10	1%	3.47	-
52171	52170	16	4.18	21.63	0.10	1%	4.15	-
52170	18	16	22.42	18.25	0.14	0%	22.39	-
52089	52088	15	3.02	11.00	0.62	47%	1.61	-
52088	36931	15	1.98	11.28	0.74	71%	0.57	-
52028	52027	10	1.03	11.67	0.34	33%	0.69	-
52027	52026	10	1.40	11.59	0.29	25%	1.06	-
52026	52025	10	1.63	8.40	0.28	21%	1.29	-
52025	52024	10	1.79	8.30	0.26	19%	1.45	-
52024	902054	15	4.53	8.27	0.26	8%	4.19	-
49997	36917	18	10.27	7.05	0.44	17%	8.54	-
48242	17297	12	5.79	10.95	0.36	26%	4.27	-
48063	42229	24	24.93	120.22	9.27	14%	21.49	7.27
47036	36944	15	5.09	8.11	0.45	25%	3.80	-
47025	36942	15	3.62	11.75	0.52	36%	2.33	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
46796	17748	12	4.95	4.40	0.45	40%	2.95	-
46789	6931	30	19.86	11.02	4.90	96%	0.78	2.40
45753	6937	30	18.97	11.34	5.25	96%	0.85	2.75
45724	18455	12	4.10	10.01	0.48	43%	2.33	-
45592	22464	12	2.38	8.25	0.19	6%	2.25	-
45585	22457	12	1.16	11.39	0.24	11%	1.03	-
45568	22490	12	4.47	11.05	0.15	3%	4.34	-
45567	45566	12	4.46	14.37	0.15	3%	4.33	-
45566	45565	12	4.75	10.08	0.15	3%	4.62	-
45565	45564A	12	3.59	9.68	0.16	4%	3.46	-
45564	45563	12	2.73	11.65	0.18	5%	2.60	-
45563	22466	12	4.74	8.74	0.15	3%	4.61	-
44548	20777	15	4.28	9.03	0.82	75%	1.06	-
44225	44224	10	0.69	12.98	10.11	108%	0.00	9.28
44224	44223	10	0.63	14.85	10.21	118%	0.00	9.38
44223	44222	10	0.78	14.30	9.90	107%	0.00	9.06
44222	44221	10	0.65	16.04	9.75	129%	0.00	8.92
44221	44220	10	0.72	17.71	9.35	116%	0.00	8.52
44220	44219	10	0.68	10.99	8.96	123%	0.00	8.13
44219	44218	10	0.79	8.59	8.63	102%	0.00	7.80
44218	44217	10	0.78	15.42	9.32	104%	0.00	8.49
44217	44216	10	0.84	12.02	10.06	97%	0.03	9.23
44216	44215	10	0.80	11.87	10.77	118%	0.00	9.93
44215	44214	10	0.80	11.29	10.60	119%	0.00	9.76
44214	53270	10	0.87	12.30	10.42	110%	0.00	9.59
44213	44212	10	0.81	9.79	9.41	149%	0.00	8.57
44212	44211	10	0.80	10.62	8.18	151%	0.00	7.35
44211	44210	10	0.80	11.54	6.72	151%	0.00	5.88
44210	44209	10	0.52	15.76	5.15	260%	0.00	4.32
44209	44208	24	5.12	13.54	0.81	26%	3.77	-
44208	34385	24	4.66	13.72	1.24	29%	3.29	-
43865	42055	12	1.94	18.39	0.29	18%	1.60	-
43826	52024	15	3.12	8.28	0.15	0%	3.12	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
43825	43824	15	3.07	8.08	0.29	11%	2.73	-
43786	44225	12	1.79	11.00	8.22	42%	1.05	7.22
43502	43501	16	3.68	6.59	0.54	34%	2.43	-
43501	18555	18	4.20	6.75	0.56	30%	2.95	-
43387	57167	12	4.32	10.56	0.17	4%	4.13	-
43386	43385	12	3.22	10.71	0.19	6%	3.03	-
43385	43384	12	2.33	9.59	0.26	13%	2.03	-
43384	43383	12	5.32	7.57	0.22	9%	4.85	-
43383	43382	15	7.89	13.32	0.25	6%	7.39	-
43382	43381	15	2.12	13.27	0.42	24%	1.62	-
43381	150	15	46.14	9.53	0.16	1%	45.64	-
42603	36945	15	4.16	7.77	0.46	29%	2.96	-
42234	42228	30	29.98	40.38	11.41	49%	15.32	8.91
42233	42232	24	7.28	28.20	0.91	44%	4.10	-
42232	42231	24	12.99	102.54	0.69	24%	9.81	-
42231	42230	24	22.99	106.64	0.54	14%	19.81	-
42230	48063	24	24.44	116.70	5.83	13%	21.33	3.83
42229	42228	24	18.63	18.16	11.68	18%	15.20	9.68
42228	22013	24	11.46	35.56	13.19	157%	0.00	11.19
42055	42054	15	4.56	20.59	0.41	21%	3.61	-
42054	42053	15	3.67	19.39	0.44	26%	2.72	-
42053	42052	15	2.46	16.20	0.54	39%	1.51	-
42052	42051	15	5.81	14.83	0.36	16%	4.86	-
42051	42050	14	42.09	17.01	0.17	2%	41.14	-
42050	34836	14	11.24	14.13	0.26	8%	10.29	-
41530	43502	16	2.58	9.90	0.66	48%	1.33	-
41529	41530	16	4.32	8.90	0.49	29%	3.07	-
41429	41116	10	2.16	7.59	0.37	39%	1.33	-
41428	41427	12	1.36	6.34	0.58	61%	0.53	-
41427	1593	12	2.48	6.10	0.82	34%	1.65	-
41252	20781	15	3.10	8.85	0.93	90%	0.30	-
41133	41132	10	2.04	21.77	0.27	21%	1.61	-
41132	41131	10	0.90	21.25	0.41	48%	0.47	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
41131	41130	10	1.12	16.09	0.36	38%	0.69	-
41130	41129	10	1.11	11.55	0.36	39%	0.68	-
41129	41128	10	1.14	11.85	0.36	38%	0.71	-
41128	41127	10	1.33	12.65	0.33	32%	0.90	-
41127	41126	10	1.57	12.20	0.41	46%	0.86	-
41126	41125	10	1.62	12.30	0.40	44%	0.91	-
41125	41124	10	0.38	12.69	0.59	188%	0.00	-
41124	41123	10	1.17	12.15	0.48	61%	0.46	-
41123	41122	10	1.44	9.80	0.42	50%	0.73	-
41122	41121	10	2.00	8.47	0.36	36%	1.29	-
41121	41120	10	0.95	8.85	0.56	75%	0.24	-
41120	41119	10	0.94	8.20	0.61	89%	0.11	-
41119	41118	10	1.44	8.17	0.47	58%	0.61	-
41118	41117	10	2.21	8.41	0.36	38%	1.38	-
41117	41429	10	0.92	8.87	0.61	91%	0.09	-
41116	41115	10	0.67	9.19	1.06	124%	0.00	0.23
41115	41114	10	0.92	8.01	0.61	91%	0.09	-
41114	41428	10	1.28	6.72	0.51	65%	0.45	-
40488	6941	27	10.59	18.46	5.98	171%	0.00	3.73
39741	39739	12	1.45	7.65	0.49	46%	0.78	-
39739	39738	12	0.84	11.80	0.58	80%	0.17	-
39738	39737	12	2.12	10.57	0.39	32%	1.45	-
39737	39736	12	0.90	12.25	0.93	75%	0.23	-
39736	39735	12	2.70	5.04	0.36	25%	2.03	-
39735	39734	12	0.30	8.01	0.80	224%	0.00	-
39734	39733	12	1.58	9.80	0.46	43%	0.91	-
39733	23779	12	3.90	7.95	0.31	17%	3.23	-
39458	38645	15	2.80	9.55	0.35	16%	2.34	-
39224	20126	15	1.32	7.64	0.77	102%	0.00	-
39118	39117	12	1.77	9.52	0.21	9%	1.62	-
39117	38084	12	3.22	3.55	0.18	5%	3.07	-
38839	38533	15	3.01	10.13	0.39	21%	2.39	-
38838	38532	15	5.33	9.46	0.31	12%	4.71	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
38773	33440	27	19.80	9.20	4.72	61%	7.71	2.47
38649	38648	15	3.52	10.35	0.22	6%	3.30	-
38648	38647	15	3.94	7.15	0.29	12%	3.48	-
38647	38646	15	4.58	13.09	0.29	10%	4.12	-
38646	39458	15	2.95	12.75	0.34	16%	2.49	-
38645	38644	15	2.19	11.01	0.38	21%	1.73	-
38644	38643	15	6.81	11.89	0.27	8%	6.24	-
38643	38642	15	2.96	6.51	0.37	19%	2.39	-
38642	38539	15	8.05	8.80	0.26	7%	7.48	-
38539	38538A	15	4.52	8.01	0.33	13%	3.95	-
38538	38537	15	3.79	6.92	0.34	15%	3.22	-
38537	38536	15	3.28	5.18	0.37	19%	2.66	-
38536	38535	15	1.48	9.72	0.56	42%	0.86	-
38535	38534	15	3.32	11.48	0.37	19%	2.70	-
38534	38839	15	5.70	10.35	0.31	11%	5.08	-
38533	38838	15	6.21	9.20	0.29	10%	5.59	-
38532	38531	15	3.29	9.31	0.37	19%	2.67	-
38531	38530A	15	3.54	8.55	0.36	17%	2.92	-
38530	38529	15	4.42	10.64	0.34	14%	3.80	-
38529	38528	15	5.03	6.75	0.32	12%	4.41	-
38528	38527	15	4.15	7.18	0.34	15%	3.53	-
38527	38526	15	4.76	7.35	0.72	13%	4.14	-
38526	38525	15	5.43	6.70	3.09	12%	4.80	1.84
38525	6952	24	11.66	8.66	6.78	151%	0.00	4.78
38085	36954	12	2.22	8.39	0.20	8%	2.05	-
38084	38083	12	4.52	7.36	0.16	3%	4.37	-
38083	38081	12	1.68	8.01	0.38	30%	1.17	-
38081	38080	12	1.91	10.66	0.36	26%	1.41	-
38080	38079	12	2.52	7.56	0.32	20%	2.02	-
38079	38078	12	2.08	7.63	0.34	24%	1.58	-
38078	38077	12	2.84	16.52	0.30	17%	2.35	-
38077	38076	12	3.23	7.51	0.28	15%	2.74	-
38076	38075	12	2.89	9.52	0.29	17%	2.41	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
38075	38074	12	3.21	7.63	0.28	15%	2.73	-
38074	38073	12	2.48	8.21	0.31	19%	2.00	-
38073	38072	12	3.17	10.79	0.28	15%	2.70	-
38072	36952	15	3.11	13.97	0.50	33%	2.09	-
37991	37990	30	16.93	11.72	0.52	6%	15.87	-
37990	37989	30	19.62	10.38	0.72	18%	16.14	-
37989	37988	30	16.71	11.32	0.78	21%	13.23	-
37988	37987	30	16.97	11.80	0.78	21%	13.49	-
37987	37986	30	16.78	13.18	0.78	21%	13.30	-
37986	33466	27	23.90	12.86	0.63	15%	20.42	-
37148	20794	15	4.20	10.61	0.49	30%	2.94	-
37032	37031	12	2.70	9.08	0.35	23%	2.07	-
37031	37030	12	1.24	8.03	0.48	51%	0.61	-
37030	65333	15	7.16	8.17	0.28	9%	6.53	-
37014	20553	27	22.86	11.88	1.00	37%	14.37	-
37013	37012	27	17.06	15.10	1.20	55%	7.62	-
37012	37011	27	24.41	14.15	0.97	39%	14.97	-
37011	37010	27	20.31	11.37	1.09	46%	10.87	-
37010	37009	27	22.18	9.00	1.03	43%	12.74	-
37009	33448	27	19.98	8.93	1.11	48%	10.34	-
36990	20793	15	5.49	9.63	0.44	24%	4.19	-
36963	36962	12	4.46	10.91	0.14	2%	4.36	-
36962	36961	12	4.30	9.41	0.14	2%	4.20	-
36961	36960	12	4.21	13.14	0.14	2%	4.11	-
36960	36959	12	3.62	8.33	0.15	3%	3.52	-
36959	36958	12	3.94	12.25	0.15	3%	3.84	-
36958	36957	12	4.14	8.75	0.14	2%	4.04	-
36957	36956	12	2.57	12.55	0.17	4%	2.47	-
36956	36955	12	4.12	9.31	0.14	2%	4.02	-
36955	38085	12	2.09	11.54	0.16	5%	1.99	-
36954	36953	12	2.97	8.62	0.19	6%	2.80	-
36953	38072	15	4.09	8.82	0.35	16%	3.44	-
36952	36951	15	4.34	10.40	0.43	23%	3.32	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
36951	36950	15	4.48	9.31	0.43	23%	3.47	-
36950	36949	15	4.39	9.95	0.45	26%	3.26	-
36949	36948	15	3.44	9.72	0.50	33%	2.32	-
36948	52364	15	4.97	9.60	0.43	23%	3.85	-
36947	36946	15	5.72	10.64	0.39	19%	4.61	-
36946	42603	15	2.44	9.03	0.57	47%	1.29	-
36945	47036	15	4.92	8.29	0.45	25%	3.69	-
36944	47025	15	3.80	14.15	0.51	34%	2.51	-
36942	36941	15	3.72	15.34	0.52	36%	2.39	-
36941	36940	15	3.75	13.63	0.52	35%	2.42	-
36940	36939	15	5.73	10.89	0.43	23%	4.41	-
36939	36938	15	5.95	14.26	0.42	22%	4.63	-
36938	36937	15	6.60	11.53	0.41	21%	5.23	-
36937	36936	15	4.05	11.22	0.52	34%	2.68	-
36936	36935	15	3.71	10.80	0.54	37%	2.34	-
36935	36934	15	3.90	10.50	0.53	35%	2.53	-
36934	36933	15	3.60	5.34	0.55	38%	2.23	-
36933	52089	15	3.55	8.45	0.56	40%	2.14	-
36931	36930	15	2.72	14.94	0.65	52%	1.32	-
36930	36929	15	2.67	25.41	0.64	52%	1.27	-
36929	36928	15	3.54	9.48	0.57	40%	2.11	-
36928	36927	15	3.61	11.35	0.56	40%	2.18	-
36927	36926	18	5.67	15.92	0.54	26%	4.19	-
36926	36925	15	3.48	10.59	0.59	43%	2.00	-
36925	36924	18	6.74	10.96	0.50	22%	5.26	-
36924	36923	12	2.78	14.55	0.57	59%	1.13	-
36923	36922	18	8.14	9.74	0.48	20%	6.49	-
36922	36921	18	9.32	13.10	0.45	18%	7.67	-
36921	36920	18	12.20	12.90	0.40	14%	10.55	-
36920	36919	18	10.12	12.97	0.44	17%	8.41	-
36919	36918	18	10.38	10.69	0.44	16%	8.67	-
36918	49997	18	10.39	1.65	0.44	17%	8.66	-
36917	36916	18	8.06	13.08	0.50	21%	6.33	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
36916	36915	18	8.92	10.69	0.47	19%	7.19	-
36915	36914	18	9.59	12.09	0.45	18%	7.86	-
36914	36913	18	8.51	11.48	0.48	20%	6.78	-
36913	36912	18	6.21	9.89	0.55	28%	4.47	-
36912	36911	18	8.66	11.16	0.48	20%	6.92	-
36911	34383	18	7.13	10.71	0.53	24%	5.39	-
34836	33711	12	4.08	12.09	0.37	29%	2.90	-
34447	17751	12	1.53	9.36	3.31	131%	0.00	2.31
34385	34384	24	5.19	15.86	1.89	36%	3.34	-
34384	34383	24	4.98	11.75	2.59	37%	3.13	0.59
34383	34382	24	8.82	13.59	4.19	40%	5.27	2.19
34382	34381	24	7.10	14.22	4.72	50%	3.55	2.72
34381	20767	24	6.52	15.43	5.68	54%	2.99	3.68
34180	34179	12	3.15	10.06	0.16	4%	3.03	-
34179	34178	12	4.06	14.19	0.35	24%	3.10	-
34178	34177	12	4.55	15.64	0.33	21%	3.59	-
34177	34176	12	6.86	15.67	0.27	14%	5.90	-
34176	59274	12	6.12	14.60	0.29	16%	5.16	-
34175	19141	21	10.96	15.94	0.87	47%	5.85	-
33711	33710	12	3.43	7.58	0.42	34%	2.25	-
33710	33709	12	3.48	9.37	0.42	34%	2.30	-
33709	33708	12	3.79	6.90	0.47	33%	2.55	-
33708	33707	12	3.34	7.80	5.57	37%	2.10	4.57
33707	20761	12	0.62	11.42	9.57	200%	0.00	8.57
33532	33531	10	1.79	14.71	0.48	61%	0.69	-
33531	33530	10	1.75	13.29	0.49	63%	0.65	-
33530	33529	10	1.58	12.80	0.53	70%	0.48	-
33529	33528	12	1.23	13.86	0.72	89%	0.13	-
33528	33527	12	1.53	12.70	0.64	72%	0.43	-
33527	20783	15	2.88	10.40	0.98	94%	0.16	-
33470	30342	30	18.45	12.82	0.16	0%	18.45	-
33466	33465	27	16.23	10.66	0.78	25%	12.12	-
33465	33464	27	17.18	11.61	0.76	24%	13.07	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
33464	33463	27	17.12	12.19	0.76	24%	13.01	-
33463	33462	27	17.85	16.38	0.75	23%	13.74	-
33462	33461	27	17.65	11.58	0.75	23%	13.54	-
33461	33460	27	17.50	6.44	0.76	23%	13.39	-
33460	33459	27	20.33	14.09	0.72	20%	16.22	-
33459	33458	27	13.75	8.23	0.85	30%	9.64	-
33458	33457	27	36.06	9.12	0.56	11%	31.95	-
33457	33456	27	24.53	12.04	0.66	17%	20.42	-
33456	33455	27	24.22	11.65	0.66	17%	20.11	-
33455	33454	27	23.87	12.06	0.67	17%	19.76	-
33454	33453	27	20.32	11.89	0.72	20%	16.21	-
33453	33452	27	19.63	10.05	0.71	21%	15.52	-
33452	33451	27	17.72	11.90	1.11	23%	13.62	-
33451	37014	27	14.56	12.10	1.25	58%	6.07	-
33448	33447	27	34.51	10.17	0.88	30%	24.07	-
33447	33446	27	32.04	8.94	0.92	33%	21.60	-
33446	33445	27	27.09	9.63	1.01	40%	16.34	-
33445	33444	27	23.23	10.06	1.09	46%	12.48	-
33444	33443	27	22.20	12.98	1.24	52%	10.65	-
33443	33442	27	21.67	10.65	2.06	53%	10.19	-
33442	38773	27	23.12	9.88	3.88	50%	11.64	1.63
33440	33439	27	15.04	10.63	6.29	80%	2.95	4.04
33439	33438	27	23.73	11.03	6.26	51%	11.64	4.01
33438	33437	30	33.56	9.94	5.42	36%	21.47	2.92
33437	42234	30	29.00	11.52	7.88	42%	16.91	5.38
33296	52660	18	7.17	9.01	0.35	10%	6.46	-
32475	6989	15	3.44	10.76	0.40	22%	2.69	-
32394	19706	24	20.96	13.24	5.89	84%	3.28	3.89
32263	32262	12	2.03	11.10	0.48	45%	1.12	-
32262	32261	12	2.57	10.20	0.43	35%	1.66	-
32261	32260	12	2.35	28.96	0.44	39%	1.44	-
32260	32259	12	0.19	12.30	0.96	519%	0.00	-
32259	32258	12	1.75	12.95	0.55	56%	0.76	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
32258	32257	12	0.91	11.86	1.07	108%	0.00	0.07
32257	32254	12	1.03	12.18	0.79	96%	0.05	-
32254	33532	12	0.60	9.71	0.88	164%	0.00	-
30726	20776	15	4.20	9.39	0.83	77%	0.98	-
30594	30593	15	6.25	10.79	0.27	8%	5.76	-
30593	30592	15	7.17	11.40	0.70	7%	6.68	-
30592	15271	15	5.96	11.14	0.27	8%	5.47	-
30591	30590B	15	3.67	11.40	0.48	31%	2.52	-
30590	30589	15	4.56	7.61	0.45	25%	3.42	-
30589	30588A	15	5.48	9.00	0.41	21%	4.34	-
30588	16037	18	5.35	13.60	0.48	21%	4.21	-
30342	37991	30	16.87	11.82	0.32	0%	16.87	-
29873	20799	10	3.12	6.54	0.18	8%	2.87	-
29862	29861	10	0.78	6.42	0.74	107%	0.00	-
29861	20812	12	0.51	6.58	0.57	163%	0.00	-
22538	15270	15	7.91	12.49	0.41	21%	6.27	-
22490	22489	12	3.54	14.52	0.16	4%	3.41	-
22489	22482	12	3.79	11.84	0.16	3%	3.66	-
22482	45567	12	3.26	14.72	0.17	4%	3.13	-
22466	22465	12	1.49	9.40	0.21	9%	1.36	-
22465	45592	12	1.79	7.80	0.20	7%	1.66	-
22464	22463A	12	2.89	7.41	0.18	5%	2.76	-
22463	22462	12	3.24	5.39	0.17	4%	3.11	-
22462	22458	12	1.67	7.24	0.21	8%	1.54	-
22458	45585	12	1.66	6.88	0.21	8%	1.53	-
22457	22456	12	1.01	8.77	0.25	13%	0.88	-
22456	22455	12	1.49	7.25	0.21	9%	1.36	-
22455	22454	12	0.95	9.94	0.26	14%	0.82	-
22454	6921	12	1.33	13.48	0.55	10%	1.20	-
22225	19142	21	6.53	15.80	0.70	33%	4.36	-
22223	22222	21	5.79	13.16	0.89	51%	2.82	-
22222	7314	21	6.07	20.57	1.02	49%	3.10	-
22013	22012	24	15.07	12.31	12.19	115%	0.00	10.19

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
22012	22011	24	14.71	11.45	11.38	105%	0.00	9.38
22011	22010	24	14.74	11.68	11.28	104%	0.00	9.28
22010	22009	24	11.99	11.14	10.95	127%	0.00	8.95
22009	6957	24	13.03	11.60	10.74	118%	0.00	8.74
21329	20761	27	8.83	14.86	11.19	87%	1.14	8.94
21328	6888	30	14.98	16.92	5.92	64%	5.44	3.42
21046	21045	15	1.39	11.79	0.49	40%	0.84	-
21045	21043	15	4.05	12.26	0.32	14%	3.50	-
21043	21042	15	2.51	12.75	0.62	50%	1.26	-
21042	41529	15	2.52	10.08	0.62	50%	1.27	-
20812	20811	12	1.93	6.50	0.47	43%	1.10	-
20811	20810	12	1.77	8.20	0.49	47%	0.94	-
20810	20809	12	1.60	12.88	0.51	52%	0.77	-
20809	20808	12	1.97	20.42	0.46	42%	1.14	-
20808	20807	12	1.49	16.48	0.54	56%	0.66	-
20807	20806	12	2.48	9.94	0.42	34%	1.65	-
20806	20805	12	4.45	7.64	0.31	19%	3.62	-
20805	20804	12	2.12	12.25	0.49	47%	1.13	-
20804	20803	12	5.48	8.30	0.30	18%	4.49	-
20803	20799	12	3.67	12.60	0.37	27%	2.68	-
20799	20798	12	3.58	9.80	0.42	35%	2.34	-
20798	20797	12	3.49	15.04	0.43	36%	2.25	-
20797	20796	12	3.16	8.44	0.45	39%	1.92	-
20796	20795	12	3.21	8.55	0.44	39%	1.97	-
20795	37148	15	6.37	10.03	0.42	20%	5.11	-
20794	36990	15	5.91	9.12	0.42	21%	4.65	-
20793	69152	16	5.36	12.49	0.50	28%	3.86	-
20783	56667	15	3.47	17.40	0.86	78%	0.75	-
20782	41252	15	2.55	11.48	1.43	109%	0.00	0.18
20781	20780	15	4.47	9.25	0.73	63%	1.67	-
20780	20779	15	4.87	8.28	0.70	58%	2.07	-
20779	20778	15	5.14	9.24	0.69	56%	2.27	-
20778	57146	15	4.29	10.35	0.77	67%	1.42	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	Downstream Manhole	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
20777	30726	15	5.71	9.89	0.69	56%	2.49	-
20776	20775	15	5.61	11.33	0.71	59%	2.31	-
20775	20774	15	4.60	9.62	0.80	72%	1.30	-
20774	20773	15	4.19	10.65	0.86	79%	0.89	-
20773	20772	15	4.54	8.23	0.81	73%	1.24	-
20772	20771	15	4.55	10.38	0.81	74%	1.18	-
20771	20770	18	3.80	10.31	1.11	90%	0.39	-
20770	20769	18	5.65	10.75	0.85	60%	2.24	-
20769	20768	18	6.76	12.44	0.76	50%	3.35	-
20768	20767	18	6.95	9.26	4.39	49%	3.57	2.89
20767	20766	27	11.25	16.52	6.51	60%	4.55	4.26
20766	20765	27	8.57	16.61	8.20	77%	1.98	5.95
20765	20764	27	8.31	17.81	8.76	80%	1.70	6.51
20764	20763	27	8.55	18.48	9.13	83%	1.41	6.88
20763	20762	27	11.21	15.83	9.53	67%	3.71	7.28
20762	21329	27	8.72	17.03	10.95	86%	1.22	8.70
20761	20760	27	8.89	15.66	11.27	99%	0.11	9.02
20760	20759	30	5.75	13.73	11.47	153%	0.00	8.97
20759	20758	30	5.53	16.37	10.81	159%	0.00	8.31
20758	20757	30	6.00	11.11	9.85	146%	0.00	7.35
20757	20756	30	4.99	10.80	9.28	176%	0.00	6.78
20756	20755	30	5.78	10.35	8.74	152%	0.00	6.24
20755	20754	30	8.76	27.22	8.00	103%	0.00	5.50
20754	20753	30	1.77	23.92	7.94	538%	0.00	5.44
20753	21328	30	8.76	16.59	5.82	109%	0.00	3.32
20553	37013	27	21.67	15.36	1.64	44%	12.23	-
20314	18454	12	4.89	7.66	0.43	36%	3.12	-
20127	18554	15	2.28	7.43	0.64	55%	1.03	-
20126	18553	15	3.22	8.10	0.57	42%	1.87	-
19910	17762	12	3.43	11.13	0.48	44%	1.92	-
19876	19875	12	1.73	9.78	4.72	110%	0.00	3.72
19875	19874	12	2.38	9.73	4.68	80%	0.48	3.68
19874	19873	12	3.96	11.93	5.14	49%	2.02	4.14

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
19873	6955	24	11.35	10.88	10.35	149%	0.00	8.35
19706	6947	24	16.10	13.34	5.91	111%	0.00	3.91
19657	17760	12	6.10	12.46	0.35	25%	4.60	-
19143	22225	21	4.35	13.52	0.80	50%	2.18	-
19143	59276	21	19.39	13.52	0.50	11%	17.32	-
19142	34175	21	11.95	14.33	0.56	18%	9.78	-
19141	7308	21	11.40	13.25	1.05	65%	3.97	-
18586	902012	24	10.73	9.16	7.02	127%	0.00	5.02
18586	902012	24	10.73	9.16	4.36	45%	5.93	2.36
18555	20127	15	3.00	6.77	0.56	42%	1.75	-
18554	39224	15	2.91	7.65	0.63	43%	1.66	-
18553	18552	15	2.45	7.63	0.67	55%	1.10	-
18552	18496	15	2.73	10.35	0.63	49%	1.38	-
18496	901391	15	1.34	9.20	1.18	119%	0.00	-
18463	18458	10	2.32	15.95	0.43	51%	1.13	-
18458	18457	12	5.30	9.19	0.36	26%	3.91	-
18457	18456	12	5.79	10.72	0.35	24%	4.40	-
18456	45724	12	4.19	8.64	0.41	33%	2.80	-
18455	20314	12	4.78	8.25	0.43	37%	3.01	-
18454	18453	12	5.17	7.86	0.54	34%	3.40	-
18453	18452	12	2.75	8.76	2.13	65%	0.98	1.13
18452	6928	42	7.10	11.49	6.65	288%	0.00	3.15
18322	18321	21	13.13	10.28	0.71	32%	8.89	-
18321	7309	21	9.56	13.32	0.83	44%	5.32	-
18241	7311	21	7.28	21.26	0.99	58%	3.04	-
18202	6885	12	1.79	19.43	11.01	111%	0.00	10.01
18064	18063	12	2.00	13.12	0.65	38%	1.23	-
18063	17775	12	1.55	14.10	1.11	49%	0.78	0.11
17969	9040	15	3.87	9.20	0.47	30%	2.71	-
17949	9039	15	5.30	16.00	0.42	22%	4.14	-
17775	17774	12	2.18	22.74	0.42	35%	1.41	-
17774	17773	12	6.84	12.74	0.25	11%	6.07	-
17773	17772	12	2.76	16.50	0.37	28%	1.99	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
17772	17771	12	4.84	8.94	0.29	16%	4.07	-
17771	17770	12	5.05	8.65	0.28	15%	4.28	-
17770	17769	12	4.29	10.53	0.30	18%	3.52	-
17769	17768	12	4.61	9.15	0.29	17%	3.84	-
17768	17767	12	2.47	8.97	0.40	31%	1.70	-
17767	17766	12	0.63	11.00	0.77	122%	0.00	-
17766	17765	12	2.84	6.93	0.37	27%	2.07	-
17765	48242	12	5.59	14.08	0.27	14%	4.82	-
17764	17763	12	2.76	9.80	0.54	55%	1.25	-
17763	19910	12	3.22	12.88	0.50	47%	1.71	-
17762	17761	12	4.35	9.39	0.42	35%	2.85	-
17761	19657	12	5.56	2.96	0.37	27%	4.05	-
17760	17759	12	4.26	13.40	0.43	35%	2.76	-
17759	17758	12	1.27	10.90	0.99	118%	0.00	-
17758	17757	12	4.94	26.73	0.40	30%	3.45	-
17757	17756	12	1.90	7.53	3.83	76%	0.46	2.83
17756	17755	12	1.10	13.16	4.27	129%	0.00	3.27
17755	17754	12	1.40	6.10	3.94	122%	0.00	2.94
17754	17753	12	1.51	6.85	3.94	112%	0.00	2.94
17753	17752	12	1.51	7.37	3.70	111%	0.00	2.70
17752	34447	12	1.28	5.60	3.52	131%	0.00	2.52
17751	17750	12	1.38	9.45	2.66	145%	0.00	1.66
17750	17749	12	1.49	7.73	1.32	134%	0.00	0.32
17749	46796	12	5.48	4.63	0.43	36%	3.48	-
17748	17747	12	2.92	5.00	0.63	68%	0.92	-
17747	18202	12	14.96	6.12	0.27	13%	12.96	-
17375	45753	30	38.12	10.90	5.03	48%	20.00	2.53
17297	17764	12	2.92	9.64	0.52	52%	1.40	-
16604	7320	10	2.61	14.88	0.19	9%	2.37	-
16596	7333	10	1.00	17.80	0.35	34%	0.66	-
16581	7328	10	2.95	13.15	0.27	21%	2.33	-
16535	7330	15	5.93	15.92	0.18	2%	5.79	-
16379	16379N	42	20.88	17.22	9.58	195%	0.00	6.08

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
16038	16037	18	8.81	16.89	0.65	18%	7.26	-
16037	16036	18	6.69	12.93	0.66	40%	4.00	-
16036	42233	18	6.58	17.71	0.74	48%	3.40	-
15872	15871	30	20.58	13.36	5.42	88%	2.47	2.92
15871	6936	30	17.56	15.08	5.73	103%	0.00	3.23
15751	40488	27	21.21	16.43	5.46	85%	3.11	3.21
15271	22538	15	6.83	12.27	0.26	7%	6.34	-
15270	30591	15	4.91	14.11	0.43	23%	3.76	-
15270	9042	15	5.74	14.11	0.27	9%	5.25	-
15269	42234	18	10.33	11.33	7.41	27%	7.54	5.91
14937	5134	10	1.05	8.81	0.42	50%	0.52	-
14565	6885	42	77.24	11.66	7.41	49%	39.19	3.91
14458	14456	12	2.32	4.94	0.65	73%	0.63	-
14456	14455	12	2.91	5.04	0.60	65%	1.01	-
14455	14454	12	2.78	5.04	0.63	69%	0.88	-
14454	19876	12	5.21	5.28	0.91	37%	3.31	-
13939	20805	12	7.90	11.48	0.14	2%	7.73	-
9042	9041	15	4.28	13.90	0.31	11%	3.79	-
9041	17969	15	4.48	9.87	0.35	15%	3.79	-
9040	17949	15	4.86	9.47	0.44	24%	3.70	-
9039	16038	18	6.50	9.50	0.51	24%	4.95	-
8195	37032	12	1.14	9.27	0.51	55%	0.51	-
7335	7334	10	2.75	12.20	0.18	9%	2.51	-
7334	16604	10	2.50	9.74	0.19	10%	2.26	-
7333	7332	10	2.63	9.80	0.31	27%	1.92	-
7332	7316	10	1.89	10.83	0.36	37%	1.18	-
7330	7329	15	3.73	12.56	0.17	4%	3.59	-
7329	7328	15	5.22	15.72	0.18	3%	5.08	-
7328	7327	18	5.83	17.40	0.37	13%	5.08	-
7327	7326	18	5.89	19.36	0.37	13%	5.14	-
7326	7325	18	6.13	21.58	0.36	12%	5.38	-
7325	52651	18	6.84	11.66	0.38	11%	6.09	-
7324	7323	18	7.79	15.10	0.54	26%	5.80	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
7323	7322	18	6.48	16.67	0.57	31%	4.49	-
7322	7321	18	7.33	14.03	0.55	27%	5.34	-
7321	7320	18	7.90	14.30	0.54	25%	5.91	-
7320	7319	21	11.54	16.31	0.55	19%	9.31	-
7319	7318	21	9.80	18.35	0.58	23%	7.57	-
7318	7317	21	7.59	11.74	0.65	29%	5.36	-
7317	7316	21	8.38	13.97	0.62	27%	6.15	-
7316	7315	21	10.03	16.37	0.66	29%	7.10	-
7315	22223	21	4.64	12.81	0.94	63%	1.71	-
7314	18241	21	3.91	13.05	1.41	108%	0.00	-
7311	18322	21	7.06	22.19	1.00	60%	2.82	-
7309	19143	21	9.14	12.67	0.85	46%	4.90	-
7308	7305	21	12.52	11.52	1.00	59%	5.09	-
7305	7303	21	14.82	14.39	0.89	50%	7.39	-
7303	7302	21	17.06	15.30	0.84	44%	9.63	-
7302	7301	24	22.65	12.32	0.82	33%	15.22	-
7301	7300	24	20.70	12.41	0.86	36%	13.27	-
7300	55251	24	11.77	12.86	1.15	63%	4.34	-
7298	7297	24	9.58	9.60	1.44	87%	1.22	-
7297	7296	24	12.77	8.72	1.18	65%	4.41	-
7296	7295	24	9.00	9.45	1.52	93%	0.64	-
7295	61948	24	18.62	10.07	0.97	45%	10.27	-
7289	7256	10	0.68	5.89	1.70	122%	0.00	0.86
7256	7255	12	0.84	8.90	0.77	99%	0.01	-
7255	7254	12	0.98	10.50	0.71	85%	0.15	-
7254	7253	12	0.89	9.16	0.77	93%	0.06	-
7253	7252	12	1.53	11.25	0.53	54%	0.70	-
7252	6995	12	2.61	11.35	0.40	32%	1.78	-
7071	33444	10	1.58	9.54	0.46	51%	0.78	-
7051	7050	10	1.89	10.30	8.14	124%	0.00	7.31
7050	7049	10	1.77	10.10	5.49	133%	0.00	4.65
7049	6977	10	1.22	9.79	3.07	193%	0.00	2.24
6995	37990	12	5.29	9.44	0.29	16%	4.46	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
6990	32475	15	3.80	20.83	0.38	20%	3.05	-
6989	6988	15	4.13	9.12	0.36	18%	3.38	-
6988	6987	15	4.47	11.54	0.37	17%	3.72	-
6987	6985	15	4.20	12.34	0.49	31%	2.91	-
6985	6984	15	4.15	15.95	0.48	31%	2.86	-
6984	6983	15	3.71	11.11	0.52	35%	2.42	-
6983	6982	16	4.84	9.30	0.48	27%	3.55	-
6982	6981	15	5.06	10.96	0.57	40%	3.02	-
6981	6980	15	5.04	10.79	0.57	41%	3.00	-
6980	6979	18	8.55	11.17	0.52	24%	6.51	-
6979	6978	18	6.74	11.19	0.57	30%	4.70	-
6978	33451	18	6.70	9.18	0.57	30%	4.66	-
6977	33451	18	6.09	10.57	0.65	39%	3.74	-
6968	6967	15	3.35	9.37	0.34	0%	3.37	-
6967	6966	15	4.14	9.40	4.10	24%	3.16	2.85
6966	6965	18	6.25	10.81	4.72	31%	4.31	3.22
6965	15269	18	7.40	11.76	5.11	26%	5.46	3.61
6958	22009	24	30.51	11.88	10.90	1%	30.20	8.90
6957	6956	24	10.33	11.15	10.47	113%	0.00	8.47
6957	6956	24	10.33	11.15	8.20	38%	6.45	6.20
6956	19873	24	12.41	11.45	10.32	99%	0.09	8.32
6956	19873	24	12.41	11.45	7.53	30%	8.67	5.53
6955	6954	24	12.80	10.65	9.22	132%	0.00	7.22
6954	18586	24	13.00	8.05	7.93	130%	0.00	5.93
6953	38525	24	13.33	8.60	6.72	105%	0.00	4.72
6953	38525	24	13.33	8.60	4.40	35%	8.72	2.40
6952	6950	24	5.72	9.30	6.08	184%	0.00	4.08
6952	6951	24	11.09	9.30	6.01	76%	2.70	4.01
6951	6950	24	16.01	13.74	6.17	51%	7.83	4.17
6950	6949	24	14.83	14.06	6.66	118%	0.00	4.66
6949	6948	24	16.75	12.32	6.42	104%	0.00	4.42
6948	32394	24	9.21	13.46	6.32	190%	0.00	4.32
6947	6946	24	14.95	13.49	5.62	120%	0.00	3.62

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
6946	6945	27	20.33	12.04	4.98	89%	2.31	2.73
6945	6944	27	16.62	11.80	5.36	108%	0.00	3.11
6944	6943	27	18.87	13.02	5.23	95%	0.86	2.98
6943	901676	27	19.93	13.83	5.25	90%	1.92	3.00
6942	6939	30	21.32	12.08	4.92	84%	3.46	2.42
6941	6940	30	23.41	10.86	4.67	77%	5.32	2.17
6940	6942	30	20.90	11.22	4.57	86%	2.87	2.07
6939	6938	30	21.47	9.84	5.40	83%	3.62	2.90
6938	17375	30	19.60	10.28	4.98	92%	1.48	2.48
6937	15872	30	21.00	12.03	5.21	86%	2.88	2.71
6936	6935	30	18.47	11.35	5.38	98%	0.36	2.88
6935	6934	30	19.87	14.62	4.94	95%	1.09	2.44
6934	6929	30	17.76	14.36	4.81	106%	0.00	2.31
6933	6932	30	18.44	10.96	5.00	102%	0.00	2.50
6932	46789	30	23.89	10.81	4.59	78%	5.14	2.09
6931	6930	42	45.11	14.79	5.11	42%	26.05	1.61
6930	18452	42	26.69	21.91	6.31	71%	7.79	2.81
6929	6933	30	21.17	10.90	4.55	89%	2.40	2.05
6928	6927	42	25.54	11.96	6.51	81%	4.79	3.01
6927	6926	42	6.87	14.45	6.57	301%	0.00	3.07
6926	6925	42	19.18	15.73	6.36	108%	0.00	2.86
6925	6924	42	19.29	15.13	6.31	109%	0.00	2.81
6924	6923	42	19.15	15.38	6.21	111%	0.00	2.71
6923	6921	42	23.10	21.73	6.09	92%	1.93	2.59
6921	61946	42	29.09	14.92	6.79	73%	7.80	3.29
6890	6889	24	8.73	16.24	3.47	0%	8.74	1.47
6889	6888	24	9.51	12.79	4.09	-3%	9.80	2.09
6888	6887	42	29.56	17.66	7.44	125%	0.00	3.94
6887	6886	42	28.63	24.15	4.05	133%	0.00	0.55
6886	14565	42	129.77	15.48	1.49	29%	91.72	-
6885	6883	42	48.09	15.06	13.43	84%	7.69	9.93
6883	6882	42	8.98	14.90	14.53	450%	0.00	11.03
6882	6880	42	28.91	15.09	13.26	140%	0.00	9.76

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
6880	6879	42	26.91	14.80	11.07	151%	0.00	7.57
6879	6878	42	43.91	14.97	10.55	93%	3.23	7.05
6878	16379	42	23.28	17.47	10.20	175%	0.00	6.70
6877	6876	42	26.94	26.54	8.09	151%	0.00	4.59
6876	6876N	42	21.82	15.34	6.61	188%	0.00	3.11
6875	6874	42	21.73	14.86	4.05	189%	0.00	0.55
6874	JP1	42	21.31	13.83	3.28	193%	0.00	-
5134	18064	12	2.07	13.15	0.35	26%	1.54	-
4971	4970	10	2.22	8.71	0.27	21%	1.76	-
4970	2942	10	0.88	13.98	0.43	52%	0.42	-
2947	2946	10	1.97	13.55	0.29	23%	1.51	-
2946	2945	10	1.91	8.00	0.29	24%	1.45	-
2945	2943	10	1.37	14.28	0.34	33%	0.91	-
2943	4971	10	1.71	8.57	0.30	27%	1.25	-
2942	2941	10	0.84	19.97	0.44	54%	0.38	-
2941	2940	10	1.96	8.26	0.29	23%	1.50	-
2940	2939	10	2.38	10.67	0.26	19%	1.92	-
2939	2938	10	1.10	12.14	0.38	41%	0.64	-
2938	2937	10	0.94	15.90	0.42	48%	0.48	-
2937	2936	10	1.02	8.30	0.40	45%	0.56	-
2936	1508	10	1.02	10.49	0.40	45%	0.56	-
2900	7335	10	5.58	6.66	0.14	4%	5.34	-
1593	29862	12	0.43	7.93	0.90	194%	0.00	-
1507	16581	10	5.45	4.58	0.21	11%	4.83	-
150	901871	16	8.66	26.32	0.26	6%	8.15	-
70	52182	10	3.04	7.67	0.21	12%	2.68	-
66	61	10	2.42	6.06	0.23	15%	2.06	-
61	27	10	3.91	5.14	0.19	10%	3.53	-
27	23	15	4.64	22.26	0.34	14%	3.99	-
23	22	15	4.55	22.55	0.35	14%	3.90	-
22	19	15	2.66	24.63	0.43	25%	2.01	-
21	20	12	3.72	9.00	0.12	1%	3.69	-
20	19	12	0.42	9.49	0.55	6%	0.39	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 6-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
19	18	15	2.08	11.30	0.50	33%	1.40	-
18	56841	18	5.14	13.99	0.88	14%	4.43	-

*Slope of pipe is zero therefore calculated capacity is zero

Hydraulic restrictions will impact capacity and surcharge conditon calculations causing cases where there is capacity in the pipe and there is also a surcharge

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
7052M	7051	10	0.00	9.95	9.65	*	0.00	8.82
6876N	6875	42	22.90	3.50	9.39	183%	0.00	5.89
54453A	54453	12	1.73	11.75	0.25	12%	1.52	-
54452A	54452	12	2.91	9.32	0.21	7%	2.70	-
45564A	45564	12	1.55	8.49	0.26	14%	1.34	-
38538A	38538	15	7.64	8.51	0.34	14%	6.60	-
38530A	38530	15	0.00	10.41	0.64	-	0.00	-
30590B	30590A	15	5.72	16.16	0.50	32%	3.92	-
30590A	30590	15	3.71	10.12	0.62	49%	1.91	-
30588A	30588	15	4.48	11.73	0.57	40%	2.68	-
22463A	22463	12	2.96	7.72	0.21	7%	2.75	-
16379N	6877	42	21.44	3.50	11.66	193%	0.00	8.16
902054	43825	15	4.58	6.13	0.32	12%	4.01	-
902012	6953	24	11.03	9.22	7.61	121%	0.00	5.61
902012	6953	24	11.03	9.22	5.08	36%	7.04	3.08
901871	52661	12	3.61	20.98	0.35	23%	2.77	-
901676	15751	27	18.70	16.02	7.49	99%	0.20	5.24
901391	901390	16	1.95	7.56	1.09	128%	0.00	-
901390	37990	15	9.04	8.68	0.46	28%	6.54	-
70352	70351	18	9.25	15.49	0.20	2%	9.11	-
70351	70350	18	13.78	9.74	0.18	1%	13.64	-
70350	70349	18	11.47	7.51	0.19	*	11.33	-
70349	16535	18	11.51	9.39	0.19	1%	11.37	-
69152	69151	15	3.43	10.84	0.78	69%	1.06	-
69151	69150	15	5.47	23.51	0.60	43%	3.10	-
69150	69149	15	3.07	24.18	0.82	77%	0.70	-
69149	69147	15	3.51	27.33	0.76	68%	1.14	-
69147	69146	15	3.81	25.05	0.72	62%	1.44	-
69146	69145	16	3.74	21.10	0.77	63%	1.37	-
69145	69144	15	3.33	18.83	0.79	71%	0.96	-
69144	69143	16	4.25	16.85	0.72	56%	1.88	-
69143	69140	16	4.26	15.71	0.75	59%	1.74	-
69140	69139	16	4.55	16.05	0.71	55%	2.03	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
69139	69138	16	5.97	16.81	0.62	42%	3.45	-
69138	69136	16	2.70	19.89	1.05	96%	0.10	-
69136	69133	16	2.71	22.37	1.04	96%	0.11	-
69133	69132	16	2.69	21.85	1.05	97%	0.09	-
69132	69131	16	6.04	16.07	3.67	43%	3.44	2.33
69131	33527	15	2.68	23.44	10.33	97%	0.08	9.08
65511	65510	16	3.72	20.98	0.56	35%	2.40	-
65510	65509	16	3.88	25.72	0.54	34%	2.56	-
65509	65508	16	3.66	22.19	0.56	36%	2.34	-
65508	65507	16	3.57	18.58	0.57	37%	2.25	-
65507	65506	16	4.69	15.86	0.49	28%	3.37	-
65506	65505	16	3.47	14.82	0.57	38%	2.15	-
65505	65504	16	6.74	9.14	0.42	20%	5.42	-
65504	65503	16	2.31	9.61	0.69	57%	0.99	-
65503	65502	16	3.50	8.41	0.57	38%	2.18	-
65502	65501	16	2.62	7.90	0.66	50%	1.30	-
65501	65500	16	2.95	8.45	0.63	45%	1.63	-
65500	65499	16	4.25	9.65	0.51	31%	2.93	-
65499	65498	16	4.18	10.65	0.52	31%	2.86	-
65498	65497	16	6.97	11.34	0.41	19%	5.65	-
65497	34179	16	6.62	12.33	0.43	20%	5.30	-
65375	65374	18	4.33	15.58	0.56	29%	3.07	-
65374	65373	18	5.93	14.64	0.47	21%	4.68	-
65373	6990	18	9.53	17.22	0.40	13%	8.28	-
65333	65332	15	3.92	9.54	0.36	18%	3.22	-
65332	65331	15	2.41	16.48	0.46	29%	1.71	-
65331	65330	15	2.95	26.03	0.42	24%	2.25	-
65330	65329	15	6.57	10.88	0.30	11%	5.87	-
65329	65328	15	5.93	11.77	0.32	12%	5.23	-
65328	65327	15	3.83	11.30	0.37	18%	3.13	-
65327	65326	15	2.48	11.60	0.46	28%	1.78	-
65326	65325	15	3.02	24.96	0.42	23%	2.32	-
65325	65324	15	2.95	15.70	0.42	24%	2.25	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
65324	65323	15	6.73	18.66	0.30	10%	6.03	-
65323	65322	15	1.63	11.36	0.57	43%	0.93	-
65322	65321	15	7.51	17.20	0.28	9%	6.81	-
65321	65320	15	5.85	16.42	0.32	12%	5.15	-
65320	65319	15	5.95	14.96	0.32	12%	5.25	-
65319	65318	15	5.60	16.72	0.33	13%	4.90	-
65318	65317	15	5.60	13.60	0.33	13%	4.90	-
65317	65316	15	3.16	15.65	0.41	22%	2.46	-
65316	65315	15	2.34	15.41	0.47	30%	1.64	-
65315	65511	15	2.99	12.51	0.43	23%	2.29	-
61948	61947	36	33.24	17.39	8.17	38%	20.56	5.17
61947	61946	36	27.53	13.63	9.30	45%	15.17	6.30
61946	6888	42	80.26	17.46	11.23	42%	46.25	7.73
59276	59275	20	3.80	15.36	2.44	84%	0.62	0.78
59275	59274	20	7.24	18.18	2.58	44%	4.08	0.92
59274	34175	20	9.20	20.63	2.83	51%	4.47	1.16
59222	59221	12	1.68	15.58	0.40	32%	1.14	-
59221	70	10	1.78	9.60	0.33	30%	1.24	-
57167	43386	12	5.70	8.95	0.17	4%	5.44	-
57146	44548	15	3.94	11.19	8.49	114%	0.00	7.24
56841	33296	18	3.73	14.72	0.61	34%	2.47	-
56667	20782	15	3.16	11.30	9.31	126%	0.00	8.06
55251	7298	24	14.53	9.08	4.98	88%	1.74	2.98
54556	53962	10	1.07	22.61	0.52	69%	0.33	-
54456	54455	12	1.32	11.40	0.28	16%	1.11	-
54455	54454	12	3.36	13.79	0.20	6%	3.15	-
54454	54453A	12	3.99	10.52	0.19	5%	3.78	-
54453	54452A	12	2.31	12.20	0.23	9%	2.10	-
54452	54451	12	4.02	15.01	0.19	5%	3.81	-
54451	45568	12	4.09	12.89	0.19	5%	3.88	-
53962	53961	10	0.89	14.80	0.59	83%	0.15	-
53961	53960	10	0.94	8.87	0.57	79%	0.20	-
53960	53959	10	0.97	11.50	0.55	76%	0.23	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
53959	53958	10	0.88	15.72	0.59	84%	0.14	-
53958	53957	10	1.04	20.67	0.53	71%	0.30	-
53957	53956	10	0.85	22.02	0.60	87%	0.11	-
53956	53955	10	1.15	24.87	0.49	64%	0.41	-
53955	41133	10	0.84	20.33	0.88	88%	0.10	0.05
53270	44213	10	0.71	10.54	10.56	168%	0.00	9.72
52661	52660	12	7.21	18.44	0.25	12%	6.37	-
52660	52659	21	36.86	11.84	0.32	5%	34.92	-
52659	52658	21	9.16	14.29	0.55	21%	7.22	-
52658	52657	21	5.62	17.66	0.72	34%	3.68	-
52657	52656	24	8.42	18.15	0.69	25%	6.34	-
52656	52655	24	4.65	19.10	0.90	45%	2.58	-
52655	52654	24	56.68	18.73	0.32	4%	54.61	-
52654	52653	24	15.09	11.22	0.54	14%	13.02	-
52653	52652	24	57.57	13.97	0.32	4%	55.50	-
52652	52651	24	14.94	17.83	0.55	14%	12.87	-
52651	7324	18	6.85	12.30	0.77	51%	3.35	-
52364	36947	15	5.29	10.80	0.50	31%	3.66	-
52182	66	10	2.57	7.11	0.30	25%	1.93	-
52175	52174	16	10.45	7.79	0.15	0%	10.40	-
52174	52173	16	11.60	8.01	0.15	0%	11.55	-
52173	52172	16	5.32	7.86	0.16	1%	5.27	-
52172	52171	16	3.50	23.69	0.13	1%	3.45	-
52171	52170	16	4.18	21.63	0.12	1%	4.13	-
52170	18	16	22.42	18.25	0.14	0%	22.37	-
52089	52088	15	3.02	11.00	0.81	71%	0.89	-
52088	36931	15	1.98	11.28	0.97	108%	0.00	-
52028	52027	10	1.03	11.67	0.45	55%	0.46	-
52027	52026	10	1.40	11.59	0.38	41%	0.83	-
52026	52025	10	1.63	8.40	0.35	35%	1.06	-
52025	52024	10	1.79	8.30	0.34	32%	1.22	-
52024	902054	15	4.53	8.27	0.33	13%	3.96	-
49997	36917	18	10.27	7.05	0.54	26%	7.62	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
48242	17297	12	5.79	10.95	0.47	42%	3.34	-
48063	42229	24	24.93	120.22	11.46	25%	18.63	9.46
47036	36944	15	5.09	8.11	0.55	38%	3.17	-
47025	36942	15	3.62	11.75	0.65	53%	1.71	-
46796	17748	12	4.95	4.40	0.50	47%	2.63	-
46789	6931	30	19.86	11.02	9.02	97%	0.57	6.52
45753	6937	30	18.97	11.34	8.42	96%	0.73	5.92
45724	18455	12	4.10	10.01	0.56	57%	1.77	-
45592	22464	12	2.38	8.25	0.22	9%	2.17	-
45585	22457	12	1.16	11.39	0.30	18%	0.95	-
45568	22490	12	4.47	11.05	0.18	5%	4.26	-
45567	45566	12	4.46	14.37	0.18	5%	4.25	-
45566	45565	12	4.75	10.08	0.17	5%	4.54	-
45565	45564A	12	3.59	9.68	0.19	6%	3.38	-
45564	45563	12	2.73	11.65	0.21	8%	2.52	-
45563	22466	12	4.74	8.74	0.17	5%	4.53	-
44548	20777	15	4.28	9.03	8.33	108%	0.00	7.08
44225	44224	10	0.69	12.98	11.74	114%	0.00	10.90
44224	44223	10	0.63	14.85	11.72	125%	0.00	10.89
44223	44222	10	0.78	14.30	11.25	119%	0.00	10.42
44222	44221	10	0.65	16.04	10.84	142%	0.00	10.01
44221	44220	10	0.72	17.71	10.16	129%	0.00	9.33
44220	44219	10	0.68	10.99	9.26	136%	0.00	8.42
44219	44218	10	0.79	8.59	8.66	104%	0.00	7.83
44218	44217	10	0.78	15.42	9.58	106%	0.00	8.75
44217	44216	10	0.84	12.02	10.65	99%	0.01	9.82
44216	44215	10	0.80	11.87	11.62	121%	0.00	10.78
44215	44214	10	0.80	11.29	11.17	121%	0.00	10.34
44214	53270	10	0.87	12.30	10.68	111%	0.00	9.84
44213	44212	10	0.81	9.79	9.79	145%	0.00	8.96
44212	44211	10	0.80	10.62	9.43	146%	0.00	8.60
44211	44210	10	0.80	11.54	8.98	146%	0.00	8.14
44210	44209	10	0.52	15.76	8.46	277%	0.00	7.62

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
44209	44208	24	5.12	13.54	6.16	28%	3.68	4.16
44208	34385	24	4.66	13.72	6.76	32%	3.18	4.76
43865	42055	12	1.94	18.39	0.32	21%	1.54	-
43826	52024	15	3.12	8.28	0.21	0%	3.12	-
43825	43824	15	3.07	8.08	0.47	19%	2.50	-
43786	44225	12	1.79	11.00	9.90	44%	1.00	8.90
43502	43501	16	3.68	6.59	0.70	53%	1.72	-
43501	18555	18	4.20	6.75	0.80	47%	2.24	-
43387	57167	12	4.32	10.56	0.19	6%	4.06	-
43386	43385	12	3.22	10.71	0.21	8%	2.96	-
43385	43384	12	2.33	9.59	0.29	16%	1.96	-
43384	43383	12	5.32	7.57	0.26	13%	4.64	-
43383	43382	15	7.89	13.32	0.29	10%	7.14	-
43382	43381	15	2.12	13.27	0.52	36%	1.37	-
43381	150	15	46.14	9.53	0.17	2%	45.39	-
42603	36945	15	4.16	7.77	0.57	43%	2.39	-
42234	42228	30	29.98	40.38	13.55	57%	12.85	11.05
42233	42232	24	7.28	28.20	1.26	78%	1.61	-
42232	42231	24	12.99	102.54	0.93	44%	7.32	-
42231	42230	24	22.99	106.64	0.71	25%	17.33	-
42230	48063	24	24.44	116.70	8.17	22%	19.01	6.17
42229	42228	24	18.63	18.16	13.74	34%	12.35	11.74
42228	22013	24	11.46	35.56	14.65	201%	0.00	12.65
42055	42054	15	4.56	20.59	0.56	40%	2.73	-
42054	42053	15	3.67	19.39	0.63	50%	1.84	-
42053	42052	15	2.46	16.20	0.77	74%	0.63	-
42052	42051	15	5.81	14.83	0.50	32%	3.98	-
42051	42050	14	42.09	17.01	0.20	4%	40.26	-
42050	34836	14	11.24	14.13	0.34	16%	9.41	-
41530	43502	16	2.58	9.90	0.87	76%	0.62	-
41529	41530	16	4.32	8.90	0.66	45%	2.36	-
41429	41116	10	2.16	7.59	3.84	62%	0.81	3.01
41428	41427	12	1.36	6.34	2.18	99%	0.01	1.18

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
41427	1593	12	2.48	6.10	2.15	54%	1.13	1.15
41252	20781	15	3.10	8.85	3.56	131%	0.00	2.31
41133	41132	10	2.04	21.77	0.36	36%	1.30	-
41132	41131	10	0.90	21.25	0.59	82%	0.16	-
41131	41130	10	1.12	16.09	0.50	66%	0.38	-
41130	41129	10	1.11	11.55	0.50	67%	0.37	-
41129	41128	10	1.14	11.85	0.49	65%	0.40	-
41128	41127	10	1.33	12.65	0.45	56%	0.59	-
41127	41126	10	1.57	12.20	1.02	78%	0.35	0.18
41126	41125	10	1.62	12.30	1.20	75%	0.40	0.37
41125	41124	10	0.38	12.69	2.13	321%	0.00	1.29
41124	41123	10	1.17	12.15	1.88	104%	0.00	1.05
41123	41122	10	1.44	9.80	1.87	84%	0.23	1.03
41122	41121	10	2.00	8.47	3.30	58%	0.83	2.47
41121	41120	10	0.95	8.85	4.46	122%	0.00	3.62
41120	41119	10	0.94	8.20	4.06	144%	0.00	3.23
41119	41118	10	1.44	8.17	2.76	94%	0.09	1.93
41118	41117	10	2.21	8.41	2.92	63%	0.82	2.09
41117	41429	10	0.92	8.87	4.34	146%	0.00	3.51
41116	41115	10	0.67	9.19	4.87	201%	0.00	4.03
41115	41114	10	0.92	8.01	2.59	146%	0.00	1.76
41114	41428	10	1.28	6.72	2.28	105%	0.00	1.44
40488	6941	27	10.59	18.46	8.07	174%	0.00	5.82
39741	39739	12	1.45	7.65	2.27	82%	0.27	1.27
39739	39738	12	0.84	11.80	2.50	141%	0.00	1.50
39738	39737	12	2.12	10.57	2.39	56%	0.94	1.39
39737	39736	12	0.90	12.25	3.60	131%	0.00	2.60
39736	39735	12	2.70	5.04	3.13	43%	1.54	2.13
39735	39734	12	0.30	8.01	3.98	379%	0.00	2.98
39734	39733	12	1.58	9.80	3.62	71%	0.47	2.62
39733	23779	12	3.90	7.95	4.11	28%	2.82	3.11
39458	38645	15	2.80	9.55	0.47	29%	1.98	-
39224	20126	15	1.32	7.64	1.60	161%	0.00	0.35

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
39118	39117	12	1.77	9.52	0.27	15%	1.51	-
39117	38084	12	3.22	3.55	0.22	8%	2.96	-
38839	38533	15	3.01	10.13	0.54	38%	1.87	-
38838	38532	15	5.33	9.46	0.42	21%	4.19	-
38773	33440	27	19.80	9.20	7.39	70%	6.02	5.14
38649	38648	15	3.52	10.35	0.28	10%	3.15	-
38648	38647	15	3.94	7.15	0.39	21%	3.11	-
38647	38646	15	4.58	13.09	0.38	18%	3.75	-
38646	39458	15	2.95	12.75	0.45	28%	2.12	-
38645	38644	15	2.19	11.01	0.52	38%	1.37	-
38644	38643	15	6.81	11.89	0.35	15%	5.77	-
38643	38642	15	2.96	6.51	0.52	35%	1.92	-
38642	38539	15	8.05	8.80	0.33	13%	7.01	-
38539	38538A	15	4.52	8.01	0.43	23%	3.48	-
38538	38537	15	3.79	6.92	0.45	27%	2.75	-
38537	38536	15	3.28	5.18	0.52	35%	2.14	-
38536	38535	15	1.48	9.72	0.73	77%	0.34	-
38535	38534	15	3.32	11.48	0.51	34%	2.18	-
38534	38839	15	5.70	10.35	0.42	20%	4.56	-
38533	38838	15	6.21	9.20	0.38	18%	5.07	-
38532	38531	15	3.29	9.31	0.52	35%	2.15	-
38531	38530A	15	3.54	8.55	0.50	32%	2.40	-
38530	38529	15	4.42	10.64	0.45	26%	3.28	-
38529	38528	15	5.03	6.75	0.43	23%	3.89	-
38528	38527	15	4.15	7.18	0.45	28%	3.01	-
38527	38526	15	4.76	7.35	1.58	24%	3.62	0.33
38526	38525	15	5.43	6.70	3.87	21%	4.31	2.62
38525	6952	24	11.66	8.66	7.47	154%	0.00	5.47
38085	36954	12	2.22	8.39	0.26	13%	1.93	-
38084	38083	12	4.52	7.36	0.19	6%	4.26	-
38083	38081	12	1.68	8.01	0.46	43%	0.96	-
38081	38080	12	1.91	10.66	0.43	37%	1.20	-
38080	38079	12	2.52	7.56	0.38	28%	1.81	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
38079	38078	12	2.08	7.63	0.41	34%	1.37	-
38078	38077	12	2.84	16.52	0.35	25%	2.14	-
38077	38076	12	3.23	7.51	0.33	22%	2.53	-
38076	38075	12	2.89	9.52	0.35	24%	2.19	-
38075	38074	12	3.21	7.63	0.33	22%	2.51	-
38074	38073	12	2.48	8.21	0.37	28%	1.79	-
38073	38072	12	3.17	10.79	0.34	22%	2.48	-
38072	36952	15	3.11	13.97	0.61	46%	1.67	-
37991	37990	30	16.93	11.72	0.58	6%	15.86	-
37990	37989	30	19.62	10.38	0.82	22%	15.24	-
37989	37988	30	16.71	11.32	0.88	26%	12.33	-
37988	37987	30	16.97	11.80	0.88	26%	12.59	-
37987	37986	30	16.78	13.18	0.88	26%	12.40	-
37986	33466	27	23.90	12.86	0.69	18%	19.52	-
37148	20794	15	4.20	10.61	0.62	48%	2.19	-
37032	37031	12	2.70	9.08	0.36	26%	2.00	-
37031	37030	12	1.24	8.03	0.51	57%	0.54	-
37030	65333	15	7.16	8.17	0.29	10%	6.46	-
37014	20553	27	22.86	11.88	1.19	47%	12.01	-
37013	37012	27	17.06	15.10	1.39	69%	5.26	-
37012	37011	27	24.41	14.15	1.11	48%	12.61	-
37011	37010	27	20.31	11.37	1.27	58%	8.51	-
37010	37009	27	22.18	9.00	1.20	53%	10.39	-
37009	33448	27	19.98	8.93	1.28	61%	7.86	-
36990	20793	15	5.49	9.63	0.54	37%	3.44	-
36963	36962	12	4.46	10.91	0.17	4%	4.29	-
36962	36961	12	4.30	9.41	0.17	4%	4.13	-
36961	36960	12	4.21	13.14	0.17	4%	4.04	-
36960	36959	12	3.62	8.33	0.18	5%	3.45	-
36959	36958	12	3.94	12.25	0.17	4%	3.77	-
36958	36957	12	4.14	8.75	0.17	4%	3.97	-
36957	36956	12	2.57	12.55	0.20	7%	2.40	-
36956	36955	12	4.12	9.31	0.17	4%	3.95	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
36955	38085	12	2.09	11.54	0.21	8%	1.92	-
36954	36953	12	2.97	8.62	0.23	10%	2.68	-
36953	38072	15	4.09	8.82	0.42	23%	3.14	-
36952	36951	15	4.34	10.40	0.52	33%	2.90	-
36951	36950	15	4.48	9.31	0.51	32%	3.04	-
36950	36949	15	4.39	9.95	0.54	37%	2.76	-
36949	36948	15	3.44	9.72	0.61	47%	1.81	-
36948	52364	15	4.97	9.60	0.51	33%	3.34	-
36947	36946	15	5.72	10.64	0.47	28%	4.09	-
36946	42603	15	2.44	9.03	0.70	70%	0.74	-
36945	47036	15	4.92	8.29	0.54	37%	3.10	-
36944	47025	15	3.80	14.15	0.63	50%	1.89	-
36942	36941	15	3.72	15.34	0.65	53%	1.74	-
36941	36940	15	3.75	13.63	0.65	53%	1.77	-
36940	36939	15	5.73	10.89	0.53	35%	3.75	-
36939	36938	15	5.95	14.26	0.52	33%	3.97	-
36938	36937	15	6.60	11.53	0.50	31%	4.53	-
36937	36936	15	4.05	11.22	0.64	51%	1.99	-
36936	36935	15	3.71	10.80	0.69	56%	1.65	-
36935	36934	15	3.90	10.50	0.66	53%	1.84	-
36934	36933	15	3.60	5.34	0.70	57%	1.54	-
36933	52089	15	3.55	8.45	0.71	60%	1.41	-
36931	36930	15	2.72	14.94	0.85	78%	0.59	-
36930	36929	15	2.67	25.41	0.85	80%	0.55	-
36929	36928	15	3.54	9.48	0.72	61%	1.37	-
36928	36927	15	3.61	11.35	0.71	60%	1.44	-
36927	36926	18	5.67	15.92	0.67	40%	3.42	-
36926	36925	15	3.48	10.59	0.74	65%	1.23	-
36925	36924	18	6.74	10.96	0.62	33%	4.49	-
36924	36923	12	2.78	14.55	0.77	91%	0.26	-
36923	36922	18	8.14	9.74	0.60	31%	5.62	-
36922	36921	18	9.32	13.10	0.55	27%	6.80	-
36921	36920	18	12.20	12.90	0.49	21%	9.68	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
36920	36919	18	10.12	12.97	0.54	26%	7.50	-
36919	36918	18	10.38	10.69	0.54	25%	7.76	-
36918	49997	18	10.39	1.65	0.54	25%	7.74	-
36917	36916	18	8.06	13.08	0.62	33%	5.41	-
36916	36915	18	8.92	10.69	0.58	30%	6.28	-
36915	36914	18	9.59	12.09	0.56	28%	6.95	-
36914	36913	18	8.51	11.48	0.60	31%	5.87	-
36913	36912	18	6.21	9.89	0.69	43%	3.55	-
36912	36911	18	8.66	11.16	0.59	31%	6.01	-
36911	34383	18	7.13	10.71	3.26	37%	4.48	1.76
34836	33711	12	4.08	12.09	0.53	54%	1.86	-
34447	17751	12	1.53	9.36	5.15	152%	0.00	4.15
34385	34384	24	5.19	15.86	7.43	45%	2.85	5.43
34384	34383	24	4.98	11.75	8.11	47%	2.64	6.11
34383	34382	24	8.82	13.59	9.64	52%	4.20	7.64
34382	34381	24	7.10	14.22	10.09	64%	2.59	8.09
34381	20767	24	6.52	15.43	10.84	69%	2.03	8.84
34180	34179	12	3.15	10.06	0.20	6%	2.95	-
34179	34178	12	4.06	14.19	0.43	37%	2.55	-
34178	34177	12	4.55	15.64	0.41	33%	3.04	-
34177	34176	12	6.86	15.67	0.34	22%	5.35	-
34176	59274	12	6.12	14.60	0.35	25%	4.61	-
34175	19141	21	10.96	15.94	3.31	78%	2.43	1.56
33711	33710	12	3.43	7.58	0.59	65%	1.21	-
33710	33709	12	3.48	9.37	1.56	64%	1.26	0.56
33709	33708	12	3.79	6.90	4.05	61%	1.46	3.05
33708	33707	12	3.34	7.80	7.81	74%	0.88	6.81
33707	20761	12	0.62	11.42	11.57	365%	0.00	10.57
33532	33531	10	1.79	14.71	9.47	99%	0.01	8.63
33531	33530	10	1.75	13.29	10.77	97%	0.06	9.94
33530	33529	10	1.58	12.80	11.68	105%	0.00	10.84
33529	33528	12	1.23	13.86	10.56	135%	0.00	9.56
33528	33527	12	1.53	12.70	10.28	108%	0.00	9.28

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
33527	20783	15	2.88	10.40	10.45	134%	0.00	9.20
33470	30342	30	18.45	12.82	0.22	0%	18.45	-
33466	33465	27	16.23	10.66	0.94	36%	10.41	-
33465	33464	27	17.18	11.61	0.91	34%	11.39	-
33464	33463	27	17.12	12.19	0.91	34%	11.35	-
33463	33462	27	17.85	16.38	0.89	32%	12.08	-
33462	33461	27	17.65	11.58	0.90	33%	11.89	-
33461	33460	27	17.50	6.44	0.90	33%	11.76	-
33460	33459	27	20.33	14.09	0.84	28%	14.61	-
33459	33458	27	13.75	8.23	1.01	42%	8.03	-
33458	33457	27	36.06	9.12	0.64	16%	30.34	-
33457	33456	27	24.53	12.04	0.78	23%	18.81	-
33456	33455	27	24.22	11.65	0.78	24%	18.51	-
33455	33454	27	23.87	12.06	0.79	24%	18.16	-
33454	33453	27	20.32	11.89	0.84	28%	14.61	-
33453	33452	27	19.63	10.05	0.83	29%	13.92	-
33452	33451	27	17.72	11.90	1.38	32%	12.01	-
33451	37014	27	14.56	12.10	1.45	75%	3.71	-
33448	33447	27	34.51	10.17	0.98	37%	21.59	-
33447	33446	27	32.04	8.94	1.02	40%	19.12	-
33446	33445	27	27.09	9.63	1.15	49%	13.69	-
33445	33444	27	23.23	10.06	1.96	58%	9.84	-
33444	6970	10	1.29	12.98	0.76	92%	0.10	-
33444	33443	27	22.20	12.98	3.75	63%	8.24	1.50
33443	33442	27	21.67	10.65	4.87	63%	7.97	2.62
33442	38773	27	23.12	9.88	6.60	57%	9.95	4.35
33440	33439	27	15.04	10.63	8.77	90%	1.53	6.52
33439	33438	27	23.73	11.03	8.65	57%	10.25	6.40
33438	33437	30	33.56	9.94	7.74	40%	20.10	5.24
33437	42234	30	29.00	11.52	10.11	46%	15.58	7.61
33296	52660	18	7.17	9.01	0.43	15%	6.07	-
33295	12	24	10.44	10.17	0.19	1%	10.29	-
32475	6989	15	3.44	10.76	0.53	36%	2.19	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
32394	19706	24	20.96	13.24	6.91	86%	2.87	4.91
32263	32262	12	2.03	11.10	6.86	76%	0.50	5.86
32262	32261	12	2.57	10.20	8.10	59%	1.04	7.10
32261	32260	12	2.35	28.96	9.84	63%	0.87	8.84
32260	32259	12	0.19	12.30	11.78	806%	0.00	10.78
32259	32258	12	1.75	12.95	11.23	86%	0.24	10.23
32258	32257	12	0.91	11.86	11.87	163%	0.00	10.87
32257	32254	12	1.03	12.18	10.14	142%	0.00	9.14
32254	33532	12	0.60	9.71	9.67	242%	0.00	8.67
30726	20776	15	4.20	9.39	9.20	107%	0.00	7.95
30594	30593	15	6.25	10.79	0.34	14%	5.38	-
30593	30592	15	7.17	11.40	0.81	12%	6.30	-
30592	15271	15	5.96	11.14	0.35	15%	5.09	-
30591	30590B	15	3.67	11.40	0.62	49%	1.87	-
30590	30589	15	4.56	7.61	0.56	40%	2.76	-
30589	30588A	15	5.48	9.00	0.51	33%	3.68	-
30588	16037	18	5.35	13.60	0.61	34%	3.55	-
30342	37991	30	16.87	11.82	0.38	0%	16.87	-
29873	20799	10	3.12	6.54	0.22	13%	2.71	-
29862	29861	10	0.78	6.42	1.86	172%	0.00	1.03
29861	20812	12	0.51	6.58	0.79	264%	0.00	-
22538	15270	15	7.91	12.49	0.54	36%	5.06	-
22490	22489	12	3.54	14.52	0.20	6%	3.33	-
22489	22482	12	3.79	11.84	0.19	6%	3.58	-
22482	45567	12	3.26	14.72	0.20	7%	3.05	-
22466	22465	12	1.49	9.40	0.27	14%	1.28	-
22465	45592	12	1.79	7.80	0.24	12%	1.58	-
22464	22463A	12	2.89	7.41	0.21	7%	2.68	-
22463	22462	12	3.24	5.39	0.20	7%	3.03	-
22462	22458	12	1.67	7.24	0.26	13%	1.46	-
22458	45585	12	1.66	6.88	0.26	13%	1.45	-
22457	22456	12	1.01	8.77	0.32	21%	0.80	-
22456	22455	12	1.49	7.25	1.57	17%	1.23	0.57

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
22455	22454	12	0.95	9.94	3.14	27%	0.69	2.14
22454	6921	12	1.33	13.48	4.65	-30%	1.72	3.65
22225	19142	21	6.53	15.80	2.46	60%	2.62	0.71
22223	22222	21	5.79	13.16	2.31	89%	0.65	0.56
22222	7314	21	6.07	20.57	2.91	85%	0.93	1.16
22013	22012	24	15.07	12.31	12.42	120%	0.00	10.42
22012	22011	24	14.71	11.45	11.42	108%	0.00	9.42
22011	22010	24	14.74	11.68	11.32	106%	0.00	9.32
22010	22009	24	11.99	11.14	11.00	129%	0.00	9.00
22009	6957	24	13.03	11.60	10.82	121%	0.00	8.82
21329	20761	27	8.83	14.86	14.02	111%	0.00	11.77
21328	6888	30	14.98	16.92	9.66	69%	4.63	7.16
21046	21045	15	1.39	11.79	0.61	62%	0.52	-
21045	21043	15	4.05	12.26	0.40	21%	3.18	-
21043	21042	15	2.51	12.75	0.81	78%	0.55	-
21042	41529	15	2.52	10.08	0.81	78%	0.56	-
20812	20811	12	1.93	6.50	0.63	70%	0.58	-
20811	20810	12	1.77	8.20	0.65	76%	0.42	-
20810	20809	12	1.60	12.88	0.71	84%	0.25	-
20809	20808	12	1.97	20.42	0.62	68%	0.62	-
20808	20807	12	1.49	16.48	0.75	90%	0.14	-
20807	20806	12	2.48	9.94	0.54	54%	1.13	-
20806	20805	12	4.45	7.64	0.39	30%	3.10	-
20805	20804	12	2.12	12.25	0.65	74%	0.54	-
20804	20803	12	5.48	8.30	0.38	29%	3.90	-
20803	20799	12	3.67	12.60	0.47	43%	2.09	-
20799	20798	12	3.58	9.80	0.68	78%	0.80	-
20798	20797	12	3.49	15.04	0.58	64%	1.27	-
20797	20796	12	3.16	8.44	0.59	64%	1.15	-
20796	20795	12	3.21	8.55	0.58	62%	1.23	-
20795	37148	15	6.37	10.03	0.54	31%	4.36	-
20794	36990	15	5.91	9.12	0.52	34%	3.90	-
20793	69152	16	5.36	12.49	0.65	44%	2.99	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
20783	56667	15	3.47	17.40	9.73	111%	0.00	8.48
20782	41252	15	2.55	11.48	6.44	156%	0.00	5.19
20781	20780	15	4.47	9.25	2.91	91%	0.42	1.66
20780	20779	15	4.87	8.28	4.52	83%	0.82	3.27
20779	20778	15	5.14	9.24	5.73	80%	1.01	4.48
20778	57146	15	4.29	10.35	8.26	94%	0.25	7.01
20777	30726	15	5.71	9.89	7.41	81%	1.07	6.16
20776	20775	15	5.61	11.33	8.28	82%	1.01	7.03
20775	20774	15	4.60	9.62	9.41	100%	0.02	8.16
20774	20773	15	4.19	10.65	9.39	109%	0.00	8.14
20773	20772	15	4.54	8.23	8.09	100%	0.00	6.84
20772	20771	15	4.55	10.38	7.94	102%	0.00	6.69
20771	20770	18	3.80	10.31	7.49	124%	0.00	5.99
20770	20769	18	5.65	10.75	5.34	83%	0.93	3.84
20769	20768	18	6.76	12.44	6.41	70%	2.04	4.91
20768	20767	18	6.95	9.26	9.36	66%	2.34	7.86
20767	20766	27	11.25	16.52	11.48	70%	3.33	9.23
20766	20765	27	8.57	16.61	12.79	92%	0.66	10.54
20765	20764	27	8.31	17.81	13.08	95%	0.39	10.83
20764	20763	27	8.55	18.48	13.24	103%	0.00	10.99
20763	20762	27	11.21	15.83	13.20	85%	1.72	10.95
20762	21329	27	8.72	17.03	14.13	109%	0.00	11.88
20761	20760	27	8.89	15.66	13.67	111%	0.00	11.42
20760	20759	30	5.75	13.73	13.64	172%	0.00	11.14
20759	20758	30	5.53	16.37	12.62	178%	0.00	10.12
20758	20757	30	6.00	11.11	11.22	161%	0.00	8.72
20757	20756	30	4.99	10.80	10.81	194%	0.00	8.31
20756	20755	30	5.78	10.35	10.47	168%	0.00	7.97
20755	20754	30	8.76	27.22	10.37	113%	0.00	7.87
20754	20753	30	1.77	23.92	10.84	582%	0.00	8.34
20753	21328	30	8.76	16.59	9.38	118%	0.00	6.88
20553	37013	27	21.67	15.36	1.82	54%	9.87	-
20314	18454	12	4.89	7.66	1.96	48%	2.56	0.96

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
20127	18554	15	2.28	7.43	1.33	86%	0.32	0.08
20126	18553	15	3.22	8.10	1.50	66%	1.10	0.25
19910	17762	12	3.43	11.13	0.65	72%	0.98	-
19876	19875	12	1.73	9.78	5.69	123%	0.00	4.69
19875	19874	12	2.38	9.73	5.25	89%	0.26	4.25
19874	19873	12	3.96	11.93	5.53	54%	1.84	4.53
19873	6955	24	11.35	10.88	10.48	151%	0.00	8.48
19706	6947	24	16.10	13.34	6.97	114%	0.00	4.97
19657	17760	12	6.10	12.46	0.45	40%	3.65	-
19143	22225	21	4.35	13.52	2.34	89%	0.47	0.59
19143	59276	21	19.39	13.52	2.11	16%	16.21	0.36
19142	34175	21	11.95	14.33	2.75	33%	8.03	1.00
19141	7308	21	11.40	13.25	3.70	105%	0.00	1.95
18586	902012	24	10.73	9.16	7.51	128%	0.00	5.51
18586	902012	24	10.73	9.16	4.84	46%	5.84	2.84
18555	20127	15	3.00	6.77	0.92	65%	1.04	-
18554	39224	15	2.91	7.65	1.47	68%	0.94	0.22
18553	18552	15	2.45	7.63	1.77	87%	0.33	0.52
18552	18496	15	2.73	10.35	2.08	78%	0.61	0.83
18496	901391	15	1.34	9.20	2.49	187%	0.00	1.24
18463	18458	10	2.32	15.95	0.56	86%	0.32	-
18458	18457	12	5.30	9.19	0.41	32%	3.58	-
18457	18456	12	5.79	10.72	0.39	30%	4.07	-
18456	45724	12	4.19	8.64	0.46	41%	2.47	-
18455	20314	12	4.78	8.25	0.50	49%	2.45	-
18454	18453	12	5.17	7.86	5.82	45%	2.84	4.82
18453	18452	12	2.75	8.76	7.27	85%	0.42	6.27
18452	6928	42	7.10	11.49	10.83	296%	0.00	7.33
18322	18321	21	13.13	10.28	0.94	53%	6.17	-
18321	7309	21	9.56	13.32	1.50	73%	2.61	-
18241	7311	21	7.28	21.26	1.42	96%	0.32	-
18202	6885	12	1.79	19.43	12.86	129%	0.00	11.86
18064	18063	12	2.00	13.12	1.15	64%	0.72	0.15

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
18063	17775	12	1.55	14.10	1.42	82%	0.27	0.42
17969	9040	15	3.87	9.20	0.70	59%	1.60	-
17949	9039	15	5.30	16.00	0.59	43%	3.03	-
17775	17774	12	2.18	22.74	0.56	59%	0.90	-
17774	17773	12	6.84	12.74	0.31	19%	5.56	-
17773	17772	12	2.76	16.50	0.49	46%	1.48	-
17772	17771	12	4.84	8.94	0.36	26%	3.56	-
17771	17770	12	5.05	8.65	0.36	25%	3.77	-
17770	17769	12	4.29	10.53	0.39	30%	3.01	-
17769	17768	12	4.61	9.15	0.37	28%	3.33	-
17768	17767	12	2.47	8.97	0.52	52%	1.19	-
17767	17766	12	0.63	11.00	1.06	203%	0.00	0.06
17766	17765	12	2.84	6.93	0.49	45%	1.56	-
17765	48242	12	5.59	14.08	0.34	23%	4.31	-
17764	17763	12	2.76	9.80	0.90	89%	0.29	-
17763	19910	12	3.22	12.88	0.66	76%	0.76	-
17762	17761	12	4.35	9.39	0.55	56%	1.90	-
17761	19657	12	5.56	2.96	0.48	44%	3.11	-
17760	17759	12	4.26	13.40	0.56	58%	1.81	-
17759	17758	12	1.27	10.90	5.52	192%	0.00	4.52
17758	17757	12	4.94	26.73	3.77	49%	2.51	2.77
17757	17756	12	1.90	7.53	7.47	117%	0.00	6.47
17756	17755	12	1.10	13.16	7.46	203%	0.00	6.46
17755	17754	12	1.40	6.10	6.12	142%	0.00	5.12
17754	17753	12	1.51	6.85	6.08	126%	0.00	5.08
17753	17752	12	1.51	7.37	5.68	121%	0.00	4.68
17752	34447	12	1.28	5.60	5.42	143%	0.00	4.42
17751	17750	12	1.38	9.45	3.93	168%	0.00	2.93
17750	17749	12	1.49	7.73	1.75	156%	0.00	0.75
17749	46796	12	5.48	4.63	0.47	42%	3.16	-
17748	17747	12	2.92	5.00	0.69	79%	0.60	-
17747	18202	12	14.96	6.12	0.31	15%	12.64	-
17375	45753	30	38.12	10.90	8.17	48%	19.86	5.67

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
17297	17764	12	2.92	9.64	0.71	84%	0.47	-
16604	7320	10	2.61	14.88	0.24	16%	2.19	-
16596	7333	10	1.00	17.80	0.57	60%	0.40	-
16581	7328	10	2.95	13.15	0.36	37%	1.86	-
16535	7330	15	5.93	15.92	0.25	6%	5.56	-
16379	16379N	42	20.88	17.22	12.07	198%	0.00	8.57
16038	16037	18	8.81	16.89	1.14	34%	5.82	-
16037	16036	18	6.69	12.93	0.95	72%	1.90	-
16036	42233	18	6.58	17.71	1.08	86%	0.91	-
15872	15871	30	20.58	13.36	8.74	88%	2.41	6.24
15871	6936	30	17.56	15.08	9.15	103%	0.00	6.65
15751	40488	27	21.21	16.43	7.42	87%	2.72	5.17
15271	22538	15	6.83	12.27	0.33	13%	5.96	-
15270	30591	15	4.91	14.11	0.54	37%	3.10	-
15270	9042	15	5.74	14.11	0.38	18%	4.70	-
15269	42234	18	10.33	11.33	9.84	37%	6.54	8.34
14937	5134	10	1.05	8.81	0.59	83%	0.18	-
14565	6885	42	77.24	11.66	9.43	56%	33.68	5.93
14458	14456	12	2.32	4.94	0.66	76%	0.56	-
14456	14455	12	2.91	5.04	0.65	73%	0.78	-
14455	14454	12	2.78	5.04	0.83	77%	0.65	-
14454	19876	12	5.21	5.28	2.03	41%	3.09	1.03
13939	20805	12	7.90	11.48	0.16	4%	7.61	-
9042	9041	15	4.28	13.90	0.44	24%	3.24	-
9041	17969	15	4.48	9.87	0.50	31%	3.09	-
9040	17949	15	4.86	9.47	0.62	47%	2.59	-
9039	16038	18	6.50	9.50	0.73	46%	3.51	-
8195	37032	12	1.14	9.27	0.54	62%	0.44	-
7335	7334	10	2.75	12.20	0.24	15%	2.33	-
7334	16604	10	2.50	9.74	0.24	17%	2.08	-
7333	7332	10	2.63	9.80	0.44	52%	1.25	-
7332	7316	10	1.89	10.83	0.52	67%	0.62	-
7330	7329	15	3.73	12.56	0.27	10%	3.36	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
7329	7328	15	5.22	15.72	0.26	7%	4.85	-
7328	7327	18	5.83	17.40	0.52	25%	4.38	-
7327	7326	18	5.89	19.36	0.52	25%	4.44	-
7326	7325	18	6.13	21.58	0.51	24%	4.68	-
7325	52651	18	6.84	11.66	0.54	21%	5.39	-
7324	7323	18	7.79	15.10	0.73	45%	4.29	-
7323	7322	18	6.48	16.67	0.79	54%	2.98	-
7322	7321	18	7.33	14.03	0.75	48%	3.83	-
7321	7320	18	7.90	14.30	0.72	44%	4.40	-
7320	7319	21	11.54	16.31	0.73	34%	7.64	-
7319	7318	21	9.80	18.35	0.77	40%	5.90	-
7318	7317	21	7.59	11.74	0.89	51%	3.69	-
7317	7316	21	8.38	13.97	0.85	47%	4.48	-
7316	7315	21	10.03	16.37	1.77	50%	4.98	0.02
7315	22223	21	4.64	12.81	2.35	109%	0.00	0.60
7314	18241	21	3.91	13.05	2.94	178%	0.00	1.19
7311	18322	21	7.06	22.19	1.48	99%	0.10	-
7309	19143	21	9.14	12.67	1.86	76%	2.16	0.11
7308	7305	21	12.52	11.52	3.03	96%	0.53	1.28
7305	7303	21	14.82	14.39	1.23	81%	2.83	-
7303	7302	21	17.06	15.30	1.11	70%	5.07	-
7302	7301	24	22.65	12.32	1.06	53%	10.66	-
7301	7300	24	20.70	12.41	1.18	58%	8.71	-
7300	55251	24	11.77	12.86	4.84	101%	0.00	2.84
7298	7297	24	9.58	9.60	6.43	134%	0.00	4.43
7297	7296	24	12.77	8.72	5.67	100%	0.00	3.67
7296	7295	24	9.00	9.45	6.10	142%	0.00	4.10
7295	61948	24	18.62	10.07	5.14	69%	5.83	3.14
7289	7256	10	0.68	5.89	1.70	122%	0.00	0.86
7256	7255	12	0.84	8.90	0.77	99%	0.01	-
7255	7254	12	0.98	10.50	0.71	85%	0.15	-
7254	7253	12	0.89	9.16	0.77	93%	0.06	-
7253	7252	12	1.53	11.25	0.53	54%	0.70	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
7252	6995	12	2.61	11.35	0.40	32%	1.78	-
7071	33444	10	1.58	9.54	0.46	51%	0.78	-
7051	7050	10	1.89	10.30	9.52	130%	0.00	8.69
7050	7049	10	1.77	10.10	6.23	139%	0.00	5.39
7049	6977	10	1.22	9.79	3.35	201%	0.00	2.51
6995	37990	12	5.29	9.44	0.29	16%	4.46	-
6990	32475	15	3.80	20.83	0.50	33%	2.55	-
6989	6988	15	4.13	9.12	0.48	30%	2.88	-
6988	6987	15	4.47	11.54	0.47	28%	3.22	-
6987	6985	15	4.20	12.34	0.65	52%	2.02	-
6985	6984	15	4.15	15.95	0.64	52%	1.98	-
6984	6983	15	3.71	11.11	0.70	59%	1.54	-
6983	6982	16	4.84	9.30	0.64	45%	2.67	-
6982	6981	15	5.06	10.96	0.70	58%	2.14	-
6981	6980	15	5.04	10.79	0.70	58%	2.12	-
6980	6979	18	8.55	11.17	0.63	34%	5.64	-
6979	6978	18	6.74	11.19	0.70	43%	3.83	-
6978	33451	18	6.70	9.18	0.70	44%	3.79	-
6977	33451	18	6.09	10.57	0.66	40%	3.64	-
6970	6969	15	4.77	12.01	0.43	25%	3.58	-
6969	6968	15	4.56	9.61	1.24	25%	3.40	-
6968	6967	15	3.35	9.37	3.71	35%	2.19	2.46
6967	6966	15	4.14	9.40	7.15	54%	1.91	5.90
6966	6965	18	6.25	10.81	7.53	51%	3.07	6.03
6965	15269	18	7.40	11.76	7.81	43%	4.22	6.31
6958	22009	24	30.51	11.88	10.98	2%	29.90	8.98
6957	6956	24	10.33	11.15	10.58	113%	0.00	8.58
6957	6956	24	10.33	11.15	8.31	38%	6.36	6.31
6956	19873	24	12.41	11.45	10.44	96%	0.48	8.44
6956	19873	24	12.41	11.45	7.65	30%	8.72	5.65
6955	6954	24	12.80	10.65	9.35	133%	0.00	7.35
6954	18586	24	13.00	8.05	8.05	130%	0.00	6.05
6953	38525	24	13.33	8.60	7.36	105%	0.00	5.36

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
6953	38525	24	13.33	8.60	5.01	36%	8.56	3.01
6952	6950	24	5.72	9.30	6.84	187%	0.00	4.84
6952	6951	24	11.09	9.30	6.78	77%	2.51	4.78
6951	6950	24	16.01	13.74	6.96	52%	7.72	4.96
6950	6949	24	14.83	14.06	7.48	120%	0.00	5.48
6949	6948	24	16.75	12.32	7.29	106%	0.00	5.29
6948	32394	24	9.21	13.46	7.31	193%	0.00	5.31
6947	6946	24	14.95	13.49	6.84	123%	0.00	4.84
6946	6945	27	20.33	12.04	6.46	91%	1.77	4.21
6945	6944	27	16.62	11.80	6.97	110%	0.00	4.72
6944	6943	27	18.87	13.02	6.91	97%	0.52	4.66
6943	901676	27	19.93	13.83	7.00	92%	1.59	4.75
6942	6939	30	21.32	12.08	7.63	84%	3.31	5.13
6941	6940	30	23.41	10.86	7.00	79%	4.94	4.50
6940	6942	30	20.90	11.22	7.12	88%	2.52	4.62
6939	6938	30	21.47	9.84	8.31	83%	3.58	5.81
6938	17375	30	19.60	10.28	8.00	93%	1.28	5.50
6937	15872	30	21.00	12.03	8.45	87%	2.79	5.95
6936	6935	30	18.47	11.35	8.87	98%	0.34	6.37
6935	6934	30	19.87	14.62	8.55	97%	0.67	6.05
6934	6929	30	17.76	14.36	8.52	108%	0.00	6.02
6933	6932	30	18.44	10.96	8.94	102%	0.00	6.44
6932	46789	30	23.89	10.81	8.67	78%	5.14	6.17
6931	6930	42	45.11	14.79	9.26	43%	25.87	5.76
6930	18452	42	26.69	21.91	10.48	71%	7.70	6.98
6929	6933	30	21.17	10.90	8.37	90%	2.11	5.87
6928	6927	42	25.54	11.96	10.70	84%	4.05	7.20
6927	6926	42	6.87	14.45	10.78	313%	0.00	7.28
6926	6925	42	19.18	15.73	10.63	112%	0.00	7.13
6925	6924	42	19.29	15.13	10.52	115%	0.00	7.02
6924	6923	42	19.15	15.38	10.35	117%	0.00	6.85
6923	6921	42	23.10	21.73	10.21	97%	0.62	6.71
6921	61946	42	29.09	14.92	10.84	78%	6.33	7.34

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
6890	6889	24	8.73	16.24	7.32	-1%	8.78	5.32
6889	6888	24	9.51	12.79	7.94	-10%	10.47	5.94
6888	6887	42	29.56	17.66	11.25	142%	0.00	7.75
6887	6886	42	28.63	24.15	5.05	152%	0.00	1.55
6886	14565	42	129.77	15.48	2.44	34%	86.21	-
6885	6883	42	48.09	15.06	14.78	97%	1.44	11.28
6883	6882	42	8.98	14.90	15.28	456%	0.00	11.78
6882	6880	42	28.91	15.09	14.30	142%	0.00	10.80
6880	6879	42	26.91	14.80	12.91	154%	0.00	9.41
6879	6878	42	43.91	14.97	12.66	94%	2.52	9.16
6878	16379	42	23.28	17.47	12.56	178%	0.00	9.06
6877	6876	42	26.94	26.54	11.03	154%	0.00	7.53
6876	6876N	42	21.82	15.34	10.15	192%	0.00	6.65
6875	6874	42	21.73	14.86	8.77	193%	0.00	5.27
6874	JP1	42	21.31	13.83	8.28	197%	0.00	4.78
5134	18064	12	2.07	13.15	0.47	42%	1.20	-
4971	4970	10	2.22	8.71	0.30	25%	1.66	-
4970	2942	10	0.88	13.98	0.49	63%	0.32	-
2947	2946	10	1.97	13.55	0.31	28%	1.41	-
2946	2945	10	1.91	8.00	0.32	29%	1.35	-
2945	2943	10	1.37	14.28	0.38	41%	0.81	-
2943	4971	10	1.71	8.57	0.34	33%	1.15	-
2942	2941	10	0.84	19.97	0.50	66%	0.28	-
2941	2940	10	1.96	8.26	0.32	28%	1.40	-
2940	2939	10	2.38	10.67	0.29	23%	1.82	-
2939	2938	10	1.10	12.14	0.42	51%	0.54	-
2938	2937	10	0.94	15.90	0.47	59%	0.38	-
2937	2936	10	1.02	8.30	0.45	55%	0.46	-
2936	1508	10	1.02	10.49	0.45	55%	0.46	-
2900	7335	10	5.58	6.66	0.18	8%	5.16	-
1610	1609	10	1.01	8.34	0.13	0%	1.01	-
1609	1593	10	0.81	6.37	0.69	-1%	0.82	-
1593	29862	12	0.43	7.93	2.35	313%	0.00	1.35

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 10-YR 24-HR STORM								
Upstream Manhole	**Downstream Manhole**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
1507	16581	10	5.45	4.58	0.27	20%	4.36	-
150	901871	16	8.66	26.32	0.31	10%	7.82	-
70	52182	10	3.04	7.67	0.28	21%	2.40	-
66	61	10	2.42	6.06	0.30	27%	1.78	-
61	27	10	3.91	5.14	0.25	17%	3.23	-
27	23	15	4.64	22.26	0.45	25%	3.47	-
23	22	15	4.55	22.55	0.45	26%	3.38	-
22	19	15	2.66	24.63	0.59	44%	1.49	-
21	20	12	3.72	9.00	0.13	1%	3.68	-
20	19	12	0.42	9.49	0.75	11%	0.38	-
19	18	15	2.08	11.30	0.69	58%	0.87	-
18	56841	18	5.14	13.99	1.04	25%	3.88	-
12	11	24	9.29	12.70	0.20	2%	9.15	-
11	70352	24	18.68	15.86	0.24	1%	18.54	-

*Slope of pipe is zero therefore calculated capacity is zero

Hydraulic restrictions will impact capacity and surcharge conditon calculations causing cases where there is capacity in the pipe and there is also a surcharge

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
7052M	7051	1	10	0.00	9.95	9.95	*	0.00	9.11
6876N	6875	1	42	22.90	3.50	10.68	184%	0.00	7.18
54453A	54453	1	12	1.73	11.75	0.27	14%	1.48	-
54452A	54452	1	12	2.91	9.32	0.22	8%	2.66	-
45564A	45564	1	12	1.55	8.49	0.28	16%	1.30	-
38538A	38538	1	15	7.64	8.51	0.36	15%	6.47	-
38530A	38530	1	15	0.00	10.41	0.68	*	0.00	-
30590B	30590A	1	15	5.72	16.16	0.53	36%	3.69	-
30590A	30590	1	15	3.71	10.12	0.66	55%	1.68	-
30588A	30588	1	15	4.48	11.73	0.61	45%	2.45	-
22463A	22463	1	12	2.96	7.72	0.22	8%	2.71	-
16379N	6877	1	42	21.44	3.50	12.57	193%	0.00	9.07
902054	43825	1	15	4.58	6.13	0.96	14%	3.94	-
902012	6953	1	24	11.03	9.22	7.76	121%	0.00	5.76
902012	6953	3	24	11.03	9.22	5.23	36%	7.03	3.23
901871	52661	1	12	3.61	20.98	0.36	25%	2.70	-
901676	15751	1	27	18.70	16.02	8.05	100%	0.08	5.80
901391	901390	1	16	1.95	7.56	1.15	136%	0.00	-
901390	37990	1	15	9.04	8.68	0.48	29%	6.39	-
70352	70351	1	18	9.25	15.49	0.22	3%	9.01	-
70351	70350	1	18	13.78	9.74	0.20	2%	13.54	-
70350	70349	1	18	11.47	7.51	0.21	2%	11.23	-
70349	16535	1	18	11.51	9.39	0.21	2%	11.27	-
69152	69151	1	15	3.43	10.84	0.81	76%	0.83	-
69151	69150	1	15	5.47	23.51	0.62	47%	2.87	-
69150	69149	1	15	3.07	24.18	0.89	85%	0.47	-
69149	69147	1	15	3.51	27.33	0.80	74%	0.92	-
69147	69146	1	15	3.81	25.05	0.76	68%	1.22	-
69146	69145	1	16	3.74	21.10	0.83	69%	1.15	-
69145	69144	1	15	3.33	18.83	0.83	78%	0.74	-
69144	69143	1	16	4.25	16.85	0.76	61%	1.66	-
69143	69140	1	16	4.26	15.71	0.78	65%	1.50	-
69140	69139	1	16	4.55	16.05	0.76	61%	1.79	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
69139	69138	1	16	5.97	16.81	0.66	46%	3.21	-
69138	69136	1	16	2.70	19.89	1.22	106%	0.00	-
69136	69133	1	16	2.71	22.37	1.27	105%	0.00	-
69133	69132	1	16	2.69	21.85	1.21	106%	0.00	-
69132	69131	1	16	6.04	16.07	3.88	47%	3.19	2.54
69131	33527	1	15	2.68	23.44	10.50	106%	0.00	9.25
65511	65510	1	16	3.72	20.98	0.58	39%	2.27	-
65510	65509	1	16	3.88	25.72	0.57	37%	2.43	-
65509	65508	1	16	3.66	22.19	0.59	40%	2.21	-
65508	65507	1	16	3.57	18.58	0.59	41%	2.12	-
65507	65506	1	16	4.69	15.86	0.51	31%	3.24	-
65506	65505	1	16	3.47	14.82	0.60	42%	2.02	-
65505	65504	1	16	6.74	9.14	0.45	22%	5.29	-
65504	65503	1	16	2.31	9.61	0.73	63%	0.86	-
65503	65502	1	16	3.50	8.41	0.60	41%	2.05	-
65502	65501	1	16	2.62	7.90	0.69	55%	1.17	-
65501	65500	1	16	2.95	8.45	0.66	49%	1.50	-
65500	65499	1	16	4.25	9.65	0.55	34%	2.80	-
65499	65498	1	16	4.18	10.65	0.55	35%	2.73	-
65498	65497	1	16	6.97	11.34	0.44	21%	5.52	-
65497	34179	1	16	6.62	12.33	0.45	22%	5.17	-
65375	65374	1	18	4.33	15.58	0.61	34%	2.86	-
65374	65373	1	18	5.93	14.64	0.52	25%	4.47	-
65373	6990	1	18	9.53	17.22	0.43	15%	8.07	-
65333	65332	1	15	3.92	9.54	0.37	19%	3.18	-
65332	65331	1	15	2.41	16.48	0.48	31%	1.67	-
65331	65330	1	15	2.95	26.03	0.43	25%	2.21	-
65330	65329	1	15	6.57	10.88	0.31	11%	5.83	-
65329	65328	1	15	5.93	11.77	0.33	12%	5.19	-
65328	65327	1	15	3.83	11.30	0.38	19%	3.09	-
65327	65326	1	15	2.48	11.60	0.47	30%	1.74	-
65326	65325	1	15	3.02	24.96	0.43	25%	2.28	-
65325	65324	1	15	2.95	15.70	0.43	25%	2.21	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
65324	65323	1	15	6.73	18.66	0.31	11%	5.99	-
65323	65322	1	15	1.63	11.36	0.59	45%	0.89	-
65322	65321	1	15	7.51	17.20	0.29	10%	6.77	-
65321	65320	1	15	5.85	16.42	0.33	13%	5.11	-
65320	65319	1	15	5.95	14.96	0.32	12%	5.21	-
65319	65318	1	15	5.60	16.72	0.33	13%	4.86	-
65318	65317	1	15	5.60	13.60	0.33	13%	4.86	-
65317	65316	1	15	3.16	15.65	0.42	23%	2.42	-
65316	65315	1	15	2.34	15.41	0.49	32%	1.60	-
65315	65511	1	15	2.99	12.51	0.44	25%	2.25	-
61948	61947	1	36	33.24	17.39	9.04	41%	19.70	6.04
61947	61946	1	36	27.53	13.63	10.13	49%	14.08	7.13
61946	6888	1	42	80.26	17.46	11.96	44%	44.96	8.46
59276	59275	1	20	3.80	15.36	4.38	91%	0.34	2.72
59275	59274	1	20	7.24	18.18	4.52	48%	3.77	2.85
59274	34175	1	20	9.20	20.63	4.79	56%	4.04	3.12
59222	59221	1	12	1.68	15.58	0.42	36%	1.07	-
59221	70	1	10	1.78	9.60	0.35	34%	1.17	-
57167	43386	1	12	5.70	8.95	0.18	5%	5.43	-
57146	44548	1	15	3.94	11.19	8.94	116%	0.00	7.69
56841	33296	1	18	3.73	14.72	0.64	37%	2.33	-
56667	20782	1	15	3.16	11.30	9.45	126%	0.00	8.20
55251	7298	1	24	14.53	9.08	8.27	96%	0.57	6.27
54556	53962	1	10	1.07	22.61	0.55	76%	0.26	-
54456	54455	1	12	1.32	11.40	0.29	19%	1.07	-
54455	54454	1	12	3.36	13.79	0.21	7%	3.11	-
54454	54453A	1	12	3.99	10.52	0.20	6%	3.74	-
54453	54452A	1	12	2.31	12.20	0.24	11%	2.06	-
54452	54451	1	12	4.02	15.01	0.20	6%	3.77	-
54451	45568	1	12	4.09	12.89	0.20	6%	3.84	-
53962	53961	1	10	0.89	14.80	0.64	91%	0.08	-
53961	53960	1	10	0.94	8.87	0.60	86%	0.13	-
53960	53959	1	10	0.97	11.50	0.59	84%	0.16	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
53959	53958	1	10	0.88	15.72	0.64	92%	0.07	-
53958	53957	1	10	1.04	20.67	0.58	78%	0.23	-
53957	53956	1	10	0.85	22.02	0.65	95%	0.04	-
53956	53955	1	10	1.15	24.87	0.53	71%	0.34	-
53955	41133	1	10	0.84	20.33	0.91	97%	0.03	0.07
53270	44213	1	10	0.71	10.54	10.56	168%	0.00	9.73
52661	52660	2	12	7.21	18.44	0.26	13%	6.30	-
52660	52659	1	21	36.86	11.84	0.33	6%	34.81	-
52659	52658	1	21	9.16	14.29	0.57	22%	7.11	-
52658	52657	1	21	5.62	17.66	0.74	36%	3.57	-
52657	52656	1	24	8.42	18.15	0.71	26%	6.23	-
52656	52655	1	24	4.65	19.10	0.93	47%	2.46	-
52655	52654	1	24	56.68	18.73	0.33	4%	54.49	-
52654	52653	1	24	15.09	11.22	0.56	15%	12.90	-
52653	52652	1	24	57.57	13.97	0.33	4%	55.38	-
52652	52651	1	24	14.94	17.83	0.56	15%	12.75	-
52651	7324	1	18	6.85	12.30	0.83	56%	2.98	-
52364	36947	1	15	5.29	10.80	0.53	34%	3.47	-
52182	66	1	10	2.57	7.11	0.31	28%	1.84	-
52175	52174	1	16	10.45	7.79	0.15	1%	10.39	-
52174	52173	1	16	11.60	8.01	0.15	0%	11.54	-
52173	52172	1	16	5.32	7.86	0.16	1%	5.26	-
52172	52171	1	16	3.50	23.69	0.13	2%	3.44	-
52171	52170	1	16	4.18	21.63	0.12	1%	4.12	-
52170	18	1	16	22.42	18.25	0.14	0%	22.36	-
52089	52088	1	15	3.02	11.00	0.89	79%	0.63	-
52088	36931	1	15	1.98	11.28	1.08	121%	0.00	-
52028	52027	1	10	1.03	11.67	0.48	62%	0.39	-
52027	52026	1	10	1.40	11.59	0.41	46%	0.76	-
52026	52025	1	10	1.63	8.40	0.37	39%	0.99	-
52025	52024	1	10	1.79	8.30	0.36	36%	1.15	-
52024	902054	1	15	4.53	8.27	0.34	14%	3.89	-
49997	36917	1	18	10.27	7.05	0.57	29%	7.28	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
48242	17297	1	12	5.79	10.95	0.50	48%	2.99	-
48063	42229	1	24	24.93	120.22	12.12	29%	17.70	10.12
47036	36944	1	15	5.09	8.11	0.59	42%	2.94	-
47025	36942	1	15	3.62	11.75	0.70	59%	1.48	-
46796	17748	1	12	4.95	4.40	0.50	47%	2.61	-
46789	6931	1	30	19.86	11.02	9.79	98%	0.48	7.29
45753	6937	1	30	18.97	11.34	9.19	96%	0.71	6.69
45724	18455	1	12	4.10	10.01	0.58	62%	1.57	-
45592	22464	1	12	2.38	8.25	0.24	10%	2.13	-
45585	22457	1	12	1.16	11.39	0.32	21%	0.91	-
45568	22490	1	12	4.47	11.05	0.19	6%	4.22	-
45567	45566	1	12	4.46	14.37	0.19	6%	4.21	-
45566	45565	1	12	4.75	10.08	0.18	5%	4.50	-
45565	45564A	1	12	3.59	9.68	0.20	7%	3.34	-
45564	45563	1	12	2.73	11.65	0.22	9%	2.48	-
45563	22466	1	12	4.74	8.74	0.18	5%	4.49	-
44548	20777	1	15	4.28	9.03	8.77	111%	0.00	7.52
44225	44224	1	10	0.69	12.98	12.50	116%	0.00	11.66
44224	44223	1	10	0.63	14.85	12.44	127%	0.00	11.61
44223	44222	1	10	0.78	14.30	11.92	124%	0.00	11.08
44222	44221	1	10	0.65	16.04	11.37	149%	0.00	10.54
44221	44220	1	10	0.72	17.71	10.56	134%	0.00	9.73
44220	44219	1	10	0.68	10.99	9.40	142%	0.00	8.56
44219	44218	1	10	0.79	8.59	8.68	106%	0.00	7.84
44218	44217	1	10	0.78	15.42	9.66	107%	0.00	8.82
44217	44216	1	10	0.84	12.02	10.82	100%	0.00	9.99
44216	44215	1	10	0.80	11.87	11.86	126%	0.00	11.02
44215	44214	1	10	0.80	11.29	11.28	124%	0.00	10.44
44214	53270	1	10	0.87	12.30	10.71	114%	0.00	9.88
44213	44212	1	10	0.81	9.79	9.80	144%	0.00	8.96
44212	44211	1	10	0.80	10.62	9.58	144%	0.00	8.74
44211	44210	1	10	0.80	11.54	9.28	144%	0.00	8.44
44210	44209	1	10	0.52	15.76	8.91	283%	0.00	8.08

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
44209	44208	1	24	5.12	13.54	6.61	29%	3.65	4.61
44208	34385	1	24	4.66	13.72	7.21	32%	3.19	5.21
43865	42055	1	12	1.94	18.39	0.33	22%	1.51	-
43826	52024	1	15	3.12	8.28	0.22	0%	3.12	-
43825	43824	1	15	3.07	8.08	1.90	21%	2.44	0.65
43786	44225	1	12	1.79	11.00	10.67	45%	0.99	9.67
43502	43501	1	16	3.68	6.59	1.23	56%	1.62	-
43501	18555	1	18	4.20	6.75	1.34	49%	2.14	-
43387	57167	1	12	4.32	10.56	0.20	6%	4.05	-
43386	43385	1	12	3.22	10.71	0.22	8%	2.95	-
43385	43384	1	12	2.33	9.59	0.29	17%	1.95	-
43384	43383	1	12	5.32	7.57	0.27	14%	4.60	-
43383	43382	1	15	7.89	13.32	0.30	10%	7.08	-
43382	43381	1	15	2.12	13.27	0.54	38%	1.31	-
43381	150	1	15	46.14	9.53	0.17	2%	45.33	-
42603	36945	1	15	4.16	7.77	0.62	48%	2.17	-
42234	42228	1	30	29.98	40.38	14.10	58%	12.58	11.60
42233	42232	1	24	7.28	28.20	1.36	89%	0.83	-
42232	42231	1	24	12.99	102.54	1.00	50%	6.54	-
42231	42230	1	24	22.99	106.64	0.79	28%	16.55	-
42230	48063	1	24	24.44	116.70	8.91	26%	18.11	6.91
42229	42228	1	24	18.63	18.16	14.33	39%	11.41	12.33
42228	22013	1	24	11.46	35.56	15.04	212%	0.00	13.04
42055	42054	1	15	4.56	20.59	0.61	45%	2.51	-
42054	42053	1	15	3.67	19.39	0.68	56%	1.62	-
42053	42052	1	15	2.46	16.20	0.83	83%	0.41	-
42052	42051	1	15	5.81	14.83	0.53	35%	3.76	-
42051	42050	1	14	42.09	17.01	0.21	5%	40.04	-
42050	34836	1	14	11.24	14.13	0.36	18%	9.19	-
41530	43502	5	16	2.58	9.90	0.92	80%	0.52	-
41529	41530	1	16	4.32	8.90	0.71	48%	2.26	-
41429	41116	1	10	2.16	7.59	5.20	67%	0.71	4.36
41428	41427	1	12	1.36	6.34	2.70	106%	0.00	1.70

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
41427	1593	1	12	2.48	6.10	2.57	58%	1.03	1.57
41252	20781	1	15	3.10	8.85	3.90	131%	0.00	2.65
41133	41132	1	10	2.04	21.77	0.38	40%	1.23	-
41132	41131	1	10	0.90	21.25	0.62	90%	0.09	-
41131	41130	1	10	1.12	16.09	0.53	72%	0.31	-
41130	41129	1	10	1.11	11.55	0.54	73%	0.30	-
41129	41128	1	10	1.14	11.85	0.63	71%	0.33	-
41128	41127	1	10	1.33	12.65	2.21	61%	0.52	1.38
41127	41126	1	10	1.57	12.20	4.75	84%	0.25	3.92
41126	41125	1	10	1.62	12.30	4.93	81%	0.31	4.10
41125	41124	1	10	0.38	12.69	5.67	343%	0.00	4.83
41124	41123	1	10	1.17	12.15	5.40	111%	0.00	4.57
41123	41122	1	10	1.44	9.80	4.99	89%	0.16	4.15
41122	41121	1	10	2.00	8.47	6.01	62%	0.75	5.18
41121	41120	1	10	0.95	8.85	7.07	131%	0.00	6.24
41120	41119	1	10	0.94	8.20	6.57	155%	0.00	5.73
41119	41118	1	10	1.44	8.17	4.86	101%	0.00	4.02
41118	41117	1	10	2.21	8.41	4.58	78%	0.49	3.75
41117	41429	1	10	0.92	8.87	5.86	158%	0.00	5.03
41116	41115	1	10	0.67	9.19	6.11	216%	0.00	5.28
41115	41114	1	10	0.92	8.01	3.35	157%	0.00	2.52
41114	41428	1	10	1.28	6.72	2.91	113%	0.00	2.07
40488	6941	1	27	10.59	18.46	8.67	176%	0.00	6.42
39741	39739	1	12	1.45	7.65	4.25	94%	0.08	3.25
39739	39738	1	12	0.84	11.80	4.27	160%	0.00	3.27
39738	39737	1	12	2.12	10.57	4.05	62%	0.80	3.05
39737	39736	1	12	0.90	12.25	5.01	147%	0.00	4.01
39736	39735	1	12	2.70	5.04	4.35	49%	1.38	3.35
39735	39734	1	12	0.30	8.01	5.10	440%	0.00	4.10
39734	39733	1	12	1.58	9.80	4.54	83%	0.26	3.54
39733	23779	1	12	3.90	7.95	4.72	34%	2.58	3.72
39458	38645	1	15	2.80	9.55	0.50	33%	1.87	-
39224	20126	1	15	1.32	7.64	2.09	169%	0.00	0.84

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
39118	39117	1	12	1.77	9.52	0.28	17%	1.48	-
39117	38084	1	12	3.22	3.55	0.23	9%	2.93	-
38839	38533	1	15	3.01	10.13	0.57	43%	1.72	-
38838	38532	1	15	5.33	9.46	0.44	24%	4.04	-
38773	33440	1	27	19.80	9.20	7.90	70%	5.93	5.65
38649	38648	1	15	3.52	10.35	0.29	12%	3.11	-
38648	38647	1	15	3.94	7.15	0.42	24%	3.01	-
38647	38646	1	15	4.58	13.09	0.41	20%	3.65	-
38646	39458	1	15	2.95	12.75	0.49	32%	2.02	-
38645	38644	1	15	2.19	11.01	0.55	42%	1.26	-
38644	38643	1	15	6.81	11.89	0.37	17%	5.64	-
38643	38642	1	15	2.96	6.51	0.55	40%	1.79	-
38642	38539	1	15	8.05	8.80	0.35	15%	6.88	-
38539	38538A	1	15	4.52	8.01	0.45	26%	3.35	-
38538	38537	1	15	3.79	6.92	0.48	31%	2.62	-
38537	38536	1	15	3.28	5.18	0.55	39%	1.99	-
38536	38535	1	15	1.48	9.72	0.77	87%	0.19	-
38535	38534	1	15	3.32	11.48	0.54	39%	2.03	-
38534	38839	1	15	5.70	10.35	0.44	23%	4.41	-
38533	38838	1	15	6.21	9.20	0.41	21%	4.92	-
38532	38531	1	15	3.29	9.31	0.54	39%	2.00	-
38531	38530A	1	15	3.54	8.55	0.53	36%	2.25	-
38530	38529	1	15	4.42	10.64	0.48	29%	3.13	-
38529	38528	1	15	5.03	6.75	0.45	26%	3.74	-
38528	38527	1	15	4.15	7.18	0.48	31%	2.86	-
38527	38526	1	15	4.76	7.35	1.86	27%	3.50	0.61
38526	38525	1	15	5.43	6.70	4.11	23%	4.18	2.86
38525	6952	1	24	11.66	8.66	7.68	155%	0.00	5.68
38085	36954	1	12	2.22	8.39	0.27	15%	1.88	-
38084	38083	1	12	4.52	7.36	0.20	7%	4.23	-
38083	38081	1	12	1.68	8.01	0.48	45%	0.92	-
38081	38080	1	12	1.91	10.66	0.44	40%	1.15	-
38080	38079	1	12	2.52	7.56	0.39	30%	1.77	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
38079	38078	1	12	2.08	7.63	0.42	36%	1.33	-
38078	38077	1	12	2.84	16.52	0.36	26%	2.09	-
38077	38076	1	12	3.23	7.51	0.35	23%	2.48	-
38076	38075	1	12	2.89	9.52	0.36	26%	2.15	-
38075	38074	1	12	3.21	7.63	0.35	23%	2.47	-
38074	38073	1	12	2.48	8.21	0.39	30%	1.74	-
38073	38072	1	12	3.17	10.79	0.35	23%	2.43	-
38072	36952	1	15	3.11	13.97	0.64	52%	1.49	-
37991	37990	1	30	16.93	11.72	0.59	6%	15.85	-
37990	37989	1	30	19.62	10.38	0.83	23%	15.09	-
37989	37988	1	30	16.71	11.32	0.90	27%	12.18	-
37988	37987	1	30	16.97	11.80	0.89	27%	12.44	-
37987	37986	1	30	16.78	13.18	0.89	27%	12.25	-
37986	33466	1	27	23.90	12.86	0.70	19%	19.37	-
37148	20794	1	15	4.20	10.61	0.65	52%	2.02	-
37032	37031	1	12	2.70	9.08	0.37	27%	1.96	-
37031	37030	1	12	1.24	8.03	0.52	60%	0.50	-
37030	65333	1	15	7.16	8.17	0.30	10%	6.42	-
37014	20553	1	27	22.86	11.88	1.27	51%	11.24	-
37013	37012	1	27	17.06	15.10	1.44	74%	4.50	-
37012	37011	1	27	24.41	14.15	1.14	51%	11.85	-
37011	37010	1	27	20.31	11.37	1.36	62%	7.77	-
37010	37009	2	27	22.18	9.00	1.25	57%	9.65	-
37009	33448	1	27	19.98	8.93	1.31	65%	7.06	-
36990	20793	1	15	5.49	9.63	0.57	41%	3.26	-
36963	36962	1	12	4.46	10.91	0.17	4%	4.26	-
36962	36961	1	12	4.30	9.41	0.18	5%	4.10	-
36961	36960	1	12	4.21	13.14	0.18	5%	4.01	-
36960	36959	1	12	3.62	8.33	0.19	6%	3.42	-
36959	36958	1	12	3.94	12.25	0.18	5%	3.74	-
36958	36957	1	12	4.14	8.75	0.18	5%	3.94	-
36957	36956	1	12	2.57	12.55	0.21	8%	2.37	-
36956	36955	1	12	4.12	9.31	0.18	5%	3.92	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
36955	38085	1	12	2.09	11.54	0.22	10%	1.89	-
36954	36953	1	12	2.97	8.62	0.25	11%	2.63	-
36953	38072	1	15	4.09	8.82	0.44	26%	3.02	-
36952	36951	1	15	4.34	10.40	0.54	37%	2.72	-
36951	36950	1	15	4.48	9.31	0.54	36%	2.86	-
36950	36949	1	15	4.39	9.95	0.58	42%	2.56	-
36949	36948	1	15	3.44	9.72	0.65	53%	1.62	-
36948	52364	1	15	4.97	9.60	0.54	37%	3.15	-
36947	36946	1	15	5.72	10.64	0.50	32%	3.91	-
36946	42603	1	15	2.44	9.03	0.74	78%	0.54	-
36945	47036	1	15	4.92	8.29	0.58	42%	2.87	-
36944	47025	1	15	3.80	14.15	0.68	56%	1.66	-
36942	36941	1	15	3.72	15.34	0.70	60%	1.50	-
36941	36940	1	15	3.75	13.63	0.70	59%	1.53	-
36940	36939	1	15	5.73	10.89	0.55	39%	3.51	-
36939	36938	1	15	5.95	14.26	0.54	37%	3.73	-
36938	36937	1	15	6.60	11.53	0.53	35%	4.28	-
36937	36936	1	15	4.05	11.22	0.70	57%	1.73	-
36936	36935	1	15	3.71	10.80	0.73	62%	1.39	-
36935	36934	1	15	3.90	10.50	0.71	59%	1.58	-
36934	36933	1	15	3.60	5.34	0.74	64%	1.28	-
36933	52089	1	15	3.55	8.45	0.78	68%	1.15	-
36931	36930	1	15	2.72	14.94	0.92	88%	0.33	-
36930	36929	1	15	2.67	25.41	0.92	89%	0.29	-
36929	36928	1	15	3.54	9.48	0.79	69%	1.10	-
36928	36927	1	15	3.61	11.35	0.78	68%	1.17	-
36927	36926	1	18	5.67	15.92	0.73	45%	3.14	-
36926	36925	1	15	3.48	10.59	0.81	73%	0.95	-
36925	36924	1	18	6.74	10.96	0.65	38%	4.21	-
36924	36923	1	12	2.78	14.55	1.39	102%	0.00	0.39
36923	36922	1	18	8.14	9.74	0.64	35%	5.29	-
36922	36921	1	18	9.32	13.10	0.59	31%	6.47	-
36921	36920	1	18	12.20	12.90	0.52	23%	9.35	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
36920	36919	1	18	10.12	12.97	0.58	29%	7.16	-
36919	36918	1	18	10.38	10.69	0.57	28%	7.42	-
36918	49997	1	18	10.39	1.65	0.57	29%	7.40	-
36917	36916	1	18	8.06	13.08	0.65	37%	5.07	-
36916	36915	1	18	8.92	10.69	0.62	33%	5.93	-
36915	36914	1	18	9.59	12.09	0.60	31%	6.60	-
36914	36913	1	18	8.51	11.48	0.64	35%	5.52	-
36913	36912	1	18	6.21	9.89	0.74	48%	3.21	-
36912	36911	1	18	8.66	11.16	0.63	35%	5.66	-
36911	34383	1	18	7.13	10.71	3.83	42%	4.13	2.33
34836	33711	1	12	4.08	12.09	0.57	61%	1.58	-
34447	17751	1	12	1.53	9.36	5.31	153%	0.00	4.31
34385	34384	1	24	5.19	15.86	7.88	49%	2.63	5.88
34384	34383	1	24	4.98	11.75	8.53	51%	2.42	6.53
34383	34382	1	24	8.82	13.59	10.02	56%	3.87	8.02
34382	34381	1	24	7.10	14.22	10.42	70%	2.15	8.42
34381	20767	1	24	6.52	15.43	11.08	76%	1.57	9.08
34180	34179	1	12	3.15	10.06	0.21	7%	2.92	-
34179	34178	1	12	4.06	14.19	0.46	41%	2.38	-
34178	34177	1	12	4.55	15.64	0.43	37%	2.87	-
34177	34176	1	12	6.86	15.67	0.35	24%	5.18	-
34176	59274	1	12	6.12	14.60	0.37	27%	4.44	-
34175	19141	1	21	10.96	15.94	5.24	86%	1.57	3.49
33711	33710	1	12	3.43	7.58	0.65	73%	0.93	-
33710	33709	1	12	3.48	9.37	2.79	72%	0.98	1.79
33709	33708	1	12	3.79	6.90	4.73	70%	1.16	3.73
33708	33707	1	12	3.34	7.80	7.83	76%	0.79	6.83
33707	20761	1	12	0.62	11.42	11.59	393%	0.00	10.59
33532	33531	1	10	1.79	14.71	9.53	101%	0.00	8.70
33531	33530	1	10	1.75	13.29	10.82	99%	0.02	9.98
33530	33529	1	10	1.58	12.80	11.71	105%	0.00	10.87
33529	33528	1	12	1.23	13.86	10.58	135%	0.00	9.58
33528	33527	1	12	1.53	12.70	10.30	109%	0.00	9.30

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
33527	20783	1	15	2.88	10.40	10.47	134%	0.00	9.22
33470	30342	1	30	18.45	12.82	0.23	0%	18.45	-
33466	33465	1	27	16.23	10.66	0.98	39%	9.83	-
33465	33464	1	27	17.18	11.61	0.96	37%	10.81	-
33464	33463	1	27	17.12	12.19	0.96	37%	10.76	-
33463	33462	1	27	17.85	16.38	0.94	36%	11.50	-
33462	33461	1	27	17.65	11.58	0.94	36%	11.31	-
33461	33460	1	27	17.50	6.44	0.95	36%	11.17	-
33460	33459	1	27	20.33	14.09	0.90	31%	14.02	-
33459	33458	1	27	13.75	8.23	1.08	46%	7.45	-
33458	33457	1	27	36.06	9.12	0.67	17%	29.77	-
33457	33456	1	27	24.53	12.04	0.81	26%	18.24	-
33456	33455	1	27	24.22	11.65	0.81	26%	17.93	-
33455	33454	1	27	23.87	12.06	0.82	26%	17.58	-
33454	33453	1	27	20.32	11.89	0.89	31%	14.03	-
33453	33452	1	27	19.63	10.05	0.88	32%	13.35	-
33452	33451	1	27	17.72	11.90	1.46	35%	11.45	-
33451	37014	2	27	14.56	12.10	1.50	80%	2.94	-
33448	33447	1	27	34.51	10.17	1.01	40%	20.79	-
33447	33446	1	27	32.04	8.94	1.06	43%	18.32	-
33446	33445	1	27	27.09	9.63	1.36	53%	12.82	-
33445	33444	1	27	23.23	10.06	2.65	61%	9.00	0.40
33444	6970	1	10	1.29	12.98	0.97	148%	0.00	0.14
33444	33443	2	27	22.20	12.98	4.33	66%	7.61	2.08
33443	33442	1	27	21.67	10.65	5.42	65%	7.64	3.17
33442	38773	1	27	23.12	9.88	7.12	58%	9.72	4.87
33440	33439	1	27	15.04	10.63	9.29	90%	1.46	7.04
33439	33438	1	27	23.73	11.03	9.17	57%	10.19	6.92
33438	33437	1	30	33.56	9.94	8.27	40%	20.06	5.77
33437	42234	1	30	29.00	11.52	10.65	46%	15.56	8.15
33296	52660	1	18	7.17	9.01	0.43	16%	6.02	-
33295	12	1	24	10.44	10.17	0.24	2%	10.19	-
32475	6989	1	15	3.44	10.76	0.57	43%	1.98	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
32394	19706	1	24	20.96	13.24	7.22	87%	2.79	5.22
32263	32262	1	12	2.03	11.10	8.81	87%	0.26	7.81
32262	32261	1	12	2.57	10.20	9.55	67%	0.85	8.55
32261	32260	1	12	2.35	28.96	10.89	72%	0.65	9.89
32260	32259	1	12	0.19	12.30	12.31	885%	0.00	11.31
32259	32258	1	12	1.75	12.95	11.58	94%	0.10	10.58
32258	32257	1	12	0.91	11.86	11.89	171%	0.00	10.89
32257	32254	1	12	1.03	12.18	10.16	144%	0.00	9.16
32254	33532	1	12	0.60	9.71	9.69	243%	0.00	8.69
30726	20776	1	15	4.20	9.39	9.22	109%	0.00	7.97
30594	30593	1	15	6.25	10.79	0.36	16%	5.25	-
30593	30592	1	15	7.17	11.40	0.85	14%	6.17	-
30592	15271	1	15	5.96	11.14	0.37	17%	4.96	-
30591	30590B	1	15	3.67	11.40	0.67	55%	1.64	-
30590	30589	1	15	4.56	7.61	0.61	45%	2.53	-
30589	30588A	1	15	5.48	9.00	0.54	37%	3.45	-
30588	16037	1	18	5.35	13.60	0.65	38%	3.32	-
30342	37991	1	30	16.87	11.82	0.40	0%	16.87	-
29873	20799	1	10	3.12	6.54	0.24	15%	2.64	-
29862	29861	1	10	0.78	6.42	2.18	186%	0.00	1.34
29861	20812	2	12	0.51	6.58	0.84	284%	0.00	-
22538	15270	1	15	7.91	12.49	0.58	41%	4.64	-
22490	22489	1	12	3.54	14.52	0.21	7%	3.29	-
22489	22482	1	12	3.79	11.84	0.20	6%	3.54	-
22482	45567	1	12	3.26	14.72	0.21	8%	3.01	-
22466	22465	1	12	1.49	9.40	0.28	17%	1.24	-
22465	45592	1	12	1.79	7.80	0.26	14%	1.54	-
22464	22463A	1	12	2.89	7.41	0.22	9%	2.64	-
22463	22462	1	12	3.24	5.39	0.21	8%	2.99	-
22462	22458	1	12	1.67	7.24	0.28	15%	1.42	-
22458	45585	1	12	1.66	6.88	0.28	15%	1.41	-
22457	22456	1	12	1.01	8.77	0.52	24%	0.76	-
22456	22455	1	12	1.49	7.25	2.36	19%	1.20	1.36

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
22455	22454	1	12	0.95	9.94	3.92	32%	0.65	2.92
22454	6921	1	12	1.33	13.48	5.41	33%	0.89	4.41
22225	19142	1	21	6.53	15.80	4.40	65%	2.28	2.65
22223	22222	1	21	5.79	13.16	3.82	99%	0.06	2.07
22222	7314	1	21	6.07	20.57	3.94	95%	0.33	2.19
22013	22012	1	24	15.07	12.31	12.47	121%	0.00	10.47
22012	22011	1	24	14.71	11.45	11.43	107%	0.00	9.43
22011	22010	1	24	14.74	11.68	11.33	105%	0.00	9.33
22010	22009	1	24	11.99	11.14	11.02	128%	0.00	9.02
22009	6957	1	24	13.03	11.60	10.85	121%	0.00	8.85
21329	20761	1	27	8.83	14.86	14.11	115%	0.00	11.86
21328	6888	1	30	14.98	16.92	10.34	70%	4.52	7.84
21046	21045	1	15	1.39	11.79	0.63	66%	0.47	-
21045	21043	1	15	4.05	12.26	0.41	23%	3.13	-
21043	21042	1	15	2.51	12.75	0.84	82%	0.45	-
21042	41529	1	15	2.52	10.08	0.83	82%	0.46	-
20812	20811	1	12	1.93	6.50	0.66	75%	0.48	-
20811	20810	1	12	1.77	8.20	0.70	82%	0.32	-
20810	20809	1	12	1.60	12.88	0.76	90%	0.15	-
20809	20808	1	12	1.97	20.42	0.65	73%	0.52	-
20808	20807	1	12	1.49	16.48	0.83	97%	0.04	-
20807	20806	1	12	2.48	9.94	0.56	58%	1.03	-
20806	20805	1	12	4.45	7.64	0.41	33%	3.00	-
20805	20804	1	12	2.12	12.25	0.69	80%	0.43	-
20804	20803	1	12	5.48	8.30	0.40	31%	3.79	-
20803	20799	1	12	3.67	12.60	0.49	46%	1.98	-
20799	20798	1	12	3.58	9.80	0.57	59%	1.45	-
20798	20797	1	12	3.49	15.04	0.68	77%	0.80	-
20797	20796	1	12	3.16	8.44	0.67	77%	0.74	-
20796	20795	1	12	3.21	8.55	0.62	67%	1.04	-
20795	37148	1	15	6.37	10.03	0.56	34%	4.18	-
20794	36990	1	15	5.91	9.12	0.54	37%	3.73	-
20793	69152	1	16	5.36	12.49	0.67	48%	2.76	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
20783	56667	1	15	3.47	17.40	9.80	110%	0.00	8.55
20782	41252	1	15	2.55	11.48	6.70	156%	0.00	5.45
20781	20780	1	15	4.47	9.25	3.28	91%	0.40	2.03
20780	20779	1	15	4.87	8.28	4.94	83%	0.81	3.69
20779	20778	1	15	5.14	9.24	6.19	81%	1.00	4.94
20778	57146	1	15	4.29	10.35	8.72	94%	0.25	7.47
20777	30726	1	15	5.71	9.89	7.63	83%	0.95	6.38
20776	20775	1	15	5.61	11.33	8.32	83%	0.95	7.07
20775	20774	1	15	4.60	9.62	9.43	100%	0.00	8.18
20774	20773	1	15	4.19	10.65	9.41	109%	0.00	8.16
20773	20772	1	15	4.54	8.23	8.17	100%	0.00	6.92
20772	20771	1	15	4.55	10.38	8.07	103%	0.00	6.82
20771	20770	1	18	3.80	10.31	7.61	125%	0.00	6.11
20770	20769	1	18	5.65	10.75	5.42	84%	0.92	3.92
20769	20768	1	18	6.76	12.44	6.48	70%	2.03	4.98
20768	20767	1	18	6.95	9.26	9.42	66%	2.34	7.92
20767	20766	1	27	11.25	16.52	11.65	71%	3.30	9.40
20766	20765	1	27	8.57	16.61	12.99	93%	0.62	10.74
20765	20764	1	27	8.31	17.81	13.30	96%	0.36	11.05
20764	20763	1	27	8.55	18.48	13.48	105%	0.00	11.23
20763	20762	1	27	11.21	15.83	13.40	87%	1.49	11.15
20762	21329	1	27	8.72	17.03	14.27	111%	0.00	12.02
20761	20760	1	27	8.89	15.66	13.71	111%	0.00	11.46
20760	20759	1	30	5.75	13.73	13.66	172%	0.00	11.16
20759	20758	1	30	5.53	16.37	12.64	179%	0.00	10.14
20758	20757	1	30	6.00	11.11	11.23	164%	0.00	8.73
20757	20756	1	30	4.99	10.80	10.83	197%	0.00	8.33
20756	20755	1	30	5.78	10.35	10.51	170%	0.00	8.01
20755	20754	1	30	8.76	27.22	10.62	114%	0.00	8.12
20754	20753	1	30	1.77	23.92	11.26	589%	0.00	8.76
20753	21328	1	30	8.76	16.59	10.00	119%	0.00	7.50
20553	37013	1	27	21.67	15.36	1.87	58%	9.11	-
20314	18454	1	12	4.89	7.66	3.18	51%	2.37	2.18

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
20127	18554	1	15	2.28	7.43	1.88	90%	0.22	0.63
20126	18553	1	15	3.22	8.10	1.95	69%	0.99	0.70
19910	17762	1	12	3.43	11.13	0.79	82%	0.63	-
19876	19875	1	12	1.73	9.78	6.15	128%	0.00	5.15
19875	19874	1	12	2.38	9.73	5.52	93%	0.16	4.52
19874	19873	1	12	3.96	11.93	5.71	56%	1.74	4.71
19873	6955	1	24	11.35	10.88	10.53	151%	0.00	8.53
19706	6947	1	24	16.10	13.34	7.29	115%	0.00	5.29
19657	17760	1	12	6.10	12.46	0.50	47%	3.25	-
19143	22225	1	21	4.35	13.52	4.27	97%	0.11	2.52
19143	59276	2	21	19.39	13.52	4.02	18%	15.94	2.27
19142	34175	1	21	11.95	14.33	4.69	36%	7.69	2.94
19141	7308	1	21	11.40	13.25	5.40	118%	0.00	3.65
18586	902012	1	24	10.73	9.16	7.65	127%	0.00	5.65
18586	902012	3	24	10.73	9.16	4.98	46%	5.84	2.98
18555	20127	1	15	3.00	6.77	1.51	69%	0.94	0.26
18554	39224	1	15	2.91	7.65	1.98	71%	0.85	0.73
18553	18552	1	15	2.45	7.63	2.21	91%	0.22	0.96
18552	18496	1	15	2.73	10.35	2.43	82%	0.50	1.18
18496	901391	1	15	1.34	9.20	2.79	198%	0.00	1.54
18463	18458	1	10	2.32	15.95	0.51	66%	0.78	-
18458	18457	1	12	5.30	9.19	0.42	35%	3.47	-
18457	18456	1	12	5.79	10.72	0.39	31%	4.01	-
18456	45724	1	12	4.19	8.64	0.47	42%	2.42	-
18455	20314	1	12	4.78	8.25	1.09	53%	2.26	0.09
18454	18453	1	12	5.17	7.86	6.87	54%	2.39	5.87
18453	18452	1	12	2.75	8.76	8.27	92%	0.22	7.27
18452	6928	1	42	7.10	11.49	11.55	298%	0.00	8.05
18322	18321	1	21	13.13	10.28	2.20	58%	5.48	0.45
18321	7309	1	21	9.56	13.32	3.58	80%	1.91	1.83
18241	7311	1	21	7.28	21.26	1.96	105%	0.00	0.21
18202	6885	1	12	1.79	19.43	13.11	131%	0.00	12.11
18064	18063	1	12	2.00	13.12	1.42	75%	0.50	0.42

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
18063	17775	1	12	1.55	14.10	1.59	97%	0.05	0.59
17969	9040	1	15	3.87	9.20	0.77	69%	1.22	-
17949	9039	1	15	5.30	16.00	0.64	50%	2.65	-
17775	17774	1	12	2.18	22.74	0.62	69%	0.68	-
17774	17773	1	12	6.84	12.74	0.34	22%	5.34	-
17773	17772	1	12	2.76	16.50	0.54	54%	1.26	-
17772	17771	1	12	4.84	8.94	0.40	31%	3.34	-
17771	17770	1	12	5.05	8.65	0.39	30%	3.55	-
17770	17769	1	12	4.29	10.53	0.42	35%	2.79	-
17769	17768	1	12	4.61	9.15	0.41	33%	3.11	-
17768	17767	1	12	2.47	8.97	0.57	61%	0.97	-
17767	17766	1	12	0.63	11.00	1.20	239%	0.00	0.20
17766	17765	1	12	2.84	6.93	0.53	53%	1.34	-
17765	48242	1	12	5.59	14.08	0.37	27%	4.09	-
17764	17763	1	12	2.76	9.80	1.36	101%	0.00	0.36
17763	19910	1	12	3.22	12.88	0.73	87%	0.42	-
17762	17761	1	12	4.35	9.39	0.62	88%	0.54	-
17761	19657	1	12	5.56	2.96	0.52	52%	2.67	-
17760	17759	1	12	4.26	13.40	0.96	66%	1.44	-
17759	17758	1	12	1.27	10.90	6.70	220%	0.00	5.70
17758	17757	1	12	4.94	26.73	4.22	57%	2.14	3.22
17757	17756	1	12	1.90	7.53	7.51	118%	0.00	6.51
17756	17755	1	12	1.10	13.16	7.49	204%	0.00	6.49
17755	17754	1	12	1.40	6.10	6.13	142%	0.00	5.13
17754	17753	1	12	1.51	6.85	6.11	126%	0.00	5.11
17753	17752	1	12	1.51	7.37	5.77	121%	0.00	4.77
17752	34447	1	12	1.28	5.60	5.54	142%	0.00	4.54
17751	17750	1	12	1.38	9.45	4.04	170%	0.00	3.04
17750	17749	1	12	1.49	7.73	1.79	157%	0.00	0.79
17749	46796	1	12	5.48	4.63	0.47	43%	3.14	-
17748	17747	1	12	2.92	5.00	0.70	80%	0.58	-
17747	18202	1	12	14.96	6.12	0.32	16%	12.62	-
17375	45753	1	30	38.12	10.90	8.93	48%	19.82	6.43

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
17297	17764	1	12	2.92	9.64	1.56	96%	0.12	0.56
16604	7320	1	10	2.61	14.88	0.25	18%	2.14	-
16596	7333	1	10	1.00	17.80	0.69	69%	0.31	-
16581	7328	1	10	2.95	13.15	0.38	40%	1.76	-
16535	7330	1	15	5.93	15.92	0.27	9%	5.42	-
16379	16379N	1	42	20.88	17.22	12.92	198%	0.00	9.42
16038	16037	1	18	8.81	16.89	1.38	39%	5.34	-
16037	16036	1	18	6.69	12.93	1.05	82%	1.20	-
16036	42233	1	18	6.58	17.71	1.32	98%	0.10	-
15872	15871	1	30	20.58	13.36	9.53	88%	2.44	7.03
15871	6936	1	30	17.56	15.08	9.95	103%	0.00	7.45
15751	40488	1	27	21.21	16.43	7.99	88%	2.60	5.74
15271	22538	1	15	6.83	12.27	0.35	15%	5.83	-
15270	30591	1	15	4.91	14.11	0.58	41%	2.88	-
15270	9042	2	15	5.74	14.11	0.42	22%	4.50	-
15269	42234	1	18	10.33	11.33	10.51	40%	6.22	9.01
14937	5134	1	10	1.05	8.81	0.68	98%	0.02	-
14565	6885	1	42	77.24	11.66	9.77	58%	32.58	6.27
14458	14456	1	12	2.32	4.94	0.67	77%	0.53	-
14456	14455	1	12	2.91	5.04	0.67	77%	0.67	-
14455	14454	1	12	2.78	5.04	1.50	80%	0.56	0.50
14454	19876	1	12	5.21	5.28	2.56	43%	2.99	1.56
13939	20805	1	12	7.90	11.48	0.17	4%	7.57	-
9042	9041	1	15	4.28	13.90	0.48	29%	3.04	-
9041	17969	1	15	4.48	9.87	0.54	37%	2.84	-
9040	17949	1	15	4.86	9.47	0.68	55%	2.21	-
9039	16038	1	18	6.50	9.50	0.78	53%	3.02	-
8195	37032	1	12	1.14	9.27	0.56	65%	0.40	-
7335	7334	1	10	2.75	12.20	0.25	17%	2.28	-
7334	16604	1	10	2.50	9.74	0.26	19%	2.03	-
7333	7332	1	10	2.63	9.80	0.44	54%	1.21	-
7332	7316	1	10	1.89	10.83	0.54	74%	0.49	-
7330	7329	1	15	3.73	12.56	0.32	14%	3.22	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
7329	7328	1	15	5.22	15.72	0.29	10%	4.71	-
7328	7327	1	18	5.83	17.40	0.56	29%	4.14	-
7327	7326	1	18	5.89	19.36	0.55	29%	4.20	-
7326	7325	1	18	6.13	21.58	0.54	28%	4.44	-
7325	52651	1	18	6.84	11.66	0.61	25%	5.15	-
7324	7323	1	18	7.79	15.10	0.76	50%	3.93	-
7323	7322	1	18	6.48	16.67	0.84	60%	2.62	-
7322	7321	1	18	7.33	14.03	0.79	53%	3.47	-
7321	7320	1	18	7.90	14.30	0.76	49%	4.04	-
7320	7319	1	21	11.54	16.31	0.76	37%	7.22	-
7319	7318	1	21	9.80	18.35	0.82	44%	5.48	-
7318	7317	1	21	7.59	11.74	0.96	57%	3.28	-
7317	7316	1	21	8.38	13.97	1.41	51%	4.07	-
7316	7315	1	21	10.03	16.37	3.33	56%	4.40	1.58
7315	22223	1	21	4.64	12.81	3.92	121%	0.00	2.17
7314	18241	1	21	3.91	13.05	3.95	196%	0.00	2.20
7311	18322	1	21	7.06	22.19	2.76	108%	0.00	1.01
7309	19143	1	21	9.14	12.67	3.85	84%	1.48	2.10
7308	7305	1	21	12.52	11.52	4.48	107%	0.00	2.73
7305	7303	1	21	14.82	14.39	1.35	90%	1.42	-
7303	7302	1	21	17.06	15.30	1.20	79%	3.66	-
7302	7301	1	24	22.65	12.32	2.87	59%	9.28	0.87
7301	7300	1	24	20.70	12.41	4.91	64%	7.36	2.91
7300	55251	1	24	11.77	12.86	8.53	113%	0.00	6.53
7298	7297	1	24	9.58	9.60	9.23	146%	0.00	7.23
7297	7296	1	24	12.77	8.72	7.95	109%	0.00	5.95
7296	7295	1	24	9.00	9.45	7.90	155%	0.00	5.90
7295	61948	1	24	18.62	10.07	6.40	75%	4.73	4.40
7289	7256	1	10	0.68	5.89	1.70	122%	0.00	0.86
7256	7255	1	12	0.84	8.90	0.77	99%	0.01	-
7255	7254	1	12	0.98	10.50	0.71	85%	0.15	-
7254	7253	1	12	0.89	9.16	0.77	93%	0.06	-
7253	7252	1	12	1.53	11.25	0.53	54%	0.70	-

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
7252	6995	1	12	2.61	11.35	0.40	32%	1.78	-
7071	33444	2	10	1.58	9.54	0.46	51%	0.78	-
7051	7050	1	10	1.89	10.30	9.81	131%	0.00	8.98
7050	7049	1	10	1.77	10.10	6.38	140%	0.00	5.55
7049	6977	1	10	1.22	9.79	3.41	203%	0.00	2.57
6995	37990	1	12	5.29	9.44	0.29	16%	4.46	-
6990	32475	1	15	3.80	20.83	0.54	39%	2.34	-
6989	6988	1	15	4.13	9.12	0.52	35%	2.67	-
6988	6987	1	15	4.47	11.54	0.51	33%	3.01	-
6987	6985	1	15	4.20	12.34	0.72	61%	1.65	-
6985	6984	1	15	4.15	15.95	0.71	61%	1.60	-
6984	6983	1	15	3.71	11.11	0.77	69%	1.16	-
6983	6982	1	16	4.84	9.30	1.00	53%	2.30	-
6982	6981	1	15	5.06	10.96	0.74	65%	1.79	-
6981	6980	1	15	5.04	10.79	0.74	65%	1.77	-
6980	6979	1	18	8.55	11.17	0.66	38%	5.29	-
6979	6978	1	18	6.74	11.19	0.74	48%	3.48	-
6978	33451	1	18	6.70	9.18	0.75	49%	3.44	-
6977	33451	1	18	6.09	10.57	0.67	41%	3.62	-
6970	6969	1	15	4.77	12.01	1.52	40%	2.88	0.27
6969	6968	1	15	4.56	9.61	3.06	41%	2.69	1.81
6968	6967	1	15	3.35	9.37	5.22	56%	1.48	3.97
6967	6966	1	15	4.14	9.40	8.22	71%	1.21	6.97
6966	6965	1	18	6.25	10.81	8.42	60%	2.52	6.92
6965	15269	1	18	7.40	11.76	8.64	50%	3.67	7.14
6958	22009	1	24	30.51	11.88	11.00	2%	29.79	9.00
6957	6956	1	24	10.33	11.15	10.62	113%	0.00	8.62
6957	6956	3	24	10.33	11.15	8.35	38%	6.38	6.35
6956	19873	1	24	12.41	11.45	10.49	96%	0.50	8.49
6956	19873	3	24	12.41	11.45	7.70	29%	8.75	5.70
6955	6954	1	24	12.80	10.65	9.39	133%	0.00	7.39
6954	18586	1	24	13.00	8.05	8.08	131%	0.00	6.08
6953	38525	1	24	13.33	8.60	7.55	105%	0.00	5.55

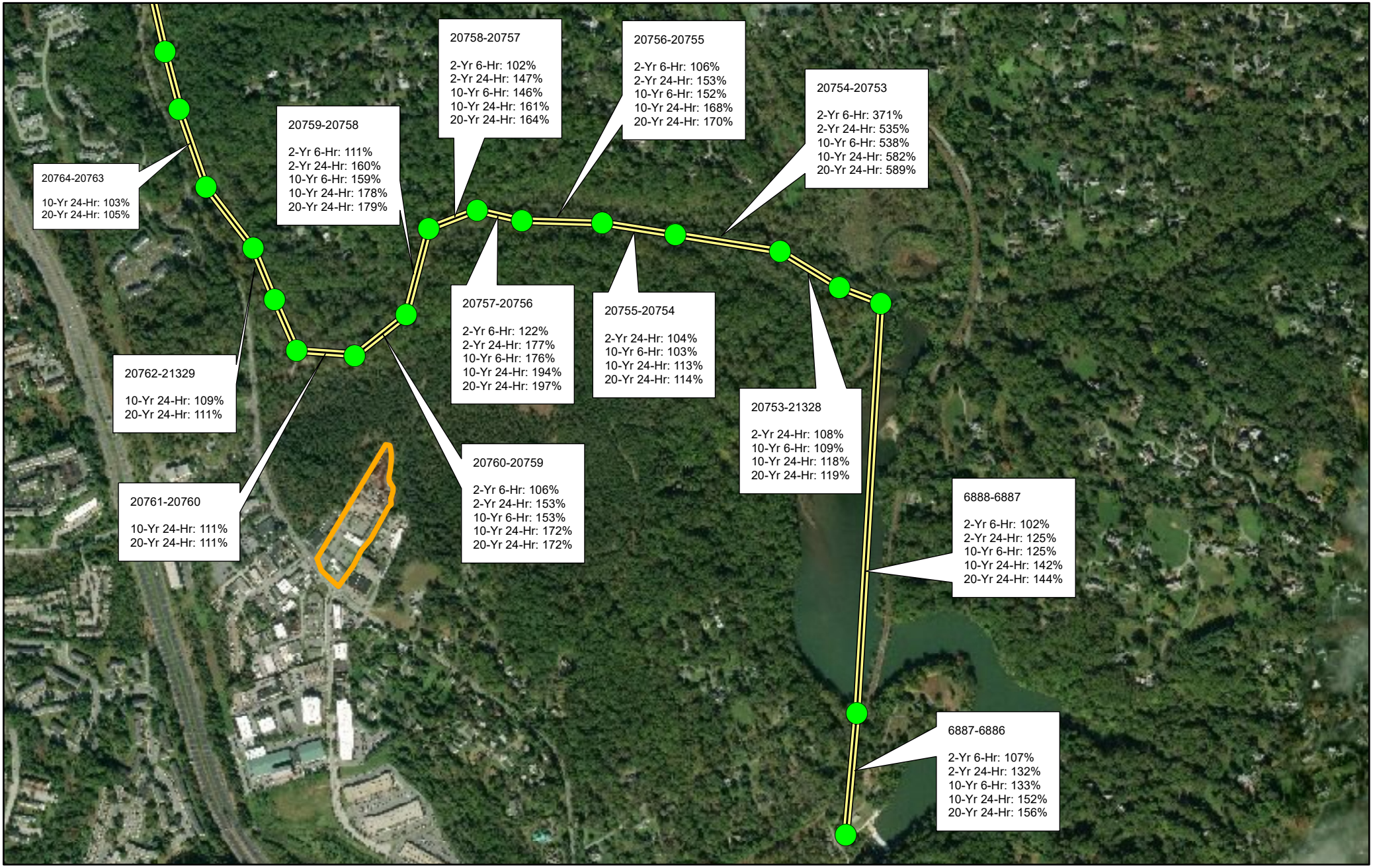
FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
6953	38525	3	24	13.33	8.60	5.19	36%	8.55	3.19
6952	6950	2	24	5.72	9.30	7.07	188%	0.00	5.07
6952	6951	1	24	11.09	9.30	7.01	77%	2.53	5.01
6951	6950	1	24	16.01	13.74	7.20	52%	7.73	5.20
6950	6949	1	24	14.83	14.06	7.73	121%	0.00	5.73
6949	6948	1	24	16.75	12.32	7.55	107%	0.00	5.55
6948	32394	1	24	9.21	13.46	7.61	194%	0.00	5.61
6947	6946	1	24	14.95	13.49	7.21	123%	0.00	5.21
6946	6945	1	27	20.33	12.04	6.90	92%	1.66	4.65
6945	6944	1	27	16.62	11.80	7.45	111%	0.00	5.20
6944	6943	1	27	18.87	13.02	7.41	98%	0.42	5.16
6943	901676	1	27	19.93	13.83	7.52	93%	1.49	5.27
6942	6939	1	30	21.32	12.08	8.31	85%	3.28	5.81
6941	6940	1	30	23.41	10.86	7.64	79%	4.83	5.14
6940	6942	1	30	20.90	11.22	7.78	88%	2.42	5.28
6939	6938	1	30	21.47	9.84	9.04	83%	3.59	6.54
6938	17375	1	30	19.60	10.28	8.75	94%	1.20	6.25
6937	15872	1	30	21.00	12.03	9.22	87%	2.80	6.72
6936	6935	1	30	18.47	11.35	9.68	98%	0.43	7.18
6935	6934	1	30	19.87	14.62	9.36	97%	0.57	6.86
6934	6929	1	30	17.76	14.36	9.33	108%	0.00	6.83
6933	6932	1	30	18.44	10.96	9.72	102%	0.00	7.22
6932	46789	1	30	23.89	10.81	9.45	78%	5.15	6.95
6931	6930	1	42	45.11	14.79	9.99	43%	25.78	6.49
6930	18452	1	42	26.69	21.91	11.20	71%	7.62	7.70
6929	6933	1	30	21.17	10.90	9.17	90%	2.05	6.67
6928	6927	1	42	25.54	11.96	11.42	85%	3.84	7.92
6927	6926	1	42	6.87	14.45	11.51	316%	0.00	8.01
6926	6925	1	42	19.18	15.73	11.36	113%	0.00	7.86
6925	6924	1	42	19.29	15.13	11.27	116%	0.00	7.77
6924	6923	1	42	19.15	15.38	11.10	119%	0.00	7.60
6923	6921	1	42	23.10	21.73	10.95	99%	0.30	7.45
6921	61946	1	42	29.09	14.92	11.58	79%	6.01	8.08

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	Downstream Manhole	Link Suffix	Pipe Diameter (in)	Design Capacity (MGD)	MH Depth (ft)	Simulated Peak Depth (ft)	Capacity Used %	Capacity Remaining (MGD)	Simulated Surcharge Depth (ft)
6890	6889	1	24	8.73	16.24	8.04	1%	8.67	6.04
6889	6888	1	24	9.51	12.79	8.66	12%	8.39	6.66
6888	6887	1	42	29.56	17.66	11.96	144%	0.00	8.46
6887	6886	1	42	28.63	24.15	5.30	156%	0.00	1.80
6886	14565	1	42	129.77	15.48	2.74	34%	85.11	-
6885	6883	1	42	48.09	15.06	15.00	99%	0.35	11.50
6883	6882	1	42	8.98	14.90	15.45	456%	0.00	11.95
6882	6880	1	42	28.91	15.09	14.59	142%	0.00	11.09
6880	6879	1	42	26.91	14.80	13.52	154%	0.00	10.02
6879	6878	1	42	43.91	14.97	13.37	94%	2.50	9.87
6878	16379	1	42	23.28	17.47	13.35	178%	0.00	9.85
6877	6876	1	42	26.94	26.54	12.05	154%	0.00	8.55
6876	6876N	1	42	21.82	15.34	11.34	193%	0.00	7.84
6875	6874	1	42	21.73	14.86	10.15	194%	0.00	6.65
6874	JP1	1	42	21.31	13.83	9.74	198%	0.00	6.24
5134	18064	1	12	2.07	13.15	0.56	50%	1.04	-
4971	4970	1	10	2.22	8.71	0.30	26%	1.63	-
4970	2942	1	10	0.88	13.98	0.51	66%	0.29	-
2947	2946	1	10	1.97	13.55	0.32	30%	1.38	-
2946	2945	1	10	1.91	8.00	0.33	31%	1.32	-
2945	2943	1	10	1.37	14.28	0.39	43%	0.78	-
2943	4971	1	10	1.71	8.57	0.35	34%	1.12	-
2942	2941	1	10	0.84	19.97	0.52	70%	0.25	-
2941	2940	1	10	1.96	8.26	0.32	30%	1.38	-
2940	2939	1	10	2.38	10.67	0.30	25%	1.80	-
2939	2938	1	10	1.10	12.14	0.44	53%	0.52	-
2938	2937	1	10	0.94	15.90	0.48	62%	0.36	-
2937	2936	1	10	1.02	8.30	0.46	57%	0.44	-
2936	1508	1	10	1.02	10.49	0.46	57%	0.44	-
2900	7335	1	10	5.58	6.66	0.18	8%	5.11	-
1610	1609	1	10	1.01	8.34	0.55	0%	1.01	-
1609	1593	1	10	0.81	6.37	1.11	2%	0.80	0.27
1593	29862	1	12	0.43	7.93	2.75	337%	0.00	1.75

FUTURE PIPE CAPACITY AND MANHOLE SURCHARGE SUMMARY 20-YR 24-HR STORM									
Upstream Manhole	**Downstream Manhole**	**Link Suffix**	**Pipe Diameter (in)**	**Design Capacity (MGD)**	**MH Depth (ft)**	**Simulated Peak Depth (ft)**	**Capacity Used %**	**Capacity Remaining (MGD)**	**Simulated Surcharge Depth (ft)**
1507	16581	1	10	5.45	4.58	0.28	22%	4.26	-
150	901871	1	16	8.66	26.32	0.32	10%	7.75	-
70	52182	1	10	3.04	7.67	0.29	24%	2.31	-
66	61	1	10	2.42	6.06	0.33	30%	1.69	-
61	27	1	10	3.91	5.14	0.26	20%	3.14	-
27	23	1	15	4.64	22.26	0.47	28%	3.35	-
23	22	1	15	4.55	22.55	0.48	28%	3.26	-
22	19	1	15	2.66	24.63	0.62	49%	1.37	-
21	20	1	12	3.72	9.00	0.13	1%	3.67	-
20	19	1	12	0.42	9.49	0.78	12%	0.37	-
19	18	1	15	2.08	11.30	0.73	65%	0.74	-
18	56841	1	18	5.14	13.99	1.08	27%	3.74	-
12	11	1	24	9.29	12.70	0.24	3%	9.05	-
11	70352	1	24	18.68	15.86	0.25	1%	18.44	-

*Slope of pipe is zero therefore calculated capacity is zero

Hydraulic restrictions will impact capacity and surcharge conditon calculations causing cases where there is capacity in the pipe and there is also a surcharge



Jones Falls Sewershed
Percent of Sewer Capacity
for Various Storm Events

NewFields
Two Midtown Plaza
1349 W. Peachtree St,
Atlanta, Georgia 30309
Tel: 404-347-9050

Date	7/8/2019	Rev. No.	0
MXD	20190702	Figure No.	01

Manhole
Pipe
Proposed Development

0 0.125 0.25 0.5
Miles

.03-3 Water Quality Criteria Specific to Designated Uses.

A. Criteria for Class I Waters — Water Contact Recreation and Protection of Nontidal Warmwater Aquatic Life.

(1) Bacteriological.

(a) Table 1. Bacteria Indicator Criteria Magnitudes

		Geometric Mean	Statistical Threshold Value
Indicator	Enterococci (fresh or marine) - culturable	35	130
	E. coli (fresh) - culturable	126	410

All Magnitudes in Table 1 are expressed as counts per 100 milliliters

(b) The geometric mean of samples taken over a 90 day period shall not exceed the steady state geometric mean values for the given indicator.

(c) 10 percent of samples taken over a 90 day period shall not exceed the statistical threshold value.

(d) When a sanitary survey and an epidemiological study approved by the Department disclose no significant health hazard, the criteria in Table 1 do not apply.

(2) Dissolved Oxygen. The dissolved oxygen concentration may not be less than 5 milligrams/liter at any time.

(3) Temperature.

(a) The maximum temperature outside the mixing zone determined in accordance with Regulation .05 of this chapter or COMAR 26.08.03.03 —.05 may not exceed 90°F (32°C) or the ambient temperature of the surface waters, whichever is greater.

(b) A thermal barrier that adversely affects aquatic life may not be established.

(c) Ambient temperature is the water temperature that is not impacted by a point source discharge.

(d) Ambient temperature shall be measured in areas of the stream representative of typical or average conditions of the stream segment in question.

(e) The Department may determine specific temperature measurement methods, times, and locations.

(4) pH. Normal pH values may not be less than 6.5 or greater than 8.5.

(5) Turbidity.

(a) Turbidity may not exceed levels detrimental to aquatic life.

(b) Turbidity in the surface water resulting from any discharge may not exceed 150 units at any time or 50 units as a monthly average. Units shall be measured in Nephelometer Turbidity Units.

(6) Color. Color in the surface water may not exceed 75 units as a monthly average. Units shall be measured in Platinum Cobalt Units.

(7) Toxic Substance Criteria. All toxic substance criteria to protect:

(a) Fresh water aquatic organisms apply in waters designated as fresh water in Regulation .03-1B;

(b) Estuarine or salt water aquatic organisms apply in waters designated as estuarine or salt waters as specified in Regulation .03-1B; and

(c) The wholesomeness of fish for human consumption apply in fresh, estuarine, and salt waters.

B. Criteria for Subcategory Class I-P Waters — Water Contact Recreation, Protection of Nontidal Warmwater Aquatic Life and Public Water Supply. The following criteria apply:

(1) The criteria for Class I waters in §A(1)—(6); and

(2) Toxic Substance Criteria. All toxic substance criteria:

(a) For protection of fresh water aquatic organisms apply; and

(b) To protect public water supplies and the wholesomeness of fish for human consumption apply.

C. Criteria for Class II Waters — Support of Estuarine and Marine Aquatic Life and Shellfish Harvesting.

(1) Bacteriological Criteria. These criteria are the same as for Class I, criteria for protection of recreational use, except, in Shellfish Harvest Waters, the following criteria also apply. In Shellfish Harvest waters, there may not be any pathogenic or harmful organisms in sufficient quantities to constitute a public health hazard in the use of waters for shellfish harvesting. A public health hazard for the consumption of raw shellfish will be presumed:

(a) If the most probable number (MPN) of fecal coliform organisms exceeds a median concentration of 14 MPN per 100 milliliters;

(b) If more than 10 percent of samples taken exceed 43 MPN per 100 milliliters for a 5-tube decimal dilution test or 49 per 100 milliliters for a 3-tube decimal dilution test; or

(c) Except when a sanitary survey approved by the Department of the Environment discloses no significant health hazard, §C(1) (a) and (b) do not apply and a public health hazard from the consumption of shellfish will not be presumed.

(2) Classification of Class II Waters for Harvesting.

(a) Approved classification means that the median fecal coliform MPN of at least 30 water sample results taken over a 3-year period to incorporate inter-annual variability does not exceed 14 per 100 milliliters; and:

(i) In areas affected by point source discharges, not more than 10 percent of the samples exceed an MPN of 43 per 100 milliliters for a five tube decimal dilution test or 49 MPN per 100 milliliters for a three tube decimal dilution test; or

(ii) In other areas, the 90th percentile of water sample results does not exceed an MPN of 43 per 100 milliliters for a five tube decimal dilution test or 49 MPN per 100 milliliters for a three tube decimal dilution test.

(b) Conditionally approved classification means that the Department has determined that under certain conditions an area is restricted, but when not restricted, meets the conditions for the approved classification.

(c) Restricted classification means that the median fecal coliform MPN of at least 30 water sample results taken over a 3-year period does not exceed 88 per 100 milliliters or that the Department has determined that a public health hazard exists; and:

(i) In areas affected by point source discharges, not more than 10 percent of the samples exceed an MPN of 260 per 100 milliliters for a five tube decimal dilution test or 300 MPN per 100 milliliters for a three tube decimal dilution test; or

(ii) In other areas, the 90th percentile of water sample results does not exceed an MPN of 260 per 100 milliliters for a five tube decimal dilution test or 300 MPN per 100 milliliter for a three tube decimal dilution test.

(d) Prohibited classification means that the fecal coliform values exceed those required for the restricted classification or is an area designated by the Department as a closed safety zone adjacent to a sewage treatment facility outfall or is an area closed due to a known pollution source.

(3) Temperature — same as Class I waters.

(4) pH — same as Class I waters.

(5) Turbidity — same as Class I waters.

(6) Color — same as Class I waters.

(7) Toxic Substance Criteria. All toxic substance criteria to protect:

(a) Estuarine or salt water aquatic organisms apply in accordance with the requirements of Regulation .03-1B; and

(b) The wholesomeness of fish for human consumption apply.

(8) Dissolved Oxygen Criteria for Class II Waters.

(a) This criteria is the same as for Class I waters, except for the Chesapeake Bay mainstem and associated tidal tributary subcategories.

(b) Seasonal and Migratory Fish Spawning and Nursery Subcategory. The dissolved oxygen concentrations in areas designated as migratory spawning and nursery seasonal use shall be:

(i) Greater than or equal to 6 milligrams/liter for a 7-day averaging period from February 1 through May 31;

(ii) Greater than or equal to 5 milligrams/liter as an instantaneous minimum from February 1 through May 31; and

(iii) Applicable to the open-water fish and shellfish subcategory criteria from June 1 to January 31.

(c) The seasonal shallow-water submerged aquatic vegetation subcategory is the same as for the open-water fish and shellfish subcategory year-round.

(d) Open-Water Fish and Shellfish Subcategory. The dissolved oxygen concentrations in areas designated as open-water fish and shellfish subcategory shall be:

(i) Greater than or equal to 5.5 milligrams/liter for a 30-day averaging period year-round in tidal fresh waters (salinity less than or equal to 0.5 parts per thousand);

(ii) Greater than or equal to 5 milligrams/liter for a 30-day averaging period year-round (salinity greater than 0.5 parts per thousand);

(iii) Greater than or equal to 4.0 milligrams/liter for a 7-day averaging period year-round;

(iv) Greater than or equal to 3.2 milligrams/liter as an instantaneous minimum year-round;

(v) For protection of the endangered shortnose sturgeon, greater than or equal to 4.3 milligrams/liter as an instantaneous minimum at water column temperatures greater than 29°C (77°F); and

(vi) For the Upper Pocomoke River Tidal Fresh (POCTF) and the Maryland portion of the Middle Pocomoke River Oligohaline (POCOH), greater than or equal to 4.0 milligrams/liter for a 30-day averaging period year-round.

(e) Seasonal Deep-Water Fish and Shellfish Subcategory. The dissolved oxygen concentrations in areas designated as seasonal deep-water fish and shellfish subcategory shall be:

(i) Greater than or equal to 3.0 milligrams/liter for a 30-day averaging period from June 1 through September 30;

(ii) Greater than or equal to 2.3 milligrams/liter for a 1-day averaging period from June 1 through September 30;

(iii) Greater than or equal to 1.7 milligrams/liter as an instantaneous minimum from June 1 through September 30;

(iv) The open-water fish and shellfish subcategory criteria apply from October 1 to May 31;

(v) For the dissolved oxygen criteria restoration variance for Chesapeake Bay Mainstem Segment 4 mesohaline (CB4MH) seasonal deep-water fish and shellfish subcategory, not lower for dissolved oxygen in segment CB4MH than the stated criteria for the seasonal deep-water seasonal fish and shellfish use for more than 7 percent spatially and temporally (in combination), from June 1 to September 30; and

(vi) For dissolved oxygen criteria restoration variance for Patapsco River mesohaline (PATMH) seasonal deep-water fish and shellfish subcategory, not lower for dissolved oxygen in segment PATMH than the stated criteria for the deep-water seasonal fish and shellfish use for more than 7 percent spatially and temporally (in combination), from June 1 to September 30.

(f) Seasonal Deep-Channel Refuge Subcategory. The dissolved oxygen concentrations in areas designated as deep-channel seasonal refuge use shall be:

(i) Greater than or equal to 1.0 milligrams/liter as an instantaneous minimum from June 1 through September 30 except for Chesapeake Bay segments subject to variances;

(ii) For dissolved oxygen criteria restoration variance for Chesapeake Bay Mainstem Segment 4 mesohaline (CB4MH) deep-channel refuge subcategory, not lower for dissolved oxygen in segment CB4MH than the stated criteria for the seasonal deep-channel refuge for more than 2 percent spatially or temporally (in combination), from June 1 to September 30;

(iii) For the dissolved oxygen criteria restoration variance for Lower Chester River Mesohaline (CHSMH) seasonal deep-channel refuge subcategory, not lower for dissolved oxygen in segment CHSMH than the stated criteria for the seasonal deep-channel refuge use for more than 16 percent spatially and temporally (in combination), from June 1 to September 30;

(iv) For the dissolved oxygen criteria restoration variance for Eastern Bay Mesohaline (EASMH) seasonal deep-channel refuge subcategory, not lower for dissolved oxygen in segment EASMH than the stated criteria for the seasonal deep-channel refuge use for more than 2 percent spatially and temporally (in combination), from June 1 to September 30; and

(v) The same as for the open-water fish and shellfish subcategory from October 1 to May 31.

(g) Implementation of the Dissolved Oxygen Water Quality Standard. The attainment of the dissolved oxygen criteria that apply to the Chesapeake Bay and tidally influenced tributary waters shall be determined using the guidelines established in the U.S. Environmental Protection Agency publications "Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and its Tidal Tributaries (EPA 903-R-03-002), Chapter III", "Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and its Tidal Tributaries (EPA 903-R-03-002), Chapter III", "Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and its Tidal Tributaries—2004 Addendum (EPA 903-R-04-005) Chapter V", "Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and its Tidal Tributaries—2007 Addendum (EPA 903-R-07-003), Chapter IV", "Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and Its Tidal Tributaries — 2008 Technical Support for Criteria Assessment Protocols Addendum (EPA 903-R-08-001), Chapter III", and "Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and Its Tidal Tributaries — 2010 Technical Support for Criteria Assessment Protocols Addendum (EPA 903-R-10-002), Chapters II and III", which are incorporated by reference.

(h) Restoration Variance. The percentage of allowable exceedance for restoration variances is based on water quality modeling and incorporates the best available data and assumptions. The restoration variances are temporary, and will be reviewed at a minimum every three years, as required by the Clean Water Act and EPA regulations. The variances may be modified based on new data or assumptions incorporated into the water quality model.

(9) Water Clarity Criteria for Seasonal Shallow-Water Submerged Aquatic Vegetation Subcategory.

(a) Water Clarity Criteria Measurement. A Bay segment has attained the shallow water designated use if:

(i) Submerged aquatic vegetation (SAV) acreage meets or exceeds the SAV acreage restoration goal in Table 2 of this regulation;

(ii) The shallow-water acreage that meets or exceeds the water clarity criterion expressed in Secchi depth equivalence from Table 1 of this regulation at the segment specific application depth specified in Regulation .08 of this chapter (excluding SAV no grow zones) is 2.5 times greater than the SAV Acreage Restoration Goal from Table 2 of this regulation; or

(iii) A combination of the actual SAV acreage attained and meeting the applicable water clarity criteria in an additional, unvegetated shallow water surface area equals 2.5 times the remaining SAV acreage necessary to meet the segment's restoration goal.

(a-1) If none of §C(9)(a)(i), (ii), or (iii) applies, the segment has not attained the water clarity designated use.

(b) Table 2. Numerical Water Clarity Criteria (in Secchi Depth Equivalents) for General Application to Shallow Water Aquatic Vegetation Bay Grass Designated Use (Application Depths Given in 0.5 Meter Attainment Intervals[1]).

		Water Clarity Criteria as Secchi Depth (meters)				
Salinity Regime	Water Clarity Criteria as Percent Light through Water	Water Clarity Criteria Application Depths (meters)				Seasonal Application
		0.5	1.0	1.5	2.0	
		Secchi Depth Equivalents for Criteria Application Depth				
Tidal Fresh	13%	0.4	0.7	1.1	1.4	April 1 to October 1
Oligohaline	13%	0.4	0.7	1.1	1.4	April 1 to October 1
Mesohaline	22%	0.5	1.0	1.4	1.9	April 1 to October 1

[1]Based on application if the formula PLW = 100exp(-K_dZ), the appropriate PLW criterion value and the selected application depth (Z) are inserted and the equation is solved for K_d. The generated K_d value is then converted to Secchi depth (in meters) using the conversion factor K_d = 1.45/Secchi depth.

(c) Table 3. SAV Acreage Restoration Goals.

Segment Description[1]	Segment Designator	SAV Acreage Restoration Goal	Secchi Application Depth
Northern Chesapeake Bay	CB1TF2	12,149	2 meters
Northern Chesapeake Bay	CB1TF1	754	1.0 meters
Lower Pocomoke River Mesohaline	POCMH	877[2]	1.0 meters
Manokin River Mesohaline	MANMH1	4,294	2.0 meters
Manokin River Mesohaline	MANMH2	59	0.5 meters
Big Annemessex River Mesohaline	BIGMH1	2,021	2.0 meters
Big Annemessex River Mesohaline	BIGMH2	22	0.5 meters
Tangier Sound Mesohaline	TANMH1	24,683[2]	2.0 meters
Tangier Sound Mesohaline	TANMH2	74	0.5 meters
Middle Nanticoke River Oligohaline	NANOH	12	0.5 meters
Lower Nanticoke River Mesohaline	NANMH	3	0.5 meters
Wicomico River Mesohaline	WICMH	3	0.5 meters
Fishing Bay Mesohaline	FSBMH	197	0.5 meters
Middle Choptank River Oligohaline	CHOOH	72	0.5 meters
Lower Choptank River Mesohaline	CHOMH2	1,621	1.0 meters
Mouth of Choptank River Mesohaline	CHOMH1	8,184	2.0 meters
Little Choptank River Mesohaline	LCHMH	4,076	2.0 meters
Honga River Mesohaline	HNGMH	7,761	2.0 meters
Eastern Bay	EASMH	6,209	2.0 meters
Upper Chester River Tidal Fresh	CSHTF	1	0.5 meters
Middle Chester River Oligohaline	CHSOH	77	0.5 meters
Lower Chester River Mesohaline	CHSMH	2,928	1.0 meters
Chesapeake & Delaware (C&D) Canal	C&DOH	7	0.5 meters
Northeast River Tidal Fresh	NORTF	89	0.5 meters
Bohemia River Oligohaline	BOHOH	354	0.5 meters
Elk River Oligohaline	ELKOH1	1,844	2.0 meters
Elk River Oligohaline	ELKOH2	190	0.5 meters
Sassafras River Oligohaline	SASOH1	1,073	2.0 meters
Sassafras River Oligohaline	SASOH2	95	0.5 meters
Bush River Oligohaline	BSHOH	350	0.5 meters
Gunpowder River Oligohaline	GUNOH2	572	2.0 meters
Mouth of Gunpowder River	GUNOH1	1,860	0.5 meters
Middle River Oligohaline	MIDOH	879	2.0 meters
Back River Oligohaline	BACOH	30	0.5 meters
Patapsco River Mesohaline	PATMH	389	1.0 meters
Magothy River Mesohaline	MAGMH	579	1.0 meters
Severn River Mesohaline	SEVMH	455	1.0 meters
South River Mesohaline	SOUMH	479	1.0 meters

Rhode River Mesohaline	RHDMH	60	0.5 meters
West River Mesohaline	WSTMH	238	0.5 meters
Upper Patuxent River Tidal Fresh	PAXTF	205	0.5 meters
Middle Patuxent River Oligohaline	PAXOH	115	0.5 meters
Lower Patuxent River Mesohaline	PAXMH1	1,459	2.0 meters
Lower Patuxent River Mesohaline	PAXMH2	172	0.5 meters
Lower Patuxent River Mesohaline	PAXMH4	1	0.5 meters
Lower Patuxent River Mesohaline	PAXMH5	2	0.5 meters
Lower Potomac River Tidal Fresh	POTTF	2,142[2]	2.0 meters
Piscataway Creek Tidal Fresh	PISTF	789	2.0 meters
Mattawoman Creek Tidal Fresh	MATTF	792	1.0 meters
Lower Potomac River Oligohaline	POTOH1	1,387[2]	2.0 meters
Lower Potomac River Oligohaline	POTOH2	262	1.0 meters
Lower Potomac River Oligohaline	POTOH3	1,153	1.0 meters
Lower Potomac River Mesohaline	POTMH	7,088[2]	1.0 meters
Upper Chesapeake Bay	CB2OH	705	0.5 meters
Upper Central Chesapeake Bay	CB3MH	1,370	0.5 meters
Middle Central Chesapeake Bay	CB4MH	2,533	2.0 meters
Lower Central Chesapeake Bay	CB5MH	8,270[2]	2.0 meters

[1] The segments West Branch Patuxent River (WBRTF-application depth = 0.5 meters), and Lower Patuxent River Mesohaline Subsegments 3 and 6 (PAXMH3 & PAXMH6-application depths = 0.5 meters), and the Anacostia River Tidal Fresh (ANATF-application depth = 0.5 meters) are not listed above because the SAV Restoration goal for each segment is 0 acres, based on no historical mapped SAV and because the available bathymetry data is too limited to allow for a calculation of an SAV restoration acreage goal using the method described in the U.S. Environmental Protection Agency publication "Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and its tidal Tributaries—2007 Addendum (EPA 903-R-07-003)". These segments have been assigned a water clarity criteria and application depth. Attainment of the shallow-water designated use will be determined using the method outlined in §C(9)(a)(iii) and (e) of this regulation.

[2]Maryland portion of the segment.

(d) SAV No Grow Zones. Certain Chesapeake Bay segments contain areas designated as shallow water use that are not suitable for growth of submerged aquatic vegetation due to natural conditions and permanent physical alterations. Tables V-1 and Figures V-1 to V-12 in the 2004 U.S. Environmental Protection Agency publication "Technical Support Document for Identification of Chesapeake Bay Designated Uses and Attainability — 2004 Addendum (EPA 903-R-04-006)", which is incorporated by reference, indicate the SAV No Grow Zones. The segments Upper Choptank River (CHOTF), Upper Nanticoke River (NANTD), Upper Pocomoke River (POCTF), and Middle Pocomoke River Oligohaline (POCOH) are entirely SAV no grow zones, therefore, the shallow-water designated use does not apply to these segments.

(e) Implementation. The attainment of the water clarity criteria that apply to the seasonal shallow-water submerged aquatic vegetation use subcategory in the Chesapeake Bay and tidally influenced tributary waters will be determined using the guidelines documented within the U.S. Environmental Protection Agency publications "Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and its Tidal Tributaries (EPA 903-R-03-002)", "Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and its Tidal Tributaries — 2004 Addendum (EPA 903-R-04-005)", "Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and it Tidal Tributaries — 2007 Addendum (EPA 903-R-07-003)", "Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and Its Tidal Tributaries — 2008 Technical Support for Criteria Assessment Protocols Addendum (EPA 903-R-08-001)", "Technical Support Document for Identification of Chesapeake Bay Designated Uses and Attainability (EPA 903-R-03-004)", and "Technical Support Document for Identification of Chesapeake Bay Designated Uses and Attainability — 2004 Addendum (EPA 903-R-04-006)" which are incorporated by reference.

(10) Chlorophyll a. Concentrations of chlorophyll a in free-floating microscopic aquatic plants (algae) may not exceed levels that result in ecologically undesirable consequences that would render tidal waters unsuitable for designated uses.

(11) Compliance Schedules for Protection of Downstream Uses in Tidal Waters.

(a) The compliance schedule provisions of COMAR 26.08.04.02C are applicable to discharge permits issued to existing dischargers which contain new or revised effluent limitations based on water quality standards contained in §C(8) and (9) of this regulation.

(b) An upstream state issuing discharge permits to existing dischargers which contain new or revised effluent limitations based on the water quality standards contained in §C(8) and (9) of this regulation may apply the compliance schedule provisions of COMAR 26.08.04.02C.

C-1. Criteria for Class II-P Waters—Support of Estuarine and Marine Aquatic Life and Shellfish Harvesting and Public Water Supplies. The following criteria apply:

(1) The criteria for Class II waters in §C(1)—(8), (9)(a)—(c), (10), and (11); and

(2) All toxic substance criteria:

(a) For protection of fresh water and freshwater-adapted estuarine aquatic organisms apply; and

(b) To protect public water supplies and the wholesomeness of fish and shellfish for human consumption.

D. Criteria for Class III Waters — Nontidal Cold Water.

(1) Bacteriological — same as Class I waters.

(2) Dissolved Oxygen. The dissolved oxygen concentration may not be less than 5 milligrams/liter at any time, with a minimum daily average of not less than 6 milligrams/liter.

(3) Temperature.

(a) The maximum temperature outside the mixing zone determined in accordance with Regulation .05 of this chapter or COMAR 26.08.03.03—.05 may not exceed 68°F (20°C) or the ambient temperature of the surface waters, whichever is greater.

(b) Ambient temperature — Same as Class I.

(c) A thermal barrier that adversely affects salmonid fish may not be established.

(d) It is the policy of the State that riparian forest buffer adjacent to Class III waters shall be retained whenever possible to maintain the temperatures essential to meeting this criterion.

(4) pH — same as Class I waters.

(5) Turbidity — same as Class I waters.

(6) Color — Same as Class I-P waters.

(7) Total Residual Chlorine (TRC). Except as provided in COMAR 26.08.03.06, the Department may not issue a permit allowing the use of chlorine or chlorine-containing compounds in the treatment of wastewaters discharging to Class III and Class III-P waters.

(8) Toxic Substance Criteria. All toxic substance criteria to protect:

(a) Fresh water aquatic organisms apply; and

(b) The wholesomeness of fish for human consumption apply.

E. Criteria for Class III-P Waters — Nontidal Cold Water and Public Water Supplies.

(1) Exception. Authorized operation of the Little Seneca Creek Dam means that all operational activities permitted are met under the conditions of a dam operating permit issued by the Department of Natural Resources under Natural Resources Article, §§8-801—8-814, Annotated Code of Maryland, and COMAR 08.05.03. Injury resulting from the authorized operation of Little Seneca Creek Dam to the Class III natural trout fishery recognized in the stream use designation assigned to Little Seneca Creek in Regulation .08 of this chapter is not considered a violation of this chapter.

(2) The following criteria apply:

(a) The criteria for Class III waters in §D(1)—(7); and

(b) All toxic substance criteria to protect:

(i) Fresh water aquatic organisms; and

(ii) Public water supplies and the wholesomeness of fish for human consumption.

F. Criteria for Class IV Waters — Recreational Trout Waters.

(1) Bacteriological — same as Class I waters.

(2) Dissolved oxygen — same as Class I waters.

(3) Temperature.

(a) The maximum temperature outside the mixing zone determined in accordance with Regulation .05 of this chapter or COMAR 26.08.03.03—.05 may not exceed 75°F (23.9°C) or the ambient temperature of the surface waters, whichever is greater.

(b) Ambient temperature — Same as Class I.

(c) A thermal barrier that adversely affects salmonid fish may not be established.

(d) It is the policy of the State that riparian forest buffer adjacent to Class IV waters shall be retained whenever possible to maintain the temperatures essential to meeting this criterion.

(4) pH — same as Class I waters.

(5) Turbidity — same as Class I waters.

(6) Color — same as for Class I waters.

(7) Toxic Substance Criteria. All toxic substance criteria to protect:

(a) Fresh water aquatic organisms apply; and

(b) The wholesomeness of fish for human consumption apply.

G. Criteria for Class IV-P Waters — Recreational Trout Waters and Public Water Supplies. The following criteria apply:

(1) The criteria for Class IV waters in §F(1)—(6); and

(2) Toxic Substance Criteria. All toxic substance criteria to protect:

(a) Fresh water aquatic organisms, and

(b) Public water supplies and the wholesomeness of fish for human consumption.

H. Criteria for Public Water Supply Reservoirs. The following criteria apply in freshwater reservoirs designated Class I-P, III-P or IV-P:

(1) The arithmetic mean of a representative number of samples of chlorophyll a concentrations, measured during the growing season (May 1 to September 30) as a 30-day moving average may not exceed 10 micrograms per liter; and

(2) The 90th-percentile of measurements taken during the growing season may not exceed 30 micrograms per liter.

Lake Roland Water Sampling Results

Fresh Water Recreational Water

August 18, 2022										
Sampling ID Numbers	**1**	**2**	**3**	**4**	**5**					
Results (E. Coli MPN)	12	6	19	19	18					
Other Parameters	**Geo Mean**	**Temp ° F**	**SpC mS/cm**	**DO mg/L**	**pH**	**Salinity PSS**	**DO %**	**Turbidity NTU**	**Wind**	**Rain 24/hr**
Results	13.615	75.7	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	Yes

August 2, 2022										
Sampling ID Numbers	**1**	**2**	**3**	**4**	**5**					
Results (E. Coli MPN)	11	11	6	23	16					
Other Parameters	**Geo Mean**	**Temp ° F**	**SpC mS/cm**	**DO mg/L**	**pH**	**Salinity PSS**	**DO %**	**Turbidity NTU**	**Wind**	**Rain 24/hr**
Results	12.172	81.7	N/A	N/A	N/A	N/A	N/A	N/A	E 11	Yes

July 28, 2022										
Sampling ID Numbers	**1**	**2**	**3**	**4**	**5**					
Results (E. Coli MPN)	1	7	4	9	9					
Other Parameters	**Geo Mean**	**Temp ° F**	**SpC mS/cm**	**DO mg/L**	**pH**	**Salinity PSS**	**DO %**	**Turbidity NTU**	**Wind**	**Rain 24/hr**
Results	4.6895	80.8	N/A	N/A	N/A	N/A	N/A	N/A	E 5-10	No

July 20, 2022

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	921	435	461	49	28	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	190.88	86.5	N/A	N/A	N/A	N/A	N/A	N/A	NE 1-5	No

July 6, 2022

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	10	15	16	12	6	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	11.156	79.4	N/A	N/A	N/A	N/A	N/A	N/A	E 5-10	Yes

June 15, 2022

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	10	50	13	7	11	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	13.8	80.1	N/A	N/A	N/A	N/A	N/A	N/A	NW 1-5	Yes

June 1, 2022

Sampling ID Numbers	1	2	3	4	5	
Results	43	18	46	24	47	

(E. Coli MPN)										

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	33.171	82.8	N/A	N/A	N/A	N/A	N/A	N/A	NE 5-10	No

May 23, 2022

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	>2420	>2420	>2420	>2420	>2420

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	2420	71.7	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	Yes

May 17, 2022

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	1414	1414	866	1300	1203

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	1220.5	72.0	N/A	N/A	N/A	N/A	N/A	N/A	NE 10-15	Yes

May 3, 2022

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	122	64	122	99	78

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	94.043	63.3	N/A	N/A	N/A	N/A	N/A	N/A	NW 5-10	No

April 19, 2022

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	1986	2420	2420	2420	2420

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	2326.2	50.0	N/A	N/A	N/A	N/A	N/A	N/A	E 22	Yes

September 8, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	15	23	219	24	26

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	34.25	77.0	N/A	N/A	N/A	N/A	N/A	N/A	S 5-10	No

August 25, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	24	26	40	16	28

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	25.686	79.0	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	No

August 17, 2021

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	>2420	>2420	<2420	2420	<2420	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	2420	79.2	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	Yes

August 3, 2021

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	70	59	63	32	81	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	58.316	75.1	N/A	N/A	N/A	N/A	N/A	N/A	E 1-5	Yes

July 20, 2021

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	74	72	71	60	56	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	66.20	80.0	N/A	N/A	N/A	N/A	N/A	N/A	NW 5-10	No

July 7, 2021

Sampling ID Numbers	1	2	3	4	5	
Results	10	3	17	2	7	

(E. Coli MPN)										

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	5.8985	84.1	N/A	N/A	N/A	N/A	N/A	N/A	S 5-10	No

June 28, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	40	102	30	29	33

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	41.09	79.1	N/A	N/A	N/A	N/A	N/A	N/A	S 5-10	No

June 25, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	770	479	548	517	411

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	532.83	70.1	N/A	N/A	N/A	N/A	N/A	N/A	E 5-10	No

June 15, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	225	517	291	326	2420

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr

Results	484.53	78.3	N/A	N/A	N/A	N/A	N/A	N/A	NW 10	No

June 2, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	54	119	104	65	75

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	79.91	70.2	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	No

May 18, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	8	6	7	38	26

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	12.71	67.4	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	No

May 10, 2021

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	74	63	51	64	64

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	62.76	56.5	N/A	N/A	N/A	N/A	N/A	N/A	NW 10	Yes

May 4, 2021

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	>2420	>2420	>2420	>2420	>2420	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	2420	70.7	N/A	N/A	N/A	N/A	N/A	N/A	W 5-10	Yes

April 20, 2021

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	21	10	79	16	16	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	21.17	59.0	N/A	N/A	N/A	N/A	N/A	N/A	SW 5-10	Yes

September 14, 2020

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	124	71	138	83	84	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	96.73	71.4	N/A	N/A	N/A	N/A	N/A	N/A	NW 7-10	No

August 25, 2020

Sampling ID Numbers	1	2	3	4	5	

Results (E. Coli MPN)	6	38	61	32	64	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	30.968	80.5	N/A	N/A	N/A	N/A	N/A	N/A	W 10-15	Yes

August 11, 2020

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	22	31	35	31	15	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	25.648	85.6	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	No

July 28, 2020

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	15	19	24	26	19	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	5.9851	86.2	N/A	N/A	N/A	N/A	N/A	N/A	W 5-10	No

July 15, 2020

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	15	72	31	49	79	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	41.93	79.00	N/A	N/A	N/A	N/A	N/A	N/A	E 1-5	No

June 29, 2020

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	108	76	44	96	50

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	70.43	75.9	N/A	N/A	N/A	N/A	N/A	N/A	NW 5-10	Yes

June 23, 2020

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	>2420	>2420	>2420	>2420	>2420

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	>2420	81.7	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	Yes

June 9, 2020

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	23	39	59	31	46

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	37.632	77.4	N/A	N/A	N/A	N/A	N/A	N/A	S 5-10	No

May 27, 2020

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	10	13	<10	20	24

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	9.10	70.3	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	No

September 4, 2019

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	29	99	113	41	44

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	56.69	75.9	N/A	N/A	N/A	N/A	N/A	N/A	NE 5-10	No

August 21, 2019

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	5	4	5	17	18

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	7.89	81.6	N/A	N/A	N/A	N/A	N/A	N/A	S 5-10	No

August 7, 2019

Sampling ID Numbers	1	2	3	4	5

Results (E. Coli MPN)	7	1	16	4	9	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	5.26	84.3	N/A	N/A	N/A	N/A	N/A	N/A	SE 5-10	No

July 24, 2019

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	2420	1533	1414	980	1203	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	1439.66	77.0	N/A	N/A	N/A	N/A	N/A	N/A	N 5-10	No

July 17, 2019

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	63	96	173	132	93	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	105.13	79.8	N/A	N/A	N/A	N/A	N/A	N/A	S 5-10	No

July 10, 2019

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	866	579	816	687	579

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	695.51	79.6	N/A	N/A	N/A	N/A	N/A	N/A	SE 5 to 10	No

June 19, 2019

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	120	411	65	82	88

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Wind	Rain 24/hr
Results	118.26	77.5	N/A	N/A	N/A	N/A	N/A	N/A	SE 0-5	Yes

June 5, 2019

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	34	22	57	36	74

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	40.84	72.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SW 5-10	No

May 15, 2019

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	2420	>2420	1986	1300	2420

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	2054.35	57.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	W	Yes

May 1, 2019

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	50	82	43	24	53

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	46.79	61.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	E 5-10	Yes

April 15, 2019

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	365	517	387	435	649

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	460.09	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Low	W 25-30	Yes

October 25, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	101	48	77	118	138

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	90.52	52.0	0.636	5.78	9.54	0.30	50.3	31.8	N/A	NW 5-10	No

October 18, 2018

Sampling ID Numbers	1	2	3	4	5

Results (E. Coli MPN)	387	276	365	387	185

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	308.43	57.7	0.594	4.69	9.45	0.28	44.2	28.3	N/A	NW 10-15	No

October 10, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	261	231	167	326	308

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	251.74	70.4	0.604	4.32	9.27	0.29	45.3	25.3	N/A	SE 5-10	No

October 4, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	435	517	435	579	345

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	455.19	68.2	0.618	4.16	8.98	0.30	44.6	48.0	N/A	SW 0-5	No

October 2, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	517	365	488	866	770

Other Parameters	Geo Mean	Temp	SpC	DO	pH	Salinity	DO	Turbidity	Tide	Wind	Rain

		° F	mS/cm	mg/L		PSS	%	NTU			24/hr
Results	572.32	65.9	0.574	4.15	9.08	0.28	44.1	43.9	N/A	S 5-10	No

September 17, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	179	192	210	291	308

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	230.23	70.2	0.604	4.05	8.92	0.30	43.9	48.0	N/A	E 5-10	No

September 5, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	33	23	15	10	13

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	17.14	79.7	0.640	4.40	8.37	0.31	54.1	31.5	N/A	SE 0-5	No

August 29, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	99	65	79	140	84

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	90.22	76.5	0.639	4.31	8.42	0.31	51.5	46.0	N/A	W 5-10	No

August 22, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	>2420	>2420	>2420	>2420	>2420

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	2420.00	72.8	0.246	4.21	8.18	0.12	48.2	113.00	N/A	N 5-10	Yes

August 8, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	57	199	76	91	162

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	104.91	75.3	0.570	4.61	8.37	0.28	54.9	56.6	N/A	W 5-10	Yes

July 31, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	1046	727	649	411	411

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	608.41	69.6	0.545	4.01	8.11	0.260	44.30	53.30	N/A	NE 5-10	Yes

July 25, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	>2420	2420	>2420	>2420	>2420

Other Parameters	Geo Mean	Temp	SpC	DO	pH	Salinity	DO	Turbidity	Tide	Wind	Rain

		° F	mS/cm	mg/L		PSS	%	NTU			24/hr
Results	2420.00	72.1	0.140	4.61	8.20	0.07	52.1	170	N/A	SE 5-10	Yes

July 17, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	42	26	26	24	19

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	26.45	80.8	0.724	4.29	8.29	0.35	52.9	32.9	N/A	S 5-10	No

June 27, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	108	143	110	84	80

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	102.68	73.2	0.623	5.41	8.38	0.30	62.8	31.5	N/A	SE 5-10	Yes

June 20, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	687	1203	308	866	866

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	718.06	76.8	0.648	3.84	8.16	0.32	45.2	49.2	N/A	E 0-5	No

May 30, 2018

Sampling ID Numbers	1	2	3	4	5

Results (E. Coli MPN)	387	461	517	517	613

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	493.37	68.90	0.434	4.31	8.33	0.20	47.4	27.7	N/A	SE 5-10	Yes

May 23, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	>2420	>2420	>2420	>2420	>2420

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	2420	64.60	0.482	4.83	8.33	0.23	50.2	48.2	N/A	NW 10-15	Yes

May 21, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	488	517	365	461	219

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	392.35	70.2	0.515	5.31	8.56	0.25	58.2	28.30	N/A	NE 5-10	No

May 17, 2018

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	>2420	>2420	>2420	>2420	>2420

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr

Results	2420	69.5	0.386	4.17	8.44	0.18	46.2	45.30	N/A	E 5-10	Yes

May 3, 2018

Sampling ID Numbers	**1**	**2**	**3**	**4**	**5**
Results (E. Coli MPN)	21	10	17	27	37

Other Parameters	**Geo Mean**	**Temp ° F**	**SpC mS/cm**	**DO mg/L**	**pH**	**Salinity PSS**	**DO %**	**Turbidity NTU**	**Tide**	**Wind**	**Rain 24/hr**
Results	20.44	68.5	0.657	7.59	10.04	0.32	83.7	37.40	N/A	S 10-15	No

April 23, 2018

Sampling ID Numbers	**1**	**2**	**3**	**4**	**5**
Results (E. Coli MPN)	26	21	30	26	15

Other Parameters	**Geo Mean**	**Temp ° F**	**SpC mS/cm**	**DO mg/L**	**pH**	**Salinity PSS**	**DO %**	**Turbidity NTU**	**Tide**	**Wind**	**Rain 24/hr**
Results	22.97	58.4	0.68	9.54	9.99	0.33	93.5	27.100	N/A	SE 5-10	No

November 13, 2017

Sampling ID Numbers	**1**	**2**	**3**	**4**	**5**
Results (E. Coli MPN)	158	152	115	167	145

Other Parameters	**Geo Mean**	**Temp ° F**	**SpC mS/cm**	**DO mg/L**	**pH**	**Salinity PSS**	**DO %**	**Turbidity NTU**	**Tide**	**Wind**	**Rain 24/hr**
Results	146.24	45.2	0.525	7.42	8.53	0.25	59.6	27.2	N/A	N 5-10	Yes

November 8, 2017

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	2420	2420	>2420	>2420	>2420	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	2420.00	50.8	0.381	6.30	8.48	0.18	56.6	44.2	N/A	N 5-10	Yes

November 1, 2017

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	>2420	>2420	>2420	>2420	2420	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	2420.00	54.2	0.366	5.85	8.40	0.17	54.0	44.7	N/A	E 5-10	No

October 30, 2017

Sampling ID Numbers	1	2	3	4	5	
Results (E. Coli MPN)	1553	1733	>2420	>2420	>2420	

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	2071.49	57.1	0.502	6.03	8.60	0.24	57.7	50.2	N/A	W 15-20	Yes

October 18, 2017

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	101	119	162	105	142

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	123.76	60.5	0.458	3.40	8.22	0.22	33.4	46.2	N/A	SW 0-5	No

October 2, 2017

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	15	4	28	10	22

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	12.99	65.7	0.682	5.12	8.58	0.33	53.7	54.200	N/A	W 0-5	No

September 19, 2017

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	7	5	10	10	12

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	8.41	70.00	0.600	7.22	9.25	0.290	81.00	11.20	N/A	N 5-10	No

September 13, 2017

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	40	23	41	29	16

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	28.09	67.1	0.47	6.28	9.33	0.23	68.1	9.100	N/A	E 0-5	Yes

September 7, 2017

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	>2420	>2420	>2420	>2420	>2420

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	2420.00	65.90	0.377	3.87	8.42	0.180	40.80	42.50	N/A	W 10-15	Yes

September 5, 2017

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	387	387	313	308	172

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	301.31	69.10	0.455	5.85	9.09	0.220	64.00	13.20	N/A	SW 5-10	No

August 22, 2017

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	153	99	111	53	29

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	76.29	78.3	0.348	5.71	9.32	0.17	70.8	24.40	N/A	SW 0-5	Yes

August 10, 2017

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	40	23	10	52	10

Other Parameters	Geo	Temp	SpC	DO	pH	Salinity	DO	Turbidity	Tide	Wind	Rain

	Mean	° F	mS/cm	mg/L		PSS	%	NTU			24/hr
Results	21.67	74.0	0.461	6.42	9.29	0.22	75.3	23.10	N/A	S 0-5	No

July 27, 2017

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	31	27	19	13	19

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	20.84	79.1	0.492	5.46	9.05	0.24	68.5	11.50	N/A	S 5-10	No

July 13, 2017

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	4	10	32	12	43

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	14.59	81.8	0.440	5.64	9.22	0.21	72.0	11.40	N/A	W 5-10	No

June 26, 2017

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	12	11	16	45	24

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	18.69	79.50	0.550	6.00	8.98	0.270	73.90	6.2	N/A	W 5-10	No

June 21, 2017

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	548	411	299	387	345

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	389.73	78.8	0.568	4.54	8.89	0.28	56.0	9.50	N/A	W 10-15	Yes

June 7, 2017

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	96	91	70	118	144

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	100.77	69.8	0.627	5.88	9.53	0.30	65.5	13.5	N/A	NE 5-10	Yes

May 17, 2017

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	75	93	58	128	50

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	76.32	66.3	0.511	5.64	9.25	0.25	61.8	31.30	N/A	S 5-10	No

May 3, 2017

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	8	19	33	9	18

Other Parameters	Geo	Temp	SpC	DO	pH	Salinity	DO	Turbidity	Tide	Wind	Rain

	Mean	° F	mS/cm	mg/L		PSS	%	NTU			24/hr
Results	15.20	68.5	0.597	5.73	9.70	0.29	63.4	13.50	N/A	NE 0-5	No

April 17, 2017

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	14	15	14	23	13

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	15.45	67.20	0.63	8.07	9.46	0.31	88.3	4.3	N/A	W 5-10	Yes

October 31, 2016

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	70	28	28	53	44

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	41.82	56.80	0.633	9.86	9.75	0.300	95.40	N/A	N/A	N 5-10	Yes

October 11, 2016

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	31	24	32	48	24

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	30.74	64.30	0.573	8.53	9.03	0.280	88.00	N/A	N/A	E 0-5	No

September 15, 2016

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	4	10	20	9	26

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	11.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NE 5-10	No

August 17, 2016

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	161	238	166	517	115

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	206.79	82.10	0.509	6.97	8.53	0.25	89.80	N/A	N/A	W 5-10	Yes

August 10, 2016

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	19	11	45	79	23

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	27.96	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	S 5-10	No

August 3, 2016

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	687	579	461	387	344

Other Parameters	Geo	Temp	SpC	DO	pH	Salinity	DO	Turbidity	Tide	Wind	Rain

	Mean	° F	mS/cm	mg/L		PSS	%	NTU			24/hr
Results	475.91	75.9	0.445	6.16	8.46	0.21	73.3	N/A	N/A	E 5-10	Yes

July 19, 2016

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	7	12	2	9	86

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	10.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	NW 5-10	Yes

June 21, 2016

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	32	8	32	179	11

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	27.64	78.2	0.585	7.11	8.29	0.29	86.2	NA	N/A	W 5-10	No

June 7, 2016

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	328	313	326	308	365

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	327.41	77.80	0.559	7.17	8.00	0.270	87.30	NA	N/A	W 5-10	No

June 2, 2016

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	13	12	15	24	21

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	16.38	74.40	0.591	7.44	8.32	0.290	87.80	4.300	N/A	SE 5-10	No

May 25, 2016

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	128	119	118	113	158

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	128.26	68.0	0.514	7.53	7.76	0.25	82.2	N/A	N/A	W 5-10	No

May 11, 2016

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	68	77	118	83	78

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	83.26	57.40	0.462	7.45	7.66	0.220	70.20	N/A	N/A	SE 0-5	Yes

May 2, 2016

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	387	250	435	345	260

Other Parameters	Geo	Temp	SpC	DO	pH	Salinity	DO	Turbidity	Tide	Wind	Rain

	Mean	° F	mS/cm	mg/L		PSS	%	NTU			24/hr
Results	327.63	57.0	0.548	8.01	7.80	0.26	77.0	3.9	N/A	S 0-5	Yes

April 26, 2016

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	53	19	42	31	32

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	33.46	64.3	0.611	9.04	8.17	0.29	94.5	5.8	N/A	SW 10-15	N/A

April 19, 2016

Sampling ID Numbers	1	2	3	4	5
Results (E. Coli MPN)	21	20	16	21	30

Other Parameters	Geo Mean	Temp ° F	SpC mS/cm	DO mg/L	pH	Salinity PSS	DO %	Turbidity NTU	Tide	Wind	Rain 24/hr
Results	21.15	61.1	0.608	9.58	9.31	0.29	96.5	8.1	N/A	NE 0-5	N/A

WELCOME TO LAKE ROLAND

WE HOPE YOU ENJOY YOUR VISIT

SUMMARY OF RULES & REGULATIONS

- OPEN FROM SUNRISE TO SUNSET. PATRONS ARE NOT PERMITTED AT OTHER TIMES UNLESS INVOLVED IN PARK SPONSORED PROGRAMS.
- PETS MUST BE LEASHED, EXCEPT INSIDE PAW POINT DOG PARK. WWW.PAWPOINT.ORG
- PET OWNERS ARE RESPONSIBLE FOR REMOVAL OF ALL PET WASTE.
- HUNTING OR POSSESSION OF FIREARMS IS PROHIBITED.
- POSSESSION OR CONSUMPTION OF ALCOHOLIC BEVERAGES IS PROHIBITED.
- PERMITS ARE REQUIRED FOR GROUPS OF 12 OR MORE.
- HORSES, SWIMMING, ICE SKATING, VENTURING ON FROZEN BODIES OF WATER, THE USE OF METAL DETECTORS, OPEN FIRES, AND UNAUTHORIZED MOTOR VEHICLES ARE PROHIBITED.
- BIKING AND BOATING ALLOWED SUBJECT TO ADDITIONAL REGULATIONS. REGULATIONS AVAILABLE AT WWW.LAKEROLAND.ORG
- PROPANE OR NATURAL GAS GRILLS AND STOVES ARE PROHIBITED.
- REMOTE CONTROLLED VEHICLES OF ANY FORM POWERED BY AN ENGINE, MOTOR, OR BATTERY ARE PROHIBITED. THIS INCLUDES RC CARS, RC AIRCRAFT, RC BOATS AND DRONES. MODEL ROCKETS OF ANY KIND ARE PROHIBITED.
- ALL PERSONS SHALL COMPLY WITH THE SIGNS AND MARKERS INSTALLED BY THE DEPT. OF REC & PARKS.

SCAN ME

VIOLATORS WILL BE PROSECUTED

HELP KEEP YOUR PARK CLEAN

BALTIMORE COUNTY DEPARTMENT OF RECREATION & PARKS

FOR MORE INFORMATION PLEASE CALL 410-887-4156 OR GO TO WWW.LAKEROLAND.ORG

LOST SOMETHING?



Check with our Nature Center staff and see if your item is there!

(410) 887-4156

STREAM SENSE

This location has been identified as having potential for recurring sanitary sewer overflows during and following heavy rainfall.

Storm water runoff from streets, parking lots, fields and lawns, as well as occasional leaks or overflows from the sanitary sewer system, may carry pollutants that negatively affect stream water quality, causing a potential health risk.

Follow these guidelines and use your "Stream Sense" whenever you use our rivers and streams:

- Avoid or minimize contact with natural waters whenever they are cloudy or immediately after storms and heavy rain.
- Do not drink stream water.
- Avoid hand to mouth contact when possible. Wash your hands before eating, after working or playing in a stream.
- Minimize water contact with open wounds or cuts, and wash with soap and water after contact with a stream.

THIS ADVISORY WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE!

Baltimore County Department of Health
Bureau of Environmental Health Services
[illegible]

2022 WINTER PROGRAMS

INFO BOX

NO SWIMMING OR SKATING

LIFEJACKETS MUST BE WORN AT ALL TIMES

SCAN ME TO SEE A CURRENT POST 9 TRAIL MAP!

STREAM SENSE

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Baltimore County Department of Health
Division of Environmental Health Services
6401 York Road, Third Floor | Baltimore, Maryland 21212
Phone: 410-887-FOOD (3663) | Fax: 410-887-3392
Email: ehs@baltimorecountymd.gov | Website: www.baltimorecountymd.gov/ehs

NO
PARKING
BALTIMORE COUNTY
DEPT OF
RECREATION & PARKS

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APPENDIX E: Table 4-3.4 - Summary of Sewer Defects by Sewer Segment
Jones Falls SRRR: Collection System Investigation

Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
BC01	45-59-35-01	18497A-18497	18497A	18497	11	1			2	1	7					X
BC01	45-59-35-01	18498-18497A	18498	18497A	1					1						
BC01	45-59-35-01	18552-18496	18552	18496	2				2							
BC01	45-59-35-01	37992-18496	37992	18496	6										6	
BC01	45-59-35-01	37993-37992	37993	37992	1					1						
BC01	45-59-35-01	38685P-38683	38685P	38683	23										23	
BC01	45-59-35-01	38686-38685	38686	38685	1								1			
BC01	45-59-35-01	38687-38686	38687	38686	5				2	2			1			
BC01	45-59-35-01	38690-38689	38690	38689	2				2							X
BC01	45-59-35-01	49940-38687	49940	38687	1					1						
BC01	45-59-35-01	49941-49940	49941	49940	6			2	2		2					
BC01	45-59-35-01	49943-49942	49943	49942	1						1					
BC01	45-59-35-01	49946-49945	49946	49945	4				1		1		2			
BC01	45-59-35-01	49948-38686	49948	38686	1				1							
BC01	45-59-35-01	49950-49949	49950	49949	4		1		2		1					X
BC01	45-59-35-01	49951-49950	49951	49950	2				2							
BC01	45-59-35-01	49952-49951	49952	49951	3				3							
BC01	45-59-35-01	49952A-49952	49952A	49952	1				1							
BC01	45-59-35-01	49952B-49952A	49952B	49952A	1				1							
BC01	45-59-35-01	49954A-49954	49954A	49954	4		2				2					X
BC01	45-59-35-01	49955-49954	49955	49954	5		2				2		1			X
BC01	45-59-35-01	49957-49954A	49957	49954A	1		1									
BC01	45-59-35-01	49961-49960	49961	49960	2						1		1			
BC01	45-59-35-01	49962-49961	49962	49961	3		1		2							X
BC01	45-59-35-02	18553-18552	18553	18552	18		1		14	2		1				
BC01	45-59-35-02	41530-43502	41530	43502	86		1					85				
BC01	45-59-35-03	31151-30159	31151	30159	5			2	3							
BC01	45-59-35-03	31152-31151	31152	31151	4			4								
BC01	45-59-35-03	31157-31156	31157	31156	1				1							
BC01	45-59-35-03	31159-31158	31159	31158	1					1						
BC01	45-59-35-03	31160-31159	31160	31159	2				2							
BC01	45-59-35-03	32083-32082	32083	32082	4				2	1	1					
BC01	45-59-35-03	32085-32523	32085	32523	1				1							
BC01	45-59-35-03	32086-32085	32086	32085	5			4	1							
BC01	45-59-35-03	32087-32086	32087	32086	1			1								
BC01	45-59-35-03	32088-32086	32088	32086	2		2									X
BC01	45-59-35-03	32327-32326	32327	32326	1				1							
BC01	45-59-35-03	32521-32520	32521	32520	1					1						
BC01	45-59-35-03	32523-32522	32523	32522	1				1							
BC01	45-59-35-03	34676-34675	34676	34675	1				1							
BC01	45-59-35-03	35105-35104	35105	35104	2				2							
BC01	45-59-35-03	35107-35106	35107	35106	1				1							
BC01	45-59-35-04	21044-21043	21044	21043	5				5							
BC01	45-59-35-04	21054-21043	21054	21043	4							4				
BC01	45-59-35-04	21055-21054	21055	21054	7				1			1			5	
BC01	45-59-35-04	21056-21055	21056	21055	21				3		1	7	2		8	
BC01	45-59-35-04	21057-21056	21057	21056	2				2							X
BC01	45-59-35-04	21058-21057	21058	21057	4				1						3	
BC01	45-59-35-05	21042-41529	21042	41529	10								10			
BC01	45-59-35-05	21048-21047	21048	21047	2				2							
BC01	45-59-35-05	21049-21048	21049	21048	9			1	7						1	X
BC01	45-59-35-05	21050-21049	21050	21049	86		1	78	4	1	1				1	X
BC01	45-59-35-05	21051-21050	21051	21050	22							22				
BC01	45-59-35-05	21052-21051	21052	21051	19						19					
BC01	45-59-35-05	21053-21049	21053	21049	21			2	14						5	
BC01	45-59-35-06	21062-21061	21062	21061	8				1				7			
BC01	45-59-35-06	21063-21062	21063	21062	2				2							
BC01	45-59-35-06	21074-21063	21074	21063	26				1			25				
BC01	45-59-35-06	21075-21074	21075	21074	2				2							
BC01	45-59-35-06	21076-21063	21076	21063	17										17	
BC01	45-59-35-06	21077-21076	21077	21076	4				4							X
BC01	45-59-35-06	21080-21079	21080	21079	46				1	1					44	
BC01	45-59-35-06	21083-21077	21083	21077	5										5	
BC01	45-59-35-06	55937-55936	55937	55936	1						1					
BC01	45-59-35-07	21066-21065	21066	21065	1					1						
BC01	45-59-35-07	21067-21066	21067	21066	1				1							
BC01	45-59-35-07	21068-21067	21068	21067	2										2	
BC01	45-59-35-07	21069-21068	21069	21068	6				2						4	
BC01	45-59-35-07	21070-21069	21070	21069	3				2				1			
BC01	45-59-35-07	21071-21067	21071	21067	27										27	
BC01	45-59-35-07	21072-21070	21072	21070	12				1				1		10	
BC01	45-59-35-07	21073-21070	21073	21070	1				1							
BC01	45-59-35-07	30948-30947	30948	30947	1			1								
BC01	45-59-35-07	30951-30950	30951	30950	14		1		1	3			1		8	X
BC01	45-59-35-07	31001-21071	31001	21071	19				6						13	
BC02	45-59-34-00	13996-13995	13996	13995	3			1	1	1						X
BC02	45-59-34-00	13997-13995	13997	13995	1				1							X
BC02	45-59-34-00	13998-13997	13998	13997	2				2							X
BC02	45-59-34-00	14611-13996	14611	13996	5			1	4							X
BC02	45-59-34-00	14613-14612	14613	14612	1				1							X
BC02	45-59-34-00	18363-7256	18363	7256	88					1	43				44	X
BC02	45-59-34-00	18364-18363	18364	18363	9		2			1			3	3		X
BC02	45-59-34-00	18374-7289	18374	7289	34					1	33					X
BC02	45-59-34-00	20244-7289	20244	7289	52		1			2	29				20	X
BC02	45-59-34-00	20245-20244	20245	20244	39		1								38	X
BC02	45-59-34-00	20246-20245	20246	20245	95				7	3	4				81	X
BC02	45-59-34-00	20248-20247	20248	20247	69				38	1	1				29	X
BC02	45-59-34-00	20249-20248	20249	20248	2				1	1						X
BC02	45-59-34-00	20250-20249	20250	20249	13						13					X
BC02	45-59-34-00	20251-53727A	20251	53727A	1		1									X
BC02	45-59-34-00	35645-7254	35645	7254	60				2	1	1				56	X
BC02	45-59-34-00	35646-35645	35646	35645	40					1					39	X
BC02	45-59-34-00	53727B-20250	53727B	20250	14			1	1		12					X
BC02	45-59-34-00	53730-53729	53730	53729	1					1						X
BC02	45-59-34-00	7255-7254	7255	7254	126				8	2	61				55	X
BC02	45-59-34-00	7256-7255	7256	7255	40				1		7				32	X
BC02	45-59-34-00	7257-7270	7257	7270	1					1						X
BC02	45-59-34-00	7258-7257	7258	7257	21	1	2		3		15					X
BC02	45-59-34-00	7259-7258	7259	7258	4				2		2					X
BC02	45-59-34-00	7260-7259	7260	7259	2				2							X
BC02	45-59-34-00	7261-7260	7261	7260	41						41					X

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Jones Falls SRRR: Collection System Investigation

Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
BC02	45-59-34-00	7263-7262	7263	7262	43						43					X
BC02	45-59-34-00	7264-7263	7264	7263	27						27					X
BC02	45-59-34-00	7265-7264	7265	7264	73					1	72					X
BC02	45-59-34-00	7266-7256	7266	7256	3				2	1						X
BC02	45-59-34-00	7268-7267	7268	7267	24		2		1	2	19					X
BC02	45-59-34-00	7269-7268	7269	7268	79				1		78					X
BC02	45-59-34-00	7270-7266	7270	7266	68				2		66					X
BC02	45-59-34-00	7271-7270	7271	7270	9						9					X
BC02	45-59-34-00	7272-7271	7272	7271	35				1	3	31					X
BC02	45-59-34-00	7273-7272	7273	7272	5				2	3						X
BC02	45-59-34-00	7274-7273	7274	7273	63					2	61					X
BC02	45-59-34-00	7275-7258	7275	7258	1		1									X
BC02	45-59-34-00	7276-7275	7276	7275	2					2						X
BC02	45-59-34-00	7277-7259	7277	7259	2				1	1						X
BC02	45-59-34-00	7278-7277	7278	7277	27				1		26					X
BC02	45-59-34-00	7279-7278	7279	7278	15				10	2			3			X
BC02	45-59-34-00	7280-7260	7280	7260	3					3						X
BC02	45-59-34-00	7281-7280	7281	7280	1					1						X
BC02	45-59-34-00	7282-7262	7282	7262	1					1						X
BC02	45-59-34-00	7287-7265	7287	7265	49						49					X
BC02	45-59-34-00	7288-7287	7288	7287	49				1	1	47					X
BC02	45-59-34-00	7289-7256	7289	7256	77				2	1	74					X
BC03	45-59-33-00	65373-6990	65373	6990	5			4		1						X
BC03	45-59-33-00	65374-65373	65374	65373	16										16	X
BC03	45-59-33-00	65375-65374	65375	65374	4										4	X
BC03	45-59-33-00	6990-32475	6990	32475	1						1					X
BC03	45-59-34-00	7252-6995	7252	6995	1					1						X
BC03	45-59-34-00	7253-7252	7253	7252	1					1						X
BC04	45-59-30-01	23057-7162	23057	7162	1				1							X
BC04	45-59-30-01	23058-23057	23058	23057	16					1	15					X
BC04	45-59-30-01	7051-7050	7051	7050	6			2	3						1	X
BC04	45-59-30-01	7052-7052M	7052	7052M	4				4							X
BC04	45-59-30-01	7161-7052M	7161	7052M	29				2	4			2		21	X
BC04	45-59-30-01	7162-7161	7162	7161	6				1				5			X
BC04	45-59-30-01	7163-23057	7163	23057	16						16					X
BC04	45-59-30-01	7164-7163	7164	7163	45						45					X
BC04	45-59-30-02	14547-14546	14547	14546	7			1	2	1			3			X
BC04	45-59-30-02	14548-14547	14548	14547	3				1				2			X
BC04	45-59-30-02	14550-14549	14550	14549	2								2			X
BC04	45-59-30-02	14551-14550	14551	14550	2		1				1					X
BC04	45-59-30-02	14552-14551	14552	14551	5				2		3					X
BC04	45-59-30-02	14553-14552	14553	14552	20				4		9		7			X
BC04	45-59-30-02	14554-14549	14554	14549	1				1							X
BC04	45-59-30-02	14555-14554	14555	14554	2				2							X
BC04	45-59-30-02	14558-14557	14558	14557	2					2						X
BC04	45-59-30-02	14560-14559	14560	14559	4						2		2			X
BC04	45-59-30-02	14563-14562	14563	14562	1								1			X
BC04	45-59-30-02	14564-14562	14564	14562	3								3			X
BC04	45-59-30-02	16797-14563	16797	14563	41				40				1			X
BC04	45-59-30-02	16798-16797	16798	16797	33				33							X
BC04	45-59-30-02	16799-16798	16799	16798	19				10		9					X
BC04	45-59-30-02	42832-14546	42832	14546	1		1									X
BC04	45-59-30-02	42833-42832A	42833	42832A	2		1			1						X
BC04	45-59-30-02	7179-7178	7179	7178	2		1		1							X
BC04	45-59-30-02	7180-7179	7180	7179	15		2		11	2						X
BC04	45-59-30-02	7181-7180	7181	7180	6		1			3					2	X
BC04	45-59-30-02	7182-7181	7182	7181	67				3	2	61		1			X
BC04	45-59-30-02	7184-7183	7184	7183	9				7	2						X
BC04	45-59-30-02	7188-7184	7188	7184	14		2		1	2		9				X
BC04	45-59-30-02	7189-7188	7189	7188	9				5	4						X
BC04	45-59-30-02	7190-7189	7190	7189	11				7	4						X
BC04	45-59-30-02	C469-7183	C469	7183	28				1		26		1			X
BC04	45-59-30-02	C647-14556	C647	14556	1					1						X
BC04	45-59-30-03	11897-7052	11897	7052	1				1							X
BC04	45-59-30-03	16536-11897	16536	11897	9		1	5		3						X
BC04	45-59-30-03	20429-7056	20429	7056	1			1								X
BC04	45-59-30-03	20430-20429	20430	20429	7				3	4						X
BC04	45-59-30-03	20431-20430	20431	20430	4					4						X
BC04	45-59-30-03	20983-7203	20983	7203	1				1							X
BC04	45-59-30-03	20984-20983	20984	20983	1				1							X
BC04	45-59-30-03	20985-20984	20985	20984	1				1							X
BC04	45-59-30-03	7053-7052	7053	7052	4				4							X
BC04	45-59-30-03	7054-7053	7054	7053	25				14	6					5	X
BC04	45-59-30-03	7055-7054	7055	7054	21		2	6	8	5						X
BC04	45-59-30-03	7057-7056	7057	7056	6				6							X
BC04	45-59-30-03	7059-7057	7059	7057	19		3		16							X
BC04	45-59-30-03	7060-7059	7060	7059	49						49					X
BC04	45-59-30-03	7165-7052	7165	7052	9				7	2						X
BC04	45-59-30-03	7166-7165	7166	7165	11		6		4	1						X
BC04	45-59-30-03	7167-7166	7167	7166	1					1						X
BC04	45-59-30-03	7168-7167	7168	7167	1		1									X
BC04	45-59-30-03	7169-7168	7169	7168	2					2						X
BC04	45-59-30-03	7177-7176	7177	7176	1					1						X
BC04	45-59-30-03	7193-7193M	7193	7193M	4				1		3					X
BC04	45-59-30-03	7193M-7192	7193M	7192	4		2		1	1						X
BC04	45-59-30-03	7194-7193	7194	7193	46				3	1	42					X
BC04	45-59-30-03	7202-901844	7202	901844	11				10	1						X
BC04	45-59-30-03	7203-7201	7203	7201	1					1						X
BC04	45-59-30-03	7204-7203	7204	7203	4		3			1						X
BC04	45-59-30-03	7205-7204	7205	7204	18				18							X
BC04	45-59-30-03	7206-7205	7206	7205	2				2							X
BC04	45-59-30-03	7207-7206	7207	7206	4		2		1	1						X
BC04	45-59-30-03	7208-7207	7208	7207	1					1						X
BC04	45-59-30-03	7209-7208	7209	7208	8		2		4	2						X
BC04	45-59-30-03	7210-7209	7210	7209	17		4		8	3			2			X
BC04	45-59-30-03	7211-7210	7211	7210	4		1		1	1			1			X
BC04	45-59-30-03	7212-7211	7212	7211	1					1						X
BC04	45-59-30-03	7213-7212	7213	7212	4					4						X
BC04	45-59-30-03	901844-7201	901844	7201	3				1	1	1					X
BC05	45-73-02-00	43792-43791	43792	43791	17										17	
BC05	45-73-02-00	43793-43792	43793	43792	31				2						29	

APPENDIX E: Table 4-3.4 - Summary of Sewer Defects by Sewer Segment
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Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
BC05	45-73-03-01	43798-43797	43798	43797	2				1						1	
BC05	45-73-03-01	43800-43799	43800	43799	6		1		2						3	
BC05	45-73-03-01	43806-43798	43806	43798	5				1				2		2	X
BC05	45-73-03-01	43807-43806	43807	43806	3								3			X
BC05	45-73-03-01	43808-43807	43808	43807	1						1					
BC05	45-73-03-01	43810-43800	43810	43800	1					1						
BC05	45-73-03-01	43811-43810	43811	43810	1				1							
BC05	45-73-03-01	43816-43815	43816	43815	3								1		2	
BC05	45-73-03-01	43818-43815	43818	43815	2			1					1			
BC05	45-73-03-01	45735-43818	45735	43818	27								1		26	
BC05	45-73-03-01	45736-45735	45736	45735	1								1			X
BC05	45-73-03-01	45737-45736	45737	45736	17								1		16	
BC05	45-73-03-01	45738-45737	45738	45737	2								1		1	
BC05	45-73-03-02	43794-43793	43794	43793	2			2								X
BC05	45-73-03-02	43795-43794A	43795	43794A	1			1								X
BC05	45-73-03-02	43801-43796	43801	43796	2				1	1						X
BC05	45-73-03-02	43802-43801	43802	43801	1				1							
BC05	45-73-03-02	43803-43802	43803	43802	36								1		35	
BC05	45-73-03-02	43804-43803	43804	43803	58										58	
BC05	45-73-03-02	43805-43804	43805	43804	2				2							X
BC05	45-73-03-02	43819-43794	43819	43794	1					1						
BC05	45-73-03-02	45741-45748	45741	45748	1				1							
BC05	45-73-03-02	45743-45742	45743	45742	2								2			X
BC05	45-73-03-02	45746-43805	45746	43805	25			1							24	
BC05	45-73-03-02	45748-45747	45748	45747	1				1							
BC05	45-73-03-02	45749-45741	45749	45741	1						1					
BC05	45-73-03-02	45750-45749	45750	45749	3								3			
BC05	45-73-03-02	53870-53869	53870	53869	9										9	
BC05	45-73-03-02	53875-53874	53875	53874	1					1						
BC05	45-73-04-00	43822-43822M	43822	43822M	25					1					24	
BC05	45-73-04-00	43824-43823	43824	43823	2					2						
BC05	45-73-04-00	43825-43824	43825	43824	2			2								X
BC06	45-59-15-01	38531-38530A	38531	38530A	2	1						1				X
BC06	45-59-15-01	38538-38537	38538	38537	1			1								
BC06	45-59-15-01	38539-38538A	38539	38538A	4		1	2	1							
BC06	45-59-15-01	52336-52335	52336	52335	1	1										X
BC06	45-59-15-01	52337-52336	52337	52336	1	1										
BC06	45-59-15-04	38651-38650	38651	38650	1			1								
BC06	45-59-15-04	38653-38651	38653	38651	2										2	
BC06	45-59-15-04	39448-38652	39448	38652	3				2				1			
BC06	45-59-15-04	39450-39449	39450	39449	3				3							
BC06	45-59-15-04	39453-39452	39453	39452	2						1		1			
BC06	45-59-15-04	39455-39454	39455	39454	1								1			
BC07	45-59-17-01	22009-6957	22009	6957	41				4			37				X
BC07	45-59-17-01	6957-6956	6957	6956	33			1	5			27				X
BC07	45-59-18-00	17315-17313	17315	17313	11				1				10			X
BC07	45-59-18-00	18297-6958	18297	6958	8			3				5				X
BC07	45-59-18-00	18301-18300	18301	18300	2				1	1						X
BC07	45-59-18-00	22010-22009	22010	22009	13			1				12				
BC07	45-59-18-00	22011-22011M	22011	22011M	12							12				
BC07	45-59-18-00	22011M-22010	22011M	22010	50							50				
BC07	45-59-19-00	22012-22011	22012	22011	58			1	1			56				
BC07	45-59-19-00	22013-22012	22013	22012	54			2	3			49				X
BC07	45-59-19-00	NS1079-22013	NS1079	22013	27		1	2				24				X
BC07	45-59-20-01	42229-NS1079	42229	NS1079	39							38		1		
BC07	45-59-20-01	42231-42230	42231	42230	3		1	1					1			
BC07	45-59-20-01	48063-42229	48063	42229	16			1							15	
BC07	45-59-20-01	48066-48065	48066	48065	1		1									
BC07	45-59-20-01	48070-48069	48070	48069	4										4	
BC07	45-59-20-01	49690-49689	49690	49689	14										14	
BC07	45-59-20-01	49691-49690	49691	49690	28										28	
BC07	45-59-20-01	49692-49691	49692	49691	1								1			
BC07	45-59-20-01	49695-49691	49695	49691	2	1								1		
BC08	45-59-17-01	14454-19876	14454	19876	1			1								
BC08	45-59-17-01	19874-19873	19874	19873	6				6							X
BC08	45-59-17-01	19875-19874	19875	19874	1			1								
BC08	45-59-17-01	19876-19875	19876	19875	2			1	1							
BC08	45-59-17-01	19881-19880	19881	19880	4				1	1				2		
BC08	45-59-17-01	19882-19881	19882	19881	8			5	2				1			X
BC08	45-59-17-01	19883-19882	19883	19882	5				1				4			X
BC08	45-59-17-01	19884-19883	19884	19883	4			2	1	1						X
BC08	45-59-17-01	19885-19884	19885	19884	13		1	1		1	2		8			X
BC08	45-59-17-01	19886-19883	19886	19883	3								3			
BC08	45-59-17-01	19887-19881	19887	19881	2				1				1			
BC08	45-59-17-01	19888-19877	19888	19877	1				1							
BC08	45-59-17-01	19889-19888	19889	19888	14			14								
BC08	45-59-17-01	19890-19889	19890	19889	5		3		2							X
BC08	45-59-17-01	19891-19890	19891	19890	5		1	3			1					X
BC08	45-59-17-01	19893-19892	19893	19892	19										19	
BC08	45-59-17-02	21620-21621	21620	21621	3				3							X
BC08	45-59-17-02	22090-21620	22090	21620	2				2							
BC08	45-59-17-02	22091-22090	22091	22090	5				5							X
BC08	45-59-17-02	22093-22092	22093	22092	1			1								
BC08	45-59-17-02	22099-22098	22099	22098	2				2							
BC08	45-59-17-02	22101-22100	22101	22100	1			1								
BC08	45-59-17-03	21623-21622	21623	21622	9										9	
BC08	45-59-17-03	52092-52091	52092	52091	49										49	
BC08	45-59-17-03	52093-52092	52093	52092	15										15	
BC08	45-59-17-03	52094-52093	52094	52093	31										31	
BC08	45-59-17-03	52095-52094	52095	52094	18										18	
BC08	45-59-17-03	52096-52095	52096	52095	21										21	
BC08	45-59-17-03	52097-52096	52097	52096	21										21	
BC08	45-59-17-03	52098-52097	52098	52097	20										20	
BC08	45-59-17-03	52099-52098	52099	52098	26										26	
BC08	45-59-17-03	52100-52099	52100	52099	14						1				13	
BC08	45-59-17-03	52240-52100	52240	52100	30										30	
BC08	45-59-17-03	52241-52240	52241	52240	31										31	
BC08	45-59-17-03	52522-52521	52522	52521	1		1									
BC08	45-59-17-04	21642-21641	21642	21641	1					1						
BC08	45-59-17-04	21644-21643	21644	21643	3			1	2							
BC08	45-59-17-04	21651-21649	21651	21649	1		1									X

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Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
BC08	45-59-17-04	21652-21651	21652	21651	4			4								
BC08	45-59-17-04	21653-21652	21653	21652	3			3								
BC08	45-59-17-04	35550-35549	35550	35549	3				2	1						
BC08	45-59-17-04	52148-35550	52148	35550	1	1										
BC09	45-59-20-01	15269-NS1080	15269	NS1080	97		1	32	6		1	57				X
BC09	45-59-20-01	NS1080-NS1079	NS1080	NS1079	53			1	11			41				X
BC09	45-59-21-00	17480-17479	17480	17479	1				1							X
BC09	45-59-21-00	17481-17480	17481	17480	27					1			22		4	X
BC09	45-59-21-00	17482-17481	17482	17481	1					1						X
BC09	45-59-21-00	42226-42225	42226	42225	1									1		X
BC09	45-59-21-00	6966-6965	6966	6965	33			14	3						16	X
BC09	45-59-22-00	13238-7120	13238	7120	2				2							X
BC09	45-59-22-00	37033-37193	37033	37193	3				1		1		1			X
BC09	45-59-22-00	47358-47357	47358	47357	1					1						X
BC09	45-59-22-00	63663-7113	63663	7113	7								7			X
BC09	45-59-22-00	6967-6966	6967	6966	22							22				X
BC09	45-59-22-00	7113-6966	7113	6966	4			3	1							X
BC09	45-59-22-00	7115-63665	7115	63665	1				1							X
BC09	45-59-22-00	7116-7115	7116	7115	4				3	1						X
BC09	45-59-22-00	7117-7116	7117	7116	4		1		2	1						X
BC09	45-59-22-00	7118-7117	7118	7117	5				3	2						X
BC09	45-59-22-00	7119-7118	7119	7118	9				5	2			2			X
BC09	45-59-22-00	7120-7119	7120	7119	5					5						X
BC09	45-59-22-00	7121-7120	7121	7120	9				1	3	1		2	2		X
BC09	45-59-22-00	7121M-7121	7121M	7121	19		1		3	1	13		1			X
BC09	45-59-22-00	7122-13238	7122	13238	7				6	1						X
BC09	45-59-22-00	7123-7122	7123	7122	7					7						X
BC09	45-59-22-00	7125-7124	7125	7124	3					3						X
BC09	45-59-22-00	7127-7126	7127	7126	4				2	1	1					X
BC09	45-59-22-00	7128-7127	7128	7127	1						1					X
BC09	45-59-22-00	7129-7128	7129	7128	2					2						X
BC09	45-59-22-00	7130-7129	7130	7129	1					1						X
BC09	45-59-22-00	7132-7128	7132	7128	2						2					X
BC09	45-59-22-00	7133-7132	7133	7132	4					4						X
BC09	45-59-22-00	7134-7133	7134	7133	3					3						X
BC09	45-59-22-00	7135-7134	7135	7134	2					1	1					X
BC09	45-59-22-00	7136-7135	7136	7135	2				1	1						X
BC09	45-59-22-00	7137-7136	7137	7136	1					1						X
BC09	45-59-22-00	7138-7115	7138	7115	1					1						X
BC09	45-59-22-00	7139-7138	7139	7138	1					1						X
BC09	45-59-22-00	7140-7139	7140	7139	2	2										X
BC09	45-59-22-00	7141-7140	7141	7140	3						3					X
BC09	45-59-22-00	7143-7142	7143	7142	3		1			1	1					X
BC09	45-59-22-00	7144-7143	7144	7143	1					1						X
BC09	45-59-22-00	7145-7144	7145	7144	4				1	3						X
BC09	45-59-22-00	7147-7146	7147	7146	1								1			X
BC09	45-59-22-00	7149-14316	7149	14316	7		1		2	4						X
BC09	45-59-22-00	7150-7149	7150	7149	3		1			2						X
BC09	45-59-22-00	7151-7150	7151	7150	6		1		1	1	3					X
BC09	45-59-22-00	7153-7152	7153	7152	5				3	2						X
BC09	45-59-22-00	7154-7153	7154	7153	1				1							X
BC09	45-59-22-00	7155-7154	7155	7154	6				2	2			2			X
BC09	45-59-22-00	7156-7155	7156	7155	4		1		1		2					X
BC09	45-59-22-00	7157-7156	7157	7156	1				1							X
BC09	45-59-22-00	7158-7157	7158	7157	45				2	2	41					X
BC09	45-59-22-00	7160-7159	7160	7159	3				1	2						X
BC09	45-59-22-00	7221-7139	7221	7139	3		1		2							X
BC09	45-59-23-00	6965-33438	6965	33438	2		1	1								X
BC09	45-59-23-00	7062-7061	7062	7061	5				1	1	1				2	X
BC09	45-59-23-00	7063-7062	7063	7062	8		1			2			3		2	X
BC09	45-59-23-00	7064-7063	7064	7063	47				2	2	43					X
BC09	45-59-23-00	7065-7064	7065	7064	8		3		3	2						X
BC09	45-59-24-00	38775-38774	38775	38774	35				1						34	X
BC09	45-59-24-00	38776-38775	38776	38775	6										6	X
BC09	45-59-24-00	38777-38776	38777	38776	5										5	X
BC09	45-59-24-00	38778-38777	38778	38777	4					1					3	X
BC09	45-59-24-00	38780-38779	38780	38779	14			1		1					12	X
BC09	45-59-24-00	38781-38780	38781	38780	37										37	X
BC09	45-59-24-00	38782-38781	38782	38781	12										12	X
BC09	45-59-24-00	38783-38781	38783	38781	26										26	X
BC09	45-59-25-00	33445-33444	33445	33444	1					1						X
BC09	45-59-25-00	67346-7085	67346	7085	1					1						X
BC09	45-59-25-00	6970-6970M	6970	6970M	7			3	2					2		X
BC09	45-59-25-00	6970M-33444M	6970M	33444M	5									5		X
BC09	45-59-25-00	6973-6972	6973	6972	2			1		1						X
BC09	45-59-25-00	7061-6967	7061	6967	6			6								X
BC09	45-59-25-00	7071-33444	7071	33444	1				1							X
BC09	45-59-25-00	7072-14682	7072	14682	2		1			1						X
BC09	45-59-25-00	7077-6970	7077	6970	3			1		2						X
BC09	45-59-25-00	7078-7077	7078	7077	2			1	1							X
BC09	45-59-25-00	7079-7078	7079	7078	1					1						X
BC09	45-59-25-00	7080-7071	7080	7071	18		9		8	1						X
BC09	45-59-25-00	7082-7081	7082	7081	1				1							X
BC09	45-59-25-00	7083-7082	7083	7082	7				2	4			1			X
BC09	45-59-25-00	7084-7083	7084	7083	1				1							X
BC09	45-59-26-00	7086-33446	7086	33446	4				4							X
BC09	45-59-26-00	7087-900091	7087	900091	11		4			7						X
BC09	45-59-26-00	7088-7087	7088	7087	7				6	1						X
BC09	45-59-27-00	13253-C454	13253	C454	4				1	3						X
BC09	45-59-27-00	15040-13253	15040	13253	5				2	3						X
BC09	45-59-27-00	15041-15040	15041	15040	2					2						X
BC09	45-59-27-00	15722-7101	15722	7101	9				7	2						X
BC09	45-59-27-00	15723-15722	15723	15722	13		2		5	2	4					X
BC09	45-59-27-00	16402-16401	16402	16401	2				2							X
BC09	45-59-27-00	16403-16402	16403	16402	46			42	4							X
BC09	45-59-27-00	16404-16403	16404	16403	5			3	2							X
BC09	45-59-27-00	16406-16405	16406	16405	1				1							X
BC09	45-59-27-00	17295-7093	17295	7093	2		1		1							X
BC09	45-59-27-00	61891-16406	61891	16406	5				4	1						X
BC09	45-59-27-00	7092-33448	7092	33448	2				2							X
BC09	45-59-27-00	7093-7092	7093	7092	2				1				1			X

APPENDIX E: Table 4-3.4 - Summary of Sewer Defects by Sewer Segment
Jones Falls SRRR: Collection System Investigation

Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
BC09	45-59-27-00	7094-7093	7094	7093	9			2	5	1			1			X
BC09	45-59-27-00	7095-7094	7095	7094	8		1		7							X
BC09	45-59-27-00	7098-7097	7098	7097	1				1							X
BC09	45-59-27-00	7100-7099	7100	7099	4				4							X
BC09	45-59-27-00	7103-7099	7103	7099	9		1		7	1						X
BC09	45-59-27-00	C445-7102	C445	7102	7				7							X
BC09	45-59-28-00	22142-6973	22142	6973	16								6	10		X
BC09	45-59-28-00	6978-33451	6978	33451	62				23				39			X
BC09	45-59-29-00	20554-20553	20554	20553	1					1						X
BC09	45-59-29-00	20555-20554	20555	20554	2		1	1								X
BC09	45-59-29-00	20556-20555	20556	20555	1								1			X
BC09	45-59-29-00	21805-7108	21805	7108	28			1	17						10	X
BC09	45-59-29-00	21806-21805	21806	21805	43				22						21	X
BC09	45-59-29-00	21807-21806	21807	21806	20				18	2						X
BC09	45-59-29-00	21808-38581	21808	38581	1				1							X
BC09	45-59-29-00	21809-21808	21809	21808	5				4				1			X
BC09	45-59-29-00	21810-21809	21810	21809	4				4							X
BC09	45-59-29-00	37012-37011	37012	37011	121					15		106				X
BC09	45-59-29-00	37014-20553	37014	20553	41			1				40				X
BC09	45-59-29-00	37378-21807	37378	21807	13							13				X
BC09	45-59-29-00	37379-37378	37379	37378	6							6				X
BC09	45-59-29-00	41020-38582	41020	38582	2					2						X
BC09	45-59-29-00	41919-20556	41919	20556	2				2							X
BC09	45-59-29-00	41919A-41919	41919A	41919	2				1						1	X
BC09	45-59-29-00	41920-41919	41920	41919	25										25	X
BC09	45-59-29-00	41921-41920	41921	41920	15		1			2					12	X
BC09	45-59-29-00	41922A-41919A	41922A	41919A	1				1							X
BC09	45-59-29-00	6979-6978	6979	6978	3				1	1			1			X
BC09	45-59-29-00	6980-6979	6980	6979	4				1				3			X
BC09	45-59-29-00	6981-6980	6981	6980	9			2	7							X
BC09	45-59-29-00	6982-6981	6982	6981	7			4	2				1			X
BC09	45-59-29-00	7106-20553	7106	20553	11				9	2						X
BC09	45-59-29-00	7107-7106	7107	7106	11				6	4			1			X
BC09	45-59-29-00	7108-7107	7108	7107	3				3							X
BC09	45-59-29-00	7109-7108	7109	7108	1				1							X
BC09	45-59-29-00	7111-7108	7111	7108	1					1						X
BC09	45-59-29-00	7112-7111	7112	7111	3			1	1				1			X
BC09	45-59-30-02	33453-33452	33453	33452	64							63	1			X
BC09	45-59-30-02	33457-33456	33457	33456	116			1				114			1	X
BC09	45-59-30-02	6984-6983	6984	6983	77						2			12	63	X
BC09	45-59-31-00	16742-6982	16742	6982	7										7	X
BC09	45-59-31-00	16743-16742	16743	16742	2				2							X
BC09	45-59-31-00	16744-16743	16744	16743	4				4							X
BC09	45-59-31-00	16746-33093	16746	33093	48			1							47	X
BC09	45-59-31-00	16747-16746	16747	16746	12										12	X
BC09	45-59-31-00	16748-16747	16748	16747	55				4	1	48				2	X
BC09	45-59-31-00	16749-16748	16749	16748	56	1			2	3					50	X
BC09	45-59-31-00	16750-16750M	16750	16750M	1					1						X
BC09	45-59-31-00	16750M-16749	16750M	16749	2					2						X
BC09	45-59-31-00	16750N-16750M	16750N	16750M	1						1					X
BC09	45-59-31-00	16751-16750	16751	16750	4					3	1					X
BC09	45-59-31-00	16752-16751	16752	16751	4					4						X
BC09	45-59-31-00	16753-16752	16753	16752	1					1						X
BC09	45-59-31-00	16754-16753	16754	16753	2					2						X
BC09	45-59-31-00	21379-6987	21379	6987	1					1						X
BC09	45-59-31-00	33025-33093	33025	33093	5			1		4						X
BC09	45-59-31-00	33027-33026	33027	33026	2					2						X
BC09	45-59-31-00	33028-33027	33028	33027	3				2	1						X
BC09	45-59-31-00	33029-33025	33029	33025	1					1						X
BC09	45-59-31-00	33093-16745	33093	16745	29				1						28	X
BC09	45-59-31-00	6983-6982	6983	6982	26										26	X
BC09	45-59-31-00	6987-6985	6987	6985	7			1	5		1					X
BC09	45-59-31-00	6988-6987	6988	6987	10		1	6	2		1					X
BC09	45-59-32-00	21380-21379	21380	21379	11				1		10					X
BC09	45-59-32-00	21381-21380	21381	21380	18				2		16					X
BC09	45-59-32-00	21382M-21381	21382M	21381	43				1	1	41					X
BC09	45-59-32-00	21382N-21382M	21382N	21382M	4	4										X
BC09	45-59-32-00	21383-21382	21383	21382	48		1		2	2	43					X
BC09	45-59-32-00	21384-21379	21384	21379	37				5		32					X
BC09	45-59-32-00	21385-21384	21385	21384	86				8		78					X
BC09	45-59-32-00	21386-21385	21386	21385	49				2		47					X
BC09	45-59-32-00	21387-21386	21387	21386	2		1		1							X
BC09	45-59-32-00	6985-6984	6985	6984	12				12							X
BC09	45-59-32-00	6989-6988	6989	6988	72		1	64	4	3						X
BC09	45-59-33-00	14262-7249	14262	7249	104		1		4		49				50	X
BC09	45-59-33-00	14263-14262	14263	14262	13				11	1			1			X
BC09	45-59-33-00	14267-66839	14267	66839	55		1		2	1	51					X
BC09	45-59-33-00	14268-901142	14268	901142	1						1					X
BC09	45-59-33-00	32475-6989	32475	6989	6			6								X
BC09	45-59-33-00	48593-14267	48593	14267	7						7					X
BC09	45-59-33-00	66836-7251	66836	7251	7				4	1	1	1				X
BC09	45-59-33-00	7249-32475	7249	32475	3			1			2					X
BC09	45-59-33-00	7250-14262	7250	14262	25				1	4	10				10	X
BC09	45-59-33-00	7251-7250	7251	7250	2				1		1					X
BC09	45-59-33-00	901142-901141	901142	901141	1				1							X
BC10	45-59-20-01	15299-9039	15299	9039	4			4								
BC10	45-59-20-01	16036-42233	16036	42233	96							95		1		
BC10	45-59-20-01	16037-16036	16037	16036	65			1						64		
BC10	45-59-20-01	33045-42232	33045	42232	18				1	1		16				
BC10	45-59-20-01	33046-33046M	33046	33046M	5			5								
BC10	45-59-20-01	33046M-33045	33046M	33045	6		1	4			1					
BC10	45-59-20-01	33046P-33046N	33046P	33046N	1				1							
BC10	45-59-20-01	33047-33046	33047	33046	13		4	1	4		2				2	
BC10	45-59-20-01	33508-33045	33508	33045	24							24				
BC10	45-59-20-01	33509-33508	33509	33508	6			3				3				
BC10	45-59-20-01	33510-33509	33510	33509	70			2				68				
BC10	45-59-20-01	33936-33510	33936	33510	8			4						4		
BC10	45-59-20-01	33937-33937M	33937	33937M	5							4		1		
BC10	45-59-20-01	33937M-33936	33937M	33936	3							2		1		
BC10	45-59-20-01	42232-42231	42232	42231	125		3	14	10			98				
BC10	45-59-20-01	42233-42232	42233	42232	18			1	2			15				

APPENDIX E: Table 4-3.4 - Summary of Sewer Defects by Sewer Segment
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Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
BC10	45-59-20-01	46514-33047	46514	33047	22				1	1					20	
BC10	45-59-20-01	46516-46515	46516	46515	1			1								
BC10	45-59-20-01	46517-46516	46517	46516	29							3		26		
BC10	45-59-20-01	901980-46514	901980	46514	1				1							
BC10	45-59-20-01	9039-16038	9039	16038	116			68	48							
BC10	45-59-20-02	15300-15299	15300	15299	9										9	
BC10	45-59-20-02	15775-15300	15775	15300	6			6								
BC10	45-59-20-02	15779-15778	15779	15778	18				2		16					
BC10	45-59-20-02	15781-15780	15781	15780	1				1							
BC10	45-59-20-02	15786-15785	15786	15785	1						1					
BC10	45-59-20-02	15790-15789	15790	15789	2				2							
BC10	45-59-20-02	15791-15781	15791	15781	1								1			
BC10	45-59-20-02	15793-15792	15793	15792	4					2	1		1			
BC10	45-59-20-02	16482-15790	16482	15790	1				1							
BC10	45-59-20-02	16483-16482	16483	16482	3				1				2			
BC10	45-59-20-02	16484-16483	16484	16483	2					1			1			X
BC10	45-59-20-02	16488-16487	16488	16487	10				1		9					
BC10	45-59-20-02	16489-16488	16489	16488	1				1							
BC10	45-59-20-02	16490-16489	16490	16489	1				1							
BC10	45-59-20-02	16492-16491	16492	16491	1				1							
BC10	45-59-20-02	16494-16493	16494	16493	43						42		1			
BC10	45-59-20-02	16495-16493	16495	16493	1			1								
BC10	45-59-20-02	16496-16491	16496	16491	17				17							X
BC10	45-59-20-02	16498-16497	16498	16497	8				8							
BC10	45-59-20-02	16499-16498	16499	16498	45				1		43		1			
BC10	45-59-20-02	16500-16499	16500	16499	23				1		22					
BC10	45-59-20-02	16501-16500	16501	16500	27						26		1			
BC10	45-59-20-02	16502-16484	16502	16484	20						20					
BC10	45-59-20-02	16504-16503	16504	16503	1					1						
BC10	45-59-20-02	16506-16505	16506	16505	3				2				1			
BC10	45-59-20-02	16508-16507	16508	16507	21						21					
BC10	45-59-20-02	16510-16509	16510	16509	11				10				1			X
BC10	45-59-20-02	16511-16510	16511	16510	2		1		1							X
BC10	45-59-20-02	16512-16511	16512	16511	22				1						21	
BC10	45-59-20-02	16513-16512	16513	16512	3										3	
BC10	45-59-20-02	16514-16513	16514	16513	3					2	1					
BC10	45-59-20-02	16515-16513	16515	16513	1					1						
BC10	45-59-20-02	16516-16505	16516	16505	1					1						
BC10	45-59-20-02	16517-16516	16517	16516	1				1							
BC10	45-59-20-02	16519-16518	16519	16518	2								2			
BC10	45-59-20-02	16521-16509	16521	16509	57					1	56					
BC10	45-59-20-02	16523-16522	16523	16522	1								1			
BC10	45-59-20-02	16524-16523	16524	16523	1						1					
BC10	45-59-20-02	16525-16522	16525	16522	20						20					
BC10	45-59-20-02	16527-15776	16527	15776	28						28					
BC10	45-59-20-02	17745-17744	17745	17744	28					1	27					
BC10	45-59-20-02	20300-16525	20300	16525	29			1			28					
BC10	45-59-20-02	20301-20300	20301	20300	24						24					
BC10	45-59-20-03	15270-9042	15270	9042	51				48				3			
BC10	45-59-20-03	17951-17950	17951	17950	2		2									
BC10	45-59-20-03	17954-17952	17954	17952	3				3							
BC10	45-59-20-03	17955-17955M	17955	17955M	2				2							
BC10	45-59-20-03	17956-17955	17956	17955	11				11							
BC10	45-59-20-03	17957-17949	17957	17949	21		1		4	1					15	
BC10	45-59-20-03	17958-17957	17958	17957	4					4						
BC10	45-59-20-03	17959-17958	17959	17958	9				4	5						
BC10	45-59-20-03	17960-9041	17960	9041	4					2					2	
BC10	45-59-20-03	17964-17965	17964	17965	1					1						
BC10	45-59-20-03	17965-17966	17965	17966	1				1							
BC10	45-59-20-03	17968-18238	17968	18238	2					1	1					
BC10	45-59-20-03	17971-C2112	17971	C2112	9			3	6							
BC10	45-59-20-03	17972-42414	17972	42414	13			5	8							
BC10	45-59-20-03	17974-17956	17974	17956	17			1	16							
BC10	45-59-20-03	17975-17974	17975	17974	38			6	32							
BC10	45-59-20-03	17976-17975	17976	17975	64		2	22	40							
BC10	45-59-20-03	18238-17967	18238	17967	4				2		2					
BC10	45-59-20-03	40472-17973	40472	17973	1				1							
BC10	45-59-20-03	40473-40472	40473	40472	5		2		3							
BC10	45-59-20-03	42414-17971	42414	17971	5				5							
BC10	45-59-20-03	42418-42417	42418	42417	1				1							
BC10	45-59-20-03	42420-42419	42420	42419	1								1			
BC10	45-59-20-03	42421-42420	42421	42420	4				3				1			
BC10	45-59-20-03	42422-42421	42422	42421	13				10				3			
BC10	45-59-20-03	42423-42422	42423	42422	6				4	2						
BC10	45-59-20-03	42424-42423	42424	42423	2		1						1			
BC10	45-59-20-03	42425-42424	42425	42424	1								1			
BC10	45-59-20-03	42623-17953	42623	17953	1				1							
BC10	45-59-20-03	9040-17949	9040	17949	1			1								
BC10	45-59-20-04	15301-17960	15301	17960	3		1			2						X
BC10	45-59-20-04	15770-15769	15770	15769	5				5							
BC10	45-59-20-04	15774-15773	15774	15773	2		1		1							X
BC10	45-59-20-04	17961-17960	17961	17960	6					6						
BC10	45-59-20-04	17962-17961	17962	17961	3		1			2						X
BC10	45-59-20-05	20205-22538	20205	22538	20				2		18					
BC10	45-59-20-05	20206M-20205	20206M	20205	5						5					
BC10	45-59-20-05	20207-20206	20207	20206	36		2				34					X
BC10	45-59-20-05	20208-20207	20208	20207	27						27					
BC10	45-59-20-05	21258-21258M	21258	21258M	3			1					2			
BC10	45-59-20-05	21258M-20208	21258M	20208	28				2		26					
BC10	45-59-20-05	21260-21259	21260	21259	66						59				7	
BC10	45-59-20-05	21261-21260	21261	21260	21			1							20	
BC10	45-59-20-05	21262-21261	21262	21261	23					1					22	
BC10	45-59-20-05	33889-21260	33889	21260	12				1						11	
BC10	45-59-20-05	33890-33889	33890	33889	2		2									
BC10	45-59-20-05	33891-33890	33891	33890	1					1						
BC10	45-59-20-05	43145-33981	43145	33981	6				6							
BC10	45-59-20-05	900019M-21262	900019M	21262	2					1	1					
BC10	45-59-20-06	10919-10918	10919	10918	11		1				1				9	
BC10	45-59-20-06	10920-10919	10920	10919	13						12				1	
BC10	45-59-20-06	10921-10919	10921	10919	2				2							X
BC10	45-59-20-06	10922-10921	10922	10921	14							5	9			

APPENDIX E: Table 4-3.4 - Summary of Sewer Defects by Sewer Segment
Jones Falls SRRR: Collection System Investigation

Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
BC10	45-59-20-06	10924-10923	10924	10923	2								1	1		
BC10	45-59-20-06	10925-9045	10925	9045	5		1		3	1						X
BC10	45-59-20-06	10926-10925	10926	10925	5				3	2						X
BC10	45-59-20-06	10928-14319	10928	14319	2										2	
BC10	45-59-20-06	10929-10928	10929	10928	27		1		5				7		14	X
BC10	45-59-20-06	10930-10926	10930	10926	29				4			25				
BC10	45-59-20-06	13411-54165	13411	54165	59					1	1	55	2			
BC10	45-59-20-06	14317-15315	14317	15315	1					1						
BC10	45-59-20-06	14318-14317	14318	14317	5				5							X
BC10	45-59-20-06	14319-14318	14319	14318	27				4						23	X
BC10	45-59-20-06	15317-15316	15317	15316	14				1						13	
BC10	45-59-20-06	15318-15317	15318	15317	13		1		1						11	X
BC10	45-59-20-06	15319-15318	15319	15318	6								1		5	
BC10	45-59-20-06	15320-15318	15320	15318	32		2		2		28					X
BC10	45-59-20-06	15321-15320	15321	15320	4				3		1					X
BC10	45-59-20-06	15326-15325	15326	15325	1				1							
BC10	45-59-20-06	16380-15321	16380	15321	2		2									
BC10	45-59-20-06	16383-16381	16383	16381	34				2		32					
BC10	45-59-20-06	16384-15324	16384	15324	14				1				2		11	X
BC10	45-59-20-06	16385-16384	16385	16384	7		1		1		5					X
BC10	45-59-20-06	16386-16385	16386	16385	29		5		5		1				18	X
BC10	45-59-20-06	16388-16385	16388	16385	1						1					
BC10	45-59-20-06	21026-13409	21026	13409	56		9		42	1			4			X
BC10	45-59-20-06	30593-15271	30593	15271	7							7				
BC10	45-59-20-06	54165-13410	54165	13410	16				1			15				
BC10	45-59-20-06	54168-54167	54168	54167	24										24	
BC10	45-59-20-06	54169-54168	54169	54168	39										39	
BC10	45-59-20-06	54170-54169	54170	54169	3										3	
BC10	45-59-20-06	9045-9044	9045	9044	7				1				3		3	X
BC10	45-59-20-06	9046-9045	9046	9045	1				1							
BC10	45-59-20-06	9047-9046	9047	9046	30		1	5	12			12				
BC10	45-59-20-06	9048-10918	9048	10918	2		1		1							X
BC10	45-59-20-06	9049-9048	9049	9048	10		1		9							X
BC10	45-59-20-06	C1934-10920	C1934	10920	22		1	2	6		12			1		X
BC11	45-59-12-00	19709-19808	19709	19808	2				2							
BC11	45-59-12-00	19710-19709	19710	19709	1				1							
BC11	45-59-12-00	19711-19808	19711	19808	3			1							2	
BC11	45-59-12-00	19712-19711	19712	19711	1						1					
BC11	45-59-12-00	19714-19712	19714	19712	5		1		2	1			1			X
BC11	45-59-12-00	19715-19714	19715	19714	5		3		2							X
BC11	45-59-12-00	19716-19715	19716	19715	1			1								
BC11	45-59-12-00	19717-19716	19717	19716	1				1							
BC11	45-59-12-00	19718-19714	19718	19714	2					2						
BC11	45-59-12-00	19808-19707	19808	19707	6								4		2	
BC11	45-59-12-00	22067-19717	22067	19717	16				16							
BC11	45-59-12-00	22069-22068	22069	22068	75			2	73							
BC11	45-59-12-00	29381-19718	29381	19718	4					3			1			
BC11	45-59-12-00	29382-29381	29382	29381	6					1			5			
BC11	45-59-12-00	30618-30617	30618	30617	1				1							
BC11	45-59-12-00	30621-30620	30621	30620	3		2		1							X
BC11	45-59-12-00	30622-30621	30622	30621	4				3	1						
BC11	45-59-12-00	30623-30622	30623	30622	11				7	2			2			X
BC11	45-59-12-00	30624-30623	30624	30623	5		1				1		3			X
BC11	45-59-12-00	30625-30624	30625	30624	2				1						1	
BC11	45-59-12-00	30626-30625	30626	30625	28			1	1						26	
BC11	45-59-12-00	30627-30626	30627	30626	2					1					1	
BC11	45-59-12-00	30628-30627	30628	30627	37										37	
BC11	45-59-12-00	30629-30621	30629	30621	1					1						
BC11	45-59-12-00	30630-30629	30630	30629	2				1				1			
BC11	45-59-12-00	30631-30630	30631	30630	1				1							
BC11	45-59-12-00	30632-30631	30632	30631	10		1		3	3			3			X
BC11	45-59-12-00	30633-30632	30633	30632	2		1						1			X
BC11	45-59-12-00	30637-30633	30637	30633	21		1	1	6				13			X
BC11	45-59-12-00	30638-30637	30638	30637	9		1	1	4				3			X
BC11	45-59-12-00	30639-30638	30639	30638	1								1			
BC11	45-59-12-00	30640-30639	30640	30639	3								3			
BC11	45-59-12-00	30642-30638	30642	30638	4				2	2						
BC11	45-59-12-00	31580-29384	31580	29384	2				1	1						
BC11	45-59-12-00	31581-31580	31581	31580	1				1							
BC11	45-59-12-00	45895-30628	45895	30628	3			1	1				1			
BC11	45-59-12-00	50146-31581	50146	31581	2					1	1					
BC11	45-59-12-00	50147-50146	50147	50146	1					1						
BC11	45-59-12-00	65512-45895	65512	45895	1				1							
BC11	45-59-12-00	6952-6950	6952	6950	46		2	2			5	36			1	X
BC11	45-59-13-00	33991-33990	33991	33990	4								4			
BC11	45-59-13-00	33992-33991	33992	33991	1			1								
BC11	45-59-15-01	18584-6951	18584	6951	33					3					30	
BC11	45-59-15-01	18585-18584	18585	18584	47					10					37	
BC11	45-59-15-01	38526-38525	38526	38525	1								1			
BC11	45-59-15-01	6951-6950	6951	6950	26		1	1		1		22		1		X
BC11	45-59-15-01	6952-6951	6952	6951	31			1			1	27		2		
BC11	45-59-16-01	18587-18586	18587	18586	8				8							
BC11	45-59-16-01	18588-18587	18588	18587	18		2		16							
BC11	45-59-16-01	18589-18588	18589	18588	12				12							
BC11	45-59-16-01	18591-18590	18591	18590	1				1							
BC11	45-59-16-01	18592-18591	18592	18591	12		3		7		1		1			
BC11	45-59-16-01	18594-18593	18594	18593	11		8		3							
BC11	45-59-16-01	18596-18595	18596	18595	3		1		2							
BC11	45-59-16-01	18597-18594	18597	18594	2			1	1							
BC11	45-59-16-01	18599-18598	18599	18598	3		2		1							
BC11	45-59-16-01	18600-18599	18600	18599	3				3							
BC11	45-59-16-01	18601-18597	18601	18597	1				1							
BC11	45-59-16-01	18602-18601	18602	18601	2								2			
BC11	45-59-16-01	18603-18602	18603	18602	3				1				2			
BC11	45-59-16-01	18605-18587	18605	18587	4				4							
BC11	45-59-16-01	18606-18605	18606	18605	1		1									
BC11	45-59-16-01	18607-18606	18607	18606	4				4							
BC11	45-59-16-01	18608-18607	18608	18607	2		2									
BC11	45-59-16-01	18610-18605	18610	18605	27		8		19							
BC11	45-59-16-01	18611-18610	18611	18610	9		1		8							
BC11	45-59-16-01	18614-18590	18614	18590	1		1									

APPENDIX E: Table 4-3.4 - Summary of Sewer Defects by Sewer Segment
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Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
BC11	45-59-16-01	18616-18615	18616	18615	2				2							
BC11	45-59-16-01	18617-18616	18617	18616	3		1		2							
BC11	45-59-16-01	18618-18617	18618	18617	8		1		7							
BC11	45-59-16-01	18621-18620	18621	18620	3		1		2							
BC11	45-59-16-01	18622-18621	18622	18621	1				1							
BC11	45-59-16-01	18625-18624	18625	18624	3				3							
BC11	45-59-16-01	18627-18624	18627	18624	6		5		1							
BC11	45-59-16-01	18630-18629	18630	18629	1				1							
BC11	45-59-16-02	21591-21590	21591	21590	39			37	2							
BC11	45-59-16-02	21592-21591	21592	21591	38			38								
BC11	45-59-16-02	21593-21592	21593	21592	62			52			10					
BC11	45-59-16-02	21594-21593	21594	21593	53			14			39					
BC11	45-59-16-02	21596-21595	21596	21595	58						55		3			
BC11	45-59-16-02	21597-21596	21597	21596	31				1		15		15			
BC11	45-59-16-02	21598-21590	21598	21590	2			1	1							
BC11	45-59-16-02	21599-21598	21599	21598	1						1					
BC11	45-59-16-02	21601-21600	21601	21600	10						10					
BC11	45-59-16-02	21603-21602	21603	21602	19						19					
BC11	45-59-16-02	21605-21604	21605	21604	21						21					
BC11	45-59-16-02	21607-21606	21607	21606	72						68		4			
BC11	45-59-16-02	21608-21607	21608	21607	22						19		3			
BC11	45-59-16-02	21609-21600	21609	21600	2				2							
BC11	45-59-16-02	21611-21610	21611	21610	25				1		24					
BC11	45-59-16-02	21612-21611	21612	21611	45					1	43		1			
BC11	45-59-16-02	21613-21611	21613	21611	53				2		47		4			X
BC11	45-59-16-02	21614-21613	21614	21613	11						11					
BC11	45-59-16-02	21615-21614	21615	21614	12						12					
BC11	45-59-16-02	21616-21615	21616	21615	27		1		1		24		1			X
BC11	45-59-16-02	21617-21616	21617	21616	40				4	1	35					
BC11	45-59-16-02	21618-21615	21618	21615	17						17					
BC11	45-59-16-02	21619-21618	21619	21618	21				1		20					X
BC12	45-58-05-00	22223-22222	22223	22222	45				1			44				
BC12	45-58-05-00	7315-22223	7315	22223	2			1	1							X
BC12	45-58-05-00	7316-7315	7316	7315	14							14				
BC12	45-58-06-01	60688-60689	60688	60689	1					1						
BC12	45-58-06-01	7333-7332	7333	7332	1					1						
BC12	45-58-06-01	901893-16595	901893	16595	1						1					
BC12	45-58-06-02	15272-2416	15272	2416	1		1									
BC12	45-58-06-02	15273-15272	15273	15272	2						2					
BC12	45-58-06-02	15274-15273	15274	15273	7			4	1		2					
BC12	45-58-06-02	15275-15274	15275	15274	2						2					
BC12	45-58-06-02	2402-901892	2402	901892	6					6						
BC12	45-58-06-02	2403-2402	2403	2402	8				8							
BC12	45-58-06-02	2405-2404	2405	2404	13				9	3			1			
BC12	45-58-06-02	2416-2404	2416	2404	2				1				1			
BC12	45-58-06-02	2417-2432	2417	2432	2				2							
BC12	45-58-06-02	2418-2417	2418	2417	22		1	2	19							
BC12	45-58-06-02	2432-2416	2432	2416	1		1									
BC12	45-58-06-02	3525-2417	3525	2417	8		1		7							
BC12	45-58-06-02	3526-3525	3526	3525	14				13		1					
BC12	45-58-06-02	3527-3526	3527	3526	2								2			
BC12	45-58-06-02	901892-901893	901892	901893	2					2						
BC12	45-58-06-03	2406-2405	2406	2405	14				11	3						
BC12	45-58-06-03	2407-2443	2407	2443	5				4	1						
BC12	45-58-06-03	2443-2406	2443	2406	5				4	1						X
BC12	45-58-06-03	6296-6295	6296	6295	4		2			2						X
BC12	45-58-06-03	6297-6296	6297	6296	2				2							X
BC12	45-58-06-03	6298-6297	6298	6297	2		1		1							X
BC12	45-58-06-03	6299-6298	6299	6298	3				3							
BC12	45-58-06-03	6300-6299	6300	6299	4			2	2							X
BC12	45-58-06-03	6301-6300	6301	6300	1					1						
BC12	45-58-06-03	6303-6299	6303	6299	4			3	1							
BC12	45-58-06-03	6304-6303	6304	6303	4		1		3							X
BC12	45-58-06-03	6305-6304	6305	6304	4				4							
BC12	45-58-06-03	7587-7594	7587	7594	2				2							
BC12	45-58-06-03	7588-7587	7588	7587	2			1	1							
BC12	45-58-06-03	7589-7588	7589	7588	10		4		6							X
BC12	45-58-06-03	7591-7589	7591	7589	1					1						
BC12	45-58-06-03	7592-7591	7592	7591	7				5						2	X
BC12	45-58-06-03	7593-7592	7593	7592	5				4	1						
BC12	45-58-06-03	7594-7595	7594	7595	1					1						
BC12	45-58-06-03	7596-7597	7596	7597	2				1	1						
BC12	45-58-06-04	10849-2408	10849	2408	9			1	6	2						X
BC12	45-58-06-04	12738-2400	12738	2400	7				4	3						
BC12	45-58-06-04	2385-2398	2385	2398	8			5	2	1						X
BC12	45-58-06-04	2398-2419	2398	2419	11				4	1			4		2	
BC12	45-58-06-04	2408-2407	2408	2407	3		1		2							X
BC12	45-58-06-04	2409-10849	2409	10849	4					4						
BC12	45-58-06-04	2410-2409	2410	2409	6				4	2						
BC12	45-58-06-04	2411-2410	2411	2410	7				2	5						X
BC12	45-58-06-04	2412-2411	2412	2411	12				3	9						X
BC12	45-58-06-04	2413-2412	2413	2412	9				5	4						X
BC12	45-58-06-04	2414-6310	2414	6310	1					1						
BC12	45-58-06-04	2415-2414	2415	2414	4				1	3						
BC12	45-58-06-04	2419-2408	2419	2408	10				7	3						X
BC12	45-58-06-04	2420-4077	2420	4077	5					5						
BC12	45-58-06-04	2429-2415	2429	2415	2					1			1			
BC12	45-58-06-04	2479-2398	2479	2398	9			2	6	1						
BC12	45-58-06-04	2480-2479	2480	2479	4				2	2						
BC12	45-58-06-04	2481-2480	2481	2480	4			1	1	2						
BC12	45-58-06-04	2482-2481	2482	2481	3					3						
BC12	45-58-06-04	4077-2419	4077	2419	4				4							X
BC12	45-58-06-04	4078-4077	4078	4077	10			3	7							
BC12	45-58-06-04	4079-4078	4079	4078	5				5							
BC12	45-58-06-04	6310-2413	6310	2413	2				2							
BC12	45-58-06-04	6311-6310	6311	6310	2					2						
BC12	45-58-06-04	C439-902171	C439	902171	13		1		4		8					X
BC12	45-58-06-05	10256-10260	10256	10260	2					1			1			X
BC12	45-58-06-05	10258-10257	10258	10257	1				1							X
BC12	45-58-06-05	10259-10258	10259	10258	3				1	2						X
BC12	45-58-06-05	10261-10256	10261	10256	3					2			1			

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Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
BC12	45-58-06-05	10262-10261	10262	10261	1				1							
BC12	45-58-06-05	10263-10262	10263	10262	3										3	
BC12	45-58-06-05	11565-11564	11565	11564	3				3							
BC12	45-58-06-05	11566-11565	11566	11565	2					2						
BC12	45-58-06-05	12328-10264	12328	10264	21		1			1			10		9	X
BC12	45-58-06-05	12466-12328	12466	12328	3				1	2						
BC12	45-58-06-05	12468-12467	12468	12467	1				1							X
BC12	45-58-06-06	8184-8183	8184	8183	53		5	1	3		37		7			X
BC12	45-58-06-07	2957-2958	2957	2958	2		1						1			
BC12	45-58-06-07	2958-2959	2958	2959	26				1	1					24	
BC12	45-58-07-00	16604-7320	16604	7320	6				2					4		
BC12	45-58-07-00	7317-7316	7317	7316	83			3				79	1			
BC12	45-58-07-00	7318-7317	7318	7317	88			1				87				
BC12	45-58-07-00	7332-7316	7332	7316	1			1								
BC12	45-58-08-00	2251-2250	2251	2250	15			1	12	2						
BC12	45-58-08-00	2252-2374	2252	2374	9					2			7			
BC12	45-58-08-00	2374-2251	2374	2251	4				4							
BC12	45-58-08-00	2376-2375	2376	2375	21		2	2	11	4			2			X
BC12	45-58-08-00	2377-2376	2377	2376	10					1			9			
BC12	45-58-08-00	2378-2377	2378	2377	1				1							
BC12	45-58-08-00	2379-2378	2379	2378	8				6	2						X
BC12	45-58-08-00	2380-2379	2380	2379	8				8							
BC12	45-58-08-00	2381-2380	2381	2380	2					2						
BC12	45-58-08-00	2382-2381	2382	2381	26				17	9						X
BC12	45-58-08-00	2383-2382	2383	2382	34				23	9			2			X
BC12	45-58-08-00	2384-2383	2384	2383	8				3	4			1			
BC12	45-58-08-00	2386-2384	2386	2384	6		1		3	1			1			X
BC12	45-58-08-00	2387-2386	2387	2386	8				4	1			3			
BC12	45-58-08-00	2388-2375	2388	2375	6				6							
BC12	45-58-08-00	2389-2388	2389	2388	5				4	1						
BC12	45-58-08-00	2390-2389	2390	2389	13				11	1			1			
BC12	45-58-08-00	2391-2390	2391	2390	51				9	1					41	
BC12	45-58-08-00	2392-2391	2392	2391	47		1		3	1					42	X
BC12	45-58-08-00	2393-2392	2393	2392	3		1			2						X
BC12	45-58-08-00	2394-2393	2394	2393	8		2		5	1						X
BC12	45-58-08-00	2395-2252	2395	2252	28				22	6						X
BC12	45-58-08-00	2396-2395	2396	2395	16		1		11	3			1			X
BC12	45-58-08-00	2397-2396	2397	2396	10				7	2			1			X
BC12	45-58-08-00	2428-2376	2428	2376	2				2							X
BC12	45-58-08-00	260-2907	260	2907	15				10				5			
BC12	45-58-08-00	2900-7335	2900	7335	1								1			
BC12	45-58-08-00	2901-2900	2901	2900	5	1			4							
BC12	45-58-08-00	2902-2901	2902	2901	2					1			1			
BC12	45-58-08-00	2903-2902	2903	2902	1										1	
BC12	45-58-08-00	2904-2903	2904	2903	4				4							
BC12	45-58-08-00	2905-2904	2905	2904	5				5							
BC12	45-58-08-00	2906-2905	2906	2905	3				2				1			
BC12	45-58-08-00	2907-2906	2907	2906	3				3							
BC12	45-58-08-00	2908-2907	2908	2907	3				1	1			1			
BC12	45-58-08-00	50817-50816	50817	50816	2								2			
BC12	45-58-08-00	52651-7324	52651	7324	1			1								
BC12	45-58-08-00	52652-52651	52652	52651	23			1				21	1			
BC12	45-58-08-00	52653-52652	52653	52652	8							8				
BC12	45-58-08-00	52654-52653	52654	52653	1				1							
BC12	45-58-08-00	7335-7334	7335	7334	1					1						
BC12	45-58-09-01	1512-1511	1512	1511	2		1		1							X
BC12	45-58-09-01	1513-1512	1513	1512	1				1							
BC12	45-58-09-01	1514-1513	1514	1513	7				7							
BC12	45-58-09-01	1515-1515M	1515	1515M	2				2							
BC12	45-58-09-01	1515M-1514	1515M	1514	2				2							
BC12	45-58-09-01	1516-1515	1516	1515	1				1							
BC12	45-58-09-01	1517-1516	1517	1516	3				3							
BC12	45-58-09-01	1518-1517	1518	1517	5				4	1						
BC12	45-58-09-01	1519-1518	1519	1518	1		1									X
BC12	45-58-09-01	1520-1519	1520	1519	6		1		5							X
BC12	45-58-09-01	1549-1520	1549	1520	9				9							X
BC12	45-58-09-01	1550-1550M	1550	1550M	5		1		4							X
BC12	45-58-09-01	1550M-1550N	1550M	1550N	9				9							X
BC12	45-58-09-01	1550N-1549	1550N	1549	7		1		6							X
BC12	45-58-09-01	1551-1550	1551	1550	3				2				1			
BC12	45-58-09-01	16581-7328	16581	7328	3			1	1					1		
BC12	45-58-09-01	2936-1508	2936	1508	56	1	4		49				2			X
BC12	45-58-09-01	7326-7325	7326	7325	6			6								
BC12	45-58-09-01	7327-7326	7327	7326	1			1								
BC12	45-58-09-01	7328-7327	7328	7327	1			1								
BC12	45-58-09-02	1511-1510	1511	1510	1				1							
BC12	45-58-09-02	16608-16607	16608	16607	1				1							
BC12	45-58-09-02	2809-4793	2809	4793	1				1							X
BC12	45-58-09-02	2810-2809	2810	2809	65				63	1	1					
BC12	45-58-09-02	2811-2810	2811	2810	7				6	1						
BC12	45-58-09-02	2812-2811	2812	2811	6				6							X
BC12	45-58-09-02	2813-4793	2813	4793	51				51							
BC12	45-58-09-02	2814-2813	2814	2813	72			1			71					
BC12	45-58-09-02	2937-2936	2937	2936	54		2		31						21	X
BC12	45-58-09-02	2938-2937	2938	2937	28		5		23							X
BC12	45-58-09-02	2939-2938	2939	2938	8				8							
BC12	45-58-09-02	2940-2939	2940	2939	13			6	7							
BC12	45-58-09-02	2941-2941M	2941	2941M	5				5							
BC12	45-58-09-02	2941M-2940	2941M	2940	22				2						20	
BC12	45-58-09-02	2942-2941	2942	2941	27			1	15						11	
BC12	45-58-09-02	2945-2943	2945	2943	23		2	6	15							X
BC12	45-58-09-02	2946-2946M	2946	2946M	1				1							
BC12	45-58-09-02	2946M-2945	2946M	2945	42		2		40							X
BC12	45-58-09-02	2947-2946	2947	2946	9		1		3	5						X
BC12	45-58-09-02	4792-2946	4792	2946	24		7		16						1	X
BC12	45-58-09-02	4793-4794	4793	4794	6		2		4							X
BC12	45-58-09-02	4794-4792	4794	4792	29		3		25		1					X
BC12	45-58-09-02	4795-2814	4795	2814	4								4			
BC12	45-58-09-02	4970-2942	4970	2942	18		2	1	12	1					2	X
BC12	45-58-09-03	11196-901927	11196	901927	2				2							
BC12	45-58-09-03	14862-14861	14862	14861	2			1	1							

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Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
BC12	45-58-09-03	14863-14862	14863	14862	3		1		2							X
BC12	45-58-09-03	14863-14863M	14863	14863M	1								1			
BC12	45-58-09-03	14864-14878	14864	14878	35						35					
BC12	45-58-09-03	14865-14864	14865	14864	1				1							
BC12	45-58-09-03	14866-14865	14866	14865	2				2							
BC12	45-58-09-03	14867-14866	14867	14866	1				1							
BC12	45-58-09-03	14868-14867	14868	14867	2		1			1						X
BC12	45-58-09-03	14871-14869	14871	14869	24						24					
BC12	45-58-09-03	14872-14871	14872	14871	1								1			
BC12	45-58-09-03	14873-14872	14873	14872	58						40		8		10	
BC12	45-58-09-03	14877-14876	14877	14876	2								1		1	
BC12	45-58-09-03	14878-14874	14878	14874	23						23					
BC12	45-58-09-03	14879-14878	14879	14878	19			1			18					
BC12	45-58-09-03	14880-14879	14880	14879	8		1		2				3		2	X
BC12	45-58-09-03	14881-14880	14881	14880	1										1	
BC12	45-58-09-03	14882-14881	14882	14881	5								5			
BC12	45-58-09-03	14883-14882	14883	14882	17						16				1	
BC12	45-58-09-03	14884-14878	14884	14878	22						22					
BC12	45-58-09-03	14885-14884	14885	14884	14				1		13					
BC12	45-58-09-03	14886-14881	14886	14881	20						19		1			
BC12	45-58-09-03	18058-18057	18058	18057	2		1						1			X
BC12	45-58-09-03	18059-18058	18059	18058	11				11							X
BC12	45-58-09-03	18060-18059	18060	18059	1				1							
BC12	45-58-09-03	19896-2947	19896	2947	1				1							
BC12	45-58-09-03	19897-19896	19897	19896	7						7					
BC12	45-58-09-03	19898-19897	19898	19897	1				1							X
BC12	45-58-09-03	2948-4788	2948	4788	13		3		9				1			X
BC12	45-58-09-03	2949-2948	2949	2948	4					1					3	
BC12	45-58-09-03	2953-4789	2953	4789	3		2		1							X
BC12	45-58-09-03	4788-2947	4788	2947	6				3	2		1				X
BC12	45-58-09-03	4789-4788	4789	4788	2					2						
BC12	45-58-09-03	4790-5007	4790	5007	5				1	4						
BC12	45-58-09-03	4791-4790	4791	4790	2					2						
BC12	45-58-09-03	901927-4791	901927	4791	1		1									
BC12	45-58-10-00	103-2255	103	2255	13								13			
BC12	45-58-10-00	140-103	140	103	9		1		6	1			1			X
BC12	45-58-10-00	179-140	179	140	15				12	3						X
BC12	45-58-10-00	2254-742	2254	742	20				7	11			2			
BC12	45-58-10-00	2255-2254	2255	2254	23				7	12		3	1			X
BC12	45-58-10-00	3379-103	3379	103	7		4			1			2			X
BC12	45-58-10-00	3380-3379	3380	3379	4		1		1	1			1			X
BC12	45-58-10-00	53001-745	53001	745	16				15				1			X
BC12	45-58-10-00	737-738	737	738	8		1		4				3			X
BC12	45-58-10-00	738-739	738	739	5				2	1			2			X
BC12	45-58-10-00	739-740	739	740	6	1		1	2				2			X
BC12	45-58-10-00	740-741	740	741	1					1						
BC12	45-58-10-00	741-742	741	742	1				1							
BC12	45-58-10-00	746-758	746	758	1						1					
BC12	45-58-10-00	747-746	747	746	7		1		1	1			4			X
BC12	45-58-10-00	748-754	748	754	2					2						
BC12	45-58-10-00	749-873	749	873	46				17	3		26				X
BC12	45-58-10-00	750-751	750	751	9		1		3	2	1		2			X
BC12	45-58-10-00	751-753	751	753	3				2	1						
BC12	45-58-10-00	752-751	752	751	13				8	5						X
BC12	45-58-10-00	753-749	753	749	8				4	4						X
BC12	45-58-10-00	755-744	755	744	15				9	2			4			X
BC12	45-58-10-00	756-755	756	755	4				1	1			2			X
BC12	45-58-10-00	757-740	757	740	3				2				1			X
BC12	45-58-10-00	758-757	758	757	3				2				1			
BC12	45-58-11-00	12-12M	12	12M	4		2		2							X
BC12	45-58-11-00	12M-11	12M	11	10		2	1	7							X
BC12	45-58-11-00	33295-12	33295	12	7									7		
BC12	45-58-11-00	33296-33295	33296	33295	4									4		
BC12	45-58-11-00	52655-52654	52655	52654	17			1				15	1			X
BC12	45-58-11-00	52656-52655	52656	52655	68			1	4			63				
BC12	45-58-11-00	52659-52658	52659	52658	121			2				119				X
BC12	45-58-11-00	52660-52659	52660	52659	18										18	
BC12	45-58-20-01	150-901871	150	901871	2				2							
BC12	45-58-20-01	151-150	151	150	1				1							
BC12	45-58-20-01	152-151	152	151	9		1		8							X
BC12	45-58-20-01	154-232	154	232	1								1			
BC12	45-58-20-01	155-154	155	154	9		5		4							X
BC12	45-58-20-01	157-156	157	156	9		3		4	2						X
BC12	45-58-20-01	158-157	158	157	3					3						
BC12	45-58-20-02	1110N-1110M	1110N	1110M	11		1		1		9					X
BC12	45-58-20-02	160-43383	160	43383	2				2							X
BC12	45-58-20-02	209-43384	209	43384	1			1								
BC12	45-58-20-02	43384-208	43384	208	4			1					3			
BC12	45-58-20-03	1156-216	1156	216	1				1							
BC12	45-58-20-03	163-209	163	209	4		1		3							X
BC12	45-58-20-03	166-163	166	163	4			1		3						
BC12	45-58-20-03	170-1109	170	1109	20		1		15	4						X
BC12	45-58-20-03	183-166	183	166	1								1			
BC12	45-58-20-03	184-185	184	185	2				2							
BC12	45-58-20-03	185-163	185	163	2		1			1						X
BC12	45-58-20-03	186-184	186	184	1					1						
BC12	45-58-20-03	187-185	187	185	1					1						
BC12	45-58-20-03	188-187	188	187	2					1			1			
BC12	45-58-20-03	190-188	190	188	8				3	3			2			
BC12	45-58-20-03	191-190	191	190	7		1		5	1						X
BC12	45-58-20-03	192-191	192	191	2								2			
BC12	45-58-20-03	196-223	196	223	4				1	2			1			
BC12	45-58-20-03	197-196	197	196	1					1						
BC12	45-58-20-03	197-219	197	219	2		1		1							X
BC12	45-58-20-03	198-191	198	191	2				1	1						
BC12	45-58-20-03	199-198	199	198	16		1		8	5			2			X
BC12	45-58-20-03	200-199	200	199	3				1	2						
BC12	45-58-20-03	213-170	213	170	4				4							
BC12	45-58-20-03	216-200	216	200	19		7		10	1	1					X
BC12	45-58-20-03	217-216	217	216	1								1			
BC12	45-58-20-03	218-217	218	217	1				1							

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BC12	45-58-20-03	219-218	219	218	3		2				1					X
BC12	45-58-20-03	220-219	220	219	4			2					2			
BC12	45-58-20-03	221-220	221	220	5					5						
BC12	45-58-20-03	222-2421	222	2421	3		1		1	1						X
BC12	45-58-20-03	2401-2384	2401	2384	4			1	1	1			1			
BC12	45-58-20-03	2422-2421	2422	2421	9				3	2			4			X
BC12	45-58-20-03	2424-C1735	2424	C1735	2					1			1			
BC12	45-58-20-03	2425-240	2425	240	16		2		9	5						X
BC12	45-58-20-03	2426-2425	2426	2425	5					5						
BC12	45-58-20-03	C1735-2422	C1735	2422	3				3							
BC12	45-58-20-04	164-43385	164	43385	1					1						
BC12	45-58-20-04	167-43386	167	43386	4		2							2		
BC12	45-58-20-05	174-172	174	172	1				1							
BC12	45-58-20-05	175-43387	175	43387	3		2		1							X
BC12	45-58-20-05	57168-57167	57168	57167	1					1						
BC12	45-58-20-06	176-175	176	175	2					2						
BC12	45-58-20-06	177-176	177	176	1				1							X
BC12	45-58-20-06	180-178	180	178	1					1						
BC12	45-58-20-06	182-213	182	213	2				1	1						
BC12	45-58-21-01	18-56841	18	56841	15										15	
BC12	45-58-21-01	19-18	19	18	39				2						37	
BC12	45-58-21-01	20-19	20	19	1				1							
BC12	45-58-21-01	21-20	21	20	5		4			1						X
BC12	45-58-21-01	22-19	22	19	7				7							
BC12	45-58-21-01	23-22	23	22	5				5							
BC12	45-58-21-01	52170-18	52170	18	14										14	
BC12	45-58-21-02	1400-64	1400	64	1								1			
BC12	45-58-21-02	28-27	28	27	12				11	1						
BC12	45-58-21-02	61-27	61	27	11	1	1		6	1	2					X
BC12	45-58-21-02	62-61	62	61	10		1		7		2					X
BC12	45-58-21-02	63-62	63	62	9				6	2			1			
BC12	45-58-21-02	64-63	64	63	7				3				4			
BC12	45-58-21-02	66-61	66	61	20				18				2			X
BC12	45-58-21-02	67-66	67	66	13		2	1	6	2				2		X
BC12	45-58-21-02	68-67	68	67	4					3			1			
BC12	45-58-21-03	36-28	36	28	9	1			8							X
BC12	45-58-21-03	37-36	37	36	9				8	1						X
BC12	45-58-21-03	38-37	38	37	12				6	4			2			X
BC12	45-58-21-03	900038-28	900038	28	10		2		4						4	X
BC12	45-58-21-04	1565-901973	1565	901973	2				1	1						
BC12	45-58-21-04	214-42	214	42	2					2						
BC12	45-58-21-04	215-214	215	214	8			1	5	1			1			
BC12	45-58-21-04	224-43	224	43	8			5		3						
BC12	45-58-21-04	225-224	225	224	6			1	4				1			
BC12	45-58-21-04	226-225	226	225	1					1						
BC12	45-58-21-04	227-225	227	225	2				1		1					
BC12	45-58-21-04	228-227	228	227	4						1		3			
BC12	45-58-21-04	2285-2083	2285	2083	10				7		1		2			
BC12	45-58-21-04	2286-2285	2286	2285	5								5			
BC12	45-58-21-04	229-48	229	48	5					1	1		3			
BC12	45-58-21-04	230-45	230	45	9				8	1						
BC12	45-58-21-04	241-224	241	224	11	2		3		4	2					X
BC12	45-58-21-04	3487-2286	3487	2286	6				5				1			
BC12	45-58-21-04	3488-2285	3488	2285	2		1		1							X
BC12	45-58-21-04	40-39	40	39	3		1		1	1						X
BC12	45-58-21-04	41-C1840	41	C1840	2				1	1						
BC12	45-58-21-04	42-41	42	41	10		2	7	1							X
BC12	45-58-21-04	43-41	43	41	2								2			
BC12	45-58-21-04	44-43	44	43	8		1		7							X
BC12	45-58-21-04	45-41	45	41	16		1		5				5		5	X
BC12	45-58-21-04	46-45	46	45	4	1	1			1	1					X
BC12	45-58-21-04	48-230	48	230	6				4	2						
BC12	45-58-21-04	49-48	49	48	12		5			5			2			
BC12	45-58-21-04	51-215	51	215	11				5	2	1		3			X
BC12	45-58-21-04	537-C1840	537	C1840	1		1									
BC12	45-58-21-04	538-537	538	537	34	1	2		6	1		24				
BC12	45-58-21-04	77-49	77	49	4		1		1	2						X
BC12	45-58-21-04	901973-2083	901973	2083	6				6							
BC12	45-58-21-04	C1709-3487	C1709	3487	2								2			X
BC12	45-58-21-05	31-900039	31	900039	100		1		2						97	
BC12	45-58-21-05	32-31	32	31	3			1	2							
BC12	45-58-21-05	50-31	50	31	12		5		4	2			1			X
BC12	45-58-21-06	211-52	211	52	1					1						
BC12	45-58-21-06	33-32	33	32	3				3							
BC12	45-58-21-07	20560-33	20560	33	51		3		1		1				46	X
BC12	45-58-21-07	35-34	35	34	6		2		3		1					X
BC12	45-58-21-07	52-33	52	33	1								1			
BC12	45-58-21-07	59-34	59	34	4								4			
BC12	45-58-22-00	202-52174	202	52174	26		1		9		16					X
BC12	45-58-22-00	203-207	203	207	10		1		4	4			1			X
BC12	45-58-22-00	204-201	204	201	48			1		1					46	
BC12	45-58-22-00	207-202	207	202	1					1						
BC12	45-58-22-00	52176-52175	52176	52175	18										18	
BC12	45-58-22-00	52178-52177	52178	52177	1					1						
BC12	45-58-22-00	52179-52178	52179	52178	1					1						
BC12	45-58-22-00	902121-52182	902121	52182	32					5			1		26	
BC12	45-58-23-01	121-59220	121	59220	8				3	5						
BC12	45-58-23-01	122-121	122	121	11		2		7	2						X
BC12	45-58-23-01	1305-122	1305	122	2					1	1					
BC12	45-58-23-01	1306-1305	1306	1305	8				3	1			4			X
BC12	45-58-23-01	130-C1754	130	C1754	4					4						
BC12	45-58-23-01	132-130	132	130	12		3		9							X
BC12	45-58-23-01	133-132	133	132	1					1						
BC12	45-58-23-01	136-C1713	136	C1713	3				2	1						
BC12	45-58-23-01	137-24	137	24	3					3						
BC12	45-58-23-01	138M-137	138M	137	1								1			
BC12	45-58-23-01	141-139	141	139	1				1							
BC12	45-58-23-01	143-138	143	138	6				3	3						X
BC12	45-58-23-01	144-143	144	143	1					1						
BC12	45-58-23-01	145-144	145	144	2				2							X
BC12	45-58-23-01	147-146	147	146	6		4		2							X

APPENDIX E: Table 4-3.4 - Summary of Sewer Defects by Sewer Segment
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Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
BC12	45-58-23-01	24-134	24	134	4					4						
BC12	45-58-23-01	39160-39159	39160	39159	1					1						
BC12	45-58-23-01	7019-205	7019	205	10		2		3	5						X
BC12	45-58-23-01	902168-128	902168	128	1					1						
BC12	45-58-23-01	C1702-C1712	C1702	C1712	9		2		1		6					X
BC12	45-58-23-01	C1713-135	C1713	135	6				5	1						
BC12	45-58-23-01	C1720-124	C1720	124	5		2		1	2						X
BC12	45-58-23-01	C1754-129	C1754	129	21				15	6						X
BC12	45-58-23-02	114-72	114	72	20		4	3	6	4	3					
BC12	45-58-23-02	115-116	115	116	10		2	2		1	3	1	1			
BC12	45-58-23-02	116-117	116	117	39			1	2	3	2				31	
BC12	45-58-23-02	117-71	117	71	34		8	2	21	1	2					
BC12	45-58-23-02	118-117	118	117	7			2	1	2	1	1				
BC12	45-58-23-02	119-118	119	118	5		2	1	1		1					
BC12	45-58-23-02	59224-59223	59224	59223	25										25	
BC12	45-58-23-02	71-70	71	70	10		2		5		3					
BC12	45-58-23-02	72-71	72	71	16		1		10	1	2			2		
BC12	45-58-23-02	97-118	97	118	15		2	1	6	1	5					
BC12	45-58-23-03	100-99	100	99	4	1	1		2							X
BC12	45-58-23-03	120-97	120	97	6		4		1					1		
BC12	45-58-23-03	94-95	94	95	6		1		1		4					
BC12	45-58-23-03	95-97	95	97	10		1	3		2	3	1				
BC12	45-58-23-03	98-97	98	97	20			1	14	1		2		2		
BC12	45-58-23-03	99-98	99	98	12		1		7		1	3				
BC12	45-58-23-04	231-93	231	93	2		1	1								
BC12	45-58-23-04	39678-91	39678	91	4	1	3									X
BC12	45-58-23-04	91-91M	91	91M	2					2						
BC12	45-58-23-04	93-94	93	94	13		2	1	5	2	2	1				
BC12	45-58-24-00	112-73	112	73	24		5	4	8	2	4	1				
BC12	45-58-24-00	113-112	113	112	23		7		14		1		1			
BC12	45-58-24-00	75-73	75	73	7	1			4	1			1			X
BC12	45-58-25-00	105-106	105	106	2								2			
BC12	45-58-25-00	106-79	106	79	19		12		7							X
BC12	45-58-25-00	107-106	107	106	2		2									X
BC12	45-58-25-00	76-75	76	75	5					1					4	
BC12	45-58-25-00	79-76	79	76	20		1		15						4	
BC12	45-58-25-00	80-79	80	79	5				3	1			1			X
BC12	45-58-25-00	83-901755	83	901755	3				2	1						
BC12	45-58-26-01	235-901756	235	901756	5		2		3							X
BC12	45-58-26-01	236-235	236	235	40		3		10						27	X
BC12	45-58-26-01	237-236	237	236	8		4		2			2				X
BC12	45-58-26-01	239-238	239	238	2				1		1					
BC12	45-58-26-01	270-236	270	236	3				2	1						
BC12	45-58-26-01	271-61976	271	61976	24				7	2	1			11	3	
BC12	45-58-26-01	272-270	272	270	4				4							
BC12	45-58-26-01	273-272	273	272	2				2							
BC12	45-58-26-01	61976-270	61976	270	3				2	1						X
BC12	45-58-27-00	39675-84	39675	84	1					1						
BC12	45-58-27-00	84-83	84	83	4				2				2			
BC13	45-59-05-02	18460-18459	18460	18459	12				1				11			X
BC13	45-59-05-02	18461-18460	18461	18460	8					1	7					X
BC13	45-59-05-02	18462-18461	18462	18461	3				1				2			X
BC13	45-59-05-02	18489-18459	18489	18459	1				1							
BC13	45-59-05-02	18490-18489	18490	18489	4				1	2			1			
BC13	45-59-05-02	18491-18490	18491	18490	2					2						
BC13	45-59-05-02	18492-18491	18492	18491	3					2			1			
BC13	45-59-05-02	18493-18492	18493	18492	9					1			8			
BC13	45-59-05-02	18494-18493	18494	18493	1		1									
BC13	45-59-05-02	18499-18460	18499	18460	1					1						
BC13	45-59-05-02	18500-18499	18500	18499	1					1						
BC13	45-59-05-02	18501-18500	18501	18500	3					2	1					
BC13	45-59-05-02	18502-18501	18502	18501	4					1	2		1			
BC13	45-59-05-02	18503-18502	18503	18502	13										13	
BC13	45-59-05-02	18504-18462	18504	18462	1				1							X
BC13	45-59-05-02	18505-18504	18505	18504	4					3	1					
BC13	45-59-05-02	18506-18505	18506	18505	8						1		7			
BC13	45-59-05-02	18510-21327	18510	21327	4					2			2			
BC13	45-59-05-03	18463-18458	18463	18458	1										1	
BC13	45-59-05-03	18464-18463	18464	18463	41								28		13	
BC13	45-59-05-03	18465-18464	18465	18464	3				3							X
BC13	45-59-05-03	18467-18466	18467	18466	7			1	1						5	
BC13	45-59-05-03	18468-18467	18468	18467	38			1				37				
BC13	45-59-05-03	18469-18468	18469	18468	31					1		8			22	
BC13	45-59-05-03	18470-18469	18470	18469	2										2	
BC13	45-59-05-03	18471-18470	18471	18470	3					2			1			
BC13	45-59-05-03	18472-18465	18472	18465	13			9		2	1		1			
BC13	45-59-05-03	18473-18472	18473	18472	2								2			
BC13	45-59-05-03	18475-18484	18475	18484	2				1		1					
BC13	45-59-05-03	18476-18475	18476	18475	12										12	
BC13	45-59-05-03	18477-18476	18477	18476	13								13			
BC13	45-59-05-03	18478-18463	18478	18463	1					1						
BC13	45-59-05-03	18479-18478	18479	18478	3					1	1		1			
BC13	45-59-05-03	18481-18480	18481	18480	3					3						
BC13	45-59-05-03	18482-18481A	18482	18481A	2				2							
BC13	45-59-05-03	18483-18482	18483	18482	2				2							
BC13	45-59-05-03	18484-18483	18484	18483	2			2								
BC13	45-59-05-03	18485-18484	18485	18484	4		1			2	1					
BC13	45-59-05-03	18508-18486	18508	18486	1						1					
BC13	45-59-05-03	18509-18508	18509	18508	23				1		1	20	1			
BC13	45-59-05-03	18513-18516	18513	18516	2					1			1			
BC13	45-59-05-03	18516-18486	18516	18486	2	2										
BC13	45-59-05-03	18517-18486	18517	18486	3			1	2							
BC13	45-59-05-03	18518-30035	18518	30035	2			1			1					
BC13	45-59-05-03	18519-18518	18519	18518	6		1	2	1	2						X
BC13	45-59-05-03	18520-18519	18520	18519	1								1			
BC13	45-59-05-03	23777-23776	23777	23776	5					1					4	
BC13	45-59-05-03	23778-23777	23778	23777	4				3	1						
BC13	45-59-05-03	30035-18517	30035	18517	1										1	
BC13	45-59-05-03	30345-30344	30345	30344	10										10	
BC13	45-59-05-03	30346-30345	30346	30345	7								7			
BC13	45-59-05-03	30347-30346	30347	30346	14								12		2	

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Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
BC13	45-59-05-03	30348-30347	30348	30347	5										5	
BC13	45-59-05-03	30351-38231	30351	38231	2										2	
BC13	45-59-05-03	30356-30355	30356	30355	1					1						
BC13	45-59-05-03	30357-30356	30357	30356	57								12		45	
BC13	45-59-05-03	38231-30348	38231	30348	32								15		17	
BC13	45-59-05-03	38233-30356	38233	30356	3								3			
BC13	45-59-05-03	38235-38234	38235	38234	3					1			2			
BC13	45-59-05-03	45260-18470	45260	18470	1					1						
BC13	45-59-05-04	23779-23778	23779	23778	2				1	1						X
BC13	45-59-05-04	23780-23780M	23780	23780M	2					2						
BC13	45-59-05-04	23781M-23780	23781M	23780	1					1						
BC13	45-59-05-04	23782-23781	23782	23781	1					1						
BC13	45-59-05-04	23783-23782	23783	23782	2				2							
BC13	45-59-05-04	23784-23783	23784	23783	4		1		1	1				1		X
BC13	45-59-05-04	23785-23784	23785	23784	3		1		1	1						X
BC13	45-59-05-04	23786-23785	23786	23785	4		1		2				1			X
BC13	45-59-05-04	23787-23786	23787	23786	3				2	1						X
BC13	45-59-05-04	23788-23787	23788	23787	11				3						8	X
BC13	45-59-05-04	23789-23788	23789	23788	4				3				1			
BC13	45-59-05-04	23790-23789	23790	23789	3		2			1						
BC13	45-59-05-04	23791-23790	23791	23790	1				1							
BC13	45-59-05-04	23794-23793	23794	23793	2				1	1						
BC13	45-59-05-04	23798-23797	23798	23797	2				1				1			X
BC13	45-59-05-04	23799-23798	23799	23798	1		1									X
BC13	45-59-05-04	23801-23793	23801	23793	1		1									X
BC13	45-59-05-04	23802-23801	23802	23801	14										14	
BC13	45-59-05-04	23805-23804	23805	23804	2					1					1	
BC13	45-59-05-04	23806-23805	23806	23805	3		1		1	1						X
BC13	45-59-05-04	23809-23808	23809	23808	13										13	
BC13	45-59-05-04	23810-23809	23810	23809	2				2							
BC13	45-59-05-04	23811-23810	23811	23810	2				2							
BC13	45-59-05-04	23813-23812	23813	23812	2				1	1						
BC13	45-59-05-04	23814-23813	23814	23813	1					1						
BC13	45-59-05-04	23815M-23814	23815M	23814	19		1	1	7		10					X
BC13	45-59-05-04	23817-23806	23817	23806	2				1				1			
BC13	45-59-05-04	23819-23818	23819	23818	1								1			
BC13	45-59-05-04	23822-23821	23822	23821	4			3			1					X
BC13	45-59-05-04	23826-23825	23826	23825	1				1							
BC13	45-59-05-04	23827-23822	23827	23822	5		2		2	1						X
BC13	45-59-05-04	42237-61962	42237	61962	1				1							X
BC13	45-59-05-04	42238-42237	42238	42237	17				1					16		
BC13	45-59-05-04	42239-42238	42239	42238	52				1						51	
BC13	45-59-05-04	42240-42239	42240	42239	62			1		1					60	
BC13	45-59-05-04	61962-39741	61962	39741	1				1							
BC14	45-55-07-00	10896-10895	10896	10895	1		1									
BC14	45-55-07-00	10897-10896	10897	10896	10		1		8				1			X
BC14	45-55-07-00	10900-10894	10900	10894	2								1		1	X
BC14	45-55-07-00	10902-10901	10902	10901	2								2			
BC14	45-55-07-00	10904-10903	10904	10903	1								1			
BC14	45-55-07-00	10905-10904	10905	10904	4				4							X
BC14	45-55-07-00	10907-10906	10907	10906	1				1							
BC14	45-55-07-00	10908-10895	10908	10895	1								1			X
BC14	45-55-07-00	10910-9350A	10910	9350A	8		1		1	3			1		2	X
BC14	45-55-07-00	10914-10913	10914	10913	3				1	1			1			
BC14	45-55-07-00	10986-9346	10986	9346	2					2						
BC14	45-55-07-00	10989-10988	10989	10988	1		1									X
BC14	45-55-07-00	11392-9342	11392	9342	2				2							
BC14	45-55-07-00	11393-11392	11393	11392	1		1									X
BC14	45-55-07-00	12721-10898	12721	10898	1				1							
BC14	45-55-07-00	12722-12721	12722	12721	2				2							X
BC14	45-55-07-00	12724-13287	12724	13287	13						13					
BC14	45-55-07-00	12725-12724	12725	12724	85		1		6	1	73		4			X
BC14	45-55-07-00	12726-C368	12726	C368	3				3							X
BC14	45-55-07-00	12729-12728	12729	12728	27				1		26					
BC14	45-55-07-00	12730-12729	12730	12729	1					1						
BC14	45-55-07-00	12731-12726	12731	12726	2				2							
BC14	45-55-07-00	13287-10905	13287	10905	1				1							
BC14	45-55-07-00	4352-9351	4352	9351	5		3		2							X
BC14	45-55-07-00	5123-65333	5123	65333	2			1	1							
BC14	45-55-07-00	5124-5123	5124	5123	1			1								
BC14	45-55-07-00	5125-5124	5125	5124	3			1					2			
BC14	45-55-07-00	5125-5126	5125	5126	1				1							
BC14	45-55-07-00	5126-5133	5126	5133	8				8							
BC14	45-55-07-00	5127-5126	5127	5126	1		1									X
BC14	45-55-07-00	5128-5127	5128	5127	2				1	1						X
BC14	45-55-07-00	5129-5127	5129	5127	1								1			
BC14	45-55-07-00	5130-5127	5130	5127	2		1			1						
BC14	45-55-07-00	5133-6262	5133	6262	51			1	50							
BC14	45-55-07-00	6262-37032	6262	37032	29				29							
BC14	45-55-07-00	9343-9342	9343	9342	1				1							
BC14	45-55-07-00	9344-9343	9344	9343	1				1							
BC14	45-55-07-00	9347-10986	9347	10986	7			2		4			1			
BC14	45-55-07-00	9348-9347	9348	9347	6					6						
BC14	45-55-07-00	9349-9348	9349	9348	8			1	2	3			2			
BC14	45-55-07-00	9350-9349	9350	9349	5					3			2			
BC14	45-55-07-00	9362-9361	9362	9361	2		2									X
BC14	45-55-07-00	9814-10910	9814	10910	1					1						
BC14	45-55-07-00	9818-9817	9818	9817	2				1				1			
BC14	45-55-07-00	9820-9819	9820	9819	1								1			
BC14	45-55-07-00	C366-10914	C366	10914	5				2				3			X
BC14	45-55-07-00	C368-10904	C368	10904	5		4		1							X
BC14	45-55-07-00	C527-12731	C527	12731	1		1									X
BC14	45-55-07-00	C528-12731	C528	12731	2								2			
BC15	45-59-01-00	45564A-45564	45564A	45564	2					2						
BC15	45-59-01-00	45571-45570	45571	45570	1									1		
BC15	45-59-01-00	45580-45579	45580	45579	1					1						
BC15	45-59-01-00	45592-22464	45592	22464	1					1						
BC15	45-59-01-00	45607-45606	45607	45606	3					3						
BC15	45-59-01-00	45608-45607	45608	45607	1					1						
BC15	45-59-01-00	45610-45605	45610	45605	1					1						
BC15	45-59-01-00	45613-45612	45613	45612	1					1						

APPENDIX E: Table 4-3.4 - Summary of Sewer Defects by Sewer Segment
Jones Falls SRRR: Collection System Investigation

Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
BC15	45-59-01-00	45614-45613	45614	45613	2					2						
BC15	45-59-01-00	45621-22482	45621	22482	1	1										
BC16	45-58-01-00	55251-7298	55251	7298	95			4				91				X
BC16	45-58-01-00	55252-55251	55252	55251	6									1	5	
BC16	45-58-01-00	55253-55252	55253	55252	24										24	
BC16	45-58-01-00	55254-55253	55254	55253	26									1	25	
BC16	45-58-01-00	55255-55254	55255	55254	15										15	
BC16	45-58-01-00	55262-55261	55262	55261	56										56	
BC16	45-58-01-00	55265-55264	55265	55264	1						1					
BC16	45-58-01-00	55267-55262	55267	55262	1									1		
BC16	45-58-01-00	55269-55268	55269	55268	1								1			
BC16	45-58-01-00	55270-55269	55270	55269	27										27	
BC16	45-58-01-00	55271-55270	55271	55270	37										37	
BC16	45-58-01-00	55272-55271	55272	55271	37										37	
BC16	45-58-01-00	7295-NS560	7295	NS560	59			3				56				X
BC16	45-58-01-00	7296-7295	7296	7295	86			8				78				X
BC16	45-58-01-00	7297-7296	7297	7296	80			11				69				
BC16	45-58-01-00	7298-7297	7298	7297	94			8				86				X
BC16	45-58-01-00	7300-55251	7300	55251	53			1				41		11		
BC16	45-58-01-00	7301-7300	7301	7300	47			2				45				
BC16	45-58-03-00	18241-7311	18241	7311	5			5								X
BC16	45-58-03-00	19141-7308	19141	7308	2			2								X
BC16	45-58-03-00	19142-34175	19142	34175	11				1			10				
BC16	45-58-03-00	22225-19142	22225	19142	27			1	1			25				
BC16	45-58-03-00	34175-19141	34175	19141	25			2				23				X
BC16	45-58-03-00	45632-45631	45632	45631	1					1						
BC16	45-58-03-00	45652-45640	45652	45640	2			1		1						
BC16	45-58-03-00	45653-45652	45653	45652	1						1					
BC16	45-58-03-00	45654-45653	45654	45653	3	2					1					
BC16	45-58-03-00	59274-34175	59274	34175	1					1						
BC16	45-58-03-00	7302-7301	7302	7301	24							24				
BC16	45-58-03-00	7303-7302	7303	7302	19							19				
BC16	45-58-03-00	7305-7303	7305	7303	61			3				58				X
BC16	45-58-03-00	7308-7305	7308	7305	148			9	1			137		1		X
BC16	45-58-04-00	18321-7309	18321	7309	36			5	2			29				X
BC16	45-58-04-00	18322-18321	18322	18321	25							25				
BC16	45-58-04-00	34176-59274	34176	59274	3				2	1						X
BC16	45-58-04-00	34177-34176	34177	34176	2				2							X
BC16	45-58-04-00	7309-19143	7309	19143	17				1			16				
BC16	45-58-05-00	22222-7314	22222	7314	4				1			3				
BC16	45-58-05-00	45669-7314	45669	7314	2			2								
BC16	45-58-05-00	45670-45669	45670	45669	5		2	1	1					1		X
BC16	45-58-05-00	45672-45671	45672	45671	4										4	
BC16	45-58-05-00	45674-45673	45674	45673	1			1								
BC16	45-58-05-00	45674A-45674	45674A	45674	1						1					
BC16	45-58-05-00	45685-45684	45685	45684	1					1						
BC16	45-58-05-00	45690-45689	45690	45689	1						1					
BC16	45-58-05-00	45691-45690	45691	45690	1			1								
BC16	45-58-05-00	7314-18241	7314	18241	48			9				39				X
BC19	45-62-02-00	40267A-40267	40267A	40267	4				1	3						
BC19	45-62-02-00	42054-42053	42054	42053	5				5							
BC19	45-62-03-01	56448-56440	56448	56440	1		1									
BC20	45-66-02-00	20772-20771	20772	20771	2			1		1						
BC20	45-66-04-00	901982-45331	901982	45331	2									2		
BC20	45-66-06-00	20781-20780	20781	20780	4		1	1	1				1			X
BC20	45-66-06-00	41267-56215	41267	56215	3		2		1							X
BC20	45-66-06-00	41268-43491	41268	43491	2		2									X
BC20	45-66-06-00	41270-41269	41270	41269	3		1		2							X
BC20	45-66-06-00	41271-41269	41271	41269	3		1		1		1					X
BC20	45-66-06-00	41272-41271	41272	41271	2				2							
BC20	45-66-06-00	41273-41272	41273	41272	1				1							
BC20	45-66-06-00	41274-41273	41274	41273	1								1			
BC20	45-66-06-00	41276-41274	41276	41274	6								6			
BC20	45-66-06-00	41277-41276	41277	41276	6				2				4			
BC20	45-66-06-00	41278-41271	41278	41271	1		1									
BC20	45-66-06-00	41279-41278	41279	41278	2								2			
BC20	45-66-06-00	41280-41279	41280	41279	6								6			
BC20	45-66-06-00	41281-41280	41281	41280	3								3			
BC20	45-66-06-00	41282-41281	41282	41281	13				3				10			X
BC20	45-66-06-00	41283-41282	41283	41282	1								1			
BC20	45-66-06-00	43492-43491	43492	43491	10				7				3			
BC20	45-66-06-00	43493-43492	43493	43492	8				7				1			
BC20	45-66-06-00	43494-43493	43494	43493	1		1									
BC20	45-66-06-00	43495-43494	43495	43494	9		1		5		2		1			X
BC20	45-66-06-00	43496-43495	43496	43495	3				2				1			
BC20	45-66-06-00	43497-43496	43497	43496	6				6							
BC20	45-66-06-00	43498-43497	43498	43497	10				6				4			
BC20	45-66-06-00	56220-56219	56220	56219	1			1								
BC20	45-66-06-00	56223-56222	56223	56222	3	3										
BC20	45-66-07-00	41255-41254	41255	41254	6		1			3			2			X
BC20	45-66-07-00	41257-41254	41257	41254	1								1			
BC20	45-66-07-00	41258-41257	41258	41257	4				2				2			
BC20	45-66-07-00	41259-41258	41259	41258	1				1							
BC20	45-66-07-00	41261-41260	41261	41260	111				1		1	37			72	
BC20	45-66-07-00	41262-41261	41262	41261	1				1							
BC20	45-66-07-00	41263-41262	41263	41262	51				1			50				X
BC20	45-66-07-00	56212-41253	56212	41253	2				2							
BC20	45-66-08-00	20782-41252	20782	41252	1			1								
BC20	45-66-08-00	33528-33527	33528	33527	3			1	2							X
BC20	45-66-09-02	33532-33531	33532	33531	3			1	2							
BC20	45-66-09-02	33534-33533	33534	33533	2				2							
BC22	45-69-00-00	44214-53270	44214	53270	29										29	
BC22	45-69-00-00	44215-44214	44215	44214	64										64	
BC22	45-69-00-00	50532-50531	50532	50531	1							1				
BC22	45-69-00-00	53270-44213	53270	44213	38			1							37	
BC22	45-69-00-00	57679-57678	57679	57678	22										22	
BC22	45-69-00-00	57680-57679	57680	57679	42		1								41	
BC22	45-69-00-00	61667-57676	61667	57676	10										10	
BC22	45-70-00-00	30727-53271	30727	53271	1						1					
BC22	45-70-00-00	44210-44209	44210	44209	47										47	
BC22	45-70-00-00	44211-44210	44211	44210	17										17	

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Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
BC22	45-70-00-00	44212-44211	44212	44211	67						1				66	
BC22	45-70-00-00	44213-44212	44213	44212	63										63	
BC22	45-70-00-00	44216-44215	44216	44215	62										62	
BC22	45-70-00-00	53292-30727	53292	30727	66						1	51			14	
BC22	45-70-00-00	53297-53296	53297	53296	1						1					
BC22	45-70-00-00	53300-53298	53300	53298	1			1								
BC22	45-70-00-00	53301-53300	53301	53300	1				1							
BC22	45-70-00-00	53302-53294	53302	53294	1						1					
BC22	45-70-00-00	53303-53302	53303	53302	32										32	
BC22	45-70-00-00	57676-44210	57676	44210	20										20	
BC22	45-70-00-00	64082-53297	64082	53297	22					1					21	
BC22	45-70-00-00	64085-64084	64085	64084	2									2		
BC22	45-71-00-00	44217-44216	44217	44216	62										62	
BC22	45-71-00-00	44218-44217	44218	44217	42				1						41	
BC22	45-71-00-00	44219-44218	44219	44218	2			2								
BC22	45-71-00-00	44220-44219	44220	44219	136							68			68	
BC22	45-71-00-00	44221-44220	44221	44220	125										125	
BC22	45-71-00-00	53258-53257	53258	53257	103			4	1					2	96	
BC22	45-71-00-00	53260-53259	53260	53259	61			4						1	56	
BC22	45-71-00-00	53268-53267	53268	53267	24										24	
BC22	45-71-00-00	53281-53280	53281	53280	1									1		
BC22	45-71-00-00	53283-53280	53283	53280	1					1						
BC22	45-71-00-00	53284-53282	53284	53282	2									2		
BC22	45-71-00-00	53287-53286	53287	53286	1				1							
BC22	45-71-00-00	53288-53287	53288	53287	1									1		
BC22	45-71-00-00	57683-57682	57683	57682	1									1		
BC22	45-72-00-00	44222-44221	44222	44221	3										3	
BC22	45-73-01-00	43827-43786	43827	43786	1										1	
BC22	45-73-01-00	49507-49506	49507	49506	19										19	
BC22	45-73-01-00	49509-49508	49509	49508	6										6	
BC22	45-73-01-00	49510-49509	49510	49509	24										24	
BC22	45-73-01-00	58595-58594	58595	58594	3										3	
BC22	45-73-01-00	58596-58595	58596	58595	1			1								
BC22	45-73-01-00	58597-58596	58597	58596	41	41										
BC22	45-73-01-00	58598-58597	58598	58597	55	53					2					
BC22	45-73-01-00	58599-58598	58599	58598	4			1						3		
BC22	45-73-01-00	58601-58600	58601	58600	1									1		
BC22	45-73-01-00	58603-58602	58603	58602	1						1					
BC22	45-73-01-00	58604-58603	58604	58603	2									2		
BC22	45-73-01-00	58609A-58609	58609A	58609	1									1		
BC22	45-73-01-00	62157-62156	62157	62156	1									1		
BC22	45-73-01-00	62159-62158	62159	62158	1									1		
BC22	45-73-02-00	43788-43787	43788	43787	32										32	
BC22	45-73-02-00	43789-43788	43789	43788	47			1							46	
BC22	45-73-02-00	43791-43790	43791	43790	6										6	
BC23	45-68-07-00	36938-36937	36938	36937	3								3			
BC23	45-68-12-01	42612-42611	42612	42611	2			2								
BC23	45-68-12-01	42613-42612	42613	42612	5			1	2	1	1					
BC23	45-68-12-01	42615-42614	42615	42614	79		1		6		1			34	37	
BC23	45-68-12-01	42616-42615	42616	42615	14				1		1				12	
BC23	45-68-12-01	42617-42616	42617	42616	59				4				1		54	
BC24	45-10-22-03	703-704	703	704	1				1							
BC24	45-66-10-00	69135-69136	69135	69136	4										4	
BC24	45-66-10-00	69138-69136	69138	69136	1							1				
BC24	45-66-10-00	69153-69143	69153	69143	1							1				
BC24	45-66-12-00	20794-36990	20794	36990	43				1				42			
BC24	45-66-13-00	20796-20795	20796	20795	4					3			1			
BC24	45-66-16-00	20803-20799	20803	20799	1				1							
BC24	45-66-16-00	29268-29907	29268	29907	3		1		2							X
BC24	45-66-16-00	29269-29268	29269	29268	4				4							
BC24	45-66-16-00	29270-29269	29270	29269	2				2							
BC24	45-66-16-00	29271-29270	29271	29270	1				1							
BC24	45-66-16-00	29277-29276	29277	29276	1				1							
BC24	45-66-16-00	29278-29277	29278	29277	1			1								
BC24	45-66-16-00	29280-29279	29280	29279	1				1							
BC24	45-66-16-00	29284-29276	29284	29276	2				2							
BC24	45-66-16-00	29285-29284	29285	29284	4		2			2						X
BC24	45-66-16-00	29287-29286	29287	29286	1					1						
BC24	45-66-16-00	29288-29279	29288	29279	2				2							
BC24	45-66-16-00	29291-29290	29291	29290	3			3								
BC24	45-66-16-00	29293-29292	29293	29292	1					1						
BC24	45-66-16-00	29875-29874	29875	29874	1					1						
BC24	45-66-16-00	29876-29875	29876	29875	3				3							
BC24	45-66-16-00	32372-32371	32372	32371	8				8							
BC24	45-66-16-00	32373-32372	32373	32372	4				4							
BC24	45-66-16-00	32374-32373	32374	32373	2				2							
BC24	45-66-16-00	32376-32375	32376	32375	2				2							X
BC24	45-66-16-00	32378-32368	32378	32368	5				4	1						
BC24	45-66-16-00	32380-32379	32380	32379	3				3							
BC24	45-66-16-00	32381-32380	32381	32380	1				1							
BC24	45-66-16-00	32383-32382	32383	32382	2				2							
BC24	45-66-16-00	32386-32385	32386	32385	6				6							
BC24	45-66-16-00	32387-32384	32387	32384	4				4							
BC24	45-66-16-00	38381-38380	38381	38380	1						1					
BC24	45-66-16-00	38386-38385	38386	38385	1								1			
BC24	45-66-16-00	39715-38381	39715	38381	1					1						
BC24	45-66-17-00	13936-1597	13936	1597	3			2		1						
BC24	45-66-17-00	13938-13937	13938	13937	3		2			1						X
BC24	45-66-17-00	13939-20805	13939	20805	1								1			
BC24	45-66-17-00	13940-13939	13940	13939	3				1	1			1			
BC24	45-66-17-00	1593-29862	1593	29862	13					1					12	
BC24	45-66-17-00	1596-1595	1596	1595	4				3	1						X
BC24	45-66-17-00	1598-1597	1598	1597	3				3							
BC24	45-66-17-00	1599-1596	1599	1596	8	1			6	1						X
BC24	45-66-17-00	1600-1599	1600	1599	1					1						
BC24	45-66-17-00	1601-1600	1601	1600	1				1							
BC24	45-66-17-00	1604-1603	1604	1603	4									2	2	
BC24	45-66-17-00	1605-1604	1605	1604	5				3	1	1					
BC24	45-66-17-00	1606-1605	1606	1605	1				1							
BC24	45-66-17-00	1607-20810	1607	20810	3				3							
BC24	45-66-17-00	1608-1607	1608	1607	4				3	1						

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BC24	45-66-17-00	1609-1593	1609	1593	7		2		2	3						X
BC24	45-66-17-00	1610-1609	1610	1609	8	2			5	1						X
BC24	45-66-17-00	1611-1610	1611	1610	5				2	1			2			
BC24	45-66-17-00	1612-1611	1612	1611	10				3						7	
BC24	45-66-17-00	1613-1612	1613	1612	5	1			4							X
BC24	45-66-17-00	1614-1613	1614	1613	64		1		3	1					59	X
BC24	45-66-17-00	1620-1619	1620	1619	4		1		3							
BC24	45-66-17-00	20804-20803	20804	20803	9			6		1		2				
BC24	45-66-17-00	20805-20804	20805	20804	43			8			34				1	
BC24	45-66-17-00	20807-20806	20807	20806	2			1	1							
BC24	45-66-17-00	20808-20807	20808	20807	1				1							
BC24	45-66-17-00	20810-20809	20810	20809	9		5	1	3							X
BC24	45-66-17-00	20811-20810	20811	20810	2					2						
BC24	45-66-17-00	20812-20811	20812	20811	2				1	1						
BC24	45-66-17-00	29273-29272	29273	29272	1								1			
BC24	45-66-17-00	29862-29861	29862	29861	1					1						
BC24	45-66-17-00	41116-41115	41116	41115	1				1							
BC24	45-66-17-00	41118-41117	41118	41117	2			2								
BC24	45-66-17-00	41120-41119	41120	41119	1		1									X
BC24	45-66-17-00	41428-41427	41428	41427	2					1			1			
BC24	45-66-17-00	902120-13937	902120	13937	19			4	2		8			5		X
BC24	45-66-18-01	10382-1614	10382	1614	1			1								
BC24	45-66-18-01	10384-10383	10384	10383	5		2		2	1						X
BC24	45-66-18-01	10387-10386	10387	10386	2				2							
BC24	45-66-18-01	11081-11114	11081	11114	1								1			
BC24	45-66-18-01	11085-11084	11085	11084	5				2						3	X
BC24	45-66-18-01	11087-9881	11087	9881	4					4						
BC24	45-66-18-01	12088-12087	12088	12087	1			1								
BC24	45-66-18-01	12089-12088	12089	12088	2			2								
BC24	45-66-18-01	12092-12091	12092	12091	1		1									
BC24	45-66-18-01	14271-11087	14271	11087	1					1						
BC24	45-66-18-01	14506-14505	14506	14505	2				2							
BC24	45-66-18-01	14507-12092	14507	12092	3		1		2							X
BC24	45-66-18-01	14512-14511	14512	14511	2				1				1			
BC24	45-66-18-01	14513-14508	14513	14508	3				3							X
BC24	45-66-18-01	14514-14513	14514	14513	2					2						
BC24	45-66-18-01	14515-14513	14515	14513	5				1	4						
BC24	45-66-18-01	14516-14515	14516	14515	3					3						
BC24	45-66-18-01	16102-16101	16102	16101	1				1							
BC24	45-66-18-01	16103-16095	16103	16095	1				1							
BC24	45-66-18-01	16104-16103	16104	16103	1					1						
BC24	45-66-18-01	16106-14506	16106	14506	19								19			
BC24	45-66-18-01	16108-16107	16108	16107	1				1							
BC24	45-66-18-01	21265-21264	21265	21264	1				1							
BC24	45-66-18-01	21269-21268	21269	21268	7		1		6							X
BC24	45-66-18-01	21271-21270	21271	21270	1					1						
BC24	45-66-18-01	33755-33754	33755	33754	2			2								
BC24	45-66-18-01	33756-33755	33756	33755	13					1				12		
BC24	45-66-18-01	33757-33756	33757	33756	1			1								
BC24	45-66-18-01	33759-33758	33759	33758	3				2	1						
BC24	45-66-18-01	41121-41120	41121	41120	1						1					
BC24	45-66-18-01	41123-41122	41123	41122	1			1								
BC24	45-66-18-01	41124-41123	41124	41123	3			1	1	1						
BC24	45-66-18-01	41136-41135	41136	41135	1		1									X
BC24	45-66-18-01	41137-41136	41137	41136	1		1									X
BC24	45-66-18-01	57725-33756	57725	33756	1										1	
BC24	45-66-18-01	57742-57741	57742	57741	1			1								
BC24	45-66-18-01	706-1614	706	1614	91				6						85	
BC24	45-66-18-01	902152-1614	902152	1614	4				4							
BC24	45-66-18-01	9879-1615	9879	1615	80					1					79	
BC24	45-66-18-01	9880-9879	9880	9879	5				1	4						X
BC24	45-66-18-01	9881-9880	9881	9880	2					2						
BC24	45-66-18-02	42426-42602	42426	42602	10				7	1			2			X
BC24	45-66-18-02	696-697	696	697	10				10							
BC24	45-66-18-02	697-698	697	698	8				7	1						
BC24	45-66-18-02	698-699	698	699	2				1						1	
BC24	45-66-18-02	699-700	699	700	15				9	2	1		3			
BC24	45-66-18-02	700-42602	700	42602	3					2			1			
BC24	45-66-18-02	701-702	701	702	3				1	1					1	
BC24	45-66-18-02	704-704M	704	704M	2		1		1							
BC24	45-66-18-02	704M-705	704M	705	4				4							X
BC24	45-66-18-02	705-706	705	706	38				9						29	X
BC24	45-66-18-02	708-709	708	709	3		1		1	1						X
BC24	45-66-18-02	709-710	709	710	103		1		6	2	59			3	32	X
BC24	45-66-18-02	710-711	710	711	43		1			1			2		39	X
BC24	45-66-18-02	711-700	711	700	51		1								50	X
BC24	45-66-18-02	825-708	825	708	2		1		1							X
BC24	45-66-18-02	826-825	826	825	13					1					12	
BC24	45-66-18-02	9467-9467M	9467	9467M	15										15	
BC24	45-66-18-02	9467M-9468	9467M	9468	5				2						3	
BC24	45-66-18-02	9468-9468M	9468	9468M	1		1									X
BC24	45-66-18-02	9468M-9714	9468M	9714	24				1				1		22	
BC24	45-66-18-02	9469-9470	9469	9470	1										1	
BC24	45-66-18-02	9470-9715	9470	9715	11	1	2		4	2			2			X
BC24	45-66-18-02	9471-696	9471	696	3				2		1					
BC24	45-66-18-02	9714-9469	9714	9469	12		2		4	1			4		1	X
BC24	45-66-18-02	9715-9471	9715	9471	3										3	
BC25	45-66-09-01	32260-32259	32260	32259	3			1	2							
BC25	45-66-09-02	20986-21242	20986	21242	18						18					
BC25	45-66-09-02	20988-20987	20988	20987	29				1		27		1			
BC25	45-66-09-02	20989-20988	20989	20988	28						28					
BC25	45-66-09-02	20993-20992	20993	20992	3				2				1			
BC25	45-66-09-02	20994-20993	20994	20993	2				1				1			
BC25	45-66-09-02	20995-20994	20995	20994	2				1				1			
BC25	45-66-09-02	20996-20995	20996	20995	3				2				1			
BC25	45-66-09-02	20997-20994	20997	20994	3								1		2	
BC25	45-66-09-02	20998-20997	20998	20997	25						25					
BC25	45-66-09-02	20999-20998	20999	20998	1	1										X
BC25	45-66-09-02	21002-21001	21002	21001	2			1	1							
BC25	45-66-09-02	21003-21002	21003	21002	4		2	1	1							X
BC25	45-66-09-02	21007-21006	21007	21006	2		1				1					

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Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
BC25	45-66-09-02	21011-21010	21011	21010	1				1							
BC25	45-66-09-02	21014-21007	21014	21007	10						10					
BC25	45-66-09-02	21015-21014	21015	21014	19				2		17					
BC25	45-66-09-02	21016-21015	21016	21015	29				1		28					
BC25	45-66-09-02	22042-23517	22042	23517	31				17		13				1	X
BC25	45-66-09-02	22043-22207	22043	22207	1			1								
BC25	45-66-09-02	22045-22044	22045	22044	1								1			
BC25	45-66-09-02	22047-22046	22047	22046	1								1			
BC25	45-66-09-02	22049-22048	22049	22048	1		1									X
BC25	45-66-09-02	22050-22049	22050	22049	1				1							
BC25	45-66-09-02	23515-68946	23515	68946	1				1							
BC25	45-66-09-02	23516-23515	23516	23515	2				2							
BC25	45-66-09-02	23517-23516	23517	23516	39						18		1		20	
BC25	45-66-09-02	32257-32254	32257	32254	4				4							
BC25	45-66-09-02	32263-32262	32263	32262	1									1		
BC25	45-66-09-02	32265-32264	32265	32264	71			5	14						52	
BC25	45-66-09-03	29525-29524	29525	29524	2				2							
BC25	45-66-09-03	29526-29525	29526	29525	1				1							
BC25	45-66-09-03	29527-29526	29527	29526	1				1							
BC25	45-66-09-03	29531-29529	29531	29529	1					1						
BC25	45-66-09-03	29533-29532	29533	29532	1				1							
BC25	45-66-09-03	29540-29539	29540	29539	1			1								
BC25	45-66-09-03	29542-29541	29542	29541	1			1								
BC25	45-66-09-03	29713-29533	29713	29533	1				1							
BC25	45-66-09-03	29800-29529	29800	29529	1					1						
BC25	45-66-09-03	29801-29531	29801	29531	2				1	1						
BC25	45-66-09-03	29802-29801	29802	29801	3				2	1						
BC25	45-66-09-03	29803-29802	29803	29802	1				1							
BC25	45-66-09-03	29804-29802	29804	29802	2				1	1						
BC25	45-66-09-03	29805-29804	29805	29804	1				1							
BC25	45-66-09-03	30502-30501	30502	30501	4			2		1			1			
BC26	45-68-15-01	41042-41037	41042	41037	4		4									
BC26	45-68-15-02	43748-43747	43748	43747	1				1							
BC26	45-68-15-03	45833-45832	45833	45832	9				1			8				X
BC26	45-68-15-03	45834-45833	45834	45833	2				2							
BC26	45-68-15-03	45836-45835	45836	45835	14								14			
BC26	45-68-15-03	45838-45831	45838	45831	5		1	2					1		1	X
BC26	45-68-15-03	45841-45832	45841	45832	2									2		
BC26	45-68-15-03	45842-45841	45842	45841	1										1	
BC26	45-68-15-03	45844-45843	45844	45843	4							4				
BC26	45-68-15-03	45846-45844	45846	45844	1								1			
BC26	45-68-15-03	45847-45839	45847	45839	1								1			
BC26	45-68-15-03	45849-45848	45849	45848	3								3			
BC26	45-68-15-03	45850-45849	45850	45849	69								5	31	33	
BC26	45-68-15-03	45851-45850	45851	45850	48				1				42	5		
BC26	45-68-15-03	45853-45852	45853	45852	1				1							
BC26	45-68-15-03	45854-45853	45854	45853	2	1						1				
BC26	45-68-15-03	46822-45854	46822	45854	4									4		
BC26	45-68-15-03	46824-46823	46824	46823	1					1						
BC26	45-68-15-03	46826-46825	46826	46825	40										40	
BC26	45-68-15-03	46828-46827	46828	46827	1					1						
BC26	45-68-15-03	46832-46825	46832	46825	7										7	
BC26	45-68-15-03	46844-46843	46844	46843	1					1						
BC26	45-68-15-03	46845-46844	46845	46844	1								1			
BC26	45-68-15-03	46848-46847	46848	46847	1					1						
BC26	45-68-15-03	46849-46848	46849	46848	1									1		
BC26	45-68-15-03	46850-46849	46850	46849	1					1						
BC26	45-68-16-02	46780A-46750	46780A	46750	1					1						
BC26	45-68-16-02	49047-49046	49047	49046	5		1								4	X
BC26	45-68-16-02	49067-49066	49067	49066	1						1					
BC26	45-68-17-01	36959-36958	36959	36958	3			2		1						
BC26	45-68-17-01	36960-36959	36960	36959	4				2	2						
BC26	45-68-17-01	36961-36960	36961	36960	2			1	1							
BC26	45-68-17-01	36962-36961	36962	36961	16			1	15							X
BC26	45-68-17-01	36963-36962	36963	36962	35				34	1						X
BC26	45-68-17-01	38088-38087	38088	38087	1			1								
BC26	45-68-17-01	38089-38088	38089	38088	5		2	1	1	1						X
BC26	45-68-17-01	38274-38090	38274	38090	1					1						
BC26	45-68-17-01	38330-38274	38330	38274	3			3								
BC26	45-68-17-01	38331-38330	38331	38330	2				2							X
BC26	45-68-17-01	38334-38330	38334	38330	12			3	8				1			
BC26	45-68-17-01	38338-38337	38338	38337	5				5							
BC26	45-68-17-01	38339-38338	38339	38338	1				1							X
BC26	45-68-17-01	45074-45073	45074	45073	20								20			
BC26	45-68-17-01	45075-45074	45075	45074	12								12			
BC26	45-68-17-01	45076-45075	45076	45075	1					1						
BC26	45-68-17-01	45077-45076	45077	45076	3								3			
BC26	45-68-17-01	45078-45077	45078	45077	3								3			
BC26	45-68-17-01	45079-45078	45079	45078	3								3			
BC26	45-68-17-01	45080-45076	45080	45076	1				1							
BC26	45-68-17-01	45082-45081	45082	45081	4								4			
BC26	45-68-18-00	38471-38470	38471	38470	6			1	5							
BC26	45-68-18-00	38473-38472	38473	38472	1								1			
BC26	45-68-18-00	38474-38473	38474	38473	1		1									X
BC26	45-68-18-00	38475-38474	38475	38474	2				2							X
BC26	45-68-18-00	38664-38663	38664	38663	5		1		4							
BC26	45-68-18-00	38665-38664	38665	38664	1				1							
BC26	45-68-18-00	38666-38665	38666	38665	1				1							
BC26	45-68-18-00	38667-38666	38667	38666	1		1									X
BC26	45-68-18-00	38669-38668	38669	38668	1								1			
BC26	45-68-18-00	38675-38674	38675	38674	1				1							
BC26	45-68-18-00	38677-38676	38677	38676	1				1							
BC26	45-68-18-00	38679-38678	38679	38678	2				2							X
BC26	45-68-18-00	39286-38662	39286	38662	7				6	1						
JF0320S	45-10-22-01	12848-TCM131	12848	TCM131	6					4			2			
JF0320S	45-10-22-01	12849-12848	12849	12848	5				2		1		1		1	
JF0320S	45-10-22-01	12850-12848	12850	12848	9				9							
JF0320S	45-10-22-01	12851-12850	12851	12850	2		1		1							
JF0320S	45-10-22-01	12852-12851	12852	12851	5		2		2				1			
JF0320S	45-10-22-01	12853-TCM130	12853	TCM130	3								3			
JF0320S	45-10-22-01	13285-36794	13285	36794	3		1		1	1						

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Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
JF0320S	45-10-22-01	14057-14056	14057	14056	2		1		1							
JF0320S	45-10-22-01	14970-14969	14970	14969	2		1		1							
JF0320S	45-10-22-01	14971-14970	14971	14970	2				2							
JF0320S	45-10-22-01	15752-9866	15752	9866	2			1	1							
JF0320S	45-10-22-01	15753-15752	15753	15752	2		1		1							
JF0320S	45-10-22-01	15754-15753	15754	15753	2		1		1							
JF0320S	45-10-22-01	15755-15754	15755	15754	3		3									
JF0320S	45-10-22-01	17503-12849	17503	12849	4			1	2				1			
JF0320S	45-10-22-01	17504-17503	17504	17503	6			1	5							
JF0320S	45-10-22-01	17505-17504	17505	17504	8		1	3	4							
JF0320S	45-10-22-01	17509-17503	17509	17503	1								1			
JF0320S	45-10-22-01	17510-17509	17510	17509	7				7							
JF0320S	45-10-22-01	17511-17510	17511	17510	1							1				
JF0320S	45-10-22-01	17514-17504	17514	17504	15			15								
JF0320S	45-10-22-01	18764-17505	18764	17505	2			2								
JF0320S	45-10-22-01	36794-13284	36794	13284	1		1									
JF0320S	45-10-22-01	791-792	791	792	5		4		1							
JF0320S	45-10-22-01	793-TCM85	793	TCM85	18				15		1	2				
JF0320S	45-10-22-01	795-794	795	794	14		2		12							
JF0320S	45-10-22-01	9862-793	9862	793	3				3							
JF0320S	45-10-22-01	9866-9862	9866	9862	1				1							
JF0320S	45-10-22-01	9868-9867	9868	9867	1				1							
JF0320S	45-10-22-01	9870-9869	9870	9869	12				12							
JF0320S	45-10-22-01	9872-9871	9872	9871	3				3							
JF0320S	45-10-22-01	9873-9872	9873	9872	2		2									
JF0320S	45-10-22-01	9875-9874	9875	9874	5				5							
JF0320S	45-10-22-01	9876-9875	9876	9875	1				1							
JFWR09	45-10-01-01	21400-21399	21400	21399	1				1							
JFWR09	45-10-01-01	21402-21401	21402	21401	25										25	
JFWR09	45-10-01-01	40475-21402	40475	21402	67				1						66	
JFWR09	45-10-01-01	40476-40475	40476	40475	22										22	
JFWR09	45-10-01-01	58190-58189	58190	58189	1					1						
JFWR09	45-10-01-01	67531-21400	67531	21400	3				2	1						
JFWR15	45-10-02-03	10961-10960	10961	10960	4					2	1				1	
JFWR15	45-10-02-03	10962-10961	10962	10961	2					1			1			
JFWR15	45-10-02-03	10963-10962	10963	10962	1								1			
JFWR15	45-10-02-03	10964-10960	10964	10960	1				1							
JFWR15	45-10-02-03	10965-10961	10965	10961	10		1		9							X
JFWR15	45-10-02-03	10966-10965	10966	10965	1								1			
JFWR15	45-10-02-03	10967-10965	10967	10965	5		2		2				1			X
JFWR15	45-10-02-03	10968-10967	10968	10967	1								1			
JFWR15	45-10-02-03	10970-10969	10970	10969	1				1							X
JFWR15	45-10-02-03	10972-10971	10972	10971	2				1				1			
JFWR15	45-10-02-03	10973-10972	10973	10972	1				1							
JFWR15	45-10-02-03	15061-15060	15061	15060	2					2						
JFWR15	45-10-02-03	15197-10963	15197	10963	13					1			4		8	
JFWR15	45-10-02-03	15199-15198	15199	15198	2				2							
JFWR15	45-10-02-03	15201-15200	15201	15200	1				1							X
JFWR15	45-10-02-03	15202-15201	15202	15201	5				5							X
JFWR15	45-10-02-03	15206-15205	15206	15205	2								2			
JFWR15	45-10-02-03	15328-15328M	15328	15328M	6			4	2							
JFWR15	45-10-02-03	15499-15061A	15499	15061A	1					1						
JFWR15	45-10-02-03	15971-15970	15971	15970	1	1										X
JFWR15	45-10-02-03	15973-15972	15973	15972	1			1								
JFWR15	45-10-02-03	15975-15974	15975	15974	2								2			
JFWR15	45-10-02-03	15977-15976	15977	15976	1								1			
JFWR15	45-10-02-03	15978-15977	15978	15977	1								1			
JFWR15	45-10-02-03	15979-15971	15979	15971	4	1	1		1		1					X
JFWR15	45-10-02-03	15980-15202	15980	15202	26		11		9	3			3			X
JFWR15	45-10-02-03	15981-15980	15981	15980	24		13		7		2				2	X
JFWR15	45-10-02-03	15987-15986	15987	15986	2								1		1	
JFWR15	45-10-02-03	15988-15987	15988	15987	1								1			
JFWR15	45-10-02-03	15989-15207	15989	15207	1				1							X
JFWR15	45-10-02-03	21396-15197	21396	15197	2				1	1						
JFWR15	45-10-02-03	21794-21793	21794	21793	13		2		11							X
JFWR15	45-10-02-03	21795-21794	21795	21794	2				2							X
JFWR15	45-10-02-03	21796-21795	21796	21795	1				1							
JFWR15	45-10-02-03	21797-21796	21797	21796	12			1	7	1					3	
JFWR15	45-10-02-03	21798-21797	21798	21797	3				3							
JFWR15	45-10-02-03	21801-21797	21801	21797	1				1							
JFWR15	45-10-02-03	21880-21879	21880	21879	1								1			
JFWR15	45-10-02-03	21888-21801	21888	21801	1				1							X
JFWR15	45-10-02-03	22735-22734	22735	22734	1					1						
JFWR15	45-10-02-03	22736-22735	22736	22735	2			1	1							
JFWR15	45-10-02-03	22738-22737	22738	22737	1					1						
JFWR15	45-10-02-03	22739-22736	22739	22736	1			1								
JFWR15	45-10-02-03	22740-22735	22740	22735	4				2	2						
JFWR15	45-10-02-03	22741-22740	22741	22740	3		1				1		1			X
JFWR15	45-10-02-03	22742-22741	22742	22741	1					1						
JFWR15	45-10-02-03	35624-15982	35624	15982	2					2						
JFWR15	45-10-02-03	35625-35624	35625	35624	5					5						
JFWR15	45-10-02-03	901932-901934	901932	901934	1					1						
JFWR15	45-10-02-03	901934-21796	901934	21796	3				3							
JFWR15	45-10-02-03	M402-46686	M402	46686	3				2		1					
JFWR15	45-10-02-06	15330-37642	15330	37642	16				13	3						X
JFWR15	45-10-02-06	15331-32174	15331	32174	1					1						
JFWR15	45-10-02-06	15332-15331	15332	15331	19	2		1	3	10	1				2	X
JFWR15	45-10-02-06	15333-15332	15333	15332	9		1	2		1	4		1			X
JFWR15	45-10-02-06	15334-15333	15334	15333	2					2						
JFWR15	45-10-02-06	15335-15334	15335	15334	6					4			1		1	
JFWR15	45-10-02-06	15336-15335	15336	15335	54				2	6	46					X
JFWR15	45-10-02-06	15337-15336	15337	15336	3				1		1				1	
JFWR15	45-10-02-06	15338-15337	15338	15337	2		1						1			X
JFWR15	45-10-02-06	15339-15338	15339	15338	1				1							X
JFWR15	45-10-02-06	15341-15333	15341	15333	3		1				1			1		X
JFWR15	45-10-02-06	15342-15338	15342	15338	16		1						14		1	X
JFWR15	45-10-02-06	16322-C630	16322	C630	1		1									
JFWR15	45-10-02-06	16324-16322	16324	16322	6		1				5					X
JFWR15	45-10-02-06	16325-15337	16325	15337	13				1		12					
JFWR15	45-10-02-06	16329-16328	16329	16328	1						1					
JFWR15	45-10-02-06	16330-16329	16330	16329	2				1		1					X

APPENDIX E: Table 4-3.4 - Summary of Sewer Defects by Sewer Segment
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Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
JFWR15	45-10-02-06	16331-16330	16331	16330	37				1	1	1		34			
JFWR15	45-10-02-06	16332-16331	16332	16331	2				1		1					X
JFWR15	45-10-02-06	17020-15344	17020	15344	1				1							
JFWR15	45-10-02-06	17021-17020	17021	17020	29				1		15				13	
JFWR15	45-10-02-06	17022-17021	17022	17021	13			1							12	
JFWR15	45-10-02-06	17023-17022	17023	17022	13			2	1					10		X
JFWR15	45-10-02-06	17026-17025	17026	17025	85				3		71		11			X
JFWR15	45-10-02-06	17027-17026	17027	17026	3								2		1	
JFWR15	45-10-02-06	17028-17027	17028	17027	5									5		
JFWR15	45-10-02-06	17029-17028	17029	17028	9								9			
JFWR15	45-10-02-06	17030-17028	17030	17028	7				2	1	1		3			X
JFWR15	45-10-02-06	17031-17024	17031	17024	30						29		1			
JFWR15	45-10-02-06	17032-17023	17032	17023	34						32		2			
JFWR15	45-10-02-06	17035-17034	17035	17034	10						9	1				
JFWR15	45-10-02-06	17036-17033	17036	17033	2				1				1			
JFWR15	45-10-02-06	17042-17021	17042	17021	76		1		2		73					X
JFWR15	45-10-02-06	19058-34829	19058	34829	4						4					
JFWR15	45-10-02-06	19059-19058	19059	19058	67				1		16		16		34	
JFWR15	45-10-02-06	19060-34832	19060	34832	90								18		72	
JFWR15	45-10-02-06	19061-19060	19061	19060	106								70		36	
JFWR15	45-10-02-06	19062-19061	19062	19061	54				5				1		48	
JFWR15	45-10-02-06	19063-19062	19063	19062	3						3					
JFWR15	45-10-02-06	19064-19063	19064	19063	34				1				33			X
JFWR15	45-10-02-06	19065-19059	19065	19059	3				3							
JFWR15	45-10-02-06	19067-19066	19067	19066	29						29					
JFWR15	45-10-02-06	19068-19067	19068	19067	58									58		
JFWR15	45-10-02-06	19069-19068	19069	19068	3				2				1			X
JFWR15	45-10-02-06	19070-19067	19070	19067	2		1		1							X
JFWR15	45-10-02-06	19071-19070	19071	19070	3				3							X
JFWR15	45-10-02-06	19072-19071	19072	19071	12				10	1		1				
JFWR15	45-10-02-06	19073-19072	19073	19072	2				1	1						X
JFWR15	45-10-02-06	19075-19074	19075	19074	2				1	1						
JFWR15	45-10-02-06	19076-19075	19076	19075	23				2		1		2	9	9	
JFWR15	45-10-02-06	19078-19073	19078	19073	1						1					
JFWR15	45-10-02-06	19079-19076	19079	19076	1								1			
JFWR15	45-10-02-06	19080-19079	19080	19079	22								22			
JFWR15	45-10-02-06	19081-19080	19081	19080	2								2			
JFWR15	45-10-02-06	19082-19069	19082	19069	1				1							
JFWR15	45-10-02-06	19083-19082	19083	19082	27		1		1				25			X
JFWR15	45-10-02-06	19144-19064	19144	19064	32		4		3		1		24			X
JFWR15	45-10-02-06	20212-19077	20212	19077	16								16			
JFWR15	45-10-02-06	20213-20212	20213	20212	45						1		44			
JFWR15	45-10-02-06	20214-20213	20214	20213	17								17			
JFWR15	45-10-02-06	20215-20214	20215	20214	3						1		2			
JFWR15	45-10-02-06	20216-20215	20216	20215	12								12			
JFWR15	45-10-02-06	20217-20216	20217	20216	9								3	6		
JFWR15	45-10-02-06	20257-20256	20257	20256	2				2							X
JFWR15	45-10-02-06	20599-19144	20599	19144	1				1							X
JFWR15	45-10-02-06	21187-21186	21187	21186	100				1		75		16		8	X
JFWR15	45-10-02-06	21188-21187	21188	21187	79						78		1			
JFWR15	45-10-02-06	21190-21191	21190	21191	1								1			
JFWR15	45-10-02-06	21191-15332	21191	15332	1		1									X
JFWR15	45-10-02-06	21192-21191	21192	21191	2								2			
JFWR15	45-10-02-06	21193-21192	21193	21192	2			1					1			
JFWR15	45-10-02-06	21194-21193	21194	21193	37			1			35				1	
JFWR15	45-10-02-06	21241-20213	21241	20213	7						3			4		X
JFWR15	45-10-02-06	21449-21448	21449	21448	5			1	3		1					
JFWR15	45-10-02-06	21450-21449	21450	21449	22								14		8	
JFWR15	45-10-02-06	21451-21450	21451	21450	23				3				20			
JFWR15	45-10-02-06	21452-21451	21452	21451	17						1		16			
JFWR15	45-10-02-06	21453-21449	21453	21449	2		1				1					X
JFWR15	45-10-02-06	21454-21190	21454	21190	22		1		1		1		19			X
JFWR15	45-10-02-06	21456-21455	21456	21455	27				1		26					
JFWR15	45-10-02-06	21457-21454	21457	21454	2				2							
JFWR15	45-10-02-06	21458-21457	21458	21457	4								4			
JFWR15	45-10-02-06	21458-21459	21458	21459	48				1		5		42			
JFWR15	45-10-02-06	21459-21187	21459	21187	32						24		2		6	
JFWR15	45-10-02-06	21460-21459	21460	21459	3				2		1					
JFWR15	45-10-02-06	21461-21460	21461	21460	22				2	1	1		18			
JFWR15	45-10-02-06	21462-21460	21462	21460	25						25					
JFWR15	45-10-02-06	21464-21461	21464	21461	5				1	2			2			
JFWR15	45-10-02-06	21465-21464	21465	21464	2				1				1			X
JFWR15	45-10-02-06	21466-21465	21466	21465	2						1		1			
JFWR15	45-10-02-06	21818-20212	21818	20212	33								33			
JFWR15	45-10-02-06	22051-19069	22051	19069	1								1			
JFWR15	45-10-02-06	22169-15332	22169	15332	23					1					22	
JFWR15	45-10-02-06	32174-15330	32174	15330	6				2	4						
JFWR15	45-10-02-06	32176-32175	32176	32175	1				1							X
JFWR15	45-10-02-06	32178-32177	32178	32177	2			2								
JFWR15	45-10-02-06	32183-32180	32183	32180	2				2							
JFWR15	45-10-02-06	32185-32184	32185	32184	2				2							
JFWR15	45-10-02-06	32186-32185	32186	32185	12				1						11	
JFWR15	45-10-02-06	32187-32186	32187	32186	5			1	3						1	
JFWR15	45-10-02-06	32189-32188	32189	32188	4			1	1						2	X
JFWR15	45-10-02-06	32191-32190	32191	32190	4				3						1	
JFWR15	45-10-02-06	32194-32190	32194	32190	26										26	
JFWR15	45-10-02-06	32196-32195	32196	32195	11										11	
JFWR15	45-10-02-06	32198-32197	32198	32197	1					1						
JFWR15	45-10-02-06	32199-32195	32199	32195	2			1	1							
JFWR15	45-10-02-06	32844-32846	32844	32846	2				1			1				
JFWR15	45-10-02-06	32845-32844	32845	32844	16								16			
JFWR15	45-10-02-06	32846-32193	32846	32193	50			1				49				
JFWR15	45-10-02-06	32847-32182	32847	32182	23										23	
JFWR15	45-10-02-06	32848-32198	32848	32198	4		1		1	1	1					X
JFWR15	45-10-02-06	33284-32196	33284	32196	2				2							
JFWR15	45-10-02-06	33831-33284	33831	33284	2										2	
JFWR15	45-10-02-06	33832-33831	33832	33831	20										20	
JFWR15	45-10-02-06	33834-33833	33834	33833	2									2		
JFWR15	45-10-02-06	33840-33839	33840	33839	5		1		2		2					X
JFWR15	45-10-02-06	33841-33840	33841	33840	6		1						1		4	X
JFWR15	45-10-02-06	33842-33841	33842	33841	1										1	

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Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
JFWR15	45-10-02-06	33843-33842	33843	33842	18				1						17	
JFWR15	45-10-02-06	33844-33843	33844	33843	3			1							2	
JFWR15	45-10-02-06	33845-33844	33845	33844	3			1	2							X
JFWR15	45-10-02-06	33848-33839	33848	33839	1										1	
JFWR15	45-10-02-06	33849-33835	33849	33835	14			1							13	
JFWR15	45-10-02-06	34829-15336	34829	15336	8		3		3	2						X
JFWR15	45-10-02-06	34832-19059	34832	19059	1						1					
JFWR15	45-10-02-06	34834-34833	34834	34833	2		1		1							X
JFWR15	45-10-02-06	36797-33842	36797	33842	13										13	
JFWR15	45-10-02-06	36799-36798	36799	36798	20			1	2						17	
JFWR15	45-10-02-06	36800-36799	36800	36799	1				1							
JFWR15	45-10-02-06	36974-36802	36974	36802	39								39			
JFWR15	45-10-02-06	37345-36802	37345	36802	2		1						1			
JFWR15	45-10-02-06	37643-37642	37643	37642	1				1							
JFWR15	45-10-02-06	37645-37644	37645	37644	2								2			
JFWR15	45-10-02-06	37646-37645	37646	37645	1								1			
JFWR15	45-10-02-06	37647-37646	37647	37646	55								43		12	
JFWR15	45-10-02-06	37649-37648	37649	37648	1			1								
JFWR15	45-10-02-06	37651-37650	37651	37650	1								1			
JFWR15	45-10-02-06	37652-37651	37652	37651	1								1			
JFWR15	45-10-02-06	37653-37651	37653	37651	3				2				1			
JFWR15	45-10-02-06	37654-37652	37654	37652	1								1			
JFWR15	45-10-02-06	C630-15343	C630	15343	2		1		1							
JFWR29	45-10-21-00	11521-30165	11521	30165	62					5		57				X
JFWR29	45-10-21-00	11522-11521	11522	11521	27				1	1		22	3			X
JFWR29	45-10-21-00	11664-3630	11664	3630	15							15				X
JFWR29	45-10-21-00	3402-3403	3402	3403	29		2		12						15	X
JFWR29	45-10-21-00	3404-3408	3404	3408	12		1		5		1		5			X
JFWR29	45-10-21-00	3405-3404	3405	3404	11				11							X
JFWR29	45-10-21-00	3406-3405	3406	3405	5				3	1	1					X
JFWR29	45-10-21-00	3407-3629	3407	3629	8		2		5	1						X
JFWR29	45-10-21-00	3408-3407	3408	3407	13				12				1			X
JFWR29	45-10-21-00	3409-3404	3409	3404	9		1		7				1			X
JFWR29	45-10-21-00	3410-3630	3410	3630	5				1			4				
JFWR29	45-10-21-00	3629-3920	3629	3920	4				2	2						
JFWR29	45-10-21-00	3630-3521	3630	3521	2				1	1						
JFWR29	45-10-21-00	3632-11521	3632	11521	65					5		60				X
JFWR29	45-10-21-00	3632-3633	3632	3633	6				5	1						
JFWR29	45-10-21-00	3633-3634	3633	3634	15				15							X
JFWR29	45-10-21-00	3634-3635	3634	3635	13				12	1						
JFWR29	45-10-21-00	3635-901644	3635	901644	19				17	2						X
JFWR29	45-10-21-00	3637-3407	3637	3407	1				1							X
JFWR29	45-10-21-00	3638-3637	3638	3637	1				1							
JFWR29	45-10-21-00	3761-3407	3761	3407	3				3							X
JFWR29	45-10-21-00	3762-3761	3762	3761	15				1				6		8	
JFWR29	45-10-21-00	3765-3764	3765	3764	4				4							X
JFWR29	45-10-21-00	3976-3402	3976	3402	8				1				7			
JFWR29	45-10-21-00	3977-3976	3977	3976	1								1			
JFWR29	45-10-21-00	3978-3403	3978	3403	2				1				1			X
JFWR29	45-10-21-00	5212-3979	5212	3979	8				1	1			6			
JFWR29	45-10-21-00	5213-5212	5213	5212	2		1						1			X
JFWR29	45-10-21-00	5214-5215	5214	5215	26				4		4		18			X
JFWR29	45-10-21-00	5215-5216	5215	5216	7		2		4	1						X
JFWR29	45-10-21-00	5216-5217	5216	5217	3								3			
JFWR29	45-10-21-00	5217-5218	5217	5218	7				2				5			
JFWR29	45-10-21-00	5218-5219	5218	5219	20								5		15	
JFWR29	45-10-21-00	5219-5220	5219	5220	2		1			1						X
JFWR29	45-10-21-00	5222-5221	5222	5221	1				1							X
JFWR29	45-10-21-00	7667-5216	7667	5216	5		1		3	1						X
JFWR29	45-10-21-00	901644-911	901644	911	10		1		7	2						X
JFWR29	45-10-21-00	911-3410	911	3410	2				1	1						
JFWR29	45-10-21-00	913-912	913	912	2					2						
JFWR29	45-10-21-00	914-913N	914	913N	15				11	4						X
JFWR29	45-10-21-00	914M-914	914M	914	5				1	3					1	
JFWR29	45-10-21-00	C450-11468	C450	11468	4		1		3							
JFWR29	45-10-21-00	TCM19-C450	TCM19	C450	10		4		5		1					X
JFWR31	45-10-22-02	10287-10410	10287	10410	1					1						
JFWR31	45-10-22-02	1029-1030	1029	1030	1			1								
JFWR31	45-10-22-02	1030-1031	1030	1031	5			5								
JFWR31	45-10-22-02	1031-1032	1031	1032	4				2	2						X
JFWR31	45-10-22-02	1032-1033	1032	1033	5				4	1						
JFWR31	45-10-22-02	1033-1034	1033	1034	6		2		4							X
JFWR31	45-10-22-02	1579-1029	1579	1029	1					1						
JFWR31	45-10-22-02	1580-10410	1580	10410	2					2						
JFWR31	45-10-22-02	1581-1580	1581	1580	1					1						
JFWR31	45-10-22-02	1582-1581	1582	1581	2			1		1						
JFWR31	45-10-22-02	1584-1583	1584	1583	3				2	1						
JFWR31	45-10-22-02	1585-1584	1585	1584	3			2		1						
JFWR31	45-10-22-02	1586-18228	1586	18228	1					1						
JFWR31	45-10-22-02	1587-1586	1587	1586	3		2			1						
JFWR31	45-10-22-02	1589-1588	1589	1588	2				1	1						
JFWR31	45-10-22-02	1590-1589	1590	1589	6				5	1						X
JFWR31	45-10-22-02	1592-1591	1592	1591	13		7		6							
JFWR31	45-10-22-02	18224-37765	18224	37765	1					1						
JFWR31	45-10-22-02	18228-18227	18228	18227	1					1						
JFWR31	45-10-22-02	29858-1582	29858	1582	1			1								
JFWR31	45-10-22-02	37765-18223	37765	18223	1					1						
JFWR31	45-10-22-02	37767-37766	37767	37766	1					1						
JFWR31	45-10-22-02	9330-9329	9330	9329	4				2	2						
JFWR31	45-10-22-03	1004-946	1004	946	3				3							
JFWR31	45-10-22-03	1007-904	1007	904	5		2		2	1						X
JFWR31	45-10-22-03	1008-1012	1008	1012	6				6							
JFWR31	45-10-22-03	1012-1046	1012	1046	2				2							
JFWR31	45-10-22-03	1046-1046M	1046	1046M	9				9							X
JFWR31	45-10-22-03	1046M-1045	1046M	1045	26			2	21	1	2					X
JFWR31	45-10-22-03	7654-1678	7654	1678	12			2	5	4	1					
JFWR31	45-10-22-03	888-889	888	889	1					1						
JFWR31	45-10-22-03	889-890	889	890	1		1									X
JFWR31	45-10-22-03	890-897	890	897	24				1						23	
JFWR31	45-10-22-03	895-896	895	896	7				5	1	1					
JFWR31	45-10-22-03	896-897	896	897	1					1						

APPENDIX E: Table 4-3.4 - Summary of Sewer Defects by Sewer Segment
Jones Falls SRRR: Collection System Investigation

Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
JFWR31	45-10-22-03	898-1000	898	1000	5				2	3						
JFWR31	45-10-22-03	904-900	904	900	4		1		1	2						X
JFWR31	45-10-22-03	905-906	905	906	110		7		2	2	81		18			X
JFWR31	45-10-22-03	906-902	906	902	4				1	3						
JFWR31	45-10-22-03	907-908	907	908	10		2		2				6			X
JFWR31	45-10-22-03	908-909	908	909	11				1	6			3	1		
JFWR31	45-10-22-03	909-909M	909	909M	1						1					
JFWR31	45-10-22-03	910-909	910	909	25					1				24		
JFWR31	45-10-22-03	919-938	919	938	6					6						
JFWR31	45-10-22-03	921-919	921	919	5		1		3	1						
JFWR31	45-10-22-03	924-938	924	938	2		1			1						X
JFWR31	45-10-22-03	925-924	925	924	4				4							
JFWR31	45-10-22-03	932-933	932	933	2				1	1						
JFWR31	45-10-22-03	932M-932	932M	932	4					3			1			
JFWR31	45-10-22-03	933-934	933	934	5		2		1	1			1			X
JFWR31	45-10-22-03	935-918	935	918	5		2		1						2	X
JFWR31	45-10-22-03	938A-939	938A	939	1					1						
JFWR31	45-10-22-03	939-940	939	940	2				2							
JFWR31	45-10-22-03	940-941	940	941	6			3	2						1	
JFWR31	45-10-22-03	942-940	942	940	2		2									X
JFWR31	45-10-22-03	944-943	944	943	1				1							
JFWR31	45-10-22-03	961-942	961	942	1					1						
JFWR31	45-10-22-03	9855-9854	9855	9854	7				7							
JFWR31	45-10-22-03	C1808-1678	C1808	1678	12			1	1		1				9	
JFWR31	45-10-22-03	C248-9855	C248	9855	1					1						
JFWR35	45-10-02-01	14173-14172	14173	14172	3		2		1							X
JFWR35	45-10-02-01	14174-14173	14174	14173	17						17					
JFWR35	45-10-02-01	14175-14174	14175	14174	6				6							
JFWR35	45-10-02-01	14177-14176	14177	14176	50		1				49					X
JFWR35	45-10-02-01	14179-14178	14179	14178	13		3		10							X
JFWR35	45-10-02-01	14180-14179	14180	14179	7				7							X
JFWR35	45-10-02-01	14181-14173	14181	14173	2								2			
JFWR35	45-10-02-01	14182-14181	14182	14181	3		1		2							X
JFWR35	45-10-02-01	14183-14182	14183	14182	4		1		1	1			1			X
JFWR35	45-10-02-01	14184-14174	14184	14174	1			1								
JFWR35	45-10-02-01	14185-14184	14185	14184	3		1		2							X
JFWR35	45-10-02-01	14186-14173	14186	14173	9		4		5							X
JFWR35	45-10-02-01	29002-69313	29002	69313	3										3	
JFWR35	45-10-02-01	69334-69332	69334	69332	1										1	
JFWR35	45-10-02-01	69713-69712	69713	69712	2										2	
TSJF01	45-51-00-00	1336-1437	1336	1437	2				1	1						
TSJF01	45-51-00-00	1436-707	1436	707	1				1							X
TSJF01	45-51-00-00	16443-901147	16443	901147	1				1							
TSJF01	45-51-00-00	45221-6880	45221	6880	1								1			
TSJF01	45-51-00-00	45415-45414	45415	45414	1					1						
TSJF01	45-51-00-00	47403-6879	47403	6879	1			1								
TSJF01	45-51-00-00	47404-47403	47404	47403	1			1								
TSJF01	45-51-00-00	52577-52576	52577	52576	1					1						
TSJF01	45-51-00-00	6724-6723	6724	6723	54						1		29		24	
TSJF01	45-51-00-00	6725-6724	6725	6724	4								4			
TSJF01	45-51-00-00	6726-6725	6726	6725	1								1			
TSJF01	45-51-00-00	6727-6726	6727	6726	10								10			
TSJF01	45-51-00-00	6729-6728	6729	6728	27		4		1				22			X
TSJF01	45-51-00-00	6876-6875	6876	6875	41			4		7		29		1		
TSJF01	45-51-00-00	6880-6879	6880	6879	32			1				30		1		
TSJF01	45-51-00-00	717-1336	717	1336	9				9							
TSJF01	45-51-00-00	901145-822	901145	822	47		2		43	2						X
TSJF01	45-51-00-00	901146-901145	901146	901145	16		1		9	6						X
TSJF01	45-51-00-00	901147-901146	901147	901146	5				2	3						
TSJF01	45-51-00-00	901149-822	901149	822	1				1							
TSJF01	45-51-00-00	C1838-901149	C1838	901149	5		1		3	1						X
TSJF01	45-51-00-00	TCM28-717	TCM28	717	4										4	
TSJF01	45-52-00-00	16379-6877	16379	6877	104			34		15		50		5		
TSJF01	45-52-00-00	6874-TCM27	6874	TCM27	18			3		2		11		2		
TSJF01	45-52-00-00	6875-6874	6875	6874	41			5		5		31				X
TSJF01	45-52-00-00	6877-6876	6877	6876	81			8		3		67		3		
TSJF01	45-52-00-00	6878-16379	6878	16379	29			5		4		18		2		
TSJF01	45-52-00-00	6879-6878	6879	6878	34			1		7		25		1		
TSJF01	45-52-00-00	707-6876	707	6876	14				3		1				10	X
TSJF01	45-53-00-00	45229-45228	45229	45228	1		1									
TSJF01	45-53-00-00	45252-45250	45252	45250	1								1			
TSJF01	45-53-00-00	6882-6880	6882	6880	189		1	4		29		152		2	1	
TSJF01	45-54-00-00	6883-6882	6883	6882	78			4		11		62		1		
TSJF01	45-54-00-00	6885-6883	6885	6883	109			2				107				
TSJF01	45-54-00-00	6887-6886	6887	6886	232		4	4				224				
TSJF01	45-55-01-00	14565-6885	14565	6885	81							81				
TSJF01	45-55-02-00	6886-14565	6886	14565	46				1	2		43				
TSJF01	45-55-03-00	17299-17298	17299	17298	17			5	1		11					X
TSJF01	45-55-03-00	17301M-17300	17301M	17300	55				1		27				27	
TSJF01	45-55-03-00	17302-17301	17302	17301	3			2		1						
TSJF01	45-55-03-00	17723M-17303	17723M	17303	3	1				2						X
TSJF01	45-55-03-00	17724-17723	17724	17723	4				4							
TSJF01	45-55-03-00	TCM29-17724	TCM29	17724	8		1		5	1	1					X
TSJF01	45-55-04-00	2931-2930	2931	2930	1		1									
TSJF01	45-55-06-00	14937-5134	14937	5134	1					1						
TSJF01	45-55-06-00	14938-14937	14938	14937	2								2			
TSJF01	45-55-06-00	14940-14939	14940	14939	2					2						
TSJF01	45-55-06-00	14942-14941	14942	14941	1					1						
TSJF01	45-55-06-00	14943-14939	14943	14939	3				3							
TSJF01	45-55-06-00	14946-14944	14946	14944	6								6			
TSJF01	45-55-06-00	45936-45935	45936	45935	1								1			
TSJF01	45-55-06-00	5134-18064	5134	18064	5		1	2	2							X
TSJF01	45-55-06-00	5135-14937	5135	14937	2					2						
TSJF01	45-55-06-00	5136-5135	5136	5135	2					2						
TSJF01	45-55-06-00	5137-5136	5137	5136	6				5	1						
TSJF01	45-55-06-00	5138-5137	5138	5137	1								1			
TSJF01	45-55-06-00	5139-5138	5139	5138	3		1			1			1			X
TSJF01	45-55-06-00	5140-5139	5140	5139	6				1	2			3			
TSJF01	45-55-06-00	5141-5140	5141	5140	4					3			1			
TSJF01	45-55-06-00	9366-9365	9366	9365	3					2			1			
TSJF01	45-55-06-00	9367-9366	9367	9366	20										20	

APPENDIX E: Table 4-3.4 - Summary of Sewer Defects by Sewer Segment
Jones Falls SRRR: Collection System Investigation

Flow Meter Basin	SSA	SewerID	Upstream MH	Downstream MH	Total Defects in Sewer Segment	Major Defects	Breaks and Holes	Infiltration	Fractures and Cracks	Break-in Taps	Defective Joint	Defective Pipe Surface or Lining	Roots	Deposits	Grease	Corrective Action
TSJF01	45-55-06-00	9370-9369	9370	9369	2				2							
TSJF01	45-55-06-00	9372-9370	9372	9370	1								1			
TSJF01	45-55-07-00	6797-5142	6797	5142	2					1			1			
TSJF01	45-55-07-00	C184-5141	C184	5141	34						28			6		
TSJF01	45-56-00-00	6888-6887	6888	6887	541							536		4	1	
TSJF01	45-59-03-00	39731-39730	39731	39730	1	1										X
TSJF01	45-59-03-00	44133-42262	44133	42262	1				1							
TSJF01	45-59-03-00	50162-45620	50162	45620	1					1						
TSJF01	45-59-07-00	14541-14540	14541	14540	2						2					
TSJF01	45-59-07-00	14542-14536	14542	14536	2				2							X
TSJF01	45-59-07-00	14543-14542	14543	14542	1								1			
TSJF01	45-59-07-00	15724-6940	15724	6940	4				4							
TSJF01	45-59-07-00	15725-15724	15725	15724	3				3							
TSJF01	45-59-07-00	21205-21204	21205	21204	1					1						
TSJF01	45-59-07-00	21207-21206	21207	21206	3						1		2			
TSJF01	45-59-07-00	21208-21207	21208	21207	4					4						
TSJF01	45-59-07-00	21209-21208	21209	21208	5				3				2			
TSJF01	45-59-07-00	21210-21209	21210	21209	1						1					
TSJF01	45-59-07-00	21211-21204	21211	21204	2								1		1	
TSJF01	45-59-07-00	21212-21211	21212	21211	1					1						
TSJF01	45-59-07-00	21213-21212	21213	21212	4					3			1			
TSJF01	45-59-07-00	21214-21213	21214	21213	5					3			2			
TSJF01	45-59-07-00	21215-21214	21215	21214	1					1						
TSJF01	45-59-07-00	21216-21215	21216	21215	1								1			
TSJF01	45-59-07-00	32593-15725	32593	15725	2						1		1			
TSJF01	45-59-08-00	14535-6935	14535	6935	3		1		1	1						X
TSJF01	45-59-08-00	18935-18934	18935	18934	4		2		2							X
TSJF01	45-59-08-00	18936-18936A	18936	18936A	1			1								
TSJF01	45-59-08-00	18937-18936	18937	18936	2					2						
TSJF01	45-59-08-00	21475-21474	21475	21474	2				2							
TSJF01	45-59-08-00	21476-21475	21476	21475	3				3							
TSJF01	45-59-08-00	21477-21476	21477	21476	3				1				2			
TSJF01	45-59-08-00	21478-21475	21478	21475	1					1						
TSJF01	45-59-08-00	39533-39532	39533	39532	4					4						
TSJF01	45-59-08-00	40492-40491	40492	40491	2						1	1				X
TSJF01	45-59-08-00	40496-40495	40496	40495	3	2	1									
TSJF01	45-59-08-00	6936-6935	6936	6935	16			1				15				X
TSJF01	45-59-08-00	6938-17375	6938	17375	36		1	1				34				X
TSJF01	45-59-09-00	29836-901474	29836	901474	1			1								
TSJF01	45-59-09-00	29842-29841	29842	29841	1						1					
TSJF01	45-59-09-00	29845-29844	29845	29844	1				1							
TSJF01	45-59-09-00	29846-29844	29846	29844	4								4			
TSJF01	45-59-09-00	30664-29845	30664	29845	1						1					



VICINITY MAP
NOT TO SCALE

BC01
BC03
BC02
BC01A
BC06
BC08
BC09
BC04
BC05
BC07
BC10
BC11
BC22
BC30
BC13
BC12-A
BC12-B
BC12-C
BC15
BC12-F
BC21
BC26
BC23
BC18
BC12-D
BC16
BC20
BC31
BC12-E
BC27
BC28
BC24
BC14
BC19-A
BC25
BC19
BC29
BC28
JFWR15
TSJF01
JF0320S
JFWR31

TIMONIUM RD
PARKING
TONY DR
FALLS RD
JOPPA RD
BELLONA AVE
CHARLES VIEW WAY
BRIDGEMAN TER
WINE SPRING LN
WALNUT HILL LN
SHERWOOD AVE
GREENSPRING AVE
BRIDLE RIDGE LN
WOODVALLEY DR
RUXTON RD
GRASTY RD
PARK SCHOOL DR
DARNALL RD
CIRCLE RD
BELLONA AVE
ROLANDVUE RD
WAGNER RD
TOWSON WAY
EMERSON DR
GLEN DR
GREENVIEW TER
GEMCO DR
MONTROSE AVE
AUBURN DR
YORK RD
ALLEY
BRIGHTSIDE RD
HOLLINS LN
CHARLESBROOKE RD
SMITH AVE
HOOKS LN
BRETON WAY
MELODY LN
BROOKS ROBINSON DR
STEVENSON RD
BRYNMOR CT
TRAVER TINE DR
STONE CLIFF DR
OLD COURT RD
SUDBROOK LN

Legend

Manholes

- Lining
- Internal Frame Seal
- Inflow Insert
- Replace Frame and Cover
- Lining & Internal Frame Seal
- Lining & Inflow Insert
- Lining, Internal Frame Seal & Inflow Insert
- Lining, Internal Frame Seal, Inflow Insert & Replace Frame and Cover
- Lining, Internal Frame Seal & Replace Frame and Cover
- Lining, Internal Frame Seal & Reset Frame and Cover
- Lining & Replace Frame and Cover
- Lining, Replace Frame and Cover & Exterior Cone Refinishing
- Lining & Reset Frame and Cover
- Lining, Reset Frame and Cover & Exterior Cone Refinishing
- Lining, Reset Frame and Cover & Joint Seal
- Lining & Exterior Cone Refinishing
- Lining & Joint Seal
- Lining & Bench and Channel Repair
- Lining & External Frame Seal
- Internal Frame Seal & Inflow Insert
- Inflow Insert & Replace Frame and Cover
- Inflow Insert & Grout Bench and Riser
- Chimney Repair
- New Manhole
- No rehab recommended

Pipes

- Lining
- Lining & Lateral Repair
- Lining & Point Repair
- Lining, Lateral Repair & Point Repair
- Grout Joint
- Relief sewer
- No rehab recommended

- BCXX Metered basins
- Unmetered
- City/County Border

0 500 1,000 2,000 Feet

Coordinate System:
Maryland State Plane: NAD83/91 Horizontal Datum

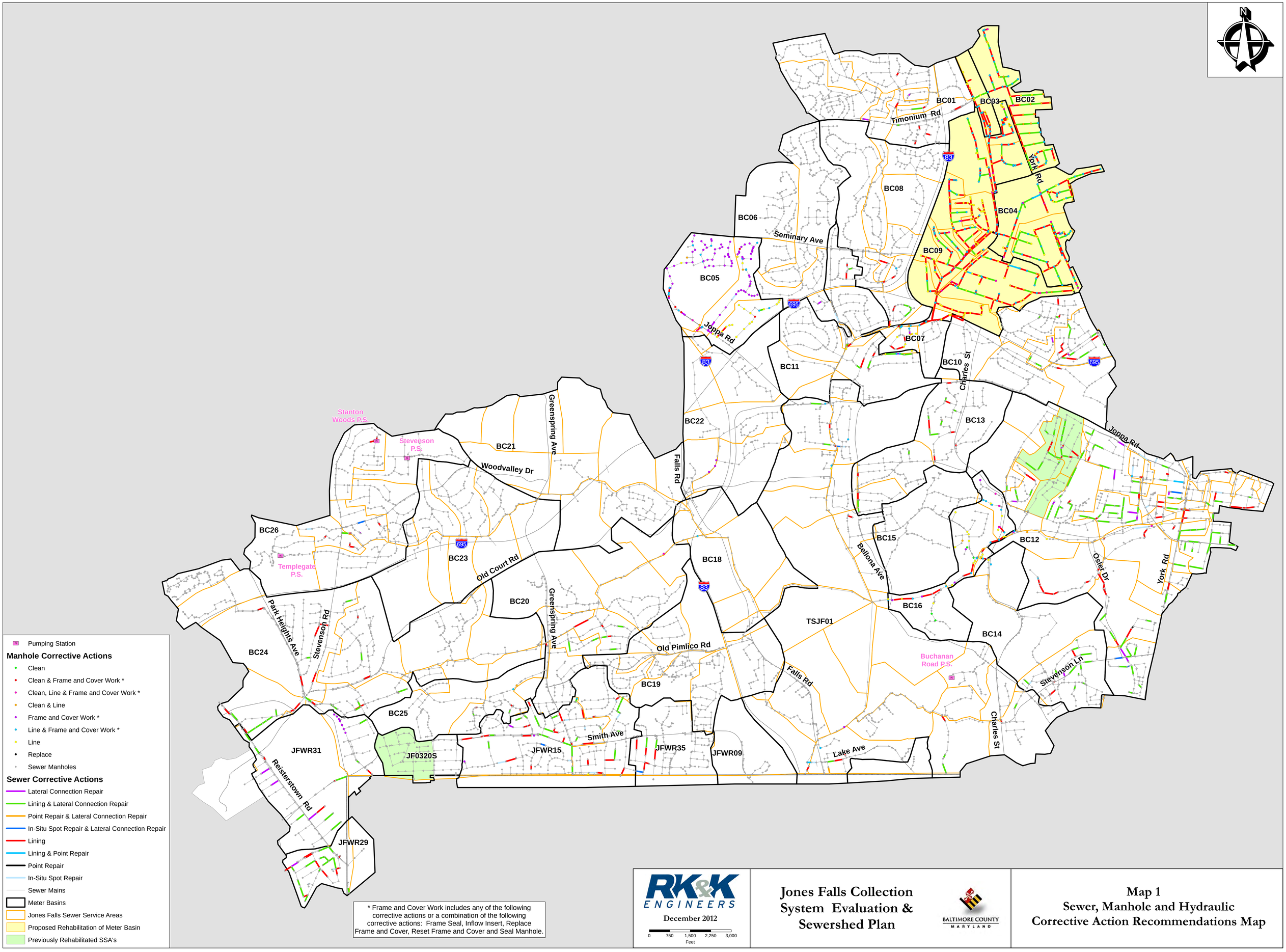
N

JONES FALLS
SEWERSHED REPAIR, REPLACEMENT AND REHABILITATION PLAN
REHABILITATION COMPLETED

rjngroup Engineering Infrastructure for tomorrow

Map 2

Date of Map Production: January 12, 2021


N
BC01
BC02
BC03
BC04
BC05
BC06
BC07
BC08
BC09
BC10
BC11
BC12
BC13
BC14
BC15
BC16
BC18
BC19
BC20
BC21
BC22
BC23
BC24
BC25
BC26
TSJF01
JF0320S
JFWR09
JFWR15
JFWR29
JFWR31
JFWR35
Timonium Rd
York Rd
Seminary Ave
Jeppa Rd
Charles St
Joppa Rd
Falls Rd
Greenspring Ave
Woodvalley Dr
Old Court Rd
Park Heights Ave
Stevenson Rd
Reisterstown Rd
Smith Ave
Old Pimlico Rd
Lake Ave
Bellona Ave
Osler Dr
Stevenson Ln
Stanton Woods P.S.
Stevenson P.S.
Templegate P.S.
Buchanan Road P.S.
83
695
Pumping Station
Manhole Corrective Actions
Clean
Clean & Frame and Cover Work *
Clean, Line & Frame and Cover Work *
Clean & Line
Frame and Cover Work *
Line & Frame and Cover Work *
Line
Replace
Sewer Manholes
Sewer Corrective Actions
Lateral Connection Repair
Lining & Lateral Connection Repair
Point Repair & Lateral Connection Repair
In-Situ Spot Repair & Lateral Connection Repair
Lining
Lining & Point Repair
Point Repair
In-Situ Spot Repair
Sewer Mains
Meter Basins
Jones Falls Sewer Service Areas
Proposed Rehabilitation of Meter Basin
Previously Rehabilitated SSA's
* Frame and Cover Work includes any of the following corrective actions or a combination of the following corrective actions: Frame Seal, Inflow Insert, Replace Frame and Cover, Reset Frame and Cover and Seal Manhole.
RK&K ENGINEERS
December 2012
0 750 1,500 2,250 3,000
Feet
Jones Falls Collection System Evaluation & Sewershed Plan
BALTIMORE COUNTY MARYLAND
Map 1
Sewer, Manhole and Hydraulic Corrective Action Recommendations Map



VICINITY MAP
NOT TO SCALE

Legend

Storm Code

- Model-predicted overflow under 2 year, 6 hour storm
- Model-predicted overflow under 2 year, 24 hour storm
- Model-predicted overflow under 10 year, 6 hour storm
- Model-predicted overflow under 10 year, 24 hour storm
- Model-predicted overflow under 20 year, 24 hour storm
- No overflow under 20 year, 24 hour or less intense storms

StormCode

- Model-predicted hydraulic restriction under 2 year, 6 hour storm
- Model-predicted hydraulic restriction under 2 year, 24 hour storm
- Model-predicted hydraulic restriction under 10 year, 6 hour storm
- Model-predicted hydraulic restriction under 10 year, 24 hour storm
- Model-predicted hydraulic restriction under 20 year, 24 hour storm
- No hydraulic restriction under 20 year, 24 hour or less intense storms
- BCXX Metered basins
- Unmetered
- City/County Border

Notes:
1) Manholes indicated as model-predicted overflows under less intense storm events are also predicted to overflow under more intense storm events.
2) Pipes indicated as hydraulically restricted under less intense storm events are also predicted to be restricted under more intense storm events; "Hydraulic restriction" means pipe surcharged and HGL slope > pipe slope (see Appendix B).

0 500 1,000 2,000 Feet

Coordinate System:
Maryland State Plane: NAD83/91 Horizontal Datum

N

JONES FALLS SEWERSHED REPAIR, REPLACEMENT AND REHABILITATION PLAN

MODEL PREDICTED SSO AND FLOW RESTRICTION LOCATIONS

rjngroup Engineering infrastructure for tomorrow

Map 3
STORM SIMULATED FUTURE CONDITIONS
Date of Map Production: April 21, 2021

May 27, 2021

Mr. David Bayer, P.E.
Sanitary Sewer Design Section
Baltimore County, Department of Public Works
County Office Building, Room 200
111 West Chesapeake Avenue
Towson, Maryland 21204

Subject: County Project No. 2012-01 – Task 14
Jones Falls Sewershed – Performance Assessment Report

Dear Mr. Bayer:

Enclosed is an electronic copy of the Jones Falls Performance Assessment Draft Report. This report describes the work performed for the Jones Falls Sewershed and provides an analysis on the success of rehabilitation work completed in the Jones Falls basin.

Should you have any questions or require additional information, please feel free to contact me.

Sincerely,

RJN GROUP, INC.

Islam Khallaf, P.E.
Project Manager

cc: Lisa Eicholtz, Baltimore County
Louisa Rettew, Baltimore County
Christina Camonayan, RJN Group, Inc
Babak Ebrazi, RJN Group, Inc

BALTIMORE COUNTY, MARYLAND
County Project No. 2012-01, Task 14

May 27, 2021

Performance Assessment Report
Jones Falls Sewershed

Prepared By:
RJN Group, Inc.
1589 Sulphur Spring Road, Suite 102
Baltimore, Maryland 21227

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Executive Summary

Baltimore County entered into a Consent Decree (CD) in 2005 with the United States Environmental Protection Agency (EPA) and the State of Maryland Department of the Environment (MDE) to complete a comprehensive collection system evaluation for all 23 County Sewersheds to identify/address deficiencies that contribute to, or are likely to contribute to, sanitary sewer overflows (SSO).

In fulfillment of CD requirements, the County contracted Rummel, Klepper & Kahl, LLP (RK&K), to complete collection system inspection (Paragraph 8), rainfall and flow monitoring (Paragraph 9), collection system modeling (Paragraph 14), and prepare a sewershed repair, replacement, and rehabilitation plan (Paragraph 10) for the Jones Falls Sewershed. The Sewershed Repair, Replacement, and Rehabilitation (SRRR) Plan for Jones Falls (*Sewershed Repair, Replacement and Rehabilitation (SRRR) Plan for the Jones Falls Sewershed*, *Rummel, Klepper & Kahl, LLP, December 2012*) was submitted to the County, and approved by US EPA and MDE, in 2013.

Section 6 of the 2013 SRRR Plan provides detail of the work planned in the Jones Falls sewershed. Targeted rehabilitation to correct structural defects was completed throughout the sewershed. Comprehensive rehabilitation to eliminate sources of I/I was completed in SRRR meter basins BC02, BC03, BC04, and BC09.

Rehabilitation construction in the four meter basins (BC02, BC03, BC04, and BC09) targeted for comprehensive rehabilitation for I/I reduction was performed from 2015 through 2019. Comprehensive rehabilitation construction for I/I reduction in basins BC02 and BC03 began in November 2015 and was completed in September 2018, in basin BC04 construction began in May 2016 and was completed in September 2019, and in basin BC09 construction began in March 2016 and was completed in September 2019. Two relief sewers were also constructed in Jones Falls to increase the capacity of the system, one near Coppermine Terrace and the other relief sewer was constructed within Towson Town Boulevard and will be put in service in the future.

RJN was contracted by the County to complete a Performance Assessment of the work completed in the Jones Falls sewershed per CD Paragraph 10.E. This Performance Assessment details the work completed to meet CD requirements as outlined in Section 6 Corrective Action Recommendation Plan of the 2013 Jones Falls SRRR Plan.

The results of the base infiltration reduction assessment indicate that the completed rehabilitation projects in basins BC02, BC04, and BC09 were effective in reducing groundwater infiltration and exceeded the predicted base infiltration reductions in the 2013 SRRR Plan while basin BC03 showed an increase in base infiltration. The increase in base infiltration in BC03 can be attributed to the small inch diameter mile (idm) and the small net tributary area. This basin's primary purpose appears to act as a flow balance check meter for the upstream meters as they combine into the interceptor. In addition, the only wastewater contribution to the meter basin itself is from the private sewers within the MD Fairground. The results of the RDII reduction assessment indicate that completed rehabilitation projects were effective in reducing RDII into the sewer system in three out of the four rehabilitated basins.

Three Non-Pump Station SSOs were originally constructed in the Jones Falls Sewershed to relieve the sanitary sewer collection system and overflow in the event of surcharge caused by hydraulic capacity limitations during wet weather. SSO elimination plans for these non-pump station SSOs were prepared and the recommended corrective actions were completed. One constructed SSO (31A) was eliminated as of May 2007, prior to the development of the SRRR Plan. Overflow structure SSO 120 was eliminated in 2011 through rehabilitation. SSO 113 has not yet been eliminated and cannot be closed until Baltimore City completes their corrective actions downstream. SSO 131, Alabama Avenue, was discovered and immediately closed in September of 2010.

Pre- and post-rehabilitation flow monitoring data was used to update the hydraulic model based on the monitored flow conditions. The model was then used to simulate pre- and post-rehabilitation hydraulic conditions, respectively, under projected 2025 population and employment conditions as obtained from the hydraulic model used for the 2013 SRRR Plan. Model simulations show that I/I reduction rehabilitation and relief sewer construction in Jones Falls reduced predicted overflow volumes between 89 and 100 percent in total, for those basins where comprehensive I/I reduction rehabilitation was performed, or relief sewers were constructed.

RJN evaluated the effectiveness of the County's preventative and proactive maintenance programs in reducing root, grease, and other blockages. Based on the results, the County's maintenance programs are generally effective in preventing overflows resulting from blockages, defective pipe, and high flows. The County's approved collection system operation and maintenance (O&M) plan outlines the various preventative and proactive maintenance programs the County has implemented in Jones Falls. The County maintains a list of sites that require special cleaning in the Jones Falls Sewershed; these are sites that require recurring cleaning due to grease, roots, or other blockages. From January 2010 through December 2019, the County performed over 4,000 SLRAT O&M field visits including regular maintenance and special cleaning in addition to preventative and investigative work. A total of 20 blockages were recorded in 2019.

Non-constructed overflows trended downward during the overall 2010 – 2019 evaluation period. With the exception of two overflows totaling over 5,000 gallons in 2018 during dry weather conditions, attributed to a defective pipe, discharges from sanitary sewer manholes (non-constructed SSOs) in the Jones Falls sewershed totaled 1,165 gallons during the assessed post rehabilitation period (2019). There were no discharges attributed to high flows during the assessed post-rehabilitation period,

The number of basement backups not attributed to high flows peaked in 2014 and 2018, but otherwise has remained steady around 11 backups each year. The annual number of basement backups (i.e. private property discharges) reached a high of 37 in 2018, including 17 basement backups attributed to high flows. These 17 high flow basement backups are attributed to the record rainfall recorded in throughout Baltimore County in 2018. None of the SSO discharges or basement backups associated with high flows occurred in meter basins where comprehensive rehabilitation for I/I reduction was performed during the post rehabilitation period.

Overall, the results of the performance assessment indicate that the rehabilitation performed, and relief sewers constructed or planned, were effective. Three (3) non-pump station SSOs have been eliminated. SSO 113, Marnat Road, has not been closed. The volume of non-constructed SSOs have begun to decrease in the post rehabilitation monitoring period and the model predicted SSO volumes are projected to decrease 89 and100 percent. The number of recorded basement backups did increase during the evaluation period, but the vast majority of these occurred during the record rainfall year of 2018.

1.0 Introduction

Baltimore County entered into a Consent Decree (CD) in 2005 with the United States Environmental Protection Agency (EPA) and the State of Maryland Department of the Environment (MDE) to complete a comprehensive collection system evaluation for all 23 County Sewersheds to identify/address deficiencies that contribute to, or are likely to contribute to, sanitary sewer overflows (SSO).

In fulfillment of CD requirements, the County contracted Rummel, Klepper & Kahl, LLP (RK&K), to complete collection system inspection (Paragraph 8), rainfall and flow monitoring (Paragraph 9), collection system modeling (Paragraph 14), and prepare a Sewershed Repair, Replacement, and Rehabilitation (SRRR) plan (Paragraph 10) for the Jones Falls Sewershed. The Sewershed Repair, Replacement, and Rehabilitation (SRRR) Plan for Jones Falls was submitted to the County, and approved by US EPA and MDE, in 2013.

Section 6 (Corrective Action Recommendation Plan) of the 2013 SRRR Plan provides detail of the work planned in the Jones Falls sewershed. Targeted rehabilitation to correct structural defects was performed throughout the sewershed. Comprehensive rehabilitation to eliminate sources of I/I was implemented in meter basins BC02, BC03, BC04, and BC09.

Rehabilitation construction in the four meter basins (BC02, BC03, BC04, and BC09) targeted for comprehensive rehabilitation for I/I reduction was performed from 2015 through 2019. Comprehensive rehabilitation construction for I/I reduction in basins BC02 and BC03 began in November 2015 and was completed in September 2018, in basin BC04 construction began in May 2016 and was completed in September 2019, and in basin BC09 construction began in March 2016 and was completed in September 2019. Two relief sewers were also constructed in Jones Falls to increase the capacity of the system, one near Coppermine Terrace and the other was constructed near Towson Town Boulevard.

RJN was contracted by the County to complete a Performance Assessment of the work completed in the Jones Falls sewershed per CD Paragraph 10.E. This Performance Assessment details the work completed to meet CD requirements as outlined in Section 6 of the 2013 Jones Falls SRRR Plan.

The remainder of the report is organized as follows: *Section 2 – Evaluation of SSOs*, *Section 3 – Quantification of Reduction in BI and RDII*, *Section 4 – Effectiveness of Repair, Replacement, and Rehabilitation Projects*, *Section 5 – Effectiveness of Preventative & Proactive Maintenance Programs*, and *Section 6 – Conclusions.*

1.1 Sewershed Meter Basin Summary

The Jones Falls Sewershed, as shown in **Figure 1-1**, is located in the southern region of Central Baltimore County, directly adjacent and north of Baltimore City. The sewershed is approximately 12,577 acres in size and is comprised of residential and commercial properties. The wastewater collection system within the sewershed consists of approximately 1,100,000 linear feet (LF) of gravity sewers ranging in diameter from 6 to 48 inches, 6,200 manholes, 4 pump stations, approximately 6,600 LF of 6-inch force main, and 8,200 LF of low-pressure pipes.

The sewershed intermittently receives flow from the Texas Sewershed from the northeast by a 24-inch force main. The flow from the Texas pump station generally discharges to the Longquarter sewershed, and flow to the Jones Falls sewershed is regulated by a valve that is normally closed. Flow continues to run through the Jones Falls Sewershed via gravity sewers. All force mains transmit flows from pump stations to gravity mains.

The majority of flow from the Jones Falls sewershed flows through a 42-inch interceptor gravity main discharging into the City of Baltimore's sewer system, where the flow is metered by a jurisdictional boundary meter (TSJF01) operated and maintained by the City of Baltimore. Additionally, in the southwestern portion of the sewershed, there are several sewered areas that discharge to the City of Baltimore sewer system through separate jurisdictional boundary connections. All flow from the Jones Falls sewershed is ultimately conveyed to the City's Back River Wastewater Treatment Plant.

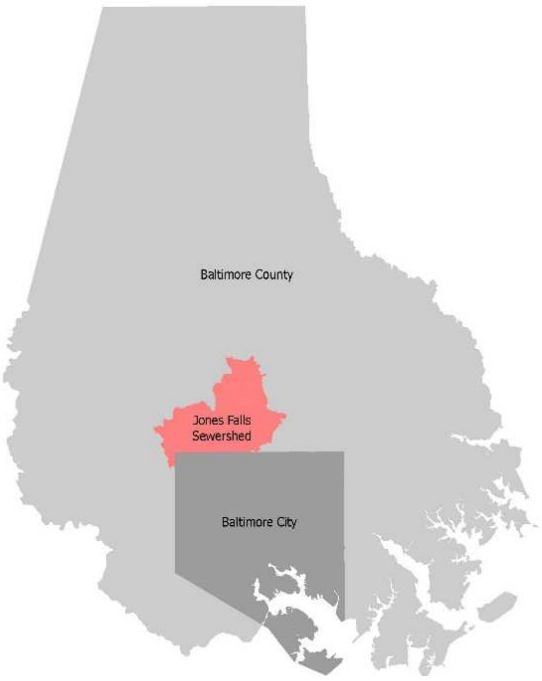


Figure 1-1
Sewershed Location Map

Flow monitoring in support of the 2011 I/I Report and the SRRR Plan for Jones Falls was performed at 26 locations in 2008, supplemented by flow meter data collected separately by the City of Baltimore at seven locations either at the jurisdictional boundary with the County or downstream thereof. Meter Basins were generally delineated to capture flow generated from all SSAs. Post rehabilitation flow meter locations were selected based on the previously (2008) monitored locations, supplemented by additional locations selected to address the County's intent.

Post rehabilitation flows were monitored at 43 locations. The Jones Falls Sewershed was divided into 37-meter basins as shown on **Figure 1-2.** The majority of the target locations were selected based on the 2008 metering locations. Additional meter locations were selected to better characterize the flows in the main and branch interceptors, monitor flows in two parallel lines in the western part of the sewershed, and subdivide select target 2008 meter basins into smaller meter basins to further characterize dry- and wet-weather flows in those meter basins. One location was selected to directly monitor flow discharging to Jones Falls from the Texas Pump Station. In addition to these 37 meter locations, five model-predicted SSO locations as reported in the 2013 Jones Falls SRRR Plan were targeted for flow monitoring to attempt to verify model predictions.

1.2 Pre- and Post-Rehabilitation Flow and Rainfall Monitoring

To assess the effectiveness of rehabilitation projects in reducing I/I, pre- and post-rehabilitation flow monitoring was performed in meter basins where rehabilitation construction was implemented as well as locations with known or suspected sanitary sewer overflow activity. Pre-rehabilitation flow monitoring was completed by RK&K and the flow monitoring data was included in the Inflow and Infiltration Evaluation Report submitted to the County in November 2011 (Inflow & Infiltration Evaluation Report Jones Falls Sewershed, RK&K, November 2011).

Table 1-1 below summarizes the pre- and post-rehab flow monitoring periods, and the purpose of flow monitoring in each basin. Locations of the Jones Falls flow meters are presented in **Figure 1-2**.

Table 1-1 Pre- and Post-Rehabilitation Flow Monitoring Summary

Basin	MH ID	Pre-Rehab FM Period	Post-Rehab FM Period	Flow Monitoring Purpose
BC01*	18552	2/1/2008 – 11/30/2008	07/07/2018 - 01/31/2020	I/I Analysis and Modeling
BC01A	18497A	N/A	06/26/2018 - 01/31/2020	I/I Analysis and Modeling
BC02	7253	2/1/2008 – 11/30/2008	07/11/2018 - 01/31/2020	I/I Analysis and Modeling, and Performance Assessment
BC03	33463	2/1/2008 – 11/30/2008	06/25/2018 - 01/31/2020	Flow Diversion Quantification and Modeling, and Performance Assessment
BC04	6977	2/1/2008 – 11/30/2008	06/25/2018 - 01/31/2020	I/I Analysis and Modeling, and Performance Assessment
BC05	43791	2/1/2008 – 11/30/2008	06/27/2018 - 01/31/2020	I/I Analysis and Modeling
BC06	38526	2/1/2008 – 11/30/2008	06/27/2018 - 01/31/2020	I/I Analysis and Modeling
BC07	18586M	3/2/2008 – 11/30/2008	07/09/2018 - 01/31/2020	I/I Analysis and Modeling
BC08	19873	2/1/2008 – 11/30/2008	06/29/2018 - 01/31/2020	I/I Analysis and Modeling
BC09	NS1079	2/1/2008 – 11/30/2008	06/28/2018 - 01/31/2020	I/I Analysis, Modeling, and Performance Assessment
BC10	42231	2/1/2008 – 11/30/2008	06/30/2018 - 01/31/2020	I/I Analysis and Modeling
BC11	6944	2/1/2008 – 11/30/2008	07/10/2018 - 01/31/2020	I/I Analysis and Modeling
BC12A	2402	N/A	06/30/2018 - 01/31/2020	I/I Analysis and Modeling
BC12B	52661	N/A	07/03/2018 - 01/31/2020	I/I Analysis and Modeling
BC12C	52172	N/A	07/06/2018 - 01/31/2020	I/I Analysis and Modeling
BC12D	19	N/A	07/07/2018 - 01/31/2020	I/I Analysis and Modeling
BC12E	33213	N/A	06/26/2018 - 01/31/2020	I/I Analysis and Modeling
BC12F	7317	N/A	07/03/2018 - 01/31/2020	I/I Analysis and Modeling
BC13	18456	2/1/2008 – 11/30/2008	06/29/2018 - 01/31/2020	I/I Analysis and Modeling
BC14	34177	2/1/2008 – 11/30/2008	06/30/2018 - 01/31/2020	I/I Analysis and Modeling
BC15	22456	2/1/2008 – 11/30/2008	06/30/2018 - 01/31/2020	I/I Analysis and Modeling
BC16*	7295	2/1/2008 – 11/30/2008	07/02/2018 - 01/31/2020	I/I Analysis and Modeling
BC18*	20758	2/1/2008 – 11/30/2008	07/05/2018 - 01/31/2020	I/I Analysis and Modeling
BC19	33711	2/1/2008 – 11/30/2008	06/26/2018 - 01/31/2020	I/I Analysis and Modeling
BC19A*	42056	N/A	07/06/2018 - 01/31/2020	I/I Analysis and Modeling
BC20	20770	2/1/2008 – 11/30/2008	06/29/2018 - 01/31/2020	I/I Analysis and Modeling
BC21	36912	2/1/2008 – 11/30/2008	06/30/2018 - 01/31/2020	I/I Analysis and Modeling
BC22	34385	2/1/2008 – 11/30/2008	07/02/2018 - 01/31/2020	I/I Analysis and Modeling
BC23*	36929	2/1/2008 – 11/30/2008	07/07/2018 - 01/31/2020	I/I Analysis and Modeling
BC24*	33527	2/1/2008 – 11/30/2008	07/09/2018 - 01/31/2020	I/I Analysis and Modeling
BC25*	33531	2/1/2008 – 11/30/2008	06/30/2018 - 01/31/2020	I/I Analysis and Modeling
BC26	33531	2/1/2008 – 11/30/2008	06/30/2018 - 01/31/2020	I/I Analysis and Modeling
BC27	36951	N/A	07/09/2018 - 01/31/2020	I/I Analysis and Modeling
BC28	41119	N/A	07/11/2018 - 01/31/2020	I/I Analysis and Modeling
BC29	1613	N/A	07/09/2018 - 01/31/2020	I/I Analysis and Modeling
BC30	17755	N/A	06/28/2018 - 01/31/2020	I/I Analysis and Modeling
BC31	18452	N/A	07/03/2018 - 01/31/2020	I/I Analysis and Modeling. Interceptor flow characterization
BCDF	6886	N/A	07/11/2018 - 01/31/2020	I/I Analysis and Modeling. Interceptor flow characterization
BC-SSO-01	33471	N/A	06/25/2018 - 01/31/2020	Boundary Meter and Modeling
BC-SSO-02	22010	N/A	06/29/2018 - 01/31/2020	Model-predicted SSO Evaluation
BC-SSO-03	44220	N/A	06/29/2018 - 01/31/2020	Model-predicted SSO Evaluation
BC-SSO-04	1582	N/A	06/27/2018 - 01/31/2020	Model-predicted SSO Evaluation

*Post Rehab FM occurred in a different manhole than Pre-Rehab flow monitoring.
N/A – No pre-rehab flow monitoring occurred in that basin.
BC01, BC12, and BC19 basins were broken up in the Post-Rehab flow monitoring to isolate problem areas

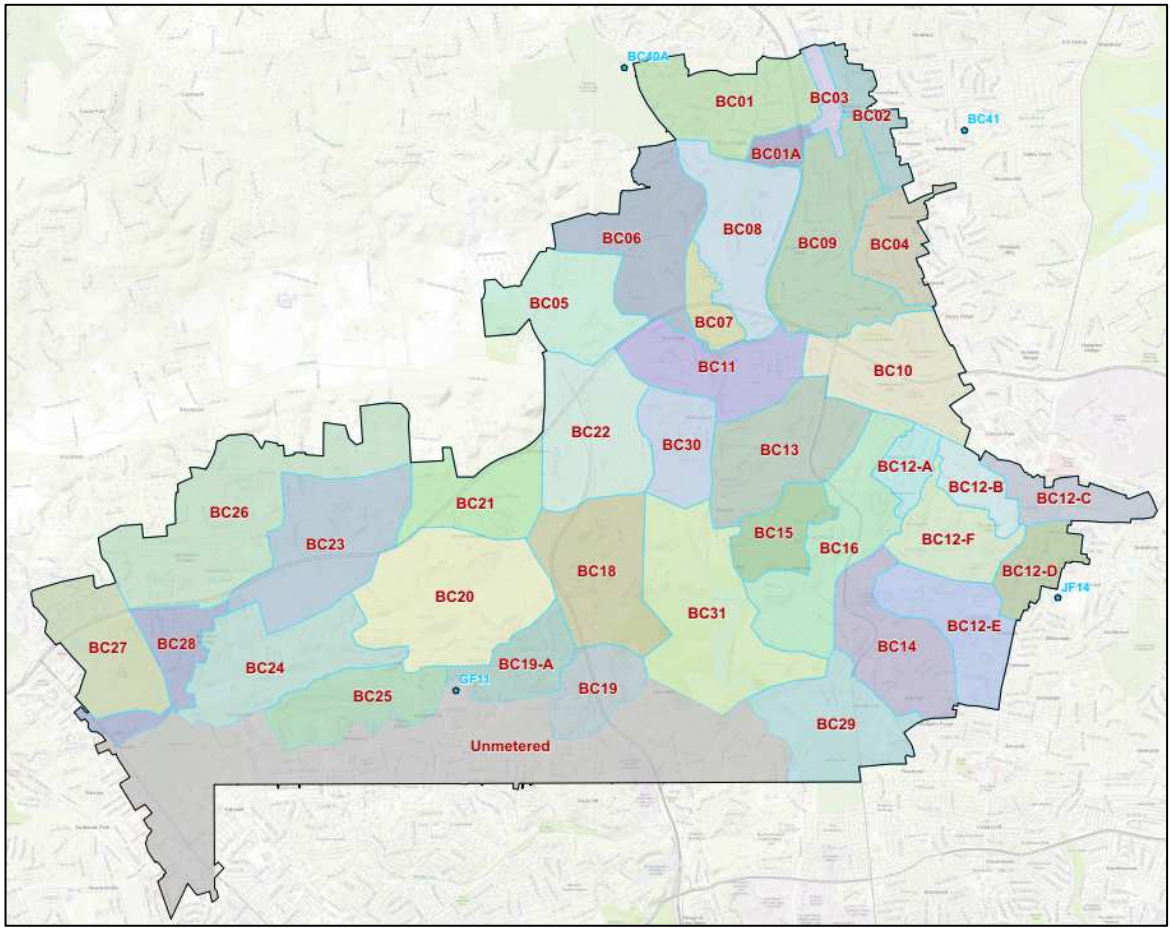


Figure 1-2: Jones Falls Meter and Rain Gauge Locations

Flow monitoring in basins BC02, BC03, BC04, and BC09 was performed to evaluate the effectiveness of comprehensive I/I rehabilitation performed in these four meter basins. The remaining meters listed in **Table 1-1** were installed to evaluate flows at model-predicted SSO locations as identified in support of the 2013 Jones Falls SRRR Plan or to calibrate and verify the model. The control basin (BC26), where no I/I reduction construction was performed, serves as a comparative baseline to evaluate, and assess the effectiveness of I/I reduction where rehabilitation was performed. Monitoring in the control basin was conducted concurrently with BC02, BC03, BC04, and BC09 during the post-rehabilitation period to account for flow differences attributable to rainfall differentials during the pre-and post-rehabilitation monitoring periods, seasonality, groundwater conditions, and other non-rehabilitation related influences on the sanitary sewer flows.

Baltimore County has had a County-wide rain gauge rainfall monitoring program in place continuously since 2006. The County-wide rain gauging program consists of 45 tipping bucket rain gauges located throughout Baltimore County. The rain gauges record 0.01-inch increments of precipitation at 5-minute intervals. Rainfall data collected from four (4) rain gauges was used to correlate rainfall events with inflow responses. The four rain gauges are BC40A, BC41, GF11, and JF14. Locations of the rain gauges are included in **Figure 1-2**.

Annual rainfall totals measured at BC40A, BC41, GF11, JF14, and the average annual totals for Baltimore County's network of 45 rain gauges are presented in **Table 1-2** to provide a general sense of the wet weather variations observed in the Jones Falls Sewershed, and the County as a whole, during the pre- and post-rehabilitation periods under evaluation.

Table 1-2 Jones Falls Sewershed and Baltimore County Rain Summary

Rainfall Monitoring Year	Rehab Period	BC40/BC40A Rainfall (in)	BC41 Rainfall (in)	GF11 Rainfall (in)	JF14 Rainfall (in)	Baltimore County Average (in)
2008	Pre-Rehab	44.3	46.9	46.2	45.5	44.5
2018	Post-Rehab	73.9	67.8	73.0	75.4	71.0
2019	Post-Rehab	51.9	49.5	52.1	52.7	44.2

It is notable that measured rainfall was between 45-66 percent higher in 2018 (post-rehab flow monitoring) than in 2008 (pre-rehab flow monitoring). This differential in rainfall can potentially affect comparative evaluation results because both infiltration and inflow are correlated with rainfall. Measured inflow is directly related to the amount of recorded rainfall, and infiltration is indirectly affected by high rainfall in that sustained high rainfall periods will generally elevate groundwater levels.

In evaluating I/I data from pre- and post-rehabilitation periods, the rainfall differential between the two periods should be accounted for when evaluating the success of rehabilitation performed to reduce I/I sources. Control basin monitoring is intended to assist in the assessment by providing flow monitoring data in a non-rehabilitated basin. The monitored I/I differential in the control basin can then be used to assess the differential in I/I attributable to the differential in rainfall in the pre- and post-rehabilitation monitoring periods, independent of the I/I source rehabilitation that occurred.

2.0 Evaluation of SSOs

This section presents an analysis of the frequency and causes of SSOs that occurred in the Jones Falls Sewershed before and after the implementation of SRRR corrective action recommendations listed in Section 6 of the Jones Falls Sewershed SRRR Plan. SSOs can usually be grouped into one of four categories: constructed overflow structures, pump station & pressure pipe overflows, manhole & sewer overflows, and basement backup overflows.

Section (2.0) assesses the rates, volumes and causes of SSOs that *actually occurred* in Jones Falls between 2010 and 2020.

2.1 Pump Station Improvements

The Jones Falls Sewershed contains four (4) pumping stations. These include the Buchanan Road Pumping Station, the Stanton Woods Pumping Station, the Templegate Pumping Station, and the Stevenson Pumping Station. The County is currently undertaking, or has previously completed, measures set forth in Paragraph 13 of the CD for these pumping stations. The County has completed an Engineering Evaluation and Condition Assessment (EE/CA) for all four (4) of the pumping stations as required by Paragraph 13.F of the CD. Reports have been submitted for review and approval in accordance with Paragraph 13.F.iii of the CD. All deficiencies defined in Paragraph 13.F.iv of the CD, and outlined in the EE/CA reports for the Buchanan Road, Stanton Woods and the Templegate Pumping Stations are being completed in accordance with Paragraph 13.F.iv.(a) of the CD.

2.2 Constructed Overflow Structures

There were three (3) non-pump station SSOs located in the Jones Falls Sewershed. These included SSO 31A (Rider Avenue) located in Meter Basin BC11, SSO 113 (Marnat Road) located in the old Meter Basin JF0320S, and SSO 120 (Charles Street Avenue) located in Meter Basin BC12. A found non-pump station SSO structure, Alabama Ave, SSO 131, was discovered and immediately closed in 2010. The County has completed sewer and manhole rehabilitation projects in several of the SSA's that are tributary to these SSOs to eliminate overflows prior to the implementation of the recommended Jones Falls SRRR Plan corrective

actions. The County implemented the corrective actions contained in the approved elimination plans. This work is summarized below:

- Rider Avenue Non-Pumping Station **SSO 31A** – The SSO was eliminated in May 2007.
- Marnat Road Non-Pumping Station **SSO 113** – Under Contract 09124 SX0, forty-four (44) manholes were rehabilitated, 7,149 linear feet (LF) of sewer was lined and seventy-two (72) sewer house connections were sealed. The project work was completed in June 2012.
- Charles Street Avenue Non-Pumping Station **SSO 120** – Under Contract 10034 SX0, forty-eight (48) manholes were rehabilitated, seven (7) point repairs were completed, 13,826 LF of sewer was lined and 323 sewer house connections were sealed. The SSO was eliminated in September 2011.
- Alabama Avenue Non-Pumping Station **SSO 131 –** The SSO structure was discovered and immediately closed in September 2010.

2.3 Non-Constructed Overflows

Non-constructed overflows are SSOs that occur from a County manhole or gravity sewer that is not an intentionally constructed non-pump stations overflow structure. Non-constructed overflows can occur during dry or wet weather, and can be caused by blockages, defective pipes, or high flows.

Figure 2-1 shows the manhole and sewer overflow volumes recorded in Jones Falls between January 2010 and December 2019 and reported as due to blockages, defective pipes, or high flows. The total volume of SSOs exceeded 7,000 gallons in 2018 and from Figure 2-2 appears to be correlated to the excessive rain that year. In 2016, there was over 6,000 gallons of overflow, making it the second highest overflow year between 2010 and 2019; however, this vast majority (97%) of the 2016 reported volume was caused by two breaks in a force main. Excluding that one event, the total 2016 SSO volume was 150 gallons, none of which was attributed to high flows.

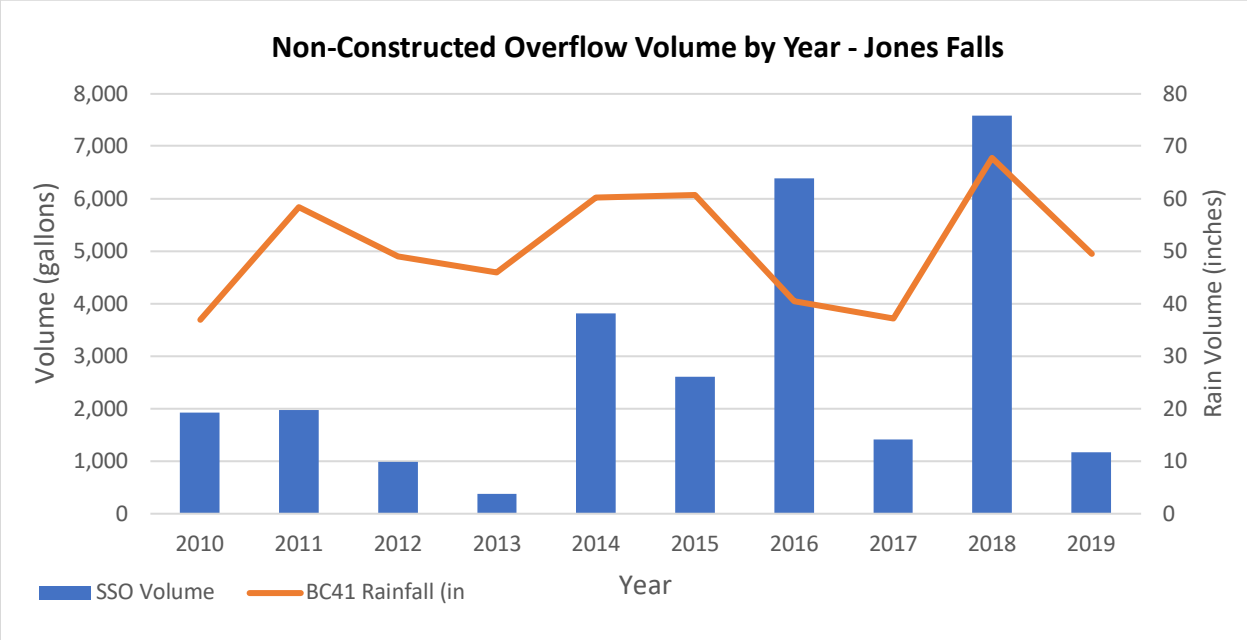


Figure 2-1: Total Overflow Volume Observed at Non-Constructed SSOs in Jones Falls

2.4 Basement Backups

Similar to SSOs observed in manholes and sewers, basement backup conditions occur when the sanitary sewer system becomes inundated as a result of blockages or high flows. Any basement backups that occurred due to defective pipes have been excluded from the analysis. While it is difficult to quantify the overflow volume in basement backup occurrences, comparing the number and causes of basement backup conditions before and after the construction process can provide a measure of the effectiveness of repair, rehabilitation, and replacement projects.

The County provided basement backup records, which were analyzed by comparing the number of basement backups that occurred during the pre-rehabilitation period with the number that occurred after construction. **Table 2-1** summarizes the total number of basement backup occurrences in the Jones Falls Sewershed between January 2010 and December 2019. The results are also graphically shown in **Figure 2-2**.

Table 2-1 Basement Backups in Jones Falls

Cause of Backup	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Blockage	7	4	12	18	28	11	13	15	20	12
High Flow		3	1		5	1	2		17	
Total	**7**	**7**	**13**	**18**	**33**	**12**	**15**	**15**	**37**	**12**
BC41 Rainfall (in)	37.01	58.4	49	45.9	60.2	60.7	40.4	37.2	67.8	49.5

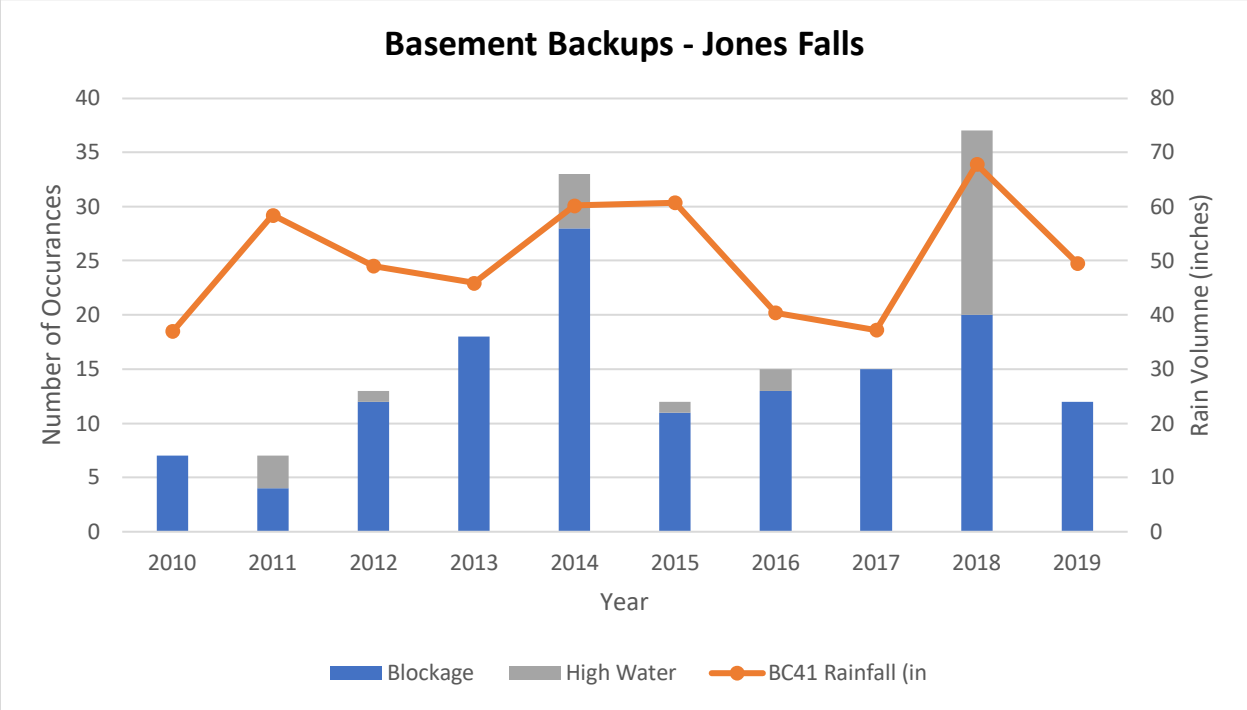


Figure 2-2: Basement Backups in Jones Falls

Table 2-1 and **Figure 2-2** show distinct correlation between basement backup occurrences and annual recorded rainfall, particularly for the record rainfall of 2018. Rehabilitation construction was performed in various parts of the sewershed from 2015 through 2019 with comprehensive rehabilitation for I/I reduction performed in BC02, BC03, BC04, and BC09. The historic high 2018 rainfall in Baltimore County resulted in 20 basement backups in Jones Falls reported as being caused by high flows that year. None of the

recorded basement backups due to high flows occurred during the post rehabilitation period in any of the meter basins where comprehensive rehabilitation was performed from.

3.0 Quantification of Reduction in Base Infiltration (BI) and RDII

Base Infiltration (BI) is defined as the amount of groundwater that is entering the sanitary sewer system on a continuous basis. Base infiltration enters the system through pipe joints, sewer line defects (including main sewer lines and service laterals), and defective manhole walls, benches, and pipe seals.

Rainfall Dependent Infiltration and Inflow (RDII) in a sanitary sewer system is defined as extraneous flow that is a direct result of storm water runoff.

This section presents the effective BI rates determined through pre- and post-rehabilitation dry-weather data analysis, the effective RDII rates determined through pre- and post-rehabilitation wet-weather data analysis, as well as a comparison of the estimated BI/RDII reduction predicted in the 2013 SRRR Plan with the actual BI/RDII reduction observed in the Jones Falls Sewershed.

3.1 Quantification of Reduction in Base Infiltration (BI)

For basins in the Jones Falls Sewershed where comprehensive rehabilitation was completed, (BC02, BC03, BC04 and BC09), BI for the pre-rehabilitation conditions was obtained from the existing hydraulic model, calibrated using the 2008 flow monitoring by RK&K (November 2011). Whereas the post-rehabilitation BI rates were obtained from the model calibrated by RJN using the 2018-2019 flow monitoring data.

In accordance with the County's SRRR Plan Guidelines, BI was calculated based on analysis of average dry weather flow data using a methodology that uses minimum night flows. The minimum hourly flowrate (usually observed between 2-4 AM) represents the basin's flow when most residents are asleep and thus not contributing flow to the sanitary sewer system. This approach assumes that the BI is 90 percent of minimum night flows (Paul S. Mitchell, Patrick L. Stevens, and Adam Nazaroff, "A comparison of methods and a simple empirical solution to quantifying base infiltration in sewers," Water Practice, 2007).

$$BI = 0.90 \times \text{Minimum Night Flows (during selected dry days)}$$

The main characteristics that affect base infiltration are the size, length, and condition of the pipes in a basin. To eliminate the problem of non-matching basins, the base infiltration volume for each basin is divided by the total tributary length in each basin while accounting for pipe diameter. The base infiltration for each basin is therefore expressed as gallons per day per inch of diameter per mile of pipe (gpd/idm) which reduces the effect of the differences in tributary pipe length and size between the basins and normalizes the results for better comparison. This enables an 'apples to apples' comparison of the basins where rehabilitation was done.

A comparison of the BI determined from the pre-rehabilitation condition to the BI determined from the post-rehabilitation condition determines the percentage of BI reduction in the meter basins studied. **Table 3-1** presents the predicted, as well as the effective reduction of BI in each meter basin. The predicted BI reduction presented in **Table 3-1** was obtained from the 2013 Jones Fall SRRR Report ("Jones Fall Sewershed Repair, Replacement and Rehabilitation Plan", 2013 Jones Fall SRRR Plan, RK&K, Section 5.6. p. 5-15). The report projected 23% reduction of BI in meter basins where rehabilitation was performed, per the SRRR guidelines.

Table 3-1 Predicted and Measured Reduction of BI for Pre- and Post-Rehabilitation Conditions

Meter Basin	Pre-Rehab BI Volume (GPD)	Pre-Rehab BI Severity (gpd/inch-mile)	Post-Rehab BI Volume (GPD) [a]	Post-Rehab BI Severity (gpd/inch-mile)	Predicted BI Change (%)	Gross BI Reduction (%)	Effective BI Reduction (%)
BC02	36,900	1,372	31,300	1,224	-23	-10.83	-45.72
BC03 [c]	139,500	8,965	273,000	17,522	-23	95.45	60.56
BC04	99,000	2,826	60,000	1,820	-23	-35.59	-70.47
BC09 [d]	1,017,000	7,385	77,000	620	-23	-91.61	-126.49
BC26	62,100	1,348	154,510	1,818	+10 [b]	34.88	Control Basin

a) The number was obtained from the model calibrated by RJN using the post-rehabilitation flow monitoring data.
b) The predicted BI change for a control basin of +10% was used both in the Herring Run Capacity Assessment Report (WR&A, November 2012) and in the Herring Run Performance Assessment report (RJN Group, 2020); therefore, an assumption was made to use that same value for the Jones Falls Sewershed since a different value was not stated in the Jones Falls HCA Report.
c) Base Infiltration results are suspect for BC03 due to small basin idm and little flow added into this meter basin from private sewers.
d) Base Infiltration results show an effective reduction over 100% for BC09. The diversion valve controlling the flow into Jones Falls from Texas Sewershed was replaced and stopped a significant amount of flow that was bypassing the valve and leaking into the Jones Falls Sewershed.

The change in BI in the control basin (BC26) is determined using the same methodology used for the meter basins where rehabilitation was performed, to account for flow differences attributable to non-rehabilitation related factors. This establishes the 'effective' BI reduction attributable to rehabilitation construction. In other words, the BI in the rehabilitated basins as determined from the flow monitoring data (gross BI change) is adjusted by the percentage of BI change in the control basin to establish the 'effective' BI. If the BI reduction percentage in a basin as determined from the flow monitoring data is equal to or less than the percentage of BI change of the control basin (+34.88%), then the basin is considered to have no effective BI reduction from the rehabilitation construction.

According to the results demonstrated in **Table 3**, the severity of the BI has been reduced in basins BC02, BC04, and BC09. The percentage of the reduction in BI in BC02, BC04, and BC09 basins is 46%, 70%, and 126%, respectively. Although comprehensive rehabilitation was performed in BC03, the analysis identified BC03 as having an increase in base infiltration. BC03 has a net tributary area that is very small due to its primary purpose is to act as a flow balance check for upstream meters (BC01, BC01A, BC02, and BCDF) as they combine into the interceptor. The only wastewater contribution to the meter basin itself is from the private sewers withing the MD Fairground which has sporadic/seasonal usage. The leaking diversion valve upstream of the meter likely impacted the data causing the irregularity in the results in Basin BC03.

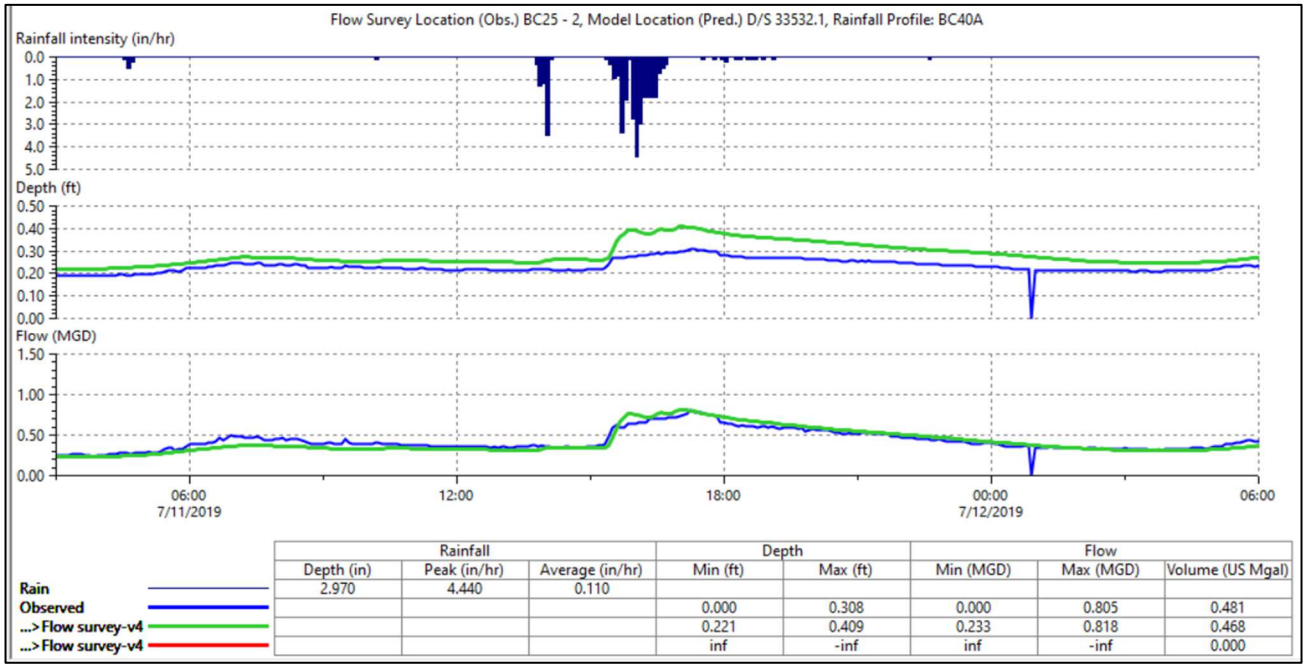
3.2 Quantification of Reduction in Rain Derived Inflow and Infiltration (RDII)

To quantify RDII for the pre- and post-rehabilitation conditions, InfoWorks ICM was used to calibrate the collection system model using the collected wet weather flow data. RDII in the model is measured by the "fixed runoff coefficient" (R-value). The R-value was first determined for each meter basin for the pre-rehabilitation condition by completing model simulations for various rainfall events until the metered peak flow and volume was adequately reproduced by the calibrated model. The guidelines below were established for wet weather calibration of the model for both pre- and post-rehabilitation conditions.

- The modeled peak flow rate should be within -10 percent and +25 percent of the observed peak rate.
- The modeled volume of flow should be within -10 percent and +20 percent of the observed flow volume.

- The shape and timing of the hydrographs should be similar.

After completion of the dry weather calibration for the post-rehabilitation condition, the second step of the calibration process involved wet weather calibration using rain events of various intensity and duration that occurred during the post-rehabilitation flow monitoring period. For wet weather calibration, the R-values were adjusted iteratively until the model was calibrated (model-predicted and observed conditions match within established parameters) and adequately predicted peak flow, volume, and the hydrograph shape and timing. An example of modeled versus observed metered flow is shown in **Figure 3-1** for meter site BC25 from 07/11/2019 to 07/12/2019. The model data is in green and the meter flow data is in blue.



	Rainfall			Depth		Flow		
	Depth (in)	Peak (in/hr)	Average (in/hr)	Min (ft)	Max (ft)	Min (MGD)	Max (MGD)	Volume (US Mgal)
Rain	2.970	4.440	0.110					
Observed				0.000	0.308	0.000	0.805	0.481
...>Flow survey-v4				0.221	0.409	0.233	0.818	0.468
...>Flow survey-v4				inf	-inf	inf	-inf	0.000

Figure 3-1 Modeled vs. Observed Flow at BC25 during Rainfall from 07/11/2019 to 07/12/2019.

Figure 3-2 below shows statistical plots of modeled versus observed (meter-recorded) volume and peak flow under a series of rain events for basin BC25 and for basin BC30. As illustrated in this figure, the model reasonably simulates the recorded (observed) flow data. The modeled and observed data are generally within established margins of error and established tolerances.

Appendix A provides modeled and observed data in tabular format, time series plots and statistical plots for all meter sites.

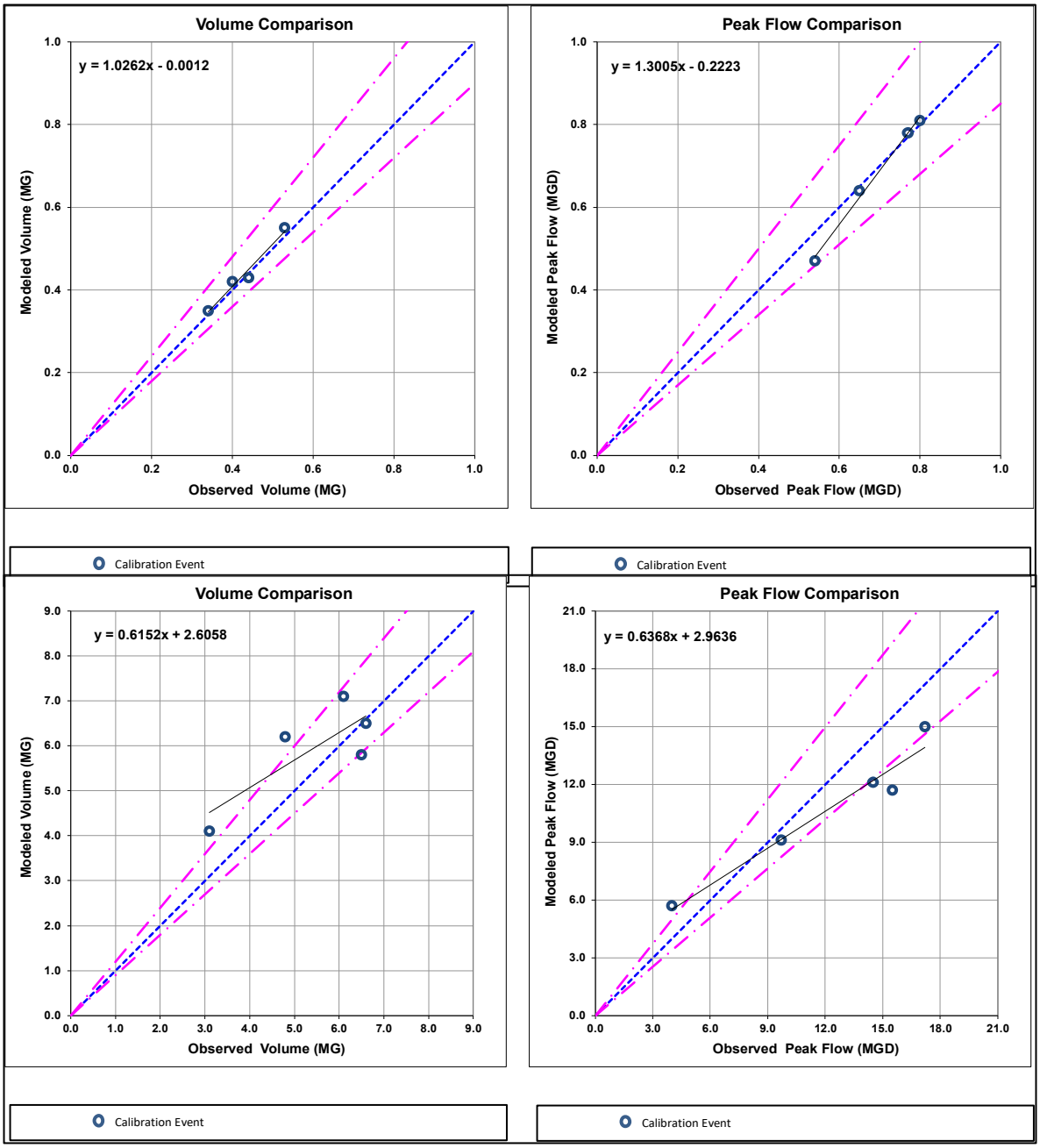


Figure 3-2 Statistical Plots of Volume and Peak Flow for BC25 (top) and BC30 (bottom)

Table 3-2 presents the percentage of RDII removal predicted in the SRRR plan in comparison to that achieved from rehabilitation construction. The predicted RDII removal percentage was obtained from the 2013 Jones Fall SRRR Report ("Jones Fall Sewershed Repair, Replacement and Rehabilitation Plan", 2013 Jones Fall SRRR Plan, RK&K, Section 5.6. p. 5-15). Similar to the "effective" reduction evaluation applied to base infiltration as previously described, the change in RDII in the control basin is applied to the RDII removal determined for the rehabilitated basins to obtain the effective RDII removal percentage.

Table 3-2 Predicted vs. Achieved Percentage of RDII Removal

Basin	Predicted RDII Removal (%)	Actual RDII Removal (%)	Effective RDII Removal (%)
BC02	-35	-2.06	-16.10
BC03 [a]	-35	-96.46	-110.59
BC04	-35	-22.11	-36.26
BC09	-35	-55.13	-69.16
BC26	10	14.04	Control basin

a) RDII results appear irregular for BC03 due to the leaking diversion valve upstream.

The results in **Table 3-2** indicate that rehabilitation work has reduced the extent of inflow into the sewer system within all basins where rehabilitation was completed, however, the extent of the RDII reduction in BC02 was less than the other basins. The analysis indicates a 14% increase in RDII in the control basin which was applied to the basins where rehabilitation was performed to obtain the "effective" RDII reduction shown in **Table 3-2.**

4.0 Effectiveness of Repair, Replacement, and Rehabilitation Projects

This section evaluates the effectiveness of corrective actions completed in the Jones Falls Sewershed to address capacity and structural issues outlined in the Jones Falls SRRR Plan. The evaluation was performed based on a review of County-provided post-construction inspection records, improvements implemented based on the 2013 SRRR Plan (Section 6.0), and model simulation results using the updated hydraulic model recalibrated based on pre- and post-rehabilitation flow monitoring data.

4.1 Completed Rehabilitation and Relief Sewer Projects

In the Jones Falls Sewershed, the County completed rehabilitation on public manholes, laterals, and sewers which received an inspection score of a 4 or 5 or within areas that exhibited excessive I/I that contributed to a model predicted SSO location. Rehabilitation for manholes included installing frame seals, inserting inflow inserts, lining, and full replacement. Pipes received lining, point repairs, lateral connection repair, or full pipe replacement.

RJN reviewed the County's records for the Jones Falls Sewershed to confirm rehabilitation was performed based on the recommendations outlined in Section 6 of the Jones Falls SRRR Plan, which was submitted to the County in early 2013 and approved by US EPA and MDE later that year. Rehabilitation construction was performed between 2015 and 2019.

In addition to the corrective action rehabilitation, the County planned relief sewers in the Jones Falls sewershed to eliminate capacity deficiencies and prevent future SSO's. Construction of the Coppermine Terrace relief sewer has been completed.

Map 1 ("Sewer, Manhole and Hydraulic Corrective Action Recommendations Map", 2012 Jones Falls Collection System Evaluation & Sewershed Plan, RK&K) depicts the structural, O&M, and capacity improvements described in the SRRR Plan for each meter basin in Jones Falls. Comprehensive

rehabilitation for I/I removal was completed in basins BC02, BC03, BC04, and BC09 as described in the SRRR Plan. **Map 2** ("Jones Falls Rehabilitation Completed"), depicts the rehabilitation that was completed in the Jones Falls sewershed, including rehabilitation in basins that were not part of the comprehensive rehabilitation plan.

4.2 Collection, Pumping, and Transmission System Modeling

This section presents capacity analysis results from model simulations of the Jones Falls sewer network in response to dry and wet weather flows under the projected Year 2025 population and employment projection conditions for both pre- and post-rehabilitation conditions. The intent of the modeling for performance assessment is to compare the effects of predicted flows both before and after rehabilitation to assess the success of work completed relative to addressing predicted capacity constraints in the system. Future (Year 2025) population conditions were selected for the capacity analysis so that the model simulations were run with projected future consumption flows included. The post-rehab condition model is different from the pre-rehab condition model in the following aspects:

- The post-rehab condition model reflects reduced RDII and BI rates as identified from BI and RDII quantification.
- The construction of the Coppermine Terrace relief sewer
- The construction of a portion of the Towson Town Boulevard relief sewer

Other than the differences noted above, the pre- and post-rehabilitation condition models for the Jones Falls Sewershed are identical to each other and both models reflect rehabilitation projects completed prior to the beginning of 2008 pre-rehabilitation flow monitoring.

All simulation runs were completed using a free-discharge assumption at the County – City boundary. This is consistent with the approach used for the hydraulic model developed for the 2013 SRRR Plan. The City has not completed Phase II projects necessary to establish alternative predicted future boundary conditions at the jurisdictional boundary.

4.3 Flow Capacity Assessment

<u>Dry Weather Flow Capacity Assessment</u>

During the dry-weather flow condition, the model simulations do not predict any SSOs in the Jones Falls Sewershed under either the pre- or post-rehabilitation condition. However, model predictions indicate surcharges in both pre- and post-rehabilitation conditions. According to the model predictions, nine (9) pipe segments surcharge during the pre-rehabilitation conditions, while thirteen (13) pipes surcharge in post-rehabilitation conditions. **Appendix B** lists each pipe segment in the model, the simulated dry-weather peak flow, pipe full capacity, and percentage of capacity used under pre- and post-rehabilitation conditions.

<u>Wet Weather Flow Capacity Assessment</u>

Consistent with the 2013 SRRR Plan approach and per the County guidelines, the 2, 10, and 20-year, 24-hour duration storms, and the 2 and 10-year, 6-hour duration storms were simulated, and the wet weather flow capacity assessment was completed. The storm distribution chosen for analysis is the NRCS Type II distribution. The storm depths for the five design storms are as follows:

- 2-Year, 6-Hour Storm – 2.37 inches of rain
- 2-Year, 24-Hour Storm – 3.38 inches of rain
- 10-Year, 6-Hour Storm – 3.50 inches of rain
- 10-Year, 24-Hour Storm – 5.19 inches of rain
- 20-Year, 24-Hour Storm – 6.06 inches of rain

Tables 4-1A and **4-1B** present the model predicted occurrences of sewer overflow locations and flood volumes for all five design storm events in the meter basins where comprehensive rehabilitation I/I reduction projects and/or relief sewers were constructed (BC02, BC03, BC04 and BC09). **Table 4-1A** shows the results for the pre-rehabilitation condition, and **Table 4-1B** shows the results for the post-rehabilitation condition.

During wet weather flow conditions in basins where comprehensive rehabilitation was completed, the Jones Falls pre-rehabilitation condition model predicts eight (8) SSOs for the 2-year 6-hour, 21 SSOs for the 2-year 24-hour storms, 23 SSOs for the 10-year 6-hour storm, 34 SSOs for the 10-year 24-hour storm, and 39 overflows for the 20-year 24-hour design storm (**Table 4-1A**).

Table 4-1B shows the predicted number of overflows in each meter basin under the post-rehabilitation condition. According to the results, the rehabilitation projects have decreased the occurrence as well as volume of SSOs in the meter basins where rehabilitation work was completed. The model predicts no overflow for the 2-year 6-hour, three (3) SSOs for the 2-year 24-hour storms, four (4) SSOs for the 10-year 6-hour storm, eleven (11) SSOs for the 10-year 24-hour storm, and twelve (12) overflows for the 20-year 24-hour design storm.

Table 4-2 shows the percentage of predicted overflow volume reduced in predicted SSO locations, for each meter basin under the five different storm conditions. For the post-rehabilitation condition, the predicted overflow volume is reduced between 70% and 100% when compared to the pre-rehabilitation condition.

The simulated wet weather peak flow, the pipe full capacity, the percentage of capacity used, and the surcharge state for each pipe segment modeled during the five design storms for the pre- and post-rehabilitation conditions are provided in **Appendix B**.

Map 3 depicts the model predicted SSO and flow restriction locations in Jones Falls for all five (5) design storm simulations under the post-rehabilitation condition.

Table 4-1A Jones Falls Pre-Rehabilitation Model Predicted SSO Results Summary

Predicted Overflow Volumes under Pre-Rehab Conditions (MG)						
Node ID	**Basin**	**2-Year 6-Hour (MG)**	**2-Year 24-Hour (MG)**	**10-Year 6-Hour (US MG)**	**10-Year 24-Hour (US MG)**	**20-Year 24-Hour (US MG)**
20246	BC02	0.0079	0.014	0.0195	0.0215	0.0236
53728	BC02	0.0025	0.0306	0.0422	0.0579	0.0642
53729	BC02		0.0021	0.0028	0.019	0.0223
53730	BC02				0.0264	0.0432
Total Volume		**0.0104**	**0.0467**	**0.0645**	**0.1248**	**0.1533**
Count		**2**	**3**	**3**	**4**	**4**
	BC03	0.1568	0.2003	0.3076	0.3693	0.4302
Total Volume		**0.1568**	**0.2003**	**0.3076**	**0.3693**	**0.4302**
Count		**1**	**1**	**1**	**1**	**1**
14546	BC04		0.0067	0.011	0.0123	0.0136
14547	BC04		0.0067	0.0114	0.0142	0.016
14548	BC04		0.0078	0.0157	0.0642	0.088
7052M	BC04					0.0007
7167	BC04		0.0019	0.003	0.0044	0.0052
7168	BC04		0.0075	0.0114	0.0138	0.0152
7176	BC04		0.0044	0.0079	0.0129	0.0148
7177	BC04		0.0022	0.0049	0.0431	0.0616
7184	BC04	0.0096	0.0191	0.0306	0.0315	0.0347
Total Volume		**0.0096**	**0.0563**	**0.0959**	**0.1964**	**0.2498**
Count		**1**	**8**	**8**	**8**	**9**
16402	BC09	0.0081	0.0152	0.0318	0.0277	0.0306
16403	BC09		0.0057	0.0192	0.0266	0.0307
16404	BC09			0.0001	0.0097	0.0121
16754	BC09		0.0171	0.0496	0.1044	0.1399
17480	BC09				0.0072	0.0108
17484	BC09				0.0004	0.0041
38582	BC09		0.0023	0.007	0.0099	0.0116
38774	BC09					0.0043
38775	BC09				0.0002	0.0006
38778	BC09				0.0033	0.0048
38780	BC09				0.0048	0.0083
38781	BC09					0.0001
38782	BC09					0.0007
41020	BC09			0.0022	0.0186	0.0283
41434	BC09				0.0108	0.0217
42224	BC09				0.0039	0.0106
42227	BC09		0.0015	0.0053	0.0207	0.0249
66453	BC09				0.0058	0.0119
7064	BC09				0.0021	0.0027
7065	BC09				0.0068	0.0127
7085	BC09		0.0015	0.0066	0.0173	0.0208
7113	BC09					0.0016
7123	BC09	0.0488	0.0422	0.059	0.059	0.0648
7136	BC09	0.0042	0.0036	0.0061	0.0059	0.0065
7137	BC09	0.0538	0.0852	0.1786	0.2368	0.2923
Total Volume		**0.1149**	**0.1743**	**0.3655**	**0.5819**	**0.7574**
Count		**4**	**9**	**11**	**21**	**25**
Grand Total		**0.2917**	**0.4776**	**0.8335**	**1.2724**	**1.5907**
Total Count		**8**	**21**	**23**	**34**	**39**

Table 4-1B Jones Falls Post-Rehabilitation Model Predicted SSO Results Summary

Predicted Overflow Volumes under Post-Rehab Conditions (MG)						
Node ID	Basin	2-Year 6-Hour (MG)	2-Year 24-Hour (MG)	10-Year 6-Hour (US MG)	10-Year 24-Hour (US MG)	20-Year 24-Hour (US MG)
20246	BC02		0.0016	0.0041	0.0152	0.0179
53728	BC02				0.0413	0.0603
53729	BC02					0.0033
Total Volume		**0**	**0.0016**	**0.0041**	**0.0565**	**0.0815**
Count		**0**	**1**	**1**	**2**	**3**
14546	BC04			0.0013	0.0066	0.0078
14547	BC04				0.0055	0.0068
14548	BC04				0.0111	0.0196
7167	BC04		0.0001	0.0007	0.0038	0.0044
7168	BC04				0.0052	0.0062
7176	BC04				0.0043	0.0059
7177	BC04				0.0048	0.0106
7184	BC04		0.0045	0.0077	0.0129	0.015
Total Volume		**0**	**0.0046**	**0.0097**	**0.0542**	**0.0763**
Count		**0**	**2**	**3**	**8**	**8**
7123	BC09				0.0024	0.0073
Total Volume		**0**	**0**	**0**	**0.0024**	**0.0073**
Count		**0**	**0**	**0**	**1**	**1**
Grand Total		**0**	**0.0062**	**0.0138**	**0.1131**	**0.1651**
Total Count		**0**	**3**	**4**	**11**	**12**

Table 4-2: Percentage Reduction in Predicted Overflow Volume

Basin	Description	2-Year, 6-Hour Storm	2-Year 24-Hour Storm	10-Year 6-Hour Storm	10-Year 24-Hour Storm	20-Year 24-Hour Storm
BC02	Volume Reduction (%)	-100.00%	-96.57%	-93.64%	-54.73%	-46.84%
BC03	Volume Reduction (%)	-100.00%	-100.00%	-100.00%	-100.00%	-100.00%
BC04	Volume Reduction (%)	-100.00%	-91.83%	-89.89%	-72.40%	-69.46%
BC09	Volume Reduction (%)	-100.00%	-100.00%	-100.00%	-99.59%	-99.04%

5.0 Effectiveness of Preventative/Proactive Maintenance Programs

As part of the performance assessment, RJN evaluated the effectiveness of the County's preventative and proactive maintenance programs in reducing root, grease and other blockages. The County's approved collection system operation and maintenance (O&M) plan, dated January 12, 2006, outlines the various preventative and proactive maintenance programs the County has implemented in Jones Falls.

5.1 Sewer Cleaning Program

The County's approved Collection System Operation and Maintenance Plan requires the County to clean all gravity sewers that are 8-inch diameter or larger every seven years, subject to future cleaning frequency re-evaluations.

In addition to the Operation and Maintenance (O&M) Plan's seven-year cleaning cycle, the Baltimore County Bureau of Utilities maintains a recurring specials list, which identifies specific sewer segments requiring routine cleaning. The recurring specials list is reviewed and revised on a regular basis based on historical customer complaints, recorded historical O&M defects/observations and sewer location. The County 'specials' list is included in **Appendix C**.

5.2 Sewershed Blockage History

County records containing sanitary sewer flow stoppages, and the subsequent County response, were reviewed by RJN for the period between January 2010 and December 2019. **Table 5-1** summarizes the results of that review.

Table 5-1 Rates and Causes of Blockages

Cause of Blockage	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Cleaning	-	-	-	-	1	-	5	1	2	1	10
Debris	1	-	-	-	-	2	-	-	2	2	7
Grease	4	2	4	2	5	5	4	4	6	5	41
Private	-	-	-	-	-	-	-	-	-	2	2
Rags	1	1	1	1	-	1	-	-	6	1	12
Roots	2	4	4	8	10	6	6	3	8	2	53
Unknown/Other	1	1	4	5	2	1	2	9	12	5	42
Unspecified	2	2	3	4	13	2	2	6	4	2	40
Totals	**11**	**10**	**16**	**20**	**31**	**17**	**19**	**23**	**40**	**20**	**207**

Prior to SRRR implementation, the two main known causes of stoppages in Jones Falls were roots and grease. Through construction and post construction periods, grease and roots remain the leading causes of blockages in the Jones Falls system. The County-provided blockage records are included in **Appendix C**.

5.3 Fats, Oils and Grease (FOG) Control Program

The County's FOG control program is detailed in the approved revised FOG Program Modification Plan, dated August 21, 2009. In accordance with the Plan, the County inspects FOG generating facilities using the risk scoring system and FOG generator identification evaluation developed by the County for the program. The inspection findings and FOG generating facility enforcement history are recorded in the County's FOG database for use in the County's annual FOG control program effectiveness evaluation. Program/analysis revisions that are identified by the effectiveness evaluation are addressed accordingly.

In addition to the FOG control program, the Bureau of Utilities' specials list (see Section 5.1) identifies specific sewer segments that experience grease deposition and require routine cleaning. The recurring specials list is reviewed and revised on a regular basis based on historical customer complaints, recorded historical O&M defects/observations and the FOG control program inspection findings.

On September 16, 2010, the County posted on its Department of Environmental Protection & Sustainability website a FOG manual to be used by Food Service Facilities as a guide for complying with the County's revised Food Service Facilities Regulations. The County continues inspecting FOG generating facilities using the revised risk scoring system and the FOG generator identification evaluation. To address residential FOG generators, the County plans to develop informational material that describes the effects of FOG on the wastewater collection system. The material will be distributed to residential property owners.

RJN analyzed the inspection and violation records of Food Service Facilities (FSFs) in the Jones Falls sewershed from 2013 through 2020 as provided by the County. **Figure 5-1** shows yearly FSF inspection and violation totals. No significant trend was observed between 2013 and 2020 following analysis of inspection and violation records in Jones Falls. **Appendix C** includes the County-provided FSF inspection and violation records that were reviewed by RJN.

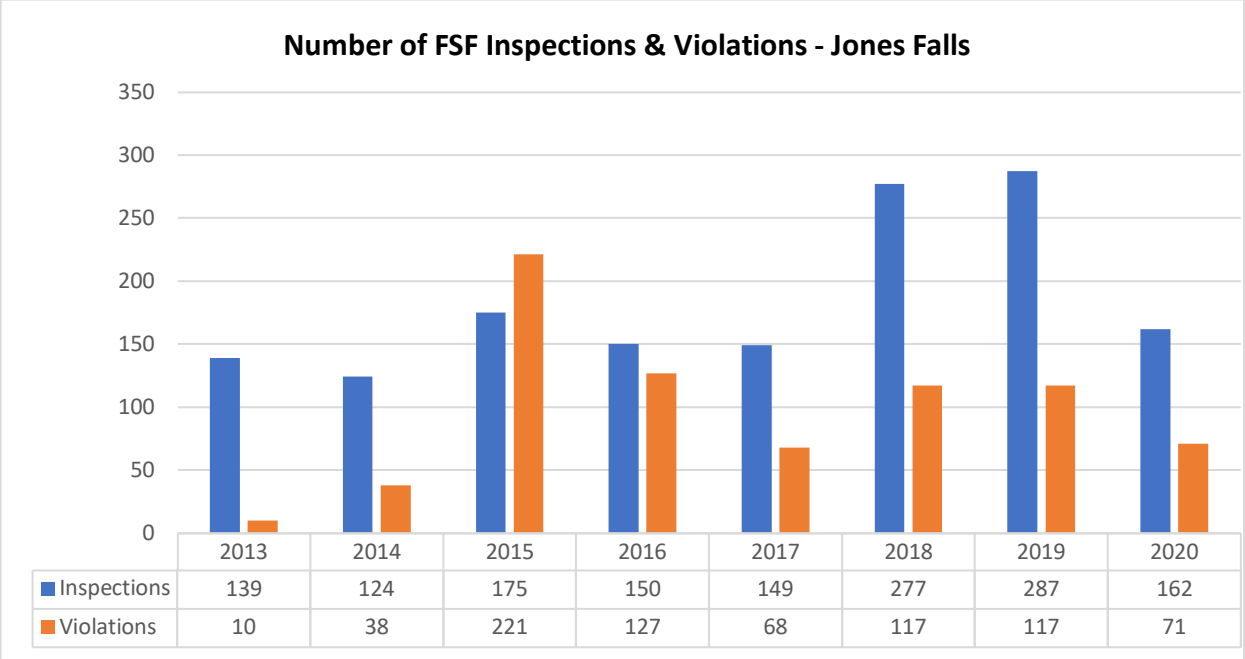


Figure 5-1: Food Service Facility Inspections and Violations in Jones Falls

6.0 Conclusions

The results of the base infiltration reduction assessment indicate that the completed rehabilitation projects in basins BC02, BC04, and BC09 were effective in reducing groundwater infiltration when compared to the predicted base infiltration reductions in the 2013 SRRR Plan while basin BC03 showed an increase in base infiltration. The increase in base infiltration in BC03 can be attributed to the small inch diameter mile (idm) and the small net tributary area as well as the closure of the leaking diversion valve upstream. This basin's primary purpose appears to act as a flow balance check meter for the upstream meters as they combine into the interceptor. In addition, the only wastewater contribution to the meter basin itself is the MD Fairground. The results of the RDII reduction assessment indicate that completed rehabilitation projects were effective in reducing RDII into the sewer system in three out of the four rehabilitated basins.

Four (4) Non-Pump Station SSOs were originally constructed in the Jones Falls Sewershed to relieve the sanitary sewer collection system and overflow in the event of surcharge caused by hydraulic capacity limitations during wet weather. Constructive overflow SSO (31A) was eliminated as of May 2007 as well as SSO 131 in 2010, prior to the development of the SRRR Plan. Overflow structure SSO 120 was eliminated in 2011 through rehabilitation. Overflow structure SSO 113 has not yet been closed because Baltimore City corrective actions are required prior to closure.

Pre- and post-rehabilitation flow monitoring data was used to update the hydraulic model based on the monitored flow conditions. The model was then used to simulate pre- and post-rehabilitation hydraulic conditions, respectively, under projected 2025 population and employment conditions as obtained from the hydraulic model used for the 2013 SRRR Plan. Model simulations show that I/I reduction rehabilitation and relief sewer construction in Jones Falls reduced predicted overflow volumes between 89 and 100 percent in total, for those basins where comprehensive I/I reduction rehabilitation was performed, or relief sewers were constructed.

RJN evaluated the effectiveness of the County's preventative and proactive maintenance programs in reducing root, grease, and other blockages. Based on the results, the County's maintenance programs are generally effective in preventing overflows resulting from blockages, defective pipe, and high flows. The

County's approved collection system operation and maintenance (O&M) plan outlines the various preventative and proactive maintenance programs the County has implemented in Jones Falls. The County maintains a list of sites that require special cleaning in the Jones Falls Sewershed; these are sites that require recurring cleaning due to grease, roots, or other blockages. From January 2010 through December 2019, the County performed over 4,000 SLRAT O&M field visits including regular maintenance and special cleaning in addition to preventative and investigative work. A total of 20 blockages were recorded in 2019.

Non-constructed overflows trended downward during the overall 2010 – 2019 evaluation period. With the exception of two overflows totaling over 5,000 gallons in 2018 during dry weather conditions, attributed to a defective pipe, discharges from sanitary sewer manholes (non-constructed SSOs) in the Jones Falls sewershed totaled 1,165 gallons during the assessed post rehabilitation period (2019). There were no discharges attributed to high flows during the assessed post-rehabilitation period,

The number of basement backups not attributed to high flows peaked in 2014 and 2018, but otherwise has remained steady around 11 backups each year. The annual number of basement backups (i.e. private property discharges) reached a high of 37 in 2018, including 17 basement backups attributed to high flows. These 17 high flow basement backups are attributed to the record rainfall recorded in throughout Baltimore County in 2018. None of the SSO discharges or basement backups associated with high flows occurred in meter basins where comprehensive rehabilitation for I/I reduction was performed during the post rehabilitation period.

Overall, the results of the performance assessment indicate that the rehabilitation performed, and relief sewers constructed were effective. Three out of the four constructed overflows have been eliminated. The volume of non-constructed SSOs have begun to decrease in the post rehabilitation monitoring period and the model predicted SSO volumes are projected to decrease 90 to 100 percent. The number of recorded basement backups did increase during the evaluation period, but the vast majority of these occurred during the record rainfall year of 2018.

Maryland
Department of
the Environment

Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor

Ben Grumbles, Secretary
Horacio Tablada, Deputy Secretary

ELECTRONIC MAIL
Jeff Peluso, Acting Chief
Bureau of Engineering & Construction
Baltimore County Department of Public Works
4421 Bucks School House Road, Suite 100
Baltimore, Maryland 21237

Re: Baltimore County Judicial Consent Decree 1:05-cv-02028-AMD, AI# 31394
Sewershed Performance Assessments: West Low Level, Dead Run, Herring Run, and Gwynns Falls
[Response requested in 30 days]

Dear Mr. Peluso:

The Maryland Department of the Environment, Water Management Administration, Compliance Division (Department) has reviewed the Performance Assessment Reports for the West Low Level Sewershed and Dead Run Sewershed, dated June 4, 2019, for the Herring Run Sewershed, dated September 1, 2020, and for the Gwynns Falls Sewershed, dated October 6, 2020, submitted in accordance with Judicial Consent Decree 1:05-cv-02028-AMD (Consent Decree) Paragraph 10.E. The Department acknowledges that the 90-day period under which comment is expected to be provided (Paragraph 10.E.iii.) has passed, however the Department respectfully submits the following response, consistent with the overall purpose and goal of the Consent Decree.

Across the Reports, the Department acknowledges that 2018 was an unusually rainy year, creating challenges in comparing pre- and post-construction data to determine the effectiveness of the Sewershed Repair, Replacement, and Rehabilitation (SRRR) projects. The Department also understands that the final post-rehabilitation modeling uses 2025 population data, assumes that all projects within the Sewershed are completed (though some are still pending), and for the County-City boundary, either uses assumptions provided by Baltimore City, or assumes unrestricted discharge at the County-City boundary, since future boundary conditions depend on Baltimore City's own Sewershed projects which are currently pending.

The Department acknowledges that the County's assessment of the **West Low Level Sewershed** concluded that the SRRR projects: did not reduce groundwater infiltration in either WLL1 or WLL3; did reduce inflow into the WLL3 sewer system, but not into the WLL1 sewer system; and are expected to eliminate overflows in WLL3 under the 2-year storm designs and reduce predicted overflow volume by 91% under the 10-year, 6-hour storm design, but not reduce overflows in WLL1. The assessment also concluded that the County's maintenance programs to reduce overflows caused by blockages did successfully reduce non-grease blockages.

The Department also acknowledges that the County's assessment of the **Dead Run Sewershed** concluded that the SRRR projects: resulted in two basins with no effective groundwater infiltration reduction, two with significantly less reduction than expected, and one which met the reduction goal; were effective in reducing inflow into the sewer system throughout Dead Run Sewershed with the exception of DR11; and are expected to help to eliminate/reduce predicted overflows in four of the five basins. The assessment also concluded that the County's maintenance programs to reduce overflows caused by blockages are generally effective at doing so.

The Department acknowledges that the County's assessment of the **Herring Run Sewershed** concluded that the SRRR projects: were somewhat effective at reducing groundwater infiltration in the Herring Run Sewershed; were effective in reducing inflow into the sewer system within both basins; and are expected to reduce predicted overflow volumes between 75% and 80% in the basins. The assessment also concluded that the County's maintenance programs to reduce overflows caused by blockages are generally effective at doing so.

The Department acknowledges that certain analyses of the SRRR projects in the **Gwynns Falls Sewershed** were complicated by having no control basin, and by the substantial alteration of several of the basins in terms of size and tributary length. The Department also acknowledges that the County's assessment nevertheless concluded that the SRRR projects: were effective at reducing groundwater infiltration across the Sewershed; were effective at reducing rainfall inflow throughout the Sewershed; and are expected to eliminate predicted overflow volumes completely in many basins, and reduce the overflow volume between 31% and 75% in others, with the exception of one basin which predicted an increase in overflow volume under certain storm conditions. The assessment also concluded that the County's maintenance programs to reduce overflows caused by blockages are generally effective at doing so.

Based on the results of these assessments, and the information gained, the Department requests an update regarding additional planned projects in the Sewersheds, modified O&M Program components, and/or any next steps intended to address the remaining insufficiencies and move towards the CD goal of eliminating SSOs. In the Gwynns Falls Report, the County's contractor, RJN Group, recommended that the County conduct flow monitoring for model verification at the locations where the model predicts overflows. The Department would be in agreement with this, or other similar ground-truth confirmation, as a first step for all Sewersheds, if more information is needed prior to deciding whether and what additional steps should be taken. **Within the next 30 days, please provide your response in writing to the Department.** The Department also requests that any outstanding projects which were included in the post-construction model (e.g., relief sewers) be clearly identified in each quarterly report until they are complete; and that specific progress updates be provided therein, especially the identification of any changes that would affect modeling assumptions and could be expected to have measurable impact on the results presented in these Reports.

Thank you for your continued cooperation in this matter. If you should have any questions, please contact Ms. Sharon Talley, Chief, Enforcement Division, Compliance Program, at (410) 537-3510 or by email at sharon.talley@maryland.gov.

Sincerely,

Harry E. Hunsicker

Harry E. Hunsicker III, Program Manager
Compliance Program
Water and Science Administration

HEH:jrh

cc: Ted DeBoda, Baltimore County DPW
Baltimore County CD Administrator
James Nolan, Assistant County Attorney
Amanda Pruzinsky, EPA Region III
Nina Rivera, EPA Region III
Randolph Rollman, Baltimore County DPW
Paul Sayan, Baltimore County DPW
Lynn Angotti, MDE OAG
Ellen Cohill, MDE OAG

Michael McCann

From: Jess Herpel -MDE- <jessica.herpel@maryland.gov>
Sent: Wednesday, March 22, 2023 2:06 PM
To: Michael McCann
Cc: Kathy Mohan -MDE-; Arno Laud -MDE-; Patrick Noyes -MDE-
Subject: Re: PIA request

Hi Mr. McCann,

Unfortunately for a period of time when we were working from home during the pandemic, letters were not being date stamped.

That is the letter that we sent electronically on April 22, 2021. The Department has not provided any specific feedback on the Jones Falls Sewershed to date.

Jess Herpel
Enforcement Coordinator
Water and Science Administration
Maryland Department of the Environment
410-537-3518
Website | Facebook | Twitter

On Wed, Mar 22, 2023 at 1:57 PM Michael McCann <michael@mmccannlaw.net> wrote:

> Hi Jess. Regarding your email below, I am trying to confirm the April 22, 2021 letter that you refer to below (as the last correspondence from MDE concerning the PARS. Unfortunately, a number of the letters produced to me from MDE are not dated, which is strange. I believe the attached letter is the April 22, 2021 letter you mention, but it is not dated. Can you confirm it is? And has there been any approval of the PAR for the Jones Falls Sewershed yet?
>
> Thanks!
>
> Michael
>
> **Michael R. McCann**
>
> *Michael R. McCann, PA*
>
> *118 W. Pennsylvania Avenue*

Towson, Maryland 21204

(p) 410-825-2150

(f) 410-825-2149

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From: Jess Herpel -MDE- [mailto:jessica.herpel@maryland.gov]
Sent: Wednesday, February 8, 2023 11:22 AM
To: Michael McCann <michael@mmccannlaw.net>
Cc: Kathy Mohan -MDE- <kathy.mohan@maryland.gov>; Arno Laud -MDE- <arno.laud@maryland.gov>; Patrick Noyes -MDE- <patrick.noyes@maryland.gov>
Subject: Re: PIA request

Michael,

As discussed in our February 1, 2023 email communications, I will reiterate below:

The CD requires submission of the PARs for review and comment. To the best of my knowledge, the latest formal communication regarding any PARs from MDE occurred on April 22, 2021, prior to the submission of the Jones Falls PAR (June 2021), and so it was not included in that letter. The County responded to this letter on July 19, 2022. The Department has not provided formal response back, nor has it separately provided a response to the Jones Falls PAR (beyond acknowledging receipt).

Thanks,

Jess Herpel
Enforcement Coordinator
Water and Science Administration

Maryland Department of the Environment
410-537-3510
Website | Facebook | Twitter

On Wed, Feb 8, 2023 at 7:20 AM Michael McCann <michael@mmccannlaw.net> wrote:

Jess: As you know I reviewed several boxes of documents last week, which were produced in addition to several boxes that I reviewed a couple weeks ago and numerous electronic files sent to me by Kathy.

Amongst the documents produced were approvals and comments from MDE relating to Baltimore County's SRRR Plans and performance assessments from some of the sewersheds in the County. There were no documents regarding any approval or comment on the Performance Assessment for the Jones Falls sewershed.

Please confirm that there are no such approvals or comments.

Thank you.

Michael

Michael R. McCann

Michael R. McCann, PA

118 W. Pennsylvania Avenue

Towson, Maryland 21204

(p) 410-825-2150

(f) 410-825-2149

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Click here to complete a three question customer experience survey.

Click here to complete a three question customer experience survey.

Michael McCann

From: Jess Herpel -MDE- <jessica.herpel@maryland.gov>
Sent: Wednesday, February 8, 2023 11:22 AM
To: Michael McCann
Cc: Kathy Mohan -MDE-; Arno Laud -MDE-; Patrick Noyes -MDE-
Subject: Re: PIA request

Michael,

As discussed in our February 1, 2023 email communications, I will reiterate below:

The CD requires submission of the PARs for review and comment. To the best of my knowledge, the latest formal communication regarding any PARs from MDE occurred on April 22, 2021, prior to the submission of the Jones Falls PAR (June 2021), and so it was not included in that letter. The County responded to this letter on July 19, 2022. The Department has not provided formal response back, nor has it separately provided a response to the Jones Falls PAR (beyond acknowledging receipt).

Thanks,

Jess Herpel
Enforcement Coordinator
Water and Science Administration
Maryland Department of the Environment
410-537-3510
Website | Facebook | Twitter

On Wed, Feb 8, 2023 at 7:20 AM Michael McCann <michael@mmccannlaw.net> wrote:

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>
> Amongst the documents produced were approvals and comments from MDE relating to Baltimore County's SRRR Plans and performance assessments from some of the sewersheds in the County. There were no documents regarding any approval or comment on the Performance Assessment for the Jones Falls sewershed.
>
> Please confirm that there are no such approvals or comments.
>
> Thank you.

Michael

Michael R. McCann

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(p) 410-825-2150

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Click here to complete a three question customer experience survey.

Michael McCann

From: Jess Herpel -MDE- <jessica.herpel@maryland.gov>
Sent: Wednesday, February 1, 2023 4:56 PM
To: Michael McCann
Cc: Kathy Mohan -MDE-; Arno Laud -MDE-; Patrick Noyes -MDE-
Subject: Re: PIA request

Mr. McCann,

To the best of my knowledge, that's all the documentation that Enforcement has which is responsive to your PIA request - at least as I understood it to be modified, to include only formal written communications (e.g., letters, reports, and submissions) between Baltimore County and MDE regarding the CD. We did not review any email communications. To be clear, letters, reports and submissions which were transmitted electronically, as many have been since the pandemic, *were also provided to you*. These are the files that were sent to you electronically. In the event that you are requesting *emails* between MDE and the County, that would require some additional time to provide, and we would need to generate a new estimate for that information. Let me know if you need any clarification on that point.

Regarding a formal response to the Jones Falls PAR, you are correct that we have not provided one. I believe the latest formal communication on the PARs on our part occurred prior to the submission of the Jones Falls PAR, and so it was not included (the April 22, 2021 letter, "Multiple PARs"). The County responded to this letter on July 19, 2022. The Department has not provided formal response back, nor has it separately provided a substantive response to the Jones Falls PAR (beyond perhaps acknowledging receipt).

Regarding your request to meet and discuss the CD further, the Department welcomes the submission of comments, concerns, or other information in order to ensure Baltimore County's compliance with the Consent Decree, but declines your request to meet concerning interpreting the Consent Decree and the SRRR. Please do submit any additional comments, concerns, or other information for the Department's review.

I apologize that such a simple answer took so long to produce. Please let me know if I can be of any further assistance. If you'd like to submit a document as noted above, you can send it to arno.laud@maryland.gov and copy myself.

Thank you,
Jess

Jess Herpel
Enforcement Coordinator
Water and Science Administration
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore, Maryland 21230
jessica.herpel@maryland.gov
410-537-3518
Website | Facebook | Twitter

On Wed, Feb 1, 2023 at 2:16 PM Michael McCann <michael@mmccannlaw.net> wrote:

Good afternoon guys. As you know, I reviewed several boxes of documents yesterday at your offices.

Can you confirm that, other than the documents emailed to me and produced during my two visits, there are no other responsive documents to PIA request?

Regarding the documents that were produced during my two visit, there were several folders of MDE approvals relating the County's SRRR plans and performance assessments for various sewersheds in the County. I did not see an approval of the Performance Assessment for the Jones Falls Sewershed. Please confirm that this approval, in particular, was not issued.

Thank you.

Michael

Michael R. McCann

Michael R. McCann, PA

118 W. Pennsylvania Avenue

Towson, Maryland 21204

(p) 410-825-2150

(f) 410-825-2149

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Click here to complete a three question customer experience survey.

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
10918	13409	21	0.15	3.97	0.00	0.05
11	70352	24	1.63	18.68	0.72	0.16
11897	7052	8	3.72	1.51	0.00	0.45
12	11	24	0.40	9.29	0.72	0.20
13238	7120	8	1.83	1.06	0.44	0.47
13409	9047	21	-0.19	-4.47	0.00	0.05
13939	20805	12	11.76	7.90	0.08	0.50
14317	15315	15	2.45	6.54	0.00	0.10
14454	19876	12	5.12	5.21	0.98	0.45
14455	14454	12	1.46	2.78	0.98	0.43
14456	14455	12	1.59	2.91	0.98	0.42
14458	14456	12	1.02	2.32	0.91	0.45
14546	7188	8	0.57	0.59	0.90	2.00
14547	14546	8	2.87	1.32	0.90	0.62
14548	14547	8	4.80	1.71	0.90	0.52
14565	6885	42	2.14	77.24	33.66	1.00
14937	5134	10	0.55	1.05	0.26	0.35
150	901871	16	3.05	8.66	0.77	0.22
1507	16581	10	14.78	5.45	0.71	0.26
1508	1507	8	0.99	0.78	0.71	0.96
15269	42234	18	1.37	10.33	0.71	0.24
15270	30591	15	1.38	4.91	0.70	0.27
15270	9042	15	1.89	5.74	0.15	0.15
15271	22538	15	2.67	6.83	0.26	0.41
15315	30592	15	2.39	6.45	0.00	0.15
15751	40488	27	0.66	21.21	12.95	0.86
15871	6936	30	0.44	17.56	13.19	0.66
15872	15871	30	0.60	20.58	13.19	0.64
1593	29862	12	0.04	0.43	0.72	0.78
16036	42233	18	0.94	6.58	1.71	0.35
16037	16036	18	0.97	6.69	1.44	0.32
16038	16037	18	1.68	8.81	0.75	0.41
1609	1593	10	0.33	0.81	0.42	0.51
1610	1609	10	0.50	1.01	0.42	0.46
1611	1610	10	0.77	1.24	0.42	0.41
1612	1611	10	1.74	1.87	0.42	0.41
1613	1612	10	0.47	0.97	0.42	0.47
1614	1613	10	0.39	0.88	0.42	0.50
16379	16379N	42	0.16	20.88	35.22	2.00
16379N	6877	42	0.16	21.44	35.22	2.00
16401	C445	8	0.41	0.50	0.23	0.49
16402	16401	8	0.40	0.49	0.23	0.49
16403	16402	8	2.26	1.17	0.23	1.00

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
16404	16403	8	1.56	0.97	0.23	0.35
16535	7330	15	2.02	5.93	1.28	0.33
16536	11897	8	4.15	1.59	0.00	0.10
16581	7328	10	4.34	2.95	0.71	0.35
16595	7333	8	4.68	1.69	0.91	1.00
16596	7333	10	0.50	1.00	1.62	2.00
16604	7320	10	3.39	2.61	0.89	0.99
16742	6982	8	2.42	1.22	0.16	0.27
16743	16742	8	0.65	0.63	0.16	0.36
16744	16743	8	1.02	0.79	0.16	0.32
16745	16744	8	1.07	0.81	0.16	0.32
16746	33093	8	1.00	0.78	0.16	0.33
16747	16746	8	0.72	0.66	0.16	0.35
16748	16747	8	1.03	0.79	0.16	0.32
16749	16748	8	6.64	2.01	0.16	0.21
16750	16750M	8	1.91	1.08	0.16	0.28
16750M	16749	8	1.86	1.06	0.16	0.28
16751	16750	8	1.04	0.80	0.16	0.32
16752	16751	8	0.49	0.55	0.16	0.38
16753	16752	8	0.49	0.55	0.16	0.39
16754	16753	8	0.40	0.49	0.16	0.41
17008	33535	8	5.13	1.77	0.18	0.23
17009	17008	8	4.03	1.57	0.18	0.25
17037	17009	8	5.23	1.79	0.18	0.23
17041	17037	8	5.23	1.79	0.18	0.23
17297	17764	12	1.61	2.92	0.94	0.41
17375	45753	30	2.07	38.12	13.19	0.62
17479	42227	8	1.02	0.79	0.14	0.35
17480	17479	8	1.97	1.10	0.14	0.26
17481	17480	8	5.66	1.86	0.14	0.21
17482	17481	8	6.53	2.00	0.14	0.21
17483	17482	8	4.37	1.63	0.14	0.22
17484	17483	8	1.94	1.09	0.14	0.27
17747	18202	12	42.19	14.96	1.17	1.00
17748	17747	12	1.61	2.92	1.17	0.45
17749	46796	12	5.67	5.48	1.17	0.33
17750	17749	12	0.42	1.49	1.17	0.66
17751	17750	12	0.36	1.38	1.18	0.72
17752	34447	12	0.31	1.28	0.99	0.66
17753	17752	12	0.43	1.51	1.00	0.63
17754	17753	12	0.43	1.51	1.00	0.60
17755	17754	12	0.37	1.40	1.01	0.61
17756	17755	12	0.23	1.10	0.89	0.68

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
17757	17756	12	0.68	1.90	0.91	0.49
17758	17757	12	4.60	4.94	0.91	0.37
17759	17758	12	0.30	1.27	0.91	0.63
17760	17759	12	3.42	4.26	0.92	0.33
17761	19657	12	5.83	5.56	0.93	0.29
17762	17761	12	3.57	4.35	0.93	0.33
17763	19910	12	1.95	3.22	0.94	0.38
17764	17763	12	1.44	2.76	0.94	0.42
17765	48242	12	5.89	5.59	0.35	0.21
17766	17765	12	1.52	2.84	0.35	0.26
17767	17766	12	-0.07	-0.63	0.35	0.54
17768	17767	12	1.15	2.47	0.35	0.46
17769	17768	12	4.01	4.61	0.35	0.28
17770	17769	12	3.46	4.29	0.35	0.22
17771	17770	12	4.80	5.05	0.35	0.20
17772	17771	12	4.42	4.84	0.35	0.21
17773	17772	12	1.43	2.76	0.35	0.26
17774	17773	12	8.83	6.84	0.35	0.18
17775	17774	12	0.89	2.18	0.35	0.28
17949	9039	15	1.61	5.30	0.52	0.23
17969	9040	15	0.86	3.87	0.52	0.25
18	56841	18	-0.57	-5.14	2.02	0.81
18063	17775	12	-0.45	-1.55	0.35	0.86
18064	18063	12	0.76	2.00	0.35	0.77
18202	6885	12	0.61	1.79	1.17	1.00
18241	7311	21	1.20	7.28	7.86	2.00
18297	6958	8	10.17	2.49	0.35	0.27
18298	18297	8	10.97	2.59	0.35	0.27
18298A	18298	8	0.30	0.43	0.35	0.66
18299	18298A	8	0.35	0.46	0.35	0.65
18300	18299	8	0.39	0.49	0.35	0.64
18301	18300	8	2.16	1.15	0.35	0.49
18302	18301	8	4.20	1.60	0.35	0.34
18303	18302	8	6.83	2.04	0.35	0.30
18321	7309	21	0.87	9.56	7.86	0.82
18322	18321	21	1.64	13.13	7.86	0.71
18363	7256	8	0.40	0.49	0.00	0.55
18364	18363	8	0.40	0.49	0.00	0.10
18452	6928	42	0.01	7.10	14.55	0.63
18453	18452	12	1.43	2.75	0.93	0.42
18454	18453	12	2.98	5.17	0.93	0.30
18455	20314	12	2.55	4.78	0.93	0.31
18456	45724	12	1.96	4.19	0.63	0.28

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
18457	18456	12	3.74	5.79	0.63	0.24
18458	18457	12	3.14	5.30	0.63	0.25
18463	18458	10	1.59	2.32	0.54	0.34
18478	18463	8	2.51	1.61	0.54	0.49
18479	18478	8	3.06	1.37	0.54	0.44
18480	18479	8	2.00	1.11	0.54	0.50
18481	18480	8	2.95	1.34	0.54	0.45
18481A	18481	8	3.21	1.40	0.54	0.44
18482	18481A	8	2.77	1.30	0.54	0.46
18483	18482	8	3.23	1.40	0.54	0.49
18484	18483	8	3.01	1.36	0.54	0.45
18485	18484	8	3.63	1.49	0.54	0.43
18486	18485	8	2.66	1.27	0.54	0.47
18496	901391	15	0.24	1.34	0.88	0.58
18497	19001	8	0.38	0.48	0.12	0.35
18497A	18497	8	0.97	0.77	0.12	0.29
18498	18497A	8	0.97	0.77	0.12	0.28
18517	18486	8	3.54	1.47	0.54	0.43
18552	18496	15	0.43	2.73	0.76	0.43
18553	18552	15	0.34	2.45	0.76	0.39
18554	39224	15	0.49	2.91	0.71	0.41
18555	20127	15	0.52	3	0.71	0.34
18586	902012	24	0.32	10.73	9.74	0.71
18586	902012	15	1.43	4.99	0	0.1
18587	18586	8	2	1.11	0.62	1
18588	18587	8	0.61	0.61	0.62	0.9
18589	18588	8	0.6	0.6	0.62	0.97
18590	18589	8	1.19	0.85	0.62	0.84
18591	18590	8	0.61	0.61	0.62	0.95
18592	18591	8	0.61	0.61	0.62	2
18593	18592	8	0.6	0.6	0.62	2
18594	18593	8	1.5	0.96	0.63	1
18595	18594	8	2	1.1	0.63	0.56
18596	18595	8	2	1.11	0.63	0.56
19	18	15	0.25	2.08	0.8	0.43
19001	18496	8	0.4	0.5	0.12	0.35
19141	7308	21	1.24	11.4	9.48	0.79
19142	34175	21	1.36	11.95	3.89	0.71
19143	22225	21	0.18	4.35	3.89	0.62
19143	59276	21	3.58	19.39	3.97	0.7
19657	17760	12	7.02	6.1	0.93	0.28
19706	6947	24	0.72	16.1	11.9	0.66
19707	19706	8	0.39	0.49	0.7	2

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
19711	19808	8	0.4	0.49	0.7	2
19712	19711	8	0.6	0.61	0.7	2
19714	19712	8	0.6	0.61	0.7	2
19715	19714	8	0.4	0.49	0.71	2
19716	19715	8	0.6	0.6	0.72	2
19717	19716	8	0.6	0.6	0.73	2
19808	19707	8	0.4	0.49	0.7	2
19873	6955	24	0.36	11.35	9.15	0.69
19874	19873	12	1.75	3.96	0.98	0.35
19875	19874	12	0.63	2.38	0.98	0.45
19876	19875	12	0.56	1.73	0.98	0.55
19910	17762	12	2.22	3.43	0.93	0.37
20	19	12	-0.03	-0.42	0.1	0.6
20126	18553	15	0.59	3.22	0.76	0.34
20127	18554	15	0.3	2.28	0.71	0.38
20244	7289	8	0.41	0.5	0.54	2
20246	3	8	0.38	0.48	0.54	2
20247	20246	8	0.4	0.49	0.54	2
20248	20247	8	2.5	1.24	0.54	1
20249	20248	8	3.78	1.52	0.55	0.43
20250	20249	8	4.74	1.7	0.55	0.41
20314	18454	12	2.67	4.89	0.93	0.31
20553	37013	27	-0.69	-21.67	3.8	0.5
20753	21328	30	0.11	8.76	9.84	2
20754	20753	30	0.01	1.77	9.83	2
20755	20754	30	0.26	8.76	9.63	2
20756	20755	30	0.11	5.78	9.48	2
20757	20756	30	0.08	4.99	9.48	2
20758	20757	30	0.12	6	9.48	2
20759	20758	30	0.1	5.53	9.48	2
20760	20759	30	0.11	5.75	9.47	2
20761	72975	27	0.07	5.21	8.88	2
20762	21329	27	0.19	8.72	8.81	2
20763	20762	27	0.31	11.21	8.82	1
20764	20763	27	0.18	8.55	8.76	2
20765	20764	27	0.17	8.31	8.66	2
20766	20765	27	0.18	8.57	8.85	2
20767	20766	27	0.32	11.25	9.1	1
20768	20767	18	1.05	6.95	5.44	1
20769	20768	18	0.99	6.76	5.44	1
20770	20769	18	0.69	5.65	5.45	1
20771	20770	18	0.74	3.8	5.45	2
20772	20771	15	1.19	4.55	5.15	2
20773	20772	15	1.18	4.54	4.61	2
20774	20773	15	1.01	4.19	4.65	2
20775	20774	15	1.21	4.6	4.72	2
20776	20775	15	1.81	5.61	4.91	1
20777	30726	15	1.87	5.71	4.82	1
20778	57146	15	1.06	4.29	2.66	1
20779	20778	15	1.52	5.14	2.66	1
20780	20779	15	1.36	4.87	2.18	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
20781	20780	15	1.15	4.47	2.18	0.5
20782	41252	15	0.89	2.55	1.93	0.65
20783	56667	15	1.63	3.47	1.59	0.55
20793	69152	16	1.17	5.36	0.92	0.3
20794	36990	15	2	5.91	0.84	0.28
20795	37148	15	2.33	6.37	0.84	0.47
20796	20795	12	1.94	3.21	0.84	0.36
20797	20796	12	1.88	3.16	0.84	0.36
20798	20797	12	2.3	3.49	0.84	0.35
20799	20798	12	2.41	3.58	0.84	0.35
20803	20799	12	2.54	3.67	0.76	0.33
20804	20803	12	5.66	5.48	0.76	0.27
20805	20804	12	0.85	2.12	0.76	0.42
20806	20805	12	3.74	4.45	0.72	0.29
20807	20806	12	1.16	2.48	0.72	0.38
20808	20807	12	0.42	1.49	0.72	0.5
20809	20808	12	0.73	1.97	0.72	0.6
20810	20809	12	0.48	1.6	0.72	0.48
20811	20810	12	0.59	1.77	0.72	0.45
20812	20811	12	0.7	1.93	0.72	0.43
21	20	12	2.61	3.72	0.1	0.57
21042	41529	15	0.37	2.52	0.71	0.36
21043	21042	15	0.36	2.51	0.71	0.36
21044	21043	8	1.01	0.78	0.33	0.47
21045	21043	15	0.94	4.05	0.35	0.24
21046	21045	15	0.11	1.39	0.35	0.32
21047	21044	8	1.01	0.78	0.05	0.2
21048	21047	8	0.83	0.71	0.05	0.21
21049	21048	8	0.79	0.7	0.05	0.21
21050	21049	8	1.86	1.07	0.05	0.18
21051	21050	8	2.21	1.16	0.05	0.17
21052	21051	8	3	1.35	0.05	0.16
21053	21049	8	0.98	0.77	0	0.1
21054	21043	8	1.94	1.09	0.03	0.15
21055	21054	8	1.78	1.04	0.03	0.16
21056	21055	8	1.76	1.04	0.03	0.16
21057	21056	8	1.77	1.04	0.03	0.16
21058	21057	8	1.73	1.03	0.03	0.16
21059	21044	8	1.02	0.79	0.28	0.43
21060	21059	8	1	0.78	0.28	0.43
21061	21060	8	3.02	1.36	0.28	0.33
21062	21061	8	1.02	0.79	0.28	0.43
21063	21062	8	1.02	0.79	0.28	0.43
21064	21063	8	0.86	0.72	0.22	0.39
21065	21064	8	0.93	0.75	0.22	0.38
21066	21065	8	0.88	0.73	0.22	0.39
21067	21066	8	0.9	0.74	0.22	0.38
21068	21067	8	0.99	0.78	0.05	0.2
21071	21067	8	0.88	0.73	0.17	0.35
21328	6888	30	0.32	14.98	9.84	1
21329	20761	27	0.19	8.83	8.81	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
21589	18596	8	1.53	0.97	0.63	0.6
21590	21589	8	0.79	0.69	0.26	0.44
21591	21590	8	2.02	1.11	0.26	0.35
21592	21591	8	2.05	1.12	0.26	0.35
21593	21592	8	2	1.11	0.26	0.35
21594	21593	8	3.35	1.43	0.26	0.3
21595	21594	8	6.07	1.92	0.26	0.27
21620	21621	8	0.61	0.61	0.04	0.21
21621	52550	8	2.69	1.28	0.04	0.48
21622	52551	8	2.76	1.3	0.87	0.61
21623	21622	8	0.93	0.75	0.39	0.52
21624	21623	8	2.02	1.11	0.39	0.43
21625	21624	8	2.38	1.21	0.39	0.41
21626	21625	8	2.91	1.33	0.39	0.39
21627	21626	8	0.6	0.6	0.39	0.6
21628	21627	8	0.31	0.44	0.39	0.74
21629	21628	8	0.39	0.49	0.39	0.7
21630	21629	8	0.4	0.49	0.39	0.69
21631	21630	8	0.4	0.5	0.39	0.69
21634	21631	8	2.99	1.35	0.39	0.38
21635	21634	8	2.65	1.27	0.39	0.4
21636	21635	8	5.84	1.89	0.39	0.33
21638	21636	8	0.99	0.78	0.39	0.51
21641	21622	8	1.48	0.95	0.56	0.57
21642	21641	8	0.61	0.61	0.56	0.77
21643	21642	8	0.59	0.6	0.56	0.78
21645	21643	8	0.61	0.61	0.56	0.76
21646	21645	8	0.59	0.6	0.56	0.78
21647	21646	8	1.58	0.98	0.56	0.64
21648	21647	8	3.99	1.56	0.56	0.43
21649	21648	8	6.08	1.93	0.56	0.38
21651	21649	8	0.59	0.6	0.56	0.78
21652	21651	8	0.4	0.49	0.53	2
21653	21652	8	0.41	0.5	0.42	0.93
21654	21653	8	0.4	0.49	0.42	0.72
21655	21654	8	0.95	0.76	0.42	0.57
21805	7108	8	2.53	1.24	0.18	0.28
21806	21805	8	0.59	0.6	0.18	0.4
21807	21806	8	0.61	0.61	0.18	0.39
22	19	15	0.41	2.66	0.71	0.43
22009	6957	24	0.47	13.03	8.09	0.65
22010	22009	24	0.4	11.99	7.74	0.58
22011	22010	24	0.6	14.74	7.74	0.56
22012	22011	24	0.6	14.71	7.74	0.51
22013	22012	24	0.63	15.07	7.74	0.51
22067	19717	8	2.62	1.27	1.1	1
22090	21620	8	0.61	0.61	0.04	0.21
22091	22090	8	0.6	0.6	0.04	0.21
22092	22091	8	1.06	0.8	0.04	0.19
22093	22092	8	1.44	0.94	0.04	0.18
22094	22093	8	1.82	1.05	0.04	0.17

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
22097	22094	8	3.89	1.54	0.04	0.15
22098	22097	8	4.15	1.59	0.04	0.15
22099	22098	8	1.41	0.93	0.04	0.18
22100	22099	8	0.57	0.59	0.04	0.21
22101	22100	8	0.59	0.6	0.04	0.21
22222	7314	21	0.83	6.07	7.54	2
22223	22222	21	0.76	5.79	7.54	2
22225	19142	21	0.41	6.53	3.89	0.56
22454	6921	12	0.79	1.33	0.22	1
22455	22454	12	0.4	0.95	0.21	0.33
22456	22455	12	0.99	1.49	0.21	0.36
22457	22456	12	0.46	1.01	0.21	0.32
22458	45585	12	1.23	1.66	0.21	0.26
22462	22458	12	1.24	1.67	0.21	0.26
22463	22462	12	1.98	3.24	0.21	0.2
22463A	22463	12	1.66	2.96	0.21	0.21
22464	22463A	12	1.58	2.89	0.21	0.21
22465	45592	12	0.6	1.79	0.21	0.24
22466	22465	12	0.42	1.49	0.21	0.26
22482	45567	12	2	3.26	0.21	0.2
22489	22482	12	2.71	3.79	0.21	0.19
22490	22489	12	2.36	3.54	0.21	0.19
22538	15270	15	3.59	7.91	0.85	0.24
2254	742	10	0.44	0.94	0	0.08
2255	2254	10	0.79	1.26	0	0.08
23	22	15	1.19	4.55	0.71	0.36
23057	7162	8	0.51	0.56	0.14	0.36
23775	18517	8	6.07	1.93	0.31	0.29
23776	23775	8	4.24	1.61	0.31	0.31
23777	23776	8	1.12	0.83	0.31	0.44
23778	23777	8	0.6	0.61	0.31	0.52
23779	23778	8	0.68	0.64	0.31	0.5
2402	901892	6	3.29	0.66	0.66	2
2402	SSO120-oufall	8	41.88	5.06	0.32	0.2
2403	2402	8	2.49	1.23	0.98	1
2404	F5313-missing	8	3.52	1.46	0.98	1
2405	2404	8	0.35	0.46	0.77	2
2416	2404	8	0.4	0.49	0.22	0.73
27	23	15	1.23	4.64	0.71	0.29
2900	7335	10	15.51	5.58	0.89	0.29
2936	1508	10	0.52	1.02	0.54	0.54
2937	2936	10	0.52	1.02	0.28	0.44
2938	2937	10	0.44	0.94	0.28	0.44
2939	2938	10	0.61	1.1	0.28	0.37
2940	2939	10	2.82	2.38	0.28	0.25
2941	2940	10	1.91	1.96	0.28	0.27
2942	2941	10	0.35	0.84	0.28	0.41
2943	4971	10	1.46	1.71	0.28	0.29
2945	2943	10	0.93	1.37	0.28	0.31
2946	2945	10	1.81	1.91	0.28	0.28
2947	2946	10	1.93	1.97	0.28	0.27

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
29644	37991	8	0.5	0.55	0.35	0.54
29645	30342	15	0.58	3.18	0	0.05
29645	33471	30	0.65	21.3	0	0.05
29861	20812	12	0.05	0.51	0.72	0.53
29862	29861	10	0.31	0.78	0.72	0.75
29873	20799	10	4.86	3.12	0.13	0.17
3	20244	8	0.39	0.49	0.54	2
30153	21046	8	0.38	0.48	0.35	0.89
30155	30153	8	0.44	0.52	0.35	0.61
30156	30155	8	0.88	0.73	0.35	0.5
30157	30156	8	0.6	0.6	0.35	0.56
30158	30157	8	0.61	0.61	0.35	0.56
30159	30158	8	0.55	0.58	0.35	0.57
30342	37991	30	0.41	16.87	0	0.08
30588	16037	18	0.62	5.35	0.69	0.25
30588A	30588	15	1.15	4.48	0.69	0.28
30589	30588A	15	1.72	5.48	0.69	0.26
30590	30589	15	1.19	4.56	0.69	0.28
30590A	30590	15	0.79	3.71	0.7	0.3
30590B	30590A	15	1.88	5.72	0.7	0.28
30591	30590B	15	0.77	3.67	0.7	0.3
30592	15271	15	2.04	5.96	0.26	0.17
30593	30592	15	-2.94	-7.17	0.26	0.48
30594	30593	15	2.24	6.25	0.26	0.4
30595	30594	15	2.79	6.97	0	0.1
30596	30595	15	3.59	7.91	0	0.1
30597	30596	15	3.01	7.25	0	0.1
30598	30597	15	0.88	3.91	0	0.05
30616	22067	8	0.42	0.51	1.1	2
30617	30616	8	2.76	1.3	1.1	1
30618	30617	8	3.89	1.54	1.1	1
30619	30618	8	3.8	1.52	1.1	0.85
30620	30619	8	3.53	1.47	1.1	0.65
30621	30620	8	2.89	1.33	1.1	0.71
30622	30621	8	0.92	0.75	1.1	2
30623	30622	8	0.92	0.75	1.1	2
30624	30623	8	9.81	2.45	1.1	1
30625	30624	8	5.85	1.89	1.1	0.56
30626	30625	8	5.07	1.76	1.1	0.58
30627	30626	8	1.53	0.97	1.1	2
30628	30627	8	2.23	1.17	1.1	1
30726	20776	15	1.01	4.2	4.34	2
30727	53271	8	2	1.1	1.1	1
30953	31001	8	0.43	0.51	0.17	0.42
30957	30953	8	0.61	0.61	0.17	0.37
30958	59113	8	4.84	1.72	0.37	1
30959	30958	8	1.4	0.93	0.37	0.45
30960	30959	8	1.4	0.92	0.37	0.45
30963	30960	8	2.86	1.32	0.17	0.3
30968	65375	18	1.6	8.6	0	0.11
31001	21071	8	0.47	0.54	0.17	0.4

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
31151	30159	8	0.61	0.61	0.35	0.56
31153	31151	8	1.36	0.91	0.35	0.44
31154	31153	8	1.7	1.02	0.35	0.42
31155	31154	8	1.7	1.02	0.35	0.42
31828	21655	8	2.04	1.12	0.42	0.59
31829	31828	8	1	0.78	0.42	0.53
31830	31829	8	1.39	0.92	0.42	0.49
31831	31830	8	1.19	0.85	0.42	0.5
31832	31831	8	1.29	0.89	0.42	0.5
31833	31832	8	1.98	1.1	0.42	0.44
31834	31833	8	4.03	1.57	0.42	0.37
31835	31834	8	1.04	0.8	0.33	0.46
32254	33532	12	0.16	0.6	0.44	0.55
32257	32254	12	0.47	1.03	0.44	0.46
32258	32257	12	0.37	0.91	0.44	0.5
32259	32258	12	0.58	1.75	0.44	0.35
32260	32259	12	-0.01	-0.19	0.44	0.62
32261	32260	12	1.04	2.35	0.4	0.3
32262	32261	12	1.25	2.57	0.4	0.28
32263	32262	12	0.78	2.03	0.4	0.31
32394	19706	24	1.22	20.96	11.2	0.64
32395	32394	8	1.59	0.98	0.99	2
32396	32395	8	2.1	1.13	0.99	1
32397	32396	8	4.36	1.63	0.99	0.62
32475	6989	15	0.68	3.44	0.1	0.13
33093	16745	8	0.95	0.76	0.16	0.33
33295	12	24	0.51	10.44	0.72	0.62
33296	52660	18	1.12	7.17	1.3	0.3
33437	42234	30	0.71	29	4.35	0.27
33438	33437	30	0.95	33.56	4.35	0.25
33439	33438	27	-0.83	-23.73	4.35	0.74
33440	33439	27	0.33	15.04	4.35	0.68
33442	38773	27	0.79	23.12	4.25	0.29
33443	33442	27	0.69	21.67	4.25	0.3
33444	6970	10	-0.49	-1.29	0	0.08
33444	33443	27	0.73	22.2	4.25	0.3
33445	33444	27	0.8	23.23	4.1	0.29
33446	33445	27	1.08	27.09	4.1	0.28
33447	33446	27	1.52	32.04	4.05	0.26
33448	33447	27	1.76	34.51	4.05	0.25
33451	37014	27	0.53	14.56	3.63	0.35
33452	33451	27	0.78	17.72	1.75	0.3
33453	33452	27	0.96	19.63	1.75	0.21
33454	33453	27	1.03	20.32	1.75	0.22
33455	33454	27	1.42	23.87	1.75	0.21
33456	33455	27	1.46	24.22	1.75	0.21
33457	33456	27	1.5	24.53	1.75	0.21
33458	33457	27	3.25	36.06	1.75	0.18
33459	33458	27	0.47	13.75	1.75	0.25
33460	33459	27	1.03	20.33	1.75	0.22
33461	33460	27	0.76	17.5	1.75	0.22

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
33462	33461	27	0.78	17.65	1.75	0.22
33463	33462	27	0.79	17.85	1.75	0.22
33464	33463	27	0.73	17.12	1.75	0.22
33465	33464	27	0.74	17.18	1.75	0.22
33466	33465	27	0.66	16.23	1.75	0.22
33470	30342	30	0.48	18.45	0	0.05
33471	33470	30	0.6	20.51	0	0.05
33527	20783	15	1.12	2.88	1.59	0.54
33528	33527	12	1.04	1.53	0.61	0.45
33529	33528	12	0.67	1.23	0.61	0.49
33530	33529	10	2.95	1.58	0.61	0.51
33531	33530	10	3.61	1.75	0.61	0.42
33532	33531	10	3.77	1.79	0.61	0.42
33533	33532	8	5.87	1.89	0.18	0.23
33534	33533	8	4.62	1.68	0.18	0.24
33535	57364	8	5.24	1.79	0.18	0.23
33707	20761	12	-0.55	-1.71	0.25	1
33708	33707	12	2.37	3.55	0.79	1
33709	33708	12	2.7	3.79	0.78	1
33710	33709	12	2.28	3.48	0.78	0.34
33711	33710	12	2.06	3.31	0.78	0.35
33989	32397	8	4.08	1.58	0.99	0.58
33990	33989	8	4.08	1.58	0.99	0.58
33991	33990	8	7.13	2.09	0.99	0.5
33992	33991	8	2.3	1.18	0.99	0.71
33993	33992	8	0.6	0.61	0.99	2
33994	33993	8	0.96	0.76	0.99	2
33995	33994	8	3.61	1.48	0.99	1
33996	33995	8	2.8	1.31	0.99	0.66
33997	33996	8	0.59	0.6	0.99	2
33998	33997	8	0.6	0.61	0.99	2
33999	33998	8	2.39	1.21	1.18	1
34000	33999	8	2.37	1.2	1.18	1
34175	19141	21	1.14	10.96	8.97	0.75
34176	59274	12	4.17	6.12	1.13	0.31
34177	34176	12	5.25	6.86	1.13	0.29
34178	34177	12	2.31	4.55	1.13	0.39
34179	34178	12	1.84	4.06	1.13	0.37
34180	34179	12	1.87	3.15	0.16	0.25
34209	31835	8	0.6	0.6	0.33	0.54
34210	34209	8	0.59	0.6	0.33	0.54
34211	34210	8	0.6	0.61	0.33	0.54
34212	34211	8	0.65	0.63	0.33	0.53
34213	34212	8	2.36	1.2	0.33	0.38
34214	34213	8	3.17	1.39	0.33	0.35
34215	34214	8	3.16	1.39	0.33	0.35
34216	34215	8	3.13	1.38	0.33	0.35
34217	34216	8	4.46	1.65	0.33	0.32
34218	34217	8	1.96	1.09	0.14	0.27
34381	20767	24	0.2	6.52	3.99	1
34382	34381	24	0.24	7.1	4.05	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
34383	34382	24	0.36	8.82	4.3	1
34384	34383	24	0.27	4.98	2.8	1
34385	34384	24	0.3	5.19	2.81	1
34447	17751	12	0.44	1.53	1.18	0.66
34836	33711	12	0.79	5.33	0.78	0.35
35527	21652	8	1.94	1.09	0.12	0.24
35528	35527	8	1.88	1.07	0.12	0.24
35529	35528	8	3.17	1.39	0.12	0.24
35530	35529	8	3.4	1.44	0.12	0.21
35531	35530	8	4.22	1.6	0.12	0.21
35532	35531	8	4.26	1.61	0.12	0.21
35533	35532	8	4.45	1.65	0.12	0.21
35534	35533	8	4.81	1.71	0.12	0.2
35535	35534	8	4.48	1.65	0.12	0.21
35536	35535	8	4.59	1.67	0.12	0.2
35537	35536	8	4.4	1.64	0.12	0.21
35538	35537	8	4.31	1.62	0.12	0.21
35539	35538	8	2.91	1.33	0.12	0.22
35551	16404	8	7.51	2.14	0.23	0.24
36911	34383	18	1.1	7.13	1.96	1
36912	36911	18	1.63	8.66	1.96	0.34
36913	36912	18	0.84	6.21	1.97	0.39
36914	36913	18	1.57	8.51	1.96	0.34
36915	36914	18	1.99	9.59	1.96	0.32
36916	36915	18	1.73	8.92	1.96	0.34
36917	36916	18	1.41	8.06	1.96	0.35
36918	49997	18	2.34	10.39	1.96	0.31
36919	36918	18	2.34	10.38	1.93	0.31
36920	36919	18	2.22	10.12	1.93	0.31
36921	36920	18	3.23	12.2	1.86	0.28
36922	36921	18	1.89	9.32	1.86	0.32
36923	36922	18	1.44	8.14	1.86	0.34
36924	36923	12	1.46	2.78	1.86	0.61
36925	36924	18	2.33	6.74	1.77	0.36
36926	36925	15	1.64	3.48	1.77	0.51
36927	36926	18	1.65	5.67	1.77	0.41
36928	36927	15	1.77	3.61	1.74	0.5
36929	36928	15	1.7	3.54	1.74	0.51
36930	36929	15	0.97	2.67	1.7	0.58
36931	36930	15	1.01	2.72	1.7	0.59
36933	52089	15	1.71	3.55	1.71	0.5
36934	36933	15	1.76	3.6	1.68	0.49
36935	36934	15	2.07	3.9	1.68	0.47
36936	36935	15	1.86	3.71	1.68	0.49
36937	36936	15	2.23	4.05	1.68	0.46
36938	36937	15	2.5	6.6	1.68	0.36
36939	36938	15	2.03	5.95	1.65	0.37
36940	36939	15	1.88	5.73	1.65	0.38
36941	36940	15	0.8	3.75	1.65	0.47
36942	36941	15	0.79	3.72	1.65	0.47
36944	47025	15	0.83	3.8	1.63	0.46

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
36945	47036	15	1.39	4.92	1.58	0.41
36946	42603	15	0.34	2.44	1.53	0.52
36947	36946	15	1.88	5.72	1.5	0.45
36948	52364	15	1.42	4.97	1.51	0.39
36949	36948	15	0.68	3.44	1.51	0.47
36950	36949	15	1.11	4.39	1.51	0.42
36951	36950	15	1.15	4.48	1.4	0.4
36952	36951	15	1.08	4.34	1.41	0.41
36953	38072	15	0.96	4.09	0.95	0.42
36954	36953	12	1.67	2.97	0.3	0.23
36955	38085	12	0.82	2.09	0.17	0.26
36956	36955	12	3.2	4.12	0.17	0.17
36957	36956	12	1.25	2.57	0.17	0.21
36958	36957	12	3.24	4.14	0.17	0.17
36959	36958	12	2.92	3.94	0.17	0.17
36960	36959	12	2.47	3.62	0.17	0.18
36961	36960	12	3.34	4.21	0.17	0.17
36962	36961	12	3.48	4.3	0.17	0.17
36963	36962	12	3.74	4.46	0.17	0.16
36990	20793	15	1.73	5.49	0.86	0.45
37009	33448	27	0.59	19.98	3.83	0.3
37010	37009	27	0.73	22.18	3.8	0.28
37011	37010	27	0.61	20.31	3.8	0.29
37012	37011	27	0.88	24.41	3.8	0.27
37013	37012	27	0.43	17.06	3.8	0.33
37014	20553	27	0.77	22.86	3.63	0.43
37030	65333	15	2.94	7.16	0.55	0.24
37031	37030	12	0.29	1.24	0.55	0.45
37032	37031	12	1.38	2.7	0.55	0.35
37054	6946	8	2.59	1.26	0.39	0.4
37055	37054	8	1.59	0.98	0.39	0.45
37056	37055	8	1.25	0.87	0.39	0.48
37057	37056	8	0.98	0.77	0.39	0.51
37058	37057	8	0.99	0.78	0.39	0.51
37059	38271	8	1.27	0.88	0.39	0.48
37060	37059	8	5.04	1.75	0.39	0.34
37061	37060	8	4.59	1.67	0.39	0.35
37148	20794	15	1.01	4.2	0.84	0.32
37986	33466	27	1.43	23.9	1.69	0.21
37987	37986	30	0.4	16.78	1.69	0.22
37988	37987	30	0.41	16.97	1.69	0.22
37989	37988	30	0.4	16.71	1.69	0.22
37990	37989	30	0.55	19.62	1.69	0.21
37991	37990	30	0.41	16.93	0.34	0.2
38072	36952	15	0.55	3.11	1.41	0.48
38073	38072	12	1.9	3.17	0.68	0.33
38074	38073	12	1.16	2.48	0.68	0.37
38075	38074	12	1.94	3.21	0.68	0.33
38076	38075	12	1.57	2.89	0.69	0.35
38077	38076	12	1.97	3.23	0.69	0.33
38078	38077	12	1.52	2.84	0.69	0.35

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38079	38078	12	0.81	2.08	0.69	0.41
38080	38079	12	1.2	2.52	0.7	0.37
38081	38080	12	0.69	1.91	0.7	0.43
38083	38081	12	0.53	1.68	0.7	0.46
38084	38083	12	3.86	4.52	0.27	0.31
38085	36954	12	0.93	2.22	0.3	0.26
38269	37058	8	1	0.78	0.39	0.51
38270	38269	8	0.9	0.74	0.39	0.53
38271	38270	8	1.72	1.02	0.39	0.44
38273	38083	8	0.69	0.65	0.48	0.64
38452	36953	8	0.1	0.25	0.66	2
38453	38452	8	4.49	1.66	0.67	1
38454	38453	8	3.34	1.43	0.68	0.5
38455	38454	8	0.84	0.71	0.38	0.53
38456	38455	8	6.64	2.01	0.38	0.31
38457	38456	8	5.3	1.8	0.38	0.33
38458	38457	8	2.04	1.12	0.38	0.42
38459	38458	8	0.54	0.58	0.38	0.61
38460	38459	8	0.53	0.57	0.38	0.62
38461	38460	8	0.46	0.53	0.38	0.64
38462	38461	8	1.63	1	0.39	0.44
38463	38462	8	4.76	1.71	0.39	0.34
38464	38463	8	0.07	0.2	0.39	2
38465	38464	8	0.58	0.59	0.39	1
38525	6952	24	0.38	11.66	10.21	0.72
38526	38525	15	1.69	5.43	0.56	0.58
38527	38526	15	1.3	4.76	0.56	0.25
38528	38527	15	0.99	4.15	0.56	0.25
38529	38528	15	1.45	5.03	0.56	0.25
38530	38529	15	1.12	4.42	0.56	0.26
38530A	38530	15	0	0	0.56	0.37
38531	38530A	15	0.72	3.54	0.56	0.37
38532	38531	15	0.62	3.29	0.56	0.28
38533	38838	15	2.21	6.21	0.56	0.22
38534	38839	15	1.86	5.7	0.56	0.28
38535	38534	15	0.63	3.32	0.56	0.28
38536	38535	15	-0.13	-1.48	0.56	0.43
38537	38536	15	0.62	3.28	0.56	0.28
38538	38537	15	0.82	3.79	0.52	0.26
38538A	38538	15	3.35	7.64	0.52	0.2
38539	38538A	15	1.17	4.52	0.52	0.25
38581	21807	8	1.93	1.08	0.18	0.29
38582	38581	8	1.51	0.96	0.18	1
38642	38539	15	3.72	8.05	0.52	0.24
38643	38642	15	0.5	2.96	0.52	0.29
38644	38643	15	2.66	6.81	0.52	0.21
38645	38644	15	0.27	2.19	0.43	0.3
38646	39458	15	0.5	2.95	0.43	0.26
38647	38646	15	1.2	4.58	0.43	0.32
38648	38647	15	0.89	3.94	0.43	0.23
38649	38648	15	0.71	3.52	0.19	0.18

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38682	18498	8	0.69	0.65	0.12	0.31
38683	38682	8	0.66	0.63	0.12	0.31
38684	38683	8	0.43	0.51	0.12	0.35
38773	33440	27	0.58	19.8	4.35	0.46
38774	38773	8	0.42	0.51	0.13	0.36
38775	38774	8	1.13	0.83	0.13	0.29
38776	38775	8	1.9	1.08	0.13	0.39
38777	38776	8	1	0.78	0.13	0.29
38778	38777	8	1.01	0.79	0.13	0.29
38779	38778	8	1.4	0.92	0.13	0.28
38780	38779	8	0.61	0.61	0.13	0.33
38781	38780	8	4.14	1.59	0.13	0.22
38782	38781	8	4.9	1.73	0.13	0.21
38838	38532	15	1.63	5.33	0.56	0.24
38839	38533	15	0.52	3.01	0.56	0.29
39117	38084	12	1.95	3.22	0.27	0.22
39118	39117	12	0.59	1.77	0.27	0.27
39224	20126	15	0.1	1.32	0.76	0.46
39225	39224	8	0.63	0.62	0.06	0.23
39458	38645	15	0.45	2.8	0.43	0.27
39733	23779	12	2.87	3.9	0.31	0.21
39734	39733	12	0.47	1.58	0.31	0.32
39735	39734	12	-0.02	-0.3	0.31	0.56
39736	39735	12	1.38	2.7	0.31	0.51
39737	39736	12	-0.15	-0.9	0.31	0.69
39738	39737	12	0.85	2.12	0.31	0.64
39739	39738	12	0.13	0.84	0.31	0.39
39741	39739	12	0.4	1.45	0.31	0.39
40488	6941	27	0.66	10.59	12.95	0.85
41020	38582	8	2.34	1.19	0.18	0.28
41036	38273	8	0.42	0.51	0.48	0.77
41037	41036	8	0.41	0.5	0.48	0.83
41038	41037	8	0.5	0.55	0.21	0.43
41039	41038	8	0.64	0.63	0.21	0.42
41040	41039	8	0.54	0.58	0.21	0.43
41042	41037	8	8.15	2.23	0.31	0.93
41043	41042	8	1.16	0.84	0.31	0.43
41044	41043	8	1.13	0.83	0.31	0.44
41045	41044	8	6.18	1.94	0.32	0.29
41114	41428	10	0.82	1.28	0.33	0.4
41115	41114	10	0.42	0.92	0.33	0.42
41116	41115	10	0.22	0.67	0.33	0.5
41117	41429	10	0.42	0.92	0.33	0.42
41118	41117	10	2.42	2.21	0.33	0.28
41119	41118	10	1.04	1.44	0.33	0.34
41120	41119	10	0.44	0.94	0.33	0.42
41121	41120	10	0.45	0.95	0.33	0.42
41122	41121	10	1.99	2	0.33	0.33
41123	41122	10	1.04	1.44	0.33	0.34
41124	41123	10	0.68	1.17	0.33	0.37
41125	41124	10	0.07	0.38	0.33	0.48

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
41126	41125	10	1.32	1.62	0.33	0.59
41127	41126	10	1.24	1.57	0.33	0.33
41128	41127	10	0.89	1.33	0.33	0.35
41129	41128	10	0.64	1.14	0.33	0.37
41130	41129	10	0.62	1.11	0.33	0.38
41131	41130	10	0.63	1.12	0.33	0.5
41132	41131	10	0.41	0.9	0.33	0.43
41133	41132	10	2.08	2.04	0.33	0.37
41134	41133	10	0.44	0.94	0	0.26
41135	41134	10	0.44	0.94	0	0.08
41136	41135	10	-0.26	-0.72	0	0.08
41137	41136	10	0.62	1.12	0	0.08
41138	41137	10	0.42	0.92	0	0.08
41139	41138	10	0.54	1.05	0	0.08
41140	41139	10	0.18	0.59	0	0.08
41252	20781	15	0.55	3.1	2.18	0.63
41427	1593	12	-1.16	-2.48	0.33	0.62
41428	41427	12	0.35	1.36	0.33	0.52
41429	41116	10	2.33	2.16	0.33	0.38
41434	35551	8	1.9	1.08	0.23	0.33
41529	41530	16	0.76	4.32	0.71	0.28
41530	43502	16	0.27	2.58	0.71	0.36
41917	39225	8	0.49	0.54	0.06	0.24
42050	72974	14	2.18	13.35	0.72	0.21
42051	42050	14	21.71	42.09	0.72	0.13
42052	42051	15	1.94	5.81	0.72	0.26
42053	42052	15	0.35	2.46	0.72	0.37
42054	42053	15	0.77	3.67	0.72	0.3
42055	42054	15	1.19	4.56	0.72	0.29
42224	15269	8	0.62	0.62	0.14	0.34
42225	42224	8	4.94	1.74	0.14	0.22
42226	42225	8	0.6	0.6	0.14	0.35
42227	42226	8	0.6	0.61	0.14	0.35
42228	22013	24	0.36	11.46	7.71	0.6
42229	42228	24	1.62	18.63	2.67	0.4
42230	48063	24	2.79	24.44	1.71	0.2
42231	42230	24	2.47	22.99	1.71	0.21
42232	42231	24	0.79	12.99	1.71	0.25
42233	42232	24	0.25	7.28	1.71	0.33
42234	42228	30	0.76	29.98	5.05	0.32
42603	36945	15	0.99	4.16	1.56	0.43
43381	150	15	122.06	46.14	0.65	0.24
43382	43381	15	0.26	2.12	0.65	0.38
43383	43382	15	3.57	7.89	0.65	0.38
43384	43383	12	5.33	5.32	0.55	0.24
43385	43384	12	1.03	2.33	0.22	0.24
43386	43385	12	1.95	3.22	0.17	0.19
43387	57167	12	3.51	4.32	0.17	0.17
43501	18555	18	0.38	4.2	0.71	0.28
43502	43501	16	0.55	3.68	0.71	0.3
43786	44225	12	0.6	1.79	0.82	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
43787	43786	8	0.91	0.74	0.51	1
43788	43787	8	0.47	0.54	0.51	1
43789	43788	8	0.95	0.5	0.51	2
43790	43789	8	0.24	0.25	0.51	2
43791	43790	8	0.46	0.35	0.55	2
43792	43791	8	0.42	0.33	0.55	2
43793	43792	8	0.53	0.37	0.53	2
43794	43793	8	0.45	0.52	0.6	2
43794A	43794	8	0.44	0.52	0.48	1
43795	43794A	8	0.63	0.62	0.48	1
43796	43795	8	0.51	0.56	0.48	1
43797	43796	8	0.52	0.56	0.22	1
43798	43797	8	0.52	0.56	0.22	1
43799	43798	8	0.52	0.56	0.27	1
43800	43799	8	1.43	0.94	0.29	1
43801	43796	8	0.79	0.7	0.34	1
43802	43801	8	1.86	1.06	0.36	1
43803	43802	8	2.8	1.31	0.36	0.37
43804	43803	8	2.5	1.23	0.36	0.38
43805	43804	8	3.5	1.46	0.36	0.35
43810	43800	8	0.52	0.57	0.31	1
43811	43810	8	0.52	0.56	0.31	1
43812	43811	8	0.52	0.56	0.31	0.79
43813	43812	8	0.52	0.56	0.31	0.54
43814	43813	8	1.7	1.02	0.31	0.39
43815	43814	8	0.51	0.56	0.31	0.55
43818	43815	8	1.88	1.07	0.31	0.4
43819	43794	8	-0.04	-0.15	0.55	1
43820	43819	8	0.5	0.55	0.55	1
43821	43820	8	0.92	0.75	0.55	1
43822	43821	8	0.52	0.57	0.55	1
43823	43822	8	0.74	0.67	0.56	1
43824	43823	8	0.62	0.61	0.57	1
43825	43824	15	0.54	3.07	0.59	0.97
43826	52024	15	0.56	3.12	0	0.25
43865	42055	12	0.71	1.94	0.19	0.22
44208	34385	24	0.24	4.66	1.78	1
44209	44208	24	0.29	5.12	1.78	1
44210	44209	10	0.32	0.52	1.78	2
44211	44210	10	0.32	0.8	1.21	2
44212	44211	10	0.32	0.8	1.21	2
44213	44212	10	0.33	0.81	1.2	2
44214	53270	10	0.38	0.87	0.99	2
44215	44214	10	0.32	0.8	0.99	2
44216	44215	10	0.32	0.8	1.03	2
44217	44216	10	0.35	0.84	0.87	2
44218	44217	10	0.31	0.78	0.87	2
44219	44218	10	0.31	0.79	0.87	2
44220	44219	10	0.23	0.68	1.08	2
44221	44220	10	0.26	0.72	1.08	2
44222	44221	10	0.21	0.65	1.08	2

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
44223	44222	10	0.3	0.78	1.11	2
44224	44223	10	0.2	0.63	0.82	2
44225	44224	10	0.23	0.69	0.82	2
44548	20777	15	1.05	4.28	4.82	2
45056	41045	8	2.31	1.19	0.32	0.37
45057	45056	8	0.93	0.75	0.32	0.48
45058	45057	8	1.56	0.98	0.33	0.42
45059	45058	8	3.38	1.44	0.34	0.35
45563	22466	12	4.23	4.74	0.21	0.42
45564	45563	12	1.4	2.73	0.21	0.21
45564A	45564	12	0.46	1.55	0.21	0.26
45565	45564A	12	2.42	3.59	0.21	0.21
45566	45565	12	4.26	4.75	0.21	0.23
45567	45566	12	3.74	4.46	0.21	0.18
45568	22490	12	3.77	4.47	0.21	0.18
45585	22457	12	0.6	1.16	0.21	0.3
45592	22464	12	1.07	2.38	0.21	0.22
45724	18455	12	1.87	4.1	0.93	0.34
45735	43818	8	0.6	0.6	0.31	0.52
45736	45735	8	1.21	0.86	0.31	0.43
45737	45736	8	2.36	1.2	0.31	0.36
45738	45737	8	3	1.35	0.31	0.34
45739	45738	8	4.44	1.65	0.31	0.31
45740	45739	8	4.92	1.73	0.31	0.3
45741	45748	8	2.62	1.26	0.36	0.38
45742	45741	8	3.02	1.36	0.36	0.36
45743	45742	8	3.03	1.36	0.36	0.36
45744	45743	8	0.68	0.64	0.36	0.55
45745	45744	8	0.63	0.62	0.36	0.56
45746	43805	8	2.01	1.11	0.36	0.41
45747	45746	8	2.64	1.27	0.36	0.38
45748	45747	8	2.65	1.27	0.36	0.38
45753	6937	30	0.51	18.97	13.19	0.62
45855	45059	8	3.15	1.39	0.35	0.36
45895	30628	8	2.7	1.28	1.1	1
46748	38465	8	0.47	0.54	0.4	0.65
46749	46748	8	2.31	1.19	0.4	0.42
46778	45745	8	0.6	0.6	0.36	0.57
46779	46778	8	0.6	0.61	0.36	0.57
46789	6931	30	0.56	19.86	13.68	0.62
46796	17748	12	4.61	4.95	1.17	0.4
47025	36942	15	0.75	3.62	1.62	0.48
47036	36944	15	1.49	5.09	1.63	0.41
48063	42229	24	2.91	24.93	2.67	0.24
48064	48063	8	3.7	1.5	0.97	0.6
48065	48064	8	0.6	0.61	0.97	2
48066	48065	8	4.4	1.64	0.97	1
48067	48066	8	1.05	0.8	0.97	2
48068	48067	8	1.64	1	0.97	0.94
48069	48068	8	6.98	2.06	0.97	0.5
48070	48069	8	6.88	2.05	0.97	0.5

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
48208	48070	8	5.6	1.85	0.97	0.53
48209	48208	8	5.18	1.78	0.97	0.54
48242	17297	12	6.32	5.79	0.71	0.26
48243	48242	8	13.24	2.84	0.29	0.23
48244	48243	8	13.38	2.86	0.29	0.28
48245	48244	8	7.29	2.11	0.29	0.27
48246	48245	8	0.44	0.52	0.3	0.57
48247	48246	8	1.17	0.85	0.33	0.45
48247A	48247	8	5.34	1.8	0.33	0.3
48248	48247A	8	0.6	0.6	0.33	0.56
48249	48248	8	3.38	1.44	0.36	0.51
48250	48249	8	1.73	1.03	0.36	0.43
48251	48250	8	1.26	0.88	0.37	0.47
48252	48251	8	0.62	0.62	0.38	0.57
48253	48252	8	-0.17	-0.32	0.4	0.71
48254A	NS1044	6	1.01	0.38	0.4	2
48571	41917	8	0.4	0.49	0.06	0.25
48572	48572A	8	0.4	0.49	0.06	0.25
48572A	48571	8	0.4	0.49	0.06	0.25
49083	30960	8	2.09	1.13	0.28	0.35
49084	49083	8	2.17	1.15	0.28	0.35
4970	2942	10	0.38	0.88	0.28	0.4
4971	4970	10	2.46	2.22	0.28	0.28
49997	36917	18	2.29	10.27	1.96	0.31
50253	34218	8	0.62	0.61	0.14	0.73
50254	50253	8	0.59	0.6	0.14	0.35
50255	50254	8	2.24	1.17	0.14	0.26
50256	50255	8	5.81	1.88	0.14	0.21
50281	50256	8	1.2	0.86	0.14	0.29
50282	50281	8	3.24	1.41	0.14	0.24
5134	18064	12	0.81	2.07	0.26	0.25
5135	14937	10	0.59	1.09	0	0.27
5136	5135	10	1.57	1.78	0	0.1
5137	5136	10	1.05	1.45	0	0.1
5138	5137	10	0.57	1.07	0	0.08
5139	5138	10	1.87	1.94	0	0.1
5140	5139	10	0.1	0.44	0	0.08
52024	902054	15	1.18	4.53	0.59	0.53
52025	52024	10	1.59	1.79	0.59	0.41
52026	52025	10	1.32	1.63	0.59	0.43
52027	52026	10	0.98	1.4	0.59	0.46
52028	52027	10	0.53	1.03	0.59	0.56
52029	52028	8	3.68	1.5	0.59	0.98
52030	52029	8	3.76	1.51	0.59	0.44
52031	52030	8	0.44	0.52	0.59	2
52032	52031	8	0.44	0.52	0.59	2
52033	52032	8	0.44	0.52	0.59	2
52034	52033	8	0.44	0.52	0.59	2
52041	52034	8	0.44	0.52	0.6	2
52042	52041	8	1.31	0.89	0.6	1
52043	52042	8	3.29	1.42	0.62	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52044	52043	8	3.2	1.4	0.62	0.48
52045	52044	8	2.68	1.28	0.62	0.5
52088	36931	15	0.53	1.98	1.71	0.67
52089	52088	15	1.24	3.02	1.71	0.61
52091	52147	8	1.03	0.79	0.39	0.51
52092	52091	8	0.54	0.57	0.39	0.63
52093	52092	8	2.24	1.17	0.39	0.48
52094	52093	8	2.18	1.15	0.39	0.42
52095	52094	8	1.1	0.82	0.39	0.5
52096	52095	8	5.37	1.81	0.39	0.35
52097	52096	8	2.7	1.28	0.39	0.4
52098	52097	8	5.52	1.84	0.39	0.33
52099	52098	8	5.61	1.85	0.39	0.33
52100	52099	8	5.67	1.86	0.39	0.33
52147	52489	8	1.06	0.8	0.39	0.5
52170	18	16	20.44	22.42	1.24	1
52171	52170	16	0.71	4.18	1.24	0.37
52172	52171	16	0.5	3.5	1.24	0.42
52240	52100	8	1.83	1.06	0.39	0.43
52241	52240	8	3.62	1.49	0.39	0.36
52242	52241	8	4.07	1.58	0.39	0.36
52243	52242	8	4.92	1.73	0.39	0.34
52244	52243	8	5.2	1.78	0.39	0.34
52245	52244	8	5.53	1.84	0.39	0.33
52364	36947	15	1.61	5.29	1.5	0.38
52488	21638	8	0.62	0.62	0.39	0.58
52489	52488	8	0.67	0.64	0.39	0.58
52520	52569A	8	1.09	0.82	0.39	0.5
52521	52520	8	0.6	0.6	0.39	0.6
52522	52521	8	0.5	0.55	0.39	0.64
52523	53379	8	0.5	0.55	0.39	0.64
52524	52523	8	0.51	0.56	0.39	0.64
52550	14458	8	3.13	1.38	0.91	0.6
52551	52550	8	8.8	2.32	0.87	0.48
52552	52552A	8	12.02	2.71	0.12	0.17
52552A	35539	8	13.38	2.86	0.12	0.24
52553	52552	8	7.63	2.16	0.12	0.19
52554	52553	8	3.62	1.49	0.12	0.21
52555	52554	8	7.09	2.08	0.12	0.19
52556	52555	8	7.16	2.09	0.12	0.19
52557	52556	8	0.99	0.78	0.12	0.28
52558	52557	8	0.98	0.77	0.12	0.28
52559	52558	8	2.45	1.22	0.12	0.23
52560	52245	8	16.07	3.13	0.39	0.26
52561	52560	8	5.06	1.76	0.39	0.34
52562	52561	8	5.07	1.76	0.39	0.34
52566	52562	8	0.57	0.59	0.39	0.61
52567	52566	8	0.61	0.61	0.39	0.59
52568	52567	8	3.99	1.56	0.39	0.45
52569	52568	8	4.99	1.75	0.39	0.34
52569A	52569	8	2.91	1.33	0.39	0.39

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52651	7324	18	1.02	6.85	4.26	0.58
52652	52651	24	1.04	14.94	2.31	0.43
52653	52652	24	15.5	57.57	2.31	0.17
52654	52653	24	1.07	15.09	2.31	0.28
52655	52654	24	15.02	56.68	2.31	0.24
52656	52655	24	0.1	4.65	2.31	0.48
52657	52656	24	0.33	8.42	2.31	0.45
52658	52657	21	0.3	5.62	2.06	0.42
52659	52658	21	0.8	9.16	2.06	0.37
52660	52659	21	12.95	36.86	2.06	0.27
52661	52660	12	9.8	7.21	0.77	0.24
53242	52559	8	4.7	1.69	0.12	0.2
53243	53242	8	4.56	1.67	0.12	0.2
53244	53243	8	0.81	0.7	0.12	0.29
53245	53244	8	0.59	0.6	0.12	0.31
53246	53245	8	0.61	0.61	0.12	0.31
53257	44216	8	1.01	0.79	1.24	2
53258	53257	8	4.47	1.65	1.24	1
53259	53258	8	2.36	1.2	1.29	2
53260	53259	8	0.98	0.77	1.33	2
53261	53260	8	3.03	1.36	1.59	2
53262	53261	8	4.81	1.71	1.6	1
53263	53262	8	5.97	1.91	1.79	1
53264	53263	8	3.34	1.43	1.81	2
53267	53264	8	6.84	2.04	1.92	1
53269	53267	8	4.76	1.7	2.06	2
53270	44213	10	0.25	0.71	1.2	2
53271	53270	8	0.92	0.75	0.65	1
53292	30727	8	2.04	1.11	1.14	2
53293	53292	8	0.6	0.6	1.14	2
53294	53293	8	0.48	0.54	1.14	2
53295	53294	8	1.79	1.04	1.15	2
53296	53295	8	0.64	0.62	1.17	2
53297	53296	8	3.49	1.46	1.2	1
53379	52522	8	0.49	0.55	0.39	0.64
53385	53246	8	1.01	0.78	0.12	0.28
53386	53385	8	2.01	1.11	0.12	0.24
53387	53386	8	0.95	0.76	0.12	0.28
53388	53387	8	0.99	0.78	0.12	0.28
53727	53727A	8	0.3	0.43	0.55	0.8
53727A	53727B	8	0.55	0.58	0.55	0.73
53727B	20250	8	4.72	1.7	0.55	0.41
53728	53727	8	0.63	0.62	0.55	0.74
53729	53728	8	0.39	0.49	0.55	0.84
53730	53729	8	5.14	1.77	0.55	0.56
53868	46779	8	1.32	0.9	0.36	0.45
53869	53868	8	0.99	0.78	0.36	0.49
53870	53869	8	2.49	1.23	0.36	0.38
53871	53870	8	4.42	1.64	0.36	0.34
53872	53871	8	0.82	0.71	0.36	0.51
53873	53872	8	0.56	0.59	0.36	0.58

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
53874	53873	8	1.14	0.83	0.36	0.48
53875	53874	8	0.52	0.56	0.36	0.59
53876	53875	8	0.78	0.69	0.36	0.52
53877	53876	8	4.6	1.68	0.36	0.37
53878	53877	8	3.82	1.53	0.36	0.35
53879	53878	8	6.38	1.97	0.36	0.3
53955	41133	10	0.35	0.84	0.33	0.92
53956	53955	10	0.66	1.15	0.33	0.76
53957	53956	10	0.36	0.85	0.33	0.44
53958	53957	10	0.54	1.04	0.33	0.39
53959	53958	10	0.38	0.88	0.33	0.43
53960	53959	10	0.47	0.97	0.33	0.43
53961	53960	10	0.44	0.94	0.33	0.42
53962	53961	10	0.4	0.89	0.33	0.43
54110	52045	8	0.6	0.61	0.62	2
54111	54110	8	1.58	0.98	0.62	0.89
54112	54111	8	1.76	1.04	0.62	0.57
54113	54112	8	0.69	0.65	0.62	0.81
54114	54113	8	2.46	1.23	0.62	0.67
54115	54114	8	1.68	1.01	0.62	0.58
54116	54115	8	3.59	1.48	0.62	0.47
54117	54116	8	4.79	1.71	0.62	0.43
54353	65512	8	4.29	1.62	1.1	0.62
54451	45568	12	3.15	4.09	0.21	0.18
54452	54451	12	3.05	4.02	0.21	0.19
54452A	54452	12	1.59	2.91	0.21	0.21
54453	54452A	12	1.01	2.31	0.21	0.23
54453A	54453	12	0.56	1.73	0.21	0.25
54454	54453A	12	3	3.99	0.21	0.19
54455	54454	12	2.13	3.36	0.21	0.2
54456	54455	12	0.33	1.32	0.21	0.28
54556	53962	10	0.57	1.07	0.33	0.39
55251	7298	24	0.99	14.53	9.89	0.74
55252	55251	8	0.57	0.59	0.42	0.62
55253	55252	8	0.59	0.6	0.42	0.63
55254	55253	8	0.59	0.6	0.42	0.63
55255	55254	8	0.6	0.6	0.42	0.63
55256	55255	8	4.97	1.74	0.42	0.48
55257	55256	8	1.08	0.81	0.42	0.52
55258	55257	8	32.91	4.48	0.42	0.23
55259	55258	8	36.11	4.69	0.42	0.23
55260	55259	8	31.38	4.38	0.42	0.23
55261	55260	8	0.59	0.6	0.42	0.63
55262	55261	8	0.6	0.6	0.42	0.63
55267	55262	8	0.99	0.78	0.42	0.53
55268	55267	8	0.99	0.78	0.42	0.53
55269	55268	8	15.51	3.08	0.42	0.4
55270	55269	8	0.98	0.78	0.42	0.53
55271	55270	8	4.8	1.71	0.42	0.39
55272	55271	8	1.05	0.8	0.42	0.52
56667	20782	15	1.35	3.16	1.93	0.59

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
56841	33296	18	0.3	3.73	2.02	0.52
56842	56841	12	0.59	1.77	-0.01	0.76
57146	44548	15	0.89	3.94	4.4	2
57167	43386	12	6.13	5.7	0.17	0.15
57364	69111	8	7.05	2.07	0.18	0.22
59113	59114	8	0.37	0.47	0.19	0.45
59113	30957	8	2.74	1.29	0.17	0.27
59114	59115	8	0.36	0.47	0.19	0.46
59115	59116	8	0.36	0.47	0.19	0.46
59116	31155	8	2.21	1.16	0.35	0.39
59222	59221	12	0.53	1.68	0.29	0.35
59274	34175	20	0.62	9.2	5.08	0.77
59275	59274	20	0.65	7.24	3.97	0.62
59276	59275	20	0.18	3.8	3.97	0.68
61	27	10	7.63	3.91	0.06	0.13
61831	21595	8	1.12	0.83	0.26	0.51
61832	61831	8	2.88	1.32	0.26	0.32
61833	61832	8	0.6	0.6	0.26	0.48
61834	61833	8	3.58	1.48	0.26	0.3
61946	6888	42	1.52	80.26	23.4	1
61947	61946	36	0.41	27.53	9.35	1
61948	61947	36	0.59	33.24	9.83	0.94
63663	7113	8	2.1	1.13	0.44	0.44
63665	7114	8	2.96	1.34	0.44	0.41
64082	53297	8	0.61	0.61	1.25	2
64083	64082	8	3.54	1.47	1.31	1
64084	64083	8	4.69	1.69	1.4	1
64085	64084	8	1.81	1.05	1.47	2
65315	65511	15	0.51	2.99	0.55	0.37
65316	65315	15	0.31	2.34	0.55	0.33
65317	65316	15	0.57	3.16	0.55	0.29
65318	65317	15	1.8	5.6	0.55	0.23
65319	65318	15	1.8	5.6	0.55	0.23
65320	65319	15	2.03	5.95	0.55	0.23
65321	65320	15	1.96	5.85	0.55	0.23
65322	65321	15	3.23	7.51	0.55	0.21
65323	65322	15	0.15	1.63	0.55	0.4
65324	65323	15	2.6	6.73	0.55	0.22
65325	65324	15	0.5	2.95	0.55	0.29
65326	65325	15	0.52	3.02	0.55	0.29
65327	65326	15	0.35	2.48	0.55	0.32
65328	65327	15	0.84	3.83	0.55	0.31
65329	65328	15	2.02	5.93	0.55	0.23
65330	65329	15	2.47	6.57	0.55	0.22
65331	65330	15	0.5	2.95	0.55	0.29
65332	65331	15	0.33	2.41	0.55	0.33
65333	65332	15	0.88	3.92	0.55	0.26
65373	6990	18	1.97	9.53	0.1	0.12
65374	65373	18	0.76	5.93	0.1	0.1
65375	65374	18	0.41	4.33	0.1	0.11
65497	34179	16	1.05	6.62	0.97	0.28

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
65498	65497	16	1.17	6.97	0.97	0.27
65499	65498	16	0.71	4.18	0.97	0.33
65500	65499	16	0.73	4.25	0.97	0.33
65501	65500	16	0.35	2.95	0.97	0.4
65502	65501	16	0.28	2.62	0.97	0.42
65503	65502	16	0.5	3.5	0.97	0.36
65504	65503	16	0.22	2.31	0.97	0.44
65505	65504	16	1.84	6.74	0.97	0.36
65506	65505	16	0.49	3.47	0.97	0.36
65507	65506	16	0.89	4.69	0.97	0.31
65508	65507	16	0.52	3.57	0.97	0.36
65509	65508	16	0.54	3.66	0.97	0.42
65510	65509	16	0.61	3.88	0.97	0.35
65511	65510	16	0.56	3.72	0.97	0.35
65512	45895	8	4.33	1.63	1.1	0.62
66	61	10	2.92	2.42	0	0.1
66452	67346	8	0.85	0.72	0.15	0.33
66453	66452	8	1.85	1.06	0.15	0.27
67346	7085	8	0.77	0.68	0.15	0.34
6874	JP1	42	0.16	21.31	35.49	0.83
6875	6874	42	0.17	21.73	35.45	0.99
6876	6876N	42	0.19	21.82	35.45	2
6876N	6875	42	0.19	22.9	35.45	2
6877	6876	42	0.17	26.94	35.22	2
6878	16379	42	-0.14	-23.28	35.22	1
6879	6878	42	0.46	43.91	35.22	1
6880	6879	42	0.17	26.91	35.22	2
6882	6880	42	0.2	28.91	35.05	2
6883	6882	42	-0.02	-8.98	35.05	1
6885	6883	42	0.55	48.09	35.05	1
6886	14565	42	3.98	129.77	33.65	0.72
6887	6886	42	0.19	28.63	33.66	0.97
6888	6887	42	0.21	29.56	33.13	2
6889	6888	24	0.42	9.51	-0.38	1
6890	6889	24	0.36	8.73	-0.13	0.78
69111	33534	8	4.5	1.66	0.18	0.24
69131	33527	15	0.97	2.68	0.98	0.45
69132	69131	16	3.51	6.04	0.98	0.29
69133	69132	16	0.7	2.69	0.98	0.42
69136	69133	16	0.71	2.71	0.98	0.42
69138	69136	16	0.7	2.7	0.98	0.42
69139	69138	16	1.45	5.97	0.97	0.35
69140	69139	16	0.84	4.55	0.97	0.32
69143	69140	16	0.74	4.26	0.97	0.33
69144	69143	16	0.74	4.25	0.92	0.35
69145	69144	15	0.63	3.33	0.92	0.36
69146	69145	16	0.57	3.74	0.92	0.34
69147	69146	15	0.83	3.81	0.92	0.34
69149	69147	15	0.71	3.51	0.92	0.35
69150	69149	15	0.54	3.07	0.92	0.38
69151	69150	15	1.72	5.47	0.92	0.29

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
69152	69151	15	0.68	3.43	0.92	0.36
6921	61946	42	0.2	29.09	14.68	1
6923	6921	42	0.13	23.1	14.8	0.86
6924	6923	42	0.09	19.15	15.13	0.73
6925	6924	42	0.09	19.29	14.95	0.68
6926	6925	42	0.09	19.18	14.75	0.65
6927	6926	42	0.01	6.87	14.77	0.66
6928	6927	42	0.15	25.54	14.77	0.64
6929	6933	30	0.64	21.17	13.54	0.63
6930	18452	42	0.17	26.69	13.65	0.6
6931	6930	42	0.48	45.11	13.67	0.55
6932	46789	30	0.81	23.89	13.54	0.58
6933	6932	30	0.48	18.44	13.54	0.63
6934	6929	30	0.45	17.76	13.54	0.64
6935	6934	30	0.56	19.87	13.54	0.63
6936	6935	30	0.49	18.47	13.19	0.65
6937	15872	30	0.63	21	13.19	0.58
6938	17375	30	0.55	19.6	13.2	0.6
6939	6938	30	0.66	21.47	12.95	0.66
6940	6942	30	0.62	20.9	12.95	0.57
6941	6940	30	0.78	23.41	12.95	0.58
6942	6939	30	0.65	21.32	12.95	0.65
6943	901676	27	0.59	19.93	12.9	0.61
6944	6943	27	0.53	18.87	12.9	0.61
6945	6944	27	0.41	16.62	12.29	0.64
6946	6945	27	0.61	20.33	12.29	0.61
6947	6946	24	0.62	14.95	11.9	0.68
6948	32394	24	0.23	9.21	10.21	0.75
6949	6948	24	0.78	16.75	10.21	0.73
6950	6949	24	0.61	14.83	10.21	0.62
6951	6950	24	0.71	16.01	6.53	0.62
6952	6951	24	0.34	11.09	6.53	0.56
6952	6950	24	0.09	4.4	3.68	0.58
6953	38525	24	0.49	13.33	9.74	0.69
6953	38525	15	0.72	3.54	0	0.05
6954	18586	24	0.47	13	9.16	0.69
6955	6954	24	0.45	12.8	9.15	0.63
6956	19873	24	0.43	12.41	8.21	0.7
6956	19873	15	0.54	3.08	0	0.05
6957	6956	24	0.3	10.33	8.09	0.66
6957	6956	15	0.01	0.5	0	0.05
6958	22009	24	2.58	30.51	0.35	0.62
6965	15269	18	0.7	7.4	0.57	0.19
6966	6965	18	0.5	6.25	0.57	0.21
6967	6966	15	0.58	4.14	0.13	0.24
6968	6967	15	0.38	3.35	0	0.05
6969	6968	15	0.7	4.56	0	0.05
6970	6969	15	0.77	4.77	0	0.05
6977	33451	18	0.81	6.09	1.68	0.36
6978	33451	18	0.97	6.7	0.33	0.16
6979	6978	18	0.98	6.74	0.33	0.16

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
6980	6979	18	1.59	8.55	0.33	0.16
6981	6980	15	1.46	5.04	0.33	0.36
6982	6981	15	1.47	5.06	0.33	0.2
6983	6982	16	0.95	4.84	0.17	0.14
6984	6983	15	0.79	3.71	0.17	0.15
6985	6984	15	0.99	4.15	0.17	0.15
6987	6985	15	1.01	4.2	0.17	0.17
6988	6987	15	1.15	4.47	0.1	0.14
6989	6988	15	0.98	4.13	0.1	0.46
6990	32475	15	0.83	3.8	0.1	0.12
6995	37990	12	5.27	5.29	0.54	0.24
70	52182	10	4.61	3.04	0.49	0.29
70349	16535	18	2.87	11.51	0.72	0.2
70350	70349	18	2.85	11.47	0.72	0.2
70351	70350	18	4.12	13.78	0.72	0.18
70352	70351	18	1.85	9.25	0.72	0.21
7049	6977	10	0.74	1.22	1.68	2
7050	7049	10	1.57	1.77	1.68	1
7051	7050	10	1.78	1.89	1.68	1
7052	7052M	8	2.36	1.2	0.75	1
7052M	7051	10	0	0	0.88	0.84
7061	6967	8	2.22	1.16	0.14	0.25
7062	7061	8	1.78	1.04	0.14	0.26
7063	7062	8	1.77	1.04	0.14	0.27
7064	7063	8	0.47	0.53	0.14	0.36
7065	7064	8	2.27	1.18	0.14	0.25
7071	33444	10	1.25	1.03	0	0.1
7071	33444	10	0.99	1.41	0.15	0.23
7080	7071	8	1.91	1.08	0.15	0.27
7081	7080	8	0.41	0.5	0.15	0.39
7082	7081	8	3.14	1.38	0.15	0.24
7083	7082	8	0.4	0.49	0.15	0.39
7084	7083	8	0.4	0.49	0.15	0.39
7085	7084	8	0.4	0.49	0.15	0.39
7086	33446	8	4.41	1.64	0.05	0.15
7087	900091	8	0.49	0.55	0.05	0.23
7088	7087	8	2.46	1.22	0.05	0.17
7089	7088	8	0.42	0.51	0.05	0.23
7090	7089	8	0.4	0.49	0.05	0.24
7092	33448	8	0.62	0.62	0.23	0.84
7093	7092	8	3.27	1.41	0.23	0.29
7094	7093	8	0.81	0.7	0.23	0.41
7095	7094	8	4.87	1.72	0.23	0.27
7096	7095	8	6.45	1.98	0.23	0.25
7097	7096	8	8.76	2.31	0.23	0.23
7098	7097	8	8.43	2.27	0.23	0.23
7099	7098	8	0.41	0.5	0.23	0.49
7100	7099	8	2.05	1.12	0.23	0.34
7101	7100	8	1.48	0.95	0.23	0.35
7102	F1757	8	0.77	0.69	0.23	0.41
7106	20553	8	3.67	1.5	0.18	0.26

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7107	7106	8	3.65	1.49	0.18	0.26
7108	7107	8	3.74	1.51	0.18	0.26
7113	6966	8	3.25	1.41	0.44	0.4
7114	63663	8	2.3	1.19	0.44	0.43
7115	63665	8	3.32	1.42	0.44	0.4
71157	64085	8	0.56	0.58	1.51	2
71158	71157	8	0.61	0.61	1.61	2
7116	7115	8	0.37	0.47	0.44	0.76
7117	7116	8	4.07	1.58	0.44	0.62
7118	7117	8	3.84	1.53	0.44	0.38
7119	7118	8	2.99	1.35	0.44	0.41
71194	38684	8	0.4	0.49	0.12	0.35
7120	7119	8	1.81	1.05	0.44	0.47
7122	13238	8	1.68	1.01	0.44	0.48
71229	71158	8	7.71	2.17	2.83	2
7123	7122	8	0.5	0.55	0.44	0.7
7124	7123	8	3.45	1.45	0.44	0.55
7125	7124	8	3.12	1.38	0.44	0.41
7126	7125	8	2.45	1.22	0.44	0.43
7127	7126	8	2.5	1.24	0.44	0.43
7128	7127	8	4.12	1.59	0.44	0.37
7132	7128	8	2.18	1.15	0.44	0.44
7133	7132	8	1.58	0.98	0.44	0.49
7134	7133	8	2.31	1.19	0.44	0.43
7135	7134	8	2.48	1.23	0.44	0.43
7136	7135	8	1.81	1.05	0.44	0.47
7137	7136	8	2.8	1.31	0.44	0.42
7161	7052M	8	4.47	1.65	0.14	1
7162	7161	8	7.62	2.16	0.14	0.22
7163	23057	8	0.26	0.4	0.14	0.42
7164	7163	8	1.6	0.99	0.14	0.27
7165	7052	8	3.7	1.5	0.75	0.51
7166	7165	8	3.45	1.45	0.75	0.52
7167	7166	8	0.41	0.5	0.75	2
7168	7167	8	2.46	1.23	0.76	1
7169	7168	8	3.36	1.43	0.76	0.53
7170	7169	8	3.71	1.5	0.76	0.51
7171	7170	8	2.34	1.19	0.76	0.59
7173	7171	8	3.06	1.37	0.76	0.55
7176	7173	8	2.75	1.29	0.76	0.57
7177	7176	8	4.51	1.66	0.76	0.49
7178	7051	8	4.11	1.58	0.84	1
7179	7178	8	1.64	1	0.83	0.71
7180	7179	8	0.4	0.5	0.83	2
7181	7180	8	0.41	0.5	0.84	2
7182	7181	8	1.23	0.87	0.84	1
7183	7182	8	2.33	1.19	0.85	1
7184	7183	8	1.87	1.07	0.86	1
7185	7184	8	1.9	1.08	0.9	0.74
7188	7185	8	1.37	0.91	0.9	0.89
7252	6995	12	1.29	2.61	0.54	0.33

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7253	7252	12	0.44	1.53	0.54	0.42
7254	7253	12	0.36	0.89	0.54	0.57
7255	7254	12	0.43	0.98	0.54	0.57
7256	7255	12	0.32	0.84	0.54	0.58
7257	7270	8	0.81	0.7	0	0.1
7258	7257	8	1.76	1.04	0	0.1
7259	7258	8	1.2	0.86	0	0.1
7260	7259	8	0.39	0.49	0	0.1
7261	7260	8	0.36	0.47	0	0.1
7262	7261	8	0.32	0.44	0	0.1
7263	7262	8	0.39	0.49	0	0.1
7264	7263	8	0.38	0.48	0	0.1
7265	7264	8	1.36	0.91	0	0.1
7266	7256	8	0.8	0.7	0	0.1
7270	7266	8	0.85	0.72	0	0.1
7287	7265	8	3.97	1.56	0	0.1
7288	7287	8	3.37	1.44	0	0.1
7289	7256	10	0.54	0.68	0.54	0.69
7295	61948	24	1.62	18.62	9.89	0.61
7296	7295	24	0.38	9	9.89	0.97
7297	7296	24	0.76	12.77	9.89	0.96
7298	7297	24	0.43	9.58	9.89	0.88
7300	55251	24	0.65	11.77	9.48	0.69
7301	7300	24	2	20.7	9.48	0.49
7302	7301	24	2.4	22.65	9.48	0.47
7303	7302	21	2.77	17.06	9.48	0.55
7305	7303	21	2.09	14.82	9.48	0.59
7308	7305	21	1.49	12.52	9.48	1
7309	19143	21	0.8	9.14	7.86	0.72
7311	18322	21	1.12	7.06	7.86	2
7314	18241	21	0.35	3.91	7.86	2
7315	22223	21	0.49	4.64	7.27	2
7316	7315	21	0.96	10.03	7.27	1
7317	7316	21	0.67	8.38	5.05	1
7318	7317	21	0.55	7.59	5.05	1
7319	7318	21	0.91	9.8	5.04	1
7320	7319	21	1.27	11.54	5.13	0.75
7321	7320	18	1.35	7.9	4.26	0.54
7322	7321	18	1.16	7.33	4.26	0.56
7323	7322	18	0.91	6.48	4.26	0.59
7324	7323	18	1.31	7.79	4.26	0.54
7325	52651	18	1.02	6.84	1.96	0.64
7326	7325	18	0.81	6.13	1.96	0.39
7327	7326	18	0.75	5.89	1.96	0.4
7328	7327	18	0.74	5.83	1.96	0.41
7329	7328	15	1.56	5.22	1.28	0.35
7330	7329	15	0.8	3.73	1.28	0.41
7332	7316	10	1.77	1.89	2.36	2
7333	7332	10	3.44	2.63	2.4	1
7334	16604	10	3.11	2.5	0.89	0.43
7335	7334	10	3.77	2.75	0.89	0.41

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
742	754	8	1.89	1.07	0	0.1
754	902164	8	6.11	1.93	0	0.1
8195	37032	12	0.24	1.14	0.55	0.47
900091	7086	8	0.5	0.55	0.05	0.22
901295	901296	8	1.49	0.95	0.39	0.46
901296	901297	8	0.61	0.61	0.39	0.59
901297	901298	8	0.59	0.6	0.39	0.6
901298	901299	8	1.79	1.05	0.39	0.44
901299	52524	8	8.72	2.31	0.39	0.49
901390	37990	15	11.09	9.04	0.88	0.23
901391	901390	16	0.36	1.95	0.88	0.45
901676	15751	27	0.52	18.7	12.96	0.62
901871	52661	12	2.46	3.61	0.77	0.33
901892	901893	6	5.72	0.87	0.66	1
901893	16595	8	6.03	1.92	0.66	0.42
902012	6953	24	0.34	11.03	9.74	0.72
902012	6953	15	0.32	2.35	0	0.05
902054	43825	15	1.2	4.58	0.59	0.4
902164	902165	8	6.32	1.96	0	0.1
902165	52657	8	6.21	1.95	0	0.1
9039	16038	18	0.92	6.5	0.75	0.31
9040	17949	15	1.35	4.86	0.52	0.24
9041	17969	15	1.15	4.48	0.26	0.22
9042	9041	15	1.05	4.28	0.15	0.16
9044	14317	15	4.1	8.45	0	0.1
9045	9044	15	3.35	7.65	0	0.1
9046	9045	15	0.08	1.16	0	0.05
9047	9046	21	0.25	5.11	0	0.05
9048	10918	21	0.48	7.06	0	0.05
9049	9048	21	2.33	15.64	0	0.1
break 1	break12	6	-0.12	-0.12	0.22	1
Break 4	45855	6	-1.62	-0.49	0.35	1
Break11	41040	6	-2.37	-0.6	0.22	1
break12	Break11	6	-0.32	-0.2	0.22	1
break2	46749	6	0.06	0.08	0.41	2
C445	7102	8	0.21	0.36	0.23	0.54
F1757	7101	8	0.8	0.7	0.23	0.41
F5313-missing	2403	8	2.4	1.21	0.98	1
NS1044	48253	6	-6.41	-1.03	0.4	1
PVT302	PVT303	8	0.48	0.54	0.35	0.59
PVT303	29644	8	0.9	0.74	0.35	0.82
PVT472	PVT473	8	1.39	0.92	0.05	0.18
PVT473	PVT474	8	5.93	1.9	0.05	0.15
PVT474	PVT475	8	8.6	2.29	0.05	0.14
PVT475	PVT476	8	0.61	0.61	0.05	0.21
PVT476	PVT477	8	0.6	0.6	0.05	0.21
PVT477	PVT478	8	11.33	2.63	0.05	0.14
PVT478	32260	8	15.2	3.05	0.05	0.13
weir15	33295	24	0.31	8.18	0.72	0.39
59221	59220	8	2.22	1.16	0.29	0.35
59220	59219	8	2.72	1.29	0.29	0.34

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
59219	204	8	2.74	1.29	0.29	0.34
204	201	8	4.72	1.7	0.29	0.29
201	52174	8	1.89	1.07	0.29	0.37
52176	52175	16	2.3	7.52	0.86	0.35
52182	52181	8	5.49	1.83	0.49	0.37
52181	52176	8	5.35	1.81	0.49	0.37
42057	71509	8	5.5	1.83	0.44	0.48
42056	42055	8	4.53	1.66	0.44	0.36
71509	42056	8	1.63	1	0.44	0.48
52175	52174	16	0.57	3.73	0.96	0.35
52174	52173	16	0.5	3.51	1.24	0.41
52173	52172	16	0.49	3.47	1.24	0.42
72974	34836	14	0.79	8.03	0.72	0.23
33707	72976	12	4.58	4.93	0.77	1
72976	72975	12	0.96	2.26	0.78	1
72975	20760	27	0.2	8.89	9.48	2

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
10918	13409	21	0.15	3.97	0.00	0.05
11	70352	24	1.63	18.68	1.54	0.22
11897	7052	8	3.72	1.51	-0.06	1.00
12	11	24	0.40	9.29	1.54	0.28
13238	7120	8	1.83	1.06	0.63	0.57
13409	9047	21	-0.19	-4.47	0.00	0.05
13939	20805	12	11.76	7.90	0.14	0.61
14317	15315	15	2.45	6.54	0.00	0.10
14454	19876	12	5.12	5.21	1.51	0.63
14455	14454	12	1.46	2.78	1.51	0.54
14456	14455	12	1.59	2.91	1.51	0.52
14458	14456	12	1.02	2.32	1.41	0.57
14546	7188	8	0.57	0.59	1.27	2.00
14547	14546	8	2.87	1.32	1.34	2.00
14548	14547	8	4.80	1.71	1.44	1.00
14565	6885	42	2.14	77.24	40.10	1.00
14937	5134	10	0.55	1.05	0.27	0.36
150	901871	16	3.05	8.66	1.21	0.27
1507	16581	10	14.78	5.45	1.03	0.31
1508	1507	8	0.99	0.78	1.03	2.00
15269	42234	18	1.37	10.33	1.03	0.33
15270	30591	15	1.38	4.91	1.04	0.33
15270	9042	15	1.89	5.74	0.39	0.20
15271	22538	15	2.67	6.83	0.43	0.47
15315	30592	15	2.39	6.45	0.00	0.18
15751	40488	27	0.66	21.21	14.51	0.98
15871	6936	30	0.44	17.56	15.09	0.93
15872	15871	30	0.60	20.58	15.09	0.89
1593	29862	12	0.04	0.43	1.05	2.00
16036	42233	18	0.94	6.58	2.89	0.47
16037	16036	18	0.97	6.69	2.44	0.42
16038	16037	18	1.68	8.81	1.41	0.52
1609	1593	10	0.33	0.81	0.63	0.66
1610	1609	10	0.50	1.01	0.63	0.58
1611	1610	10	0.77	1.24	0.63	0.51
1612	1611	10	1.74	1.87	0.63	0.51
1613	1612	10	0.47	0.97	0.63	0.59
1614	1613	10	0.39	0.88	0.63	0.64
16379	16379N	42	0.16	20.88	41.13	2.00
16379N	6877	42	0.16	21.44	41.13	2.00
16401	C445	8	0.41	0.50	0.32	0.58
16402	16401	8	0.40	0.49	0.32	0.59
16403	16402	8	2.26	1.17	0.32	1.00

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
16404	16403	8	1.56	0.97	0.32	0.41
16535	7330	15	2.02	5.93	2.43	0.57
16536	11897	8	4.15	1.59	0.00	0.10
16581	7328	10	4.34	2.95	1.03	0.65
16595	7333	8	4.68	1.69	0.68	1.00
16596	7333	10	0.50	1.00	2.80	2.00
16604	7320	10	3.39	2.61	1.52	1.00
16742	6982	8	2.42	1.22	0.24	0.31
16743	16742	8	0.65	0.63	0.24	0.43
16744	16743	8	1.02	0.79	0.24	0.39
16745	16744	8	1.07	0.81	0.24	0.38
16746	33093	8	1.00	0.78	0.24	0.39
16747	16746	8	0.72	0.66	0.24	0.43
16748	16747	8	1.03	0.79	0.24	0.39
16749	16748	8	6.64	2.01	0.24	0.25
16750	16750M	8	1.91	1.08	0.24	0.34
16750M	16749	8	1.86	1.06	0.24	0.34
16751	16750	8	1.04	0.80	0.24	0.39
16752	16751	8	0.49	0.55	0.24	0.47
16753	16752	8	0.49	0.55	0.24	0.47
16754	16753	8	0.40	0.49	0.24	0.50
17008	33535	8	5.13	1.77	0.26	0.28
17009	17008	8	4.03	1.57	0.26	0.29
17037	17009	8	5.23	1.79	0.26	0.28
17041	17037	8	5.23	1.79	0.26	0.28
17297	17764	12	1.61	2.92	1.30	0.49
17375	45753	30	2.07	38.12	15.09	0.67
17479	42227	8	1.02	0.79	0.23	0.44
17480	17479	8	1.97	1.10	0.23	0.33
17481	17480	8	5.66	1.86	0.23	0.26
17482	17481	8	6.53	2.00	0.23	0.25
17483	17482	8	4.37	1.63	0.23	0.27
17484	17483	8	1.94	1.09	0.23	0.33
17747	18202	12	42.19	14.96	1.52	1.00
17748	17747	12	1.61	2.92	1.52	0.52
17749	46796	12	5.67	5.48	1.52	0.37
17750	17749	12	0.42	1.49	1.52	0.83
17751	17750	12	0.36	1.38	1.52	2.00
17752	34447	12	0.31	1.28	1.30	2.00
17753	17752	12	0.43	1.51	1.32	1.00
17754	17753	12	0.43	1.51	1.36	0.88
17755	17754	12	0.37	1.40	1.38	0.74
17756	17755	12	0.23	1.10	1.23	0.93

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
17757	17756	12	0.68	1.90	1.25	0.68
17758	17757	12	4.60	4.94	1.26	0.50
17759	17758	12	0.30	1.27	1.26	0.79
17760	17759	12	3.42	4.26	1.27	0.39
17761	19657	12	5.83	5.56	1.28	0.34
17762	17761	12	3.57	4.35	1.28	0.39
17763	19910	12	1.95	3.22	1.29	0.45
17764	17763	12	1.44	2.76	1.30	0.50
17765	48242	12	5.89	5.59	0.40	0.24
17766	17765	12	1.52	2.84	0.40	0.27
17767	17766	12	-0.07	-0.63	0.40	0.58
17768	17767	12	1.15	2.47	0.40	0.50
17769	17768	12	4.01	4.61	0.40	0.29
17770	17769	12	3.46	4.29	0.40	0.23
17771	17770	12	4.80	5.05	0.40	0.21
17772	17771	12	4.42	4.84	0.40	0.22
17773	17772	12	1.43	2.76	0.40	0.28
17774	17773	12	8.83	6.84	0.40	0.19
17775	17774	12	0.89	2.18	0.40	0.29
17949	9039	15	1.61	5.30	1.02	0.31
17969	9040	15	0.86	3.87	1.03	0.36
18	56841	18	-0.57	-5.14	3.24	0.99
18063	17775	12	-0.45	-1.55	0.40	0.90
18064	18063	12	0.76	2.00	0.40	0.80
18202	6885	12	0.61	1.79	1.50	1.00
18241	7311	21	1.20	7.28	9.30	2.00
18297	6958	8	10.17	2.49	0.34	0.27
18298	18297	8	10.97	2.59	0.34	0.27
18298A	18298	8	0.30	0.43	0.34	0.65
18299	18298A	8	0.35	0.46	0.34	0.64
18300	18299	8	0.39	0.49	0.34	0.63
18301	18300	8	2.16	1.15	0.34	0.48
18302	18301	8	4.20	1.60	0.34	0.33
18303	18302	8	6.83	2.04	0.34	0.29
18321	7309	21	0.87	9.56	9.12	1.00
18322	18321	21	1.64	13.13	9.14	1.00
18363	7256	8	0.40	0.49	-0.01	0.87
18364	18363	8	0.40	0.49	0.00	0.10
18452	6928	42	0.01	7.10	17.31	2.00
18453	18452	12	1.43	2.75	1.65	1.00
18454	18453	12	2.98	5.17	1.65	1.00
18455	20314	12	2.55	4.78	1.65	0.42
18456	45724	12	1.96	4.19	1.01	0.35

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
18457	18456	12	3.74	5.79	1.01	0.30
18458	18457	12	3.14	5.30	1.01	0.31
18463	18458	10	1.59	2.32	0.86	0.43
18478	18463	8	2.51	1.61	0.86	0.62
18479	18478	8	3.06	1.37	0.86	0.58
18480	18479	8	2.00	1.11	0.86	0.68
18481	18480	8	2.95	1.34	0.86	0.59
18481A	18481	8	3.21	1.40	0.86	0.58
18482	18481A	8	2.77	1.30	0.86	0.61
18483	18482	8	3.23	1.40	0.86	0.69
18484	18483	8	3.01	1.36	0.86	0.59
18485	18484	8	3.63	1.49	0.86	0.56
18486	18485	8	2.66	1.27	0.86	0.62
18496	901391	15	0.24	1.34	1.57	0.92
18497	19001	8	0.38	0.48	0.18	0.43
18497A	18497	8	0.97	0.77	0.18	0.35
18498	18497A	8	0.97	0.77	0.18	0.35
18517	18486	8	3.54	1.47	0.86	0.56
18552	18496	15	0.43	2.73	1.40	0.81
18553	18552	15	0.34	2.45	1.40	0.55
18554	39224	15	0.49	2.91	1.31	0.59
18555	20127	15	0.52	3	1.31	0.47
18586	902012	24	0.32	10.73	12.49	2
18586	902012	15	1.43	4.99	0	0.1
18587	18586	8	2	1.11	0.82	1
18588	18587	8	0.61	0.61	0.82	2
18589	18588	8	0.6	0.6	0.82	2
18590	18589	8	1.19	0.85	0.82	1
18591	18590	8	0.61	0.61	0.82	2
18592	18591	8	0.61	0.61	0.84	2
18593	18592	8	0.6	0.6	0.86	2
18594	18593	8	1.5	0.96	0.94	1
18595	18594	8	2	1.1	1.02	1
18596	18595	8	2	1.11	1.02	1
19	18	15	0.25	2.08	1.27	0.57
19001	18496	8	0.4	0.5	0.18	0.58
19141	7308	21	1.24	11.4	11.48	2
19142	34175	21	1.36	11.95	4.9	1
19143	22225	21	0.18	4.35	4.9	2
19143	59276	21	3.58	19.39	4.35	1
19657	17760	12	7.02	6.1	1.28	0.33
19706	6947	24	0.72	16.1	14.06	0.78
19707	19706	8	0.39	0.49	0.7	2
19711	19808	8	0.4	0.49	0.7	2

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
19712	19711	8	0.6	0.61	0.7	2
19714	19712	8	0.6	0.61	0.7	2
19715	19714	8	0.4	0.49	0.71	2
19716	19715	8	0.6	0.6	0.72	2
19717	19716	8	0.6	0.6	0.73	2
19808	19707	8	0.4	0.49	0.7	2
19873	6955	24	0.36	11.35	11.74	0.89
19874	19873	12	1.75	3.96	1.51	0.44
19875	19874	12	0.63	2.38	1.51	0.58
19876	19875	12	0.56	1.73	1.51	0.72
19910	17762	12	2.22	3.43	1.29	0.44
20	19	12	-0.03	-0.42	0.16	0.77
20126	18553	15	0.59	3.22	1.4	0.47
20127	18554	15	0.3	2.28	1.31	0.53
20244	7289	8	0.41	0.5	0.83	2
20246	3	8	0.38	0.48	0.84	2
20247	20246	8	0.4	0.49	0.89	2
20248	20247	8	2.5	1.24	0.89	1
20249	20248	8	3.78	1.52	0.89	1
20250	20249	8	4.74	1.7	0.9	0.53
20314	18454	12	2.67	4.89	1.65	0.5
20553	37013	27	-0.69	-21.67	5.63	0.58
20753	21328	30	0.11	8.76	10.21	2
20754	20753	30	0.01	1.77	10.25	2
20755	20754	30	0.26	8.76	10.04	2
20756	20755	30	0.11	5.78	9.79	2
20757	20756	30	0.08	4.99	9.86	2
20758	20757	30	0.12	6	9.91	2
20759	20758	30	0.1	5.53	9.97	2
20760	20759	30	0.11	5.75	10.06	2
20761	72975	27	0.07	5.21	9.53	2
20762	21329	27	0.19	8.72	9.3	2
20763	20762	27	0.31	11.21	9.36	1
20764	20763	27	0.18	8.55	9.3	2
20765	20764	27	0.17	8.31	9.14	2
20766	20765	27	0.18	8.57	9.21	2
20767	20766	27	0.32	11.25	9.43	1
20768	20767	18	1.05	6.95	5.6	1
20769	20768	18	0.99	6.76	5.62	1
20770	20769	18	0.69	5.65	5.65	1
20771	20770	18	0.74	3.8	5.65	2
20772	20771	15	1.19	4.55	5.2	2
20773	20772	15	1.18	4.54	4.48	1
20774	20773	15	1.01	4.19	4.6	2
20775	20774	15	1.21	4.6	4.92	2
20776	20775	15	1.81	5.61	5.21	1
20777	30726	15	1.87	5.71	4.86	1
20778	57146	15	1.06	4.29	4.04	1
20779	20778	15	1.52	5.14	4.04	1
20780	20779	15	1.36	4.87	3.31	1
20781	20780	15	1.15	4.47	3.3	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
20782	41252	15	0.89	2.55	2.93	2
20783	56667	15	1.63	3.47	2.31	1
20793	69152	16	1.17	5.36	1.38	0.36
20794	36990	15	2	5.91	1.26	0.35
20795	37148	15	2.33	6.37	1.26	0.53
20796	20795	12	1.94	3.21	1.25	0.44
20797	20796	12	1.88	3.16	1.25	0.45
20798	20797	12	2.3	3.49	1.25	0.43
20799	20798	12	2.41	3.58	1.25	0.42
20803	20799	12	2.54	3.67	1.11	0.39
20804	20803	12	5.66	5.48	1.11	0.32
20805	20804	12	0.85	2.12	1.11	0.52
20806	20805	12	3.74	4.45	1.05	0.35
20807	20806	12	1.16	2.48	1.05	0.47
20808	20807	12	0.42	1.49	1.05	0.63
20809	20808	12	0.73	1.97	1.05	0.74
20810	20809	12	0.48	1.6	1.05	0.59
20811	20810	12	0.59	1.77	1.05	0.56
20812	20811	12	0.7	1.93	1.05	0.55
21	20	12	2.61	3.72	0.17	0.74
21042	41529	15	0.37	2.52	1.31	0.51
21043	21042	15	0.36	2.51	1.31	0.51
21044	21043	8	1.01	0.78	0.69	0.74
21045	21043	15	0.94	4.05	0.58	0.39
21046	21045	15	0.11	1.39	0.58	0.4
21047	21044	8	1.01	0.78	0.09	0.57
21048	21047	8	0.83	0.71	0.1	0.27
21049	21048	8	0.79	0.7	0.1	0.27
21050	21049	8	1.86	1.07	0.1	0.22
21051	21050	8	2.21	1.16	0.1	0.22
21052	21051	8	3	1.35	0.1	0.21
21053	21049	8	0.98	0.77	0	0.12
21054	21043	8	1.94	1.09	0.06	0.19
21055	21054	8	1.78	1.04	0.06	0.2
21056	21055	8	1.76	1.04	0.06	0.2
21057	21056	8	1.77	1.04	0.06	0.2
21058	21057	8	1.73	1.03	0.06	0.2
21059	21044	8	1.02	0.79	0.61	0.81
21060	21059	8	1	0.78	0.61	0.69
21061	21060	8	3.02	1.36	0.62	0.55
21062	21061	8	1.02	0.79	0.62	0.68
21063	21062	8	1.02	0.79	0.62	0.68
21064	21063	8	0.86	0.72	0.51	0.63
21065	21064	8	0.93	0.75	0.51	0.62
21066	21065	8	0.88	0.73	0.51	0.63
21067	21066	8	0.9	0.74	0.51	0.63
21068	21067	8	0.99	0.78	0.09	0.26
21071	21067	8	0.88	0.73	0.42	0.56
21328	6888	30	0.32	14.98	10.21	1
21329	20761	27	0.19	8.83	9.25	2
21589	18596	8	1.53	0.97	1.08	2

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
21590	21589	8	0.79	0.69	0.46	1
21591	21590	8	2.02	1.11	0.47	0.47
21592	21591	8	2.05	1.12	0.47	0.46
21593	21592	8	2	1.11	0.47	0.47
21594	21593	8	3.35	1.43	0.47	0.41
21595	21594	8	6.07	1.92	0.47	0.35
21620	21621	8	0.61	0.61	0.07	0.24
21621	52550	8	2.69	1.28	0.07	1
21622	52551	8	2.76	1.3	1.35	2
21623	21622	8	0.93	0.75	0.52	1
21624	21623	8	2.02	1.11	0.52	0.83
21625	21624	8	2.38	1.21	0.52	0.47
21626	21625	8	2.91	1.33	0.52	0.44
21627	21626	8	0.6	0.6	0.52	0.72
21628	21627	8	0.31	0.44	0.52	2
21629	21628	8	0.39	0.49	0.52	2
21630	21629	8	0.4	0.49	0.52	2
21631	21630	8	0.4	0.5	0.52	2
21634	21631	8	2.99	1.35	0.52	0.44
21635	21634	8	2.65	1.27	0.52	0.46
21636	21635	8	5.84	1.89	0.52	0.37
21638	21636	8	0.99	0.78	0.52	0.61
21641	21622	8	1.48	0.95	0.83	1
21642	21641	8	0.61	0.61	0.83	2
21643	21642	8	0.59	0.6	0.83	2
21645	21643	8	0.61	0.61	0.83	2
21646	21645	8	0.59	0.6	0.83	2
21647	21646	8	1.58	0.98	0.83	1
21648	21647	8	3.99	1.56	0.84	1
21649	21648	8	6.08	1.93	0.84	0.48
21651	21649	8	0.59	0.6	0.84	2
21652	21651	8	0.4	0.49	0.79	2
21653	21652	8	0.41	0.5	0.61	2
21654	21653	8	0.4	0.49	0.61	2
21655	21654	8	0.95	0.76	0.61	1
21805	7108	8	2.53	1.24	0.26	0.33
21806	21805	8	0.59	0.6	0.26	0.48
21807	21806	8	0.61	0.61	0.26	0.48
22	19	15	0.41	2.66	1.11	0.57
22009	6957	24	0.47	13.03	10.28	0.92
22010	22009	24	0.4	11.99	10.17	0.74
22011	22010	24	0.6	14.74	10.17	0.75
22012	22011	24	0.6	14.71	10.19	0.62
22013	22012	24	0.63	15.07	10.19	0.63
22067	19717	8	2.62	1.27	1.07	1
22090	21620	8	0.61	0.61	0.07	0.24
22091	22090	8	0.6	0.6	0.07	0.24
22092	22091	8	1.06	0.8	0.07	0.22
22093	22092	8	1.44	0.94	0.07	0.2
22094	22093	8	1.82	1.05	0.07	0.2
22097	22094	8	3.89	1.54	0.07	0.17

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
22098	22097	8	4.15	1.59	0.07	0.17
22099	22098	8	1.41	0.93	0.07	0.21
22100	22099	8	0.57	0.59	0.07	0.24
22101	22100	8	0.59	0.6	0.07	0.24
22222	7314	21	0.83	6.07	8.83	2
22223	22222	21	0.76	5.79	8.84	2
22225	19142	21	0.41	6.53	4.9	1
22454	6921	12	0.79	1.33	0.38	1
22455	22454	12	0.4	0.95	0.36	1
22456	22455	12	0.99	1.49	0.34	0.6
22457	22456	12	0.46	1.01	0.34	0.41
22458	45585	12	1.23	1.66	0.34	0.32
22462	22458	12	1.24	1.67	0.34	0.32
22463	22462	12	1.98	3.24	0.34	0.24
22463A	22463	12	1.66	2.96	0.34	0.25
22464	22463A	12	1.58	2.89	0.34	0.25
22465	45592	12	0.6	1.79	0.34	0.3
22466	22465	12	0.42	1.49	0.34	0.33
22482	45567	12	2	3.26	0.34	0.24
22489	22482	12	2.71	3.79	0.34	0.22
22490	22489	12	2.36	3.54	0.34	0.23
22538	15270	15	3.59	7.91	1.43	0.3
2254	742	10	0.44	0.94	0	0.08
2255	2254	10	0.79	1.26	0	0.08
23	22	15	1.19	4.55	1.11	0.45
23057	7162	8	0.51	0.56	0.24	0.47
23775	18517	8	6.07	1.93	0.47	0.35
23776	23775	8	4.24	1.61	0.47	0.38
23777	23776	8	1.12	0.83	0.47	0.56
23778	23777	8	0.6	0.61	0.47	0.68
23779	23778	8	0.68	0.64	0.47	0.64
2402	901892	6	3.29	0.66	0.66	2
2402	SSO120-oufall	8	41.88	5.06	0.41	0.22
2403	2402	8	2.49	1.23	1.07	1
2404	F5313-missing	8	3.52	1.46	1.34	1
2405	2404	8	0.35	0.46	1.03	2
2416	2404	8	0.4	0.49	0.34	1
27	23	15	1.23	4.64	1.11	0.35
2900	7335	10	15.51	5.58	1.52	0.43
2936	1508	10	0.52	1.02	0.8	1
2937	2936	10	0.52	1.02	0.4	1
2938	2937	10	0.44	0.94	0.39	0.56
2939	2938	10	0.61	1.1	0.39	0.45
2940	2939	10	2.82	2.38	0.39	0.29
2941	2940	10	1.91	1.96	0.39	0.32
2942	2941	10	0.35	0.84	0.39	0.49
2943	4971	10	1.46	1.71	0.39	0.34
2945	2943	10	0.93	1.37	0.39	0.37
2946	2945	10	1.81	1.91	0.39	0.32
2947	2946	10	1.93	1.97	0.39	0.32
29644	37991	8	0.5	0.55	0.41	0.59

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
29645	30342	15	0.58	3.18	0	0.05
29645	33471	30	0.65	21.3	0	0.05
29861	20812	12	0.05	0.51	1.05	0.65
29862	29861	10	0.31	0.78	1.05	2
29873	20799	10	4.86	3.12	0.21	0.2
3	20244	8	0.39	0.49	0.83	2
30153	21046	8	0.38	0.48	0.58	2
30155	30153	8	0.44	0.52	0.58	2
30156	30155	8	0.88	0.73	0.58	1
30157	30156	8	0.6	0.6	0.58	0.89
30158	30157	8	0.61	0.61	0.59	0.86
30159	30158	8	0.55	0.58	0.59	0.9
30342	37991	30	0.41	16.87	0	0.12
30588	16037	18	0.62	5.35	1.04	0.3
30588A	30588	15	1.15	4.48	1.04	0.35
30589	30588A	15	1.72	5.48	1.04	0.31
30590	30589	15	1.19	4.56	1.04	0.34
30590A	30590	15	0.79	3.71	1.04	0.36
30590B	30590A	15	1.88	5.72	1.04	0.35
30591	30590B	15	0.77	3.67	1.04	0.37
30592	15271	15	2.04	5.96	0.43	0.21
30593	30592	15	-2.94	-7.17	0.43	0.54
30594	30593	15	2.24	6.25	0.43	0.46
30595	30594	15	2.79	6.97	0	0.1
30596	30595	15	3.59	7.91	0	0.1
30597	30596	15	3.01	7.25	0	0.1
30598	30597	15	0.88	3.91	0	0.05
30616	22067	8	0.42	0.51	1.07	2
30617	30616	8	2.76	1.3	1.07	1
30618	30617	8	3.89	1.54	1.07	1
30619	30618	8	3.8	1.52	1.07	0.63
30620	30619	8	3.53	1.47	1.07	0.64
30621	30620	8	2.89	1.33	1.07	0.7
30622	30621	8	0.92	0.75	1.07	2
30623	30622	8	0.92	0.75	1.07	2
30624	30623	8	9.81	2.45	1.07	1
30625	30624	8	5.85	1.89	1.07	0.56
30626	30625	8	5.07	1.76	1.07	0.57
30627	30626	8	1.53	0.97	1.07	2
30628	30627	8	2.23	1.17	1.07	1
30726	20776	15	1.01	4.2	4.37	2
30727	53271	8	2	1.1	1.1	1
30953	31001	8	0.43	0.51	0.43	0.71
30957	30953	8	0.61	0.61	0.43	0.63
30958	59113	8	4.84	1.72	0.74	1
30959	30958	8	1.4	0.93	0.74	0.7
30960	30959	8	1.4	0.92	0.74	0.77
30963	30960	8	2.86	1.32	0.29	0.84
30968	65375	18	1.6	8.6	0	0.14
31001	21071	8	0.47	0.54	0.42	0.67
31151	30159	8	0.61	0.61	0.59	0.85

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
31153	31151	8	1.36	0.91	0.59	0.88
31154	31153	8	1.7	1.02	0.59	0.56
31155	31154	8	1.7	1.02	0.59	0.56
31828	21655	8	2.04	1.12	0.62	1
31829	31828	8	1	0.78	0.65	1
31830	31829	8	1.39	0.92	0.66	1
31831	31830	8	1.19	0.85	0.66	1
31832	31831	8	1.29	0.89	0.66	1
31833	31832	8	1.98	1.1	0.66	0.57
31834	31833	8	4.03	1.57	0.66	0.47
31835	31834	8	1.04	0.8	0.52	0.6
32254	33532	12	0.16	0.6	0.6	0.65
32257	32254	12	0.47	1.03	0.6	0.56
32258	32257	12	0.37	0.91	0.6	0.6
32259	32258	12	0.58	1.75	0.6	0.44
32260	32259	12	-0.01	-0.19	0.6	0.72
32261	32260	12	1.04	2.35	0.54	0.4
32262	32261	12	1.25	2.57	0.54	0.33
32263	32262	12	0.78	2.03	0.54	0.36
32394	19706	24	1.22	20.96	13.57	0.75
32395	32394	8	1.59	0.98	0.99	2
32396	32395	8	2.1	1.13	0.99	1
32397	32396	8	4.36	1.63	0.99	0.62
32475	6989	15	0.68	3.44	0.15	0.15
33093	16745	8	0.95	0.76	0.24	0.4
33295	12	24	0.51	10.44	1.54	0.71
33296	52660	18	1.12	7.17	1.68	0.35
33437	42234	30	0.71	29	6.3	0.32
33438	33437	30	0.95	33.56	6.3	0.3
33439	33438	27	-0.83	-23.73	6.3	0.83
33440	33439	27	0.33	15.04	6.3	0.79
33442	38773	27	0.79	23.12	6.17	0.36
33443	33442	27	0.69	21.67	6.17	0.37
33444	6970	10	-0.49	-1.29	0	0.08
33444	33443	27	0.73	22.2	6.17	0.36
33445	33444	27	0.8	23.23	6	0.35
33446	33445	27	1.08	27.09	6	0.34
33447	33446	27	1.52	32.04	5.94	0.31
33448	33447	27	1.76	34.51	5.94	0.3
33451	37014	27	0.53	14.56	5.42	0.43
33452	33451	27	0.78	17.72	2.8	0.38
33453	33452	27	0.96	19.63	2.8	0.26
33454	33453	27	1.03	20.32	2.8	0.27
33455	33454	27	1.42	23.87	2.8	0.25
33456	33455	27	1.46	24.22	2.8	0.25
33457	33456	27	1.5	24.53	2.8	0.25
33458	33457	27	3.25	36.06	2.8	0.21
33459	33458	27	0.47	13.75	2.8	0.31
33460	33459	27	1.03	20.33	2.8	0.27
33461	33460	27	0.76	17.5	2.8	0.28
33462	33461	27	0.78	17.65	2.8	0.28

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
33463	33462	27	0.79	17.85	2.8	0.27
33464	33463	27	0.73	17.12	2.8	0.28
33465	33464	27	0.74	17.18	2.81	0.28
33466	33465	27	0.66	16.23	2.81	0.29
33470	30342	30	0.48	18.45	0	0.05
33471	33470	30	0.6	20.51	0	0.05
33527	20783	15	1.12	2.88	2.28	0.68
33528	33527	12	1.04	1.53	0.86	0.55
33529	33528	12	0.67	1.23	0.86	0.6
33530	33529	10	2.95	1.58	0.86	0.67
33531	33530	10	3.61	1.75	0.86	0.5
33532	33531	10	3.77	1.79	0.86	0.5
33533	33532	8	5.87	1.89	0.26	0.27
33534	33533	8	4.62	1.68	0.26	0.28
33535	57364	8	5.24	1.79	0.26	0.28
33707	20761	12	-0.55	-1.71	0.38	1
33708	33707	12	2.37	3.55	1.12	1
33709	33708	12	2.7	3.79	1.14	1
33710	33709	12	2.28	3.48	1.12	1
33711	33710	12	2.06	3.31	1.12	0.42
33989	32397	8	4.08	1.58	0.99	0.58
33990	33989	8	4.08	1.58	0.99	0.58
33991	33990	8	7.13	2.09	0.99	0.5
33992	33991	8	2.3	1.18	0.99	0.71
33993	33992	8	0.6	0.61	0.99	2
33994	33993	8	0.96	0.76	0.99	2
33995	33994	8	3.61	1.48	0.99	1
33996	33995	8	2.8	1.31	0.99	0.66
33997	33996	8	0.59	0.6	0.99	2
33998	33997	8	0.6	0.61	0.99	2
33999	33998	8	2.39	1.21	1.18	1
34000	33999	8	2.37	1.2	1.18	1
34175	19141	21	1.14	10.96	10.71	1
34176	59274	12	4.17	6.12	1.59	0.36
34177	34176	12	5.25	6.86	1.59	0.34
34178	34177	12	2.31	4.55	1.59	0.44
34179	34178	12	1.84	4.06	1.59	0.44
34180	34179	12	1.87	3.15	0.23	0.33
34209	31835	8	0.6	0.6	0.52	0.72
34210	34209	8	0.59	0.6	0.52	0.72
34211	34210	8	0.6	0.61	0.52	0.72
34212	34211	8	0.65	0.63	0.52	0.71
34213	34212	8	2.36	1.2	0.52	0.57
34214	34213	8	3.17	1.39	0.52	0.43
34215	34214	8	3.16	1.39	0.52	0.43
34216	34215	8	3.13	1.38	0.52	0.43
34217	34216	8	4.46	1.65	0.52	0.4
34218	34217	8	1.96	1.09	0.23	0.33
34381	20767	24	0.2	6.52	5.01	1
34382	34381	24	0.24	7.1	5.07	1
34383	34382	24	0.36	8.82	5.12	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
34384	34383	24	0.27	4.98	3.69	1
34385	34384	24	0.3	5.19	3.7	1
34447	17751	12	0.44	1.53	1.53	2
34836	33711	12	0.79	5.33	1.12	0.42
35527	21652	8	1.94	1.09	0.18	0.29
35528	35527	8	1.88	1.07	0.18	0.29
35529	35528	8	3.17	1.39	0.18	0.29
35530	35529	8	3.4	1.44	0.18	0.26
35531	35530	8	4.22	1.6	0.18	0.25
35532	35531	8	4.26	1.61	0.18	0.25
35533	35532	8	4.45	1.65	0.18	0.24
35534	35533	8	4.81	1.71	0.18	0.24
35535	35534	8	4.48	1.65	0.18	0.24
35536	35535	8	4.59	1.67	0.18	0.24
35537	35536	8	4.4	1.64	0.18	0.24
35538	35537	8	4.31	1.62	0.18	0.24
35539	35538	8	2.91	1.33	0.18	0.27
35551	16404	8	7.51	2.14	0.32	0.28
36911	34383	18	1.1	7.13	2.87	1
36912	36911	18	1.63	8.66	2.87	1
36913	36912	18	0.84	6.21	2.89	0.49
36914	36913	18	1.57	8.51	2.88	0.42
36915	36914	18	1.99	9.59	2.88	0.39
36916	36915	18	1.73	8.92	2.88	0.41
36917	36916	18	1.41	8.06	2.88	0.43
36918	49997	18	2.34	10.39	2.88	0.37
36919	36918	18	2.34	10.38	2.85	0.37
36920	36919	18	2.22	10.12	2.85	0.38
36921	36920	18	3.23	12.2	2.77	0.34
36922	36921	18	1.89	9.32	2.77	0.39
36923	36922	18	1.44	8.14	2.77	0.42
36924	36923	12	1.46	2.78	2.77	1
36925	36924	18	2.33	6.74	2.68	0.45
36926	36925	15	1.64	3.48	2.68	0.67
36927	36926	18	1.65	5.67	2.68	0.56
36928	36927	15	1.77	3.61	2.64	0.65
36929	36928	15	1.7	3.54	2.64	0.65
36930	36929	15	0.97	2.67	2.59	0.81
36931	36930	15	1.01	2.72	2.59	0.9
36933	52089	15	1.71	3.55	2.62	0.84
36934	36933	15	1.76	3.6	2.58	0.64
36935	36934	15	2.07	3.9	2.58	0.61
36936	36935	15	1.86	3.71	2.58	0.63
36937	36936	15	2.23	4.05	2.58	0.59
36938	36937	15	2.5	6.6	2.58	0.44
36939	36938	15	2.03	5.95	2.53	0.47
36940	36939	15	1.88	5.73	2.53	0.48
36941	36940	15	0.8	3.75	2.53	0.61
36942	36941	15	0.79	3.72	2.54	0.61
36944	47025	15	0.83	3.8	2.5	0.6
36945	47036	15	1.39	4.92	2.42	0.51

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
36946	42603	15	0.34	2.44	2.34	0.66
36947	36946	15	1.88	5.72	2.31	0.63
36948	52364	15	1.42	4.97	2.31	0.49
36949	36948	15	0.68	3.44	2.31	0.6
36950	36949	15	1.11	4.39	2.31	0.55
36951	36950	15	1.15	4.48	2.13	0.5
36952	36951	15	1.08	4.34	2.13	0.51
36953	38072	15	0.96	4.09	1.23	0.56
36954	36953	12	1.67	2.97	0.48	0.29
36955	38085	12	0.82	2.09	0.28	0.32
36956	36955	12	3.2	4.12	0.28	0.2
36957	36956	12	1.25	2.57	0.28	0.24
36958	36957	12	3.24	4.14	0.28	0.2
36959	36958	12	2.92	3.94	0.28	0.21
36960	36959	12	2.47	3.62	0.28	0.21
36961	36960	12	3.34	4.21	0.28	0.2
36962	36961	12	3.48	4.3	0.28	0.2
36963	36962	12	3.74	4.46	0.28	0.2
36990	20793	15	1.73	5.49	1.28	0.52
37009	33448	27	0.59	19.98	5.66	0.37
37010	37009	27	0.73	22.18	5.63	0.35
37011	37010	27	0.61	20.31	5.63	0.36
37012	37011	27	0.88	24.41	5.63	0.33
37013	37012	27	0.43	17.06	5.63	0.4
37014	20553	27	0.77	22.86	5.42	0.53
37030	65333	15	2.94	7.16	0.64	0.26
37031	37030	12	0.29	1.24	0.64	0.49
37032	37031	12	1.38	2.7	0.64	0.39
37054	6946	8	2.59	1.26	0.37	0.38
37055	37054	8	1.59	0.98	0.37	0.43
37056	37055	8	1.25	0.87	0.37	0.46
37057	37056	8	0.98	0.77	0.37	0.5
37058	37057	8	0.99	0.78	0.37	0.5
37059	38271	8	1.27	0.88	0.37	0.46
37060	37059	8	5.04	1.75	0.37	0.33
37061	37060	8	4.59	1.67	0.37	0.34
37148	20794	15	1.01	4.2	1.26	0.39
37986	33466	27	1.43	23.9	2.75	0.25
37987	37986	30	0.4	16.78	2.75	0.28
37988	37987	30	0.41	16.97	2.75	0.28
37989	37988	30	0.4	16.71	2.75	0.28
37990	37989	30	0.55	19.62	2.75	0.26
37991	37990	30	0.41	16.93	0.4	0.26
38072	36952	15	0.55	3.11	2.14	0.61
38073	38072	12	1.9	3.17	0.95	0.39
38074	38073	12	1.16	2.48	0.95	0.44
38075	38074	12	1.94	3.21	0.95	0.39
38076	38075	12	1.57	2.89	0.95	0.41
38077	38076	12	1.97	3.23	0.95	0.39
38078	38077	12	1.52	2.84	0.96	0.42
38079	38078	12	0.81	2.08	0.96	0.49

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38080	38079	12	1.2	2.52	0.96	0.44
38081	38080	12	0.69	1.91	0.96	0.5
38083	38081	12	0.53	1.68	0.96	0.55
38084	38083	12	3.86	4.52	0.43	0.4
38085	36954	12	0.93	2.22	0.48	0.32
38269	37058	8	1	0.78	0.37	0.5
38270	38269	8	0.9	0.74	0.37	0.51
38271	38270	8	1.72	1.02	0.37	0.43
38273	38083	8	0.69	0.65	0.55	0.71
38452	36953	8	0.1	0.25	0.82	2
38453	38452	8	4.49	1.66	0.82	1
38454	38453	8	3.34	1.43	0.82	0.56
38455	38454	8	0.84	0.71	0.41	0.56
38456	38455	8	6.64	2.01	0.41	0.32
38457	38456	8	5.3	1.8	0.41	0.34
38458	38457	8	2.04	1.12	0.41	0.43
38459	38458	8	0.54	0.58	0.41	0.64
38460	38459	8	0.53	0.57	0.41	0.64
38461	38460	8	0.46	0.53	0.41	0.68
38462	38461	8	1.63	1	0.41	0.46
38463	38462	8	4.76	1.71	0.41	0.35
38464	38463	8	0.07	0.2	0.41	2
38465	38464	8	0.58	0.59	0.41	1
38525	6952	24	0.38	11.66	13.19	0.92
38526	38525	15	1.69	5.43	1.01	0.92
38527	38526	15	1.3	4.76	1.02	0.33
38528	38527	15	0.99	4.15	1.02	0.34
38529	38528	15	1.45	5.03	1.02	0.32
38530	38529	15	1.12	4.42	1.02	0.34
38530A	38530	15	0	0	1.02	0.48
38531	38530A	15	0.72	3.54	1.02	0.48
38532	38531	15	0.62	3.29	1.02	0.39
38533	38838	15	2.21	6.21	1.02	0.3
38534	38839	15	1.86	5.7	1.02	0.39
38535	38534	15	0.63	3.32	1.02	0.38
38536	38535	15	-0.13	-1.48	1.02	0.56
38537	38536	15	0.62	3.28	1.02	0.39
38538	38537	15	0.82	3.79	0.95	0.35
38538A	38538	15	3.35	7.64	0.95	0.27
38539	38538A	15	1.17	4.52	0.95	0.33
38581	21807	8	1.93	1.08	0.26	0.35
38582	38581	8	1.51	0.96	0.26	1
38642	38539	15	3.72	8.05	0.95	0.32
38643	38642	15	0.5	2.96	0.95	0.39
38644	38643	15	2.66	6.81	0.95	0.27
38645	38644	15	0.27	2.19	0.78	0.4
38646	39458	15	0.5	2.95	0.78	0.36
38647	38646	15	1.2	4.58	0.79	0.41
38648	38647	15	0.89	3.94	0.79	0.31
38649	38648	15	0.71	3.52	0.36	0.26
38682	18498	8	0.69	0.65	0.18	0.37

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38683	38682	8	0.66	0.63	0.18	0.38
38684	38683	8	0.43	0.51	0.18	0.42
38773	33440	27	0.58	19.8	6.3	0.58
38774	38773	8	0.42	0.51	0.21	0.46
38775	38774	8	1.13	0.83	0.21	0.36
38776	38775	8	1.9	1.08	0.21	0.46
38777	38776	8	1	0.78	0.21	0.37
38778	38777	8	1.01	0.79	0.21	0.37
38779	38778	8	1.4	0.92	0.22	0.35
38780	38779	8	0.61	0.61	0.22	0.43
38781	38780	8	4.14	1.59	0.22	0.28
38782	38781	8	4.9	1.73	0.22	0.26
38838	38532	15	1.63	5.33	1.02	0.31
38839	38533	15	0.52	3.01	1.02	0.41
39117	38084	12	1.95	3.22	0.43	0.27
39118	39117	12	0.59	1.77	0.43	0.35
39224	20126	15	0.1	1.32	1.4	0.63
39225	39224	8	0.63	0.62	0.09	0.28
39458	38645	15	0.45	2.8	0.78	0.36
39733	23779	12	2.87	3.9	0.47	0.26
39734	39733	12	0.47	1.58	0.47	0.38
39735	39734	12	-0.02	-0.3	0.47	0.67
39736	39735	12	1.38	2.7	0.47	0.63
39737	39736	12	-0.15	-0.9	0.47	0.8
39738	39737	12	0.85	2.12	0.47	0.76
39739	39738	12	0.13	0.84	0.47	0.48
39741	39739	12	0.4	1.45	0.47	0.48
40488	6941	27	0.66	10.59	14.53	0.97
41020	38582	8	2.34	1.19	0.27	0.34
41036	38273	8	0.42	0.51	0.55	0.91
41037	41036	8	0.41	0.5	0.56	2
41038	41037	8	0.5	0.55	0.24	0.46
41039	41038	8	0.64	0.63	0.24	0.44
41040	41039	8	0.54	0.58	0.24	0.46
41042	41037	8	8.15	2.23	0.33	1
41043	41042	8	1.16	0.84	0.33	0.45
41044	41043	8	1.13	0.83	0.33	0.45
41045	41044	8	6.18	1.94	0.33	0.3
41114	41428	10	0.82	1.28	0.44	0.69
41115	41114	10	0.42	0.92	0.44	0.49
41116	41115	10	0.22	0.67	0.44	0.6
41117	41429	10	0.42	0.92	0.44	0.5
41118	41117	10	2.42	2.21	0.44	0.32
41119	41118	10	1.04	1.44	0.44	0.39
41120	41119	10	0.44	0.94	0.44	0.49
41121	41120	10	0.45	0.95	0.44	0.49
41122	41121	10	1.99	2	0.44	0.41
41123	41122	10	1.04	1.44	0.44	0.39
41124	41123	10	0.68	1.17	0.44	0.43
41125	41124	10	0.07	0.38	0.44	0.56
41126	41125	10	1.32	1.62	0.44	0.67

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
41127	41126	10	1.24	1.57	0.44	0.37
41128	41127	10	0.89	1.33	0.44	0.41
41129	41128	10	0.64	1.14	0.44	0.44
41130	41129	10	0.62	1.11	0.44	0.44
41131	41130	10	0.63	1.12	0.44	0.56
41132	41131	10	0.41	0.9	0.44	0.5
41133	41132	10	2.08	2.04	0.44	0.44
41134	41133	10	0.44	0.94	0	0.31
41135	41134	10	0.44	0.94	0	0.08
41136	41135	10	-0.26	-0.72	0	0.08
41137	41136	10	0.62	1.12	0	0.08
41138	41137	10	0.42	0.92	0	0.08
41139	41138	10	0.54	1.05	0	0.08
41140	41139	10	0.18	0.59	0	0.08
41252	20781	15	0.55	3.1	3.3	2
41427	1593	12	-1.16	-2.48	0.45	1
41428	41427	12	0.35	1.36	0.45	1
41429	41116	10	2.33	2.16	0.44	0.48
41434	35551	8	1.9	1.08	0.32	0.39
41529	41530	16	0.76	4.32	1.31	0.38
41530	43502	16	0.27	2.58	1.31	0.51
41917	39225	8	0.49	0.54	0.09	0.29
42050	72974	14	2.18	13.35	0.91	0.25
42051	42050	14	21.71	42.09	0.91	0.14
42052	42051	15	1.94	5.81	0.91	0.29
42053	42052	15	0.35	2.46	0.91	0.42
42054	42053	15	0.77	3.67	0.91	0.35
42055	42054	15	1.19	4.56	0.91	0.32
42224	15269	8	0.62	0.62	0.23	0.43
42225	42224	8	4.94	1.74	0.23	0.27
42226	42225	8	0.6	0.6	0.23	0.44
42227	42226	8	0.6	0.61	0.23	0.44
42228	22013	24	0.36	11.46	10.15	0.72
42229	42228	24	1.62	18.63	3.23	0.61
42230	48063	24	2.79	24.44	2.89	0.25
42231	42230	24	2.47	22.99	2.89	0.26
42232	42231	24	0.79	12.99	2.89	0.33
42233	42232	24	0.25	7.28	2.89	0.43
42234	42228	30	0.76	29.98	7.23	0.49
42603	36945	15	0.99	4.16	2.39	0.55
43381	150	15	122.06	46.14	1.01	0.29
43382	43381	15	0.26	2.12	1.01	0.48
43383	43382	15	3.57	7.89	1.01	0.48
43384	43383	12	5.33	5.32	0.85	0.29
43385	43384	12	1.03	2.33	0.36	0.29
43386	43385	12	1.95	3.22	0.28	0.22
43387	57167	12	3.51	4.32	0.28	0.2
43501	18555	18	0.38	4.2	1.31	0.39
43502	43501	16	0.55	3.68	1.31	0.42
43786	44225	12	0.6	1.79	0.84	1
43787	43786	8	0.91	0.74	0.51	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
43788	43787	8	0.47	0.54	0.51	1
43789	43788	8	0.95	0.5	0.51	2
43790	43789	8	0.24	0.25	0.51	2
43791	43790	8	0.46	0.35	0.56	2
43792	43791	8	0.42	0.33	0.57	2
43793	43792	8	0.53	0.37	0.54	2
43794	43793	8	0.45	0.52	0.61	2
43794A	43794	8	0.44	0.52	0.69	2
43795	43794A	8	0.63	0.62	0.69	2
43796	43795	8	0.51	0.56	0.69	2
43797	43796	8	0.52	0.56	0.31	1
43798	43797	8	0.52	0.56	0.31	1
43799	43798	8	0.52	0.56	0.3	1
43800	43799	8	1.43	0.94	0.37	1
43801	43796	8	0.79	0.7	0.45	1
43802	43801	8	1.86	1.06	0.52	1
43803	43802	8	2.8	1.31	0.57	1
43804	43803	8	2.5	1.23	0.57	0.49
43805	43804	8	3.5	1.46	0.57	0.45
43810	43800	8	0.52	0.57	0.49	1
43811	43810	8	0.52	0.56	0.5	1
43812	43811	8	0.52	0.56	0.5	1
43813	43812	8	0.52	0.56	0.5	1
43814	43813	8	1.7	1.02	0.5	1
43815	43814	8	0.51	0.56	0.5	0.76
43818	43815	8	1.88	1.07	0.51	0.62
43819	43794	8	-0.04	-0.15	0.67	1
43820	43819	8	0.5	0.55	0.67	2
43821	43820	8	0.92	0.75	0.67	1
43822	43821	8	0.52	0.57	0.67	2
43823	43822	8	0.74	0.67	0.67	2
43824	43823	8	0.62	0.61	0.68	2
43825	43824	15	0.54	3.07	0.69	1
43826	52024	15	0.56	3.12	-0.03	1
43865	42055	12	0.71	1.94	0.21	0.23
44208	34385	24	0.24	4.66	2.03	1
44209	44208	24	0.29	5.12	2.03	1
44210	44209	10	0.32	0.52	2.04	2
44211	44210	10	0.32	0.8	1.2	2
44212	44211	10	0.32	0.8	1.2	2
44213	44212	10	0.33	0.81	1.2	2
44214	53270	10	0.38	0.87	0.99	2
44215	44214	10	0.32	0.8	0.99	2
44216	44215	10	0.32	0.8	1.03	2
44217	44216	10	0.35	0.84	0.79	1
44218	44217	10	0.31	0.78	0.79	2
44219	44218	10	0.31	0.79	0.79	1
44220	44219	10	0.23	0.68	1.1	2
44221	44220	10	0.26	0.72	1.1	2
44222	44221	10	0.21	0.65	1.11	2
44223	44222	10	0.3	0.78	1.16	2

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
44224	44223	10	0.2	0.63	0.82	2
44225	44224	10	0.23	0.69	0.82	2
44548	20777	15	1.05	4.28	5.22	2
45056	41045	8	2.31	1.19	0.34	0.38
45057	45056	8	0.93	0.75	0.34	0.48
45058	45057	8	1.56	0.98	0.34	0.42
45059	45058	8	3.38	1.44	0.34	0.35
45563	22466	12	4.23	4.74	0.34	0.48
45564	45563	12	1.4	2.73	0.34	0.26
45564A	45564	12	0.46	1.55	0.34	0.32
45565	45564A	12	2.42	3.59	0.34	0.27
45566	45565	12	4.26	4.75	0.34	0.27
45567	45566	12	3.74	4.46	0.34	0.21
45568	22490	12	3.77	4.47	0.34	0.21
45585	22457	12	0.6	1.16	0.34	0.37
45592	22464	12	1.07	2.38	0.34	0.27
45724	18455	12	1.87	4.1	1.65	0.45
45735	43818	8	0.6	0.6	0.51	0.72
45736	45735	8	1.21	0.86	0.51	0.58
45737	45736	8	2.36	1.2	0.51	0.47
45738	45737	8	3	1.35	0.51	0.44
45739	45738	8	4.44	1.65	0.51	0.4
45740	45739	8	4.92	1.73	0.51	0.39
45741	45748	8	2.62	1.26	0.58	0.49
45742	45741	8	3.02	1.36	0.58	0.47
45743	45742	8	3.03	1.36	0.58	0.47
45744	45743	8	0.68	0.64	0.58	0.75
45745	45744	8	0.63	0.62	0.58	0.78
45746	43805	8	2.01	1.11	0.57	0.52
45747	45746	8	2.64	1.27	0.58	0.49
45748	45747	8	2.65	1.27	0.58	0.49
45753	6937	30	0.51	18.97	15.09	0.67
45855	45059	8	3.15	1.39	0.34	0.36
45895	30628	8	2.7	1.28	1.07	1
46748	38465	8	0.47	0.54	0.42	0.68
46749	46748	8	2.31	1.19	0.42	0.43
46778	45745	8	0.6	0.6	0.58	0.77
46779	46778	8	0.6	0.61	0.58	0.8
46789	6931	30	0.56	19.86	16.12	1
46796	17748	12	4.61	4.95	1.52	0.47
47025	36942	15	0.75	3.62	2.49	0.62
47036	36944	15	1.49	5.09	2.5	0.5
48063	42229	24	2.91	24.93	3.25	0.26
48064	48063	8	3.7	1.5	0.96	0.59
48065	48064	8	0.6	0.61	0.96	2
48066	48065	8	4.4	1.64	0.96	1
48067	48066	8	1.05	0.8	0.96	2
48068	48067	8	1.64	1	0.96	0.89
48069	48068	8	6.98	2.06	0.96	0.49
48070	48069	8	6.88	2.05	0.96	0.5
48208	48070	8	5.6	1.85	0.96	0.52

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
48209	48208	8	5.18	1.78	0.96	0.54
48242	17297	12	6.32	5.79	0.94	0.3
48243	48242	8	13.24	2.84	0.33	0.25
48244	48243	8	13.38	2.86	0.33	0.3
48245	48244	8	7.29	2.11	0.33	0.29
48246	48245	8	0.44	0.52	0.34	0.61
48247	48246	8	1.17	0.85	0.35	0.47
48247A	48247	8	5.34	1.8	0.36	0.32
48248	48247A	8	0.6	0.6	0.36	0.57
48249	48248	8	3.38	1.44	0.37	0.52
48250	48249	8	1.73	1.03	0.37	0.43
48251	48250	8	1.26	0.88	0.37	0.47
48252	48251	8	0.62	0.62	0.38	0.58
48253	48252	8	-0.17	-0.32	0.41	1
48254A	NS1044	6	1.01	0.38	0.41	2
48571	41917	8	0.4	0.49	0.09	0.31
48572	48572A	8	0.4	0.49	0.09	0.31
48572A	48571	8	0.4	0.49	0.09	0.31
49083	30960	8	2.09	1.13	0.45	0.73
49084	49083	8	2.17	1.15	0.45	0.44
4970	2942	10	0.38	0.88	0.39	0.48
4971	4970	10	2.46	2.22	0.39	0.36
49997	36917	18	2.29	10.27	2.88	0.37
50253	34218	8	0.62	0.61	0.23	0.79
50254	50253	8	0.59	0.6	0.23	0.44
50255	50254	8	2.24	1.17	0.23	0.31
50256	50255	8	5.81	1.88	0.23	0.26
50281	50256	8	1.2	0.86	0.23	0.36
50282	50281	8	3.24	1.41	0.23	0.29
5134	18064	12	0.81	2.07	0.27	0.25
5135	14937	10	0.59	1.09	0	0.27
5136	5135	10	1.57	1.78	0	0.1
5137	5136	10	1.05	1.45	0	0.1
5138	5137	10	0.57	1.07	0	0.08
5139	5138	10	1.87	1.94	0	0.1
5140	5139	10	0.1	0.44	0	0.08
52024	902054	15	1.18	4.53	0.76	1
52025	52024	10	1.59	1.79	0.77	1
52026	52025	10	1.32	1.63	0.77	1
52027	52026	10	0.98	1.4	0.77	0.54
52028	52027	10	0.53	1.03	0.77	0.65
52029	52028	8	3.68	1.5	0.77	1
52030	52029	8	3.76	1.51	0.77	0.52
52031	52030	8	0.44	0.52	0.77	2
52032	52031	8	0.44	0.52	0.77	2
52033	52032	8	0.44	0.52	0.77	2
52034	52033	8	0.44	0.52	0.78	2
52041	52034	8	0.44	0.52	0.8	2
52042	52041	8	1.31	0.89	0.9	2
52043	52042	8	3.29	1.42	0.9	1
52044	52043	8	3.2	1.4	0.91	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52045	52044	8	2.68	1.28	0.92	0.64
52088	36931	15	0.53	1.98	2.61	0.95
52089	52088	15	1.24	3.02	2.61	0.96
52091	52147	8	1.03	0.79	0.52	0.6
52092	52091	8	0.54	0.57	0.52	0.77
52093	52092	8	2.24	1.17	0.52	0.63
52094	52093	8	2.18	1.15	0.52	0.49
52095	52094	8	1.1	0.82	0.52	0.59
52096	52095	8	5.37	1.81	0.52	0.44
52097	52096	8	2.7	1.28	0.52	0.45
52098	52097	8	5.52	1.84	0.52	0.38
52099	52098	8	5.61	1.85	0.52	0.37
52100	52099	8	5.67	1.86	0.52	0.37
52147	52489	8	1.06	0.8	0.52	0.59
52170	18	16	20.44	22.42	1.97	1
52171	52170	16	0.71	4.18	1.97	0.49
52172	52171	16	0.5	3.5	1.97	0.54
52240	52100	8	1.83	1.06	0.52	0.5
52241	52240	8	3.62	1.49	0.52	0.42
52242	52241	8	4.07	1.58	0.52	0.41
52243	52242	8	4.92	1.73	0.52	0.39
52244	52243	8	5.2	1.78	0.52	0.38
52245	52244	8	5.53	1.84	0.52	0.38
52364	36947	15	1.61	5.29	2.31	0.48
52488	21638	8	0.62	0.62	0.52	0.67
52489	52488	8	0.67	0.64	0.52	0.7
52520	52569A	8	1.09	0.82	0.52	0.59
52521	52520	8	0.6	0.6	0.52	0.72
52522	52521	8	0.5	0.55	0.52	0.79
52523	53379	8	0.5	0.55	0.52	0.79
52524	52523	8	0.51	0.56	0.52	0.78
52550	14458	8	3.13	1.38	1.41	2
52551	52550	8	8.8	2.32	1.35	1
52552	52552A	8	12.02	2.71	0.18	0.2
52552A	35539	8	13.38	2.86	0.18	0.28
52553	52552	8	7.63	2.16	0.18	0.22
52554	52553	8	3.62	1.49	0.18	0.26
52555	52554	8	7.09	2.08	0.18	0.22
52556	52555	8	7.16	2.09	0.18	0.22
52557	52556	8	0.99	0.78	0.18	0.34
52558	52557	8	0.98	0.77	0.18	0.34
52559	52558	8	2.45	1.22	0.18	0.28
52560	52245	8	16.07	3.13	0.52	0.29
52561	52560	8	5.06	1.76	0.52	0.39
52562	52561	8	5.07	1.76	0.52	0.39
52566	52562	8	0.57	0.59	0.52	0.73
52567	52566	8	0.61	0.61	0.52	0.71
52568	52567	8	3.99	1.56	0.52	0.57
52569	52568	8	4.99	1.75	0.52	0.39
52569A	52569	8	2.91	1.33	0.52	0.44
52651	7324	18	1.02	6.85	6.67	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52652	52651	24	1.04	14.94	3.32	1
52653	52652	24	15.5	57.57	3.33	1
52654	52653	24	1.07	15.09	3.33	0.34
52655	52654	24	15.02	56.68	3.33	0.29
52656	52655	24	0.1	4.65	3.33	0.58
52657	52656	24	0.33	8.42	3.33	0.55
52658	52657	21	0.3	5.62	2.89	0.51
52659	52658	21	0.8	9.16	2.89	0.45
52660	52659	21	12.95	36.86	2.89	0.33
52661	52660	12	9.8	7.21	1.21	0.29
53242	52559	8	4.7	1.69	0.18	0.24
53243	53242	8	4.56	1.67	0.18	0.24
53244	53243	8	0.81	0.7	0.18	0.36
53245	53244	8	0.59	0.6	0.18	0.39
53246	53245	8	0.61	0.61	0.18	0.38
53257	44216	8	1.01	0.79	1.24	2
53258	53257	8	4.47	1.65	1.24	1
53259	53258	8	2.36	1.2	1.26	2
53260	53259	8	0.98	0.77	1.33	2
53261	53260	8	3.03	1.36	1.59	2
53262	53261	8	4.81	1.71	1.6	1
53263	53262	8	5.97	1.91	1.79	1
53264	53263	8	3.34	1.43	1.82	2
53267	53264	8	6.84	2.04	1.98	1
53269	53267	8	4.76	1.7	2.24	2
53270	44213	10	0.25	0.71	1.19	2
53271	53270	8	0.92	0.75	0.46	1
53292	30727	8	2.04	1.11	1.14	2
53293	53292	8	0.6	0.6	1.14	2
53294	53293	8	0.48	0.54	1.14	2
53295	53294	8	1.79	1.04	1.15	2
53296	53295	8	0.64	0.62	1.17	2
53297	53296	8	3.49	1.46	1.2	1
53379	52522	8	0.49	0.55	0.52	0.79
53385	53246	8	1.01	0.78	0.18	0.34
53386	53385	8	2.01	1.11	0.18	0.29
53387	53386	8	0.95	0.76	0.18	0.35
53388	53387	8	0.99	0.78	0.18	0.34
53727	53727A	8	0.3	0.43	0.9	2
53727A	53727B	8	0.55	0.58	0.9	2
53727B	20250	8	4.72	1.7	0.9	0.53
53728	53727	8	0.63	0.62	0.9	2
53729	53728	8	0.39	0.49	0.9	2
53730	53729	8	5.14	1.77	0.9	1
53868	46779	8	1.32	0.9	0.58	0.67
53869	53868	8	0.99	0.78	0.58	0.65
53870	53869	8	2.49	1.23	0.58	0.51
53871	53870	8	4.42	1.64	0.58	0.42
53872	53871	8	0.82	0.71	0.58	0.7
53873	53872	8	0.56	0.59	0.58	0.94
53874	53873	8	1.14	0.83	0.59	0.81

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
53875	53874	8	0.52	0.56	0.59	0.9
53876	53875	8	0.78	0.69	0.6	0.77
53877	53876	8	4.6	1.68	0.6	0.6
53878	53877	8	3.82	1.53	0.6	0.45
53879	53878	8	6.38	1.97	0.6	0.4
53955	41133	10	0.35	0.84	0.44	0.97
53956	53955	10	0.66	1.15	0.44	0.82
53957	53956	10	0.36	0.85	0.44	0.51
53958	53957	10	0.54	1.04	0.44	0.46
53959	53958	10	0.38	0.88	0.44	0.51
53960	53959	10	0.47	0.97	0.44	0.51
53961	53960	10	0.44	0.94	0.44	0.49
53962	53961	10	0.4	0.89	0.44	0.5
54110	52045	8	0.6	0.61	0.92	2
54111	54110	8	1.58	0.98	0.92	1
54112	54111	8	1.76	1.04	0.92	1
54113	54112	8	0.69	0.65	0.93	2
54114	54113	8	2.46	1.23	0.94	1
54115	54114	8	1.68	1.01	0.97	1
54116	54115	8	3.59	1.48	1	1
54117	54116	8	4.79	1.71	1.02	0.57
54353	65512	8	4.29	1.62	1.07	0.61
54451	45568	12	3.15	4.09	0.34	0.22
54452	54451	12	3.05	4.02	0.34	0.22
54452A	54452	12	1.59	2.91	0.34	0.25
54453	54452A	12	1.01	2.31	0.34	0.28
54453A	54453	12	0.56	1.73	0.34	0.31
54454	54453A	12	3	3.99	0.34	0.22
54455	54454	12	2.13	3.36	0.34	0.23
54456	54455	12	0.33	1.32	0.34	0.34
54556	53962	10	0.57	1.07	0.44	0.45
55251	7298	24	0.99	14.53	12.06	1
55252	55251	8	0.57	0.59	0.65	2
55253	55252	8	0.59	0.6	0.65	2
55254	55253	8	0.59	0.6	0.65	2
55255	55254	8	0.6	0.6	0.65	2
55256	55255	8	4.97	1.74	0.65	1
55257	55256	8	1.08	0.81	0.65	0.7
55258	55257	8	32.91	4.48	0.65	0.28
55259	55258	8	36.11	4.69	0.65	0.28
55260	55259	8	31.38	4.38	0.65	0.28
55261	55260	8	0.59	0.6	0.65	2
55262	55261	8	0.6	0.6	0.65	2
55267	55262	8	0.99	0.78	0.65	1
55268	55267	8	0.99	0.78	0.65	1
55269	55268	8	15.51	3.08	0.66	0.6
55270	55269	8	0.98	0.78	0.66	0.72
55271	55270	8	4.8	1.71	0.66	0.58
55272	55271	8	1.05	0.8	0.66	0.71
56667	20782	15	1.35	3.16	2.93	1
56841	33296	18	0.3	3.73	3.23	0.71

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
56842	56841	12	0.59	1.77	-0.05	1
57146	44548	15	0.89	3.94	6.87	2
57167	43386	12	6.13	5.7	0.28	0.18
57364	69111	8	7.05	2.07	0.26	0.26
59113	59114	8	0.37	0.47	0.31	0.58
59113	30957	8	2.74	1.29	0.43	0.51
59114	59115	8	0.36	0.47	0.31	0.61
59115	59116	8	0.36	0.47	0.31	0.61
59116	31155	8	2.21	1.16	0.59	0.51
59222	59221	12	0.53	1.68	0.45	0.41
59274	34175	20	0.62	9.2	5.81	1
59275	59274	20	0.65	7.24	4.26	1
59276	59275	20	0.18	3.8	4.34	2
61	27	10	7.63	3.91	0.09	0.14
61831	21595	8	1.12	0.83	0.47	0.59
61832	61831	8	2.88	1.32	0.47	0.43
61833	61832	8	0.6	0.6	0.47	0.67
61834	61833	8	3.58	1.48	0.47	0.41
61946	6888	42	1.52	80.26	30.06	1
61947	61946	36	0.41	27.53	11.82	1
61948	61947	36	0.59	33.24	11.87	1
63663	7113	8	2.1	1.13	0.63	0.55
63665	7114	8	2.96	1.34	0.63	0.5
64082	53297	8	0.61	0.61	1.25	2
64083	64082	8	3.54	1.47	1.32	1
64084	64083	8	4.69	1.69	1.41	1
64085	64084	8	1.81	1.05	1.48	2
65315	65511	15	0.51	2.99	0.64	0.44
65316	65315	15	0.31	2.34	0.64	0.36
65317	65316	15	0.57	3.16	0.64	0.31
65318	65317	15	1.8	5.6	0.64	0.25
65319	65318	15	1.8	5.6	0.64	0.25
65320	65319	15	2.03	5.95	0.64	0.25
65321	65320	15	1.96	5.85	0.64	0.24
65322	65321	15	3.23	7.51	0.64	0.22
65323	65322	15	0.15	1.63	0.64	0.43
65324	65323	15	2.6	6.73	0.64	0.25
65325	65324	15	0.5	2.95	0.64	0.32
65326	65325	15	0.52	3.02	0.64	0.32
65327	65326	15	0.35	2.48	0.64	0.35
65328	65327	15	0.84	3.83	0.64	0.34
65329	65328	15	2.02	5.93	0.64	0.24
65330	65329	15	2.47	6.57	0.64	0.23
65331	65330	15	0.5	2.95	0.64	0.32
65332	65331	15	0.33	2.41	0.64	0.36
65333	65332	15	0.88	3.92	0.64	0.28
65373	6990	18	1.97	9.53	0.15	0.13
65374	65373	18	0.76	5.93	0.15	0.12
65375	65374	18	0.41	4.33	0.15	0.14
65497	34179	16	1.05	6.62	1.36	0.32
65498	65497	16	1.17	6.97	1.36	0.32

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
65499	65498	16	0.71	4.18	1.36	0.4
65500	65499	16	0.73	4.25	1.36	0.39
65501	65500	16	0.35	2.95	1.36	0.48
65502	65501	16	0.28	2.62	1.36	0.5
65503	65502	16	0.5	3.5	1.36	0.44
65504	65503	16	0.22	2.31	1.36	0.53
65505	65504	16	1.84	6.74	1.36	0.45
65506	65505	16	0.49	3.47	1.36	0.44
65507	65506	16	0.89	4.69	1.36	0.37
65508	65507	16	0.52	3.57	1.36	0.43
65509	65508	16	0.54	3.66	1.36	0.49
65510	65509	16	0.61	3.88	1.36	0.41
65511	65510	16	0.56	3.72	1.36	0.42
65512	45895	8	4.33	1.63	1.07	0.6
66	61	10	2.92	2.42	0	0.1
66452	67346	8	0.85	0.72	0.22	0.39
66453	66452	8	1.85	1.06	0.22	0.33
67346	7085	8	0.77	0.68	0.22	0.41
6874	JP1	42	0.16	21.31	41.44	0.94
6875	6874	42	0.17	21.73	41.39	2
6876	6876N	42	0.19	21.82	41.39	2
6876N	6875	42	0.19	22.9	41.39	2
6877	6876	42	0.17	26.94	41.13	2
6878	16379	42	-0.14	-23.28	41.13	1
6879	6878	42	0.46	43.91	41.13	1
6880	6879	42	0.17	26.91	41.13	2
6882	6880	42	0.2	28.91	40.93	2
6883	6882	42	-0.02	-8.98	40.93	1
6885	6883	42	0.55	48.09	41.85	1
6886	14565	42	3.98	129.77	40.1	1
6887	6886	42	0.19	28.63	40.11	2
6888	6887	42	0.21	29.56	39.18	2
6889	6888	24	0.42	9.51	-1.17	1
6890	6889	24	0.36	8.73	-0.56	1
69111	33534	8	4.5	1.66	0.26	0.29
69131	33527	15	0.97	2.68	1.45	0.59
69132	69131	16	3.51	6.04	1.45	0.35
69133	69132	16	0.7	2.69	1.45	0.52
69136	69133	16	0.71	2.71	1.45	0.51
69138	69136	16	0.7	2.7	1.45	0.52
69139	69138	16	1.45	5.97	1.43	0.45
69140	69139	16	0.84	4.55	1.43	0.39
69143	69140	16	0.74	4.26	1.43	0.4
69144	69143	16	0.74	4.25	1.38	0.43
69145	69144	15	0.63	3.33	1.38	0.45
69146	69145	16	0.57	3.74	1.38	0.42
69147	69146	15	0.83	3.81	1.38	0.42
69149	69147	15	0.71	3.51	1.38	0.44
69150	69149	15	0.54	3.07	1.38	0.48
69151	69150	15	1.72	5.47	1.38	0.36
69152	69151	15	0.68	3.43	1.38	0.44

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
6921	61946	42	0.2	29.09	18.47	1
6923	6921	42	0.13	23.1	18.17	1
6924	6923	42	0.09	19.15	18.17	1
6925	6924	42	0.09	19.29	17.66	1
6926	6925	42	0.09	19.18	17.19	1
6927	6926	42	0.01	6.87	17.62	2
6928	6927	42	0.15	25.54	17.66	1
6929	6933	30	0.64	21.17	15.86	1
6930	18452	42	0.17	26.69	15.83	1
6931	6930	42	0.48	45.11	15.95	1
6932	46789	30	0.81	23.89	15.84	1
6933	6932	30	0.48	18.44	15.86	1
6934	6929	30	0.45	17.76	15.86	1
6935	6934	30	0.56	19.87	15.86	0.97
6936	6935	30	0.49	18.47	15.09	0.93
6937	15872	30	0.63	21	15.09	0.65
6938	17375	30	0.55	19.6	15.09	0.66
6939	6938	30	0.66	21.47	14.51	0.78
6940	6942	30	0.62	20.9	14.51	0.62
6941	6940	30	0.78	23.41	14.51	0.66
6942	6939	30	0.65	21.32	14.51	0.77
6943	901676	27	0.59	19.93	14.39	0.66
6944	6943	27	0.53	18.87	14.4	0.65
6945	6944	27	0.41	16.62	14.27	0.72
6946	6945	27	0.61	20.33	14.27	0.7
6947	6946	24	0.62	14.95	14.06	0.78
6948	32394	24	0.23	9.21	13.19	0.88
6949	6948	24	0.78	16.75	13.19	0.89
6950	6949	24	0.61	14.83	13.19	0.73
6951	6950	24	0.71	16.01	8.08	0.78
6952	6951	24	0.34	11.09	8.08	0.64
6952	6950	24	0.09	4.4	5.11	0.69
6953	38525	24	0.49	13.33	12.49	0.9
6953	38525	15	0.72	3.54	0	0.05
6954	18586	24	0.47	13	11.67	1
6955	6954	24	0.45	12.8	11.67	0.9
6956	19873	24	0.43	12.41	10.28	0.92
6956	19873	15	0.54	3.08	0	0.05
6957	6956	24	0.3	10.33	10.27	0.87
6957	6956	15	0.01	0.5	0	0.05
6958	22009	24	2.58	30.51	0.34	0.92
6965	15269	18	0.7	7.4	0.82	0.23
6966	6965	18	0.5	6.25	0.82	0.25
6967	6966	15	0.58	4.14	0.21	0.29
6968	6967	15	0.38	3.35	0	0.05
6969	6968	15	0.7	4.56	0	0.05
6970	6969	15	0.77	4.77	0	0.05
6977	33451	18	0.81	6.09	2.18	0.42
6978	33451	18	0.97	6.7	0.49	0.19
6979	6978	18	0.98	6.74	0.49	0.19
6980	6979	18	1.59	8.55	0.49	0.19

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
6981	6980	15	1.46	5.04	0.49	0.39
6982	6981	15	1.47	5.06	0.49	0.23
6983	6982	16	0.95	4.84	0.26	0.16
6984	6983	15	0.79	3.71	0.26	0.19
6985	6984	15	0.99	4.15	0.26	0.18
6987	6985	15	1.01	4.2	0.26	0.2
6988	6987	15	1.15	4.47	0.15	0.16
6989	6988	15	0.98	4.13	0.15	0.48
6990	32475	15	0.83	3.8	0.15	0.14
6995	37990	12	5.27	5.29	0.83	0.29
70	52182	10	4.61	3.04	0.81	0.36
70349	16535	18	2.87	11.51	1.54	0.27
70350	70349	18	2.85	11.47	1.54	0.27
70351	70350	18	4.12	13.78	1.54	0.25
70352	70351	18	1.85	9.25	1.54	0.29
7049	6977	10	0.74	1.22	2.18	2
7050	7049	10	1.57	1.77	2.18	2
7051	7050	10	1.78	1.89	2.18	2
7052	7052M	8	2.36	1.2	1.08	1
7052M	7051	10	0	0	1.22	2
7061	6967	8	2.22	1.16	0.21	0.3
7062	7061	8	1.78	1.04	0.21	0.32
7063	7062	8	1.77	1.04	0.21	0.32
7064	7063	8	0.47	0.53	0.21	0.45
7065	7064	8	2.27	1.18	0.21	0.3
7071	33444	10	1.25	1.03	0	0.1
7071	33444	10	0.99	1.41	0.22	0.28
7080	7071	8	1.91	1.08	0.22	0.32
7081	7080	8	0.41	0.5	0.22	0.48
7082	7081	8	3.14	1.38	0.22	0.29
7083	7082	8	0.4	0.49	0.22	0.48
7084	7083	8	0.4	0.49	0.22	0.48
7085	7084	8	0.4	0.49	0.22	0.48
7086	33446	8	4.41	1.64	0.07	0.17
7087	900091	8	0.49	0.55	0.07	0.25
7088	7087	8	2.46	1.22	0.07	0.19
7089	7088	8	0.42	0.51	0.07	0.26
7090	7089	8	0.4	0.49	0.07	0.27
7092	33448	8	0.62	0.62	0.31	0.99
7093	7092	8	3.27	1.41	0.32	0.34
7094	7093	8	0.81	0.7	0.32	0.49
7095	7094	8	4.87	1.72	0.32	0.3
7096	7095	8	6.45	1.98	0.32	0.29
7097	7096	8	8.76	2.31	0.32	0.27
7098	7097	8	8.43	2.27	0.32	0.27
7099	7098	8	0.41	0.5	0.32	0.58
7100	7099	8	2.05	1.12	0.32	0.43
7101	7100	8	1.48	0.95	0.32	0.41
7102	F1757	8	0.77	0.69	0.32	0.49
7106	20553	8	3.67	1.5	0.26	0.3
7107	7106	8	3.65	1.49	0.26	0.3

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7108	7107	8	3.74	1.51	0.26	0.3
7113	6966	8	3.25	1.41	0.63	0.48
7114	63663	8	2.3	1.19	0.63	0.53
7115	63665	8	3.32	1.42	0.63	0.48
71157	64085	8	0.56	0.58	1.52	2
71158	71157	8	0.61	0.61	1.65	2
7116	7115	8	0.37	0.47	0.63	2
7117	7116	8	4.07	1.58	0.63	1
7118	7117	8	3.84	1.53	0.63	0.46
7119	7118	8	2.99	1.35	0.63	0.49
71194	38684	8	0.4	0.49	0.18	0.43
7120	7119	8	1.81	1.05	0.63	0.57
7122	13238	8	1.68	1.01	0.63	0.58
71229	71158	8	7.71	2.17	2.85	2
7123	7122	8	0.5	0.55	0.63	2
7124	7123	8	3.45	1.45	0.63	1
7125	7124	8	3.12	1.38	0.63	0.49
7126	7125	8	2.45	1.22	0.63	0.52
7127	7126	8	2.5	1.24	0.63	0.52
7128	7127	8	4.12	1.59	0.63	0.45
7132	7128	8	2.18	1.15	0.63	0.55
7133	7132	8	1.58	0.98	0.63	0.59
7134	7133	8	2.31	1.19	0.63	0.53
7135	7134	8	2.48	1.23	0.64	0.52
7136	7135	8	1.81	1.05	0.64	0.57
7137	7136	8	2.8	1.31	0.64	0.5
7161	7052M	8	4.47	1.65	0.23	1
7162	7161	8	7.62	2.16	0.24	0.28
7163	23057	8	0.26	0.4	0.24	0.56
7164	7163	8	1.6	0.99	0.24	0.35
7165	7052	8	3.7	1.5	1.12	1
7166	7165	8	3.45	1.45	1.14	0.69
7167	7166	8	0.41	0.5	1.14	2
7168	7167	8	2.46	1.23	1.15	1
7169	7168	8	3.36	1.43	1.16	1
7170	7169	8	3.71	1.5	1.23	1
7171	7170	8	2.34	1.19	1.23	2
7173	7171	8	3.06	1.37	1.23	1
7176	7173	8	2.75	1.29	1.25	0.98
7177	7176	8	4.51	1.66	1.28	0.93
7178	7051	8	4.11	1.58	0.99	1
7179	7178	8	1.64	1	0.98	0.96
7180	7179	8	0.4	0.5	0.98	2
7181	7180	8	0.41	0.5	0.98	2
7182	7181	8	1.23	0.87	0.98	2
7183	7182	8	2.33	1.19	1.01	1
7184	7183	8	1.87	1.07	1.05	2
7185	7184	8	1.9	1.08	1.24	2
7188	7185	8	1.37	0.91	1.24	2
7252	6995	12	1.29	2.61	0.83	0.4
7253	7252	12	0.44	1.53	0.83	0.53

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7254	7253	12	0.36	0.89	0.83	0.76
7255	7254	12	0.43	0.98	0.83	0.77
7256	7255	12	0.32	0.84	0.83	0.77
7257	7270	8	0.81	0.7	0	0.1
7258	7257	8	1.76	1.04	0	0.1
7259	7258	8	1.2	0.86	0	0.1
7260	7259	8	0.39	0.49	0	0.1
7261	7260	8	0.36	0.47	0	0.1
7262	7261	8	0.32	0.44	0	0.1
7263	7262	8	0.39	0.49	0	0.1
7264	7263	8	0.38	0.48	0	0.1
7265	7264	8	1.36	0.91	0	0.1
7266	7256	8	0.8	0.7	0	0.25
7270	7266	8	0.85	0.72	0	0.1
7287	7265	8	3.97	1.56	0	0.1
7288	7287	8	3.37	1.44	0	0.1
7289	7256	10	0.54	0.68	0.83	2
7295	61948	24	1.62	18.62	11.98	1
7296	7295	24	0.38	9	12.06	2
7297	7296	24	0.76	12.77	12.06	1
7298	7297	24	0.43	9.58	12.06	2
7300	55251	24	0.65	11.77	11.43	1
7301	7300	24	2	20.7	11.46	1
7302	7301	24	2.4	22.65	11.47	0.54
7303	7302	21	2.77	17.06	11.47	0.62
7305	7303	21	2.09	14.82	11.47	0.67
7308	7305	21	1.49	12.52	12.28	1
7309	19143	21	0.8	9.14	9.12	1
7311	18322	21	1.12	7.06	9.3	2
7314	18241	21	0.35	3.91	9.32	2
7315	22223	21	0.49	4.64	8.45	2
7316	7315	21	0.96	10.03	8.84	1
7317	7316	21	0.67	8.38	7.21	1
7318	7317	21	0.55	7.59	7.21	1
7319	7318	21	0.91	9.8	7.45	1
7320	7319	21	1.27	11.54	7.45	1
7321	7320	18	1.35	7.9	6.2	1
7322	7321	18	1.16	7.33	6.2	1
7323	7322	18	0.91	6.48	6.2	1
7324	7323	18	1.31	7.79	6.4	1
7325	52651	18	1.02	6.84	3.4	1
7326	7325	18	0.81	6.13	3.4	1
7327	7326	18	0.75	5.89	3.41	1
7328	7327	18	0.74	5.83	3.41	0.76
7329	7328	15	1.56	5.22	2.43	0.49
7330	7329	15	0.8	3.73	2.43	0.59
7332	7316	10	1.77	1.89	2.52	2
7333	7332	10	3.44	2.63	2.66	2
7334	16604	10	3.11	2.5	1.52	1
7335	7334	10	3.77	2.75	1.52	0.91
742	754	8	1.89	1.07	0	0.1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
754	902164	8	6.11	1.93	0	0.1
8195	37032	12	0.24	1.14	0.64	0.51
900091	7086	8	0.5	0.55	0.07	0.25
901295	901296	8	1.49	0.95	0.52	0.58
901296	901297	8	0.61	0.61	0.52	0.72
901297	901298	8	0.59	0.6	0.52	0.72
901298	901299	8	1.79	1.05	0.52	0.51
901299	52524	8	8.72	2.31	0.52	0.64
901390	37990	15	11.09	9.04	1.57	0.3
901391	901390	16	0.36	1.95	1.57	0.62
901676	15751	27	0.52	18.7	14.52	0.66
901871	52661	12	2.46	3.61	1.21	0.42
901892	901893	6	5.72	0.87	0.66	1
901893	16595	8	6.03	1.92	0.66	0.42
902012	6953	24	0.34	11.03	12.49	2
902012	6953	15	0.32	2.35	0	0.05
902054	43825	15	1.2	4.58	0.73	1
902164	902165	8	6.32	1.96	0	0.1
902165	52657	8	6.21	1.95	0	0.1
9039	16038	18	0.92	6.5	1.41	0.42
9040	17949	15	1.35	4.86	1.02	0.33
9041	17969	15	1.15	4.48	0.56	0.32
9042	9041	15	1.05	4.28	0.39	0.22
9044	14317	15	4.1	8.45	0	0.1
9045	9044	15	3.35	7.65	0	0.1
9046	9045	15	0.08	1.16	0	0.05
9047	9046	21	0.25	5.11	0	0.05
9048	10918	21	0.48	7.06	0	0.05
9049	9048	21	2.33	15.64	0	0.1
break 1	break12	6	-0.12	-0.12	0.24	1
Break 4	45855	6	-1.62	-0.49	0.35	1
Break11	41040	6	-2.37	-0.6	0.24	1
break12	Break11	6	-0.32	-0.2	0.24	1
break2	46749	6	0.06	0.08	0.43	2
C445	7102	8	0.21	0.36	0.32	0.64
F1757	7101	8	0.8	0.7	0.32	0.49
F5313-missing	2403	8	2.4	1.21	1.34	2
NS1044	48253	6	-6.41	-1.03	0.41	1
PVT302	PVT303	8	0.48	0.54	0.41	0.65
PVT303	29644	8	0.9	0.74	0.41	0.87
PVT472	PVT473	8	1.39	0.92	0.07	0.21
PVT473	PVT474	8	5.93	1.9	0.07	0.16
PVT474	PVT475	8	8.6	2.29	0.07	0.15
PVT475	PVT476	8	0.61	0.61	0.07	0.24
PVT476	PVT477	8	0.6	0.6	0.07	0.24
PVT477	PVT478	8	11.33	2.63	0.07	0.14
PVT478	32260	8	15.2	3.05	0.07	0.14
weir15	33295	24	0.31	8.18	1.55	0.47
59221	59220	8	2.22	1.16	0.45	0.44
59220	59219	8	2.72	1.29	0.45	0.42
59219	204	8	2.74	1.29	0.45	0.42

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Post						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
204	201	8	4.72	1.7	0.45	0.37
201	52174	8	1.89	1.07	0.45	0.47
52176	52175	16	2.3	7.52	1.4	0.46
52182	52181	8	5.49	1.83	0.81	0.48
52181	52176	8	5.35	1.81	0.81	0.48
42057	71509	8	5.5	1.83	0.53	0.53
42056	42055	8	4.53	1.66	0.53	0.4
71509	42056	8	1.63	1	0.53	0.53
52175	52174	16	0.57	3.73	1.55	0.46
52174	52173	16	0.5	3.51	1.99	0.53
52173	52172	16	0.49	3.47	1.98	0.55
72974	34836	14	0.79	8.03	0.91	0.28
33707	72976	12	4.58	4.93	0.72	1
72976	72975	12	0.96	2.26	0.73	1
72975	20760	27	0.2	8.89	10.14	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
10918	13409	21	0.15	3.97	0.00	0.05
11	70352	24	1.63	18.68	1.51	0.21
11897	7052	8	3.72	1.51	-0.04	1.00
12	11	24	0.40	9.29	1.51	0.28
13238	7120	8	1.83	1.06	0.70	0.61
13409	9047	21	-0.19	-4.47	0.00	0.05
13939	20805	12	11.76	7.90	0.13	0.61
14317	15315	15	2.45	6.54	0.00	0.10
14454	19876	12	5.12	5.21	1.46	0.62
14455	14454	12	1.46	2.78	1.46	0.53
14456	14455	12	1.59	2.91	1.46	0.51
14458	14456	12	1.02	2.32	1.35	0.56
14546	7188	8	0.57	0.59	1.32	2.00
14547	14546	8	2.87	1.32	1.36	2.00
14548	14547	8	4.80	1.71	1.42	1.00
14565	6885	42	2.14	77.24	40.73	1.00
14937	5134	10	0.55	1.05	0.37	0.42
150	901871	16	3.05	8.66	1.19	0.27
1507	16581	10	14.78	5.45	0.99	0.30
1508	1507	8	0.99	0.78	0.99	2.00
15269	42234	18	1.37	10.33	1.13	0.34
15270	30591	15	1.38	4.91	1.00	0.32
15270	9042	15	1.89	5.74	0.35	0.20
15271	22538	15	2.67	6.83	0.41	0.46
15315	30592	15	2.39	6.45	0.00	0.18
15751	40488	27	0.66	21.21	16.74	1.00
15871	6936	30	0.44	17.56	16.78	1.00
15872	15871	30	0.60	20.58	16.79	1.00
1593	29862	12	0.04	0.43	1.07	2.00
16036	42233	18	0.94	6.58	2.67	0.44
16037	16036	18	0.97	6.69	2.25	0.41
16038	16037	18	1.68	8.81	1.26	0.50
1609	1593	10	0.33	0.81	0.64	0.68
1610	1609	10	0.50	1.01	0.65	0.58
1611	1610	10	0.77	1.24	0.65	0.52
1612	1611	10	1.74	1.87	0.65	0.52
1613	1612	10	0.47	0.97	0.65	0.60
1614	1613	10	0.39	0.88	0.65	0.64
16379	16379N	42	0.16	20.88	41.21	2.00
16379N	6877	42	0.16	21.44	41.21	2.00
16401	C445	8	0.41	0.50	0.35	0.63
16402	16401	8	0.40	0.49	0.35	0.64
16403	16402	8	2.26	1.17	0.35	1.00

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
16404	16403	8	1.56	0.97	0.35	0.43
16535	7330	15	2.02	5.93	2.45	0.57
16536	11897	8	4.15	1.59	0.00	0.10
16581	7328	10	4.34	2.95	0.99	0.64
16595	7333	8	4.68	1.69	0.67	1.00
16596	7333	10	0.50	1.00	2.83	2.00
16604	7320	10	3.39	2.61	1.39	1.00
16742	6982	8	2.42	1.22	0.26	0.33
16743	16742	8	0.65	0.63	0.26	0.46
16744	16743	8	1.02	0.79	0.26	0.41
16745	16744	8	1.07	0.81	0.26	0.41
16746	33093	8	1.00	0.78	0.26	0.42
16747	16746	8	0.72	0.66	0.26	0.45
16748	16747	8	1.03	0.79	0.26	0.41
16749	16748	8	6.64	2.01	0.26	0.27
16750	16750M	8	1.91	1.08	0.26	0.35
16750M	16749	8	1.86	1.06	0.26	0.35
16751	16750	8	1.04	0.80	0.26	0.41
16752	16751	8	0.49	0.55	0.26	0.50
16753	16752	8	0.49	0.55	0.26	0.50
16754	16753	8	0.40	0.49	0.26	0.53
17008	33535	8	5.13	1.77	0.26	0.28
17009	17008	8	4.03	1.57	0.26	0.29
17037	17009	8	5.23	1.79	0.26	0.28
17041	17037	8	5.23	1.79	0.26	0.28
17297	17764	12	1.61	2.92	1.42	0.50
17375	45753	30	2.07	38.12	16.95	1.00
17479	42227	8	1.02	0.79	0.24	0.45
17480	17479	8	1.97	1.10	0.24	0.33
17481	17480	8	5.66	1.86	0.24	0.26
17482	17481	8	6.53	2.00	0.24	0.25
17483	17482	8	4.37	1.63	0.24	0.28
17484	17483	8	1.94	1.09	0.24	0.34
17747	18202	12	42.19	14.96	1.73	1.00
17748	17747	12	1.61	2.92	1.73	0.57
17749	46796	12	5.67	5.48	1.73	0.40
17750	17749	12	0.42	1.49	1.73	2.00
17751	17750	12	0.36	1.38	1.73	2.00
17752	34447	12	0.31	1.28	1.47	2.00
17753	17752	12	0.43	1.51	1.47	1.00
17754	17753	12	0.43	1.51	1.48	1.00
17755	17754	12	0.37	1.40	1.49	2.00
17756	17755	12	0.23	1.10	1.31	2.00

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
17757	17756	12	0.68	1.90	1.33	1.00
17758	17757	12	4.60	4.94	1.36	1.00
17759	17758	12	0.30	1.27	1.38	0.88
17760	17759	12	3.42	4.26	1.39	0.41
17761	19657	12	5.83	5.56	1.40	0.36
17762	17761	12	3.57	4.35	1.40	0.41
17763	19910	12	1.95	3.22	1.41	0.48
17764	17763	12	1.44	2.76	1.41	0.52
17765	48242	12	5.89	5.59	0.50	0.25
17766	17765	12	1.52	2.84	0.50	0.30
17767	17766	12	-0.07	-0.63	0.50	0.63
17768	17767	12	1.15	2.47	0.50	0.56
17769	17768	12	4.01	4.61	0.50	0.32
17770	17769	12	3.46	4.29	0.50	0.25
17771	17770	12	4.80	5.05	0.50	0.23
17772	17771	12	4.42	4.84	0.50	0.24
17773	17772	12	1.43	2.76	0.50	0.30
17774	17773	12	8.83	6.84	0.50	0.21
17775	17774	12	0.89	2.18	0.50	0.33
17949	9039	15	1.61	5.30	0.92	0.30
17969	9040	15	0.86	3.87	0.92	0.34
18	56841	18	-0.57	-5.14	3.16	0.98
18063	17775	12	-0.45	-1.55	0.50	0.96
18064	18063	12	0.76	2.00	0.50	0.86
18202	6885	12	0.61	1.79	1.72	1.00
18241	7311	21	1.20	7.28	9.30	2.00
18297	6958	8	10.17	2.49	0.37	1.00
18298	18297	8	10.97	2.59	0.37	0.27
18298A	18298	8	0.30	0.43	0.37	0.68
18299	18298A	8	0.35	0.46	0.37	0.67
18300	18299	8	0.39	0.49	0.37	0.65
18301	18300	8	2.16	1.15	0.37	0.51
18302	18301	8	4.20	1.60	0.37	0.34
18303	18302	8	6.83	2.04	0.37	0.30
18321	7309	21	0.87	9.56	9.15	1.00
18322	18321	21	1.64	13.13	9.15	1.00
18363	7256	8	0.40	0.49	-0.01	0.87
18364	18363	8	0.40	0.49	0.00	0.10
18452	6928	42	0.01	7.10	17.96	2.00
18453	18452	12	1.43	2.75	1.36	1.00
18454	18453	12	2.98	5.17	1.36	1.00
18455	20314	12	2.55	4.78	1.36	0.38
18456	45724	12	1.96	4.19	0.98	0.35

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
18457	18456	12	3.74	5.79	0.98	0.29
18458	18457	12	3.14	5.30	0.98	0.31
18463	18458	10	1.59	2.32	0.84	0.43
18478	18463	8	2.51	1.61	0.84	0.61
18479	18478	8	3.06	1.37	0.84	0.58
18480	18479	8	2.00	1.11	0.84	0.66
18481	18480	8	2.95	1.34	0.84	0.58
18481A	18481	8	3.21	1.40	0.84	0.57
18482	18481A	8	2.77	1.30	0.84	0.59
18483	18482	8	3.23	1.40	0.84	0.67
18484	18483	8	3.01	1.36	0.84	0.58
18485	18484	8	3.63	1.49	0.84	0.55
18486	18485	8	2.66	1.27	0.84	0.60
18496	901391	15	0.24	1.34	1.37	0.79
18497	19001	8	0.38	0.48	0.18	0.43
18497A	18497	8	0.97	0.77	0.18	0.34
18498	18497A	8	0.97	0.77	0.18	0.34
18517	18486	8	3.54	1.47	0.84	0.56
18552	18496	15	0.43	2.73	1.20	0.66
18553	18552	15	0.34	2.45	1.20	0.50
18554	39224	15	0.49	2.91	1.11	0.54
18555	20127	15	0.52	3	1.11	0.43
18586	902012	24	0.32	10.73	13.29	2
18586	902012	15	1.43	4.99	0.19	0.16
18587	18586	8	2	1.11	0.81	1
18588	18587	8	0.61	0.61	0.82	2
18589	18588	8	0.6	0.6	0.82	2
18590	18589	8	1.19	0.85	0.82	1
18591	18590	8	0.61	0.61	0.82	2
18592	18591	8	0.61	0.61	0.83	2
18593	18592	8	0.6	0.6	0.85	2
18594	18593	8	1.5	0.96	0.93	1
18595	18594	8	2	1.1	0.93	1
18596	18595	8	2	1.11	0.94	1
19	18	15	0.25	2.08	1.25	0.56
19001	18496	8	0.4	0.5	0.18	0.42
19141	7308	21	1.24	11.4	11.55	2
19142	34175	21	1.36	11.95	4.9	1
19143	22225	21	0.18	4.35	4.9	2
19143	59276	21	3.58	19.39	4.39	1
19657	17760	12	7.02	6.1	1.4	0.34
19706	6947	24	0.72	16.1	15.68	1
19707	19706	8	0.39	0.49	0.71	2
19711	19808	8	0.4	0.49	0.7	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
19712	19711	8	0.6	0.61	0.7	2
19714	19712	8	0.6	0.61	0.7	2
19715	19714	8	0.4	0.49	0.71	2
19716	19715	8	0.6	0.6	0.72	2
19717	19716	8	0.6	0.6	0.73	2
19808	19707	8	0.4	0.49	0.7	2
19873	6955	24	0.36	11.35	12.59	2
19874	19873	12	1.75	3.96	1.47	1
19875	19874	12	0.63	2.38	1.46	0.57
19876	19875	12	0.56	1.73	1.46	0.71
19910	17762	12	2.22	3.43	1.4	0.46
20	19	12	-0.03	-0.42	0.16	0.76
20126	18553	15	0.59	3.22	1.2	0.43
20127	18554	15	0.3	2.28	1.11	0.48
20244	7289	8	0.41	0.5	0.83	2
20246	3	8	0.38	0.48	0.84	2
20247	20246	8	0.4	0.49	0.91	2
20248	20247	8	2.5	1.24	0.91	1
20249	20248	8	3.78	1.52	0.91	1
20250	20249	8	4.74	1.7	0.91	0.53
20314	18454	12	2.67	4.89	1.36	1
20553	37013	27	-0.69	-21.67	5.55	0.58
20753	21328	30	0.11	8.76	10.09	2
20754	20753	30	0.01	1.77	10.13	2
20755	20754	30	0.26	8.76	9.86	2
20756	20755	30	0.11	5.78	9.71	2
20757	20756	30	0.08	4.99	9.77	2
20758	20757	30	0.12	6	9.83	2
20759	20758	30	0.1	5.53	9.89	2
20760	20759	30	0.11	5.75	9.98	2
20761	72975	27	0.07	5.21	9.49	2
20762	21329	27	0.19	8.72	9.4	2
20763	20762	27	0.31	11.21	9.47	1
20764	20763	27	0.18	8.55	9.45	2
20765	20764	27	0.17	8.31	9.37	2
20766	20765	27	0.18	8.57	9.45	2
20767	20766	27	0.32	11.25	9.66	1
20768	20767	18	1.05	6.95	5.66	1
20769	20768	18	0.99	6.76	5.67	1
20770	20769	18	0.69	5.65	5.68	1
20771	20770	18	0.74	3.8	5.68	2
20772	20771	15	1.19	4.55	5.19	2
20773	20772	15	1.18	4.54	4.49	1
20774	20773	15	1.01	4.19	4.6	2
20775	20774	15	1.21	4.6	4.87	2
20776	20775	15	1.81	5.61	5.23	1
20777	30726	15	1.87	5.71	4.86	1
20778	57146	15	1.06	4.29	3.96	1
20779	20778	15	1.52	5.14	3.96	1
20780	20779	15	1.36	4.87	3.22	1
20781	20780	15	1.15	4.47	3.22	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
20782	41252	15	0.89	2.55	2.83	2
20783	56667	15	1.63	3.47	2.31	0.76
20793	69152	16	1.17	5.36	1.35	0.36
20794	36990	15	2	5.91	1.24	0.34
20795	37148	15	2.33	6.37	1.24	0.53
20796	20795	12	1.94	3.21	1.23	0.44
20797	20796	12	1.88	3.16	1.23	0.44
20798	20797	12	2.3	3.49	1.23	0.42
20799	20798	12	2.41	3.58	1.23	0.42
20803	20799	12	2.54	3.67	1.12	0.39
20804	20803	12	5.66	5.48	1.12	0.32
20805	20804	12	0.85	2.12	1.12	0.52
20806	20805	12	3.74	4.45	1.07	0.35
20807	20806	12	1.16	2.48	1.07	0.48
20808	20807	12	0.42	1.49	1.07	0.64
20809	20808	12	0.73	1.97	1.07	0.74
20810	20809	12	0.48	1.6	1.07	0.61
20811	20810	12	0.59	1.77	1.07	0.57
20812	20811	12	0.7	1.93	1.07	0.56
21	20	12	2.61	3.72	0.16	0.74
21042	41529	15	0.37	2.52	1.11	0.46
21043	21042	15	0.36	2.51	1.11	0.46
21044	21043	8	1.01	0.78	0.57	0.64
21045	21043	15	0.94	4.05	0.51	0.35
21046	21045	15	0.11	1.39	0.51	0.38
21047	21044	8	1.01	0.78	0.08	0.37
21048	21047	8	0.83	0.71	0.08	0.25
21049	21048	8	0.79	0.7	0.08	0.25
21050	21049	8	1.86	1.07	0.08	0.21
21051	21050	8	2.21	1.16	0.08	0.21
21052	21051	8	3	1.35	0.08	0.2
21053	21049	8	0.98	0.77	0	0.1
21054	21043	8	1.94	1.09	0.05	0.18
21055	21054	8	1.78	1.04	0.05	0.18
21056	21055	8	1.76	1.04	0.05	0.18
21057	21056	8	1.77	1.04	0.05	0.18
21058	21057	8	1.73	1.03	0.05	0.18
21059	21044	8	1.02	0.79	0.49	0.6
21060	21059	8	1	0.78	0.49	0.58
21061	21060	8	3.02	1.36	0.49	0.44
21062	21061	8	1.02	0.79	0.49	0.58
21063	21062	8	1.02	0.79	0.49	0.58
21064	21063	8	0.86	0.72	0.39	0.53
21065	21064	8	0.93	0.75	0.39	0.52
21066	21065	8	0.88	0.73	0.39	0.53
21067	21066	8	0.9	0.74	0.39	0.52
21068	21067	8	0.99	0.78	0.08	0.24
21071	21067	8	0.88	0.73	0.31	0.47
21328	6888	30	0.32	14.98	10.06	1
21329	20761	27	0.19	8.83	9.34	2
21589	18596	8	1.53	0.97	0.99	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
21590	21589	8	0.79	0.69	0.41	0.57
21591	21590	8	2.02	1.11	0.41	0.43
21592	21591	8	2.05	1.12	0.41	0.43
21593	21592	8	2	1.11	0.42	0.44
21594	21593	8	3.35	1.43	0.42	0.38
21595	21594	8	6.07	1.92	0.42	0.33
21620	21621	8	0.61	0.61	0.07	0.24
21621	52550	8	2.69	1.28	0.07	0.93
21622	52551	8	2.76	1.3	1.29	1
21623	21622	8	0.93	0.75	0.47	0.81
21624	21623	8	2.02	1.11	0.47	0.47
21625	21624	8	2.38	1.21	0.47	0.44
21626	21625	8	2.91	1.33	0.47	0.42
21627	21626	8	0.6	0.6	0.47	0.66
21628	21627	8	0.31	0.44	0.47	0.87
21629	21628	8	0.39	0.49	0.47	0.8
21630	21629	8	0.4	0.49	0.47	0.79
21631	21630	8	0.4	0.5	0.47	0.78
21634	21631	8	2.99	1.35	0.47	0.42
21635	21634	8	2.65	1.27	0.47	0.43
21636	21635	8	5.84	1.89	0.47	0.35
21638	21636	8	0.99	0.78	0.47	0.57
21641	21622	8	1.48	0.95	0.84	1
21642	21641	8	0.61	0.61	0.84	2
21643	21642	8	0.59	0.6	0.84	2
21645	21643	8	0.61	0.61	0.84	2
21646	21645	8	0.59	0.6	0.84	2
21647	21646	8	1.58	0.98	0.84	1
21648	21647	8	3.99	1.56	0.84	1
21649	21648	8	6.08	1.93	0.84	0.48
21651	21649	8	0.59	0.6	0.84	2
21652	21651	8	0.4	0.49	0.79	2
21653	21652	8	0.41	0.5	0.63	2
21654	21653	8	0.4	0.49	0.64	2
21655	21654	8	0.95	0.76	0.65	1
21805	7108	8	2.53	1.24	0.29	0.34
21806	21805	8	0.59	0.6	0.29	0.5
21807	21806	8	0.61	0.61	0.29	0.5
22	19	15	0.41	2.66	1.1	0.57
22009	6957	24	0.47	13.03	11.12	1
22010	22009	24	0.4	11.99	10.76	1
22011	22010	24	0.6	14.74	10.76	1
22012	22011	24	0.6	14.71	10.8	1
22013	22012	24	0.63	15.07	10.96	0.99
22067	19717	8	2.62	1.27	1.13	1
22090	21620	8	0.61	0.61	0.07	0.24
22091	22090	8	0.6	0.6	0.07	0.24
22092	22091	8	1.06	0.8	0.07	0.22
22093	22092	8	1.44	0.94	0.07	0.21
22094	22093	8	1.82	1.05	0.07	0.2
22097	22094	8	3.89	1.54	0.07	0.17

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
22098	22097	8	4.15	1.59	0.07	0.17
22099	22098	8	1.41	0.93	0.07	0.21
22100	22099	8	0.57	0.59	0.07	0.25
22101	22100	8	0.59	0.6	0.07	0.25
22222	7314	21	0.83	6.07	8.77	2
22223	22222	21	0.76	5.79	8.79	2
22225	19142	21	0.41	6.53	4.9	1
22454	6921	12	0.79	1.33	0.41	1
22455	22454	12	0.4	0.95	0.4	1
22456	22455	12	0.99	1.49	0.35	1
22457	22456	12	0.46	1.01	0.34	0.41
22458	45585	12	1.23	1.66	0.34	0.33
22462	22458	12	1.24	1.67	0.34	0.33
22463	22462	12	1.98	3.24	0.34	0.24
22463A	22463	12	1.66	2.96	0.34	0.25
22464	22463A	12	1.58	2.89	0.34	0.25
22465	45592	12	0.6	1.79	0.34	0.3
22466	22465	12	0.42	1.49	0.34	0.34
22482	45567	12	2	3.26	0.34	0.24
22489	22482	12	2.71	3.79	0.34	0.22
22490	22489	12	2.36	3.54	0.34	0.23
22538	15270	15	3.59	7.91	1.36	0.3
2254	742	10	0.44	0.94	0	0.08
2255	2254	10	0.79	1.26	0	0.08
23	22	15	1.19	4.55	1.1	0.45
23057	7162	8	0.51	0.56	0.22	0.45
23775	18517	8	6.07	1.93	0.49	0.36
23776	23775	8	4.24	1.61	0.49	0.39
23777	23776	8	1.12	0.83	0.49	0.57
23778	23777	8	0.6	0.61	0.49	0.7
23779	23778	8	0.68	0.64	0.49	0.65
2402	901892	6	3.29	0.66	0.66	2
2402	SSO120-oufall	8	41.88	5.06	0.41	0.22
2403	2402	8	2.49	1.23	1.07	1
2404	F5313-missing	8	3.52	1.46	1.34	1
2405	2404	8	0.35	0.46	1.02	2
2416	2404	8	0.4	0.49	0.35	1
27	23	15	1.23	4.64	1.1	0.35
2900	7335	10	15.51	5.58	1.4	0.39
2936	1508	10	0.52	1.02	0.75	1
2937	2936	10	0.52	1.02	0.32	0.84
2938	2937	10	0.44	0.94	0.32	0.47
2939	2938	10	0.61	1.1	0.32	0.4
2940	2939	10	2.82	2.38	0.32	0.27
2941	2940	10	1.91	1.96	0.32	0.29
2942	2941	10	0.35	0.84	0.32	0.43
2943	4971	10	1.46	1.71	0.32	0.31
2945	2943	10	0.93	1.37	0.32	0.34
2946	2945	10	1.81	1.91	0.32	0.29
2947	2946	10	1.93	1.97	0.32	0.29
29644	37991	8	0.5	0.55	0.4	0.58

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
29645	30342	15	0.58	3.18	0	0.05
29645	33471	30	0.65	21.3	0	0.05
29861	20812	12	0.05	0.51	1.07	0.66
29862	29861	10	0.31	0.78	1.07	2
29873	20799	10	4.86	3.12	0.2	0.2
3	20244	8	0.39	0.49	0.83	2
30153	21046	8	0.38	0.48	0.51	2
30155	30153	8	0.44	0.52	0.51	1
30156	30155	8	0.88	0.73	0.51	0.97
30157	30156	8	0.6	0.6	0.52	0.72
30158	30157	8	0.61	0.61	0.52	0.72
30159	30158	8	0.55	0.58	0.52	0.73
30342	37991	30	0.41	16.87	0	0.11
30588	16037	18	0.62	5.35	1	0.29
30588A	30588	15	1.15	4.48	1	0.34
30589	30588A	15	1.72	5.48	1	0.3
30590	30589	15	1.19	4.56	1	0.34
30590A	30590	15	0.79	3.71	1	0.36
30590B	30590A	15	1.88	5.72	1	0.34
30591	30590B	15	0.77	3.67	1	0.36
30592	15271	15	2.04	5.96	0.41	0.2
30593	30592	15	-2.94	-7.17	0.41	0.53
30594	30593	15	2.24	6.25	0.41	0.45
30595	30594	15	2.79	6.97	0	0.1
30596	30595	15	3.59	7.91	0	0.1
30597	30596	15	3.01	7.25	0	0.1
30598	30597	15	0.88	3.91	0	0.05
30616	22067	8	0.42	0.51	1.13	2
30617	30616	8	2.76	1.3	1.13	1
30618	30617	8	3.89	1.54	1.13	1
30619	30618	8	3.8	1.52	1.13	1
30620	30619	8	3.53	1.47	1.13	0.67
30621	30620	8	2.89	1.33	1.13	0.72
30622	30621	8	0.92	0.75	1.13	2
30623	30622	8	0.92	0.75	1.13	2
30624	30623	8	9.81	2.45	1.13	1
30625	30624	8	5.85	1.89	1.13	0.57
30626	30625	8	5.07	1.76	1.13	0.59
30627	30626	8	1.53	0.97	1.13	2
30628	30627	8	2.23	1.17	1.13	1
30726	20776	15	1.01	4.2	4.37	2
30727	53271	8	2	1.1	1.1	1
30953	31001	8	0.43	0.51	0.31	0.58
30957	30953	8	0.61	0.61	0.31	0.52
30958	59113	8	4.84	1.72	0.58	1
30959	30958	8	1.4	0.93	0.58	0.58
30960	30959	8	1.4	0.92	0.58	0.58
30963	30960	8	2.86	1.32	0.27	0.54
30968	65375	18	1.6	8.6	0	0.14
31001	21071	8	0.47	0.54	0.31	0.56
31151	30159	8	0.61	0.61	0.52	0.72

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
31153	31151	8	1.36	0.91	0.52	0.68
31154	31153	8	1.7	1.02	0.52	0.51
31155	31154	8	1.7	1.02	0.52	0.51
31828	21655	8	2.04	1.12	0.65	1
31829	31828	8	1	0.78	0.65	1
31830	31829	8	1.39	0.92	0.65	1
31831	31830	8	1.19	0.85	0.66	1
31832	31831	8	1.29	0.89	0.67	1
31833	31832	8	1.98	1.1	0.67	1
31834	31833	8	4.03	1.57	0.67	0.47
31835	31834	8	1.04	0.8	0.52	0.6
32254	33532	12	0.16	0.6	0.63	0.66
32257	32254	12	0.47	1.03	0.63	0.57
32258	32257	12	0.37	0.91	0.63	0.62
32259	32258	12	0.58	1.75	0.63	0.46
32260	32259	12	-0.01	-0.19	0.63	0.73
32261	32260	12	1.04	2.35	0.57	0.42
32262	32261	12	1.25	2.57	0.57	0.34
32263	32262	12	0.78	2.03	0.57	0.37
32394	19706	24	1.22	20.96	14.98	1
32395	32394	8	1.59	0.98	0.99	2
32396	32395	8	2.1	1.13	0.99	1
32397	32396	8	4.36	1.63	0.99	0.62
32475	6989	15	0.68	3.44	0.16	0.15
33093	16745	8	0.95	0.76	0.26	0.42
33295	12	24	0.51	10.44	1.51	0.7
33296	52660	18	1.12	7.17	1.65	0.34
33437	42234	30	0.71	29	6.35	0.32
33438	33437	30	0.95	33.56	6.35	0.3
33439	33438	27	-0.83	-23.73	6.35	0.83
33440	33439	27	0.33	15.04	6.35	0.79
33442	38773	27	0.79	23.12	6.2	0.36
33443	33442	27	0.69	21.67	6.2	0.37
33444	6970	10	-0.49	-1.29	0	0.08
33444	33443	27	0.73	22.2	6.2	0.36
33445	33444	27	0.8	23.23	5.99	0.35
33446	33445	27	1.08	27.09	5.99	0.34
33447	33446	27	1.52	32.04	5.92	0.31
33448	33447	27	1.76	34.51	5.92	0.3
33451	37014	27	0.53	14.56	5.31	0.42
33452	33451	27	0.78	17.72	2.57	0.38
33453	33452	27	0.96	19.63	2.57	0.25
33454	33453	27	1.03	20.32	2.57	0.26
33455	33454	27	1.42	23.87	2.57	0.24
33456	33455	27	1.46	24.22	2.57	0.24
33457	33456	27	1.5	24.53	2.57	0.24
33458	33457	27	3.25	36.06	2.57	0.21
33459	33458	27	0.47	13.75	2.57	0.29
33460	33459	27	1.03	20.33	2.57	0.26
33461	33460	27	0.76	17.5	2.57	0.27
33462	33461	27	0.78	17.65	2.57	0.26

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
33463	33462	27	0.79	17.85	2.57	0.26
33464	33463	27	0.73	17.12	2.57	0.27
33465	33464	27	0.74	17.18	2.57	0.27
33466	33465	27	0.66	16.23	2.57	0.27
33470	30342	30	0.48	18.45	0	0.05
33471	33470	30	0.6	20.51	0	0.05
33527	20783	15	1.12	2.88	2.31	0.69
33528	33527	12	1.04	1.53	0.88	0.56
33529	33528	12	0.67	1.23	0.88	0.61
33530	33529	10	2.95	1.58	0.88	0.68
33531	33530	10	3.61	1.75	0.88	0.51
33532	33531	10	3.77	1.79	0.88	0.5
33533	33532	8	5.87	1.89	0.26	0.27
33534	33533	8	4.62	1.68	0.26	0.28
33535	57364	8	5.24	1.79	0.26	0.28
33707	20761	12	-0.55	-1.71	0.32	1
33708	33707	12	2.37	3.55	1	1
33709	33708	12	2.7	3.79	1	1
33710	33709	12	2.28	3.48	0.97	1
33711	33710	12	2.06	3.31	0.98	0.39
33989	32397	8	4.08	1.58	0.99	0.58
33990	33989	8	4.08	1.58	0.99	0.58
33991	33990	8	7.13	2.09	0.99	0.5
33992	33991	8	2.3	1.18	0.99	0.71
33993	33992	8	0.6	0.61	0.99	2
33994	33993	8	0.96	0.76	0.99	2
33995	33994	8	3.61	1.48	0.99	1
33996	33995	8	2.8	1.31	0.99	0.66
33997	33996	8	0.59	0.6	0.99	2
33998	33997	8	0.6	0.61	0.99	2
33999	33998	8	2.39	1.21	1.18	1
34000	33999	8	2.37	1.2	1.18	1
34175	19141	21	1.14	10.96	10.68	1
34176	59274	12	4.17	6.12	1.55	0.36
34177	34176	12	5.25	6.86	1.55	0.34
34178	34177	12	2.31	4.55	1.55	0.44
34179	34178	12	1.84	4.06	1.55	0.44
34180	34179	12	1.87	3.15	0.25	0.32
34209	31835	8	0.6	0.6	0.52	0.73
34210	34209	8	0.59	0.6	0.52	0.73
34211	34210	8	0.6	0.61	0.52	0.73
34212	34211	8	0.65	0.63	0.52	0.71
34213	34212	8	2.36	1.2	0.52	0.57
34214	34213	8	3.17	1.39	0.52	0.44
34215	34214	8	3.16	1.39	0.52	0.44
34216	34215	8	3.13	1.38	0.52	0.44
34217	34216	8	4.46	1.65	0.52	0.4
34218	34217	8	1.96	1.09	0.22	0.32
34381	20767	24	0.2	6.52	5.07	1
34382	34381	24	0.24	7.1	5.08	1
34383	34382	24	0.36	8.82	5.2	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
34384	34383	24	0.27	4.98	3.72	1
34385	34384	24	0.3	5.19	3.73	1
34447	17751	12	0.44	1.53	1.73	2
34836	33711	12	0.79	5.33	0.98	0.39
35527	21652	8	1.94	1.09	0.16	0.28
35528	35527	8	1.88	1.07	0.16	0.28
35529	35528	8	3.17	1.39	0.16	0.28
35530	35529	8	3.4	1.44	0.16	0.25
35531	35530	8	4.22	1.6	0.16	0.23
35532	35531	8	4.26	1.61	0.16	0.23
35533	35532	8	4.45	1.65	0.16	0.23
35534	35533	8	4.81	1.71	0.16	0.23
35535	35534	8	4.48	1.65	0.16	0.23
35536	35535	8	4.59	1.67	0.16	0.23
35537	35536	8	4.4	1.64	0.16	0.23
35538	35537	8	4.31	1.62	0.16	0.23
35539	35538	8	2.91	1.33	0.16	0.26
35551	16404	8	7.51	2.14	0.35	0.29
36911	34383	18	1.1	7.13	2.73	1
36912	36911	18	1.63	8.66	2.74	1
36913	36912	18	0.84	6.21	2.76	0.47
36914	36913	18	1.57	8.51	2.75	0.41
36915	36914	18	1.99	9.59	2.75	0.38
36916	36915	18	1.73	8.92	2.75	0.4
36917	36916	18	1.41	8.06	2.75	0.42
36918	49997	18	2.34	10.39	2.75	0.36
36919	36918	18	2.34	10.38	2.72	0.36
36920	36919	18	2.22	10.12	2.72	0.37
36921	36920	18	3.23	12.2	2.64	0.33
36922	36921	18	1.89	9.32	2.64	0.38
36923	36922	18	1.44	8.14	2.64	0.41
36924	36923	12	1.46	2.78	2.64	0.85
36925	36924	18	2.33	6.74	2.57	0.44
36926	36925	15	1.64	3.48	2.57	0.65
36927	36926	18	1.65	5.67	2.57	0.54
36928	36927	15	1.77	3.61	2.54	0.63
36929	36928	15	1.7	3.54	2.54	0.64
36930	36929	15	0.97	2.67	2.49	0.78
36931	36930	15	1.01	2.72	2.49	0.85
36933	52089	15	1.71	3.55	2.5	0.75
36934	36933	15	1.76	3.6	2.46	0.63
36935	36934	15	2.07	3.9	2.46	0.59
36936	36935	15	1.86	3.71	2.46	0.61
36937	36936	15	2.23	4.05	2.47	0.57
36938	36937	15	2.5	6.6	2.47	0.43
36939	36938	15	2.03	5.95	2.42	0.46
36940	36939	15	1.88	5.73	2.42	0.47
36941	36940	15	0.8	3.75	2.42	0.58
36942	36941	15	0.79	3.72	2.42	0.59
36944	47025	15	0.83	3.8	2.38	0.57
36945	47036	15	1.39	4.92	2.32	0.5

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
36946	42603	15	0.34	2.44	2.26	0.65
36947	36946	15	1.88	5.72	2.22	0.62
36948	52364	15	1.42	4.97	2.22	0.48
36949	36948	15	0.68	3.44	2.22	0.58
36950	36949	15	1.11	4.39	2.22	0.53
36951	36950	15	1.15	4.48	2.1	0.5
36952	36951	15	1.08	4.34	2.1	0.5
36953	38072	15	0.96	4.09	1.37	0.55
36954	36953	12	1.67	2.97	0.47	0.29
36955	38085	12	0.82	2.09	0.27	0.32
36956	36955	12	3.2	4.12	0.27	0.2
36957	36956	12	1.25	2.57	0.27	0.24
36958	36957	12	3.24	4.14	0.27	0.2
36959	36958	12	2.92	3.94	0.27	0.2
36960	36959	12	2.47	3.62	0.27	0.21
36961	36960	12	3.34	4.21	0.27	0.2
36962	36961	12	3.48	4.3	0.27	0.2
36963	36962	12	3.74	4.46	0.27	0.2
36990	20793	15	1.73	5.49	1.26	0.52
37009	33448	27	0.59	19.98	5.6	0.36
37010	37009	27	0.73	22.18	5.55	0.35
37011	37010	27	0.61	20.31	5.55	0.36
37012	37011	27	0.88	24.41	5.55	0.33
37013	37012	27	0.43	17.06	5.55	0.4
37014	20553	27	0.77	22.86	5.31	0.53
37030	65333	15	2.94	7.16	0.59	0.25
37031	37030	12	0.29	1.24	0.59	0.47
37032	37031	12	1.38	2.7	0.59	0.37
37054	6946	8	2.59	1.26	0.41	1
37055	37054	8	1.59	0.98	0.41	0.46
37056	37055	8	1.25	0.87	0.41	0.5
37057	37056	8	0.98	0.77	0.41	0.53
37058	37057	8	0.99	0.78	0.41	0.53
37059	38271	8	1.27	0.88	0.41	0.49
37060	37059	8	5.04	1.75	0.41	0.35
37061	37060	8	4.59	1.67	0.41	0.35
37148	20794	15	1.01	4.2	1.24	0.39
37986	33466	27	1.43	23.9	2.51	0.24
37987	37986	30	0.4	16.78	2.51	0.27
37988	37987	30	0.41	16.97	2.51	0.27
37989	37988	30	0.4	16.71	2.51	0.27
37990	37989	30	0.55	19.62	2.51	0.25
37991	37990	30	0.41	16.93	0.39	0.24
38072	36952	15	0.55	3.11	2.1	0.6
38073	38072	12	1.9	3.17	0.92	0.38
38074	38073	12	1.16	2.48	0.92	0.43
38075	38074	12	1.94	3.21	0.92	0.38
38076	38075	12	1.57	2.89	0.92	0.41
38077	38076	12	1.97	3.23	0.92	0.38
38078	38077	12	1.52	2.84	0.92	0.41
38079	38078	12	0.81	2.08	0.93	0.48

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38080	38079	12	1.2	2.52	0.93	0.43
38081	38080	12	0.69	1.91	0.93	0.5
38083	38081	12	0.53	1.68	0.93	0.54
38084	38083	12	3.86	4.52	0.43	0.39
38085	36954	12	0.93	2.22	0.48	0.32
38269	37058	8	1	0.78	0.41	0.53
38270	38269	8	0.9	0.74	0.41	0.55
38271	38270	8	1.72	1.02	0.41	0.45
38273	38083	8	0.69	0.65	0.55	0.7
38452	36953	8	0.1	0.25	0.9	2
38453	38452	8	4.49	1.66	0.9	1
38454	38453	8	3.34	1.43	0.92	0.59
38455	38454	8	0.84	0.71	0.41	0.56
38456	38455	8	6.64	2.01	0.41	0.32
38457	38456	8	5.3	1.8	0.41	0.34
38458	38457	8	2.04	1.12	0.41	0.43
38459	38458	8	0.54	0.58	0.41	0.64
38460	38459	8	0.53	0.57	0.41	0.64
38461	38460	8	0.46	0.53	0.41	0.68
38462	38461	8	1.63	1	0.41	0.46
38463	38462	8	4.76	1.71	0.41	0.35
38464	38463	8	0.07	0.2	0.41	2
38465	38464	8	0.58	0.59	0.41	1
38525	6952	24	0.38	11.66	14.03	0.98
38526	38525	15	1.69	5.43	0.83	1
38527	38526	15	1.3	4.76	0.84	0.3
38528	38527	15	0.99	4.15	0.84	0.31
38529	38528	15	1.45	5.03	0.84	0.29
38530	38529	15	1.12	4.42	0.84	0.31
38530A	38530	15	0	0	0.84	0.44
38531	38530A	15	0.72	3.54	0.84	0.44
38532	38531	15	0.62	3.29	0.84	0.35
38533	38838	15	2.21	6.21	0.84	0.27
38534	38839	15	1.86	5.7	0.84	0.35
38535	38534	15	0.63	3.32	0.84	0.35
38536	38535	15	-0.13	-1.48	0.84	0.51
38537	38536	15	0.62	3.28	0.84	0.35
38538	38537	15	0.82	3.79	0.78	0.31
38538A	38538	15	3.35	7.64	0.78	0.24
38539	38538A	15	1.17	4.52	0.78	0.3
38581	21807	8	1.93	1.08	0.29	0.36
38582	38581	8	1.51	0.96	0.29	1
38642	38539	15	3.72	8.05	0.78	0.29
38643	38642	15	0.5	2.96	0.78	0.36
38644	38643	15	2.66	6.81	0.78	0.25
38645	38644	15	0.27	2.19	0.65	0.36
38646	39458	15	0.5	2.95	0.65	0.32
38647	38646	15	1.2	4.58	0.65	0.38
38648	38647	15	0.89	3.94	0.65	0.28
38649	38648	15	0.71	3.52	0.29	0.23
38682	18498	8	0.69	0.65	0.18	0.37

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38683	38682	8	0.66	0.63	0.18	0.37
38684	38683	8	0.43	0.51	0.18	0.41
38773	33440	27	0.58	19.8	6.35	0.58
38774	38773	8	0.42	0.51	0.21	0.46
38775	38774	8	1.13	0.83	0.21	0.36
38776	38775	8	1.9	1.08	0.21	0.46
38777	38776	8	1	0.78	0.21	0.37
38778	38777	8	1.01	0.79	0.21	0.37
38779	38778	8	1.4	0.92	0.21	0.35
38780	38779	8	0.61	0.61	0.21	0.42
38781	38780	8	4.14	1.59	0.21	0.27
38782	38781	8	4.9	1.73	0.22	0.26
38838	38532	15	1.63	5.33	0.84	0.29
38839	38533	15	0.52	3.01	0.84	0.36
39117	38084	12	1.95	3.22	0.43	0.27
39118	39117	12	0.59	1.77	0.43	0.34
39224	20126	15	0.1	1.32	1.2	0.58
39225	39224	8	0.63	0.62	0.1	0.28
39458	38645	15	0.45	2.8	0.65	0.33
39733	23779	12	2.87	3.9	0.49	0.26
39734	39733	12	0.47	1.58	0.49	0.39
39735	39734	12	-0.02	-0.3	0.49	0.68
39736	39735	12	1.38	2.7	0.49	0.64
39737	39736	12	-0.15	-0.9	0.49	0.81
39738	39737	12	0.85	2.12	0.49	0.77
39739	39738	12	0.13	0.84	0.49	0.49
39741	39739	12	0.4	1.45	0.49	0.49
40488	6941	27	0.66	10.59	16.74	2
41020	38582	8	2.34	1.19	0.29	0.35
41036	38273	8	0.42	0.51	0.55	0.89
41037	41036	8	0.41	0.5	0.55	2
41038	41037	8	0.5	0.55	0.23	0.45
41039	41038	8	0.64	0.63	0.23	0.43
41040	41039	8	0.54	0.58	0.23	0.45
41042	41037	8	8.15	2.23	0.33	1
41043	41042	8	1.16	0.84	0.33	0.45
41044	41043	8	1.13	0.83	0.33	0.45
41045	41044	8	6.18	1.94	0.33	0.3
41114	41428	10	0.82	1.28	0.46	0.76
41115	41114	10	0.42	0.92	0.46	0.51
41116	41115	10	0.22	0.67	0.46	0.62
41117	41429	10	0.42	0.92	0.46	0.51
41118	41117	10	2.42	2.21	0.46	0.33
41119	41118	10	1.04	1.44	0.46	0.41
41120	41119	10	0.44	0.94	0.46	0.5
41121	41120	10	0.45	0.95	0.46	0.5
41122	41121	10	1.99	2	0.46	0.42
41123	41122	10	1.04	1.44	0.46	0.41
41124	41123	10	0.68	1.17	0.46	0.44
41125	41124	10	0.07	0.38	0.46	0.57
41126	41125	10	1.32	1.62	0.46	0.69

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
41127	41126	10	1.24	1.57	0.46	0.39
41128	41127	10	0.89	1.33	0.46	0.42
41129	41128	10	0.64	1.14	0.46	0.45
41130	41129	10	0.62	1.11	0.46	0.46
41131	41130	10	0.63	1.12	0.46	0.58
41132	41131	10	0.41	0.9	0.46	0.51
41133	41132	10	2.08	2.04	0.46	0.45
41134	41133	10	0.44	0.94	0	0.32
41135	41134	10	0.44	0.94	0	0.08
41136	41135	10	-0.26	-0.72	0	0.08
41137	41136	10	0.62	1.12	0	0.08
41138	41137	10	0.42	0.92	0	0.08
41139	41138	10	0.54	1.05	0	0.08
41140	41139	10	0.18	0.59	0	0.08
41252	20781	15	0.55	3.1	3.21	0.97
41427	1593	12	-1.16	-2.48	0.47	1
41428	41427	12	0.35	1.36	0.47	1
41429	41116	10	2.33	2.16	0.46	0.51
41434	35551	8	1.9	1.08	0.35	0.41
41529	41530	16	0.76	4.32	1.11	0.35
41530	43502	16	0.27	2.58	1.11	0.46
41917	39225	8	0.49	0.54	0.1	0.3
42050	72974	14	2.18	13.35	0.81	0.23
42051	42050	14	21.71	42.09	0.81	0.14
42052	42051	15	1.94	5.81	0.81	0.27
42053	42052	15	0.35	2.46	0.81	0.39
42054	42053	15	0.77	3.67	0.81	0.32
42055	42054	15	1.19	4.56	0.81	0.3
42224	15269	8	0.62	0.62	0.24	0.44
42225	42224	8	4.94	1.74	0.24	0.27
42226	42225	8	0.6	0.6	0.24	0.45
42227	42226	8	0.6	0.61	0.24	0.45
42228	22013	24	0.36	11.46	10.96	0.78
42229	42228	24	1.62	18.63	3.62	0.7
42230	48063	24	2.79	24.44	2.66	0.24
42231	42230	24	2.47	22.99	2.66	0.25
42232	42231	24	0.79	12.99	2.66	0.31
42233	42232	24	0.25	7.28	2.67	0.42
42234	42228	30	0.76	29.98	7.43	0.56
42603	36945	15	0.99	4.16	2.29	0.53
43381	150	15	122.06	46.14	0.99	0.29
43382	43381	15	0.26	2.12	0.99	0.48
43383	43382	15	3.57	7.89	0.99	0.48
43384	43383	12	5.33	5.32	0.83	0.28
43385	43384	12	1.03	2.33	0.32	0.29
43386	43385	12	1.95	3.22	0.26	0.22
43387	57167	12	3.51	4.32	0.26	0.2
43501	18555	18	0.38	4.2	1.11	0.35
43502	43501	16	0.55	3.68	1.11	0.38
43786	44225	12	0.6	1.79	0.83	1
43787	43786	8	0.91	0.74	0.51	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
43788	43787	8	0.47	0.54	0.51	1
43789	43788	8	0.95	0.5	0.51	2
43790	43789	8	0.24	0.25	0.51	2
43791	43790	8	0.46	0.35	0.57	2
43792	43791	8	0.42	0.33	0.57	2
43793	43792	8	0.53	0.37	0.52	2
43794	43793	8	0.45	0.52	0.61	2
43794A	43794	8	0.44	0.52	0.77	2
43795	43794A	8	0.63	0.62	0.77	2
43796	43795	8	0.51	0.56	0.77	2
43797	43796	8	0.52	0.56	0.36	1
43798	43797	8	0.52	0.56	0.35	1
43799	43798	8	0.52	0.56	0.35	1
43800	43799	8	1.43	0.94	0.35	1
43801	43796	8	0.79	0.7	0.49	1
43802	43801	8	1.86	1.06	0.51	1
43803	43802	8	2.8	1.31	0.57	1
43804	43803	8	2.5	1.23	0.57	0.49
43805	43804	8	3.5	1.46	0.57	0.44
43810	43800	8	0.52	0.57	0.43	1
43811	43810	8	0.52	0.56	0.49	1
43812	43811	8	0.52	0.56	0.5	1
43813	43812	8	0.52	0.56	0.5	1
43814	43813	8	1.7	1.02	0.5	1
43815	43814	8	0.51	0.56	0.5	0.77
43818	43815	8	1.88	1.07	0.51	0.63
43819	43794	8	-0.04	-0.15	0.7	1
43820	43819	8	0.5	0.55	0.7	2
43821	43820	8	0.92	0.75	0.7	1
43822	43821	8	0.52	0.57	0.7	2
43823	43822	8	0.74	0.67	0.7	2
43824	43823	8	0.62	0.61	0.71	2
43825	43824	15	0.54	3.07	0.71	1
43826	52024	15	0.56	3.12	-0.03	1
43865	42055	12	0.71	1.94	0.21	0.23
44208	34385	24	0.24	4.66	2.02	1
44209	44208	24	0.29	5.12	2.02	1
44210	44209	10	0.32	0.52	2.02	2
44211	44210	10	0.32	0.8	1.19	2
44212	44211	10	0.32	0.8	1.18	2
44213	44212	10	0.33	0.81	1.16	2
44214	53270	10	0.38	0.87	0.99	2
44215	44214	10	0.32	0.8	0.99	2
44216	44215	10	0.32	0.8	1.03	2
44217	44216	10	0.35	0.84	0.88	2
44218	44217	10	0.31	0.78	0.88	2
44219	44218	10	0.31	0.79	0.88	2
44220	44219	10	0.23	0.68	1.1	2
44221	44220	10	0.26	0.72	1.1	2
44222	44221	10	0.21	0.65	1.11	2
44223	44222	10	0.3	0.78	1.17	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
44224	44223	10	0.2	0.63	0.83	2
44225	44224	10	0.23	0.69	0.83	2
44548	20777	15	1.05	4.28	4.94	2
45056	41045	8	2.31	1.19	0.33	0.38
45057	45056	8	0.93	0.75	0.34	0.48
45058	45057	8	1.56	0.98	0.34	0.42
45059	45058	8	3.38	1.44	0.34	0.35
45563	22466	12	4.23	4.74	0.34	0.49
45564	45563	12	1.4	2.73	0.34	0.26
45564A	45564	12	0.46	1.55	0.34	0.33
45565	45564A	12	2.42	3.59	0.34	0.28
45566	45565	12	4.26	4.75	0.34	0.27
45567	45566	12	3.74	4.46	0.34	0.21
45568	22490	12	3.77	4.47	0.34	0.21
45585	22457	12	0.6	1.16	0.34	0.38
45592	22464	12	1.07	2.38	0.34	0.28
45724	18455	12	1.87	4.1	1.36	0.41
45735	43818	8	0.6	0.6	0.51	0.71
45736	45735	8	1.21	0.86	0.51	0.57
45737	45736	8	2.36	1.2	0.51	0.47
45738	45737	8	3	1.35	0.51	0.44
45739	45738	8	4.44	1.65	0.51	0.4
45740	45739	8	4.92	1.73	0.51	0.38
45741	45748	8	2.62	1.26	0.57	0.49
45742	45741	8	3.02	1.36	0.57	0.47
45743	45742	8	3.03	1.36	0.57	0.47
45744	45743	8	0.68	0.64	0.57	0.74
45745	45744	8	0.63	0.62	0.57	0.78
45746	43805	8	2.01	1.11	0.57	0.52
45747	45746	8	2.64	1.27	0.57	0.49
45748	45747	8	2.65	1.27	0.57	0.49
45753	6937	30	0.51	18.97	16.91	1
45855	45059	8	3.15	1.39	0.34	0.36
45895	30628	8	2.7	1.28	1.13	1
46748	38465	8	0.47	0.54	0.42	0.68
46749	46748	8	2.31	1.19	0.42	0.43
46778	45745	8	0.6	0.6	0.57	0.77
46779	46778	8	0.6	0.61	0.57	0.79
46789	6931	30	0.56	19.86	17.08	1
46796	17748	12	4.61	4.95	1.73	0.53
47025	36942	15	0.75	3.62	2.38	0.59
47036	36944	15	1.49	5.09	2.38	0.5
48063	42229	24	2.91	24.93	3.64	0.28
48064	48063	8	3.7	1.5	0.99	0.6
48065	48064	8	0.6	0.61	0.99	2
48066	48065	8	4.4	1.64	0.99	1
48067	48066	8	1.05	0.8	0.99	2
48068	48067	8	1.64	1	0.99	1
48069	48068	8	6.98	2.06	0.99	0.5
48070	48069	8	6.88	2.05	0.99	0.5
48208	48070	8	5.6	1.85	0.99	0.53

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
48209	48208	8	5.18	1.78	0.99	0.55
48242	17297	12	6.32	5.79	1	0.32
48243	48242	8	13.24	2.84	0.32	0.25
48244	48243	8	13.38	2.86	0.32	0.29
48245	48244	8	7.29	2.11	0.33	0.28
48246	48245	8	0.44	0.52	0.33	0.6
48247	48246	8	1.17	0.85	0.35	0.46
48247A	48247	8	5.34	1.8	0.35	0.32
48248	48247A	8	0.6	0.6	0.35	0.57
48249	48248	8	3.38	1.44	0.37	0.52
48250	48249	8	1.73	1.03	0.38	0.43
48251	48250	8	1.26	0.88	0.37	0.5
48252	48251	8	0.62	0.62	0.38	0.88
48253	48252	8	-0.17	-0.32	0.47	1
48254A	NS1044	6	1.01	0.38	0.4	2
48571	41917	8	0.4	0.49	0.1	0.31
48572	48572A	8	0.4	0.49	0.1	0.31
48572A	48571	8	0.4	0.49	0.1	0.31
49083	30960	8	2.09	1.13	0.31	0.43
49084	49083	8	2.17	1.15	0.31	0.37
4970	2942	10	0.38	0.88	0.32	0.43
4971	4970	10	2.46	2.22	0.32	0.31
49997	36917	18	2.29	10.27	2.75	0.37
50253	34218	8	0.62	0.61	0.22	0.79
50254	50253	8	0.59	0.6	0.22	0.43
50255	50254	8	2.24	1.17	0.22	0.31
50256	50255	8	5.81	1.88	0.22	0.25
50281	50256	8	1.2	0.86	0.22	0.36
50282	50281	8	3.24	1.41	0.22	0.29
5134	18064	12	0.81	2.07	0.37	0.29
5135	14937	10	0.59	1.09	0	0.34
5136	5135	10	1.57	1.78	0	0.1
5137	5136	10	1.05	1.45	0	0.1
5138	5137	10	0.57	1.07	0	0.08
5139	5138	10	1.87	1.94	0	0.1
5140	5139	10	0.1	0.44	0	0.08
52024	902054	15	1.18	4.53	0.76	1
52025	52024	10	1.59	1.79	0.77	1
52026	52025	10	1.32	1.63	0.77	1
52027	52026	10	0.98	1.4	0.77	1
52028	52027	10	0.53	1.03	0.77	0.65
52029	52028	8	3.68	1.5	0.77	1
52030	52029	8	3.76	1.51	0.77	0.52
52031	52030	8	0.44	0.52	0.77	2
52032	52031	8	0.44	0.52	0.77	2
52033	52032	8	0.44	0.52	0.77	2
52034	52033	8	0.44	0.52	0.78	2
52041	52034	8	0.44	0.52	0.8	2
52042	52041	8	1.31	0.89	0.94	2
52043	52042	8	3.29	1.42	0.94	1
52044	52043	8	3.2	1.4	0.94	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52045	52044	8	2.68	1.28	0.95	0.65
52088	36931	15	0.53	1.98	2.5	0.9
52089	52088	15	1.24	3.02	2.5	0.9
52091	52147	8	1.03	0.79	0.47	0.57
52092	52091	8	0.54	0.57	0.47	0.7
52093	52092	8	2.24	1.17	0.47	0.56
52094	52093	8	2.18	1.15	0.47	0.45
52095	52094	8	1.1	0.82	0.47	0.56
52096	52095	8	5.37	1.81	0.47	0.41
52097	52096	8	2.7	1.28	0.47	0.43
52098	52097	8	5.52	1.84	0.47	0.36
52099	52098	8	5.61	1.85	0.47	0.36
52100	52099	8	5.67	1.86	0.47	0.36
52147	52489	8	1.06	0.8	0.47	0.56
52170	18	16	20.44	22.42	1.93	1
52171	52170	16	0.71	4.18	1.93	0.48
52172	52171	16	0.5	3.5	1.93	0.53
52240	52100	8	1.83	1.06	0.47	0.48
52241	52240	8	3.62	1.49	0.47	0.4
52242	52241	8	4.07	1.58	0.47	0.39
52243	52242	8	4.92	1.73	0.47	0.37
52244	52243	8	5.2	1.78	0.47	0.36
52245	52244	8	5.53	1.84	0.47	0.36
52364	36947	15	1.61	5.29	2.22	0.47
52488	21638	8	0.62	0.62	0.47	0.64
52489	52488	8	0.67	0.64	0.47	0.64
52520	52569A	8	1.09	0.82	0.47	0.56
52521	52520	8	0.6	0.6	0.47	0.67
52522	52521	8	0.5	0.55	0.47	0.72
52523	53379	8	0.5	0.55	0.47	0.72
52524	52523	8	0.51	0.56	0.47	0.71
52550	14458	8	3.13	1.38	1.35	0.96
52551	52550	8	8.8	2.32	1.29	0.93
52552	52552A	8	12.02	2.71	0.16	0.19
52552A	35539	8	13.38	2.86	0.16	0.27
52553	52552	8	7.63	2.16	0.16	0.21
52554	52553	8	3.62	1.49	0.16	0.24
52555	52554	8	7.09	2.08	0.16	0.21
52556	52555	8	7.16	2.09	0.16	0.21
52557	52556	8	0.99	0.78	0.16	0.33
52558	52557	8	0.98	0.77	0.16	0.33
52559	52558	8	2.45	1.22	0.16	0.27
52560	52245	8	16.07	3.13	0.47	0.28
52561	52560	8	5.06	1.76	0.47	0.36
52562	52561	8	5.07	1.76	0.47	0.36
52566	52562	8	0.57	0.59	0.47	0.69
52567	52566	8	0.61	0.61	0.47	0.66
52568	52567	8	3.99	1.56	0.47	0.51
52569	52568	8	4.99	1.75	0.47	0.37
52569A	52569	8	2.91	1.33	0.47	0.42
52651	7324	18	1.02	6.85	6.43	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52652	52651	24	1.04	14.94	3.18	1
52653	52652	24	15.5	57.57	3.15	1
52654	52653	24	1.07	15.09	3.14	0.33
52655	52654	24	15.02	56.68	3.14	0.28
52656	52655	24	0.1	4.65	3.14	0.57
52657	52656	24	0.33	8.42	3.15	0.54
52658	52657	21	0.3	5.62	2.82	0.5
52659	52658	21	0.8	9.16	2.82	0.45
52660	52659	21	12.95	36.86	2.82	0.33
52661	52660	12	9.8	7.21	1.19	0.29
53242	52559	8	4.7	1.69	0.16	0.23
53243	53242	8	4.56	1.67	0.16	0.23
53244	53243	8	0.81	0.7	0.16	0.34
53245	53244	8	0.59	0.6	0.16	0.37
53246	53245	8	0.61	0.61	0.16	0.36
53257	44216	8	1.01	0.79	1.24	2
53258	53257	8	4.47	1.65	1.24	1
53259	53258	8	2.36	1.2	1.26	2
53260	53259	8	0.98	0.77	1.32	2
53261	53260	8	3.03	1.36	1.59	2
53262	53261	8	4.81	1.71	1.6	1
53263	53262	8	5.97	1.91	1.79	1
53264	53263	8	3.34	1.43	1.81	2
53267	53264	8	6.84	2.04	1.94	1
53269	53267	8	4.76	1.7	2.17	2
53270	44213	10	0.25	0.71	1.16	2
53271	53270	8	0.92	0.75	0.66	1
53292	30727	8	2.04	1.11	1.14	2
53293	53292	8	0.6	0.6	1.14	2
53294	53293	8	0.48	0.54	1.14	2
53295	53294	8	1.79	1.04	1.14	2
53296	53295	8	0.64	0.62	1.17	2
53297	53296	8	3.49	1.46	1.2	1
53379	52522	8	0.49	0.55	0.47	0.72
53385	53246	8	1.01	0.78	0.16	0.33
53386	53385	8	2.01	1.11	0.16	0.28
53387	53386	8	0.95	0.76	0.16	0.33
53388	53387	8	0.99	0.78	0.16	0.33
53727	53727A	8	0.3	0.43	0.91	2
53727A	53727B	8	0.55	0.58	0.91	2
53727B	20250	8	4.72	1.7	0.91	0.53
53728	53727	8	0.63	0.62	0.91	2
53729	53728	8	0.39	0.49	0.91	2
53730	53729	8	5.14	1.77	0.91	1
53868	46779	8	1.32	0.9	0.57	0.65
53869	53868	8	0.99	0.78	0.57	0.65
53870	53869	8	2.49	1.23	0.57	0.51
53871	53870	8	4.42	1.64	0.57	0.42
53872	53871	8	0.82	0.71	0.57	0.7
53873	53872	8	0.56	0.59	0.57	0.91
53874	53873	8	1.14	0.83	0.58	0.77

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
53875	53874	8	0.52	0.56	0.58	0.87
53876	53875	8	0.78	0.69	0.58	0.73
53877	53876	8	4.6	1.68	0.58	0.58
53878	53877	8	3.82	1.53	0.58	0.44
53879	53878	8	6.38	1.97	0.58	0.39
53955	41133	10	0.35	0.84	0.46	0.98
53956	53955	10	0.66	1.15	0.46	0.83
53957	53956	10	0.36	0.85	0.46	0.53
53958	53957	10	0.54	1.04	0.46	0.48
53959	53958	10	0.38	0.88	0.46	0.52
53960	53959	10	0.47	0.97	0.46	0.52
53961	53960	10	0.44	0.94	0.46	0.5
53962	53961	10	0.4	0.89	0.46	0.52
54110	52045	8	0.6	0.61	0.95	2
54111	54110	8	1.58	0.98	0.95	1
54112	54111	8	1.76	1.04	0.95	1
54113	54112	8	0.69	0.65	0.95	2
54114	54113	8	2.46	1.23	0.96	1
54115	54114	8	1.68	1.01	0.97	1
54116	54115	8	3.59	1.48	0.99	1
54117	54116	8	4.79	1.71	1.01	0.57
54353	65512	8	4.29	1.62	1.13	0.63
54451	45568	12	3.15	4.09	0.34	0.22
54452	54451	12	3.05	4.02	0.34	0.22
54452A	54452	12	1.59	2.91	0.34	0.25
54453	54452A	12	1.01	2.31	0.34	0.28
54453A	54453	12	0.56	1.73	0.34	0.31
54454	54453A	12	3	3.99	0.34	0.22
54455	54454	12	2.13	3.36	0.34	0.24
54456	54455	12	0.33	1.32	0.34	0.35
54556	53962	10	0.57	1.07	0.46	0.47
55251	7298	24	0.99	14.53	12.23	1
55252	55251	8	0.57	0.59	0.72	2
55253	55252	8	0.59	0.6	0.72	2
55254	55253	8	0.59	0.6	0.72	2
55255	55254	8	0.6	0.6	0.72	2
55256	55255	8	4.97	1.74	0.72	1
55257	55256	8	1.08	0.81	0.72	0.74
55258	55257	8	32.91	4.48	0.72	0.29
55259	55258	8	36.11	4.69	0.72	0.29
55260	55259	8	31.38	4.38	0.72	0.29
55261	55260	8	0.59	0.6	0.72	2
55262	55261	8	0.6	0.6	0.72	2
55267	55262	8	0.99	0.78	0.72	1
55268	55267	8	0.99	0.78	0.72	1
55269	55268	8	15.51	3.08	0.72	1
55270	55269	8	0.98	0.78	0.72	0.78
55271	55270	8	4.8	1.71	0.72	0.65
55272	55271	8	1.05	0.8	0.72	0.76
56667	20782	15	1.35	3.16	2.83	1
56841	33296	18	0.3	3.73	3.16	0.7

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
56842	56841	12	0.59	1.77	-0.03	1
57146	44548	15	0.89	3.94	6.9	2
57167	43386	12	6.13	5.7	0.26	0.18
57364	69111	8	7.05	2.07	0.26	0.26
59113	59114	8	0.37	0.47	0.26	0.53
59113	30957	8	2.74	1.29	0.31	0.35
59114	59115	8	0.36	0.47	0.26	0.55
59115	59116	8	0.36	0.47	0.26	0.55
59116	31155	8	2.21	1.16	0.52	0.48
59222	59221	12	0.53	1.68	0.45	0.41
59274	34175	20	0.62	9.2	5.79	1
59275	59274	20	0.65	7.24	4.29	1
59276	59275	20	0.18	3.8	4.38	2
61	27	10	7.63	3.91	0.09	0.14
61831	21595	8	1.12	0.83	0.42	0.57
61832	61831	8	2.88	1.32	0.42	0.4
61833	61832	8	0.6	0.6	0.42	0.63
61834	61833	8	3.58	1.48	0.42	0.38
61946	6888	42	1.52	80.26	31.13	1
61947	61946	36	0.41	27.53	12.03	1
61948	61947	36	0.59	33.24	12.08	1
63663	7113	8	2.1	1.13	0.7	0.58
63665	7114	8	2.96	1.34	0.7	0.52
64082	53297	8	0.61	0.61	1.24	2
64083	64082	8	3.54	1.47	1.3	1
64084	64083	8	4.69	1.69	1.39	1
64085	64084	8	1.81	1.05	1.47	2
65315	65511	15	0.51	2.99	0.59	0.44
65316	65315	15	0.31	2.34	0.59	0.35
65317	65316	15	0.57	3.16	0.59	0.3
65318	65317	15	1.8	5.6	0.59	0.24
65319	65318	15	1.8	5.6	0.59	0.24
65320	65319	15	2.03	5.95	0.59	0.24
65321	65320	15	1.96	5.85	0.59	0.23
65322	65321	15	3.23	7.51	0.59	0.21
65323	65322	15	0.15	1.63	0.59	0.42
65324	65323	15	2.6	6.73	0.59	0.23
65325	65324	15	0.5	2.95	0.59	0.31
65326	65325	15	0.52	3.02	0.59	0.3
65327	65326	15	0.35	2.48	0.59	0.34
65328	65327	15	0.84	3.83	0.59	0.33
65329	65328	15	2.02	5.93	0.59	0.23
65330	65329	15	2.47	6.57	0.59	0.22
65331	65330	15	0.5	2.95	0.59	0.31
65332	65331	15	0.33	2.41	0.59	0.34
65333	65332	15	0.88	3.92	0.59	0.27
65373	6990	18	1.97	9.53	0.16	0.13
65374	65373	18	0.76	5.93	0.16	0.12
65375	65374	18	0.41	4.33	0.16	0.14
65497	34179	16	1.05	6.62	1.31	0.32
65498	65497	16	1.17	6.97	1.31	0.31

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
65499	65498	16	0.71	4.18	1.31	0.39
65500	65499	16	0.73	4.25	1.31	0.38
65501	65500	16	0.35	2.95	1.31	0.47
65502	65501	16	0.28	2.62	1.31	0.49
65503	65502	16	0.5	3.5	1.31	0.43
65504	65503	16	0.22	2.31	1.31	0.52
65505	65504	16	1.84	6.74	1.31	0.44
65506	65505	16	0.49	3.47	1.31	0.43
65507	65506	16	0.89	4.69	1.31	0.36
65508	65507	16	0.52	3.57	1.31	0.42
65509	65508	16	0.54	3.66	1.31	0.48
65510	65509	16	0.61	3.88	1.31	0.41
65511	65510	16	0.56	3.72	1.31	0.42
65512	45895	8	4.33	1.63	1.13	0.63
66	61	10	2.92	2.42	0	0.1
66452	67346	8	0.85	0.72	0.24	0.41
66453	66452	8	1.85	1.06	0.24	0.34
67346	7085	8	0.77	0.68	0.24	0.42
6874	JP1	42	0.16	21.31	41.59	0.95
6875	6874	42	0.17	21.73	41.53	2
6876	6876N	42	0.19	21.82	41.53	2
6876N	6875	42	0.19	22.9	41.53	2
6877	6876	42	0.17	26.94	41.21	2
6878	16379	42	-0.14	-23.28	41.21	1
6879	6878	42	0.46	43.91	41.21	1
6880	6879	42	0.17	26.91	41.21	2
6882	6880	42	0.2	28.91	40.97	2
6883	6882	42	-0.02	-8.98	40.97	1
6885	6883	42	0.55	48.09	42.85	1
6886	14565	42	3.98	129.77	40.73	1
6887	6886	42	0.19	28.63	40.73	2
6888	6887	42	0.21	29.56	39.95	2
6889	6888	24	0.42	9.51	-1.16	1
6890	6889	24	0.36	8.73	-0.57	1
69111	33534	8	4.5	1.66	0.26	0.28
69131	33527	15	0.97	2.68	1.43	0.6
69132	69131	16	3.51	6.04	1.43	0.35
69133	69132	16	0.7	2.69	1.43	0.52
69136	69133	16	0.71	2.71	1.43	0.51
69138	69136	16	0.7	2.7	1.43	0.52
69139	69138	16	1.45	5.97	1.41	0.44
69140	69139	16	0.84	4.55	1.41	0.39
69143	69140	16	0.74	4.26	1.41	0.4
69144	69143	16	0.74	4.25	1.35	0.42
69145	69144	15	0.63	3.33	1.35	0.44
69146	69145	16	0.57	3.74	1.35	0.42
69147	69146	15	0.83	3.81	1.35	0.42
69149	69147	15	0.71	3.51	1.35	0.43
69150	69149	15	0.54	3.07	1.35	0.47
69151	69150	15	1.72	5.47	1.35	0.35
69152	69151	15	0.68	3.43	1.35	0.44

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
6921	61946	42	0.2	29.09	19.31	1
6923	6921	42	0.13	23.1	18.95	1
6924	6923	42	0.09	19.15	18.95	1
6925	6924	42	0.09	19.29	18.65	1
6926	6925	42	0.09	19.18	18.28	1
6927	6926	42	0.01	6.87	18.28	2
6928	6927	42	0.15	25.54	18.28	1
6929	6933	30	0.64	21.17	16.99	1
6930	18452	42	0.17	26.69	16.77	1
6931	6930	42	0.48	45.11	16.78	1
6932	46789	30	0.81	23.89	16.95	1
6933	6932	30	0.48	18.44	16.98	1
6934	6929	30	0.45	17.76	17.14	1
6935	6934	30	0.56	19.87	17.15	1
6936	6935	30	0.49	18.47	16.76	1
6937	15872	30	0.63	21	16.85	1
6938	17375	30	0.55	19.6	16.98	1
6939	6938	30	0.66	21.47	16.71	1
6940	6942	30	0.62	20.9	16.73	1
6941	6940	30	0.78	23.41	16.74	1
6942	6939	30	0.65	21.32	16.71	1
6943	901676	27	0.59	19.93	16.67	1
6944	6943	27	0.53	18.87	16.69	1
6945	6944	27	0.41	16.62	16.09	1
6946	6945	27	0.61	20.33	16.09	1
6947	6946	24	0.62	14.95	15.68	1
6948	32394	24	0.23	9.21	14	2
6949	6948	24	0.78	16.75	14	1
6950	6949	24	0.61	14.83	14	0.8
6951	6950	24	0.71	16.01	8.4	0.85
6952	6951	24	0.34	11.09	8.41	0.69
6952	6950	24	0.09	4.4	5.63	0.73
6953	38525	24	0.49	13.33	13.39	0.98
6953	38525	15	0.72	3.54	0	0.05
6954	18586	24	0.47	13	12.6	1
6955	6954	24	0.45	12.8	12.59	1
6956	19873	24	0.43	12.41	10.93	1
6956	19873	15	0.54	3.08	1.27	0.68
6957	6956	24	0.3	10.33	10.76	2
6957	6956	15	0.01	0.5	2.03	0.93
6958	22009	24	2.58	30.51	0.39	1
6965	15269	18	0.7	7.4	0.9	0.24
6966	6965	18	0.5	6.25	0.9	0.26
6967	6966	15	0.58	4.14	0.22	0.31
6968	6967	15	0.38	3.35	0	0.05
6969	6968	15	0.7	4.56	0	0.05
6970	6969	15	0.77	4.77	0	0.05
6977	33451	18	0.81	6.09	2.23	0.42
6978	33451	18	0.97	6.7	0.54	0.2
6979	6978	18	0.98	6.74	0.54	0.2
6980	6979	18	1.59	8.55	0.54	0.2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
6981	6980	15	1.46	5.04	0.54	0.4
6982	6981	15	1.47	5.06	0.54	0.24
6983	6982	16	0.95	4.84	0.28	0.17
6984	6983	15	0.79	3.71	0.28	0.19
6985	6984	15	0.99	4.15	0.28	0.18
6987	6985	15	1.01	4.2	0.28	0.2
6988	6987	15	1.15	4.47	0.16	0.16
6989	6988	15	0.98	4.13	0.16	0.48
6990	32475	15	0.83	3.8	0.16	0.15
6995	37990	12	5.27	5.29	0.83	0.29
70	52182	10	4.61	3.04	0.77	0.36
70349	16535	18	2.87	11.51	1.51	0.27
70350	70349	18	2.85	11.47	1.51	0.27
70351	70350	18	4.12	13.78	1.51	0.24
70352	70351	18	1.85	9.25	1.51	0.29
7049	6977	10	0.74	1.22	2.23	2
7050	7049	10	1.57	1.77	2.23	2
7051	7050	10	1.78	1.89	2.23	2
7052	7052M	8	2.36	1.2	1.12	1
7052M	7051	10	0	0	1.27	2
7061	6967	8	2.22	1.16	0.22	0.31
7062	7061	8	1.78	1.04	0.22	0.33
7063	7062	8	1.77	1.04	0.22	0.33
7064	7063	8	0.47	0.53	0.22	0.46
7065	7064	8	2.27	1.18	0.22	0.31
7071	33444	10	1.25	1.03	0	0.1
7071	33444	10	0.99	1.41	0.24	0.29
7080	7071	8	1.91	1.08	0.24	0.34
7081	7080	8	0.41	0.5	0.24	0.5
7082	7081	8	3.14	1.38	0.24	0.29
7083	7082	8	0.4	0.49	0.24	0.5
7084	7083	8	0.4	0.49	0.24	0.5
7085	7084	8	0.4	0.49	0.24	0.5
7086	33446	8	4.41	1.64	0.07	0.18
7087	900091	8	0.49	0.55	0.08	0.27
7088	7087	8	2.46	1.22	0.08	0.2
7089	7088	8	0.42	0.51	0.08	0.27
7090	7089	8	0.4	0.49	0.08	0.28
7092	33448	8	0.62	0.62	0.35	0.99
7093	7092	8	3.27	1.41	0.35	0.35
7094	7093	8	0.81	0.7	0.35	0.51
7095	7094	8	4.87	1.72	0.35	0.32
7096	7095	8	6.45	1.98	0.35	0.3
7097	7096	8	8.76	2.31	0.35	0.28
7098	7097	8	8.43	2.27	0.35	0.28
7099	7098	8	0.41	0.5	0.35	0.63
7100	7099	8	2.05	1.12	0.35	0.48
7101	7100	8	1.48	0.95	0.35	0.43
7102	F1757	8	0.77	0.69	0.35	0.52
7106	20553	8	3.67	1.5	0.29	0.31
7107	7106	8	3.65	1.49	0.29	0.31

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7108	7107	8	3.74	1.51	0.29	0.31
7113	6966	8	3.25	1.41	0.7	0.51
7114	63663	8	2.3	1.19	0.7	0.57
7115	63665	8	3.32	1.42	0.7	0.5
71157	64085	8	0.56	0.58	1.51	2
71158	71157	8	0.61	0.61	1.61	2
7116	7115	8	0.37	0.47	0.7	2
7117	7116	8	4.07	1.58	0.7	1
7118	7117	8	3.84	1.53	0.7	0.49
7119	7118	8	2.99	1.35	0.7	0.52
71194	38684	8	0.4	0.49	0.18	0.43
7120	7119	8	1.81	1.05	0.7	0.61
7122	13238	8	1.68	1.01	0.7	0.63
71229	71158	8	7.71	2.17	2.85	2
7123	7122	8	0.5	0.55	0.7	2
7124	7123	8	3.45	1.45	0.7	1
7125	7124	8	3.12	1.38	0.7	0.51
7126	7125	8	2.45	1.22	0.7	0.56
7127	7126	8	2.5	1.24	0.7	0.55
7128	7127	8	4.12	1.59	0.7	0.48
7132	7128	8	2.18	1.15	0.7	0.57
7133	7132	8	1.58	0.98	0.7	0.64
7134	7133	8	2.31	1.19	0.7	0.57
7135	7134	8	2.48	1.23	0.7	0.56
7136	7135	8	1.81	1.05	0.7	0.61
7137	7136	8	2.8	1.31	0.7	0.53
7161	7052M	8	4.47	1.65	0.22	1
7162	7161	8	7.62	2.16	0.22	0.27
7163	23057	8	0.26	0.4	0.22	0.54
7164	7163	8	1.6	0.99	0.22	0.34
7165	7052	8	3.7	1.5	1.13	1
7166	7165	8	3.45	1.45	1.16	1
7167	7166	8	0.41	0.5	1.16	2
7168	7167	8	2.46	1.23	1.17	1
7169	7168	8	3.36	1.43	1.18	1
7170	7169	8	3.71	1.5	1.21	1
7171	7170	8	2.34	1.19	1.23	2
7173	7171	8	3.06	1.37	1.23	1
7176	7173	8	2.75	1.29	1.23	0.9
7177	7176	8	4.51	1.66	1.25	0.83
7178	7051	8	4.11	1.58	1	1
7179	7178	8	1.64	1	0.99	1
7180	7179	8	0.4	0.5	0.98	2
7181	7180	8	0.41	0.5	0.98	2
7182	7181	8	1.23	0.87	0.98	2
7183	7182	8	2.33	1.19	1	1
7184	7183	8	1.87	1.07	1.04	1
7185	7184	8	1.9	1.08	1.28	2
7188	7185	8	1.37	0.91	1.3	2
7252	6995	12	1.29	2.61	0.83	0.4
7253	7252	12	0.44	1.53	0.83	0.53

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7254	7253	12	0.36	0.89	0.83	0.76
7255	7254	12	0.43	0.98	0.83	0.77
7256	7255	12	0.32	0.84	0.83	0.77
7257	7270	8	0.81	0.7	0	0.1
7258	7257	8	1.76	1.04	0	0.1
7259	7258	8	1.2	0.86	0	0.1
7260	7259	8	0.39	0.49	0	0.1
7261	7260	8	0.36	0.47	0	0.1
7262	7261	8	0.32	0.44	0	0.1
7263	7262	8	0.39	0.49	0	0.1
7264	7263	8	0.38	0.48	0	0.1
7265	7264	8	1.36	0.91	0	0.1
7266	7256	8	0.8	0.7	0	0.25
7270	7266	8	0.85	0.72	0	0.1
7287	7265	8	3.97	1.56	0	0.1
7288	7287	8	3.37	1.44	0	0.1
7289	7256	10	0.54	0.68	0.83	2
7295	61948	24	1.62	18.62	12.18	1
7296	7295	24	0.38	9	12.23	2
7297	7296	24	0.76	12.77	12.23	1
7298	7297	24	0.43	9.58	12.23	2
7300	55251	24	0.65	11.77	11.53	1
7301	7300	24	2	20.7	11.53	1
7302	7301	24	2.4	22.65	11.55	0.55
7303	7302	21	2.77	17.06	11.55	0.62
7305	7303	21	2.09	14.82	11.55	0.68
7308	7305	21	1.49	12.52	11.55	1
7309	19143	21	0.8	9.14	9.15	2
7311	18322	21	1.12	7.06	9.28	2
7314	18241	21	0.35	3.91	9.33	2
7315	22223	21	0.49	4.64	8.35	2
7316	7315	21	0.96	10.03	8.83	1
7317	7316	21	0.67	8.38	7.2	1
7318	7317	21	0.55	7.59	7.2	1
7319	7318	21	0.91	9.8	7.43	1
7320	7319	21	1.27	11.54	7.43	1
7321	7320	18	1.35	7.9	6.22	1
7322	7321	18	1.16	7.33	6.22	1
7323	7322	18	0.91	6.48	6.22	1
7324	7323	18	1.31	7.79	6.22	1
7325	52651	18	1.02	6.84	3.39	1
7326	7325	18	0.81	6.13	3.39	1
7327	7326	18	0.75	5.89	3.39	1
7328	7327	18	0.74	5.83	3.39	0.85
7329	7328	15	1.56	5.22	2.45	0.5
7330	7329	15	0.8	3.73	2.45	0.59
7332	7316	10	1.77	1.89	2.55	2
7333	7332	10	3.44	2.63	2.65	2
7334	16604	10	3.11	2.5	1.4	1
7335	7334	10	3.77	2.75	1.4	0.71
742	754	8	1.89	1.07	0	0.1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
754	902164	8	6.11	1.93	0	0.1
8195	37032	12	0.24	1.14	0.59	0.49
900091	7086	8	0.5	0.55	0.08	0.27
901295	901296	8	1.49	0.95	0.47	0.52
901296	901297	8	0.61	0.61	0.47	0.66
901297	901298	8	0.59	0.6	0.47	0.67
901298	901299	8	1.79	1.05	0.47	0.48
901299	52524	8	8.72	2.31	0.47	0.57
901390	37990	15	11.09	9.04	1.37	0.28
901391	901390	16	0.36	1.95	1.37	0.57
901676	15751	27	0.52	18.7	16.74	1
901871	52661	12	2.46	3.61	1.19	0.41
901892	901893	6	5.72	0.87	0.66	1
901893	16595	8	6.03	1.92	0.66	0.42
902012	6953	24	0.34	11.03	13.1	2
902012	6953	15	0.32	2.35	0.32	0.26
902054	43825	15	1.2	4.58	0.72	1
902164	902165	8	6.32	1.96	0	0.1
902165	52657	8	6.21	1.95	0	0.1
9039	16038	18	0.92	6.5	1.26	0.4
9040	17949	15	1.35	4.86	0.92	0.31
9041	17969	15	1.15	4.48	0.52	0.31
9042	9041	15	1.05	4.28	0.35	0.22
9044	14317	15	4.1	8.45	0	0.1
9045	9044	15	3.35	7.65	0	0.1
9046	9045	15	0.08	1.16	0	0.05
9047	9046	21	0.25	5.11	0	0.05
9048	10918	21	0.48	7.06	0	0.05
9049	9048	21	2.33	15.64	0	0.1
break 1	break12	6	-0.12	-0.12	0.23	1
Break 4	45855	6	-1.62	-0.49	0.35	1
Break11	41040	6	-2.37	-0.6	0.23	1
break12	Break11	6	-0.32	-0.2	0.23	1
break2	46749	6	0.06	0.08	0.43	2
C445	7102	8	0.21	0.36	0.35	0.68
F1757	7101	8	0.8	0.7	0.35	0.51
F5313-missing	2403	8	2.4	1.21	1.34	2
NS1044	48253	6	-6.41	-1.03	0.4	1
PVT302	PVT303	8	0.48	0.54	0.4	0.65
PVT303	29644	8	0.9	0.74	0.4	0.86
PVT472	PVT473	8	1.39	0.92	0.06	0.19
PVT473	PVT474	8	5.93	1.9	0.06	0.15
PVT474	PVT475	8	8.6	2.29	0.06	0.14
PVT475	PVT476	8	0.61	0.61	0.06	0.22
PVT476	PVT477	8	0.6	0.6	0.06	0.22
PVT477	PVT478	8	11.33	2.63	0.06	0.14
PVT478	32260	8	15.2	3.05	0.06	0.14
weir15	33295	24	0.31	8.18	1.51	0.47
59221	59220	8	2.22	1.16	0.45	0.44
59220	59219	8	2.72	1.29	0.45	0.42
59219	204	8	2.74	1.29	0.45	0.42

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
204	201	8	4.72	1.7	0.45	0.37
201	52174	8	1.89	1.07	0.45	0.47
52176	52175	16	2.3	7.52	1.34	0.45
52182	52181	8	5.49	1.83	0.77	0.47
52181	52176	8	5.35	1.81	0.77	0.47
42057	71509	8	5.5	1.83	0.49	0.5
42056	42055	8	4.53	1.66	0.49	0.38
71509	42056	8	1.63	1	0.49	0.5
52175	52174	16	0.57	3.73	1.5	0.45
52174	52173	16	0.5	3.51	1.94	0.52
52173	52172	16	0.49	3.47	1.93	0.54
72974	34836	14	0.79	8.03	0.81	0.26
33707	72976	12	4.58	4.93	0.83	1
72976	72975	12	0.96	2.26	0.75	1
72975	20760	27	0.2	8.89	10.06	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
10918	13409	21	0.15	3.97	0.00	0.05
11	70352	24	1.63	18.68	2.44	0.27
11897	7052	8	3.72	1.51	-0.06	1.00
12	11	24	0.40	9.29	2.44	0.35
13238	7120	8	1.83	1.06	0.96	0.77
13409	9047	21	-0.19	-4.47	0.00	0.05
13939	20805	12	11.76	7.90	0.23	0.93
14317	15315	15	2.45	6.54	0.00	0.10
14454	19876	12	5.12	5.21	1.83	1.00
14455	14454	12	1.46	2.78	1.83	0.60
14456	14455	12	1.59	2.91	1.83	0.58
14458	14456	12	1.02	2.32	1.67	0.64
14546	7188	8	0.57	0.59	1.43	2.00
14547	14546	8	2.87	1.32	1.54	2.00
14548	14547	8	4.80	1.71	1.74	2.00
14565	6885	42	2.14	77.24	44.11	1.00
14937	5134	10	0.55	1.05	0.50	0.49
150	901871	16	3.05	8.66	2.03	0.35
1507	16581	10	14.78	5.45	1.53	1.00
1508	1507	8	0.99	0.78	1.52	2.00
15269	42234	18	1.37	10.33	1.66	1.00
15270	30591	15	1.38	4.91	1.57	0.41
15270	9042	15	1.89	5.74	0.84	0.28
15271	22538	15	2.67	6.83	0.72	0.56
15315	30592	15	2.39	6.45	0.00	0.23
15751	40488	27	0.66	21.21	17.45	1.00
15871	6936	30	0.44	17.56	17.34	1.00
15872	15871	30	0.60	20.58	17.34	1.00
1593	29862	12	0.04	0.43	1.66	2.00
16036	42233	18	0.94	6.58	4.72	0.63
16037	16036	18	0.97	6.69	3.99	0.60
16038	16037	18	1.68	8.81	2.44	0.72
1609	1593	10	0.33	0.81	1.00	2.00
1610	1609	10	0.50	1.01	1.01	2.00
1611	1610	10	0.77	1.24	1.02	1.00
1612	1611	10	1.74	1.87	1.04	1.00
1613	1612	10	0.47	0.97	1.05	2.00
1614	1613	10	0.39	0.88	1.05	2.00
16379	16379N	42	0.16	20.88	41.45	2.00
16379N	6877	42	0.16	21.44	41.45	2.00
16401	C445	8	0.41	0.50	0.53	2.00
16402	16401	8	0.40	0.49	0.54	2.00
16403	16402	8	2.26	1.17	0.55	1.00
16404	16403	8	1.56	0.97	0.56	0.56

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
16535	7330	15	2.02	5.93	4.00	1.00
16536	11897	8	4.15	1.59	0.00	0.10
16581	7328	10	4.34	2.95	1.53	1.00
16595	7333	8	4.68	1.69	0.79	1.00
16596	7333	10	0.50	1.00	3.76	2.00
16604	7320	10	3.39	2.61	2.20	1.00
16742	6982	8	2.42	1.22	0.42	0.42
16743	16742	8	0.65	0.63	0.42	0.62
16744	16743	8	1.02	0.79	0.42	0.53
16745	16744	8	1.07	0.81	0.42	0.52
16746	33093	8	1.00	0.78	0.42	0.54
16747	16746	8	0.72	0.66	0.42	0.59
16748	16747	8	1.03	0.79	0.42	0.53
16749	16748	8	6.64	2.01	0.42	0.39
16750	16750M	8	1.91	1.08	0.42	0.45
16750M	16749	8	1.86	1.06	0.42	0.45
16751	16750	8	1.04	0.80	0.42	0.53
16752	16751	8	0.49	0.55	0.42	0.67
16753	16752	8	0.49	0.55	0.42	0.67
16754	16753	8	0.40	0.49	0.42	0.72
17008	33535	8	5.13	1.77	0.41	0.35
17009	17008	8	4.03	1.57	0.41	0.36
17037	17009	8	5.23	1.79	0.41	0.34
17041	17037	8	5.23	1.79	0.41	0.34
17297	17764	12	1.61	2.92	2.23	0.89
17375	45753	30	2.07	38.12	17.42	1.00
17479	42227	8	1.02	0.79	0.41	0.63
17480	17479	8	1.97	1.10	0.41	0.44
17481	17480	8	5.66	1.86	0.41	0.34
17482	17481	8	6.53	2.00	0.42	0.33
17483	17482	8	4.37	1.63	0.42	0.36
17484	17483	8	1.94	1.09	0.42	0.44
17747	18202	12	42.19	14.96	2.24	1.00
17748	17747	12	1.61	2.92	2.24	0.67
17749	46796	12	5.67	5.48	2.24	0.46
17750	17749	12	0.42	1.49	2.24	2.00
17751	17750	12	0.36	1.38	2.24	2.00
17752	34447	12	0.31	1.28	1.88	2.00
17753	17752	12	0.43	1.51	1.91	2.00
17754	17753	12	0.43	1.51	1.96	2.00
17755	17754	12	0.37	1.40	2.03	2.00
17756	17755	12	0.23	1.10	2.13	2.00
17757	17756	12	0.68	1.90	2.13	2.00
17758	17757	12	4.60	4.94	2.13	1.00

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
17759	17758	12	0.30	1.27	2.14	2.00
17760	17759	12	3.42	4.26	2.16	1.00
17761	19657	12	5.83	5.56	2.25	0.45
17762	17761	12	3.57	4.35	2.26	0.52
17763	19910	12	1.95	3.22	2.28	0.65
17764	17763	12	1.44	2.76	2.23	0.70
17765	48242	12	5.89	5.59	0.73	0.32
17766	17765	12	1.52	2.84	0.73	0.36
17767	17766	12	-0.07	-0.63	0.73	0.76
17768	17767	12	1.15	2.47	0.73	0.69
17769	17768	12	4.01	4.61	0.73	0.39
17770	17769	12	3.46	4.29	0.73	0.29
17771	17770	12	4.80	5.05	0.73	0.28
17772	17771	12	4.42	4.84	0.73	0.28
17773	17772	12	1.43	2.76	0.73	0.36
17774	17773	12	8.83	6.84	0.73	0.24
17775	17774	12	0.89	2.18	0.73	0.41
17949	9039	15	1.61	5.30	1.85	0.42
17969	9040	15	0.86	3.87	1.85	0.49
18	56841	18	-0.57	-5.14	5.27	1.00
18063	17775	12	-0.45	-1.55	0.73	1.00
18064	18063	12	0.76	2.00	0.73	1.00
18202	6885	12	0.61	1.79	2.24	2.00
18241	7311	21	1.20	7.28	9.49	2.00
18297	6958	8	10.17	2.49	0.34	1.00
18298	18297	8	10.97	2.59	0.34	1.00
18298A	18298	8	0.30	0.43	0.34	0.65
18299	18298A	8	0.35	0.46	0.34	0.64
18300	18299	8	0.39	0.49	0.34	0.63
18301	18300	8	2.16	1.15	0.34	0.48
18302	18301	8	4.20	1.60	0.34	0.33
18303	18302	8	6.83	2.04	0.34	0.29
18321	7309	21	0.87	9.56	9.14	1.00
18322	18321	21	1.64	13.13	9.17	1.00
18363	7256	8	0.40	0.49	-0.01	0.87
18364	18363	8	0.40	0.49	0.00	0.10
18452	6928	42	0.01	7.10	20.60	2.00
18453	18452	12	1.43	2.75	2.31	1.00
18454	18453	12	2.98	5.17	2.31	1.00
18455	20314	12	2.55	4.78	2.31	1.00
18456	45724	12	1.96	4.19	1.54	0.47
18457	18456	12	3.74	5.79	1.54	0.36
18458	18457	12	3.14	5.30	1.54	0.38
18463	18458	10	1.59	2.32	1.33	0.59

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
18478	18463	8	2.51	1.61	1.36	1.00
18479	18478	8	3.06	1.37	1.33	0.95
18480	18479	8	2.00	1.11	1.33	2.00
18481	18480	8	2.95	1.34	1.33	1.00
18481A	18481	8	3.21	1.40	1.33	1.00
18482	18481A	8	2.77	1.30	1.33	2.00
18483	18482	8	3.23	1.40	1.34	1.00
18484	18483	8	3.01	1.36	1.35	2.00
18485	18484	8	3.63	1.49	1.37	1.00
18486	18485	8	2.66	1.27	1.40	2.00
18496	901391	15	0.24	1.34	2.17	2.00
18497	19001	8	0.38	0.48	0.28	1.00
18497A	18497	8	0.97	0.77	0.28	0.43
18498	18497A	8	0.97	0.77	0.28	0.43
18517	18486	8	3.54	1.47	1.42	0.93
18552	18496	15	0.43	2.73	1.90	1.00
18553	18552	15	0.34	2.45	1.90	1.00
18554	39224	15	0.49	2.91	1.77	0.71
18555	20127	15	0.52	3	1.77	0.58
18586	902012	24	0.32	10.73	13.16	2
18586	902012	15	1.43	4.99	3.87	1
18587	18586	8	2	1.11	0.82	1
18588	18587	8	0.61	0.61	0.82	2
18589	18588	8	0.6	0.6	0.82	2
18590	18589	8	1.19	0.85	0.82	1
18591	18590	8	0.61	0.61	0.83	2
18592	18591	8	0.61	0.61	0.85	2
18593	18592	8	0.6	0.6	0.88	2
18594	18593	8	1.5	0.96	0.95	1
18595	18594	8	2	1.1	1.09	1
18596	18595	8	2	1.11	1.11	2
19	18	15	0.25	2.08	2.12	2
19001	18496	8	0.4	0.5	0.27	1
19141	7308	21	1.24	11.4	12.87	2
19142	34175	21	1.36	11.95	5.11	1
19143	22225	21	0.18	4.35	5.1	2
19143	59276	21	3.58	19.39	4.25	1
19657	17760	12	7.02	6.1	2.25	0.43
19706	6947	24	0.72	16.1	17.5	2
19707	19706	8	0.39	0.49	0.7	2
19711	19808	8	0.4	0.49	0.7	2
19712	19711	8	0.6	0.61	0.7	2
19714	19712	8	0.6	0.61	0.7	2
19715	19714	8	0.4	0.49	0.71	2
19716	19715	8	0.6	0.6	0.72	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
19717	19716	8	0.6	0.6	0.73	2
19808	19707	8	0.4	0.49	0.7	2
19873	6955	24	0.36	11.35	14.91	2
19874	19873	12	1.75	3.96	1.96	1
19875	19874	12	0.63	2.38	1.93	1
19876	19875	12	0.56	1.73	1.89	2
19910	17762	12	2.22	3.43	2.24	0.61
20	19	12	-0.03	-0.42	0.27	1
20126	18553	15	0.59	3.22	1.91	0.67
20127	18554	15	0.3	2.28	1.77	0.64
20244	7289	8	0.41	0.5	0.83	2
20246	3	8	0.38	0.48	0.85	2
20247	20246	8	0.4	0.49	1.01	2
20248	20247	8	2.5	1.24	1.01	1
20249	20248	8	3.78	1.52	1.02	1
20250	20249	8	4.74	1.7	1.02	1
20314	18454	12	2.67	4.89	2.31	1
20553	37013	27	-0.69	-21.67	6.92	0.64
20753	21328	30	0.11	8.76	10.9	2
20754	20753	30	0.01	1.77	11.08	2
20755	20754	30	0.26	8.76	10.67	2
20756	20755	30	0.11	5.78	10.3	2
20757	20756	30	0.08	4.99	10.36	2
20758	20757	30	0.12	6	10.4	2
20759	20758	30	0.1	5.53	10.45	2
20760	20759	30	0.11	5.75	10.52	2
20761	72975	27	0.07	5.21	9.76	2
20762	21329	27	0.19	8.72	9.29	2
20763	20762	27	0.31	11.21	9.39	1
20764	20763	27	0.18	8.55	9.37	2
20765	20764	27	0.17	8.31	9.28	2
20766	20765	27	0.18	8.57	9.41	2
20767	20766	27	0.32	11.25	9.59	1
20768	20767	18	1.05	6.95	5.4	1
20769	20768	18	0.99	6.76	5.47	1
20770	20769	18	0.69	5.65	5.77	2
20771	20770	18	0.74	3.8	5.93	2
20772	20771	15	1.19	4.55	5.21	2
20773	20772	15	1.18	4.54	4.53	1
20774	20773	15	1.01	4.19	4.6	2
20775	20774	15	1.21	4.6	4.88	2
20776	20775	15	1.81	5.61	5.77	2
20777	30726	15	1.87	5.71	4.9	1
20778	57146	15	1.06	4.29	4.69	2
20779	20778	15	1.52	5.14	4.69	1
20780	20779	15	1.36	4.87	4.13	1
20781	20780	15	1.15	4.47	4.13	1
20782	41252	15	0.89	2.55	3.59	2
20783	56667	15	1.63	3.47	3.02	1
20793	69152	16	1.17	5.36	2.07	0.49
20794	36990	15	2	5.91	1.92	0.43
20795	37148	15	2.33	6.37	1.92	0.64

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
20796	20795	12	1.94	3.21	1.91	0.57
20797	20796	12	1.88	3.16	1.91	0.57
20798	20797	12	2.3	3.49	1.91	0.67
20799	20798	12	2.41	3.58	1.91	1
20803	20799	12	2.54	3.67	1.73	1
20804	20803	12	5.66	5.48	1.73	0.4
20805	20804	12	0.85	2.12	1.73	0.7
20806	20805	12	3.74	4.45	1.66	0.43
20807	20806	12	1.16	2.48	1.66	0.61
20808	20807	12	0.42	1.49	1.66	2
20809	20808	12	0.73	1.97	1.66	1
20810	20809	12	0.48	1.6	1.66	2
20811	20810	12	0.59	1.77	1.66	0.89
20812	20811	12	0.7	1.93	1.66	0.82
21	20	12	2.61	3.72	0.28	1
21042	41529	15	0.37	2.52	1.77	0.61
21043	21042	15	0.36	2.51	1.77	0.61
21044	21043	8	1.01	0.78	0.94	2
21045	21043	15	0.94	4.05	0.79	0.52
21046	21045	15	0.11	1.39	0.79	0.47
21047	21044	8	1.01	0.78	0.14	1
21048	21047	8	0.83	0.71	0.16	0.74
21049	21048	8	0.79	0.7	0.16	0.34
21050	21049	8	1.86	1.07	0.16	0.28
21051	21050	8	2.21	1.16	0.16	0.27
21052	21051	8	3	1.35	0.16	0.25
21053	21049	8	0.98	0.77	0	0.19
21054	21043	8	1.94	1.09	0.1	0.23
21055	21054	8	1.78	1.04	0.1	0.23
21056	21055	8	1.76	1.04	0.1	0.23
21057	21056	8	1.77	1.04	0.1	0.23
21058	21057	8	1.73	1.03	0.1	0.24
21059	21044	8	1.02	0.79	0.85	2
21060	21059	8	1	0.78	0.85	2
21061	21060	8	3.02	1.36	0.85	1
21062	21061	8	1.02	0.79	0.85	2
21063	21062	8	1.02	0.79	0.85	2
21064	21063	8	0.86	0.72	0.69	1
21065	21064	8	0.93	0.75	0.7	1
21066	21065	8	0.88	0.73	0.71	1
21067	21066	8	0.9	0.74	0.71	1
21068	21067	8	0.99	0.78	0.16	0.32
21071	21067	8	0.88	0.73	0.6	1
21328	6888	30	0.32	14.98	10.86	1
21329	20761	27	0.19	8.83	9.22	2
21589	18596	8	1.53	0.97	1.53	2
21590	21589	8	0.79	0.69	0.69	1
21591	21590	8	2.02	1.11	0.73	1
21592	21591	8	2.05	1.12	0.73	1
21593	21592	8	2	1.11	0.77	0.63
21594	21593	8	3.35	1.43	0.77	0.53
21595	21594	8	6.07	1.92	0.77	0.45

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
21620	21621	8	0.61	0.61	0.11	1
21621	52550	8	2.69	1.28	0.11	1
21622	52551	8	2.76	1.3	1.57	2
21623	21622	8	0.93	0.75	0.72	1
21624	21623	8	2.02	1.11	0.72	1
21625	21624	8	2.38	1.21	0.72	0.57
21626	21625	8	2.91	1.33	0.72	0.54
21627	21626	8	0.6	0.6	0.72	2
21628	21627	8	0.31	0.44	0.72	2
21629	21628	8	0.39	0.49	0.72	2
21630	21629	8	0.4	0.49	0.72	2
21631	21630	8	0.4	0.5	0.72	2
21634	21631	8	2.99	1.35	0.72	1
21635	21634	8	2.65	1.27	0.72	0.56
21636	21635	8	5.84	1.89	0.72	0.44
21638	21636	8	0.99	0.78	0.72	0.78
21641	21622	8	1.48	0.95	0.88	1
21642	21641	8	0.61	0.61	0.88	2
21643	21642	8	0.59	0.6	0.87	2
21645	21643	8	0.61	0.61	0.87	2
21646	21645	8	0.59	0.6	0.87	2
21647	21646	8	1.58	0.98	0.89	1
21648	21647	8	3.99	1.56	0.89	1
21649	21648	8	6.08	1.93	0.9	1
21651	21649	8	0.59	0.6	0.9	2
21652	21651	8	0.4	0.49	0.81	2
21653	21652	8	0.41	0.5	0.61	2
21654	21653	8	0.4	0.49	0.61	2
21655	21654	8	0.95	0.76	0.74	1
21805	7108	8	2.53	1.24	0.46	0.43
21806	21805	8	0.59	0.6	0.46	0.66
21807	21806	8	0.61	0.61	0.46	0.66
22	19	15	0.41	2.66	1.83	1
22009	6957	24	0.47	13.03	13.27	2
22010	22009	24	0.4	11.99	13.15	2
22011	22010	24	0.6	14.74	13.16	1
22012	22011	24	0.6	14.71	13.18	1
22013	22012	24	0.63	15.07	13.23	1
22067	19717	8	2.62	1.27	1.07	1
22090	21620	8	0.61	0.61	0.11	0.3
22091	22090	8	0.6	0.6	0.11	0.3
22092	22091	8	1.06	0.8	0.11	0.27
22093	22092	8	1.44	0.94	0.11	0.25
22094	22093	8	1.82	1.05	0.11	0.24
22097	22094	8	3.89	1.54	0.11	0.21
22098	22097	8	4.15	1.59	0.11	0.2
22099	22098	8	1.41	0.93	0.11	0.25
22100	22099	8	0.57	0.59	0.11	0.31
22101	22100	8	0.59	0.6	0.11	0.31
22222	7314	21	0.83	6.07	8.79	2
22223	22222	21	0.76	5.79	8.79	2
22225	19142	21	0.41	6.53	5.1	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
22454	6921	12	0.79	1.33	0.53	1
22455	22454	12	0.4	0.95	0.58	1
22456	22455	12	0.99	1.49	0.58	1
22457	22456	12	0.46	1.01	0.58	1
22458	45585	12	1.23	1.66	0.58	0.42
22462	22458	12	1.24	1.67	0.58	0.42
22463	22462	12	1.98	3.24	0.58	0.32
22463A	22463	12	1.66	2.96	0.58	0.32
22464	22463A	12	1.58	2.89	0.58	0.32
22465	45592	12	0.6	1.79	0.58	0.4
22466	22465	12	0.42	1.49	0.58	0.44
22482	45567	12	2	3.26	0.58	0.3
22489	22482	12	2.71	3.79	0.58	0.28
22490	22489	12	2.36	3.54	0.58	0.29
22538	15270	15	3.59	7.91	2.41	0.39
2254	742	10	0.44	0.94	0	0.08
2255	2254	10	0.79	1.26	0	0.08
23	22	15	1.19	4.55	1.85	0.66
23057	7162	8	0.51	0.56	0.41	0.65
23775	18517	8	6.07	1.93	0.79	0.46
23776	23775	8	4.24	1.61	0.79	0.51
23777	23776	8	1.12	0.83	0.79	0.86
23778	23777	8	0.6	0.61	0.79	2
23779	23778	8	0.68	0.64	0.79	2
2402	901892	6	3.29	0.66	0.66	2
2402	SSO120-oufall	8	41.88	5.06	0.42	0.22
2403	2402	8	2.49	1.23	1.08	1
2404	F5313-missing	8	3.52	1.46	1.51	2
2405	2404	8	0.35	0.46	1.04	2
2416	2404	8	0.4	0.49	0.6	2
27	23	15	1.23	4.64	1.85	0.47
2900	7335	10	15.51	5.58	2.47	1
2936	1508	10	0.52	1.02	1.16	2
2937	2936	10	0.52	1.02	0.53	1
2938	2937	10	0.44	0.94	0.52	1
2939	2938	10	0.61	1.1	0.52	1
2940	2939	10	2.82	2.38	0.52	1
2941	2940	10	1.91	1.96	0.53	0.37
2942	2941	10	0.35	0.84	0.53	0.58
2943	4971	10	1.46	1.71	0.53	0.4
2945	2943	10	0.93	1.37	0.53	0.44
2946	2945	10	1.81	1.91	0.53	0.37
2947	2946	10	1.93	1.97	0.53	0.37
29644	37991	8	0.5	0.55	0.51	0.67
29645	30342	15	0.58	3.18	0	0.05
29645	33471	30	0.65	21.3	0	0.05
29861	20812	12	0.05	0.51	1.66	0.98
29862	29861	10	0.31	0.78	1.66	2
29873	20799	10	4.86	3.12	0.35	0.34
3	20244	8	0.39	0.49	0.83	2
30153	21046	8	0.38	0.48	0.79	2
30155	30153	8	0.44	0.52	0.79	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
30156	30155	8	0.88	0.73	0.79	2
30157	30156	8	0.6	0.6	0.79	2
30158	30157	8	0.61	0.61	0.79	2
30159	30158	8	0.55	0.58	0.8	2
30342	37991	30	0.41	16.87	0	0.14
30588	16037	18	0.62	5.35	1.56	0.49
30588A	30588	15	1.15	4.48	1.56	0.42
30589	30588A	15	1.72	5.48	1.56	0.38
30590	30589	15	1.19	4.56	1.56	0.42
30590A	30590	15	0.79	3.71	1.56	0.46
30590B	30590A	15	1.88	5.72	1.57	0.44
30591	30590B	15	0.77	3.67	1.57	0.46
30592	15271	15	2.04	5.96	0.72	0.26
30593	30592	15	-2.94	-7.17	0.72	0.61
30594	30593	15	2.24	6.25	0.72	0.54
30595	30594	15	2.79	6.97	0	0.1
30596	30595	15	3.59	7.91	0	0.1
30597	30596	15	3.01	7.25	0	0.1
30598	30597	15	0.88	3.91	0	0.05
30616	22067	8	0.42	0.51	1.07	2
30617	30616	8	2.76	1.3	1.07	1
30618	30617	8	3.89	1.54	1.07	1
30619	30618	8	3.8	1.52	1.07	0.63
30620	30619	8	3.53	1.47	1.07	0.64
30621	30620	8	2.89	1.33	1.07	0.7
30622	30621	8	0.92	0.75	1.07	2
30623	30622	8	0.92	0.75	1.07	2
30624	30623	8	9.81	2.45	1.07	1
30625	30624	8	5.85	1.89	1.07	0.56
30626	30625	8	5.07	1.76	1.07	0.57
30627	30626	8	1.53	0.97	1.07	2
30628	30627	8	2.23	1.17	1.07	1
30726	20776	15	1.01	4.2	4.39	2
30727	53271	8	2	1.1	1.1	1
30953	31001	8	0.43	0.51	0.61	2
30957	30953	8	0.61	0.61	0.61	1
30958	59113	8	4.84	1.72	1.09	1
30959	30958	8	1.4	0.93	1.09	2
30960	30959	8	1.4	0.92	1.09	2
30963	30960	8	2.86	1.32	0.47	1
30968	65375	18	1.6	8.6	0	0.18
31001	21071	8	0.47	0.54	0.61	0.99
31151	30159	8	0.61	0.61	0.81	2
31153	31151	8	1.36	0.91	0.83	1
31154	31153	8	1.7	1.02	0.86	1
31155	31154	8	1.7	1.02	0.88	1
31828	21655	8	2.04	1.12	0.89	1
31829	31828	8	1	0.78	0.89	2
31830	31829	8	1.39	0.92	0.91	1
31831	31830	8	1.19	0.85	0.91	2
31832	31831	8	1.29	0.89	0.93	2
31833	31832	8	1.98	1.1	1.01	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
31834	31833	8	4.03	1.57	1.01	1
31835	31834	8	1.04	0.8	0.78	0.95
32254	33532	12	0.16	0.6	0.95	2
32257	32254	12	0.47	1.03	0.95	0.9
32258	32257	12	0.37	0.91	0.95	0.99
32259	32258	12	0.58	1.75	0.95	0.84
32260	32259	12	-0.01	-0.19	0.95	0.94
32261	32260	12	1.04	2.35	0.86	0.63
32262	32261	12	1.25	2.57	0.86	0.42
32263	32262	12	0.78	2.03	0.86	0.46
32394	19706	24	1.22	20.96	16.99	1
32395	32394	8	1.59	0.98	0.99	2
32396	32395	8	2.1	1.13	0.99	1
32397	32396	8	4.36	1.63	0.99	0.62
32475	6989	15	0.68	3.44	0.27	0.2
33093	16745	8	0.95	0.76	0.42	0.55
33295	12	24	0.51	10.44	2.44	0.78
33296	52660	18	1.12	7.17	2.82	0.45
33437	42234	30	0.71	29	7.88	1
33438	33437	30	0.95	33.56	8.01	0.66
33439	33438	27	-0.83	-23.73	8.01	0.91
33440	33439	27	0.33	15.04	8.01	0.88
33442	38773	27	0.79	23.12	7.8	0.41
33443	33442	27	0.69	21.67	7.8	0.42
33444	6970	10	-0.49	-1.29	0	0.08
33444	33443	27	0.73	22.2	7.8	0.42
33445	33444	27	0.8	23.23	7.52	0.4
33446	33445	27	1.08	27.09	7.52	0.37
33447	33446	27	1.52	32.04	7.43	0.35
33448	33447	27	1.76	34.51	7.43	0.33
33451	37014	27	0.53	14.56	6.6	0.48
33452	33451	27	0.78	17.72	3.47	0.44
33453	33452	27	0.96	19.63	3.47	0.29
33454	33453	27	1.03	20.32	3.47	0.29
33455	33454	27	1.42	23.87	3.47	0.28
33456	33455	27	1.46	24.22	3.47	0.28
33457	33456	27	1.5	24.53	3.47	0.27
33458	33457	27	3.25	36.06	3.47	0.23
33459	33458	27	0.47	13.75	3.47	0.35
33460	33459	27	1.03	20.33	3.47	0.29
33461	33460	27	0.76	17.5	3.47	0.3
33462	33461	27	0.78	17.65	3.47	0.3
33463	33462	27	0.79	17.85	3.47	0.3
33464	33463	27	0.73	17.12	3.47	0.31
33465	33464	27	0.74	17.18	3.47	0.31
33466	33465	27	0.66	16.23	3.47	0.32
33470	30342	30	0.48	18.45	0	0.05
33471	33470	30	0.6	20.51	0	0.05
33527	20783	15	1.12	2.88	3.02	2
33528	33527	12	1.04	1.53	1.33	1
33529	33528	12	0.67	1.23	1.33	2
33530	33529	10	2.95	1.58	1.33	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
33531	33530	10	3.61	1.75	1.33	1
33532	33531	10	3.77	1.79	1.33	1
33533	33532	8	5.87	1.89	0.41	0.88
33534	33533	8	4.62	1.68	0.41	0.35
33535	57364	8	5.24	1.79	0.41	0.34
33707	20761	12	-0.55	-1.71	0.66	1
33708	33707	12	2.37	3.55	1.61	1
33709	33708	12	2.7	3.79	1.69	1
33710	33709	12	2.28	3.48	1.65	1
33711	33710	12	2.06	3.31	1.65	0.51
33989	32397	8	4.08	1.58	0.99	0.58
33990	33989	8	4.08	1.58	0.99	0.58
33991	33990	8	7.13	2.09	0.99	0.5
33992	33991	8	2.3	1.18	0.99	0.71
33993	33992	8	0.6	0.61	0.99	2
33994	33993	8	0.96	0.76	0.99	2
33995	33994	8	3.61	1.48	0.99	1
33996	33995	8	2.8	1.31	0.99	0.66
33997	33996	8	0.59	0.6	0.99	2
33998	33997	8	0.6	0.61	0.99	2
33999	33998	8	2.39	1.21	1.18	1
34000	33999	8	2.37	1.2	1.18	1
34175	19141	21	1.14	10.96	11.46	2
34176	59274	12	4.17	6.12	2.37	0.44
34177	34176	12	5.25	6.86	2.38	0.42
34178	34177	12	2.31	4.55	2.38	0.53
34179	34178	12	1.84	4.06	2.36	0.61
34180	34179	12	1.87	3.15	0.39	0.47
34209	31835	8	0.6	0.6	0.78	2
34210	34209	8	0.59	0.6	0.78	2
34211	34210	8	0.6	0.61	0.79	2
34212	34211	8	0.65	0.63	0.82	2
34213	34212	8	2.36	1.2	0.88	1
34214	34213	8	3.17	1.39	0.88	1
34215	34214	8	3.16	1.39	0.89	0.59
34216	34215	8	3.13	1.38	0.89	0.59
34217	34216	8	4.46	1.65	0.89	0.54
34218	34217	8	1.96	1.09	0.39	0.42
34381	20767	24	0.2	6.52	6.4	1
34382	34381	24	0.24	7.1	6.4	1
34383	34382	24	0.36	8.82	6.4	1
34384	34383	24	0.27	4.98	4.17	1
34385	34384	24	0.3	5.19	4.65	1
34447	17751	12	0.44	1.53	2.24	2
34836	33711	12	0.79	5.33	1.65	0.51
35527	21652	8	1.94	1.09	0.28	0.36
35528	35527	8	1.88	1.07	0.28	0.36
35529	35528	8	3.17	1.39	0.28	0.36
35530	35529	8	3.4	1.44	0.28	0.31
35531	35530	8	4.22	1.6	0.28	0.3
35532	35531	8	4.26	1.61	0.28	0.29
35533	35532	8	4.45	1.65	0.28	0.29

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
35534	35533	8	4.81	1.71	0.28	0.29
35535	35534	8	4.48	1.65	0.28	0.29
35536	35535	8	4.59	1.67	0.28	0.29
35537	35536	8	4.4	1.64	0.28	0.29
35538	35537	8	4.31	1.62	0.28	0.29
35539	35538	8	2.91	1.33	0.28	0.33
35551	16404	8	7.51	2.14	0.56	0.36
36911	34383	18	1.1	7.13	3.77	1
36912	36911	18	1.63	8.66	3.76	1
36913	36912	18	0.84	6.21	3.75	0.57
36914	36913	18	1.57	8.51	3.74	0.53
36915	36914	18	1.99	9.59	3.74	0.44
36916	36915	18	1.73	8.92	3.74	0.47
36917	36916	18	1.41	8.06	3.74	0.49
36918	49997	18	2.34	10.39	3.74	0.43
36919	36918	18	2.34	10.38	3.71	0.43
36920	36919	18	2.22	10.12	3.71	0.43
36921	36920	18	3.23	12.2	3.63	0.39
36922	36921	18	1.89	9.32	3.63	0.44
36923	36922	18	1.44	8.14	3.63	0.48
36924	36923	12	1.46	2.78	3.63	2
36925	36924	18	2.33	6.74	3.53	1
36926	36925	15	1.64	3.48	3.53	2
36927	36926	18	1.65	5.67	3.53	0.98
36928	36927	15	1.77	3.61	3.5	0.92
36929	36928	15	1.7	3.54	3.5	1
36930	36929	15	0.97	2.67	3.42	2
36931	36930	15	1.01	2.72	3.43	2
36933	52089	15	1.71	3.55	3.46	1
36934	36933	15	1.76	3.6	3.44	1
36935	36934	15	2.07	3.9	3.79	1
36936	36935	15	1.86	3.71	3.79	2
36937	36936	15	2.23	4.05	3.79	1
36938	36937	15	2.5	6.6	3.79	1
36939	36938	15	2.03	5.95	3.73	1
36940	36939	15	1.88	5.73	3.81	0.82
36941	36940	15	0.8	3.75	3.81	0.98
36942	36941	15	0.79	3.72	3.82	2
36944	47025	15	0.83	3.8	3.79	1
36945	47036	15	1.39	4.92	3.7	0.66
36946	42603	15	0.34	2.44	3.58	0.86
36947	36946	15	1.88	5.72	3.53	0.98
36948	52364	15	1.42	4.97	3.54	0.64
36949	36948	15	0.68	3.44	3.54	0.94
36950	36949	15	1.11	4.39	3.54	0.99
36951	36950	15	1.15	4.48	3.34	0.65
36952	36951	15	1.08	4.34	3.34	0.67
36953	38072	15	0.96	4.09	2.03	0.84
36954	36953	12	1.67	2.97	0.82	0.37
36955	38085	12	0.82	2.09	0.47	0.43
36956	36955	12	3.2	4.12	0.48	0.25
36957	36956	12	1.25	2.57	0.48	0.31

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
36958	36957	12	3.24	4.14	0.48	0.25
36959	36958	12	2.92	3.94	0.48	0.26
36960	36959	12	2.47	3.62	0.48	0.27
36961	36960	12	3.34	4.21	0.48	0.25
36962	36961	12	3.48	4.3	0.48	0.25
36963	36962	12	3.74	4.46	0.48	0.24
36990	20793	15	1.73	5.49	1.95	0.61
37009	33448	27	0.59	19.98	6.98	0.41
37010	37009	27	0.73	22.18	6.92	0.39
37011	37010	27	0.61	20.31	6.92	0.41
37012	37011	27	0.88	24.41	6.92	0.37
37013	37012	27	0.43	17.06	6.92	0.44
37014	20553	27	0.77	22.86	6.6	0.6
37030	65333	15	2.94	7.16	0.82	0.29
37031	37030	12	0.29	1.24	0.82	0.56
37032	37031	12	1.38	2.7	0.82	0.46
37054	6946	8	2.59	1.26	0.37	1
37055	37054	8	1.59	0.98	0.37	1
37056	37055	8	1.25	0.87	0.37	1
37057	37056	8	0.98	0.77	0.37	1
37058	37057	8	0.99	0.78	0.37	1
37059	38271	8	1.27	0.88	0.37	0.46
37060	37059	8	5.04	1.75	0.37	0.33
37061	37060	8	4.59	1.67	0.37	0.34
37148	20794	15	1.01	4.2	1.92	0.49
37986	33466	27	1.43	23.9	3.41	0.28
37987	37986	30	0.4	16.78	3.41	0.31
37988	37987	30	0.41	16.97	3.41	0.31
37989	37988	30	0.4	16.71	3.41	0.31
37990	37989	30	0.55	19.62	3.41	0.29
37991	37990	30	0.41	16.93	0.49	0.28
38072	36952	15	0.55	3.11	3.34	0.87
38073	38072	12	1.9	3.17	1.44	0.49
38074	38073	12	1.16	2.48	1.44	0.56
38075	38074	12	1.94	3.21	1.44	0.49
38076	38075	12	1.57	2.89	1.44	0.51
38077	38076	12	1.97	3.23	1.44	0.48
38078	38077	12	1.52	2.84	1.44	0.51
38079	38078	12	0.81	2.08	1.44	0.62
38080	38079	12	1.2	2.52	1.44	0.56
38081	38080	12	0.69	1.91	1.44	0.65
38083	38081	12	0.53	1.68	1.44	0.72
38084	38083	12	3.86	4.52	0.74	0.58
38085	36954	12	0.93	2.22	0.82	0.43
38269	37058	8	1	0.78	0.37	0.5
38270	38269	8	0.9	0.74	0.37	0.51
38271	38270	8	1.72	1.02	0.37	0.43
38273	38083	8	0.69	0.65	0.78	1
38452	36953	8	0.1	0.25	1.24	2
38453	38452	8	4.49	1.66	1.24	1
38454	38453	8	3.34	1.43	1.32	1
38455	38454	8	0.84	0.71	0.45	0.58

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38456	38455	8	6.64	2.01	0.45	0.34
38457	38456	8	5.3	1.8	0.45	0.36
38458	38457	8	2.04	1.12	0.45	0.45
38459	38458	8	0.54	0.58	0.45	0.67
38460	38459	8	0.53	0.57	0.45	0.69
38461	38460	8	0.46	0.53	0.45	0.72
38462	38461	8	1.63	1	0.45	0.49
38463	38462	8	4.76	1.71	0.45	0.36
38464	38463	8	0.07	0.2	0.45	2
38465	38464	8	0.58	0.59	0.45	1
38525	6952	24	0.38	11.66	16.63	2
38526	38525	15	1.69	5.43	1.59	1
38527	38526	15	1.3	4.76	1.62	1
38528	38527	15	0.99	4.15	1.62	1
38529	38528	15	1.45	5.03	1.62	0.41
38530	38529	15	1.12	4.42	1.62	0.43
38530A	38530	15	0	0	1.62	0.6
38531	38530A	15	0.72	3.54	1.62	0.61
38532	38531	15	0.62	3.29	1.62	0.5
38533	38838	15	2.21	6.21	1.62	0.38
38534	38839	15	1.86	5.7	1.62	0.5
38535	38534	15	0.63	3.32	1.62	0.5
38536	38535	15	-0.13	-1.48	1.62	0.69
38537	38536	15	0.62	3.28	1.62	0.53
38538	38537	15	0.82	3.79	1.5	0.44
38538A	38538	15	3.35	7.64	1.51	0.36
38539	38538A	15	1.17	4.52	1.51	0.41
38581	21807	8	1.93	1.08	0.46	0.51
38582	38581	8	1.51	0.96	0.46	1
38642	38539	15	3.72	8.05	1.51	0.41
38643	38642	15	0.5	2.96	1.51	0.51
38644	38643	15	2.66	6.81	1.51	0.34
38645	38644	15	0.27	2.19	1.24	0.51
38646	39458	15	0.5	2.95	1.24	0.46
38647	38646	15	1.2	4.58	1.25	0.51
38648	38647	15	0.89	3.94	1.25	0.39
38649	38648	15	0.71	3.52	0.56	0.35
38682	18498	8	0.69	0.65	0.28	0.48
38683	38682	8	0.66	0.63	0.28	0.48
38684	38683	8	0.43	0.51	0.28	0.53
38773	33440	27	0.58	19.8	8.01	0.68
38774	38773	8	0.42	0.51	0.38	0.64
38775	38774	8	1.13	0.83	0.38	0.49
38776	38775	8	1.9	1.08	0.38	0.6
38777	38776	8	1	0.78	0.38	0.5
38778	38777	8	1.01	0.79	0.38	0.5
38779	38778	8	1.4	0.92	0.38	0.46
38780	38779	8	0.61	0.61	0.38	0.58
38781	38780	8	4.14	1.59	0.39	0.44
38782	38781	8	4.9	1.73	0.39	0.34
38838	38532	15	1.63	5.33	1.62	0.39
38839	38533	15	0.52	3.01	1.62	0.52

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
39117	38084	12	1.95	3.22	0.74	0.34
39118	39117	12	0.59	1.77	0.74	0.46
39224	20126	15	0.1	1.32	1.91	0.75
39225	39224	8	0.63	0.62	0.16	0.36
39458	38645	15	0.45	2.8	1.24	0.47
39733	23779	12	2.87	3.9	0.79	1
39734	39733	12	0.47	1.58	0.79	0.59
39735	39734	12	-0.02	-0.3	0.79	0.88
39736	39735	12	1.38	2.7	0.79	0.86
39737	39736	12	-0.15	-0.9	0.79	1
39738	39737	12	0.85	2.12	0.79	1
39739	39738	12	0.13	0.84	0.79	0.63
39741	39739	12	0.4	1.45	0.79	0.65
40488	6941	27	0.66	10.59	17.43	2
41020	38582	8	2.34	1.19	0.47	0.44
41036	38273	8	0.42	0.51	0.78	2
41037	41036	8	0.41	0.5	0.78	2
41038	41037	8	0.5	0.55	0.38	0.59
41039	41038	8	0.64	0.63	0.38	0.58
41040	41039	8	0.54	0.58	0.38	0.61
41042	41037	8	8.15	2.23	0.4	1
41043	41042	8	1.16	0.84	0.4	0.5
41044	41043	8	1.13	0.83	0.4	0.5
41045	41044	8	6.18	1.94	0.4	0.33
41114	41428	10	0.82	1.28	0.69	1
41115	41114	10	0.42	0.92	0.68	1
41116	41115	10	0.22	0.67	0.68	2
41117	41429	10	0.42	0.92	0.68	0.73
41118	41117	10	2.42	2.21	0.68	0.44
41119	41118	10	1.04	1.44	0.68	0.5
41120	41119	10	0.44	0.94	0.68	0.64
41121	41120	10	0.45	0.95	0.68	0.66
41122	41121	10	1.99	2	0.68	0.56
41123	41122	10	1.04	1.44	0.68	0.5
41124	41123	10	0.68	1.17	0.68	0.56
41125	41124	10	0.07	0.38	0.68	0.69
41126	41125	10	1.32	1.62	0.68	0.83
41127	41126	10	1.24	1.57	0.68	0.47
41128	41127	10	0.89	1.33	0.68	0.51
41129	41128	10	0.64	1.14	0.68	0.57
41130	41129	10	0.62	1.11	0.68	0.57
41131	41130	10	0.63	1.12	0.68	0.69
41132	41131	10	0.41	0.9	0.68	0.65
41133	41132	10	2.08	2.04	0.68	0.61
41134	41133	10	0.44	0.94	0	0.39
41135	41134	10	0.44	0.94	0	0.08
41136	41135	10	-0.26	-0.72	0	0.08
41137	41136	10	0.62	1.12	0	0.08
41138	41137	10	0.42	0.92	0	0.08
41139	41138	10	0.54	1.05	0	0.08
41140	41139	10	0.18	0.59	0	0.08
41252	20781	15	0.55	3.1	4.13	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
41427	1593	12	-1.16	-2.48	0.69	1
41428	41427	12	0.35	1.36	0.69	1
41429	41116	10	2.33	2.16	0.68	1
41434	35551	8	1.9	1.08	0.56	0.52
41529	41530	16	0.76	4.32	1.77	0.46
41530	43502	16	0.27	2.58	1.77	0.61
41917	39225	8	0.49	0.54	0.17	0.39
42050	72974	14	2.18	13.35	1.28	0.3
42051	42050	14	21.71	42.09	1.28	0.15
42052	42051	15	1.94	5.81	1.28	0.34
42053	42052	15	0.35	2.46	1.28	0.5
42054	42053	15	0.77	3.67	1.28	0.42
42055	42054	15	1.19	4.56	1.28	0.37
42224	15269	8	0.62	0.62	0.41	0.61
42225	42224	8	4.94	1.74	0.41	0.35
42226	42225	8	0.6	0.6	0.41	0.62
42227	42226	8	0.6	0.61	0.41	0.62
42228	22013	24	0.36	11.46	13.23	2
42229	42228	24	1.62	18.63	4.99	1
42230	48063	24	2.79	24.44	4.71	1
42231	42230	24	2.47	22.99	4.71	0.32
42232	42231	24	0.79	12.99	4.71	0.42
42233	42232	24	0.25	7.28	4.71	0.57
42234	42228	30	0.76	29.98	9.06	1
42603	36945	15	0.99	4.16	3.66	0.72
43381	150	15	122.06	46.14	1.66	0.37
43382	43381	15	0.26	2.12	1.66	0.64
43383	43382	15	3.57	7.89	1.66	0.66
43384	43383	12	5.33	5.32	1.4	0.36
43385	43384	12	1.03	2.33	0.57	0.36
43386	43385	12	1.95	3.22	0.46	0.27
43387	57167	12	3.51	4.32	0.46	0.24
43501	18555	18	0.38	4.2	1.77	0.47
43502	43501	16	0.55	3.68	1.77	0.49
43786	44225	12	0.6	1.79	0.82	1
43787	43786	8	0.91	0.74	0.51	1
43788	43787	8	0.47	0.54	0.51	1
43789	43788	8	0.95	0.5	0.51	2
43790	43789	8	0.24	0.25	0.51	2
43791	43790	8	0.46	0.35	0.63	2
43792	43791	8	0.42	0.33	0.63	2
43793	43792	8	0.53	0.37	0.52	2
43794	43793	8	0.45	0.52	0.62	2
43794A	43794	8	0.44	0.52	1.06	2
43795	43794A	8	0.63	0.62	1.06	2
43796	43795	8	0.51	0.56	1.06	2
43797	43796	8	0.52	0.56	0.49	1
43798	43797	8	0.52	0.56	0.48	1
43799	43798	8	0.52	0.56	0.47	1
43800	43799	8	1.43	0.94	0.46	1
43801	43796	8	0.79	0.7	0.69	1
43802	43801	8	1.86	1.06	0.79	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
43803	43802	8	2.8	1.31	0.8	1
43804	43803	8	2.5	1.23	0.81	1
43805	43804	8	3.5	1.46	0.83	0.56
43810	43800	8	0.52	0.57	0.46	1
43811	43810	8	0.52	0.56	0.5	1
43812	43811	8	0.52	0.56	0.59	2
43813	43812	8	0.52	0.56	0.66	2
43814	43813	8	1.7	1.02	0.72	1
43815	43814	8	0.51	0.56	0.82	2
43818	43815	8	1.88	1.07	0.83	1
43819	43794	8	-0.04	-0.15	0.72	1
43820	43819	8	0.5	0.55	0.72	2
43821	43820	8	0.92	0.75	0.72	1
43822	43821	8	0.52	0.57	0.72	2
43823	43822	8	0.74	0.67	0.72	2
43824	43823	8	0.62	0.61	0.73	2
43825	43824	15	0.54	3.07	0.73	1
43826	52024	15	0.56	3.12	0.03	1
43865	42055	12	0.71	1.94	0.28	0.28
44208	34385	24	0.24	4.66	1.97	1
44209	44208	24	0.29	5.12	2.08	1
44210	44209	10	0.32	0.52	2.15	2
44211	44210	10	0.32	0.8	1.2	2
44212	44211	10	0.32	0.8	1.2	2
44213	44212	10	0.33	0.81	1.2	2
44214	53270	10	0.38	0.87	0.99	2
44215	44214	10	0.32	0.8	0.99	2
44216	44215	10	0.32	0.8	1.03	2
44217	44216	10	0.35	0.84	0.78	1
44218	44217	10	0.31	0.78	0.77	1
44219	44218	10	0.31	0.79	0.77	1
44220	44219	10	0.23	0.68	1.11	2
44221	44220	10	0.26	0.72	1.11	2
44222	44221	10	0.21	0.65	1.11	2
44223	44222	10	0.3	0.78	1.12	2
44224	44223	10	0.2	0.63	0.82	2
44225	44224	10	0.23	0.69	0.82	2
44548	20777	15	1.05	4.28	4.98	2
45056	41045	8	2.31	1.19	0.4	0.42
45057	45056	8	0.93	0.75	0.4	0.53
45058	45057	8	1.56	0.98	0.4	0.46
45059	45058	8	3.38	1.44	0.41	0.38
45563	22466	12	4.23	4.74	0.58	0.59
45564	45563	12	1.4	2.73	0.58	0.33
45564A	45564	12	0.46	1.55	0.58	0.43
45565	45564A	12	2.42	3.59	0.58	0.38
45566	45565	12	4.26	4.75	0.58	0.33
45567	45566	12	3.74	4.46	0.58	0.27
45568	22490	12	3.77	4.47	0.58	0.27
45585	22457	12	0.6	1.16	0.58	1
45592	22464	12	1.07	2.38	0.58	0.35
45724	18455	12	1.87	4.1	2.31	0.58

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
45735	43818	8	0.6	0.6	0.85	2
45736	45735	8	1.21	0.86	0.85	1
45737	45736	8	2.36	1.2	0.87	1
45738	45737	8	3	1.35	0.9	0.61
45739	45738	8	4.44	1.65	0.9	0.54
45740	45739	8	4.92	1.73	0.9	0.52
45741	45748	8	2.62	1.26	0.83	0.61
45742	45741	8	3.02	1.36	0.83	0.58
45743	45742	8	3.03	1.36	0.83	0.58
45744	45743	8	0.68	0.64	0.83	2
45745	45744	8	0.63	0.62	0.83	2
45746	43805	8	2.01	1.11	0.83	0.65
45747	45746	8	2.64	1.27	0.83	0.6
45748	45747	8	2.65	1.27	0.83	0.6
45753	6937	30	0.51	18.97	17.34	1
45855	45059	8	3.15	1.39	0.41	0.38
45895	30628	8	2.7	1.28	1.07	1
46748	38465	8	0.47	0.54	0.45	0.71
46749	46748	8	2.31	1.19	0.45	0.44
46778	45745	8	0.6	0.6	0.83	2
46779	46778	8	0.6	0.61	0.84	2
46789	6931	30	0.56	19.86	18.63	1
46796	17748	12	4.61	4.95	2.24	0.64
47025	36942	15	0.75	3.62	3.78	2
47036	36944	15	1.49	5.09	3.8	0.65
48063	42229	24	2.91	24.93	5.1	1
48064	48063	8	3.7	1.5	0.96	1
48065	48064	8	0.6	0.61	0.96	2
48066	48065	8	4.4	1.64	0.96	1
48067	48066	8	1.05	0.8	0.96	2
48068	48067	8	1.64	1	0.96	0.89
48069	48068	8	6.98	2.06	0.96	0.49
48070	48069	8	6.88	2.05	0.96	0.5
48208	48070	8	5.6	1.85	0.96	0.52
48209	48208	8	5.18	1.78	0.96	0.54
48242	17297	12	6.32	5.79	1.56	0.54
48243	48242	8	13.24	2.84	0.36	0.26
48244	48243	8	13.38	2.86	0.36	0.31
48245	48244	8	7.29	2.11	0.36	0.3
48246	48245	8	0.44	0.52	0.37	0.64
48247	48246	8	1.17	0.85	0.37	0.48
48247A	48247	8	5.34	1.8	0.38	0.33
48248	48247A	8	0.6	0.6	0.38	0.58
48249	48248	8	3.38	1.44	0.38	0.53
48250	48249	8	1.73	1.03	0.38	0.43
48251	48250	8	1.26	0.88	0.38	0.48
48252	48251	8	0.62	0.62	0.38	0.58
48253	48252	8	-0.17	-0.32	0.41	0.73
48254A	NS1044	6	1.01	0.38	0.41	2
48571	41917	8	0.4	0.49	0.17	0.41
48572	48572A	8	0.4	0.49	0.17	0.42
48572A	48571	8	0.4	0.49	0.17	0.42

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
49083	30960	8	2.09	1.13	0.64	1
49084	49083	8	2.17	1.15	0.65	0.56
4970	2942	10	0.38	0.88	0.53	0.57
4971	4970	10	2.46	2.22	0.53	0.46
49997	36917	18	2.29	10.27	3.74	0.43
50253	34218	8	0.62	0.61	0.39	0.89
50254	50253	8	0.59	0.6	0.39	0.59
50255	50254	8	2.24	1.17	0.39	0.41
50256	50255	8	5.81	1.88	0.39	0.32
50281	50256	8	1.2	0.86	0.39	0.49
50282	50281	8	3.24	1.41	0.39	0.37
5134	18064	12	0.81	2.07	0.5	0.34
5135	14937	10	0.59	1.09	0	0.41
5136	5135	10	1.57	1.78	0	0.1
5137	5136	10	1.05	1.45	0	0.1
5138	5137	10	0.57	1.07	0	0.08
5139	5138	10	1.87	1.94	0	0.1
5140	5139	10	0.1	0.44	0	0.08
52024	902054	15	1.18	4.53	0.77	1
52025	52024	10	1.59	1.79	0.77	1
52026	52025	10	1.32	1.63	0.77	1
52027	52026	10	0.98	1.4	0.77	1
52028	52027	10	0.53	1.03	0.77	0.65
52029	52028	8	3.68	1.5	0.77	1
52030	52029	8	3.76	1.51	0.77	0.52
52031	52030	8	0.44	0.52	0.77	2
52032	52031	8	0.44	0.52	0.77	2
52033	52032	8	0.44	0.52	0.77	2
52034	52033	8	0.44	0.52	0.79	2
52041	52034	8	0.44	0.52	0.83	2
52042	52041	8	1.31	0.89	1.13	2
52043	52042	8	3.29	1.42	1.13	1
52044	52043	8	3.2	1.4	1.13	1
52045	52044	8	2.68	1.28	1.13	1
52088	36931	15	0.53	1.98	3.43	2
52089	52088	15	1.24	3.02	3.44	2
52091	52147	8	1.03	0.79	0.72	0.95
52092	52091	8	0.54	0.57	0.72	2
52093	52092	8	2.24	1.17	0.72	1
52094	52093	8	2.18	1.15	0.72	0.58
52095	52094	8	1.1	0.82	0.72	0.74
52096	52095	8	5.37	1.81	0.72	0.61
52097	52096	8	2.7	1.28	0.72	0.55
52098	52097	8	5.52	1.84	0.72	0.45
52099	52098	8	5.61	1.85	0.72	0.44
52100	52099	8	5.67	1.86	0.72	0.44
52147	52489	8	1.06	0.8	0.72	1
52170	18	16	20.44	22.42	3.26	1
52171	52170	16	0.71	4.18	3.26	0.66
52172	52171	16	0.5	3.5	3.26	0.78
52240	52100	8	1.83	1.06	0.72	0.63
52241	52240	8	3.62	1.49	0.72	0.5

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52242	52241	8	4.07	1.58	0.72	0.49
52243	52242	8	4.92	1.73	0.72	0.46
52244	52243	8	5.2	1.78	0.72	0.46
52245	52244	8	5.53	1.84	0.72	0.45
52364	36947	15	1.61	5.29	3.53	0.91
52488	21638	8	0.62	0.62	0.72	0.84
52489	52488	8	0.67	0.64	0.72	2
52520	52569A	8	1.09	0.82	0.72	0.74
52521	52520	8	0.6	0.6	0.72	2
52522	52521	8	0.5	0.55	0.72	2
52523	53379	8	0.5	0.55	0.73	2
52524	52523	8	0.51	0.56	0.74	2
52550	14458	8	3.13	1.38	1.67	2
52551	52550	8	8.8	2.32	1.57	1
52552	52552A	8	12.02	2.71	0.28	0.24
52552A	35539	8	13.38	2.86	0.28	0.34
52553	52552	8	7.63	2.16	0.28	0.26
52554	52553	8	3.62	1.49	0.28	0.31
52555	52554	8	7.09	2.08	0.28	0.27
52556	52555	8	7.16	2.09	0.28	0.27
52557	52556	8	0.99	0.78	0.28	0.43
52558	52557	8	0.98	0.77	0.28	0.43
52559	52558	8	2.45	1.22	0.28	0.34
52560	52245	8	16.07	3.13	0.72	0.34
52561	52560	8	5.06	1.76	0.72	0.46
52562	52561	8	5.07	1.76	0.72	0.46
52566	52562	8	0.57	0.59	0.72	2
52567	52566	8	0.61	0.61	0.72	2
52568	52567	8	3.99	1.56	0.72	1
52569	52568	8	4.99	1.75	0.72	0.46
52569A	52569	8	2.91	1.33	0.72	0.54
52651	7324	18	1.02	6.85	7.72	2
52652	52651	24	1.04	14.94	5.41	1
52653	52652	24	15.5	57.57	5.41	1
52654	52653	24	1.07	15.09	5.41	0.43
52655	52654	24	15.02	56.68	5.42	0.38
52656	52655	24	0.1	4.65	5.42	0.78
52657	52656	24	0.33	8.42	5.42	0.76
52658	52657	21	0.3	5.62	4.83	0.71
52659	52658	21	0.8	9.16	4.84	0.67
52660	52659	21	12.95	36.86	4.84	0.46
52661	52660	12	9.8	7.21	2.03	0.38
53242	52559	8	4.7	1.69	0.28	0.29
53243	53242	8	4.56	1.67	0.28	0.29
53244	53243	8	0.81	0.7	0.28	0.45
53245	53244	8	0.59	0.6	0.28	0.49
53246	53245	8	0.61	0.61	0.28	0.49
53257	44216	8	1.01	0.79	1.24	2
53258	53257	8	4.47	1.65	1.24	1
53259	53258	8	2.36	1.2	1.26	2
53260	53259	8	0.98	0.77	1.32	2
53261	53260	8	3.03	1.36	1.59	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
53262	53261	8	4.81	1.71	1.6	1
53263	53262	8	5.97	1.91	1.79	1
53264	53263	8	3.34	1.43	1.82	2
53267	53264	8	6.84	2.04	1.97	1
53269	53267	8	4.76	1.7	2.23	2
53270	44213	10	0.25	0.71	1.2	2
53271	53270	8	0.92	0.75	0.41	1
53292	30727	8	2.04	1.11	1.14	2
53293	53292	8	0.6	0.6	1.14	2
53294	53293	8	0.48	0.54	1.14	2
53295	53294	8	1.79	1.04	1.15	2
53296	53295	8	0.64	0.62	1.17	2
53297	53296	8	3.49	1.46	1.2	1
53379	52522	8	0.49	0.55	0.73	2
53385	53246	8	1.01	0.78	0.28	0.42
53386	53385	8	2.01	1.11	0.28	0.36
53387	53386	8	0.95	0.76	0.28	0.43
53388	53387	8	0.99	0.78	0.28	0.43
53727	53727A	8	0.3	0.43	1.02	2
53727A	53727B	8	0.55	0.58	1.02	2
53727B	20250	8	4.72	1.7	1.02	1
53728	53727	8	0.63	0.62	1.02	2
53729	53728	8	0.39	0.49	1.58	2
53730	53729	8	5.14	1.77	1.58	1
53868	46779	8	1.32	0.9	0.84	1
53869	53868	8	0.99	0.78	0.85	2
53870	53869	8	2.49	1.23	0.87	1
53871	53870	8	4.42	1.64	0.89	0.62
53872	53871	8	0.82	0.71	0.89	2
53873	53872	8	0.56	0.59	0.89	2
53874	53873	8	1.14	0.83	0.89	2
53875	53874	8	0.52	0.56	0.9	2
53876	53875	8	0.78	0.69	0.93	2
53877	53876	8	4.6	1.68	0.98	1
53878	53877	8	3.82	1.53	1.02	1
53879	53878	8	6.38	1.97	1.04	0.53
53955	41133	10	0.35	0.84	0.68	1
53956	53955	10	0.66	1.15	0.68	0.95
53957	53956	10	0.36	0.85	0.68	0.68
53958	53957	10	0.54	1.04	0.68	0.63
53959	53958	10	0.38	0.88	0.68	0.66
53960	53959	10	0.47	0.97	0.68	0.67
53961	53960	10	0.44	0.94	0.68	0.64
53962	53961	10	0.4	0.89	0.68	0.65
54110	52045	8	0.6	0.61	1.17	2
54111	54110	8	1.58	0.98	1.17	2
54112	54111	8	1.76	1.04	1.18	2
54113	54112	8	0.69	0.65	1.23	2
54114	54113	8	2.46	1.23	1.3	2
54115	54114	8	1.68	1.01	1.37	2
54116	54115	8	3.59	1.48	1.46	1
54117	54116	8	4.79	1.71	1.64	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
54353	65512	8	4.29	1.62	1.07	0.61
54451	45568	12	3.15	4.09	0.58	0.28
54452	54451	12	3.05	4.02	0.58	0.28
54452A	54452	12	1.59	2.91	0.58	0.32
54453	54452A	12	1.01	2.31	0.58	0.36
54453A	54453	12	0.56	1.73	0.58	0.41
54454	54453A	12	3	3.99	0.58	0.31
54455	54454	12	2.13	3.36	0.58	0.3
54456	54455	12	0.33	1.32	0.58	0.45
54556	53962	10	0.57	1.07	0.68	0.61
55251	7298	24	0.99	14.53	13.55	1
55252	55251	8	0.57	0.59	0.89	2
55253	55252	8	0.59	0.6	0.89	2
55254	55253	8	0.59	0.6	0.9	2
55255	55254	8	0.6	0.6	0.91	2
55256	55255	8	4.97	1.74	0.93	1
55257	55256	8	1.08	0.81	0.93	2
55258	55257	8	32.91	4.48	0.93	0.33
55259	55258	8	36.11	4.69	0.93	0.33
55260	55259	8	31.38	4.38	0.93	0.33
55261	55260	8	0.59	0.6	0.93	2
55262	55261	8	0.6	0.6	0.93	2
55267	55262	8	0.99	0.78	0.98	2
55268	55267	8	0.99	0.78	1.04	2
55269	55268	8	15.51	3.08	1.22	1
55270	55269	8	0.98	0.78	1.22	2
55271	55270	8	4.8	1.71	1.22	1
55272	55271	8	1.05	0.8	1.22	2
56667	20782	15	1.35	3.16	3.58	2
56841	33296	18	0.3	3.73	5.26	2
56842	56841	12	0.59	1.77	-0.14	1
57146	44548	15	0.89	3.94	9.13	2
57167	43386	12	6.13	5.7	0.46	0.22
57364	69111	8	7.05	2.07	0.41	0.32
59113	59114	8	0.37	0.47	0.48	0.86
59113	30957	8	2.74	1.29	0.61	1
59114	59115	8	0.36	0.47	0.47	0.93
59115	59116	8	0.36	0.47	0.47	0.94
59116	31155	8	2.21	1.16	0.91	1
59222	59221	12	0.53	1.68	0.76	0.52
59274	34175	20	0.62	9.2	6.35	1
59275	59274	20	0.65	7.24	4.16	1
59276	59275	20	0.18	3.8	4.18	2
61	27	10	7.63	3.91	0.15	0.16
61831	21595	8	1.12	0.83	0.77	0.78
61832	61831	8	2.88	1.32	0.77	0.66
61833	61832	8	0.6	0.6	0.77	2
61834	61833	8	3.58	1.48	0.78	0.53
61946	6888	42	1.52	80.26	35.62	1
61947	61946	36	0.41	27.53	13.2	1
61948	61947	36	0.59	33.24	13.3	1
63663	7113	8	2.1	1.13	0.96	0.72

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post							
Upstream Node		Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
	63665	7114	8	2.96	1.34	0.96	0.64
	64082	53297	8	0.61	0.61	1.24	2
	64083	64082	8	3.54	1.47	1.3	1
	64084	64083	8	4.69	1.69	1.39	1
	64085	64084	8	1.81	1.05	1.47	2
	65315	65511	15	0.51	2.99	0.82	0.55
	65316	65315	15	0.31	2.34	0.82	0.41
	65317	65316	15	0.57	3.16	0.82	0.35
	65318	65317	15	1.8	5.6	0.82	0.28
	65319	65318	15	1.8	5.6	0.82	0.28
	65320	65319	15	2.03	5.95	0.82	0.28
	65321	65320	15	1.96	5.85	0.82	0.27
	65322	65321	15	3.23	7.51	0.82	0.24
	65323	65322	15	0.15	1.63	0.82	0.5
	65324	65323	15	2.6	6.73	0.82	0.31
	65325	65324	15	0.5	2.95	0.82	0.36
	65326	65325	15	0.52	3.02	0.82	0.36
	65327	65326	15	0.35	2.48	0.82	0.4
	65328	65327	15	0.84	3.83	0.82	0.39
	65329	65328	15	2.02	5.93	0.82	0.27
	65330	65329	15	2.47	6.57	0.82	0.26
	65331	65330	15	0.5	2.95	0.82	0.36
	65332	65331	15	0.33	2.41	0.82	0.41
	65333	65332	15	0.88	3.92	0.82	0.31
	65373	6990	18	1.97	9.53	0.27	0.15
	65374	65373	18	0.76	5.93	0.27	0.15
	65375	65374	18	0.41	4.33	0.27	0.18
	65497	34179	16	1.05	6.62	1.99	0.39
	65498	65497	16	1.17	6.97	1.99	0.38
	65499	65498	16	0.71	4.18	1.99	0.49
	65500	65499	16	0.73	4.25	1.99	0.49
	65501	65500	16	0.35	2.95	1.99	0.59
	65502	65501	16	0.28	2.62	1.99	0.63
	65503	65502	16	0.5	3.5	1.99	0.57
	65504	65503	16	0.22	2.31	1.99	0.66
	65505	65504	16	1.84	6.74	1.99	0.59
	65506	65505	16	0.49	3.47	1.99	0.55
	65507	65506	16	0.89	4.69	1.99	0.48
	65508	65507	16	0.52	3.57	1.99	0.53
	65509	65508	16	0.54	3.66	1.99	0.6
	65510	65509	16	0.61	3.88	1.99	0.51
	65511	65510	16	0.56	3.72	1.99	0.52
	65512	45895	8	4.33	1.63	1.07	0.6
	66	61	10	2.92	2.42	0	0.1
	66452	67346	8	0.85	0.72	0.39	0.54
	66453	66452	8	1.85	1.06	0.39	0.43
	67346	7085	8	0.77	0.68	0.39	0.55
	6874	JP1	42	0.16	21.31	41.95	0.95
	6875	6874	42	0.17	21.73	41.86	2
	6876	6876N	42	0.19	21.82	41.86	2
6876N		6875	42	0.19	22.9	41.86	2
	6877	6876	42	0.17	26.94	41.45	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
6878	16379	42	-0.14	-23.28	41.45	1
6879	6878	42	0.46	43.91	41.45	1
6880	6879	42	0.17	26.91	41.45	2
6882	6880	42	0.2	28.91	41.14	2
6883	6882	42	-0.02	-8.98	41.14	1
6885	6883	42	0.55	48.09	46.89	1
6886	14565	42	3.98	129.77	44.11	1
6887	6886	42	0.19	28.63	44.11	2
6888	6887	42	0.21	29.56	42.76	2
6889	6888	24	0.42	9.51	-1.42	1
6890	6889	24	0.36	8.73	-0.73	1
69111	33534	8	4.5	1.66	0.41	0.36
69131	33527	15	0.97	2.68	2.16	1
69132	69131	16	3.51	6.04	2.16	1
69133	69132	16	0.7	2.69	2.16	0.68
69136	69133	16	0.71	2.71	2.16	0.66
69138	69136	16	0.7	2.7	2.16	0.68
69139	69138	16	1.45	5.97	2.15	0.63
69140	69139	16	0.84	4.55	2.15	0.49
69143	69140	16	0.74	4.26	2.15	0.5
69144	69143	16	0.74	4.25	2.07	0.53
69145	69144	15	0.63	3.33	2.07	0.57
69146	69145	16	0.57	3.74	2.07	0.53
69147	69146	15	0.83	3.81	2.07	0.53
69149	69147	15	0.71	3.51	2.07	0.56
69150	69149	15	0.54	3.07	2.07	0.6
69151	69150	15	1.72	5.47	2.07	0.44
69152	69151	15	0.68	3.43	2.07	0.57
6921	61946	42	0.2	29.09	23.08	1
6923	6921	42	0.13	23.1	22.55	1
6924	6923	42	0.09	19.15	22.55	2
6925	6924	42	0.09	19.29	21.94	2
6926	6925	42	0.09	19.18	21.21	2
6927	6926	42	0.01	6.87	21.21	2
6928	6927	42	0.15	25.54	21.22	1
6929	6933	30	0.64	21.17	18.27	1
6930	18452	42	0.17	26.69	18.64	1
6931	6930	42	0.48	45.11	18.64	1
6932	46789	30	0.81	23.89	18.27	1
6933	6932	30	0.48	18.44	18.27	1
6934	6929	30	0.45	17.76	18.26	2
6935	6934	30	0.56	19.87	18.26	1
6936	6935	30	0.49	18.47	17.34	1
6937	15872	30	0.63	21	17.34	1
6938	17375	30	0.55	19.6	17.49	1
6939	6938	30	0.66	21.47	16.87	1
6940	6942	30	0.62	20.9	17.19	1
6941	6940	30	0.78	23.41	17.35	1
6942	6939	30	0.65	21.32	16.9	1
6943	901676	27	0.59	19.93	17.35	1
6944	6943	27	0.53	18.87	17.4	1
6945	6944	27	0.41	16.62	17.28	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
6946	6945	27	0.61	20.33	17.34	1
6947	6946	24	0.62	14.95	17.49	2
6948	32394	24	0.23	9.21	16.54	2
6949	6948	24	0.78	16.75	16.55	1
6950	6949	24	0.61	14.83	16.57	2
6951	6950	24	0.71	16.01	8.59	1
6952	6951	24	0.34	11.09	8.69	1
6952	6950	24	0.09	4.4	9.19	2
6953	38525	24	0.49	13.33	13.56	2
6953	38525	15	0.72	3.54	3.4	1
6954	18586	24	0.47	13	14.89	2
6955	6954	24	0.45	12.8	14.89	2
6956	19873	24	0.43	12.41	11.17	1
6956	19873	15	0.54	3.08	2.56	1
6957	6956	24	0.3	10.33	11.2	2
6957	6956	15	0.01	0.5	2.78	2
6958	22009	24	2.58	30.51	0.34	1
6965	15269	18	0.7	7.4	1.28	0.59
6966	6965	18	0.5	6.25	1.28	0.31
6967	6966	15	0.58	4.14	0.37	0.37
6968	6967	15	0.38	3.35	0	0.05
6969	6968	15	0.7	4.56	0	0.05
6970	6969	15	0.77	4.77	0	0.05
6977	33451	18	0.81	6.09	2.3	0.43
6978	33451	18	0.97	6.7	0.89	0.25
6979	6978	18	0.98	6.74	0.89	0.25
6980	6979	18	1.59	8.55	0.89	0.24
6981	6980	15	1.46	5.04	0.89	0.45
6982	6981	15	1.47	5.06	0.89	0.3
6983	6982	16	0.95	4.84	0.47	0.22
6984	6983	15	0.79	3.71	0.47	0.25
6985	6984	15	0.99	4.15	0.47	0.23
6987	6985	15	1.01	4.2	0.48	0.25
6988	6987	15	1.15	4.47	0.27	0.2
6989	6988	15	0.98	4.13	0.27	0.52
6990	32475	15	0.83	3.8	0.27	0.19
6995	37990	12	5.27	5.29	0.83	0.29
70	52182	10	4.61	3.04	1.34	0.48
70349	16535	18	2.87	11.51	2.44	0.33
70350	70349	18	2.85	11.47	2.44	0.33
70351	70350	18	4.12	13.78	2.44	0.3
70352	70351	18	1.85	9.25	2.44	0.36
7049	6977	10	0.74	1.22	2.3	2
7050	7049	10	1.57	1.77	2.3	2
7051	7050	10	1.78	1.89	2.3	2
7052	7052M	8	2.36	1.2	1.17	1
7052M	7051	10	0	0	1.35	2
7061	6967	8	2.22	1.16	0.37	0.41
7062	7061	8	1.78	1.04	0.38	0.43
7063	7062	8	1.77	1.04	0.37	0.43
7064	7063	8	0.47	0.53	0.38	0.64
7065	7064	8	2.27	1.18	0.38	0.41

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7071	33444	10	1.25	1.03	0	0.1
7071	33444	10	0.99	1.41	0.38	0.36
7080	7071	8	1.91	1.08	0.38	0.42
7081	7080	8	0.41	0.5	0.38	0.66
7082	7081	8	3.14	1.38	0.38	0.37
7083	7082	8	0.4	0.49	0.38	0.67
7084	7083	8	0.4	0.49	0.38	0.67
7085	7084	8	0.4	0.49	0.38	0.67
7086	33446	8	4.41	1.64	0.11	0.2
7087	900091	8	0.49	0.55	0.11	0.32
7088	7087	8	2.46	1.22	0.11	0.22
7089	7088	8	0.42	0.51	0.11	0.33
7090	7089	8	0.4	0.49	0.11	0.34
7092	33448	8	0.62	0.62	0.53	1
7093	7092	8	3.27	1.41	0.53	0.44
7094	7093	8	0.81	0.7	0.53	0.66
7095	7094	8	4.87	1.72	0.53	0.46
7096	7095	8	6.45	1.98	0.53	0.37
7097	7096	8	8.76	2.31	0.53	0.34
7098	7097	8	8.43	2.27	0.53	0.35
7099	7098	8	0.41	0.5	0.53	0.91
7100	7099	8	2.05	1.12	0.53	0.78
7101	7100	8	1.48	0.95	0.53	0.55
7102	F1757	8	0.77	0.69	0.53	0.68
7106	20553	8	3.67	1.5	0.46	0.4
7107	7106	8	3.65	1.49	0.46	0.4
7108	7107	8	3.74	1.51	0.46	0.39
7113	6966	8	3.25	1.41	0.96	0.62
7114	63663	8	2.3	1.19	0.96	0.7
7115	63665	8	3.32	1.42	0.96	0.62
71157	64085	8	0.56	0.58	1.51	2
71158	71157	8	0.61	0.61	1.62	2
7116	7115	8	0.37	0.47	0.96	2
7117	7116	8	4.07	1.58	0.96	1
7118	7117	8	3.84	1.53	0.96	0.58
7119	7118	8	2.99	1.35	0.96	0.64
71194	38684	8	0.4	0.49	0.28	0.56
7120	7119	8	1.81	1.05	0.96	0.77
7122	13238	8	1.68	1.01	0.96	0.8
71229	71158	8	7.71	2.17	2.88	2
7123	7122	8	0.5	0.55	0.96	2
7124	7123	8	3.45	1.45	1.09	1
7125	7124	8	3.12	1.38	1.09	1
7126	7125	8	2.45	1.22	1.09	0.76
7127	7126	8	2.5	1.24	1.09	0.75
7128	7127	8	4.12	1.59	1.09	0.63
7132	7128	8	2.18	1.15	1.09	0.83
7133	7132	8	1.58	0.98	1.1	2
7134	7133	8	2.31	1.19	1.1	1
7135	7134	8	2.48	1.23	1.11	0.77
7136	7135	8	1.81	1.05	1.11	2
7137	7136	8	2.8	1.31	1.13	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7161	7052M	8	4.47	1.65	0.39	1
7162	7161	8	7.62	2.16	0.41	0.41
7163	23057	8	0.26	0.4	0.41	0.8
7164	7163	8	1.6	0.99	0.42	0.47
7165	7052	8	3.7	1.5	1.17	1
7166	7165	8	3.45	1.45	1.17	1
7167	7166	8	0.41	0.5	1.16	2
7168	7167	8	2.46	1.23	1.2	1
7169	7168	8	3.36	1.43	1.38	1
7170	7169	8	3.71	1.5	1.38	1
7171	7170	8	2.34	1.19	1.43	2
7173	7171	8	3.06	1.37	1.46	2
7176	7173	8	2.75	1.29	1.52	2
7177	7176	8	4.51	1.66	1.68	2
7178	7051	8	4.11	1.58	1.02	1
7179	7178	8	1.64	1	1.01	1
7180	7179	8	0.4	0.5	0.98	2
7181	7180	8	0.41	0.5	0.98	2
7182	7181	8	1.23	0.87	0.98	2
7183	7182	8	2.33	1.19	1.02	1
7184	7183	8	1.87	1.07	1.08	2
7185	7184	8	1.9	1.08	1.28	2
7188	7185	8	1.37	0.91	1.32	2
7252	6995	12	1.29	2.61	0.83	0.4
7253	7252	12	0.44	1.53	0.83	0.53
7254	7253	12	0.36	0.89	0.83	0.77
7255	7254	12	0.43	0.98	0.83	0.77
7256	7255	12	0.32	0.84	0.83	0.77
7257	7270	8	0.81	0.7	0	0.1
7258	7257	8	1.76	1.04	0	0.1
7259	7258	8	1.2	0.86	0	0.1
7260	7259	8	0.39	0.49	0	0.1
7261	7260	8	0.36	0.47	0	0.1
7262	7261	8	0.32	0.44	0	0.1
7263	7262	8	0.39	0.49	0	0.1
7264	7263	8	0.38	0.48	0	0.1
7265	7264	8	1.36	0.91	0	0.1
7266	7256	8	0.8	0.7	0	0.25
7270	7266	8	0.85	0.72	0	0.1
7287	7265	8	3.97	1.56	0	0.1
7288	7287	8	3.37	1.44	0	0.1
7289	7256	10	0.54	0.68	0.83	2
7295	61948	24	1.62	18.62	13.35	1
7296	7295	24	0.38	9	13.55	2
7297	7296	24	0.76	12.77	13.55	2
7298	7297	24	0.43	9.58	13.55	2
7300	55251	24	0.65	11.77	12.83	2
7301	7300	24	2	20.7	12.83	1
7302	7301	24	2.4	22.65	12.83	1
7303	7302	21	2.77	17.06	12.87	1
7305	7303	21	2.09	14.82	12.87	0.73
7308	7305	21	1.49	12.52	12.87	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7309	19143	21	0.8	9.14	9.11	1
7311	18322	21	1.12	7.06	9.47	2
7314	18241	21	0.35	3.91	9.55	2
7315	22223	21	0.49	4.64	8.47	2
7316	7315	21	0.96	10.03	8.9	1
7317	7316	21	0.67	8.38	7.27	1
7318	7317	21	0.55	7.59	7.27	1
7319	7318	21	0.91	9.8	9.53	1
7320	7319	21	1.27	11.54	9.53	1
7321	7320	18	1.35	7.9	7.45	1
7322	7321	18	1.16	7.33	7.45	2
7323	7322	18	0.91	6.48	7.45	2
7324	7323	18	1.31	7.79	7.5	1
7325	52651	18	1.02	6.84	3.94	1
7326	7325	18	0.81	6.13	5.26	1
7327	7326	18	0.75	5.89	5.26	1
7328	7327	18	0.74	5.83	5.26	1
7329	7328	15	1.56	5.22	3.79	1
7330	7329	15	0.8	3.73	3.96	2
7332	7316	10	1.77	1.89	2.47	2
7333	7332	10	3.44	2.63	2.61	2
7334	16604	10	3.11	2.5	2.26	1
7335	7334	10	3.77	2.75	2.41	1
742	754	8	1.89	1.07	0	0.1
754	902164	8	6.11	1.93	0	0.1
8195	37032	12	0.24	1.14	0.82	0.59
900091	7086	8	0.5	0.55	0.11	0.32
901295	901296	8	1.49	0.95	0.75	1
901296	901297	8	0.61	0.61	0.75	2
901297	901298	8	0.59	0.6	0.75	2
901298	901299	8	1.79	1.05	0.75	0.64
901299	52524	8	8.72	2.31	0.75	1
901390	37990	15	11.09	9.04	2.17	0.35
901391	901390	16	0.36	1.95	2.17	0.74
901676	15751	27	0.52	18.7	17.48	1
901871	52661	12	2.46	3.61	2.03	0.55
901892	901893	6	5.72	0.87	0.66	1
901893	16595	8	6.03	1.92	0.66	0.42
902012	6953	24	0.34	11.03	12.98	2
902012	6953	15	0.32	2.35	2.9	2
902054	43825	15	1.2	4.58	0.74	1
902164	902165	8	6.32	1.96	0	0.1
902165	52657	8	6.21	1.95	0	0.1
9039	16038	18	0.92	6.5	2.44	0.63
9040	17949	15	1.35	4.86	1.85	0.44
9041	17969	15	1.15	4.48	1.12	0.46
9042	9041	15	1.05	4.28	0.83	0.32
9044	14317	15	4.1	8.45	0	0.1
9045	9044	15	3.35	7.65	0	0.1
9046	9045	15	0.08	1.16	0	0.05
9047	9046	21	0.25	5.11	0	0.05
9048	10918	21	0.48	7.06	0	0.05

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Post							
Upstream Node	Downstream Node		Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
9049		9048	21	2.33	15.64	0	0.1
break 1	break12		6	-0.12	-0.12	0.38	1
Break 4		45855	6	-1.62	-0.49	0.41	1
Break11		41040	6	-2.37	-0.6	0.38	1
break12	Break11		6	-0.32	-0.2	0.38	1
break2		46749	6	0.06	0.08	0.45	2
C445		7102	8	0.21	0.36	0.53	0.92
F1757		7101	8	0.8	0.7	0.53	0.66
F5313-missing		2403	8	2.4	1.21	1.51	2
NS1044		48253	6	-6.41	-1.03	0.41	1
PVT302	PVT303		8	0.48	0.54	0.51	0.79
PVT303		29644	8	0.9	0.74	0.51	0.94
PVT472	PVT473		8	1.39	0.92	0.09	0.23
PVT473	PVT474		8	5.93	1.9	0.09	0.18
PVT474	PVT475		8	8.6	2.29	0.09	0.16
PVT475	PVT476		8	0.61	0.61	0.09	0.28
PVT476	PVT477		8	0.6	0.6	0.09	0.28
PVT477	PVT478		8	11.33	2.63	0.09	0.16
PVT478		32260	8	15.2	3.05	0.09	0.15
weir15		33295	24	0.31	8.18	2.44	0.55
59221		59220	8	2.22	1.16	0.76	0.6
59220		59219	8	2.72	1.29	0.76	0.57
59219		204	8	2.74	1.29	0.76	0.57
204		201	8	4.72	1.7	0.76	0.51
201		52174	8	1.89	1.07	0.76	0.64
52176		52175	16	2.3	7.52	2.32	0.68
52182		52181	8	5.49	1.83	1.33	0.64
52181		52176	8	5.35	1.81	1.33	0.65
42057		71509	8	5.5	1.83	0.71	0.66
42056		42055	8	4.53	1.66	0.71	0.47
71509		42056	8	1.63	1	0.71	0.64
52175		52174	16	0.57	3.73	2.58	0.68
52174		52173	16	0.5	3.51	3.32	0.75
52173		52172	16	0.49	3.47	3.29	0.79
72974		34836	14	0.79	8.03	1.28	0.34
33707		72976	12	4.58	4.93	0.92	1
72976		72975	12	0.96	2.26	0.91	1
72975		20760	27	0.2	8.89	10.57	2

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
10918	13409	21	0.15	3.97	0.00	0.05
11	70352	24	1.63	18.68	2.76	0.28
11897	7052	8	3.72	1.51	-0.08	1.00
12	11	24	0.40	9.29	2.76	0.37
13238	7120	8	1.83	1.06	0.96	0.77
13409	9047	21	-0.19	-4.47	0.00	0.05
13939	20805	12	11.76	7.90	0.27	1.00
14317	15315	15	2.45	6.54	0.00	0.10
14454	19876	12	5.12	5.21	1.87	1.00
14455	14454	12	1.46	2.78	1.87	0.62
14456	14455	12	1.59	2.91	1.87	0.59
14458	14456	12	1.02	2.32	1.68	0.64
14546	7188	8	0.57	0.59	1.43	2.00
14547	14546	8	2.87	1.32	1.54	2.00
14548	14547	8	4.80	1.71	1.77	2.00
14565	6885	42	2.14	77.24	44.43	1.00
14937	5134	10	0.55	1.05	0.58	0.54
150	901871	16	3.05	8.66	4.85	1.00
1507	16581	10	14.78	5.45	1.53	1.00
1508	1507	8	0.99	0.78	1.53	2.00
15269	42234	18	1.37	10.33	1.79	1.00
15270	30591	15	1.38	4.91	1.76	0.43
15270	9042	15	1.89	5.74	1.01	0.30
15271	22538	15	2.67	6.83	0.83	0.59
15315	30592	15	2.39	6.45	0.00	0.25
15751	40488	27	0.66	21.21	17.95	1.00
15871	6936	30	0.44	17.56	17.33	1.00
15872	15871	30	0.60	20.58	17.33	1.00
1593	29862	12	0.04	0.43	1.82	2.00
16036	42233	18	0.94	6.58	5.38	0.70
16037	16036	18	0.97	6.69	4.56	0.68
16038	16037	18	1.68	8.81	2.84	0.82
1609	1593	10	0.33	0.81	1.13	2.00
1610	1609	10	0.50	1.01	1.15	2.00
1611	1610	10	0.77	1.24	1.16	1.00
1612	1611	10	1.74	1.87	1.18	1.00
1613	1612	10	0.47	0.97	1.20	2.00
1614	1613	10	0.39	0.88	1.20	2.00
16379	16379N	42	0.16	20.88	41.47	2.00
16379N	6877	42	0.16	21.44	41.47	2.00
16401	C445	8	0.41	0.50	0.62	2.00
16402	16401	8	0.40	0.49	0.62	2.00
16403	16402	8	2.26	1.17	0.63	1.00
16404	16403	8	1.56	0.97	0.65	0.61

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
16535	7330	15	2.02	5.93	4.43	1.00
16536	11897	8	4.15	1.59	0.00	0.10
16581	7328	10	4.34	2.95	1.55	1.00
16595	7333	8	4.68	1.69	0.68	1.00
16596	7333	10	0.50	1.00	3.77	2.00
16604	7320	10	3.39	2.61	2.36	1.00
16742	6982	8	2.42	1.22	0.49	0.46
16743	16742	8	0.65	0.63	0.49	0.68
16744	16743	8	1.02	0.79	0.49	0.58
16745	16744	8	1.07	0.81	0.49	0.58
16746	33093	8	1.00	0.78	0.49	0.59
16747	16746	8	0.72	0.66	0.49	0.65
16748	16747	8	1.03	0.79	0.49	0.58
16749	16748	8	6.64	2.01	0.49	0.44
16750	16750M	8	1.91	1.08	0.49	0.49
16750M	16749	8	1.86	1.06	0.49	0.49
16751	16750	8	1.04	0.80	0.49	0.58
16752	16751	8	0.49	0.55	0.49	0.77
16753	16752	8	0.49	0.55	0.50	0.77
16754	16753	8	0.40	0.49	0.50	0.94
17008	33535	8	5.13	1.77	0.47	0.36
17009	17008	8	4.03	1.57	0.47	0.39
17037	17009	8	5.23	1.79	0.47	0.36
17041	17037	8	5.23	1.79	0.47	0.36
17297	17764	12	1.61	2.92	2.54	1.00
17375	45753	30	2.07	38.12	17.65	1.00
17479	42227	8	1.02	0.79	0.48	0.70
17480	17479	8	1.97	1.10	0.48	0.48
17481	17480	8	5.66	1.86	0.49	0.36
17482	17481	8	6.53	2.00	0.49	0.35
17483	17482	8	4.37	1.63	0.49	0.39
17484	17483	8	1.94	1.09	0.49	0.49
17747	18202	12	42.19	14.96	2.27	1.00
17748	17747	12	1.61	2.92	2.27	0.67
17749	46796	12	5.67	5.48	2.27	0.46
17750	17749	12	0.42	1.49	2.27	2.00
17751	17750	12	0.36	1.38	2.27	2.00
17752	34447	12	0.31	1.28	1.87	2.00
17753	17752	12	0.43	1.51	1.89	2.00
17754	17753	12	0.43	1.51	1.95	2.00
17755	17754	12	0.37	1.40	2.02	2.00
17756	17755	12	0.23	1.10	2.24	2.00
17757	17756	12	0.68	1.90	2.24	2.00
17758	17757	12	4.60	4.94	2.51	1.00

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
17759	17758	12	0.30	1.27	2.51	2.00
17760	17759	12	3.42	4.26	2.52	1.00
17761	19657	12	5.83	5.56	2.59	0.50
17762	17761	12	3.57	4.35	2.60	0.61
17763	19910	12	1.95	3.22	2.54	0.69
17764	17763	12	1.44	2.76	2.54	1.00
17765	48242	12	5.89	5.59	0.86	0.35
17766	17765	12	1.52	2.84	0.85	0.39
17767	17766	12	-0.07	-0.63	0.85	0.82
17768	17767	12	1.15	2.47	0.85	0.75
17769	17768	12	4.01	4.61	0.85	0.42
17770	17769	12	3.46	4.29	0.85	0.32
17771	17770	12	4.80	5.05	0.85	0.29
17772	17771	12	4.42	4.84	0.85	0.30
17773	17772	12	1.43	2.76	0.85	0.40
17774	17773	12	8.83	6.84	0.85	0.26
17775	17774	12	0.89	2.18	0.85	0.44
17949	9039	15	1.61	5.30	2.17	0.46
17969	9040	15	0.86	3.87	2.17	0.54
18	56841	18	-0.57	-5.14	5.93	1.00
18063	17775	12	-0.45	-1.55	0.85	1.00
18064	18063	12	0.76	2.00	0.85	1.00
18202	6885	12	0.61	1.79	2.26	2.00
18241	7311	21	1.20	7.28	9.55	2.00
18297	6958	8	10.17	2.49	0.34	1.00
18298	18297	8	10.97	2.59	0.34	1.00
18298A	18298	8	0.30	0.43	0.34	0.65
18299	18298A	8	0.35	0.46	0.34	0.64
18300	18299	8	0.39	0.49	0.34	0.63
18301	18300	8	2.16	1.15	0.34	0.48
18302	18301	8	4.20	1.60	0.34	0.33
18303	18302	8	6.83	2.04	0.34	0.29
18321	7309	21	0.87	9.56	9.30	1.00
18322	18321	21	1.64	13.13	9.21	1.00
18363	7256	8	0.40	0.49	-0.01	0.87
18364	18363	8	0.40	0.49	0.00	0.10
18452	6928	42	0.01	7.10	20.62	2.00
18453	18452	12	1.43	2.75	2.42	1.00
18454	18453	12	2.98	5.17	2.49	1.00
18455	20314	12	2.55	4.78	2.42	1.00
18456	45724	12	1.96	4.19	1.62	0.49
18457	18456	12	3.74	5.79	1.62	0.37
18458	18457	12	3.14	5.30	1.62	0.39
18463	18458	10	1.59	2.32	1.40	0.57

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
18478	18463	8	2.51	1.61	1.40	1.00
18479	18478	8	3.06	1.37	1.40	2.00
18480	18479	8	2.00	1.11	1.40	2.00
18481	18480	8	2.95	1.34	1.41	2.00
18481A	18481	8	3.21	1.40	1.41	2.00
18482	18481A	8	2.77	1.30	1.42	2.00
18483	18482	8	3.23	1.40	1.43	2.00
18484	18483	8	3.01	1.36	1.44	2.00
18485	18484	8	3.63	1.49	1.46	1.00
18486	18485	8	2.66	1.27	1.49	2.00
18496	901391	15	0.24	1.34	2.31	2.00
18497	19001	8	0.38	0.48	0.32	1.00
18497A	18497	8	0.97	0.77	0.32	0.46
18498	18497A	8	0.97	0.77	0.32	0.46
18517	18486	8	3.54	1.47	1.54	2.00
18552	18496	15	0.43	2.73	2.01	1.00
18553	18552	15	0.34	2.45	2.01	1.00
18554	39224	15	0.49	2.91	1.87	0.84
18555	20127	15	0.52	3	1.87	0.63
18586	902012	24	0.32	10.73	13.12	2
18586	902012	15	1.43	4.99	3.93	1
18587	18586	8	2	1.11	0.83	1
18588	18587	8	0.61	0.61	0.82	2
18589	18588	8	0.6	0.6	0.82	2
18590	18589	8	1.19	0.85	0.82	1
18591	18590	8	0.61	0.61	0.82	2
18592	18591	8	0.61	0.61	0.85	2
18593	18592	8	0.6	0.6	0.88	2
18594	18593	8	1.5	0.96	0.95	1
18595	18594	8	2	1.1	1.09	1
18596	18595	8	2	1.11	1.12	2
19	18	15	0.25	2.08	2.4	2
19001	18496	8	0.4	0.5	0.31	1
19141	7308	21	1.24	11.4	13.35	2
19142	34175	21	1.36	11.95	5.43	1
19143	22225	21	0.18	4.35	5.14	2
19143	59276	21	3.58	19.39	4.39	1
19657	17760	12	7.02	6.1	2.57	0.47
19706	6947	24	0.72	16.1	17.81	2
19707	19706	8	0.39	0.49	0.7	2
19711	19808	8	0.4	0.49	0.7	2
19712	19711	8	0.6	0.61	0.7	2
19714	19712	8	0.6	0.61	0.7	2
19715	19714	8	0.4	0.49	0.71	2

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
19716	19715	8	0.6	0.6	0.72	2
19717	19716	8	0.6	0.6	0.73	2
19808	19707	8	0.4	0.49	0.7	2
19873	6955	24	0.36	11.35	15.82	2
19874	19873	12	1.75	3.96	1.98	1
19875	19874	12	0.63	2.38	1.95	1
19876	19875	12	0.56	1.73	1.91	2
19910	17762	12	2.22	3.43	2.54	1
20	19	12	-0.03	-0.42	0.29	1
20126	18553	15	0.59	3.22	2.01	1
20127	18554	15	0.3	2.28	1.87	0.69
20244	7289	8	0.41	0.5	0.83	2
20246	3	8	0.38	0.48	0.85	2
20247	20246	8	0.4	0.49	1.02	2
20248	20247	8	2.5	1.24	1.02	1
20249	20248	8	3.78	1.52	1.02	1
20250	20249	8	4.74	1.7	1.02	1
20314	18454	12	2.67	4.89	2.63	1
20553	37013	27	-0.69	-21.67	7.27	0.65
20753	21328	30	0.11	8.76	11.08	2
20754	20753	30	0.01	1.77	11.27	2
20755	20754	30	0.26	8.76	10.76	2
20756	20755	30	0.11	5.78	10.34	2
20757	20756	30	0.08	4.99	10.41	2
20758	20757	30	0.12	6	10.46	2
20759	20758	30	0.1	5.53	10.51	2
20760	20759	30	0.11	5.75	10.59	2
20761	72975	27	0.07	5.21	9.81	2
20762	21329	27	0.19	8.72	9.34	2
20763	20762	27	0.31	11.21	9.47	1
20764	20763	27	0.18	8.55	9.49	2
20765	20764	27	0.17	8.31	9.43	2
20766	20765	27	0.18	8.57	9.61	2
20767	20766	27	0.32	11.25	9.84	1
20768	20767	18	1.05	6.95	5.37	1
20769	20768	18	0.99	6.76	5.44	1
20770	20769	18	0.69	5.65	5.59	2
20771	20770	18	0.74	3.8	5.86	2
20772	20771	15	1.19	4.55	5.21	2
20773	20772	15	1.18	4.54	4.53	1
20774	20773	15	1.01	4.19	4.6	2
20775	20774	15	1.21	4.6	4.83	2
20776	20775	15	1.81	5.61	5.97	2
20777	30726	15	1.87	5.71	4.9	1
20778	57146	15	1.06	4.29	4.7	2
20779	20778	15	1.52	5.14	4.7	1
20780	20779	15	1.36	4.87	4.14	1
20781	20780	15	1.15	4.47	4.2	1
20782	41252	15	0.89	2.55	3.62	2
20783	56667	15	1.63	3.47	3.12	1
20793	69152	16	1.17	5.36	2.25	0.51
20794	36990	15	2	5.91	2.08	0.44

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
20795	37148	15	2.33	6.37	2.08	0.65
20796	20795	12	1.94	3.21	2.06	0.59
20797	20796	12	1.88	3.16	2.06	0.6
20798	20797	12	2.3	3.49	2.06	0.85
20799	20798	12	2.41	3.58	2.06	1
20803	20799	12	2.54	3.67	1.89	1
20804	20803	12	5.66	5.48	1.89	0.42
20805	20804	12	0.85	2.12	1.89	0.74
20806	20805	12	3.74	4.45	1.82	0.46
20807	20806	12	1.16	2.48	1.82	0.65
20808	20807	12	0.42	1.49	1.82	2
20809	20808	12	0.73	1.97	1.82	1
20810	20809	12	0.48	1.6	1.82	2
20811	20810	12	0.59	1.77	1.82	2
20812	20811	12	0.7	1.93	1.82	1
21	20	12	2.61	3.72	0.31	1
21042	41529	15	0.37	2.52	1.87	0.63
21043	21042	15	0.36	2.51	1.87	0.63
21044	21043	8	1.01	0.78	0.99	2
21045	21043	15	0.94	4.05	0.83	0.55
21046	21045	15	0.11	1.39	0.83	0.48
21047	21044	8	1.01	0.78	0.15	1
21048	21047	8	0.83	0.71	0.18	1
21049	21048	8	0.79	0.7	0.18	0.36
21050	21049	8	1.86	1.07	0.18	0.3
21051	21050	8	2.21	1.16	0.18	0.29
21052	21051	8	3	1.35	0.18	0.27
21053	21049	8	0.98	0.77	0	0.21
21054	21043	8	1.94	1.09	0.12	0.24
21055	21054	8	1.78	1.04	0.12	0.25
21056	21055	8	1.76	1.04	0.12	0.25
21057	21056	8	1.77	1.04	0.12	0.25
21058	21057	8	1.73	1.03	0.12	0.25
21059	21044	8	1.02	0.79	0.91	2
21060	21059	8	1	0.78	0.9	2
21061	21060	8	3.02	1.36	0.91	1
21062	21061	8	1.02	0.79	0.91	2
21063	21062	8	1.02	0.79	0.91	2
21064	21063	8	0.86	0.72	0.75	2
21065	21064	8	0.93	0.75	0.75	1
21066	21065	8	0.88	0.73	0.75	2
21067	21066	8	0.9	0.74	0.75	2
21068	21067	8	0.99	0.78	0.18	0.71
21071	21067	8	0.88	0.73	0.66	1
21328	6888	30	0.32	14.98	11.03	1
21329	20761	27	0.19	8.83	9.24	2
21589	18596	8	1.53	0.97	1.53	2
21590	21589	8	0.79	0.69	0.69	1
21591	21590	8	2.02	1.11	0.83	1
21592	21591	8	2.05	1.12	0.83	1
21593	21592	8	2	1.11	0.86	1
21594	21593	8	3.35	1.43	0.87	0.57

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
21595	21594	8	6.07	1.92	0.87	0.49
21620	21621	8	0.61	0.61	0.13	1
21621	52550	8	2.69	1.28	0.12	1
21622	52551	8	2.76	1.3	1.57	2
21623	21622	8	0.93	0.75	0.72	1
21624	21623	8	2.02	1.11	0.72	1
21625	21624	8	2.38	1.21	0.72	0.57
21626	21625	8	2.91	1.33	0.72	0.54
21627	21626	8	0.6	0.6	0.72	2
21628	21627	8	0.31	0.44	0.72	2
21629	21628	8	0.39	0.49	0.72	2
21630	21629	8	0.4	0.49	0.72	2
21631	21630	8	0.4	0.5	0.72	2
21634	21631	8	2.99	1.35	0.72	1
21635	21634	8	2.65	1.27	0.72	0.56
21636	21635	8	5.84	1.89	0.72	0.44
21638	21636	8	0.99	0.78	0.72	0.78
21641	21622	8	1.48	0.95	0.87	1
21642	21641	8	0.61	0.61	0.87	2
21643	21642	8	0.59	0.6	0.87	2
21645	21643	8	0.61	0.61	0.87	2
21646	21645	8	0.59	0.6	0.88	2
21647	21646	8	1.58	0.98	0.9	1
21648	21647	8	3.99	1.56	0.9	1
21649	21648	8	6.08	1.93	0.91	1
21651	21649	8	0.59	0.6	0.91	2
21652	21651	8	0.4	0.49	0.81	2
21653	21652	8	0.41	0.5	0.6	2
21654	21653	8	0.4	0.49	0.61	2
21655	21654	8	0.95	0.76	0.74	1
21805	7108	8	2.53	1.24	0.53	0.47
21806	21805	8	0.59	0.6	0.54	0.74
21807	21806	8	0.61	0.61	0.54	0.73
22	19	15	0.41	2.66	2.09	1
22009	6957	24	0.47	13.03	13.92	2
22010	22009	24	0.4	11.99	13.78	2
22011	22010	24	0.6	14.74	13.88	1
22012	22011	24	0.6	14.71	13.88	1
22013	22012	24	0.63	15.07	13.88	1
22067	19717	8	2.62	1.27	1.07	1
22090	21620	8	0.61	0.61	0.13	0.33
22091	22090	8	0.6	0.6	0.13	0.33
22092	22091	8	1.06	0.8	0.13	0.29
22093	22092	8	1.44	0.94	0.13	0.27
22094	22093	8	1.82	1.05	0.13	0.26
22097	22094	8	3.89	1.54	0.13	0.22
22098	22097	8	4.15	1.59	0.13	0.21
22099	22098	8	1.41	0.93	0.13	0.27
22100	22099	8	0.57	0.59	0.13	0.33
22101	22100	8	0.59	0.6	0.13	0.33
22222	7314	21	0.83	6.07	8.79	2
22223	22222	21	0.76	5.79	8.79	2

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
22225	19142	21	0.41	6.53	5.3	1
22454	6921	12	0.79	1.33	0.63	1
22455	22454	12	0.4	0.95	0.67	1
22456	22455	12	0.99	1.49	0.67	1
22457	22456	12	0.46	1.01	0.68	1
22458	45585	12	1.23	1.66	0.68	0.45
22462	22458	12	1.24	1.67	0.68	0.45
22463	22462	12	1.98	3.24	0.68	0.36
22463A	22463	12	1.66	2.96	0.68	0.34
22464	22463A	12	1.58	2.89	0.68	0.35
22465	45592	12	0.6	1.79	0.68	0.43
22466	22465	12	0.42	1.49	0.68	0.48
22482	45567	12	2	3.26	0.68	0.33
22489	22482	12	2.71	3.79	0.68	0.3
22490	22489	12	2.36	3.54	0.68	0.31
22538	15270	15	3.59	7.91	2.77	0.42
2254	742	10	0.44	0.94	0	0.08
2255	2254	10	0.79	1.26	0	0.08
23	22	15	1.19	4.55	2.12	1
23057	7162	8	0.51	0.56	0.48	0.72
23775	18517	8	6.07	1.93	0.88	0.49
23776	23775	8	4.24	1.61	0.88	0.54
23777	23776	8	1.12	0.83	0.88	2
23778	23777	8	0.6	0.61	0.88	2
23779	23778	8	0.68	0.64	0.88	2
2402	901892	6	3.29	0.66	0.66	2
2402	SSO120-oufall	8	41.88	5.06	0.42	0.22
2403	2402	8	2.49	1.23	1.08	1
2404	F5313-missing	8	3.52	1.46	1.57	2
2405	2404	8	0.35	0.46	1.04	2
2416	2404	8	0.4	0.49	0.7	2
27	23	15	1.23	4.64	2.13	0.91
2900	7335	10	15.51	5.58	2.8	1
2936	1508	10	0.52	1.02	1.32	2
2937	2936	10	0.52	1.02	0.58	1
2938	2937	10	0.44	0.94	0.58	1
2939	2938	10	0.61	1.1	0.58	1
2940	2939	10	2.82	2.38	0.57	1
2941	2940	10	1.91	1.96	0.58	0.98
2942	2941	10	0.35	0.84	0.58	0.62
2943	4971	10	1.46	1.71	0.58	0.42
2945	2943	10	0.93	1.37	0.58	0.46
2946	2945	10	1.81	1.91	0.58	0.39
2947	2946	10	1.93	1.97	0.58	0.38
29644	37991	8	0.5	0.55	0.53	0.69
29645	30342	15	0.58	3.18	0	0.05
29645	33471	30	0.65	21.3	0	0.05
29861	20812	12	0.05	0.51	1.82	2
29862	29861	10	0.31	0.78	1.82	2
29873	20799	10	4.86	3.12	0.4	0.38
3	20244	8	0.39	0.49	0.83	2
30153	21046	8	0.38	0.48	0.83	2

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Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
30155	30153	8	0.44	0.52	0.83	2
30156	30155	8	0.88	0.73	0.83	2
30157	30156	8	0.6	0.6	0.83	2
30158	30157	8	0.61	0.61	0.83	2
30159	30158	8	0.55	0.58	0.84	2
30342	37991	30	0.41	16.87	0	0.15
30588	16037	18	0.62	5.35	1.73	0.59
30588A	30588	15	1.15	4.48	1.75	0.44
30589	30588A	15	1.72	5.48	1.75	0.4
30590	30589	15	1.19	4.56	1.75	0.44
30590A	30590	15	0.79	3.71	1.75	0.49
30590B	30590A	15	1.88	5.72	1.76	0.47
30591	30590B	15	0.77	3.67	1.76	0.49
30592	15271	15	2.04	5.96	0.83	0.27
30593	30592	15	-2.94	-7.17	0.83	0.64
30594	30593	15	2.24	6.25	0.83	0.56
30595	30594	15	2.79	6.97	0	0.1
30596	30595	15	3.59	7.91	0	0.1
30597	30596	15	3.01	7.25	0	0.1
30598	30597	15	0.88	3.91	0	0.05
30616	22067	8	0.42	0.51	1.07	2
30617	30616	8	2.76	1.3	1.07	1
30618	30617	8	3.89	1.54	1.07	1
30619	30618	8	3.8	1.52	1.07	0.63
30620	30619	8	3.53	1.47	1.07	0.64
30621	30620	8	2.89	1.33	1.07	0.7
30622	30621	8	0.92	0.75	1.07	2
30623	30622	8	0.92	0.75	1.07	2
30624	30623	8	9.81	2.45	1.07	1
30625	30624	8	5.85	1.89	1.07	0.56
30626	30625	8	5.07	1.76	1.07	0.57
30627	30626	8	1.53	0.97	1.07	2
30628	30627	8	2.23	1.17	1.07	1
30726	20776	15	1.01	4.2	4.39	2
30727	53271	8	2	1.1	1.1	1
30953	31001	8	0.43	0.51	0.66	2
30957	30953	8	0.61	0.61	0.67	2
30958	59113	8	4.84	1.72	1.21	1
30959	30958	8	1.4	0.93	1.21	2
30960	30959	8	1.4	0.92	1.21	2
30963	30960	8	2.86	1.32	0.53	1
30968	65375	18	1.6	8.6	0	0.19
31001	21071	8	0.47	0.54	0.66	2
31151	30159	8	0.61	0.61	0.85	2
31153	31151	8	1.36	0.91	0.88	1
31154	31153	8	1.7	1.02	0.91	1
31155	31154	8	1.7	1.02	0.95	1
31828	21655	8	2.04	1.12	0.89	1
31829	31828	8	1	0.78	0.89	2
31830	31829	8	1.39	0.92	0.91	1
31831	31830	8	1.19	0.85	0.92	2
31832	31831	8	1.29	0.89	0.95	2

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
31833	31832	8	1.98	1.1	1.05	1
31834	31833	8	4.03	1.57	1.05	1
31835	31834	8	1.04	0.8	0.78	0.96
32254	33532	12	0.16	0.6	2.71	2
32257	32254	12	0.47	1.03	1.42	2
32258	32257	12	0.37	0.91	1.06	2
32259	32258	12	0.58	1.75	1.06	1
32260	32259	12	-0.01	-0.19	1.08	1
32261	32260	12	1.04	2.35	0.98	0.95
32262	32261	12	1.25	2.57	0.98	0.44
32263	32262	12	0.78	2.03	0.98	0.5
32394	19706	24	1.22	20.96	17.3	1
32395	32394	8	1.59	0.98	0.99	2
32396	32395	8	2.1	1.13	0.99	1
32397	32396	8	4.36	1.63	0.99	0.62
32475	6989	15	0.68	3.44	0.32	0.21
33093	16745	8	0.95	0.76	0.49	0.6
33295	12	24	0.51	10.44	2.77	0.8
33296	52660	18	1.12	7.17	3.16	0.48
33437	42234	30	0.71	29	8.22	1
33438	33437	30	0.95	33.56	8.34	1
33439	33438	27	-0.83	-23.73	8.56	1
33440	33439	27	0.33	15.04	8.56	1
33442	38773	27	0.79	23.12	8.31	0.42
33443	33442	27	0.69	21.67	8.31	0.43
33444	6970	10	-0.49	-1.29	0	0.08
33444	33443	27	0.73	22.2	8.31	0.43
33445	33444	27	0.8	23.23	7.98	0.41
33446	33445	27	1.08	27.09	7.98	0.39
33447	33446	27	1.52	32.04	7.88	0.35
33448	33447	27	1.76	34.51	7.88	0.34
33451	37014	27	0.53	14.56	6.91	0.49
33452	33451	27	0.78	17.72	3.63	0.45
33453	33452	27	0.96	19.63	3.63	0.29
33454	33453	27	1.03	20.32	3.63	0.3
33455	33454	27	1.42	23.87	3.63	0.28
33456	33455	27	1.46	24.22	3.63	0.28
33457	33456	27	1.5	24.53	3.63	0.28
33458	33457	27	3.25	36.06	3.63	0.24
33459	33458	27	0.47	13.75	3.63	0.35
33460	33459	27	1.03	20.33	3.63	0.3
33461	33460	27	0.76	17.5	3.63	0.31
33462	33461	27	0.78	17.65	3.63	0.31
33463	33462	27	0.79	17.85	3.63	0.31
33464	33463	27	0.73	17.12	3.63	0.32
33465	33464	27	0.74	17.18	3.63	0.32
33466	33465	27	0.66	16.23	3.63	0.33
33470	30342	30	0.48	18.45	0	0.06
33471	33470	30	0.6	20.51	0	0.05
33527	20783	15	1.12	2.88	3.11	2
33528	33527	12	1.04	1.53	1.45	1
33529	33528	12	0.67	1.23	1.45	2

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
33530	33529	10	2.95	1.58	1.45	1
33531	33530	10	3.61	1.75	1.54	1
33532	33531	10	3.77	1.79	2.93	2
33533	33532	8	5.87	1.89	0.78	1
33534	33533	8	4.62	1.68	0.47	0.37
33535	57364	8	5.24	1.79	0.47	0.36
33707	20761	12	-0.55	-1.71	0.71	1
33708	33707	12	2.37	3.55	1.72	1
33709	33708	12	2.7	3.79	1.9	1
33710	33709	12	2.28	3.48	1.85	1
33711	33710	12	2.06	3.31	1.85	0.55
33989	32397	8	4.08	1.58	0.99	0.58
33990	33989	8	4.08	1.58	0.99	0.58
33991	33990	8	7.13	2.09	0.99	0.5
33992	33991	8	2.3	1.18	0.99	0.71
33993	33992	8	0.6	0.61	0.99	2
33994	33993	8	0.96	0.76	0.99	2
33995	33994	8	3.61	1.48	0.99	1
33996	33995	8	2.8	1.31	0.99	0.66
33997	33996	8	0.59	0.6	0.99	2
33998	33997	8	0.6	0.61	0.99	2
33999	33998	8	2.39	1.21	1.18	1
34000	33999	8	2.37	1.2	1.18	1
34175	19141	21	1.14	10.96	11.72	2
34176	59274	12	4.17	6.12	2.77	0.53
34177	34176	12	5.25	6.86	3.4	0.68
34178	34177	12	2.31	4.55	5.9	2
34179	34178	12	1.84	4.06	5	1
34180	34179	12	1.87	3.15	1.14	1
34209	31835	8	0.6	0.6	0.78	2
34210	34209	8	0.59	0.6	0.78	2
34211	34210	8	0.6	0.61	0.8	2
34212	34211	8	0.65	0.63	0.86	2
34213	34212	8	2.36	1.2	1.03	1
34214	34213	8	3.17	1.39	1.03	1
34215	34214	8	3.16	1.39	1.04	0.65
34216	34215	8	3.13	1.38	1.04	0.65
34217	34216	8	4.46	1.65	1.04	0.58
34218	34217	8	1.96	1.09	0.45	0.46
34381	20767	24	0.2	6.52	6.66	2
34382	34381	24	0.24	7.1	6.66	1
34383	34382	24	0.36	8.82	6.66	1
34384	34383	24	0.27	4.98	4.74	1
34385	34384	24	0.3	5.19	5.04	1
34447	17751	12	0.44	1.53	2.27	2
34836	33711	12	0.79	5.33	1.85	0.57
35527	21652	8	1.94	1.09	0.31	0.38
35528	35527	8	1.88	1.07	0.31	0.38
35529	35528	8	3.17	1.39	0.31	0.38
35530	35529	8	3.4	1.44	0.31	0.33
35531	35530	8	4.22	1.6	0.31	0.31
35532	35531	8	4.26	1.61	0.31	0.31

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
35533	35532	8	4.45	1.65	0.31	0.31
35534	35533	8	4.81	1.71	0.31	0.3
35535	35534	8	4.48	1.65	0.31	0.31
35536	35535	8	4.59	1.67	0.31	0.31
35537	35536	8	4.4	1.64	0.31	0.31
35538	35537	8	4.31	1.62	0.31	0.31
35539	35538	8	2.91	1.33	0.31	0.35
35551	16404	8	7.51	2.14	0.65	0.39
36911	34383	18	1.1	7.13	3.78	1
36912	36911	18	1.63	8.66	3.78	1
36913	36912	18	0.84	6.21	3.77	0.57
36914	36913	18	1.57	8.51	3.76	0.53
36915	36914	18	1.99	9.59	3.76	0.44
36916	36915	18	1.73	8.92	3.76	0.47
36917	36916	18	1.41	8.06	3.76	0.49
36918	49997	18	2.34	10.39	3.76	0.43
36919	36918	18	2.34	10.38	3.72	0.43
36920	36919	18	2.22	10.12	3.72	0.43
36921	36920	18	3.23	12.2	3.64	0.39
36922	36921	18	1.89	9.32	3.64	0.44
36923	36922	18	1.44	8.14	3.64	0.49
36924	36923	12	1.46	2.78	3.64	2
36925	36924	18	2.33	6.74	3.54	1
36926	36925	15	1.64	3.48	3.55	2
36927	36926	18	1.65	5.67	3.55	1
36928	36927	15	1.77	3.61	3.51	0.93
36929	36928	15	1.7	3.54	3.51	1
36930	36929	15	0.97	2.67	3.42	2
36931	36930	15	1.01	2.72	3.43	2
36933	52089	15	1.71	3.55	3.47	1
36934	36933	15	1.76	3.6	3.47	1
36935	36934	15	2.07	3.9	4.15	2
36936	36935	15	1.86	3.71	4.15	2
36937	36936	15	2.23	4.05	4.15	2
36938	36937	15	2.5	6.6	4.15	1
36939	36938	15	2.03	5.95	4.08	1
36940	36939	15	1.88	5.73	4.19	1
36941	36940	15	0.8	3.75	4.25	2
36942	36941	15	0.79	3.72	4.25	2
36944	47025	15	0.83	3.8	4.18	2
36945	47036	15	1.39	4.92	4.08	0.71
36946	42603	15	0.34	2.44	3.97	0.93
36947	36946	15	1.88	5.72	3.91	1
36948	52364	15	1.42	4.97	3.91	0.69
36949	36948	15	0.68	3.44	3.91	2
36950	36949	15	1.11	4.39	3.91	1
36951	36950	15	1.15	4.48	3.77	0.93
36952	36951	15	1.08	4.34	3.77	0.74
36953	38072	15	0.96	4.09	2.2	1
36954	36953	12	1.67	2.97	0.95	0.4
36955	38085	12	0.82	2.09	0.55	0.46
36956	36955	12	3.2	4.12	0.55	0.27

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
36957	36956	12	1.25	2.57	0.55	0.33
36958	36957	12	3.24	4.14	0.55	0.27
36959	36958	12	2.92	3.94	0.55	0.27
36960	36959	12	2.47	3.62	0.55	0.28
36961	36960	12	3.34	4.21	0.55	0.27
36962	36961	12	3.48	4.3	0.55	0.26
36963	36962	12	3.74	4.46	0.56	0.26
36990	20793	15	1.73	5.49	2.1	0.64
37009	33448	27	0.59	19.98	7.34	0.42
37010	37009	27	0.73	22.18	7.27	0.4
37011	37010	27	0.61	20.31	7.27	0.42
37012	37011	27	0.88	24.41	7.27	0.38
37013	37012	27	0.43	17.06	7.27	0.46
37014	20553	27	0.77	22.86	6.91	0.61
37030	65333	15	2.94	7.16	0.89	0.31
37031	37030	12	0.29	1.24	0.89	0.58
37032	37031	12	1.38	2.7	0.89	0.48
37054	6946	8	2.59	1.26	0.37	1
37055	37054	8	1.59	0.98	0.37	1
37056	37055	8	1.25	0.87	0.37	1
37057	37056	8	0.98	0.77	0.37	1
37058	37057	8	0.99	0.78	0.37	1
37059	38271	8	1.27	0.88	0.37	0.46
37060	37059	8	5.04	1.75	0.37	0.33
37061	37060	8	4.59	1.67	0.37	0.34
37148	20794	15	1.01	4.2	2.08	0.51
37986	33466	27	1.43	23.9	3.56	0.28
37987	37986	30	0.4	16.78	3.56	0.32
37988	37987	30	0.41	16.97	3.56	0.31
37989	37988	30	0.4	16.71	3.56	0.32
37990	37989	30	0.55	19.62	3.56	0.29
37991	37990	30	0.41	16.93	0.52	0.29
38072	36952	15	0.55	3.11	3.77	2
38073	38072	12	1.9	3.17	1.63	0.52
38074	38073	12	1.16	2.48	1.63	0.6
38075	38074	12	1.94	3.21	1.63	0.51
38076	38075	12	1.57	2.89	1.63	0.55
38077	38076	12	1.97	3.23	1.63	0.54
38078	38077	12	1.52	2.84	1.63	0.56
38079	38078	12	0.81	2.08	1.63	0.67
38080	38079	12	1.2	2.52	1.63	0.59
38081	38080	12	0.69	1.91	1.63	0.71
38083	38081	12	0.53	1.68	1.63	0.79
38084	38083	12	3.86	4.52	0.85	0.67
38085	36954	12	0.93	2.22	0.95	0.46
38269	37058	8	1	0.78	0.37	0.5
38270	38269	8	0.9	0.74	0.37	0.51
38271	38270	8	1.72	1.02	0.37	0.43
38273	38083	8	0.69	0.65	0.84	2
38452	36953	8	0.1	0.25	1.29	2
38453	38452	8	4.49	1.66	1.38	1
38454	38453	8	3.34	1.43	1.4	1

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38455	38454	8	0.84	0.71	0.5	0.63
38456	38455	8	6.64	2.01	0.5	0.35
38457	38456	8	5.3	1.8	0.5	0.37
38458	38457	8	2.04	1.12	0.5	0.48
38459	38458	8	0.54	0.58	0.5	0.72
38460	38459	8	0.53	0.57	0.5	0.73
38461	38460	8	0.46	0.53	0.5	0.79
38462	38461	8	1.63	1	0.5	0.55
38463	38462	8	4.76	1.71	0.5	0.38
38464	38463	8	0.07	0.2	0.5	2
38465	38464	8	0.58	0.59	0.5	1
38525	6952	24	0.38	11.66	17.02	2
38526	38525	15	1.69	5.43	1.83	1
38527	38526	15	1.3	4.76	1.84	1
38528	38527	15	0.99	4.15	1.84	1
38529	38528	15	1.45	5.03	1.84	0.43
38530	38529	15	1.12	4.42	1.84	0.46
38530A	38530	15	0	0	1.84	0.64
38531	38530A	15	0.72	3.54	1.84	0.65
38532	38531	15	0.62	3.29	1.85	0.54
38533	38838	15	2.21	6.21	1.85	0.41
38534	38839	15	1.86	5.7	1.85	0.56
38535	38534	15	0.63	3.32	1.85	0.54
38536	38535	15	-0.13	-1.48	1.85	0.73
38537	38536	15	0.62	3.28	1.85	0.58
38538	38537	15	0.82	3.79	1.72	0.48
38538A	38538	15	3.35	7.64	1.72	0.4
38539	38538A	15	1.17	4.52	1.72	0.44
38581	21807	8	1.93	1.08	0.54	0.59
38582	38581	8	1.51	0.96	0.54	1
38642	38539	15	3.72	8.05	1.72	0.43
38643	38642	15	0.5	2.96	1.73	0.55
38644	38643	15	2.66	6.81	1.73	0.36
38645	38644	15	0.27	2.19	1.42	0.55
38646	39458	15	0.5	2.95	1.42	0.5
38647	38646	15	1.2	4.58	1.43	0.55
38648	38647	15	0.89	3.94	1.43	0.42
38649	38648	15	0.71	3.52	0.64	0.38
38682	18498	8	0.69	0.65	0.32	0.51
38683	38682	8	0.66	0.63	0.32	0.51
38684	38683	8	0.43	0.51	0.32	0.57
38773	33440	27	0.58	19.8	8.56	0.92
38774	38773	8	0.42	0.51	0.44	0.7
38775	38774	8	1.13	0.83	0.44	0.56
38776	38775	8	1.9	1.08	0.44	0.64
38777	38776	8	1	0.78	0.44	0.56
38778	38777	8	1.01	0.79	0.44	0.56
38779	38778	8	1.4	0.92	0.45	0.5
38780	38779	8	0.61	0.61	0.45	0.65
38781	38780	8	4.14	1.59	0.45	0.5
38782	38781	8	4.9	1.73	0.45	0.36
38838	38532	15	1.63	5.33	1.85	0.42

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38839	38533	15	0.52	3.01	1.85	0.56
39117	38084	12	1.95	3.22	0.85	0.36
39118	39117	12	0.59	1.77	0.85	0.5
39224	20126	15	0.1	1.32	2.01	0.87
39225	39224	8	0.63	0.62	0.19	0.52
39458	38645	15	0.45	2.8	1.42	0.5
39733	23779	12	2.87	3.9	0.88	1
39734	39733	12	0.47	1.58	0.88	1
39735	39734	12	-0.02	-0.3	0.91	1
39736	39735	12	1.38	2.7	0.91	0.99
39737	39736	12	-0.15	-0.9	0.92	1
39738	39737	12	0.85	2.12	0.92	1
39739	39738	12	0.13	0.84	0.92	0.68
39741	39739	12	0.4	1.45	0.92	0.71
40488	6941	27	0.66	10.59	17.93	2
41020	38582	8	2.34	1.19	0.54	0.49
41036	38273	8	0.42	0.51	0.84	2
41037	41036	8	0.41	0.5	0.84	2
41038	41037	8	0.5	0.55	0.44	0.64
41039	41038	8	0.64	0.63	0.44	0.63
41040	41039	8	0.54	0.58	0.44	0.66
41042	41037	8	8.15	2.23	0.4	1
41043	41042	8	1.16	0.84	0.4	0.5
41044	41043	8	1.13	0.83	0.4	0.5
41045	41044	8	6.18	1.94	0.4	0.32
41114	41428	10	0.82	1.28	0.78	1
41115	41114	10	0.42	0.92	0.77	1
41116	41115	10	0.22	0.67	0.77	2
41117	41429	10	0.42	0.92	0.77	1
41118	41117	10	2.42	2.21	0.76	1
41119	41118	10	1.04	1.44	0.77	0.81
41120	41119	10	0.44	0.94	0.77	0.7
41121	41120	10	0.45	0.95	0.77	0.74
41122	41121	10	1.99	2	0.77	0.63
41123	41122	10	1.04	1.44	0.77	0.53
41124	41123	10	0.68	1.17	0.77	0.6
41125	41124	10	0.07	0.38	0.77	0.74
41126	41125	10	1.32	1.62	0.77	0.89
41127	41126	10	1.24	1.57	0.77	0.5
41128	41127	10	0.89	1.33	0.77	0.56
41129	41128	10	0.64	1.14	0.77	0.61
41130	41129	10	0.62	1.11	0.77	0.62
41131	41130	10	0.63	1.12	0.77	0.75
41132	41131	10	0.41	0.9	0.77	0.71
41133	41132	10	2.08	2.04	0.77	0.68
41134	41133	10	0.44	0.94	0	0.41
41135	41134	10	0.44	0.94	0	0.08
41136	41135	10	-0.26	-0.72	0	0.08
41137	41136	10	0.62	1.12	0	0.08
41138	41137	10	0.42	0.92	0	0.08
41139	41138	10	0.54	1.05	0	0.08
41140	41139	10	0.18	0.59	0	0.08

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
41252	20781	15	0.55	3.1	4.21	2
41427	1593	12	-1.16	-2.48	0.78	1
41428	41427	12	0.35	1.36	0.78	1
41429	41116	10	2.33	2.16	0.77	1
41434	35551	8	1.9	1.08	0.65	0.57
41529	41530	16	0.76	4.32	1.87	0.49
41530	43502	16	0.27	2.58	1.87	0.64
41917	39225	8	0.49	0.54	0.19	0.42
42050	72974	14	2.18	13.35	1.42	0.32
42051	42050	14	21.71	42.09	1.42	0.16
42052	42051	15	1.94	5.81	1.42	0.35
42053	42052	15	0.35	2.46	1.42	0.53
42054	42053	15	0.77	3.67	1.42	0.45
42055	42054	15	1.19	4.56	1.42	0.4
42224	15269	8	0.62	0.62	0.47	1
42225	42224	8	4.94	1.74	0.48	0.37
42226	42225	8	0.6	0.6	0.48	0.69
42227	42226	8	0.6	0.61	0.48	0.69
42228	22013	24	0.36	11.46	13.83	2
42229	42228	24	1.62	18.63	5.63	1
42230	48063	24	2.79	24.44	5.38	1
42231	42230	24	2.47	22.99	5.38	1
42232	42231	24	0.79	12.99	5.38	0.45
42233	42232	24	0.25	7.28	5.38	0.61
42234	42228	30	0.76	29.98	9.68	1
42603	36945	15	0.99	4.16	4.03	0.84
43381	150	15	122.06	46.14	1.91	0.39
43382	43381	15	0.26	2.12	1.91	0.71
43383	43382	15	3.57	7.89	1.91	0.72
43384	43383	12	5.33	5.32	1.6	0.39
43385	43384	12	1.03	2.33	0.64	0.39
43386	43385	12	1.95	3.22	0.52	0.29
43387	57167	12	3.51	4.32	0.52	0.26
43501	18555	18	0.38	4.2	1.87	0.49
43502	43501	16	0.55	3.68	1.87	0.51
43786	44225	12	0.6	1.79	0.82	1
43787	43786	8	0.91	0.74	0.51	1
43788	43787	8	0.47	0.54	0.51	1
43789	43788	8	0.95	0.5	0.51	2
43790	43789	8	0.24	0.25	0.51	2
43791	43790	8	0.46	0.35	0.66	2
43792	43791	8	0.42	0.33	0.66	2
43793	43792	8	0.53	0.37	0.52	2
43794	43793	8	0.45	0.52	0.62	2
43794A	43794	8	0.44	0.52	1.08	2
43795	43794A	8	0.63	0.62	1.08	2
43796	43795	8	0.51	0.56	1.08	2
43797	43796	8	0.52	0.56	0.53	1
43798	43797	8	0.52	0.56	0.52	1
43799	43798	8	0.52	0.56	0.52	1
43800	43799	8	1.43	0.94	0.53	1
43801	43796	8	0.79	0.7	0.68	1

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
43802	43801	8	1.86	1.06	0.83	1
43803	43802	8	2.8	1.31	0.83	1
43804	43803	8	2.5	1.23	0.84	1
43805	43804	8	3.5	1.46	0.84	0.56
43810	43800	8	0.52	0.57	0.53	1
43811	43810	8	0.52	0.56	0.55	1
43812	43811	8	0.52	0.56	0.6	2
43813	43812	8	0.52	0.56	0.66	2
43814	43813	8	1.7	1.02	0.72	1
43815	43814	8	0.51	0.56	0.84	2
43818	43815	8	1.88	1.07	0.87	1
43819	43794	8	-0.04	-0.15	0.72	1
43820	43819	8	0.5	0.55	0.72	2
43821	43820	8	0.92	0.75	0.72	1
43822	43821	8	0.52	0.57	0.72	2
43823	43822	8	0.74	0.67	0.72	2
43824	43823	8	0.62	0.61	0.73	2
43825	43824	15	0.54	3.07	0.73	1
43826	52024	15	0.56	3.12	0.03	1
43865	42055	12	0.71	1.94	0.31	0.31
44208	34385	24	0.24	4.66	1.88	1
44209	44208	24	0.29	5.12	2.1	1
44210	44209	10	0.32	0.52	2.17	2
44211	44210	10	0.32	0.8	1.2	2
44212	44211	10	0.32	0.8	1.2	2
44213	44212	10	0.33	0.81	1.2	2
44214	53270	10	0.38	0.87	0.99	2
44215	44214	10	0.32	0.8	0.99	2
44216	44215	10	0.32	0.8	1.03	2
44217	44216	10	0.35	0.84	0.79	1
44218	44217	10	0.31	0.78	0.79	2
44219	44218	10	0.31	0.79	0.78	1
44220	44219	10	0.23	0.68	1.11	2
44221	44220	10	0.26	0.72	1.11	2
44222	44221	10	0.21	0.65	1.11	2
44223	44222	10	0.3	0.78	1.13	2
44224	44223	10	0.2	0.63	0.82	2
44225	44224	10	0.23	0.69	0.82	2
44548	20777	15	1.05	4.28	4.9	2
45056	41045	8	2.31	1.19	0.4	0.42
45057	45056	8	0.93	0.75	0.4	0.53
45058	45057	8	1.56	0.98	0.4	0.46
45059	45058	8	3.38	1.44	0.4	0.37
45563	22466	12	4.23	4.74	0.68	0.63
45564	45563	12	1.4	2.73	0.68	0.35
45564A	45564	12	0.46	1.55	0.68	0.47
45565	45564A	12	2.42	3.59	0.68	0.42
45566	45565	12	4.26	4.75	0.68	0.35
45567	45566	12	3.74	4.46	0.68	0.28
45568	22490	12	3.77	4.47	0.68	0.28
45585	22457	12	0.6	1.16	0.68	1
45592	22464	12	1.07	2.38	0.68	0.38

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
45724	18455	12	1.87	4.1	2.42	1
45735	43818	8	0.6	0.6	0.95	2
45736	45735	8	1.21	0.86	0.95	2
45737	45736	8	2.36	1.2	0.97	1
45738	45737	8	3	1.35	1.02	1
45739	45738	8	4.44	1.65	1.05	0.59
45740	45739	8	4.92	1.73	1.05	0.57
45741	45748	8	2.62	1.26	0.84	0.61
45742	45741	8	3.02	1.36	0.84	0.58
45743	45742	8	3.03	1.36	0.84	0.58
45744	45743	8	0.68	0.64	0.84	2
45745	45744	8	0.63	0.62	0.84	2
45746	43805	8	2.01	1.11	0.84	0.66
45747	45746	8	2.64	1.27	0.84	0.61
45748	45747	8	2.65	1.27	0.84	0.61
45753	6937	30	0.51	18.97	17.5	1
45855	45059	8	3.15	1.39	0.4	0.38
45895	30628	8	2.7	1.28	1.07	1
46748	38465	8	0.47	0.54	0.5	0.87
46749	46748	8	2.31	1.19	0.5	0.52
46778	45745	8	0.6	0.6	0.84	2
46779	46778	8	0.6	0.61	0.85	2
46789	6931	30	0.56	19.86	18.68	1
46796	17748	12	4.61	4.95	2.27	0.65
47025	36942	15	0.75	3.62	4.17	2
47036	36944	15	1.49	5.09	4.19	0.71
48063	42229	24	2.91	24.93	5.74	1
48064	48063	8	3.7	1.5	0.96	1
48065	48064	8	0.6	0.61	0.96	2
48066	48065	8	4.4	1.64	0.96	1
48067	48066	8	1.05	0.8	0.96	2
48068	48067	8	1.64	1	0.96	0.89
48069	48068	8	6.98	2.06	0.96	0.49
48070	48069	8	6.88	2.05	0.96	0.5
48208	48070	8	5.6	1.85	0.96	0.52
48209	48208	8	5.18	1.78	0.96	0.54
48242	17297	12	6.32	5.79	1.77	0.65
48243	48242	8	13.24	2.84	0.37	0.27
48244	48243	8	13.38	2.86	0.37	0.31
48245	48244	8	7.29	2.11	0.37	0.3
48246	48245	8	0.44	0.52	0.37	0.64
48247	48246	8	1.17	0.85	0.38	0.49
48247A	48247	8	5.34	1.8	0.38	0.34
48248	48247A	8	0.6	0.6	0.38	0.58
48249	48248	8	3.38	1.44	0.39	0.53
48250	48249	8	1.73	1.03	0.38	0.43
48251	48250	8	1.26	0.88	0.38	0.48
48252	48251	8	0.62	0.62	0.39	0.58
48253	48252	8	-0.17	-0.32	0.41	0.73
48254A	NS1044	6	1.01	0.38	0.41	2
48571	41917	8	0.4	0.49	0.19	0.44
48572	48572A	8	0.4	0.49	0.19	0.45

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
48572A	48571	8	0.4	0.49	0.19	0.44
49083	30960	8	2.09	1.13	0.71	1
49084	49083	8	2.17	1.15	0.73	0.59
4970	2942	10	0.38	0.88	0.58	0.6
4971	4970	10	2.46	2.22	0.58	0.5
49997	36917	18	2.29	10.27	3.76	0.43
50253	34218	8	0.62	0.61	0.45	0.92
50254	50253	8	0.59	0.6	0.45	0.65
50255	50254	8	2.24	1.17	0.45	0.44
50256	50255	8	5.81	1.88	0.45	0.35
50281	50256	8	1.2	0.86	0.45	0.52
50282	50281	8	3.24	1.41	0.45	0.4
5134	18064	12	0.81	2.07	0.58	0.37
5135	14937	10	0.59	1.09	0	0.46
5136	5135	10	1.57	1.78	0	0.1
5137	5136	10	1.05	1.45	0	0.1
5138	5137	10	0.57	1.07	0	0.08
5139	5138	10	1.87	1.94	0	0.1
5140	5139	10	0.1	0.44	0	0.08
52024	902054	15	1.18	4.53	0.77	1
52025	52024	10	1.59	1.79	0.77	1
52026	52025	10	1.32	1.63	0.77	1
52027	52026	10	0.98	1.4	0.77	1
52028	52027	10	0.53	1.03	0.77	0.65
52029	52028	8	3.68	1.5	0.77	1
52030	52029	8	3.76	1.51	0.77	0.52
52031	52030	8	0.44	0.52	0.77	2
52032	52031	8	0.44	0.52	0.77	2
52033	52032	8	0.44	0.52	0.77	2
52034	52033	8	0.44	0.52	0.79	2
52041	52034	8	0.44	0.52	0.83	2
52042	52041	8	1.31	0.89	1.13	2
52043	52042	8	3.29	1.42	1.13	1
52044	52043	8	3.2	1.4	1.13	1
52045	52044	8	2.68	1.28	1.13	1
52088	36931	15	0.53	1.98	3.43	2
52089	52088	15	1.24	3.02	3.44	2
52091	52147	8	1.03	0.79	0.72	0.97
52092	52091	8	0.54	0.57	0.72	2
52093	52092	8	2.24	1.17	0.72	1
52094	52093	8	2.18	1.15	0.72	0.58
52095	52094	8	1.1	0.82	0.72	0.74
52096	52095	8	5.37	1.81	0.72	0.62
52097	52096	8	2.7	1.28	0.72	0.55
52098	52097	8	5.52	1.84	0.72	0.45
52099	52098	8	5.61	1.85	0.72	0.44
52100	52099	8	5.67	1.86	0.72	0.44
52147	52489	8	1.06	0.8	0.72	1
52170	18	16	20.44	22.42	3.61	1
52171	52170	16	0.71	4.18	3.61	0.72
52172	52171	16	0.5	3.5	3.61	0.98
52240	52100	8	1.83	1.06	0.72	0.63

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Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52241	52240	8	3.62	1.49	0.72	0.5
52242	52241	8	4.07	1.58	0.72	0.49
52243	52242	8	4.92	1.73	0.72	0.46
52244	52243	8	5.2	1.78	0.72	0.46
52245	52244	8	5.53	1.84	0.72	0.45
52364	36947	15	1.61	5.29	3.91	1
52488	21638	8	0.62	0.62	0.72	0.84
52489	52488	8	0.67	0.64	0.72	2
52520	52569A	8	1.09	0.82	0.72	0.75
52521	52520	8	0.6	0.6	0.72	2
52522	52521	8	0.5	0.55	0.72	2
52523	53379	8	0.5	0.55	0.76	2
52524	52523	8	0.51	0.56	0.78	2
52550	14458	8	3.13	1.38	1.68	2
52551	52550	8	8.8	2.32	1.57	1
52552	52552A	8	12.02	2.71	0.31	0.25
52552A	35539	8	13.38	2.86	0.31	0.36
52553	52552	8	7.63	2.16	0.31	0.28
52554	52553	8	3.62	1.49	0.31	0.33
52555	52554	8	7.09	2.08	0.31	0.28
52556	52555	8	7.16	2.09	0.31	0.28
52557	52556	8	0.99	0.78	0.31	0.45
52558	52557	8	0.98	0.77	0.31	0.45
52559	52558	8	2.45	1.22	0.31	0.36
52560	52245	8	16.07	3.13	0.72	0.34
52561	52560	8	5.06	1.76	0.72	0.46
52562	52561	8	5.07	1.76	0.72	0.46
52566	52562	8	0.57	0.59	0.72	2
52567	52566	8	0.61	0.61	0.72	2
52568	52567	8	3.99	1.56	0.72	1
52569	52568	8	4.99	1.75	0.72	0.46
52569A	52569	8	2.91	1.33	0.72	0.54
52651	7324	18	1.02	6.85	7.83	2
52652	52651	24	1.04	14.94	5.84	1
52653	52652	24	15.5	57.57	5.85	1
52654	52653	24	1.07	15.09	5.85	0.44
52655	52654	24	15.02	56.68	5.85	0.4
52656	52655	24	0.1	4.65	5.85	0.82
52657	52656	24	0.33	8.42	5.88	0.8
52658	52657	21	0.3	5.62	5.3	0.77
52659	52658	21	0.8	9.16	5.33	0.73
52660	52659	21	12.95	36.86	5.98	0.52
52661	52660	12	9.8	7.21	5.31	1
53242	52559	8	4.7	1.69	0.31	0.31
53243	53242	8	4.56	1.67	0.31	0.31
53244	53243	8	0.81	0.7	0.31	0.48
53245	53244	8	0.59	0.6	0.31	0.52
53246	53245	8	0.61	0.61	0.31	0.51
53257	44216	8	1.01	0.79	1.24	2
53258	53257	8	4.47	1.65	1.24	1
53259	53258	8	2.36	1.2	1.26	2
53260	53259	8	0.98	0.77	1.32	2

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
53261	53260	8	3.03	1.36	1.59	2
53262	53261	8	4.81	1.71	1.6	1
53263	53262	8	5.97	1.91	1.79	1
53264	53263	8	3.34	1.43	1.81	2
53267	53264	8	6.84	2.04	1.96	1
53269	53267	8	4.76	1.7	2.21	2
53270	44213	10	0.25	0.71	1.2	2
53271	53270	8	0.92	0.75	0.41	1
53292	30727	8	2.04	1.11	1.14	2
53293	53292	8	0.6	0.6	1.14	2
53294	53293	8	0.48	0.54	1.14	2
53295	53294	8	1.79	1.04	1.14	2
53296	53295	8	0.64	0.62	1.17	2
53297	53296	8	3.49	1.46	1.2	1
53379	52522	8	0.49	0.55	0.73	2
53385	53246	8	1.01	0.78	0.31	0.45
53386	53385	8	2.01	1.11	0.31	0.38
53387	53386	8	0.95	0.76	0.31	0.46
53388	53387	8	0.99	0.78	0.31	0.45
53727	53727A	8	0.3	0.43	1.02	2
53727A	53727B	8	0.55	0.58	1.02	2
53727B	20250	8	4.72	1.7	1.02	1
53728	53727	8	0.63	0.62	1.02	2
53729	53728	8	0.39	0.49	1.74	2
53730	53729	8	5.14	1.77	1.83	2
53868	46779	8	1.32	0.9	0.87	1
53869	53868	8	0.99	0.78	0.89	2
53870	53869	8	2.49	1.23	0.97	1
53871	53870	8	4.42	1.64	0.97	1
53872	53871	8	0.82	0.71	0.98	2
53873	53872	8	0.56	0.59	0.98	2
53874	53873	8	1.14	0.83	0.98	2
53875	53874	8	0.52	0.56	0.99	2
53876	53875	8	0.78	0.69	1.02	2
53877	53876	8	4.6	1.68	1.06	1
53878	53877	8	3.82	1.53	1.12	1
53879	53878	8	6.38	1.97	1.19	1
53955	41133	10	0.35	0.84	0.77	1
53956	53955	10	0.66	1.15	0.77	1
53957	53956	10	0.36	0.85	0.77	0.74
53958	53957	10	0.54	1.04	0.77	0.71
53959	53958	10	0.38	0.88	0.77	0.72
53960	53959	10	0.47	0.97	0.77	0.74
53961	53960	10	0.44	0.94	0.77	0.7
53962	53961	10	0.4	0.89	0.77	0.72
54110	52045	8	0.6	0.61	1.17	2
54111	54110	8	1.58	0.98	1.17	2
54112	54111	8	1.76	1.04	1.19	2
54113	54112	8	0.69	0.65	1.23	2
54114	54113	8	2.46	1.23	1.3	2
54115	54114	8	1.68	1.01	1.4	2
54116	54115	8	3.59	1.48	1.51	2

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
54117	54116	8	4.79	1.71	1.69	2
54353	65512	8	4.29	1.62	1.07	0.61
54451	45568	12	3.15	4.09	0.68	0.29
54452	54451	12	3.05	4.02	0.68	0.29
54452A	54452	12	1.59	2.91	0.68	0.35
54453	54452A	12	1.01	2.31	0.68	0.38
54453A	54453	12	0.56	1.73	0.68	0.44
54454	54453A	12	3	3.99	0.68	0.34
54455	54454	12	2.13	3.36	0.68	0.32
54456	54455	12	0.33	1.32	0.68	0.49
54556	53962	10	0.57	1.07	0.77	0.7
55251	7298	24	0.99	14.53	13.95	1
55252	55251	8	0.57	0.59	0.87	2
55253	55252	8	0.59	0.6	0.88	2
55254	55253	8	0.59	0.6	0.89	2
55255	55254	8	0.6	0.6	0.9	2
55256	55255	8	4.97	1.74	0.93	1
55257	55256	8	1.08	0.81	0.93	2
55258	55257	8	32.91	4.48	0.93	0.33
55259	55258	8	36.11	4.69	0.93	0.33
55260	55259	8	31.38	4.38	0.93	0.33
55261	55260	8	0.59	0.6	0.93	2
55262	55261	8	0.6	0.6	0.93	2
55267	55262	8	0.99	0.78	0.98	2
55268	55267	8	0.99	0.78	1.06	2
55269	55268	8	15.51	3.08	1.43	1
55270	55269	8	0.98	0.78	1.43	2
55271	55270	8	4.8	1.71	1.43	1
55272	55271	8	1.05	0.8	1.43	2
56667	20782	15	1.35	3.16	3.61	2
56841	33296	18	0.3	3.73	5.93	2
56842	56841	12	0.59	1.77	-0.18	1
57146	44548	15	0.89	3.94	9.54	2
57167	43386	12	6.13	5.7	0.52	0.23
57364	69111	8	7.05	2.07	0.47	0.34
59113	59114	8	0.37	0.47	0.54	2
59113	30957	8	2.74	1.29	0.68	1
59114	59115	8	0.36	0.47	0.53	2
59115	59116	8	0.36	0.47	0.53	2
59116	31155	8	2.21	1.16	1.01	1
59222	59221	12	0.53	1.68	0.88	0.57
59274	34175	20	0.62	9.2	6.6	1
59275	59274	20	0.65	7.24	4.69	1
59276	59275	20	0.18	3.8	4.54	2
61	27	10	7.63	3.91	0.17	0.17
61831	21595	8	1.12	0.83	0.87	2
61832	61831	8	2.88	1.32	0.88	1
61833	61832	8	0.6	0.6	0.88	2
61834	61833	8	3.58	1.48	0.89	0.57
61946	6888	42	1.52	80.26	35.82	1
61947	61946	36	0.41	27.53	13.56	1
61948	61947	36	0.59	33.24	13.66	1

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Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
63663	7113	8	2.1	1.13	0.96	0.72
63665	7114	8	2.96	1.34	0.96	0.64
64082	53297	8	0.61	0.61	1.24	2
64083	64082	8	3.54	1.47	1.3	1
64084	64083	8	4.69	1.69	1.37	1
64085	64084	8	1.81	1.05	1.45	2
65315	65511	15	0.51	2.99	0.89	0.6
65316	65315	15	0.31	2.34	0.89	0.43
65317	65316	15	0.57	3.16	0.89	0.36
65318	65317	15	1.8	5.6	0.89	0.29
65319	65318	15	1.8	5.6	0.89	0.29
65320	65319	15	2.03	5.95	0.89	0.29
65321	65320	15	1.96	5.85	0.89	0.28
65322	65321	15	3.23	7.51	0.89	0.25
65323	65322	15	0.15	1.63	0.89	0.52
65324	65323	15	2.6	6.73	0.89	0.33
65325	65324	15	0.5	2.95	0.89	0.38
65326	65325	15	0.52	3.02	0.89	0.37
65327	65326	15	0.35	2.48	0.89	0.42
65328	65327	15	0.84	3.83	0.89	0.41
65329	65328	15	2.02	5.93	0.89	0.28
65330	65329	15	2.47	6.57	0.89	0.27
65331	65330	15	0.5	2.95	0.89	0.38
65332	65331	15	0.33	2.41	0.89	0.42
65333	65332	15	0.88	3.92	0.89	0.33
65373	6990	18	1.97	9.53	0.32	0.16
65374	65373	18	0.76	5.93	0.32	0.16
65375	65374	18	0.41	4.33	0.32	0.19
65497	34179	16	1.05	6.62	2.23	0.42
65498	65497	16	1.17	6.97	2.23	0.4
65499	65498	16	0.71	4.18	2.23	0.52
65500	65499	16	0.73	4.25	2.23	0.51
65501	65500	16	0.35	2.95	2.23	0.64
65502	65501	16	0.28	2.62	2.23	0.68
65503	65502	16	0.5	3.5	2.23	0.62
65504	65503	16	0.22	2.31	2.23	0.7
65505	65504	16	1.84	6.74	2.23	0.64
65506	65505	16	0.49	3.47	2.23	0.58
65507	65506	16	0.89	4.69	2.23	0.51
65508	65507	16	0.52	3.57	2.23	0.57
65509	65508	16	0.54	3.66	2.23	0.64
65510	65509	16	0.61	3.88	2.23	0.55
65511	65510	16	0.56	3.72	2.23	0.56
65512	45895	8	4.33	1.63	1.07	0.6
66	61	10	2.92	2.42	0	0.1
66452	67346	8	0.85	0.72	0.45	0.58
66453	66452	8	1.85	1.06	0.45	0.47
67346	7085	8	0.77	0.68	0.45	0.6
6874	JP1	42	0.16	21.31	42.05	0.96
6875	6874	42	0.17	21.73	41.95	2
6876	6876N	42	0.19	21.82	41.95	2
6876N	6875	42	0.19	22.9	41.95	2

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Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
6877	6876	42	0.17	26.94	41.47	2
6878	16379	42	-0.14	-23.28	41.47	1
6879	6878	42	0.46	43.91	41.47	1
6880	6879	42	0.17	26.91	41.47	2
6882	6880	42	0.2	28.91	41.12	2
6883	6882	42	-0.02	-8.98	41.12	1
6885	6883	42	0.55	48.09	47.33	1
6886	14565	42	3.98	129.77	44.43	1
6887	6886	42	0.19	28.63	44.43	2
6888	6887	42	0.21	29.56	42.88	2
6889	6888	24	0.42	9.51	-1.47	1
6890	6889	24	0.36	8.73	-0.75	1
69111	33534	8	4.5	1.66	0.47	0.38
69131	33527	15	0.97	2.68	2.36	1
69132	69131	16	3.51	6.04	2.36	1
69133	69132	16	0.7	2.69	2.36	0.72
69136	69133	16	0.71	2.71	2.36	0.72
69138	69136	16	0.7	2.7	2.36	0.72
69139	69138	16	1.45	5.97	2.34	0.69
69140	69139	16	0.84	4.55	2.34	0.51
69143	69140	16	0.74	4.26	2.34	0.53
69144	69143	16	0.74	4.25	2.25	0.56
69145	69144	15	0.63	3.33	2.25	0.61
69146	69145	16	0.57	3.74	2.25	0.56
69147	69146	15	0.83	3.81	2.25	0.56
69149	69147	15	0.71	3.51	2.25	0.58
69150	69149	15	0.54	3.07	2.25	0.64
69151	69150	15	1.72	5.47	2.25	0.46
69152	69151	15	0.68	3.43	2.25	0.59
6921	61946	42	0.2	29.09	23.17	1
6923	6921	42	0.13	23.1	22.62	1
6924	6923	42	0.09	19.15	22.62	2
6925	6924	42	0.09	19.29	22.03	2
6926	6925	42	0.09	19.18	21.26	2
6927	6926	42	0.01	6.87	21.25	2
6928	6927	42	0.15	25.54	21.25	1
6929	6933	30	0.64	21.17	18.3	1
6930	18452	42	0.17	26.69	18.69	1
6931	6930	42	0.48	45.11	18.68	1
6932	46789	30	0.81	23.89	18.3	1
6933	6932	30	0.48	18.44	18.3	1
6934	6929	30	0.45	17.76	18.3	2
6935	6934	30	0.56	19.87	18.3	1
6936	6935	30	0.49	18.47	17.33	1
6937	15872	30	0.63	21	17.33	1
6938	17375	30	0.55	19.6	17.75	1
6939	6938	30	0.66	21.47	17.13	1
6940	6942	30	0.62	20.9	17.57	1
6941	6940	30	0.78	23.41	17.82	1
6942	6939	30	0.65	21.32	17.16	1
6943	901676	27	0.59	19.93	17.83	1
6944	6943	27	0.53	18.87	17.87	1

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
6945	6944	27	0.41	16.62	17.74	2
6946	6945	27	0.61	20.33	17.76	1
6947	6946	24	0.62	14.95	17.8	2
6948	32394	24	0.23	9.21	16.84	2
6949	6948	24	0.78	16.75	16.85	2
6950	6949	24	0.61	14.83	16.88	2
6951	6950	24	0.71	16.01	8.61	1
6952	6951	24	0.34	11.09	8.74	1
6952	6950	24	0.09	4.4	9.26	2
6953	38525	24	0.49	13.33	13.46	2
6953	38525	15	0.72	3.54	3.4	1
6954	18586	24	0.47	13	15.26	2
6955	6954	24	0.45	12.8	15.82	2
6956	19873	24	0.43	12.41	11.39	1
6956	19873	15	0.54	3.08	2.68	1
6957	6956	24	0.3	10.33	11.31	2
6957	6956	15	0.01	0.5	2.9	2
6958	22009	24	2.58	30.51	0.34	1
6965	15269	18	0.7	7.4	1.34	1
6966	6965	18	0.5	6.25	1.35	1
6967	6966	15	0.58	4.14	0.43	1
6968	6967	15	0.38	3.35	0	0.05
6969	6968	15	0.7	4.56	0	0.05
6970	6969	15	0.77	4.77	0	0.05
6977	33451	18	0.81	6.09	2.33	0.43
6978	33451	18	0.97	6.7	1.04	0.27
6979	6978	18	0.98	6.74	1.04	0.27
6980	6979	18	1.59	8.55	1.04	0.26
6981	6980	15	1.46	5.04	1.04	0.47
6982	6981	15	1.47	5.06	1.04	0.33
6983	6982	16	0.95	4.84	0.56	0.23
6984	6983	15	0.79	3.71	0.56	0.27
6985	6984	15	0.99	4.15	0.56	0.25
6987	6985	15	1.01	4.2	0.56	0.27
6988	6987	15	1.15	4.47	0.32	0.21
6989	6988	15	0.98	4.13	0.32	0.53
6990	32475	15	0.83	3.8	0.32	0.2
6995	37990	12	5.27	5.29	0.83	0.29
70	52182	10	4.61	3.04	1.54	0.54
70349	16535	18	2.87	11.51	2.73	1
70350	70349	18	2.85	11.47	2.76	0.35
70351	70350	18	4.12	13.78	2.76	0.32
70352	70351	18	1.85	9.25	2.76	0.39
7049	6977	10	0.74	1.22	2.33	2
7050	7049	10	1.57	1.77	2.33	2
7051	7050	10	1.78	1.89	2.33	2
7052	7052M	8	2.36	1.2	1.17	1
7052M	7051	10	0	0	1.39	2
7061	6967	8	2.22	1.16	0.43	0.43
7062	7061	8	1.78	1.04	0.44	0.46
7063	7062	8	1.77	1.04	0.44	0.47
7064	7063	8	0.47	0.53	0.44	0.71

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7065	7064	8	2.27	1.18	0.44	0.44
7071	33444	10	1.25	1.03	0	0.1
7071	33444	10	0.99	1.41	0.44	0.39
7080	7071	8	1.91	1.08	0.44	0.46
7081	7080	8	0.41	0.5	0.44	0.73
7082	7081	8	3.14	1.38	0.44	0.4
7083	7082	8	0.4	0.49	0.44	0.75
7084	7083	8	0.4	0.49	0.44	0.75
7085	7084	8	0.4	0.49	0.45	0.76
7086	33446	8	4.41	1.64	0.13	0.21
7087	900091	8	0.49	0.55	0.13	0.35
7088	7087	8	2.46	1.22	0.13	0.24
7089	7088	8	0.42	0.51	0.13	0.35
7090	7089	8	0.4	0.49	0.13	0.36
7092	33448	8	0.62	0.62	0.62	2
7093	7092	8	3.27	1.41	0.62	0.48
7094	7093	8	0.81	0.7	0.62	0.74
7095	7094	8	4.87	1.72	0.62	0.54
7096	7095	8	6.45	1.98	0.62	0.4
7097	7096	8	8.76	2.31	0.62	0.37
7098	7097	8	8.43	2.27	0.62	0.37
7099	7098	8	0.41	0.5	0.62	2
7100	7099	8	2.05	1.12	0.62	1
7101	7100	8	1.48	0.95	0.62	0.6
7102	F1757	8	0.77	0.69	0.62	0.77
7106	20553	8	3.67	1.5	0.53	0.43
7107	7106	8	3.65	1.49	0.53	0.43
7108	7107	8	3.74	1.51	0.53	0.43
7113	6966	8	3.25	1.41	0.96	0.72
7114	63663	8	2.3	1.19	0.96	0.7
7115	63665	8	3.32	1.42	0.96	0.62
71157	64085	8	0.56	0.58	1.5	2
71158	71157	8	0.61	0.61	1.57	2
7116	7115	8	0.37	0.47	0.96	2
7117	7116	8	4.07	1.58	0.96	1
7118	7117	8	3.84	1.53	0.96	0.58
7119	7118	8	2.99	1.35	0.96	0.64
71194	38684	8	0.4	0.49	0.32	0.59
7120	7119	8	1.81	1.05	0.96	0.77
7122	13238	8	1.68	1.01	0.96	0.8
71229	71158	8	7.71	2.17	2.89	2
7123	7122	8	0.5	0.55	0.96	2
7124	7123	8	3.45	1.45	1.2	1
7125	7124	8	3.12	1.38	1.2	1
7126	7125	8	2.45	1.22	1.2	1
7127	7126	8	2.5	1.24	1.21	1
7128	7127	8	4.12	1.59	1.22	0.95
7132	7128	8	2.18	1.15	1.22	2
7133	7132	8	1.58	0.98	1.22	2
7134	7133	8	2.31	1.19	1.22	2
7135	7134	8	2.48	1.23	1.23	2
7136	7135	8	1.81	1.05	1.25	2

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7137	7136	8	2.8	1.31	1.26	1
7161	7052M	8	4.47	1.65	0.45	1
7162	7161	8	7.62	2.16	0.48	0.93
7163	23057	8	0.26	0.4	0.48	0.95
7164	7163	8	1.6	0.99	0.48	0.5
7165	7052	8	3.7	1.5	1.17	1
7166	7165	8	3.45	1.45	1.17	1
7167	7166	8	0.41	0.5	1.16	2
7168	7167	8	2.46	1.23	1.2	1
7169	7168	8	3.36	1.43	1.38	1
7170	7169	8	3.71	1.5	1.38	1
7171	7170	8	2.34	1.19	1.44	2
7173	7171	8	3.06	1.37	1.46	2
7176	7173	8	2.75	1.29	1.52	2
7177	7176	8	4.51	1.66	1.69	2
7178	7051	8	4.11	1.58	1.03	1
7179	7178	8	1.64	1	1.01	2
7180	7179	8	0.4	0.5	0.98	2
7181	7180	8	0.41	0.5	0.98	2
7182	7181	8	1.23	0.87	0.98	2
7183	7182	8	2.33	1.19	1.02	1
7184	7183	8	1.87	1.07	1.08	2
7185	7184	8	1.9	1.08	1.28	2
7188	7185	8	1.37	0.91	1.32	2
7252	6995	12	1.29	2.61	0.83	0.4
7253	7252	12	0.44	1.53	0.83	0.53
7254	7253	12	0.36	0.89	0.83	0.77
7255	7254	12	0.43	0.98	0.83	0.77
7256	7255	12	0.32	0.84	0.83	0.77
7257	7270	8	0.81	0.7	0	0.1
7258	7257	8	1.76	1.04	0	0.1
7259	7258	8	1.2	0.86	0	0.1
7260	7259	8	0.39	0.49	0	0.1
7261	7260	8	0.36	0.47	0	0.1
7262	7261	8	0.32	0.44	0	0.1
7263	7262	8	0.39	0.49	0	0.1
7264	7263	8	0.38	0.48	0	0.1
7265	7264	8	1.36	0.91	0	0.1
7266	7256	8	0.8	0.7	0	0.25
7270	7266	8	0.85	0.72	0	0.1
7287	7265	8	3.97	1.56	0	0.1
7288	7287	8	3.37	1.44	0	0.1
7289	7256	10	0.54	0.68	0.83	2
7295	61948	24	1.62	18.62	13.72	1
7296	7295	24	0.38	9	13.94	2
7297	7296	24	0.76	12.77	13.94	2
7298	7297	24	0.43	9.58	13.94	2
7300	55251	24	0.65	11.77	13.31	2
7301	7300	24	2	20.7	13.32	1
7302	7301	24	2.4	22.65	13.32	1
7303	7302	21	2.77	17.06	13.33	1
7305	7303	21	2.09	14.82	13.35	0.77

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7308	7305	21	1.49	12.52	13.35	2
7309	19143	21	0.8	9.14	9.39	2
7311	18322	21	1.12	7.06	9.53	2
7314	18241	21	0.35	3.91	9.63	2
7315	22223	21	0.49	4.64	8.48	2
7316	7315	21	0.96	10.03	8.9	1
7317	7316	21	0.67	8.38	7.27	1
7318	7317	21	0.55	7.59	7.27	1
7319	7318	21	0.91	9.8	9.62	1
7320	7319	21	1.27	11.54	9.62	1
7321	7320	18	1.35	7.9	7.47	1
7322	7321	18	1.16	7.33	7.46	2
7323	7322	18	0.91	6.48	7.46	2
7324	7323	18	1.31	7.79	7.52	1
7325	52651	18	1.02	6.84	3.96	1
7326	7325	18	0.81	6.13	5.89	1
7327	7326	18	0.75	5.89	5.89	2
7328	7327	18	0.74	5.83	5.89	2
7329	7328	15	1.56	5.22	4.37	1
7330	7329	15	0.8	3.73	4.4	2
7332	7316	10	1.77	1.89	2.45	2
7333	7332	10	3.44	2.63	2.58	2
7334	16604	10	3.11	2.5	2.44	1
7335	7334	10	3.77	2.75	2.67	1
742	754	8	1.89	1.07	0	0.1
754	902164	8	6.11	1.93	0	0.1
8195	37032	12	0.24	1.14	0.89	0.61
900091	7086	8	0.5	0.55	0.13	0.35
901295	901296	8	1.49	0.95	0.84	1
901296	901297	8	0.61	0.61	0.84	2
901297	901298	8	0.59	0.6	0.84	2
901298	901299	8	1.79	1.05	0.84	0.7
901299	52524	8	8.72	2.31	0.84	1
901390	37990	15	11.09	9.04	2.31	0.36
901391	901390	16	0.36	1.95	2.31	0.78
901676	15751	27	0.52	18.7	17.97	1
901871	52661	12	2.46	3.61	3.73	2
901892	901893	6	5.72	0.87	0.66	1
901893	16595	8	6.03	1.92	0.66	0.42
902012	6953	24	0.34	11.03	13	2
902012	6953	15	0.32	2.35	2.95	2
902054	43825	15	1.2	4.58	0.74	1
902164	902165	8	6.32	1.96	0	0.1
902165	52657	8	6.21	1.95	0	0.1
9039	16038	18	0.92	6.5	2.84	0.75
9040	17949	15	1.35	4.86	2.17	0.48
9041	17969	15	1.15	4.48	1.34	0.51
9042	9041	15	1.05	4.28	1.01	0.35
9044	14317	15	4.1	8.45	0	0.1
9045	9044	15	3.35	7.65	0	0.1
9046	9045	15	0.08	1.16	0	0.05
9047	9046	21	0.25	5.11	0	0.05

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Post						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
9048	10918	21	0.48	7.06	0	0.05
9049	9048	21	2.33	15.64	0	0.1
break 1	break12	6	-0.12	-0.12	0.44	1
Break 4	45855	6	-1.62	-0.49	0.4	1
Break11	41040	6	-2.37	-0.6	0.44	1
break12	Break11	6	-0.32	-0.2	0.44	1
break2	46749	6	0.06	0.08	0.5	2
C445	7102	8	0.21	0.36	0.62	2
F1757	7101	8	0.8	0.7	0.62	0.75
F5313-missing	2403	8	2.4	1.21	1.57	2
NS1044	48253	6	-6.41	-1.03	0.41	1
PVT302	PVT303	8	0.48	0.54	0.53	0.94
PVT303	29644	8	0.9	0.74	0.53	0.97
PVT472	PVT473	8	1.39	0.92	0.1	0.24
PVT473	PVT474	8	5.93	1.9	0.1	0.18
PVT474	PVT475	8	8.6	2.29	0.1	0.17
PVT475	PVT476	8	0.61	0.61	0.1	0.29
PVT476	PVT477	8	0.6	0.6	0.1	0.29
PVT477	PVT478	8	11.33	2.63	0.1	0.16
PVT478	32260	8	15.2	3.05	0.1	0.39
weir15	33295	24	0.31	8.18	2.77	0.58
59221	59220	8	2.22	1.16	0.88	0.66
59220	59219	8	2.72	1.29	0.88	0.63
59219	204	8	2.74	1.29	0.88	0.62
204	201	8	4.72	1.7	0.88	0.59
201	52174	8	1.89	1.07	0.88	0.71
52176	52175	16	2.3	7.52	2.64	0.99
52182	52181	8	5.49	1.83	1.54	0.72
52181	52176	8	5.35	1.81	1.54	0.72
42057	71509	8	5.5	1.83	0.78	0.7
42056	42055	8	4.53	1.66	0.78	0.5
71509	42056	8	1.63	1	0.78	0.68
52175	52174	16	0.57	3.73	2.92	1
52174	52173	16	0.5	3.51	3.76	2
52173	52172	16	0.49	3.47	3.64	2
72974	34836	14	0.79	8.03	1.42	0.36
33707	72976	12	4.58	4.93	0.98	1
72976	72975	12	0.96	2.26	0.95	1
72975	20760	27	0.2	8.89	10.66	2

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
10918	13409	21	0.15	3.97	0.00	0.05
11	70352	24	1.63	18.68	0.00	0.10
11897	7052	8	3.72	1.51	-0.04	1.00
12	11	24	0.40	9.29	0.00	0.05
13238	7120	8	1.83	1.06	0.96	0.77
13409	9047	21	-0.19	-4.47	0.00	0.05
13939	20805	12	11.76	7.90	0.10	0.51
14317	15315	15	2.45	6.54	0.00	0.10
14454	19876	12	5.12	5.21	1.60	0.69
14455	14454	12	1.46	2.78	1.60	0.56
14456	14455	12	1.59	2.91	1.60	0.54
14458	14456	12	1.02	2.32	1.48	0.59
14546	7188	8	0.57	0.59	1.27	2.00
14547	14546	8	2.87	1.32	1.27	1.00
14548	14547	8	4.80	1.71	1.30	1.00
14565	6885	42	2.14	77.24	30.67	1.00
14937	5134	10	0.55	1.05	0.31	0.38
150	901871	16	3.05	8.66	0.51	0.19
1507	16581	10	14.78	5.45	0.58	0.24
1508	1507	8	0.99	0.78	0.49	0.92
15269	42234	18	1.37	10.33	2.17	1.00
15270	30591	15	1.38	4.91	0.79	0.29
15270	9042	15	1.89	5.74	0.20	0.16
15271	22538	15	2.67	6.83	0.30	0.43
15315	30592	15	2.39	6.45	0.00	0.16
15751	40488	27	0.66	21.21	16.62	1.00
15871	6936	30	0.44	17.56	16.78	0.93
15872	15871	30	0.60	20.58	16.78	0.93
1593	29862	12	0.04	0.43	0.72	0.78
16036	42233	18	0.94	6.58	1.96	0.37
16037	16036	18	0.97	6.69	1.65	0.34
16038	16037	18	1.68	8.81	0.87	0.44
1609	1593	10	0.33	0.81	0.00	0.08
1610	1609	10	0.50	1.01	0.00	0.08
1611	1610	10	0.77	1.24	0.00	0.08
1612	1611	10	1.74	1.87	0.00	0.10
1613	1612	10	0.47	0.97	0.00	0.08
1614	1613	10	0.39	0.88	0.00	0.08
16379	16379N	42	0.16	20.88	32.21	2.00
16379N	6877	42	0.16	21.44	32.21	2.00
16401	C445	8	0.41	0.50	0.81	2.00
16402	16401	8	0.40	0.49	0.82	2.00
16403	16402	8	2.26	1.17	1.00	1.00

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
16404	16403	8	1.56	0.97	1.00	2.00
16535	7330	15	2.02	5.93	0.08	0.13
16536	11897	8	4.15	1.59	0.00	0.10
16581	7328	10	4.34	2.95	0.58	0.32
16595	7333	8	4.68	1.69	0.26	0.28
16596	7333	10	0.50	1.00	0.22	0.33
16604	7320	10	3.39	2.61	0.17	0.58
16742	6982	8	2.42	1.22	0.70	0.56
16743	16742	8	0.65	0.63	0.70	2.00
16744	16743	8	1.02	0.79	0.70	1.00
16745	16744	8	1.07	0.81	0.70	0.82
16746	33093	8	1.00	0.78	0.70	0.76
16747	16746	8	0.72	0.66	0.70	0.91
16748	16747	8	1.03	0.79	0.70	0.79
16749	16748	8	6.64	2.01	0.70	0.61
16750	16750M	8	1.91	1.08	0.70	0.62
16750M	16749	8	1.86	1.06	0.70	0.60
16751	16750	8	1.04	0.80	0.70	0.73
16752	16751	8	0.49	0.55	0.70	2.00
16753	16752	8	0.49	0.55	0.70	2.00
16754	16753	8	0.40	0.49	0.70	2.00
17008	33535	8	5.13	1.77	0.21	0.25
17009	17008	8	4.03	1.57	0.21	0.27
17037	17009	8	5.23	1.79	0.21	0.25
17041	17037	8	5.23	1.79	0.21	0.25
17297	17764	12	1.61	2.92	0.95	0.41
17375	45753	30	2.07	38.12	16.78	0.74
17479	42227	8	1.02	0.79	0.63	1.00
17480	17479	8	1.97	1.10	0.64	0.56
17481	17480	8	5.66	1.86	0.64	0.42
17482	17481	8	6.53	2.00	0.64	0.41
17483	17482	8	4.37	1.63	0.64	0.45
17484	17483	8	1.94	1.09	0.64	0.57
17747	18202	12	42.19	14.96	1.21	0.21
17748	17747	12	1.61	2.92	1.21	0.46
17749	46796	12	5.67	5.48	1.21	0.34
17750	17749	12	0.42	1.49	1.21	0.68
17751	17750	12	0.36	1.38	1.22	0.73
17752	34447	12	0.31	1.28	1.04	0.69
17753	17752	12	0.43	1.51	1.04	0.66
17754	17753	12	0.43	1.51	1.05	0.63
17755	17754	12	0.37	1.40	1.06	0.63
17756	17755	12	0.23	1.10	0.89	0.68

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
17757	17756	12	0.68	1.90	0.90	0.49
17758	17757	12	4.60	4.94	0.90	0.36
17759	17758	12	0.30	1.27	0.91	0.63
17760	17759	12	3.42	4.26	0.92	0.33
17761	19657	12	5.83	5.56	0.92	0.29
17762	17761	12	3.57	4.35	0.93	0.33
17763	19910	12	1.95	3.22	0.93	0.38
17764	17763	12	1.44	2.76	0.94	0.42
17765	48242	12	5.89	5.59	0.45	0.24
17766	17765	12	1.52	2.84	0.45	0.29
17767	17766	12	-0.07	-0.63	0.45	0.60
17768	17767	12	1.15	2.47	0.45	0.53
17769	17768	12	4.01	4.61	0.45	0.30
17770	17769	12	3.46	4.29	0.45	0.24
17771	17770	12	4.80	5.05	0.45	0.22
17772	17771	12	4.42	4.84	0.45	0.23
17773	17772	12	1.43	2.76	0.45	0.29
17774	17773	12	8.83	6.84	0.45	0.20
17775	17774	12	0.89	2.18	0.45	0.31
17949	9039	15	1.61	5.30	0.63	0.25
17969	9040	15	0.86	3.87	0.63	0.28
18	56841	18	-0.57	-5.14	0.57	0.56
18063	17775	12	-0.45	-1.55	0.45	0.92
18064	18063	12	0.76	2.00	0.45	0.83
18202	6885	12	0.61	1.79	1.20	1.00
18241	7311	21	1.20	7.28	2.96	0.45
18297	6958	8	10.17	2.49	0.20	1.00
18298	18297	8	10.97	2.59	0.20	0.21
18298A	18298	8	0.30	0.43	0.20	0.49
18299	18298A	8	0.35	0.46	0.20	0.47
18300	18299	8	0.39	0.49	0.20	0.46
18301	18300	8	2.16	1.15	0.20	0.31
18302	18301	8	4.20	1.60	0.20	0.26
18303	18302	8	6.83	2.04	0.20	0.23
18321	7309	21	0.87	9.56	2.96	0.38
18322	18321	21	1.64	13.13	2.96	0.34
18363	7256	8	0.40	0.49	-0.01	0.87
18364	18363	8	0.40	0.49	0.00	0.10
18452	6928	42	0.01	7.10	18.33	0.75
18453	18452	12	1.43	2.75	1.07	0.44
18454	18453	12	2.98	5.17	1.07	0.33
18455	20314	12	2.55	4.78	1.07	0.34
18456	45724	12	1.96	4.19	0.84	0.32

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
18457	18456	12	3.74	5.79	0.84	0.28
18458	18457	12	3.14	5.30	0.84	0.29
18463	18458	10	1.59	2.32	0.72	0.40
18478	18463	8	2.51	1.61	0.72	0.57
18479	18478	8	3.06	1.37	0.72	0.52
18480	18479	8	2.00	1.11	0.72	0.60
18481	18480	8	2.95	1.34	0.72	0.53
18481A	18481	8	3.21	1.40	0.72	0.52
18482	18481A	8	2.77	1.30	0.72	0.55
18483	18482	8	3.23	1.40	0.72	0.60
18484	18483	8	3.01	1.36	0.72	0.53
18485	18484	8	3.63	1.49	0.72	0.50
18486	18485	8	2.66	1.27	0.72	0.55
18496	901391	15	0.24	1.34	0.97	0.62
18497	19001	8	0.38	0.48	0.15	0.39
18497A	18497	8	0.97	0.77	0.15	0.31
18498	18497A	8	0.97	0.77	0.15	0.31
18517	18486	8	3.54	1.47	0.72	0.50
18552	18496	15	0.43	2.73	0.82	0.47
18553	18552	15	0.34	2.45	0.82	0.40
18554	39224	15	0.49	2.91	0.76	0.43
18555	20127	15	0.52	3	0.76	0.35
18586	902012	24	0.32	10.73	13.51	2
18586	902012	15	1.43	6.49	4.54	1
18587	18586	8	2	1.11	0.26	1
18588	18587	8	0.61	0.61	0.26	0.47
18589	18588	8	0.6	0.6	0.26	0.48
18590	18589	8	1.19	0.85	0.26	0.4
18591	18590	8	0.61	0.61	0.26	0.47
18592	18591	8	0.61	0.61	0.26	0.47
18593	18592	8	0.6	0.6	0.26	0.48
18594	18593	8	1.5	0.96	0.26	0.37
18595	18594	8	2	1.1	0.26	0.35
18596	18595	8	2	1.11	0.26	0.35
19	18	15	0.25	2.08	0.56	0.36
19001	18496	8	0.4	0.5	0.15	0.39
19141	7308	21	1.24	11.4	5.06	0.48
19142	34175	21	1.36	11.95	1.61	0.39
19143	22225	21	0.18	4.35	1.61	0.39
19143	59276	21	3.58	19.39	1.34	0.39
19657	17760	12	7.02	6.1	0.92	0.28
19706	6947	24	0.72	16.1	16.41	2
19707	19706	8	0.39	0.49	0.22	1
19711	19808	8	0.4	0.49	0.21	0.46

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
19712	19711	8	0.6	0.61	0.21	0.42
19714	19712	8	0.6	0.61	0.21	0.42
19715	19714	8	0.4	0.49	0.21	0.47
19716	19715	8	0.6	0.6	0.21	0.42
19717	19716	8	0.6	0.6	0.21	0.42
19808	19707	8	0.4	0.49	0.21	0.58
19873	6955	24	0.36	11.35	15.43	2
19874	19873	12	1.75	3.96	1.62	1
19875	19874	12	0.63	2.38	1.61	0.97
19876	19875	12	0.56	1.73	1.6	0.77
19910	17762	12	2.22	3.43	0.93	0.37
20	19	12	-0.03	-0.42	0.02	0.5
20126	18553	15	0.59	3.22	0.82	0.35
20127	18554	15	0.3	2.28	0.76	0.39
20244	7289	8	0.41	0.5	0.83	2
20246	3	8	0.38	0.48	0.85	2
20247	20246	8	0.4	0.49	1.01	2
20248	20247	8	2.5	1.24	1.01	1
20249	20248	8	3.78	1.52	1.01	1
20250	20249	8	4.74	1.7	1.01	1
20314	18454	12	2.67	4.89	1.07	0.34
20553	37013	27	-0.69	-21.67	7.64	0.67
20753	21328	30	0.11	8.76	6.61	0.62
20754	20753	30	0.01	1.77	6.58	2
20755	20754	30	0.26	8.76	6.25	1
20756	20755	30	0.11	5.78	6.1	0.84
20757	20756	30	0.08	4.99	6.1	0.89
20758	20757	30	0.12	6	6.1	0.91
20759	20758	30	0.1	5.53	6.1	0.96
20760	20759	30	0.11	5.75	6.11	0.96
20761	20760	27	0.2	8.89	6.12	0.97
20762	21329	27	0.19	8.72	5.31	0.6
20763	20762	27	0.31	11.21	5.32	0.49
20764	20763	27	0.18	8.55	5.08	0.56
20765	20764	27	0.17	8.31	4.66	0.54
20766	20765	27	0.18	8.57	4.67	0.53
20767	20766	27	0.32	11.25	4.68	0.49
20768	20767	18	1.05	6.95	2.29	0.41
20769	20768	18	0.99	6.76	2.29	0.41
20770	20769	18	0.69	5.65	2.29	0.44
20771	20770	18	0.74	3.8	2.29	0.57
20772	20771	15	1.19	4.55	2.28	0.51
20773	20772	15	1.18	4.54	2.25	0.51
20774	20773	15	1.01	4.19	2.25	0.54
20775	20774	15	1.21	4.6	2.25	0.5
20776	20775	15	1.81	5.61	2.25	0.45
20777	30726	15	1.87	5.71	2.22	0.44
20778	57146	15	1.06	4.29	1.99	0.49
20779	20778	15	1.52	5.14	1.99	0.44
20780	20779	15	1.36	4.87	1.93	0.45
20781	20780	15	1.15	4.47	1.93	0.48

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
20782	41252	15	0.89	2.55	1.9	0.64
20783	56667	15	1.63	3.47	1.78	0.54
20793	69152	16	1.17	5.36	1.07	0.32
20794	36990	15	2	5.91	0.96	0.3
20795	37148	15	2.33	6.37	0.96	0.49
20796	20795	12	1.94	3.21	0.95	0.39
20797	20796	12	1.88	3.16	0.95	0.39
20798	20797	12	2.3	3.49	0.95	0.37
20799	20798	12	2.41	3.58	0.95	0.36
20803	20799	12	2.54	3.67	0.79	0.33
20804	20803	12	5.66	5.48	0.79	0.28
20805	20804	12	0.85	2.12	0.79	0.43
20806	20805	12	3.74	4.45	0.72	0.29
20807	20806	12	1.16	2.48	0.72	0.38
20808	20807	12	0.42	1.49	0.72	0.5
20809	20808	12	0.73	1.97	0.72	0.6
20810	20809	12	0.48	1.6	0.72	0.48
20811	20810	12	0.59	1.77	0.72	0.45
20812	20811	12	0.7	1.93	0.72	0.43
21	20	12	2.61	3.72	0.02	0.47
21042	41529	15	0.37	2.52	0.76	0.38
21043	21042	15	0.36	2.51	0.76	0.38
21044	21043	8	1.01	0.78	0.37	0.5
21045	21043	15	0.94	4.05	0.37	0.26
21046	21045	15	0.11	1.39	0.37	0.32
21047	21044	8	1.01	0.78	0.06	0.21
21048	21047	8	0.83	0.71	0.06	0.22
21049	21048	8	0.79	0.7	0.06	0.22
21050	21049	8	1.86	1.07	0.06	0.19
21051	21050	8	2.21	1.16	0.06	0.19
21052	21051	8	3	1.35	0.06	0.18
21053	21049	8	0.98	0.77	0	0.1
21054	21043	8	1.94	1.09	0.04	0.16
21055	21054	8	1.78	1.04	0.04	0.16
21056	21055	8	1.76	1.04	0.04	0.16
21057	21056	8	1.77	1.04	0.04	0.16
21058	21057	8	1.73	1.03	0.04	0.16
21059	21044	8	1.02	0.79	0.31	0.45
21060	21059	8	1	0.78	0.31	0.45
21061	21060	8	3.02	1.36	0.31	0.34
21062	21061	8	1.02	0.79	0.31	0.45
21063	21062	8	1.02	0.79	0.31	0.45
21064	21063	8	0.86	0.72	0.25	0.42
21065	21064	8	0.93	0.75	0.25	0.42
21066	21065	8	0.88	0.73	0.25	0.42
21067	21066	8	0.9	0.74	0.25	0.42
21068	21067	8	0.99	0.78	0.06	0.21
21071	21067	8	0.88	0.73	0.23	0.4
21328	6888	30	0.32	14.98	6.69	0.94
21329	20761	27	0.19	8.83	5.4	0.79
21589	18596	8	1.53	0.97	0.26	0.37

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
21590	21589	8	0.79	0.69	0.11	0.28
21591	21590	8	2.02	1.11	0.11	0.23
21592	21591	8	2.05	1.12	0.11	0.23
21593	21592	8	2	1.11	0.11	0.23
21594	21593	8	3.35	1.43	0.11	0.21
21595	21594	8	6.07	1.92	0.11	0.19
21620	21621	8	0.61	0.61	0.08	0.59
21621	52550	8	2.69	1.28	0.08	1
21622	52551	8	2.76	1.3	1.4	2
21623	21622	8	0.93	0.75	0.55	1
21624	21623	8	2.02	1.11	0.55	1
21625	21624	8	2.38	1.21	0.55	0.49
21626	21625	8	2.91	1.33	0.55	0.46
21627	21626	8	0.6	0.6	0.55	0.77
21628	21627	8	0.31	0.44	0.55	2
21629	21628	8	0.39	0.49	0.55	2
21630	21629	8	0.4	0.49	0.55	2
21631	21630	8	0.4	0.5	0.55	2
21634	21631	8	2.99	1.35	0.55	0.46
21635	21634	8	2.65	1.27	0.55	0.48
21636	21635	8	5.84	1.89	0.55	0.38
21638	21636	8	0.99	0.78	0.55	0.64
21641	21622	8	1.48	0.95	0.86	1
21642	21641	8	0.61	0.61	0.86	2
21643	21642	8	0.59	0.6	0.86	2
21645	21643	8	0.61	0.61	0.86	2
21646	21645	8	0.59	0.6	0.86	2
21647	21646	8	1.58	0.98	0.86	1
21648	21647	8	3.99	1.56	0.86	1
21649	21648	8	6.08	1.93	0.86	0.73
21651	21649	8	0.59	0.6	0.86	2
21652	21651	8	0.4	0.49	0.8	2
21653	21652	8	0.41	0.5	0.61	2
21654	21653	8	0.4	0.49	0.63	2
21655	21654	8	0.95	0.76	0.73	1
21805	7108	8	2.53	1.24	0.8	0.59
21806	21805	8	0.59	0.6	0.8	2
21807	21806	8	0.61	0.61	0.8	2
22	19	15	0.41	2.66	0.55	0.36
22009	6957	24	0.47	13.03	13.88	2
22010	22009	24	0.4	11.99	13.72	2
22011	22010	24	0.6	14.74	13.73	1
22012	22011	24	0.6	14.71	13.74	1
22013	22012	24	0.63	15.07	13.74	1
22067	19717	8	2.62	1.27	0.21	0.29
22090	21620	8	0.61	0.61	0.08	0.27
22091	22090	8	0.6	0.6	0.08	0.27
22092	22091	8	1.06	0.8	0.08	0.23
22093	22092	8	1.44	0.94	0.08	0.22
22094	22093	8	1.82	1.05	0.08	0.21
22097	22094	8	3.89	1.54	0.08	0.18

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
22098	22097	8	4.15	1.59	0.08	0.18
22099	22098	8	1.41	0.93	0.08	0.22
22100	22099	8	0.57	0.59	0.08	0.27
22101	22100	8	0.59	0.6	0.08	0.27
22222	7314	21	0.83	6.07	2.41	0.61
22223	22222	21	0.76	5.79	2.41	0.45
22225	19142	21	0.41	6.53	1.61	0.34
22454	6921	12	0.79	1.33	0.1	0.2
22455	22454	12	0.4	0.95	0.1	0.23
22456	22455	12	0.99	1.49	0.1	0.26
22457	22456	12	0.46	1.01	0.1	0.22
22458	45585	12	1.23	1.66	0.1	0.2
22462	22458	12	1.24	1.67	0.1	0.2
22463	22462	12	1.98	3.24	0.1	0.15
22463A	22463	12	1.66	2.96	0.1	0.16
22464	22463A	12	1.58	2.89	0.1	0.16
22465	45592	12	0.6	1.79	0.1	0.17
22466	22465	12	0.42	1.49	0.1	0.19
22482	45567	12	2	3.26	0.1	0.15
22489	22482	12	2.71	3.79	0.1	0.15
22490	22489	12	2.36	3.54	0.1	0.15
22538	15270	15	3.59	7.91	0.99	0.26
2254	742	10	0.44	0.94	0	0.08
2255	2254	10	0.79	1.26	0	0.08
23	22	15	1.19	4.55	0.55	0.31
23057	7162	8	0.51	0.56	0.22	0.44
23775	18517	8	6.07	1.93	0.4	0.33
23776	23775	8	4.24	1.61	0.4	0.36
23777	23776	8	1.12	0.83	0.4	0.5
23778	23777	8	0.6	0.61	0.4	0.61
23779	23778	8	0.68	0.64	0.4	0.58
2402	901892	6	3.29	0.86	0.26	1
2403	2402	8	2.49	1.6	0.26	0.3
2404	F5313-missing	8	3.52	1.9	0.26	0.27
2405	2404	8	0.35	0.6	0.2	0.42
2416	2404	8	0.4	0.64	0.05	0.27
27	23	15	1.23	4.64	0.55	0.26
2900	7335	10	15.51	5.58	0.17	0.15
2936	1508	10	0.52	1.02	0.45	0.47
2937	2936	10	0.52	1.02	0.45	0.48
2938	2937	10	0.44	0.94	0.45	0.55
2939	2938	10	0.61	1.1	0.45	0.48
2940	2939	10	2.82	2.38	0.45	0.31
2941	2940	10	1.91	1.96	0.45	0.34
2942	2941	10	0.35	0.84	0.45	0.52
2943	4971	10	1.46	1.71	0.45	0.36
2945	2943	10	0.93	1.37	0.45	0.41
2946	2945	10	1.81	1.91	0.45	0.35
2947	2946	10	1.93	1.97	0.45	0.34
29644	37991	8	0.5	0.55	1.06	2
29645	30342	15	0.58	3.18	0	0.05

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
29645	33471	30	0.65	21.3	0	0.05
29861	20812	12	0.05	0.51	0.72	0.53
29862	29861	10	0.31	0.78	0.72	0.75
29873	20799	10	4.86	3.12	0.17	0.19
3	20244	8	0.39	0.49	0.83	2
30153	21046	8	0.38	0.48	0.37	0.91
30155	30153	8	0.44	0.52	0.37	0.63
30156	30155	8	0.88	0.73	0.37	0.51
30157	30156	8	0.6	0.6	0.37	0.57
30158	30157	8	0.61	0.61	0.37	0.57
30159	30158	8	0.55	0.58	0.37	0.58
30342	37991	30	0.41	16.87	0	0.16
30588	16037	18	0.62	5.35	0.79	0.27
30588A	30588	15	1.15	4.48	0.79	0.3
30589	30588A	15	1.72	5.48	0.79	0.28
30590	30589	15	1.19	4.56	0.79	0.3
30590A	30590	15	0.79	3.71	0.79	0.32
30590B	30590A	15	1.88	5.72	0.79	0.3
30591	30590B	15	0.77	3.67	0.79	0.32
30592	15271	15	2.04	5.96	0.3	0.18
30593	30592	15	-2.94	-7.17	0.3	0.5
30594	30593	15	2.24	6.25	0.3	0.42
30595	30594	15	2.79	6.97	0	0.1
30596	30595	15	3.59	7.91	0	0.1
30597	30596	15	3.01	7.25	0	0.1
30598	30597	15	0.88	3.91	0	0.05
30616	22067	8	0.42	0.51	0.21	0.45
30617	30616	8	2.76	1.3	0.21	0.29
30618	30617	8	3.89	1.54	0.21	0.29
30619	30618	8	3.8	1.52	0.21	0.27
30620	30619	8	3.53	1.47	0.21	0.27
30621	30620	8	2.89	1.33	0.21	0.28
30622	30621	8	0.92	0.75	0.21	0.37
30623	30622	8	0.92	0.75	0.21	0.37
30624	30623	8	9.81	2.45	0.21	0.22
30625	30624	8	5.85	1.89	0.21	0.24
30626	30625	8	5.07	1.76	0.21	0.25
30627	30626	8	1.53	0.97	0.21	0.33
30628	30627	8	2.23	1.17	0.21	0.3
30726	20776	15	1.01	4.2	2.22	0.53
30727	53271	8	2	1.1	0.36	1
30953	31001	8	0.43	0.51	0.23	0.49
30957	30953	8	0.61	0.61	0.23	0.44
30958	59113	8	4.84	1.72	0.45	1
30959	30958	8	1.4	0.93	0.45	0.5
30960	30959	8	1.4	0.92	0.45	0.5
30963	30960	8	2.86	1.32	0.18	0.36
30968	65375	18	1.6	8.6	0	0.22
31001	21071	8	0.47	0.54	0.23	0.47
31151	30159	8	0.61	0.61	0.37	0.57
31153	31151	8	1.36	0.91	0.37	0.45

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
31154	31153	8	1.7	1.02	0.37	0.43
31155	31154	8	1.7	1.02	0.37	0.43
31828	21655	8	2.04	1.12	0.79	1
31829	31828	8	1	0.78	0.79	2
31830	31829	8	1.39	0.92	0.79	1
31831	31830	8	1.19	0.85	0.79	1
31832	31831	8	1.29	0.89	0.79	1
31833	31832	8	1.98	1.1	0.8	1
31834	31833	8	4.03	1.57	0.8	1
31835	31834	8	1.04	0.8	0.64	0.7
32254	33532	12	0.16	0.6	0.63	0.66
32257	32254	12	0.47	1.03	0.63	0.57
32258	32257	12	0.37	0.91	0.63	0.62
32259	32258	12	0.58	1.75	0.63	0.46
32260	32259	12	-0.01	-0.19	0.63	0.73
32261	32260	12	1.04	2.35	0.57	0.41
32262	32261	12	1.25	2.57	0.57	0.34
32263	32262	12	0.78	2.03	0.57	0.37
32394	19706	24	1.22	20.96	16.21	1
32395	32394	8	1.59	0.98	0.17	0.95
32396	32395	8	2.1	1.13	0.16	0.28
32397	32396	8	4.36	1.63	0.16	0.23
32475	6989	15	0.68	3.44	0.44	0.25
33093	16745	8	0.95	0.76	0.7	0.78
33295	12	24	0.51	10.44	0	0.05
33296	52660	18	1.12	7.17	0.57	0.21
33437	42234	30	0.71	29	9.69	1
33438	33437	30	0.95	33.56	9.83	0.43
33439	33438	27	-0.83	-23.73	9.84	0.98
33440	33439	27	0.33	15.04	9.84	1
33442	38773	27	0.79	23.12	9.4	0.46
33443	33442	27	0.69	21.67	9.4	0.46
33444	6970	10	-0.49	-1.29	0	0.08
33444	33443	27	0.73	22.2	9.4	0.46
33445	33444	27	0.8	23.23	8.78	0.43
33446	33445	27	1.08	27.09	8.78	0.41
33447	33446	27	1.52	32.04	8.56	0.37
33448	33447	27	1.76	34.51	8.56	0.35
33451	37014	27	0.53	14.56	6.88	0.49
33452	33451	27	0.78	17.72	3.26	0.45
33453	33452	27	0.96	19.63	3.26	0.28
33454	33453	27	1.03	20.32	3.26	0.29
33455	33454	27	1.42	23.87	3.26	0.27
33456	33455	27	1.46	24.22	3.26	0.27
33457	33456	27	1.5	24.53	3.26	0.27
33458	33457	27	3.25	36.06	3.26	0.22
33459	33458	27	0.47	13.75	3.26	0.34
33460	33459	27	1.03	20.33	3.26	0.29
33461	33460	27	0.76	17.5	3.26	0.29
33462	33461	27	0.78	17.65	3.26	0.29
33463	33462	27	0.79	17.85	3.26	0.29

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
33464	33463	27	0.73	17.12	3.26	0.3
33465	33464	27	0.74	17.18	3.26	0.3
33466	33465	27	0.66	16.23	3.26	0.31
33470	30342	30	0.48	18.45	0	0.06
33471	33470	30	0.6	20.51	0	0.05
33527	20783	15	1.12	2.88	1.78	0.58
33528	33527	12	1.04	1.53	0.7	0.49
33529	33528	12	0.67	1.23	0.7	0.53
33530	33529	10	2.95	1.58	0.7	0.56
33531	33530	10	3.61	1.75	0.7	0.45
33532	33531	10	3.77	1.79	0.7	0.44
33533	33532	8	5.87	1.89	0.21	0.25
33534	33533	8	4.62	1.68	0.21	0.26
33535	57364	8	5.24	1.79	0.21	0.25
33707	20761	12	0.07	0.62	0.93	0.86
33708	33707	12	2.1	3.34	0.93	0.37
33709	33708	12	2.7	3.79	0.93	0.35
33710	33709	12	2.28	3.48	0.92	0.36
33711	33710	12	2.22	3.43	0.92	0.37
33989	32397	8	4.08	1.58	0.16	0.24
33990	33989	8	4.08	1.58	0.16	0.24
33991	33990	8	7.13	2.09	0.16	0.21
33992	33991	8	2.3	1.18	0.16	0.27
33993	33992	8	0.6	0.61	0.16	0.37
33994	33993	8	0.96	0.76	0.16	0.33
33995	33994	8	3.61	1.48	0.16	0.24
33996	33995	8	2.8	1.31	0.16	0.26
33997	33996	8	0.59	0.6	0.16	0.37
33998	33997	8	0.6	0.61	0.16	0.37
33999	33998	8	2.39	1.21	0.16	0.27
34000	33999	8	2.37	1.2	0.16	0.27
34175	19141	21	1.14	10.96	3.61	0.45
34176	59274	12	4.17	6.12	0.81	0.27
34177	34176	12	5.25	6.86	0.81	0.25
34178	34177	12	2.31	4.55	0.81	0.35
34179	34178	12	1.84	4.06	0.81	0.32
34180	34179	12	1.87	3.15	0.07	0.2
34209	31835	8	0.6	0.6	0.64	2
34210	34209	8	0.59	0.6	0.64	2
34211	34210	8	0.6	0.61	0.64	2
34212	34211	8	0.65	0.63	0.64	2
34213	34212	8	2.36	1.2	0.65	1
34214	34213	8	3.17	1.39	0.65	0.49
34215	34214	8	3.16	1.39	0.65	0.49
34216	34215	8	3.13	1.38	0.65	0.5
34217	34216	8	4.46	1.65	0.65	0.45
34218	34217	8	1.96	1.09	0.28	0.36
34381	20767	24	0.2	6.52	2.53	0.43
34382	34381	24	0.24	7.1	2.53	0.42
34383	34382	24	0.36	8.82	2.54	0.37
34384	34383	24	0.27	4.98	1.36	0.36

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
34385	34384	24	0.3	5.19	1.36	0.35
34447	17751	12	0.44	1.53	1.22	0.68
34836	33711	12	0.46	4.08	0.92	0.33
35527	21652	8	1.94	1.09	0.2	0.31
35528	35527	8	1.88	1.07	0.2	0.31
35529	35528	8	3.17	1.39	0.2	0.31
35530	35529	8	3.4	1.44	0.2	0.27
35531	35530	8	4.22	1.6	0.2	0.26
35532	35531	8	4.26	1.61	0.2	0.26
35533	35532	8	4.45	1.65	0.2	0.26
35534	35533	8	4.81	1.71	0.2	0.25
35535	35534	8	4.48	1.65	0.2	0.26
35536	35535	8	4.59	1.67	0.2	0.26
35537	35536	8	4.4	1.64	0.2	0.26
35538	35537	8	4.31	1.62	0.2	0.26
35539	35538	8	2.91	1.33	0.2	0.28
35551	16404	8	7.51	2.14	1.01	0.5
36911	34383	18	1.1	7.13	1.28	0.3
36912	36911	18	1.63	8.66	1.28	0.28
36913	36912	18	0.84	6.21	1.28	0.31
36914	36913	18	1.57	8.51	1.28	0.28
36915	36914	18	1.99	9.59	1.28	0.27
36916	36915	18	1.73	8.92	1.28	0.28
36917	36916	18	1.41	8.06	1.28	0.29
36918	49997	18	2.34	10.39	1.28	0.26
36919	36918	18	2.34	10.38	1.27	0.26
36920	36919	18	2.22	10.12	1.27	0.26
36921	36920	18	3.23	12.2	1.23	0.23
36922	36921	18	1.89	9.32	1.23	0.27
36923	36922	18	1.44	8.14	1.23	0.28
36924	36923	12	1.46	2.78	1.24	0.48
36925	36924	18	2.33	6.74	1.16	0.3
36926	36925	15	1.64	3.48	1.17	0.42
36927	36926	18	1.65	5.67	1.17	0.33
36928	36927	15	1.77	3.61	1.15	0.4
36929	36928	15	1.7	3.54	1.15	0.41
36930	36929	15	0.97	2.67	1.13	0.46
36931	36930	15	1.01	2.72	1.14	0.47
36933	52089	15	1.71	3.55	1.15	0.41
36934	36933	15	1.76	3.6	1.12	0.4
36935	36934	15	2.07	3.9	1.12	0.38
36936	36935	15	1.86	3.71	1.13	0.39
36937	36936	15	2.23	4.05	1.13	0.37
36938	36937	15	2.5	6.6	1.13	0.3
36939	36938	15	2.03	5.95	1.1	0.31
36940	36939	15	1.88	5.73	1.1	0.31
36941	36940	15	0.8	3.75	1.1	0.37
36942	36941	15	0.79	3.72	1.1	0.38
36944	47025	15	0.83	3.8	1.08	0.37
36945	47036	15	1.39	4.92	1.03	0.33
36946	42603	15	0.34	2.44	0.98	0.42

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
36947	36946	15	1.88	5.72	0.97	0.34
36948	52364	15	1.42	4.97	0.97	0.32
36949	36948	15	0.68	3.44	0.98	0.37
36950	36949	15	1.11	4.39	0.98	0.34
36951	36950	15	1.15	4.48	0.82	0.31
36952	36951	15	1.08	4.34	0.83	0.31
36953	38072	15	0.96	4.09	0.47	0.3
36954	36953	12	1.67	2.97	0.11	0.16
36955	38085	12	0.82	2.09	0.06	0.16
36956	36955	12	3.2	4.12	0.06	0.13
36957	36956	12	1.25	2.57	0.06	0.17
36958	36957	12	3.24	4.14	0.06	0.13
36959	36958	12	2.92	3.94	0.06	0.13
36960	36959	12	2.47	3.62	0.06	0.13
36961	36960	12	3.34	4.21	0.06	0.13
36962	36961	12	3.48	4.3	0.06	0.13
36963	36962	12	3.74	4.46	0.06	0.13
36990	20793	15	1.73	5.49	0.98	0.48
37009	33448	27	0.59	19.98	7.76	0.43
37010	37009	27	0.73	22.18	7.64	0.41
37011	37010	27	0.61	20.31	7.64	0.43
37012	37011	27	0.88	24.41	7.64	0.39
37013	37012	27	0.43	17.06	7.64	0.48
37014	20553	27	0.77	22.86	6.88	0.63
37030	65333	15	2.94	7.16	0.6	0.25
37031	37030	12	0.29	1.24	0.6	0.47
37032	37031	12	1.38	2.7	0.6	0.37
37054	6946	8	2.59	1.26	0.12	0.26
37055	37054	8	1.59	0.98	0.12	0.26
37056	37055	8	1.25	0.87	0.12	0.27
37057	37056	8	0.98	0.77	0.12	0.28
37058	37057	8	0.99	0.78	0.12	0.28
37059	38271	8	1.27	0.88	0.12	0.27
37060	37059	8	5.04	1.75	0.12	0.2
37061	37060	8	4.59	1.67	0.12	0.21
37148	20794	15	1.01	4.2	0.96	0.34
37986	33466	27	1.43	23.9	2.85	0.26
37987	37986	30	0.4	16.78	2.85	0.28
37988	37987	30	0.41	16.97	2.85	0.28
37989	37988	30	0.4	16.71	2.85	0.28
37990	37989	30	0.55	19.62	2.85	0.26
37991	37990	30	0.41	16.93	1.06	0.26
38072	36952	15	0.55	3.11	0.84	0.36
38073	38072	12	1.9	3.17	0.44	0.27
38074	38073	12	1.16	2.48	0.44	0.3
38075	38074	12	1.94	3.21	0.44	0.27
38076	38075	12	1.57	2.89	0.44	0.28
38077	38076	12	1.97	3.23	0.45	0.27
38078	38077	12	1.52	2.84	0.45	0.29
38079	38078	12	0.81	2.08	0.45	0.33
38080	38079	12	1.2	2.52	0.46	0.31

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38081	38080	12	0.69	1.91	0.47	0.35
38083	38081	12	0.53	1.68	0.47	0.37
38084	38083	12	3.86	4.52	0.11	0.22
38085	36954	12	0.93	2.22	0.11	0.16
38269	37058	8	1	0.78	0.12	0.28
38270	38269	8	0.9	0.74	0.12	0.29
38271	38270	8	1.72	1.02	0.12	0.25
38273	38083	8	0.69	0.65	0.38	0.56
38452	36953	8	0.1	0.25	0.37	2
38453	38452	8	4.49	1.66	0.4	1
38454	38453	8	3.34	1.43	0.41	0.38
38455	38454	8	0.84	0.71	0.33	0.49
38456	38455	8	6.64	2.01	0.33	0.29
38457	38456	8	5.3	1.8	0.33	0.31
38458	38457	8	2.04	1.12	0.34	0.39
38459	38458	8	0.54	0.58	0.34	0.57
38460	38459	8	0.53	0.57	0.35	0.58
38461	38460	8	0.46	0.53	0.35	0.61
38462	38461	8	1.63	1	0.36	0.43
38463	38462	8	4.76	1.71	0.36	0.33
38464	38463	8	0.07	0.2	0.36	2
38465	38464	8	0.58	0.59	0.37	1
38525	6952	24	0.38	11.66	16.05	2
38526	38525	15	1.69	5.43	0.51	1
38527	38526	15	1.3	4.76	0.51	0.24
38528	38527	15	0.99	4.15	0.51	0.24
38529	38528	15	1.45	5.03	0.51	0.24
38530	38529	15	1.12	4.42	0.51	0.25
38530A	38530	15	0	0	0.51	0.35
38531	38530A	15	0.72	3.54	0.51	0.35
38532	38531	15	0.62	3.29	0.51	0.27
38533	38838	15	2.21	6.21	0.51	0.22
38534	38839	15	1.86	5.7	0.51	0.27
38535	38534	15	0.63	3.32	0.51	0.27
38536	38535	15	-0.13	-1.48	0.51	0.41
38537	38536	15	0.62	3.28	0.51	0.27
38538	38537	15	0.82	3.79	0.47	0.24
38538A	38538	15	3.35	7.64	0.47	0.2
38539	38538A	15	1.17	4.52	0.47	0.24
38581	21807	8	1.93	1.08	0.8	1
38582	38581	8	1.51	0.96	0.81	1
38642	38539	15	3.72	8.05	0.47	0.23
38643	38642	15	0.5	2.96	0.47	0.28
38644	38643	15	2.66	6.81	0.47	0.2
38645	38644	15	0.27	2.19	0.4	0.29
38646	39458	15	0.5	2.95	0.4	0.25
38647	38646	15	1.2	4.58	0.4	0.31
38648	38647	15	0.89	3.94	0.4	0.22
38649	38648	15	0.71	3.52	0.19	0.17
38682	18498	8	0.69	0.65	0.15	0.34
38683	38682	8	0.66	0.63	0.15	0.35

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38684	38683	8	0.43	0.51	0.15	0.38
38773	33440	27	0.58	19.8	9.84	0.82
38774	38773	8	0.42	0.51	0.58	0.9
38775	38774	8	1.13	0.83	0.58	0.76
38776	38775	8	1.9	1.08	0.58	0.75
38777	38776	8	1	0.78	0.58	0.65
38778	38777	8	1.01	0.79	0.58	0.65
38779	38778	8	1.4	0.92	0.58	0.59
38780	38779	8	0.61	0.61	0.58	0.8
38781	38780	8	4.14	1.59	0.59	0.67
38782	38781	8	4.9	1.73	0.59	0.42
38838	38532	15	1.63	5.33	0.51	0.23
38839	38533	15	0.52	3.01	0.51	0.28
39117	38084	12	1.95	3.22	0.11	0.16
39118	39117	12	0.59	1.77	0.11	0.18
39224	20126	15	0.1	1.32	0.82	0.48
39225	39224	8	0.63	0.62	0.06	0.23
39458	38645	15	0.45	2.8	0.4	0.26
39733	23779	12	2.87	3.9	0.4	0.24
39734	39733	12	0.47	1.58	0.4	0.35
39735	39734	12	-0.02	-0.3	0.4	0.62
39736	39735	12	1.38	2.7	0.4	0.58
39737	39736	12	-0.15	-0.9	0.4	0.75
39738	39737	12	0.85	2.12	0.4	0.71
39739	39738	12	0.13	0.84	0.4	0.44
39741	39739	12	0.4	1.45	0.4	0.44
40488	6941	27	0.66	10.59	16.62	2
41020	38582	8	2.34	1.19	0.81	1
41036	38273	8	0.42	0.51	0.38	0.65
41037	41036	8	0.41	0.5	0.39	0.69
41038	41037	8	0.5	0.55	0.18	0.4
41039	41038	8	0.64	0.63	0.18	0.38
41040	41039	8	0.54	0.58	0.18	0.4
41042	41037	8	8.15	2.23	0.26	0.74
41043	41042	8	1.16	0.84	0.26	0.41
41044	41043	8	1.13	0.83	0.27	0.42
41045	41044	8	6.18	1.94	0.29	0.28
41114	41428	10	0.82	1.28	0.72	0.63
41115	41114	10	0.42	0.92	0.72	0.66
41116	41115	10	0.22	0.67	0.72	0.95
41117	41429	10	0.42	0.92	0.72	0.66
41118	41117	10	2.42	2.21	0.72	0.46
41119	41118	10	1.04	1.44	0.72	0.51
41120	41119	10	0.44	0.94	0.72	0.66
41121	41120	10	0.45	0.95	0.63	0.68
41122	41121	10	1.99	2	0.63	0.53
41123	41122	10	1.04	1.44	0.63	0.48
41124	41123	10	0.68	1.17	0.63	0.53
41125	41124	10	0.07	0.38	0.63	0.66
41126	41125	10	1.32	1.62	0.63	0.8
41127	41126	10	1.24	1.57	0.63	0.45

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
41128	41127	10	0.89	1.33	0.41	0.39
41129	41128	10	0.64	1.14	0.41	0.42
41130	41129	10	0.62	1.11	0.41	0.43
41131	41130	10	0.63	1.12	0.41	0.55
41132	41131	10	0.41	0.9	0.41	0.48
41133	41132	10	2.08	2.04	0.41	0.42
41134	41133	10	0.44	0.94	0	0.3
41135	41134	10	0.44	0.94	0	0.08
41136	41135	10	-0.26	-0.72	0	0.08
41137	41136	10	0.62	1.12	0	0.08
41138	41137	10	0.42	0.92	0	0.08
41139	41138	10	0.54	1.05	0	0.08
41140	41139	10	0.18	0.59	0	0.08
41252	20781	15	0.55	3.1	1.93	0.57
41427	1593	12	-1.16	-2.48	0.72	0.78
41428	41427	12	0.35	1.36	0.72	0.7
41429	41116	10	2.33	2.16	0.72	0.85
41434	35551	8	1.9	1.08	1.01	0.78
41529	41530	16	0.76	4.32	0.76	0.29
41530	43502	16	0.27	2.58	0.76	0.37
41917	39225	8	0.49	0.54	0.06	0.24
42050	34836	14	1.55	11.24	0.84	0.21
42051	42050	14	21.71	42.09	0.84	0.14
42052	42051	15	1.94	5.81	0.84	0.28
42053	42052	15	0.35	2.46	0.84	0.4
42054	42053	15	0.77	3.67	0.84	0.33
42055	42054	15	1.19	4.56	0.84	0.31
42224	15269	8	0.62	0.62	0.63	0.98
42225	42224	8	4.94	1.74	0.63	0.43
42226	42225	8	0.6	0.6	0.63	2
42227	42226	8	0.6	0.61	0.63	2
42228	22013	24	0.36	11.46	13.69	2
42229	42228	24	1.62	18.63	2.1	1
42230	48063	24	2.79	24.44	1.96	1
42231	42230	24	2.47	22.99	1.96	0.22
42232	42231	24	0.79	12.99	1.96	0.27
42233	42232	24	0.25	7.28	1.96	0.35
42234	42228	30	0.76	29.98	11.62	1
42603	36945	15	0.99	4.16	1.02	0.34
43381	150	15	122.06	46.14	0.49	0.21
43382	43381	15	0.26	2.12	0.49	0.33
43383	43382	15	3.57	7.89	0.49	0.33
43384	43383	12	5.33	5.32	0.47	0.22
43385	43384	12	1.03	2.33	0.3	0.26
43386	43385	12	1.95	3.22	0.19	0.19
43387	57167	12	3.51	4.32	0.19	0.17
43501	18555	18	0.38	4.2	0.76	0.29
43502	43501	16	0.55	3.68	0.76	0.31
43786	44225	12	0.6	1.79	0.56	1
43787	43786	8	0.91	0.74	0.47	0.58
43788	43787	8	0.47	0.54	0.47	0.73

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
43789	43788	8	0.95	0.5	0.47	0.81
43790	43789	8	0.24	0.25	0.47	2
43791	43790	8	0.46	0.35	0.47	2
43792	43791	8	0.42	0.33	0.47	2
43793	43792	8	0.53	0.37	0.45	2
43794	43793	8	0.45	0.52	0.45	1
43794A	43794	8	0.44	0.52	0.22	1
43795	43794A	8	0.63	0.62	0.22	1
43796	43795	8	0.51	0.56	0.22	1
43797	43796	8	0.52	0.56	0.1	1
43798	43797	8	0.52	0.56	0.1	0.3
43799	43798	8	0.52	0.56	0.1	0.3
43800	43799	8	1.43	0.94	0.1	0.24
43801	43796	8	0.79	0.7	0.13	0.31
43802	43801	8	1.86	1.06	0.13	0.26
43803	43802	8	2.8	1.31	0.13	0.23
43804	43803	8	2.5	1.23	0.13	0.24
43805	43804	8	3.5	1.46	0.13	0.22
43810	43800	8	0.52	0.57	0.1	0.29
43811	43810	8	0.52	0.56	0.1	0.3
43812	43811	8	0.52	0.56	0.1	0.3
43813	43812	8	0.52	0.56	0.1	0.3
43814	43813	8	1.7	1.02	0.1	0.23
43815	43814	8	0.51	0.56	0.1	0.3
43818	43815	8	1.88	1.07	0.1	0.22
43819	43794	8	-0.04	-0.15	0.23	0.8
43820	43819	8	0.5	0.55	0.23	0.47
43821	43820	8	0.92	0.75	0.23	0.4
43822	43821	8	0.52	0.57	0.23	0.46
43823	43822	8	0.74	0.67	0.23	0.95
43824	43823	8	0.62	0.61	0.23	0.44
43825	43824	15	0.54	3.07	0.23	0.19
43826	52024	15	0.56	3.12	0	0.17
43865	42055	12	0.71	1.94	0.33	0.29
44208	34385	24	0.24	4.66	1.1	0.33
44209	44208	24	0.29	5.12	1.1	0.32
44210	44209	10	0.32	0.52	1.1	2
44211	44210	10	0.32	0.8	1.02	2
44212	44211	10	0.32	0.8	1.02	2
44213	44212	10	0.33	0.81	1.02	2
44214	53270	10	0.38	0.87	0.79	1
44215	44214	10	0.32	0.8	0.78	1
44216	44215	10	0.32	0.8	0.78	1
44217	44216	10	0.35	0.84	0.64	1
44218	44217	10	0.31	0.78	0.64	1
44219	44218	10	0.31	0.79	0.63	1
44220	44219	10	0.23	0.68	0.63	1
44221	44220	10	0.26	0.72	0.62	1
44222	44221	10	0.21	0.65	0.62	1
44223	44222	10	0.3	0.78	0.61	1
44224	44223	10	0.2	0.63	0.56	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
44225	44224	10	0.23	0.69	0.55	1
44548	20777	15	1.05	4.28	2.22	0.52
45056	41045	8	2.31	1.19	0.29	0.36
45057	45056	8	0.93	0.75	0.3	0.46
45058	45057	8	1.56	0.98	0.31	0.42
45059	45058	8	3.38	1.44	0.33	0.35
45563	22466	12	4.23	4.74	0.1	0.34
45564	45563	12	1.4	2.73	0.1	0.16
45564A	45564	12	0.46	1.55	0.1	0.19
45565	45564A	12	2.42	3.59	0.1	0.15
45566	45565	12	4.26	4.75	0.1	0.19
45567	45566	12	3.74	4.46	0.1	0.14
45568	22490	12	3.77	4.47	0.1	0.14
45585	22457	12	0.6	1.16	0.1	0.21
45592	22464	12	1.07	2.38	0.1	0.17
45724	18455	12	1.87	4.1	1.07	0.36
45735	43818	8	0.6	0.6	0.1	0.29
45736	45735	8	1.21	0.86	0.1	0.25
45737	45736	8	2.36	1.2	0.1	0.21
45738	45737	8	3	1.35	0.1	0.21
45739	45738	8	4.44	1.65	0.1	0.19
45740	45739	8	4.92	1.73	0.1	0.19
45741	45748	8	2.62	1.26	0.13	0.23
45742	45741	8	3.02	1.36	0.13	0.23
45743	45742	8	3.03	1.36	0.13	0.23
45744	45743	8	0.68	0.64	0.13	0.32
45745	45744	8	0.63	0.62	0.13	0.32
45746	43805	8	2.01	1.11	0.13	0.25
45747	45746	8	2.64	1.27	0.13	0.23
45748	45747	8	2.65	1.27	0.13	0.23
45753	6937	30	0.51	18.97	16.78	0.72
45855	45059	8	3.15	1.39	0.35	0.36
45895	30628	8	2.7	1.28	0.21	0.29
46748	38465	8	0.47	0.54	0.39	0.65
46749	46748	8	2.31	1.19	0.4	0.42
46778	45745	8	0.6	0.6	0.13	0.33
46779	46778	8	0.6	0.61	0.13	0.33
46789	6931	30	0.56	19.86	17.36	0.72
46796	17748	12	4.61	4.95	1.21	0.41
47025	36942	15	0.75	3.62	1.08	0.38
47036	36944	15	1.49	5.09	1.09	0.33
48063	42229	24	2.91	24.93	2.19	1
48064	48063	8	3.7	1.5	0.27	0.3
48065	48064	8	0.6	0.61	0.27	0.49
48066	48065	8	4.4	1.64	0.27	0.34
48067	48066	8	1.05	0.8	0.27	0.42
48068	48067	8	1.64	1	0.27	0.37
48069	48068	8	6.98	2.06	0.28	0.27
48070	48069	8	6.88	2.05	0.28	0.27
48208	48070	8	5.6	1.85	0.28	0.28
48209	48208	8	5.18	1.78	0.28	0.28

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre							
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State	
48242	17297	12	6.32	5.79	0.96	0.29	
48243	48242	8	13.24	2.84	0.32	0.25	
48244	48243	8	13.38	2.86	0.32	0.29	
48245	48244	8	7.29	2.11	0.33	0.28	
48246	48245	8	0.44	0.52	0.33	0.6	
48247	48246	8	1.17	0.85	0.35	0.47	
48247A	48247	8	5.34	1.8	0.36	0.32	
48248	48247A	8	0.6	0.6	0.36	0.57	
48249	48248	8	3.38	1.44	0.37	0.52	
48250	48249	8	1.73	1.03	0.37	0.43	
48251	48250	8	1.26	0.88	0.38	0.48	
48252	48251	8	0.62	0.62	0.38	0.58	
48253	48252	8	-0.17	-0.32	0.4	0.73	
48254A	NS1044	6	1.01	0.38	0.4	2	
48571	41917	8	0.4	0.49	0.06	0.25	
48572	48572A	8	0.4	0.49	0.06	0.26	
48572A	48571	8	0.4	0.49	0.06	0.26	
49083	30960	8	2.09	1.13	0.37	0.41	
49084	49083	8	2.17	1.15	0.37	0.4	
4970	2942	10	0.38	0.88	0.45	0.51	
4971	4970	10	2.46	2.22	0.45	0.39	
49997	36917	18	2.29	10.27	1.28	0.26	
50253	34218	8	0.62	0.61	0.28	0.82	
50254	50253	8	0.59	0.6	0.28	0.49	
50255	50254	8	2.24	1.17	0.28	0.35	
50256	50255	8	5.81	1.88	0.28	0.28	
50281	50256	8	1.2	0.86	0.28	0.41	
50282	50281	8	3.24	1.41	0.28	0.32	
5134	18064	12	0.81	2.07	0.31	0.27	
5135	14937	10	0.59	1.09	0	0.3	
5136	5135	10	1.57	1.78	0	0.1	
5137	5136	10	1.05	1.45	0	0.1	
5138	5137	10	0.57	1.07	0	0.08	
5139	5138	10	1.87	1.94	0	0.1	
5140	5139	10	0.1	0.44	0	0.08	
52024	902054	15	1.18	4.53	0.23	0.45	
52025	52024	10	1.59	1.79	0.23	0.26	
52026	52025	10	1.32	1.63	0.23	0.28	
52027	52026	10	0.98	1.4	0.23	0.29	
52028	52027	10	0.53	1.03	0.23	0.34	
52029	52028	8	3.68	1.5	0.23	0.7	
52030	52029	8	3.76	1.51	0.23	0.28	
52031	52030	8	0.44	0.52	0.23	0.49	
52032	52031	8	0.44	0.52	0.23	0.49	
52033	52032	8	0.44	0.52	0.23	0.49	
52034	52033	8	0.44	0.52	0.23	0.48	
52041	52034	8	0.44	0.52	0.23	0.49	
52042	52041	8	1.31	0.89	0.23	0.36	
52043	52042	8	3.29	1.42	0.23	0.29	
52044	52043	8	3.2	1.4	0.23	0.29	
52045	52044	8	2.68	1.28	0.23	0.3	

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52088	36931	15	0.53	1.98	1.14	0.53
52089	52088	15	1.24	3.02	1.14	0.45
52091	52147	8	1.03	0.79	0.55	0.63
52092	52091	8	0.54	0.57	0.55	0.85
52093	52092	8	2.24	1.17	0.55	0.71
52094	52093	8	2.18	1.15	0.55	0.5
52095	52094	8	1.1	0.82	0.55	0.62
52096	52095	8	5.37	1.81	0.55	0.48
52097	52096	8	2.7	1.28	0.55	0.48
52098	52097	8	5.52	1.84	0.55	0.39
52099	52098	8	5.61	1.85	0.55	0.39
52100	52099	8	5.67	1.86	0.55	0.39
52147	52489	8	1.06	0.8	0.55	0.63
52170	18	16	20.44	22.42	0.02	0.8
52171	52170	16	0.71	4.18	0.02	0.09
52172	52171	16	0.5	3.5	0.02	0.07
52173	52172	16	1.15	5.32	0.02	0.11
52174	52173	16	5.47	11.6	0.02	0.11
52175	52174	16	4.44	10.45	0.02	0.1
52182	66	10	3.28	2.57	0.24	0.23
52240	52100	8	1.83	1.06	0.55	0.52
52241	52240	8	3.62	1.49	0.55	0.43
52242	52241	8	4.07	1.58	0.55	0.42
52243	52242	8	4.92	1.73	0.55	0.41
52244	52243	8	5.2	1.78	0.55	0.4
52245	52244	8	5.53	1.84	0.55	0.39
52364	36947	15	1.61	5.29	0.97	0.31
52488	21638	8	0.62	0.62	0.55	0.71
52489	52488	8	0.67	0.64	0.55	0.72
52520	52569A	8	1.09	0.82	0.55	0.62
52521	52520	8	0.6	0.6	0.55	0.78
52522	52521	8	0.5	0.55	0.56	2
52523	53379	8	0.5	0.55	0.56	2
52524	52523	8	0.51	0.56	0.56	1
52550	14458	8	3.13	1.38	1.48	2
52551	52550	8	8.8	2.32	1.4	1
52552	52552A	8	12.02	2.71	0.2	0.21
52552A	35539	8	13.38	2.86	0.2	0.3
52553	52552	8	7.63	2.16	0.2	0.23
52554	52553	8	3.62	1.49	0.2	0.27
52555	52554	8	7.09	2.08	0.2	0.23
52556	52555	8	7.16	2.09	0.2	0.23
52557	52556	8	0.99	0.78	0.2	0.36
52558	52557	8	0.98	0.77	0.2	0.36
52559	52558	8	2.45	1.22	0.2	0.29
52560	52245	8	16.07	3.13	0.55	0.3
52561	52560	8	5.06	1.76	0.55	0.4
52562	52561	8	5.07	1.76	0.55	0.4
52566	52562	8	0.57	0.59	0.55	0.79
52567	52566	8	0.61	0.61	0.55	0.75
52568	52567	8	3.99	1.56	0.55	0.61

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52569	52568	8	4.99	1.75	0.55	0.4
52569A	52569	8	2.91	1.33	0.55	0.46
52651	7324	18	1.02	6.85	1.81	0.36
52652	52651	24	1.04	14.94	1.19	0.21
52653	52652	24	15.5	57.57	1.19	0.14
52654	52653	24	1.07	15.09	1.19	0.21
52655	52654	24	15.02	56.68	1.19	0.17
52656	52655	24	0.1	4.65	1.19	0.34
52657	52656	24	0.33	8.42	1.19	0.31
52658	52657	21	0.3	5.62	1.07	0.3
52659	52658	21	0.8	9.16	1.07	0.24
52660	52659	21	12.95	36.86	1.07	0.18
52661	52660	12	9.8	7.21	0.51	0.21
53242	52559	8	4.7	1.69	0.2	0.25
53243	53242	8	4.56	1.67	0.2	0.26
53244	53243	8	0.81	0.7	0.2	0.38
53245	53244	8	0.59	0.6	0.2	0.41
53246	53245	8	0.61	0.61	0.2	0.41
53257	44216	8	1.01	0.79	0.24	1
53258	53257	8	4.47	1.65	0.24	1
53259	53258	8	2.36	1.2	0.24	0.32
53260	53259	8	0.98	0.77	0.24	0.4
53261	53260	8	3.03	1.36	0.24	0.3
53262	53261	8	4.81	1.71	0.24	0.27
53263	53262	8	5.97	1.91	0.24	0.26
53264	53263	8	3.34	1.43	0.24	0.29
53267	53264	8	6.84	2.04	0.24	0.25
53269	53267	8	4.76	1.7	0.24	0.27
53270	44213	10	0.25	0.71	1.02	2
53271	53270	8	0.92	0.75	0.35	1
53292	30727	8	2.04	1.11	0.36	0.41
53293	53292	8	0.6	0.6	0.36	0.57
53294	53293	8	0.48	0.54	0.36	0.59
53295	53294	8	1.79	1.04	0.36	0.42
53296	53295	8	0.64	0.62	0.36	0.56
53297	53296	8	3.49	1.46	0.36	0.42
53379	52522	8	0.49	0.55	0.56	2
53385	53246	8	1.01	0.78	0.2	0.36
53386	53385	8	2.01	1.11	0.2	0.3
53387	53386	8	0.95	0.76	0.2	0.36
53388	53387	8	0.99	0.78	0.2	0.36
53727	53727A	8	0.3	0.43	1.01	2
53727A	53727B	8	0.55	0.58	1.01	2
53727B	20250	8	4.72	1.7	1.01	0.95
53728	53727	8	0.63	0.62	1.01	2
53729	53728	8	0.39	0.49	1.13	2
53730	53729	8	5.14	1.77	1.13	1
53868	46779	8	1.32	0.9	0.13	0.28
53869	53868	8	0.99	0.78	0.13	0.29
53870	53869	8	2.49	1.23	0.13	0.24
53871	53870	8	4.42	1.64	0.13	0.21

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
53872	53871	8	0.82	0.71	0.13	0.3
53873	53872	8	0.56	0.59	0.13	0.34
53874	53873	8	1.14	0.83	0.13	0.28
53875	53874	8	0.52	0.56	0.13	0.34
53876	53875	8	0.78	0.69	0.13	0.31
53877	53876	8	4.6	1.68	0.13	0.21
53878	53877	8	3.82	1.53	0.13	0.22
53879	53878	8	6.38	1.97	0.13	0.2
53955	41133	10	0.35	0.84	0.41	0.96
53956	53955	10	0.66	1.15	0.41	0.8
53957	53956	10	0.36	0.85	0.41	0.5
53958	53957	10	0.54	1.04	0.41	0.44
53959	53958	10	0.38	0.88	0.41	0.49
53960	53959	10	0.47	0.97	0.41	0.49
53961	53960	10	0.44	0.94	0.41	0.47
53962	53961	10	0.4	0.89	0.41	0.49
54110	52045	8	0.6	0.61	0.23	0.44
54111	54110	8	1.58	0.98	0.23	0.35
54112	54111	8	1.76	1.04	0.23	0.34
54113	54112	8	0.69	0.65	0.23	0.43
54114	54113	8	2.46	1.23	0.23	0.31
54115	54114	8	1.68	1.01	0.23	0.34
54116	54115	8	3.59	1.48	0.23	0.29
54117	54116	8	4.79	1.71	0.23	0.27
54353	65512	8	4.29	1.62	0.21	0.26
54451	45568	12	3.15	4.09	0.1	0.14
54452	54451	12	3.05	4.02	0.1	0.15
54452A	54452	12	1.59	2.91	0.1	0.16
54453	54452A	12	1.01	2.31	0.1	0.17
54453A	54453	12	0.56	1.73	0.1	0.18
54454	54453A	12	3	3.99	0.1	0.15
54455	54454	12	2.13	3.36	0.1	0.16
54456	54455	12	0.33	1.32	0.1	0.2
54556	53962	10	0.57	1.07	0.41	0.44
55251	7298	24	0.99	14.53	5.98	0.45
55252	55251	8	0.57	0.59	0.93	2
55253	55252	8	0.59	0.6	0.93	2
55254	55253	8	0.59	0.6	0.93	2
55255	55254	8	0.6	0.6	0.93	2
55256	55255	8	4.97	1.74	0.93	1
55257	55256	8	1.08	0.81	0.93	2
55258	55257	8	32.91	4.48	0.93	0.33
55259	55258	8	36.11	4.69	0.93	0.33
55260	55259	8	31.38	4.38	0.93	0.33
55261	55260	8	0.59	0.6	0.93	2
55262	55261	8	0.6	0.6	0.93	2
55267	55262	8	0.99	0.78	0.95	2
55268	55267	8	0.99	0.78	1.02	2
55269	55268	8	15.51	3.08	1.15	1
55270	55269	8	0.98	0.78	1.15	2
55271	55270	8	4.8	1.71	1.15	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
55272	55271	8	1.05	0.8	1.15	2
56667	20782	15	1.35	3.16	1.9	0.59
56841	33296	18	0.3	3.73	0.57	0.27
56842	56841	12	0.59	1.77	0	0.38
57146	44548	15	0.89	3.94	2.16	0.53
57167	43386	12	6.13	5.7	0.19	0.16
57364	69111	8	7.05	2.07	0.21	0.24
59113	59114	8	0.37	0.47	0.22	0.48
59113	30957	8	2.74	1.29	0.23	0.3
59114	59115	8	0.36	0.47	0.22	0.5
59115	59116	8	0.36	0.47	0.22	0.5
59116	31155	8	2.21	1.16	0.37	0.4
59221	70	10	1.58	1.78	0.21	0.25
59222	59221	12	0.53	1.68	0.21	0.24
59274	34175	20	0.62	9.2	2	0.42
59275	59274	20	0.65	7.24	1.34	0.32
59276	59275	20	0.18	3.8	1.34	0.38
61	27	10	7.63	3.91	0.26	0.2
61831	21595	8	1.12	0.83	0.11	0.43
61832	61831	8	2.88	1.32	0.11	0.22
61833	61832	8	0.6	0.6	0.11	0.3
61834	61833	8	3.58	1.48	0.11	0.21
61946	6888	42	1.52	80.26	23.87	1
61947	61946	36	0.41	27.53	5.82	1
61948	61947	36	0.59	33.24	5.98	0.37
63663	7113	8	2.1	1.13	0.96	0.72
63665	7114	8	2.96	1.34	0.96	0.64
64082	53297	8	0.61	0.61	0.36	0.57
64083	64082	8	3.54	1.47	0.36	0.42
64084	64083	8	4.69	1.69	0.36	0.33
64085	64084	8	1.81	1.05	0.36	0.42
65315	65511	15	0.51	2.99	0.6	0.32
65316	65315	15	0.31	2.34	0.6	0.35
65317	65316	15	0.57	3.16	0.6	0.3
65318	65317	15	1.8	5.6	0.6	0.24
65319	65318	15	1.8	5.6	0.6	0.24
65320	65319	15	2.03	5.95	0.6	0.24
65321	65320	15	1.96	5.85	0.6	0.24
65322	65321	15	3.23	7.51	0.6	0.21
65323	65322	15	0.15	1.63	0.6	0.42
65324	65323	15	2.6	6.73	0.6	0.24
65325	65324	15	0.5	2.95	0.6	0.31
65326	65325	15	0.52	3.02	0.6	0.3
65327	65326	15	0.35	2.48	0.6	0.34
65328	65327	15	0.84	3.83	0.6	0.33
65329	65328	15	2.02	5.93	0.6	0.23
65330	65329	15	2.47	6.57	0.6	0.22
65331	65330	15	0.5	2.95	0.6	0.31
65332	65331	15	0.33	2.41	0.6	0.35
65333	65332	15	0.88	3.92	0.6	0.27
65373	6990	18	1.97	9.53	0.44	0.18

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
65374	65373	18	0.76	5.93	0.44	0.19
65375	65374	18	0.41	4.33	0.44	0.22
65497	34179	16	1.05	6.62	0.77	0.25
65498	65497	16	1.17	6.97	0.77	0.24
65499	65498	16	0.71	4.18	0.77	0.29
65500	65499	16	0.73	4.25	0.77	0.29
65501	65500	16	0.35	2.95	0.77	0.35
65502	65501	16	0.28	2.62	0.77	0.37
65503	65502	16	0.5	3.5	0.77	0.32
65504	65503	16	0.22	2.31	0.77	0.39
65505	65504	16	1.84	6.74	0.77	0.32
65506	65505	16	0.49	3.47	0.77	0.32
65507	65506	16	0.89	4.69	0.77	0.28
65508	65507	16	0.52	3.57	0.77	0.32
65509	65508	16	0.54	3.66	0.77	0.38
65510	65509	16	0.61	3.88	0.77	0.3
65511	65510	16	0.56	3.72	0.77	0.31
65512	45895	8	4.33	1.63	0.21	0.26
66	61	10	2.92	2.42	0.24	0.23
66452	67346	8	0.85	0.72	0.67	0.78
66453	66452	8	1.85	1.06	0.67	0.65
67346	7085	8	0.77	0.68	0.66	1
6874	JP1	42	0.16	21.31	32.44	0.78
6875	6874	42	0.17	21.73	32.44	0.9
6876	6876N	42	0.19	21.82	32.44	2
6876N	6875	42	0.19	22.9	32.44	2
6877	6876	42	0.17	26.94	32.21	2
6878	16379	42	-0.14	-23.28	32.21	1
6879	6878	42	0.46	43.91	32.21	1
6880	6879	42	0.17	26.91	32.21	2
6882	6880	42	0.2	28.91	32.05	2
6883	6882	42	-0.02	-8.98	32.06	1
6885	6883	42	0.55	48.09	32.06	1
6886	14565	42	3.98	129.77	30.64	0.45
6887	6886	42	0.19	28.63	30.64	0.85
6888	6887	42	0.21	29.56	30.02	0.96
6889	6888	24	0.42	9.51	-0.12	1
6890	6889	24	0.36	8.73	0	0.05
69111	33534	8	4.5	1.66	0.21	0.26
69131	33527	15	0.97	2.68	1.12	0.48
69132	69131	16	3.51	6.04	1.12	0.31
69133	69132	16	0.7	2.69	1.12	0.45
69136	69133	16	0.71	2.71	1.12	0.44
69138	69136	16	0.7	2.7	1.12	0.45
69139	69138	16	1.45	5.97	1.11	0.37
69140	69139	16	0.84	4.55	1.11	0.34
69143	69140	16	0.74	4.26	1.11	0.35
69144	69143	16	0.74	4.25	1.07	0.37
69145	69144	15	0.63	3.33	1.07	0.39
69146	69145	16	0.57	3.74	1.07	0.37
69147	69146	15	0.83	3.81	1.07	0.36

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
69149	69147	15	0.71	3.51	1.07	0.38
69150	69149	15	0.54	3.07	1.07	0.41
69151	69150	15	1.72	5.47	1.07	0.32
69152	69151	15	0.68	3.43	1.07	0.39
6921	61946	42	0.2	29.09	18.71	1
6923	6921	42	0.13	23.1	18.87	0.64
6924	6923	42	0.09	19.15	18.87	0.7
6925	6924	42	0.09	19.29	18.71	0.74
6926	6925	42	0.09	19.18	18.51	0.75
6927	6926	42	0.01	6.87	18.51	0.77
6928	6927	42	0.15	25.54	18.51	0.77
6929	6933	30	0.64	21.17	17.16	0.76
6930	18452	42	0.17	26.69	17.35	0.72
6931	6930	42	0.48	45.11	17.36	0.66
6932	46789	30	0.81	23.89	17.16	0.7
6933	6932	30	0.48	18.44	17.16	0.73
6934	6929	30	0.45	17.76	17.16	0.75
6935	6934	30	0.56	19.87	17.16	0.76
6936	6935	30	0.49	18.47	16.78	0.85
6937	15872	30	0.63	21	16.78	0.77
6938	17375	30	0.55	19.6	16.78	0.71
6939	6938	30	0.66	21.47	16.62	0.9
6940	6942	30	0.62	20.9	16.62	0.69
6941	6940	30	0.78	23.41	16.62	0.77
6942	6939	30	0.65	21.32	16.62	0.95
6943	901676	27	0.59	19.93	16.56	0.98
6944	6943	27	0.53	18.87	16.57	0.75
6945	6944	27	0.41	16.62	16.53	0.8
6946	6945	27	0.61	20.33	16.53	0.8
6947	6946	24	0.62	14.95	16.41	2
6948	32394	24	0.23	9.21	16.05	2
6949	6948	24	0.78	16.75	16.05	1
6950	6949	24	0.61	14.83	16.05	2
6951	6950	24	0.71	16.01	8.09	1
6952	6951	24	0.34	11.09	8.12	1
6952	6950	24	0.09	5.72	10.03	2
6953	38525	24	0.49	13.33	13.97	2
6953	38525	15	0.72	4.61	4.33	1
6954	18586	24	0.47	13	15.44	2
6955	6954	24	0.45	12.8	15.42	2
6956	19873	24	0.43	12.41	11.98	1
6956	19873	15	0.54	4	3.27	1
6957	6956	24	0.3	10.33	11.52	2
6957	6956	15	0.01	0.64	3.53	2
6958	22009	24	2.58	30.51	0.19	1
6965	15269	18	0.7	7.4	1.56	0.32
6966	6965	18	0.5	6.25	1.56	0.35
6967	6966	15	0.58	4.14	0.61	0.41
6968	6967	15	0.38	3.35	0	0.05
6969	6968	15	0.7	4.56	0	0.05
6970	6969	15	0.77	4.77	0	0.05

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
6977	33451	18	0.81	6.09	2.22	0.42
6978	33451	18	0.97	6.7	1.44	0.32
6979	6978	18	0.98	6.74	1.44	0.32
6980	6979	18	1.59	8.55	1.44	0.29
6981	6980	15	1.46	5.04	1.44	0.51
6982	6981	15	1.47	5.06	1.44	0.38
6983	6982	16	0.95	4.84	0.76	0.27
6984	6983	15	0.79	3.71	0.76	0.31
6985	6984	15	0.99	4.15	0.76	0.29
6987	6985	15	1.01	4.2	0.76	0.3
6988	6987	15	1.15	4.47	0.44	0.23
6989	6988	15	0.98	4.13	0.44	0.55
6990	32475	15	0.83	3.8	0.44	0.23
6995	37990	12	5.27	5.29	0.83	0.29
70	52182	10	4.61	3.04	0.24	0.23
70349	16535	18	2.87	11.51	0	0.1
70350	70349	18	2.85	11.47	0	0.1
70351	70350	18	4.12	13.78	0	0.1
70352	70351	18	1.85	9.25	0	0.1
7049	6977	10	0.74	1.22	2.22	2
7050	7049	10	1.57	1.77	2.22	2
7051	7050	10	1.78	1.89	2.22	2
7052	7052M	8	2.36	1.2	1.08	1
7052M	7051	10	0	0	1.25	2
7061	6967	8	2.22	1.16	0.61	0.52
7062	7061	8	1.78	1.04	0.61	0.56
7063	7062	8	1.77	1.04	0.61	0.56
7064	7063	8	0.47	0.53	0.61	2
7065	7064	8	2.27	1.18	0.61	0.52
7071	33444	10	1.25	1.58	0	0.1
7071	33444	10	0.99	1.41	0.66	0.49
7080	7071	8	1.91	1.08	0.66	0.57
7081	7080	8	0.41	0.5	0.66	2
7082	7081	8	3.14	1.38	0.66	0.5
7083	7082	8	0.4	0.49	0.66	2
7084	7083	8	0.4	0.49	0.66	2
7085	7084	8	0.4	0.49	0.66	2
7086	33446	8	4.41	1.64	0.22	0.27
7087	900091	8	0.49	0.55	0.22	0.46
7088	7087	8	2.46	1.22	0.22	0.31
7089	7088	8	0.42	0.51	0.22	0.46
7090	7089	8	0.4	0.49	0.22	0.49
7092	33448	8	0.62	0.62	0.8	2
7093	7092	8	3.27	1.41	0.8	0.56
7094	7093	8	0.81	0.7	0.8	2
7095	7094	8	4.87	1.72	0.8	1
7096	7095	8	6.45	1.98	0.8	0.45
7097	7096	8	8.76	2.31	0.8	0.42
7098	7097	8	8.43	2.27	0.8	0.42
7099	7098	8	0.41	0.5	0.8	2
7100	7099	8	2.05	1.12	0.8	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7101	7100	8	1.48	0.95	0.8	0.72
7102	F1757	8	0.77	0.69	0.8	2
7106	20553	8	3.67	1.5	0.8	0.53
7107	7106	8	3.65	1.49	0.8	0.54
7108	7107	8	3.74	1.51	0.8	0.53
7113	6966	8	3.25	1.41	0.96	0.62
7114	63663	8	2.3	1.19	0.96	0.7
7115	63665	8	3.32	1.42	0.96	0.62
71157	64085	8	0.56	0.58	0.36	0.65
71158	71157	8	0.61	0.61	0.36	0.57
7116	7115	8	0.37	0.47	0.96	2
7117	7116	8	4.07	1.58	0.96	1
7118	7117	8	3.84	1.53	0.96	0.58
7119	7118	8	2.99	1.35	0.96	0.64
71194	38684	8	0.4	0.49	0.15	0.39
7120	7119	8	1.81	1.05	0.96	0.78
7122	13238	8	1.68	1.01	0.96	0.8
71229	71158	8	7.71	2.17	0.36	0.29
7123	7122	8	0.5	0.55	0.96	2
7124	7123	8	3.45	1.45	1.24	1
7125	7124	8	3.12	1.38	1.24	1
7126	7125	8	2.45	1.22	1.24	2
7127	7126	8	2.5	1.24	1.24	2
7128	7127	8	4.12	1.59	1.25	1
7132	7128	8	2.18	1.15	1.26	2
7133	7132	8	1.58	0.98	1.26	2
7134	7133	8	2.31	1.19	1.26	2
7135	7134	8	2.48	1.23	1.26	2
7136	7135	8	1.81	1.05	1.3	2
7137	7136	8	2.8	1.31	1.34	2
7161	7052M	8	4.47	1.65	0.21	1
7162	7161	8	7.62	2.16	0.22	0.27
7163	23057	8	0.26	0.4	0.22	0.53
7164	7163	8	1.6	0.99	0.22	0.34
7165	7052	8	3.7	1.5	1.09	1
7166	7165	8	3.45	1.45	1.11	0.66
7167	7166	8	0.41	0.5	1.11	2
7168	7167	8	2.46	1.23	1.11	1
7169	7168	8	3.36	1.43	1.12	1
7170	7169	8	3.71	1.5	1.13	0.66
7171	7170	8	2.34	1.19	1.13	0.82
7173	7171	8	3.06	1.37	1.14	0.74
7176	7173	8	2.75	1.29	1.14	0.73
7177	7176	8	4.51	1.66	1.14	0.64
7178	7051	8	4.11	1.58	0.98	1
7179	7178	8	1.64	1	0.98	0.97
7180	7179	8	0.4	0.5	0.98	2
7181	7180	8	0.41	0.5	0.98	2
7182	7181	8	1.23	0.87	0.98	2
7183	7182	8	2.33	1.19	1	1
7184	7183	8	1.87	1.07	1.03	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7185	7184	8	1.9	1.08	1.26	2
7188	7185	8	1.37	0.91	1.26	2
7252	6995	12	1.29	2.61	0.83	0.4
7253	7252	12	0.44	1.53	0.83	0.53
7254	7253	12	0.36	0.89	0.83	0.76
7255	7254	12	0.43	0.98	0.83	0.77
7256	7255	12	0.32	0.84	0.83	0.77
7257	7270	8	0.81	0.7	0	0.1
7258	7257	8	1.76	1.04	0	0.1
7259	7258	8	1.2	0.86	0	0.1
7260	7259	8	0.39	0.49	0	0.1
7261	7260	8	0.36	0.47	0	0.1
7262	7261	8	0.32	0.44	0	0.1
7263	7262	8	0.39	0.49	0	0.1
7264	7263	8	0.38	0.48	0	0.1
7265	7264	8	1.36	0.91	0	0.1
7266	7256	8	0.8	0.7	0	0.25
7270	7266	8	0.85	0.72	0	0.1
7287	7265	8	3.97	1.56	0	0.1
7288	7287	8	3.37	1.44	0	0.1
7289	7256	10	0.54	0.68	0.83	2
7295	61948	24	1.62	18.62	5.98	0.41
7296	7295	24	0.38	9	5.98	0.59
7297	7296	24	0.76	12.77	5.98	0.55
7298	7297	24	0.43	9.58	5.98	0.57
7300	55251	24	0.65	11.77	5.06	0.46
7301	7300	24	2	20.7	5.06	0.35
7302	7301	24	2.4	22.65	5.06	0.34
7303	7302	21	2.77	17.06	5.06	0.39
7305	7303	21	2.09	14.82	5.06	0.42
7308	7305	21	1.49	12.52	5.06	0.45
7309	19143	21	0.8	9.14	2.96	0.4
7311	18322	21	1.12	7.06	2.96	0.47
7314	18241	21	0.35	3.91	2.96	0.63
7315	22223	21	0.49	4.64	2.39	0.48
7316	7315	21	0.96	10.03	2.39	0.36
7317	7316	21	0.67	8.38	1.97	0.34
7318	7317	21	0.55	7.59	1.97	0.35
7319	7318	21	0.91	9.8	1.97	0.33
7320	7319	21	1.27	11.54	1.97	0.3
7321	7320	18	1.35	7.9	1.81	0.34
7322	7321	18	1.16	7.33	1.81	0.35
7323	7322	18	0.91	6.48	1.81	0.36
7324	7323	18	1.31	7.79	1.81	0.35
7325	52651	18	1.02	6.84	0.62	0.35
7326	7325	18	0.81	6.13	0.62	0.22
7327	7326	18	0.75	5.89	0.62	0.22
7328	7327	18	0.74	5.83	0.62	0.22
7329	7328	15	1.56	5.22	0.08	0.13
7330	7329	15	0.8	3.73	0.08	0.11
7332	7316	10	1.77	1.89	0.48	0.46

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7333	7332	10	3.44	2.63	0.48	0.3
7334	16604	10	3.11	2.5	0.17	0.2
7335	7334	10	3.77	2.75	0.17	0.2
742	754	8	1.89	1.07	0	0.1
754	902164	8	6.11	1.93	0	0.1
8195	37032	12	0.24	1.14	0.6	0.5
900091	7086	8	0.5	0.55	0.22	0.45
901295	901296	8	1.49	0.95	0.56	0.62
901296	901297	8	0.61	0.61	0.56	0.76
901297	901298	8	0.59	0.6	0.56	0.78
901298	901299	8	1.79	1.05	0.56	0.53
901299	52524	8	8.72	2.31	0.56	0.87
901390	37990	15	11.09	9.04	0.97	0.24
901391	901390	16	0.36	1.95	0.97	0.47
901676	15751	27	0.52	18.7	16.62	0.97
901871	52661	12	2.46	3.61	0.51	0.27
901892	901893	6	5.72	1.13	0.26	1
901893	16595	8	6.03	2.49	0.26	0.24
902012	6953	24	0.34	11.03	13.29	2
902012	6953	15	0.32	3.05	3.6	2
902054	43825	15	1.2	4.58	0.23	0.18
902164	902165	8	6.32	1.96	0	0.1
902165	52657	8	6.21	1.95	0	0.1
9039	16038	18	0.92	6.5	0.87	0.34
9040	17949	15	1.35	4.86	0.63	0.26
9041	17969	15	1.15	4.48	0.33	0.25
9042	9041	15	1.05	4.28	0.2	0.18
9044	14317	15	4.1	8.45	0	0.1
9045	9044	15	3.35	7.65	0	0.1
9046	9045	15	0.08	1.16	0	0.05
9047	9046	21	0.25	5.11	0	0.05
9048	10918	21	0.48	7.06	0	0.05
9049	9048	21	2.33	15.64	0	0.1
break 1	break12	6	-0.12	-0.12	0.19	1
Break 4	45855	6	-1.62	-0.49	0.35	1
Break11	41040	6	-2.37	-0.6	0.19	1
break12	Break11	6	-0.32	-0.2	0.19	1
break2	46749	6	0.06	0.08	0.41	2
C445	7102	8	0.21	0.36	0.8	2
F1757	7101	8	0.8	0.7	0.8	2
F5313-missing	2403	8	2.4	1.57	0.26	0.29
NS1044	48253	6	-6.41	-1.03	0.4	1
PVT302	PVT303	8	0.48	0.54	1.06	2
PVT303	29644	8	0.9	0.74	1.06	2
PVT472	PVT473	8	1.39	0.92	0.06	0.19
PVT473	PVT474	8	5.93	1.9	0.06	0.15
PVT474	PVT475	8	8.6	2.29	0.06	0.14
PVT475	PVT476	8	0.61	0.61	0.06	0.22
PVT476	PVT477	8	0.6	0.6	0.06	0.22
PVT477	PVT478	8	11.33	2.63	0.06	0.14
PVT478	32260	8	15.2	3.05	0.06	0.14

Jones Falls: Wet Weather Capacity Analysis - 2 year, 6-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
weir15	33295	24	0.31	8.18	0	0.05

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
10918	13409	21	0.15	3.97	0.00	0.05
11	70352	24	1.63	18.68	0.00	0.10
11897	7052	8	3.72	1.51	-0.08	1.00
12	11	24	0.40	9.29	0.00	0.05
13238	7120	8	1.83	1.06	0.96	0.77
13409	9047	21	-0.19	-4.47	0.00	0.05
13939	20805	12	11.76	7.90	0.17	0.62
14317	15315	15	2.45	6.54	0.00	0.10
14454	19876	12	5.12	5.21	1.87	1.00
14455	14454	12	1.46	2.78	1.87	0.62
14456	14455	12	1.59	2.91	1.87	0.59
14458	14456	12	1.02	2.32	1.68	0.64
14546	7188	8	0.57	0.59	1.41	2.00
14547	14546	8	2.87	1.32	1.52	2.00
14548	14547	8	4.80	1.71	1.71	2.00
14565	6885	42	2.14	77.24	37.63	1.00
14937	5134	10	0.55	1.05	0.46	0.47
150	901871	16	3.05	8.66	0.66	0.21
1507	16581	10	14.78	5.45	0.81	0.28
1508	1507	8	0.99	0.78	0.58	0.97
15269	42234	18	1.37	10.33	2.65	1.00
15270	30591	15	1.38	4.91	1.17	0.35
15270	9042	15	1.89	5.74	0.51	0.22
15271	22538	15	2.67	6.83	0.51	0.50
15315	30592	15	2.39	6.45	0.00	0.20
15751	40488	27	0.66	21.21	18.03	1.00
15871	6936	30	0.44	17.56	17.99	2.00
15872	15871	30	0.60	20.58	17.99	1.00
1593	29862	12	0.04	0.43	0.97	2.00
16036	42233	18	0.94	6.58	3.39	0.51
16037	16036	18	0.97	6.69	2.86	0.46
16038	16037	18	1.68	8.81	1.69	0.56
1609	1593	10	0.33	0.81	0.00	0.29
1610	1609	10	0.50	1.01	0.00	0.08
1611	1610	10	0.77	1.24	0.00	0.08
1612	1611	10	1.74	1.87	0.00	0.10
1613	1612	10	0.47	0.97	0.00	0.08
1614	1613	10	0.39	0.88	0.00	0.08
16379	16379N	42	0.16	20.88	39.70	2.00
16379N	6877	42	0.16	21.44	39.70	2.00
16401	C445	8	0.41	0.50	0.81	2.00
16402	16401	8	0.40	0.49	0.85	2.00
16403	16402	8	2.26	1.17	1.11	1.00

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
16404	16403	8	1.56	0.97	1.40	2.00
16535	7330	15	2.02	5.93	0.13	0.14
16536	11897	8	4.15	1.59	0.00	0.10
16581	7328	10	4.34	2.95	0.81	0.37
16595	7333	8	4.68	1.69	0.41	0.35
16596	7333	10	0.50	1.00	0.37	0.43
16604	7320	10	3.39	2.61	0.29	0.71
16742	6982	8	2.42	1.22	0.75	0.66
16743	16742	8	0.65	0.63	0.75	2.00
16744	16743	8	1.02	0.79	0.75	1.00
16745	16744	8	1.07	0.81	0.75	1.00
16746	33093	8	1.00	0.78	0.75	0.91
16747	16746	8	0.72	0.66	0.75	2.00
16748	16747	8	1.03	0.79	0.75	0.95
16749	16748	8	6.64	2.01	0.75	0.74
16750	16750M	8	1.91	1.08	0.75	0.66
16750M	16749	8	1.86	1.06	0.75	0.64
16751	16750	8	1.04	0.80	0.75	0.80
16752	16751	8	0.49	0.55	0.75	2.00
16753	16752	8	0.49	0.55	0.75	2.00
16754	16753	8	0.40	0.49	0.80	2.00
17008	33535	8	5.13	1.77	0.26	0.28
17009	17008	8	4.03	1.57	0.26	0.29
17037	17009	8	5.23	1.79	0.26	0.28
17041	17037	8	5.23	1.79	0.26	0.28
17297	17764	12	1.61	2.92	1.46	0.51
17375	45753	30	2.07	38.12	18.00	1.00
17479	42227	8	1.02	0.79	1.00	2.00
17480	17479	8	1.97	1.10	1.01	0.78
17481	17480	8	5.66	1.86	1.01	0.68
17482	17481	8	6.53	2.00	1.01	0.51
17483	17482	8	4.37	1.63	1.01	0.58
17484	17483	8	1.94	1.09	1.02	0.78
17747	18202	12	42.19	14.96	1.82	1.00
17748	17747	12	1.61	2.92	1.82	0.58
17749	46796	12	5.67	5.48	1.82	0.41
17750	17749	12	0.42	1.49	1.82	2.00
17751	17750	12	0.36	1.38	1.82	2.00
17752	34447	12	0.31	1.28	1.54	2.00
17753	17752	12	0.43	1.51	1.54	2.00
17754	17753	12	0.43	1.51	1.55	2.00
17755	17754	12	0.37	1.40	1.58	2.00
17756	17755	12	0.23	1.10	1.32	2.00

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
17757	17756	12	0.68	1.90	1.35	1.00
17758	17757	12	4.60	4.94	1.38	1.00
17759	17758	12	0.30	1.27	1.39	0.90
17760	17759	12	3.42	4.26	1.42	0.41
17761	19657	12	5.83	5.56	1.42	0.36
17762	17761	12	3.57	4.35	1.42	0.41
17763	19910	12	1.95	3.22	1.44	0.49
17764	17763	12	1.44	2.76	1.44	0.52
17765	48242	12	5.89	5.59	0.68	0.31
17766	17765	12	1.52	2.84	0.68	0.35
17767	17766	12	-0.07	-0.63	0.68	0.73
17768	17767	12	1.15	2.47	0.68	0.66
17769	17768	12	4.01	4.61	0.68	0.37
17770	17769	12	3.46	4.29	0.68	0.29
17771	17770	12	4.80	5.05	0.68	0.27
17772	17771	12	4.42	4.84	0.68	0.27
17773	17772	12	1.43	2.76	0.68	0.35
17774	17773	12	8.83	6.84	0.68	0.23
17775	17774	12	0.89	2.18	0.68	0.39
17949	9039	15	1.61	5.30	1.25	0.35
17969	9040	15	0.86	3.87	1.25	0.40
18	56841	18	-0.57	-5.14	0.90	0.63
18063	17775	12	-0.45	-1.55	0.68	1.00
18064	18063	12	0.76	2.00	0.68	0.97
18202	6885	12	0.61	1.79	1.81	1.00
18241	7311	21	1.20	7.28	5.00	0.63
18297	6958	8	10.17	2.49	0.39	1.00
18298	18297	8	10.97	2.59	0.38	1.00
18298A	18298	8	0.30	0.43	0.38	0.70
18299	18298A	8	0.35	0.46	0.38	0.69
18300	18299	8	0.39	0.49	0.39	0.69
18301	18300	8	2.16	1.15	0.39	0.54
18302	18301	8	4.20	1.60	0.39	0.35
18303	18302	8	6.83	2.04	0.39	0.31
18321	7309	21	0.87	9.56	5.00	0.51
18322	18321	21	1.64	13.13	5.00	0.46
18363	7256	8	0.40	0.49	-0.01	0.87
18364	18363	8	0.40	0.49	0.00	0.10
18452	6928	42	0.01	7.10	20.10	2.00
18453	18452	12	1.43	2.75	1.78	1.00
18454	18453	12	2.98	5.17	1.78	1.00
18455	20314	12	2.55	4.78	1.78	0.43
18456	45724	12	1.96	4.19	1.44	0.42

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
18457	18456	12	3.74	5.79	1.44	0.35
18458	18457	12	3.14	5.30	1.44	0.37
18463	18458	10	1.59	2.32	1.23	0.53
18478	18463	8	2.51	1.61	1.23	1.00
18479	18478	8	3.06	1.37	1.23	0.76
18480	18479	8	2.00	1.11	1.23	2.00
18481	18480	8	2.95	1.34	1.23	1.00
18481A	18481	8	3.21	1.40	1.23	1.00
18482	18481A	8	2.77	1.30	1.24	0.85
18483	18482	8	3.23	1.40	1.24	1.00
18484	18483	8	3.01	1.36	1.24	1.00
18485	18484	8	3.63	1.49	1.27	0.74
18486	18485	8	2.66	1.27	1.31	2.00
18496	901391	15	0.24	1.34	1.83	2.00
18497	19001	8	0.38	0.48	0.26	0.53
18497A	18497	8	0.97	0.77	0.26	0.42
18498	18497A	8	0.97	0.77	0.26	0.42
18517	18486	8	3.54	1.47	1.24	0.72
18552	18496	15	0.43	2.73	1.58	1.00
18553	18552	15	0.34	2.45	1.58	0.58
18554	39224	15	0.49	2.91	1.49	0.63
18555	20127	15	0.52	3	1.49	0.51
18586	902012	24	0.32	10.73	13.68	2
18586	902012	15	1.43	6.49	4.78	1
18587	18586	8	2	1.11	0.31	1
18588	18587	8	0.61	0.61	0.32	1
18589	18588	8	0.6	0.6	0.32	1
18590	18589	8	1.19	0.85	0.32	1
18591	18590	8	0.61	0.61	0.32	0.53
18592	18591	8	0.61	0.61	0.32	0.53
18593	18592	8	0.6	0.6	0.32	0.54
18594	18593	8	1.5	0.96	0.32	0.42
18595	18594	8	2	1.1	0.32	0.38
18596	18595	8	2	1.11	0.32	0.38
19	18	15	0.25	2.08	0.87	0.45
19001	18496	8	0.4	0.5	0.25	1
19141	7308	21	1.24	11.4	8.29	0.66
19142	34175	21	1.36	11.95	2.51	0.53
19143	22225	21	0.18	4.35	2.51	0.49
19143	59276	21	3.58	19.39	2.49	0.53
19657	17760	12	7.02	6.1	1.42	0.35
19706	6947	24	0.72	16.1	17.96	2
19707	19706	8	0.39	0.49	0.34	1
19711	19808	8	0.4	0.49	0.27	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
19712	19711	8	0.6	0.61	0.27	1
19714	19712	8	0.6	0.61	0.27	1
19715	19714	8	0.4	0.49	0.27	0.65
19716	19715	8	0.6	0.6	0.27	0.49
19717	19716	8	0.6	0.6	0.27	0.49
19808	19707	8	0.4	0.49	0.32	1
19873	6955	24	0.36	11.35	16.87	2
19874	19873	12	1.75	3.96	1.97	1
19875	19874	12	0.63	2.38	1.93	1
19876	19875	12	0.56	1.73	1.87	2
19910	17762	12	2.22	3.43	1.43	0.46
20	19	12	-0.03	-0.42	0.03	0.62
20126	18553	15	0.59	3.22	1.59	0.51
20127	18554	15	0.3	2.28	1.49	0.57
20244	7289	8	0.41	0.5	0.83	2
20246	3	8	0.38	0.48	0.85	2
20247	20246	8	0.4	0.49	1.02	2
20248	20247	8	2.5	1.24	1.02	1
20249	20248	8	3.78	1.52	1.02	1
20250	20249	8	4.74	1.7	1.02	1
20314	18454	12	2.67	4.89	1.78	0.43
20553	37013	27	-0.69	-21.67	9.41	0.73
20753	21328	30	0.11	8.76	9.49	2
20754	20753	30	0.01	1.77	9.48	2
20755	20754	30	0.26	8.76	9.08	2
20756	20755	30	0.11	5.78	8.86	2
20757	20756	30	0.08	4.99	8.85	2
20758	20757	30	0.12	6	8.84	2
20759	20758	30	0.1	5.53	8.83	2
20760	20759	30	0.11	5.75	8.83	2
20761	20760	27	0.2	8.89	8.82	1
20762	21329	27	0.19	8.72	7.51	1
20763	20762	27	0.31	11.21	7.5	1
20764	20763	27	0.18	8.55	7.17	1
20765	20764	27	0.17	8.31	6.63	1
20766	20765	27	0.18	8.57	6.74	1
20767	20766	27	0.32	11.25	6.88	1
20768	20767	18	1.05	6.95	3.73	1
20769	20768	18	0.99	6.76	3.75	1
20770	20769	18	0.69	5.65	3.78	0.6
20771	20770	18	0.74	3.8	3.78	0.91
20772	20771	15	1.19	4.55	3.75	0.92
20773	20772	15	1.18	4.54	3.69	0.7
20774	20773	15	1.01	4.19	3.69	0.74
20775	20774	15	1.21	4.6	3.69	0.7
20776	20775	15	1.81	5.61	3.69	0.64
20777	30726	15	1.87	5.71	3.61	0.69
20778	57146	15	1.06	4.29	3.21	0.65
20779	20778	15	1.52	5.14	3.21	0.58
20780	20779	15	1.36	4.87	3.12	0.59
20781	20780	15	1.15	4.47	3.12	0.63

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
20782	41252	15	0.89	2.55	3.08	2
20783	56667	15	1.63	3.47	2.95	1
20793	69152	16	1.17	5.36	1.63	0.4
20794	36990	15	2	5.91	1.41	0.36
20795	37148	15	2.33	6.37	1.41	0.56
20796	20795	12	1.94	3.21	1.38	0.47
20797	20796	12	1.88	3.16	1.38	0.48
20798	20797	12	2.3	3.49	1.38	0.45
20799	20798	12	2.41	3.58	1.38	0.44
20803	20799	12	2.54	3.67	1.13	0.41
20804	20803	12	5.66	5.48	1.13	0.33
20805	20804	12	0.85	2.12	1.13	0.52
20806	20805	12	3.74	4.45	0.97	0.34
20807	20806	12	1.16	2.48	0.97	0.44
20808	20807	12	0.42	1.49	0.97	0.59
20809	20808	12	0.73	1.97	0.97	0.69
20810	20809	12	0.48	1.6	0.97	0.57
20811	20810	12	0.59	1.77	0.97	0.53
20812	20811	12	0.7	1.93	0.97	0.52
21	20	12	2.61	3.72	0.03	0.59
21042	41529	15	0.37	2.52	1.49	0.55
21043	21042	15	0.36	2.51	1.49	0.55
21044	21043	8	1.01	0.78	0.8	2
21045	21043	15	0.94	4.05	0.63	0.44
21046	21045	15	0.11	1.39	0.63	0.42
21047	21044	8	1.01	0.78	0.11	1
21048	21047	8	0.83	0.71	0.11	0.28
21049	21048	8	0.79	0.7	0.11	0.29
21050	21049	8	1.86	1.07	0.11	0.24
21051	21050	8	2.21	1.16	0.11	0.23
21052	21051	8	3	1.35	0.11	0.22
21053	21049	8	0.98	0.77	0	0.14
21054	21043	8	1.94	1.09	0.07	0.2
21055	21054	8	1.78	1.04	0.07	0.21
21056	21055	8	1.76	1.04	0.07	0.21
21057	21056	8	1.77	1.04	0.07	0.21
21058	21057	8	1.73	1.03	0.07	0.21
21059	21044	8	1.02	0.79	0.71	1
21060	21059	8	1	0.78	0.71	1
21061	21060	8	3.02	1.36	0.72	0.65
21062	21061	8	1.02	0.79	0.72	0.78
21063	21062	8	1.02	0.79	0.72	0.78
21064	21063	8	0.86	0.72	0.59	0.71
21065	21064	8	0.93	0.75	0.59	0.69
21066	21065	8	0.88	0.73	0.6	0.7
21067	21066	8	0.9	0.74	0.6	0.7
21068	21067	8	0.99	0.78	0.11	0.27
21071	21067	8	0.88	0.73	0.5	0.67
21328	6888	30	0.32	14.98	9.49	1
21329	20761	27	0.19	8.83	7.66	1
21589	18596	8	1.53	0.97	0.33	0.42

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
21590	21589	8	0.79	0.69	0.14	0.32
21591	21590	8	2.02	1.11	0.14	0.26
21592	21591	8	2.05	1.12	0.14	0.26
21593	21592	8	2	1.11	0.14	0.26
21594	21593	8	3.35	1.43	0.14	0.23
21595	21594	8	6.07	1.92	0.14	0.21
21620	21621	8	0.61	0.61	0.13	1
21621	52550	8	2.69	1.28	0.13	1
21622	52551	8	2.76	1.3	1.58	2
21623	21622	8	0.93	0.75	0.73	1
21624	21623	8	2.02	1.11	0.73	1
21625	21624	8	2.38	1.21	0.73	0.57
21626	21625	8	2.91	1.33	0.73	0.54
21627	21626	8	0.6	0.6	0.73	2
21628	21627	8	0.31	0.44	0.73	2
21629	21628	8	0.39	0.49	0.73	2
21630	21629	8	0.4	0.49	0.73	2
21631	21630	8	0.4	0.5	0.73	2
21634	21631	8	2.99	1.35	0.73	1
21635	21634	8	2.65	1.27	0.73	0.56
21636	21635	8	5.84	1.89	0.73	0.44
21638	21636	8	0.99	0.78	0.73	0.78
21641	21622	8	1.48	0.95	0.86	1
21642	21641	8	0.61	0.61	0.86	2
21643	21642	8	0.59	0.6	0.87	2
21645	21643	8	0.61	0.61	0.88	2
21646	21645	8	0.59	0.6	0.89	2
21647	21646	8	1.58	0.98	0.91	1
21648	21647	8	3.99	1.56	0.91	1
21649	21648	8	6.08	1.93	0.92	1
21651	21649	8	0.59	0.6	0.92	2
21652	21651	8	0.4	0.49	0.82	2
21653	21652	8	0.41	0.5	0.58	2
21654	21653	8	0.4	0.49	0.59	2
21655	21654	8	0.95	0.76	0.74	1
21805	7108	8	2.53	1.24	0.95	0.66
21806	21805	8	0.59	0.6	0.95	2
21807	21806	8	0.61	0.61	0.95	2
22	19	15	0.41	2.66	0.84	0.45
22009	6957	24	0.47	13.03	15.39	2
22010	22009	24	0.4	11.99	15.2	2
22011	22010	24	0.6	14.74	15.25	2
22012	22011	24	0.6	14.71	15.33	2
22013	22012	24	0.63	15.07	17.29	2
22067	19717	8	2.62	1.27	0.27	0.34
22090	21620	8	0.61	0.61	0.13	0.34
22091	22090	8	0.6	0.6	0.13	0.34
22092	22091	8	1.06	0.8	0.13	0.29
22093	22092	8	1.44	0.94	0.13	0.28
22094	22093	8	1.82	1.05	0.13	0.26
22097	22094	8	3.89	1.54	0.13	0.22

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
22098	22097	8	4.15	1.59	0.13	0.22
22099	22098	8	1.41	0.93	0.13	0.28
22100	22099	8	0.57	0.59	0.13	0.34
22101	22100	8	0.59	0.6	0.14	0.34
22222	7314	21	0.83	6.07	3.77	0.98
22223	22222	21	0.76	5.79	3.76	0.75
22225	19142	21	0.41	6.53	2.51	0.43
22454	6921	12	0.79	1.33	0.17	1
22455	22454	12	0.4	0.95	0.13	0.26
22456	22455	12	0.99	1.49	0.13	0.29
22457	22456	12	0.46	1.01	0.13	0.25
22458	45585	12	1.23	1.66	0.13	0.21
22462	22458	12	1.24	1.67	0.13	0.21
22463	22462	12	1.98	3.24	0.13	0.17
22463A	22463	12	1.66	2.96	0.13	0.17
22464	22463A	12	1.58	2.89	0.13	0.17
22465	45592	12	0.6	1.79	0.13	0.2
22466	22465	12	0.42	1.49	0.13	0.21
22482	45567	12	2	3.26	0.13	0.17
22489	22482	12	2.71	3.79	0.13	0.16
22490	22489	12	2.36	3.54	0.13	0.16
22538	15270	15	3.59	7.91	1.69	0.33
2254	742	10	0.44	0.94	0	0.08
2255	2254	10	0.79	1.26	0	0.08
23	22	15	1.19	4.55	0.85	0.39
23057	7162	8	0.51	0.56	0.35	0.58
23775	18517	8	6.07	1.93	0.67	0.42
23776	23775	8	4.24	1.61	0.67	0.46
23777	23776	8	1.12	0.83	0.67	0.7
23778	23777	8	0.6	0.61	0.67	2
23779	23778	8	0.68	0.64	0.67	2
2402	901892	6	3.29	0.86	0.41	1
2403	2402	8	2.49	1.6	0.41	0.38
2404	F5313-missing	8	3.52	1.9	0.41	0.33
2405	2404	8	0.35	0.6	0.33	0.54
2416	2404	8	0.4	0.64	0.09	0.34
27	23	15	1.23	4.64	0.85	0.31
2900	7335	10	15.51	5.58	0.29	0.18
2936	1508	10	0.52	1.02	0.49	0.5
2937	2936	10	0.52	1.02	0.49	0.5
2938	2937	10	0.44	0.94	0.49	0.57
2939	2938	10	0.61	1.1	0.49	0.51
2940	2939	10	2.82	2.38	0.49	0.32
2941	2940	10	1.91	1.96	0.49	0.36
2942	2941	10	0.35	0.84	0.49	0.56
2943	4971	10	1.46	1.71	0.49	0.38
2945	2943	10	0.93	1.37	0.49	0.42
2946	2945	10	1.81	1.91	0.49	0.36
2947	2946	10	1.93	1.97	0.49	0.35
29644	37991	8	0.5	0.55	1.07	2
29645	30342	15	0.58	3.18	0	0.05

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
29645	33471	30	0.65	21.3	0	0.05
29861	20812	12	0.05	0.51	0.97	0.62
29862	29861	10	0.31	0.78	0.97	2
29873	20799	10	4.86	3.12	0.26	0.22
3	20244	8	0.39	0.49	0.83	2
30153	21046	8	0.38	0.48	0.63	2
30155	30153	8	0.44	0.52	0.63	2
30156	30155	8	0.88	0.73	0.63	1
30157	30156	8	0.6	0.6	0.64	2
30158	30157	8	0.61	0.61	0.64	2
30159	30158	8	0.55	0.58	0.64	2
30342	37991	30	0.41	16.87	0	0.17
30588	16037	18	0.62	5.35	1.17	0.33
30588A	30588	15	1.15	4.48	1.17	0.36
30589	30588A	15	1.72	5.48	1.17	0.33
30590	30589	15	1.19	4.56	1.17	0.36
30590A	30590	15	0.79	3.71	1.17	0.39
30590B	30590A	15	1.88	5.72	1.17	0.37
30591	30590B	15	0.77	3.67	1.17	0.39
30592	15271	15	2.04	5.96	0.51	0.22
30593	30592	15	-2.94	-7.17	0.51	0.56
30594	30593	15	2.24	6.25	0.51	0.48
30595	30594	15	2.79	6.97	0	0.1
30596	30595	15	3.59	7.91	0	0.1
30597	30596	15	3.01	7.25	0	0.1
30598	30597	15	0.88	3.91	0	0.05
30616	22067	8	0.42	0.51	0.27	0.53
30617	30616	8	2.76	1.3	0.27	0.33
30618	30617	8	3.89	1.54	0.27	0.33
30619	30618	8	3.8	1.52	0.27	0.3
30620	30619	8	3.53	1.47	0.27	0.31
30621	30620	8	2.89	1.33	0.27	0.32
30622	30621	8	0.92	0.75	0.27	0.43
30623	30622	8	0.92	0.75	0.27	0.43
30624	30623	8	9.81	2.45	0.27	0.25
30625	30624	8	5.85	1.89	0.27	0.28
30626	30625	8	5.07	1.76	0.27	0.28
30627	30626	8	1.53	0.97	0.27	0.37
30628	30627	8	2.23	1.17	0.27	0.35
30726	20776	15	1.01	4.2	3.61	0.72
30727	53271	8	2	1.1	0.57	1
30953	31001	8	0.43	0.51	0.5	0.8
30957	30953	8	0.61	0.61	0.5	0.73
30958	59113	8	4.84	1.72	0.83	1
30959	30958	8	1.4	0.93	0.83	0.77
30960	30959	8	1.4	0.92	0.83	1
30963	30960	8	2.86	1.32	0.32	1
30968	65375	18	1.6	8.6	0	0.28
31001	21071	8	0.47	0.54	0.5	0.76
31151	30159	8	0.61	0.61	0.64	2
31153	31151	8	1.36	0.91	0.64	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
31154	31153	8	1.7	1.02	0.65	0.59
31155	31154	8	1.7	1.02	0.65	0.59
31828	21655	8	2.04	1.12	0.89	1
31829	31828	8	1	0.78	0.89	2
31830	31829	8	1.39	0.92	0.91	1
31831	31830	8	1.19	0.85	0.92	2
31832	31831	8	1.29	0.89	0.95	2
31833	31832	8	1.98	1.1	1.05	1
31834	31833	8	4.03	1.57	1.05	1
31835	31834	8	1.04	0.8	0.78	0.96
32254	33532	12	0.16	0.6	0.99	2
32257	32254	12	0.47	1.03	0.99	0.9
32258	32257	12	0.37	0.91	0.99	2
32259	32258	12	0.58	1.75	1	1
32260	32259	12	-0.01	-0.19	1	0.98
32261	32260	12	1.04	2.35	0.91	0.67
32262	32261	12	1.25	2.57	0.91	0.43
32263	32262	12	0.78	2.03	0.91	0.48
32394	19706	24	1.22	20.96	17.76	1
32395	32394	8	1.59	0.98	0.18	1
32396	32395	8	2.1	1.13	0.19	0.29
32397	32396	8	4.36	1.63	0.19	0.25
32475	6989	15	0.68	3.44	0.69	0.3
33093	16745	8	0.95	0.76	0.75	0.92
33295	12	24	0.51	10.44	0	0.05
33296	52660	18	1.12	7.17	0.9	0.26
33437	42234	30	0.71	29	11.74	1
33438	33437	30	0.95	33.56	11.74	1
33439	33438	27	-0.83	-23.73	12	1
33440	33439	27	0.33	15.04	12.01	1
33442	38773	27	0.79	23.12	11.26	1
33443	33442	27	0.69	21.67	11.37	1
33444	6970	10	-0.49	-1.29	0	0.08
33444	33443	27	0.73	22.2	11.44	0.75
33445	33444	27	0.8	23.23	10.64	0.48
33446	33445	27	1.08	27.09	10.64	0.45
33447	33446	27	1.52	32.04	10.38	0.41
33448	33447	27	1.76	34.51	10.38	0.39
33451	37014	27	0.53	14.56	8.46	0.55
33452	33451	27	0.78	17.72	4.24	0.53
33453	33452	27	0.96	19.63	4.24	0.32
33454	33453	27	1.03	20.32	4.24	0.33
33455	33454	27	1.42	23.87	4.25	0.3
33456	33455	27	1.46	24.22	4.25	0.3
33457	33456	27	1.5	24.53	4.25	0.3
33458	33457	27	3.25	36.06	4.25	0.25
33459	33458	27	0.47	13.75	4.25	0.38
33460	33459	27	1.03	20.33	4.25	0.33
33461	33460	27	0.76	17.5	4.25	0.34
33462	33461	27	0.78	17.65	4.25	0.34
33463	33462	27	0.79	17.85	4.25	0.34

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
33464	33463	27	0.73	17.12	4.25	0.35
33465	33464	27	0.74	17.18	4.25	0.34
33466	33465	27	0.66	16.23	4.25	0.35
33470	30342	30	0.48	18.45	0	0.08
33471	33470	30	0.6	20.51	0	0.05
33527	20783	15	1.12	2.88	2.95	2
33528	33527	12	1.04	1.53	1.25	1
33529	33528	12	0.67	1.23	1.25	0.8
33530	33529	10	2.95	1.58	1.25	0.98
33531	33530	10	3.61	1.75	1.25	0.64
33532	33531	10	3.77	1.79	1.25	0.63
33533	33532	8	5.87	1.89	0.27	0.8
33534	33533	8	4.62	1.68	0.26	0.29
33535	57364	8	5.24	1.79	0.26	0.28
33707	20761	12	0.07	0.62	1.53	2
33708	33707	12	2.1	3.34	1.53	1
33709	33708	12	2.7	3.79	1.53	1
33710	33709	12	2.28	3.48	1.47	0.6
33711	33710	12	2.22	3.43	1.47	0.47
33989	32397	8	4.08	1.58	0.19	0.25
33990	33989	8	4.08	1.58	0.19	0.25
33991	33990	8	7.13	2.09	0.19	0.22
33992	33991	8	2.3	1.18	0.19	0.29
33993	33992	8	0.6	0.61	0.19	0.39
33994	33993	8	0.96	0.76	0.19	0.35
33995	33994	8	3.61	1.48	0.19	0.26
33996	33995	8	2.8	1.31	0.19	0.27
33997	33996	8	0.59	0.6	0.19	0.4
33998	33997	8	0.6	0.61	0.19	0.39
33999	33998	8	2.39	1.21	0.19	0.28
34000	33999	8	2.37	1.2	0.19	0.28
34175	19141	21	1.14	10.96	6.05	0.65
34176	59274	12	4.17	6.12	1.06	0.3
34177	34176	12	5.25	6.86	1.06	0.28
34178	34177	12	2.31	4.55	1.06	0.38
34179	34178	12	1.84	4.06	1.06	0.36
34180	34179	12	1.87	3.15	0.11	0.24
34209	31835	8	0.6	0.6	0.78	2
34210	34209	8	0.59	0.6	0.78	2
34211	34210	8	0.6	0.61	0.8	2
34212	34211	8	0.65	0.63	0.87	2
34213	34212	8	2.36	1.2	1.07	1
34214	34213	8	3.17	1.39	1.07	1
34215	34214	8	3.16	1.39	1.08	0.96
34216	34215	8	3.13	1.38	1.08	0.68
34217	34216	8	4.46	1.65	1.08	0.6
34218	34217	8	1.96	1.09	0.47	0.49
34381	20767	24	0.2	6.52	3.4	1
34382	34381	24	0.24	7.1	3.4	1
34383	34382	24	0.36	8.82	3.44	1
34384	34383	24	0.27	4.98	1.84	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
34385	34384	24	0.3	5.19	1.76	1
34447	17751	12	0.44	1.53	1.82	2
34836	33711	12	0.46	4.08	1.47	0.42
35527	21652	8	1.94	1.09	0.36	0.41
35528	35527	8	1.88	1.07	0.36	0.42
35529	35528	8	3.17	1.39	0.36	0.42
35530	35529	8	3.4	1.44	0.36	0.36
35531	35530	8	4.22	1.6	0.36	0.34
35532	35531	8	4.26	1.61	0.36	0.34
35533	35532	8	4.45	1.65	0.36	0.33
35534	35533	8	4.81	1.71	0.36	0.33
35535	35534	8	4.48	1.65	0.36	0.33
35536	35535	8	4.59	1.67	0.36	0.33
35537	35536	8	4.4	1.64	0.36	0.34
35538	35537	8	4.31	1.62	0.36	0.34
35539	35538	8	2.91	1.33	0.36	0.37
35551	16404	8	7.51	2.14	1.41	1
36911	34383	18	1.1	7.13	1.74	0.99
36912	36911	18	1.63	8.66	1.75	0.32
36913	36912	18	0.84	6.21	1.75	0.36
36914	36913	18	1.57	8.51	1.74	0.32
36915	36914	18	1.99	9.59	1.74	0.3
36916	36915	18	1.73	8.92	1.74	0.32
36917	36916	18	1.41	8.06	1.74	0.33
36918	49997	18	2.34	10.39	1.75	0.29
36919	36918	18	2.34	10.38	1.73	0.29
36920	36919	18	2.22	10.12	1.73	0.29
36921	36920	18	3.23	12.2	1.67	0.27
36922	36921	18	1.89	9.32	1.67	0.3
36923	36922	18	1.44	8.14	1.67	0.32
36924	36923	12	1.46	2.78	1.67	0.57
36925	36924	18	2.33	6.74	1.52	0.34
36926	36925	15	1.64	3.48	1.52	0.48
36927	36926	18	1.65	5.67	1.52	0.38
36928	36927	15	1.77	3.61	1.48	0.46
36929	36928	15	1.7	3.54	1.48	0.47
36930	36929	15	0.97	2.67	1.46	0.53
36931	36930	15	1.01	2.72	1.46	0.54
36933	52089	15	1.71	3.55	1.47	0.46
36934	36933	15	1.76	3.6	1.43	0.45
36935	36934	15	2.07	3.9	1.43	0.43
36936	36935	15	1.86	3.71	1.43	0.44
36937	36936	15	2.23	4.05	1.43	0.43
36938	36937	15	2.5	6.6	1.44	0.33
36939	36938	15	2.03	5.95	1.38	0.35
36940	36939	15	1.88	5.73	1.38	0.35
36941	36940	15	0.8	3.75	1.38	0.43
36942	36941	15	0.79	3.72	1.39	0.43
36944	47025	15	0.83	3.8	1.35	0.42
36945	47036	15	1.39	4.92	1.28	0.36
36946	42603	15	0.34	2.44	1.21	0.46

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
36947	36946	15	1.88	5.72	1.17	0.38
36948	52364	15	1.42	4.97	1.17	0.35
36949	36948	15	0.68	3.44	1.17	0.41
36950	36949	15	1.11	4.39	1.18	0.37
36951	36950	15	1.15	4.48	1.03	0.34
36952	36951	15	1.08	4.34	1.03	0.35
36953	38072	15	0.96	4.09	0.68	0.35
36954	36953	12	1.67	2.97	0.18	0.19
36955	38085	12	0.82	2.09	0.1	0.2
36956	36955	12	3.2	4.12	0.1	0.14
36957	36956	12	1.25	2.57	0.1	0.18
36958	36957	12	3.24	4.14	0.1	0.14
36959	36958	12	2.92	3.94	0.1	0.15
36960	36959	12	2.47	3.62	0.1	0.15
36961	36960	12	3.34	4.21	0.1	0.14
36962	36961	12	3.48	4.3	0.1	0.14
36963	36962	12	3.74	4.46	0.1	0.14
36990	20793	15	1.73	5.49	1.44	0.56
37009	33448	27	0.59	19.98	9.58	0.49
37010	37009	27	0.73	22.18	9.41	0.46
37011	37010	27	0.61	20.31	9.41	0.48
37012	37011	27	0.88	24.41	9.41	0.44
37013	37012	27	0.43	17.06	9.41	0.53
37014	20553	27	0.77	22.86	8.46	0.72
37030	65333	15	2.94	7.16	0.61	0.25
37031	37030	12	0.29	1.24	0.61	0.47
37032	37031	12	1.38	2.7	0.61	0.37
37054	6946	8	2.59	1.26	0.18	1
37055	37054	8	1.59	0.98	0.18	1
37056	37055	8	1.25	0.87	0.18	1
37057	37056	8	0.98	0.77	0.18	0.34
37058	37057	8	0.99	0.78	0.18	0.34
37059	38271	8	1.27	0.88	0.18	0.32
37060	37059	8	5.04	1.75	0.18	0.24
37061	37060	8	4.59	1.67	0.18	0.24
37148	20794	15	1.01	4.2	1.41	0.42
37986	33466	27	1.43	23.9	3.71	0.31
37987	37986	30	0.4	16.78	3.71	0.32
37988	37987	30	0.41	16.97	3.71	0.32
37989	37988	30	0.4	16.71	3.71	0.32
37990	37989	30	0.55	19.62	3.71	0.3
37991	37990	30	0.41	16.93	1.06	0.29
38072	36952	15	0.55	3.11	1.03	0.4
38073	38072	12	1.9	3.17	0.49	0.28
38074	38073	12	1.16	2.48	0.49	0.32
38075	38074	12	1.94	3.21	0.5	0.28
38076	38075	12	1.57	2.89	0.5	0.3
38077	38076	12	1.97	3.23	0.51	0.28
38078	38077	12	1.52	2.84	0.5	0.3
38079	38078	12	0.81	2.08	0.51	0.35
38080	38079	12	1.2	2.52	0.52	0.33

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38081	38080	12	0.69	1.91	0.52	0.36
38083	38081	12	0.53	1.68	0.52	0.39
38084	38083	12	3.86	4.52	0.17	0.24
38085	36954	12	0.93	2.22	0.18	0.2
38269	37058	8	1	0.78	0.18	0.34
38270	38269	8	0.9	0.74	0.18	0.35
38271	38270	8	1.72	1.02	0.18	0.3
38273	38083	8	0.69	0.65	0.4	0.58
38452	36953	8	0.1	0.25	0.51	2
38453	38452	8	4.49	1.66	0.52	1
38454	38453	8	3.34	1.43	0.53	0.43
38455	38454	8	0.84	0.71	0.34	0.5
38456	38455	8	6.64	2.01	0.34	0.29
38457	38456	8	5.3	1.8	0.34	0.31
38458	38457	8	2.04	1.12	0.34	0.4
38459	38458	8	0.54	0.58	0.35	0.57
38460	38459	8	0.53	0.57	0.35	0.58
38461	38460	8	0.46	0.53	0.35	0.62
38462	38461	8	1.63	1	0.36	0.43
38463	38462	8	4.76	1.71	0.36	0.33
38464	38463	8	0.07	0.2	0.36	2
38465	38464	8	0.58	0.59	0.37	1
38525	6952	24	0.38	11.66	17.71	2
38526	38525	15	1.69	5.43	0.75	1
38527	38526	15	1.3	4.76	0.76	1
38528	38527	15	0.99	4.15	0.76	0.41
38529	38528	15	1.45	5.03	0.76	0.28
38530	38529	15	1.12	4.42	0.76	0.3
38530A	38530	15	0	0	0.76	0.42
38531	38530A	15	0.72	3.54	0.76	0.42
38532	38531	15	0.62	3.29	0.76	0.33
38533	38838	15	2.21	6.21	0.76	0.26
38534	38839	15	1.86	5.7	0.76	0.33
38535	38534	15	0.63	3.32	0.76	0.33
38536	38535	15	-0.13	-1.48	0.76	0.49
38537	38536	15	0.62	3.28	0.76	0.33
38538	38537	15	0.82	3.79	0.69	0.29
38538A	38538	15	3.35	7.64	0.69	0.22
38539	38538A	15	1.17	4.52	0.69	0.28
38581	21807	8	1.93	1.08	0.96	1
38582	38581	8	1.51	0.96	1	2
38642	38539	15	3.72	8.05	0.69	0.28
38643	38642	15	0.5	2.96	0.69	0.33
38644	38643	15	2.66	6.81	0.69	0.23
38645	38644	15	0.27	2.19	0.55	0.34
38646	39458	15	0.5	2.95	0.55	0.29
38647	38646	15	1.2	4.58	0.55	0.35
38648	38647	15	0.89	3.94	0.55	0.26
38649	38648	15	0.71	3.52	0.25	0.21
38682	18498	8	0.69	0.65	0.26	0.45
38683	38682	8	0.66	0.63	0.26	0.46

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38684	38683	8	0.43	0.51	0.26	0.5
38773	33440	27	0.58	19.8	12.01	1
38774	38773	8	0.42	0.51	0.85	2
38775	38774	8	1.13	0.83	0.85	2
38776	38775	8	1.9	1.08	0.85	1
38777	38776	8	1	0.78	0.87	2
38778	38777	8	1.01	0.79	0.88	2
38779	38778	8	1.4	0.92	0.89	1
38780	38779	8	0.61	0.61	0.92	2
38781	38780	8	4.14	1.59	0.92	1
38782	38781	8	4.9	1.73	0.92	0.53
38838	38532	15	1.63	5.33	0.76	0.28
38839	38533	15	0.52	3.01	0.76	0.35
39117	38084	12	1.95	3.22	0.16	0.18
39118	39117	12	0.59	1.77	0.16	0.21
39224	20126	15	0.1	1.32	1.59	0.67
39225	39224	8	0.63	0.62	0.1	0.28
39458	38645	15	0.45	2.8	0.55	0.3
39733	23779	12	2.87	3.9	0.67	0.7
39734	39733	12	0.47	1.58	0.67	0.46
39735	39734	12	-0.02	-0.3	0.67	0.8
39736	39735	12	1.38	2.7	0.67	0.76
39737	39736	12	-0.15	-0.9	0.67	0.93
39738	39737	12	0.85	2.12	0.67	0.9
39739	39738	12	0.13	0.84	0.67	0.58
39741	39739	12	0.4	1.45	0.67	0.59
40488	6941	27	0.66	10.59	18.02	2
41020	38582	8	2.34	1.19	1.14	1
41036	38273	8	0.42	0.51	0.4	0.67
41037	41036	8	0.41	0.5	0.41	0.72
41038	41037	8	0.5	0.55	0.18	0.41
41039	41038	8	0.64	0.63	0.18	0.39
41040	41039	8	0.54	0.58	0.19	0.41
41042	41037	8	8.15	2.23	0.27	0.78
41043	41042	8	1.16	0.84	0.27	0.41
41044	41043	8	1.13	0.83	0.27	0.42
41045	41044	8	6.18	1.94	0.29	0.28
41114	41428	10	0.82	1.28	0.97	0.8
41115	41114	10	0.42	0.92	0.97	0.83
41116	41115	10	0.22	0.67	0.97	2
41117	41429	10	0.42	0.92	0.97	0.87
41118	41117	10	2.42	2.21	0.97	0.7
41119	41118	10	1.04	1.44	0.97	0.62
41120	41119	10	0.44	0.94	0.97	0.99
41121	41120	10	0.45	0.95	0.85	1
41122	41121	10	1.99	2	0.85	0.92
41123	41122	10	1.04	1.44	0.85	0.57
41124	41123	10	0.68	1.17	0.85	0.64
41125	41124	10	0.07	0.38	0.85	0.79
41126	41125	10	1.32	1.62	0.85	0.96
41127	41126	10	1.24	1.57	0.85	0.54

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
41128	41127	10	0.89	1.33	0.55	0.45
41129	41128	10	0.64	1.14	0.55	0.5
41130	41129	10	0.62	1.11	0.55	0.5
41131	41130	10	0.63	1.12	0.55	0.62
41132	41131	10	0.41	0.9	0.55	0.57
41133	41132	10	2.08	2.04	0.55	0.52
41134	41133	10	0.44	0.94	0	0.34
41135	41134	10	0.44	0.94	0	0.08
41136	41135	10	-0.26	-0.72	0	0.08
41137	41136	10	0.62	1.12	0	0.08
41138	41137	10	0.42	0.92	0	0.08
41139	41138	10	0.54	1.05	0	0.08
41140	41139	10	0.18	0.59	0	0.08
41252	20781	15	0.55	3.1	3.12	0.87
41427	1593	12	-1.16	-2.48	0.97	0.91
41428	41427	12	0.35	1.36	0.97	0.86
41429	41116	10	2.33	2.16	0.97	1
41434	35551	8	1.9	1.08	1.41	2
41529	41530	16	0.76	4.32	1.49	0.41
41530	43502	16	0.27	2.58	1.49	0.55
41917	39225	8	0.49	0.54	0.1	0.3
42050	34836	14	1.55	11.24	1.25	0.25
42051	42050	14	21.71	42.09	1.25	0.15
42052	42051	15	1.94	5.81	1.25	0.33
42053	42052	15	0.35	2.46	1.25	0.5
42054	42053	15	0.77	3.67	1.25	0.42
42055	42054	15	1.19	4.56	1.25	0.37
42224	15269	8	0.62	0.62	0.85	2
42225	42224	8	4.94	1.74	0.85	1
42226	42225	8	0.6	0.6	0.85	2
42227	42226	8	0.6	0.61	0.87	2
42228	22013	24	0.36	11.46	17.6	2
42229	42228	24	1.62	18.63	3.58	1
42230	48063	24	2.79	24.44	3.26	1
42231	42230	24	2.47	22.99	3.39	1
42232	42231	24	0.79	12.99	3.39	0.35
42233	42232	24	0.25	7.28	3.39	0.47
42234	42228	30	0.76	29.98	14.1	1
42603	36945	15	0.99	4.16	1.25	0.38
43381	150	15	122.06	46.14	0.61	0.23
43382	43381	15	0.26	2.12	0.61	0.37
43383	43382	15	3.57	7.89	0.61	0.37
43384	43383	12	5.33	5.32	0.56	0.24
43385	43384	12	1.03	2.33	0.33	0.27
43386	43385	12	1.95	3.22	0.22	0.2
43387	57167	12	3.51	4.32	0.22	0.18
43501	18555	18	0.38	4.2	1.49	0.42
43502	43501	16	0.55	3.68	1.49	0.44
43786	44225	12	0.6	1.79	0.71	1
43787	43786	8	0.91	0.74	0.59	1
43788	43787	8	0.47	0.54	0.59	2

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
43789	43788	8	0.95	0.5	0.59	2
43790	43789	8	0.24	0.25	0.6	2
43791	43790	8	0.46	0.35	0.6	2
43792	43791	8	0.42	0.33	0.61	2
43793	43792	8	0.53	0.37	0.58	2
43794	43793	8	0.45	0.52	0.59	2
43794A	43794	8	0.44	0.52	0.26	1
43795	43794A	8	0.63	0.62	0.26	1
43796	43795	8	0.51	0.56	0.27	1
43797	43796	8	0.52	0.56	0.13	1
43798	43797	8	0.52	0.56	0.15	1
43799	43798	8	0.52	0.56	0.16	1
43800	43799	8	1.43	0.94	0.16	1
43801	43796	8	0.79	0.7	0.21	1
43802	43801	8	1.86	1.06	0.21	1
43803	43802	8	2.8	1.31	0.21	0.29
43804	43803	8	2.5	1.23	0.21	0.29
43805	43804	8	3.5	1.46	0.21	0.28
43810	43800	8	0.52	0.57	0.16	1
43811	43810	8	0.52	0.56	0.16	0.37
43812	43811	8	0.52	0.56	0.16	0.37
43813	43812	8	0.52	0.56	0.16	0.37
43814	43813	8	1.7	1.02	0.16	0.28
43815	43814	8	0.51	0.56	0.16	0.37
43818	43815	8	1.88	1.07	0.16	0.28
43819	43794	8	-0.04	-0.15	0.37	1
43820	43819	8	0.5	0.55	0.37	1
43821	43820	8	0.92	0.75	0.37	0.92
43822	43821	8	0.52	0.57	0.37	0.6
43823	43822	8	0.74	0.67	0.37	1
43824	43823	8	0.62	0.61	0.37	0.57
43825	43824	15	0.54	3.07	0.37	0.27
43826	52024	15	0.56	3.12	0	0.2
43865	42055	12	0.71	1.94	0.34	0.29
44208	34385	24	0.24	4.66	1.41	0.8
44209	44208	24	0.29	5.12	1.34	0.6
44210	44209	10	0.32	0.52	1.34	2
44211	44210	10	0.32	0.8	1.21	2
44212	44211	10	0.32	0.8	1.21	2
44213	44212	10	0.33	0.81	1.21	2
44214	53270	10	0.38	0.87	0.94	2
44215	44214	10	0.32	0.8	0.94	2
44216	44215	10	0.32	0.8	0.93	2
44217	44216	10	0.35	0.84	0.78	1
44218	44217	10	0.31	0.78	0.78	1
44219	44218	10	0.31	0.79	0.77	1
44220	44219	10	0.23	0.68	0.78	2
44221	44220	10	0.26	0.72	0.78	2
44222	44221	10	0.21	0.65	0.78	2
44223	44222	10	0.3	0.78	0.78	2
44224	44223	10	0.2	0.63	0.71	2

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
44225	44224	10	0.23	0.69	0.71	2
44548	20777	15	1.05	4.28	3.61	0.72
45056	41045	8	2.31	1.19	0.3	0.36
45057	45056	8	0.93	0.75	0.3	0.46
45058	45057	8	1.56	0.98	0.32	0.42
45059	45058	8	3.38	1.44	0.33	0.35
45563	22466	12	4.23	4.74	0.13	0.36
45564	45563	12	1.4	2.73	0.13	0.18
45564A	45564	12	0.46	1.55	0.13	0.21
45565	45564A	12	2.42	3.59	0.13	0.16
45566	45565	12	4.26	4.75	0.13	0.2
45567	45566	12	3.74	4.46	0.13	0.15
45568	22490	12	3.77	4.47	0.13	0.15
45585	22457	12	0.6	1.16	0.13	0.23
45592	22464	12	1.07	2.38	0.13	0.19
45724	18455	12	1.87	4.1	1.78	0.48
45735	43818	8	0.6	0.6	0.16	0.36
45736	45735	8	1.21	0.86	0.16	0.3
45737	45736	8	2.36	1.2	0.16	0.27
45738	45737	8	3	1.35	0.16	0.25
45739	45738	8	4.44	1.65	0.16	0.23
45740	45739	8	4.92	1.73	0.16	0.22
45741	45748	8	2.62	1.26	0.21	0.29
45742	45741	8	3.02	1.36	0.21	0.28
45743	45742	8	3.03	1.36	0.21	0.28
45744	45743	8	0.68	0.64	0.21	0.41
45745	45744	8	0.63	0.62	0.21	0.42
45746	43805	8	2.01	1.11	0.21	0.31
45747	45746	8	2.64	1.27	0.21	0.29
45748	45747	8	2.65	1.27	0.21	0.29
45753	6937	30	0.51	18.97	17.99	1
45855	45059	8	3.15	1.39	0.34	0.36
45895	30628	8	2.7	1.28	0.27	0.33
46748	38465	8	0.47	0.54	0.39	0.65
46749	46748	8	2.31	1.19	0.4	0.42
46778	45745	8	0.6	0.6	0.21	0.42
46779	46778	8	0.6	0.61	0.21	0.42
46789	6931	30	0.56	19.86	18.78	1
46796	17748	12	4.61	4.95	1.82	0.54
47025	36942	15	0.75	3.62	1.34	0.43
47036	36944	15	1.49	5.09	1.35	0.36
48063	42229	24	2.91	24.93	3.6	1
48064	48063	8	3.7	1.5	0.6	1
48065	48064	8	0.6	0.61	0.6	0.95
48066	48065	8	4.4	1.64	0.6	0.82
48067	48066	8	1.05	0.8	0.6	0.66
48068	48067	8	1.64	1	0.6	0.57
48069	48068	8	6.98	2.06	0.6	0.38
48070	48069	8	6.88	2.05	0.6	0.39
48208	48070	8	5.6	1.85	0.6	0.41
48209	48208	8	5.18	1.78	0.61	0.42

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
48242	17297	12	6.32	5.79	1.45	0.36
48243	48242	8	13.24	2.84	0.36	0.26
48244	48243	8	13.38	2.86	0.36	0.31
48245	48244	8	7.29	2.11	0.36	0.3
48246	48245	8	0.44	0.52	0.36	0.63
48247	48246	8	1.17	0.85	0.37	0.48
48247A	48247	8	5.34	1.8	0.37	0.33
48248	48247A	8	0.6	0.6	0.37	0.58
48249	48248	8	3.38	1.44	0.38	0.53
48250	48249	8	1.73	1.03	0.38	0.43
48251	48250	8	1.26	0.88	0.38	0.48
48252	48251	8	0.62	0.62	0.38	0.58
48253	48252	8	-0.17	-0.32	0.41	1
48254A	NS1044	6	1.01	0.38	0.41	2
48571	41917	8	0.4	0.49	0.1	0.31
48572	48572A	8	0.4	0.49	0.1	0.32
48572A	48571	8	0.4	0.49	0.1	0.32
49083	30960	8	2.09	1.13	0.51	1
49084	49083	8	2.17	1.15	0.51	0.48
4970	2942	10	0.38	0.88	0.49	0.54
4971	4970	10	2.46	2.22	0.49	0.43
49997	36917	18	2.29	10.27	1.74	0.29
50253	34218	8	0.62	0.61	0.47	0.94
50254	50253	8	0.59	0.6	0.47	0.68
50255	50254	8	2.24	1.17	0.47	0.46
50256	50255	8	5.81	1.88	0.47	0.36
50281	50256	8	1.2	0.86	0.47	0.55
50282	50281	8	3.24	1.41	0.48	0.42
5134	18064	12	0.81	2.07	0.46	0.33
5135	14937	10	0.59	1.09	0	0.39
5136	5135	10	1.57	1.78	0	0.1
5137	5136	10	1.05	1.45	0	0.1
5138	5137	10	0.57	1.07	0	0.08
5139	5138	10	1.87	1.94	0	0.1
5140	5139	10	0.1	0.44	0	0.08
52024	902054	15	1.18	4.53	0.37	0.48
52025	52024	10	1.59	1.79	0.37	0.33
52026	52025	10	1.32	1.63	0.37	0.34
52027	52026	10	0.98	1.4	0.37	0.36
52028	52027	10	0.53	1.03	0.37	0.43
52029	52028	8	3.68	1.5	0.37	0.82
52030	52029	8	3.76	1.51	0.37	0.35
52031	52030	8	0.44	0.52	0.37	0.64
52032	52031	8	0.44	0.52	0.37	0.64
52033	52032	8	0.44	0.52	0.37	0.64
52034	52033	8	0.44	0.52	0.37	0.64
52041	52034	8	0.44	0.52	0.37	0.64
52042	52041	8	1.31	0.89	0.37	0.49
52043	52042	8	3.29	1.42	0.37	0.36
52044	52043	8	3.2	1.4	0.37	0.36
52045	52044	8	2.68	1.28	0.37	0.38

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52088	36931	15	0.53	1.98	1.46	0.61
52089	52088	15	1.24	3.02	1.47	0.55
52091	52147	8	1.03	0.79	0.73	0.98
52092	52091	8	0.54	0.57	0.73	2
52093	52092	8	2.24	1.17	0.73	1
52094	52093	8	2.18	1.15	0.73	0.58
52095	52094	8	1.1	0.82	0.73	0.75
52096	52095	8	5.37	1.81	0.73	0.62
52097	52096	8	2.7	1.28	0.73	0.56
52098	52097	8	5.52	1.84	0.73	0.45
52099	52098	8	5.61	1.85	0.73	0.44
52100	52099	8	5.67	1.86	0.73	0.44
52147	52489	8	1.06	0.8	0.73	1
52170	18	16	20.44	22.42	0.03	0.88
52171	52170	16	0.71	4.18	0.03	0.09
52172	52171	16	0.5	3.5	0.03	0.08
52173	52172	16	1.15	5.32	0.03	0.11
52174	52173	16	5.47	11.6	0.03	0.11
52175	52174	16	4.44	10.45	0.03	0.11
52182	66	10	3.28	2.57	0.42	0.3
52240	52100	8	1.83	1.06	0.73	0.63
52241	52240	8	3.62	1.49	0.73	0.5
52242	52241	8	4.07	1.58	0.73	0.49
52243	52242	8	4.92	1.73	0.73	0.46
52244	52243	8	5.2	1.78	0.73	0.46
52245	52244	8	5.53	1.84	0.73	0.45
52364	36947	15	1.61	5.29	1.17	0.34
52488	21638	8	0.62	0.62	0.73	0.84
52489	52488	8	0.67	0.64	0.73	2
52520	52569A	8	1.09	0.82	0.73	0.75
52521	52520	8	0.6	0.6	0.73	2
52522	52521	8	0.5	0.55	0.73	2
52523	53379	8	0.5	0.55	0.78	2
52524	52523	8	0.51	0.56	0.83	2
52550	14458	8	3.13	1.38	1.68	2
52551	52550	8	8.8	2.32	1.58	1
52552	52552A	8	12.02	2.71	0.36	0.27
52552A	35539	8	13.38	2.86	0.36	0.38
52553	52552	8	7.63	2.16	0.36	0.29
52554	52553	8	3.62	1.49	0.36	0.35
52555	52554	8	7.09	2.08	0.36	0.3
52556	52555	8	7.16	2.09	0.36	0.3
52557	52556	8	0.99	0.78	0.36	0.49
52558	52557	8	0.98	0.77	0.36	0.49
52559	52558	8	2.45	1.22	0.36	0.38
52560	52245	8	16.07	3.13	0.73	0.35
52561	52560	8	5.06	1.76	0.73	0.46
52562	52561	8	5.07	1.76	0.73	0.46
52566	52562	8	0.57	0.59	0.73	2
52567	52566	8	0.61	0.61	0.73	2
52568	52567	8	3.99	1.56	0.73	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52569	52568	8	4.99	1.75	0.73	0.46
52569A	52569	8	2.91	1.33	0.73	0.54
52651	7324	18	1.02	6.85	2.61	0.44
52652	52651	24	1.04	14.94	1.68	0.27
52653	52652	24	15.5	57.57	1.68	0.15
52654	52653	24	1.07	15.09	1.68	0.25
52655	52654	24	15.02	56.68	1.68	0.2
52656	52655	24	0.1	4.65	1.68	0.41
52657	52656	24	0.33	8.42	1.68	0.38
52658	52657	21	0.3	5.62	1.56	0.36
52659	52658	21	0.8	9.16	1.56	0.3
52660	52659	21	12.95	36.86	1.56	0.23
52661	52660	12	9.8	7.21	0.66	0.23
53242	52559	8	4.7	1.69	0.36	0.33
53243	53242	8	4.56	1.67	0.36	0.33
53244	53243	8	0.81	0.7	0.36	0.52
53245	53244	8	0.59	0.6	0.36	0.57
53246	53245	8	0.61	0.61	0.36	0.56
53257	44216	8	1.01	0.79	0.4	1
53258	53257	8	4.47	1.65	0.41	1
53259	53258	8	2.36	1.2	0.41	0.42
53260	53259	8	0.98	0.77	0.41	0.53
53261	53260	8	3.03	1.36	0.41	0.39
53262	53261	8	4.81	1.71	0.41	0.35
53263	53262	8	5.97	1.91	0.41	0.33
53264	53263	8	3.34	1.43	0.41	0.38
53267	53264	8	6.84	2.04	0.41	0.32
53269	53267	8	4.76	1.7	0.41	0.35
53270	44213	10	0.25	0.71	1.21	2
53271	53270	8	0.92	0.75	0.54	1
53292	30727	8	2.04	1.11	0.6	1
53293	53292	8	0.6	0.6	0.6	0.98
53294	53293	8	0.48	0.54	0.6	0.96
53295	53294	8	1.79	1.04	0.61	0.7
53296	53295	8	0.64	0.62	0.61	0.88
53297	53296	8	3.49	1.46	0.61	0.75
53379	52522	8	0.49	0.55	0.74	2
53385	53246	8	1.01	0.78	0.36	0.49
53386	53385	8	2.01	1.11	0.36	0.41
53387	53386	8	0.95	0.76	0.36	0.5
53388	53387	8	0.99	0.78	0.36	0.49
53727	53727A	8	0.3	0.43	1.02	2
53727A	53727B	8	0.55	0.58	1.02	2
53727B	20250	8	4.72	1.7	1.02	1
53728	53727	8	0.63	0.62	1.02	2
53729	53728	8	0.39	0.49	1.74	2
53730	53729	8	5.14	1.77	1.95	2
53868	46779	8	1.32	0.9	0.21	0.35
53869	53868	8	0.99	0.78	0.21	0.37
53870	53869	8	2.49	1.23	0.21	0.29
53871	53870	8	4.42	1.64	0.21	0.26

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
53872	53871	8	0.82	0.71	0.21	0.39
53873	53872	8	0.56	0.59	0.21	0.43
53874	53873	8	1.14	0.83	0.21	0.36
53875	53874	8	0.52	0.56	0.21	0.43
53876	53875	8	0.78	0.69	0.21	0.39
53877	53876	8	4.6	1.68	0.21	0.26
53878	53877	8	3.82	1.53	0.21	0.27
53879	53878	8	6.38	1.97	0.21	0.24
53955	41133	10	0.35	0.84	0.55	1
53956	53955	10	0.66	1.15	0.55	0.87
53957	53956	10	0.36	0.85	0.55	0.59
53958	53957	10	0.54	1.04	0.55	0.53
53959	53958	10	0.38	0.88	0.55	0.58
53960	53959	10	0.47	0.97	0.55	0.58
53961	53960	10	0.44	0.94	0.55	0.56
53962	53961	10	0.4	0.89	0.55	0.57
54110	52045	8	0.6	0.61	0.37	0.58
54111	54110	8	1.58	0.98	0.37	0.44
54112	54111	8	1.76	1.04	0.37	0.43
54113	54112	8	0.69	0.65	0.37	0.56
54114	54113	8	2.46	1.23	0.37	0.41
54115	54114	8	1.68	1.01	0.37	0.43
54116	54115	8	3.59	1.48	0.37	0.36
54117	54116	8	4.79	1.71	0.37	0.33
54353	65512	8	4.29	1.62	0.27	0.29
54451	45568	12	3.15	4.09	0.13	0.15
54452	54451	12	3.05	4.02	0.13	0.16
54452A	54452	12	1.59	2.91	0.13	0.17
54453	54452A	12	1.01	2.31	0.13	0.19
54453A	54453	12	0.56	1.73	0.13	0.2
54454	54453A	12	3	3.99	0.13	0.16
54455	54454	12	2.13	3.36	0.13	0.17
54456	54455	12	0.33	1.32	0.13	0.22
54556	53962	10	0.57	1.07	0.55	0.51
55251	7298	24	0.99	14.53	9.19	0.63
55252	55251	8	0.57	0.59	0.93	2
55253	55252	8	0.59	0.6	0.93	2
55254	55253	8	0.59	0.6	0.93	2
55255	55254	8	0.6	0.6	0.93	2
55256	55255	8	4.97	1.74	0.93	1
55257	55256	8	1.08	0.81	0.93	2
55258	55257	8	32.91	4.48	0.93	0.33
55259	55258	8	36.11	4.69	0.93	0.33
55260	55259	8	31.38	4.38	0.93	0.33
55261	55260	8	0.59	0.6	0.93	2
55262	55261	8	0.6	0.6	0.93	2
55267	55262	8	0.99	0.78	0.98	2
55268	55267	8	0.99	0.78	1.05	2
55269	55268	8	15.51	3.08	1.64	1
55270	55269	8	0.98	0.78	1.64	2
55271	55270	8	4.8	1.71	1.64	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
55272	55271	8	1.05	0.8	1.71	2
56667	20782	15	1.35	3.16	3.08	1
56841	33296	18	0.3	3.73	0.9	0.34
56842	56841	12	0.59	1.77	0	0.49
57146	44548	15	0.89	3.94	3.51	0.74
57167	43386	12	6.13	5.7	0.22	0.16
57364	69111	8	7.05	2.07	0.26	0.26
59113	59114	8	0.37	0.47	0.34	0.6
59113	30957	8	2.74	1.29	0.5	0.62
59114	59115	8	0.36	0.47	0.34	0.64
59115	59116	8	0.36	0.47	0.34	0.64
59116	31155	8	2.21	1.16	0.65	0.55
59221	70	10	1.58	1.78	0.36	0.32
59222	59221	12	0.53	1.68	0.36	0.32
59274	34175	20	0.62	9.2	3.54	0.57
59275	59274	20	0.65	7.24	2.49	0.44
59276	59275	20	0.18	3.8	2.49	0.52
61	27	10	7.63	3.91	0.45	0.25
61831	21595	8	1.12	0.83	0.14	0.45
61832	61831	8	2.88	1.32	0.14	0.24
61833	61832	8	0.6	0.6	0.14	0.34
61834	61833	8	3.58	1.48	0.14	0.23
61946	6888	42	1.52	80.26	27.66	1
61947	61946	36	0.41	27.53	8.81	1
61948	61947	36	0.59	33.24	9.12	1
63663	7113	8	2.1	1.13	0.97	1
63665	7114	8	2.96	1.34	0.96	0.64
64082	53297	8	0.61	0.61	0.61	0.86
64083	64082	8	3.54	1.47	0.61	0.73
64084	64083	8	4.69	1.69	0.61	0.43
64085	64084	8	1.81	1.05	0.61	0.56
65315	65511	15	0.51	2.99	0.6	0.37
65316	65315	15	0.31	2.34	0.6	0.35
65317	65316	15	0.57	3.16	0.6	0.3
65318	65317	15	1.8	5.6	0.6	0.24
65319	65318	15	1.8	5.6	0.61	0.24
65320	65319	15	2.03	5.95	0.61	0.24
65321	65320	15	1.96	5.85	0.61	0.24
65322	65321	15	3.23	7.51	0.61	0.21
65323	65322	15	0.15	1.63	0.61	0.42
65324	65323	15	2.6	6.73	0.61	0.24
65325	65324	15	0.5	2.95	0.61	0.31
65326	65325	15	0.52	3.02	0.61	0.31
65327	65326	15	0.35	2.48	0.61	0.34
65328	65327	15	0.84	3.83	0.61	0.33
65329	65328	15	2.02	5.93	0.61	0.24
65330	65329	15	2.47	6.57	0.61	0.23
65331	65330	15	0.5	2.95	0.61	0.31
65332	65331	15	0.33	2.41	0.61	0.35
65333	65332	15	0.88	3.92	0.61	0.27
65373	6990	18	1.97	9.53	0.69	0.21

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
65374	65373	18	0.76	5.93	0.69	0.23
65375	65374	18	0.41	4.33	0.69	0.28
65497	34179	16	1.05	6.62	0.96	0.28
65498	65497	16	1.17	6.97	0.96	0.27
65499	65498	16	0.71	4.18	0.96	0.33
65500	65499	16	0.73	4.25	0.96	0.33
65501	65500	16	0.35	2.95	0.96	0.39
65502	65501	16	0.28	2.62	0.96	0.42
65503	65502	16	0.5	3.5	0.96	0.36
65504	65503	16	0.22	2.31	0.96	0.44
65505	65504	16	1.84	6.74	0.96	0.36
65506	65505	16	0.49	3.47	0.96	0.36
65507	65506	16	0.89	4.69	0.96	0.31
65508	65507	16	0.52	3.57	0.96	0.36
65509	65508	16	0.54	3.66	0.96	0.42
65510	65509	16	0.61	3.88	0.96	0.34
65511	65510	16	0.56	3.72	0.96	0.35
65512	45895	8	4.33	1.63	0.27	0.29
66	61	10	2.92	2.42	0.42	0.3
66452	67346	8	0.85	0.72	0.94	2
66453	66452	8	1.85	1.06	0.95	1
67346	7085	8	0.77	0.68	0.94	2
6874	JP1	42	0.16	21.31	39.98	0.92
6875	6874	42	0.17	21.73	39.98	2
6876	6876N	42	0.19	21.82	39.98	2
6876N	6875	42	0.19	22.9	39.98	2
6877	6876	42	0.17	26.94	39.7	2
6878	16379	42	-0.14	-23.28	39.7	1
6879	6878	42	0.46	43.91	39.7	1
6880	6879	42	0.17	26.91	39.7	2
6882	6880	42	0.2	28.91	39.49	2
6883	6882	42	-0.02	-8.98	39.49	1
6885	6883	42	0.55	48.09	39.49	1
6886	14565	42	3.98	129.77	37.63	1
6887	6886	42	0.19	28.63	37.66	2
6888	6887	42	0.21	29.56	36.87	2
6889	6888	24	0.42	9.51	-0.69	1
6890	6889	24	0.36	8.73	-0.33	1
69111	33534	8	4.5	1.66	0.26	0.29
69131	33527	15	0.97	2.68	1.76	1
69132	69131	16	3.51	6.04	1.76	0.38
69133	69132	16	0.7	2.69	1.76	0.59
69136	69133	16	0.71	2.71	1.76	0.58
69138	69136	16	0.7	2.7	1.76	0.59
69139	69138	16	1.45	5.97	1.71	0.52
69140	69139	16	0.84	4.55	1.71	0.43
69143	69140	16	0.74	4.26	1.71	0.44
69144	69143	16	0.74	4.25	1.63	0.46
69145	69144	15	0.63	3.33	1.63	0.5
69146	69145	16	0.57	3.74	1.63	0.47
69147	69146	15	0.83	3.81	1.63	0.46

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
69149	69147	15	0.71	3.51	1.63	0.49
69150	69149	15	0.54	3.07	1.63	0.52
69151	69150	15	1.72	5.47	1.63	0.39
69152	69151	15	0.68	3.43	1.63	0.49
6921	61946	42	0.2	29.09	20.56	1
6923	6921	42	0.13	23.1	20.43	1
6924	6923	42	0.09	19.15	20.43	2
6925	6924	42	0.09	19.29	20.26	2
6926	6925	42	0.09	19.18	20.08	2
6927	6926	42	0.01	6.87	20.26	2
6928	6927	42	0.15	25.54	20.28	1
6929	6933	30	0.64	21.17	18.51	1
6930	18452	42	0.17	26.69	18.55	1
6931	6930	42	0.48	45.11	18.64	1
6932	46789	30	0.81	23.89	18.51	1
6933	6932	30	0.48	18.44	18.51	1
6934	6929	30	0.45	17.76	18.52	2
6935	6934	30	0.56	19.87	18.53	1
6936	6935	30	0.49	18.47	17.98	1
6937	15872	30	0.63	21	17.99	1
6938	17375	30	0.55	19.6	18	1
6939	6938	30	0.66	21.47	17.79	1
6940	6942	30	0.62	20.9	17.85	1
6941	6940	30	0.78	23.41	17.98	1
6942	6939	30	0.65	21.32	17.79	1
6943	901676	27	0.59	19.93	17.95	1
6944	6943	27	0.53	18.87	17.95	1
6945	6944	27	0.41	16.62	17.92	2
6946	6945	27	0.61	20.33	17.93	1
6947	6946	24	0.62	14.95	17.95	2
6948	32394	24	0.23	9.21	17.6	2
6949	6948	24	0.78	16.75	17.61	2
6950	6949	24	0.61	14.83	17.63	2
6951	6950	24	0.71	16.01	8.02	1
6952	6951	24	0.34	11.09	8.23	1
6952	6950	24	0.09	5.72	10.58	2
6953	38525	24	0.49	13.33	13.9	2
6953	38525	15	0.72	4.61	4.41	1
6954	18586	24	0.47	13	16.83	2
6955	6954	24	0.45	12.8	16.83	2
6956	19873	24	0.43	12.41	12.24	1
6956	19873	15	0.54	4	3.59	1
6957	6956	24	0.3	10.33	11.5	2
6957	6956	15	0.01	0.64	3.87	2
6958	22009	24	2.58	30.51	0.35	1
6965	15269	18	0.7	7.4	1.86	1
6966	6965	18	0.5	6.25	1.86	1
6967	6966	15	0.58	4.14	0.91	1
6968	6967	15	0.38	3.35	-0.45	1
6969	6968	15	0.7	4.56	0	0.06
6970	6969	15	0.77	4.77	0	0.05

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
6977	33451	18	0.81	6.09	2.32	0.43
6978	33451	18	0.97	6.7	1.91	0.37
6979	6978	18	0.98	6.74	1.91	0.37
6980	6979	18	1.59	8.55	1.91	0.34
6981	6980	15	1.46	5.04	1.91	0.57
6982	6981	15	1.47	5.06	1.91	0.44
6983	6982	16	0.95	4.84	1.18	0.34
6984	6983	15	0.79	3.71	1.18	0.39
6985	6984	15	0.99	4.15	1.18	0.37
6987	6985	15	1.01	4.2	1.18	0.37
6988	6987	15	1.15	4.47	0.68	0.28
6989	6988	15	0.98	4.13	0.69	0.6
6990	32475	15	0.83	3.8	0.69	0.29
6995	37990	12	5.27	5.29	0.83	0.3
70	52182	10	4.61	3.04	0.42	0.29
70349	16535	18	2.87	11.51	0	0.1
70350	70349	18	2.85	11.47	0	0.1
70351	70350	18	4.12	13.78	0	0.1
70352	70351	18	1.85	9.25	0	0.1
7049	6977	10	0.74	1.22	2.32	2
7050	7049	10	1.57	1.77	2.32	2
7051	7050	10	1.78	1.89	2.32	2
7052	7052M	8	2.36	1.2	1.17	1
7052M	7051	10	0	0	1.37	2
7061	6967	8	2.22	1.16	0.91	1
7062	7061	8	1.78	1.04	0.91	0.73
7063	7062	8	1.77	1.04	0.91	0.73
7064	7063	8	0.47	0.53	0.91	2
7065	7064	8	2.27	1.18	0.91	1
7071	33444	10	1.25	1.58	0	0.1
7071	33444	10	0.99	1.41	0.8	0.55
7080	7071	8	1.91	1.08	0.8	0.65
7081	7080	8	0.41	0.5	0.8	2
7082	7081	8	3.14	1.38	0.8	0.56
7083	7082	8	0.4	0.49	0.8	2
7084	7083	8	0.4	0.49	0.8	2
7085	7084	8	0.4	0.49	0.83	2
7086	33446	8	4.41	1.64	0.29	0.3
7087	900091	8	0.49	0.55	0.29	0.53
7088	7087	8	2.46	1.22	0.29	0.38
7089	7088	8	0.42	0.51	0.29	0.52
7090	7089	8	0.4	0.49	0.29	0.57
7092	33448	8	0.62	0.62	0.8	2
7093	7092	8	3.27	1.41	0.8	0.56
7094	7093	8	0.81	0.7	0.8	2
7095	7094	8	4.87	1.72	0.8	1
7096	7095	8	6.45	1.98	0.8	0.45
7097	7096	8	8.76	2.31	0.8	0.42
7098	7097	8	8.43	2.27	0.8	0.42
7099	7098	8	0.41	0.5	0.8	2
7100	7099	8	2.05	1.12	0.8	1

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7101	7100	8	1.48	0.95	0.8	0.72
7102	F1757	8	0.77	0.69	0.8	2
7106	20553	8	3.67	1.5	0.95	0.59
7107	7106	8	3.65	1.49	0.95	0.59
7108	7107	8	3.74	1.51	0.95	0.58
7113	6966	8	3.25	1.41	0.97	1
7114	63663	8	2.3	1.19	0.96	0.7
7115	63665	8	3.32	1.42	0.96	0.62
71157	64085	8	0.56	0.58	0.61	0.87
71158	71157	8	0.61	0.61	0.61	0.85
7116	7115	8	0.37	0.47	0.96	2
7117	7116	8	4.07	1.58	0.96	1
7118	7117	8	3.84	1.53	0.96	0.58
7119	7118	8	2.99	1.35	0.96	0.64
71194	38684	8	0.4	0.49	0.26	0.52
7120	7119	8	1.81	1.05	0.96	0.78
7122	13238	8	1.68	1.01	0.96	0.8
71229	71158	8	7.71	2.17	0.61	0.38
7123	7122	8	0.5	0.55	0.96	2
7124	7123	8	3.45	1.45	1.24	1
7125	7124	8	3.12	1.38	1.24	1
7126	7125	8	2.45	1.22	1.24	2
7127	7126	8	2.5	1.24	1.24	2
7128	7127	8	4.12	1.59	1.25	1
7132	7128	8	2.18	1.15	1.26	2
7133	7132	8	1.58	0.98	1.26	2
7134	7133	8	2.31	1.19	1.26	2
7135	7134	8	2.48	1.23	1.26	2
7136	7135	8	1.81	1.05	1.3	2
7137	7136	8	2.8	1.31	1.36	2
7161	7052M	8	4.47	1.65	0.33	1
7162	7161	8	7.62	2.16	0.35	0.69
7163	23057	8	0.26	0.4	0.35	0.71
7164	7163	8	1.6	0.99	0.35	0.43
7165	7052	8	3.7	1.5	1.17	1
7166	7165	8	3.45	1.45	1.17	1
7167	7166	8	0.41	0.5	1.16	2
7168	7167	8	2.46	1.23	1.2	1
7169	7168	8	3.36	1.43	1.38	1
7170	7169	8	3.71	1.5	1.38	1
7171	7170	8	2.34	1.19	1.42	2
7173	7171	8	3.06	1.37	1.46	2
7176	7173	8	2.75	1.29	1.51	2
7177	7176	8	4.51	1.66	1.64	2
7178	7051	8	4.11	1.58	1.02	1
7179	7178	8	1.64	1	1	1
7180	7179	8	0.4	0.5	0.98	2
7181	7180	8	0.41	0.5	0.98	2
7182	7181	8	1.23	0.87	0.98	2
7183	7182	8	2.33	1.19	1.02	1
7184	7183	8	1.87	1.07	1.07	2

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7185	7184	8	1.9	1.08	1.28	2
7188	7185	8	1.37	0.91	1.32	2
7252	6995	12	1.29	2.61	0.83	0.4
7253	7252	12	0.44	1.53	0.83	0.53
7254	7253	12	0.36	0.89	0.83	0.77
7255	7254	12	0.43	0.98	0.83	0.77
7256	7255	12	0.32	0.84	0.83	0.77
7257	7270	8	0.81	0.7	0	0.1
7258	7257	8	1.76	1.04	0	0.1
7259	7258	8	1.2	0.86	0	0.1
7260	7259	8	0.39	0.49	0	0.1
7261	7260	8	0.36	0.47	0	0.1
7262	7261	8	0.32	0.44	0	0.1
7263	7262	8	0.39	0.49	0	0.1
7264	7263	8	0.38	0.48	0	0.1
7265	7264	8	1.36	0.91	0	0.1
7266	7256	8	0.8	0.7	0	0.25
7270	7266	8	0.85	0.72	0	0.1
7287	7265	8	3.97	1.56	0	0.1
7288	7287	8	3.37	1.44	0	0.1
7289	7256	10	0.54	0.68	0.83	2
7295	61948	24	1.62	18.62	9.15	1
7296	7295	24	0.38	9	9.15	0.84
7297	7296	24	0.76	12.77	9.16	0.82
7298	7297	24	0.43	9.58	9.18	0.78
7300	55251	24	0.65	11.77	8.29	0.63
7301	7300	24	2	20.7	8.32	0.45
7302	7301	24	2.4	22.65	8.29	0.43
7303	7302	21	2.77	17.06	8.34	0.5
7305	7303	21	2.09	14.82	8.29	0.55
7308	7305	21	1.49	12.52	8.35	1
7309	19143	21	0.8	9.14	5	0.53
7311	18322	21	1.12	7.06	5	0.64
7314	18241	21	0.35	3.91	5	0.98
7315	22223	21	0.49	4.64	3.71	0.62
7316	7315	21	0.96	10.03	3.71	0.52
7317	7316	21	0.67	8.38	2.9	0.41
7318	7317	21	0.55	7.59	2.9	0.43
7319	7318	21	0.91	9.8	2.9	0.41
7320	7319	21	1.27	11.54	2.9	0.36
7321	7320	18	1.35	7.9	2.61	0.41
7322	7321	18	1.16	7.33	2.61	0.43
7323	7322	18	0.91	6.48	2.61	0.44
7324	7323	18	1.31	7.79	2.61	0.42
7325	52651	18	1.02	6.84	0.94	0.43
7326	7325	18	0.81	6.13	0.94	0.27
7327	7326	18	0.75	5.89	0.94	0.28
7328	7327	18	0.74	5.83	0.94	0.28
7329	7328	15	1.56	5.22	0.13	0.14
7330	7329	15	0.8	3.73	0.13	0.14
7332	7316	10	1.77	1.89	0.83	0.66

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7333	7332	10	3.44	2.63	0.83	0.4
7334	16604	10	3.11	2.5	0.29	0.25
7335	7334	10	3.77	2.75	0.29	0.24
742	754	8	1.89	1.07	0	0.1
754	902164	8	6.11	1.93	0	0.1
8195	37032	12	0.24	1.14	0.61	0.5
900091	7086	8	0.5	0.55	0.29	0.52
901295	901296	8	1.49	0.95	1.01	2
901296	901297	8	0.61	0.61	1	2
901297	901298	8	0.59	0.6	1	2
901298	901299	8	1.79	1.05	1	0.89
901299	52524	8	8.72	2.31	1	1
901390	37990	15	11.09	9.04	1.83	0.32
901391	901390	16	0.36	1.95	1.83	0.67
901676	15751	27	0.52	18.7	18.03	1
901871	52661	12	2.46	3.61	0.66	0.31
901892	901893	6	5.72	1.13	0.41	1
901893	16595	8	6.03	2.49	0.41	0.29
902012	6953	24	0.34	11.03	13.33	2
902012	6953	15	0.32	3.05	3.88	2
902054	43825	15	1.2	4.58	0.37	0.22
902164	902165	8	6.32	1.96	0	0.1
902165	52657	8	6.21	1.95	0	0.1
9039	16038	18	0.92	6.5	1.69	0.45
9040	17949	15	1.35	4.86	1.25	0.36
9041	17969	15	1.15	4.48	0.71	0.36
9042	9041	15	1.05	4.28	0.51	0.25
9044	14317	15	4.1	8.45	0	0.1
9045	9044	15	3.35	7.65	0	0.1
9046	9045	15	0.08	1.16	0	0.05
9047	9046	21	0.25	5.11	0	0.05
9048	10918	21	0.48	7.06	0	0.05
9049	9048	21	2.33	15.64	0	0.1
break 1	break12	6	-0.12	-0.12	0.19	1
Break 4	45855	6	-1.62	-0.49	0.35	1
Break11	41040	6	-2.37	-0.6	0.19	1
break12	Break11	6	-0.32	-0.2	0.19	1
break2	46749	6	0.06	0.08	0.41	2
C445	7102	8	0.21	0.36	0.8	2
F1757	7101	8	0.8	0.7	0.8	2
F5313-missing	2403	8	2.4	1.57	0.41	0.36
NS1044	48253	6	-6.41	-1.03	0.41	1
PVT302	PVT303	8	0.48	0.54	1.07	2
PVT303	29644	8	0.9	0.74	1.07	2
PVT472	PVT473	8	1.39	0.92	0.09	0.23
PVT473	PVT474	8	5.93	1.9	0.09	0.18
PVT474	PVT475	8	8.6	2.29	0.09	0.17
PVT475	PVT476	8	0.61	0.61	0.09	0.28
PVT476	PVT477	8	0.6	0.6	0.09	0.28
PVT477	PVT478	8	11.33	2.63	0.09	0.16
PVT478	32260	8	15.2	3.05	0.09	0.15

Jones Falls: Wet Weather Capacity Analysis - 2 year, 24-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
weir15	33295	24	0.31	8.18	0	0.05

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
10918	13409	21	0.15	3.97	0.00	0.05
11	70352	24	1.63	18.68	0.00	0.10
11897	7052	8	3.72	1.51	-0.06	1.00
12	11	24	0.40	9.29	0.00	0.05
13238	7120	8	1.83	1.06	0.96	0.77
13409	9047	21	-0.19	-4.47	0.00	0.05
13939	20805	12	11.76	7.90	0.17	0.57
14317	15315	15	2.45	6.54	0.00	0.10
14454	19876	12	5.12	5.21	1.90	1.00
14455	14454	12	1.46	2.78	1.90	0.77
14456	14455	12	1.59	2.91	1.90	0.60
14458	14456	12	1.02	2.32	1.69	0.64
14546	7188	8	0.57	0.59	1.39	2.00
14547	14546	8	2.87	1.32	1.48	2.00
14548	14547	8	4.80	1.71	1.66	2.00
14565	6885	42	2.14	77.24	38.06	1.00
14937	5134	10	0.55	1.05	0.53	0.51
150	901871	16	3.05	8.66	0.52	0.19
1507	16581	10	14.78	5.45	0.62	0.25
1508	1507	8	0.99	0.78	0.51	0.93
15269	42234	18	1.37	10.33	2.67	1.00
15270	30591	15	1.38	4.91	1.15	0.35
15270	9042	15	1.89	5.74	0.49	0.22
15271	22538	15	2.67	6.83	0.49	0.49
15315	30592	15	2.39	6.45	0.00	0.19
15751	40488	27	0.66	21.21	18.09	1.00
15871	6936	30	0.44	17.56	18.11	2.00
15872	15871	30	0.60	20.58	18.11	1.00
1593	29862	12	0.04	0.43	0.83	0.90
16036	42233	18	0.94	6.58	3.18	0.49
16037	16036	18	0.97	6.69	2.69	0.44
16038	16037	18	1.68	8.81	1.55	0.54
1609	1593	10	0.33	0.81	0.00	0.08
1610	1609	10	0.50	1.01	0.00	0.08
1611	1610	10	0.77	1.24	0.00	0.08
1612	1611	10	1.74	1.87	0.00	0.10
1613	1612	10	0.47	0.97	0.00	0.08
1614	1613	10	0.39	0.88	0.00	0.08
16379	16379N	42	0.16	20.88	40.67	2.00
16379N	6877	42	0.16	21.44	40.67	2.00
16401	C445	8	0.41	0.50	0.81	2.00
16402	16401	8	0.40	0.49	0.84	2.00
16403	16402	8	2.26	1.17	1.11	1.00

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
16404	16403	8	1.56	0.97	1.57	2.00
16535	7330	15	2.02	5.93	0.14	0.14
16536	11897	8	4.15	1.59	0.00	0.10
16581	7328	10	4.34	2.95	0.62	0.33
16595	7333	8	4.68	1.69	0.33	0.31
16596	7333	10	0.50	1.00	0.34	0.42
16604	7320	10	3.39	2.61	0.24	0.62
16742	6982	8	2.42	1.22	0.75	0.69
16743	16742	8	0.65	0.63	0.75	2.00
16744	16743	8	1.02	0.79	0.75	1.00
16745	16744	8	1.07	0.81	0.75	1.00
16746	33093	8	1.00	0.78	0.75	0.91
16747	16746	8	0.72	0.66	0.75	2.00
16748	16747	8	1.03	0.79	0.75	0.95
16749	16748	8	6.64	2.01	0.75	0.75
16750	16750M	8	1.91	1.08	0.75	0.66
16750M	16749	8	1.86	1.06	0.75	0.64
16751	16750	8	1.04	0.80	0.75	0.80
16752	16751	8	0.49	0.55	0.75	2.00
16753	16752	8	0.49	0.55	0.75	2.00
16754	16753	8	0.40	0.49	0.79	2.00
17008	33535	8	5.13	1.77	0.22	0.26
17009	17008	8	4.03	1.57	0.22	0.27
17037	17009	8	5.23	1.79	0.22	0.26
17041	17037	8	5.23	1.79	0.22	0.26
17297	17764	12	1.61	2.92	1.53	0.52
17375	45753	30	2.07	38.12	18.12	1.00
17479	42227	8	1.02	0.79	1.08	2.00
17480	17479	8	1.97	1.10	1.08	1.00
17481	17480	8	5.66	1.86	1.09	1.00
17482	17481	8	6.53	2.00	1.09	0.54
17483	17482	8	4.37	1.63	1.09	0.61
17484	17483	8	1.94	1.09	1.09	2.00
17747	18202	12	42.19	14.96	1.98	1.00
17748	17747	12	1.61	2.92	1.98	0.62
17749	46796	12	5.67	5.48	1.98	0.43
17750	17749	12	0.42	1.49	1.99	2.00
17751	17750	12	0.36	1.38	1.99	2.00
17752	34447	12	0.31	1.28	1.67	2.00
17753	17752	12	0.43	1.51	1.67	2.00
17754	17753	12	0.43	1.51	1.69	2.00
17755	17754	12	0.37	1.40	1.70	2.00
17756	17755	12	0.23	1.10	1.42	2.00

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
17757	17756	12	0.68	1.90	1.45	1.00
17758	17757	12	4.60	4.94	1.47	1.00
17759	17758	12	0.30	1.27	1.50	2.00
17760	17759	12	3.42	4.26	1.52	0.43
17761	19657	12	5.83	5.56	1.52	0.37
17762	17761	12	3.57	4.35	1.52	0.42
17763	19910	12	1.95	3.22	1.53	0.50
17764	17763	12	1.44	2.76	1.53	0.55
17765	48242	12	5.89	5.59	0.77	0.32
17766	17765	12	1.52	2.84	0.77	0.37
17767	17766	12	-0.07	-0.63	0.77	0.77
17768	17767	12	1.15	2.47	0.77	0.71
17769	17768	12	4.01	4.61	0.77	0.40
17770	17769	12	3.46	4.29	0.77	0.30
17771	17770	12	4.80	5.05	0.77	0.28
17772	17771	12	4.42	4.84	0.77	0.29
17773	17772	12	1.43	2.76	0.77	0.37
17774	17773	12	8.83	6.84	0.77	0.25
17775	17774	12	0.89	2.18	0.77	0.42
17949	9039	15	1.61	5.30	1.16	0.34
17969	9040	15	0.86	3.87	1.16	0.38
18	56841	18	-0.57	-5.14	0.71	0.59
18063	17775	12	-0.45	-1.55	0.77	1.00
18064	18063	12	0.76	2.00	0.77	1.00
18202	6885	12	0.61	1.79	1.97	2.00
18241	7311	21	1.20	7.28	4.24	0.56
18297	6958	8	10.17	2.49	0.34	1.00
18298	18297	8	10.97	2.59	0.35	1.00
18298A	18298	8	0.30	0.43	0.35	0.66
18299	18298A	8	0.35	0.46	0.35	0.65
18300	18299	8	0.39	0.49	0.35	0.64
18301	18300	8	2.16	1.15	0.35	0.49
18302	18301	8	4.20	1.60	0.35	0.33
18303	18302	8	6.83	2.04	0.35	0.29
18321	7309	21	0.87	9.56	4.24	0.47
18322	18321	21	1.64	13.13	4.24	0.42
18363	7256	8	0.40	0.49	-0.01	0.87
18364	18363	8	0.40	0.49	0.00	0.10
18452	6928	42	0.01	7.10	20.42	2.00
18453	18452	12	1.43	2.75	1.77	1.00
18454	18453	12	2.98	5.17	1.77	1.00
18455	20314	12	2.55	4.78	1.77	0.43
18456	45724	12	1.96	4.19	1.39	0.41

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
18457	18456	12	3.74	5.79	1.39	0.35
18458	18457	12	3.14	5.30	1.39	0.36
18463	18458	10	1.59	2.32	1.19	0.52
18478	18463	8	2.51	1.61	1.19	1.00
18479	18478	8	3.06	1.37	1.19	0.73
18480	18479	8	2.00	1.11	1.19	2.00
18481	18480	8	2.95	1.34	1.19	1.00
18481A	18481	8	3.21	1.40	1.19	0.82
18482	18481A	8	2.77	1.30	1.19	0.78
18483	18482	8	3.23	1.40	1.19	0.97
18484	18483	8	3.01	1.36	1.19	0.81
18485	18484	8	3.63	1.49	1.19	0.70
18486	18485	8	2.66	1.27	1.19	0.78
18496	901391	15	0.24	1.34	1.60	0.94
18497	19001	8	0.38	0.48	0.25	0.52
18497A	18497	8	0.97	0.77	0.25	0.41
18498	18497A	8	0.97	0.77	0.25	0.41
18517	18486	8	3.54	1.47	1.19	0.70
18552	18496	15	0.43	2.73	1.35	0.83
18553	18552	15	0.34	2.45	1.35	0.53
18554	39224	15	0.49	2.91	1.25	0.57
18555	20127	15	0.52	3	1.25	0.45
18586	902012	24	0.32	10.73	13.61	2
18586	902012	15	1.43	6.49	4.78	1
18587	18586	8	2	1.11	0.39	1
18588	18587	8	0.61	0.61	0.39	1
18589	18588	8	0.6	0.6	0.4	1
18590	18589	8	1.19	0.85	0.4	1
18591	18590	8	0.61	0.61	0.41	0.61
18592	18591	8	0.61	0.61	0.41	0.61
18593	18592	8	0.6	0.6	0.41	0.62
18594	18593	8	1.5	0.96	0.41	0.47
18595	18594	8	2	1.1	0.41	0.43
18596	18595	8	2	1.11	0.41	0.43
19	18	15	0.25	2.08	0.68	0.4
19001	18496	8	0.4	0.5	0.25	0.62
19141	7308	21	1.24	11.4	7.44	0.6
19142	34175	21	1.36	11.95	2.17	0.47
19143	22225	21	0.18	4.35	2.17	0.46
19143	59276	21	3.58	19.39	2.07	0.48
19657	17760	12	7.02	6.1	1.52	0.36
19706	6947	24	0.72	16.1	17.9	2
19707	19706	8	0.39	0.49	0.39	1
19711	19808	8	0.4	0.49	0.33	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
19712	19711	8	0.6	0.61	0.32	1
19714	19712	8	0.6	0.61	0.32	1
19715	19714	8	0.4	0.49	0.33	1
19716	19715	8	0.6	0.6	0.33	0.54
19717	19716	8	0.6	0.6	0.33	0.54
19808	19707	8	0.4	0.49	0.36	1
19873	6955	24	0.36	11.35	16.86	2
19874	19873	12	1.75	3.96	1.96	1
19875	19874	12	0.63	2.38	1.92	1
19876	19875	12	0.56	1.73	1.9	2
19910	17762	12	2.22	3.43	1.52	0.48
20	19	12	-0.03	-0.42	0.03	0.55
20126	18553	15	0.59	3.22	1.35	0.45
20127	18554	15	0.3	2.28	1.25	0.51
20244	7289	8	0.41	0.5	0.83	2
20246	3	8	0.38	0.48	0.85	2
20247	20246	8	0.4	0.49	1.02	2
20248	20247	8	2.5	1.24	1.02	1
20249	20248	8	3.78	1.52	1.02	1
20250	20249	8	4.74	1.7	1.02	1
20314	18454	12	2.67	4.89	1.77	0.46
20553	37013	27	-0.69	-21.67	9.44	0.73
20753	21328	30	0.11	8.76	9.54	2
20754	20753	30	0.01	1.77	9.53	2
20755	20754	30	0.26	8.76	9.02	2
20756	20755	30	0.11	5.78	8.81	2
20757	20756	30	0.08	4.99	8.8	2
20758	20757	30	0.12	6	8.79	2
20759	20758	30	0.1	5.53	8.79	2
20760	20759	30	0.11	5.75	8.78	2
20761	20760	27	0.2	8.89	8.78	1
20762	21329	27	0.19	8.72	7.51	1
20763	20762	27	0.31	11.21	7.5	1
20764	20763	27	0.18	8.55	7.16	1
20765	20764	27	0.17	8.31	6.62	1
20766	20765	27	0.18	8.57	6.61	1
20767	20766	27	0.32	11.25	6.6	1
20768	20767	18	1.05	6.95	3.36	1
20769	20768	18	0.99	6.76	3.39	1
20770	20769	18	0.69	5.65	3.41	0.57
20771	20770	18	0.74	3.8	3.41	0.74
20772	20771	15	1.19	4.55	3.37	0.7
20773	20772	15	1.18	4.54	3.3	0.64
20774	20773	15	1.01	4.19	3.3	0.69
20775	20774	15	1.21	4.6	3.3	0.64
20776	20775	15	1.81	5.61	3.3	0.57
20777	30726	15	1.87	5.71	3.22	0.58
20778	57146	15	1.06	4.29	2.87	0.61
20779	20778	15	1.52	5.14	2.87	0.55
20780	20779	15	1.36	4.87	2.8	0.56
20781	20780	15	1.15	4.47	2.8	0.58

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
20782	41252	15	0.89	2.55	2.77	2
20783	56667	15	1.63	3.47	2.72	0.72
20793	69152	16	1.17	5.36	1.5	0.38
20794	36990	15	2	5.91	1.26	0.35
20795	37148	15	2.33	6.37	1.26	0.54
20796	20795	12	1.94	3.21	1.24	0.44
20797	20796	12	1.88	3.16	1.24	0.45
20798	20797	12	2.3	3.49	1.24	0.43
20799	20798	12	2.41	3.58	1.24	0.42
20803	20799	12	2.54	3.67	0.99	0.39
20804	20803	12	5.66	5.48	0.99	0.3
20805	20804	12	0.85	2.12	0.99	0.49
20806	20805	12	3.74	4.45	0.83	0.31
20807	20806	12	1.16	2.48	0.83	0.42
20808	20807	12	0.42	1.49	0.83	0.54
20809	20808	12	0.73	1.97	0.83	0.65
20810	20809	12	0.48	1.6	0.83	0.51
20811	20810	12	0.59	1.77	0.83	0.49
20812	20811	12	0.7	1.93	0.83	0.47
21	20	12	2.61	3.72	0.03	0.52
21042	41529	15	0.37	2.52	1.25	0.5
21043	21042	15	0.36	2.51	1.25	0.5
21044	21043	8	1.01	0.78	0.66	0.71
21045	21043	15	0.94	4.05	0.55	0.38
21046	21045	15	0.11	1.39	0.55	0.39
21047	21044	8	1.01	0.78	0.1	0.51
21048	21047	8	0.83	0.71	0.1	0.28
21049	21048	8	0.79	0.7	0.1	0.28
21050	21049	8	1.86	1.07	0.1	0.23
21051	21050	8	2.21	1.16	0.1	0.22
21052	21051	8	3	1.35	0.1	0.21
21053	21049	8	0.98	0.77	0	0.13
21054	21043	8	1.94	1.09	0.07	0.19
21055	21054	8	1.78	1.04	0.07	0.2
21056	21055	8	1.76	1.04	0.07	0.2
21057	21056	8	1.77	1.04	0.07	0.2
21058	21057	8	1.73	1.03	0.07	0.2
21059	21044	8	1.02	0.79	0.56	0.74
21060	21059	8	1	0.78	0.56	0.64
21061	21060	8	3.02	1.36	0.56	0.5
21062	21061	8	1.02	0.79	0.56	0.64
21063	21062	8	1.02	0.79	0.56	0.64
21064	21063	8	0.86	0.72	0.45	0.58
21065	21064	8	0.93	0.75	0.45	0.57
21066	21065	8	0.88	0.73	0.45	0.57
21067	21066	8	0.9	0.74	0.45	0.57
21068	21067	8	0.99	0.78	0.1	0.26
21071	21067	8	0.88	0.73	0.36	0.5
21328	6888	30	0.32	14.98	9.54	1
21329	20761	27	0.19	8.83	7.69	1
21589	18596	8	1.53	0.97	0.41	0.47

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
21590	21589	8	0.79	0.69	0.17	0.35
21591	21590	8	2.02	1.11	0.17	0.28
21592	21591	8	2.05	1.12	0.17	0.28
21593	21592	8	2	1.11	0.17	0.28
21594	21593	8	3.35	1.43	0.17	0.25
21595	21594	8	6.07	1.92	0.17	0.22
21620	21621	8	0.61	0.61	0.14	1
21621	52550	8	2.69	1.28	0.13	1
21622	52551	8	2.76	1.3	1.58	2
21623	21622	8	0.93	0.75	0.73	1
21624	21623	8	2.02	1.11	0.72	1
21625	21624	8	2.38	1.21	0.72	0.57
21626	21625	8	2.91	1.33	0.72	0.54
21627	21626	8	0.6	0.6	0.72	2
21628	21627	8	0.31	0.44	0.72	2
21629	21628	8	0.39	0.49	0.72	2
21630	21629	8	0.4	0.49	0.72	2
21631	21630	8	0.4	0.5	0.72	2
21634	21631	8	2.99	1.35	0.72	1
21635	21634	8	2.65	1.27	0.72	0.56
21636	21635	8	5.84	1.89	0.72	0.44
21638	21636	8	0.99	0.78	0.72	0.78
21641	21622	8	1.48	0.95	0.86	1
21642	21641	8	0.61	0.61	0.87	2
21643	21642	8	0.59	0.6	0.88	2
21645	21643	8	0.61	0.61	0.88	2
21646	21645	8	0.59	0.6	0.89	2
21647	21646	8	1.58	0.98	0.91	1
21648	21647	8	3.99	1.56	0.91	1
21649	21648	8	6.08	1.93	0.91	1
21651	21649	8	0.59	0.6	0.91	2
21652	21651	8	0.4	0.49	0.82	2
21653	21652	8	0.41	0.5	0.59	2
21654	21653	8	0.4	0.49	0.63	2
21655	21654	8	0.95	0.76	0.74	1
21805	7108	8	2.53	1.24	0.95	0.66
21806	21805	8	0.59	0.6	0.95	2
21807	21806	8	0.61	0.61	0.95	2
22	19	15	0.41	2.66	0.65	0.4
22009	6957	24	0.47	13.03	15.39	2
22010	22009	24	0.4	11.99	15.2	2
22011	22010	24	0.6	14.74	15.25	2
22012	22011	24	0.6	14.71	15.33	2
22013	22012	24	0.63	15.07	17.39	2
22067	19717	8	2.62	1.27	0.33	0.39
22090	21620	8	0.61	0.61	0.14	0.34
22091	22090	8	0.6	0.6	0.14	0.34
22092	22091	8	1.06	0.8	0.14	0.3
22093	22092	8	1.44	0.94	0.14	0.28
22094	22093	8	1.82	1.05	0.14	0.27
22097	22094	8	3.89	1.54	0.14	0.22

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
22098	22097	8	4.15	1.59	0.14	0.22
22099	22098	8	1.41	0.93	0.14	0.28
22100	22099	8	0.57	0.59	0.14	0.35
22101	22100	8	0.59	0.6	0.14	0.34
22222	7314	21	0.83	6.07	2.98	0.8
22223	22222	21	0.76	5.79	2.97	0.55
22225	19142	21	0.41	6.53	2.17	0.4
22454	6921	12	0.79	1.33	0.18	1
22455	22454	12	0.4	0.95	0.13	0.45
22456	22455	12	0.99	1.49	0.13	0.29
22457	22456	12	0.46	1.01	0.13	0.25
22458	45585	12	1.23	1.66	0.13	0.21
22462	22458	12	1.24	1.67	0.13	0.21
22463	22462	12	1.98	3.24	0.13	0.17
22463A	22463	12	1.66	2.96	0.13	0.17
22464	22463A	12	1.58	2.89	0.13	0.17
22465	45592	12	0.6	1.79	0.13	0.2
22466	22465	12	0.42	1.49	0.13	0.21
22482	45567	12	2	3.26	0.13	0.17
22489	22482	12	2.71	3.79	0.13	0.16
22490	22489	12	2.36	3.54	0.13	0.16
22538	15270	15	3.59	7.91	1.64	0.33
2254	742	10	0.44	0.94	0	0.08
2255	2254	10	0.79	1.26	0	0.08
23	22	15	1.19	4.55	0.65	0.34
23057	7162	8	0.51	0.56	0.36	0.59
23775	18517	8	6.07	1.93	0.67	0.42
23776	23775	8	4.24	1.61	0.67	0.46
23777	23776	8	1.12	0.83	0.67	0.7
23778	23777	8	0.6	0.61	0.67	2
23779	23778	8	0.68	0.64	0.67	2
2402	901892	6	3.29	0.86	0.33	1
2403	2402	8	2.49	1.6	0.33	0.34
2404	F5313-missing	8	3.52	1.9	0.33	0.3
2405	2404	8	0.35	0.6	0.26	0.47
2416	2404	8	0.4	0.64	0.07	0.3
27	23	15	1.23	4.64	0.65	0.28
2900	7335	10	15.51	5.58	0.24	0.17
2936	1508	10	0.52	1.02	0.46	0.48
2937	2936	10	0.52	1.02	0.46	0.48
2938	2937	10	0.44	0.94	0.46	0.55
2939	2938	10	0.61	1.1	0.46	0.49
2940	2939	10	2.82	2.38	0.46	0.31
2941	2940	10	1.91	1.96	0.46	0.35
2942	2941	10	0.35	0.84	0.46	0.53
2943	4971	10	1.46	1.71	0.46	0.36
2945	2943	10	0.93	1.37	0.46	0.41
2946	2945	10	1.81	1.91	0.46	0.35
2947	2946	10	1.93	1.97	0.46	0.35
29644	37991	8	0.5	0.55	1.06	2
29645	30342	15	0.58	3.18	0	0.05

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
29645	33471	30	0.65	21.3	0	0.05
29861	20812	12	0.05	0.51	0.83	0.57
29862	29861	10	0.31	0.78	0.83	0.89
29873	20799	10	4.86	3.12	0.25	0.21
3	20244	8	0.39	0.49	0.83	2
30153	21046	8	0.38	0.48	0.55	2
30155	30153	8	0.44	0.52	0.55	2
30156	30155	8	0.88	0.73	0.55	1
30157	30156	8	0.6	0.6	0.55	0.78
30158	30157	8	0.61	0.61	0.55	0.77
30159	30158	8	0.55	0.58	0.55	0.78
30342	37991	30	0.41	16.87	0	0.17
30588	16037	18	0.62	5.35	1.14	0.32
30588A	30588	15	1.15	4.48	1.14	0.36
30589	30588A	15	1.72	5.48	1.14	0.33
30590	30589	15	1.19	4.56	1.14	0.36
30590A	30590	15	0.79	3.71	1.15	0.38
30590B	30590A	15	1.88	5.72	1.15	0.37
30591	30590B	15	0.77	3.67	1.15	0.39
30592	15271	15	2.04	5.96	0.49	0.22
30593	30592	15	-2.94	-7.17	0.49	0.56
30594	30593	15	2.24	6.25	0.49	0.48
30595	30594	15	2.79	6.97	0	0.1
30596	30595	15	3.59	7.91	0	0.1
30597	30596	15	3.01	7.25	0	0.1
30598	30597	15	0.88	3.91	0	0.05
30616	22067	8	0.42	0.51	0.33	0.59
30617	30616	8	2.76	1.3	0.33	0.36
30618	30617	8	3.89	1.54	0.33	0.36
30619	30618	8	3.8	1.52	0.33	0.33
30620	30619	8	3.53	1.47	0.33	0.34
30621	30620	8	2.89	1.33	0.33	0.36
30622	30621	8	0.92	0.75	0.33	0.48
30623	30622	8	0.92	0.75	0.33	0.48
30624	30623	8	9.81	2.45	0.33	0.27
30625	30624	8	5.85	1.89	0.33	0.3
30626	30625	8	5.07	1.76	0.33	0.31
30627	30626	8	1.53	0.97	0.33	0.42
30628	30627	8	2.23	1.17	0.33	0.38
30726	20776	15	1.01	4.2	3.22	0.66
30727	53271	8	2	1.1	0.6	1
30953	31001	8	0.43	0.51	0.36	0.63
30957	30953	8	0.61	0.61	0.36	0.56
30958	59113	8	4.84	1.72	0.64	1
30959	30958	8	1.4	0.93	0.64	0.63
30960	30959	8	1.4	0.92	0.64	0.63
30963	30960	8	2.86	1.32	0.31	0.64
30968	65375	18	1.6	8.6	0	0.29
31001	21071	8	0.47	0.54	0.36	0.6
31151	30159	8	0.61	0.61	0.55	0.77
31153	31151	8	1.36	0.91	0.55	0.76

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
31154	31153	8	1.7	1.02	0.55	0.54
31155	31154	8	1.7	1.02	0.55	0.54
31828	21655	8	2.04	1.12	0.89	1
31829	31828	8	1	0.78	0.89	2
31830	31829	8	1.39	0.92	0.91	1
31831	31830	8	1.19	0.85	0.92	2
31832	31831	8	1.29	0.89	0.96	2
31833	31832	8	1.98	1.1	1.07	1
31834	31833	8	4.03	1.57	1.07	1
31835	31834	8	1.04	0.8	0.78	0.96
32254	33532	12	0.16	0.6	0.98	0.88
32257	32254	12	0.47	1.03	0.98	0.78
32258	32257	12	0.37	0.91	0.98	2
32259	32258	12	0.58	1.75	0.98	0.92
32260	32259	12	-0.01	-0.19	0.99	0.96
32261	32260	12	1.04	2.35	0.91	0.65
32262	32261	12	1.25	2.57	0.91	0.42
32263	32262	12	0.78	2.03	0.91	0.48
32394	19706	24	1.22	20.96	17.68	1
32395	32394	8	1.59	0.98	0.24	1
32396	32395	8	2.1	1.13	0.25	0.33
32397	32396	8	4.36	1.63	0.25	0.28
32475	6989	15	0.68	3.44	0.75	0.32
33093	16745	8	0.95	0.76	0.75	0.92
33295	12	24	0.51	10.44	0	0.05
33296	52660	18	1.12	7.17	0.71	0.23
33437	42234	30	0.71	29	12.09	1
33438	33437	30	0.95	33.56	12.09	1
33439	33438	27	-0.83	-23.73	12.09	1
33440	33439	27	0.33	15.04	12.09	1
33442	38773	27	0.79	23.12	11.49	1
33443	33442	27	0.69	21.67	11.48	1
33444	6970	10	-0.49	-1.29	0	0.08
33444	33443	27	0.73	22.2	11.49	0.9
33445	33444	27	0.8	23.23	10.76	0.51
33446	33445	27	1.08	27.09	10.76	0.45
33447	33446	27	1.52	32.04	10.44	0.41
33448	33447	27	1.76	34.51	10.44	0.39
33451	37014	27	0.53	14.56	8.49	0.56
33452	33451	27	0.78	17.72	4.11	0.53
33453	33452	27	0.96	19.63	4.11	0.31
33454	33453	27	1.03	20.32	4.11	0.32
33455	33454	27	1.42	23.87	4.11	0.3
33456	33455	27	1.46	24.22	4.11	0.29
33457	33456	27	1.5	24.53	4.11	0.29
33458	33457	27	3.25	36.06	4.11	0.25
33459	33458	27	0.47	13.75	4.11	0.38
33460	33459	27	1.03	20.33	4.11	0.32
33461	33460	27	0.76	17.5	4.11	0.34
33462	33461	27	0.78	17.65	4.11	0.33
33463	33462	27	0.79	17.85	4.11	0.33

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
33464	33463	27	0.73	17.12	4.11	0.34
33465	33464	27	0.74	17.18	4.11	0.34
33466	33465	27	0.66	16.23	4.11	0.35
33470	30342	30	0.48	18.45	0	0.08
33471	33470	30	0.6	20.51	0	0.05
33527	20783	15	1.12	2.88	2.72	0.78
33528	33527	12	1.04	1.53	1.1	0.64
33529	33528	12	0.67	1.23	1.1	0.71
33530	33529	10	2.95	1.58	1.1	0.85
33531	33530	10	3.61	1.75	1.1	0.58
33532	33531	10	3.77	1.79	1.1	0.58
33533	33532	8	5.87	1.89	0.22	0.25
33534	33533	8	4.62	1.68	0.22	0.26
33535	57364	8	5.24	1.79	0.22	0.26
33707	20761	12	0.07	0.62	1.24	2
33708	33707	12	2.1	3.34	1.24	1
33709	33708	12	2.7	3.79	1.24	1
33710	33709	12	2.28	3.48	1.18	0.43
33711	33710	12	2.22	3.43	1.18	0.42
33989	32397	8	4.08	1.58	0.25	0.28
33990	33989	8	4.08	1.58	0.25	0.28
33991	33990	8	7.13	2.09	0.25	0.25
33992	33991	8	2.3	1.18	0.25	0.33
33993	33992	8	0.6	0.61	0.25	0.45
33994	33993	8	0.96	0.76	0.25	0.41
33995	33994	8	3.61	1.48	0.25	0.29
33996	33995	8	2.8	1.31	0.25	0.31
33997	33996	8	0.59	0.6	0.25	0.46
33998	33997	8	0.6	0.61	0.25	0.45
33999	33998	8	2.39	1.21	0.25	0.32
34000	33999	8	2.37	1.2	0.25	0.32
34175	19141	21	1.14	10.96	5.11	0.59
34176	59274	12	4.17	6.12	0.96	0.29
34177	34176	12	5.25	6.86	0.96	0.27
34178	34177	12	2.31	4.55	0.96	0.37
34179	34178	12	1.84	4.06	0.96	0.35
34180	34179	12	1.87	3.15	0.12	0.23
34209	31835	8	0.6	0.6	0.78	2
34210	34209	8	0.59	0.6	0.78	2
34211	34210	8	0.6	0.61	0.8	2
34212	34211	8	0.65	0.63	0.85	2
34213	34212	8	2.36	1.2	1.11	1
34214	34213	8	3.17	1.39	1.11	1
34215	34214	8	3.16	1.39	1.11	1
34216	34215	8	3.13	1.38	1.11	0.7
34217	34216	8	4.46	1.65	1.11	0.62
34218	34217	8	1.96	1.09	0.48	0.51
34381	20767	24	0.2	6.52	3.46	1
34382	34381	24	0.24	7.1	3.55	1
34383	34382	24	0.36	8.82	3.56	1
34384	34383	24	0.27	4.98	1.9	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
34385	34384	24	0.3	5.19	1.85	1
34447	17751	12	0.44	1.53	1.99	2
34836	33711	12	0.46	4.08	1.18	0.37
35527	21652	8	1.94	1.09	0.33	0.39
35528	35527	8	1.88	1.07	0.33	0.39
35529	35528	8	3.17	1.39	0.33	0.39
35530	35529	8	3.4	1.44	0.33	0.34
35531	35530	8	4.22	1.6	0.33	0.32
35532	35531	8	4.26	1.61	0.33	0.32
35533	35532	8	4.45	1.65	0.33	0.32
35534	35533	8	4.81	1.71	0.33	0.31
35535	35534	8	4.48	1.65	0.33	0.32
35536	35535	8	4.59	1.67	0.33	0.31
35537	35536	8	4.4	1.64	0.33	0.32
35538	35537	8	4.31	1.62	0.33	0.32
35539	35538	8	2.91	1.33	0.33	0.35
35551	16404	8	7.51	2.14	1.59	1
36911	34383	18	1.1	7.13	1.72	0.99
36912	36911	18	1.63	8.66	1.72	0.32
36913	36912	18	0.84	6.21	1.73	0.36
36914	36913	18	1.57	8.51	1.72	0.32
36915	36914	18	1.99	9.59	1.72	0.3
36916	36915	18	1.73	8.92	1.72	0.31
36917	36916	18	1.41	8.06	1.72	0.33
36918	49997	18	2.34	10.39	1.72	0.29
36919	36918	18	2.34	10.38	1.71	0.29
36920	36919	18	2.22	10.12	1.71	0.29
36921	36920	18	3.23	12.2	1.64	0.27
36922	36921	18	1.89	9.32	1.64	0.3
36923	36922	18	1.44	8.14	1.64	0.32
36924	36923	12	1.46	2.78	1.64	0.57
36925	36924	18	2.33	6.74	1.46	0.33
36926	36925	15	1.64	3.48	1.47	0.47
36927	36926	18	1.65	5.67	1.47	0.37
36928	36927	15	1.77	3.61	1.42	0.45
36929	36928	15	1.7	3.54	1.42	0.45
36930	36929	15	0.97	2.67	1.39	0.51
36931	36930	15	1.01	2.72	1.39	0.52
36933	52089	15	1.71	3.55	1.4	0.45
36934	36933	15	1.76	3.6	1.36	0.44
36935	36934	15	2.07	3.9	1.36	0.42
36936	36935	15	1.86	3.71	1.36	0.43
36937	36936	15	2.23	4.05	1.36	0.42
36938	36937	15	2.5	6.6	1.37	0.33
36939	36938	15	2.03	5.95	1.31	0.34
36940	36939	15	1.88	5.73	1.31	0.34
36941	36940	15	0.8	3.75	1.31	0.42
36942	36941	15	0.79	3.72	1.32	0.42
36944	47025	15	0.83	3.8	1.28	0.41
36945	47036	15	1.39	4.92	1.23	0.36
36946	42603	15	0.34	2.44	1.15	0.45

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
36947	36946	15	1.88	5.72	1.1	0.37
36948	52364	15	1.42	4.97	1.11	0.34
36949	36948	15	0.68	3.44	1.11	0.4
36950	36949	15	1.11	4.39	1.12	0.36
36951	36950	15	1.15	4.48	1.01	0.34
36952	36951	15	1.08	4.34	1.01	0.35
36953	38072	15	0.96	4.09	0.63	0.34
36954	36953	12	1.67	2.97	0.17	0.19
36955	38085	12	0.82	2.09	0.1	0.2
36956	36955	12	3.2	4.12	0.1	0.14
36957	36956	12	1.25	2.57	0.1	0.18
36958	36957	12	3.24	4.14	0.1	0.14
36959	36958	12	2.92	3.94	0.1	0.15
36960	36959	12	2.47	3.62	0.1	0.15
36961	36960	12	3.34	4.21	0.1	0.14
36962	36961	12	3.48	4.3	0.1	0.14
36963	36962	12	3.74	4.46	0.1	0.14
36990	20793	15	1.73	5.49	1.3	0.54
37009	33448	27	0.59	19.98	9.64	0.49
37010	37009	27	0.73	22.18	9.44	0.46
37011	37010	27	0.61	20.31	9.44	0.49
37012	37011	27	0.88	24.41	9.44	0.44
37013	37012	27	0.43	17.06	9.44	0.53
37014	20553	27	0.77	22.86	8.49	0.73
37030	65333	15	2.94	7.16	0.63	0.25
37031	37030	12	0.29	1.24	0.63	0.48
37032	37031	12	1.38	2.7	0.63	0.38
37054	6946	8	2.59	1.26	0.2	1
37055	37054	8	1.59	0.98	0.2	1
37056	37055	8	1.25	0.87	0.2	1
37057	37056	8	0.98	0.77	0.2	0.36
37058	37057	8	0.99	0.78	0.2	0.36
37059	38271	8	1.27	0.88	0.2	0.34
37060	37059	8	5.04	1.75	0.2	0.25
37061	37060	8	4.59	1.67	0.2	0.26
37148	20794	15	1.01	4.2	1.26	0.39
37986	33466	27	1.43	23.9	3.48	0.3
37987	37986	30	0.4	16.78	3.48	0.31
37988	37987	30	0.41	16.97	3.48	0.31
37989	37988	30	0.4	16.71	3.48	0.31
37990	37989	30	0.55	19.62	3.48	0.29
37991	37990	30	0.41	16.93	1.06	0.28
38072	36952	15	0.55	3.11	1.01	0.4
38073	38072	12	1.9	3.17	0.49	0.28
38074	38073	12	1.16	2.48	0.49	0.32
38075	38074	12	1.94	3.21	0.5	0.28
38076	38075	12	1.57	2.89	0.5	0.3
38077	38076	12	1.97	3.23	0.5	0.28
38078	38077	12	1.52	2.84	0.5	0.3
38079	38078	12	0.81	2.08	0.5	0.35
38080	38079	12	1.2	2.52	0.52	0.32

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38081	38080	12	0.69	1.91	0.52	0.36
38083	38081	12	0.53	1.68	0.52	0.39
38084	38083	12	3.86	4.52	0.16	0.24
38085	36954	12	0.93	2.22	0.17	0.2
38269	37058	8	1	0.78	0.2	0.36
38270	38269	8	0.9	0.74	0.2	0.37
38271	38270	8	1.72	1.02	0.2	0.32
38273	38083	8	0.69	0.65	0.41	0.58
38452	36953	8	0.1	0.25	0.47	2
38453	38452	8	4.49	1.66	0.49	1
38454	38453	8	3.34	1.43	0.5	0.43
38455	38454	8	0.84	0.71	0.35	0.5
38456	38455	8	6.64	2.01	0.35	0.3
38457	38456	8	5.3	1.8	0.35	0.32
38458	38457	8	2.04	1.12	0.35	0.4
38459	38458	8	0.54	0.58	0.36	0.58
38460	38459	8	0.53	0.57	0.36	0.59
38461	38460	8	0.46	0.53	0.36	0.63
38462	38461	8	1.63	1	0.37	0.43
38463	38462	8	4.76	1.71	0.37	0.34
38464	38463	8	0.07	0.2	0.37	2
38465	38464	8	0.58	0.59	0.38	1
38525	6952	24	0.38	11.66	17.6	2
38526	38525	15	1.69	5.43	0.71	1
38527	38526	15	1.3	4.76	0.62	1
38528	38527	15	0.99	4.15	0.62	0.49
38529	38528	15	1.45	5.03	0.62	0.26
38530	38529	15	1.12	4.42	0.62	0.27
38530A	38530	15	0	0	0.62	0.38
38531	38530A	15	0.72	3.54	0.62	0.38
38532	38531	15	0.62	3.29	0.62	0.3
38533	38838	15	2.21	6.21	0.62	0.24
38534	38839	15	1.86	5.7	0.62	0.29
38535	38534	15	0.63	3.32	0.62	0.29
38536	38535	15	-0.13	-1.48	0.62	0.45
38537	38536	15	0.62	3.28	0.62	0.3
38538	38537	15	0.82	3.79	0.57	0.27
38538A	38538	15	3.35	7.64	0.57	0.21
38539	38538A	15	1.17	4.52	0.57	0.26
38581	21807	8	1.93	1.08	0.96	1
38582	38581	8	1.51	0.96	0.99	2
38642	38539	15	3.72	8.05	0.57	0.25
38643	38642	15	0.5	2.96	0.57	0.3
38644	38643	15	2.66	6.81	0.57	0.22
38645	38644	15	0.27	2.19	0.46	0.31
38646	39458	15	0.5	2.95	0.46	0.27
38647	38646	15	1.2	4.58	0.46	0.33
38648	38647	15	0.89	3.94	0.46	0.23
38649	38648	15	0.71	3.52	0.22	0.19
38682	18498	8	0.69	0.65	0.25	0.44
38683	38682	8	0.66	0.63	0.25	0.45

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38684	38683	8	0.43	0.51	0.25	0.5
38773	33440	27	0.58	19.8	12.09	1
38774	38773	8	0.42	0.51	0.9	2
38775	38774	8	1.13	0.83	0.9	2
38776	38775	8	1.9	1.08	0.9	1
38777	38776	8	1	0.78	0.9	2
38778	38777	8	1.01	0.79	0.91	2
38779	38778	8	1.4	0.92	0.93	2
38780	38779	8	0.61	0.61	0.95	2
38781	38780	8	4.14	1.59	0.95	1
38782	38781	8	4.9	1.73	0.96	0.55
38838	38532	15	1.63	5.33	0.62	0.25
38839	38533	15	0.52	3.01	0.62	0.31
39117	38084	12	1.95	3.22	0.15	0.18
39118	39117	12	0.59	1.77	0.15	0.21
39224	20126	15	0.1	1.32	1.35	0.62
39225	39224	8	0.63	0.62	0.1	0.29
39458	38645	15	0.45	2.8	0.46	0.28
39733	23779	12	2.87	3.9	0.67	0.7
39734	39733	12	0.47	1.58	0.67	0.46
39735	39734	12	-0.02	-0.3	0.67	0.8
39736	39735	12	1.38	2.7	0.67	0.76
39737	39736	12	-0.15	-0.9	0.67	0.93
39738	39737	12	0.85	2.12	0.67	0.9
39739	39738	12	0.13	0.84	0.67	0.58
39741	39739	12	0.4	1.45	0.67	0.59
40488	6941	27	0.66	10.59	18.09	2
41020	38582	8	2.34	1.19	1.15	1
41036	38273	8	0.42	0.51	0.41	0.69
41037	41036	8	0.41	0.5	0.42	0.72
41038	41037	8	0.5	0.55	0.19	0.41
41039	41038	8	0.64	0.63	0.19	0.39
41040	41039	8	0.54	0.58	0.19	0.42
41042	41037	8	8.15	2.23	0.27	0.79
41043	41042	8	1.16	0.84	0.27	0.41
41044	41043	8	1.13	0.83	0.28	0.43
41045	41044	8	6.18	1.94	0.3	0.28
41114	41428	10	0.82	1.28	0.83	0.69
41115	41114	10	0.42	0.92	0.83	0.73
41116	41115	10	0.22	0.67	0.83	2
41117	41429	10	0.42	0.92	0.83	0.73
41118	41117	10	2.42	2.21	0.83	0.54
41119	41118	10	1.04	1.44	0.83	0.56
41120	41119	10	0.44	0.94	0.83	0.73
41121	41120	10	0.45	0.95	0.71	0.78
41122	41121	10	1.99	2	0.71	0.6
41123	41122	10	1.04	1.44	0.71	0.51
41124	41123	10	0.68	1.17	0.71	0.57
41125	41124	10	0.07	0.38	0.71	0.71
41126	41125	10	1.32	1.62	0.71	0.86
41127	41126	10	1.24	1.57	0.71	0.49

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
41128	41127	10	0.89	1.33	0.43	0.4
41129	41128	10	0.64	1.14	0.43	0.43
41130	41129	10	0.62	1.11	0.43	0.44
41131	41130	10	0.63	1.12	0.43	0.56
41132	41131	10	0.41	0.9	0.43	0.49
41133	41132	10	2.08	2.04	0.43	0.43
41134	41133	10	0.44	0.94	0	0.31
41135	41134	10	0.44	0.94	0	0.08
41136	41135	10	-0.26	-0.72	0	0.08
41137	41136	10	0.62	1.12	0	0.08
41138	41137	10	0.42	0.92	0	0.08
41139	41138	10	0.54	1.05	0	0.08
41140	41139	10	0.18	0.59	0	0.08
41252	20781	15	0.55	3.1	2.8	0.74
41427	1593	12	-1.16	-2.48	0.83	0.82
41428	41427	12	0.35	1.36	0.83	0.75
41429	41116	10	2.33	2.16	0.83	1
41434	35551	8	1.9	1.08	1.58	2
41529	41530	16	0.76	4.32	1.25	0.37
41530	43502	16	0.27	2.58	1.25	0.5
41917	39225	8	0.49	0.54	0.1	0.31
42050	34836	14	1.55	11.24	0.95	0.22
42051	42050	14	21.71	42.09	0.95	0.14
42052	42051	15	1.94	5.81	0.95	0.29
42053	42052	15	0.35	2.46	0.95	0.43
42054	42053	15	0.77	3.67	0.95	0.35
42055	42054	15	1.19	4.56	0.95	0.33
42224	15269	8	0.62	0.62	0.85	2
42225	42224	8	4.94	1.74	0.85	1
42226	42225	8	0.6	0.6	0.85	2
42227	42226	8	0.6	0.61	0.87	2
42228	22013	24	0.36	11.46	18.03	2
42229	42228	24	1.62	18.63	3.44	1
42230	48063	24	2.79	24.44	3.02	1
42231	42230	24	2.47	22.99	3.12	1
42232	42231	24	0.79	12.99	3.18	0.34
42233	42232	24	0.25	7.28	3.18	0.45
42234	42228	30	0.76	29.98	14.66	1
42603	36945	15	0.99	4.16	1.19	0.37
43381	150	15	122.06	46.14	0.5	0.21
43382	43381	15	0.26	2.12	0.5	0.33
43383	43382	15	3.57	7.89	0.5	0.33
43384	43383	12	5.33	5.32	0.47	0.22
43385	43384	12	1.03	2.33	0.3	0.26
43386	43385	12	1.95	3.22	0.19	0.19
43387	57167	12	3.51	4.32	0.19	0.17
43501	18555	18	0.38	4.2	1.25	0.38
43502	43501	16	0.55	3.68	1.25	0.41
43786	44225	12	0.6	1.79	0.74	1
43787	43786	8	0.91	0.74	0.59	1
43788	43787	8	0.47	0.54	0.59	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
43789	43788	8	0.95	0.5	0.59	2
43790	43789	8	0.24	0.25	0.59	2
43791	43790	8	0.46	0.35	0.59	2
43792	43791	8	0.42	0.33	0.6	2
43793	43792	8	0.53	0.37	0.57	2
43794	43793	8	0.45	0.52	0.58	2
43794A	43794	8	0.44	0.52	0.27	1
43795	43794A	8	0.63	0.62	0.27	1
43796	43795	8	0.51	0.56	0.28	1
43797	43796	8	0.52	0.56	0.14	1
43798	43797	8	0.52	0.56	0.15	1
43799	43798	8	0.52	0.56	0.16	1
43800	43799	8	1.43	0.94	0.16	1
43801	43796	8	0.79	0.7	0.2	1
43802	43801	8	1.86	1.06	0.2	1
43803	43802	8	2.8	1.31	0.2	0.28
43804	43803	8	2.5	1.23	0.2	0.29
43805	43804	8	3.5	1.46	0.2	0.27
43810	43800	8	0.52	0.57	0.16	1
43811	43810	8	0.52	0.56	0.16	0.82
43812	43811	8	0.52	0.56	0.16	0.37
43813	43812	8	0.52	0.56	0.16	0.37
43814	43813	8	1.7	1.02	0.16	0.28
43815	43814	8	0.51	0.56	0.16	0.38
43818	43815	8	1.88	1.07	0.16	0.28
43819	43794	8	-0.04	-0.15	0.33	1
43820	43819	8	0.5	0.55	0.34	1
43821	43820	8	0.92	0.75	0.34	1
43822	43821	8	0.52	0.57	0.34	0.57
43823	43822	8	0.74	0.67	0.34	1
43824	43823	8	0.62	0.61	0.34	0.55
43825	43824	15	0.54	3.07	0.34	0.26
43826	52024	15	0.56	3.12	0	0.19
43865	42055	12	0.71	1.94	0.34	0.29
44208	34385	24	0.24	4.66	1.44	0.81
44209	44208	24	0.29	5.12	1.37	0.61
44210	44209	10	0.32	0.52	1.35	2
44211	44210	10	0.32	0.8	1.21	2
44212	44211	10	0.32	0.8	1.21	2
44213	44212	10	0.33	0.81	1.21	2
44214	53270	10	0.38	0.87	0.95	2
44215	44214	10	0.32	0.8	0.95	2
44216	44215	10	0.32	0.8	0.95	2
44217	44216	10	0.35	0.84	0.81	1
44218	44217	10	0.31	0.78	0.81	2
44219	44218	10	0.31	0.79	0.8	2
44220	44219	10	0.23	0.68	0.84	2
44221	44220	10	0.26	0.72	0.84	2
44222	44221	10	0.21	0.65	0.84	2
44223	44222	10	0.3	0.78	0.84	2
44224	44223	10	0.2	0.63	0.74	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
44225	44224	10	0.23	0.69	0.74	2
44548	20777	15	1.05	4.28	3.22	0.65
45056	41045	8	2.31	1.19	0.3	0.36
45057	45056	8	0.93	0.75	0.31	0.46
45058	45057	8	1.56	0.98	0.32	0.42
45059	45058	8	3.38	1.44	0.33	0.35
45563	22466	12	4.23	4.74	0.13	0.36
45564	45563	12	1.4	2.73	0.13	0.18
45564A	45564	12	0.46	1.55	0.13	0.21
45565	45564A	12	2.42	3.59	0.13	0.16
45566	45565	12	4.26	4.75	0.13	0.2
45567	45566	12	3.74	4.46	0.13	0.15
45568	22490	12	3.77	4.47	0.13	0.15
45585	22457	12	0.6	1.16	0.13	0.24
45592	22464	12	1.07	2.38	0.13	0.19
45724	18455	12	1.87	4.1	1.77	0.48
45735	43818	8	0.6	0.6	0.16	0.36
45736	45735	8	1.21	0.86	0.16	0.31
45737	45736	8	2.36	1.2	0.16	0.27
45738	45737	8	3	1.35	0.16	0.25
45739	45738	8	4.44	1.65	0.16	0.23
45740	45739	8	4.92	1.73	0.16	0.22
45741	45748	8	2.62	1.26	0.2	0.29
45742	45741	8	3.02	1.36	0.2	0.28
45743	45742	8	3.03	1.36	0.2	0.28
45744	45743	8	0.68	0.64	0.2	0.4
45745	45744	8	0.63	0.62	0.2	0.4
45746	43805	8	2.01	1.11	0.2	0.3
45747	45746	8	2.64	1.27	0.2	0.29
45748	45747	8	2.65	1.27	0.2	0.29
45753	6937	30	0.51	18.97	18.12	1
45855	45059	8	3.15	1.39	0.34	0.35
45895	30628	8	2.7	1.28	0.33	0.36
46748	38465	8	0.47	0.54	0.39	0.65
46749	46748	8	2.31	1.19	0.4	0.42
46778	45745	8	0.6	0.6	0.2	0.41
46779	46778	8	0.6	0.61	0.2	0.41
46789	6931	30	0.56	19.86	19.06	1
46796	17748	12	4.61	4.95	1.98	0.59
47025	36942	15	0.75	3.62	1.28	0.42
47036	36944	15	1.49	5.09	1.28	0.36
48063	42229	24	2.91	24.93	3.44	1
48064	48063	8	3.7	1.5	0.46	1
48065	48064	8	0.6	0.61	0.46	0.66
48066	48065	8	4.4	1.64	0.46	0.52
48067	48066	8	1.05	0.8	0.46	0.56
48068	48067	8	1.64	1	0.46	0.49
48069	48068	8	6.98	2.06	0.46	0.34
48070	48069	8	6.88	2.05	0.46	0.34
48208	48070	8	5.6	1.85	0.46	0.36
48209	48208	8	5.18	1.78	0.46	0.36

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
48242	17297	12	6.32	5.79	1.53	0.36
48243	48242	8	13.24	2.84	0.37	0.26
48244	48243	8	13.38	2.86	0.37	0.31
48245	48244	8	7.29	2.11	0.37	0.3
48246	48245	8	0.44	0.52	0.37	0.64
48247	48246	8	1.17	0.85	0.37	0.48
48247A	48247	8	5.34	1.8	0.38	0.33
48248	48247A	8	0.6	0.6	0.38	0.58
48249	48248	8	3.38	1.44	0.38	0.53
48250	48249	8	1.73	1.03	0.39	0.44
48251	48250	8	1.26	0.88	0.38	0.48
48252	48251	8	0.62	0.62	0.39	0.58
48253	48252	8	-0.17	-0.32	0.41	0.73
48254A	NS1044	6	1.01	0.38	0.4	2
48571	41917	8	0.4	0.49	0.1	0.32
48572	48572A	8	0.4	0.49	0.1	0.33
48572A	48571	8	0.4	0.49	0.1	0.33
49083	30960	8	2.09	1.13	0.4	0.53
49084	49083	8	2.17	1.15	0.4	0.42
4970	2942	10	0.38	0.88	0.46	0.52
4971	4970	10	2.46	2.22	0.46	0.4
49997	36917	18	2.29	10.27	1.72	0.29
50253	34218	8	0.62	0.61	0.48	0.94
50254	50253	8	0.59	0.6	0.48	0.69
50255	50254	8	2.24	1.17	0.48	0.46
50256	50255	8	5.81	1.88	0.48	0.36
50281	50256	8	1.2	0.86	0.48	0.55
50282	50281	8	3.24	1.41	0.48	0.42
5134	18064	12	0.81	2.07	0.53	0.35
5135	14937	10	0.59	1.09	0	0.42
5136	5135	10	1.57	1.78	0	0.1
5137	5136	10	1.05	1.45	0	0.1
5138	5137	10	0.57	1.07	0	0.08
5139	5138	10	1.87	1.94	0	0.1
5140	5139	10	0.1	0.44	0	0.08
52024	902054	15	1.18	4.53	0.34	0.47
52025	52024	10	1.59	1.79	0.34	0.31
52026	52025	10	1.32	1.63	0.34	0.33
52027	52026	10	0.98	1.4	0.34	0.35
52028	52027	10	0.53	1.03	0.34	0.41
52029	52028	8	3.68	1.5	0.34	0.8
52030	52029	8	3.76	1.51	0.34	0.34
52031	52030	8	0.44	0.52	0.34	0.61
52032	52031	8	0.44	0.52	0.34	0.61
52033	52032	8	0.44	0.52	0.34	0.61
52034	52033	8	0.44	0.52	0.34	0.61
52041	52034	8	0.44	0.52	0.34	0.61
52042	52041	8	1.31	0.89	0.34	0.46
52043	52042	8	3.29	1.42	0.34	0.35
52044	52043	8	3.2	1.4	0.34	0.35
52045	52044	8	2.68	1.28	0.34	0.37

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52088	36931	15	0.53	1.98	1.4	0.59
52089	52088	15	1.24	3.02	1.4	0.52
52091	52147	8	1.03	0.79	0.72	0.97
52092	52091	8	0.54	0.57	0.72	2
52093	52092	8	2.24	1.17	0.72	1
52094	52093	8	2.18	1.15	0.72	0.58
52095	52094	8	1.1	0.82	0.72	0.74
52096	52095	8	5.37	1.81	0.72	0.62
52097	52096	8	2.7	1.28	0.72	0.55
52098	52097	8	5.52	1.84	0.72	0.45
52099	52098	8	5.61	1.85	0.72	0.44
52100	52099	8	5.67	1.86	0.72	0.44
52147	52489	8	1.06	0.8	0.72	1
52170	18	16	20.44	22.42	0.03	0.83
52171	52170	16	0.71	4.18	0.03	0.09
52172	52171	16	0.5	3.5	0.03	0.08
52173	52172	16	1.15	5.32	0.03	0.11
52174	52173	16	5.47	11.6	0.03	0.11
52175	52174	16	4.44	10.45	0.03	0.11
52182	66	10	3.28	2.57	0.36	0.28
52240	52100	8	1.83	1.06	0.72	0.63
52241	52240	8	3.62	1.49	0.72	0.5
52242	52241	8	4.07	1.58	0.72	0.49
52243	52242	8	4.92	1.73	0.72	0.46
52244	52243	8	5.2	1.78	0.72	0.46
52245	52244	8	5.53	1.84	0.72	0.45
52364	36947	15	1.61	5.29	1.11	0.33
52488	21638	8	0.62	0.62	0.72	0.84
52489	52488	8	0.67	0.64	0.72	2
52520	52569A	8	1.09	0.82	0.72	0.75
52521	52520	8	0.6	0.6	0.72	2
52522	52521	8	0.5	0.55	0.72	2
52523	53379	8	0.5	0.55	0.75	2
52524	52523	8	0.51	0.56	0.77	2
52550	14458	8	3.13	1.38	1.69	2
52551	52550	8	8.8	2.32	1.58	1
52552	52552A	8	12.02	2.71	0.33	0.26
52552A	35539	8	13.38	2.86	0.33	0.37
52553	52552	8	7.63	2.16	0.33	0.28
52554	52553	8	3.62	1.49	0.33	0.34
52555	52554	8	7.09	2.08	0.33	0.29
52556	52555	8	7.16	2.09	0.33	0.28
52557	52556	8	0.99	0.78	0.33	0.46
52558	52557	8	0.98	0.77	0.33	0.47
52559	52558	8	2.45	1.22	0.33	0.36
52560	52245	8	16.07	3.13	0.72	0.34
52561	52560	8	5.06	1.76	0.72	0.46
52562	52561	8	5.07	1.76	0.72	0.46
52566	52562	8	0.57	0.59	0.72	2
52567	52566	8	0.61	0.61	0.72	2
52568	52567	8	3.99	1.56	0.72	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52569	52568	8	4.99	1.75	0.72	0.46
52569A	52569	8	2.91	1.33	0.72	0.54
52651	7324	18	1.02	6.85	1.99	0.38
52652	52651	24	1.04	14.94	1.24	0.23
52653	52652	24	15.5	57.57	1.24	0.14
52654	52653	24	1.07	15.09	1.24	0.22
52655	52654	24	15.02	56.68	1.24	0.17
52656	52655	24	0.1	4.65	1.24	0.35
52657	52656	24	0.33	8.42	1.24	0.32
52658	52657	21	0.3	5.62	1.17	0.31
52659	52658	21	0.8	9.16	1.17	0.26
52660	52659	21	12.95	36.86	1.17	0.19
52661	52660	12	9.8	7.21	0.52	0.21
53242	52559	8	4.7	1.69	0.33	0.31
53243	53242	8	4.56	1.67	0.33	0.32
53244	53243	8	0.81	0.7	0.33	0.49
53245	53244	8	0.59	0.6	0.33	0.54
53246	53245	8	0.61	0.61	0.33	0.53
53257	44216	8	1.01	0.79	0.4	1
53258	53257	8	4.47	1.65	0.42	1
53259	53258	8	2.36	1.2	0.42	0.42
53260	53259	8	0.98	0.77	0.42	0.54
53261	53260	8	3.03	1.36	0.42	0.4
53262	53261	8	4.81	1.71	0.42	0.35
53263	53262	8	5.97	1.91	0.42	0.34
53264	53263	8	3.34	1.43	0.42	0.39
53267	53264	8	6.84	2.04	0.42	0.33
53269	53267	8	4.76	1.7	0.42	0.35
53270	44213	10	0.25	0.71	1.21	2
53271	53270	8	0.92	0.75	0.57	1
53292	30727	8	2.04	1.11	0.63	1
53293	53292	8	0.6	0.6	0.63	2
53294	53293	8	0.48	0.54	0.63	2
53295	53294	8	1.79	1.04	0.63	0.95
53296	53295	8	0.64	0.62	0.63	2
53297	53296	8	3.49	1.46	0.63	0.88
53379	52522	8	0.49	0.55	0.73	2
53385	53246	8	1.01	0.78	0.33	0.46
53386	53385	8	2.01	1.11	0.33	0.38
53387	53386	8	0.95	0.76	0.33	0.47
53388	53387	8	0.99	0.78	0.33	0.47
53727	53727A	8	0.3	0.43	1.02	2
53727A	53727B	8	0.55	0.58	1.02	2
53727B	20250	8	4.72	1.7	1.02	1
53728	53727	8	0.63	0.62	1.02	2
53729	53728	8	0.39	0.49	1.74	2
53730	53729	8	5.14	1.77	1.93	2
53868	46779	8	1.32	0.9	0.2	0.34
53869	53868	8	0.99	0.78	0.2	0.36
53870	53869	8	2.49	1.23	0.2	0.29
53871	53870	8	4.42	1.64	0.2	0.26

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
53872	53871	8	0.82	0.71	0.2	0.37
53873	53872	8	0.56	0.59	0.2	0.42
53874	53873	8	1.14	0.83	0.2	0.35
53875	53874	8	0.52	0.56	0.2	0.42
53876	53875	8	0.78	0.69	0.2	0.38
53877	53876	8	4.6	1.68	0.2	0.25
53878	53877	8	3.82	1.53	0.2	0.26
53879	53878	8	6.38	1.97	0.2	0.23
53955	41133	10	0.35	0.84	0.43	0.97
53956	53955	10	0.66	1.15	0.43	0.81
53957	53956	10	0.36	0.85	0.43	0.51
53958	53957	10	0.54	1.04	0.43	0.45
53959	53958	10	0.38	0.88	0.43	0.5
53960	53959	10	0.47	0.97	0.43	0.5
53961	53960	10	0.44	0.94	0.43	0.49
53962	53961	10	0.4	0.89	0.43	0.5
54110	52045	8	0.6	0.61	0.34	0.56
54111	54110	8	1.58	0.98	0.34	0.42
54112	54111	8	1.76	1.04	0.34	0.41
54113	54112	8	0.69	0.65	0.34	0.53
54114	54113	8	2.46	1.23	0.34	0.38
54115	54114	8	1.68	1.01	0.34	0.42
54116	54115	8	3.59	1.48	0.34	0.35
54117	54116	8	4.79	1.71	0.34	0.32
54353	65512	8	4.29	1.62	0.33	0.32
54451	45568	12	3.15	4.09	0.13	0.15
54452	54451	12	3.05	4.02	0.13	0.16
54452A	54452	12	1.59	2.91	0.13	0.17
54453	54452A	12	1.01	2.31	0.13	0.19
54453A	54453	12	0.56	1.73	0.13	0.2
54454	54453A	12	3	3.99	0.13	0.16
54455	54454	12	2.13	3.36	0.13	0.17
54456	54455	12	0.33	1.32	0.13	0.22
54556	53962	10	0.57	1.07	0.43	0.45
55251	7298	24	0.99	14.53	8.36	0.56
55252	55251	8	0.57	0.59	0.93	2
55253	55252	8	0.59	0.6	0.93	2
55254	55253	8	0.59	0.6	0.93	2
55255	55254	8	0.6	0.6	0.93	2
55256	55255	8	4.97	1.74	0.93	1
55257	55256	8	1.08	0.81	0.93	2
55258	55257	8	32.91	4.48	0.93	0.33
55259	55258	8	36.11	4.69	0.93	0.33
55260	55259	8	31.38	4.38	0.93	0.33
55261	55260	8	0.59	0.6	0.93	2
55262	55261	8	0.6	0.6	0.93	2
55267	55262	8	0.99	0.78	0.98	2
55268	55267	8	0.99	0.78	1.04	2
55269	55268	8	15.51	3.08	1.64	1
55270	55269	8	0.98	0.78	1.64	2
55271	55270	8	4.8	1.71	1.64	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
55272	55271	8	1.05	0.8	1.7	2
56667	20782	15	1.35	3.16	2.77	1
56841	33296	18	0.3	3.73	0.71	0.3
56842	56841	12	0.59	1.77	0	0.42
57146	44548	15	0.89	3.94	3.13	0.68
57167	43386	12	6.13	5.7	0.19	0.16
57364	69111	8	7.05	2.07	0.22	0.24
59113	59114	8	0.37	0.47	0.28	0.54
59113	30957	8	2.74	1.29	0.36	0.41
59114	59115	8	0.36	0.47	0.28	0.57
59115	59116	8	0.36	0.47	0.28	0.57
59116	31155	8	2.21	1.16	0.55	0.5
59221	70	10	1.58	1.78	0.3	0.3
59222	59221	12	0.53	1.68	0.3	0.29
59274	34175	20	0.62	9.2	2.94	0.51
59275	59274	20	0.65	7.24	2.07	0.39
59276	59275	20	0.18	3.8	2.07	0.48
61	27	10	7.63	3.91	0.38	0.23
61831	21595	8	1.12	0.83	0.17	0.46
61832	61831	8	2.88	1.32	0.17	0.26
61833	61832	8	0.6	0.6	0.17	0.37
61834	61833	8	3.58	1.48	0.17	0.25
61946	6888	42	1.52	80.26	27.9	1
61947	61946	36	0.41	27.53	7.99	1
61948	61947	36	0.59	33.24	8.35	1
63663	7113	8	2.1	1.13	0.96	1
63665	7114	8	2.96	1.34	0.96	0.64
64082	53297	8	0.61	0.61	0.63	0.94
64083	64082	8	3.54	1.47	0.63	0.81
64084	64083	8	4.69	1.69	0.63	0.43
64085	64084	8	1.81	1.05	0.63	0.57
65315	65511	15	0.51	2.99	0.63	0.35
65316	65315	15	0.31	2.34	0.63	0.36
65317	65316	15	0.57	3.16	0.63	0.31
65318	65317	15	1.8	5.6	0.63	0.25
65319	65318	15	1.8	5.6	0.63	0.25
65320	65319	15	2.03	5.95	0.63	0.25
65321	65320	15	1.96	5.85	0.63	0.24
65322	65321	15	3.23	7.51	0.63	0.22
65323	65322	15	0.15	1.63	0.63	0.43
65324	65323	15	2.6	6.73	0.63	0.25
65325	65324	15	0.5	2.95	0.63	0.32
65326	65325	15	0.52	3.02	0.63	0.31
65327	65326	15	0.35	2.48	0.63	0.35
65328	65327	15	0.84	3.83	0.63	0.34
65329	65328	15	2.02	5.93	0.63	0.24
65330	65329	15	2.47	6.57	0.63	0.23
65331	65330	15	0.5	2.95	0.63	0.32
65332	65331	15	0.33	2.41	0.63	0.35
65333	65332	15	0.88	3.92	0.63	0.28
65373	6990	18	1.97	9.53	0.75	0.21

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
65374	65373	18	0.76	5.93	0.75	0.24
65375	65374	18	0.41	4.33	0.75	0.28
65497	34179	16	1.05	6.62	0.88	0.27
65498	65497	16	1.17	6.97	0.88	0.26
65499	65498	16	0.71	4.18	0.88	0.31
65500	65499	16	0.73	4.25	0.88	0.31
65501	65500	16	0.35	2.95	0.88	0.37
65502	65501	16	0.28	2.62	0.88	0.4
65503	65502	16	0.5	3.5	0.88	0.35
65504	65503	16	0.22	2.31	0.88	0.42
65505	65504	16	1.84	6.74	0.88	0.35
65506	65505	16	0.49	3.47	0.88	0.35
65507	65506	16	0.89	4.69	0.88	0.29
65508	65507	16	0.52	3.57	0.88	0.34
65509	65508	16	0.54	3.66	0.88	0.4
65510	65509	16	0.61	3.88	0.88	0.33
65511	65510	16	0.56	3.72	0.88	0.34
65512	45895	8	4.33	1.63	0.33	0.32
66	61	10	2.92	2.42	0.36	0.28
66452	67346	8	0.85	0.72	1.06	2
66453	66452	8	1.85	1.06	1.07	2
67346	7085	8	0.77	0.68	1.06	2
6874	JP1	42	0.16	21.31	41.06	0.94
6875	6874	42	0.17	21.73	41.06	2
6876	6876N	42	0.19	21.82	41.06	2
6876N	6875	42	0.19	22.9	41.06	2
6877	6876	42	0.17	26.94	40.67	2
6878	16379	42	-0.14	-23.28	40.67	1
6879	6878	42	0.46	43.91	40.67	1
6880	6879	42	0.17	26.91	40.67	2
6882	6880	42	0.2	28.91	40.4	2
6883	6882	42	-0.02	-8.98	40.4	1
6885	6883	42	0.55	48.09	40.4	1
6886	14565	42	3.98	129.77	38.05	1
6887	6886	42	0.19	28.63	38.05	2
6888	6887	42	0.21	29.56	37.02	2
6889	6888	24	0.42	9.51	-0.58	1
6890	6889	24	0.36	8.73	-0.28	1
69111	33534	8	4.5	1.66	0.22	0.27
69131	33527	15	0.97	2.68	1.65	0.7
69132	69131	16	3.51	6.04	1.65	0.37
69133	69132	16	0.7	2.69	1.65	0.57
69136	69133	16	0.71	2.71	1.65	0.56
69138	69136	16	0.7	2.7	1.65	0.57
69139	69138	16	1.45	5.97	1.6	0.5
69140	69139	16	0.84	4.55	1.6	0.42
69143	69140	16	0.74	4.26	1.6	0.43
69144	69143	16	0.74	4.25	1.5	0.45
69145	69144	15	0.63	3.33	1.5	0.48
69146	69145	16	0.57	3.74	1.5	0.44
69147	69146	15	0.83	3.81	1.5	0.44

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
69149	69147	15	0.71	3.51	1.5	0.46
69150	69149	15	0.54	3.07	1.5	0.5
69151	69150	15	1.72	5.47	1.5	0.37
69152	69151	15	0.68	3.43	1.5	0.47
6921	61946	42	0.2	29.09	21.29	1
6923	6921	42	0.13	23.1	21.17	1
6924	6923	42	0.09	19.15	21.17	2
6925	6924	42	0.09	19.29	20.94	2
6926	6925	42	0.09	19.18	20.56	2
6927	6926	42	0.01	6.87	20.64	2
6928	6927	42	0.15	25.54	20.66	1
6929	6933	30	0.64	21.17	18.75	1
6930	18452	42	0.17	26.69	18.87	1
6931	6930	42	0.48	45.11	18.91	1
6932	46789	30	0.81	23.89	18.74	1
6933	6932	30	0.48	18.44	18.75	2
6934	6929	30	0.45	17.76	18.77	2
6935	6934	30	0.56	19.87	18.78	1
6936	6935	30	0.49	18.47	18.11	1
6937	15872	30	0.63	21	18.12	1
6938	17375	30	0.55	19.6	18.12	1
6939	6938	30	0.66	21.47	17.85	1
6940	6942	30	0.62	20.9	17.87	1
6941	6940	30	0.78	23.41	18.04	1
6942	6939	30	0.65	21.32	17.85	1
6943	901676	27	0.59	19.93	18	1
6944	6943	27	0.53	18.87	18.01	1
6945	6944	27	0.41	16.62	17.96	2
6946	6945	27	0.61	20.33	17.96	1
6947	6946	24	0.62	14.95	17.83	2
6948	32394	24	0.23	9.21	17.47	2
6949	6948	24	0.78	16.75	17.48	2
6950	6949	24	0.61	14.83	17.5	2
6951	6950	24	0.71	16.01	8.04	1
6952	6951	24	0.34	11.09	8.21	1
6952	6950	24	0.09	5.72	10.54	2
6953	38525	24	0.49	13.33	14.02	2
6953	38525	15	0.72	4.61	4.43	1
6954	18586	24	0.47	13	16.84	2
6955	6954	24	0.45	12.8	16.83	2
6956	19873	24	0.43	12.41	12.37	1
6956	19873	15	0.54	4	3.59	1
6957	6956	24	0.3	10.33	11.67	2
6957	6956	15	0.01	0.64	3.87	2
6958	22009	24	2.58	30.51	0.3	1
6965	15269	18	0.7	7.4	1.94	1
6966	6965	18	0.5	6.25	1.94	1
6967	6966	15	0.58	4.14	0.98	1
6968	6967	15	0.38	3.35	-0.5	1
6969	6968	15	0.7	4.56	-0.01	0.27
6970	6969	15	0.77	4.77	0	0.05

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
6977	33451	18	0.81	6.09	2.35	0.43
6978	33451	18	0.97	6.7	2.04	0.38
6979	6978	18	0.98	6.74	2.04	0.38
6980	6979	18	1.59	8.55	2.04	0.35
6981	6980	15	1.46	5.04	2.04	0.58
6982	6981	15	1.47	5.06	2.04	0.45
6983	6982	16	0.95	4.84	1.29	0.36
6984	6983	15	0.79	3.71	1.29	0.41
6985	6984	15	0.99	4.15	1.29	0.39
6987	6985	15	1.01	4.2	1.29	0.4
6988	6987	15	1.15	4.47	0.75	0.29
6989	6988	15	0.98	4.13	0.75	0.61
6990	32475	15	0.83	3.8	0.75	0.3
6995	37990	12	5.27	5.29	0.83	0.29
70	52182	10	4.61	3.04	0.36	0.28
70349	16535	18	2.87	11.51	0	0.1
70350	70349	18	2.85	11.47	0	0.1
70351	70350	18	4.12	13.78	0	0.1
70352	70351	18	1.85	9.25	0	0.1
7049	6977	10	0.74	1.22	2.35	2
7050	7049	10	1.57	1.77	2.35	2
7051	7050	10	1.78	1.89	2.35	2
7052	7052M	8	2.36	1.2	1.17	1
7052M	7051	10	0	0	1.42	2
7061	6967	8	2.22	1.16	0.98	1
7062	7061	8	1.78	1.04	0.98	0.8
7063	7062	8	1.77	1.04	0.98	0.81
7064	7063	8	0.47	0.53	0.99	2
7065	7064	8	2.27	1.18	0.99	1
7071	33444	10	1.25	1.58	0	0.1
7071	33444	10	0.99	1.41	0.8	0.55
7080	7071	8	1.91	1.08	0.8	0.65
7081	7080	8	0.41	0.5	0.8	2
7082	7081	8	3.14	1.38	0.8	0.56
7083	7082	8	0.4	0.49	0.8	2
7084	7083	8	0.4	0.49	0.81	2
7085	7084	8	0.4	0.49	0.84	2
7086	33446	8	4.41	1.64	0.34	0.32
7087	900091	8	0.49	0.55	0.34	0.58
7088	7087	8	2.46	1.22	0.34	0.43
7089	7088	8	0.42	0.51	0.34	0.57
7090	7089	8	0.4	0.49	0.34	0.62
7092	33448	8	0.62	0.62	0.8	2
7093	7092	8	3.27	1.41	0.8	0.56
7094	7093	8	0.81	0.7	0.8	2
7095	7094	8	4.87	1.72	0.8	1
7096	7095	8	6.45	1.98	0.8	0.45
7097	7096	8	8.76	2.31	0.8	0.42
7098	7097	8	8.43	2.27	0.8	0.42
7099	7098	8	0.41	0.5	0.8	2
7100	7099	8	2.05	1.12	0.8	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7101	7100	8	1.48	0.95	0.8	0.72
7102	F1757	8	0.77	0.69	0.8	2
7106	20553	8	3.67	1.5	0.95	0.59
7107	7106	8	3.65	1.49	0.95	0.59
7108	7107	8	3.74	1.51	0.95	0.58
7113	6966	8	3.25	1.41	0.97	1
7114	63663	8	2.3	1.19	0.96	0.7
7115	63665	8	3.32	1.42	0.96	0.62
71157	64085	8	0.56	0.58	0.63	0.9
71158	71157	8	0.61	0.61	0.63	0.93
7116	7115	8	0.37	0.47	0.96	2
7117	7116	8	4.07	1.58	0.96	1
7118	7117	8	3.84	1.53	0.96	0.58
7119	7118	8	2.99	1.35	0.96	0.64
71194	38684	8	0.4	0.49	0.25	0.51
7120	7119	8	1.81	1.05	0.96	0.78
7122	13238	8	1.68	1.01	0.96	0.8
71229	71158	8	7.71	2.17	0.63	0.38
7123	7122	8	0.5	0.55	0.96	2
7124	7123	8	3.45	1.45	1.24	1
7125	7124	8	3.12	1.38	1.24	1
7126	7125	8	2.45	1.22	1.24	2
7127	7126	8	2.5	1.24	1.24	2
7128	7127	8	4.12	1.59	1.25	1
7132	7128	8	2.18	1.15	1.26	2
7133	7132	8	1.58	0.98	1.26	2
7134	7133	8	2.31	1.19	1.26	2
7135	7134	8	2.48	1.23	1.26	2
7136	7135	8	1.81	1.05	1.3	2
7137	7136	8	2.8	1.31	1.35	2
7161	7052M	8	4.47	1.65	0.34	1
7162	7161	8	7.62	2.16	0.36	1
7163	23057	8	0.26	0.4	0.36	0.72
7164	7163	8	1.6	0.99	0.36	0.43
7165	7052	8	3.7	1.5	1.17	1
7166	7165	8	3.45	1.45	1.17	1
7167	7166	8	0.41	0.5	1.16	2
7168	7167	8	2.46	1.23	1.2	1
7169	7168	8	3.36	1.43	1.38	1
7170	7169	8	3.71	1.5	1.38	1
7171	7170	8	2.34	1.19	1.4	2
7173	7171	8	3.06	1.37	1.44	2
7176	7173	8	2.75	1.29	1.5	2
7177	7176	8	4.51	1.66	1.63	2
7178	7051	8	4.11	1.58	1.01	1
7179	7178	8	1.64	1	1	1
7180	7179	8	0.4	0.5	0.98	2
7181	7180	8	0.41	0.5	0.98	2
7182	7181	8	1.23	0.87	0.98	2
7183	7182	8	2.33	1.19	1.01	1
7184	7183	8	1.87	1.07	1.06	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7185	7184	8	1.9	1.08	1.28	2
7188	7185	8	1.37	0.91	1.32	2
7252	6995	12	1.29	2.61	0.83	0.4
7253	7252	12	0.44	1.53	0.83	0.53
7254	7253	12	0.36	0.89	0.83	0.77
7255	7254	12	0.43	0.98	0.83	0.77
7256	7255	12	0.32	0.84	0.83	0.77
7257	7270	8	0.81	0.7	0	0.1
7258	7257	8	1.76	1.04	0	0.1
7259	7258	8	1.2	0.86	0	0.1
7260	7259	8	0.39	0.49	0	0.1
7261	7260	8	0.36	0.47	0	0.1
7262	7261	8	0.32	0.44	0	0.1
7263	7262	8	0.39	0.49	0	0.1
7264	7263	8	0.38	0.48	0	0.1
7265	7264	8	1.36	0.91	0	0.1
7266	7256	8	0.8	0.7	0	0.25
7270	7266	8	0.85	0.72	0	0.1
7287	7265	8	3.97	1.56	0	0.1
7288	7287	8	3.37	1.44	0	0.1
7289	7256	10	0.54	0.68	0.83	2
7295	61948	24	1.62	18.62	8.36	1
7296	7295	24	0.38	9	8.36	0.76
7297	7296	24	0.76	12.77	8.36	0.73
7298	7297	24	0.43	9.58	8.36	0.72
7300	55251	24	0.65	11.77	7.43	0.58
7301	7300	24	2	20.7	7.43	0.43
7302	7301	24	2.4	22.65	7.43	0.41
7303	7302	21	2.77	17.06	7.43	0.48
7305	7303	21	2.09	14.82	7.43	0.51
7308	7305	21	1.49	12.52	7.44	0.57
7309	19143	21	0.8	9.14	4.24	0.48
7311	18322	21	1.12	7.06	4.24	0.57
7314	18241	21	0.35	3.91	4.24	0.81
7315	22223	21	0.49	4.64	2.93	0.54
7316	7315	21	0.96	10.03	2.93	0.42
7317	7316	21	0.67	8.38	2.23	0.36
7318	7317	21	0.55	7.59	2.23	0.37
7319	7318	21	0.91	9.8	2.23	0.35
7320	7319	21	1.27	11.54	2.23	0.31
7321	7320	18	1.35	7.9	1.99	0.36
7322	7321	18	1.16	7.33	1.99	0.37
7323	7322	18	0.91	6.48	1.99	0.38
7324	7323	18	1.31	7.79	1.99	0.36
7325	52651	18	1.02	6.84	0.75	0.37
7326	7325	18	0.81	6.13	0.75	0.24
7327	7326	18	0.75	5.89	0.75	0.25
7328	7327	18	0.74	5.83	0.75	0.25
7329	7328	15	1.56	5.22	0.14	0.15
7330	7329	15	0.8	3.73	0.14	0.14
7332	7316	10	1.77	1.89	0.71	0.54

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7333	7332	10	3.44	2.63	0.71	0.37
7334	16604	10	3.11	2.5	0.24	0.23
7335	7334	10	3.77	2.75	0.24	0.22
742	754	8	1.89	1.07	0	0.1
754	902164	8	6.11	1.93	0	0.1
8195	37032	12	0.24	1.14	0.63	0.51
900091	7086	8	0.5	0.55	0.34	0.57
901295	901296	8	1.49	0.95	0.85	1
901296	901297	8	0.61	0.61	0.85	2
901297	901298	8	0.59	0.6	0.85	2
901298	901299	8	1.79	1.05	0.85	0.71
901299	52524	8	8.72	2.31	0.85	1
901390	37990	15	11.09	9.04	1.6	0.3
901391	901390	16	0.36	1.95	1.6	0.62
901676	15751	27	0.52	18.7	18.1	1
901871	52661	12	2.46	3.61	0.52	0.28
901892	901893	6	5.72	1.13	0.33	1
901893	16595	8	6.03	2.49	0.33	0.27
902012	6953	24	0.34	11.03	13.44	2
902012	6953	15	0.32	3.05	3.9	2
902054	43825	15	1.2	4.58	0.34	0.21
902164	902165	8	6.32	1.96	0	0.1
902165	52657	8	6.21	1.95	0	0.1
9039	16038	18	0.92	6.5	1.55	0.43
9040	17949	15	1.35	4.86	1.16	0.35
9041	17969	15	1.15	4.48	0.69	0.35
9042	9041	15	1.05	4.28	0.49	0.25
9044	14317	15	4.1	8.45	0	0.1
9045	9044	15	3.35	7.65	0	0.1
9046	9045	15	0.08	1.16	0	0.05
9047	9046	21	0.25	5.11	0	0.05
9048	10918	21	0.48	7.06	0	0.05
9049	9048	21	2.33	15.64	0	0.1
break 1	break12	6	-0.12	-0.12	0.2	1
Break 4	45855	6	-1.62	-0.49	0.35	1
Break11	41040	6	-2.37	-0.6	0.2	1
break12	Break11	6	-0.32	-0.2	0.2	1
break2	46749	6	0.06	0.08	0.41	2
C445	7102	8	0.21	0.36	0.8	2
F1757	7101	8	0.8	0.7	0.8	2
F5313-missing	2403	8	2.4	1.57	0.33	0.33
NS1044	48253	6	-6.41	-1.03	0.4	1
PVT302	PVT303	8	0.48	0.54	1.06	2
PVT303	29644	8	0.9	0.74	1.06	2
PVT472	PVT473	8	1.39	0.92	0.08	0.22
PVT473	PVT474	8	5.93	1.9	0.08	0.17
PVT474	PVT475	8	8.6	2.29	0.08	0.16
PVT475	PVT476	8	0.61	0.61	0.08	0.26
PVT476	PVT477	8	0.6	0.6	0.08	0.27
PVT477	PVT478	8	11.33	2.63	0.08	0.15
PVT478	32260	8	15.2	3.05	0.08	0.15

Jones Falls: Wet Weather Capacity Analysis- 10 year, 6-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
weir15	33295	24	0.31	8.18	0	0.05

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
10918	13409	21	0.15	3.97	0.00	0.05
11	70352	24	1.63	18.68	0.14	0.12
11897	7052	8	3.72	1.51	-0.10	1.00
12	11	24	0.40	9.29	0.14	0.12
13238	7120	8	1.83	1.06	0.96	0.77
13409	9047	21	-0.19	-4.47	0.00	0.05
13939	20805	12	11.76	7.90	0.29	0.83
14317	15315	15	2.45	6.54	0.00	0.10
14454	19876	12	5.12	5.21	2.12	1.00
14455	14454	12	1.46	2.78	2.12	1.00
14456	14455	12	1.59	2.91	2.13	0.75
14458	14456	12	1.02	2.32	1.76	0.66
14546	7188	8	0.57	0.59	1.41	2.00
14547	14546	8	2.87	1.32	1.53	2.00
14548	14547	8	4.80	1.71	1.74	2.00
14565	6885	42	2.14	77.24	43.56	1.00
14937	5134	10	0.55	1.05	0.87	0.71
150	901871	16	3.05	8.66	0.84	0.23
1507	16581	10	14.78	5.45	1.09	0.32
1508	1507	8	0.99	0.78	0.72	1.00
15269	42234	18	1.37	10.33	3.79	1.00
15270	30591	15	1.38	4.91	1.80	0.43
15270	9042	15	1.89	5.74	1.04	0.30
15271	22538	15	2.67	6.83	0.87	0.60
15315	30592	15	2.39	6.45	0.00	0.25
15751	40488	27	0.66	21.21	18.48	1.00
15871	6936	30	0.44	17.56	18.13	2.00
15872	15871	30	0.60	20.58	18.15	1.00
1593	29862	12	0.04	0.43	1.35	2.00
16036	42233	18	0.94	6.58	5.67	0.72
16037	16036	18	0.97	6.69	4.79	0.71
16038	16037	18	1.68	8.81	2.99	0.87
1609	1593	10	0.33	0.81	-0.06	1.00
1610	1609	10	0.50	1.01	0.00	0.62
1611	1610	10	0.77	1.24	0.00	0.08
1612	1611	10	1.74	1.87	0.00	0.10
1613	1612	10	0.47	0.97	0.00	0.08
1614	1613	10	0.39	0.88	0.00	0.08
16379	16379N	42	0.16	20.88	41.43	2.00
16379N	6877	42	0.16	21.44	41.43	2.00
16401	C445	8	0.41	0.50	0.81	2.00
16402	16401	8	0.40	0.49	0.85	2.00
16403	16402	8	2.26	1.17	1.11	1.00

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
16404	16403	8	1.56	0.97	1.57	2.00
16535	7330	15	2.02	5.93	0.37	0.20
16536	11897	8	4.15	1.59	0.00	0.10
16581	7328	10	4.34	2.95	1.09	0.43
16595	7333	8	4.68	1.69	0.58	0.42
16596	7333	10	0.50	1.00	0.60	1.00
16604	7320	10	3.39	2.61	0.42	0.84
16742	6982	8	2.42	1.22	0.76	1.00
16743	16742	8	0.65	0.63	0.76	2.00
16744	16743	8	1.02	0.79	0.76	1.00
16745	16744	8	1.07	0.81	0.76	1.00
16746	33093	8	1.00	0.78	0.76	0.93
16747	16746	8	0.72	0.66	0.76	2.00
16748	16747	8	1.03	0.79	0.76	0.98
16749	16748	8	6.64	2.01	0.76	0.77
16750	16750M	8	1.91	1.08	0.76	0.66
16750M	16749	8	1.86	1.06	0.76	0.64
16751	16750	8	1.04	0.80	0.76	0.81
16752	16751	8	0.49	0.55	0.76	2.00
16753	16752	8	0.49	0.55	0.76	2.00
16754	16753	8	0.40	0.49	0.81	2.00
17008	33535	8	5.13	1.77	0.34	0.32
17009	17008	8	4.03	1.57	0.34	0.34
17037	17009	8	5.23	1.79	0.34	0.31
17041	17037	8	5.23	1.79	0.34	0.31
17297	17764	12	1.61	2.92	2.46	1.00
17375	45753	30	2.07	38.12	18.25	1.00
17479	42227	8	1.02	0.79	1.31	2.00
17480	17479	8	1.97	1.10	1.33	2.00
17481	17480	8	5.66	1.86	1.71	1.00
17482	17481	8	6.53	2.00	1.72	1.00
17483	17482	8	4.37	1.63	1.73	2.00
17484	17483	8	1.94	1.09	1.75	2.00
17747	18202	12	42.19	14.96	2.33	1.00
17748	17747	12	1.61	2.92	2.32	0.69
17749	46796	12	5.67	5.48	2.32	0.47
17750	17749	12	0.42	1.49	2.32	2.00
17751	17750	12	0.36	1.38	2.32	2.00
17752	34447	12	0.31	1.28	1.83	2.00
17753	17752	12	0.43	1.51	1.83	2.00
17754	17753	12	0.43	1.51	1.89	2.00
17755	17754	12	0.37	1.40	1.99	2.00
17756	17755	12	0.23	1.10	2.24	2.00

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
17757	17756	12	0.68	1.90	2.24	2.00
17758	17757	12	4.60	4.94	2.55	1.00
17759	17758	12	0.30	1.27	2.56	2.00
17760	17759	12	3.42	4.26	2.65	1.00
17761	19657	12	5.83	5.56	3.52	1.00
17762	17761	12	3.57	4.35	3.60	1.00
17763	19910	12	1.95	3.22	2.45	0.66
17764	17763	12	1.44	2.76	2.45	1.00
17765	48242	12	5.89	5.59	1.28	0.42
17766	17765	12	1.52	2.84	1.28	0.49
17767	17766	12	-0.07	-0.63	1.28	1.00
17768	17767	12	1.15	2.47	1.28	1.00
17769	17768	12	4.01	4.61	1.28	0.54
17770	17769	12	3.46	4.29	1.28	0.39
17771	17770	12	4.80	5.05	1.28	0.36
17772	17771	12	4.42	4.84	1.28	0.36
17773	17772	12	1.43	2.76	1.28	0.49
17774	17773	12	8.83	6.84	1.28	0.31
17775	17774	12	0.89	2.18	1.28	0.56
17949	9039	15	1.61	5.30	2.27	0.47
17969	9040	15	0.86	3.87	2.27	0.56
18	56841	18	-0.57	-5.14	1.26	0.70
18063	17775	12	-0.45	-1.55	1.28	1.00
18064	18063	12	0.76	2.00	1.28	1.00
18202	6885	12	0.61	1.79	2.31	2.00
18241	7311	21	1.20	7.28	6.97	0.82
18297	6958	8	10.17	2.49	0.62	1.00
18298	18297	8	10.97	2.59	0.64	1.00
18298A	18298	8	0.30	0.43	0.64	2.00
18299	18298A	8	0.35	0.46	0.64	2.00
18300	18299	8	0.39	0.49	0.64	2.00
18301	18300	8	2.16	1.15	0.64	1.00
18302	18301	8	4.20	1.60	0.65	0.45
18303	18302	8	6.83	2.04	0.65	0.40
18321	7309	21	0.87	9.56	6.98	1.00
18322	18321	21	1.64	13.13	6.96	0.86
18363	7256	8	0.40	0.49	-0.01	0.87
18364	18363	8	0.40	0.49	0.00	0.10
18452	6928	42	0.01	7.10	21.01	2.00
18453	18452	12	1.43	2.75	2.33	1.00
18454	18453	12	2.98	5.17	2.33	1.00
18455	20314	12	2.55	4.78	2.33	1.00
18456	45724	12	1.96	4.19	1.72	0.47

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
18457	18456	12	3.74	5.79	1.72	0.39
18458	18457	12	3.14	5.30	1.72	0.41
18463	18458	10	1.59	2.32	1.41	0.57
18478	18463	8	2.51	1.61	1.41	1.00
18479	18478	8	3.06	1.37	1.41	2.00
18480	18479	8	2.00	1.11	1.41	2.00
18481	18480	8	2.95	1.34	1.41	2.00
18481A	18481	8	3.21	1.40	1.41	2.00
18482	18481A	8	2.77	1.30	1.43	2.00
18483	18482	8	3.23	1.40	1.45	2.00
18484	18483	8	3.01	1.36	1.49	2.00
18485	18484	8	3.63	1.49	1.55	2.00
18486	18485	8	2.66	1.27	1.64	2.00
18496	901391	15	0.24	1.34	2.50	2.00
18497	19001	8	0.38	0.48	0.45	1.00
18497A	18497	8	0.97	0.77	0.45	0.57
18498	18497A	8	0.97	0.77	0.45	0.57
18517	18486	8	3.54	1.47	1.89	2.00
18552	18496	15	0.43	2.73	2.12	1.00
18553	18552	15	0.34	2.45	2.12	1.00
18554	39224	15	0.49	2.91	1.96	1
18555	20127	15	0.52	3	1.96	1
18586	902012	24	0.32	10.73	13.8	2
18586	902012	15	1.43	6.49	4.87	1
18587	18586	8	2	1.11	0.53	1
18588	18587	8	0.61	0.61	0.53	1
18589	18588	8	0.6	0.6	0.53	1
18590	18589	8	1.19	0.85	0.54	1
18591	18590	8	0.61	0.61	0.59	1
18592	18591	8	0.61	0.61	0.59	1
18593	18592	8	0.6	0.6	0.59	1
18594	18593	8	1.5	0.96	0.59	0.77
18595	18594	8	2	1.1	0.59	0.53
18596	18595	8	2	1.11	0.59	0.53
19	18	15	0.25	2.08	1.21	0.55
19001	18496	8	0.4	0.5	0.44	1
19141	7308	21	1.24	11.4	12.01	2
19142	34175	21	1.36	11.95	3.93	1
19143	22225	21	0.18	4.35	3.91	1
19143	59276	21	3.58	19.39	3.17	1
19657	17760	12	7.02	6.1	3.31	0.6
19706	6947	24	0.72	16.1	18.38	2
19707	19706	8	0.39	0.49	0.4	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
19711	19808	8	0.4	0.49	0.45	1
19712	19711	8	0.6	0.61	0.45	1
19714	19712	8	0.6	0.61	0.47	1
19715	19714	8	0.4	0.49	0.49	2
19716	19715	8	0.6	0.6	0.5	1
19717	19716	8	0.6	0.6	0.5	1
19808	19707	8	0.4	0.49	0.45	1
19873	6955	24	0.36	11.35	17.08	2
19874	19873	12	1.75	3.96	2.12	1
19875	19874	12	0.63	2.38	2.12	1
19876	19875	12	0.56	1.73	2.12	2
19910	17762	12	2.22	3.43	-5.54	2
20	19	12	-0.03	-0.42	0.05	0.75
20126	18553	15	0.59	3.22	2.12	1
20127	18554	15	0.3	2.28	1.96	1
20244	7289	8	0.41	0.5	0.83	2
20246	3	8	0.38	0.48	0.85	2
20247	20246	8	0.4	0.49	1.02	2
20248	20247	8	2.5	1.24	1.02	1
20249	20248	8	3.78	1.52	1.02	1
20250	20249	8	4.74	1.7	1.02	1
20314	18454	12	2.67	4.89	2.33	1
20553	37013	27	-0.69	-21.67	11.81	0.81
20753	21328	30	0.11	8.76	10.34	2
20754	20753	30	0.01	1.77	10.32	2
20755	20754	30	0.26	8.76	9.9	2
20756	20755	30	0.11	5.78	9.73	2
20757	20756	30	0.08	4.99	9.71	2
20758	20757	30	0.12	6	9.7	2
20759	20758	30	0.1	5.53	9.86	2
20760	20759	30	0.11	5.75	9.86	2
20761	20760	27	0.2	8.89	9.86	2
20762	21329	27	0.19	8.72	9.5	2
20763	20762	27	0.31	11.21	9.5	1
20764	20763	27	0.18	8.55	8.85	2
20765	20764	27	0.17	8.31	7.91	1
20766	20765	27	0.18	8.57	7.91	1
20767	20766	27	0.32	11.25	7.91	1
20768	20767	18	1.05	6.95	4.6	1
20769	20768	18	0.99	6.76	4.72	1
20770	20769	18	0.69	5.65	4.72	1
20771	20770	18	0.74	3.8	4.72	2
20772	20771	15	1.19	4.55	4.66	2
20773	20772	15	1.18	4.54	4.56	2
20774	20773	15	1.01	4.19	4.56	2
20775	20774	15	1.21	4.6	4.58	1
20776	20775	15	1.81	5.61	4.59	1
20777	30726	15	1.87	5.71	4.64	1
20778	57146	15	1.06	4.29	4.04	1
20779	20778	15	1.52	5.14	4.04	1
20780	20779	15	1.36	4.87	3.99	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
20781	20780	15	1.15	4.47	4.05	1
20782	41252	15	0.89	2.55	3.99	2
20783	56667	15	1.63	3.47	3.83	2
20793	69152	16	1.17	5.36	2.37	0.55
20794	36990	15	2	5.91	2.01	0.44
20795	37148	15	2.33	6.37	2.01	0.64
20796	20795	12	1.94	3.21	1.97	0.58
20797	20796	12	1.88	3.16	1.97	0.58
20798	20797	12	2.3	3.49	1.97	0.74
20799	20798	12	2.41	3.58	2.13	1
20803	20799	12	2.54	3.67	1.58	1
20804	20803	12	5.66	5.48	1.58	0.38
20805	20804	12	0.85	2.12	1.58	0.65
20806	20805	12	3.74	4.45	1.35	0.39
20807	20806	12	1.16	2.48	1.35	0.54
20808	20807	12	0.42	1.49	1.35	0.75
20809	20808	12	0.73	1.97	1.35	0.86
20810	20809	12	0.48	1.6	1.35	0.71
20811	20810	12	0.59	1.77	1.35	0.65
20812	20811	12	0.7	1.93	1.35	0.66
21	20	12	2.61	3.72	0.04	0.72
21042	41529	15	0.37	2.52	1.96	0.65
21043	21042	15	0.36	2.51	1.96	0.65
21044	21043	8	1.01	0.78	1.04	2
21045	21043	15	0.94	4.05	0.87	0.57
21046	21045	15	0.11	1.39	0.87	0.49
21047	21044	8	1.01	0.78	0.15	1
21048	21047	8	0.83	0.71	0.19	1
21049	21048	8	0.79	0.7	0.19	0.73
21050	21049	8	1.86	1.07	0.19	0.3
21051	21050	8	2.21	1.16	0.19	0.29
21052	21051	8	3	1.35	0.19	0.27
21053	21049	8	0.98	0.77	0	0.22
21054	21043	8	1.94	1.09	0.12	0.25
21055	21054	8	1.78	1.04	0.12	0.25
21056	21055	8	1.76	1.04	0.12	0.25
21057	21056	8	1.77	1.04	0.12	0.25
21058	21057	8	1.73	1.03	0.12	0.25
21059	21044	8	1.02	0.79	0.94	2
21060	21059	8	1	0.78	0.94	2
21061	21060	8	3.02	1.36	0.94	1
21062	21061	8	1.02	0.79	0.94	2
21063	21062	8	1.02	0.79	0.94	2
21064	21063	8	0.86	0.72	0.77	2
21065	21064	8	0.93	0.75	0.77	2
21066	21065	8	0.88	0.73	0.77	2
21067	21066	8	0.9	0.74	0.77	2
21068	21067	8	0.99	0.78	0.18	1
21071	21067	8	0.88	0.73	0.68	1
21328	6888	30	0.32	14.98	10.36	1
21329	20761	27	0.19	8.83	9.83	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
21589	18596	8	1.53	0.97	0.59	0.58
21590	21589	8	0.79	0.69	0.25	0.43
21591	21590	8	2.02	1.11	0.25	0.34
21592	21591	8	2.05	1.12	0.25	0.34
21593	21592	8	2	1.11	0.25	0.34
21594	21593	8	3.35	1.43	0.25	0.3
21595	21594	8	6.07	1.92	0.25	0.27
21620	21621	8	0.61	0.61	0.23	1
21621	52550	8	2.69	1.28	0.23	1
21622	52551	8	2.76	1.3	1.58	2
21623	21622	8	0.93	0.75	0.73	1
21624	21623	8	2.02	1.11	0.73	1
21625	21624	8	2.38	1.21	0.73	0.57
21626	21625	8	2.91	1.33	0.73	0.54
21627	21626	8	0.6	0.6	0.73	2
21628	21627	8	0.31	0.44	0.73	2
21629	21628	8	0.39	0.49	0.73	2
21630	21629	8	0.4	0.49	0.73	2
21631	21630	8	0.4	0.5	0.73	2
21634	21631	8	2.99	1.35	0.73	1
21635	21634	8	2.65	1.27	0.73	0.56
21636	21635	8	5.84	1.89	0.73	0.44
21638	21636	8	0.99	0.78	0.73	0.78
21641	21622	8	1.48	0.95	0.86	1
21642	21641	8	0.61	0.61	0.87	2
21643	21642	8	0.59	0.6	0.88	2
21645	21643	8	0.61	0.61	0.9	2
21646	21645	8	0.59	0.6	0.92	2
21647	21646	8	1.58	0.98	0.97	1
21648	21647	8	3.99	1.56	0.97	1
21649	21648	8	6.08	1.93	0.97	1
21651	21649	8	0.59	0.6	0.98	2
21652	21651	8	0.4	0.49	0.82	2
21653	21652	8	0.41	0.5	0.56	2
21654	21653	8	0.4	0.49	0.59	2
21655	21654	8	0.95	0.76	0.74	1
21805	7108	8	2.53	1.24	0.95	0.66
21806	21805	8	0.59	0.6	0.95	2
21807	21806	8	0.61	0.61	0.95	2
22	19	15	0.41	2.66	1.17	0.56
22009	6957	24	0.47	13.03	15.74	2
22010	22009	24	0.4	11.99	15.44	2
22011	22010	24	0.6	14.74	15.55	2
22012	22011	24	0.6	14.71	15.75	2
22013	22012	24	0.63	15.07	18.11	2
22067	19717	8	2.62	1.27	0.5	1
22090	21620	8	0.61	0.61	0.24	0.45
22091	22090	8	0.6	0.6	0.24	0.45
22092	22091	8	1.06	0.8	0.24	0.39
22093	22092	8	1.44	0.94	0.24	0.36
22094	22093	8	1.82	1.05	0.24	0.34

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
22097	22094	8	3.89	1.54	0.24	0.29
22098	22097	8	4.15	1.59	0.24	0.28
22099	22098	8	1.41	0.93	0.24	0.36
22100	22099	8	0.57	0.59	0.24	0.46
22101	22100	8	0.59	0.6	0.24	0.46
22222	7314	21	0.83	6.07	5.16	1
22223	22222	21	0.76	5.79	5.16	1
22225	19142	21	0.41	6.53	3.92	1
22454	6921	12	0.79	1.33	-0.43	1
22455	22454	12	0.4	0.95	-0.33	1
22456	22455	12	0.99	1.49	0.26	1
22457	22456	12	0.46	1.01	0.25	1
22458	45585	12	1.23	1.66	0.21	0.26
22462	22458	12	1.24	1.67	0.21	0.26
22463	22462	12	1.98	3.24	0.21	0.2
22463A	22463	12	1.66	2.96	0.21	0.21
22464	22463A	12	1.58	2.89	0.21	0.21
22465	45592	12	0.6	1.79	0.21	0.24
22466	22465	12	0.42	1.49	0.21	0.27
22482	45567	12	2	3.26	0.21	0.2
22489	22482	12	2.71	3.79	0.21	0.19
22490	22489	12	2.36	3.54	0.21	0.19
22538	15270	15	3.59	7.91	2.85	0.43
2254	742	10	0.44	0.94	0	0.08
2255	2254	10	0.79	1.26	0	0.08
23	22	15	1.19	4.55	1.17	0.47
23057	7162	8	0.51	0.56	0.61	0.99
23775	18517	8	6.07	1.93	1.09	1
23776	23775	8	4.24	1.61	1.08	0.62
23777	23776	8	1.12	0.83	1.08	2
23778	23777	8	0.6	0.61	1.08	2
23779	23778	8	0.68	0.64	1.08	2
2402	901892	6	3.29	0.86	0.58	1
2403	2402	8	2.49	1.6	0.58	0.51
2404	F5313-missing	8	3.52	1.9	0.58	0.4
2405	2404	8	0.35	0.6	0.46	0.66
2416	2404	8	0.4	0.64	0.12	0.39
27	23	15	1.23	4.64	1.17	0.36
2900	7335	10	15.51	5.58	0.42	0.21
2936	1508	10	0.52	1.02	0.56	0.6
2937	2936	10	0.52	1.02	0.56	0.54
2938	2937	10	0.44	0.94	0.56	0.62
2939	2938	10	0.61	1.1	0.56	0.56
2940	2939	10	2.82	2.38	0.56	0.35
2941	2940	10	1.91	1.96	0.56	0.38
2942	2941	10	0.35	0.84	0.56	0.6
2943	4971	10	1.46	1.71	0.56	0.41
2945	2943	10	0.93	1.37	0.56	0.45
2946	2945	10	1.81	1.91	0.56	0.38
2947	2946	10	1.93	1.97	0.56	0.38
29644	37991	8	0.5	0.55	1.08	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
29645	30342	15	0.58	3.18	0	0.05
29645	33471	30	0.65	21.3	0	0.05
29861	20812	12	0.05	0.51	1.35	0.78
29862	29861	10	0.31	0.78	1.35	2
29873	20799	10	4.86	3.12	0.41	0.35
3	20244	8	0.39	0.49	0.83	2
30153	21046	8	0.38	0.48	0.87	2
30155	30153	8	0.44	0.52	0.87	2
30156	30155	8	0.88	0.73	0.87	2
30157	30156	8	0.6	0.6	0.87	2
30158	30157	8	0.61	0.61	0.87	2
30159	30158	8	0.55	0.58	0.87	2
30342	37991	30	0.41	16.87	0	0.19
30588	16037	18	0.62	5.35	1.8	0.63
30588A	30588	15	1.15	4.48	1.8	0.45
30589	30588A	15	1.72	5.48	1.8	0.41
30590	30589	15	1.19	4.56	1.8	0.45
30590A	30590	15	0.79	3.71	1.8	0.5
30590B	30590A	15	1.88	5.72	1.8	0.48
30591	30590B	15	0.77	3.67	1.8	0.5
30592	15271	15	2.04	5.96	0.87	0.28
30593	30592	15	-2.94	-7.17	0.87	0.65
30594	30593	15	2.24	6.25	0.87	0.57
30595	30594	15	2.79	6.97	0	0.1
30596	30595	15	3.59	7.91	0	0.1
30597	30596	15	3.01	7.25	0	0.1
30598	30597	15	0.88	3.91	0	0.05
30616	22067	8	0.42	0.51	0.5	0.8
30617	30616	8	2.76	1.3	0.5	0.44
30618	30617	8	3.89	1.54	0.5	0.44
30619	30618	8	3.8	1.52	0.5	0.41
30620	30619	8	3.53	1.47	0.5	0.42
30621	30620	8	2.89	1.33	0.5	0.44
30622	30621	8	0.92	0.75	0.5	0.62
30623	30622	8	0.92	0.75	0.5	0.62
30624	30623	8	9.81	2.45	0.5	0.33
30625	30624	8	5.85	1.89	0.5	0.36
30626	30625	8	5.07	1.76	0.5	0.38
30627	30626	8	1.53	0.97	0.5	0.52
30628	30627	8	2.23	1.17	0.5	0.48
30726	20776	15	1.01	4.2	4.48	2
30727	53271	8	2	1.1	1.01	1
30953	31001	8	0.43	0.51	0.69	2
30957	30953	8	0.61	0.61	0.7	2
30958	59113	8	4.84	1.72	1.25	1
30959	30958	8	1.4	0.93	1.26	2
30960	30959	8	1.4	0.92	1.26	2
30963	30960	8	2.86	1.32	0.54	1
30968	65375	18	1.6	8.6	0	0.37
31001	21071	8	0.47	0.54	0.68	2
31151	30159	8	0.61	0.61	0.88	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
31153	31151	8	1.36	0.91	0.89	1
31154	31153	8	1.7	1.02	0.92	1
31155	31154	8	1.7	1.02	0.95	1
31828	21655	8	2.04	1.12	0.89	1
31829	31828	8	1	0.78	0.89	2
31830	31829	8	1.39	0.92	0.91	1
31831	31830	8	1.19	0.85	0.94	2
31832	31831	8	1.29	0.89	1	2
31833	31832	8	1.98	1.1	1.08	1
31834	31833	8	4.03	1.57	1.25	1
31835	31834	8	1.04	0.8	0.8	1
32254	33532	12	0.16	0.6	1.45	2
32257	32254	12	0.47	1.03	1.46	2
32258	32257	12	0.37	0.91	1.48	2
32259	32258	12	0.58	1.75	1.5	1
32260	32259	12	-0.01	-0.19	1.53	1
32261	32260	12	1.04	2.35	1.42	1
32262	32261	12	1.25	2.57	1.49	1
32263	32262	12	0.78	2.03	1.53	1
32394	19706	24	1.22	20.96	18.09	1
32395	32394	8	1.59	0.98	0.33	1
32396	32395	8	2.1	1.13	0.34	0.39
32397	32396	8	4.36	1.63	0.34	0.33
32475	6989	15	0.68	3.44	1.25	0.42
33093	16745	8	0.95	0.76	0.76	0.93
33295	12	24	0.51	10.44	0.14	0.52
33296	52660	18	1.12	7.17	1.1	0.28
33437	42234	30	0.71	29	13.4	1
33438	33437	30	0.95	33.56	13.44	1
33439	33438	27	-0.83	-23.73	13.47	1
33440	33439	27	0.33	15.04	13.5	1
33442	38773	27	0.79	23.12	12.78	1
33443	33442	27	0.69	21.67	13.2	1
33444	6970	10	-0.49	-1.29	1.19	0.91
33444	33443	27	0.73	22.2	13.69	1
33445	33444	27	0.8	23.23	13.18	1
33446	33445	27	1.08	27.09	13.4	0.83
33447	33446	27	1.52	32.04	12.93	0.46
33448	33447	27	1.76	34.51	12.93	0.43
33451	37014	27	0.53	14.56	10.86	0.64
33452	33451	27	0.78	17.72	5.71	0.65
33453	33452	27	0.96	19.63	5.71	0.37
33454	33453	27	1.03	20.32	5.71	0.37
33455	33454	27	1.42	23.87	5.72	0.35
33456	33455	27	1.46	24.22	5.72	0.35
33457	33456	27	1.5	24.53	5.72	0.35
33458	33457	27	3.25	36.06	5.72	0.3
33459	33458	27	0.47	13.75	5.72	0.45
33460	33459	27	1.03	20.33	5.72	0.38
33461	33460	27	0.76	17.5	5.73	0.4
33462	33461	27	0.78	17.65	5.74	0.4

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
33463	33462	27	0.79	17.85	5.76	0.4
33464	33463	27	0.73	17.12	5.78	0.41
33465	33464	27	0.74	17.18	5.78	0.41
33466	33465	27	0.66	16.23	5.8	0.42
33470	30342	30	0.48	18.45	0	0.1
33471	33470	30	0.6	20.51	0	0.05
33527	20783	15	1.12	2.88	3.86	2
33528	33527	12	1.04	1.53	1.66	2
33529	33528	12	0.67	1.23	1.66	2
33530	33529	10	2.95	1.58	1.66	2
33531	33530	10	3.61	1.75	1.66	1
33532	33531	10	3.77	1.79	1.72	1
33533	33532	8	5.87	1.89	0.34	1
33534	33533	8	4.62	1.68	0.34	0.32
33535	57364	8	5.24	1.79	0.34	0.31
33707	20761	12	0.07	0.62	2.25	2
33708	33707	12	2.1	3.34	2.31	1
33709	33708	12	2.7	3.79	2.59	1
33710	33709	12	2.28	3.48	2.22	1
33711	33710	12	2.22	3.43	2.22	0.59
33989	32397	8	4.08	1.58	0.34	0.33
33990	33989	8	4.08	1.58	0.34	0.33
33991	33990	8	7.13	2.09	0.34	0.29
33992	33991	8	2.3	1.18	0.34	0.38
33993	33992	8	0.6	0.61	0.34	0.55
33994	33993	8	0.96	0.76	0.34	0.48
33995	33994	8	3.61	1.48	0.34	0.34
33996	33995	8	2.8	1.31	0.34	0.36
33997	33996	8	0.59	0.6	0.34	0.56
33998	33997	8	0.6	0.61	0.34	0.55
33999	33998	8	2.39	1.21	0.34	0.4
34000	33999	8	2.37	1.2	0.34	0.38
34175	19141	21	1.14	10.96	8.53	1
34176	59274	12	4.17	6.12	1.51	0.35
34177	34176	12	5.25	6.86	1.51	0.34
34178	34177	12	2.31	4.55	1.51	0.43
34179	34178	12	1.84	4.06	1.51	0.43
34180	34179	12	1.87	3.15	0.2	0.31
34209	31835	8	0.6	0.6	0.78	2
34210	34209	8	0.59	0.6	0.78	2
34211	34210	8	0.6	0.61	0.81	2
34212	34211	8	0.65	0.63	0.9	2
34213	34212	8	2.36	1.2	1.18	1
34214	34213	8	3.17	1.39	1.36	1
34215	34214	8	3.16	1.39	1.37	1
34216	34215	8	3.13	1.38	1.45	2
34217	34216	8	4.46	1.65	1.62	1
34218	34217	8	1.96	1.09	0.81	1
34381	20767	24	0.2	6.52	4.56	1
34382	34381	24	0.24	7.1	4.56	1
34383	34382	24	0.36	8.82	4.56	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
34384	34383	24	0.27	4.98	2.34	1
34385	34384	24	0.3	5.19	2.34	1
34447	17751	12	0.44	1.53	2.32	2
34836	33711	12	0.46	4.08	2.22	0.53
35527	21652	8	1.94	1.09	0.59	0.54
35528	35527	8	1.88	1.07	0.59	0.55
35529	35528	8	3.17	1.39	0.59	0.55
35530	35529	8	3.4	1.44	0.59	0.46
35531	35530	8	4.22	1.6	0.59	0.43
35532	35531	8	4.26	1.61	0.59	0.43
35533	35532	8	4.45	1.65	0.59	0.43
35534	35533	8	4.81	1.71	0.59	0.42
35535	35534	8	4.48	1.65	0.59	0.43
35536	35535	8	4.59	1.67	0.59	0.42
35537	35536	8	4.4	1.64	0.59	0.43
35538	35537	8	4.31	1.62	0.59	0.43
35539	35538	8	2.91	1.33	0.59	0.48
35551	16404	8	7.51	2.14	1.83	1
36911	34383	18	1.1	7.13	2.68	1
36912	36911	18	1.63	8.66	2.68	1
36913	36912	18	0.84	6.21	2.69	0.46
36914	36913	18	1.57	8.51	2.68	0.4
36915	36914	18	1.99	9.59	2.68	0.37
36916	36915	18	1.73	8.92	2.68	0.39
36917	36916	18	1.41	8.06	2.68	0.41
36918	49997	18	2.34	10.39	2.68	0.36
36919	36918	18	2.34	10.38	2.65	0.36
36920	36919	18	2.22	10.12	2.65	0.36
36921	36920	18	3.23	12.2	2.56	0.33
36922	36921	18	1.89	9.32	2.56	0.37
36923	36922	18	1.44	8.14	2.56	0.4
36924	36923	12	1.46	2.78	2.56	0.78
36925	36924	18	2.33	6.74	2.28	0.42
36926	36925	15	1.64	3.48	2.28	0.6
36927	36926	18	1.65	5.67	2.28	0.5
36928	36927	15	1.77	3.61	2.2	0.57
36929	36928	15	1.7	3.54	2.2	0.58
36930	36929	15	0.97	2.67	2.15	0.69
36931	36930	15	1.01	2.72	2.15	0.73
36933	52089	15	1.71	3.55	2.16	0.61
36934	36933	15	1.76	3.6	2.09	0.56
36935	36934	15	2.07	3.9	2.09	0.53
36936	36935	15	1.86	3.71	2.09	0.55
36937	36936	15	2.23	4.05	2.09	0.52
36938	36937	15	2.5	6.6	2.09	0.4
36939	36938	15	2.03	5.95	2	0.42
36940	36939	15	1.88	5.73	2	0.42
36941	36940	15	0.8	3.75	2	0.52
36942	36941	15	0.79	3.72	2.01	0.52
36944	47025	15	0.83	3.8	1.94	0.51
36945	47036	15	1.39	4.92	1.84	0.44

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
36946	42603	15	0.34	2.44	1.72	0.56
36947	36946	15	1.88	5.72	1.64	0.5
36948	52364	15	1.42	4.97	1.65	0.41
36949	36948	15	0.68	3.44	1.64	0.49
36950	36949	15	1.11	4.39	1.65	0.44
36951	36950	15	1.15	4.48	1.45	0.41
36952	36951	15	1.08	4.34	1.46	0.42
36953	38072	15	0.96	4.09	0.94	0.43
36954	36953	12	1.67	2.97	0.29	0.23
36955	38085	12	0.82	2.09	0.17	0.25
36956	36955	12	3.2	4.12	0.17	0.17
36957	36956	12	1.25	2.57	0.17	0.21
36958	36957	12	3.24	4.14	0.17	0.17
36959	36958	12	2.92	3.94	0.17	0.17
36960	36959	12	2.47	3.62	0.17	0.18
36961	36960	12	3.34	4.21	0.17	0.17
36962	36961	12	3.48	4.3	0.17	0.17
36963	36962	12	3.74	4.46	0.17	0.16
36990	20793	15	1.73	5.49	2.05	0.66
37009	33448	27	0.59	19.98	12.13	0.57
37010	37009	27	0.73	22.18	11.8	0.56
37011	37010	27	0.61	20.31	11.8	0.6
37012	37011	27	0.88	24.41	11.8	0.56
37013	37012	27	0.43	17.06	11.81	0.62
37014	20553	27	0.77	22.86	10.86	0.86
37030	65333	15	2.94	7.16	0.7	0.27
37031	37030	12	0.29	1.24	0.7	0.51
37032	37031	12	1.38	2.7	0.7	0.41
37054	6946	8	2.59	1.26	0.33	1
37055	37054	8	1.59	0.98	0.33	1
37056	37055	8	1.25	0.87	0.33	1
37057	37056	8	0.98	0.77	0.33	1
37058	37057	8	0.99	0.78	0.33	1
37059	38271	8	1.27	0.88	0.33	0.44
37060	37059	8	5.04	1.75	0.33	0.31
37061	37060	8	4.59	1.67	0.33	0.32
37148	20794	15	1.01	4.2	2.01	0.5
37986	33466	27	1.43	23.9	4.38	0.37
37987	37986	30	0.4	16.78	4.38	0.35
37988	37987	30	0.41	16.97	4.38	0.35
37989	37988	30	0.4	16.71	4.38	0.35
37990	37989	30	0.55	19.62	4.38	0.33
37991	37990	30	0.41	16.93	1.07	0.32
38072	36952	15	0.55	3.11	1.46	0.49
38073	38072	12	1.9	3.17	0.65	0.32
38074	38073	12	1.16	2.48	0.65	0.36
38075	38074	12	1.94	3.21	0.65	0.32
38076	38075	12	1.57	2.89	0.66	0.34
38077	38076	12	1.97	3.23	0.66	0.32
38078	38077	12	1.52	2.84	0.66	0.35
38079	38078	12	0.81	2.08	0.66	0.4

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38080	38079	12	1.2	2.52	0.67	0.37
38081	38080	12	0.69	1.91	0.67	0.42
38083	38081	12	0.53	1.68	0.68	0.45
38084	38083	12	3.86	4.52	0.26	0.3
38085	36954	12	0.93	2.22	0.29	0.25
38269	37058	8	1	0.78	0.33	0.47
38270	38269	8	0.9	0.74	0.33	0.49
38271	38270	8	1.72	1.02	0.33	0.41
38273	38083	8	0.69	0.65	0.46	0.63
38452	36953	8	0.1	0.25	0.65	2
38453	38452	8	4.49	1.66	0.66	1
38454	38453	8	3.34	1.43	0.67	0.5
38455	38454	8	0.84	0.71	0.37	0.52
38456	38455	8	6.64	2.01	0.37	0.31
38457	38456	8	5.3	1.8	0.37	0.33
38458	38457	8	2.04	1.12	0.37	0.41
38459	38458	8	0.54	0.58	0.37	0.59
38460	38459	8	0.53	0.57	0.37	0.61
38461	38460	8	0.46	0.53	0.38	0.64
38462	38461	8	1.63	1	0.38	0.44
38463	38462	8	4.76	1.71	0.38	0.34
38464	38463	8	0.07	0.2	0.38	2
38465	38464	8	0.58	0.59	0.38	1
38525	6952	24	0.38	11.66	18.01	2
38526	38525	15	1.69	5.43	1.11	1
38527	38526	15	1.3	4.76	1.12	1
38528	38527	15	0.99	4.15	1.14	1
38529	38528	15	1.45	5.03	1.14	0.34
38530	38529	15	1.12	4.42	1.14	0.36
38530A	38530	15	0	0	1.14	0.51
38531	38530A	15	0.72	3.54	1.14	0.51
38532	38531	15	0.62	3.29	1.14	0.41
38533	38838	15	2.21	6.21	1.14	0.32
38534	38839	15	1.86	5.7	1.14	0.41
38535	38534	15	0.63	3.32	1.14	0.41
38536	38535	15	-0.13	-1.48	1.14	0.58
38537	38536	15	0.62	3.28	1.14	0.42
38538	38537	15	0.82	3.79	1.04	0.36
38538A	38538	15	3.35	7.64	1.04	0.28
38539	38538A	15	1.17	4.52	1.04	0.34
38581	21807	8	1.93	1.08	0.97	1
38582	38581	8	1.51	0.96	1.04	2
38642	38539	15	3.72	8.05	1.04	0.34
38643	38642	15	0.5	2.96	1.04	0.42
38644	38643	15	2.66	6.81	1.04	0.28
38645	38644	15	0.27	2.19	0.83	0.41
38646	39458	15	0.5	2.95	0.83	0.36
38647	38646	15	1.2	4.58	0.83	0.42
38648	38647	15	0.89	3.94	0.83	0.31
38649	38648	15	0.71	3.52	0.37	0.27
38682	18498	8	0.69	0.65	0.45	0.63

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38683	38682	8	0.66	0.63	0.45	0.64
38684	38683	8	0.43	0.51	0.45	0.7
38773	33440	27	0.58	19.8	13.52	1
38774	38773	8	0.42	0.51	1.01	2
38775	38774	8	1.13	0.83	1.01	2
38776	38775	8	1.9	1.08	1.01	1
38777	38776	8	1	0.78	1.03	2
38778	38777	8	1.01	0.79	1.07	2
38779	38778	8	1.4	0.92	1.13	2
38780	38779	8	0.61	0.61	1.24	2
38781	38780	8	4.14	1.59	1.56	1
38782	38781	8	4.9	1.73	1.57	1
38838	38532	15	1.63	5.33	1.14	0.33
38839	38533	15	0.52	3.01	1.14	0.43
39117	38084	12	1.95	3.22	0.26	0.21
39118	39117	12	0.59	1.77	0.26	0.27
39224	20126	15	0.1	1.32	2.12	2
39225	39224	8	0.63	0.62	0.18	1
39458	38645	15	0.45	2.8	0.83	0.37
39733	23779	12	2.87	3.9	1.08	1
39734	39733	12	0.47	1.58	1.08	1
39735	39734	12	-0.02	-0.3	1.12	1
39736	39735	12	1.38	2.7	1.14	1
39737	39736	12	-0.15	-0.9	1.17	1
39738	39737	12	0.85	2.12	1.18	1
39739	39738	12	0.13	0.84	1.18	2
39741	39739	12	0.4	1.45	1.18	1
40488	6941	27	0.66	10.59	18.47	2
41020	38582	8	2.34	1.19	1.17	1
41036	38273	8	0.42	0.51	0.47	0.75
41037	41036	8	0.41	0.5	0.47	0.8
41038	41037	8	0.5	0.55	0.2	0.42
41039	41038	8	0.64	0.63	0.2	0.41
41040	41039	8	0.54	0.58	0.21	0.43
41042	41037	8	8.15	2.23	0.3	0.89
41043	41042	8	1.16	0.84	0.3	0.43
41044	41043	8	1.13	0.83	0.3	0.43
41045	41044	8	6.18	1.94	0.31	0.29
41114	41428	10	0.82	1.28	1.35	2
41115	41114	10	0.42	0.92	1.35	2
41116	41115	10	0.22	0.67	1.35	2
41117	41429	10	0.42	0.92	1.35	2
41118	41117	10	2.42	2.21	1.35	1
41119	41118	10	1.04	1.44	1.35	1
41120	41119	10	0.44	0.94	1.35	2
41121	41120	10	0.45	0.95	1.16	2
41122	41121	10	1.99	2	1.17	1
41123	41122	10	1.04	1.44	1.17	1
41124	41123	10	0.68	1.17	1.22	2
41125	41124	10	0.07	0.38	1.22	2
41126	41125	10	1.32	1.62	1.22	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
41127	41126	10	1.24	1.57	1.22	1
41128	41127	10	0.89	1.33	0.74	1
41129	41128	10	0.64	1.14	0.74	0.59
41130	41129	10	0.62	1.11	0.74	0.6
41131	41130	10	0.63	1.12	0.74	0.73
41132	41131	10	0.41	0.9	0.74	0.7
41133	41132	10	2.08	2.04	0.74	0.66
41134	41133	10	0.44	0.94	0	0.41
41135	41134	10	0.44	0.94	0	0.08
41136	41135	10	-0.26	-0.72	0	0.08
41137	41136	10	0.62	1.12	0	0.08
41138	41137	10	0.42	0.92	0	0.08
41139	41138	10	0.54	1.05	0	0.08
41140	41139	10	0.18	0.59	0	0.08
41252	20781	15	0.55	3.1	4.05	2
41427	1593	12	-1.16	-2.48	1.35	1
41428	41427	12	0.35	1.36	1.35	1
41429	41116	10	2.33	2.16	1.35	1
41434	35551	8	1.9	1.08	1.88	2
41529	41530	16	0.76	4.32	1.96	0.51
41530	43502	16	0.27	2.58	1.96	0.65
41917	39225	8	0.49	0.54	0.18	0.41
42050	34836	14	1.55	11.24	1.83	0.29
42051	42050	14	21.71	42.09	1.83	0.17
42052	42051	15	1.94	5.81	1.83	0.4
42053	42052	15	0.35	2.46	1.83	0.62
42054	42053	15	0.77	3.67	1.83	0.55
42055	42054	15	1.19	4.56	1.83	0.45
42224	15269	8	0.62	0.62	0.85	2
42225	42224	8	4.94	1.74	0.85	1
42226	42225	8	0.6	0.6	0.85	2
42227	42226	8	0.6	0.61	0.89	2
42228	22013	24	0.36	11.46	23.04	2
42229	42228	24	1.62	18.63	6.28	1
42230	48063	24	2.79	24.44	5.43	1
42231	42230	24	2.47	22.99	5.45	1
42232	42231	24	0.79	12.99	5.66	0.47
42233	42232	24	0.25	7.28	5.67	0.63
42234	42228	30	0.76	29.98	17.13	1
42603	36945	15	0.99	4.16	1.79	0.46
43381	150	15	122.06	46.14	0.75	0.25
43382	43381	15	0.26	2.12	0.75	0.41
43383	43382	15	3.57	7.89	0.75	0.41
43384	43383	12	5.33	5.32	0.68	0.26
43385	43384	12	1.03	2.33	0.37	0.29
43386	43385	12	1.95	3.22	0.26	0.21
43387	57167	12	3.51	4.32	0.26	0.19
43501	18555	18	0.38	4.2	1.96	0.63
43502	43501	16	0.55	3.68	1.96	0.53
43786	44225	12	0.6	1.79	0.79	1
43787	43786	8	0.91	0.74	0.58	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
43788	43787	8	0.47	0.54	0.59	2
43789	43788	8	0.95	0.5	0.6	2
43790	43789	8	0.24	0.25	0.61	2
43791	43790	8	0.46	0.35	0.64	2
43792	43791	8	0.42	0.33	0.67	2
43793	43792	8	0.53	0.37	0.61	2
43794	43793	8	0.45	0.52	0.64	2
43794A	43794	8	0.44	0.52	0.5	1
43795	43794A	8	0.63	0.62	0.5	1
43796	43795	8	0.51	0.56	0.5	1
43797	43796	8	0.52	0.56	0.22	1
43798	43797	8	0.52	0.56	0.22	1
43799	43798	8	0.52	0.56	0.23	1
43800	43799	8	1.43	0.94	0.27	1
43801	43796	8	0.79	0.7	0.34	1
43802	43801	8	1.86	1.06	0.34	1
43803	43802	8	2.8	1.31	0.34	0.36
43804	43803	8	2.5	1.23	0.34	0.37
43805	43804	8	3.5	1.46	0.34	0.35
43810	43800	8	0.52	0.57	0.27	1
43811	43810	8	0.52	0.56	0.27	1
43812	43811	8	0.52	0.56	0.27	0.83
43813	43812	8	0.52	0.56	0.27	0.5
43814	43813	8	1.7	1.02	0.27	0.36
43815	43814	8	0.51	0.56	0.27	0.5
43818	43815	8	1.88	1.07	0.27	0.36
43819	43794	8	-0.04	-0.15	0.54	1
43820	43819	8	0.5	0.55	0.54	1
43821	43820	8	0.92	0.75	0.54	1
43822	43821	8	0.52	0.57	0.55	1
43823	43822	8	0.74	0.67	0.56	1
43824	43823	8	0.62	0.61	0.56	1
43825	43824	15	0.54	3.07	0.57	0.82
43826	52024	15	0.56	3.12	0	0.25
43865	42055	12	0.71	1.94	0.4	0.38
44208	34385	24	0.24	4.66	1.64	1
44209	44208	24	0.29	5.12	1.46	1
44210	44209	10	0.32	0.52	1.44	2
44211	44210	10	0.32	0.8	1.17	2
44212	44211	10	0.32	0.8	1.17	2
44213	44212	10	0.33	0.81	1.17	2
44214	53270	10	0.38	0.87	0.97	2
44215	44214	10	0.32	0.8	0.97	2
44216	44215	10	0.32	0.8	0.97	2
44217	44216	10	0.35	0.84	0.83	1
44218	44217	10	0.31	0.78	0.83	2
44219	44218	10	0.31	0.79	0.83	2
44220	44219	10	0.23	0.68	0.93	2
44221	44220	10	0.26	0.72	0.93	2
44222	44221	10	0.21	0.65	0.93	2
44223	44222	10	0.3	0.78	0.93	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
44224	44223	10	0.2	0.63	0.79	2
44225	44224	10	0.23	0.69	0.79	2
44548	20777	15	1.05	4.28	4.64	2
45056	41045	8	2.31	1.19	0.31	0.36
45057	45056	8	0.93	0.75	0.31	0.47
45058	45057	8	1.56	0.98	0.33	0.42
45059	45058	8	3.38	1.44	0.33	0.35
45563	22466	12	4.23	4.74	0.21	0.42
45564	45563	12	1.4	2.73	0.21	0.21
45564A	45564	12	0.46	1.55	0.21	0.26
45565	45564A	12	2.42	3.59	0.21	0.21
45566	45565	12	4.26	4.75	0.21	0.23
45567	45566	12	3.74	4.46	0.21	0.18
45568	22490	12	3.77	4.47	0.21	0.18
45585	22457	12	0.6	1.16	0.21	0.3
45592	22464	12	1.07	2.38	0.21	0.22
45724	18455	12	1.87	4.1	2.33	0.56
45735	43818	8	0.6	0.6	0.27	0.49
45736	45735	8	1.21	0.86	0.27	0.4
45737	45736	8	2.36	1.2	0.27	0.34
45738	45737	8	3	1.35	0.27	0.32
45739	45738	8	4.44	1.65	0.27	0.29
45740	45739	8	4.92	1.73	0.27	0.29
45741	45748	8	2.62	1.26	0.34	0.37
45742	45741	8	3.02	1.36	0.34	0.36
45743	45742	8	3.03	1.36	0.34	0.36
45744	45743	8	0.68	0.64	0.34	0.53
45745	45744	8	0.63	0.62	0.34	0.55
45746	43805	8	2.01	1.11	0.34	0.4
45747	45746	8	2.64	1.27	0.34	0.37
45748	45747	8	2.65	1.27	0.34	0.37
45753	6937	30	0.51	18.97	18.22	1
45855	45059	8	3.15	1.39	0.34	0.36
45895	30628	8	2.7	1.28	0.5	0.45
46748	38465	8	0.47	0.54	0.4	0.65
46749	46748	8	2.31	1.19	0.4	0.42
46778	45745	8	0.6	0.6	0.34	0.55
46779	46778	8	0.6	0.61	0.34	0.55
46789	6931	30	0.56	19.86	19.24	1
46796	17748	12	4.61	4.95	2.32	0.68
47025	36942	15	0.75	3.62	1.93	0.52
47036	36944	15	1.49	5.09	1.94	0.44
48063	42229	24	2.91	24.93	6.3	1
48064	48063	8	3.7	1.5	0.91	1
48065	48064	8	0.6	0.61	0.95	2
48066	48065	8	4.4	1.64	0.96	1
48067	48066	8	1.05	0.8	0.96	2
48068	48067	8	1.64	1	0.96	0.89
48069	48068	8	6.98	2.06	0.97	0.5
48070	48069	8	6.88	2.05	0.97	0.5
48208	48070	8	5.6	1.85	0.97	0.52

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
48209	48208	8	5.18	1.78	0.97	0.54
48242	17297	12	6.32	5.79	2.45	0.62
48243	48242	8	13.24	2.84	0.39	0.27
48244	48243	8	13.38	2.86	0.39	0.32
48245	48244	8	7.29	2.11	0.39	0.31
48246	48245	8	0.44	0.52	0.39	0.65
48247	48246	8	1.17	0.85	0.39	0.49
48247A	48247	8	5.34	1.8	0.39	0.34
48248	48247A	8	0.6	0.6	0.39	0.59
48249	48248	8	3.38	1.44	0.4	0.54
48250	48249	8	1.73	1.03	0.4	0.44
48251	48250	8	1.26	0.88	0.39	0.48
48252	48251	8	0.62	0.62	0.4	0.88
48253	48252	8	-0.17	-0.32	0.47	1
48254A	NS1044	6	1.01	0.38	0.41	2
48571	41917	8	0.4	0.49	0.18	0.42
48572	48572A	8	0.4	0.49	0.18	0.43
48572A	48571	8	0.4	0.49	0.18	0.43
49083	30960	8	2.09	1.13	0.74	1
49084	49083	8	2.17	1.15	0.74	0.59
4970	2942	10	0.38	0.88	0.56	0.58
4971	4970	10	2.46	2.22	0.56	0.48
49997	36917	18	2.29	10.27	2.68	0.36
50253	34218	8	0.62	0.61	0.81	2
50254	50253	8	0.59	0.6	0.82	2
50255	50254	8	2.24	1.17	0.83	0.76
50256	50255	8	5.81	1.88	0.83	0.48
50281	50256	8	1.2	0.86	0.83	0.92
50282	50281	8	3.24	1.41	0.84	0.81
5134	18064	12	0.81	2.07	0.87	0.7
5135	14937	10	0.59	1.09	-0.01	0.64
5136	5135	10	1.57	1.78	0	0.1
5137	5136	10	1.05	1.45	0	0.1
5138	5137	10	0.57	1.07	0	0.08
5139	5138	10	1.87	1.94	0	0.1
5140	5139	10	0.1	0.44	0	0.08
52024	902054	15	1.18	4.53	0.57	0.52
52025	52024	10	1.59	1.79	0.57	0.4
52026	52025	10	1.32	1.63	0.57	0.42
52027	52026	10	0.98	1.4	0.57	0.45
52028	52027	10	0.53	1.03	0.57	0.54
52029	52028	8	3.68	1.5	0.57	0.97
52030	52029	8	3.76	1.51	0.57	0.44
52031	52030	8	0.44	0.52	0.57	2
52032	52031	8	0.44	0.52	0.57	2
52033	52032	8	0.44	0.52	0.57	2
52034	52033	8	0.44	0.52	0.57	2
52041	52034	8	0.44	0.52	0.57	2
52042	52041	8	1.31	0.89	0.57	1
52043	52042	8	3.29	1.42	0.58	0.48
52044	52043	8	3.2	1.4	0.58	0.46

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52045	52044	8	2.68	1.28	0.58	0.49
52088	36931	15	0.53	1.98	2.16	0.78
52089	52088	15	1.24	3.02	2.16	0.75
52091	52147	8	1.03	0.79	0.73	0.99
52092	52091	8	0.54	0.57	0.73	2
52093	52092	8	2.24	1.17	0.73	1
52094	52093	8	2.18	1.15	0.73	0.58
52095	52094	8	1.1	0.82	0.73	0.75
52096	52095	8	5.37	1.81	0.73	0.62
52097	52096	8	2.7	1.28	0.73	0.56
52098	52097	8	5.52	1.84	0.73	0.45
52099	52098	8	5.61	1.85	0.73	0.45
52100	52099	8	5.67	1.86	0.73	0.44
52147	52489	8	1.06	0.8	0.73	1
52170	18	16	20.44	22.42	0.05	0.96
52171	52170	16	0.71	4.18	0.05	0.09
52172	52171	16	0.5	3.5	0.05	0.09
52173	52172	16	1.15	5.32	0.05	0.12
52174	52173	16	5.47	11.6	0.05	0.12
52175	52174	16	4.44	10.45	0.05	0.11
52182	66	10	3.28	2.57	0.64	0.37
52240	52100	8	1.83	1.06	0.73	0.63
52241	52240	8	3.62	1.49	0.73	0.5
52242	52241	8	4.07	1.58	0.73	0.49
52243	52242	8	4.92	1.73	0.73	0.47
52244	52243	8	5.2	1.78	0.73	0.46
52245	52244	8	5.53	1.84	0.73	0.45
52364	36947	15	1.61	5.29	1.64	0.4
52488	21638	8	0.62	0.62	0.73	0.84
52489	52488	8	0.67	0.64	0.73	2
52520	52569A	8	1.09	0.82	0.73	0.75
52521	52520	8	0.6	0.6	0.73	2
52522	52521	8	0.5	0.55	0.73	2
52523	53379	8	0.5	0.55	0.77	2
52524	52523	8	0.51	0.56	0.81	2
52550	14458	8	3.13	1.38	1.76	2
52551	52550	8	8.8	2.32	1.58	1
52552	52552A	8	12.02	2.71	0.59	0.34
52552A	35539	8	13.38	2.86	0.59	0.5
52553	52552	8	7.63	2.16	0.59	0.37
52554	52553	8	3.62	1.49	0.59	0.45
52555	52554	8	7.09	2.08	0.59	0.38
52556	52555	8	7.16	2.09	0.59	0.38
52557	52556	8	0.99	0.78	0.59	0.66
52558	52557	8	0.98	0.77	0.59	0.66
52559	52558	8	2.45	1.22	0.59	0.52
52560	52245	8	16.07	3.13	0.73	0.35
52561	52560	8	5.06	1.76	0.73	0.46
52562	52561	8	5.07	1.76	0.73	0.46
52566	52562	8	0.57	0.59	0.73	2
52567	52566	8	0.61	0.61	0.73	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52568	52567	8	3.99	1.56	0.73	1
52569	52568	8	4.99	1.75	0.73	0.46
52569A	52569	8	2.91	1.33	0.73	0.54
52651	7324	18	1.02	6.85	3.5	0.52
52652	52651	24	1.04	14.94	2.07	0.34
52653	52652	24	15.5	57.57	2.07	0.16
52654	52653	24	1.07	15.09	2.07	0.27
52655	52654	24	15.02	56.68	2.07	0.23
52656	52655	24	0.1	4.65	2.07	0.45
52657	52656	24	0.33	8.42	2.08	0.42
52658	52657	21	0.3	5.62	1.94	0.41
52659	52658	21	0.8	9.16	1.94	0.35
52660	52659	21	12.95	36.86	1.94	0.26
52661	52660	12	9.8	7.21	0.84	0.25
53242	52559	8	4.7	1.69	0.59	0.42
53243	53242	8	4.56	1.67	0.59	0.43
53244	53243	8	0.81	0.7	0.59	0.72
53245	53244	8	0.59	0.6	0.59	0.84
53246	53245	8	0.61	0.61	0.59	0.81
53257	44216	8	1.01	0.79	0.68	1
53258	53257	8	4.47	1.65	0.72	1
53259	53258	8	2.36	1.2	0.74	0.58
53260	53259	8	0.98	0.77	0.74	0.86
53261	53260	8	3.03	1.36	0.75	0.74
53262	53261	8	4.81	1.71	0.75	0.48
53263	53262	8	5.97	1.91	0.75	0.44
53264	53263	8	3.34	1.43	0.75	0.52
53267	53264	8	6.84	2.04	0.75	0.43
53269	53267	8	4.76	1.7	0.75	0.48
53270	44213	10	0.25	0.71	1.19	2
53271	53270	8	0.92	0.75	0.68	1
53292	30727	8	2.04	1.11	1.01	1
53293	53292	8	0.6	0.6	1.02	2
53294	53293	8	0.48	0.54	1.02	2
53295	53294	8	1.79	1.04	1.02	1
53296	53295	8	0.64	0.62	1.03	2
53297	53296	8	3.49	1.46	1.05	1
53379	52522	8	0.49	0.55	0.73	2
53385	53246	8	1.01	0.78	0.59	0.67
53386	53385	8	2.01	1.11	0.59	0.53
53387	53386	8	0.95	0.76	0.59	0.68
53388	53387	8	0.99	0.78	0.59	0.66
53727	53727A	8	0.3	0.43	1.02	2
53727A	53727B	8	0.55	0.58	1.02	2
53727B	20250	8	4.72	1.7	1.02	1
53728	53727	8	0.63	0.62	1.02	2
53729	53728	8	0.39	0.49	1.75	2
53730	53729	8	5.14	1.77	2.15	2
53868	46779	8	1.32	0.9	0.34	0.44
53869	53868	8	0.99	0.78	0.34	0.48
53870	53869	8	2.49	1.23	0.34	0.37

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
53871	53870	8	4.42	1.64	0.34	0.33
53872	53871	8	0.82	0.71	0.34	0.5
53873	53872	8	0.56	0.59	0.34	0.57
53874	53873	8	1.14	0.83	0.34	0.46
53875	53874	8	0.52	0.56	0.34	0.57
53876	53875	8	0.78	0.69	0.34	0.51
53877	53876	8	4.6	1.68	0.34	0.36
53878	53877	8	3.82	1.53	0.34	0.34
53879	53878	8	6.38	1.97	0.34	0.3
53955	41133	10	0.35	0.84	0.74	1
53956	53955	10	0.66	1.15	0.74	0.99
53957	53956	10	0.36	0.85	0.74	0.72
53958	53957	10	0.54	1.04	0.74	0.68
53959	53958	10	0.38	0.88	0.74	0.71
53960	53959	10	0.47	0.97	0.74	0.72
53961	53960	10	0.44	0.94	0.74	0.68
53962	53961	10	0.4	0.89	0.74	0.71
54110	52045	8	0.6	0.61	0.58	0.82
54111	54110	8	1.58	0.98	0.58	0.69
54112	54111	8	1.76	1.04	0.58	0.55
54113	54112	8	0.69	0.65	0.58	0.75
54114	54113	8	2.46	1.23	0.58	0.62
54115	54114	8	1.68	1.01	0.58	0.56
54116	54115	8	3.59	1.48	0.58	0.44
54117	54116	8	4.79	1.71	0.58	0.42
54353	65512	8	4.29	1.62	0.5	0.4
54451	45568	12	3.15	4.09	0.21	0.18
54452	54451	12	3.05	4.02	0.21	0.19
54452A	54452	12	1.59	2.91	0.21	0.21
54453	54452A	12	1.01	2.31	0.21	0.23
54453A	54453	12	0.56	1.73	0.21	0.25
54454	54453A	12	3	3.99	0.21	0.19
54455	54454	12	2.13	3.36	0.21	0.2
54456	54455	12	0.33	1.32	0.21	0.28
54556	53962	10	0.57	1.07	0.74	0.68
55251	7298	24	0.99	14.53	12.81	1
55252	55251	8	0.57	0.59	0.99	2
55253	55252	8	0.59	0.6	0.96	2
55254	55253	8	0.59	0.6	0.95	2
55255	55254	8	0.6	0.6	0.94	2
55256	55255	8	4.97	1.74	0.93	1
55257	55256	8	1.08	0.81	0.93	2
55258	55257	8	32.91	4.48	0.93	0.33
55259	55258	8	36.11	4.69	0.93	0.33
55260	55259	8	31.38	4.38	0.93	0.33
55261	55260	8	0.59	0.6	0.93	2
55262	55261	8	0.6	0.6	0.93	2
55267	55262	8	0.99	0.78	0.96	2
55268	55267	8	0.99	0.78	1.03	2
55269	55268	8	15.51	3.08	1.65	1
55270	55269	8	0.98	0.78	1.65	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
55271	55270	8	4.8	1.71	1.65	1
55272	55271	8	1.05	0.8	1.76	2
56667	20782	15	1.35	3.16	3.99	2
56841	33296	18	0.3	3.73	1.26	0.41
56842	56841	12	0.59	1.77	-0.01	0.59
57146	44548	15	0.89	3.94	4.49	2
57167	43386	12	6.13	5.7	0.26	0.17
57364	69111	8	7.05	2.07	0.34	0.29
59113	59114	8	0.37	0.47	0.55	2
59113	30957	8	2.74	1.29	0.71	1
59114	59115	8	0.36	0.47	0.54	2
59115	59116	8	0.36	0.47	0.54	2
59116	31155	8	2.21	1.16	1.01	1
59221	70	10	1.58	1.78	0.54	0.39
59222	59221	12	0.53	1.68	0.54	0.4
59274	34175	20	0.62	9.2	4.85	1
59275	59274	20	0.65	7.24	3.25	1
59276	59275	20	0.18	3.8	3.16	1
61	27	10	7.63	3.91	0.68	0.3
61831	21595	8	1.12	0.83	0.25	0.51
61832	61831	8	2.88	1.32	0.25	0.31
61833	61832	8	0.6	0.6	0.25	0.46
61834	61833	8	3.58	1.48	0.25	0.29
61946	6888	42	1.52	80.26	34	1
61947	61946	36	0.41	27.53	12.26	1
61948	61947	36	0.59	33.24	12.38	1
63663	7113	8	2.1	1.13	0.98	1
63665	7114	8	2.96	1.34	0.96	1
64082	53297	8	0.61	0.61	1.09	2
64083	64082	8	3.54	1.47	1.09	1
64084	64083	8	4.69	1.69	1.09	0.59
64085	64084	8	1.81	1.05	1.09	2
65315	65511	15	0.51	2.99	0.7	0.44
65316	65315	15	0.31	2.34	0.7	0.38
65317	65316	15	0.57	3.16	0.7	0.33
65318	65317	15	1.8	5.6	0.7	0.26
65319	65318	15	1.8	5.6	0.7	0.26
65320	65319	15	2.03	5.95	0.7	0.26
65321	65320	15	1.96	5.85	0.7	0.26
65322	65321	15	3.23	7.51	0.7	0.23
65323	65322	15	0.15	1.63	0.7	0.45
65324	65323	15	2.6	6.73	0.7	0.27
65325	65324	15	0.5	2.95	0.7	0.34
65326	65325	15	0.52	3.02	0.7	0.33
65327	65326	15	0.35	2.48	0.7	0.36
65328	65327	15	0.84	3.83	0.7	0.36
65329	65328	15	2.02	5.93	0.7	0.25
65330	65329	15	2.47	6.57	0.7	0.24
65331	65330	15	0.5	2.95	0.7	0.34
65332	65331	15	0.33	2.41	0.7	0.37
65333	65332	15	0.88	3.92	0.7	0.29

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
65373	6990	18	1.97	9.53	1.25	0.27
65374	65373	18	0.76	5.93	1.25	0.32
65375	65374	18	0.41	4.33	1.25	0.37
65497	34179	16	1.05	6.62	1.32	0.32
65498	65497	16	1.17	6.97	1.32	0.31
65499	65498	16	0.71	4.18	1.32	0.39
65500	65499	16	0.73	4.25	1.32	0.38
65501	65500	16	0.35	2.95	1.32	0.47
65502	65501	16	0.28	2.62	1.32	0.5
65503	65502	16	0.5	3.5	1.32	0.43
65504	65503	16	0.22	2.31	1.32	0.52
65505	65504	16	1.84	6.74	1.32	0.44
65506	65505	16	0.49	3.47	1.32	0.43
65507	65506	16	0.89	4.69	1.32	0.36
65508	65507	16	0.52	3.57	1.32	0.42
65509	65508	16	0.54	3.66	1.32	0.48
65510	65509	16	0.61	3.88	1.32	0.41
65511	65510	16	0.56	3.72	1.32	0.42
65512	45895	8	4.33	1.63	0.5	0.4
66	61	10	2.92	2.42	0.64	0.36
66452	67346	8	0.85	0.72	1.26	2
66453	66452	8	1.85	1.06	1.31	2
67346	7085	8	0.77	0.68	1.26	2
6874	JP1	42	0.16	21.31	42.02	0.95
6875	6874	42	0.17	21.73	42.02	2
6876	6876N	42	0.19	21.82	42.02	2
6876N	6875	42	0.19	22.9	42.02	2
6877	6876	42	0.17	26.94	41.43	2
6878	16379	42	-0.14	-23.28	41.43	1
6879	6878	42	0.46	43.91	41.43	1
6880	6879	42	0.17	26.91	41.43	2
6882	6880	42	0.2	28.91	41.01	2
6883	6882	42	-0.02	-8.98	41.01	1
6885	6883	42	0.55	48.09	46.65	1
6886	14565	42	3.98	129.77	43.56	1
6887	6886	42	0.19	28.63	43.56	2
6888	6887	42	0.21	29.56	41.91	2
6889	6888	24	0.42	9.51	-1.65	1
6890	6889	24	0.36	8.73	-0.93	1
69111	33534	8	4.5	1.66	0.34	0.33
69131	33527	15	0.97	2.68	2.6	1
69132	69131	16	3.51	6.04	2.6	1
69133	69132	16	0.7	2.69	2.6	0.78
69136	69133	16	0.71	2.71	2.6	0.78
69138	69136	16	0.7	2.7	2.6	0.78
69139	69138	16	1.45	5.97	2.52	0.76
69140	69139	16	0.84	4.55	2.52	0.54
69143	69140	16	0.74	4.26	2.52	0.56
69144	69143	16	0.74	4.25	2.37	0.59
69145	69144	15	0.63	3.33	2.37	0.63
69146	69145	16	0.57	3.74	2.37	0.58

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
69147	69146	15	0.83	3.81	2.37	0.57
69149	69147	15	0.71	3.51	2.37	0.61
69150	69149	15	0.54	3.07	2.37	0.66
69151	69150	15	1.72	5.47	2.37	0.48
69152	69151	15	0.68	3.43	2.37	0.62
6921	61946	42	0.2	29.09	22.79	1
6923	6921	42	0.13	23.1	22.49	1
6924	6923	42	0.09	19.15	22.48	2
6925	6924	42	0.09	19.29	22.11	2
6926	6925	42	0.09	19.18	21.52	2
6927	6926	42	0.01	6.87	21.5	2
6928	6927	42	0.15	25.54	21.49	1
6929	6933	30	0.64	21.17	18.76	1
6930	18452	42	0.17	26.69	19	1
6931	6930	42	0.48	45.11	18.99	1
6932	46789	30	0.81	23.89	18.72	1
6933	6932	30	0.48	18.44	18.75	2
6934	6929	30	0.45	17.76	19.06	2
6935	6934	30	0.56	19.87	19.12	1
6936	6935	30	0.49	18.47	18.12	1
6937	15872	30	0.63	21	18.18	1
6938	17375	30	0.55	19.6	18.28	1
6939	6938	30	0.66	21.47	17.88	1
6940	6942	30	0.62	20.9	18.02	1
6941	6940	30	0.78	23.41	18.38	1
6942	6939	30	0.65	21.32	17.9	1
6943	901676	27	0.59	19.93	18.33	1
6944	6943	27	0.53	18.87	18.35	1
6945	6944	27	0.41	16.62	18.3	2
6946	6945	27	0.61	20.33	18.31	1
6947	6946	24	0.62	14.95	18.27	2
6948	32394	24	0.23	9.21	17.8	2
6949	6948	24	0.78	16.75	17.82	2
6950	6949	24	0.61	14.83	17.85	2
6951	6950	24	0.71	16.01	8.01	1
6952	6951	24	0.34	11.09	8.3	1
6952	6950	24	0.09	5.72	10.69	2
6953	38525	24	0.49	13.33	13.9	2
6953	38525	15	0.72	4.61	4.47	2
6954	18586	24	0.47	13	16.9	2
6955	6954	24	0.45	12.8	16.94	2
6956	19873	24	0.43	12.41	11.9	1
6956	19873	15	0.54	4	3.64	1
6957	6956	24	0.3	10.33	11.65	2
6957	6956	15	0.01	0.64	3.95	2
6958	22009	24	2.58	30.51	0.61	1
6965	15269	18	0.7	7.4	3.18	1
6966	6965	18	0.5	6.25	3.18	1
6967	6966	15	0.58	4.14	2.23	1
6968	6967	15	0.38	3.35	-1.33	1
6969	6968	15	0.7	4.56	1.16	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
6970	6969	15	0.77	4.77	1.16	1
6977	33451	18	0.81	6.09	2.45	0.44
6978	33451	18	0.97	6.7	2.91	0.47
6979	6978	18	0.98	6.74	2.92	0.46
6980	6979	18	1.59	8.55	2.92	0.42
6981	6980	15	1.46	5.04	2.92	0.66
6982	6981	15	1.47	5.06	2.92	0.56
6983	6982	16	0.95	4.84	2.17	0.69
6984	6983	15	0.79	3.71	2.17	0.56
6985	6984	15	0.99	4.15	2.17	0.51
6987	6985	15	1.01	4.2	2.17	0.52
6988	6987	15	1.15	4.47	1.25	0.37
6989	6988	15	0.98	4.13	1.25	0.69
6990	32475	15	0.83	3.8	1.25	0.4
6995	37990	12	5.27	5.29	0.83	0.38
70	52182	10	4.61	3.04	0.64	0.36
70349	16535	18	2.87	11.51	0.14	0.13
70350	70349	18	2.85	11.47	0.14	0.13
70351	70350	18	4.12	13.78	0.14	0.12
70352	70351	18	1.85	9.25	0.14	0.13
7049	6977	10	0.74	1.22	2.45	2
7050	7049	10	1.57	1.77	2.45	2
7051	7050	10	1.78	1.89	2.45	2
7052	7052M	8	2.36	1.2	1.17	1
7052M	7051	10	0	0	1.57	2
7061	6967	8	2.22	1.16	1.07	1
7062	7061	8	1.78	1.04	1.06	2
7063	7062	8	1.77	1.04	1.06	2
7064	7063	8	0.47	0.53	1.1	2
7065	7064	8	2.27	1.18	1.18	2
7071	33444	10	1.25	1.58	-0.07	1
7071	33444	10	0.99	1.41	0.81	1
7080	7071	8	1.91	1.08	0.8	0.65
7081	7080	8	0.41	0.5	0.8	2
7082	7081	8	3.14	1.38	0.8	0.56
7083	7082	8	0.4	0.49	0.8	2
7084	7083	8	0.4	0.49	0.82	2
7085	7084	8	0.4	0.49	0.89	2
7086	33446	8	4.41	1.64	0.49	0.39
7087	900091	8	0.49	0.55	0.49	0.76
7088	7087	8	2.46	1.22	0.49	0.62
7089	7088	8	0.42	0.51	0.49	0.71
7090	7089	8	0.4	0.49	0.49	0.87
7092	33448	8	0.62	0.62	0.8	2
7093	7092	8	3.27	1.41	0.8	0.56
7094	7093	8	0.81	0.7	0.8	2
7095	7094	8	4.87	1.72	0.8	1
7096	7095	8	6.45	1.98	0.8	0.45
7097	7096	8	8.76	2.31	0.8	0.42
7098	7097	8	8.43	2.27	0.8	0.42
7099	7098	8	0.41	0.5	0.8	2

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7100	7099	8	2.05	1.12	0.8	1
7101	7100	8	1.48	0.95	0.8	0.72
7102	F1757	8	0.77	0.69	0.8	2
7106	20553	8	3.67	1.5	0.95	0.59
7107	7106	8	3.65	1.49	0.95	0.59
7108	7107	8	3.74	1.51	0.95	0.58
7113	6966	8	3.25	1.41	0.99	1
7114	63663	8	2.3	1.19	0.97	1
7115	63665	8	3.32	1.42	0.96	0.62
71157	64085	8	0.56	0.58	1.09	2
71158	71157	8	0.61	0.61	1.1	2
7116	7115	8	0.37	0.47	0.96	2
7117	7116	8	4.07	1.58	0.96	1
7118	7117	8	3.84	1.53	0.96	0.58
7119	7118	8	2.99	1.35	0.96	0.64
71194	38684	8	0.4	0.49	0.45	0.78
7120	7119	8	1.81	1.05	0.96	0.78
7122	13238	8	1.68	1.01	0.96	0.8
71229	71158	8	7.71	2.17	1.12	0.52
7123	7122	8	0.5	0.55	0.96	2
7124	7123	8	3.45	1.45	1.24	1
7125	7124	8	3.12	1.38	1.24	1
7126	7125	8	2.45	1.22	1.24	2
7127	7126	8	2.5	1.24	1.24	2
7128	7127	8	4.12	1.59	1.25	1
7132	7128	8	2.18	1.15	1.26	2
7133	7132	8	1.58	0.98	1.26	2
7134	7133	8	2.31	1.19	1.26	2
7135	7134	8	2.48	1.23	1.26	2
7136	7135	8	1.81	1.05	1.3	2
7137	7136	8	2.8	1.31	1.34	2
7161	7052M	8	4.47	1.65	0.56	1
7162	7161	8	7.62	2.16	0.61	1
7163	23057	8	0.26	0.4	0.62	2
7164	7163	8	1.6	0.99	0.62	0.79
7165	7052	8	3.7	1.5	1.17	1
7166	7165	8	3.45	1.45	1.17	1
7167	7166	8	0.41	0.5	1.16	2
7168	7167	8	2.46	1.23	1.2	1
7169	7168	8	3.36	1.43	1.38	1
7170	7169	8	3.71	1.5	1.38	1
7171	7170	8	2.34	1.19	1.43	2
7173	7171	8	3.06	1.37	1.46	2
7176	7173	8	2.75	1.29	1.52	2
7177	7176	8	4.51	1.66	1.69	2
7178	7051	8	4.11	1.58	1.01	1
7179	7178	8	1.64	1	1	1
7180	7179	8	0.4	0.5	0.98	2
7181	7180	8	0.41	0.5	0.98	2
7182	7181	8	1.23	0.87	0.98	2
7183	7182	8	2.33	1.19	1.02	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7184	7183	8	1.87	1.07	1.07	2
7185	7184	8	1.9	1.08	1.28	2
7188	7185	8	1.37	0.91	1.32	2
7252	6995	12	1.29	2.61	0.83	0.4
7253	7252	12	0.44	1.53	0.83	0.53
7254	7253	12	0.36	0.89	0.83	0.77
7255	7254	12	0.43	0.98	0.83	0.77
7256	7255	12	0.32	0.84	0.83	0.77
7257	7270	8	0.81	0.7	0	0.1
7258	7257	8	1.76	1.04	0	0.1
7259	7258	8	1.2	0.86	0	0.1
7260	7259	8	0.39	0.49	0	0.1
7261	7260	8	0.36	0.47	0	0.1
7262	7261	8	0.32	0.44	0	0.1
7263	7262	8	0.39	0.49	0	0.1
7264	7263	8	0.38	0.48	0	0.1
7265	7264	8	1.36	0.91	0	0.1
7266	7256	8	0.8	0.7	0	0.25
7270	7266	8	0.85	0.72	0	0.1
7287	7265	8	3.97	1.56	0	0.1
7288	7287	8	3.37	1.44	0	0.1
7289	7256	10	0.54	0.68	0.83	2
7295	61948	24	1.62	18.62	12.72	1
7296	7295	24	0.38	9	12.8	2
7297	7296	24	0.76	12.77	12.8	2
7298	7297	24	0.43	9.58	12.8	2
7300	55251	24	0.65	11.77	11.96	2
7301	7300	24	2	20.7	11.96	1
7302	7301	24	2.4	22.65	12.01	0.6
7303	7302	21	2.77	17.06	12.01	0.64
7305	7303	21	2.09	14.82	12.01	0.7
7308	7305	21	1.49	12.52	12.01	1
7309	19143	21	0.8	9.14	6.99	1
7311	18322	21	1.12	7.06	6.96	0.85
7314	18241	21	0.35	3.91	6.97	2
7315	22223	21	0.49	4.64	5.08	2
7316	7315	21	0.96	10.03	5.07	1
7317	7316	21	0.67	8.38	3.93	1
7318	7317	21	0.55	7.59	3.9	0.51
7319	7318	21	0.91	9.8	3.9	0.49
7320	7319	21	1.27	11.54	3.9	0.42
7321	7320	18	1.35	7.9	3.5	0.48
7322	7321	18	1.16	7.33	3.5	0.5
7323	7322	18	0.91	6.48	3.5	0.52
7324	7323	18	1.31	7.79	3.5	0.49
7325	52651	18	1.02	6.84	1.45	0.52
7326	7325	18	0.81	6.13	1.45	0.34
7327	7326	18	0.75	5.89	1.45	0.34
7328	7327	18	0.74	5.83	1.45	0.35
7329	7328	15	1.56	5.22	0.37	0.21
7330	7329	15	0.8	3.73	0.37	0.22

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7332	7316	10	1.77	1.89	1.24	1
7333	7332	10	3.44	2.63	1.25	0.5
7334	16604	10	3.11	2.5	0.42	0.29
7335	7334	10	3.77	2.75	0.42	0.28
742	754	8	1.89	1.07	0	0.1
754	902164	8	6.11	1.93	0	0.1
8195	37032	12	0.24	1.14	0.7	0.54
900091	7086	8	0.5	0.55	0.49	0.74
901295	901296	8	1.49	0.95	1.16	2
901296	901297	8	0.61	0.61	1.12	2
901297	901298	8	0.59	0.6	1.09	2
901298	901299	8	1.79	1.05	1.09	2
901299	52524	8	8.72	2.31	1.09	1
901390	37990	15	11.09	9.04	2.5	0.37
901391	901390	16	0.36	1.95	2.5	0.82
901676	15751	27	0.52	18.7	18.5	1
901871	52661	12	2.46	3.61	0.84	0.35
901892	901893	6	5.72	1.13	0.58	1
901893	16595	8	6.03	2.49	0.58	0.35
902012	6953	24	0.34	11.03	13.37	2
902012	6953	15	0.32	3.05	3.89	2
902054	43825	15	1.2	4.58	0.57	0.29
902164	902165	8	6.32	1.96	0	0.1
902165	52657	8	6.21	1.95	0	0.1
9039	16038	18	0.92	6.5	2.99	0.8
9040	17949	15	1.35	4.86	2.27	0.5
9041	17969	15	1.15	4.48	1.39	0.53
9042	9041	15	1.05	4.28	1.04	0.35
9044	14317	15	4.1	8.45	0	0.1
9045	9044	15	3.35	7.65	0	0.1
9046	9045	15	0.08	1.16	0	0.05
9047	9046	21	0.25	5.11	0	0.05
9048	10918	21	0.48	7.06	0	0.05
9049	9048	21	2.33	15.64	0	0.1
break 1	break12	6	-0.12	-0.12	0.21	1
Break 4	45855	6	-1.62	-0.49	0.35	1
Break11	41040	6	-2.37	-0.6	0.21	1
break12	Break11	6	-0.32	-0.2	0.21	1
break2	46749	6	0.06	0.08	0.41	2
C445	7102	8	0.21	0.36	0.8	2
F1757	7101	8	0.8	0.7	0.8	2
F5313-missing	2403	8	2.4	1.57	0.58	0.43
NS1044	48253	6	-6.41	-1.03	0.41	1
PVT302	PVT303	8	0.48	0.54	1.08	2
PVT303	29644	8	0.9	0.74	1.08	2
PVT472	PVT473	8	1.39	0.92	0.14	0.28
PVT473	PVT474	8	5.93	1.9	0.14	0.21
PVT474	PVT475	8	8.6	2.29	0.14	0.19
PVT475	PVT476	8	0.61	0.61	0.14	0.34
PVT476	PVT477	8	0.6	0.6	0.14	0.34
PVT477	PVT478	8	11.33	2.63	0.14	1

Jones Falls: Wet Weather Capacity Analysis- 10 year, 24-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
PVT478	32260	8	15.2	3.05	0.13	1
weir15	33295	24	0.31	8.18	0.15	0.29

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
10918	13409	21	0.15	3.97	0.00	0.05
11	70352	24	1.63	18.68	0.24	0.13
11897	7052	8	3.72	1.51	-0.10	1.00
12	11	24	0.40	9.29	0.24	0.13
13238	7120	8	1.83	1.06	0.96	0.77
13409	9047	21	-0.19	-4.47	0.00	0.05
13939	20805	12	11.76	7.90	0.33	0.90
14317	15315	15	2.45	6.54	0.00	0.10
14454	19876	12	5.12	5.21	2.22	1.00
14455	14454	12	1.46	2.78	2.22	1.00
14456	14455	12	1.59	2.91	2.22	1.00
14458	14456	12	1.02	2.32	1.79	0.67
14546	7188	8	0.57	0.59	1.41	2.00
14547	14546	8	2.87	1.32	1.52	2.00
14548	14547	8	4.80	1.71	1.72	2.00
14565	6885	42	2.14	77.24	44.69	1.00
14937	5134	10	0.55	1.05	1.03	0.82
150	901871	16	3.05	8.66	0.91	0.24
1507	16581	10	14.78	5.45	1.19	0.34
1508	1507	8	0.99	0.78	0.77	1.00
15269	42234	18	1.37	10.33	4.11	1.00
15270	30591	15	1.38	4.91	2.03	0.46
15270	9042	15	1.89	5.74	1.24	0.33
15271	22538	15	2.67	6.83	1.00	0.63
15315	30592	15	2.39	6.45	0.00	0.27
15751	40488	27	0.66	21.21	18.59	1.00
15871	6936	30	0.44	17.56	18.10	2.00
15872	15871	30	0.60	20.58	18.14	1.00
1593	29862	12	0.04	0.43	1.45	2.00
16036	42233	18	0.94	6.58	6.45	0.88
16037	16036	18	0.97	6.69	5.47	0.90
16038	16037	18	1.68	8.81	3.47	1.00
1609	1593	10	0.33	0.81	-0.07	1.00
1610	1609	10	0.50	1.01	-0.01	1.00
1611	1610	10	0.77	1.24	0.00	0.41
1612	1611	10	1.74	1.87	0.00	0.10
1613	1612	10	0.47	0.97	0.00	0.08
1614	1613	10	0.39	0.88	0.00	0.08
16379	16379N	42	0.16	20.88	41.49	2.00
16379N	6877	42	0.16	21.44	41.49	2.00
16401	C445	8	0.41	0.50	0.81	2.00
16402	16401	8	0.40	0.49	0.85	2.00
16403	16402	8	2.26	1.17	1.11	1.00

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
16404	16403	8	1.56	0.97	1.57	2.00
16535	7330	15	2.02	5.93	0.51	0.22
16536	11897	8	4.15	1.59	0.00	0.10
16581	7328	10	4.34	2.95	1.19	0.45
16595	7333	8	4.68	1.69	0.64	0.44
16596	7333	10	0.50	1.00	0.69	1.00
16604	7320	10	3.39	2.61	0.47	0.88
16742	6982	8	2.42	1.22	0.86	1.00
16743	16742	8	0.65	0.63	0.81	2.00
16744	16743	8	1.02	0.79	0.77	1.00
16745	16744	8	1.07	0.81	0.77	1.00
16746	33093	8	1.00	0.78	0.76	0.93
16747	16746	8	0.72	0.66	0.76	2.00
16748	16747	8	1.03	0.79	0.76	0.99
16749	16748	8	6.64	2.01	0.76	0.77
16750	16750M	8	1.91	1.08	0.76	0.66
16750M	16749	8	1.86	1.06	0.76	0.64
16751	16750	8	1.04	0.80	0.76	0.82
16752	16751	8	0.49	0.55	0.76	2.00
16753	16752	8	0.49	0.55	0.76	2.00
16754	16753	8	0.40	0.49	0.80	2.00
17008	33535	8	5.13	1.77	0.38	0.33
17009	17008	8	4.03	1.57	0.38	0.35
17037	17009	8	5.23	1.79	0.38	0.33
17041	17037	8	5.23	1.79	0.38	0.33
17297	17764	12	1.61	2.92	2.78	1.00
17375	45753	30	2.07	38.12	18.31	1.00
17479	42227	8	1.02	0.79	1.31	2.00
17480	17479	8	1.97	1.10	1.34	2.00
17481	17480	8	5.66	1.86	1.73	1.00
17482	17481	8	6.53	2.00	1.73	1.00
17483	17482	8	4.37	1.63	1.73	2.00
17484	17483	8	1.94	1.09	1.76	2.00
17747	18202	12	42.19	14.96	2.35	1.00
17748	17747	12	1.61	2.92	2.34	0.70
17749	46796	12	5.67	5.48	2.34	0.47
17750	17749	12	0.42	1.49	2.34	2.00
17751	17750	12	0.36	1.38	2.34	2.00
17752	34447	12	0.31	1.28	1.82	2.00
17753	17752	12	0.43	1.51	1.82	2.00
17754	17753	12	0.43	1.51	1.91	2.00
17755	17754	12	0.37	1.40	2.03	2.00
17756	17755	12	0.23	1.10	2.25	2.00

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
17757	17756	12	0.68	1.90	2.26	2.00
17758	17757	12	4.60	4.94	3.11	1.00
17759	17758	12	0.30	1.27	3.28	2.00
17760	17759	12	3.42	4.26	5.07	2.00
17761	19657	12	5.83	5.56	3.10	1.00
17762	17761	12	3.57	4.35	2.87	0.78
17763	19910	12	1.95	3.22	2.78	0.97
17764	17763	12	1.44	2.76	2.78	2.00
17765	48242	12	5.89	5.59	1.50	0.46
17766	17765	12	1.52	2.84	1.50	0.53
17767	17766	12	-0.07	-0.63	1.50	1.00
17768	17767	12	1.15	2.47	1.50	1.00
17769	17768	12	4.01	4.61	1.50	0.65
17770	17769	12	3.46	4.29	1.50	0.42
17771	17770	12	4.80	5.05	1.50	0.39
17772	17771	12	4.42	4.84	1.50	0.40
17773	17772	12	1.43	2.76	1.50	0.54
17774	17773	12	8.83	6.84	1.50	0.34
17775	17774	12	0.89	2.18	1.50	0.62
17949	9039	15	1.61	5.30	2.65	0.51
17969	9040	15	0.86	3.87	2.65	0.61
18	56841	18	-0.57	-5.14	1.40	0.72
18063	17775	12	-0.45	-1.55	1.50	1.00
18064	18063	12	0.76	2.00	1.50	1.00
18202	6885	12	0.61	1.79	2.34	2.00
18241	7311	21	1.20	7.28	7.64	2.00
18297	6958	8	10.17	2.49	0.72	1.00
18298	18297	8	10.97	2.59	0.74	1.00
18298A	18298	8	0.30	0.43	0.73	2.00
18299	18298A	8	0.35	0.46	0.73	2.00
18300	18299	8	0.39	0.49	0.73	2.00
18301	18300	8	2.16	1.15	0.74	1.00
18302	18301	8	4.20	1.60	0.75	0.49
18303	18302	8	6.83	2.04	0.75	0.43
18321	7309	21	0.87	9.56	7.65	1.00
18322	18321	21	1.64	13.13	7.65	1.00
18363	7256	8	0.40	0.49	-0.01	0.87
18364	18363	8	0.40	0.49	0.00	0.10
18452	6928	42	0.01	7.10	21.15	2.00
18453	18452	12	1.43	2.75	2.51	2.00
18454	18453	12	2.98	5.17	8.27	2.00
18455	20314	12	2.55	4.78	2.52	1.00
18456	45724	12	1.96	4.19	1.77	0.50

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
18457	18456	12	3.74	5.79	1.77	0.40
18458	18457	12	3.14	5.30	1.79	0.42
18463	18458	10	1.59	2.32	1.41	0.60
18478	18463	8	2.51	1.61	1.41	1.00
18479	18478	8	3.06	1.37	1.41	2.00
18480	18479	8	2.00	1.11	1.41	2.00
18481	18480	8	2.95	1.34	1.41	2.00
18481A	18481	8	3.21	1.40	1.41	2.00
18482	18481A	8	2.77	1.30	1.43	2.00
18483	18482	8	3.23	1.40	1.45	2.00
18484	18483	8	3.01	1.36	1.50	2.00
18485	18484	8	3.63	1.49	1.57	2.00
18486	18485	8	2.66	1.27	1.68	2.00
18496	901391	15	0.24	1.34	2.65	2.00
18497	19001	8	0.38	0.48	0.52	2.00
18497A	18497	8	0.97	0.77	0.53	0.63
18498	18497A	8	0.97	0.77	0.53	0.63
18517	18486	8	3.54	1.47	1.95	2.00
18552	18496	15	0.43	2.73	2.23	1.00
18553	18552	15	0.34	2.45	2.23	1.00
18554	39224	15	0.49	2.91	2.06	1
18555	20127	15	0.52	3	2.06	1
18586	902012	24	0.32	10.73	13.59	2
18586	902012	15	1.43	6.49	4.88	1
18587	18586	8	2	1.11	0.6	1
18588	18587	8	0.61	0.61	0.61	2
18589	18588	8	0.6	0.6	0.61	2
18590	18589	8	1.19	0.85	0.61	1
18591	18590	8	0.61	0.61	0.64	2
18592	18591	8	0.61	0.61	0.66	2
18593	18592	8	0.6	0.6	0.67	2
18594	18593	8	1.5	0.96	0.68	1
18595	18594	8	2	1.1	0.69	0.59
18596	18595	8	2	1.11	0.69	0.58
19	18	15	0.25	2.08	1.34	0.58
19001	18496	8	0.4	0.5	0.51	2
19141	7308	21	1.24	11.4	13.4	2
19142	34175	21	1.36	11.95	4.26	1
19143	22225	21	0.18	4.35	4.24	1
19143	59276	21	3.58	19.39	3.45	1
19657	17760	12	7.02	6.1	3.35	1
19706	6947	24	0.72	16.1	18.43	2
19707	19706	8	0.39	0.49	0.42	1

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
19711	19808	8	0.4	0.49	0.54	2
19712	19711	8	0.6	0.61	0.54	1
19714	19712	8	0.6	0.61	0.54	1
19715	19714	8	0.4	0.49	0.57	2
19716	19715	8	0.6	0.6	0.58	1
19717	19716	8	0.6	0.6	0.59	1
19808	19707	8	0.4	0.49	0.5	2
19873	6955	24	0.36	11.35	17.12	2
19874	19873	12	1.75	3.96	2.22	1
19875	19874	12	0.63	2.38	2.22	1
19876	19875	12	0.56	1.73	2.22	2
19910	17762	12	2.22	3.43	3.68	1
20	19	12	-0.03	-0.42	0.05	0.78
20126	18553	15	0.59	3.22	2.23	1
20127	18554	15	0.3	2.28	2.06	1
20244	7289	8	0.41	0.5	0.83	2
20246	3	8	0.38	0.48	0.85	2
20247	20246	8	0.4	0.49	1.02	2
20248	20247	8	2.5	1.24	1.02	1
20249	20248	8	3.78	1.52	1.02	1
20250	20249	8	4.74	1.7	1.02	1
20314	18454	12	2.67	4.89	4.56	1
20553	37013	27	-0.69	-21.67	12.56	0.83
20753	21328	30	0.11	8.76	10.45	2
20754	20753	30	0.01	1.77	10.44	2
20755	20754	30	0.26	8.76	10.02	2
20756	20755	30	0.11	5.78	9.87	2
20757	20756	30	0.08	4.99	9.85	2
20758	20757	30	0.12	6	9.85	2
20759	20758	30	0.1	5.53	9.89	2
20760	20759	30	0.11	5.75	9.89	2
20761	20760	27	0.2	8.89	9.91	2
20762	21329	27	0.19	8.72	9.71	2
20763	20762	27	0.31	11.21	9.71	1
20764	20763	27	0.18	8.55	8.96	2
20765	20764	27	0.17	8.31	7.95	1
20766	20765	27	0.18	8.57	7.95	1
20767	20766	27	0.32	11.25	7.95	1
20768	20767	18	1.05	6.95	4.63	1
20769	20768	18	0.99	6.76	4.73	1
20770	20769	18	0.69	5.65	4.73	1
20771	20770	18	0.74	3.8	4.73	2
20772	20771	15	1.19	4.55	4.67	2
20773	20772	15	1.18	4.54	4.56	2
20774	20773	15	1.01	4.19	4.56	2
20775	20774	15	1.21	4.6	4.61	2
20776	20775	15	1.81	5.61	4.64	1
20777	30726	15	1.87	5.71	4.76	1
20778	57146	15	1.06	4.29	4.04	1
20779	20778	15	1.52	5.14	4.04	1
20780	20779	15	1.36	4.87	4	1

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
20781	20780	15	1.15	4.47	4.07	1
20782	41252	15	0.89	2.55	3.99	2
20783	56667	15	1.63	3.47	3.82	2
20793	69152	16	1.17	5.36	2.59	0.59
20794	36990	15	2	5.91	2.17	0.46
20795	37148	15	2.33	6.37	2.17	0.67
20796	20795	12	1.94	3.21	2.13	0.61
20797	20796	12	1.88	3.16	2.13	0.62
20798	20797	12	2.3	3.49	2.13	1
20799	20798	12	2.41	3.58	2.13	1
20803	20799	12	2.54	3.67	1.7	1
20804	20803	12	5.66	5.48	1.69	0.4
20805	20804	12	0.85	2.12	1.69	0.69
20806	20805	12	3.74	4.45	1.45	0.41
20807	20806	12	1.16	2.48	1.45	0.56
20808	20807	12	0.42	1.49	1.45	0.83
20809	20808	12	0.73	1.97	1.45	0.94
20810	20809	12	0.48	1.6	1.45	0.75
20811	20810	12	0.59	1.77	1.45	0.7
20812	20811	12	0.7	1.93	1.45	0.71
21	20	12	2.61	3.72	0.05	0.75
21042	41529	15	0.37	2.52	2.06	0.67
21043	21042	15	0.36	2.51	2.06	0.67
21044	21043	8	1.01	0.78	1.09	2
21045	21043	15	0.94	4.05	0.92	0.6
21046	21045	15	0.11	1.39	0.92	0.5
21047	21044	8	1.01	0.78	0.16	1
21048	21047	8	0.83	0.71	0.21	1
21049	21048	8	0.79	0.7	0.21	1
21050	21049	8	1.86	1.07	0.21	0.32
21051	21050	8	2.21	1.16	0.21	0.3
21052	21051	8	3	1.35	0.21	0.29
21053	21049	8	0.98	0.77	0	0.25
21054	21043	8	1.94	1.09	0.14	0.26
21055	21054	8	1.78	1.04	0.14	0.27
21056	21055	8	1.76	1.04	0.14	0.27
21057	21056	8	1.77	1.04	0.14	0.27
21058	21057	8	1.73	1.03	0.14	0.27
21059	21044	8	1.02	0.79	0.98	2
21060	21059	8	1	0.78	0.98	2
21061	21060	8	3.02	1.36	0.98	1
21062	21061	8	1.02	0.79	0.98	2
21063	21062	8	1.02	0.79	0.99	2
21064	21063	8	0.86	0.72	0.81	2
21065	21064	8	0.93	0.75	0.81	2
21066	21065	8	0.88	0.73	0.81	2
21067	21066	8	0.9	0.74	0.82	2
21068	21067	8	0.99	0.78	0.21	1
21071	21067	8	0.88	0.73	0.73	1
21328	6888	30	0.32	14.98	10.46	1
21329	20761	27	0.19	8.83	10.12	2

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
21589	18596	8	1.53	0.97	0.69	0.64
21590	21589	8	0.79	0.69	0.29	0.47
21591	21590	8	2.02	1.11	0.29	0.36
21592	21591	8	2.05	1.12	0.29	0.36
21593	21592	8	2	1.11	0.29	0.36
21594	21593	8	3.35	1.43	0.29	0.32
21595	21594	8	6.07	1.92	0.29	0.28
21620	21621	8	0.61	0.61	0.27	1
21621	52550	8	2.69	1.28	0.27	1
21622	52551	8	2.76	1.3	1.58	2
21623	21622	8	0.93	0.75	0.73	1
21624	21623	8	2.02	1.11	0.73	1
21625	21624	8	2.38	1.21	0.73	0.57
21626	21625	8	2.91	1.33	0.73	0.54
21627	21626	8	0.6	0.6	0.73	2
21628	21627	8	0.31	0.44	0.73	2
21629	21628	8	0.39	0.49	0.73	2
21630	21629	8	0.4	0.49	0.73	2
21631	21630	8	0.4	0.5	0.73	2
21634	21631	8	2.99	1.35	0.73	1
21635	21634	8	2.65	1.27	0.73	0.56
21636	21635	8	5.84	1.89	0.73	0.44
21638	21636	8	0.99	0.78	0.73	0.78
21641	21622	8	1.48	0.95	0.85	1
21642	21641	8	0.61	0.61	0.86	2
21643	21642	8	0.59	0.6	0.88	2
21645	21643	8	0.61	0.61	0.9	2
21646	21645	8	0.59	0.6	0.92	2
21647	21646	8	1.58	0.98	0.97	1
21648	21647	8	3.99	1.56	0.99	1
21649	21648	8	6.08	1.93	0.99	1
21651	21649	8	0.59	0.6	0.99	2
21652	21651	8	0.4	0.49	0.83	2
21653	21652	8	0.41	0.5	0.56	2
21654	21653	8	0.4	0.49	0.58	2
21655	21654	8	0.95	0.76	0.74	1
21805	7108	8	2.53	1.24	0.95	0.66
21806	21805	8	0.59	0.6	0.95	2
21807	21806	8	0.61	0.61	0.95	2
22	19	15	0.41	2.66	1.29	0.58
22009	6957	24	0.47	13.03	15.68	2
22010	22009	24	0.4	11.99	15.31	2
22011	22010	24	0.6	14.74	15.42	2
22012	22011	24	0.6	14.71	15.64	2
22013	22012	24	0.63	15.07	18.24	2
22067	19717	8	2.62	1.27	0.59	1
22090	21620	8	0.61	0.61	0.28	0.49
22091	22090	8	0.6	0.6	0.28	0.5
22092	22091	8	1.06	0.8	0.28	0.42
22093	22092	8	1.44	0.94	0.28	0.39
22094	22093	8	1.82	1.05	0.28	0.37

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
22097	22094	8	3.89	1.54	0.28	0.31
22098	22097	8	4.15	1.59	0.28	0.3
22099	22098	8	1.41	0.93	0.28	0.39
22100	22099	8	0.57	0.59	0.28	0.5
22101	22100	8	0.59	0.6	0.28	0.5
22222	7314	21	0.83	6.07	5.74	1
22223	22222	21	0.76	5.79	5.73	1
22225	19142	21	0.41	6.53	4.25	1
22454	6921	12	0.79	1.33	-0.5	1
22455	22454	12	0.4	0.95	-0.39	1
22456	22455	12	0.99	1.49	0.29	1
22457	22456	12	0.46	1.01	0.28	1
22458	45585	12	1.23	1.66	0.25	0.28
22462	22458	12	1.24	1.67	0.25	0.28
22463	22462	12	1.98	3.24	0.25	0.21
22463A	22463	12	1.66	2.96	0.25	0.22
22464	22463A	12	1.58	2.89	0.25	0.22
22465	45592	12	0.6	1.79	0.25	0.26
22466	22465	12	0.42	1.49	0.25	0.28
22482	45567	12	2	3.26	0.25	0.21
22489	22482	12	2.71	3.79	0.25	0.2
22490	22489	12	2.36	3.54	0.25	0.2
22538	15270	15	3.59	7.91	3.27	0.46
2254	742	10	0.44	0.94	0	0.08
2255	2254	10	0.79	1.26	0	0.08
23	22	15	1.19	4.55	1.29	0.5
23057	7162	8	0.51	0.56	0.71	2
23775	18517	8	6.07	1.93	1.11	1
23776	23775	8	4.24	1.61	1.1	0.62
23777	23776	8	1.12	0.83	1.1	2
23778	23777	8	0.6	0.61	1.1	2
23779	23778	8	0.68	0.64	1.32	2
2402	901892	6	3.29	0.86	0.64	1
2403	2402	8	2.49	1.6	0.64	0.56
2404	F5313-missing	8	3.52	1.9	0.64	0.43
2405	2404	8	0.35	0.6	0.51	0.72
2416	2404	8	0.4	0.64	0.14	0.42
27	23	15	1.23	4.64	1.29	0.38
2900	7335	10	15.51	5.58	0.47	0.22
2936	1508	10	0.52	1.02	0.58	0.91
2937	2936	10	0.52	1.02	0.58	0.56
2938	2937	10	0.44	0.94	0.58	0.64
2939	2938	10	0.61	1.1	0.59	0.57
2940	2939	10	2.82	2.38	0.59	0.35
2941	2940	10	1.91	1.96	0.59	0.39
2942	2941	10	0.35	0.84	0.59	0.63
2943	4971	10	1.46	1.71	0.59	0.42
2945	2943	10	0.93	1.37	0.59	0.47
2946	2945	10	1.81	1.91	0.59	0.4
2947	2946	10	1.93	1.97	0.59	0.39
29644	37991	8	0.5	0.55	1.08	2

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
29645	30342	15	0.58	3.18	0	0.05
29645	33471	30	0.65	21.3	0	0.05
29861	20812	12	0.05	0.51	1.45	0.83
29862	29861	10	0.31	0.78	1.45	2
29873	20799	10	4.86	3.12	0.69	0.77
3	20244	8	0.39	0.49	0.83	2
30153	21046	8	0.38	0.48	0.92	2
30155	30153	8	0.44	0.52	0.92	2
30156	30155	8	0.88	0.73	0.92	2
30157	30156	8	0.6	0.6	0.92	2
30158	30157	8	0.61	0.61	0.92	2
30159	30158	8	0.55	0.58	0.92	2
30342	37991	30	0.41	16.87	0	0.2
30588	16037	18	0.62	5.35	2.03	0.79
30588A	30588	15	1.15	4.48	2.03	0.49
30589	30588A	15	1.72	5.48	2.03	0.43
30590	30589	15	1.19	4.56	2.03	0.48
30590A	30590	15	0.79	3.71	2.03	0.53
30590B	30590A	15	1.88	5.72	2.03	0.52
30591	30590B	15	0.77	3.67	2.03	0.54
30592	15271	15	2.04	5.96	1	0.29
30593	30592	15	-2.94	-7.17	1	0.68
30594	30593	15	2.24	6.25	1	0.6
30595	30594	15	2.79	6.97	0	0.1
30596	30595	15	3.59	7.91	0	0.1
30597	30596	15	3.01	7.25	0	0.1
30598	30597	15	0.88	3.91	0	0.05
30616	22067	8	0.42	0.51	0.59	1
30617	30616	8	2.76	1.3	0.59	0.49
30618	30617	8	3.89	1.54	0.59	0.49
30619	30618	8	3.8	1.52	0.59	0.44
30620	30619	8	3.53	1.47	0.59	0.45
30621	30620	8	2.89	1.33	0.59	0.48
30622	30621	8	0.92	0.75	0.59	0.69
30623	30622	8	0.92	0.75	0.59	0.69
30624	30623	8	9.81	2.45	0.59	0.35
30625	30624	8	5.85	1.89	0.59	0.4
30626	30625	8	5.07	1.76	0.59	0.42
30627	30626	8	1.53	0.97	0.59	0.58
30628	30627	8	2.23	1.17	0.59	0.51
30726	20776	15	1.01	4.2	4.51	2
30727	53271	8	2	1.1	1.08	1
30953	31001	8	0.43	0.51	0.76	2
30957	30953	8	0.61	0.61	0.76	2
30958	59113	8	4.84	1.72	1.31	1
30959	30958	8	1.4	0.93	1.32	2
30960	30959	8	1.4	0.92	1.35	2
30963	30960	8	2.86	1.32	0.61	1
30968	65375	18	1.6	8.6	-0.01	0.41
31001	21071	8	0.47	0.54	0.76	2
31151	30159	8	0.61	0.61	0.93	2

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
31153	31151	8	1.36	0.91	0.94	2
31154	31153	8	1.7	1.02	0.95	1
31155	31154	8	1.7	1.02	0.98	1
31828	21655	8	2.04	1.12	0.89	1
31829	31828	8	1	0.78	0.89	2
31830	31829	8	1.39	0.92	0.91	1
31831	31830	8	1.19	0.85	0.94	2
31832	31831	8	1.29	0.89	1	2
31833	31832	8	1.98	1.1	1.08	1
31834	31833	8	4.03	1.57	1.32	1
31835	31834	8	1.04	0.8	0.8	1
32254	33532	12	0.16	0.6	1.45	2
32257	32254	12	0.47	1.03	1.48	2
32258	32257	12	0.37	0.91	1.53	2
32259	32258	12	0.58	1.75	1.65	1
32260	32259	12	-0.01	-0.19	1.67	1
32261	32260	12	1.04	2.35	1.7	1
32262	32261	12	1.25	2.57	1.7	1
32263	32262	12	0.78	2.03	1.74	1
32394	19706	24	1.22	20.96	18.16	1
32395	32394	8	1.59	0.98	0.39	1
32396	32395	8	2.1	1.13	0.4	0.6
32397	32396	8	4.36	1.63	0.4	0.35
32475	6989	15	0.68	3.44	1.46	0.46
33093	16745	8	0.95	0.76	0.76	0.93
33295	12	24	0.51	10.44	0.24	0.55
33296	52660	18	1.12	7.17	1.15	0.29
33437	42234	30	0.71	29	13.41	1
33438	33437	30	0.95	33.56	13.47	1
33439	33438	27	-0.83	-23.73	13.53	1
33440	33439	27	0.33	15.04	13.57	1
33442	38773	27	0.79	23.12	12.88	1
33443	33442	27	0.69	21.67	13.44	1
33444	6970	10	-0.49	-1.29	1.91	1
33444	33443	27	0.73	22.2	14.04	1
33445	33444	27	0.8	23.23	13.94	1
33446	33445	27	1.08	27.09	14.23	1
33447	33446	27	1.52	32.04	13.71	0.57
33448	33447	27	1.76	34.51	13.72	0.45
33451	37014	27	0.53	14.56	11.62	0.67
33452	33451	27	0.78	17.72	6.27	0.68
33453	33452	27	0.96	19.63	6.28	0.39
33454	33453	27	1.03	20.32	6.29	0.4
33455	33454	27	1.42	23.87	6.29	0.36
33456	33455	27	1.46	24.22	6.29	0.36
33457	33456	27	1.5	24.53	6.3	0.36
33458	33457	27	3.25	36.06	6.3	0.32
33459	33458	27	0.47	13.75	6.3	0.48
33460	33459	27	1.03	20.33	6.3	0.4
33461	33460	27	0.76	17.5	6.32	0.42
33462	33461	27	0.78	17.65	6.33	0.42

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
33463	33462	27	0.79	17.85	6.35	0.42
33464	33463	27	0.73	17.12	6.36	0.43
33465	33464	27	0.74	17.18	6.37	0.43
33466	33465	27	0.66	16.23	6.38	0.44
33470	30342	30	0.48	18.45	0	0.11
33471	33470	30	0.6	20.51	0	0.05
33527	20783	15	1.12	2.88	3.86	2
33528	33527	12	1.04	1.53	1.66	2
33529	33528	12	0.67	1.23	1.66	2
33530	33529	10	2.95	1.58	1.66	2
33531	33530	10	3.61	1.75	1.66	1
33532	33531	10	3.77	1.79	1.77	2
33533	33532	8	5.87	1.89	0.37	1
33534	33533	8	4.62	1.68	0.38	0.34
33535	57364	8	5.24	1.79	0.38	0.33
33707	20761	12	0.07	0.62	2.43	2
33708	33707	12	2.1	3.34	2.49	1
33709	33708	12	2.7	3.79	2.56	1
33710	33709	12	2.28	3.48	2.5	1
33711	33710	12	2.22	3.43	2.5	1
33989	32397	8	4.08	1.58	0.4	0.36
33990	33989	8	4.08	1.58	0.4	0.36
33991	33990	8	7.13	2.09	0.4	0.31
33992	33991	8	2.3	1.18	0.4	0.42
33993	33992	8	0.6	0.61	0.4	0.6
33994	33993	8	0.96	0.76	0.4	0.52
33995	33994	8	3.61	1.48	0.4	0.37
33996	33995	8	2.8	1.31	0.4	0.39
33997	33996	8	0.59	0.6	0.4	0.61
33998	33997	8	0.6	0.61	0.4	0.6
33999	33998	8	2.39	1.21	0.4	0.46
34000	33999	8	2.37	1.2	0.4	0.41
34175	19141	21	1.14	10.96	9.39	1
34176	59274	12	4.17	6.12	1.68	0.37
34177	34176	12	5.25	6.86	1.68	0.35
34178	34177	12	2.31	4.55	1.68	0.45
34179	34178	12	1.84	4.06	1.68	0.46
34180	34179	12	1.87	3.15	0.23	0.34
34209	31835	8	0.6	0.6	0.78	2
34210	34209	8	0.59	0.6	0.78	2
34211	34210	8	0.6	0.61	0.81	2
34212	34211	8	0.65	0.63	0.91	2
34213	34212	8	2.36	1.2	1.18	1
34214	34213	8	3.17	1.39	1.36	1
34215	34214	8	3.16	1.39	1.38	1
34216	34215	8	3.13	1.38	1.48	2
34217	34216	8	4.46	1.65	1.62	1
34218	34217	8	1.96	1.09	0.88	1
34381	20767	24	0.2	6.52	5.01	1
34382	34381	24	0.24	7.1	5.01	1
34383	34382	24	0.36	8.82	5.01	1

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
34384	34383	24	0.27	4.98	2.56	1
34385	34384	24	0.3	5.19	2.56	1
34447	17751	12	0.44	1.53	2.35	2
34836	33711	12	0.46	4.08	2.5	0.57
35527	21652	8	1.94	1.09	0.67	0.58
35528	35527	8	1.88	1.07	0.67	0.58
35529	35528	8	3.17	1.39	0.67	0.59
35530	35529	8	3.4	1.44	0.67	0.49
35531	35530	8	4.22	1.6	0.67	0.47
35532	35531	8	4.26	1.61	0.67	0.46
35533	35532	8	4.45	1.65	0.67	0.46
35534	35533	8	4.81	1.71	0.67	0.45
35535	35534	8	4.48	1.65	0.67	0.46
35536	35535	8	4.59	1.67	0.67	0.45
35537	35536	8	4.4	1.64	0.67	0.46
35538	35537	8	4.31	1.62	0.67	0.46
35539	35538	8	2.91	1.33	0.67	0.51
35551	16404	8	7.51	2.14	1.84	1
36911	34383	18	1.1	7.13	3.02	1
36912	36911	18	1.63	8.66	3.02	1
36913	36912	18	0.84	6.21	3.03	0.5
36914	36913	18	1.57	8.51	3.01	0.43
36915	36914	18	1.99	9.59	3.01	0.4
36916	36915	18	1.73	8.92	3.01	0.42
36917	36916	18	1.41	8.06	3.01	0.43
36918	49997	18	2.34	10.39	3.02	0.38
36919	36918	18	2.34	10.38	2.98	0.38
36920	36919	18	2.22	10.12	2.98	0.39
36921	36920	18	3.23	12.2	2.87	0.35
36922	36921	18	1.89	9.32	2.87	0.4
36923	36922	18	1.44	8.14	2.87	0.42
36924	36923	12	1.46	2.78	2.87	2
36925	36924	18	2.33	6.74	2.55	0.44
36926	36925	15	1.64	3.48	2.55	0.65
36927	36926	18	1.65	5.67	2.55	0.54
36928	36927	15	1.77	3.61	2.46	0.62
36929	36928	15	1.7	3.54	2.46	0.63
36930	36929	15	0.97	2.67	2.4	0.74
36931	36930	15	1.01	2.72	2.4	0.81
36933	52089	15	1.71	3.55	2.42	0.7
36934	36933	15	1.76	3.6	2.34	0.6
36935	36934	15	2.07	3.9	2.35	0.57
36936	36935	15	1.86	3.71	2.35	0.59
36937	36936	15	2.23	4.05	2.35	0.56
36938	36937	15	2.5	6.6	2.35	0.43
36939	36938	15	2.03	5.95	2.25	0.44
36940	36939	15	1.88	5.73	2.25	0.45
36941	36940	15	0.8	3.75	2.25	0.56
36942	36941	15	0.79	3.72	2.25	0.57
36944	47025	15	0.83	3.8	2.17	0.55
36945	47036	15	1.39	4.92	2.07	0.47

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
36946	42603	15	0.34	2.44	1.92	0.59
36947	36946	15	1.88	5.72	1.83	0.54
36948	52364	15	1.42	4.97	1.84	0.43
36949	36948	15	0.68	3.44	1.84	0.52
36950	36949	15	1.11	4.39	1.84	0.47
36951	36950	15	1.15	4.48	1.63	0.43
36952	36951	15	1.08	4.34	1.64	0.44
36953	38072	15	0.96	4.09	1.06	0.46
36954	36953	12	1.67	2.97	0.34	0.25
36955	38085	12	0.82	2.09	0.2	0.27
36956	36955	12	3.2	4.12	0.2	0.18
36957	36956	12	1.25	2.57	0.2	0.22
36958	36957	12	3.24	4.14	0.2	0.18
36959	36958	12	2.92	3.94	0.2	0.18
36960	36959	12	2.47	3.62	0.2	0.19
36961	36960	12	3.34	4.21	0.2	0.18
36962	36961	12	3.48	4.3	0.2	0.18
36963	36962	12	3.74	4.46	0.2	0.17
36990	20793	15	1.73	5.49	2.22	0.68
37009	33448	27	0.59	19.98	12.92	0.58
37010	37009	27	0.73	22.18	12.54	0.59
37011	37010	27	0.61	20.31	12.54	0.66
37012	37011	27	0.88	24.41	12.55	0.62
37013	37012	27	0.43	17.06	12.56	0.64
37014	20553	27	0.77	22.86	11.61	0.9
37030	65333	15	2.94	7.16	0.74	0.27
37031	37030	12	0.29	1.24	0.74	0.52
37032	37031	12	1.38	2.7	0.74	0.43
37054	6946	8	2.59	1.26	0.39	1
37055	37054	8	1.59	0.98	0.39	1
37056	37055	8	1.25	0.87	0.39	1
37057	37056	8	0.98	0.77	0.39	1
37058	37057	8	0.99	0.78	0.39	1
37059	38271	8	1.27	0.88	0.39	0.48
37060	37059	8	5.04	1.75	0.39	0.34
37061	37060	8	4.59	1.67	0.39	0.35
37148	20794	15	1.01	4.2	2.17	0.52
37986	33466	27	1.43	23.9	4.53	0.39
37987	37986	30	0.4	16.78	4.53	0.36
37988	37987	30	0.41	16.97	4.53	0.36
37989	37988	30	0.4	16.71	4.53	0.36
37990	37989	30	0.55	19.62	4.53	0.33
37991	37990	30	0.41	16.93	1.07	0.33
38072	36952	15	0.55	3.11	1.64	0.52
38073	38072	12	1.9	3.17	0.72	0.34
38074	38073	12	1.16	2.48	0.72	0.38
38075	38074	12	1.94	3.21	0.72	0.34
38076	38075	12	1.57	2.89	0.73	0.36
38077	38076	12	1.97	3.23	0.73	0.34
38078	38077	12	1.52	2.84	0.73	0.36
38079	38078	12	0.81	2.08	0.73	0.42

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38080	38079	12	1.2	2.52	0.74	0.38
38081	38080	12	0.69	1.91	0.74	0.44
38083	38081	12	0.53	1.68	0.74	0.48
38084	38083	12	3.86	4.52	0.3	0.33
38085	36954	12	0.93	2.22	0.34	0.27
38269	37058	8	1	0.78	0.39	0.51
38270	38269	8	0.9	0.74	0.39	0.53
38271	38270	8	1.72	1.02	0.39	0.44
38273	38083	8	0.69	0.65	0.47	0.64
38452	36953	8	0.1	0.25	0.73	2
38453	38452	8	4.49	1.66	0.74	1
38454	38453	8	3.34	1.43	0.75	0.52
38455	38454	8	0.84	0.71	0.37	0.52
38456	38455	8	6.64	2.01	0.38	0.31
38457	38456	8	5.3	1.8	0.38	0.33
38458	38457	8	2.04	1.12	0.38	0.42
38459	38458	8	0.54	0.58	0.38	0.6
38460	38459	8	0.53	0.57	0.38	0.62
38461	38460	8	0.46	0.53	0.38	0.64
38462	38461	8	1.63	1	0.38	0.44
38463	38462	8	4.76	1.71	0.38	0.34
38464	38463	8	0.07	0.2	0.38	2
38465	38464	8	0.58	0.59	0.39	1
38525	6952	24	0.38	11.66	18.07	2
38526	38525	15	1.69	5.43	1.24	1
38527	38526	15	1.3	4.76	1.25	1
38528	38527	15	0.99	4.15	1.27	1
38529	38528	15	1.45	5.03	1.29	0.36
38530	38529	15	1.12	4.42	1.29	0.38
38530A	38530	15	0	0	1.29	0.54
38531	38530A	15	0.72	3.54	1.29	0.54
38532	38531	15	0.62	3.29	1.29	0.44
38533	38838	15	2.21	6.21	1.29	0.34
38534	38839	15	1.86	5.7	1.29	0.44
38535	38534	15	0.63	3.32	1.29	0.43
38536	38535	15	-0.13	-1.48	1.29	0.62
38537	38536	15	0.62	3.28	1.29	0.46
38538	38537	15	0.82	3.79	1.17	0.38
38538A	38538	15	3.35	7.64	1.17	0.31
38539	38538A	15	1.17	4.52	1.17	0.36
38581	21807	8	1.93	1.08	0.97	1
38582	38581	8	1.51	0.96	1.04	2
38642	38539	15	3.72	8.05	1.17	0.35
38643	38642	15	0.5	2.96	1.17	0.44
38644	38643	15	2.66	6.81	1.17	0.3
38645	38644	15	0.27	2.19	0.93	0.44
38646	39458	15	0.5	2.95	0.93	0.39
38647	38646	15	1.2	4.58	0.93	0.45
38648	38647	15	0.89	3.94	0.93	0.34
38649	38648	15	0.71	3.52	0.41	0.29
38682	18498	8	0.69	0.65	0.53	0.69

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
38683	38682	8	0.66	0.63	0.53	0.71
38684	38683	8	0.43	0.51	0.53	0.77
38773	33440	27	0.58	19.8	13.61	1
38774	38773	8	0.42	0.51	1.01	2
38775	38774	8	1.13	0.83	1.01	2
38776	38775	8	1.9	1.08	1.01	1
38777	38776	8	1	0.78	1.03	2
38778	38777	8	1.01	0.79	1.07	2
38779	38778	8	1.4	0.92	1.14	2
38780	38779	8	0.61	0.61	1.27	2
38781	38780	8	4.14	1.59	1.67	2
38782	38781	8	4.9	1.73	1.72	2
38838	38532	15	1.63	5.33	1.29	0.35
38839	38533	15	0.52	3.01	1.29	0.46
39117	38084	12	1.95	3.22	0.29	0.22
39118	39117	12	0.59	1.77	0.29	0.28
39224	20126	15	0.1	1.32	2.23	2
39225	39224	8	0.63	0.62	0.21	1
39458	38645	15	0.45	2.8	0.93	0.4
39733	23779	12	2.87	3.9	1.32	1
39734	39733	12	0.47	1.58	1.32	1
39735	39734	12	-0.02	-0.3	1.32	1
39736	39735	12	1.38	2.7	1.32	1
39737	39736	12	-0.15	-0.9	1.32	1
39738	39737	12	0.85	2.12	1.32	1
39739	39738	12	0.13	0.84	1.33	2
39741	39739	12	0.4	1.45	1.35	1
40488	6941	27	0.66	10.59	18.58	2
41020	38582	8	2.34	1.19	1.18	1
41036	38273	8	0.42	0.51	0.47	0.76
41037	41036	8	0.41	0.5	0.48	0.82
41038	41037	8	0.5	0.55	0.21	0.43
41039	41038	8	0.64	0.63	0.21	0.42
41040	41039	8	0.54	0.58	0.21	0.43
41042	41037	8	8.15	2.23	0.3	0.92
41043	41042	8	1.16	0.84	0.31	0.43
41044	41043	8	1.13	0.83	0.31	0.44
41045	41044	8	6.18	1.94	0.31	0.29
41114	41428	10	0.82	1.28	1.45	2
41115	41114	10	0.42	0.92	1.45	2
41116	41115	10	0.22	0.67	1.45	2
41117	41429	10	0.42	0.92	1.45	2
41118	41117	10	2.42	2.21	1.45	1
41119	41118	10	1.04	1.44	1.59	2
41120	41119	10	0.44	0.94	1.45	2
41121	41120	10	0.45	0.95	1.25	2
41122	41121	10	1.99	2	1.25	1
41123	41122	10	1.04	1.44	1.25	1
41124	41123	10	0.68	1.17	1.28	2
41125	41124	10	0.07	0.38	1.3	2
41126	41125	10	1.32	1.62	1.31	1

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
41127	41126	10	1.24	1.57	1.32	1
41128	41127	10	0.89	1.33	0.78	1
41129	41128	10	0.64	1.14	0.81	1
41130	41129	10	0.62	1.11	0.81	0.67
41131	41130	10	0.63	1.12	0.81	0.77
41132	41131	10	0.41	0.9	0.81	0.74
41133	41132	10	2.08	2.04	0.81	0.71
41134	41133	10	0.44	0.94	0	0.43
41135	41134	10	0.44	0.94	0	0.08
41136	41135	10	-0.26	-0.72	0	0.08
41137	41136	10	0.62	1.12	0	0.08
41138	41137	10	0.42	0.92	0	0.08
41139	41138	10	0.54	1.05	0	0.08
41140	41139	10	0.18	0.59	0	0.08
41252	20781	15	0.55	3.1	4.07	2
41427	1593	12	-1.16	-2.48	1.45	1
41428	41427	12	0.35	1.36	1.45	2
41429	41116	10	2.33	2.16	1.45	1
41434	35551	8	1.9	1.08	1.89	2
41529	41530	16	0.76	4.32	2.06	0.56
41530	43502	16	0.27	2.58	2.06	0.89
41917	39225	8	0.49	0.54	0.21	0.44
42050	34836	14	1.55	11.24	2.05	0.3
42051	42050	14	21.71	42.09	2.05	0.18
42052	42051	15	1.94	5.81	2.05	0.42
42053	42052	15	0.35	2.46	2.05	0.66
42054	42053	15	0.77	3.67	2.05	0.59
42055	42054	15	1.19	4.56	2.05	0.49
42224	15269	8	0.62	0.62	0.85	2
42225	42224	8	4.94	1.74	0.85	1
42226	42225	8	0.6	0.6	0.85	2
42227	42226	8	0.6	0.61	0.89	2
42228	22013	24	0.36	11.46	24.26	2
42229	42228	24	1.62	18.63	7.21	1
42230	48063	24	2.79	24.44	6.33	1
42231	42230	24	2.47	22.99	6.34	1
42232	42231	24	0.79	12.99	6.45	0.5
42233	42232	24	0.25	7.28	6.45	0.68
42234	42228	30	0.76	29.98	17.4	1
42603	36945	15	0.99	4.16	2.01	0.49
43381	150	15	122.06	46.14	0.81	0.25
43382	43381	15	0.26	2.12	0.81	0.43
43383	43382	15	3.57	7.89	0.81	0.43
43384	43383	12	5.33	5.32	0.72	0.27
43385	43384	12	1.03	2.33	0.38	0.29
43386	43385	12	1.95	3.22	0.27	0.22
43387	57167	12	3.51	4.32	0.27	0.2
43501	18555	18	0.38	4.2	2.06	1
43502	43501	16	0.55	3.68	2.06	0.95
43786	44225	12	0.6	1.79	0.8	1
43787	43786	8	0.91	0.74	0.57	1

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
43788	43787	8	0.47	0.54	0.58	2
43789	43788	8	0.95	0.5	0.59	2
43790	43789	8	0.24	0.25	0.61	2
43791	43790	8	0.46	0.35	0.64	2
43792	43791	8	0.42	0.33	0.68	2
43793	43792	8	0.53	0.37	0.6	2
43794	43793	8	0.45	0.52	0.64	2
43794A	43794	8	0.44	0.52	0.57	2
43795	43794A	8	0.63	0.62	0.57	1
43796	43795	8	0.51	0.56	0.57	2
43797	43796	8	0.52	0.56	0.25	1
43798	43797	8	0.52	0.56	0.25	1
43799	43798	8	0.52	0.56	0.25	1
43800	43799	8	1.43	0.94	0.29	1
43801	43796	8	0.79	0.7	0.36	1
43802	43801	8	1.86	1.06	0.39	1
43803	43802	8	2.8	1.31	0.39	0.39
43804	43803	8	2.5	1.23	0.39	0.4
43805	43804	8	3.5	1.46	0.39	0.37
43810	43800	8	0.52	0.57	0.31	1
43811	43810	8	0.52	0.56	0.31	1
43812	43811	8	0.52	0.56	0.31	1
43813	43812	8	0.52	0.56	0.31	0.55
43814	43813	8	1.7	1.02	0.31	0.4
43815	43814	8	0.51	0.56	0.31	0.55
43818	43815	8	1.88	1.07	0.31	0.41
43819	43794	8	-0.04	-0.15	0.59	1
43820	43819	8	0.5	0.55	0.59	2
43821	43820	8	0.92	0.75	0.59	1
43822	43821	8	0.52	0.57	0.59	2
43823	43822	8	0.74	0.67	0.59	1
43824	43823	8	0.62	0.61	0.59	1
43825	43824	15	0.54	3.07	0.61	1
43826	52024	15	0.56	3.12	0	0.26
43865	42055	12	0.71	1.94	0.43	0.42
44208	34385	24	0.24	4.66	1.57	1
44209	44208	24	0.29	5.12	1.52	1
44210	44209	10	0.32	0.52	1.47	2
44211	44210	10	0.32	0.8	1.15	2
44212	44211	10	0.32	0.8	1.15	2
44213	44212	10	0.33	0.81	1.16	2
44214	53270	10	0.38	0.87	0.99	2
44215	44214	10	0.32	0.8	0.99	2
44216	44215	10	0.32	0.8	1.01	2
44217	44216	10	0.35	0.84	0.84	1
44218	44217	10	0.31	0.78	0.84	2
44219	44218	10	0.31	0.79	0.83	2
44220	44219	10	0.23	0.68	0.97	2
44221	44220	10	0.26	0.72	0.97	2
44222	44221	10	0.21	0.65	0.97	2
44223	44222	10	0.3	0.78	0.97	2

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
44224	44223	10	0.2	0.63	0.8	2
44225	44224	10	0.23	0.69	0.8	2
44548	20777	15	1.05	4.28	4.76	2
45056	41045	8	2.31	1.19	0.32	0.36
45057	45056	8	0.93	0.75	0.32	0.48
45058	45057	8	1.56	0.98	0.33	0.42
45059	45058	8	3.38	1.44	0.34	0.35
45563	22466	12	4.23	4.74	0.25	0.43
45564	45563	12	1.4	2.73	0.25	0.22
45564A	45564	12	0.46	1.55	0.25	0.28
45565	45564A	12	2.42	3.59	0.25	0.23
45566	45565	12	4.26	4.75	0.25	0.24
45567	45566	12	3.74	4.46	0.25	0.19
45568	22490	12	3.77	4.47	0.25	0.19
45585	22457	12	0.6	1.16	0.25	0.42
45592	22464	12	1.07	2.38	0.25	0.24
45724	18455	12	1.87	4.1	2.52	1
45735	43818	8	0.6	0.6	0.31	0.52
45736	45735	8	1.21	0.86	0.31	0.43
45737	45736	8	2.36	1.2	0.31	0.36
45738	45737	8	3	1.35	0.31	0.35
45739	45738	8	4.44	1.65	0.31	0.31
45740	45739	8	4.92	1.73	0.31	0.3
45741	45748	8	2.62	1.26	0.39	0.4
45742	45741	8	3.02	1.36	0.39	0.38
45743	45742	8	3.03	1.36	0.39	0.38
45744	45743	8	0.68	0.64	0.39	0.57
45745	45744	8	0.63	0.62	0.39	0.58
45746	43805	8	2.01	1.11	0.39	0.43
45747	45746	8	2.64	1.27	0.39	0.4
45748	45747	8	2.65	1.27	0.39	0.4
45753	6937	30	0.51	18.97	18.26	1
45855	45059	8	3.15	1.39	0.35	0.36
45895	30628	8	2.7	1.28	0.59	0.49
46748	38465	8	0.47	0.54	0.4	0.65
46749	46748	8	2.31	1.19	0.4	0.42
46778	45745	8	0.6	0.6	0.39	0.59
46779	46778	8	0.6	0.61	0.39	0.59
46789	6931	30	0.56	19.86	19.35	1
46796	17748	12	4.61	4.95	2.34	0.68
47025	36942	15	0.75	3.62	2.17	0.56
47036	36944	15	1.49	5.09	2.17	0.47
48063	42229	24	2.91	24.93	7.22	1
48064	48063	8	3.7	1.5	0.98	1
48065	48064	8	0.6	0.61	1.05	2
48066	48065	8	4.4	1.64	1.09	1
48067	48066	8	1.05	0.8	1.1	2
48068	48067	8	1.64	1	1.1	2
48069	48068	8	6.98	2.06	1.1	0.53
48070	48069	8	6.88	2.05	1.1	0.53
48208	48070	8	5.6	1.85	1.1	0.57

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
48209	48208	8	5.18	1.78	1.1	0.58
48242	17297	12	6.32	5.79	2.78	1
48243	48242	8	13.24	2.84	0.4	0.27
48244	48243	8	13.38	2.86	0.4	0.32
48245	48244	8	7.29	2.11	0.4	0.31
48246	48245	8	0.44	0.52	0.4	0.66
48247	48246	8	1.17	0.85	0.4	0.5
48247A	48247	8	5.34	1.8	0.4	0.35
48248	48247A	8	0.6	0.6	0.4	0.6
48249	48248	8	3.38	1.44	0.4	0.55
48250	48249	8	1.73	1.03	0.4	0.44
48251	48250	8	1.26	0.88	0.4	0.49
48252	48251	8	0.62	0.62	0.4	0.59
48253	48252	8	-0.17	-0.32	0.44	0.93
48254A	NS1044	6	1.01	0.38	0.42	2
48571	41917	8	0.4	0.49	0.21	0.45
48572	48572A	8	0.4	0.49	0.21	0.47
48572A	48571	8	0.4	0.49	0.21	0.47
49083	30960	8	2.09	1.13	0.79	1
49084	49083	8	2.17	1.15	0.81	1
4970	2942	10	0.38	0.88	0.59	0.61
4971	4970	10	2.46	2.22	0.59	0.51
49997	36917	18	2.29	10.27	3.01	0.38
50253	34218	8	0.62	0.61	0.89	2
50254	50253	8	0.59	0.6	0.95	2
50255	50254	8	2.24	1.17	0.95	1
50256	50255	8	5.81	1.88	0.97	0.52
50281	50256	8	1.2	0.86	0.97	2
50282	50281	8	3.24	1.41	0.97	1
5134	18064	12	0.81	2.07	1.03	1
5135	14937	10	0.59	1.09	-0.02	0.75
5136	5135	10	1.57	1.78	0	0.1
5137	5136	10	1.05	1.45	0	0.1
5138	5137	10	0.57	1.07	0	0.08
5139	5138	10	1.87	1.94	0	0.1
5140	5139	10	0.1	0.44	0	0.08
52024	902054	15	1.18	4.53	0.64	1
52025	52024	10	1.59	1.79	0.64	0.43
52026	52025	10	1.32	1.63	0.64	0.45
52027	52026	10	0.98	1.4	0.64	0.49
52028	52027	10	0.53	1.03	0.64	0.58
52029	52028	8	3.68	1.5	0.64	1
52030	52029	8	3.76	1.51	0.64	0.47
52031	52030	8	0.44	0.52	0.64	2
52032	52031	8	0.44	0.52	0.64	2
52033	52032	8	0.44	0.52	0.64	2
52034	52033	8	0.44	0.52	0.64	2
52041	52034	8	0.44	0.52	0.64	2
52042	52041	8	1.31	0.89	0.65	1
52043	52042	8	3.29	1.42	0.65	1
52044	52043	8	3.2	1.4	0.66	0.5

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52045	52044	8	2.68	1.28	0.66	0.52
52088	36931	15	0.53	1.98	2.41	0.87
52089	52088	15	1.24	3.02	2.42	0.86
52091	52147	8	1.03	0.79	0.73	0.99
52092	52091	8	0.54	0.57	0.73	2
52093	52092	8	2.24	1.17	0.73	1
52094	52093	8	2.18	1.15	0.73	0.58
52095	52094	8	1.1	0.82	0.73	0.75
52096	52095	8	5.37	1.81	0.73	0.62
52097	52096	8	2.7	1.28	0.73	0.56
52098	52097	8	5.52	1.84	0.73	0.45
52099	52098	8	5.61	1.85	0.73	0.45
52100	52099	8	5.67	1.86	0.73	0.44
52147	52489	8	1.06	0.8	0.73	1
52170	18	16	20.44	22.42	0.06	0.99
52171	52170	16	0.71	4.18	0.06	0.09
52172	52171	16	0.5	3.5	0.06	0.1
52173	52172	16	1.15	5.32	0.06	0.12
52174	52173	16	5.47	11.6	0.06	0.12
52175	52174	16	4.44	10.45	0.06	0.11
52182	66	10	3.28	2.57	0.73	0.39
52240	52100	8	1.83	1.06	0.73	0.63
52241	52240	8	3.62	1.49	0.73	0.5
52242	52241	8	4.07	1.58	0.73	0.49
52243	52242	8	4.92	1.73	0.73	0.47
52244	52243	8	5.2	1.78	0.73	0.46
52245	52244	8	5.53	1.84	0.73	0.45
52364	36947	15	1.61	5.29	1.83	0.42
52488	21638	8	0.62	0.62	0.73	0.84
52489	52488	8	0.67	0.64	0.73	2
52520	52569A	8	1.09	0.82	0.73	0.75
52521	52520	8	0.6	0.6	0.73	2
52522	52521	8	0.5	0.55	0.73	2
52523	53379	8	0.5	0.55	0.76	2
52524	52523	8	0.51	0.56	0.8	2
52550	14458	8	3.13	1.38	1.79	2
52551	52550	8	8.8	2.32	1.58	1
52552	52552A	8	12.02	2.71	0.67	0.36
52552A	35539	8	13.38	2.86	0.67	0.53
52553	52552	8	7.63	2.16	0.67	0.4
52554	52553	8	3.62	1.49	0.67	0.49
52555	52554	8	7.09	2.08	0.67	0.41
52556	52555	8	7.16	2.09	0.67	0.41
52557	52556	8	0.99	0.78	0.67	0.72
52558	52557	8	0.98	0.77	0.67	0.73
52559	52558	8	2.45	1.22	0.67	0.6
52560	52245	8	16.07	3.13	0.73	0.35
52561	52560	8	5.06	1.76	0.73	0.46
52562	52561	8	5.07	1.76	0.73	0.46
52566	52562	8	0.57	0.59	0.73	2
52567	52566	8	0.61	0.61	0.73	2

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
52568	52567	8	3.99	1.56	0.73	1
52569	52568	8	4.99	1.75	0.73	0.46
52569A	52569	8	2.91	1.33	0.73	0.54
52651	7324	18	1.02	6.85	3.86	0.55
52652	52651	24	1.04	14.94	2.19	0.39
52653	52652	24	15.5	57.57	2.19	0.16
52654	52653	24	1.07	15.09	2.19	0.28
52655	52654	24	15.02	56.68	2.19	0.23
52656	52655	24	0.1	4.65	2.19	0.46
52657	52656	24	0.33	8.42	2.19	0.43
52658	52657	21	0.3	5.62	2.05	0.42
52659	52658	21	0.8	9.16	2.05	0.37
52660	52659	21	12.95	36.86	2.05	0.27
52661	52660	12	9.8	7.21	0.91	0.26
53242	52559	8	4.7	1.69	0.67	0.45
53243	53242	8	4.56	1.67	0.67	0.45
53244	53243	8	0.81	0.7	0.67	0.81
53245	53244	8	0.59	0.6	0.67	2
53246	53245	8	0.61	0.61	0.67	2
53257	44216	8	1.01	0.79	0.82	2
53258	53257	8	4.47	1.65	0.83	1
53259	53258	8	2.36	1.2	0.87	0.64
53260	53259	8	0.98	0.77	0.87	2
53261	53260	8	3.03	1.36	0.87	1
53262	53261	8	4.81	1.71	0.87	0.51
53263	53262	8	5.97	1.91	0.87	0.49
53264	53263	8	3.34	1.43	0.87	0.58
53267	53264	8	6.84	2.04	0.87	0.47
53269	53267	8	4.76	1.7	0.87	0.52
53270	44213	10	0.25	0.71	1.18	2
53271	53270	8	0.92	0.75	0.66	1
53292	30727	8	2.04	1.11	1.08	1
53293	53292	8	0.6	0.6	1.09	2
53294	53293	8	0.48	0.54	1.09	2
53295	53294	8	1.79	1.04	1.1	2
53296	53295	8	0.64	0.62	1.11	2
53297	53296	8	3.49	1.46	1.13	1
53379	52522	8	0.49	0.55	0.73	2
53385	53246	8	1.01	0.78	0.67	1
53386	53385	8	2.01	1.11	0.68	0.6
53387	53386	8	0.95	0.76	0.68	0.76
53388	53387	8	0.99	0.78	0.68	0.73
53727	53727A	8	0.3	0.43	1.02	2
53727A	53727B	8	0.55	0.58	1.02	2
53727B	20250	8	4.72	1.7	1.02	1
53728	53727	8	0.63	0.62	1.02	2
53729	53728	8	0.39	0.49	1.75	2
53730	53729	8	5.14	1.77	2.16	2
53868	46779	8	1.32	0.9	0.39	0.48
53869	53868	8	0.99	0.78	0.39	0.51
53870	53869	8	2.49	1.23	0.39	0.4

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
53871	53870	8	4.42	1.64	0.39	0.35
53872	53871	8	0.82	0.71	0.39	0.55
53873	53872	8	0.56	0.59	0.39	0.62
53874	53873	8	1.14	0.83	0.39	0.5
53875	53874	8	0.52	0.56	0.39	0.63
53876	53875	8	0.78	0.69	0.39	0.56
53877	53876	8	4.6	1.68	0.39	0.41
53878	53877	8	3.82	1.53	0.39	0.36
53879	53878	8	6.38	1.97	0.39	0.32
53955	41133	10	0.35	0.84	0.81	1
53956	53955	10	0.66	1.15	0.81	1
53957	53956	10	0.36	0.85	0.81	0.78
53958	53957	10	0.54	1.04	0.81	0.76
53959	53958	10	0.38	0.88	0.81	0.77
53960	53959	10	0.47	0.97	0.81	0.79
53961	53960	10	0.44	0.94	0.81	0.72
53962	53961	10	0.4	0.89	0.81	0.76
54110	52045	8	0.6	0.61	0.66	2
54111	54110	8	1.58	0.98	0.66	1
54112	54111	8	1.76	1.04	0.66	0.59
54113	54112	8	0.69	0.65	0.66	0.96
54114	54113	8	2.46	1.23	0.66	0.83
54115	54114	8	1.68	1.01	0.66	0.6
54116	54115	8	3.59	1.48	0.66	0.48
54117	54116	8	4.79	1.71	0.66	0.44
54353	65512	8	4.29	1.62	0.59	0.43
54451	45568	12	3.15	4.09	0.25	0.19
54452	54451	12	3.05	4.02	0.25	0.2
54452A	54452	12	1.59	2.91	0.25	0.22
54453	54452A	12	1.01	2.31	0.25	0.24
54453A	54453	12	0.56	1.73	0.25	0.26
54454	54453A	12	3	3.99	0.25	0.2
54455	54454	12	2.13	3.36	0.25	0.21
54456	54455	12	0.33	1.32	0.25	0.29
54556	53962	10	0.57	1.07	0.81	0.75
55251	7298	24	0.99	14.53	13.95	1
55252	55251	8	0.57	0.59	0.98	2
55253	55252	8	0.59	0.6	0.96	2
55254	55253	8	0.59	0.6	0.95	2
55255	55254	8	0.6	0.6	0.94	2
55256	55255	8	4.97	1.74	0.93	1
55257	55256	8	1.08	0.81	0.93	2
55258	55257	8	32.91	4.48	0.93	0.33
55259	55258	8	36.11	4.69	0.93	0.33
55260	55259	8	31.38	4.38	0.93	0.33
55261	55260	8	0.59	0.6	0.93	2
55262	55261	8	0.6	0.6	0.93	2
55267	55262	8	0.99	0.78	0.96	2
55268	55267	8	0.99	0.78	1.03	2
55269	55268	8	15.51	3.08	1.65	1
55270	55269	8	0.98	0.78	1.65	2

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
55271	55270	8	4.8	1.71	1.65	1
55272	55271	8	1.05	0.8	1.75	2
56667	20782	15	1.35	3.16	3.99	2
56841	33296	18	0.3	3.73	1.4	0.43
56842	56841	12	0.59	1.77	-0.01	0.62
57146	44548	15	0.89	3.94	4.57	2
57167	43386	12	6.13	5.7	0.27	0.18
57364	69111	8	7.05	2.07	0.38	0.3
59113	59114	8	0.37	0.47	0.56	2
59113	30957	8	2.74	1.29	0.77	1
59114	59115	8	0.36	0.47	0.54	2
59115	59116	8	0.36	0.47	0.53	2
59116	31155	8	2.21	1.16	1.05	1
59221	70	10	1.58	1.78	0.61	0.42
59222	59221	12	0.53	1.68	0.61	0.42
59274	34175	20	0.62	9.2	5.16	1
59275	59274	20	0.65	7.24	3.47	1
59276	59275	20	0.18	3.8	3.46	1
61	27	10	7.63	3.91	0.77	0.32
61831	21595	8	1.12	0.83	0.29	0.52
61832	61831	8	2.88	1.32	0.29	0.34
61833	61832	8	0.6	0.6	0.29	0.5
61834	61833	8	3.58	1.48	0.29	0.32
61946	6888	42	1.52	80.26	35.3	1
61947	61946	36	0.41	27.53	13.33	1
61948	61947	36	0.59	33.24	13.5	1
63663	7113	8	2.1	1.13	0.98	1
63665	7114	8	2.96	1.34	0.96	1
64082	53297	8	0.61	0.61	1.19	2
64083	64082	8	3.54	1.47	1.2	1
64084	64083	8	4.69	1.69	1.24	1
64085	64084	8	1.81	1.05	1.26	2
65315	65511	15	0.51	2.99	0.74	0.46
65316	65315	15	0.31	2.34	0.74	0.39
65317	65316	15	0.57	3.16	0.74	0.34
65318	65317	15	1.8	5.6	0.74	0.27
65319	65318	15	1.8	5.6	0.74	0.27
65320	65319	15	2.03	5.95	0.74	0.27
65321	65320	15	1.96	5.85	0.74	0.26
65322	65321	15	3.23	7.51	0.74	0.23
65323	65322	15	0.15	1.63	0.74	0.47
65324	65323	15	2.6	6.73	0.74	0.28
65325	65324	15	0.5	2.95	0.74	0.35
65326	65325	15	0.52	3.02	0.74	0.34
65327	65326	15	0.35	2.48	0.74	0.37
65328	65327	15	0.84	3.83	0.74	0.37
65329	65328	15	2.02	5.93	0.74	0.26
65330	65329	15	2.47	6.57	0.74	0.25
65331	65330	15	0.5	2.95	0.74	0.35
65332	65331	15	0.33	2.41	0.74	0.38
65333	65332	15	0.88	3.92	0.74	0.3

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
65373	6990	18	1.97	9.53	1.46	0.29
65374	65373	18	0.76	5.93	1.46	0.34
65375	65374	18	0.41	4.33	1.47	0.41
65497	34179	16	1.05	6.62	1.45	0.34
65498	65497	16	1.17	6.97	1.45	0.33
65499	65498	16	0.71	4.18	1.45	0.41
65500	65499	16	0.73	4.25	1.45	0.41
65501	65500	16	0.35	2.95	1.45	0.5
65502	65501	16	0.28	2.62	1.45	0.52
65503	65502	16	0.5	3.5	1.45	0.45
65504	65503	16	0.22	2.31	1.45	0.55
65505	65504	16	1.84	6.74	1.45	0.48
65506	65505	16	0.49	3.47	1.45	0.45
65507	65506	16	0.89	4.69	1.45	0.38
65508	65507	16	0.52	3.57	1.45	0.44
65509	65508	16	0.54	3.66	1.45	0.5
65510	65509	16	0.61	3.88	1.45	0.43
65511	65510	16	0.56	3.72	1.45	0.43
65512	45895	8	4.33	1.63	0.59	0.43
66	61	10	2.92	2.42	0.73	0.39
66452	67346	8	0.85	0.72	1.27	2
66453	66452	8	1.85	1.06	1.32	2
67346	7085	8	0.77	0.68	1.27	2
6874	JP1	42	0.16	21.31	42.2	0.96
6875	6874	42	0.17	21.73	42.2	2
6876	6876N	42	0.19	21.82	42.2	2
6876N	6875	42	0.19	22.9	42.2	2
6877	6876	42	0.17	26.94	41.49	2
6878	16379	42	-0.14	-23.28	41.49	1
6879	6878	42	0.46	43.91	41.49	1
6880	6879	42	0.17	26.91	41.49	2
6882	6880	42	0.2	28.91	40.99	2
6883	6882	42	-0.02	-8.98	40.99	1
6885	6883	42	0.55	48.09	47.91	1
6886	14565	42	3.98	129.77	44.7	1
6887	6886	42	0.19	28.63	44.77	2
6888	6887	42	0.21	29.56	42.69	2
6889	6888	24	0.42	9.51	-1.93	1
6890	6889	24	0.36	8.73	-1.09	1
69111	33534	8	4.5	1.66	0.38	0.34
69131	33527	15	0.97	2.68	2.85	2
69132	69131	16	3.51	6.04	2.85	1
69133	69132	16	0.7	2.69	2.85	0.9
69136	69133	16	0.71	2.71	2.85	0.95
69138	69136	16	0.7	2.7	2.85	0.91
69139	69138	16	1.45	5.97	2.76	0.91
69140	69139	16	0.84	4.55	2.76	0.57
69143	69140	16	0.74	4.26	2.76	0.58
69144	69143	16	0.74	4.25	2.59	0.61
69145	69144	15	0.63	3.33	2.59	0.66
69146	69145	16	0.57	3.74	2.59	0.62

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
69147	69146	15	0.83	3.81	2.59	0.61
69149	69147	15	0.71	3.51	2.59	0.64
69150	69149	15	0.54	3.07	2.59	0.71
69151	69150	15	1.72	5.47	2.59	0.5
69152	69151	15	0.68	3.43	2.59	0.65
6921	61946	42	0.2	29.09	23.11	1
6923	6921	42	0.13	23.1	22.81	1
6924	6923	42	0.09	19.15	22.8	2
6925	6924	42	0.09	19.29	22.39	2
6926	6925	42	0.09	19.18	21.71	2
6927	6926	42	0.01	6.87	21.7	2
6928	6927	42	0.15	25.54	21.7	1
6929	6933	30	0.64	21.17	18.76	1
6930	18452	42	0.17	26.69	19.08	1
6931	6930	42	0.48	45.11	19.07	1
6932	46789	30	0.81	23.89	18.73	1
6933	6932	30	0.48	18.44	18.75	2
6934	6929	30	0.45	17.76	19.14	2
6935	6934	30	0.56	19.87	19.21	1
6936	6935	30	0.49	18.47	18.06	1
6937	15872	30	0.63	21	18.2	1
6938	17375	30	0.55	19.6	18.35	1
6939	6938	30	0.66	21.47	17.89	1
6940	6942	30	0.62	20.9	18.04	1
6941	6940	30	0.78	23.41	18.47	1
6942	6939	30	0.65	21.32	17.92	1
6943	901676	27	0.59	19.93	18.41	1
6944	6943	27	0.53	18.87	18.43	1
6945	6944	27	0.41	16.62	18.38	2
6946	6945	27	0.61	20.33	18.39	1
6947	6946	24	0.62	14.95	18.35	2
6948	32394	24	0.23	9.21	17.83	2
6949	6948	24	0.78	16.75	17.85	2
6950	6949	24	0.61	14.83	17.88	2
6951	6950	24	0.71	16.01	8.03	1
6952	6951	24	0.34	11.09	8.28	1
6952	6950	24	0.09	5.72	10.72	2
6953	38525	24	0.49	13.33	13.89	2
6953	38525	15	0.72	4.61	4.45	2
6954	18586	24	0.47	13	16.92	2
6955	6954	24	0.45	12.8	16.97	2
6956	19873	24	0.43	12.41	11.87	1
6956	19873	15	0.54	4	3.63	1
6957	6956	24	0.3	10.33	11.6	2
6957	6956	15	0.01	0.64	3.93	2
6958	22009	24	2.58	30.51	0.72	1
6965	15269	18	0.7	7.4	3.73	1
6966	6965	18	0.5	6.25	3.73	1
6967	6966	15	0.58	4.14	2.92	1
6968	6967	15	0.38	3.35	1.87	1
6969	6968	15	0.7	4.56	1.87	1

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
6970	6969	15	0.77	4.77	1.88	1
6977	33451	18	0.81	6.09	2.47	0.44
6978	33451	18	0.97	6.7	3.26	0.5
6979	6978	18	0.98	6.74	3.26	0.5
6980	6979	18	1.59	8.55	3.26	0.44
6981	6980	15	1.46	5.04	3.26	0.69
6982	6981	15	1.47	5.06	3.27	0.59
6983	6982	16	0.95	4.84	2.54	1
6984	6983	15	0.79	3.71	2.54	0.79
6985	6984	15	0.99	4.15	2.55	0.57
6987	6985	15	1.01	4.2	2.55	0.57
6988	6987	15	1.15	4.47	1.46	0.41
6989	6988	15	0.98	4.13	1.46	0.73
6990	32475	15	0.83	3.8	1.46	0.43
6995	37990	12	5.27	5.29	0.83	0.39
70	52182	10	4.61	3.04	0.73	0.38
70349	16535	18	2.87	11.51	0.24	0.14
70350	70349	18	2.85	11.47	0.24	0.14
70351	70350	18	4.12	13.78	0.24	0.13
70352	70351	18	1.85	9.25	0.24	0.15
7049	6977	10	0.74	1.22	2.47	2
7050	7049	10	1.57	1.77	2.47	2
7051	7050	10	1.78	1.89	2.48	2
7052	7052M	8	2.36	1.2	1.17	1
7052M	7051	10	0	0	1.65	2
7061	6967	8	2.22	1.16	1.07	1
7062	7061	8	1.78	1.04	1.06	2
7063	7062	8	1.77	1.04	1.06	2
7064	7063	8	0.47	0.53	1.1	2
7065	7064	8	2.27	1.18	1.19	2
7071	33444	10	1.25	1.58	-0.15	1
7071	33444	10	0.99	1.41	0.82	1
7080	7071	8	1.91	1.08	0.8	0.65
7081	7080	8	0.41	0.5	0.8	2
7082	7081	8	3.14	1.38	0.8	0.56
7083	7082	8	0.4	0.49	0.8	2
7084	7083	8	0.4	0.49	0.82	2
7085	7084	8	0.4	0.49	0.89	2
7086	33446	8	4.41	1.64	0.56	0.42
7087	900091	8	0.49	0.55	0.56	2
7088	7087	8	2.46	1.22	0.57	0.89
7089	7088	8	0.42	0.51	0.57	0.77
7090	7089	8	0.4	0.49	0.57	2
7092	33448	8	0.62	0.62	0.8	2
7093	7092	8	3.27	1.41	0.8	0.56
7094	7093	8	0.81	0.7	0.8	2
7095	7094	8	4.87	1.72	0.8	1
7096	7095	8	6.45	1.98	0.8	0.45
7097	7096	8	8.76	2.31	0.8	0.42
7098	7097	8	8.43	2.27	0.8	0.42
7099	7098	8	0.41	0.5	0.8	2

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7100	7099	8	2.05	1.12	0.8	1
7101	7100	8	1.48	0.95	0.8	0.72
7102	F1757	8	0.77	0.69	0.8	2
7106	20553	8	3.67	1.5	0.95	0.59
7107	7106	8	3.65	1.49	0.95	0.59
7108	7107	8	3.74	1.51	0.95	0.58
7113	6966	8	3.25	1.41	0.99	1
7114	63663	8	2.3	1.19	0.97	1
7115	63665	8	3.32	1.42	0.96	0.62
71157	64085	8	0.56	0.58	1.26	2
71158	71157	8	0.61	0.61	1.27	2
7116	7115	8	0.37	0.47	0.96	2
7117	7116	8	4.07	1.58	0.96	1
7118	7117	8	3.84	1.53	0.96	0.58
7119	7118	8	2.99	1.35	0.96	0.64
71194	38684	8	0.4	0.49	0.53	2
7120	7119	8	1.81	1.05	0.96	0.78
7122	13238	8	1.68	1.01	0.96	0.8
71229	71158	8	7.71	2.17	1.3	1
7123	7122	8	0.5	0.55	0.96	2
7124	7123	8	3.45	1.45	1.24	1
7125	7124	8	3.12	1.38	1.24	1
7126	7125	8	2.45	1.22	1.24	2
7127	7126	8	2.5	1.24	1.24	2
7128	7127	8	4.12	1.59	1.25	1
7132	7128	8	2.18	1.15	1.26	2
7133	7132	8	1.58	0.98	1.26	2
7134	7133	8	2.31	1.19	1.26	2
7135	7134	8	2.48	1.23	1.26	2
7136	7135	8	1.81	1.05	1.29	2
7137	7136	8	2.8	1.31	1.34	2
7161	7052M	8	4.47	1.65	0.65	1
7162	7161	8	7.62	2.16	0.7	1
7163	23057	8	0.26	0.4	0.71	2
7164	7163	8	1.6	0.99	0.71	1
7165	7052	8	3.7	1.5	1.17	1
7166	7165	8	3.45	1.45	1.17	1
7167	7166	8	0.41	0.5	1.16	2
7168	7167	8	2.46	1.23	1.2	1
7169	7168	8	3.36	1.43	1.38	1
7170	7169	8	3.71	1.5	1.38	1
7171	7170	8	2.34	1.19	1.42	2
7173	7171	8	3.06	1.37	1.46	2
7176	7173	8	2.75	1.29	1.52	2
7177	7176	8	4.51	1.66	1.68	2
7178	7051	8	4.11	1.58	1.01	1
7179	7178	8	1.64	1	1	1
7180	7179	8	0.4	0.5	0.98	2
7181	7180	8	0.41	0.5	0.98	2
7182	7181	8	1.23	0.87	0.98	2
7183	7182	8	2.33	1.19	1.01	1

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7184	7183	8	1.87	1.07	1.06	2
7185	7184	8	1.9	1.08	1.28	2
7188	7185	8	1.37	0.91	1.32	2
7252	6995	12	1.29	2.61	0.83	0.4
7253	7252	12	0.44	1.53	0.83	0.53
7254	7253	12	0.36	0.89	0.83	0.77
7255	7254	12	0.43	0.98	0.83	0.77
7256	7255	12	0.32	0.84	0.83	0.77
7257	7270	8	0.81	0.7	0	0.1
7258	7257	8	1.76	1.04	0	0.1
7259	7258	8	1.2	0.86	0	0.1
7260	7259	8	0.39	0.49	0	0.1
7261	7260	8	0.36	0.47	0	0.1
7262	7261	8	0.32	0.44	0	0.1
7263	7262	8	0.39	0.49	0	0.1
7264	7263	8	0.38	0.48	0	0.1
7265	7264	8	1.36	0.91	0	0.1
7266	7256	8	0.8	0.7	0	0.25
7270	7266	8	0.85	0.72	0	0.1
7287	7265	8	3.97	1.56	0	0.1
7288	7287	8	3.37	1.44	0	0.1
7289	7256	10	0.54	0.68	0.83	2
7295	61948	24	1.62	18.62	13.6	1
7296	7295	24	0.38	9	13.93	2
7297	7296	24	0.76	12.77	13.93	2
7298	7297	24	0.43	9.58	13.94	2
7300	55251	24	0.65	11.77	13.32	2
7301	7300	24	2	20.7	13.33	1
7302	7301	24	2.4	22.65	13.33	1
7303	7302	21	2.77	17.06	13.37	1
7305	7303	21	2.09	14.82	13.39	0.77
7308	7305	21	1.49	12.52	13.39	2
7309	19143	21	0.8	9.14	7.66	1
7311	18322	21	1.12	7.06	7.64	2
7314	18241	21	0.35	3.91	7.64	2
7315	22223	21	0.49	4.64	5.63	2
7316	7315	21	0.96	10.03	5.63	1
7317	7316	21	0.67	8.38	4.34	1
7318	7317	21	0.55	7.59	4.31	0.75
7319	7318	21	0.91	9.8	4.31	0.54
7320	7319	21	1.27	11.54	4.31	0.43
7321	7320	18	1.35	7.9	3.86	0.5
7322	7321	18	1.16	7.33	3.86	0.53
7323	7322	18	0.91	6.48	3.86	0.56
7324	7323	18	1.31	7.79	3.86	0.51
7325	52651	18	1.02	6.84	1.69	0.58
7326	7325	18	0.81	6.13	1.69	0.36
7327	7326	18	0.75	5.89	1.69	0.37
7328	7327	18	0.74	5.83	1.69	0.37
7329	7328	15	1.56	5.22	0.51	0.23
7330	7329	15	0.8	3.73	0.51	0.26

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	Downstream Node	Pipe diameter (in)	Pipe Gradient (%)	Pipe Full Capacity (MGD)	Peak Flow (MGD)	Surcharge State
7332	7316	10	1.77	1.89	1.36	1
7333	7332	10	3.44	2.63	1.4	0.56
7334	16604	10	3.11	2.5	0.47	0.31
7335	7334	10	3.77	2.75	0.47	0.3
742	754	8	1.89	1.07	0	0.1
754	902164	8	6.11	1.93	0	0.1
8195	37032	12	0.24	1.14	0.74	0.56
900091	7086	8	0.5	0.55	0.56	0.92
901295	901296	8	1.49	0.95	1.16	2
901296	901297	8	0.61	0.61	1.12	2
901297	901298	8	0.59	0.6	1.09	2
901298	901299	8	1.79	1.05	1.09	2
901299	52524	8	8.72	2.31	1.09	1
901390	37990	15	11.09	9.04	2.65	0.38
901391	901390	16	0.36	1.95	2.65	0.87
901676	15751	27	0.52	18.7	18.6	1
901871	52661	12	2.46	3.61	0.91	0.36
901892	901893	6	5.72	1.13	0.64	1
901893	16595	8	6.03	2.49	0.64	0.36
902012	6953	24	0.34	11.03	13.33	2
902012	6953	15	0.32	3.05	3.89	2
902054	43825	15	1.2	4.58	0.64	1
902164	902165	8	6.32	1.96	0	0.1
902165	52657	8	6.21	1.95	0	0.1
9039	16038	18	0.92	6.5	3.47	0.99
9040	17949	15	1.35	4.86	2.65	0.54
9041	17969	15	1.15	4.48	1.64	0.59
9042	9041	15	1.05	4.28	1.24	0.38
9044	14317	15	4.1	8.45	0	0.1
9045	9044	15	3.35	7.65	0	0.1
9046	9045	15	0.08	1.16	0	0.05
9047	9046	21	0.25	5.11	0	0.05
9048	10918	21	0.48	7.06	0	0.05
9049	9048	21	2.33	15.64	0	0.1
break 1	break12	6	-0.12	-0.12	0.22	1
Break 4	45855	6	-1.62	-0.49	0.35	1
Break11	41040	6	-2.37	-0.6	0.22	1
break12	Break11	6	-0.32	-0.2	0.22	1
break2	46749	6	0.06	0.08	0.41	2
C445	7102	8	0.21	0.36	0.8	2
F1757	7101	8	0.8	0.7	0.8	2
F5313-missing	2403	8	2.4	1.57	0.64	0.46
NS1044	48253	6	-6.41	-1.03	0.42	1
PVT302	PVT303	8	0.48	0.54	1.08	2
PVT303	29644	8	0.9	0.74	1.08	2
PVT472	PVT473	8	1.39	0.92	0.15	0.29
PVT473	PVT474	8	5.93	1.9	0.15	0.21
PVT474	PVT475	8	8.6	2.29	0.15	0.2
PVT475	PVT476	8	0.61	0.61	0.15	0.36
PVT476	PVT477	8	0.6	0.6	0.15	0.36
PVT477	PVT478	8	11.33	2.63	0.15	1

Jones Falls: Wet Weather Capacity Analysis- 20 year, 24-hour storm - Pre						
Upstream Node	**Downstream Node**	**Pipe diameter (in)**	**Pipe Gradient (%)**	**Pipe Full Capacity (MGD)**	**Peak Flow (MGD)**	**Surcharge State**
PVT478	32260	8	15.2	3.05	0.15	1
weir15	33295	24	0.31	8.18	0.25	0.31

JONES FALLS POPULATION PROJECTIONS 4/2008

Year	2000	2005	2010	2015	2020	2025	2030
Totals	66657	67757	71126	71717	72075	71896	71941

JONES FALLS EMPLOYMENT PROJECTIONS 4/2008

Year	2000	2005	2010	2015	2020	2025	2030
Totals	82198	86797	87958	89756	89998	90191	90449

Michael R. McCann, P.A.
118 W. Pennsylvania Avenue
Towson, Maryland 21204
Phone: (410) 825-2150
Facsimile: (410) 825-2149
michael@mmccannlaw.net

November 14, 2018

Via Email and Hand-Delivery

Steven Walsh, Director
Baltimore County Department of Public Works, Ste. 307
111 W. Chesapeake Avenue
Towson, Maryland 21204

Re: Sewer Capacity
Jones Falls Sewershed

Dear Mr. Walsh:

Pursuant to the Public Information Act, Annotated Code of Maryland §§10-611 through 10-630, I write to request copies of documents maintained by Baltimore County regarding the above-referenced matter. I believe, but do not know for certain, that the documents responsive to these requests would be maintained by the Department of Public Works.

Unless stated otherwise, the requests shall pertain to (i) the Jones Falls Sewershed (the "Sewershed"), and (ii) the period of time from January 1, 2005 to the present. I have provided headings to the requests, which are intended to assist the reviewer in identifying the documents requested.

Consent Decree- Reporting/Compliance

1. All Quarterly Reports and Annual Reports submitted to EPA and/or MDE pursuant to the Consent Decree entered in 2005 in the matter of *United States of America et al. v. Baltimore County, Maryland* (the "Consent Decree").

2. All other reports, plans and other documents submitted to EPA and/or MDE pursuant or relating to the Consent Decree, including but not limited to the Sewershed Repair, Replacement, and Rehabilitation Plan ("SSSR Plan"), Long-Term Capacity/Peak Flow Management Evaluation Report ("LTC/PFME Report"), SSO Characterization Reports, Inflow & Infiltration Evaluation Report, SSO Elimination Plans, Collection

System Inspection Plans, CCTV Inspection Reports, Performance Assessments, SSO Incident Reports, and Discharge and Building Backup Reports.

3. All updates to and revised versions of the SSSR Plan, LTC/PFME Report, and other reports and plans submitted to EPA and/or MDE.

4. All correspondence sent to or received from EPA and/or MDE pursuant to or relating to the Consent Decree.

5. All correspondence sent to or received from Rummel, Klepper & Kahl ("RK&K") relating to Consent Decree and/or the County's obligations under the Consent Decree.

6. All documents evidencing, reflecting or relating to the actions taken by the County to eliminate sanitary system overflows in accordance with the Consent Decree.

7. All "force majeure" notifications submitted to EPA and/or MDE pursuant to section XII of the Consent Decree.

8. All documentation relating to citizen/resident complaints regarding SSOs in the Jones Falls Sewershed.

9. All correspondence between County and Baltimore City, and other documents sent to or received from Baltimore City, regarding Sewershed boundary flows, capacity and/or responsibility for SSO's.

Growth

10. All population growth, employment growth, and future land use data used in connection with the preparation of the LTC/PFME Report, the SRRR Plan or any update or revision thereto.

11. All population growth, employment growth, and future land use data supporting the Towson Run relief sewer.

12. All population growth, employment growth, and future land use data supporting the determination that adequate sewer capacity exists to accommodate the Towson Row development.

13. All employment growth, and future land use data supporting the determination that adequate sewer capacity exists to accommodate the Johns Hopkins surgical outpatient center at Green Spring Station.

14. All student population growth, employment growth, and future land use data supporting the determination that adequate sewer capacity exists to accommodate the expansion of facilities of Towson University.

Water Quality

15. All reports, studies, data, and other documents reflecting or relating to water quality in Lake Roland and/or its tributary streams.

16. All reports, studies, data, and other documents reflecting or relating to fecal contamination in Lake Roland and/or its tributary streams.

Towson Run Interceptor/Relief Sewer

17. All data, projections, rationale and other documents justifying the construction of the Towson Run relief sewer.

18. All plans, drawings and other documents reflecting (i) the location and/or route of the Towson Run relief sewer, (ii) the current status of the construction of the Towson Run relief sewer, *i.e.,* the segments that have been installed, (iii) the schedule for construction of the remaining segments of the relief sewer, (iv) the size and capacity of the relief sewer. and (v) information regarding hydraulic modeling of the new interceptor/relief sewer in relation to the existing sewer.

19. All documents reflecting the current flow data (including peak flows) of the Towson Run Interceptor.

20. All documents reflecting the flow data (including current peak flows) of the completed segments of the Towson Run relief sewer.

21. All capacity analyses and other documents reflecting the current capacity of the Towson Run Interceptor.

22. All capacity analyses and other documents reflecting the planned or expected capacity of the Towson Run relief sewer.

23. All documents reflecting whether the Towson Run relief sewer will replace the Towson Run Interceptor or provide storage capacity for the Towson Run Interceptor.

24. All peak flow projections for the Towson Run Sewershed and the data supporting those projections.

25. All documents reflecting the capacities or other factors that trigger recommendation regarding a relief sewer in 10 and 20-year storm events.

Lake Roland Interceptor

26. All documents relating to or reflecting any defects or maintenance issues in the Lake Roland Interceptor, whether the defects have been repaired, and how they were repaired.

27. All documents relating to or reflecting the current peak carrying capacity of the Lake Roland Interceptor.

28. All documents relating to or reflecting the projected peak carrying capacity of the Lake Roland Interceptor.

29. All studies and condition reports of the Lake Roland Interceptor, including I&I Analysis.

30. All studies and information relating to how wastewater flow leaving Baltimore County is affected by capacity issues at the point of entry to the Baltimore City system.

Growth Management Act/Basic Services Maps/ Triennial Review

31. All documents constituting or reflecting any County policy, standard, or procedure for determining sewer capacity under the Growth Management Act in section 4A of the Zoning Regulations.

32. All documents constituting or reflecting any County's policy, standards, or procedures for determining areas of concern or deficiency in the Basic Services Sewerage Map.

33. All documents reflecting, or which would allow one to determine, the "maximum level of nonindustrial development" permitted in the Sewershed under section 4A02.4.C.3 of the County's Zoning Regulations, including but not limited to documents reflecting or that would allow one to determine the "available sewerage capacity," the "county's share of the maximum reserve capacity of the sewerage in the area," and "the daily quantity of sewerage from any industrial permits for which construction permits are expected to be issued" as those terms are used in section 4A02.4.C.3.

34. All documents reflecting the Department of Public Work's determination of the "quantity of sewerage yielded by a building or part of a building to be devoted principally to uses other than dwelling or retail or office uses" under section 4A02.4.C.3.c.

35. All correspondence and other documents reflecting or relating to any discussion or determination of whether there is adequate sewer capacity in any area within the Sewershed.

36. All applications for and other documents constituting or relating to any reserve capacity use certificate issued for a development in the Sewershed.

37. All documents comprising DPW's file for the triennial review of the County's Water Supply and Sewerage Plan as it relates to the Sewershed and/or the Towson Run Interceptor/Relief Sewer, for the years 2005, 2008, 2011, 2014, and 2017.

Thank you for your cooperation. Please contact me if you have any questions or concerns.

Very truly yours,

Michael R. McCann

cc: Brady Locher

Michael McCann

From: Milana Vayner <mvayner@baltimorecountymd.gov>
Sent: Friday, April 19, 2019 12:21 PM
To: Michael McCann
Cc: Thomas Kiefer; Dave Bayer; Glen Keller; Dave Thomas; Stacy R Harris; Michelle Kowalski
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)
Attachments: Inspection Plan - Amendment 2_8_2006.pdf; Inspection Plan.pdf; JonesFallsPopandEmployProjections.xls; Revised Flow Monitoring Plan.pdf; Rainfall Monitoring Plan.pdf; Alabama Road SSO Elimnation Plan.pdf; Charles Street Ave and Rider Ave SSO Elimination Plan.pdf; Marnat Road SSO Elimination Plan.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Michael,

Below is the County's response to your PIA Request, Jones Falls Sewershed (18-37). The files are large and if they don't go through I will put them on a CD for you to pick up. Dave Bayer spent an additional hour in search and preparation. Please provide one more check for $50 made out to Baltimore County, Maryland, referencing PIA #18-37. As a courtesy the copying costs are waived at this time.

A. Consent Decree Documents:

1. SRRR Plan was previously provided on a CD. It is our understanding that the CD transmitted contained the following two (2) Appendices:

   Appendix L, LTC/PFMR, was on the CD with the SRRR Plan.
   Appendix B, I and I Evaluation Report, was on the CD with the SRRR Plan.

2. The Inspection Plan and Inspection Plan Amendment are attached to this email.

3. The SSO Elimination Plans for the four (4) SSO's that were located within the Jones Falls Sewershed are attached (SSO #131: Alabama Road, SSO #120: Charles Street Avenue, SSO #113: Marnat Road, and SSO #13A: Rider Avenue).

4. The Rainfall Monitoring Plan is attached.

5. The Revised Flow Monitoring Plan is attached.

B. Other portions of the PIA Request, as consolidated:

1. The Population and Employment Projections for the Jones Falls Sewershed from 2000 through 2030 are attached.

2. Projected Wastewater Flow Data is detailed in the Hydraulic Capacity Assessment Report (Appendix K). The Planning Office provided Population and Employment Projections that were distributed by Regional Planning Districts not Zip Codes.

3. The County chose to evaluate two synthetic Design Storms not required by the Consent Decree (the 2-yr 6-hour and the 10-yr 6-hour Design Storms) to determine the impacts on the County's collection system

from synthetic Design Storms having shorter durations because Design Storms having different durations produce significantly different hydrographs and peak discharges.

4. The SRRR Plan Section 5.6.2 details the assumptions regarding the Infiltration and Inflow rates used in the predictive model.

5. The SRRR Plan Section 5.6.2 details the assumption made regarding pipe deterioration.

7. a. Determining Deficiency: See Section 4A02.4(C) of the Baltimore County Zoning Regulations.

   b. Determining Areas of Concern: Areas of Concern have no basis in the BCZR Growth Management Article. They are advisory only and indicate areas known to the Sewer Design Section of the DPW Bureau of Engineering & Construction where connection to the public sewer system may require improvements or corrections to the receiving sewer system to ensure adequate dry and wet-weather capacity to serve the property to which the connection is requested. The specific requirements are as specified in the PAI Development Plan Review Bureau Policy Manual and the DPW Design Manual, both which can be found on the County website, https://www.baltimorecountymd.gov/Agencies/permits/pdmdvplr.html and apply to all development in the County.

8. Table 5.3.1 in the Jones Falls Sewershed SRRR Plan details the calibration quality of the predictive model. Pipe segments that exhibited sensitivity to flow changes were noted. Pipe segments that exhibited sensitivity to physical changes were documented.

9. There aren't any documents reflecting the standards or thresholds for determining when a future relief sewer is needed.

Related to Brooklandville and deficient sewers, the County identified several pipe segments in the Brooklandville area as lacking capacity during wet weather. Flow monitoring confirmed several sewer segments were at or near capacity during wet weather events, and because of the potential for possible future development in the area, this additional area of special concern was added to the 2007 Basic Services Maps.

The link to the "Applications of Hydrologic Methods In Maryland" is:
http://gishydro.eng.umd.edu/panel.htm

I believe that DPW has provided the responsive records that exists in response to your PIA request at this time.

Milana

From: Milana Vayner
Sent: Thursday, April 18, 2019 3:43 PM
To: 'Michael McCann' <michael@mmccannlaw.net>
Cc: Thomas Kiefer <tkiefer@baltimorecountymd.gov>; Dave Bayer <dbayer@baltimorecountymd.gov>; Glen Keller <gkeller@baltimorecountymd.gov>; Dave Thomas <dthomas@baltimorecountymd.gov>
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Michael,
I've received the check. Will talk to the DPW folks so we can coordinate a date for you to receive and/or inspect records that they have compiled thus far.
Milana

From: Michael McCann <michael@mmccannlaw.net>
Sent: Wednesday, April 17, 2019 10:26 AM
To: Milana Vayner <mvayner@baltimorecountymd.gov>
Cc: Thomas Kiefer <tkiefer@baltimorecountymd.gov>; Dave Bayer <dbayer@baltimorecountymd.gov>; Glen Keller <gkeller@baltimorecountymd.gov>; Dave Thomas <dthomas@baltimorecountymd.gov>
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Milana: I meant to add the following (in blue) to my response below. Thanks!

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Michael McCann
Sent: Wednesday, April 17, 2019 10:01 AM
To: Milana Vayner <mvayner@baltimorecountymd.gov>
Cc: Thomas Kiefer <tkiefer@baltimorecountymd.gov>; Dave Bayer <dbayer@baltimorecountymd.gov>; Glen Keller <gkeller@baltimorecountymd.gov>; Dave Thomas <dthomas@baltimorecountymd.gov>
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Milana: Thank you. See my responses below in red.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Milana Vayner [mailto:mvayner@baltimorecountymd.gov]
Sent: Monday, April 15, 2019 8:31 PM
To: Michael McCann <michael@mmccannlaw.net>
Cc: Thomas Kiefer <tkiefer@baltimorecountymd.gov>; Dave Bayer <dbayer@baltimorecountymd.gov>; Glen Keller <gkeller@baltimorecountymd.gov>; Dave Thomas <dthomas@baltimorecountymd.gov>
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Michael,

Sorry for the delay. Been a bit hectic here.

In your email dated March 6, you stated you were requesting "In addition to any documents "reflecting" the standard/threshold for determining if a sewer shed is deficient, please produce any documents stating or setting forth the actual standard/threshold."

- Dave Bayer needs additional clarification on what you mean by this request. Without such clarification he does not know how to determine the amount of time needed to gather the records.

My description was purposely basic. As I am sure you understand, it is difficult to clarify this when I don't know, for certain, what it is that I am clarifying. What I do know is, first, there are "sewerage standards" in the Growth Management Act (BCZR, section 4A) that determine whether an area should be on the Basic Services Maps. I would anticipate that, aside from the standards themselves, there are County policies that describe or explain these standards, including a policy that describes how the sewer shed is determined. I know, for example, that the Traffic Engineering, has policies for determining traffic sheds. Second, I would think that the County has a standard or threshold for determining when a relief sewer (Towson relief sewer) is necessary. That may be a specific storm event, for example.

In that same email you stated "there is an area in Brooklandville that is identified on the Basic Services Map as deficient. I would think there might be documents in connection with that determination that either reflect or state the standard/threshold. Please provide those documents."

- Dave Bayer stated that he would need additional time to gather those records. *Dave – how much additional time would you need?*

Dave Thomas – please look at #7 below and let me know if you have any responsive records.

In regard to the requested records (pasted below for everyone's reference, relevant sections highlighted) from your 2/20 email, please provide a check for $100 (2 hours of Dave Bayer's time) made out to "Baltimore County, Maryland" referencing Request #18-37 for the search and preparation (S&P) fees. It can be dropped off at the Law Office front desk (400 Washington Ave, 2nd Floor). I will drop off today.

Once the check is received and processed, I will help coordinate the date and time for when you can come and inspect the County's records. If any of the records are readily available in electronic format, we will make a CD of those records.

A. Consent Order documents: Below is a list of documents required by the Consent Decree that we want to make sure we have copies of. I understand that many of them might be appendices or otherwise part of other documents, in particular the SRRR Plan (Dec. 2012) and the LTC/PFME Report (Nov. 2012).

Since we have those two documents, we only need the *documents that have been issued by the County/sent to MDE subsequent to the periods covered by the SRRR Plan and the LTC/PFME Report, i.e., after Dec. and Nov. 2012 respectively.*

With respect to the annual and quarterly reports, we only need *annual reports since 2016 and quarterly reports since the 4th quarter of 2017.*

SRRR Plan
LTC/PFME Report
Non-Pump Station Elimination Report
SSO Characterization Reports
I/I Evaluation Reports
SSO Elimination Plans

Collection System Inspection Plans
CCTV Inspection Reports
Rainfall and Flow Monitoring Plans
Performance Assessment Reports
SSO Incident Reports
Discharge and Building Backup Reports
All other annual and quarterly reports submitted to MDE
All correspondence between MDE/EPA and the County or its representatives relating to the Consent Decree

B. Other PIA Requests, as consolidated:

1. All documents reflecting current projections of population/employment growth through 2027.

County's response: The County has no such documents other than those referenced in the 2012 SRRR report.

2. All documents reflecting current and projected wastewater flow data through 2027.

County's response: The County has no such documents other than those referenced in the 2012 SRRR report. The Planning Office makes all population projections, which are not done by sewershed but rather by zip code.

3. All documents reflecting the assumptions/bases that the County relied upon for its use of the 10 year/6 hour storm event as representative of rainfall patterns, as opposed to the 2, 10, and 20 year/24 hour storm events.

County's response: The County relied upon the MDE recommended storm event. The County has no other documents.

4. All documents reflecting the assumptions/bases for the County's Infiltration/In-Flow ("I/I") rates used in the predictive model in the LTC/PFME report, before and after intercept piping improvements, and any data reflecting actual improvements achieved by the work that has been undertaken.

County's response: The County's assumptions are set forth in the guidelines in the SRRR Plan. The County has not yet completed any analysis of the actual improvements in I/I rates from the improvement projects that have been undertaken.

5. All documents reflecting the County's assumptions/bases for deterioration in pipe infiltration rates over time used in the predictive model in the LTC/PFME report.

County's response: The County will provide such documents.

6. All reports, studies, data and other documents relating to water quality or fecal contamination in Lake Roland and its tributary streams, including those concerning the causes of such contamination and proposed remedies.

County's response: DPW does not have any such documents, has not been informed that there is any such contamination from human sources, and has not evaluated causes or remedies of any such contaminations. The Department of Environmental Protection and Sustainability (DEPS) may have such documents.

7. All documents reflecting the County's bases and standards for determining areas of concern or deficiency under the Growth Management Act and for purposes of preparing the Basic Services Maps (e.g., the Maps identify an area of concern around Greenspring Station).

County's response: The County identifies areas of concern/deficiency as any area where constructed SSO are located. These locations are identified in an appendix to the County's annual reports. The County has not conducted evaluations of reserve capacity deterioration. [*Milana: It sounded like Dave Thomas might have further information on this point. I understand Dave to be an employee of DPW, so please check with him on this*]

8. All documents reflecting any sensitivity analysis for the predictive model of sewer capacity or any other documents that would help one understand the relationships between input and output values and the more sensitive parameters.

County's response: The County will check to see if any Monte Carlo simulation or other sensitivity analysis was performed. Also, the table at page 5-5 of the SRRR plan addresses calibration quality of the model.

9. All documents reflecting the standards or thresholds for determining when a relief sewer is needed, including the level of surcharge in an interceptor. [*Milana: This was not specifically discussed at our meeting, but is covered by our original PIA].*

From: Michael McCann <michael@mmccannlaw.net>
Sent: Friday, April 5, 2019 9:09 AM
To: Milana Vayner <mvayner@baltimorecountymd.gov>
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Good morning Milana. Please let me know about this as soon as you can. Thank you.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Michael McCann
Sent: Monday, March 25, 2019 1:22 PM

To: Milana Vayner <mvayner@baltimorecountymd.gov>
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Hi Milana. Do you know when we will receive the documents? Please let me know. Thanks.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Michael McCann
Sent: Saturday, March 2, 2019 4:13 PM
To: Milana Vayner <mvayner@baltimorecountymd.gov>
Subject: Re: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Milana. Just checking on this. Do you anticipate getting the documents to us soon?

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From: Michael McCann <michael@mmccannlaw.net>
Sent: Friday, February 22, 2019 4:45 PM
To: Milana Vayner
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Thanks Milana. Have a good weekend.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please delete/destroy any copy of this message and notify Michael R. McCann at 410 825-2150.

From: Milana Vayner [mailto:mvayner@baltimorecountymd.gov]
Sent: Friday, February 22, 2019 3:51 PM
To: Michael McCann <michael@mmccannlaw.net>
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Attached is a copy of the receipt. The original is at the front desk in the Law Office. I have just forwarded your clarification email from Wednesday to DPW. We will have a response regarding timeline for production and search and preparation fee estimate, if applicable, by end of next week, March 1.

From: Michael McCann <michael@mmccannlaw.net>
Sent: Thursday, February 21, 2019 12:20 PM
To: Milana Vayner <mvayner@baltimorecountymd.gov>
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Please send me a receipt when you get a chance.

Thanks.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Michael McCann
Sent: Thursday, February 21, 2019 12:18 PM
To: Milana Vayner <mvayner@baltimorecountymd.gov>
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Milana: I am going to drop off check today at the front desk of your office.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue

Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Michael McCann
Sent: Sunday, February 17, 2019 5:38 PM
To: Milana Vayner <mvayner@baltimorecountymd.gov>
Cc: Michelle Kowalski <mkowalski@baltimorecountymd.gov>; Dave Bayer <dbayer@baltimorecountymd.gov>; keysaman@rkk.com; Stacy R Harris <srharris@baltimorecountymd.gov>; Paul Sayan <psayan@baltimorecountymd.gov>; Glen Keller <gkeller@baltimorecountymd.gov>; Thomas Kiefer <tkiefer@baltimorecountymd.gov>
Subject: Re: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Milana: I should have listing to you tomorrow with a check. But I take it you are closed tomorrow?

From: Milana Vayner <mvayner@baltimorecountymd.gov>
Sent: Friday, February 15, 2019 8:20:17 PM
To: Michael McCann
Cc: Michelle Kowalski; Dave Bayer; keysaman@rkk.com; Stacy R Harris; Paul Sayan; Glen Keller; Thomas Kiefer
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Michael,

As previously agreed, please remit a check made out to "Baltimore County, Maryland" referencing Request #18-37 for the search and preparation (S&P) fees. It can be dropped off at the Law Office front desk (400 Washington Ave, 2nd Floor).
The meeting was 50 minutes long with Tom Kiefer ($50), Paul Sayan ($159), Keith Eysaman ($159), Dave Bayer ($50) and myself ($50) present. The payment for County staff/consultant time due is $468.00. With the exception of the items we have stated are available for production, no more work will be done in regard to this PIA request until the check for the above S&P fee is received.

Also, per our meeting, we are awaiting your written clarification as to the records you are more specifically seeking. Upon receipt, we will let you know the estimated amount of time it will take to gather the records and what S&P fees may be due to complete the search.

Regards,
Milana

From: Michael McCann <michael@mmccannlaw.net>
Sent: Wednesday, February 6, 2019 1:07 PM
To: Paul Sayan <psayan@baltimorecountymd.gov>; Milana Vayner <mvayner@baltimorecountymd.gov>; Thomas Kiefer <tkiefer@baltimorecountymd.gov>; Glen Keller <gkeller@baltimorecountymd.gov>
Cc: Michelle Kowalski <mkowalski@baltimorecountymd.gov>; Dave Bayer <dbayer@baltimorecountymd.gov>; Lisa

Eicholtz <leicholtz@baltimorecountymd.gov>; keysaman@rkk.com; Stacy R Harris <srharris@baltimorecountymd.gov>
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Milana: I am available at 230.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Paul Sayan [mailto:psayan@baltimorecountymd.gov]
Sent: Wednesday, February 6, 2019 11:48 AM
To: Milana Vayner <mvayner@baltimorecountymd.gov>; Michael McCann <michael@mmccannlaw.net>; Thomas Kiefer <tkiefer@baltimorecountymd.gov>; Glen Keller <gkeller@baltimorecountymd.gov>
Cc: Michelle Kowalski <mkowalski@baltimorecountymd.gov>; Dave Bayer <dbayer@baltimorecountymd.gov>; Lisa Eicholtz <leicholtz@baltimorecountymd.gov>; keysaman@rkk.com; Stacy R Harris <srharris@baltimorecountymd.gov>
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

I am unavailable between 10:30 and 2:00. I am available for the remainder of the day.

From: Milana Vayner
Sent: Wednesday, February 06, 2019 11:32 AM
To: Michael McCann <michael@mmccannlaw.net>; Thomas Kiefer <tkiefer@baltimorecountymd.gov>; Glen Keller <gkeller@baltimorecountymd.gov>
Cc: Michelle Kowalski <mkowalski@baltimorecountymd.gov>; Dave Bayer <dbayer@baltimorecountymd.gov>; Lisa Eicholtz <leicholtz@baltimorecountymd.gov>; Paul Sayan <psayan@baltimorecountymd.gov>; keysaman@rkk.com; Stacy R Harris <srharris@baltimorecountymd.gov>
Subject: Re: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Understood, Monday it is. Please confirm Paul from Berger and Keith from RKK are attending.

From: Stacy R Harris
Sent: Wednesday, February 6, 2019 10:22 AM
To: Milana Vayner; Michael McCann; Thomas Kiefer
Cc: Glen Keller; Michelle Kowalski
Subject: Re: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Monday is best. Tom schedule is very tight on Tuesday.

From: Milana Vayner
Sent: Wednesday, February 6, 2019 9:50:46 AM
To: Stacy R Harris; Michael McCann; Thomas Kiefer
Cc: Glen Keller; Michelle Kowalski
Subject: Re: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

I would prefer Tuesday, Monday's are not good for me but if it works for everyone else, I will make it work.

RK&K (Keith) - Ok Monday, will Tuesday work?
Berger (Paul) - ?
Tom (DPW) - Ok Monday, will Tuesday work?
Glen (DPW)- Ok Monday, will Tuesday work?
Milana (Law) - prefer Tuesday
McCann - ok either day

From: Stacy R Harris
Sent: Wednesday, February 6, 2019 8:59 AM
To: Michael McCann; Milana Vayner; Thomas Kiefer
Cc: Glen Keller; Michelle Kowalski
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Meeting Schedule for: February 11, 2019 @ 1 pm
Location: 111 West Chesapeake Ave, Rm 219, Towson 21204

If you have any question, please call 410-887-3788

Thank you,
Stacy Harris – Office Assistant
Bureau of Engineering and Construction
111 West Chesapeake Avenue, Suite 219
Towson, MD 21204
410-887-3788

Exceptional Customer Service
Safe and Efficient Operations
Reliable Infrastructure

From: Michael McCann [mailto:michael@mmccannlaw.net]
Sent: Wednesday, February 06, 2019 7:56 AM
To: Milana Vayner <mvayner@baltimorecountymd.gov>; Thomas Kiefer <tkiefer@baltimorecountymd.gov>
Cc: Glen Keller <gkeller@baltimorecountymd.gov>; Stacy R Harris <srharris@baltimorecountymd.gov>; Michelle Kowalski <mkowalski@baltimorecountymd.gov>
Subject: Re: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Yes. Sorry for delay. How is Monday after 12 or anytime Tuesday?

Get Outlook for iOS

From: Milana Vayner <mvayner@baltimorecountymd.gov>
Sent: Tuesday, February 5, 2019 3:45 PM
To: Thomas Kiefer
Cc: Michael McCann; Glen Keller; Stacy R Harris; Michelle Kowalski
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Michael,
Can you please provide dates/times for next week? There are several calendars (Tom, Glen, RK&K [Keith], Berger [Paul], and me) that need to be coordinated.
Thank you,
Milana

From: Thomas Kiefer <tkiefer@baltimorecountymd.gov>
Sent: Tuesday, February 5, 2019 2:01 PM
To: Milana Vayner <mvayner@baltimorecountymd.gov>
Cc: Michael McCann <michael@mmccannlaw.net>; Glen Keller <gkeller@baltimorecountymd.gov>; Stacy R Harris <srharris@baltimorecountymd.gov>; Michelle Kowalski <mkowalski@baltimorecountymd.gov>
Subject: Re: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Any new appointment time?
Sent from my iPhone

On Feb 4, 2019, at 3:11 PM, Milana Vayner <mvayner@baltimorecountymd.gov> wrote:

> Michael,
> I just got confirmation that Keith Eysaman will be representing RK&K. Are we still on?
> Milana
>
> ---
>
> **From:** Milana Vayner
> **Sent:** Monday, February 4, 2019 1:08:21 PM
> **To:** Michael McCann
> **Cc:** Thomas Kiefer; Glen Keller; Stacy R Harris; Michelle Kowalski
> **Subject:** Re: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)
>
> Michael,
>
> Tom will be out of his meeting after 1:30pm and should be able to provide an update at to RK&K, or perhaps Glen has updates.
>
> Glen Keller (Chief of Sewer Design) and Paul Sayon (consultant from Louis Berger, the data person who would know how to extract information out of the County system, https://secure-web.cisco.com/1l4GWPGbM0bg0YPN8BBZ6SIUyqfj0xNpvFGBByJJZ4W8CGIcWERl7r7PKHphsRu5aqqQ0NNrDEBwLbXKjd-f78IET3SMztkZftoQZcxWTY-oOMaahV37NjTSgcM75paJsN9G9AEYljm1frZBJXXQn1h7B__7WmoT9Y7k3PMglbZhlnAVzo5esfzxBsFXvQl_wBRrOtYGRvd-50ng-vqD4T2XNm2V3CewxN1xleRGVXQVtQc2yeCfMPKLSzhd_Xt4HcGbY2SZI3MMEuN7MMYq-RMsUGe-Vt6vGiD0si56jfenR4C87vIewrxiVlW5kNB7hfBrEsTGEMS8sNkjYVcGpBWGsRdbZTW_4zkaDJrUxMi3TGBGrm0gd6xqrGQf8BPx7gmuDPJtkVyKzUyKKZ9ktw8w_mD76Y3-7LBFl17kxegtJ87NCvujCVdbILyfNo761RaQlNzDAtczUcrbhJfZAHA/https%3A%2F%2Fwww.louisb

erger.com%2Four-work%2Fproject%2Fbaltimore-county-sanitary-sewer-overflow-consent-decree-program-maryland-us) can definitely make it. In your previous email, you had stated that you wanted both the RK&K and Berger consultants at the meeting. There would be no other people; the meeting would include me, Tom, Glen, Paul and hopefully a person from RK&K from the County side.

Although I am available on Thursday and Friday, I do not know whether the other participants can all attend. I am not available on Monday.

From: Michael McCann <michael@mmccannlaw.net>
Sent: Monday, February 4, 2019 12:32 PM
To: Milana Vayner
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Milana: I think we are going to need to push this back. It's getting late and I need to let my folks know since we were planning on meeting in advance to focus our requests and haven't done that.

As for who should be there, we definitely need RK&K there and Tom. Not certain why anyone else is necessary if, as you say RK&K is the one who created the databases and knows where to find the documents. For example, I am not sure who "Berger" is, but I do feel a bit uncomfortable bringing a blank check and having to pay for whomever might show up.

Instead of tomorrow, I can do Thursday anytime, Friday after 3:30, and Monday after 11 am.

Let me know what works and who, other than RK&K and Tom, you think needs to be present. Thanks.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Milana Vayner [mailto:mvayner@baltimorecountymd.gov]
Sent: Monday, February 4, 2019 9:52 AM
To: Michael McCann <michael@mmccannlaw.net>
Cc: Thomas Kiefer <tkiefer@baltimorecountymd.gov>; Michelle Kowalski <mkowalski@baltimorecountymd.gov>; Stacy R Harris <srharris@baltimorecountymd.gov>
Subject: Re: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Tom is verifying on RK&K, but the consultant from Berger and one of our Engineers will be there. Just bring the check and we'll fill in amount based on people present.

On Feb 4, 2019, at 9:10 AM, Michael McCann <michael@mmccannlaw.net> wrote:

> Hi Milana. Just checking back to see if we are still on for tomorrow at 3 pm. Thanks.
>
> Get Outlook for iOS

From: Milana Vayner <mvayner@baltimorecountymd.gov>
Sent: Tuesday, January 29, 2019 2:40 PM
To: Michael McCann
Cc: Thomas Kiefer; Michelle Kowalski; Stacy R Harris
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Tom is checking to see if the consultants and which County Engineers are available that date/time.

From: Michael McCann <michael@mmccannlaw.net>
Sent: Tuesday, January 29, 2019 12:51 PM
To: Milana Vayner <mvayner@baltimorecountymd.gov>
Cc: Thomas Kiefer <tkiefer@baltimorecountymd.gov>; Michelle Kowalski <mkowalski@baltimorecountymd.gov>; Stacy R Harris <srharris@baltimorecountymd.gov>
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Milana: It sounds like having both there would be the safest option. Drop the check off at your office?

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Milana Vayner [mailto:mvayner@baltimorecountymd.gov]
Sent: Tuesday, January 29, 2019 12:34 PM

To: Michael McCann <michael@mmccannlaw.net>
Cc: Thomas Kiefer <tkiefer@baltimorecountymd.gov>; Michelle Kowalski <mkowalski@baltimorecountymd.gov>; Stacy R Harris <srharris@baltimorecountymd.gov>
Subject: Re: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

RK&K would know what information is available in the County system whereas the data person, also consultant (Berger), would know how to extract it out of the County system. Which one, or both, do you want at the meeting? (Both are $191/hr.)

On Jan 24, 2019, at 7:10 PM, Michael McCann <michael@mmccannlaw.net> wrote:

> Thank you Milana. Will let you know about consultant ASAP, likely tomorrow. Am I correct that he or she is someone from RK&K as opposed to a tech person who simply prepared the database?
>
> Get Outlook for iOS
>
> ---
>
> **From:** Milana Vayner <mvayner@baltimorecountymd.gov>
> **Sent:** Thursday, January 24, 2019 2:30 PM
> **To:** Michael McCann
> **Cc:** Thomas Kiefer; Michelle Kowalski; Stacy R Harris
> **Subject:** RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)
>
> Michael,
> OK. I'll have a meeting room reserved and will let you know where once that happens. Our consultant is $191/hour and that is who is familiar with our databases because they built them. In discussing the provision of the PIA that relates to records that exist in databases, the Attorney General has written that application of this provision will depend on the nature and characteristics of particular databases, but generally speaking, an agency is obligated to extract data from an existing database if it has the capacity to do so "within [its] existing functionality and in the normal course." *Comptroller of the Treasury v. Immanuel*, 216 Md. App. 259, 271 (2014). So, an agency should comply with a request if it has staff available who routinely perform the type of data extraction requested, but need not do so if it would call for expertise outside the agency's existing capabilities. *See* the Office of the Attorney General Maryland Public Information Act Manual, https://secure-web.cisco.com/1QWwi5gbwN72YQPPiXwdiiBIbZyTUHuJAJF7PgQuo_nkLEDQXk5KG-2tctjQHWMLvQpYFxahTQTii3_gVjUaH_HX7RHRRI-kfxa9OB1zuUjJjpc6CWmX3C9Zg_3q0elPOZAQPfT7fYMaJeUgucxRzNRJ8PJfbVbCJhKFr08Jy2dUlWTT02o0FSoDobtYCzFfLaxyomLa7Czr-Nqps9-3eZ9hDBAcukbFrreHS5vzPKo9JpRoSJT-ziB8uv5eBqu6zpdwNk42mz-a1mseEqRxlSmh33BrlP7SFMDMIwldt9knsxCeoRieFp5RM_5_PvpczXaLwVe5kwrb19nIj0OV07d2Q55jV1TfV4zfaUU8pO8ZU1dn6MLNMMF3VStzLesTtBhzG20d2fURgONrvpBfNynvCpdlaTISzk8WdB7FWFQYuzLQjtQkyBNWsmuE1uq81mpiamZOzWLxNDLCDdHG4Mw/https%3A%2F%2Fwww.oag.state.md.us%2FOpengov%2FChapter2.pdf. DPW does not "routinely perform the type of data extraction requested" and the only way to do perform such an extraction would be to require DPW to "call for

expertise outside the agency's existing capabilities." If you are agreeable to paying the actual cost of the consultant's hourly rate, we can invite the consultant to the meeting. Otherwise Tom will advise which one of the DPW Engineer's is available and best suited to attend our meeting and the rate would be $60/hour.

Michelle or Stacy,
Could you please reserve a room and send a meeting invite?

Thank you all,
Milana

From: Michael McCann <michael@mmccannlaw.net>
Sent: Thursday, January 24, 2019 10:52 AM
To: Milana Vayner <mvayner@baltimorecountymd.gov>
Cc: Thomas Kiefer <tkiefer@baltimorecountymd.gov>
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Milana: Sorry I meant Feb 5, not March 5. Thanks.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Michael McCann
Sent: Thursday, January 24, 2019 8:58 AM
To: 'Milana Vayner' <mvayner@baltimorecountymd.gov>
Cc: Thomas Kiefer <tkiefer@baltimorecountymd.gov>
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Thanks Milana. Let's do 3/5 at 3 pm. I will get a check over to you today or tomorrow.

I think it is really important to have someone there who is familiar with the issues or it might be a waste of time. If that requires additional payment, let me know.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Milana Vayner [mailto:mvayner@baltimorecountymd.gov]
Sent: Wednesday, January 23, 2019 10:23 AM
To: Michael McCann <michael@mmccannlaw.net>
Cc: Thomas Kiefer <tkiefer@baltimorecountymd.gov>
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Michael,

These are the times we have available. Tom will try to bring in someone else, but we've already expended the two hours allotted by the Public Information Act and can have the records described in my previous email ready for your inspection when we meet. \
This meeting will entail two additional hours of time, for which a $120 prepayment ($60/hr x 2 people) is required.

2/5: 3-4pm
2/7: 1-2pm

If you have any questions, feel free to call.

Milana

From: Michael McCann <michael@mmccannlaw.net>
Sent: Thursday, January 17, 2019 11:24 AM
To: Milana Vayner <mvayner@baltimorecountymd.gov>
Cc: Thomas Kiefer <tkiefer@baltimorecountymd.gov>
Subject: RE: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

Milana: Thank you. I apologize for the delay. The person I needed to confer with about is out of town this entire month.

I have some possible limitations on the request that I think will be helpful, but I think it is best if we meet to discuss this. It would be necessary to have someone, perhaps more than one person, attend the meeting who is/are familiar with the documents that the County has. As I said, it is difficult to limit the scope of the requests without having a sense of what actually exists. I am confident that, with the right person(s) in the room, we should be able to limit the requests considerably.

Can we arrange such a meeting on February 5, 6, or 7?

Thank you.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Milana Vayner [mailto:mvayner@baltimorecountymd.gov]
Sent: Wednesday, December 19, 2018 5:28 PM
To: Michael McCann <michael@mmccannlaw.net>
Cc: Thomas Kiefer <tkiefer@baltimorecountymd.gov>
Subject: PIA Request - Jones Falls Sewershed Sewer, Baltimore County (18-37)

SENT VIA EMAIL TO MICHAEL@MMCCANNLAW.NET
(Please confirm receipt.)

Michael R. McCann, Esquire
Michael R. McCann, P.A.
118 W. Pennsylvania Avenue
Towson, Maryland 21204

RE: *Maryland Public Information Act Request - Jones Falls Sewershed Sewer Capacity*

Dear Mr. McCann:

This correspondence is in response to your letter dated November 14, 2018, received via email by the Department of Public Works, requesting responsive records to a list of thirty-seven (37) items related to the Consent Decree and the Jones Falls Sewershed from January 1, 2005 to the present.

Thank you for returning my call from yesterday. Pursuant to our phone conversation this morning, you would like to come in with your colleague to meet with us to narrow down the scope of the request. Please let me know as soon as you can which of these you would like to set for the meeting, as calendars tend to fill up quickly. From the three dates discussed, the following are available:

January 3 (1-2pm or 3-4pm) or
January 4 (any time between 9am-3pm).

The General Provisions (GP) Article of the Annotated Code of Maryland, §4-206 provides that "the official custodian may charge an applicant a reasonable fee for the search for, preparation of, and reproduction of a public record." A "reasonable fee" is defined as "a fee bearing a reasonable relationship to the recovery of actual costs incurred by a governmental unit." GP §4-206(a). "The custodian may not charge a fee for the first 2 hours." GP §4-206(c). Baltimore County's Code of Regulations authorizes the custodian of records to require the prepayment of search, preparation and reproduction fees. (See Regulation 08.01.01.15.E., which can be found at http://www.baltimorecountymd.gov/Agencies/infotech/index.html.)

As I mentioned over the phone, DPW's general retention policy, which does apply to some of the requested records, is as follows: The files stay in the office for a year, then they go to archives for 2 years. They are shredded after 3 years, except for federal aid projects which we keep for 10 years or unless there is an ongoing enforcement action or active contract. The County's email retention policy is 18 months, unless an employee happens to save/print/file it. The records you are requesting are from almost 14 years ago, so some records may have been purged. This does not constitute a denial under the PIA and a search will be done in accordance with the legal requirements of the PIA for any responsive records.

DPW has expended in excess of the two hours allotted by law, and is estimating the following for to produce the requested records due to the length of time covered by the request and the sheer number of records. Further, all query results must be reviewed to determine if the records are responsive to the request.

Position	Function	Billing Rate/Hour	Hours	Amount
Supervisor	oversight/management and correspondence	$60	8	$480
Engineer 4	research coordination and aggregation	$60	42	$ 2,520
Engineer 3 - Bayer	research, data review	$60	129	$ 7,740
Engineer 3 - Bokey	research, data review	$60	40	$ 2,400
Database consultant	queries, research, data review	$60*	342	$ 20,520
Attorney	review for responsiveness, redact as necessary	$60	10	$ 600
TOTALS			**571**	**$ 34,260**

* The consultant's rate is $191/hr. The actual cost to the County, just for the consultant's time is $65,322.

To the extent that any portions of your request would require the County to "create, compile, or program a new public record," that currently does not exist and which is not required under the PIA (*See* GP §4-205(c)(4)(iii)), in discussing this provision, the Attorney General has written: Application of this provision will depend on the nature and characteristics of particular databases, but generally speaking, an agency is obligated to extract data from an existing database if it has the capacity to do so "within [its] existing functionality and in the normal course." *Comptroller of the Treasury v. Immanuel*, 216 Md. App. 259, 271 (2014). So, an agency should comply with a request if it has staff available who routinely perform the type of data extraction requested, but need not do so if it would call for expertise outside the agency's existing capabilities. See the Office of the Attorney General Maryland Public Information Act Manual, https://secure-web.cisco.com/1QWwi5gbwN72YQPPiXwdiiBIbZyTUHuJAJF7PgQuo_nkLEDQXk5KG-2tctjQHWMLvQpYFxahTQTii3_gVjUaH_HX7RHRRI-kfxa9OB1zuUjJjpc6CWmX3C9Zg_3q0elPOZAQPfT7fYMaJeUgucxRzNRJ8PJfbVbCJhKFr08Jy2dUIWTT02o0FSoDobtYCzFfLaxyomLa7Czr-Nqps9-3eZ9hDBAcukbFrreHS5vzPKo9JpRoSJT-ziB8uv5eBqu6zpdwNk42mz-a1mseEqRxlSmh33BrlP7SFMDMIwldt9knsxCeoRieFp5RM_5_PvpczXaLwVe5kwrb19nIj0OV07d2Q55jV1TfV4zfaUU8pO8ZU1dn6MLNMMF3VStzLesTtBhzG20d2fURgONrvpBfNynvCpdlaTISzk8WdB7FWFQYuzLQitQkyBNWsmuE1uq81mpiamZOzWLxNDLCDdHG4Mw/https%3A%2F%2Fwww.oag.state.md.us%2FOpengov%2FChapter2.pdf

During our meeting we will discuss for which items in your request DPW does not "routinely perform the type of data extraction requested" and whether the only way to do perform such an extraction would be to require DPW to "call for expertise outside the agency's existing

capabilities." If the need for such data extraction arises, we note now that we decline to do such extraction. This does not constitute a denial under the PIA.

Records that can be made available in a mix of electronic and hard copies for you to come in and inspect are:
- Annual and quarterly reports 2005- present
- SRRR plan for Jones Falls Sewershed
- LTC/PFME report
- Collection System Inspection Plans

Lastly, if you choose to proceed with this request and remit payment for the search and preparation fees, the County is authorized to require the prepayment of $.50 per page for hard copies and $.25 per page for PDF emailed copies, for the reproduction of the records. Once the requested information is ready, you will receive correspondence as to the amount due. The County will not release these records until it receives payment for the copying costs.

In accordance with GP §4-203(c)(1)(i)(4), I must inform you of remedies available for review. If you are alleging that you are being charged an unreasonable fee (defined as more than ($350.00) under GP § 4-206, you may file a complaint with the State Public Information Act Compliance Board, pursuant to GP § 4-1A-05. If you are alleging a complaint set out in GP § 4-1B-04, you may submit your complaint to the Public Access Ombudsman. You may also pursue judicial enforcement remedies as provided in GP §4-362.

Milana Vayner
Assistant County Attorney
Baltimore County Office of Law
400 Washington Avenue, 2nd Floor
Towson, Maryland 21204
(410) 887 – 4420
mvayner@baltimorecountymd.gov

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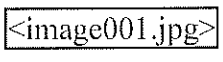

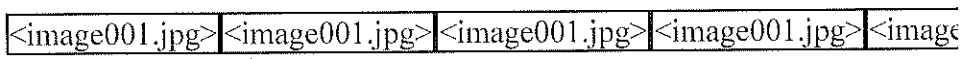

www.baltimorecountymd.gov

JONES FALLS POPULATION PROJECTIONS 4/2008

Year	2000	2005	2010	2015	2020	2025	2030
Totals	66657	67757	71126	71717	72075	71896	71941

JONES FALLS EMPLOYMENT PROJECTIONS 4/2008

Year	2000	2005	2010	2015	2020	2025	2030
Totals	82198	86797	87958	89756	89998	90191	90449

Hazen

Jones Falls Sewershed
Comprehensive Evaluation

News & Information

Q3 2022 ISSUE
FALL UPDATE



INTRODUCTION

Jones Falls Sewershed Comprehensive Evaluation

Slightly more than two years into a three plus year project, Baltimore County and their Engineering Consultant, Hazen and Sawyer, continue to make significant progress in completing a long term comprehensive evaluation of the Jones Falls Sewershed. The following are currently being evaluated with future projects vetted for long term capacity:

- Future capacity needs driven by planned development, potential re-development, and possible future connection of unserved areas of the sewershed, including nearly 1,000 septic facilities spread throughout Jones Falls.
- Strategies needed to further protect the environment from potential sanitary sewer overflows (SSOs) and residents/businesses from potential basement backups.
- Best Management Practices for continued proactive operation and maintenance of the sanitary sewer system.
- Recommended approaches to address sewer system vulnerabilities and improve long-term sustainability and resiliency.
- Development of a Capital Improvement Program (CIP) to address system deficiencies at year 2025, and at 20-year and 50-year planning horizons.

What Area Does the Jones Falls Sewershed Encompass?

The Jones Falls Sewershed includes approximately 1,124,000 linear feet (LF) of gravity sewers ranging from 6- to 42-inches in diameter and approximately 6,200 sewer manholes and structures. The area served by this sewershed is shown in below.

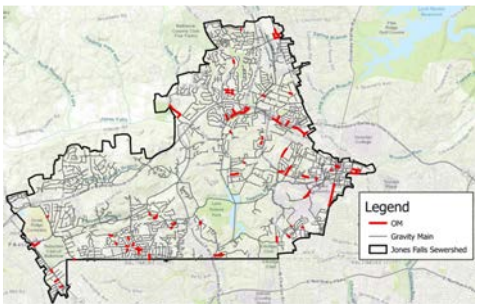

Figure 1: Jones Falls Sewershed

The entire engineering assessment completed will be documented in a comprehensive report that will provide a flexible roadmap enabling Baltimore County to develop informed, asset-based, risk-based, and prioritized Capital Improvement Plan budgets for near-term and long-term system improvements.

Work on the Comprehensive Report has already begun with a Draft anticipated in 2023. Improvements therein will both protect the environment and protect residents/businesses.

Baltimore County remains firm in meeting the following commitments and achieving the long term planning goals.

Commitments:

- Maintain proper sanitation so communities can continue to thrive and prosper.
- Continue prioritization of clean water access.
- Conduct planning projects that are necessary for the County to meet future utility challenges and build upon past improvements.
- Revitalize utility infrastructure to meet forecasted population and employment growth.

Planning Goals:

1. Enhance resiliency and sustainability through properly planned infrastructure improvements.
2. Preserve and protect the environment through projects that improve water quality.
3. Focus planning efforts on assessment and improvement of the existing sewer system.
4. Track and prioritize needed sewer system improvements and proactively repair/replace infrastructure that impacts the community or the environment.

A brief update on critical project accomplishments made through Q3 2022, which build upon prior accomplishments, are included below.

Data Review

Comprehensive review of over 17,500 available historical records.

Field Data Gathering/Reconnaissance

Completed a Hot Spot Analysis associated with all SSO, basement backup, and work order data.

Hydraulic Model Expansion

Completed a gap analysis of the existing model to assess ways the model could be improved upon for use as a tool to better estimate the impacts that rainfall has on sewer system operations. The existing model, constructed over ten years ago, was found to not accurately represent current wet weather flow conditions. This is not unusual given the age of the model. The existing model properly predicted wet weather flows at 1 of 39 meters *(Figure 2)*.

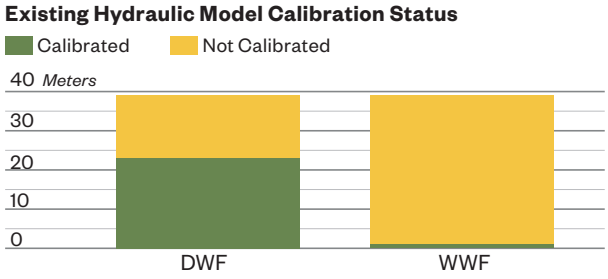

Figure 2

Based upon the model gap analysis, completed field survey of 106 manholes to update the hydraulic model.

Completed a flow, level, and rainfall monitoring data analysis to assess current high rainfall dependent inflow and infiltration (RDII) sewer service areas. These areas respond more dramatically to rainfall *(Red areas shown in Figure 3)*.

Selected additional flow monitor locations to refine the hydraulic model calibration effort.

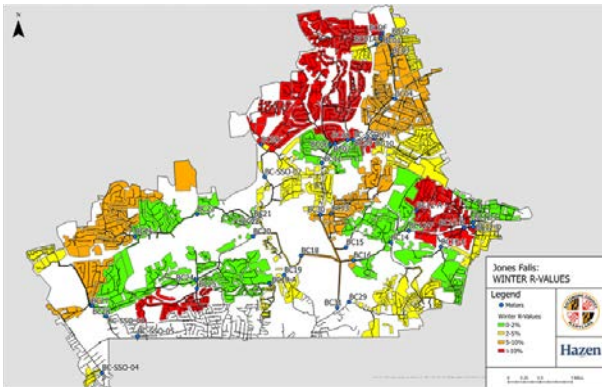

Figure 3 :
Winter High RDII Areas within the Jones Falls Sewershed

Baltimore County deployed 26 additional flow monitors. Monitoring will continue through Summer 2022, such that dry weather, wet weather, and high groundwater flow data is gathered. Expanding the hydraulic model to include all sewers in the sewershed allows for a more detailed sewershed wide analysis. The original model was only required to include pipes 10-inches and larger. The number of manholes in the model increased from 1,513 to 6,715 while the number of pipes increased from 1,342 to 6,919.

Hydraulic Modeling Validation

Expanded model calibration/verification with new flow monitoring data is being completed now with much progress made. Data is anticipated to be collected through Summer 2022.

Stakeholder Engagement

Met with the following stakeholders in the sewershed to better understand potential increases in residential and employment populations: GBMC, St. Joseph Medical Center, Sheppard Pratt, Towson University.

Dashboards

Development of a series of Project Dashboards that are being used to present evaluation findings. These will be expanded once capacity analysis is completed *(Figure 4)*.

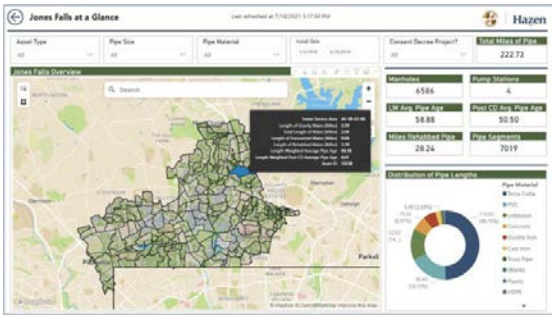

Figure 4

Environmental Investigations

Environmental investigations in and near all large water features within the sewershed (Lake Roland, Jones Falls, etc.) began in Fall 2021 and will continue into 2022.

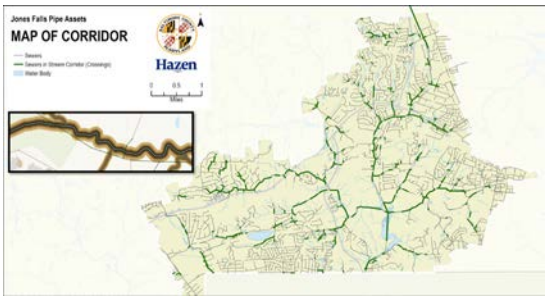

Figure 5

Climate Change

Assessed the potential impacts climate change may have on rainfall within the sewershed, including more frequent and higher intensity storm events.

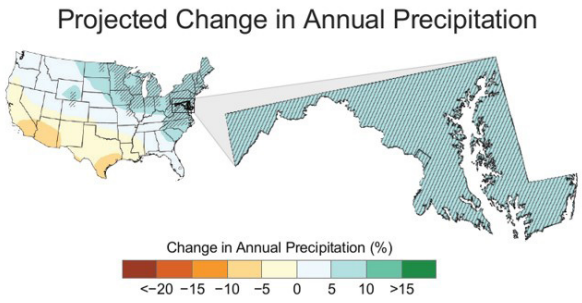

Figure 6

Mobile GIS

Implemented Mobile GIS to streamline data gathering. It replaces maps and redundant data entry, allowing gathered data to be immediately shared within the project team.

Population Estimates

Developed future population estimates, both residential and employment, which will contribute to future flows within the sewershed. All sewer assets must be capable of conveying future flows to protect residents, businesses, and the environment from overflows and backups.

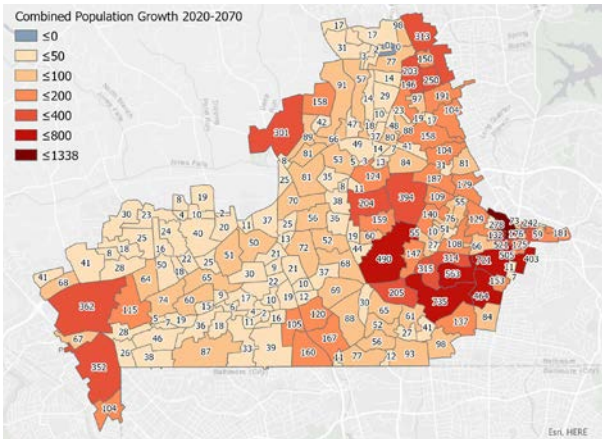

Figure 7

Water Meter Billing

Distributed water meter billing information to the hydraulic model for increased accuracy in sewer modeling.

COF Criteria	Social			Financial	Environment
	Vibrant Communities	Workforce Empowerment	Equitable Decision Making	Government Accountability	Sustainability
Environmental Impact	x		x		x
Transportation Impact	x	x	x	x	
Critical Facilties	x		x		
Diameter		x		x	x
Pipe Accessibility				x	x

Figure 8

Consequence of Failure Criteria

Developed Consequence of Failure Criteria, which are being used to assess and prioritize each recommendation within the sewershed. These criteria account for a Triple Bottom Line evaluation including Social, Financial, and Environmental impacts.

Future Innovation Areas

Identify

Identify innovation options that offer the County the most value.

- Leverage existing data
- Utilize the County's Tools (CityWorks, InfoWorks, etc.)
- Address known concerns within the sewer system (RDII, energy usage, etc.).

Assess

Assess the return on investment for potential use elsewhere in the sewer system.

- Pilot/test and assess results

Position

Position the County as a leading utility in sewer system design & operation.

Baltimore County and Hazen have been having ongoing discussions with respect to future innovations. The goals of these future projects are as shown above.

Flow Monitoring

Flow monitoring data from 32 flow monitors has been analyzed for the data collected from November 2021 through June 2022. Flow data has been imported in the HazenQ software, integrated with previously collected 2018 flow data. Connectivity diagram had been updated to include new locations. Flow data has been reviewed for quality.

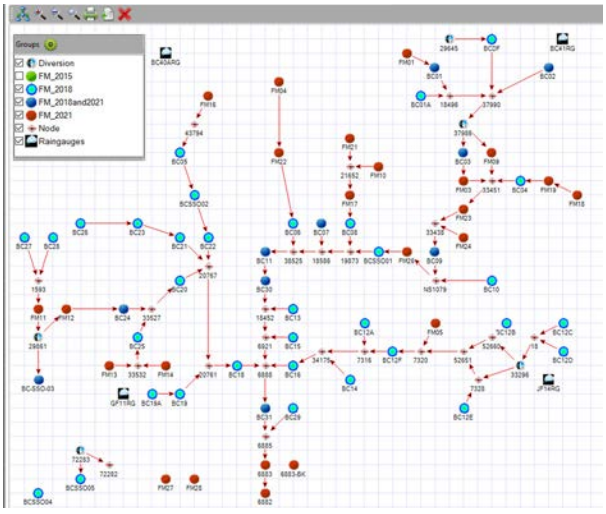

Figure 9

Rainfall

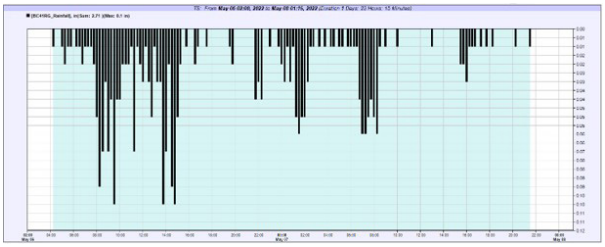

Figure 10

Rainfall data from multiple rain gauges has been analyzed using the data collected from November 2021 through June 2022. Rainfall has been imported in the HazenQ software and return period calculated.

Dry Weather Flow (DWF) Calibration

DWF calculations are under way for each metershed. Normalized DWF patterns are being created and transferred to the modeling subcatchments. GWI component is distributed using subcatchments area and ADSF component is distributed using water consumption.

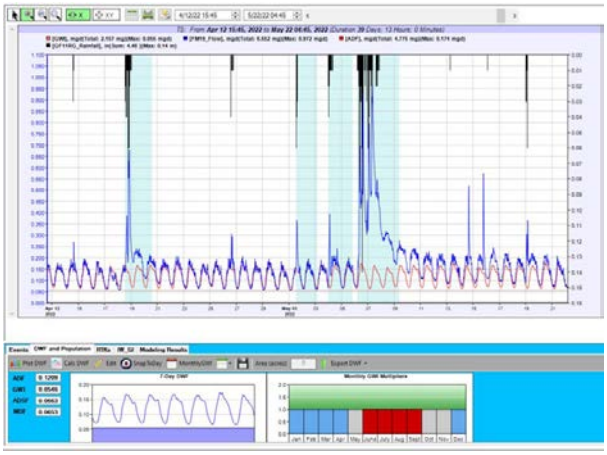

Figure 11

Stream Asset Prioritization

- Developed Framework: Existing approach modified to fit Baltimore County; New COF category introduced - Public Health/ Environmental Impact
- Completed Desktop Analysis: LOF and COF factors decided upon and calculated; Risk scores assigned to all assets; Areas of interest identified with all levels of risk

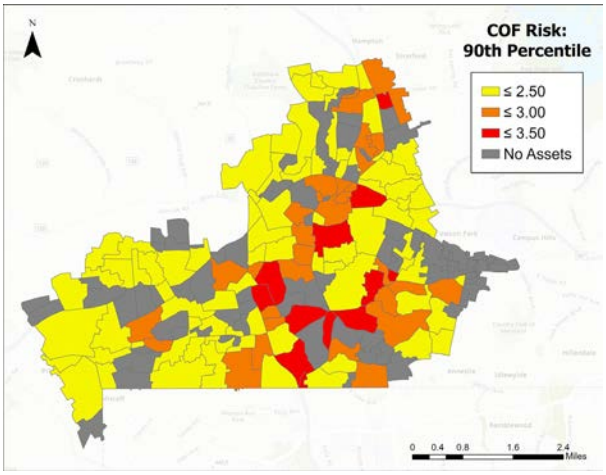

Figure 12

Looking Ahead

Upcoming Project Tasks

Engineering evaluation work continues while flow monitoring efforts reached partial completion in Summer 2022. Planned upcoming project tasks are highlighted below.

Continued stakeholder engagement to fully understand the unique dynamics within the Jones Falls Sewershed, including community interests and potential residential and employment growth over the next 50 years.

Continued sewer and manhole inspections through 2022 and into 2023. Additional system evaluation will occur after hydraulic modeling once Summer 2022 flow data is available, anticipated this Fall.

What to expect going forward?

Given that this project is intended to map out what the sewer system needs to look like over a 50 year period, it is important to cover all possible aspects of what the sewer system could become by the year 2050 (~30 year period) and 2070. The following tasks, planned to occur at a later stage in the evaluation, will be completed as a part of this effort to provide a complete picture of the near and long term sewershed needs.

- Capacity assessment using the calibrated model under future flow conditions. ***Work is underway on this - see the update included in this quarterly issue!***
- Acoustic and Sonar inspection of assets identified during the modeling evaluation effort. Anticipated in late 2022 and continuing into 2023 following hydraulic modeling.
- Development of a recommended CIP.
- Recommendations on Asset Management Program features, which will allow for proactive protection of the environment and the County's residents and businesses. Initial Asset Management framework development has been completed and will be refined when hydraulic modeling results are generated in 2022 based on updated flow monitoring *(see Figure 13)*.

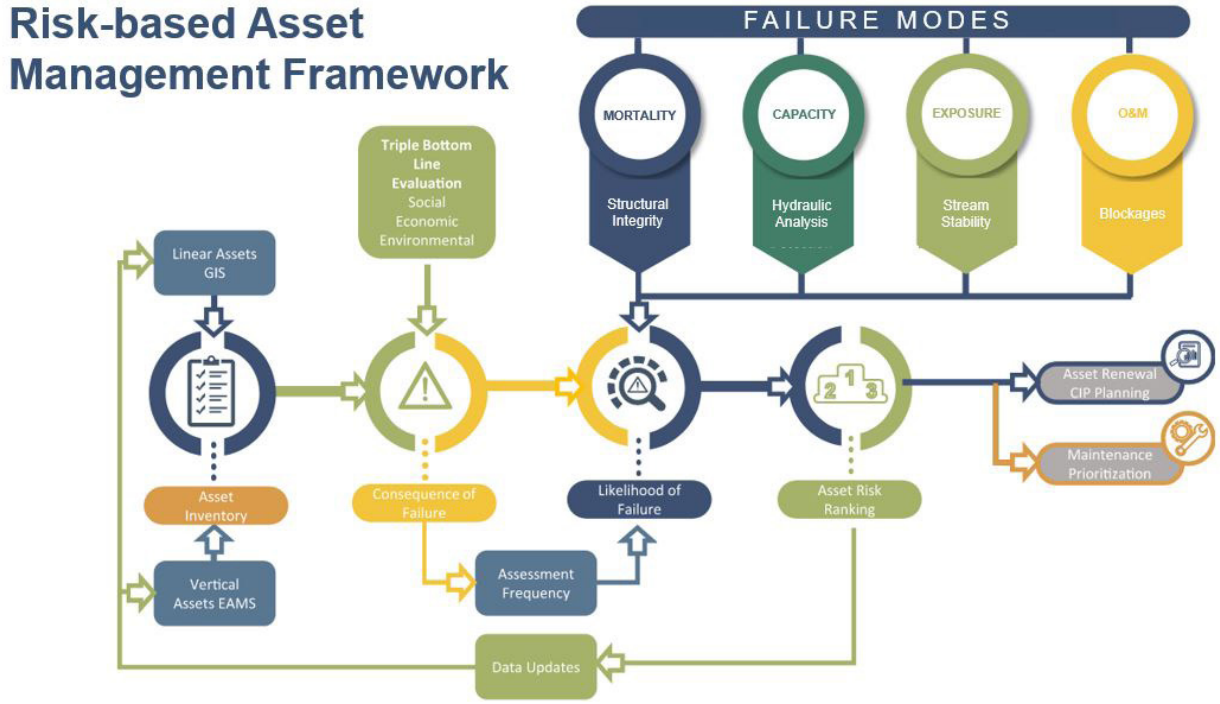

Figure 13

Upcoming Project Tasks (continued)

A concerted effort is being made on this project to expand and refine the hydraulic model so that it can be used as an advanced tool to accurately reflect future wet weather conditions. Potential future flows can also be properly evaluated with the advanced model.

Target Completion Date

The Final Report is anticipated to be completed in late 2023. Baltimore County will continue to provide updates on the project, on a regular basis.

Data continues to be gathered through flow and level monitors located throughout the sewershed. Flow monitoring through May 2022 has been gathered and will continue through Summer and Fall 2022. Hazen and Sawyer continues to use this captured data to improve the County's Jones Falls Sewershed hydraulic model. A concerted effort has been made in Q2 to evaluate the flow data gathered with results anticipated in Q3 and Q4 of 2022. Using the improved hydraulic model will allow for informed decisions to be made on capacity needs throughout the entire sewershed and at the neighborhood level.

Winter 2022 Update to Follow!

Michael McCann

From: Lisa Eicholtz <leicholtz@baltimorecountymd.gov>
Sent: Thursday, March 23, 2023 1:31 PM
To: Michael McCann
Cc: Jennifer Frankovich; James R. Benjamin Jr.
Subject: RE: Hazen
Attachments: Hazen Task 3 JO 231-201-0077-7330 proposal .pdf

This document is covered under PIA 23–172. A copy of the proposal is included here in advance of distribution of the full response to PIA 23-172.

Lisa K. Eicholtz, PE
Bureau Chief, Engineering and Construction
Department of Public Works & Transportation
111 W. Chesapeake Avenue Room 205
Towson MD 21204
O: 410.887.3788
leicholtz@baltimorecountymd.gov

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Sustainable Infrastructure

From: Michael McCann <michael@mmccannlaw.net>
Sent: Wednesday, March 22, 2023 10:58 AM
To: Lisa Eicholtz <leicholtz@baltimorecountymd.gov>
Cc: Jennifer Frankovich <jfrankovich@baltimorecountymd.gov>; James R. Benjamin Jr. <jrbenjamin@baltimorecountymd.gov>
Subject: RE: Hazen

CAUTION: This message from michael@mmccannlaw.net originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Please send that document. Thank you.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Lisa Eicholtz [mailto:leicholtz@baltimorecountymd.gov]
Sent: Monday, March 20, 2023 3:41 PM
To: Michael McCann <michael@mmccannlaw.net>
Cc: Jennifer Frankovich <jfrankovich@baltimorecountymd.gov>; James R. Benjamin Jr. <jrbenjamin@baltimorecountymd.gov>
Subject: RE: Hazen

Checking the files, the final scope of services was dated 1/29/2020.

Lisa K. Eicholtz, PE
Bureau Chief, Engineering and Construction
Department of Public Works & Transportation
111 W. Chesapeake Avenue Room 205
Towson MD 21204
O: 410.887.3788
leicholtz@baltimorecountymd.gov

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From: Michael McCann <michael@mmccannlaw.net>
Sent: Monday, March 20, 2023 12:08 PM
To: Lisa Eicholtz <leicholtz@baltimorecountymd.gov>
Cc: Jennifer Frankovich <jfrankovich@baltimorecountymd.gov>; James R. Benjamin Jr. <jrbenjamin@baltimorecountymd.gov>
Subject: Hazen

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Lisa: On a somewhat unrelated note, the question was raised during a recent hearing whether the attached proposal from Hazen is the one upon which that company has been performing its work for the County, i.e., is it the final one? (it was the one provided to us and the subject of our conversations with Mr. Vetter and DPW staff in early 2020).

Please let me know.

Thank.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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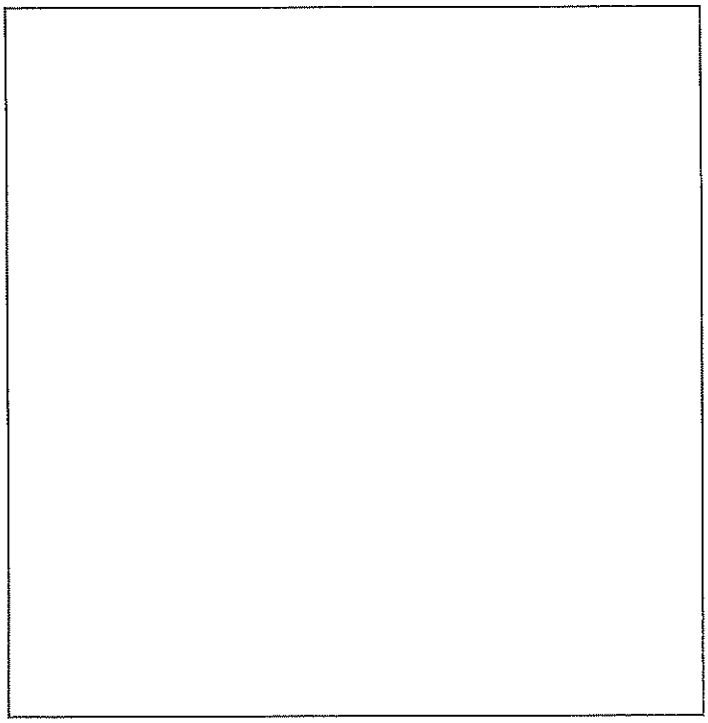

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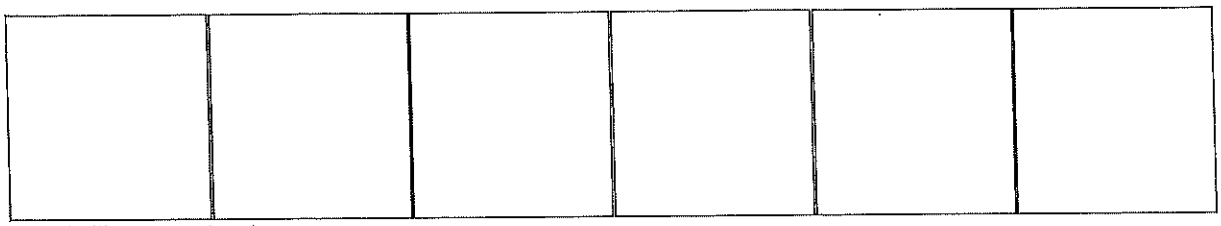

Baltimore County Department of Public Works
On-Call Engineering Services for Pumping Stations
Project No. 2015-03

Task 003 – Jones Falls Sewershed Comprehensive Evaluation

January 29, 2020

In accordance with Baltimore County's request under the On-Call Engineering Services for Pumping Stations Agreement, Project No. 2015-03, Hazen and Sawyer is pleased to submit this Scope of Services and Fee Proposal for the Jones Falls Sewershed Comprehensive Evaluation. The proposed Scope of Services is in accordance with the executed agreement with Baltimore County dated February 23, 2016 and amended on May 24, 2019.

BACKGROUND

The County is requesting a comprehensive evaluation of the Jones Fall Sewershed to assess the near-term and long-term needs of the sanitary sewer system, including:

- Future capacity needs driven by development, re-development and/or future connection of unserved areas of the sewershed
- Strategies needed to further protect the environment from potential sanitary sewer overflows (SSOs)
- Best Management Practices for continued proactive operation and maintenance of the sanitary sewer system
- Strategies to address vulnerabilities and improve long-term sustainability and resiliency

The Jones Falls Sewershed includes approximately 1,124,000 linear feet (LF) of gravity sewers ranging from 6- to 42-inches in diameter and approximately 6,200 manholes or other sewer structures. Data and reporting from previous studies will be provided to Hazen as part of this comprehensive needs assessment. Hazen and Sawyer will complete an evaluation addressing the capacity, operations and maintenance (O&M), and structural needs of the sewer system and develop a comprehensive plan and strategies to address system deficiencies at year 2025, 20-year, and 50-year planning horizons and two additional planning horizons determined by the County. This work will be detailed in a comprehensive sewershed evaluation report that will provide a flexible roadmap enabling the County to develop informed, asset-based, risk-based, and prioritized Capital Improvement Plan (CIP) budgets for near-term and long-term system improvements and strategies.

GENERAL ASSUMPTIONS

For the purposes of this Task Order, the following assumptions are made:

- All available requested data and reports will be provided to the Consultant by the County in a timely manner.
- Flow and rainfall monitoring data collected by others after the notice to proceed for this task will be provided in electronic time series format to the Consultant by the County on a monthly basis for the duration of the monitoring period. Raw data will be supplied within one week of the end of the month and QA/QC'd final data will be supplied within four weeks of the end of the month.
- No lidar inspection will be performed.
- Recent CCTV and manhole inspection data is available for most of the Sewershed.
- Up to 50,000 LF of CCTV inspections are included based on an assumed average production rate of 450 linear feet (LF) per day for CCTV inspection and light cleaning.
- Up to 15,000 LF of heavy cleaning is included based on an assumed average production rate of 300 LF per day for heavy cleaning.
- Up to 20,000 LF of combination sonar/CCTV inspection is included based on an assumed average production rate of 1,000 LF per day for sonar/CCTV inspection.
- Up to 100 MACP Level 1 manhole inspections are included based on an assumed average production rate of 10 manholes per day.
- Up to 50 MACP Level 2 manhole inspections are included based on an assumed average production rate of 8 manholes per day.
- Up to 150 manhole surveys are included.
- The County is conducting a Performance Assessment, including I/I analysis, associated with the recent sewer improvements within the Sewershed. However, this assessment will not be completed for another eighteen (18) or more months. The County will provide data as it becomes available during this Task, but Hazen will proceed without this information. Hazen will develop an interim I/I analysis and update the I/I analysis after the performance assessment is complete. The modeling efforts described in Tasks 5 and 6 will utilize the interim I/I analysis results.
- Scope of Services does not include any design work. Conceptual locations of capacity improvements and strategies will be determined.
- Scope is limited to review of existing water quality data and reports. No water quality sampling, testing or fieldwork will be performed.
- For the future capacity assessment, the County will provide direction on targeted areas and timing for extending sewer service to properties with on-site septic systems. Planning level costs will be developed only for upgrades to the existing system as required to accommodate additional flows from properties with septic systems. Evaluation of sizing, location and costs of new infrastructure extensions to serve septic system areas is not included.

SCOPE OF SERVICES

The scope of services is divided into the following tasks:

- Task 1 – Project Administration
- Task 2 – Gather and Review Existing Data
- Task 3 – System Characterization and Data Gap Analysis
- Task 4 – Flow/Rainfall Monitoring Data Review and Interim I/I Analysis
- Task 5 – Hydraulic Model Refinement, Calibration and Verification
- Task 6 – Asset Management and Capital Improvement Program Development
- Task 7 – Sewershed Evaluation Reports
- Task 8 – Public Outreach

TASK 1 – PROJECT ADMINISTRATION

Task 1.1 – Project Management

The project team for this Task Order consists of the Consultant and its subconsultants, Savin Engineers, P.C., PEER Consultants, P.C., C.C. Johnson & Malhorta, P.C. (CCJM) and Mobile Dredging and Video Pipe (MDVP). The Consultant will coordinate the overall work of the project to include project management, subconsultant coordination and MBE/WBE participation management.

The Consultant will schedule, manage and coordinate the efforts of its subconsultants. The Consultant will be responsible for quality control of subconsultant's deliverables.

Deliverables:

- Monthly Invoices (one original invoice with copy of all backup paperwork; two copies of the invoice only)

Task 1.2 – Kick-off Meeting

Before the start of the project, a kick-off meeting will be scheduled to discuss the project goals, communication protocol, schedule, deliverables and existing data acquisition. Participants in this meeting are expected to include the Consultant project manager, the Consultant's technical expert, and the County's project manager. Consultant will submit an electronic format agenda in advance of the meeting, prepare the meeting minutes, and submit the minutes to all attendees in electronic format within five (5) business days after the meeting.

Deliverables:

- Draft and Final Meeting Agenda (PDF format)
- Draft and Final Meeting Minutes (PDF format)

Task 1.3 – Task Schedule and Progress Reports

Consultant will prepare a task-based schedule for the performance of the work under this Task Order. The baseline schedule will be submitted for approval and will outline the major tasks to be completed under this Task Order. The schedule will identify projected submittal dates for the Draft and Final Reports discussed in Task 7 of this proposal. The Consultant will assess the project progress and report on the progress on a monthly basis. Monthly progress reports will detail work activities completed during the reporting period, work activities planned for the next period, budget status, schedule status and an issue log. Consultant will update monthly, or as appropriate, the schedule for performing the services.

Deliverables:

- Draft and Final Baseline Schedule (PDF format)
- Monthly Updated Schedule (PDF format)
- Monthly Progress Reports with look-ahead (PDF format)

Task 1.4 – Additional Meetings

Additional meetings will be scheduled throughout the course of the project as needed, at the request of the County or the Consultant, to meet Task Order objectives. A total of eighteen (18) meetings, including the project kick-off, are assumed for this scope.

The following meetings with Baltimore County are anticipated:

- Task 1 – One (1) project kickoff meeting (see Task 1.2 above)
- Task 3 – One (1) data review/mapping meeting to discuss focus areas
- Task 3 – One (1) meeting to discuss data gap analysis and fieldwork recommendations
- Task 5 – One (1) meeting with the County's planning group
- Task 5 – Five (5) meetings with developers and large institutions to discuss future development projections
- Task 5 – One (1) meeting with the County's Groundwater Management Section to discuss septic systems
- Task 5 – One (1) meeting to review model update recommendations
- Task 5 – One (1) meeting to review capacity assessment results and define level of service
- Task 6 – One (1) meeting to develop initial scoring approach for risk assessment
- Task 6 – One (1) meeting to review the initial results of the risk assessment and adjust scoring criteria as needed
- Task 6 – One (1) meeting to review cleaning/CCTV needs for O&M funding assessment

- Task 6 – One (1) meeting to review the capital improvement program recommendations
- Task 7 – One (1) meeting to review the County's comments on Draft Report
- Task 7 – One (1) meeting to review the Power BI dashboard

Consultant will submit an electronic format agenda in advance of each meeting, prepare the meeting minutes, and submit the minutes to all attendees in electronic format within five (5) business days after the meeting.

Deliverables:

- Draft and Final Meeting Agendas for each meeting (PDF format)
- Draft and Final Meeting Minutes for each meeting (PDF format)

Task 1.5 – QA/QC

Quality assurance/quality control procedures will be employed to maintain quality of all deliverables. These procedures include the use of quality control reviews of engineering assumptions and calculations, quality assurance audits of the workflow processes, and other measures necessary to provide a deliverable of a quality meeting industry standards. A quality control review will be conducted on each submittal prior to delivery to the County. These reviews apply to all modeling databases, technical memoranda, or reports generated for this Task Order. Members of in-house staff not associated with the Task Order will be selected to perform these reviews.

TASK 2 – GATHER AND REVIEW EXISTING DATA

Consultant will gather and review existing data for the Jones Falls Sewershed. All data will be provided by Baltimore County for the Consultant's review. A formal data request will be submitted prior to the kick-off meeting. The Consultant anticipates the following data, at a minimum, will be requested and reviewed for completeness and fitness for the project's purpose:

- Jones Falls Model Development and Calibration Report
- Jones Falls Long Term Capacity/Peak Flow Management Evaluation (LTC/PFME) Report
- Jones Falls Sewershed Repair, Replacement and Rehabilitation (SRRR) Plan
- Historical sanitary sewer overflow (SSO) data including cause if available in electronic format by asset ID or property address
- Historical basement backup data where capacity or blockage is the cause in electronic format by property address
- Historical work order data including cleaning, repairs and complaint calls in electronic format by asset ID or property address
- Historical smoke and dye testing results in electronic format
- Frequent preventative maintenance cleaning areas and other known trouble spots
- Current Baltimore County GIS data including sewer assets, road centerline, pavement, railroads, sub-basin delineations, parcels, buildings, critical facilities, zoning, land

use/planning, hydrology features, soil types, and flow meter and rain gauge locations (current and previous)

- Available land use plans, including the Baltimore County Master Plan 2020
- Current population characteristics
- Population and employment projections, including the latest Baltimore Metropolitan Council of Government (BMCOG) projections
- Flow projections, as gathered by the County, from large institutions and developments within the sewershed (i.e., GBMC, Sheppard Pratt, St. Joseph Medical Center, Towson University, Towson Row, etc.). Hazen will support this data collection effort as described under Task 5.2.
- Most recent copy of the InfoWorks model files
- As-built drawings of the sewer collection system, pump stations and force mains
- Available records on work done as part of the implementation of the SRRR Plan including record drawings, corrective action tracking spreadsheet or other electronic format data
- Drawings for collection system improvements that are in design or construction or are installed but not currently in the GIS
- List of planned improvements, including any local relief sewers required for future planned development
- Record drawings for any previous collection system improvements in the Sewershed, including sewer rehabilitation
- Available flow and rainfall monitoring data from previous and current monitoring efforts, including data for areas of the system where corrective actions were completed (post-construction monitoring). Flow meter installation and maintenance records will also be provided.
- Report on performance assessment of rehabilitation projects which will be completed following the current flow monitoring program (report to be prepared by others)
- Most recent CCTV inspection data including videos and PACP-compliant databases
- Most recent manhole inspection data including photos and MACP-compliant databases
- Water meter consumption data for the last twelve (12) months in electronic format by month. Geocoded locations preferred.
- Level sensor data
- Pump station SCADA data
- Pump station information including pump curves, wet well set points, and record drawings
- Records of on-site septic systems located within the Sewershed from the Groundwater Management section. GIS features preferable if available but electronic address records are also acceptable.
- Data on condition of existing septic systems within the Sewershed as well as any water quality monitoring data in the vicinity of pertinent septic systems
- Records of new tap connections and/or subdivision plans for new development and re-development areas since the last comprehensive flow monitoring period in 2008, as available in electronic format
- Available historical water quality data and reports, including the NPDES Annual Report, prepared by Baltimore County's Department of Environmental Protection and

Sustainability or other entities. Consultant will review water quality data in conjunction with rainfall data, SSO data, and GIS mapping of on-site septic system locations and identify any correlations between the datasets.

Deliverables:

- Formal data request in an email prior to kick-off meeting
- List of data provided by Baltimore County
- List of data discrepancies or major data gaps after data review

TASK 3 – SYSTEM CHARACTERIZATION AND DATA GAP ANALYSIS

The objective of this task is to understand and map the locations of existing problems such as known O&M issues, SSOs, and pipe failures to identify focus areas and additional flow, level and rainfall monitoring needs. Through the data gap analysis, the Consultant will understand the extent and relative confidence in asset attribute data to be incorporated into the model. The result is a prioritized field data collection plan.

Consultant will map the data collected under Task 2 (to the extent the data can be geolocated) and identify data gaps/needs for the hydraulic modeling and areas of focus for further evaluation. All field work performed under this task will be provided to the County in a format to import into the County's Computerized Maintenance Management System (CMMS) software, which the County is planning to roll out in January 2020. Consultant will work with the County to confirm data standards necessary to facilitate import into the CMMS and GIS.

Task 3.1 – Map Existing Data and Identify Problem Areas

Consultant will map the existing data using ArcGIS Pro including:

- SSOs
- Basement backups
- Frequent cleaning areas
- Work orders, differentiating between pre- and post-rehabilitation work orders in areas where comprehensive rehabilitation has been completed
- Pipeline Assessment Certification Program (PACP) inspection data
- Manhole Assessment Certification Program (MACP) inspection data
- Rehabilitation data (previous projects, projects in planning/design/construction)
- Capacity improvement projects (in planning/design/construction)
- Flow meter, level sensor and rain gauge locations and meter basin boundaries and characteristics
- Rehabilitation and replacement recommendations from the SRRR Plan, including the installation dates of these improvements (construction work is nearing completion)
- Capacity deficiencies identified from previous modeling/study efforts
- New taps since the last model was developed

- On-site septic system locations

Consultant will review the mapped data to identify the following areas of focus:

- Problem areas for O&M issues
- Areas with known or suspected capacity constraints
- Areas with structural condition concerns

Special attention will be paid to dates. County will provide dates when improvements were made within the Sewershed, so that the data can be analyzed by way of pre- and post-repair. The County has indicated that repair and rehabilitation work from the SRRR Plan (largely structural repairs) and some isolated relief sewer work within the Sewershed is nearly complete.

Deliverables:

- Maps of the existing data and preliminary areas of focus and suggested additional monitoring locations will be presented at a progress meeting with Baltimore County and provided to the County in electronic PDF and hard copy format.

Task 3.2 – Gap Analysis and Additional Field Data Collection Recommendations

Consultant will conduct a gap analysis to identify missing values, errors, and inconsistencies in asset attributes that will impact the model. Gap analysis will be performed using the data management tools available in InfoWorks CS and GIS. Automated inference tools within InfoWorks CS and GIS will be utilized to identify questionable data such as:

- Reverse grade slopes
- Missing attribute data
- Larger diameter pipes upstream of smaller diameter pipes
- Orphan pipes or manholes
- Incorrect spatial data (e.g., a manhole location inconsistent with nearby assets)
- Incorrect elevation data (e.g. manhole rim elevations conflicting with adjacent terrain)

This will include detailed analysis of data sources for pipes in the model including GIS, record drawings, and CCTV inspections. Consultant will apply engineering judgment to determine locations where assumptions and interpolations will suffice for model calibration. Manhole surveys will be performed as needed under Task 3.3.

Consultant will also utilize the mapped data to identify the following:

- Assets without inspection data
- Assets in problem areas that do not have recent inspection data
- Any locations where additional flow or level monitoring is needed for model calibration or model expansion, or to further investigate problem areas (see Task 4.1)
- Areas where acoustic inspections or other investigations should be performed to ascertain potential blockages that could inform the model calibration and capacity assessments

- Exposed assets adjacent to or crossing streams where external asset condition should be verified

Consultant will recommend additional field work to address critical data gaps. The base scope assumes:

- Up to 100 manhole surveys to be completed by subconsultant CCJM
- Up to 50,000 LF of CCTV inspections to be completed by subconsultant Savin Engineers
- Up to 100 Level 1 and 50 Level 2 manhole inspections to be completed by subconsultant Savin Engineers
- Up to 15 additional flow meters (including for areas of model expansion) – flow monitoring to be performed by others under a separate task. The County has two (2) contractors that can install these flow meters once final locations are selected.
- Up to 20 level monitors – level monitoring to be performed by others under a separate task. The County has two (2) contractors that can install these level monitors once final locations are selected.
- Up to 200 acoustic inspections to be completed by subconsultant MDVP
- Up to 15,000 LF of creek walks and exposed asset assessments to be completed by Consultant

Consultant will develop Survey 123 Forms for various field data collection efforts. These forms will be tailored to collect necessary data by asset type.

The additional fieldwork to be performed by the Consultant is described in Tasks 3.3 through 3.7.

Deliverables:

- Maps of the additional fieldwork recommendations will be presented at a progress meeting with Baltimore County and provided to the County in electronic PDF and hard copy format.
- GIS or other electronic format data identifying specific assets to be included in the additional field investigation.

Task 3.3 – Manhole Surveys

The base scope assumes up to one hundred (100) manhole surveys will be conducted. Visual observations will be made concerning the pipe connectivity and system configuration, and rim-to-invert depth measurements will be taken for all incoming and outgoing pipes. The Consultant will also collect horizontal and vertical location data (x and y location points and rim elevation) for each manhole. No confined-space entry will be performed. Where unmapped sewer lines and manholes are found or other corrections to the existing GIS maps are needed based on field conditions, map corrections will be made and submitted to the County in ArcGIS shapefile format or in any specified format meeting the County requirements for GIS changes.

Deliverables

- Field survey data in electronic format or in County specified format
- GIS shapefile for map corrections

Task 3.4 – CCTV Inspections

Consultant will conduct closed-circuit television (CCTV) inspections in accordance with the National Association of Sewer Service Companies (NASSCO) PACP standards. The base scope assumes up to 50,000 linear feet (LF) of gravity sewer mains ranging from 8 to 42 inches in diameter will be inspected. No confined space entry will be performed. Traffic control by a subconsultant to Savin Engineers is assumed for up to seven (7) days.

CCTV Inspection Requirements

- CCTV inspection will proceed after a single light cleaning pass or prior to cleaning as long as the camera can make it through the pipe. After the CCTV inspection, if the pipe is not a minimum of 95 percent clear, up to two (2) additional light cleaning passes will be performed in accordance with NASSCO (National Association of Sewer Service Companies) standards.
- Heavy cleaning (consisting of more than three passes with the hydraulic cleaner, root cutting and/or grease cutting) is included in this scope for up to 15,000 LF of gravity sewer mains ranging from 8 to 30 inches in diameter.
- All inspection records will be provided in a PACP-compliant database with inspection fields populated.
- Inspection videos will be recorded in MPEG1 format and will follow the naming convention established by the County.
- New manholes will be reported to the County.

Reverse Inspection Setups

- If the upstream and downstream manholes are inaccessible due to private property, a CCTV inspection/reverse inspection will be attempted from the nearest upstream or downstream manholes located in the public right-of-way.

Deliverables

- PACP-compliant CCTV inspection database, logs, photos and videos
- GIS shapefiles of pipe defects (point features) and pipe ratings (pipe features)
- Identification of debris levels to be input into the hydraulic model

Task 3.5 – Manhole Inspections

Consultant will conduct manhole inspections in accordance with NASSCO MACP standards. The base scope assumes up to 100 MACP Level 1 and up to 50 MACP Level 2 manhole inspections will be performed. No confined space entry will be performed for Level 1

inspections. Consultant will work with the County to identify which optional fields to include in the Level 1 inspections, if any.

Manhole Inspection Requirements

- All inspection records will be provided in an MACP-compliant database with inspection fields populated.
- The inspections will include electronic images of the surface, casting and chimney, barrel and invert.
- Defects will be identified, and active infiltration quantified in accordance with the NASSCO MACP standards for Level 2 inspections.
- New and/or buried manholes will be reported to the County.
- Consultant is not responsible for frame or cover replacement or for raising manhole cover to grade.
- Consultant will notify the County of all manholes with signs of surcharge identified during the field inspection work.

Could Not Locate / Could Not Access (CNL/CNA) Manholes

- Consultant will perform due diligence when attempting to locate manholes. A list of CNL/CNA manholes will be provided to the County after due diligence has been performed without success.
- Consultant will make a minimum of two separate inspection attempts at different times before designating a manhole as CNA due to private property, parked car or heavy traffic.

Deliverables

Consultant will prepare and submit the following to the County:

- MACP-compliant manhole inspection database and photos in electronic format
- GIS shapefiles of manhole defects and manhole ratings

Task 3.6 – Acoustic Inspection

Consultant will conduct up to 200 acoustic inspections of sewer mains ranging from 8 to 12 inches in diameter using InfoSense's SL-RAT technology to inform potential for blockage. Acoustic inspections will be performed in O&M problem areas as identified in Task 3.1. It is assumed that 140 inspections will be on-road and 60 inspections will be off-road. Traffic control is limited to signs and cones (no flagmen or arrow boards). No flow control will be provided, and no confined space entry will be performed.

In areas where acoustic inspection scores pipes below seven (7), a follow-up PACP-compliant CCTV inspection will be conducted to ascertain the nature of the blockage/debris and to provide a record that some level of blockage was found. Recommendations for follow-up cleaning will be provided.

Cleaning and subsequent CCTV inspection of the cleaned pipe are not included in the scope. Post-cleaning CCTV inspection data, provided by the County, will be reviewed to confirm results.

Deliverables

Consultant will prepare and submit the following to the County:

- Electronic results of acoustic survey scores in Excel and/or GIS format
- PACP-compliant CCTV inspection database, logs, photos and videos of any CCTV inspections performed
- GIS files of pipe defects (point features) and pipe ratings (pipe features)

Task 3.7 – Creek Walks/Exposed Asset Assessments

Consultant will perform creek walks and exposed asset assessments for up to 15,000 LF of sewer mains located adjacent to or crossing streams. Consultant will visually assess the exterior condition of exposed sewers and manholes. The general condition of the streambanks in these areas will be recorded. Survey 123 forms will be developed and implemented as part of this effort.

Deliverables

- Survey 123 export of field data including photos and other data
- PDF field reports for each asset

Task 3.8 – Sonar/CCTV Inspections

Consultant will conduct up to 20,000 LF of sonar/CCTV inspections of sewer mains ranging from 30 to 42 inches in diameter. Sonar/CCTV inspections will be performed in O&M problem areas as identified in Task 3.1. No flow control will be provided, and no confined space entry will be performed.

Deliverables

Consultant will prepare and submit the following to the County:

- Electronic results of the sonar inspections
- PACP-compliant CCTV inspection database, logs, photos and videos
- Identification of debris levels to be input into the hydraulic model
- GIS files of pipe defects (point features) and pipe ratings (pipe features)

Task 3.9 – Summarize Field Data

Consultant will summarize field data collected under Tasks 3.3 through 3.7 and will utilize the data as needed to refine and calibrate the collection system model. Consultant will develop

rehabilitation and other "next-action" recommendations as necessary based on the inspection data. Field data results and recommendations will be incorporated into the Asset Management Program Development in Task 6.

TASK 4 – FLOW/RAINFALL MONITORING DATA REVIEW AND INTERIM I/I ANALYSIS

The objective of this task is to review and analyze the flow and rainfall monitoring data collected under a separate task order to support the model calibration and determine infiltration/inflow reduction strategies and priorities.

Task 4.1 – Flow, Level and Rainfall Monitoring Data Review

Consultant will review temporary flow and rainfall monitoring locations (installed/maintained by others) and provide feedback on the adequacy of the locations for hydraulic modeling purposes (and to support model expansion, and characterization of the system with respect to any observed SSO/O&M issues that would affect system performance). Consultant will identify future needs for flow monitoring. Since the data is collected, screened and processed by others, a QA/QC review of the flow monitoring data set will be conducted by the Consultant to assess its sufficiency for use in model calibration and verification as well as interim I/I analyses. It is assumed that up to twelve (12) months of data from up to forty-five (45) flow meter sites will be reviewed and analyzed. Data from up to fifteen (15) additional flow meter sites installed based on the Consultant's recommendations will be reviewed and analyzed for up to twelve (12) months. Consultant will review and analyze rain gauge and radar rainfall data for the flow monitoring time period. Consultant will review and analyze level sensor data for up to twenty (20) locations. Review and analysis will include flow meter volume balances as applicable.

Task 4.2 – Flow Disaggregation and Rainfall Derived Infiltration/Inflow (RDII) Evaluation

Consultant will disaggregate data from the flow meters into:

- Base sanitary flow (weekday, weekend)
- Base groundwater infiltration (GWI) including normalized GWI such as GPD/ft/in
- Seasonal RDII metrics (e.g., RTK) for each meter basin including volumes and R-values representing fast, medium and slow response.

Consultant will summarize RDII characteristics for each meter basin in tabular format and thematically map using GIS.

Deliverables:

- Tables and maps of RDII characteristics (PDF format)

TASK 5 – HYDRAULIC MODEL REFINEMENT AND CALIBRATION

The objectives of this task are to refine and calibrate the existing model so that it can be used as a tool to assess current capacity for certain levels of service, to identify future capacity constraints from new growth and redevelopment, and to develop and size improvement strategies to address capacity issues.

Task 5.1 – Existing Model Review

Consultant will review the existing model for fitness for purpose by:

- Reviewing model extents and making recommendations for refinements/expansion based on previous tasks. For the purposes of this proposal, it is assumed that the model will be expanded to include all 8-inch sewers. Refinements/expansion will be completed under Task 5.6.
- Performing wet and dry weather existing model verification with new flow and rainfall data
- Reviewing pump station and force main representations and output relative to available data
- Comparing current GIS and corrective action records to model input
- Reviewing model subcatchment representation

Deliverables:

- Summary of recommended additional field data collection in GIS or other electronic format as well as an overview of model adjustments needed as a result of the verification exercise.

Task 5.2 – Develop Future Condition Models

Consultant will develop future flow projections for near term (2025), 20-year and 50-year planning horizons and up to two (2) additional planning horizons in the event that project phasing improvement strategies might be implemented. The 50-year planning analysis will include an assessment of build-out conditions, with the assumption that any available land within the County's service boundaries for the Sewershed is developed in accordance with its current zoning. County will define the available, developable land within the Sewershed. The development of future condition models for these planning horizons will include the following:

- Review of available land use plans
- Attending one (1) meeting with applicable planning groups/agencies within Baltimore County to discuss projected future development and development timing
- Attending up to five (5) meetings with large institutions and commercial developments to discuss projected future development and development timing (e.g., GBMC, St. Joseph Medical Center, Sheppard Pratt, Towson University, Towson Row)

- Review of water consumption data in combination with dry weather flow meter data to assess unit dry weather flow variability throughout the sanitary sewer system. The assessment will involve looking at unit dry weather flows based on development type, development age, industry type, commercial type, etc. and will be used to "truth check" flow data estimates.
- Review of population and employment projections

The Consultant will develop design flow determination strategies and parameters such as unit dry weather flows for various land uses. Consultant will develop future wet weather design flow determination strategies and parameters as applicable. Infill development (i.e., re-development or new development in developed areas) will be handled differently than greenfield development (i.e., development in undeveloped areas). Future RDII strategies and parameters will be developed for new development where new pipes will be built while RDII strategies and parameters from the calibrated model will be used for infill areas. Consultant will delineate future "pipelines" to represent the connection of future flows to the existing pipe network as necessary to properly represent timing of flows. In some cases, future subcatchments will be connected directly to the nearest existing pipe.

Consultant will develop thematic mapping of development conditions for near term (2025), 20-year and 50-year planning horizons and up to two (2) additional planning horizons. These future flow projections will be utilized in the future capacity assessment to be performed under Task 5.8.

Deliverables:

- Maps showing projected future development locations including new development and potential redevelopment by parcel for 2025, 20-year, and 50-year planning horizons and up to two (2) additional planning horizons (PDF format)
- Future populations and flow projections tied to parcels
- Any future "pipelines" to represent flows from future development areas if necessary, to properly represent timing of flows

Task 5.3 – Assessment of Septic System Elimination

The Consultant will identify and map all parcels within the Sewershed that are currently served by septic systems based on geolocated electronic data provided by the County. The Consultant will attend one (1) meeting with the County's Groundwater Management Section to identify areas within the Sewershed where septic system elimination may be desired in the future. Future design flow determination strategies including flow projections will be developed for up to 1,100 septic systems to be connected to the public sewer. The future flow projections for this septic system elimination will be included in the future condition models developed under Task 5.2. Planning level cost estimates will be developed for the strategies to construct upgrades to existing sewer system infrastructure to accommodate the septic system elimination. These sewer system improvements will be included in the Capital Improvement Program to be developed under Task 6.6.

Deliverables:

- Maps of the parcels with septic systems and potential septic elimination areas (PDF format)
- Future design flow determination strategies including flow projections for the septic system elimination
- Planning level cost estimates for the upgrades to the existing sewer system infrastructure required for the septic system elimination

Task 5.4 – Phase 2 Field Investigations

Consultant will recommend and perform (upon authorization by the County) additional field investigations based on the more detailed model review including:

- Collecting manhole survey data for the expanded model or where additional conflicts are found between existing data sources. Up to fifty (50) additional manhole surveys will be performed. No confined space entry will be performed.
- Conducting pump station flow testing for four (4) pump stations to obtain accurate capacity representations in the model as well as wet well settings.
- Identification of debris levels will be completed using CCTV inspection and sonar inspection data as described in Tasks 3.4 and 3.8

Deliverables:

- Manhole survey data in electronic format or in County specified format
- Pump station drawdown testing results including comparison of actual operating conditions to original pump curves

Task 5.5 – Model Update Recommendations

Consultant will develop detailed recommendations for existing model updates including:

- Existing model representation of physical system including manhole survey results, new construction/rehabilitation/replacement, and debris as identified during the CCTV and sonar inspections described in Tasks 3.4 and 3.8
- New development
- Subcatchment delineations
- Dry weather flow representation
- RDII hydrology
- Model expansion
- Sensitivity analysis

Deliverables:

None. Work from this task will be documented in the Model Update and Calibration Report.

Task 5.6 – Update Physical Model Representation and Subcatchment Delineation

Consultant will update the current physical model based on the results of the gap analysis, GIS review, manhole surveys, CCTV/sonar inspections, pump station testing, recent development, modified subcatchment delineations, and recent system improvements.

Expansion of model networks will be initially done by importing County-provided GIS data for modeled sewer pipes and manholes into the InfoWorks framework, reviewing record drawings of applicable pump stations and force mains, and performing a QA/QC analysis on pipe/manhole connectivity and alignment. Data gaps will be populated using a combination of record drawings, field inspection data, and other data collected in prior tasks. Interpolation and extrapolation of inverts and/or rim elevations will be performed when no other reliable data sources exist. Subcatchment data for sewer service areas that are available in GIS will be used as a starting point for delineation of flow inputs in the model network. The larger subcatchments will be subdivided as required to achieve appropriate modeling resolution. Pump station operational information will be defined in the model for explicitly-modeled pumps and station piping, and configuration of diversion structures and SSO structures will also be defined.

Deliverables:

None. Work from this task will be documented in the Model Update and Calibration Report.

Task 5.7 – Model Calibration/Verification

The model will be configured to accurately represent both dry weather flow conditions as well as wet weather performance of the collection system. Dry weather flows will be developed based on a combination of flow metering data, water consumption data, and population data as appropriate. Wet weather flows will be developed using standard hydrologic parameters that represent the rainfall-dependent infiltration and inflow response of sewer systems. These parameters will be calibrated and verified as described below. Groundwater influences and/or tidal influences will be represented as observed through monitoring data.

Based on 2019-2020 flow and rainfall monitoring data, field testing, available water consumption data and other information, Consultant will perform dry and wet weather calibration for the model. Consultant will utilize the flow and rainfall monitoring data received from the County to perform dry and wet weather calibrations and verifications of the hydraulic models. Representative storm events of varying intensities and depths will be selected from the radar rainfall data set to be used for calibration and verification. A maximum of ten (10) wet weather events will be used for calibration and the remainder of the continuous monitoring period (up to 18 months of total data) for verification of the model. The calibration approach is to use a combination of fixed runoff and groundwater infiltration (GWI) model.

A sensitivity analysis including up to five (5) model parameters for one (1) storm event (from the monitoring period) at up to ten (10) monitoring locations will be performed to assess the relative impact of model parameter values on flow predictions. Graphs of the predicted storm flow hydrograph using the calibrated parameter value, a high value and low value will be prepared for

each instance.

The model will be calibrated by adjusting hydrologic and hydraulic parameters with the target to achieve the calibration/verification goals listed below. Model calibration accuracy and quality will be judged by industry guidelines, such as delineated in the Wastewater Planning User's Group Code of Practice for the Hydraulic Modelling of Sewer Systems (Nov. 2002). These guidelines establish the following calibration/verification goals for two out of three wet weather events:

- Dry weather peak flows within +10% and -10%
- Dry weather flow volumes within +10% and -10%
- Wet weather peak flows within +25% and -15%
- Wet weather flow volumes within +20% and -10%
- Wet weather peak depths within +1.6 feet and -0.3 feet
- Timing and shape of hydrographs are similar

Consultant will summarize the calibration/verification results by meter including calibration/verification statistics as well as summaries of calibration challenges, especially if the calibration/verification goals could not be met with reasonable effort.

Deliverables:

- Model Update and Calibration Report summarizing Tasks 5.1 through 5.7.
- InfoWorks ICM files for the revised current conditions model, 2025 model, 2040 model, 2070 model and up to two (2) additional planning horizon models

Task 5.8 – Baseline/Future Capacity Assessment

Consultant will use the calibrated and verified model to evaluate the sewer system's response to simulations of up to five (5) precipitation frequency events and also an extended period simulation using historical rainfall data under baseline (2020) and future conditions (2025, 2040, 2070 and up to two other planning horizons). Assessment of the existing precipitation frequency events will include the following:

- 2-year (24-hour),
- 10-year (24-hour),
- 20-year (24-hour),
- 2-year (6-hour),
- 10-year (6-hour) and
- Extended period simulation (EPS)

A sensitivity analysis will be performed on the precipitation frequency events. Changing rainfall patterns model science will be used to estimate the standard return frequency of the precipitation frequency events at a 50-year planning horizon. Comparison of the current precipitation frequency and the 2070 estimated precipitation frequency will be presented in tabular format. For a single return period and duration (i.e., 10-year, 6-hour precipitation frequency), Consultant

shall simulate the existing system's response to the IDF values for the current and projected future precipitation frequency events.

An extended period simulation will be performed following review of up to ten (10) years of rainfall data. The extended period simulation will be conducted using a "typical" year of rainfall.

The simulations will be performed for six scenarios, baseline 2020 (based on the time period for which monitoring data is collected) and future (growth scenario based on future flow projections, 2025, 2040, 2070 and up to two (2) other planning horizons). Future flow projections will be as developed under Task 5.2.

The ability of the wastewater collection system to convey baseline and future flows during both dry and wet weather (using the existing precipitation frequency events and the EPS) will be evaluated, including the systems' capability to convey buildout flows (50-year planning horizon). Locations of model-predicted SSOs, surcharging and capacity deficiencies will be identified. Predicted volumes of model-predicted SSOs at each location will be provided for each storm event. Pump station performance will also be evaluated. Tables and GIS maps depicting the performance of the collection system for each simulation (model-predicted SSOs, model-predicted surcharging, pipeline capacity deficiencies, pump station capacity deficiencies) will be developed. Results of the capacity assessment will be presented in a workshop with the County.

A sensitivity analysis of storm duration on predicted SSOs will be performed for up to two (2) of the precipitation frequency events (listed above) under the baseline scenario. Two (2) additional durations will be tested, one of which will be longer in duration than the storms listed above, and one of which will be shorter. A summary table of SSOs by precipitation frequency event will be developed.

Consultant will coordinate with the City of Baltimore and provide capacity assessment results at the City/County system boundaries to the City. Consultant will utilize the City's latest InfoWorks model as a boundary condition in this study.

Deliverables:

- Slides from Capacity Assessment workshop
- GIS files showing capacity results for each simulation
- Thematic maps in PDF format showing capacity assessment results for each precipitation frequency event and development condition (locations of SSOs and sewers that are surcharged, including extent of surcharge and type of surcharge; i.e., backwater induced or capacity related)
- Tables showing the length of sewers surcharged by diameter ranges
- Return period analysis: summary and comparison of surcharged and flooded manholes under various conditions
- Capacity Assessment Report, including an evaluation of the system's capability to convey flow

Task 5.9 – Define Levels of Service (LOS) Strategies

Consultant will work with the County to establish strategies for the level of service (LOS) definition and the planning objectives/strategies for the collection system. The LOS strategy is the triggers for improvements (unmet LOS for a selected precipitation frequency event) as well as the design targets for improvements (LOS achieved for a selected precipitation frequency event) in terms of a precipitation frequency and level threshold (overflow, extent of surcharge). The selection of the strategy for level of service will be determined in conjunction with the capacity assessment results. The Consultant will prepare for and lead a LOS workshop with the County to develop consensus moving forward for these strategies.

Deliverables:

- Slides and exhibits from LOS workshop (to be combined with the Capacity Assessment workshop)

TASK 6 – ASSET MANAGEMENT AND CAPITAL IMPROVEMENT PROGRAM DEVELOPMENT

The objective of this task is to develop risk scoring for all pipes within the sewershed by analyzing the structural, O&M and capacity assessment data and to create a prioritized capital improvement framework that addresses structural, O&M and capacity issues and strategies for modernizing the collection system.

Task 6.1 – Analysis of Existing Data for Asset Management Program

Consultant will review the data gathered under Tasks 2 through 5 for the following purposes:

- Establish pipe cohorts based on available data and experience
- Identify deterioration curves, end of useful life and remaining useful life for each cohort (using industry standards, supplemented by available age and line break/failure data)
- Identify collection system capacity-related deficiencies based on the simulations performed under Task 5
- Assess physical condition and capacity of each pipe segment using available data

PACP scoring of the pipes will not be performed as part of this task.

Task 6.2 – Risk Assessment

Consultant will develop consequence of failure (CoF), likelihood of failure (LoF) and overall risk scores (business risk exposure or BRE) for each pipe segment based on the data analyzed in Task 6.1. Additional field investigations will not be performed for this task. The development of the scoring criteria and BRE scoring will include a workshop with the County to develop

consensus on the initial scoring approach, as well as a second meeting to review the initial results and to make any necessary adjustments to the scoring framework:

- Consequence of Failure (CoF) Scoring – Develop CoF criteria, weighting and scoring for all sewer (gravity and force mains) pipes. Utilize GIS model-builder to develop CoF scores for each pipe asset based on accepted criteria. Apply the criteria to each pipe segment within GIS.

- Likelihood of Failure (LoF) Scoring - Develop (LoF) criteria, weighting and scoring for all sewer (gravity and force mains) pipes. Utilize GIS model-builder to develop LoF scores for each pipe asset based on accepted criteria. Apply the criteria to each pipe segment within GIS. The LoF scoring will incorporate available condition data and will include structural failure as well as capacity and blockage (O&M) failure risks.

- Business Risk Exposure (BRE) Scores – Develop a combined BRE score as a combination of the CoF and LoF. Assign BRE scores for each pipe segment. In addition, the Consultant will develop a risk matrix that indicates risk regions that will incorporate strategies depending on the combination of CoF and LoF. Every pipe asset will be assigned a corrective action option and priority for consideration and evaluation.

Task 6.3 – Develop Capacity Improvement Strategies

Consultant will develop and evaluate strategies for achieving the selected level of service at year 2025, 20-year and 50-year planning horizons and up to two other planning horizons, including preliminary construction cost estimates. Strategies may include an option to pump flows from the Jones Falls Sewershed elsewhere within the sanitary sewer system either permanently or during wet weather events only. The capacity impacts on another Sewershed when receiving flow from the Jones Fall Sewershed will be determined based on the existing hydraulic modeling and capacity assessments which have been developed for those Sewersheds.

The number of SSOs predicted to be reduced by implementation of strategies will be provided. The percentage of predicted SSO volume captured by implementing strategies will be provided.

Task 6.4 – Asset Renewal, Capacity Upgrade, and O&M Funding Assessment

The LoF, CoF, and BRE scores will be utilized to develop a preliminary Asset Renewal, Capacity Upgrade, and O&M Funding assessment that will provide strategies for annual renewal and replacement (R&R), capacity upgrades, and operation and maintenance (O&M) spending needs over the five planning horizons (year 2025, 20-year, 50-year, and up to two other planning horizons) to maintain a desired overall level of service/risk using current dollars. The R&R and capacity upgrades funding assessment will include assumptions for replacement versus rehabilitation as well as unit price costing using available local bidding information combined with other available costing data. The O&M funding assessment will include forecasting of cleaning and CCTV inspection needs. Consultant will work with the County to determine internal or external resource assumptions. CCTV inspection and cleaning needs will include

forecasting of inspection and cleaning frequencies by pipe to the extent practicable and will include reactive and preventive cleaning lengths. Consultant will meet with the County to develop consensus on cleaning and CCTV inspection needs assumptions to be used in the forecasting. Consultant will develop a list of equipment and staff needed to achieve the goals internally.

Task 6.5 – Near-Term Pipeline Renewal and Replacement, Capacity, and O&M Strategies

The risk assessment scores from Task 6.2 will be used to identify pipe segments that will require near-term improvements (next ten years), as well as priority cleaning and CCTV inspection. A list of segments requiring near-term improvements will be developed based on risk assessment and capacity deficiencies. An updated list of near-term pipeline renewal projects will be provided to the County. Costs for these projects will be developed based on unit costs from recent pipeline bids/projects in the area. It is assumed the County will provide the bid tabs from recent pipeline renewal projects. For priority cleaning and CCTV inspection, the Consultant will develop pipe runs (for larger trunk sewers) and pipe clusters (for more systematic basin-wide assessments) to be assessed over the next five years.

Deliverables:

- Asset Management Program Development Report summarizing the results of Tasks 6.1 through 6.4, including funding assessment and list of renewal/modernization projects and costs

Task 6.6 – Prioritized Capital Improvement Framework

Consultant will develop a prioritized capital improvement framework (CIF) for each planning horizon (up to five total) based on the results of the asset management program development and considering possible strategies that could be implemented.

Consultant will develop a project prioritization strategy with County input and develop a CIF framework from the list of strategies to achieve the target LOS at each planning horizon.

Consultant will identify and evaluate strategies for modernizing the collection system including real-time controls, permanent sensor networks, interceptor maintenance programs, and predictive maintenance.

A Power BI dashboard (see Task 7.3) will be utilized to present long-term risk profiles under varying funding scenarios and will include consideration for remaining useful life (RUL) in terms of structural, O&M and capacity perspectives. Pipe renewal and replacement costs and capacity upgrade costs will be based on available costing information and the use of current costing tools. The dashboard will include items such as the remaining useful life of each pipe segment, the risk scores, renewal and replacement costs, capacity upgrade costs, long-term projected strategies and CIF, etc. In addition, potential maintenance key performance indicators (KPIs), including inspections and service test results, will be included.

Deliverables:

- Detailed list of infrastructure needs.
- Detailed list of strategies.
- CIF will be included in the Comprehensive Report and Power BI Dashboard described in Task 7.

TASK 7 – SEWERSHED EVALUATION REPORT

The objective of this task is to provide a deliverable that identifies a roadmap forward for providing reliable sewer service in accordance with the County's long-term objectives for the Jones Falls Sewershed.

Task 7.1 – Draft Jones Falls Sewershed Comprehensive Evaluation Report

Consultant will develop a Draft Jones Falls Sewershed Comprehensive Evaluation Report that will discuss the comprehensive evaluation, including the data review and mapping, data gap analysis, additional fieldwork, flow/rainfall monitoring analysis, I/I analysis, model review and calibration, capacity assessment and strategies including asset management and capital improvement program development. GIS maps will be utilized to illustrate results of the various evaluation steps, including:

- Existing data review: problem areas, SSOs, basement backups, work orders, constraints/issues relative to condition, capacity and water quality
- Data gap analysis: missing/erroneous data and additional data needs
- Additional fieldwork: locations and results of fieldwork
- Interim I/I analysis results
- Future condition models: projected development for each planning horizon
- Capacity assessment results: model-predicted overflows and surcharging under various precipitation frequency events and an extended period simulation for each planning horizon
- Capacity and Renewal & Replacement improvements: for risk level at each planning horizon and best available current RUL estimates
- Asset management development: risk scores, Renewal & Replacement, capacity, and O&M recommendations

Consultant will summarize and provide detailed lists of infrastructure needs and strategies to address capacity, structural and O&M deficiencies within the sewershed. A prioritized capital improvement program for year 2025, 20-year and 50-year planning horizons and up to two additional planning horizons based upon possible strategies implemented will be presented, including planning-level construction cost estimates and an implementation schedule.

The Draft Report will also discuss Best Management Practices (i.e., Interceptor Maintenance Program) for on-going proactive maintenance of the small diameter and large diameter sewer mains within the Sewershed.

Deliverables:

- Draft Report: 2 hard copies and 1 electronic PDF copy

Task 7.2 – Final Jones Falls Sewershed Comprehensive Evaluation Report

Consultant will prepare a formal Response to Comments table addressing the County's comments on the Draft Report. Consultant will incorporate the comments into a Final Jones Falls Comprehensive Sewershed Evaluation and Remedial Measures Report.

Deliverables:

- Response to Comments table (PDF format)
- Final Report: 2 hard copies and 1 electronic PDF copy
- All InfoWorks model files
- Power BI dashboard (see Task 7.3)

Task 7.3 – Power BI Dashboard

Power BI is a data analytics software that uses dashboard pages to visualize data and assist in communicating results to technical and non-technical stakeholders. Consultant will develop an interactive Power BI dashboard to illustrate the following project tasks: data review and mapping, I/I analysis, future flow projections, capacity assessment, asset management, and capital improvement program. The thematic maps produced for the comprehensive evaluation report (Task 7.1) will be utilized in the framework for the dashboard. Power BI will provide interactive maps, tables and graphs to summarize, compare and analyze the results of this sewershed evaluation. The dashboard will allow the County to view the relationships between the various improvement projects and understand how development "triggers" impact the improvements. The Power BI dashboard will be customized to communicate findings/recommendations between the various County groups or with external stakeholders. Up to fifteen (15) dashboard pages will be developed.

TASK 8 – PUBLIC OUTREACH

Task 8.1 – Community Meetings

Consultant will prepare presentations and handouts for meetings/workshops with the general public or community/environmental groups. Consultant will attend up to five (5) meetings/workshops.

Deliverables:

- Exhibits and presentation materials for community meetings

PROJECT SCHEDULE

The Consultant is prepared to start this work immediately upon authorization/issuance of a purchase order. A proposed project milestone schedule is provided in Attachment A.

Baltimore County Department of Public Works
On-Call Engineering Services for Pumping Stations
Project No. 2015-03

Task 004 – Jones Falls Sewershed Comprehensive Evaluation

January 23, 2020

In accordance with Baltimore County's request under the On-Call Engineering Services for Pumping Stations Agreement, Project No. 2015-03, Hazen and Sawyer is pleased to submit this Scope of Services and Fee Proposal for the Jones Falls Sewershed Comprehensive Evaluation. The proposed Scope of Services is in accordance with the executed agreement with Baltimore County dated February 23, 2016 and amended on May 24, 2019.

BACKGROUND

The County is requesting a comprehensive evaluation of the Jones Fall Sewershed to assess the near-term and long-term needs of the sanitary sewer system, including:

- Future capacity needs driven by development, re-development and/or future connection of unserved areas of the sewershed
- Strategies needed to further protect the environment from potential sanitary sewer overflows (SSOs)
- Best Management Practices for continued proactive operation and maintenance of the sanitary sewer system
- Strategies to address vulnerabilities and improve long-term sustainability and resiliency

The Jones Falls Sewershed includes approximately 1,124,000 linear feet (LF) of gravity sewers ranging from 6- to 42-inches in diameter and approximately 6,200 manholes or other sewer structures. Data and reporting from previous studies will be provided to Hazen as part of this comprehensive needs assessment. Hazen and Sawyer will complete an evaluation addressing the capacity, operations and maintenance (O&M), and structural needs of the sewer system and develop a comprehensive plan and strategies to address system deficiencies at year 2025, 20-year, and 50-year planning horizons and two additional planning horizons determined by the County. This work will be detailed in a comprehensive sewershed evaluation report that will provide a flexible roadmap enabling the County to develop informed, asset-based, risk-based, and prioritized Capital Improvement Plan (CIP) budgets for near-term and long-term system improvements and strategies.

GENERAL ASSUMPTIONS

For the purposes of this Task Order, the following assumptions are made:

- All available requested data and reports will be provided to the Consultant by the County in a timely manner.
- Flow and rainfall monitoring data collected by others after the notice to proceed for this task will be provided in electronic time series format to the Consultant by the County on a monthly basis for the duration of the monitoring period. Raw data will be supplied within one week of the end of the month and QA/QC'd final data will be supplied within four weeks of the end of the month.
- No lidar inspection will be performed.
- Recent CCTV and manhole inspection data is available for most of the Sewershed.
- Up to 50,000 LF of CCTV inspections are included based on an assumed average production rate of 450 linear feet (LF) per day for CCTV inspection and light cleaning.
- Up to 15,000 LF of heavy cleaning is included based on an assumed average production rate of 300 LF per day for heavy cleaning.
- Up to 20,000 LF of combination sonar/CCTV inspection is included based on an assumed average production rate of 1,000 LF per day for sonar/CCTV inspection.
- Up to 100 MACP Level 1 manhole inspections are included based on an assumed average production rate of 10 manholes per day.
- Up to 50 MACP Level 2 manhole inspections are included based on an assumed average production rate of 8 manholes per day.
- Up to 150 manhole surveys are included.
- The County is conducting a Performance Assessment, including I/I analysis, associated with the recent sewer improvements within the Sewershed. However, this assessment will not be completed for another eighteen (18) or more months. The County will provide data as it becomes available during this Task, but Hazen will proceed without this information.
- Scope of Services does not include any design work. Conceptual locations of capacity improvements and strategies will be determined.
- Scope is limited to review of existing water quality data and reports. No water quality sampling, testing or fieldwork will be performed.
- For the future capacity assessment, the County will provide direction on targeted areas and timing for extending sewer service to properties with on-site septic systems. Planning level costs will be developed only for upgrades to the existing system as required to accommodate additional flows from properties with septic systems. Evaluation of sizing, location and costs of new infrastructure extensions to serve septic system areas is not included.

SCOPE OF SERVICES

The scope of services is divided into the following tasks:

- Task 1 – Project Administration
- Task 2 – Gather and Review Existing Data
- Task 3 – System Characterization and Data Gap Analysis
- Task 4 – Flow/Rainfall Monitoring Data Review and Interim I/I Analysis
- Task 5 – Hydraulic Model Refinement, Calibration and Verification
- Task 6 – Asset Management and Capital Improvement Program Development
- Task 7 – Sewershed Evaluation Reports
- Task 8 – Public Outreach

TASK 1 – PROJECT ADMINISTRATION

Task 1.1 – Project Management

The project team for this Task Order consists of the Consultant and its subconsultants, Savin Engineers, P.C., PEER Consultants, P.C., C.C. Johnson & Malhorta, P.C. (CCJM) and Mobile Dredging and Video Pipe (MDVP). The Consultant will coordinate the overall work of the project to include project management, subconsultant coordination and MBE/WBE participation management.

The Consultant will schedule, manage and coordinate the efforts of its subconsultants. The Consultant will be responsible for quality control of subconsultant's deliverables.

Deliverables:

- Monthly Invoices (one original invoice with copy of all backup paperwork; two copies of the invoice only)

Task 1.2 – Kick-off Meeting

Before the start of the project, a kick-off meeting will be scheduled to discuss the project goals, communication protocol, schedule, deliverables and existing data acquisition. Participants in this meeting are expected to include the Consultant project manager, the Consultant's technical expert, and the County's project manager. Consultant will submit an electronic format agenda in advance of the meeting, prepare the meeting minutes, and submit the minutes to all attendees in electronic format within five (5) business days after the meeting.

Deliverables:

- Draft and Final Meeting Agenda (PDF format)
- Draft and Final Meeting Minutes (PDF format)

Task 1.3 – Task Schedule and Progress Reports

Consultant will prepare a task-based schedule for the performance of the work under this Task Order. The baseline schedule will be submitted for approval and will outline the major tasks to be completed under this Task Order. The schedule will identify projected submittal dates for the Draft and Final Reports discussed in Task 7 of this proposal. The Consultant will assess the project progress and report on the progress on a monthly basis. Monthly progress reports will detail work activities completed during the reporting period, work activities planned for the next period, budget status, schedule status and an issue log. Consultant will update monthly, or as appropriate, the schedule for performing the services.

Deliverables:

- Draft and Final Baseline Schedule (PDF format)
- Monthly Updated Schedule (PDF format)
- Monthly Progress Reports with look-ahead (PDF format)

Task 1.4 – Additional Meetings

Additional meetings will be scheduled throughout the course of the project as needed, at the request of the County or the Consultant, to meet Task Order objectives. A total of eighteen (18) meetings, including the project kick-off, are assumed for this scope.

The following meetings with Baltimore County are anticipated:

- Task 1 – One (1) project kickoff meeting (see Task 1.2 above)
- Task 3 – One (1) data review/mapping meeting to discuss focus areas
- Task 3 – One (1) meeting to discuss data gap analysis and fieldwork recommendations
- Task 5 – One (1) meeting with the County's planning group
- Task 5 – Five (5) meetings with developers and large institutions to discuss future development projections
- Task 5 – One (1) meeting with the County's Groundwater Management Section to discuss septic systems
- Task 5 – One (1) meeting to review model update recommendations
- Task 5 – One (1) meeting to review capacity assessment results and define level of service
- Task 6 – One (1) meeting to develop initial scoring approach for risk assessment
- Task 6 – One (1) meeting to review the initial results of the risk assessment and adjust scoring criteria as needed
- Task 6 – One (1) meeting to review cleaning/CCTV needs for O&M funding assessment

- Task 6 – One (1) meeting to review the capital improvement program recommendations
- Task 7 – One (1) meeting to review the County's comments on Draft Report
- Task 7 – One (1) meeting to review the Power BI dashboard

Consultant will submit an electronic format agenda in advance of each meeting, prepare the meeting minutes, and submit the minutes to all attendees in electronic format within five (5) business days after the meeting.

Deliverables:

- Draft and Final Meeting Agendas for each meeting (PDF format)
- Draft and Final Meeting Minutes for each meeting (PDF format)

Task 1.5 – QA/QC

Quality assurance/quality control procedures will be employed to maintain quality of all deliverables. These procedures include the use of quality control reviews of engineering assumptions and calculations, quality assurance audits of the workflow processes, and other measures necessary to provide a deliverable of a quality meeting industry standards. A quality control review will be conducted on each submittal prior to delivery to the County. These reviews apply to all modeling databases, technical memoranda, or reports generated for this Task Order. Members of in-house staff not associated with the Task Order will be selected to perform these reviews.

TASK 2 – GATHER AND REVIEW EXISTING DATA

Consultant will gather and review existing data for the Jones Falls Sewershed. All data will be provided by Baltimore County for the Consultant's review. A formal data request will be submitted prior to the kick-off meeting. The Consultant anticipates the following data, at a minimum, will be requested and reviewed for completeness and fitness for the project's purpose:

- Jones Falls Model Development and Calibration Report
- Jones Falls Long Term Capacity/Peak Flow Management Evaluation (LTC/PFME) Report
- Jones Falls Sewershed Repair, Replacement and Rehabilitation (SRRR) Plan
- Historical sanitary sewer overflow (SSO) data including cause if available in electronic format by asset ID or property address
- Historical basement backup data where capacity or blockage is the cause in electronic format by property address
- Historical work order data including cleaning, repairs and complaint calls in electronic format by asset ID or property address
- Historical smoke and dye testing results in electronic format
- Frequent preventative maintenance cleaning areas and other known trouble spots
- Current Baltimore County GIS data including sewer assets, road centerline, pavement, railroads, sub-basin delineations, parcels, buildings, critical facilities, zoning, land

use/planning, hydrology features, soil types, and flow meter and rain gauge locations (current and previous)

- Available land use plans, including the Baltimore County Master Plan 2020
- Current population characteristics
- Population and employment projections, including the latest Baltimore Metropolitan Council of Government (BMCOG) projections
- Flow projections, as gathered by the County, from large institutions and developments within the sewershed (i.e., GBMC, Sheppard Pratt, St. Joseph Medical Center, Towson University, Towson Row, etc.). Hazen will support this data collection effort as described under Task 5.2.
- Most recent copy of the InfoWorks model files
- As-built drawings of the sewer collection system, pump stations and force mains
- Available records on work done as part of the implementation of the SRRR Plan including record drawings, corrective action tracking spreadsheet or other electronic format data
- Drawings for collection system improvements that are in design or construction or are installed but not currently in the GIS
- List of planned improvements, including any local relief sewers required for future planned development
- Record drawings for any previous collection system improvements in the Sewershed, including sewer rehabilitation
- Available flow and rainfall monitoring data from previous and current monitoring efforts, including data for areas of the system where corrective actions were completed (post-construction monitoring). Flow meter installation and maintenance records will also be provided.
- Report on performance assessment of rehabilitation projects which will be completed following the current flow monitoring program (report to be prepared by others)
- Most recent CCTV inspection data including videos and PACP-compliant databases
- Most recent manhole inspection data including photos and MACP-compliant databases
- Water meter consumption data for the last twelve (12) months in electronic format by month. Geocoded locations preferred.
- Level sensor data
- Pump station SCADA data
- Pump station information including pump curves, wet well set points, and record drawings
- Records of on-site septic systems located within the Sewershed from the Groundwater Management section. GIS features preferable if available but electronic address records are also acceptable.
- Data on condition of existing septic systems within the Sewershed as well as any water quality monitoring data in the vicinity of pertinent septic systems
- Records of new tap connections and/or subdivision plans for new development and re-development areas since the last comprehensive flow monitoring period in 2008, as available in electronic format
- Available historical water quality data and reports, including the NPDES Annual Report, prepared by Baltimore County's Department of Environmental Protection and

Sustainability or other entities. Consultant will review water quality data in conjunction with rainfall data, SSO data, and GIS mapping of on-site septic system locations and identify any correlations between the datasets.

Deliverables:

- Formal data request in an email prior to kick-off meeting
- List of data provided by Baltimore County
- List of data discrepancies or major data gaps after data review

TASK 3 – SYSTEM CHARACTERIZATION AND DATA GAP ANALYSIS

The objective of this task is to understand and map the locations of existing problems such as known O&M issues, SSOs, and pipe failures to identify focus areas and additional flow, level and rainfall monitoring needs. Through the data gap analysis, the Consultant will understand the extent and relative confidence in asset attribute data to be incorporated into the model. The result is a prioritized field data collection plan.

Consultant will map the data collected under Task 2 (to the extent the data can be geolocated) and identify data gaps/needs for the hydraulic modeling and areas of focus for further evaluation. All field work performed under this task will be provided to the County in a format to import into the County's Computerized Maintenance Management System (CMMS) software, which the County is planning to roll out in January 2020. Consultant will work with the County to confirm data standards necessary to facilitate import into the CMMS and GIS.

Task 3.1 – Map Existing Data and Identify Problem Areas

Consultant will map the existing data using ArcGIS Pro including:

- SSOs
- Basement backups
- Frequent cleaning areas
- Work orders, differentiating between pre- and post-rehabilitation work orders in areas where comprehensive rehabilitation has been completed
- Pipeline Assessment Certification Program (PACP) inspection data
- Manhole Assessment Certification Program (MACP) inspection data
- Rehabilitation data (previous projects, projects in planning/design/construction)
- Capacity improvement projects (in planning/design/construction)
- Flow meter, level sensor and rain gauge locations and meter basin boundaries and characteristics
- Rehabilitation and replacement recommendations from the SRRR Plan, including the installation dates of these improvements (construction work is nearing completion)
- Capacity deficiencies identified from previous modeling/study efforts
- New taps since the last model was developed

- On-site septic system locations

Consultant will review the mapped data to identify the following areas of focus:

- Problem areas for O&M issues
- Areas with known or suspected capacity constraints
- Areas with structural condition concerns

Special attention will be paid to dates. County will provide dates when improvements were made within the Sewershed, so that the data can be analyzed by way of pre- and post-repair. The County has indicated that repair and rehabilitation work from the SRRR Plan (largely structural repairs) and some isolated relief sewer work within the Sewershed is nearly complete.

Deliverables:

- Maps of the existing data and preliminary areas of focus and suggested additional monitoring locations will be presented at a progress meeting with Baltimore County and provided to the County in electronic PDF and hard copy format.

Task 3.2 – Gap Analysis and Additional Field Data Collection Recommendations

Consultant will conduct a gap analysis to identify missing values, errors, and inconsistencies in asset attributes that will impact the model. Gap analysis will be performed using the data management tools available in InfoWorks CS and GIS. Automated inference tools within InfoWorks CS and GIS will be utilized to identify questionable data such as:

- Reverse grade slopes
- Missing attribute data
- Larger diameter pipes upstream of smaller diameter pipes
- Orphan pipes or manholes
- Incorrect spatial data (e.g., a manhole location inconsistent with nearby assets)
- Incorrect elevation data (e.g. manhole rim elevations conflicting with adjacent terrain)

This will include detailed analysis of data sources for pipes in the model including GIS, record drawings, and CCTV inspections. Consultant will apply engineering judgment to determine locations where assumptions and interpolations will suffice for model calibration. Manhole surveys will be performed as needed under Task 3.3.

Consultant will also utilize the mapped data to identify the following:

- Assets without inspection data
- Assets in problem areas that do not have recent inspection data
- Any locations where additional flow or level monitoring is needed for model calibration or model expansion, or to further investigate problem areas (see Task 4.1)
- Areas where acoustic inspections or other investigations should be performed to ascertain potential blockages that could inform the model calibration and capacity assessments

- Exposed assets adjacent to or crossing streams where external asset condition should be verified

Consultant will recommend additional field work to address critical data gaps. The base scope assumes:

- Up to 100 manhole surveys to be completed by subconsultant CCJM
- Up to 50,000 LF of CCTV inspections to be completed by subconsultant Savin Engineers
- Up to 100 Level 1 and 50 Level 2 manhole inspections to be completed by subconsultant Savin Engineers
- Up to 15 additional flow meters (including for areas of model expansion) – flow monitoring to be performed by others under a separate task. The County has two (2) contractors that can install these flow meters once final locations are selected.
- Up to 20 level monitors – level monitoring to be performed by others under a separate task. The County has two (2) contractors that can install these level monitors once final locations are selected.
- Up to 200 acoustic inspections to be completed by subconsultant MDVP
- Up to 15,000 LF of creek walks and exposed asset assessments to be completed by Consultant

Consultant will develop Survey 123 Forms for various field data collection efforts. These forms will be tailored to collect necessary data by asset type.

The additional fieldwork to be performed by the Consultant is described in Tasks 3.3 through 3.7.

Deliverables:

- Maps of the additional fieldwork recommendations will be presented at a progress meeting with Baltimore County and provided to the County in electronic PDF and hard copy format.
- GIS or other electronic format data identifying specific assets to be included in the additional field investigation.

Task 3.3 – Manhole Surveys

The base scope assumes up to one hundred (100) manhole surveys will be conducted. Visual observations will be made concerning the pipe connectivity and system configuration, and rim-to-invert depth measurements will be taken for all incoming and outgoing pipes. The Consultant will also collect horizontal and vertical location data (x and y location points and rim elevation) for each manhole. No confined-space entry will be performed. Where unmapped sewer lines and manholes are found or other corrections to the existing GIS maps are needed based on field conditions, map corrections will be made and submitted to the County in ArcGIS shapefile format or in any specified format meeting the County requirements for GIS changes.

Deliverables

- Field survey data in electronic format or in County specified format
- GIS shapefile for map corrections

Task 3.4 – CCTV Inspections

Consultant will conduct closed-circuit television (CCTV) inspections in accordance with Baltimore County's SRRR Guidelines. The base scope assumes up to 50,000 linear feet (LF) of gravity sewer mains ranging from 8 to 42 inches in diameter will be inspected. No confined space entry will be performed. Traffic control by a subconsultant to Savin Engineers is assumed for up to seven (7) days.

CCTV Inspection Requirements

- CCTV inspection will proceed after a single light cleaning pass or prior to cleaning as long as the camera can make it through the pipe. After the CCTV inspection, if the pipe is not a minimum of 95 percent clear, up to two (2) additional light cleaning passes will be performed in accordance with NASSCO (National Association of Sewer Service Companies) standards.
- Heavy cleaning (consisting of more than three passes with the hydraulic cleaner, root cutting and/or grease cutting) is included in this scope for up to 15,000 LF of gravity sewer mains ranging from 8 to 30 inches in diameter.
- All CCTV inspections will be performed in accordance with the NASSCO PACP standards.
- All inspection records will be provided in a PACP-compliant database with inspection fields populated.
- Inspection videos will be recorded in MPEG1 format and will follow the proper naming convention as set forth in the Baltimore County SRRR Guidelines.
- New manholes will be reported to the County.

Reverse Inspection Setups

- If the upstream and downstream manholes are inaccessible due to private property, a CCTV inspection/reverse inspection will be attempted from the nearest upstream or downstream manholes located in the public right-of-way.

Deliverables

- PACP-compliant CCTV inspection database, logs, photos and videos
- GIS shapefiles of pipe defects (point features) and pipe ratings (pipe features)
- Identification of debris levels to be input into the hydraulic model

Task 3.5 – Manhole Inspections

Consultant will conduct manhole inspections in accordance with NASSCO MACP standards.

The base scope assumes up to 100 MACP Level 1 and up to 50 MACP Level 2 manhole inspections will be performed. No confined space entry will be performed for Level 1 inspections. Consultant will work with the County to identify which optional fields to include in the Level 1 inspections, if any.

Manhole Inspection Requirements

- All inspection records will be provided in an MACP-compliant database with inspection fields populated.
- The inspections will include electronic images of the surface, casting and chimney, barrel and invert.
- Defects will be identified, and active infiltration quantified in accordance with the NASSCO MACP standards for Level 2 inspections.
- New and/or buried manholes will be reported to the County.
- Consultant is not responsible for frame or cover replacement or for raising manhole cover to grade.
- Consultant will notify the County of all manholes with signs of surcharge identified during the field inspection work.

Could Not Locate / Could Not Access (CNL/CNA) Manholes

- Consultant will perform due diligence when attempting to locate manholes. A list of CNL/CNA manholes will be provided to the County after due diligence has been performed without success.
- Consultant will make a minimum of two separate inspection attempts at different times before designating a manhole as CNA due to private property, parked car or heavy traffic.

Deliverables

Consultant will prepare and submit the following to the County:

- MACP-compliant manhole inspection database and photos in electronic format
- GIS shapefiles of manhole defects and manhole ratings

Task 3.6 – Acoustic Inspection

Consultant will conduct up to 200 acoustic inspections of sewer mains ranging from 8 to 12 inches in diameter using InfoSense's SL-RAT technology to inform potential for blockage. Acoustic inspections will be performed in O&M problem areas as identified in Task 3.1. It is assumed that 140 inspections will be on-road and 60 inspections will be off-road. Traffic control is limited to signs and cones (no flagmen or arrow boards). No flow control will be provided, and no confined space entry will be performed.

In areas where acoustic inspection scores pipes below seven (7), a follow-up PACP-compliant CCTV inspection will be conducted to ascertain the nature of the blockage/debris and to provide a record that some level of blockage was found. Recommendations for follow-up cleaning will

be provided.

Cleaning and subsequent CCTV inspection of the cleaned pipe are not included in the scope. Post-cleaning CCTV inspection data, provided by the County, will be reviewed to confirm results.

Deliverables

Consultant will prepare and submit the following to the County:

- Electronic results of acoustic survey scores in Excel and/or GIS format
- PACP-compliant CCTV inspection database, logs, photos and videos of any CCTV inspections performed
- GIS files of pipe defects (point features) and pipe ratings (pipe features)

Task 3.7 – Creek Walks/Exposed Asset Assessments

Consultant will perform creek walks and exposed asset assessments for up to 15,000 LF of sewer mains located adjacent to or crossing streams. Consultant will visually assess the exterior condition of exposed sewers and manholes. The general condition of the streambanks in these areas will be recorded. Survey 123 forms will be developed and implemented as part of this effort.

Deliverables

- Survey 123 export of field data including photos and other data
- PDF field reports for each asset

Task 3.8 – Sonar/CCTV Inspections

Consultant will conduct up to 20,000 LF of sonar/CCTV inspections of sewer mains ranging from 30 to 42 inches in diameter. Sonar/CCTV inspections will be performed in O&M problem areas as identified in Task 3.1. No flow control will be provided, and no confined space entry will be performed.

Deliverables

Consultant will prepare and submit the following to the County:

- Electronic results of the sonar inspections
- PACP-compliant CCTV inspection database, logs, photos and videos
- Identification of debris levels to be input into the hydraulic model
- GIS files of pipe defects (point features) and pipe ratings (pipe features)

Task 3.9 – Summarize Field Data

Consultant will summarize field data collected under Tasks 3.3 through 3.7 and will utilize the data as needed to refine and calibrate the collection system model. Consultant will develop rehabilitation and other "next-action" recommendations as necessary based on the inspection data. Field data results and recommendations will be incorporated into the Asset Management Program Development in Task 6.

TASK 4 – FLOW/RAINFALL MONITORING DATA REVIEW AND INTERIM I/I ANALYSIS

The objective of this task is to review and analyze the flow and rainfall monitoring data collected under a separate task order to support the model calibration and determine infiltration/inflow reduction opportunity priorities.

Task 4.1 – Flow, Level and Rainfall Monitoring Data Review

Consultant will review temporary flow and rainfall monitoring locations (installed/maintained by others) and provide feedback on the adequacy of the locations for hydraulic modeling purposes (and to support model expansion, and characterization of the system with respect to any observed SSO/O&M issues that would affect system performance). Consultant will identify future needs for flow monitoring. Since the data is collected, screened and processed by others, a QA/QC review of the flow monitoring data set will be conducted by the Consultant to assess its sufficiency for use in model calibration and verification as well as I/I analyses. It is assumed that up to twelve (12) months of data from up to forty-five (45) flow meter sites will be reviewed and analyzed. Data from up to fifteen (15) additional flow meter sites installed based on the Consultant's recommendations will be reviewed and analyzed for up to twelve (12) months. Consultant will review and analyze rain gauge and radar rainfall data for the flow monitoring time period. Consultant will review and analyze level sensor data for up to twenty (20) locations. Review and analysis will include flow meter volume balances as applicable.

Task 4.2 – Flow Disaggregation and Rainfall Derived Infiltration/Inflow (RDII) Evaluation

Consultant will disaggregate data from the flow meters into:

- Base sanitary flow (weekday, weekend)
- Base groundwater infiltration (GWI) including normalized GWI such as GPD/ft/in
- Seasonal RDII metrics (e.g., RTK) for each meter basin including volumes and R-values representing fast, medium and slow response.

Consultant will summarize RDII characteristics for each meter basin in tabular format and thematically map using GIS.

Deliverables:

- Tables and maps of RDII characteristics (PDF format)

TASK 5 – HYDRAULIC MODEL REFINEMENT AND CALIBRATION

The objectives of this task are to refine and calibrate the existing model so that it can be used as a tool to assess current capacity for certain levels of service, to identify future capacity constraints from new growth and redevelopment, and to develop and size improvement strategies to address capacity issues.

Task 5.1 – Existing Model Review

Consultant will review the existing model for fitness for purpose by:

- Reviewing model extents and making recommendations for refinements/expansion based on previous tasks. For the purposes of this proposal, it is assumed that the model will be expanded to include all 8-inch sewers. Refinements/expansion will be completed under Task 5.6.
- Performing wet and dry weather existing model verification with new flow and rainfall data
- Reviewing pump station and force main representations and output relative to available data
- Comparing current GIS and corrective action records to model input
- Reviewing model subcatchment representation

Deliverables:

- Summary of recommended additional field data collection in GIS or other electronic format as well as an overview of model adjustments needed as a result of the verification exercise.

Task 5.2 – Develop Future Condition Models

Consultant will develop future flow projections for near term (2025), 20-year and 50-year planning horizons and up to two (2) additional planning horizons in the event that project phasing improvement strategies might be implemented. The 50-year planning analysis will include an assessment of build-out conditions, with the assumption that any available land within the County's service boundaries for the Sewershed is developed in accordance with its current zoning. County will define the available, developable land within the Sewershed. The development of future condition models for these planning horizons will include the following:

- Review of available land use plans
- Attending one (1) meeting with applicable planning groups/agencies within Baltimore County to discuss projected future development and development timing

- Attending up to five (5) meetings with large institutions and commercial developments to discuss projected future development and development timing (e.g., GBMC, St. Joseph Medical Center, Sheppard Pratt, Towson University, Towson Row)
- Review of water consumption data in combination with dry weather flow meter data to assess unit dry weather flow variability throughout the sanitary sewer system. The assessment will involve looking at unit dry weather flows based on development type, development age, industry type, commercial type, etc. and will be used to "truth check" flow data estimates.
- Review of population and employment projections

The Consultant will develop future flow parameters such as unit dry weather flows for various land uses on a per acre basis. Consultant will develop future wet weather flow parameters as applicable. Infill will be handled differently than new green field development. Future RDII parameters will be developed for new development where new pipes will be built while RDII parameters from the calibrated model will be used for infill areas. Consultant will delineate future "pipelines" to represent the connection of future flows to the existing pipe network as necessary to properly represent timing of flows. In some cases, future subcatchments will be connected directly to the nearest existing pipe.

Consultant will develop thematic mapping of development conditions for near term (2025), 20-year and 50-year planning horizons and up to two (2) additional planning horizons. These future flow projections will be utilized in the future capacity assessment to be performed under Task 5.8.

Deliverables:

- Maps showing projected future development locations including new development and potential redevelopment by parcel for 2025, 20-year, and 50-year planning horizons and up to two (2) additional planning horizons (PDF format)
- Future populations and flow projections tied to parcels
- Any future "pipelines" to represent flows from future development areas if necessary, to properly represent timing of flows

Task 5.3 – Assessment of Septic System Elimination

The Consultant will identify and map all parcels within the Sewershed that are currently served by septic systems based on geolocated electronic data provided by the County. The Consultant will attend one (1) meeting with the County's Groundwater Management Section to identify areas within the Sewershed where septic system elimination may be desired in the future. Future flow projections will be developed for up to 1,100 septic systems to be connected to the public sewer. The future flow projections for this septic system elimination will be included in the future condition models developed under Task 5.2. Planning level cost estimates will be developed for the strategies to construct upgrades to existing sewer system infrastructure to accommodate the septic system elimination. These sewer system improvements will be included in the Capital Improvement Program to be developed under Task 6.6.

Deliverables:

- Maps of the parcels with septic systems and potential septic elimination areas (PDF format)
- Future flow projections for the septic system elimination
- Planning level cost estimates for the upgrades to the existing sewer system infrastructure required for the septic system elimination

Task 5.4 – Phase 2 Field Investigations

Consultant will recommend and perform (upon authorization by the County) additional field investigations based on the more detailed model review including:

- Collecting manhole survey data for the expanded model or where additional conflicts are found between existing data sources. Up to fifty (50) additional manhole surveys will be performed. No confined space entry will be performed.
- Conducting pump station flow testing for four (4) pump stations to obtain accurate capacity representations in the model as well as wet well settings.
- Identification of debris levels will be completed using CCTV inspection and sonar inspection data as described in Tasks 3.4 and 3.8

Deliverables:

- Manhole survey data in electronic format or in County specified format
- Pump station drawdown testing results including comparison of actual operating conditions to original pump curves

Task 5.5 – Model Update Recommendations

Consultant will develop detailed recommendations for existing model updates including:

- Existing model representation of physical system including manhole survey results, new construction/rehabilitation/replacement, and debris as identified during the CCTV and sonar inspections described in Tasks 3.4 and 3.8
- New development
- Subcatchment delineations
- Dry weather flow representation
- RDII hydrology
- Model expansion

Deliverables:

None. Work from this task will be documented in the Model Update and Calibration Report.

Task 5.6 – Update Physical Model Representation and Subcatchment Delineation

Consultant will update the current physical model based on the results of the gap analysis, GIS review, manhole surveys, CCTV/sonar inspections, pump station testing, recent development, modified subcatchment delineations, and recent system improvements.

Expansion of model networks will be initially done by importing County-provided GIS data for modeled sewer pipes and manholes into the InfoWorks framework, reviewing record drawings of applicable pump stations and force mains, and performing a QA/QC analysis on pipe/manhole connectivity and alignment. Data gaps will be populated using a combination of record drawings, field inspection data, and other data collected in prior tasks. Interpolation and extrapolation of inverts and/or rim elevations will be performed when no other reliable data sources exist. Subcatchment data for sewer service areas that are available in GIS will be used as a starting point for delineation of flow inputs in the model network. The larger subcatchments will be subdivided as required to achieve appropriate modeling resolution. Pump station operational information will be defined in the model for explicitly-modeled pumps and station piping, and configuration of diversion structures and SSO structures will also be defined.

Deliverables:

None. Work from this task will be documented in the Model Update and Calibration Report.

Task 5.7 – Model Calibration/Verification

The model will be configured to accurately represent both dry weather flow conditions as well as wet weather performance of the collection system. Dry weather flows will be developed based on a combination of flow metering data, water consumption data, and population data as appropriate. Wet weather flows will be developed using standard hydrologic parameters that represent the rainfall-dependent infiltration and inflow response of sewer systems. These parameters will be calibrated and verified as described below. Groundwater influences and/or tidal influences will be represented as observed through monitoring data.

Based on 2019-2020 flow and rainfall monitoring data, field testing, available water consumption data and other information, Consultant will perform dry and wet weather calibration for the model. Consultant will utilize the flow and rainfall monitoring data received from the County to perform dry and wet weather calibrations and verifications of the hydraulic models. Representative storm events of varying intensities and depths will be selected from the radar rainfall data set to be used for calibration and verification. A maximum of ten (10) wet weather events will be used for calibration and the remainder of the continuous monitoring period (up to 18 months of total data) for verification of the model. The calibration approach is to use a combination of fixed runoff and groundwater infiltration (GWI) model.

The model will be calibrated by adjusting hydrologic and hydraulic parameters with the target to achieve the calibration/verification goals listed below. Model calibration accuracy and quality will be judged by industry guidelines, such as delineated in the Wastewater Planning User's Group Code of Practice for the Hydraulic Modelling of Sewer Systems (Nov. 2002). These

guidelines establish the following calibration/verification goals for two out of three wet weather events:

- Dry weather peak flows within +10% and -10%
- Dry weather flow volumes within +10% and -10%
- Wet weather peak flows within +25% and -15%
- Wet weather flow volumes within +20% and -10%
- Wet weather peak depths within +1.6 feet and -0.3 feet
- Timing and shape of hydrographs are similar

Consultant will summarize the calibration/verification results by meter including calibration/verification statistics as well as summaries of calibration challenges, especially if the calibration/verification goals could not be met with reasonable effort.

Deliverables:

- Model Update and Calibration Report summarizing Tasks 5.1 through 5.7.
- InfoWorks ICM files for the revised current conditions model, 2025 model, 2040 model, 2070 model and up to two (2) additional planning horizon models

Task 5.8 – Baseline/Future Capacity Assessment

Consultant will use the calibrated and verified model to simulate up to five (5) design storm events and an extended period simulation using historical rainfall data and analyze the collection system under baseline (2020) and future conditions (2025, 2040, 2070 and up to two other planning horizons). Potential design storms include the following standard County events:

- 2-year (24-hour),
- 10-year (24-hour),
- 20-year (24-hour),
- 2-year (6-hour) and
- 10-year (6-hour)
- Extended period simulation (to be determined as described below)

A sensitivity analysis will be performed on the standard County design storms. Climate change model science will be used to estimate the standard return frequency of the County design storms at a 50-year planning horizon. Comparison of the current return frequency and the 2070 estimated return frequency will be presented in tabular format. For a single return period and duration (i.e., 10-year, 6-hour storm), Consultant will simulate the existing system's response to the IDF values for the current design storm and the projected future design storm.

An extended period simulation will be performed using a storm event selected following review of up to ten (10) years of rainfall data. The storm event will be selected with input from the County to represent either an "average" storm event or a major storm event from the last ten (10) years.,

The simulations will be performed for six scenarios, baseline (based on the time period for which monitoring data is collected) and future (growth scenario based on future flow projections, up to five (5) scenarios). Future flow projections will be as developed under Task 5.2.

The ability of the wastewater collection system to convey baseline and future flows during both dry and wet weather will be evaluated, including the systems' capability to convey buildout flows (50-year planning horizon). Locations of model-predicted SSOs, surcharging and hydraulic deficiencies will be identified. Predicted volumes of model-predicted SSOs at each location will be provided for each storm event. Pump station performance will also be evaluated. Tables and figures depicting the performance of the collection system for each simulation will be developed. Results of the capacity assessment will be presented in a workshop with the County.

Consultant will coordinate with the City of Baltimore to evaluate the downstream impacts of the future capacity assessments and will utilize the City's latest InfoWorks model as a boundary condition in this study.

Deliverables:

- Slides from Capacity Assessment workshop
- GIS files showing capacity results for each simulation
- Thematic maps in PDF format showing capacity assessment results for each design storm and development condition (locations of SSOs and sewers that are surcharged, including extent of surcharge and type of surcharge; i.e., backwater induced or capacity related)
- Tables showing the length of sewers surcharged by diameter ranges
- Return period analysis: summary and comparison of surcharged and flooded manholes under various conditions
- Capacity Assessment Report, including an evaluation of the system's capability to convey flow

Task 5.9 – Define Levels of Service (LOS) Strategies

Consultant will work with the County to establish strategies for the level of service (LOS) definition and the planning objectives/strategies for the collection system. The LOS strategy is the triggers for improvements (unmet LOS for a selected storm event) as well as the design targets for improvements (LOS achieved for a selected storm event) in terms of a storm intensity and level threshold (overflow, extent of surcharge). The selection of the strategy for level of service will be determined in conjunction with the capacity assessment results. The Consultant will prepare for and lead a LOS workshop with the County to develop consensus moving forward for these strategies.

Deliverables:

- Slides and exhibits from LOS workshop (to be combined with the Capacity Assessment workshop)

TASK 6 – ASSET MANAGEMENT AND CAPITAL IMPROVEMENT PROGRAM DEVELOPMENT

The objective of this task is to develop risk scoring for all pipes within the sewershed by analyzing the structural, O&M and capacity assessment data and to create a prioritized capital improvement framework that addresses structural, O&M and capacity issues and strategies for modernizing the collection system.

Task 6.1 – Analysis of Existing Data for Asset Management Program

Consultant will review the data gathered under Tasks 2 through 5 for the following purposes:

- Establish pipe cohorts based on available data and experience
- Identify deterioration curves, end of useful life and remaining useful life for each cohort (using industry standards, supplemented by available age and line break/failure data)
- Identify collection system capacity-related deficiencies based on the simulations performed under Task 5
- Assess physical condition and capacity of each pipe segment using available data

PACP scoring of the pipes will not be performed as part of this task.

Task 6.2 – Risk Assessment

Consultant will develop consequence of failure (CoF), likelihood of failure (LoF) and overall risk scores (business risk exposure or BRE) for each pipe segment based on the data analyzed in Task 6.1. Additional field investigations will not be performed for this task. The development of the scoring criteria and BRE scoring will include a workshop with the County to develop consensus on the initial scoring approach, as well as a second meeting to review the initial results and to make any necessary adjustments to the scoring framework:

- Consequence of Failure (CoF) Scoring – Develop CoF criteria, weighting and scoring for all sewer (gravity and force mains) pipes. Utilize GIS model-builder to develop CoF scores for each pipe asset based on accepted criteria. Apply the criteria to each pipe segment within GIS.

- Likelihood of Failure (LoF) Scoring - Develop (LoF) criteria, weighting and scoring for all sewer (gravity and force mains) pipes. Utilize GIS model-builder to develop LoF scores for each pipe asset based on accepted criteria. Apply the criteria to each pipe segment within GIS. The LoF scoring will incorporate available condition data and will include structural failure as well as capacity and blockage (O&M) failure risks.

- Business Risk Exposure (BRE) Scores – Develop a combined BRE score as a combination of the CoF and LoF. Assign BRE scores for each pipe segment. In addition, the Consultant will develop a risk matrix that indicates risk regions that will incorporate

strategies depending on the combination of CoF and LoF. Every pipe asset will be assigned a corrective action option and priority for consideration and evaluation.

Task 6.3 – Develop Capacity Improvement Strategies

Consultant will develop and evaluate strategies for achieving the selected level of service at year 2025, 20-year and 50-year planning horizons and up to two other planning horizons, including preliminary construction cost estimates. Strategies may include an option to pump flows from the Jones Falls Sewershed elsewhere within the sanitary sewer system either permanently or during wet weather events only. The capacity impacts on another Sewershed when receiving flow from the Jones Fall Sewershed will be determined based on the existing hydraulic modeling and capacity assessments which have been developed for those Sewersheds.

Task 6.4 – Asset Renewal, Capacity Upgrade, and O&M Funding Assessment

The LoF, CoF, and BRE scores will be utilized to develop a preliminary Asset Renewal, Capacity Upgrade, and O&M Funding assessment that will provide strategies for annual renewal and replacement (R&R), capacity upgrades, and operation and maintenance (O&M) spending needs over the five planning horizons (year 2025, 20-year, 50-year, and up to two other planning horizons) to maintain a desired overall level of service/risk using current dollars. The R&R and capacity upgrades funding assessment will include assumptions for replacement versus rehabilitation as well as unit price costing using available local bidding information combined with other available costing data. The O&M funding assessment will include forecasting of cleaning and CCTV inspection needs. Consultant will work with the County to determine internal or external resource assumptions. CCTV inspection and cleaning needs will include forecasting of inspection and cleaning frequencies by pipe to the extent practicable and will include reactive and preventive cleaning lengths. Consultant will meet with the County to develop consensus on cleaning and CCTV inspection needs assumptions to be used in the forecasting. Consultant will develop a list of equipment and staff needed to achieve the goals internally.

Task 6.5 – Near-Term Pipeline Renewal and Replacement, Capacity, and O&M Strategies

The risk assessment scores from Task 6.2 will be used to identify pipe segments that will require near-term improvements (next ten years), as well as priority cleaning and CCTV inspection. A list of segments requiring near-term improvements will be developed based on risk assessment and capacity deficiencies. An updated list of near-term pipeline renewal projects will be provided to the County. Costs for these projects will be developed based on unit costs from recent pipeline bids/projects in the area. It is assumed the County will provide the bid tabs from recent pipeline renewal projects. For priority cleaning and CCTV inspection, the Consultant will develop pipe runs (for larger trunk sewers) and pipe clusters (for more systematic basin-wide assessments) to be assessed over the next five years.

Deliverables:

- Asset Management Program Development Report summarizing the results of Tasks 6.1 through 6.4, including funding assessment and list of renewal/modernization projects and costs

Task 6.6 – Prioritized Capital Improvement Framework

Consultant will develop a prioritized capital improvement framework (CIF) for each planning horizon (up to five total) based on the results of the asset management program development.

Consultant will develop a project prioritization strategy with County input and develop a CIF from the list of improvements to achieve the target LOS at each planning horizon.

Consultant will identify and evaluate strategies for modernizing the collection system including real-time controls, permanent sensor networks, interceptor maintenance programs, and predictive maintenance.

A Power BI dashboard (see Task 7.3) will be utilized to present long-term risk profiles under varying funding scenarios and will include consideration for RUL in terms of structural and capacity perspectives. Pipe renewal and replacement costs and capacity upgrade costs will be based on available costing information and the use of current costing tools. The dashboard will include items such as the remaining useful life of each pipe segment, the risk scores, renewal and replacement costs, capacity upgrade costs, long-term projected CIF, etc. In addition, potential maintenance key performance indicators (KPIs), including inspections and service test results, will be included.

Deliverables:

- Detailed list of infrastructure needs.
- Detailed list of strategies.
- CIF will be included in the Comprehensive Report and Power BI Dashboard described in Task 7.

TASK 7 – SEWERSHED EVALUATION REPORT

The objective of this task is to provide a deliverable that identifies a roadmap forward for providing reliable sewer service in accordance with the County's long-term objectives for the Jones Falls Sewershed.

Task 7.1 – Draft Jones Falls Sewershed Comprehensive Evaluation Report

Consultant will develop a Draft Jones Falls Sewershed Comprehensive Evaluation Report that will discuss the comprehensive evaluation, including the data review and mapping, data gap analysis, additional fieldwork, flow/rainfall monitoring analysis, I/I analysis, model review and calibration, capacity assessment and asset management and capital improvement program development. GIS maps will be utilized to illustrate results of the various evaluation steps, including:

- Existing data review: problem areas, SSOs, basement backups, work orders, constraints/issues relative to condition, capacity and water quality
- Data gap analysis: missing/erroneous data and additional data needs
- Additional fieldwork: locations and results of fieldwork
- I/I analysis results
- Future condition models: projected development for each planning horizon
- Capacity assessment results: model-predicted overflows and surcharging under various design storms for each planning horizon
- Capacity and R&R improvements: for risk level at each planning horizon and best available current RUL estimates
- Asset management development: risk scores, R&R, capacity, and O&M recommendations

Consultant will summarize and provide detailed lists of infrastructure needs and strategies to address capacity, structural and O&M deficiencies within the sewershed. A prioritized capital improvement program for year 2025, 20-year and 50-year planning horizons and up to two additional planning horizons will be presented, including planning-level construction cost estimates and an implementation schedule.

The Draft Report will also discuss Best Management Practices (i.e., Interceptor Maintenance Program) for on-going proactive maintenance of the small diameter and large diameter sewer mains within the Sewershed.

Deliverables:

- Draft Report: 2 hard copies and 1 electronic PDF copy

Task 7.2 – Final Jones Falls Sewershed Comprehensive Evaluation Report

Consultant will prepare a formal Response to Comments table addressing the County's comments on the Draft Report. Consultant will incorporate the comments into a Final Jones Falls Comprehensive Sewershed Evaluation and Remedial Measures Report.

Deliverables:

- Response to Comments table (PDF format)
- Final Report: 2 hard copies and 1 electronic PDF copy
- All InfoWorks model files
- Power BI dashboard (see Task 7.3)

Task 7.3 – Power BI Dashboard

Consultant will develop an interactive Power BI dashboard to illustrate the following project tasks: data review and mapping, I/I analysis, future flow projections, capacity assessment, asset management, and capital improvement program. The thematic maps produced for the

comprehensive evaluation report (Task 7.1) will be utilized in the framework for the dashboard. Power BI will provide interactive maps, tables and graphs to summarize, compare and analyze the results of this sewershed evaluation. The dashboard will allow the County to view the relationships between the various improvement projects and understand how development "triggers" impact the improvements. The Power BI dashboard will be customized to communicate findings/recommendations between the various County groups or with external stakeholders. Up to fifteen (15) dashboard pages will be developed.

TASK 8 – PUBLIC OUTREACH

Task 8.1 – Community Meetings

Consultant will prepare presentations and handouts for meetings/workshops with the general public or community/environmental groups. Consultant will attend up to five (5) meetings/workshops.

Deliverables:

- Exhibits and presentation materials for community meetings

PROJECT SCHEDULE

The Consultant is prepared to start this work immediately upon authorization/issuance of a purchase order. A proposed project milestone schedule is provided in Attachment A.

DATA EVALUATION REPORT

On-Call Sanitary Sewer Rehabilitation Design Services – Task 14
Lake Roland Sewer Rehabilitation

Baltimore County, Maryland

Date: June 2022

RAMBOLL

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APPENDICES

Appendix A – Project Asset Map

Appendix B – Pipeline and Manhole Preliminary Rehabilitation Recommendation Tables

Appendix C – Access Sites

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1. INTRODUCTION

1.1 BACKGROUND

Baltimore County owns, operates, and maintains several large-diameter sanitary sewer interceptors that run through Lake Roland Park. Lake Roland Park is a 500+ acre park located in Towson, MD that is a multifaceted facility with hiker/biker trails, a dog park, pavilions, a nature center, and lake amenities including kayaking and canoeing. The Park is a high-use public area with activities (including nature and environmental programs) occurring year-round.

The County engaged Ramboll Americas Engineering Solutions, Inc. (Ramboll) for the development of design documents for the repair and rehabilitation of the interceptors, manholes, and junction chambers located within Lake Roland Park. The primary focus of this project is to minimize the inflow and infiltration(I/I) into the interceptors to reduce the likelihood of sanitary sewer overflows. Figure 1.1 below, graphically represents the limits of work, as defined by the County, for this project.

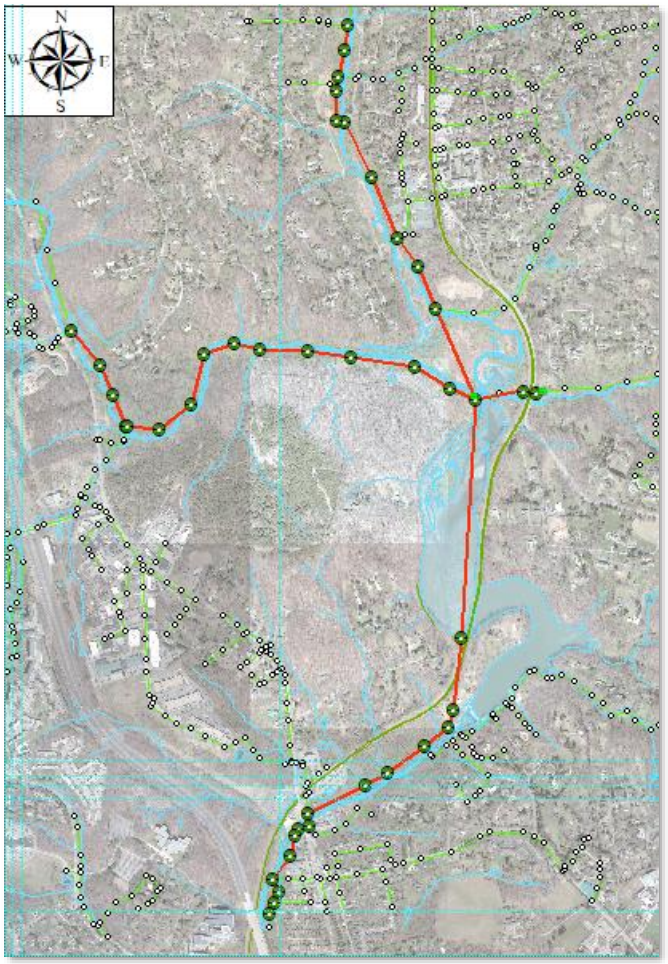


Figure 1.1 Project Map

In total, the project consists of approximately 19,550 linear feet of pipe (43 segments), ranging in size from 24-inches to 42-inches in diameter and the associated manholes/junction chambers (43 total units) along the project limits. Piping included in the project is distributed approximately as follows:

- 24-inches: 820 LF
- 27-inches: 1,755 LF
- 30-inches: 4,500 LF
- 42-inches: 12,470 LF

Note: In order to stay consistent with prior projects that Ramboll has completed with the County, the sewer pipe lengths used in this report are based on the "SHAPE_Length" field in the County's GIS. This field was compared to other applicable fields in the GIS dataset. Also, it is important to note that the pipe size distribution shown above uses the best available GIS data supplemented with information from CCTV pipeline inspections and manhole inspections.

The project area is comprised of the following sewer service areas (SSA's): 45-51-00-00, 45-52-00-00,45-53-00-00, 45-54-00-00, 45-55-01-00, 45-55-02-00, 45-56-00-00, 45-58-01-00, 45-59-02-00, 45-59-04-00, 45-59-06-00, 45-60-00-00, 45-62-01-00, 45-63-00-00, 45-65-00-00. Project asset maps, presenting the location of the assets associated with this report, are provided in **Appendix A**.

Services for this project commenced with a detailed desktop data review of existing system information including an evaluation of assets with special access considerations (i.e., private property) to assist in determining Right-of-Entry requirements for the project. Conclusions and recommendations derived from this initial data review and evaluation effort have been summarized and presented in this Data Evaluation Report. Field inspection/confirmation activities, permitting coordination, Right-of-Entry coordination and agreements, final design, bid phase services and construction phase services will be provided upon review and approval of this report by the County.

1.2 PURPOSE

As part of the preliminary engineering efforts for the project, the County requested a detailed review/evaluation of available existing system data in order to identify/accomplish the following:

- Confirm the condition of the pipelines and manholes associated with this project based on available system inspection data.
- Verify the rehabilitation recommendation (pipelines and manholes) included as part of this project.
- Preliminarily identify access and bypass requirements.
- Identify data gaps requiring additional/follow-up field evaluation efforts.
- Develop a preliminary list of permitting needs/requirements for the project.

The conclusions and recommendations of this review, as outlined above, are presented in this Data Evaluation Report.

2. DATA REVIEW AND RECOMMENDATIONS

2.1 GENERAL

This section introduces the data review activities and recommendations that were performed as part of this effort.

2.2 DATA REVIEW PROCESS

The County previously performed a sewer system evaluation that included the mapping and inspection of gravity sewers and manholes in the Lake Roland area. The data and documentation compiled as part of these efforts (including follow-up inspection and maintenance data) was made available by the County through web portal access to their online data library.

Data reviewed and analyzed as part of this review effort included:

- Geographic Information System (GIS).
- Closed-circuit television (CCTV) inspection videos and inspection logs.
- Sonar inspections completed on the lines
- Manhole inspection reports and photographs.
- Record drawings
- Maintenance records of assets (including repairs).

2.3 PIPELINE DATA REVIEW & RECOMMENDATIONS

A review of pipeline inspection data (i.e., CCTV inspection logs, videos, sonar inspections) was performed to confirm that all pipelines are suitable for trenchless rehabilitation technologies through CIPP lining. All segments have CCTV inspections reports available for review. Additionally, Redzone Sonar inspection data is available for the 42" trunkline that runs north to south. The review efforts consisted of the following:

1. Review of all available CCTV and associated inspection logs to evaluate the condition of each segment included in the project. In cases where multiple inspections are available, the most recently dated inspection report was reviewed.

2. Review of available Redzone sonar reports to confirm condition of existing pipeline for rehabilitation.

3. Provided a corrective action recommendation for each pipeline reviewed. Recommendations either confirm or revise the rehabilitation for the pipelines within the Lake Roland project.

Upon completing the review, it was determined that all pipe segments within the system can be rehabilitated using CIPP lining. Since the goal of the Lake Roland Sewer Rehabilitation project is to minimize the amount I/I into the system and prevent overflows, all lines have been identified for rehabilitation, even if structural damage

was not identified. The review of the CCTV inspections showed 24 segments with active infiltration at pipe joints, 14 of which also included some level of structural defects. Of the remaining 19 segment inspections available, 11 segments had structural defects alone and 8 segments either showed no structural defects or infiltration.

The distribution of pipe sizes recommended for CIPP lining is as follows:

- 24-inches RCP: 820 LF
- 27-inches RCP: 1,755 LF
- 30-inches RCP: 4,500 LF
- 42-inches RCP: 12,470 LF

A detailed review table supporting the above summary has been provided in **Appendix B.**

2.4 MANHOLE AND JUNCTION CHAMBER DATA REVIEW AND RECOMMENDATIONS

Similar to the pipeline data review goals, available manhole inspection data (manhole inspection reports) was reviewed in order to determine what rehabilitation should be proposed across the project area. Due to difficult access and proximity to the CIPP work associated with the pipelines, it was initially proposed that all manholes receive epoxy lining. To further confirm any additional rehabilitation required, the manhole data review approach consisted of the following:

1. Review of all available manhole reports to evaluate the condition of each asset included in project scope. No attempt was made to identify and/or correct minor cosmetic problems.
2. Provided a corrective action recommendation for each manhole.

Upon completing the review, a preliminary rehabilitation summary assessment was developed that categorized the following:

- Manholes recommended for frame and cover resetting/replacement.
- Manholes recommended for work associated with the frame seal.
- Manholes recommended for epoxy coating based on manhole defects.
- Manholes requiring full rehabilitation (epoxy coating) in conjunction with pipeline CIPP installation.
- Manholes requiring full replacement

Upon completing the review, it was determined that all 44 manholes within the system will need rehabilitation. Of the 43 manholes, 31 assets show evidence of infiltration. There are 2 manholes that are noted as 24" in their inspection reports. Field verification will be required to confirm that they are 24". Should this confirm manhole size, it will require full replacement to facilitate CIPP lining of the adjoining pipe segment. Epoxy lining was

identified as a rehabilitation method due to the high capacity of the pipelines which can cause H2S to accumulate within the manholes. The distribution of manhole rehabilitation is the following:

Rehabilitation	Manholes (ea.)
Replace/Repair or Raise Manhole Frame and Cover	15
Replace Manhole	2
Epoxy Lining	40

Additionally, there are two junction chambers located within this project. These junction chambers, NS560 and NS561, do not have any inspection data available for them. There are existing record drawings available for these junction chambers, however their structural integrity is unknown. In order determine the rehabilitation requirements of these junction chambers, they are recommended for inspection. County crews many need to be utilized for field activities to allow for access into the chambers for inspection.

A detailed review table supporting the above summary has been provided in **Appendix B.**

2.5 BYPASS SYSTEM EVALUATION

A preliminary bypass system evaluation was completed to assess the feasibility of potential staging sites which could accommodate both sanitary sewer bypass operation and large diameter lining operations, including on-site wet-out. As detail design efforts commence (including refinement of site accessibility needs and requirements), the approach for providing necessary bypass operations to construct the project will continue to be refined.

2.5.a Bypass Flow Evaluation

Due to the nature of CIPP lining, complete bypass will be required to complete this work. Bypass pumping design will be furthered as the design progresses. Ramboll has not yet reviewed flow calculations for this project, however all flows into the project are contributed by gravity. As the design progresses, Ramboll will review all flow rates provided by the County's flow metering network and further refine the bypass requirements for the project. Currently, it is expected that the bypass pumping will consist of three (3) 12"-15" HDPE pipelines to allow for redundancy should any individual pipeline failure occur. Every attempt will be made to allow for bypass piping to be routed along the proposed access trails for the work. This will limit the environmental impact and footprint for the project as machinery will be required to install the bypass lines. In areas where this is not possible the design will consider a route to minimize impacts and maintain a limited footprint.

2.5.b Site Staging Evaluation

A desktop review of potential staging sites for the sanitary sewer bypass operations was conducted using aerial imagery and County GIS mapping for all of the system assets. Potential sites were evaluated for suitability of bypass pump staging in addition to staging required for large diameter lining operations (i.e., on-site wet-out, crane usage, boiler truck access, etc.). An assumed 50' by 100' area was used as a representative potential staging area for each site. The dimensions of this representative area are subject to change based on field conditions and the final bypass design. Due to the complexity of the project, the project will be broken up into nine (9) sites that will be considered for their constructability, access requirements, environmental impacts, and bypass requirements. Sites were evaluated based on the criteria described below:

- Availability of Public ROW: Does the site provide adequate area for staging within the public ROW?
- Potential Environmental Impacts: Is the site located within an environmentally sensitive area such as wetlands and/or in close proximity to waterways?
- Potential Tree Impacts: Will the site require tree removal to establish staging area?
- Safety Hazards: Is the site located in a high-hazard work location (i.e., high-speed road corridors, proximity to overhead electric lines, etc.)?
- Private Property Issues: Is the site located on private property or near private business driveways where coordination with the property owner may be required?

Appendix C includes site maps for each of the referenced project sites (Sites #1 through #9.) Each site map includes preliminary layouts and mapping of access points, access trails/roads, bypass layouts, and staging locations.

The following table identifies the assets associated with each of the aforementioned Site Maps in **Appendix C**:

Site Map	Assets
1	6931-6930, 6930-18452, 18452-6928, 6928-6927
2	6927-6926, 6926-6925, 6925-6924
3	6924-6923, 6923-6921, 6921-NS561
4	20763-20762, 20762-21329, 21329-20761, 20761-72975, 72975-20760, 20760-20759, 20759-20758
5	20758-20757, 20757-20756, 20756-20755, 20755-20754, 20754-20753, 20753-21328, 21328-6888
6	NS560-6890, 6890-6889, 6889-6888
7	NS561-6888, 6888-6887, 6887-6886, 6886-14565
8	14565-6885, 6885-6883, 6883-6882, 6882-6880, 6880-6879
9	6879-6878, 6878-16379, 16379-6877, 6877-6876, 6876-6875, 6875-6874, 6874-TCM27

2.6 INVESTIGATION OF ASSETS IN NON-PUBLIC RIGHTS-OF-WAY

The initial data review revealed several assets that are located in non-public rights-of-way. For these assets, a separate investigation was conducted to develop a listing of potentially impacted properties which may require property owner approval for accessing and completing the suggested rehabilitation activity. Assets and properties of focus during this investigation include:

- Sewer assets that are outside of the public right-of-way and/or located within property corridors requiring special agency approval (i.e., State Highway Authority (SHA), etc.)
- Sewer assets where access could possibly be achieved through parking lots, driveways, or other previously constructed gravel/dirt roads or paths. (These instances would require property owner approval for construction activities.)
- Sewer assets located in non-paved and, at times, wooded and/or wetland areas which would require the installation of temporary access roads for site access (along with obtaining property owner approval).

Preliminary investigative efforts completed as part of this initial data review consisted of a desktop review of the existing GIS/site mapping throughout the project area and a review of existing record drawings in an attempt to identify any documentation/acknowledgement of utility easements (or lack thereof) along the assets in question. GIS data has identified 15 private property owners that may be affected, who range from commercial to residential properties. Additionally, there is land owned by the City of Baltimore, the Mass Transit Association, and Baltimore County. Ramboll has conducted several field visits to assess the current site conditions of each location and additional efforts will be conducted as the project progresses.

2.7 ACCESS OPPORTUNITIES

To complete the necessary rehabilitation, access trails to staging locations throughout the project extents will need to be developed. Large portions of the project are located within the dense treelined area of Baltimore County's Lake Roland Park, with steep slopes and minimal existing trail access. Access trails and temporary easements will be further developed as the design progresses; however, an initial attempt was made to show potential options.

Due to the proximity to and presence of streams and wetlands, temporary construction crossings and bridges will be required for a number of these sites as well. Ramboll has conducted numerous site walks with County staff, the design team, the environmental permitting team, bypass experts and the Lake Roland Nature Council. During these site walks, observations were made considering the terrain, existing park amenities, environmental features and potential impacts, and the surrounding communities and private properties. Preliminary review of the record drawings allowed for the design of the site access and ability to line multiple assets from one upstream location.

Each of the nine (9) sites are located outside of public roadways and traverse private property or public land not owned by the County. Based on preliminary review of existing record drawings (geometry) and site features, preliminary design of project staging and site access are identified below. It should be noted that the setups below show a feasible option for accessing these sites and they will be further refined as design progresses.

- ***Site #1- Ruxton Road –*** This site has access off Ruxton road which allows for easy access at the north part of the project location to 4 segments. Figure 2.1 shows the location of this site. A temporary access trail may require clearing of vegetation and potentially a temporary access roadway.

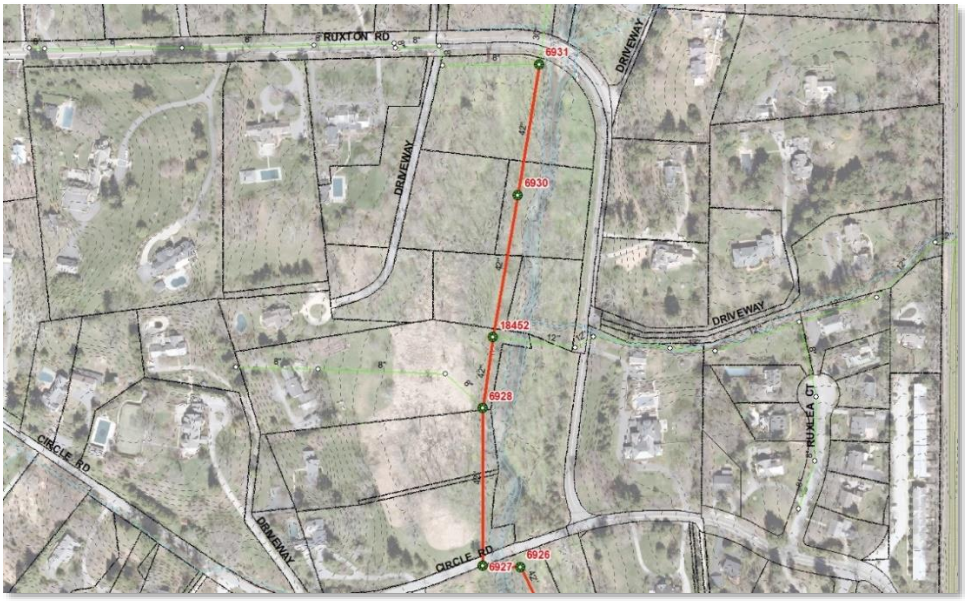


Figure 2.1 Site 1 Map

» *Access* – Access to Site #1 is from Ruxton Road, a public right-of-way. The 4 segments in this site are all located within private property and will require private property access agreements with the Homeowners. There are 9 parcels that will be impacted by this site, with a 10' existing utility easement over the pipeline. A 50' limit of disturbance (LOD) is shown on the site map as well and will be utilized for access if it is needed along the buried pipeline section.

» *Pipeline and Manhole Data Review* – The segments along this pipeline are approximately 1,190LF in total length and all are 42" reinforced concrete cylinder pipe (RCCP). Record drawings show that the segments in this site have a consistent 0.14% slope and do not have any drop manholes along the run. There is a possibility that this could allow for all sewers to be CIPP lined from the upstream MH 6931. If this is possible, full access roads to all manholes will not be needed, just foot/light duty access to allow for manhole lining and cutting out of the pipe liners. Review of CCTV inspection data shows no major defects, but 2 segments have high rates of infiltration. Review of manhole inspection data show

that MH 6930 will require replacement of the frame and cover. All other manholes within the site will require epoxy lining, which has a minimal LOD footprint impact.

- *Site Grade* – Along this site, the grade is flat with very little change in slope. This will allow for easier access and bypass capability at this site. All segments in this site are within 20' of the stream and will require special permitting due to the environmental impacts.
- *Bypass Capability* – County bypass requirements include redundancy of either the largest pump or 50% of the pumping capacity, whichever is greater. As noted above, for bypass within this site, three (3) 12"-15" HDPE bypass pipes will be utilized to bypass flows. A pump staging area of 30'x50' is shown on the Site #1 map in **Appendix C**. The bypass line for this site will be approximately 1,550 LF with two tie ins for collection sewers that connect to manholes along the alignment. Suction is anticipated to occur upstream of manhole 6931 with discharge to manhole 6927. The footprint for the bypass line along the access trail will be approximately 4' wide.

- ***Site #2 – Circle Road*** - Circle Road provides direct access to manholes 6927 and 6926. There is an existing bridge over the stream that may require a structural review prior to movement of large equipment across. (Assessment of the bridge will be performed by Ramboll structural personnel.) Only a small access trail may be necessary as both manholes are close to the roadway.

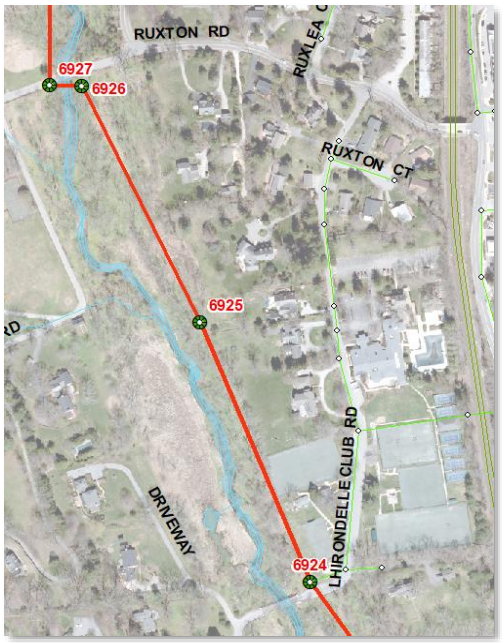


Figure 2.2 Site 2 Map

- *Access* – Access to Site #2 is from Circle Road, a public right-of-way. The 3 segments in this site are all located within property owned by the City of Baltimore. A small portion of the project is within

property owned by Lhirondelle Club and will require private property access agreements with the property owner. There is a 10' existing utility easement over the pipeline. A 50' limit of disturbance (LOD) is shown on the site map as well and will be utilized for access if it is needed along the buried pipeline section.

- *Pipeline and Manhole Data Review* – The segments along this pipeline are approximately 1,640LF in total length and all are 42" reinforced concrete cylinder pipe (RCCP). Record drawings show that the segments in this site have a consistent slope and there are no drop manholes along the run. There is a possibility that this could allow for all sewers to be CIPP lined from the upstream MH 6926. If this is possible, full access roads to all manholes will not be needed, just foot/light duty access to allow for manhole lining and cutting out of the pipe liners. Review of CCTV inspection data shows no major defects, but segments have high rates of infiltration. Review of manhole inspection data show that MH 6924 will require replacement of the frame and cover. All other manholes within the site will require epoxy lining, which has a minimal LOD footprint impact.
- *Site Grade* – Along this site, the grade is flat with very little change in slope. This will allow for easier access and bypass capability at this site. No segments in this site are within 20' of the stream, however potential presence of wetlands may require special permitting due to the environmental impacts.
- *Bypass Capability* – County bypass requirements include redundancy of either the largest pump or 50% of the pumping capacity, whichever is greater. For bypass within this site, three (3) 12"-15" HDPE bypass pipes will be utilized to bypass flows. A pump staging area of 30'x50' is shown on the Site #2 map in **Appendix C.** The bypass line for this site will be approximately 1,600 LF with one tie in for a collection sewer that connects to a manhole along the alignment. Suction is anticipated to occur at manhole 6928 with discharge to manhole 6923. The footprint for the bypass line which will run along the access trail and under and existing bridge will be approximately 4' wide. Environmental permitting will be required to run the HDPE bypass mains through the potential wetlands and streams.

- ***Site #3 – Lhirondelle Club Road*** – This access point allows for the CIPP of three segments with minimal access trail building required.
  - *Access* – Access to Site #3 is from Lhirondelle Club Road, a public right-of-way. The 3 segments in this site are all located within property owned by the City of Baltimore. A small portion of the project is within property owned by Lhirondelle Club and will require private property access agreements for running small bypass operations within the property. There is a 10' existing utility easement over the pipeline. A 50' limit of disturbance (LOD) is shown on the site map as well and will be utilized for access if it is needed along the pipeline section.

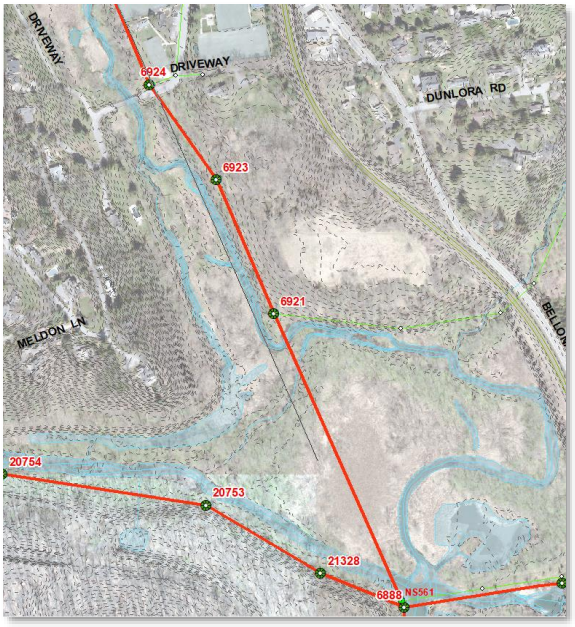


Figure 2.3 Site 3 Map

- *Pipeline and Manhole Data Review* – The segments along this pipeline are approximately 2,160 LF in total length and all are 42" reinforced concrete cylinder pipe (RCCP). Record drawings show that the segments in this site have a consistent slope and there are no drop manholes along the run. There is a possibility that this could allow for all sewers to be CIPP lined from the upstream MH 6924. If this is possible, full access roads to all manholes will not be needed, just foot/light duty access to allow for manhole lining and cutting out of the pipe liners. Review of CCTV inspection data shows no major structural defects along the pipeline segments, but several have high rates of infiltration. Review of manhole inspection data show that MH 6921 will require replacement of the frame and cover, while inspection information was not available for MH6923. All manholes within the site will require epoxy lining, which has a minimal LOD footprint impact.
- *Site Grade* – Along this site, the grade is relatively flat with minimal change in slope. This will allow for easier access and bypass capability at this site. All segments in this site are within 20' of the stream and will require special permitting due to the environmental impacts.
- *Bypass Capability* – County bypass requirements include redundancy of either the largest pump or 50% of the pumping capacity, whichever is greater . For bypass within this site, three (3) 12"-15" HDPE bypass pipes will be utilized to bypass flows. A pump staging area of 30'x50' is shown on the Site #3 map in **Appendix C.** The bypass line for this site will be approximately 2,500 LF with one tie in for a collection sewer that connects to a manhole along the alignment. Suction is anticipated to occur at manhole 6925 with discharge to manhole 6888. The footprint for the bypass line which will run along

the access trail and under and existing bridge will be approximately 4' wide. Environmental permitting will be required to run the HDPE bypass mains through the potential wetlands and streams.

- ***Site #4 – Falls Road*** – This access point will require clearing and grubbing. A temporary stream crossing bridge, and long stretches of stabilized construction trails will be required. This access trail can follow along portions of the existing walking trails within Lake Roland Park.

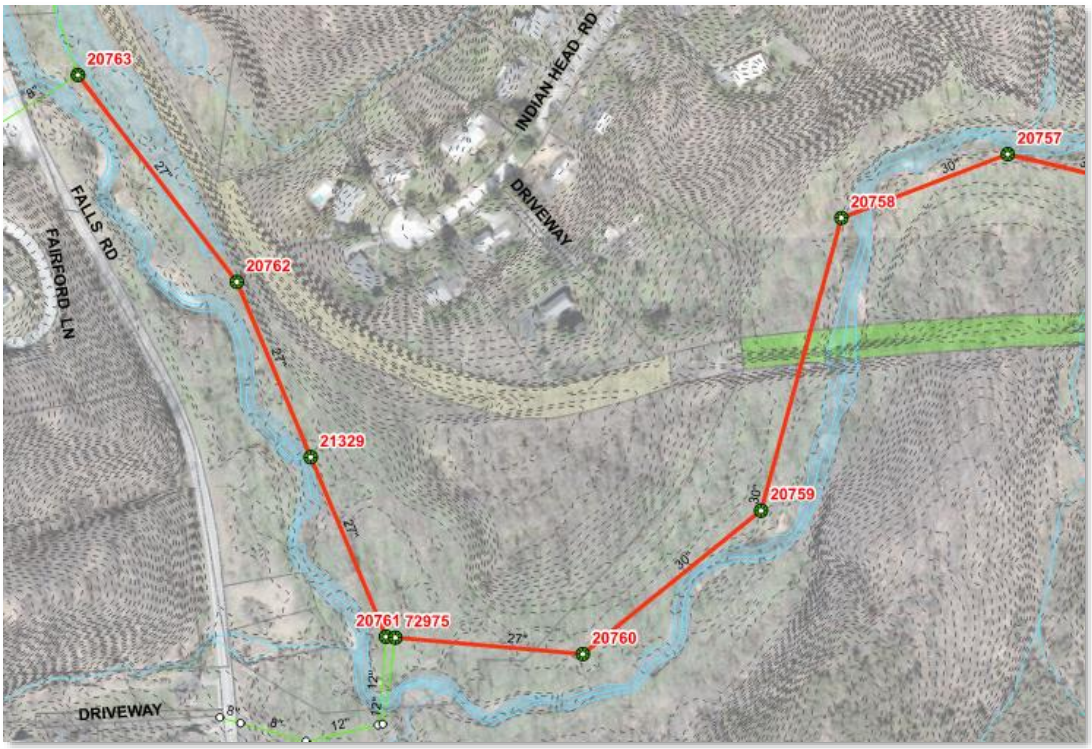


Figure 2.4 Site 4 Map

- *Access* – Access to Site #4 is from Falls Road, a public right-of-way. The 7 segments in this site are located within property owned by the City of Baltimore and property owned by the Lake Roland Protective Association. All of the lines within this site are located within the Lake Roland County Park. Every effort will be made to identify methods/approaches to maintain park accessibility near and along project corridors during construction. There is a 10' existing utility easement over the pipeline. A wide, stabilized access trail will be required along the 50' LOD. This will be required in order to bring necessary lining equipment into the site. A 50' limit of disturbance (LOD) is shown on the site map.
- *Pipeline and Manhole Data Review* – The segments along this pipeline are approximately 3,555 LF total and all are 27" or 30" reinforced concrete cylinder pipe (RCCP). Record drawings show that some segments in this site have a consistent slope and the absence of drop manholes along the run. There is a possibility that this could allow for some sewers to be lined together and lessen the impact in certain

locations. Review of CCTV inspection data shows no major defects along the pipeline run, but segments along the run have high rates of infiltration. Review of manhole inspection data show some manholes will require replacement of the frame and cover. All manholes within the site will require epoxy lining, which has a minimal LOD footprint impact.

- *Site Grade* – Predominantly along this site, the grade is relatively flat with minimal change in slope. This will allow for construction of access trails and bypass capability at this site. All segments in this site are within 50' of the stream and could require special permitting due to the environmental impacts.
- *Bypass Capability* –A pump staging area of 30'x50' is shown on the Site #4 map in **Appendix C.** The bypass line for this site will be approximately 4,000 LF with multiple tie ins for collection sewers that connect to manholes along the alignment. Suction is anticipated to occur at manhole 20764 with discharge to manhole 20757. The footprint for the bypass line, which will run along the access trail and across the existing stream will be approximately 4' wide. Environmental permitting will be required to run the HDPE bypass mains through the potential wetlands and streams.

- ***Site #5 – Lake Roland Nature Center*** – This access point will require clearing and grubbing. A temporary crossing bridge or other means to traverse the stream, and long stretches of stabilized construction trails will be required. This access trail can follow along portions of the existing walking trails within Lake Roland Park.

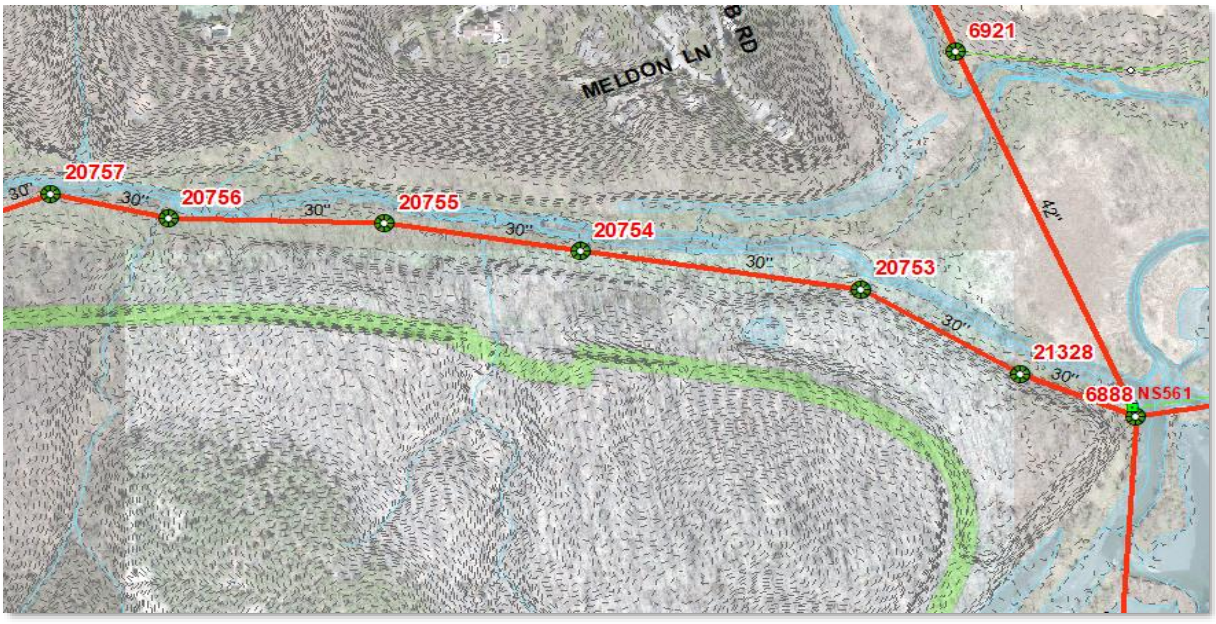


Figure 2.5 Site 5 Map

- *Access* – The 7 segments in this site are located within property owned by the City of Baltimore. Access to Site #5 is through private residential properties at the end of Hollins Lane (a public roadway). All of

the lines within this site are located within the Lake Roland County Park. Every effort will be made to identify methods/approaches to maintain park accessibility near and along project corridors during construction. There is a 10' existing utility easement over the pipeline, and a potential 50' limit of disturbance (LOD) is shown on the site map. A wide, stabilized access trail will be required along the 50' LOD. This will be required in order to bring necessary lining equipment into the site. Access to this site will be in coordination with Site #7 and utilize the same access road to portions of the project.

- *Pipeline and Manhole Data Review* – The segments along this pipeline are approximately 3,390 LF total and are all 30" reinforced concrete cylinder pipe (RCCP). Record drawings show that all segments in this site have a consistent slope and there is an absence of drop manholes along the run. There is a possibility that this could allow for some sewers to be lined together and lessen the impact in certain locations. Review of CCTV inspection data shows no major defects along the pipeline run, but segments along the run have high rates of infiltration. Review of manhole inspection data show some manholes will require replacement of the frame and cover. All manholes within the site will require epoxy lining, which has a minimal LOD footprint impact.
- *Site Grade* – Along the sewer lines, the grade is relatively flat with minimal change in slope. The access location on Hollins Lane will require coordination with the private property owner(s) at the end of the roadway. (Final identification of the access route location/alignment will dictate the residences requiring engagement/coordination.) Additional information on the grading at this access point, see Site #7 map in **Appendix C** . This will allow for construction of access trails and bypass capability at this site. All segments in this site are within 50' of the stream and could require special permitting due to the environmental impacts.
- *Bypass Capability* –A pump staging area of 30'x50' is shown on the Site #5 map in **Appendix C.** The bypass line for this site will be approximately 3,500 LF. Suction is anticipated to occur at manhole 20759 with discharge to manhole 6888. The footprint for the bypass line, which will run along the access trail and across the existing stream will be approximately 4' wide. Environmental permitting will be required to run the HDPE bypass mains through the potential wetlands and streams.

- ***Site #6 – Bellona Road –*** The access point on Bellona Rd leads to an existing Baltimore County easement. Little access trail creation is expected to be required. It is assumed that the Light rail crossing will not be an issue at this location, as segment 6889-6888 can be rehabilitated from manhole 6890.



Figure 2.6 Site 6 Map

- *Access* – Access to Site #6 is from Bellona Road, a public right-of-way. The 3 segments in this site are located within property owned by Baltimore County, Baltimore City, and the Mass Transit Administration. Access to the site will occur within the extents of an existing Baltimore County utility easement property. A potential 50' limit of disturbance (LOD) is shown on the site map. Little to no access trail will be necessary for this project.
- *Pipeline and Manhole Data Review* – The segments along this pipeline are approximately 820 LF total and are all 24" reinforced concrete cylinder pipe (RCCP). Record drawings show that all segments in this site have a consistent slope and there is an absence of drop manholes along the run. There is a possibility that this could allow for some sewers to be lined together and lessen the impact of this location. Should the final design not allow for continuous lining at this site, access to MH 6889 will be very difficult. The presence of the MTA property and active Light rail line will require extensive permitting and coordination. Review of CCTV inspection data shows no major defects along the pipeline run, but several segments along the run possess high rates of infiltration. Review of manhole inspection data show MH6890 will require replacement of the frame and cover. MH 6889 does not show any defects and should be considered to be removed from the scope of the project due to the

difficulty of access. All other manholes within the site will require epoxy lining, which has a minimal LOD footprint impact.

- *Site Grade* – Access to lining manhole MH6890 is available through a relatively flat area. This will allow for ease of access trails and bypass capability at this site. There is a steeper grade change as the line approaches the MTA Light Rail line. This should not prove as a challenge unless access to the MTA location is required. Segments in this site are not within 50' of the stream and should not require special permitting due to the environmental impacts.
- *Bypass Capability* –The bypass for this site will be through the 36" sewer north of the line within this project that are connected at NS560. The figure below shows the junction chamber per record drawings from the County. Additional flow calculations will be required to ensure that the 36" sewer has enough capacity to receive the flow that has been diverted from the existing 24" sewer, however this is not anticipated to be an issue as the 24" line appears to be currently dry.

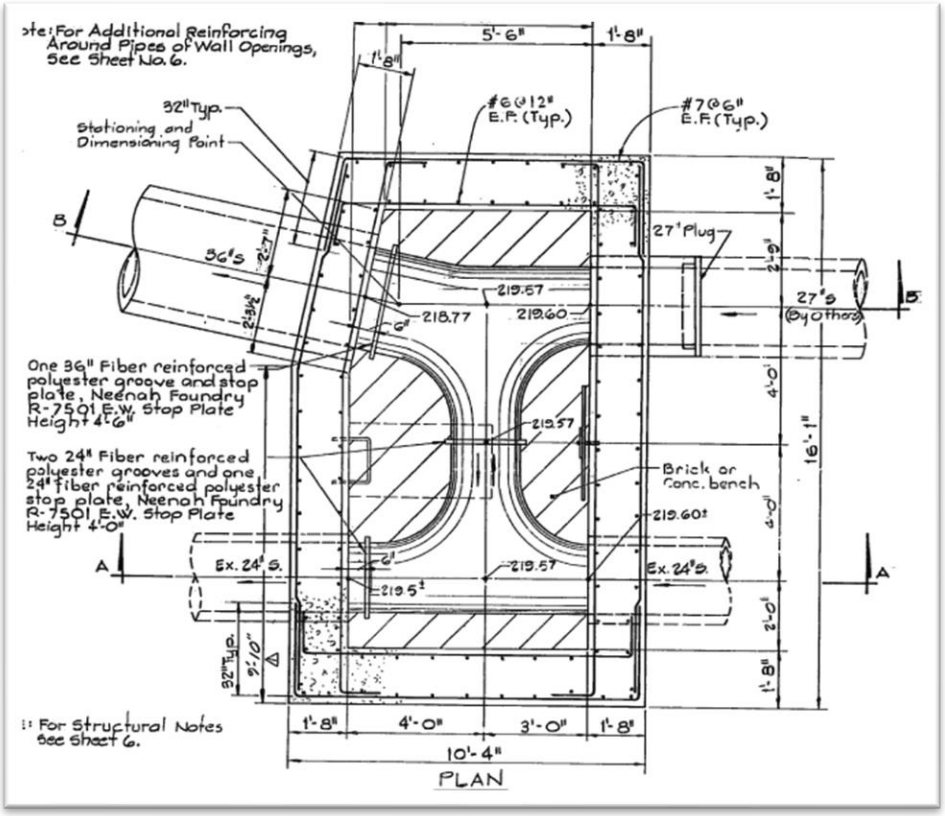


***Figure 2.7 Site 6 Map* NS560 Junction Chamber**

- ***Site #7 – Hollins Lane*** – This access point will allow for rehabilitation of the sewer lines underneath Lake Roland.

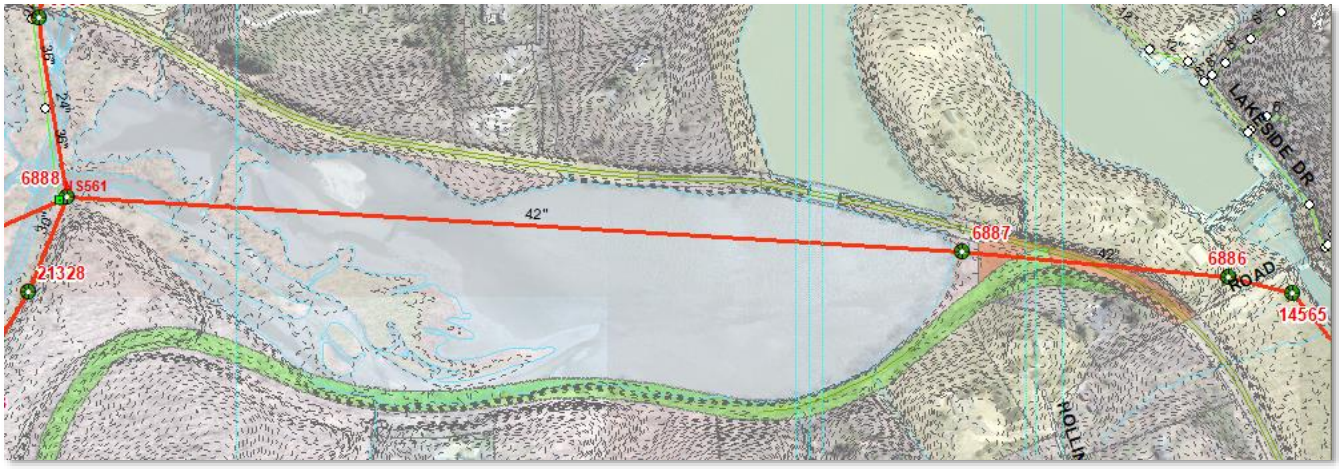


Figure 2.8 Site 7 Map

- *Access* – Access to Site #7 is from Hollins Lane (outlined at part of Site #5). The 4 segments in this site are located within property owned by the City of Baltimore, the Lake Roland Protective Association, and the Mass Transit Administration. As discussed as part of Site #5, access to the site will occur through residential private property located at the end of Hollins Lane. Coordination and homeowner approval will be required to secure access for this project. All of the lines within this site are located within the Lake Roland County Park. Every effort will be made to identify methods/approaches to maintain park accessibility near and along project corridors during construction. There is a 10' existing utility easement over the pipeline, and a potential 50' limit of disturbance (LOD) is shown on the site map. A wide, stabilized access trail will be required along the LOD. This will be required to bring necessary lining equipment into the site. Access to this site will be in coordination with Site #5 and utilize the same access road to portions of the project.
- *Pipeline and Manhole Data Review* – The segments along this pipeline are approximately 4,030 LF total and are all 42" reinforced concrete cylinder pipe (RCCP). Record drawings show that all segments in this site have a consistent slope and there is an absence of drop manholes along the run. There is a possibility that this could allow for some sewers to be lined together and lessen the impact in certain locations. Review of CCTV inspection data shows no major defects along the pipeline run, but segments along the run have high rates of infiltration. All manholes within the site will require epoxy lining, which has a minimal LOD footprint impact.
- *Site Grade* – Each segment in this site has differing slopes. Segment 6888-6887 runs underneath Lake Roland, segment 6887-6886 is a steep slope, and segment 6886-14565 has a relatively flat slope. The access location on Hollins Lane has a steep slope to reach the project area. This access location was chosen due to the slope being the most manageable compared to the surrounding area. A stabilized

construction entrance to deal with the steep slopes will be a necessity. Some segments in this site are within 20' of the stream and will require special permitting due to the environmental impacts.

- *Bypass Capability* –A pump staging area of 30'x50' is shown on the Site #7 map in **Appendix C.** The bypass line for this site will be approximately 6,000 LF. Suction is anticipated to occur at structure NS561 with discharge to manhole 6885. The footprint for the bypass line is anticipated to run along the access trail, around the western perimeter of the Lake, and will be approximately 4' wide. As design progresses, further review of potential bypass routes will occur, including exploring the potential to float (or partially float) the bypass operation across the lake. An alternate alignment is shown on Sheet 8, Site #7 Alternate Alignment in Appendix C. This alternate alignment would reduce impacts to Park operations (including the dog park and future COVID-19 memorial) however it would result in greater cost and risk to the County. Further analysis will occur as design progresses.

- ***Site #8 – Light Rail Parking Lot*** – There is an existing utility trail off of the southeast corner of the MTA light rail parking lot. This trail can provide a good access point for the manholes along the north side of the Jones Falls.

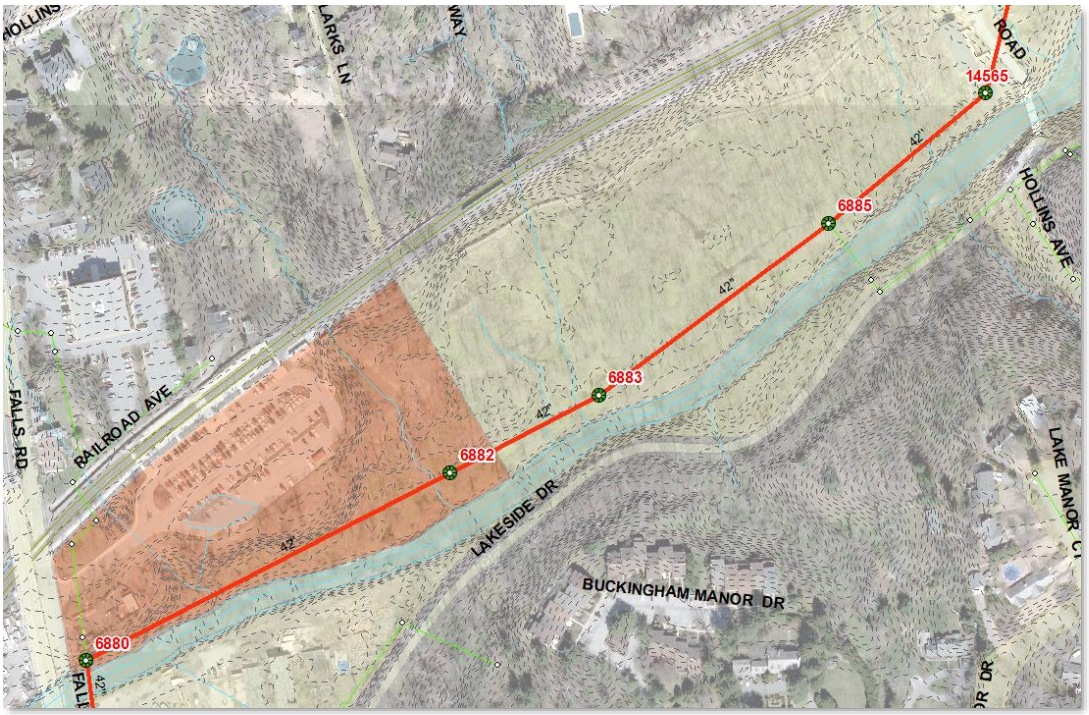


Figure 2.9 Site 8 Map

- *Access* – Access to Site #8 is from the light rail parking lot, a private property. The 5 segments in this site are located within property owned by private property owners and the Mass Transit Administration. Every effort will be made to identify methods/approaches to maintain park accessibility near and along project corridors during construction. There is a 10' existing utility

easement over the pipeline, and a potential 50' limit of disturbance (LOD) is shown on the site map. A wide, stabilized access trail will be required along portions of the LOD. This will be required to bring necessary lining equipment into the site.

- *Pipeline and Manhole Data Review* – The segments along this pipeline are approximately 2,150 LF total and are all 42" reinforced concrete cylinder pipe (RCCP). Record drawings show that all segments in this site have a consistent slope and there is an absence of drop manholes along the run. There is a possibility that this could allow for some sewers to be lined together and lessen the impact in certain locations. Review of CCTV inspection data shows no major defects along the pipeline run, but segments along the run have high rates of infiltration. Manhole 6880 will require replacement of the frame and cover, while all will require epoxy lining, which has a minimal LOD footprint impact.
- *Site Grade* – The slope along this access road and the sewer lines are relatively flat. MH6880 is located down a steep slope and will be difficult to access. To meet this challenge, it is proposed that the line be CIPP lined from the downstream manhole 6879. All segments in this site are within 50' of the stream and may require special permitting due to the environmental impacts.
- *Bypass Capability* – A pump staging area of 30'x50' is shown on the Site #8 map in **Appendix C**. The bypass line for this site will be approximately 2,500 LF with three tie ins for collection sewers that connect to manholes along the alignment. Suction is anticipated to occur at manhole 6886 with discharge to manhole 16379. The footprint for the bypass line which will run along the access trail and along water bodies will be approximately 4' wide. Environmental permitting will be required to run the HDPE bypass mains through the potential wetlands and water bodies. The possibility also exists to route the bypass along Lakeside Drive. While this would result in fewer environmental impacts, it may impact traffic to the park. Further analysis will occur as design progresses.

- ***Site #9 – Falls Road – Private Property*** –All properties are currently operating businesses, and construction will require coordination.
  - *Access* – Access to Site #9 is from various private properties along Falls Road. Every one of the 7 segments included in this site are located on private property. Access can be gained off Falls Rd or Fairfield Ave. Access agreements will need to be obtained in order to complete this work. Further design will aim to minimize the number of access points and property agreements that will be needed. There is a 10' existing utility easement over the pipeline, and a potential 50' limit of disturbance (LOD) is shown on the site map. A wide, stabilized access trail will be required along portions of the LOD. This will be required to bring necessary lining equipment into the site.

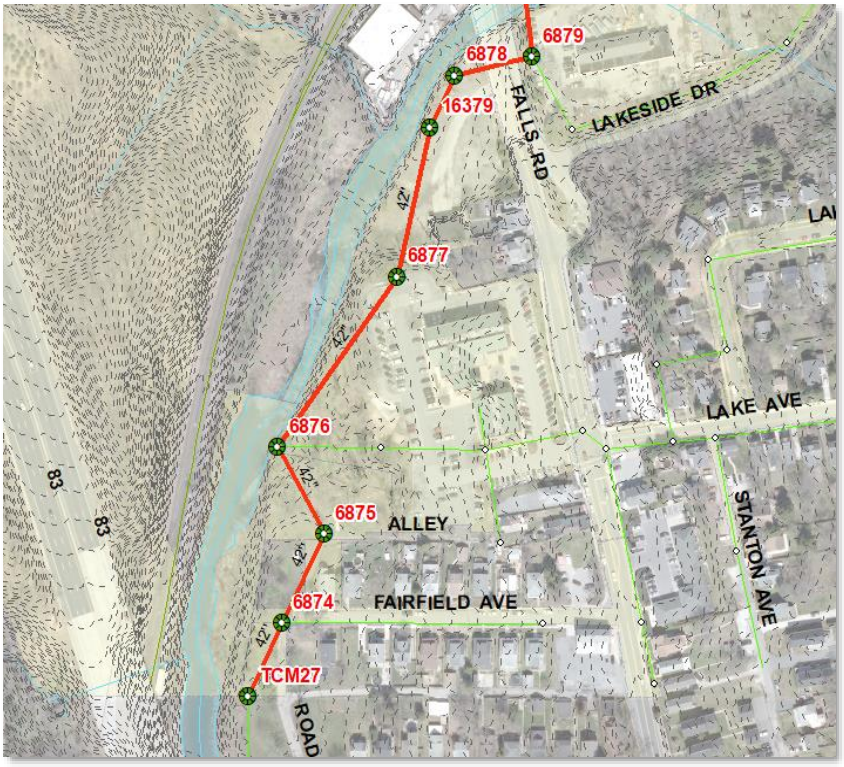


Figure 2.10 Site 9 Map

- *Pipeline and Manhole Data Review* – The segments along this pipeline are approximately 1,302 LF total and are all 42" reinforced concrete cylinder pipe (RCCP). Record drawings show that all segments in this site have a consistent slope and there is an absence of drop manholes along the run. There is a possibility that this could allow for some sewers to be lined together and lessen the impact in certain locations. Review of CCTV inspection data shows no major defects along the pipeline run, but segments along the run have high rates of infiltration. Two (2) manholes (6878 and 6879) will require new frame and covers and to be raised above grade, while all will require epoxy lining, which has a minimal LOD footprint impact.

- *Site Grade* – The slope along the majority of the lines is small and the area is relatively flat. There are manholes that are located within 10' of Jones Falls and access to these may pose a greater challenge due to the slope of the streambank.

- *Bypass Capability* – A pump staging area of 30'x50' is shown on the Site #9 map in **Appendix C.** The bypass line for this site will be approximately 2,000 LF with three (3) tie-ins for collection sewers that connect to manholes along the alignment. Suction is anticipated to occur at manhole 6879 with

discharge to the first City manhole downstream of TCM27. The footprint for the bypass line which will run along the access trail will be approximately 4' wide.

2.8 PERMITTING EVALUATION

An initial desktop screening of asset locations was conducted to preliminarily identify permits which may be required for the successful completion of this project. The project includes assets which are located in a variety of environments including, but not limited to: county-maintained roads, state-maintained roads, non-public rights-of-way, and environmentally sensitive areas. The desktop review consulted the following resources:

- Available County GIS
- High Resolution Aerial Photography
- Natural Resource Conservation Service (NRCS) – Soil Survey
- U.S. Fish and Wildlife Service (USFWS) – National Wetland Inventory Mapping
- Maryland Environmental Resource and Land Information Network (MERLIN)

The Permit evaluation recommendations are split into two areas for this report: environmental, and non-environmental.

Environmental

The purpose of the evaluation into environmental permitting was to identify the potential for project-related impacts to natural resources in the vicinity of the affected assets.

A review of the USFWS National Wetland Inventory Maps did identify the presence of federally mapped wetlands in the project area. Specifically, Estuarine and Marine Wetland, Freshwater Forested/Shrub Wetland and Freshwater Emergent Wetland were identified at and near the project site. Linear freshwater wetlands (Palustrine, forested, seasonally flooded) were identified at and near the project using the Maryland MERLIN environmental mapping tool. The MERLIN results suggest the potential for regulated freshwater wetlands at the site. High resolution aerial photography identified the presence of forest and riparian habitat in the vicinity of the project area as well as water features inclusive of the Chesapeake Bay Watershed.

The results of the desktop review indicate that the following environmental permits and submittals may be required for this project:

- Joint Federal/State Permit for Alteration of Floodplain, Waterways and Non-tidal and Tidal Wetland in Maryland (Maryland Department of Environment and the U.S. Army Corps of Engineers).
- Forest Stand Delineation (Baltimore County Environmental Protection and Sustainability Office)
- Forest Conservation Plan (Baltimore County Environmental Protection and Sustainability Office)

- Erosion and Sediment Control Permit (Baltimore County Soil Conservation District)
- Grading Plan (Baltimore County Environmental Protection and Sustainability Office)

Other approvals may be required as additional information (e.g., presence of sensitive species and/or cultural resources) and rehabilitation design becomes available.

Non-Environmental

The focus of the evaluation into non-environmental permitting was to determine if any assets in the project are located on properties controlled by agencies that may require additional permits to complete the rehabilitation recommendations. This evaluation was performed using the County's "Parcels" GIS shapefile and high-resolution aerial photography.

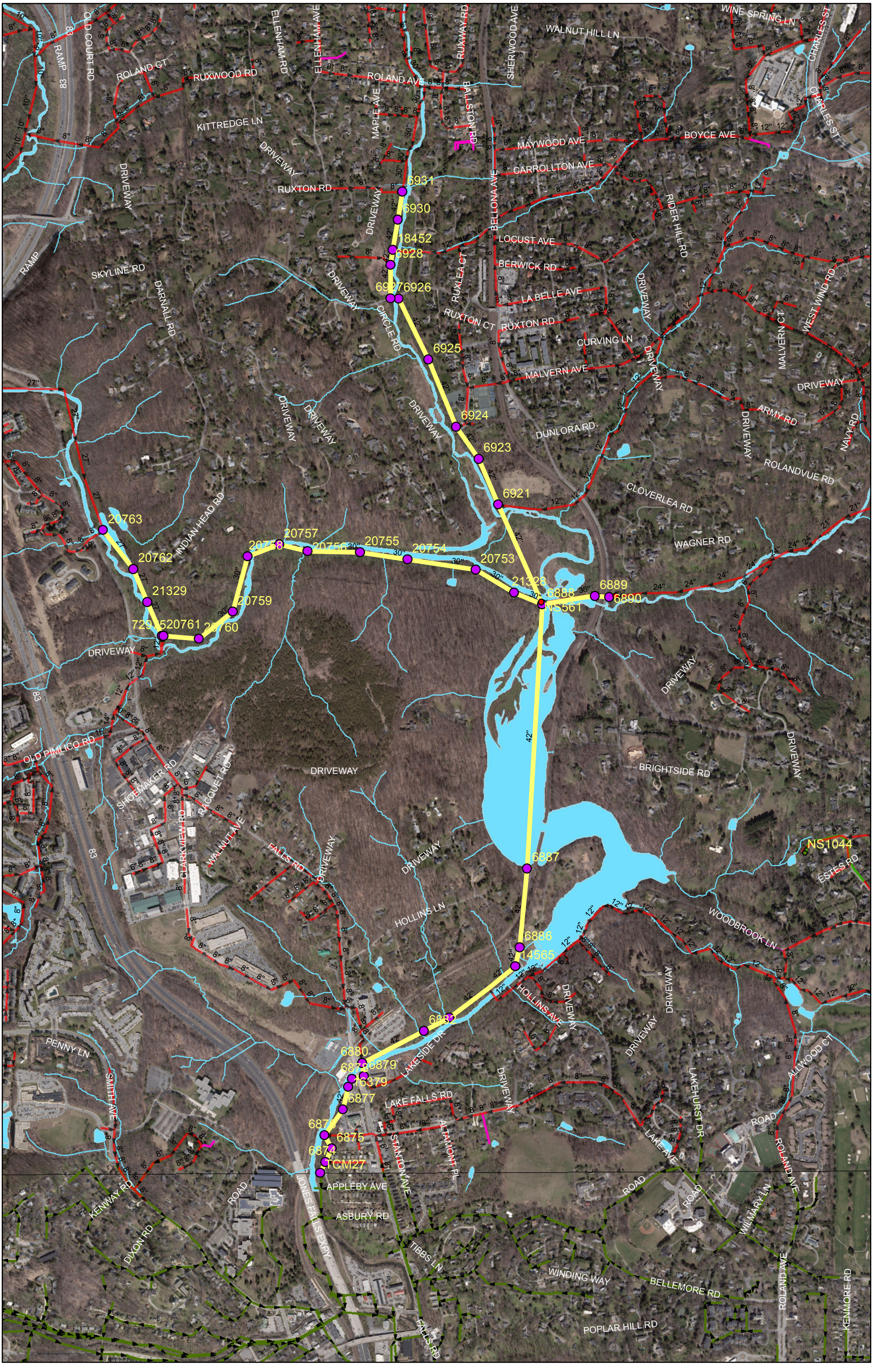
It is possible that rehabilitation activities will be performed on assets within the Maryland Transit Authority (MTA) rights-of-way, and coordination and permitting to access these sites may be required. It is anticipated that one or more SHA Utility Permit(s) will be required for this project. Additionally, further correspondence with the MTA will be necessary to facilitate rehabilitation activities within the MTA right-of-way and to identify any further access requirements. As the assets within the right-of-way are identified for trenchless rehabilitation and are not expected to require any excavation at this time, some barriers for permitting should be reduced. Excavation activities within (or in the vicinity) of railways often require additional design, coordination, and construction efforts to accommodate design requirements and criteria dictated by the entity.

Based upon a review of applicable regulations, location of assets, and work to be performed, as well as the desktop review of available resources, the only non-environmental approvals identified for the project, thus far, will be a State Highway Administration – Utility Permit

3. NEXT STEPS

Following County approval of this document, Ramboll will move forward with design activities. Ramboll will perform additional field investigations and review of LiDAR data for the potential staging areas that have been laid out in this report. Ramboll recommends that the two 24" manholes and both junction chambers be inspected by Ramboll staff. Should the County desire, Ramboll will also perform follow-up inspections of manholes that did not have available inspections data provided. Should no additional inspection activities be required, Ramboll will continue with the design for the project. Coordination with the public and any private stakeholders in the project will commence following completion of the 70% deliverables, at which time the design will be ready for presentation. A thorough review of the environmental impacts will begin and permitting requirements will be furthered.

APPENDIX A – PROJECT ASSET MAP

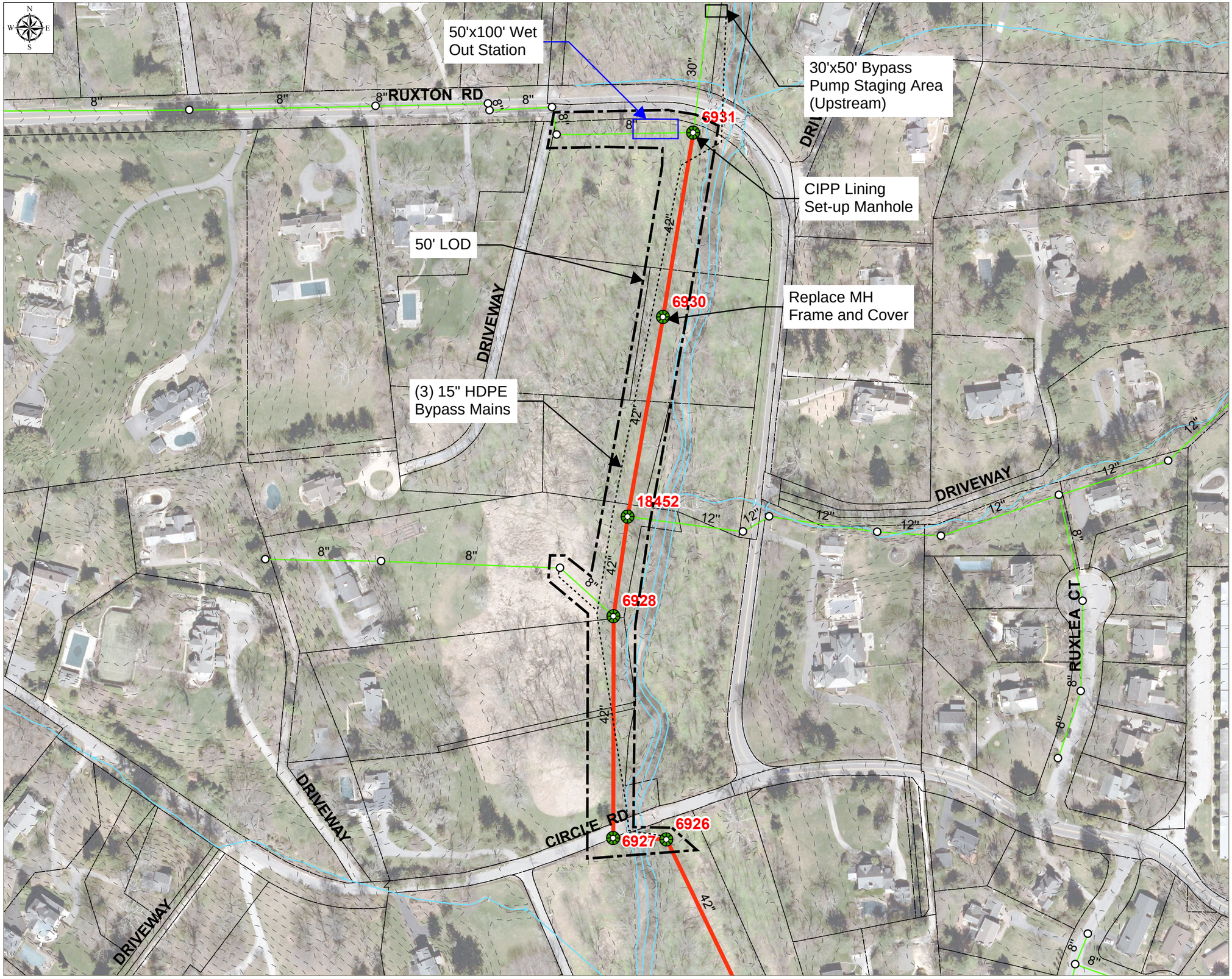

WINE SPRING LN
WALNUT HILL LN
CHARLES ST
OLD COURT RD
RAMP 83
ROLAND CT
RUXWOOD RD
ELLENHAM RD
ELLENHAM AVE
ROLAND AVE
RUXWAY RD
SHERWOOD AVE
BALLSTON RD
MAPLE AVE
KITTREDGE LN
DRIVEWAY
RUXTON RD
6931
6930
18452
6928
6927
6926
MAYWOOD AVE
CARROLLTON AVE
BOYCE AVE
BELLONA AVE
RIDER HILL RD
LOCUST AVE
BERWICK RD
LA BELLE AVE
RUXLEA CT
RUXTON CT
CURVING LN
MALVERN AVE
MALVERN CT
WEST WIND RD
RAMP
SKYLINE RD
DARNALL RD
CIRCLE RD
6925
6924
6923
DUNLORA RD
ARMY RD
NAVY RD
ROLANDVUE RD
CLOVERLEA RD
WAGNER RD
6921
20763
20762
21329
20761
20760
20759
20758
20757
20756
20755
20754
20753
21328
6888
6889
6890
NS561
INDIAN HEAD RD
OLD PIMLICO RD
SHOEMAKER RD
RACQUET RD
CLARKVIEW RD
WALNUT AVE
FALLS RD
BRIGHTSIDE RD
6887
NS1044
ESTES RD
HOLLINS LN
WOODBROOK LN
6886
14565
HOLLINS AVE
6882
6880
6879
16379
6877
6876
6875
6874
TCM27
LAKESIDE DR
LAKE FALLS RD
STANTON AVE
ALTAMONT PL
LAKEHURST DR
LAKE AVE
ALLWOOD CT
ROLAND AVE
APPLEBY AVE
ASBURY RD
JONES FALLS EXPY
KENWAY RD
DIXON RD
SMITH AVE
PENNY LN
TIBBS LN
WINDING WAY
BELLEMORE RD
POPLAR HILL RD
KENMORE RD
WILMARY LN
ROAD
DRIVEWAY

APPENDIX B – PIPELINE AND MANHOLE PRELIMINARY REHABILIATION RECOMMENDATION TABLES

Segment	Meter Basin	Sewer Service Area	Diameter	Material	Pipe Length GIS	Preliminary Recommendation								Notes
						CIPP	Point Repair[1]	Replace[2]	Lateral Repair[3]	Lateral Replacement[4]	Clean/Re-CCTV	Inspection Data Could Not Be Downloaded	No Action	
6879-6878		45-51-00-00, 45-52-00-00	42	Concrete	135.98	135.98								
6880-6879		45-51-00-00,45-53-00-00	42	Concrete	145.99	145.99								
6876-6875		45-52-00-00	42	Concrete	165.06	165.06								
6875-6874		45-52-00-00	42	Concrete	165.55	165.55								
6877-6876		45-52-00-00	42	Concrete	349.68	349.68								
16379-6877		45-52-00-00	42	Concrete	255.2	255.2								
6878-16379		45-52-00-00	42	Concrete	96.23	96.23								
6874-TCM27		45-52-00-00	42	Concrete	135.21	135.21								
6885-6883		45-54-00-00	42	Concrete	537.73	537.73								
6883-6882		45-54-00-00	42	Concrete	314.73	314.73								
6886-14565		45-54-00-00, 45-55-02-00	42	Concrete	214.21	214.21								
6887-6886		45-54-00-00, 45-56-00-00	42	Concrete	872.24	872.24								
6882-6880		45-54-00-00,45-53-00-00	42	Concrete	769.21	769.21								
14565-6885		45-55-01-00, 45-55-02-00	42	Concrete	382.83	382.83								
6888-6887		45-56-00-00	42	Concrete	2918.09	2918.09								
NS561-6888		45-56-00-00	42	Concrete	27.36	27.36								
6889-6888		45-56-00-00, 45-58-01-00	24	Concrete	589.42	589.42								
21328-6888		45-56-00-00, 45-60-00-00	30	Concrete	334.3	334.3								
6890-6889		45-58-01-00	24	Cast Iron	156.47	156.47								
NS560-6890		45-58-01-00	24	Concrete	74.18	74.18								
6925-6924		45-59-02-00	42	Concrete	801.91	801.91								
6924-6923		45-59-02-00	42	Concrete	432.77	432.77								
6923-6921		45-59-02-00	42	Concrete	547.01	547.01								
6921-NS561		45-59-02-00,45-56-00-00	42	Concrete	1175.03	1175.03								
18452-6928		45-59-04-00	42	Concrete	167.69	167.69								
6927-6926		45-59-04-00	42	Concrete	89.54	89.54								
6928-6927		45-59-04-00	42	Concrete	369.64	369.64								
6926-6925		45-59-04-00,45-59-02-00	42	Concrete	747.25	747.25								
6931-6930		45-59-06-00	42	Concrete	311.71	311.71								
6930-18452		45-59-06-00,45-59-04-00	42	Concrete	338.32	338.32								
20760-20759		45-60-00-00	30	Concrete	476.27	476.27								
20759-20758		45-60-00-00	30	Concrete	630.6	630.6								
20758-20757		45-60-00-00	30	Concrete	371.22	371.22								
20757-20756		45-60-00-00	30	Concrete	322.52	322.52								
20756-20755		45-60-00-00	30	Concrete	577.39	577.39								
20755-20754		45-60-00-00	30	Concrete	529.84	529.84								
20754-20753		45-60-00-00	30	Concrete	760.3	760.3								
20753-21328		45-60-00-00	30	Concrete	494.78	494.78								
72975-20760		45-60-00-00,45-62-01-00	27	Concrete	392.21	392.21								
20761-72975		45-62-01-00	27	Concrete	20.07	20.07								
20762-21329		45-63-00-00	27	Concrete	395.39	395.39								
21329-20761		45-63-00-00,45-62-01-00	27	Concrete	404.35	404.35								
20763-20762		45-63-00-00,45-65-00-00	27	Concrete	542.54	542.54								

Asset ID	SSA	Depth	Replace F/C (EA)	Epoxy Coating of Manholes1 (LF)	Replace MH (LF)	Field Confirm / Reinspect (EA)	No Action (EA)	Comments
6874	45-52-00-00	11.6		11.6				
6875	45-52-00-00	14.76			14.76			
6876	45-52-00-00	12.5		12.5				
6877	45-52-00-00	25.3		25.3				
6878	45-52-00-00	14.3	x	14.3				
6879	45-51-00-00	11.76	x	11.76				
6880	45-53-00-00	14.65	x	14.65				
6882	45-54-00-00	14.86		14.86				
6883	45-54-00-00	14.18		14.18				
6885	45-55-01-00	14.8		14.8				
6886	45-54-00-00	15.2		15.2				
6887	45-56-00-00	24.3		24.3				
6888	45-56-00-00	17.6		17.6				
6889	45-58-01-00	12.75		12.75				
6890	45-58-01-00	15.8	x	15.8				
6921	45-59-02-00	16.64	x	16.64				
6923	45-59-02-00			0				
6924	45-59-02-00	15.28	x	15.28				
6925	45-59-02-00	14.9		14.9				
6926	45-59-04-00	15.64		15.64				
6927	45-59-04-00	14.36		14.36				
6928	45-59-04-00	13.6			13.6			
6930	45-59-06-00	11.9	x	11.9				
6931	45-59-06-00	14.88		14.88				
14565	45-55-02-00	12		12				
16379	45-52-00-00	14.8		14.8				
18452	45-59-04-00	14.65	x	14.65				
20753	45-60-00-00	16.3		16.3				
20754	45-60-00-00	11.4		11.4				
20755	45-60-00-00	16.7		16.7				
20756	45-60-00-00	10.2	x	10.2				
20757	45-60-00-00	10.85		10.85				
20758	45-60-00-00	12.4	x	12.4				
20759	45-60-00-00	16.16		16.16				
20760	45-60-00-00	11.32	x	11.32				
20761	45-62-01-00	11.18	x	11.18				
20762	45-63-00-00	16.95		16.95				
20763	45-65-00-00	12.6	x	12.6				
21328	45-60-00-00	18.6		18.6				
21329	45-63-00-00	11.62	x	11.62				
72975	45-62-01-00	11.62	x	11.62				
NS560	45-58-01-00							
NS561	45-56-00-00							
TCM27	45-52-00-00	14.4		14.4				

APPENDIX C – ACCESS SITES



LEGEND

- Manhole for Rehabilitation
- Manhole
- Contours
- Hydrology Line
- Sewer for Rehabilitation
- Gravity Sewer
- Parcels

Rehabilitation Requirements

- Bypass Pipe
- Wet Out Station
- Pump Station Area
- Limits of Disturbance

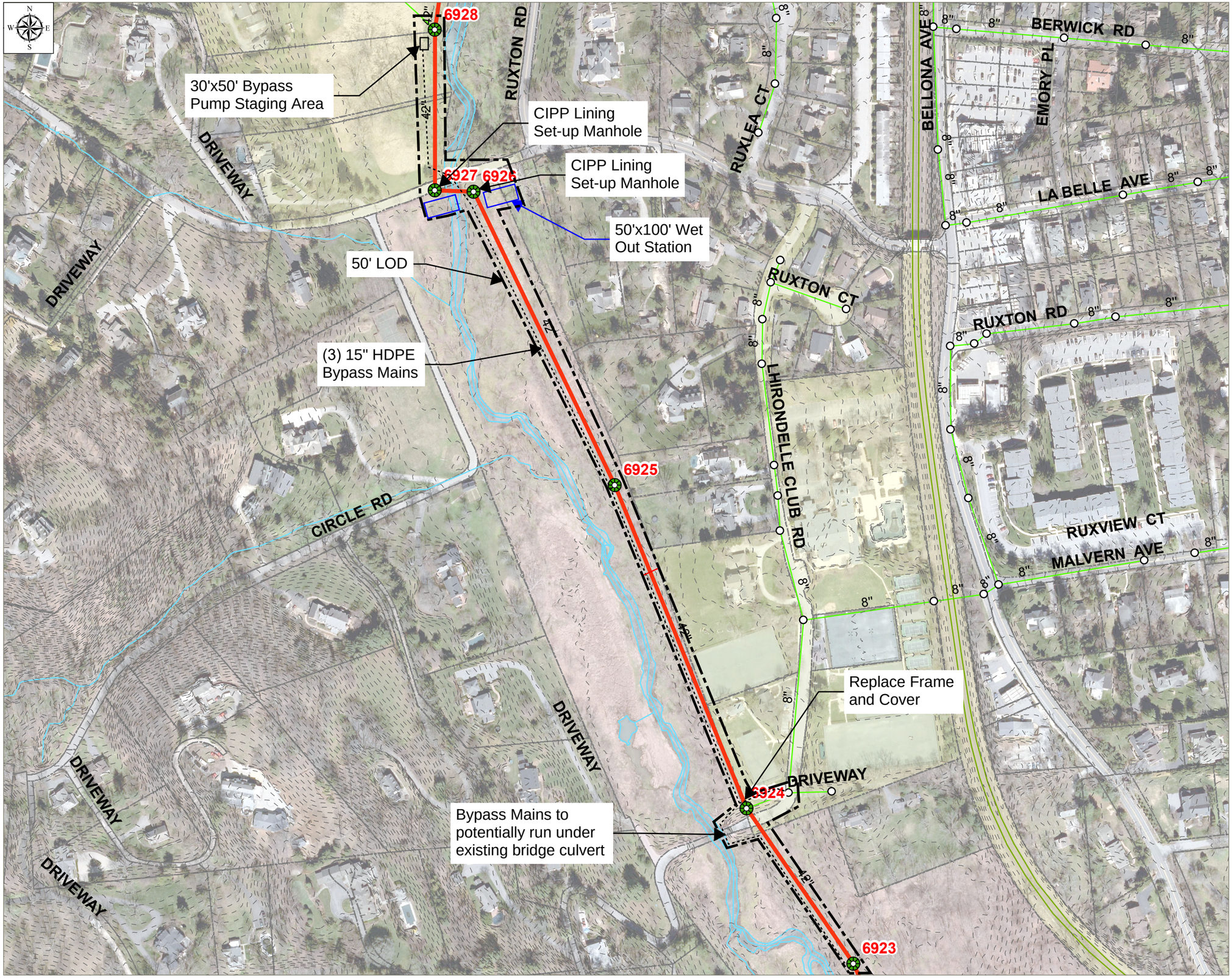
Note:
Preliminary layouts shown display one feasible option for construction. As design progresses, Limits of Disturbance(LOD), bypass piping routes and impacted parcels may change.

Scale = 1" = 200 '

BALTIMORE COUNTY
LAKE ROLAND SEWER REHABILITATION
SITE #1 MAP

SHEET 1

RAMBOLL US CORPORATION
A RAMBOLL COMPANY



LEGEND

- Sewer for Rehabilitation
- Manhole for Rehabilitation
- Manhole
- Contours
- LightRail
- Hydrology Line
- HydrologyPolygons
- Gravity Sewer

Impacted Parcel

- Private Property
- Baltimore County
- City of Baltimore

Rehabilitation Requirements

- Bypass Pipe
- Wet Out Station
- Pump Station Area
- Limits of Disturbance

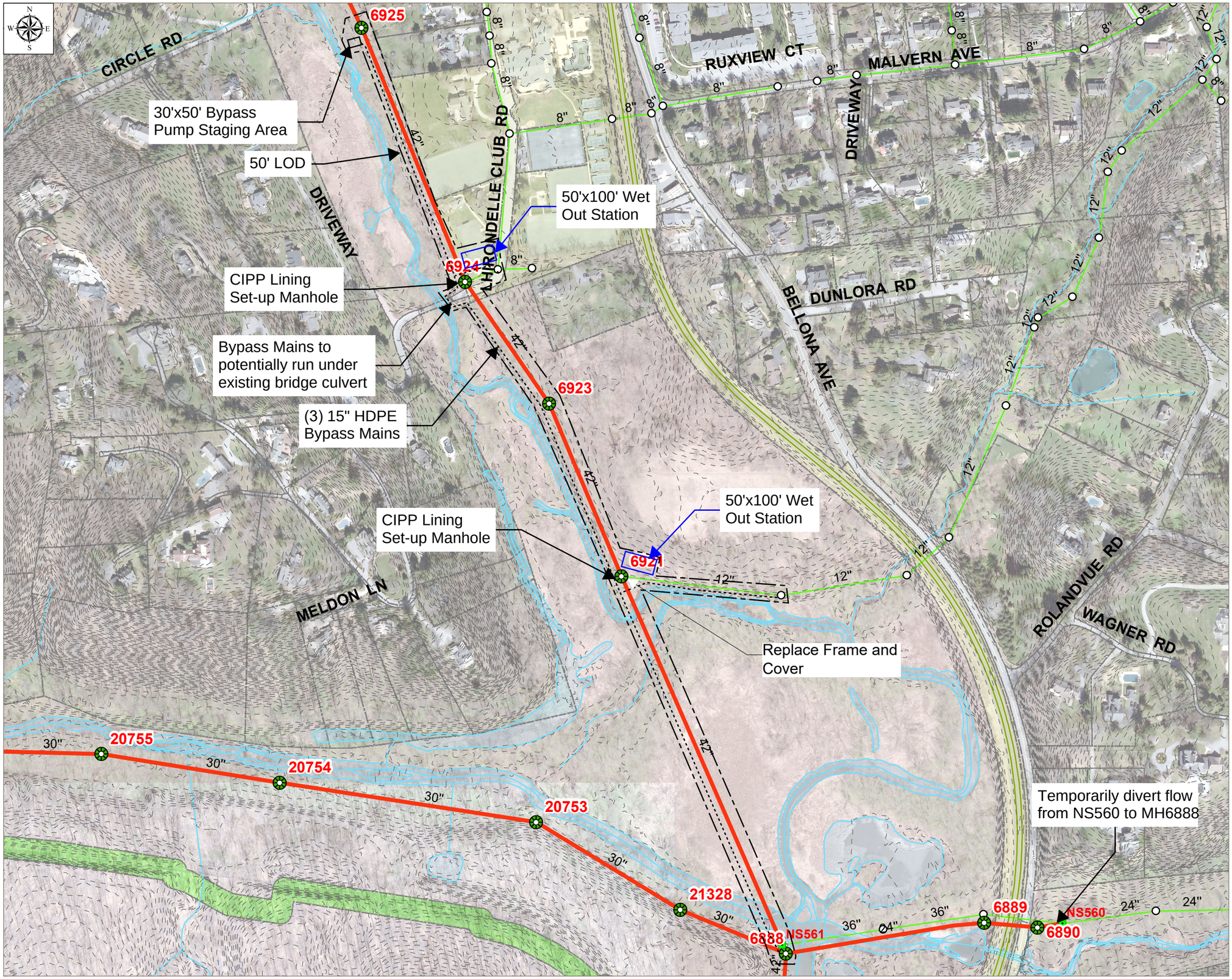
Note:
Preliminary layouts shown display one feasible option for construction. As design progresses, Limits of Disturbance(LOD), bypass piping routes and impacted parcels may change.

Scale = 1 " = 275 '

BALTIMORE COUNTY
LAKE ROLAND SEWER REHABILITATION
SITE #2 MAP

SHEET 2

RAMBOLL US CORPORATION
A RAMBOLL COMPANY



LEGEND

- Diversion Chamber for Rehabilitation
- Sewer for Rehabilitation
- Manhole for Rehabilitation
- Manhole
- Contours
- LightRail
- Hydrology Line
- HydrologyPolygons
- Gravity Sewer

Impacted Parcel

- Private Property
- Lake Roland Protective Association
- City of Baltimore

Rehabilitation Requirements

- Bypass Pipe
- Wet Out Station
- Pump Station Area
- Limits of Disturbance

Note:

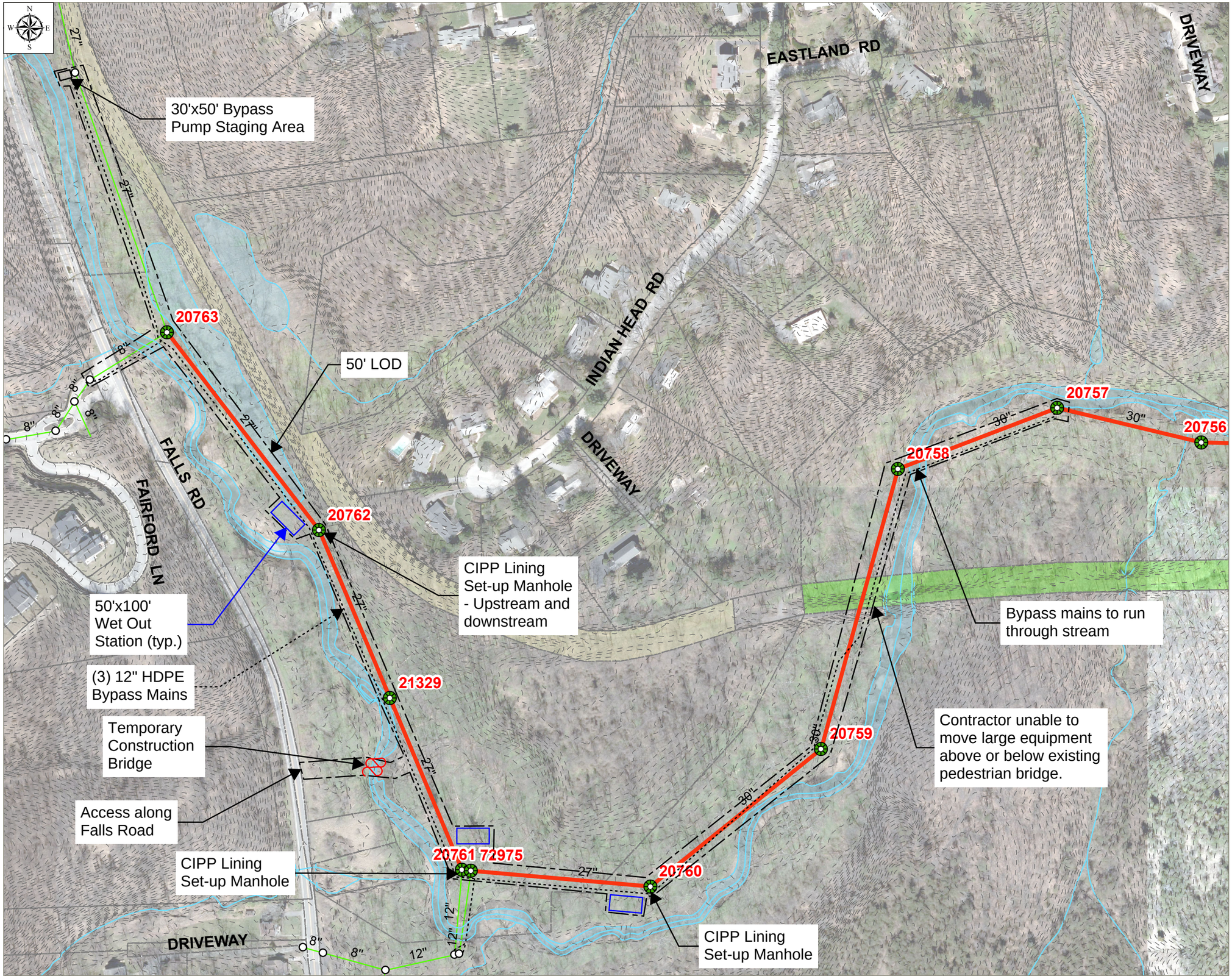
Preliminary layouts shown display one feasible option for construction. As design progresses, Limits of Disturbance(LOD), bypass piping routes and impacted parcels may change.

Scale = 1 " = 350 '

BALTIMORE COUNTY
LAKE ROLAND SEWER REHABILITATION
SITE #3 MAP

SHEET 3

RAMBOLL US CORPORATION
A RAMBOLL COMPANY



LEGEND

- Sewer for Rehabilitation
- Manhole for Rehabilitation
- Manhole
- Contours
- Hydrology Line
- HydrologyPolygons
- Gravity Sewer

Impacted Parcel

- Private Property
- Lake Roland Protective Association
- City of Baltimore

Rehabilitation Requirements

- Bypass Pipe
- Wet Out Station
- Pump Station Area
- Limits of Disturbance

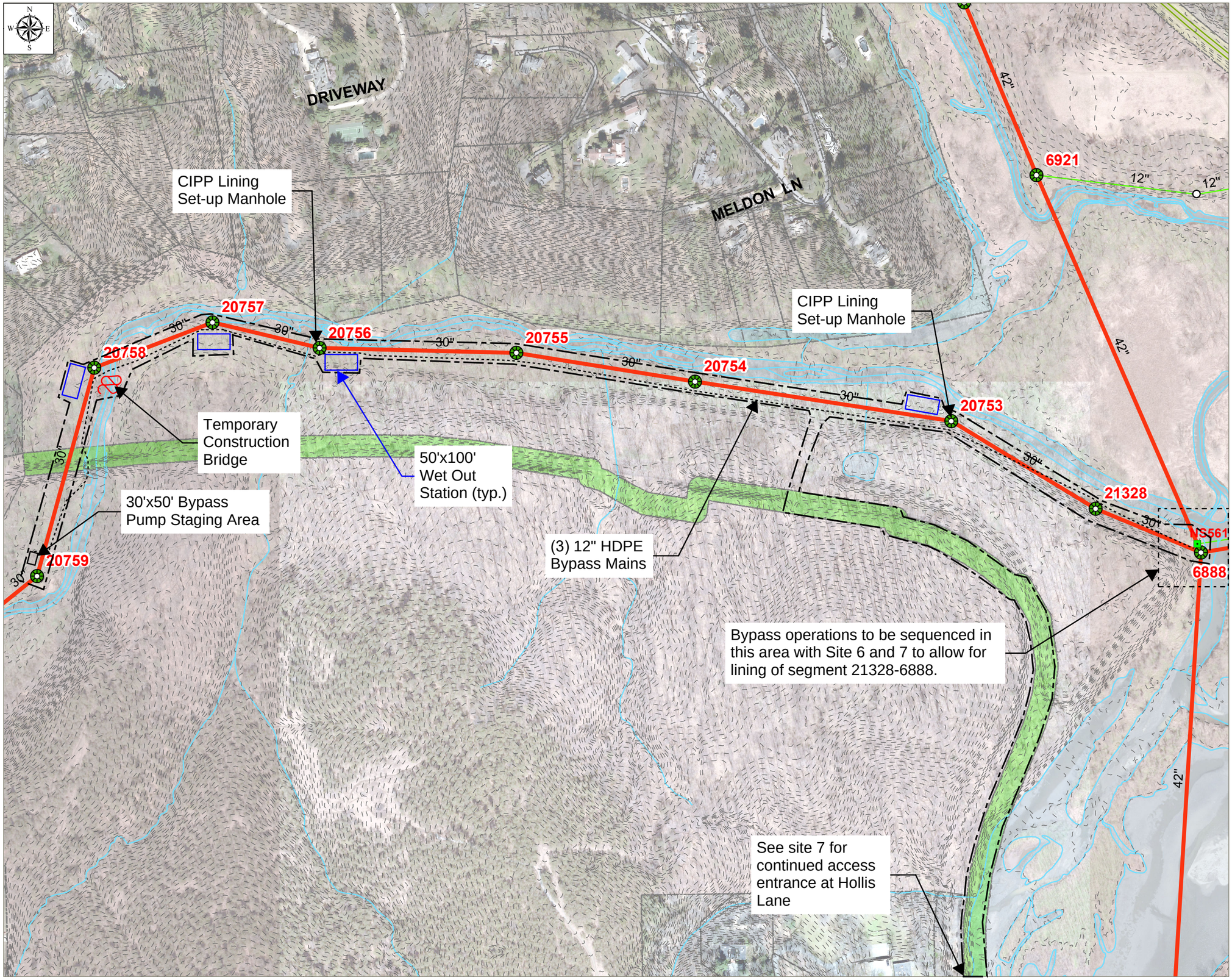
Note:
Preliminary layouts shown display one feasible option for construction. As design progresses, Limits of Disturbance(LOD), bypass piping routes and impacted parcels may change.

Scale = 1 " = 260 '

BALTIMORE COUNTY
LAKE ROLAND SEWER REHABILITATION
SITE #4 MAP

SHEET 4

RAMBOLL US CORPORATION
A RAMBOLL COMPANY



LEGEND

- Diversion Chamber for
- Sewer for Rehabilitation
- Manhole for Rehabilitation
- Manhole
- Contours
- LightRail
- Hydrology Line
- HydrologyPolygons
- Gravity Sewer

Impacted Parcel

- Private Property
- Lake Roland Protective
- City of Baltimore

Rehabilitation Requirements

- Bypass Pipe
- Wet Out Station
- Pump Station Area
- Limits of Disturbance

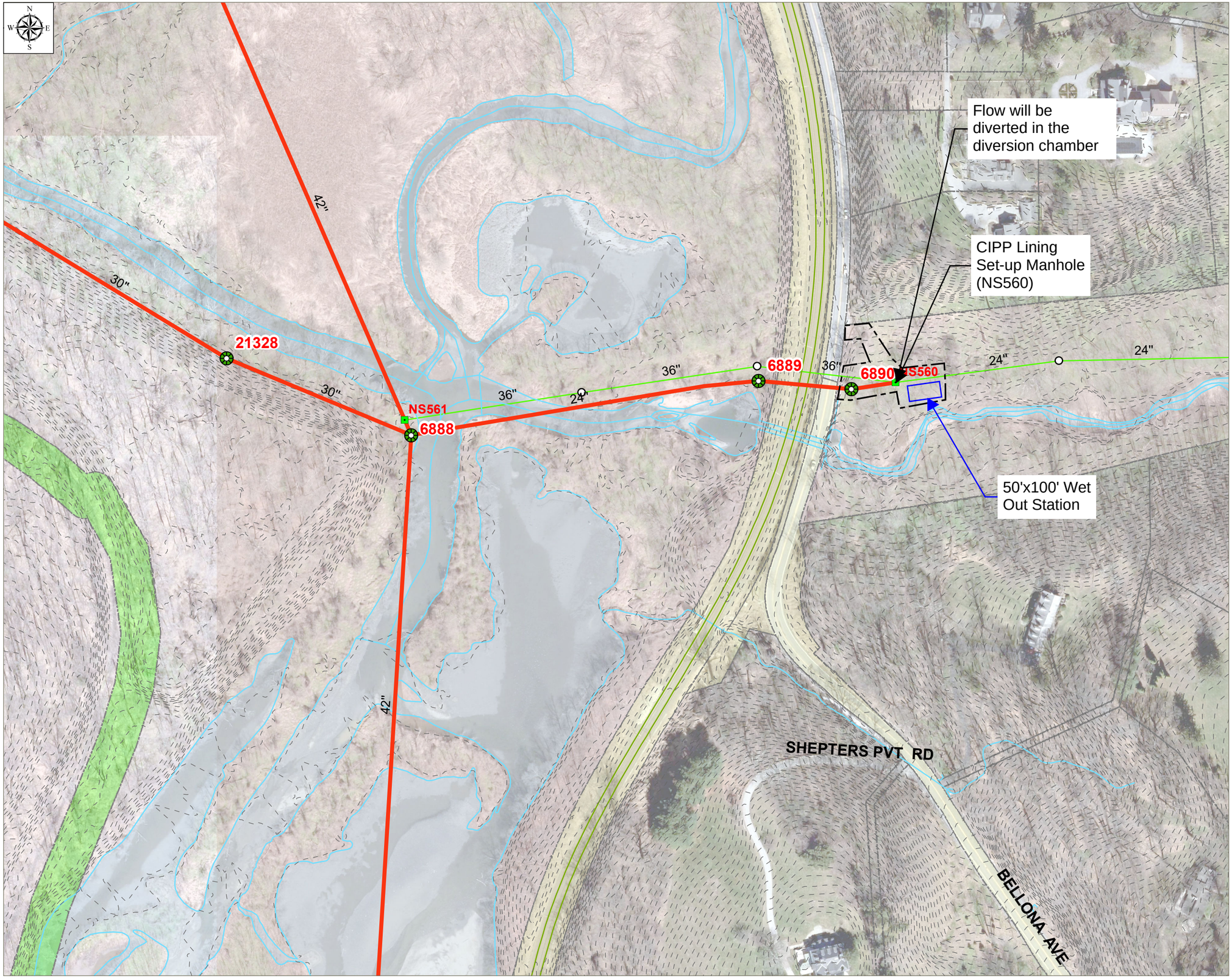
Note:
Preliminary layouts shown display one feasible option for construction. As design progresses, Limits of Disturbance(LOD), bypass piping routes and impacted parcels may change.

Scale = 1 " = 350 '

BALTIMORE COUNTY
LAKE ROLAND SEWER REHABILITATION
SITE #5 MAP

SHEET 5

RAMBOLL US CORPORATION
A RAMBOLL COMPANY



LEGEND

- Diversion Chamber for Rehabilitation
- Sewer for Rehabilitation
- Manhole for Rehabilitation
- Manhole
- Contours
- LightRail
- Hydrology Line
- HydrologyPolygons
- Gravity Sewer

Impacted Parcel

- Private Property
- Lake Roland Protective Association
- City of Baltimore

Rehabilitation Requirements

- Bypass Pipe
- Wet Out Station
- Pump Station Area
- Limits of Disturbance

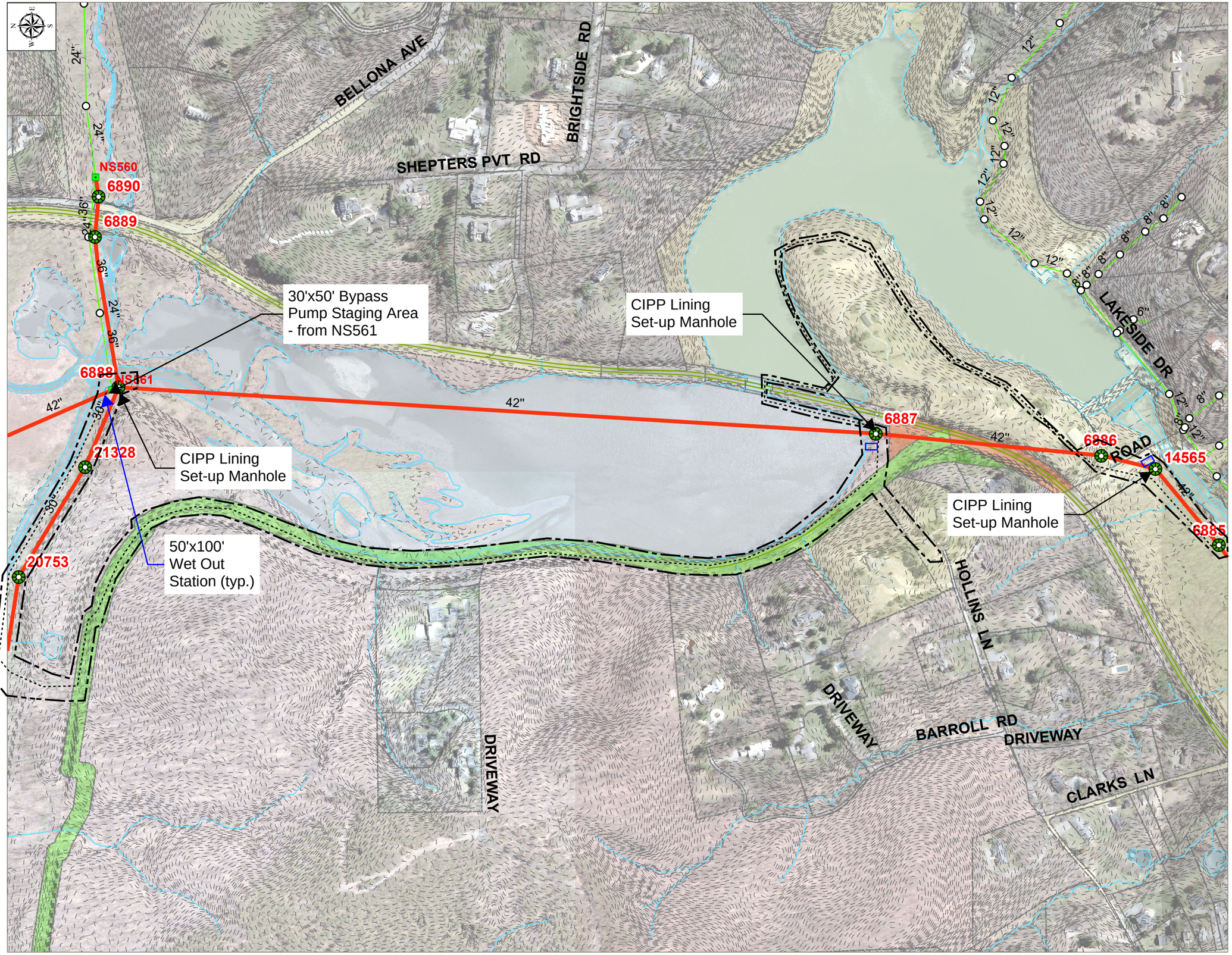
Note:
Preliminary layouts shown display one feasible option for construction. As design progresses, Limits of Disturbance(LOD), bypass piping routes and impacted parcels may change.

Scale = 1 " = 200 '

BALTIMORE COUNTY
LAKE ROLAND SEWER REHABILITATION
SITE #6 MAP

SHEET 6

RAMBOLL US CORPORATION
A RAMBOLL COMPANY



LEGEND

- Diversion Chamber for Rehabilitation
- Sewer for Rehabilitation
- Manhole for Rehabilitation
- Manhole
- Contours
- LightRail
- Hydrology Line
- HydrologyPolygons
- Gravity Sewer

Impacted Parcel

- Private Property
- Lake Roland Protective
- Mass Transit
- City of Baltimore

Rehabilitation Requirements

- Bypass Pipe
- Wet Out Station
- Pump Station Area
- Limits of Disturbance

Note:

Preliminary layouts shown display one feasible option for construction. As design progresses, Limits of Disturbance(LOD), bypass piping routes and impacted parcels may change.

Scale = 1 " = 450 '

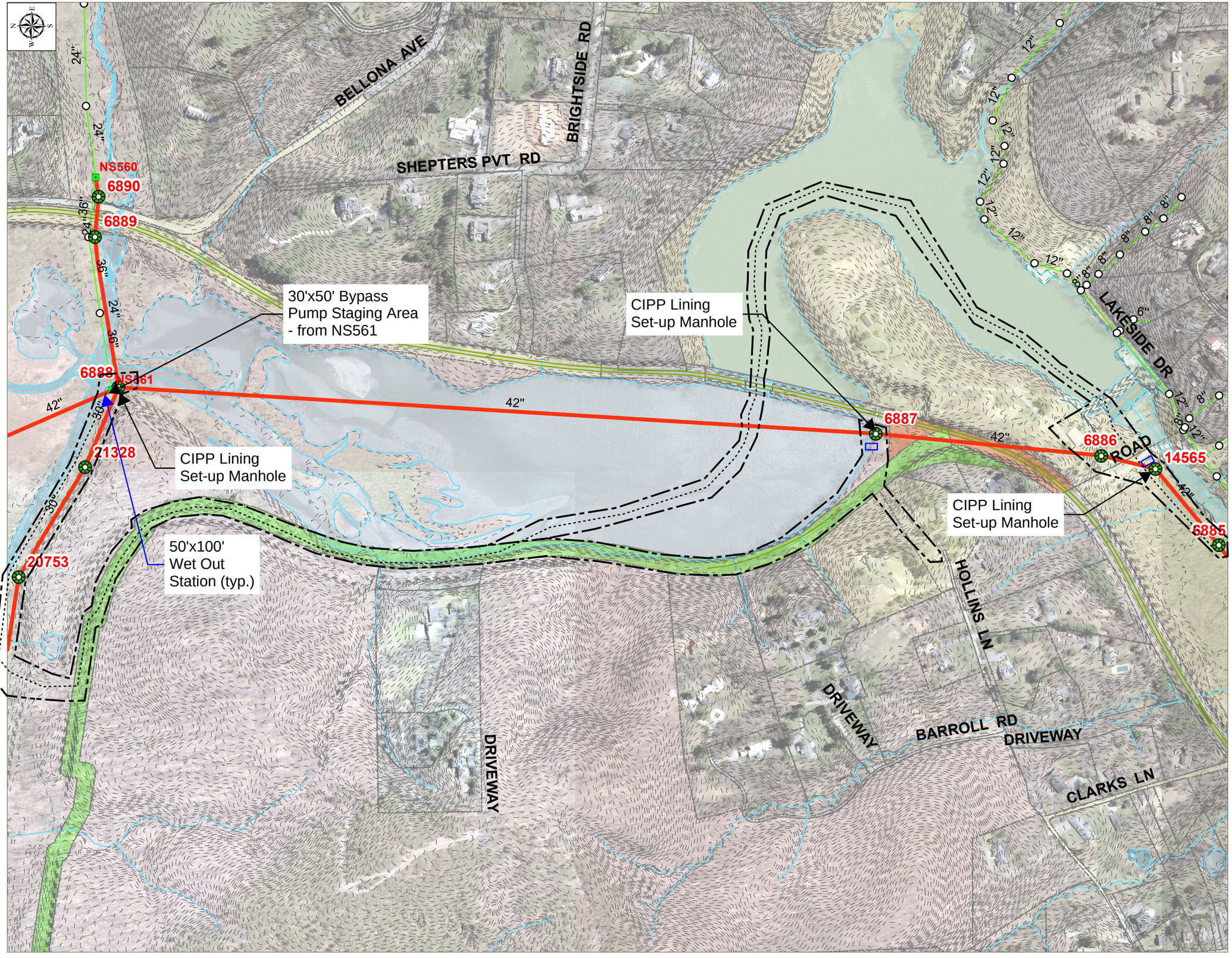
BALTIMORE COUNTY

LAKE ROLAND SEWER REHABILITATION

SITE #7 MAP

SHEET 7

RAMBOLL US CORPORATION
A RAMBOLL COMPANY



LEGEND

- Diversion Chamber for Rehabilitation
- Sewer for Rehabilitation
- Manhole for Rehabilitation
- Manhole
- Contours
- LightRail
- Hydrology Line
- HydrologyPolygons
- Gravity Sewer

Impacted Parcel

- Private Property
- Lake Roland Protective
- Mass Transit
- City of Baltimore

Rehabilitation Requirements

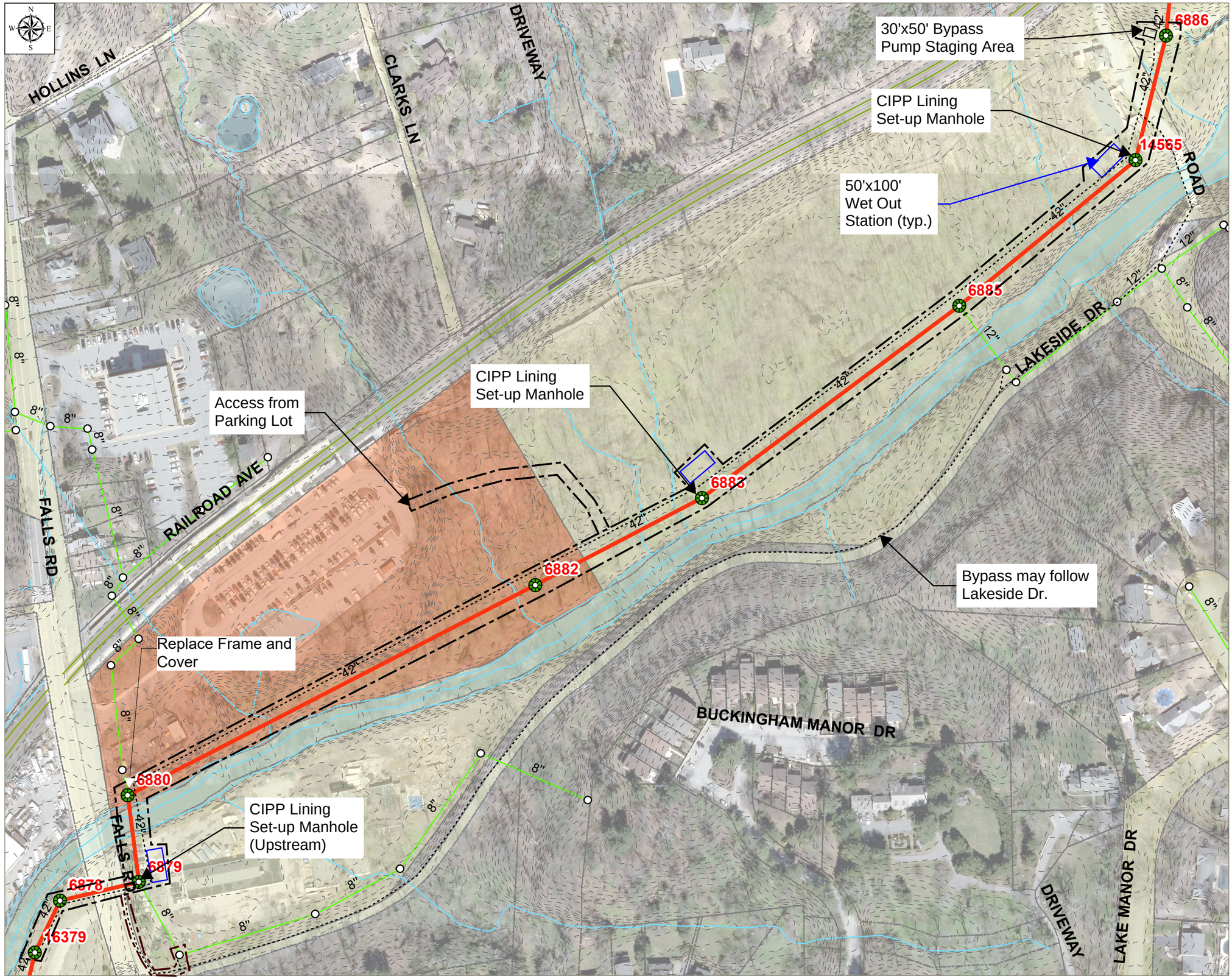
- Bypass Pipe
- Wet Out Station
- Pump Station Area
- Limits of Disturbance

Scale = 1 " = 450 '

BALTIMORE COUNTY
LAKE ROLAND SEWER REHABILITATION
SITE #7 MAP
(ALTERNATE ALIGNMENT)

SHEET 8

RAMBOLL US CORPORATION
A RAMBOLL COMPANY



LEGEND

- Sewer for Rehabilitation
- Manhole for Rehabilitation
- Manhole
- Contours
- LightRail
- Hydrology Line
- HydrologyPolygons
- Gravity Sewer

Impacted Parcel

- Private Property
- Mass Transit Administration

Rehabilitation Requirements

- Bypass Pipe
- Wet Out Station
- Pump Station Area
- Limits of Disturbance

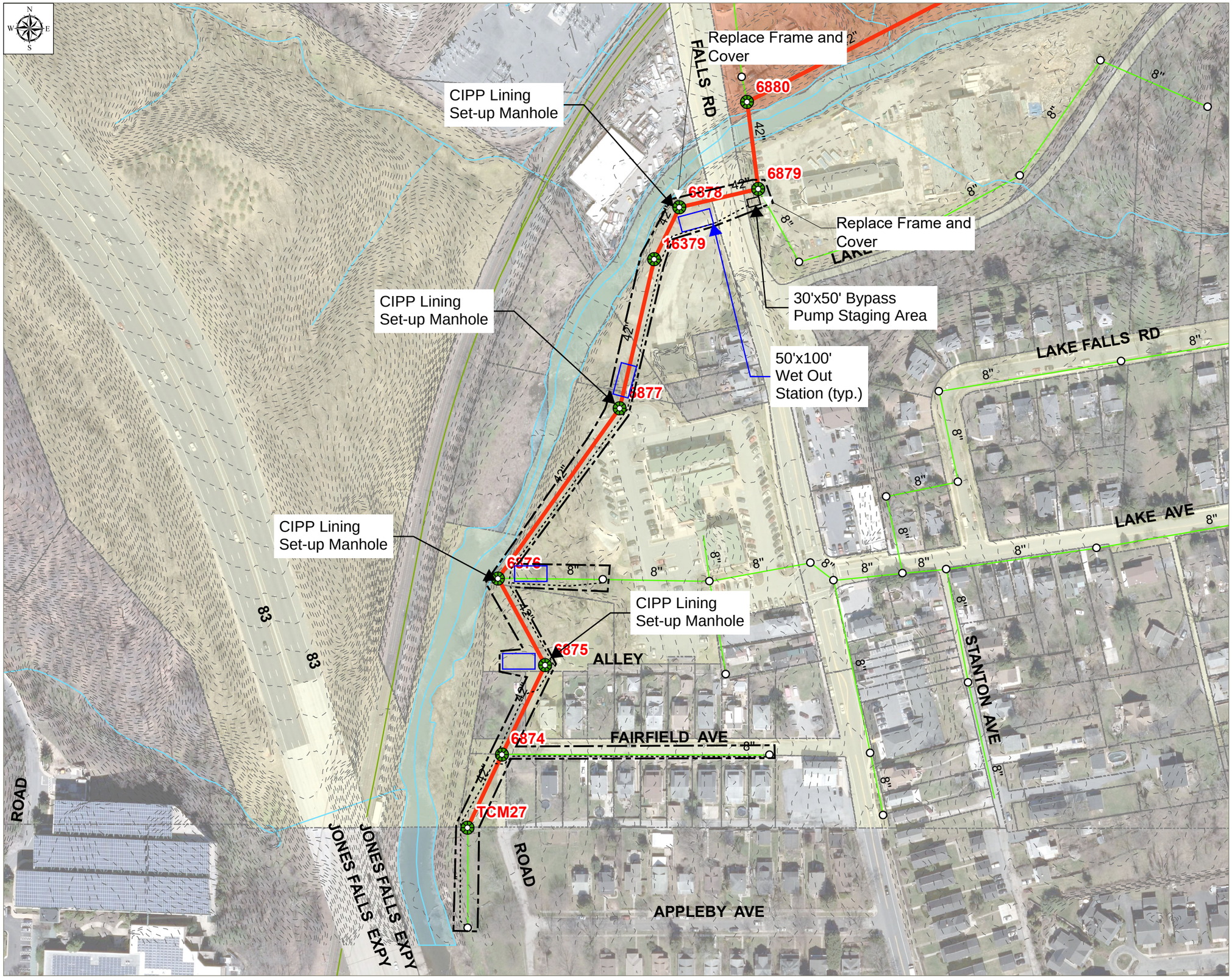
Note:
Preliminary layouts shown display one feasible option for construction. As design progresses, Limits of Disturbance(LOD), bypass piping routes and impacted parcels may change.

Scale = 1 " = 200 '

BALTIMORE COUNTY
LAKE ROLAND SEWER REHABILITATION
SITE #8 MAP

SHEET 9

RAMBOLL US CORPORATION
A RAMBOLL COMPANY



LEGEND

- Sewer for Rehabilitation
- Manhole for Rehabilitation
- Manhole
- Contours
- LightRail
- Hydrology Line
- HydrologyPolygons
- Gravity Sewer

Impacted Parcel

- Private Property
- Baltimore County
- Mass Transit

Rehabilitation Requirements

- Bypass Pipe
- Wet Out Station
- Pump Station Area
- Limits of Disturbance

Note:
Preliminary layouts shown display one feasible option for construction. As design progresses, Limits of Disturbance(LOD), bypass piping routes and impacted parcels may change.

Scale = 1 " = 200 '

BALTIMORE COUNTY
LAKE ROLAND SEWER REHABILITATION
SITE #9 MAP

SHEET 10

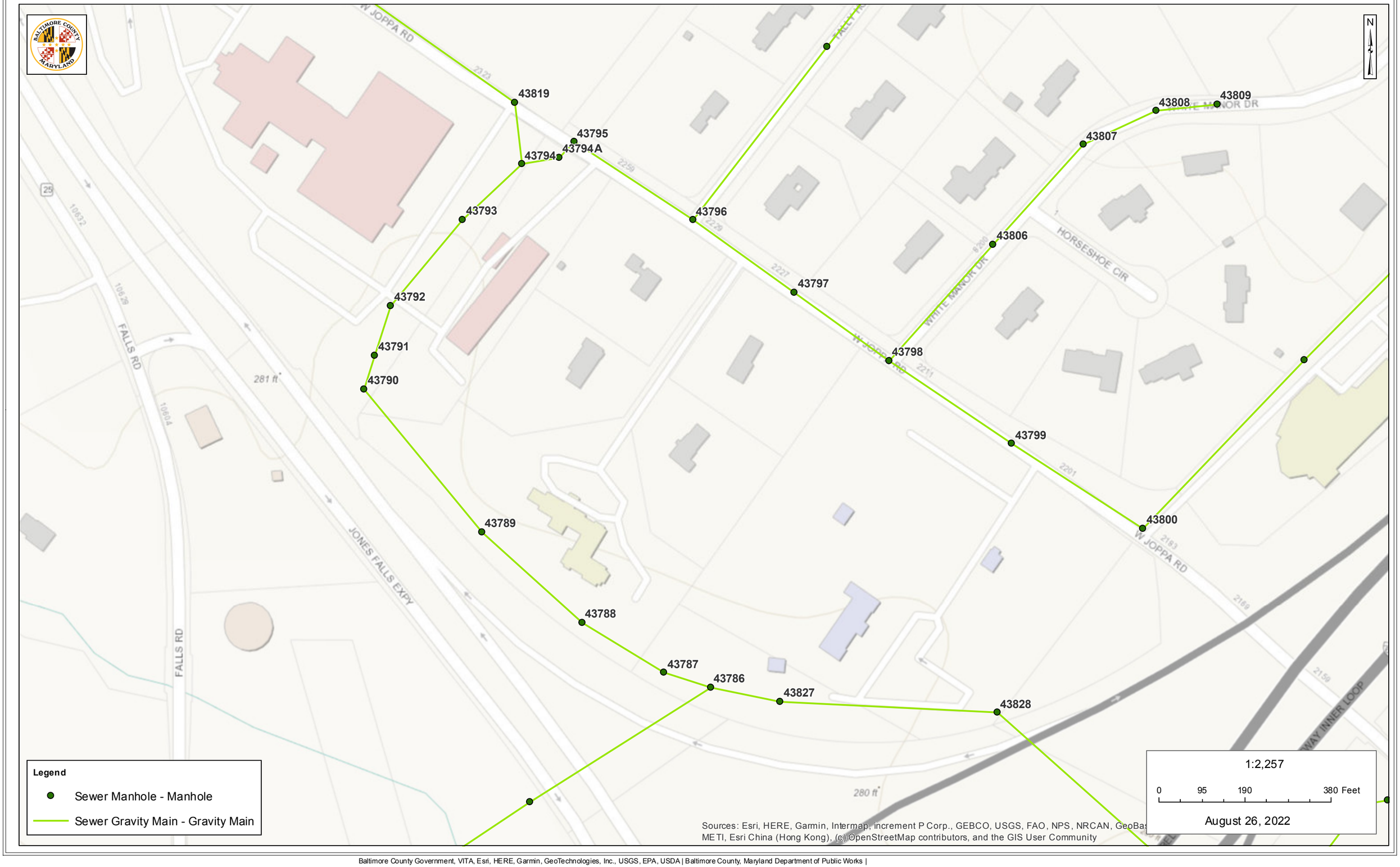
RAMBOLL US CORPORATION
A RAMBOLL COMPANY

Baltimore County - My Neighborhood



Baltimore County Government, VITA, Esri, HERE, Garmin, GeoTechnologies, Inc., USGS, EPA, USDA | Baltimore County, Maryland Department of Public Works |

Baltimore County - My Neighborhood



Baltimore County Government, VITA, Esri, HERE, Garmin, GeoTechnologies, Inc., USGS, EPA, USDA | Baltimore County, Maryland Department of Public Works |

<ichael McCann

From: Jeff Peluso
Sent: Monday, March 15, 2021 8:32 PM
To: D'Andrea Walker; Peter Gutwald
Cc: Dave Bayer
Subject: FW: Question on the sewer requirements and Johns Hopkins at Greenspring

D'Andrea/Pete,
I see this to be a big problem and Teresa Moore is asking. Can we do anything now to make JH uphold their obligations to the agreement?
Thanks,
Jeff

Jeffrey S. Peluso, P.E. | Acting Chief
Baltimore County DPW | Bureau of Engineering and Construction
111 West Chesapeake Ave., Room 225 | Towson, MD 21204 | [O] 410.887.3788
jpeluso@baltimorecountymd.gov

Exceptional Customer Service
Safe and Efficient Operations
Reliable Infrastructure

From: Dave Bayer <dbayer@baltimorecountymd.gov>
Sent: Monday, March 15, 2021 12:36 PM
To: Jeff Peluso <jpeluso@baltimorecountymd.gov>
Cc: Lisa Eicholtz <leicholtz@baltimorecountymd.gov>
Subject: Re: Question on the sewer requirements and Johns Hopkins at Greenspring

Hopkins' engineer just stopped working on the project.
They never got the permits that are needed, and they never acquired the off site right of way that is needed.
PAI issued the occupancy for the building without requiring that Hopkins fulfill their obligations in accordance with the agreement.
David

From: Jeff Peluso
Sent: Monday, March 15, 2021 10:46:53 AM
To: Dave Bayer
Cc: Lisa Eicholtz
Subject: FW: Question on the sewer requirements and Johns Hopkins at Greenspring

Hi Dave,
I recently talked to Lisa about this and I know you had been trying to get this rectified. What is the current status?
Thanks,
Jeff

Jeffrey S. Peluso, P.E. | Acting Chief

Baltimore County DPW | Bureau of Engineering and Construction
111 West Chesapeake Ave., Room 225 | Towson, MD 21204 | [O] 410.887.3788
jpeluso@baltimorecountymd.gov

Exceptional Customer Service
Safe and Efficient Operations
Reliable Infrastructure

From: Teresa Moore <teresa@thevpc.org>
Sent: Monday, March 15, 2021 10:33 AM
To: Jeff Peluso <jpeluso@baltimorecountymd.gov>
Subject: Question on the sewer requirements and Johns Hopkins at Greenspring

CAUTION: This message from teresa@thevpc.org originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Dear Jeff,

I have a board meeting tomorrow and will be covering the proposed 61-lot development near the intersection of Joppa and Falls.
As part of the county comments at the recent Concept Plan hearing, it has come to light that sewer upgrades required as part of the approvals for the surgical center at Johns Hopkins Medical at Greenspring Station, were never done.
During discussions and the hearing process – those that raised concerns about the failing sewer issue in this vicinity would be corrected before a building and occupancy permits would be approved.
It seems that never happened, but the building was built and is occupied.
Do you some time to discuss today or tomorrow? My board meeting is at 6 p.m. tomorrow and I anticipate lots of questions on this.

Teresa Moore
Executive Director
Valleys Planning Council
410-337-6877

Towson Copy Center

Fro□ □ Dave Bayer
Sent□ Monday□March 22□2021 2:56 PM
To□ Je□□Peluso□Lisa Eicholtz
S□□□ect□RE: Johns Hopkins/Greenspring Manor

1. Yes, as outlined in the MOU Section 2, Hopkins was to prepare the drawings, and get all of the permits and off-site right-of-way. Yes, we agreed to manage the Contract from Request to Advertise through construction after we received all of the Bid Ready Documents and the easements were acquired by Hopkins.
2. Yes.
3. Sanitary sewer overflows.
4. Storage (and DPW has been opposed to that option) would be one option, finding another location that avoids the capacity deficient areas would be another option, however, we believe that option would be unfeasible.
   Zero is the "breaking point" of number of units that could be built without causing an SSO.

   David

From: Jeff Peluso
Sent: Monday, March 22, 2021 1:58 PM
To: Dave Bayer <dbayer@baltimorecountymd.gov>; Lisa Eicholtz <leicholtz@baltimorecountymd.gov>
Subject: Johns Hopkins/Greenspring Manor

Good afternoon Dave/Lisa,

After having the meeting with the Administration today, we have the following questions:

1. Was Hopkins to prepare all plans and specifications along with permits for the their project? If so, were we (Engineering) sending it up to contracts? Who was responsible for securing the R/W?
2. Does this feed the Jones Falls sewershed (Lafferty)?
3. If Hopkins didn't do the improvements, what are the ramification of their new connection?
4. If Greenspring Manor were to continue through development, is there another way to provide capacity? Is there a "breaking point" for Greenspring Manor (no. of units)?

Thanks,
Jeff

Jeffrey S. Peluso, P.E. | Acting Chief
Baltimore County DPW | Bureau of Engineering and Construction
111 West Chesapeake Ave., Room 225 | Towson, MD 21204 | [O] 410.887.3788
jpeluso@baltimorecountymd.gov

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JOHN A. OLSZEWSKI, JR.
County Executive

D'ANDREA WALKER, *Acting Director*
Department of Public Works and Transportation

May 18, 2021

Chief, Environmental Enforcement Section
Environment & Natural Resources Division
US Department of Justice
1425 New York Avenue, NW
Washington DC 20530

Ms. Nina Rivera (3RC40)
Office of Regional Counsel
US Environmental Protection Agency – Region III
1650 Arch Street
Philadelphia PA 19103

Chief, (3ED32)
NPDES Section
Enforcement and Compliance Assurance Division
US Environmental Protection Agency – Region III
1650 Arch Street
Philadelphia PA 19103

Principal Counsel
Office of the Attorney General
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

Chief
Enforcement Division, Compliance Program
Water Management Administration
Maryland Department of the Environment
1800 Washington Boulevard
Baltimore MD 21230

XXIV Termination
CONSENT DECREE CIVIL NO. AMD 05-2028
(Reference DOJ Case No. 905-1-1-4402/2)
Dead Run Sewershed

As outlined within Section XXIV, Paragraph 81.A of the Consent Decree, Baltimore County is required to certify to the Environmental Protection Agency (EPA) and the Maryland Department of the Environment (MDE) completion of all obligations under Section V and Section X of the Consent Decree, and that the County has maintained compliance with all other requirements of the Consent Decree for a period of one (1) year following completion of the obligations under Section V.

This letter certifies that the obligations outlined in Paragraph 81.A. are considered complete for the Dead Run Sewershed.

If you have any questions, or require further information, please contact me at 410-887-3788.

Sincerely,

Jeffrey Peluso

Jeffrey S. Peluso, PE
Acting Chief, Bureau of Engineering and Construction

cc: D'Andrea Walker, Director, Department of Public Works
Ted DeBoda – Chief, Bureau of Utilities
Glenn Marrow – Baltimore County Law Office
Lisa Eicholtz – Chief, Sewer Design Section
Randolph Rollman/CD Admin – CD Program Management

JSP:DAB

Control Document No. 355

JOHN A. OLSZEWSKI, JR.
County Executive

D'ANDREA WALKER, *Acting Director*
Department of Public Works and Transportation

May 18, 2021

Chief, Environmental Enforcement Section
Environment & Natural Resources Division
US Department of Justice
1425 New York Avenue, NW
Washington DC 20530

Ms. Nina Rivera (3RC40)
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US Environmental Protection Agency – Region III
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Water Management Administration
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1800 Washington Boulevard
Baltimore MD 21230

XXIV Termination
CONSENT DECREE CIVIL NO. AMD 05-2028
(Reference DOJ Case No. 905-1-1-4402/2)
Tributary Sewersheds 26, 27, 43, 48, and 78

As outlined within Section XXIV, Paragraph 81.A of the Consent Decree, Baltimore County is required to certify to the Environmental Protection Agency (EPA) and the Maryland Department of the Environment (MDE) completion of all obligations under Section V and Section X of the Consent Decree, and that the County has maintained compliance with all other requirements of the Consent Decree for a period of one (1) year following completion of the obligations under Section V.

This letter certifies that the obligations outlined in Paragraph 81.A. are considered complete for the Tributary Sewersheds 26, 27, 43, 48 and 78.

If you have any questions, or require further information, please contact me at 410-887-3788.

Sincerely,

Jeffrey Peluso

Jeffrey S. Peluso, PE
Acting Chief, Bureau of Engineering and Construction

cc: D'Andrea Walker, Director, Department of Public Works
Ted DeBoda – Chief, Bureau of Utilities
Glenn Marrow – Baltimore County Law Office
Lisa Eicholtz – Chief, Sewer Design Section
Randolph Rollman/CD Admin – CD Program Management

JSP:DAB

Control Document No. 354

Department of Public Works and Transportation

2021 Basic Services Map
Sewer Deficient Areas
and
Areas of Concern

Legend

- Sewer Relief Points
- Area of Concern
- Deficient Area
- Commercial Revitalization Areas
- Towson Urban Center
- Urban Rural Demarcation Line
- County Boundary

#113 Marnat Road
#23 Southern Cross A
#23B Southern Cross B
#22 Alter Road
#24 Patterson Avenue
#99 Edmondson Avenue
#118 Overbrook & Medwick Garth
#116 Nunnery Lane
#117 Briarwood Road
#44 Redwood Avenue
#40 Briarcliff Road
#41 Aiken Avenue
#129 Queen Anne

BROOKLANDVILLE

RICHLYN MANOR

THIS MAP HAS BEEN ENACTED UNDER BILL NUMBER 32-21 AND IS PART OF THE BALTIMORE COUNTY ZONING REGULATIONS, 1955, AS AMENDED BY THE BILL ADOPTED MAY 7, 2021. EFFECTIVE MAY 17, 2021.

Julian E. Jones, Jr.

COUNTY COUNCIL OF BALTIMORE COUNTY

N W E S

SCALE 1 INCH = 4,000 Feet

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NOTE: The interpretation of the Basic Services Maps are subject to exceptions provided for in the Baltimore County Zoning Regulations, Article 4A Growth Management, Section 4A02 Basic Services Maps. These exceptions include those mapped in the County's geographic information system (GIS): the Urban and Rural Demarcation Line (URDL), Commercial Revitalization Districts (4A02.4.E.1.i), and the Towson Urban Center (4A02.4.E.1.j). The Towson Urban Center (Downtown Towson District) exists in the Master Plan 2020 in the Land Management Areas feature class.

Feature Class Production Dates

Sewer Relief Points	2021
Sewer Areas	2021
Commercial Revitalization Districts	2020
Towson Urban Center	2011
Urban Rural Demarcation Line	2012
Roads	2021
County Boundary	2008

Produced by the Baltimore County Department of Public Works and Transportation

North American Datum 1983 HARN, U.S. Survey Foot

Published August 2, 2021

BALTIMORE COUNTY GOVERNMENT
DEPARTMENT OF PUBLIC WORKS
INTER-OFFICE CORRESPONDENCE

DATE: January 6, 2021

TO: D'Andrea Walker, Acting Director
Department of Public Works

FROM: Jeffrey Peluso, PE, Acting Chief
Bureau of Engineering & Construction

SUBJECT: 2021 Basic Services Maps
Public Water and Sewer Status

In accordance with your request, we are furnishing an update for the 2021 Basic Services Map.

Water
No deficiencies are known to exist.

Sewer
All of the remaining sewer relief point locations are being metered. We have completed several rehabilitation projects and are now performing post-monitoring to determine the projects' effectiveness. In addition, we have projects still in design which will eventually eliminate the areas of concern.

Everyone should be aware that the removal of an area of special concern does not mean that an area has unlimited developmental potential. All developments are evaluated hydraulically on a case-by-case basis, and determinations are made to see if the development will need downstream supplementation.

JP:LKE

cc: Michael J. Mazurek – Chief, Water Design Section
Lisa K. Eicholtz – Sewer Design Section

S:\DPW\Restricted\Engineering Design\Engineering Design Sewer\Correspondence\Walker - 2021 Basic Services Maps 1-6-21.doc

Department of Public Works and Transportation

2022 Basic Services Map
Sewer Deficient Areas
and
Areas of Concern

Legend

- Sewer Relief Points
- Towson Urban Center
- Commercial Revitalization Areas
- Urban Rural Demarcation Line
- Area of Concern
- Deficient Area
- County Boundary

#113 Marnat Road
#23 Southern Cross A
#23B Southern Cross B
#22 Alter Road
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#99 Edmondson Avenue
#118 Overbrook & Medwick Garth
#116 Nunnery Lane
#117 Briarwood Road
#44 Redwood Avenue
#40 Briarcliff Road
#41 Aiken Avenue
#129 Queen Anne

BROOKLANDVILLE

RICHLYN MANOR

THIS MAP HAS BEEN ENACTED UNDER BILL NUMBER 25-22 AND IS PART OF THE BALTIMORE COUNTY ZONING REGULATIONS, 1955, AS AMENDED BY THE BILL ADOPTED MAY 2, 2022. EFFECTIVE MAY 16, 2022.

COUNTY COUNCIL OF BALTIMORE COUNTY

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NOTE: The interpretation of the Basic Services Maps are subject to exceptions provided for in the Baltimore County Zoning Regulations, Article 4A Growth Management, Section 4A02 Basic Services Maps. These exceptions include those mapped in the County's geographic information system (GIS): the Urban and Rural Demarcation Line (URDL), Commercial Revitalization Districts (4A02.4.E.1.i), and the Towson Urban Center (4A02.4.E.1.j). The Towson Urban Center (Downtown Towson District) exists in the Master Plan 2020 in the Land Management Areas feature class.

Feature Class Production Dates

Sewer Relief Points	2022
Sewer Areas	2022
Commercial Revitalization Districts	2020
Towson Urban Center	2011
Urban Rural Demarcation Line	2012
Roads	2022
County Boundary	2008

Produced by Baltimore County Department of Public Works and Transportation

North American Datum 1983 HARN, U.S. Survey Foot

Published May 12, 2022

BALTIMORE COUNTY GOVERNMENT
DEPARTMENT OF PUBLIC WORKS
INTER-OFFICE CORRESPONDENCE

DATE: January 4, 2022

TO: D'Andrea Walker, Acting Director
Department of Public Works and Transportation

FROM: Lisa Eicholtz, PE, Chief LKE
Bureau of Engineering & Construction

SUBJECT: 2022 Basic Services Maps
Public Water & Sewer Status

In accordance with your request, we are furnishing an update for the 2022 Basic Services Map.

Water
No deficiencies are known to exist.

Sewer
All of the 10 remaining sewer relief point locations are being metered. We have completed several rehabilitation projects and are now performing post-construction monitoring to determine the effectiveness of the projects. In addition, we have projects in design and also construction which will eventually allow the elimination of the areas of special concern.

Revisions to the Basic Services Maps to remove an area of special concern do not mean that an area has unlimited development potential. Computer modeling and simulations to assess the impacts on the County's sewer system resulting from development are completed on a case by case basis. Determinations are made to assess if the impacts from development will require downstream improvements to ensure adequate capacity in the sewer system.

LKE: DAB

cc: Erin A. McKenna-Streyle – Water Design Section
David A. Bayer, P.E. – Sewer Design Section
Jeannette Applauso – Sewer Design Section

Michael McCann

From: Justin Silberman <jsilberman@baltimorecountymd.gov>
Sent: Friday, February 3, 2023 5:11 PM
To: Lisa Eicholtz; Steve Lafferty
Cc: Lauren Buckler; Bradley Kroner; Jeannette Applauso; Erin McKenna-Streyle
Subject: Re: Follow up

Thanks so much, Lisa and Steve! Much appreciated on the prompt response and info.

From: Lisa Eicholtz <leicholtz@baltimorecountymd.gov>
Sent: Friday, February 3, 2023 4:55 PM
To: Steve Lafferty <slafferty@baltimorecountymd.gov>
Cc: Lauren Buckler <lbuckler@baltimorecountymd.gov>; Justin Silberman <jsilberman@baltimorecountymd.gov>; Bradley Kroner <bmkroner@baltimorecountymd.gov>; Jeannette Applauso <japplauso@baltimorecountymd.gov>; Erin McKenna-Streyle <emckenna-streyle@baltimorecountymd.gov>
Subject: RE: Follow up

The package sent to Council to approve had the correct maps that were previously presented to the Planning Board.

Council voted on and approved the same Sewer Basic Services maps that the Planning Board approved.

When the sewer map was sent to the County Council chairman for signature following the approval, there was a printing error by the GIS staff. The signed map is missing all areas of concern, not just the one Mr. McCann references.

We are actively working to get the correct map signed by Council so that we can post it to the DPWT website.

Jeannette Applauso has been in contact with Taylor Bensley of your staff regarding this problem.

Lisa K. Eicholtz, PE
Bureau Chief, Engineering and Construction
Department of Public Works & Transportation
111 W. Chesapeake Avenue Room 205
Towson MD 21204
O: 410.887.3788
leicholtz@baltimorecountymd.gov

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Sustainable Infrastructure

From: Steve Lafferty <slafferty@baltimorecountymd.gov>
Sent: Friday, February 3, 2023 4:48 PM
To: Lisa Eicholtz <leicholtz@baltimorecountymd.gov>
Cc: Lauren Buckler <lbuckler@baltimorecountymd.gov>; Justin Silberman <jsilberman@baltimorecountymd.gov>; Bradley Kroner <bmkroner@baltimorecountymd.gov>
Subject: FW: Follow up

Lisa,

Councilman Patoka's chief of staff sent me this query. You are in a better position to answer than I am.
Thanks,

Steve

From: Justin Silberman <jsilberman@baltimorecountymd.gov>
Sent: Friday, February 3, 2023 4:41 PM
To: Steve Lafferty <slafferty@baltimorecountymd.gov>
Cc: Izzy Patoka <izzypatoka@gmail.com>
Subject: FW: Follow up

Hi director Lafferty,

I hope you are well. Councilman Patoka wanted me to follow up with you regarding the following inquiry we received from Michael McCann:

The basic question, again, is why did the 2022 Basic Service Map for sewer suddenly not show Brooklandville/GS station as an area of concern. It was in 2021 and is back again in the recently submitted draft map from DPW. Danke!!

Anything you can share with us would be greatly appreciated.

Thanks so much and have a great weekend!

Best,

Justin Silberman
Chief of Staff
Office of Councilman Izzy Patoka
410-887-3385

From: Michael McCann <michael@mmccannlaw.net>
Sent: Friday, February 3, 2023 1:14 PM
To: Justin Silberman <jsilberman@baltimorecountymd.gov>
Subject: RE: Follow up

CAUTION: This message from michael@mmccannlaw.net originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Hey Justin. I know you have a million things to do, but let me know what you can find. The basic question, again, is why did the 2022 BSM for sewer suddenly not show Brooklandville/GS station as an area of concern. It was in 2021 and is back again in the recently submitted draft map from DPW. Danke!!

From: Michael McCann
Sent: Friday, January 27, 2023 7:16 AM
To: Justin Silberman <jsilberman@baltimorecountymd.gov>
Subject: Re: Follow up

Thanks Justin. I think I have those docs. Let me know if you find anything else or maybe Izzy has a memory of it. Appreciate it

Get Outlook for iOS

From: Justin Silberman <jsilberman@baltimorecountymd.gov>
Sent: Thursday, January 26, 2023 4:08:35 PM
To: Michael McCann <michael@mmccannlaw.net>
Subject: Follow up

Hey Michael,

Not sure if this is helpful or not, but after doing some quick digging, I have some attachments and info from the 2022 Basic Services Map right shortly prior to being introduced before the County Council ... I'll see if there is any additional information we have. I saw your email just came through, which might include one or two of the same attachments.

Attached for your information please find five attachments for your review related to the 2022 Basic Services Maps. These include the following:

- Cover letter from Planning Director Steve Lafferty indicating the Planning Board recommended adoption of the 2022 Basic Services Maps
- The three Basic Services Maps for Transportation, Water Supply, and Sewer Areas
- Memorandum related to the Transportation Map
- Memorandum related to the Water and Sewer Maps
- Spreadsheet listing the D, E, and F Transportation intersections

Hope this helps for now.

Thanks!

Justin Silberman
Chief of Staff
Office of Councilman Izzy Patoka
410-887-3385

Get your COVID-19 vaccine today.

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Department of Public Works and Transportation

2023 Basic Services Map
Sewer Deficient Areas
and
Areas of Concern

DRAFT

Legend

- Sewer Relief Points
- Commercial Revitalization Areas
- Towson Urban Center
- Area of Concern
- Deficient Area
- Urban Rural Demarcation Line
- County Boundary

#113 Marnat Road
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#117 Briarwood Road
#44 Redwood Avenue
#40 Briarcliff Road
#41 Aiken Avenue
#129 Queen Anne

BROOKLANDVILLE

RICHLYN MANOR

THIS MAP HAS BEEN ENACTED UNDER BILL NUMBER _____ AND IS PART OF THE BALTIMORE COUNTY ZONING REGULATIONS, 1955, AS AMENDED BY THE BILL ADOPTED _____. EFFECTIVE _____.

_____
COUNTY COUNCIL OF BALTIMORE COUNTY

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SCALE 1 INCH = 4,000 Feet

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NOTE: The interpretation of the Basic Services Maps are subject to exceptions provided for in the Baltimore County Zoning Regulations, Article 4A Growth Management, Section 4A02 Basic Services Maps. These exceptions include those mapped in the County's geographic information system (GIS): the Urban and Rural Demarcation Line (URDL), Commercial Revitalization Districts (4A02.4.E.1.i), and the Towson Urban Center (4A02.4.E.1.j). The Towson Urban Center (Downtown Towson District) exists in the Master Plan 2020 in the Land Management Areas feature class.

Feature Class Production Dates

Sewer Relief Points	2023
Sewer Areas	2023
Commercial Revitalization Districts	2022
Towson Urban Center	2011
Urban Rural Demarcation Line	2012
Roads	2023
County Boundary	2008

Produced by Baltimore County Department of Public Works and Transportation

North American Datum 1983 HARN, U.S. Survey Foot

Published January 9, 2023

BALTIMORE COUNTY GOVERNMENT
DEPARTMENT OF PUBLIC WORKS
INTER-OFFICE CORRESPONDENCE

DATE: January 6, 2023

TO: D'Andrea Walker, Acting Director
Department of Public Works and Transportation

FROM: Lisa Eicholtz, PE, Chief LKE
Bureau of Engineering & Construction

SUBJECT: 2023 Basic Services Maps
Public Water & Sewer Status

In accordance with your request, we are furnishing an update for the 2023 Basic Services Map.

Water
No deficiencies are known to exist.

Sewer
All of the 10 remaining sewer relief point locations are being metered. We have completed several rehabilitation projects and are now performing post-construction monitoring to determine the effectiveness of the projects. In addition, we have projects in design and also construction which will eventually allow the elimination of the areas of special concern.

Revisions to the Basic Services Maps to remove an area of special concern do not mean that an area has unlimited development potential. Computer modeling and simulations to assess the impacts on the County's sewer system resulting from development are completed on a case by case basis. Determinations are made to assess if the impacts from development will require downstream improvements to ensure adequate capacity in the sewer system.

LKE: DAB

cc: Erin A. McKenna-Streyle – Chief, Water Design Section
Amy Bley-Chief, Sewer Design Section
David A. Bayer, P.E. – Sewer Design Section
Jeannette Applauso – Sewer Design Section

Total Maximum Daily Loads of Fecal Bacteria for the Non-Tidal Jones Falls Basin in Baltimore City and Baltimore County, Maryland

FINAL



DEPARTMENT OF THE ENVIRONMENT

Montgomery Business Park Center
1800 Washington Boulevard, Suite 540
Baltimore MD 21230-1718

Submitted to:

Water Protection Division
U.S. Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, PA 19103-2029

September 2006

EPA Submittal Date: September 22, 2006
EPA Approval Date: February 12, 2008

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List of Abbreviations

ARCC	Average rates of correct classification
ARA	Antibiotic Resistance Analysis
BMP	Best Management Practice
BST	Bacteria Source Tracking
CAFO	Confined Animal Feeding Operations
cfs	Cubic Feet per Second
CFR	Code of Federal Regulations
CFU	Colony Forming Units
COMAR	Code of Maryland Regulations
CSO	Combined Sewer Overflow
CSS	Combined Sewer System
CWA	Clean Water Act
CWP	Center for Watershed Protection
DNR	Department of Natural Resources
EPA	Environmental Protection Agency
GIS	Geographic Information System
LA	Load Allocation
LTCP	Long Term Control Plan
MACS	Maryland Agricultural Cost Share Program
MDE	Maryland Department of the Environment
MDP	Maryland Department of Planning
ml	Milliliter(s)
MOS	Margin of Safety
MPN	Most Probable Number
MPR	Maximum Practicable Reduction
MS4	Municipal Separate Storm Sewer System
MST	Microbial Source Tracking
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service
RCC	Rates of Correct Classification
SHA	State Highway Administration
SSO	Sanitary Sewer Overflows
STATSGO	State Soil Geographic
TARSA	Technical and Regulatory Services Administration
TMDL	Total Maximum Daily Load
USGS	United States Geological Survey
WQIA	Water Quality Improvement Act
WLA	Wasteload Allocation
WQLS	Water Quality Limited Segment
WRAS	Watershed Restoration Action Strategy
WWTP	Wastewater Treatment Plan

EXECUTIVE SUMMARY

This document, upon approval by the U.S. Environmental Protection Agency (EPA), establishes a Total Maximum Daily Load (TMDL) for fecal bacteria in Jones Falls (basin number 02-13-09-04). Section 303(d) of the federal Clean Water Act (CWA) and the EPA implementing regulations direct each state to identify and list waters, known as water quality limited segments (WQLSs), in which current required controls of a specified substance are inadequate to achieve water quality standards. For each WQLS, states are required to either establish a total maximum daily load (TMDL) of the specified substance that the waterbody can receive without violating water quality standards, or demonstrate that water quality standards are being met.

The Maryland Department of the Environment (MDE) has identified Jones Falls and all tributaries above Lake Roland, a designated Use III waterbody (Water Contact Recreation, Protection of Aquatic Life and Natural Trout Waters), and Jones Falls between North Avenue (Baltimore City) and Lake Roland, a designated Use IV waterbody (Water Contact Recreation, Protection of Aquatic Life and Recreational Trout Waters) [Code of Maryland Regulations (COMAR) 26.08.02.08.08] in the State's 303(d) List as impaired by metals (copper and lead) (1996), nutrients (1996), sediments (1996), bacteria (fecal coliform) (2002), polychlorinated biphenyls (PCBs) - Lake Roland (2002), and by impacts to biological communities (2004). This document proposes to establish a TMDL for fecal bacteria in Jones Falls and its tributaries that will allow for the attainment of the designated use, primary contact recreation. The impairment for metals (copper and lead) was removed from the 303(d) List through a water quality analyses approved by EPA in December 2, 2004. A TMDL for chlordane was approved by EPA on March 23, 2001. The listings for nutrients, sediments, PCBs and impacts to biological communities will be addressed separately at a future date. A data solicitation for fecal bacteria was conducted by MDE in 2003, and all readily available data from the past five years was considered.

To establish baseline and allowable pollutant loads for this TMDL, a flow duration curve approach was used incorporating flow strata estimated from United States Geological Survey (USGS) daily flow monitoring data and bacteria monitoring data. The sources of fecal bacteria were estimated at five representative stations in the Jones Falls watershed where samples were collected for one year. Multiple antibiotic resistance analysis (ARA) source tracking was used to determine the relative proportion of domestic (pets and human associated animals), human (human waste), livestock (agricultural related animals), and wildlife (mammals and waterfowl) source categories.

The allowable load is determined by estimating a baseline load from current monitoring data. The baseline load is estimated using a long-term geometric mean and weighting factors from the flow duration curve. The TMDL load for fecal bacteria entering Jones Falls is established after considering four different hydrological conditions: high flow and low flow annual conditions; and high flow and low flow seasonal conditions (the period between May 1st and September 30th where water contact recreation is more prevalent). This allowable load is reported in units of Most Probable Number (MPN)/day and represents a long-term load estimated over a variety of hydrological conditions.

Two scenarios were developed, the first assessing whether attainment of current water quality standards could be achieved with maximum practicable reductions (MPRs) applied, and the second allowing higher reductions than MPRs. Scenario solutions were based on an optimization method where the objective was to minimize the overall risk to human health, assuming that the risk varies over the four bacteria source categories. In the five subwatersheds of Jones Falls, it was estimated that water quality standards could not be attained with the MPRs. Thus, a second scenario was applied allowing greater reductions that may not be feasible.

The fecal bacteria TMDL developed for the Jones Falls watershed is 860 billion MPN *E. coli*/day. The TMDL is distributed between a load allocation (LA) for nonpoint sources and waste load allocations (WLA) for point sources, including National Pollutant Elimination System (NPDES) wastewater treatment plants (WWTPs), NPDES municipal separate storm sewer systems (MS4) and NPDES combined sewer overflows (CSOs). The LA is 212 billion MPN *E. coli*/day. The WWTP WLA is 0.05 billion MPN *E. coli*/day. The MS4s WLA is 647.95 billion MPN *E. coli*/day and the CSO load allocation is 0.0 MPN *E. coli*/day. The margin of safety (MOS) has been incorporated using a conservative assumption by estimating the loading capacity of the stream based on a more stringent water quality endpoint concentration. The *E. coli* water quality criterion concentration was reduced by 5%, from 126 MPN/100ml to 119.7 MPN/100ml.

Once the EPA has approved a TMDL, and it is known what measures must be taken to reduce pollution levels, implementation of best management practices (BMPs) is expected to take place. MDE intends for the required reduction to be implemented in an iterative process that first addresses those sources with the largest impacts to water quality and creating the greatest risks to human health, with consideration given to ease and cost of implementation. In addition, follow up monitoring plans will be established to track progress and to assess the implementation efforts. As previously stated, water quality standards cannot be attained in the Jones Falls subwatersheds using the MPR scenario. This may occur in subwatersheds where wildlife is a significant component or in subwatersheds that require very high reductions of fecal bacteria loads to meet water quality standards. Therefore, MDE proposes a staged approach to implementation of the required reductions, beginning with the MPR scenario, as an iterative process that first addresses those sources making the largest impacts on water quality and creating the greatest risks to human health, with consideration given to ease and cost of implementation. In addition, follow-up monitoring plans will be established to track progress and to assess the effectiveness of implementation efforts.

1.0 INTRODUCTION

This document, upon approval by the U.S. Environmental Protection Agency (EPA), establishes a Total Maximum Daily Load (TMDL) for fecal bacteria in Jones Falls (basin number 02-13-09-04). Section 303(d)(1)(C) of the federal Clean Water Act (CWA) and the EPA implementing regulations direct each state to develop a TMDL for each impaired water quality limited segment (WQLS) on the Section 303(d) List, taking into account seasonal variations and a protective margin of safety (MOS) to account for uncertainty. A TMDL reflects the total pollutant loading of the impairing substance a waterbody can receive and still meet water quality standards.

TMDLs are established to achieve and maintain water quality standards. A water quality standard is the combination of a designated use for a particular body of water and the water quality criteria designed to protect that use. Designated uses include activities such as swimming, drinking water supply, and shellfish propagation and harvest. Water quality criteria consist of narrative statements and numeric values designed to protect the designated uses. Criteria may differ among waters with different designated uses.

The Maryland Department of the Environment (MDE) has identified Jones Falls and all tributaries above Lake Roland, a designated Use III waterbody (Water Contact Recreation, Protection of Aquatic Life and Natural Trout Waters), and Jones Falls between North Avenue (Baltimore City) and Lake Roland, a designated Use IV waterbody (Water Contact Recreation, Protection of Aquatic Life and Recreational Trout Waters) [Code of Maryland Regulations (COMAR) 26.08.02.08.08] in the State's 303(d) List as impaired by metals (copper and lead) (1996), nutrients (1996), sediments (1996), bacteria (fecal coliform) (2002), PCBs (Lake Roland) (2002) and by impacts to biological communities (2004). This document proposes to establish a TMDL of fecal bacteria in Jones Falls and its tributaries that will allow for the attainment of the designated use, primary contact recreation. The impairment for metals (copper and lead) was removed from the 303(d) List through a water quality analyses approved by EPA in December 2, 2004. A TMDL for chlordane was approved by EPA on March 23, 2001. The listings for nutrients, sediments, PCBs and impacts to biological communities will be addressed separately at a future date. A data solicitation for fecal bacteria was conducted by MDE in 2003, and all readily available data from the past five years was considered.

Fecal bacteria are microscopic single-celled organisms (primarily fecal coliforms and fecal streptococci) found in the wastes of warm-blooded animals. Their presence in water is used to assess the sanitary quality of water for body-contact recreation, consumption of molluscan bivalves (shellfish), and drinking water. Excessive amounts of fecal bacteria in surface water used for recreation are known to indicate an increased risk of pathogen-induced illness to humans. Infections due to pathogen-contaminated recreation waters include gastrointestinal, respiratory, eye, ear, nose, throat, and skin diseases (EPA, 1986).

In 1986, EPA published "Ambient Water Quality Criteria for Bacteria", in which three indicator organisms were assessed to determine their correlation with swimming-associated illnesses. Fecal coliform, *E. coli* and enterococci were the indicators used in the analysis. Fecal coliform are a subgroup of total coliform bacteria and *E. coli* are a subgroup of fecal coliform. Most *E.*

coli are harmless and are found in great quantities in the intestines of people and warm-blooded animals; however, certain pathogenic strains may cause illness. Enterococci are a subgroup of bacteria in the fecal streptococcus group. Fecal coliform, *E. coli* and enterococci can all be classified as fecal bacteria. The results of the EPA study (EPA, 1986) demonstrated that fecal coliform showed less correlation to swimming-associated gastroenteritis than either *E. coli* or enterococci.

The Jones Falls watershed was listed on the Maryland 303(d) List in 2002 using fecal coliform as the indicator organism. Based on EPA's guidance (EPA, 1986), adopted by Maryland in 2004, the State has revised the bacteria water quality criteria and it is now based on water column limits for either *E. coli* or enterococci. Because multiple monitoring datasets are available within this watershed for various pathogen indicators, the general term fecal bacteria will be used to refer to the impairing substance throughout this document. The TMDL will be based on the pathogen indicator organisms specified in Maryland's current bacteria water quality criteria, either *E. coli* or enterococci. The indicator organism used in the Jones Falls TMDL analysis was *E. coli*.

2.0 SETTING AND WATER QUALITY DESCRIPTION

2.1 General Setting

Location

The Jones Falls watershed is located in the Patapsco River region of the Chesapeake Bay watershed within Maryland (see Figure 2.1.1). The watershed covers a portion of Baltimore County and Baltimore City, Maryland. Jones Falls proper flows east and south from its headwaters in Garrison, Maryland to its discharge into the Inner Harbor in downtown Baltimore City. An impoundment is located at Lake Roland, just north of the Baltimore County/City boundary. Several tributaries drain to the Jones Falls mainstem, including Moores Branch, Roland Run, Towson Run, Western Run, and Stoney Run. The entire Jones Falls watershed area comprises 37,290 acres (58.3 sq. mi.).

Jones Falls is a free flowing, non-tidal stream. Due to the density of the urban landscape in downtown Baltimore City, Jones Falls flows through roughly three miles of underground duct before discharging into the Baltimore Harbor. This flow regime changes the effective watershed area considered for this report. First, runoff from the area above the underground portion of the watershed does not flow into the Jones Falls mainstem, but rather is routed directly to the Baltimore Harbor. Second, it is not possible to monitor in the underground portion of the stream. Therefore, the watershed area considered for this TMDL is the effective watershed area (*i.e.*, the land area draining to the above-ground portion of the stream). The lower extent of the watershed area will be determined by the location of the most downstream monitoring station in the Jones Falls mainstem before going underground. Therefore, the area of the effective Jones Falls watershed considered in this TMDL analysis is 34,122 acres (53.3 sq. mi.).

Geology/Soils

The Jones Falls watershed lies within the Piedmont and Coastal Plain provinces of central Maryland. The Piedmont province is characterized by gentle to steep rolling topography, and low hills and ridges. The surficial geology is characterized by crystalline rocks of volcanic origin and often determines the limits of stream bank and streambed. These crystalline formations decrease in elevation from northwest to southeast and eventually extend beneath the younger sediments of the Coastal Plain. The fall line represents the transition between the Atlantic Coastal Plain province and the Piedmont province. The Atlantic Coastal Plain surficial geology is characterized by thick, unconsolidated marine sediments deposited over the crystalline rock of the piedmont province. The deposits include clays, silts, sands, and gravels (Coastal Environmental Services, 1995).

The Jones Falls watershed drains from northwest to southeast, following the gradient of the underlying crystalline bedrock in the Piedmont province. The surface elevations range from approximately 680 feet to sea level at the discharge. Stream channels of the sub-watersheds are well incised in the Eastern Piedmont, and exhibit relatively straight reaches and sharp bends, reflecting their tendency to following zones of fractured or weathered rock. The stream channels

broaden abruptly as they flow down across the fall line into the soft, flat Coastal Plain sediments (Coastal Environmental Services, 1995).

Above the Baltimore City/County boundary, Jones Falls lies predominantly in the Baile soil series. Soils in this series are very deep, poorly drained, exhibit slow to moderately slow permeability, and occur on upland depressions and slopes. The secondary soil series in the Baltimore County area of the watershed is the Hatboro soil series, which has similar characteristics as the Baile soil series and is often found in flood plains.

In Baltimore City the primary soil series is the Lehigh series. This series is characterized by deep and somewhat poorly drained soil with slow permeability. The secondary soil series present in the lower Jones Falls watershed is the Beltsville soil series, which is distinguished by being moderately well drained and often found in upland regions of the coastal plain geologic region. The spatial distributions for each soil series are shown in Figure 2.1.2.

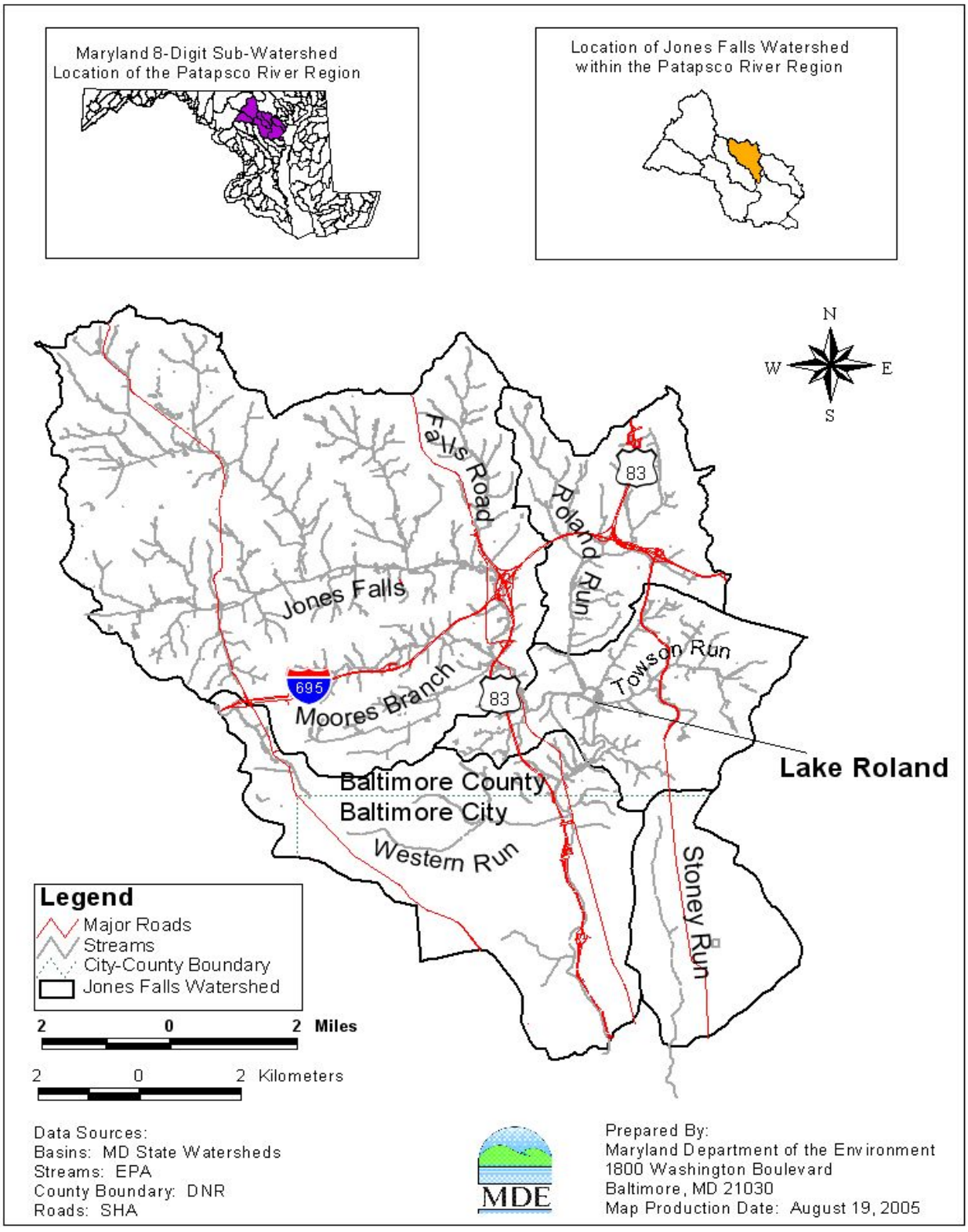

Figure 2.1.1: Location Map of the Jones Falls Watershed

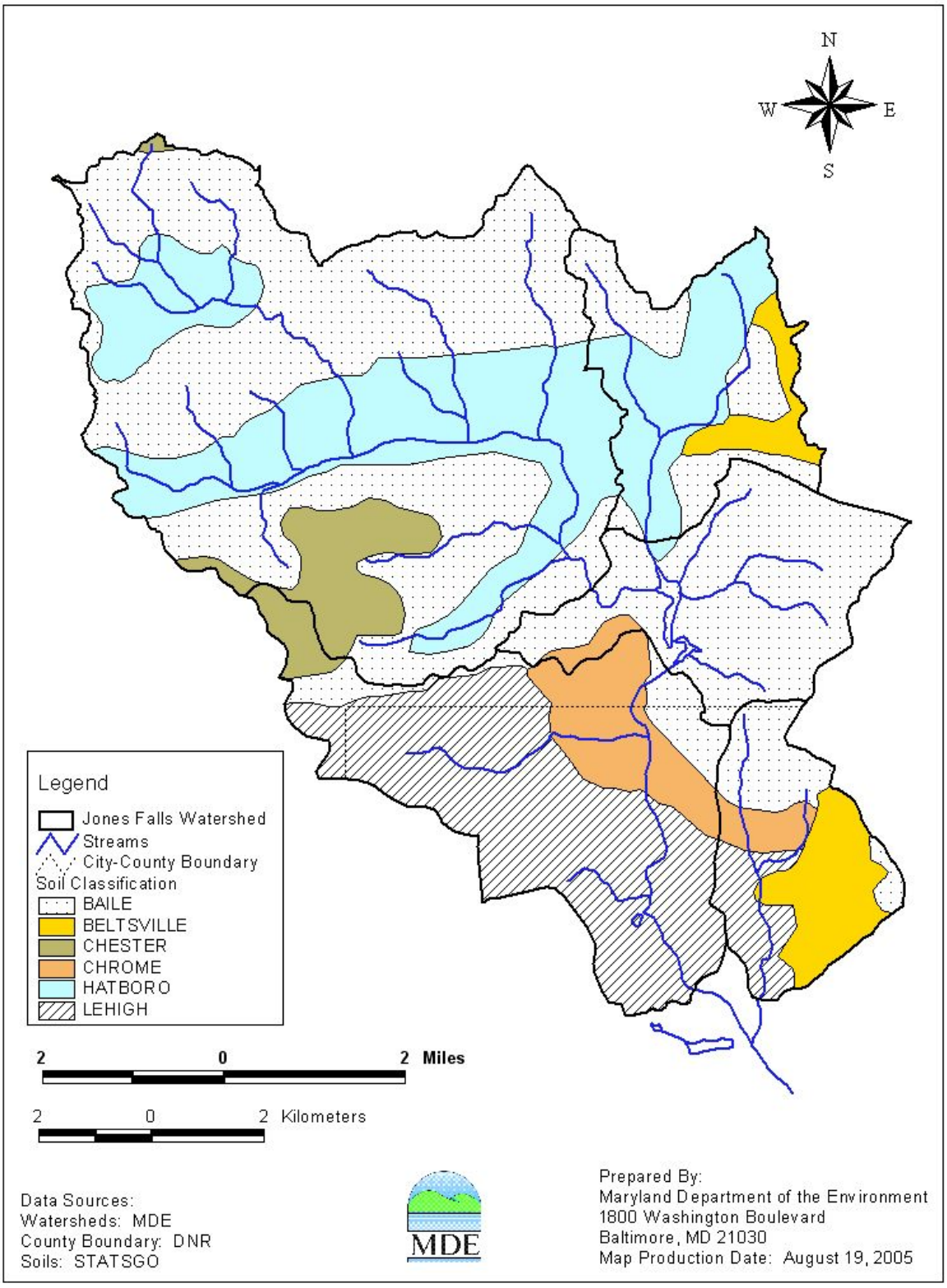

Figure 2.1.2: General Soil Series in the Jones Falls Watershed

Land Use

The Jones Falls watershed encompasses 34,122 acres (53.3 sq. mi.) within urban Baltimore City and suburban Baltimore County. The Jones Falls watershed is one of the most densely populated watersheds within the Chesapeake Bay drainage basin.

The 2000 Maryland Department of Planning (MDP) land use/land cover data shows that the watershed can be characterized as primarily residential and forested. Park and forest lands cover 16% of the watershed and are concentrated in the Baltimore County portion of the watershed. The residential and commercial land uses cover approximately 75% of the watershed and are more concentrated in the Baltimore City portion of the watershed. The land use percentage distribution for Jones Falls Basin is shown in Table 2.1.1, and spatial distributions for each land use are shown in Figure 2.1.3.

Table 2.1.1: Land Use Percentage Distribution for Jones Falls Watershed

Land Type	Acreage	Percentage
Forest	5,901	17.3
Residential	20,080	60.9
Commercial	4,486	13.1
Crops	2,326	6.8
Pasture	547	1.6
Water	54	0.2
Totals	**34,122**	**100%**

Population

The total population in the Jones Falls watershed is estimated to be 152,195. Figure 2.1.4 displays the population density in the watershed. Urban areas are more densely populated within the Baltimore City limits. The population is less dense in the suburban areas of Baltimore County.

The population and the number of households in the watershed were estimated based on a weighted average from the Geographic Information System (GIS) 2000 Census Block and the 2002 MDP land use cover. Since the Jones Falls watershed is a sub-area of the Census Block, the GIS tool was used to extract the areas from the 2000 Census Block within the watershed.

Based on the land use for residential density (low, medium, high) from the MDP land use cover, the number of dwellings per acre was calculated using Table 2.1.2 in the Jones Falls watershed.

Table 2.1.2: Number of Dwellings Per Acre

Land use Code	Dwellings Per Acre
11 Low Density Residential	1
12 Medium Density Residential	5
13 High Density Residential	8

Based on the number of households from the total population from the Census Block and the number of dwellings per acre from the MDP land use cover, population per subwatershed was calculated (Table 2.1.3).

Table 2.1.3: Total Population Per Subwatershed in Jones Falls Watershed

Subwatershed	Population	Dwellings
UQQ0005	32,791	9,956
JON0184	35,517	13,558
JON0082	28,570	8,276
JON0039	35,812	20,783
SRU0005	19,505	7,207
Total	152,195	59,780

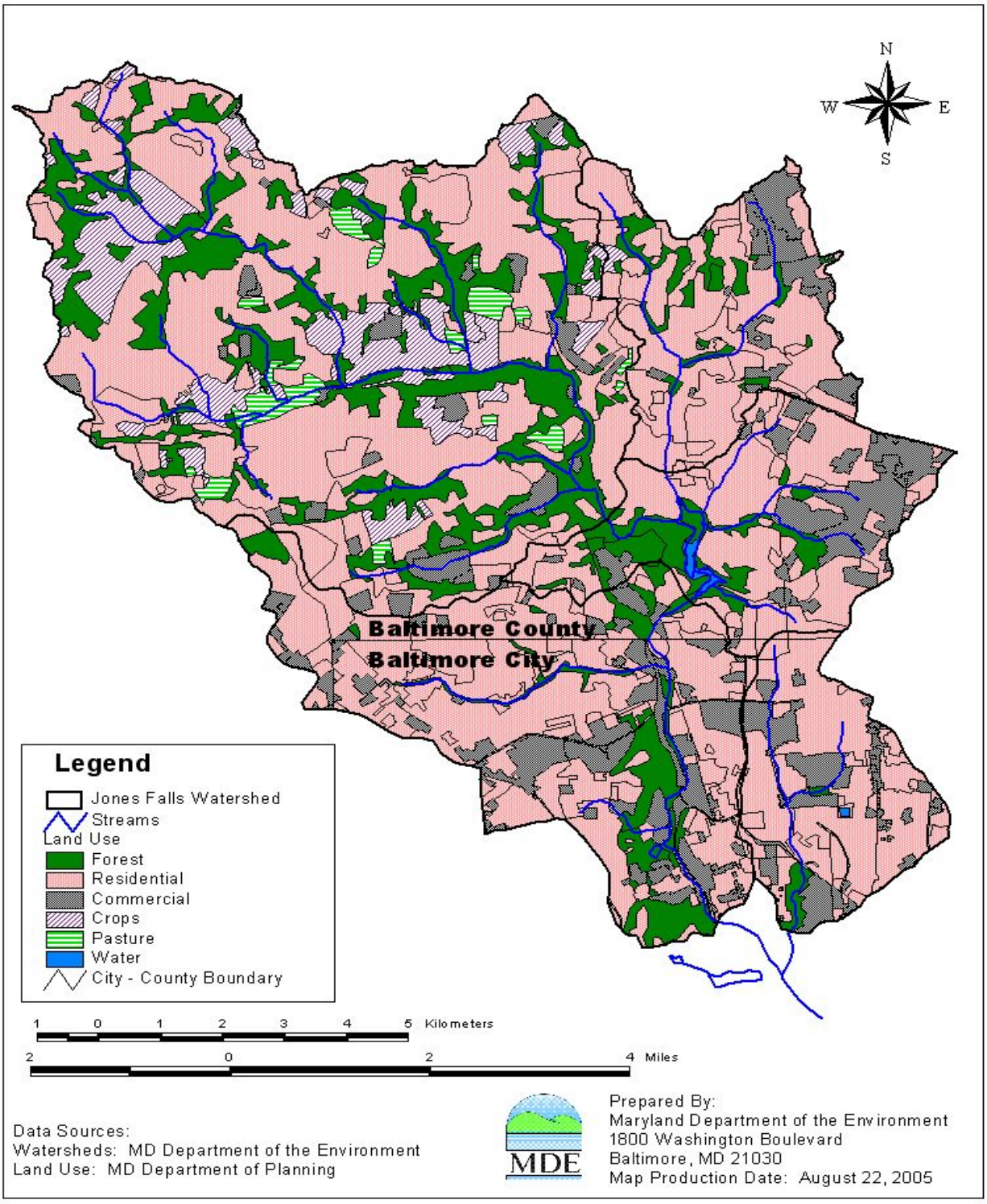

Figure 2.1.3: Land Use of the Jones Falls Watershed

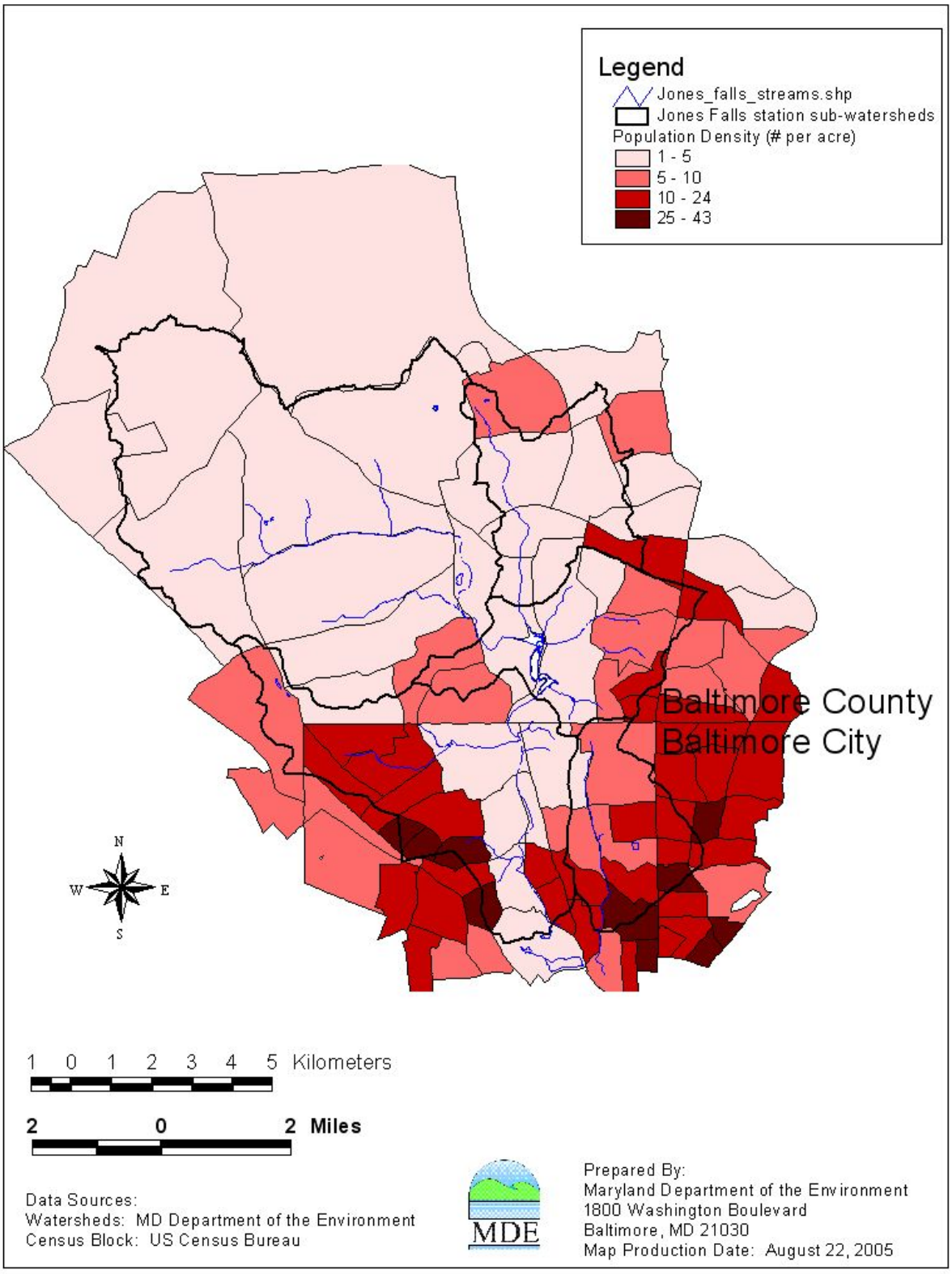

Figure 2.1.4: Population Density in Jones Falls Watershed

2.2 Water Quality Characterization

From EPA's guidance document "Ambient Water Quality Criteria for Bacteria" (1986), fecal bacteria, *E. coli*, and enterococci were assessed as indicator organisms for predicting human health impacts. A statistical analysis found that the highest correlation to gastrointestinal illness was linked to elevated levels of *E. coli* and enterococci in fresh water (enterococci in salt water), leading EPA to propose that states use *E. coli* or enterococci as pathogen indicators.

As per EPA's guidance, Maryland has adopted the new indicator organisms, *E. coli* and enterococci, for the protection of public health in Use I, II, III and IV waters. These bacteria listings were originally assessed using fecal coliform bacteria. The assessment was based on a geometric mean of the monitoring data, where the result could not exceed a geometric mean of 200 MPN/100ml. From EPA's analysis (EPA, 1986), this fecal coliform geometric mean target equates to an approximate risk of 8 illnesses per 1,000 swimmers at fresh water beaches and 19 illnesses per 1,000 swimmers at marine beaches (enterococci only), which is consistent with MDE's revised Use I bacteria criteria. Therefore the original 303(d) List fecal coliform listings can be addressed using the refined bacteria indicator organisms to assure that risk levels are acceptable.

Bacteria Monitoring

Table 2.2.1 lists the historical monitoring data for the Jones Falls watershed. MDE conducted monitoring sampling from October 2002 through June 2003. Monitoring Station JON0184 (CORE) was used by the Maryland Department of Natural Resources (DNR) to identify the bacterial impairment. There are five MDE monitoring stations in the Jones Falls watershed. In addition to the bacteria monitoring stations, there are three United States Geological Survey (USGS) gaging stations used in deriving the surface flow in Jones Falls. The locations of these stations are shown in Tables 2.2.2 to 2.2.4 and Figure 2.2.1. Observations recorded during the period 2002-2003 from the five MDE monitoring stations are shown in Appendix A. In general, based on statewide monitoring data, fecal bacteria concentrations are higher in the headwaters. This is consistent with findings from Wickham, *et al*. (2005) regarding pathogens in Maryland, where the likelihood of an impairment decreases with watershed size. A table listing the monitoring results from the Jones Falls watershed appears in Appendix A.

Bacteria counts are highly variable and results are presented on a log scale for the five monitoring stations for data collected for October 2002 through June 2003. Ranges were typically between 10 and 10,000 MPN/100 ml.

Table 2.2.1: Historical Monitoring Data in the Jones Falls Watershed

Sponsor	Location	Date	Design	Summary
Maryland Department of Natural Resources (DNR) CORE Monitoring	Baltimore County	1995 - 1999	Fecal Coliform*	JON0184 - High Bacteria concentrations
Maryland Department of Natural Resources (DNR) CORE Monitoring	Baltimore County	10/02 to 10/03	Fecal Coliform*	2002 305(b) Update – JON0184 show bacteria geometric mean of 344 MPN/100mL
Baltimore City	Baltimore City	1997 - 2001	Fecal Coliform*	Geometric Mean = 2,724 MPN/100mL
MDE	Baltimore City and Baltimore County	10/02 – 06/03	*E Coli*	5 stations Enumeration 2x per Month

*Only *E. coli* was used for this analysis.

Table 2.2.2: Locations of DNR (CORE) Monitoring Station in the Jones Falls Watershed

Monitoring Station	Observation Period	LATITUDE Decimal Degrees	LONGITUDE Decimal Degrees
JON0184	1995-1999	39 23.47	76 39.66

Table 2.2.3: Locations of MDE Monitoring Stations in the Jones Falls Watershed

Monitoring Station	Observation Period	Total Observation	LATITUDE Dec-Deg	LONGITUDE Dec-Deg
JON0184	2002-2003	24	39 23.47	76 39.66
UQQ0005	2002-2003	24	39 23.92	76 38.93
JON0082	2002-2003	24	39 22.69	76 38.66
JON0039	2002-2003	24	39 19.65	76 38.42
SRU0005	2002-2003	24	39 19.55	76 37.56

Table 2.2.4: Locations of USGS Gauging Stations in Jones Falls Watershed

Monitoring Station	Observation Period	LATITUDE Dec-deg	LONGITUDE Dec-deg
01589440	1992 - 2004	39 23.50	76 39.66
01589478	1992 - 2003	39 18.56	76 37.17

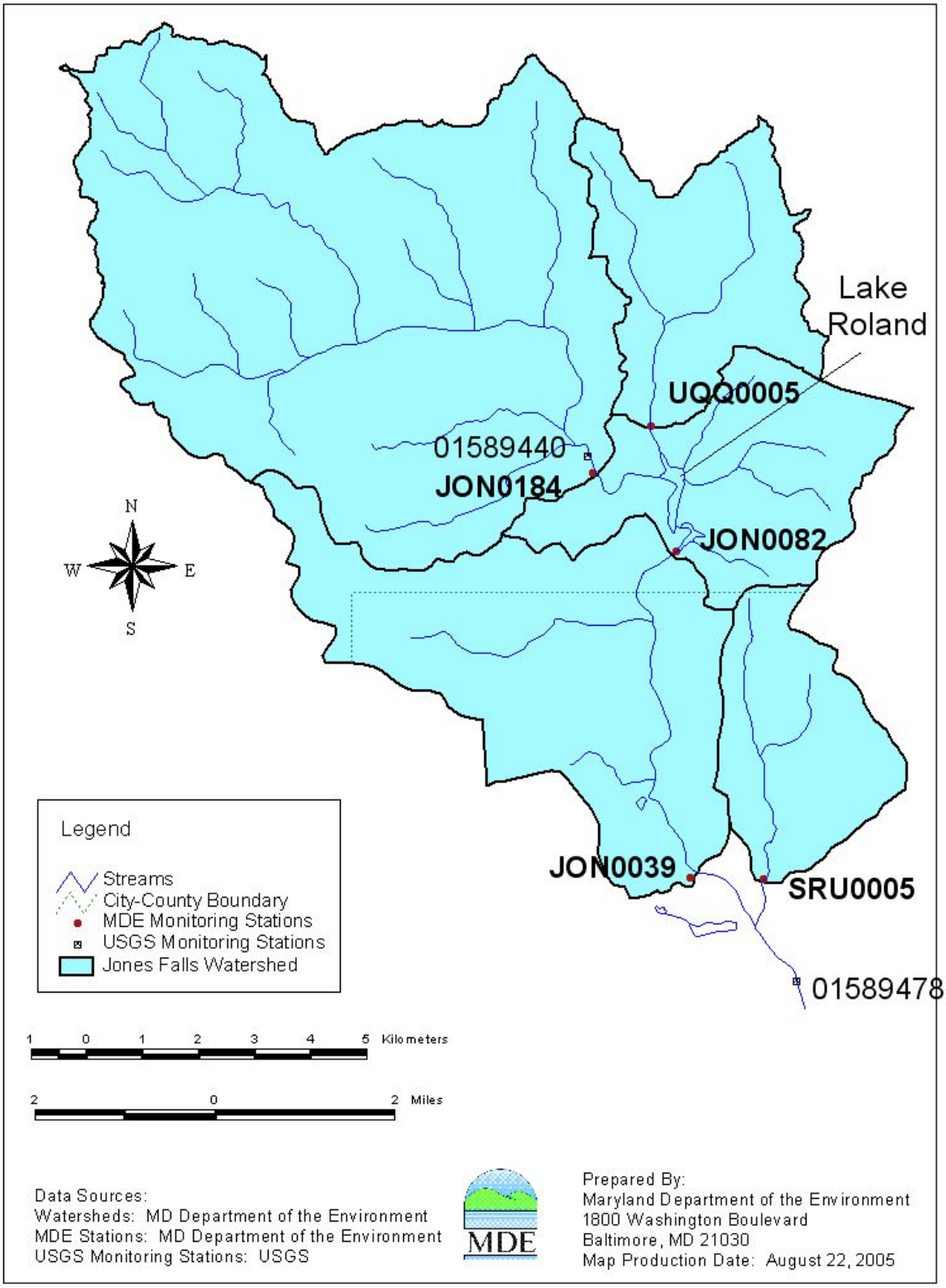

Figure 2.2.1: Monitoring Stations in the Jones Falls Watershed

2.3 Water Quality Impairment

Designated Uses and Water Quality Standard

The Maryland water quality standards Surface Water Use Designations for Jones Falls are Use III for the mainstem and all tributaries above Lake Roland (Nontidal Cold Water), and Use IV for Jones Falls from North Avenue to Lake Roland Dam (Recreational Trout Waters). See COMAR 26.08.02.08R(b). Jones Falls was first listed in the State's 2002 303(d) List as impaired by fecal coliform bacteria, and has been included on the final 2004 Integrated 303(d) List.

Water Quality Criteria

The State water quality standard for bacteria (*E. coli*) used in this study is as follows (COMAR 26.08.02.03-3):

Table 2.3.1: Bacteria Criteria Values from Table 1 COMAR 26.08.02.03-3 Water Quality Criteria Specific to Designated Uses.

Indicator	Steady-state Geometric Mean Indicator Density
Freshwater	
E. coli	126 MPN/100 ml

Interpretation of Bacteria Data for General Recreational Use

The relevant portion (for freshwater) of the listing methodology pursuant to the 2006 integrated 303(d) List for all Use Waters - Water Contact Recreation and Protection of Aquatic Life is as follows:

Recreational Waters

A steady-state geometric mean will be calculated with available data where there are at least five representative sampling events. The data shall be from samples collected during steady-state conditions and during the beach season (Memorial Day through Labor Day) to be representative of the critical condition. If the resulting steady-state geometric mean is greater than 126 cfu/100 ml *E. coli* in freshwater, the waterbody will be listed as impaired. If fewer than five representative sampling events for an area being assessed are available, data from the previous two years will be evaluated in the same way. The single sample maximum criterion applies only to beaches and is to be used for closure and advisory decisions based on short term exceedances of the geometric mean portion of the standard.

Water Quality Assessment

The water quality impairments in the Jones Falls watershed were assessed by comparing both the annual and the seasonal (May 1st – September 30th) steady-state geometric means of *E. coli* concentrations with the water quality criterion. The steady-state condition is defined as unbiased sampling targeting average flow conditions and/or equally sampling or providing for unbiased sampling of high and low flows. The 1986 EPA criteria document assumed steady-state flow in determining the risk at various bacterial concentrations, and therefore the chosen criterion value also reflects steady-state conditions (EPA, 1986). The steady-state geometric mean condition can be estimated either by monitoring design or more practically by statistical analysis as follows:

1. A stratified monitoring design is used where the number of samples collected is proportional to the duration of high flows, mid flows and low flows within the watershed. This sample design allows a geometric mean to be calculated directly from the monitoring data.

2. Routine monitoring typically results in samples from varying hydrologic conditions (*i.e.*, high flows, mid flows and low flows) where the numbers of samples are not proportional to the duration of those conditions. Averaging these results without consideration of the sampling conditions results in a biased estimate of the steady-state geometric mean. The potential bias of the steady-state geometric means can be reduced by weighting the samples results collected during high flow, mid flow and low flow regimes by the proportion of time each flow regime is expected to occur. This ensures that the high flow and low flow conditions are proportionally balanced on an annual and seasonal basis.

3. If (1) the monitoring design was not stratified based on flow regime or (2) flow information is not available to weight the samples accordingly, then a geometric mean of sequential monitoring data can be used as an estimate of the steady-state geometric mean condition for the specified period.

A routine monitoring design was used to collect bacteria data in the Jones Falls watershed. To estimate the steady-state geometric means, the monitoring data were first reviewed by plotting the sample results versus their corresponding daily flow duration percentile. Graphs illustrating these results can be found in Appendix B.

To calculate the steady-state geometric means with routine monitoring data, a conceptual model was developed by dividing the daily flow frequency for the stream segment into strata that are representative of hydrologic conditions. A conceptual continuum of flows is illustrated in Figure 2.3.1.

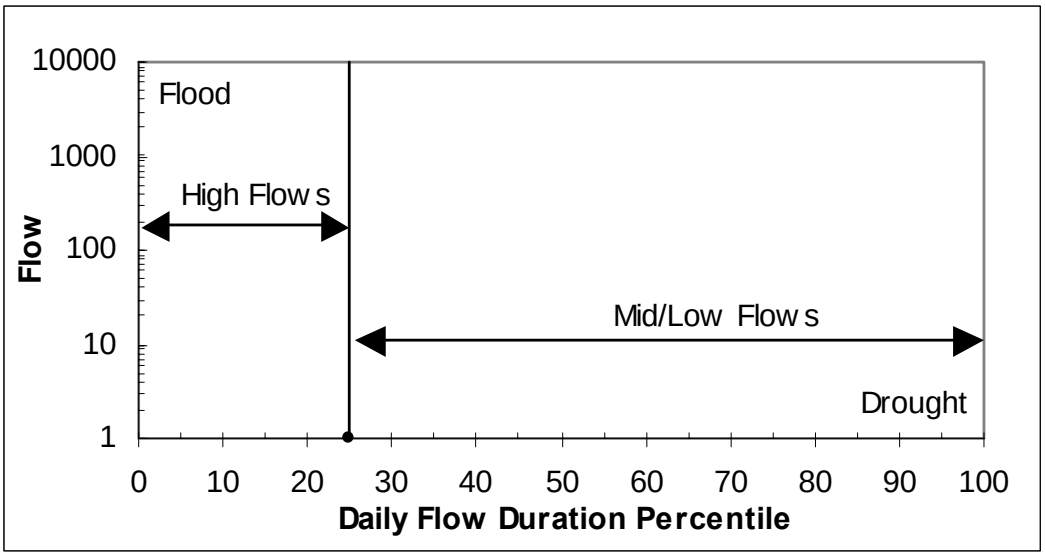

Figure 2.3.1: Conceptual Diagram of Flow Duration Zones

During high flows a significant portion of the total stream flow is from surface flow contributions. Low flow conditions represent periods with minimal rainfall and surface runoff. There is typically a transitional period (mid flows) between the high and low flow durations that is representative of varying contributions of surface flow inputs that result from differing rainfall volumes and antecedent soil moisture conditions. The division of the entire flow regime into strata enables the estimation of a less biased geometric mean from routine monitoring data that more closely approaches steady state. Based on a flow analysis of several watersheds throughout Maryland, it was determined that flows within the 25th to 30th daily flow duration percentiles were representative of average daily flows. It is assumed for this analysis that flows above the 25th percentile represent high flows and flows below the 25th percentile represent mid/low flows. A detailed method of how the flow strata were defined is presented in Appendix B.

Factors for estimating a steady-state geometric mean are based on the frequency of each flow stratum. The weighting factor accounts for the proportion of time that each flow stratum represents. The weighting factors for an average hydrological year used in the Jones Falls TMDL analysis are presented in the following table (Table 2.3.2).

Table 2.3.2: Weighting factors for Average Hydrology Year Used for Estimation of Geometric Means in the Jones Falls Watershed (Average Hydrology Year)

Flow Duration Zone	Duration Interval	Weighting Factor
High Flows	0 – 25%	0.25
Mid/Low Flows	25 – 100%	0.75

Bacteria enumeration results for samples within a specified flow stratum will receive their corresponding weighting factor. The steady-state geometric mean is calculated as follows:

$$M = \sum_{i=1}^{2} M_i * W_i \qquad (1)$$

where

$$M_i = \frac{\sum_{j=1}^{n_i} \log_{10}(C_{i,j})}{n_i} \qquad (2)$$

M = log weighted mean
M_i = log mean concentration for stratum *i*
W_i = Proportion of stratum *i*
$C_{i,j}$ = Concentration for sample *j* in stratum *i*
n_i = number of samples in stratum *i*

Finally the steady-state geometric mean concentration is estimated using the following equation:

$$C_{gm} = 10^{M} \qquad (3)$$

Cgm = Steady-state geometric mean concentration

Tables 2.3.3 and 2.3.4 present the maximum and minimum concentrations by stratum, geometric means by stratum and the overall steady-state geometric mean for the Jones Falls subwatersheds for the annual and the seasonal (May 1st –September 30th) periods.

Table 2.3.3: Jones Falls Annual Steady-state Geometric Mean by Stratum per Subwatersheds

Station	Flow Stratum	# Samples	*E. coli* Minimum (MPN/100ml)	*E. coli* Maximum (MPN/100ml)	Annual Steady-state Geometric Mean (MPN/100ml)	Annual Overall Geometric Mean (MPN/100ml)
JON0184	**High**	6	40	36,500	532	306
	Low	18	40	1,260	254	
UQQ0005	**High**	6	40	14,400	593	406
	Low	18	30	2,600	358	
JON082	**High**	6	40	22,800	619	141
	Low	18	10	3,450	86	
JON0039	**High**	9	210	43,500	2,679	712
	Low	15	70	3,260	458	
SRU0005	**High**	9	450	54,800	4,545	2,392
	Low	15	240	24,190	1,931	

Table 2.3.4: Jones Falls Seasonal (May 1st-September 30th) Period Steady-state Geometric Mean by Stratum per Subwatersheds

Station	Flow Stratum	# Samples	*E. coli* Minimum (MPN/100ml)	*E. coli* Maximum (MPN/100ml)	Annual Steady-state Geometric Mean (MPN/100ml)	Annual Overall Geometric Mean (MPN/100ml)
JON0184	**High**	4	420	36,500	1,545	664
	Low	8	150	1,210	501	
UQQ0005	**High**	4	460	14,400	1,368	976
	Low	8	300	2,600	872	
JON082	**High**	4	230	22,800	1,152	236
	Low	8	10	3,260	139	
JON0039	**High**	5	210	43,500	1,164	495
	Low	7	140	2,050	372	
SRU0005	**High**	5	750	54,800	9,105	3343
	Low	7	530	24,190	2,394	

2.4 Source Assessment

Nonpoint Source Assessment

Nonpoint sources of fecal bacteria do not have one discharge point but occur over the entire length of a stream or waterbody. During rain events, surface runoff transports water and fecal bacteria over the land surface and discharges to the stream system. This transport is dictated by rainfall, soil type, land use, and topography of the watershed. Many types of nonpoint sources introduce fecal bacteria to the land surface, including the manure spreading process, direct deposition from livestock during the grazing season, and excretions from pets and wildlife. The deposition of non-human fecal bacteria directly to the stream occurs when livestock or wildlife have direct access to the waterbody. Nonpoint source contributions from human activities generally arise from failing septic systems and their associated drain fields or leaking infrastructure (*i.e.*, sewer systems). Land use in the Jones Falls watershed consists primarily of forested and developed land uses; therefore, sources associated with agricultural land use (*i.e.*, livestock) represent a minimal contribution to the load allocation (LA) in this watershed. The entire watershed is covered by two National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) individual permits; therefore, contributions from domestic animal and human sources will be categorized under point sources or Waste Load

Allocations (WLAs). Wildlife contributions will be distributed between WLAs and LAs due to the presence of wildlife in both developed and undeveloped areas of the watershed.

Sewer Systems

Sewage collection systems within the Jones Falls watershed convey wastewater from municipalities in Baltimore County and Baltimore City. The wastewater is treated by one municipal wastewater treatment plant (WWTP), the Back River WWTP. Some sections of the Baltimore City sewage collection system are combined sewer systems (CSSs), receiving stormwater as well as wastewater. In addition, storm water in the watershed is conveyed through storm sewers covered by NPDES MS4 permits. Because the bacteria sources associated with these sewer systems are thus derived from point sources, they are addressed in the Point Source Assessment section below.

Septic Systems

There are on-site disposal (septic) systems located in the northern and western part of the Jones Falls watershed. Table 2.4.1 displays the number of septic systems and households per subwatershed. Figure 2.4.1 presents the areas covered by sewers and the septics location in the Jones Falls watershed.

Table 2.4.1: Septic Systems and Households per Subwatershed in Jones Falls Watershed

Subwatershed Station	Households per Subwatershed	Septics Systems (units)
UQQ0005	9,956	633
SRU0005	7,207	0
JON0184	13,558	3,998
JON0082	8,276	464
JON0039	20,783	134

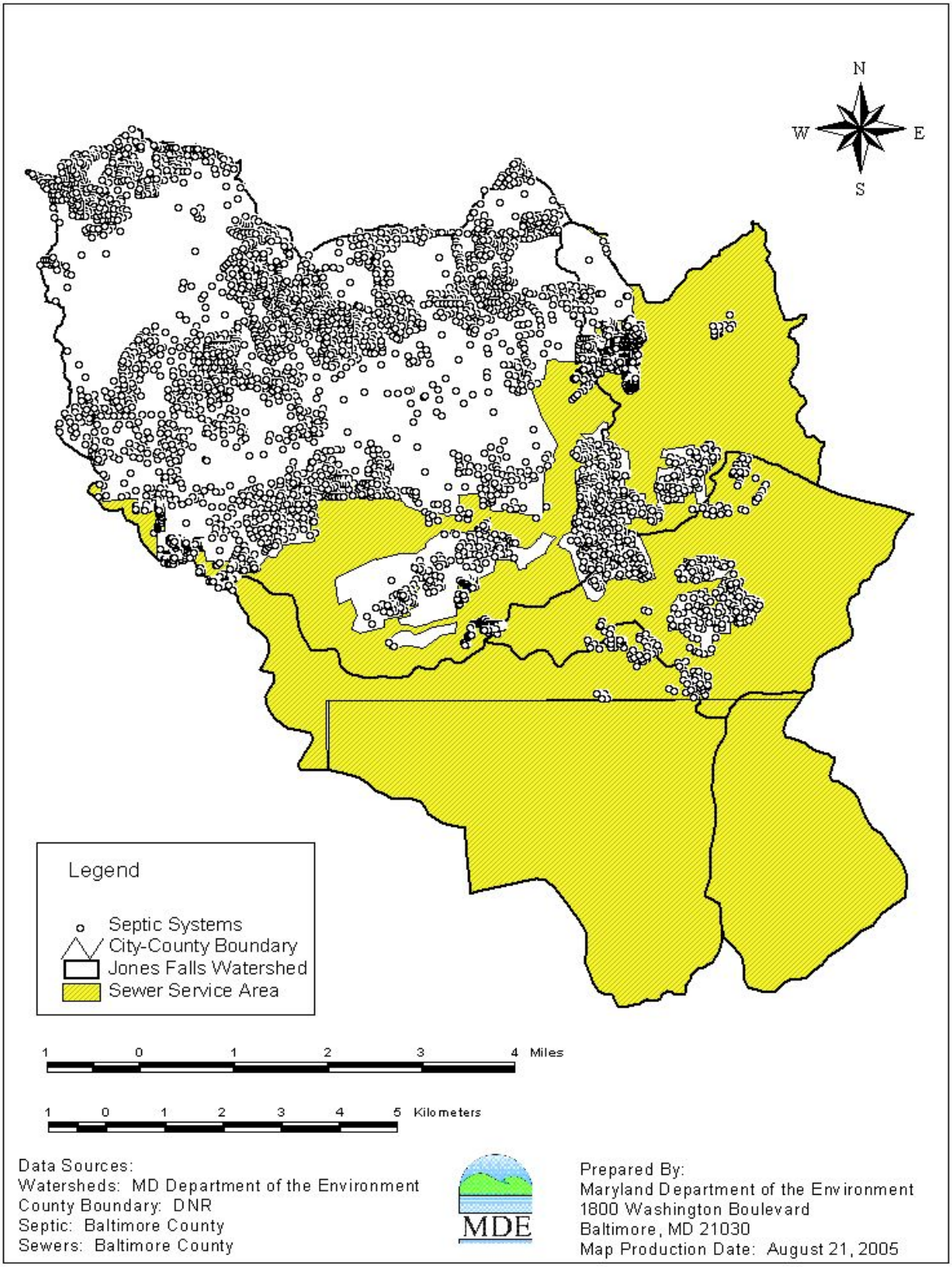

Figure 2.4.1: Sanitary Sewer Service Area and Septics in the Jones Falls Watershed

Point Source Assessment

There are two broad types of National Pollutant Discharge Elimination System (NPDES) permits considered in this analysis, individual and general. Both types of permits include industrial and municipal categories. Individual permits can include industrial and municipal WWTPs and Phase I municipal separate storm sewer systems (MS4s). MDE general permits have been established for surface water discharges that include: Phase II and other MS4 permits, surface coal mines, mineral mines, quarries, borrow pits, ready-mix concrete, asphalt plants, seafood processors, hydrostatic testing of tanks and pipelines, marinas, concentrated animal feeding operations, and stormwater associated with industrial activities.

Municipal Separate Stormwater Systems (MS4)

The Jones Falls watershed is located in Baltimore City and Baltimore County, which are both individual Phase I National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit jurisdictions. The MS4 permits cover stormwater discharges from the municipal separate stormwater sewer systems in the City and the County.

Baltimore City has conducted stormwater monitoring for 15 years in the area, both at the outfalls and in the stream. The City has monitored for fecal bacteria during base flow and storm events. Broken sanitary pipes laid in the streambed are a major source of fecal bacteria. As a result, fecal concentrations are higher in Jones Falls during dry weather than during wet weather, because the wastewater is exfiltrating (seeping) into the stream.

Sanitary Sewer Overflows

Sanitary Sewer Overflows (SSOs) occur when the capacity of a sanitary sewer is exceeded. There are several factors that may contribute to SSOs from a sewer system, including pipe capacity, operations and maintenance effectiveness, sewer design, age of system, pipe materials, geology and building codes. SSOs are prohibited by the facilities' permit and therefore must be reported to MDE's Water Management Administration in accordance with COMAR 26.08.10, to be addressed under the State's enforcement program.

In 2002, Baltimore City, MDE, and EPA entered into a civil consent decree to address SSOs and combined sewer overflows (CSOs)[1] within its jurisdictional boundaries. See U.S., et al., v. Mayor and City Council of Baltimore, JFM-02-12524, Consent Decree (entered Sept. 30, 2002). Similarly, in 2005, Baltimore County, MDE and EPA entered into a civil consent decree to address SSOs in the County. See U.S., et al. v. Baltimore County, AMD-05-2028, Consent Decree (entered Sept. 20, 2006). The consent decrees require the City and the County to evaluate their sanitary sewer systems and to repair, replace, or rehabilitate the systems as indicated by the results of those evaluations, with all work to be completed by January 2016 for Baltimore City and by March 2020 for Baltimore County.

[1] A "combined sewer system" is a sewer system in which stormwater and sanitary sewerage are conveyed through a common set of pipes for treatment at a wastewater treatment plant. A CSO is an overflow from such a combined system. Baltimore City agreed in the Consent Decree to separate the sanitary and stormwater lines in the small areas served by a combined system and has completed that separation.

There were a total of 64 SSO events reported between October 2002 and October 2003. Approximately 454,066 gallons of SSO discharge were released through various waterways (surface water, groundwater, sanitary sewers, *etc*.) in the Jones Falls mainstem and tributaries (MDE, Water Management Administration). Figure 2.4.2 depicts the location where SSOs occurred between October 2002 and 2003 in the Jones Falls watershed.

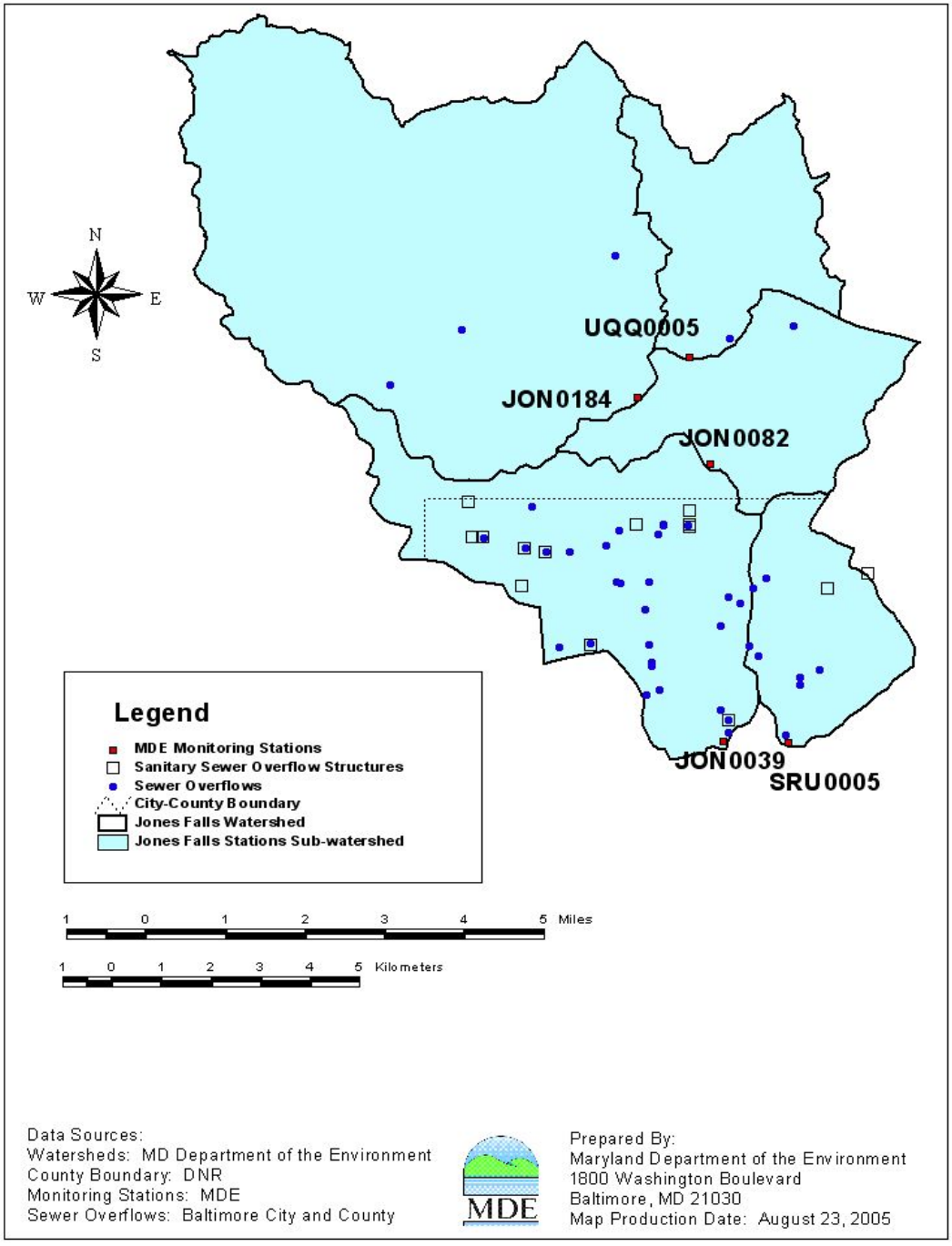

Figure 2.4.2: Location of Sanitary Sewer Overflows in the Jones Falls Watershed

SSO and CSO Structures

CSO and SSO structures, which are a part of the sewage collection system infrastructure, are designed to release sewage when the capacity of a combined or separate sewer system is exceeded, in order to prevent backups within the collection system. Like non-structural SSOs, there are several factors that may contribute to structural CSOs and SSOs from a sewage collection system, including pipe capacity, operations and maintenance effectiveness, sewer design, age of system, pipe materials, geology and building codes. Structural CSOs and SSOs are designed to discharge; therefore, they are subject to NPDES permit requirements. As explained in the preceding section, all overflow structures will be eliminated from the sanitary sewer system by January 2016 for Baltimore City and by March 2020 for Baltimore County.

In the Jones Falls watershed, the Back River WWTP is responsible for all CSO and SSO structural releases under their associated NPDES permits. The watershed contains a total of 17 sewer overflow structures. Table 2.4.2 and Figure 2.4.3 display the location of CSO and SSO structures which discharge into the Jones Falls and its tributaries.

Table 2.4.2: Sanitary and Combined Sewer Overflow Structures in the Jones Falls Watershed

Treatment Plant	NPDES ID	CSO/SSO Structure ID	Type	Latitude	Longitude	Receiving Water
Back River WWTP	MD0021555	20	SSO	39.372	-76.701	Western Run
		21	SSO	39.365	-76.700	Western Run
		22	SSO	39.365	-76.697	Western Run
		23	SSO	39.363	-76.688	Western Run
		24	SSO	39.362	-76.683	Western Run
		29	SSO	39.367	-76.662	Western Run
		31	SSO	39.356	-76.688	Western Run
		32	SSO	39.353	-76.693	Western Run
		33	SSO	39.367	-76.649	Jones Falls
		34	SSO	39.367	-76.649	Jones Falls
		36	SSO	39.370	-76.649	Jones Falls
		67	SSO	39.313	-76.622	Jones Falls
		68	SSO	39.311	-76.621	Jones Falls
		69	SSO	39.307	-76.618	Jones Falls
		72	SSO	39.305	-76.611	Jones Falls
		125	SSO	39.308	-76.618	Jones Falls
		129	SSO	39.355	-76.617	Stoney Run

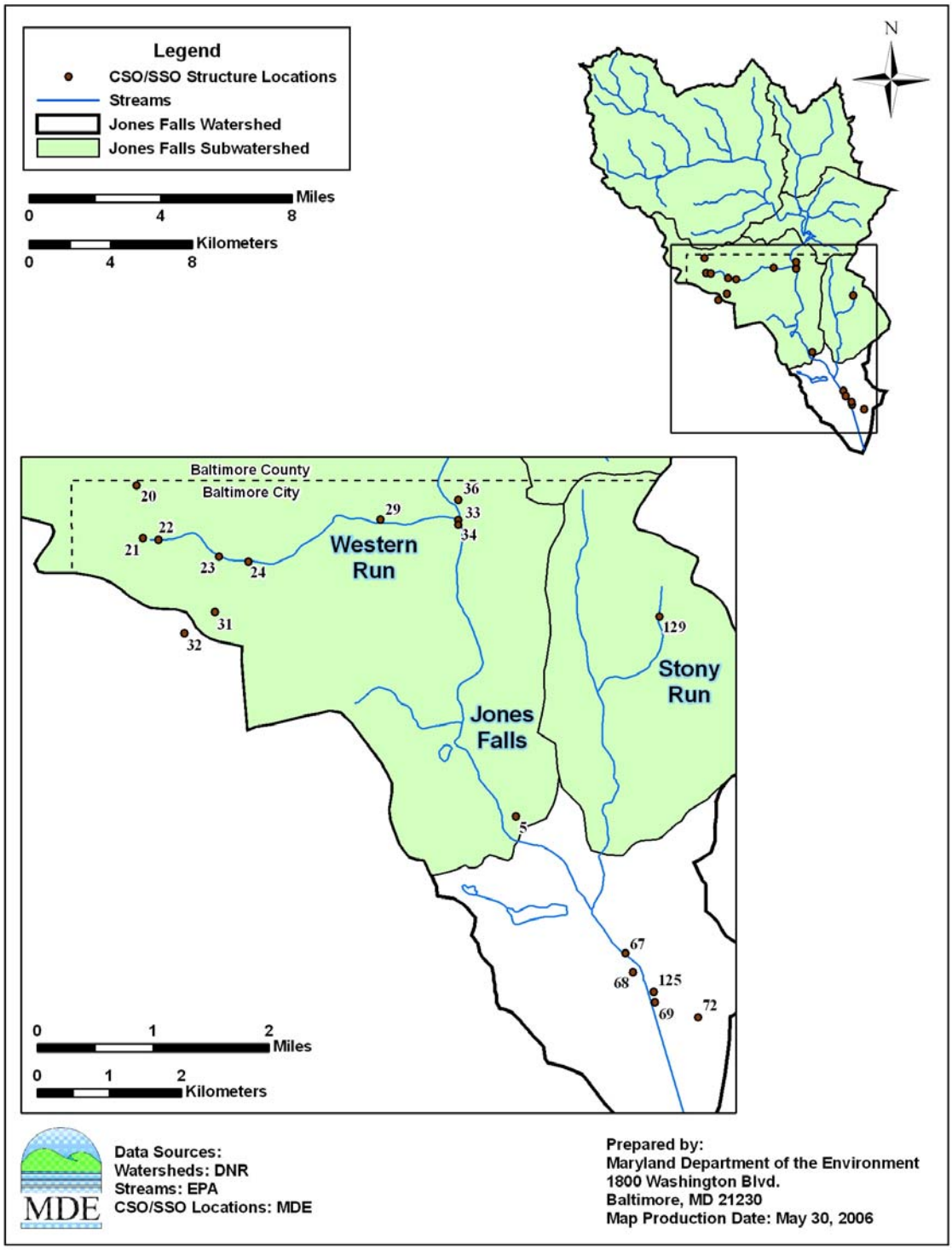

Figure 2.4.3: Sanitary and Combined Sewer Overflows Structures in the Jones Falls Watershed

Municipal and Industrial WWTPs

Based on the point source permitting information, there are seven NPDES industrial WWTPs in the watershed but none of them are permitted to discharge fecal bacteria into Jones Falls. There are two NPDES municipal point source facilities with permits regulating the discharge of fecal bacteria directly into the Jones Falls watershed: Villa Julie College and St. Timothy's School (Table 2.4.3 and Figure 2.4.4). The St. Timothy's School NPDES WWTP has a current permit, but the company managing the plant has informed MDE that the WWTP will be connected to the Baltimore County collection system by the end of July 2006 (Telephone conversation with Mr. Robert Corn, Miller Environmental Services, June 2006).

Table 2.4.3: NPDES municipal WWTPs with permits regulating the discharge of fecal bacteria directly in the Jones Falls Watershed (02-13-09-04)

Permittee	NPDES Permit No.	County	Average Annual Flow (MGD)	Average Annual Fecal Coliform Concentrations (MPN/100ml)	Fecal Coliform Load Per Day (Billion MPN/day)
Villa Julie WWTP	MD0066001	Baltimore County	0.0078	14.50	0.0043
St. Timothy's School WWTP	MD0056103	Baltimore County	0.0053	48.14	0.0097

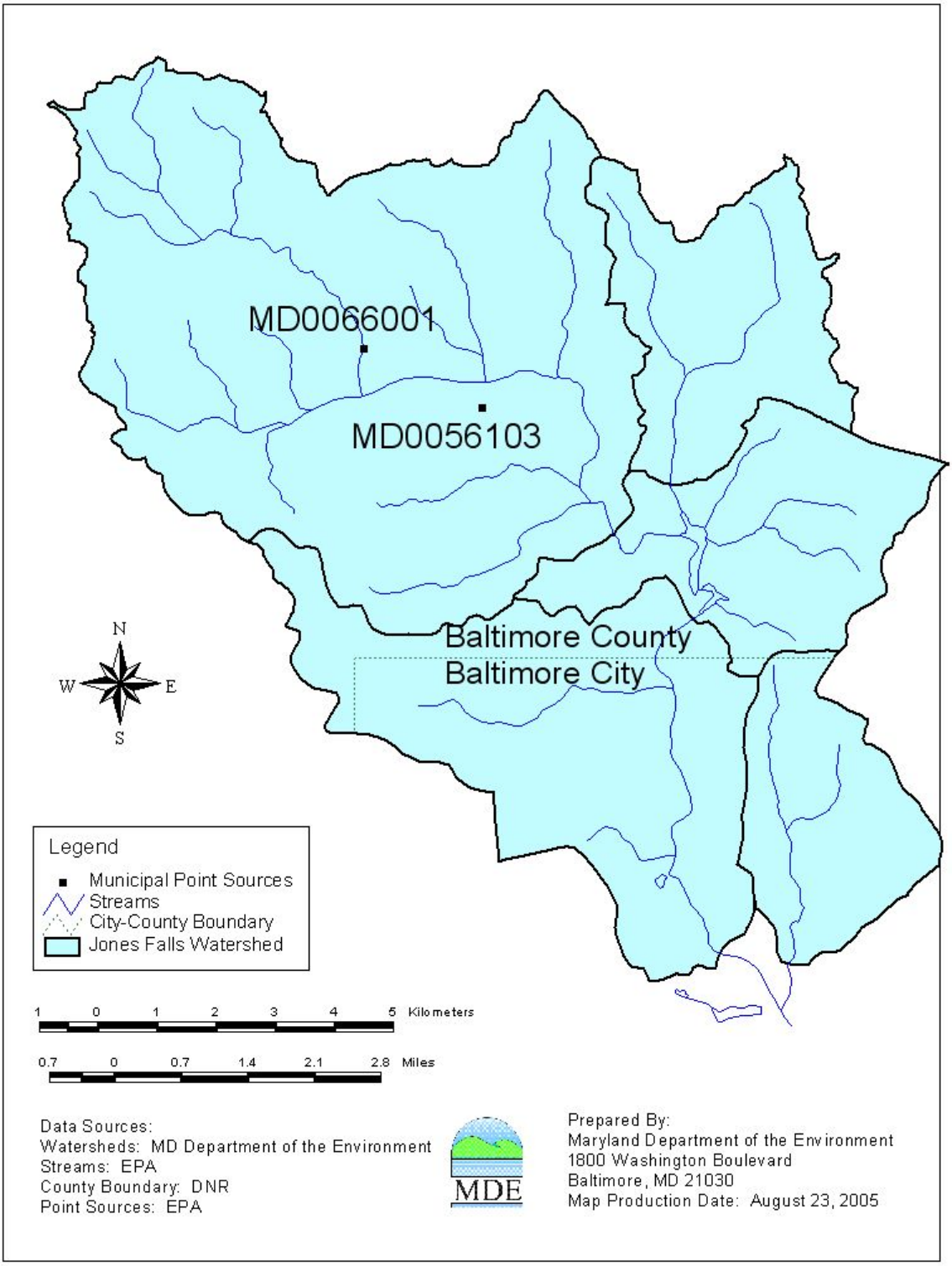

Figure 2.4.4: NPDES WWTPs with Permits Regulating the Discharge of Fecal Bacteria in the Jones Falls Watershed

Bacteria Source Tracking

Bacteria source tracking (BST) was used to identify the relative contribution of bacteria from different sources in in-stream water samples. BST Monitoring was conducted at four stations throughout the Jones falls watershed with 12 samples (one per month) collected for a one-year duration. Sources are defined as domestic (pets and human associated animals), human (human waste), livestock (agricultural animals), and wildlife (mammals and waterfowl). To identify sources, samples are collected within the watershed from known fecal sources and the patterns of antibiotic resistance of these known sources are compared to isolates of unknown bacteria from ambient samples. Details of the BST methodology and data can be found in Appendix C.

An accurate representation of the expected average source at each station is estimated by using a stratified weighted mean of the identified sample results over the specified period. The weighting factors are based on the log10 of the bacteria concentration and the percent of time that represents the high stream flow or low stream flow (see Appendix B). The procedure for calculating the stratified weighted mean of the sources per monitoring station as follows:

1. Calculate the percentage of isolates per source per each sample date (S).
2. Calculate the weighted percentage (MS) of each source per flow strata (high/low) (see Section 4). The weighting is based on the $\log_{10}$ bacteria concentration for the water sample.
3. The final weighted mean source percentage, for each source category, is based on the proportion of time in each flow duration zone (see Appendix C).

The weighted mean for each source category is calculated using the following equations:

$$M_k = \sum_{i=1}^{2} MS_{i,k} * W_i \qquad (4)$$

where

$$MS_{i,k} = \frac{\sum_{j=1}^{n_i} \log_{10}(C_{i,j}) * S_{i,j,k}}{n_i} \qquad (5)$$

M_k = weighted mean proportion of isolates of source *k*
$MS_{i,k}$ = Weighted mean proportion of isolates for source k in stratum *i*
W_i = Proportion covered by stratum *i*
i = stratum
j = sample
k = Source category (1 = human, 2 = domestic, 3 = livestock, 4 = wildlife, 5 = unknown)
C*i,j* = Concentration for sample *j* in stratum *i*
S*i,j,k* = Proportion of isolates for sample *j*, of source k in stratum *i*
n_i = number of samples in stratum *i*

The complete distributions of the annual and seasonal periods source loads are listed in Tables 2.4.4 and 2.4.5. Details of the BST data can be found in Appendix C.

Table 2.4.4: Distribution of Fecal Bacteria Source Loads in the Jones Falls Watershed for the Average Annual Period

STATION	Flow Stratum	% Domestic Animals	% Human	% Livestock	% Wildlife	% Unknown
UQQ0005	High Flow	16	40	14	7	23
	Low Flow	14	67	4	4	12
	Weighted	14	60	6	5	15
SRU0005	High Flow	9	74	3	1	13
	Low Flow	11	57	4	1	27
	Weighted	10	61	4	1	23
JON0184	High Flow	16	44	17	9	14
	Low Flow	26	46	13	2	12
	Weighted	24	45	14	4	13
JON0082	High Flow	9	56	13	3	20
	Low Flow	23	44	10	4	19
	Weighted	19	48	11	4	19
JON0039	High Flow	20	62	2	1	15
	Low Flow	17	58	10	4	11
	Weighted	17	59	8	3	12

Table 2.4.5: Distribution of Fecal Bacteria Source Loads in the Jones Falls Watershed for the Seasonal Period (May 1st – September 30th)

STATION	Flow Stratum	% Domestic Animals	% Human	% Livestock	% Wildlife	% Unknown
UQQ0005	High Flow	17	45	14	6	17
	Low Flow	14	66	4	4	13
	Weighted	15	61	7	4	14
SRU0005	High Flow	15	73	6	0	6
	Low Flow	10	67	8	1	14
	Weighted	11	68	7	1	12
JON0184	High Flow	19	53	15	8	4
	Low Flow	28	45	11	1	14
	Weighted	26	47	13	3	11
JON0082	High Flow	13	66	7	2	11
	Low Flow	20	52	11	2	13
	Weighted	18	56	10	2	13
JON0039	High Flow	23	55	3	0	18
	Low Flow	21	51	12	4	12
	Weighted	22	52	10	3	13

3.0 TARGETED WATER QUALITY GOAL

The overall objective of the fecal bacteria TMDL set forth in this document is to establish the loading caps needed to ensure attainment of water quality standards in the Jones Falls watershed. These standards are described fully in Section 2.3, "Water Quality Impairment."

4.0 TOTAL MAXIMUM DAILY LOADS AND SOURCE ALLOCATION

4.1 Overview

This section provides an overview of the non-tidal fecal bacteria TMDL development, with a discussion on the many complexities involved with the estimation of bacteria concentrations, loads and sources. The second section presents the analysis framework and how the hydrological, water quality and BST data are linked together in the TMDL process. The third section describes the analysis for estimating a representative geometric mean fecal bacteria concentration and baseline loads. The analysis methodology is based on available monitoring data and is specific to a free flowing stream system. The fourth section addresses critical conditions and seasonality. The fifth section presents the margin of safety. The sixth section discusses TMDL loading caps. The seventh section presents TMDL scenario descriptions. The eighth section presents the load allocations. Finally, in the ninth section, the TMDL equation is summarized.

To be most effective, the TMDL provides a basis for allocating loads among the known pollutant sources in the watershed so that appropriate control measures can be implemented and water quality standards achieved. By definition, the TMDL is the sum of the individual waste load allocations (WLA) for point sources, load allocations (LA) for nonpoint sources and natural background sources. A margin of safety (MOS) is also included and accounts for the uncertainty in the analytical procedures used for water quality modeling, and the limits in scientific and technical understanding of water quality in natural systems. Although this formulation suggests that the TMDL be expressed as a load, the Code of Federal Regulations (40 CFR 130.2(i)) states that the TMDL can be expressed in terms of "mass per time, toxicity or other appropriate measure."

For many reasons, bacteria are difficult to simulate in water quality models. They reproduce and die off in a non-linear fashion as a function of many environmental factors, including temperature, pH, turbidity (UV light penetration), and settling. They occur in concentrations that vary widely (*i.e.*, over orders of magnitude) and accurate estimations of source inputs are difficult to develop. Finally, limited data are available to characterize the effectiveness of any program or practice at reducing bacteria loads (Schueler, 1999).

Bacteria concentrations, determined through laboratory analysis of in-stream water samples for bacteria indicators (*e.g., E. coli*), are expressed in either colony forming units (CFU) or most probable number (MPN) of colonies. The first method (Method 1600) is a direct estimate of the bacteria colonies (EPA, 1985), and the second (Method 9223B) is a statistical estimate of the number of colonies (APHA, 1998.) Enumeration results indicate the extreme variability in the

total bacteria counts. The distribution of the enumeration results from water samples tends to be lognormal, with a strong positive skew of the data. Estimating loads of constituents that vary by orders of magnitude can introduce much uncertainty and result in large confidence intervals around the final results.

Estimating bacteria sources can be problematic due to the many assumptions required and the limited available data. For example, when considering septic systems, information is required on spatial location of failing septic systems, consideration of transport to in-stream assessment location and estimation of the load from the septic system (degree of failure). Secondary sources, such as illicit discharges, also add to the uncertainty in a bacteria water quality model.

Estimating domestic animal sources requires information regarding the pet population in a watershed, how often the owners clean up after them, and the spatial location of the pet waste relative to the stream (near-field for upland transport). Livestock sources are limited by spatial resolution of Agricultural Census information (available at the county level), site-specific issues relating to animals' confinement, and confidentiality of data related to the development of Nutrient Management Plans. The most uncertain source category is wildlife. In an urban environment, this can result from the increased deer populations near streams to rat populations in storm sewers. In rural areas, estimation of wildlife populations and habitat locations in a watershed is required.

MDE appreciates the inherent uncertainty in developing traditional water quality models for the calculation of bacteria TMDLs. Traditional water quality modeling is very expensive and time consuming and, as identified, contains many potential uncertainties. MDE believes it should be reserved for specific constituents and complex situations. In this TMDL, MDE applies an analytical method which, when combined with BST analysis, appears to provide reasonable results (Cleland, 2003). Using this approach, Maryland can address more impaired streams in the same time period than by using the traditional water quality modeling methods.

4.2 Analysis Framework

This TMDL analysis uses flow duration curves to identify flow intervals that are indicators of hydrological conditions (*i.e.*, annual average, critical conditions). As explained previously, this analytical method, combined with water quality monitoring data and BST provides a better description of water quality and meets TMDL requirements.

Figure 4.2.1 illustrates how the hydrological (flow duration curve), water quality and BST data are linked together for the TMDL development.

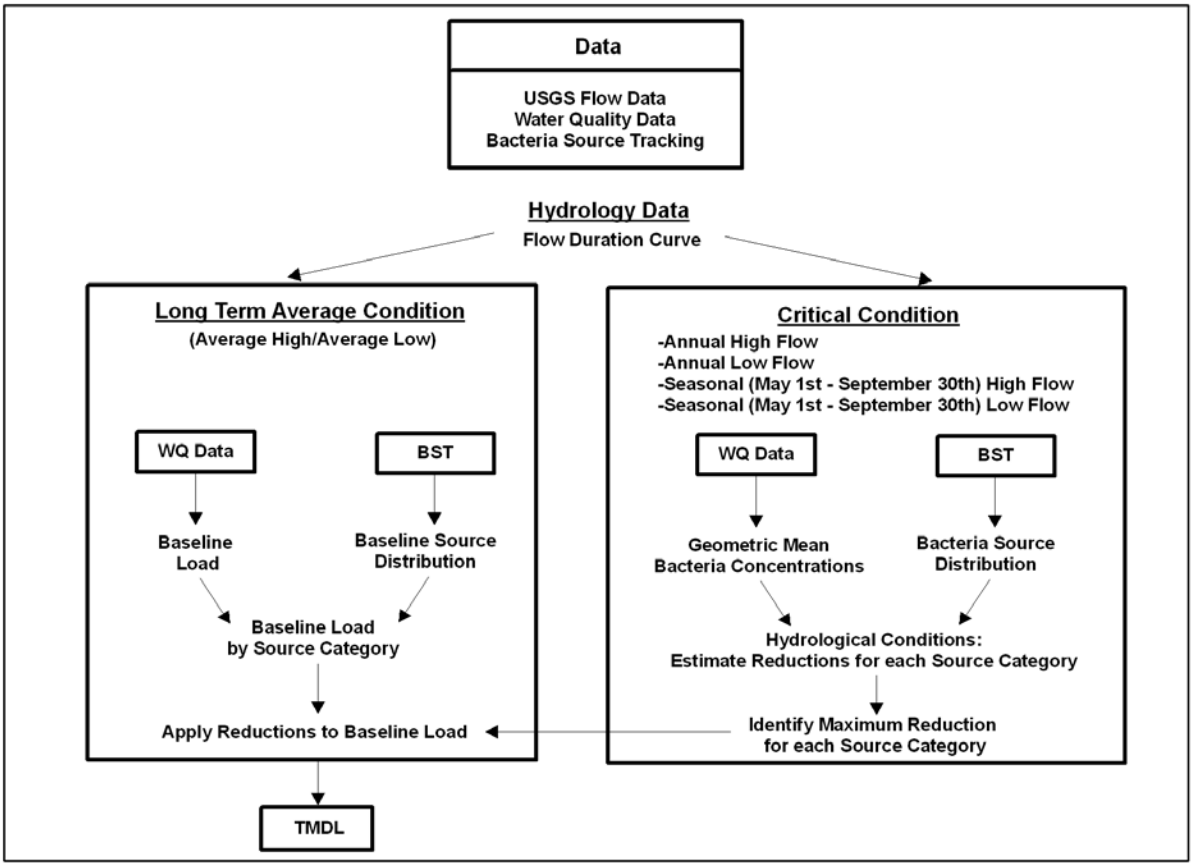

Figure 4.2.1: Diagram of Non-tidal Bacteria TMDL Analysis Framework

4.3 Estimating Baseline Loads

Baseline loads estimated in this TMDL analysis are reported as long-term average loads. The geometric mean concentration is calculated from the log transformation of the raw data. Statistical theory tells us that when back-transformed values are used to calculate average daily loads or total annual loads, the loads will be biased low (Richards, 1998). To avoid this bias, a factor should be added to the log-concentration before it is back transformed. There are several methods of determining this bias correction factor, ranging from parametric estimates resulting from the theory of the log-normal distribution to non-parametric estimates using a smearing factor. [Ferguson, 1986; Cohn *et al*., 1989; Duan, 1983]. There is much literature on the applicability of and results from these various methods with a summary provided in Richards (1998). Each has advantages and conditions of applicability. A non-parametric estimate of the bias correction factor (Duan, 1983) was used in this TMDL analysis.

The bias correction factor is estimated as follows:

$F_1 = A_i / C_i$ (6)

F_1 = Bias correction factor
A_i = Long term annual arithmetic mean for stratum *i*
C_i = Long term annual geometric mean for stratum *i*

Daily average flows are estimated for each flow stratum using the watershed area ratio approach, since nearby long-term flow monitoring data are available.

The loads for each stratum are estimated as follows:

$$L_i = Q_i * C_i * F_1 * F_2 \quad (7)$$

where

L_i = Daily average load (MPN/day) at each station for stratum *i*
Q_i = Daily average flow (cfs) for stratum *i*
C_i = long term annual geometric mean for stratum *i*
F_1= Bias correction factor
F_2= Unit conversion factor from cfs*MPN/100ml to MPN/day (2.4466x107)

For each subwatershed, the total baseline load is estimated as follows:

$$L_t = \sum_{i=1}^{2} L_i * W_i \quad (8)$$

L_t = Daily average load at station (MPN/day)
W_i= Proportion or weighting factor of stratum *i*

In the Jones Falls watershed, weighting factors of 0.25 for high flow and 0.75 for low flow were used to estimate the average annual baseline load expressed as billion MPN *E. coli*/day. Results are found in Table 4.3.1.

Table 4.3.1: Baseline Load Calculations

Station		JON0184	UQQ0005	JON0082sub	JON0039sub	SRU0005
Area (mi^2)		26.03	5.81	6.43	11.79	4.53
High Flow	Daily Average Flow (cfs)	80.9	18.1	20.0	77.8	17.8
	E. coli Concentration (MPN/100ml)	532.6	592.9	2,952.6	5,211.2	4,544.6
	Bias Correction Factor	12.0	4.7	6.7	3.6	3.0
Low Flow	Daily Average Flow (cfs)	19.1	4.4	4.9	5.5	3.1
	E. coli Concentration (MPN/100ml)	254.5	357.7	637.2	1,270.6	1,931.5
	Bias Correction Factor	1.6	2.0	5.7	1.8	2.3
Baseline Load (Billion *E. coli* MPN/day)		3,305	367	2,431	9,152	1,744

To treat each subwatershed as a separate entity, thus allowing separate loads and reduction targets for watersheds that have one or more upstream monitored sub-watersheds, they were subdivided into unique watershed segments. For stations JON0082 and JON0039, there is an upstream monitoring station (Figure 4.3.1). The subwatersheds were defined with the extension sub to the station name (e.g., JON0082sub, JON0039sub) and the total baseline loads from the upstream watersheds, estimated from the monitoring data, were multiplied by a transport factor derived from first order decay. The decay factor for *E. coli* used in the analysis was obtained from the study "Pathogen Decay in Urban Waters" by Easton *et al* (2001), and was estimated by linear regression of counts of microorganisms versus time (Die-off plots). The estimated transported loads were then subtracted from the downstream cumulative load to estimate the adjacent subwatershed load.

The general equation for the flow mass balance is:

$$\sum Q_{us} + Q_{sub} = Q_{ds} \quad (8)$$

where

Q_{us} = Upstream flow
Q_{sub} = Subwatershed flow
Q_{ds} = Downstream flow

and the general equations for bacteria loading mass balance:

$$\sum (e^{kt} * Q_{us} * C_{us}) + Q_{sub} * C_{sub} = Q_{ds} * C_{ds} \quad (9)$$

where

C_{us} = Upstream bacteria concentration
k = Bacteria (*E. coli*) decay coefficient (1/day) = 0.762 day^{-1}
t = travel time from upstream watershed to outlet
C_{sub} = Subwatershed bacteria concentration
C_{ds} = Downstream bacteria concentration

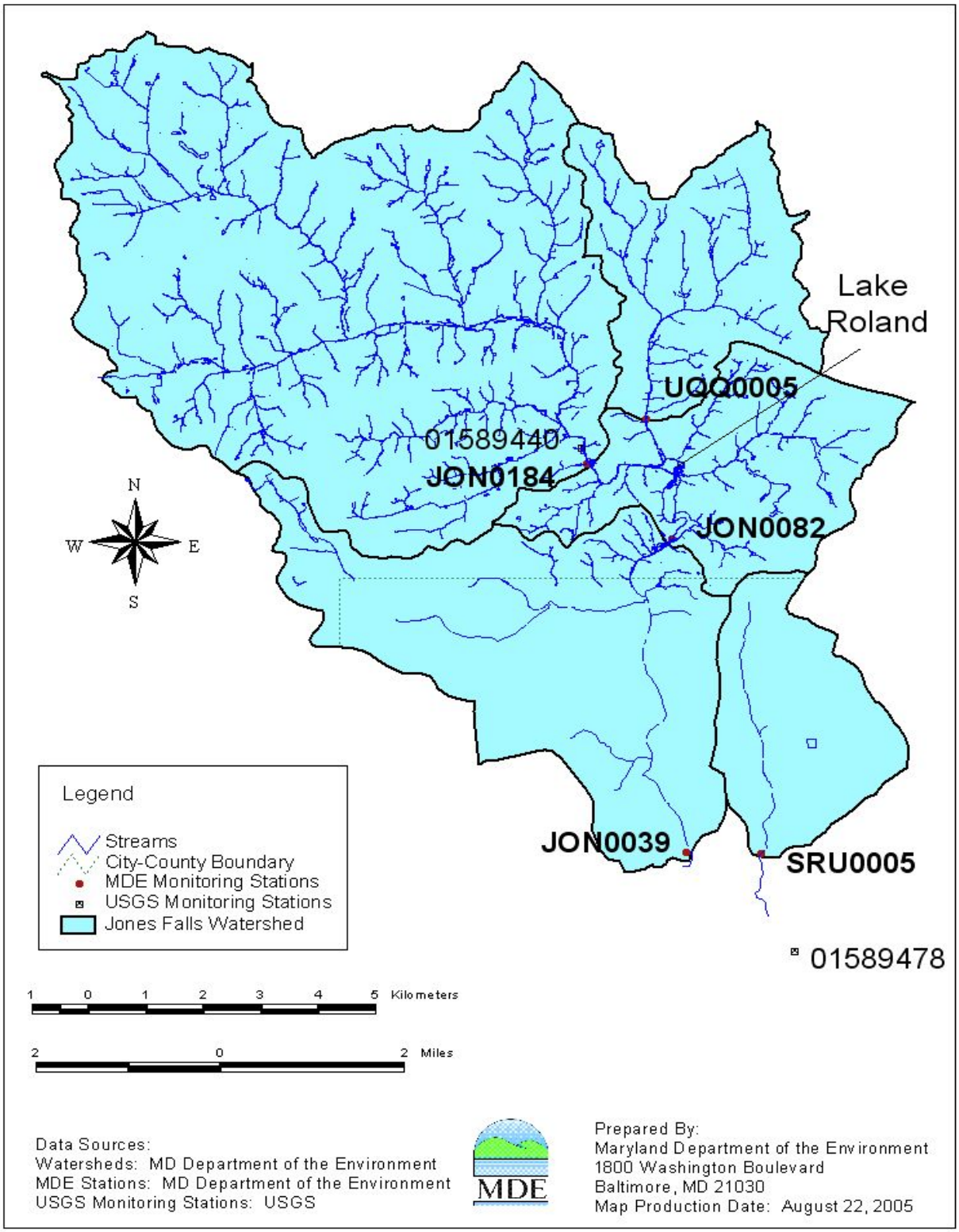

Figure 4.3.1: Monitoring Stations and Subwatersheds in the Jones Falls Watershed

The concentrations in the subwatersheds were estimated by considering the ratio of high flow concentration to low flow concentrations in the upstream watersheds. If the total load and average flow were used to estimate the geometric mean concentration, this estimated concentration would be biased if there was a correlation with flow and concentration. For example, in two strata, the steady-state geometric mean is estimated as follows:

$$L = (Q_{high} * W_{high} * C_{high}) + (Q_{low} * W_{low} * C_{low}) \quad (10)$$

L = Average Load
Q_i = Average flow for stratum i
W_i= Proportion of stratum i
C_i = Concentration for stratum i
n_i = number of samples in stratum i

The load in equation (10) is based on two concentrations and therefore when using the mass balance approach and the total load, this results in two unknowns, C_{high} and C_{low}, within one equation. Thus a relationship between C_{high} and C_{low}, must be estimated to solve for the concentration in both strata. This relationship is estimated using the average of the ratios estimated from the monitoring data in the upstream watersheds. Using this relationship, the following two equations result:

$$C_{low} = \frac{L}{Q_{high} * R * W_{high} + Q_{low} * W_{low}} \quad (11)$$

where

$$R = \frac{C_{high}}{C_{low}} \quad (12)$$

and the final geometric mean concentration is estimated as follows:

$$GM = 10^{W_{high} \log_{10}(C_{high}) + W_{low} \log_{10}(C_{low})} \quad (13)$$

Source estimates from the bacteria source tracking analysis are completed for each station and are based on the contribution from the upstream watershed, if applicable. Given the uncertainty of in-stream bacteria processes and the complexity involved in back-calculating an accurate source transport factor, the sources for JON0082sub, and JON0039sub were assigned from the analysis for JON0082, and JON0039, respectively.

4.4 Critical Condition and Seasonality

Federal regulations (40 CFR 130.7(c)(1)) require TMDLs to take into account critical conditions for stream flow, loading, and water quality parameters. The intent of this requirement is to ensure that the water quality of the waterbody is protected during times when it is most vulnerable.

For this TMDL the critical condition is determined by assessing annual and seasonal hydrological conditions for high flow and low flow periods. Seasonality is captured by assessing the time period when water contact recreation is expected (May 1st - September 30th). The average hydrological condition over a 15-year period is approximately 25% high flow and 75% low flow as defined in Appendix B. Using the definition of a high flow condition occurring when the daily flow duration interval is less than 25% and a low flow condition occurring when the daily flow duration interval is greater than 25%, the critical hydrological condition can be estimated by the percent of high or low flows during a specific period and hydrological condition.

Maryland's proposed fecal bacteria TMDL for Jones Falls has been determined by assessing various hydrological conditions to account for seasonal and annual averaging periods (Table 4.4.1). The following four conditions were used to account for the critical condition: annual high flow, annual low flow, seasonal high flow and seasonal low flow.

Table 4.4.1: Hydrological Conditions Used to Account for Critical Condition and Seasonality

Hydrological Condition		Averaging Period	Water Quality Data Used	Subwatershed	Fraction High Flow	Fraction Low Flow	Period
Annual	High	365 days	All	JON0184, UQQ0005, JON0082sub	0.80	0.20	April 1996 to March 1997
				JON0039sub, SRU0005	0.59	0.41	April 1996 to March 1997
	Low	365 days	All	JON0184, UQQ0005, JON0082sub	0.02	0.98	September 2001 to August 2002
				JON0039sub, SRU0005	0.08	0.92	August 2001 to July 2002
Seasonal	High	May 1st – Sept 30th	May 1st – Sept 30th	JON0184, UQQ0005, JON0082sub	0.78	0.22	May 1st, 1996 to September 30th, 1996
				JON0039sub, SRU0005	0.53	0.47	May 1st 2003 to September 30th, 2003
	Low	May 1st – Sept 30th	May 1st – Sept 30th	JON0184, UQQ0005, JON0082sub	0.01	0.99	May 1st, 2002 to September 30th, 2002
				JON0039sub, SRU0005	0.10	0.90	May 1st 1997 to September 30th, 1997

The critical condition is determined by the maximum reduction per source that satisfies all four conditions in each subwatershed, and is required to meet the water quality standard while minimizing the risk to water contact recreation. It is assumed that the reduction that can be implemented to a bacteria source category will be constant through all conditions.

The monitoring data for all stations located in the Jones Falls watershed cover a sufficient temporal span (at least one year) to estimate annual and seasonal conditions. The required reductions to meet water quality standards in each subwatershed and for each hydrological condition are presented in Table 4.4.2.

Table 4.4.2: Required Reductions to Meet Water Quality Standards

Station	Hydrological Condition		Domestic %	Human %	Livestock %	Wildlife %
JON0184	Annual	High flow	58.0%	98.0%	60.1%	0.0%
		Low flow	0.0%	98.0%	16.9%	0.0%
	Seasonal	High flow	97.7%	98.0%	90.1%	0.0%
		Low flow	49.1%	98.0%	64.6%	0.0%
	Maximum Source Reduction		97.7%	98.0%	90.1%	0.0%
UQQ0005	Annual	High flow	89.9%	98.0%	78.3%	0.0%
		Low flow	0.0%	86.2%	0.0%	0.0%
	Seasonal	High flow	96.6%	98.0%	90.8%	0.0%
		Low flow	60.1%	98.0%	70.7%	0.0%
	Maximum Source Reduction		96.6%	98.0%	90.8%	0.0%
JON0082sub	Annual	High flow	98.0%	98.0%	98.0%	11.1%
		Low flow	69.6%	98.0%	72.6%	0.0%
	Seasonal	High flow	98.0%	98.0%	98.0%	42.5%
		Low flow	73.4%	98.0%	74.1%	0.0%
	Maximum Source Reduction		98.0%	98.0%	98.0%	42.5%
JON0039sub	Annual	High flow	98.0%	98.0%	98.0%	23.0%
		Low flow	84.5%	98.0%	98.0%	0.0%
	Seasonal	High flow	73.7%	98.0%	88.1%	0.0%
		Low flow	56.5%	98.0%	72.4%	0.0%
	Maximum Source Reduction		98.0%	98.0%	98.0%	23.0%
SRU0005	Annual	High flow	89.5%	98.0%	98.0%	0.0%
		Low flow	77.4%	98.0%	98.0%	0.0%
	Seasonal	High flow	98.0%	98.0%	98.0%	75.7%
		Low flow	98.0%	98.0%	98.0%	38.3%
	Maximum Source Reduction		98.0%	98.0%	98.0%	75.7%

4.5 Margin of Safety

A margin of safety (MOS) is required as part of this TMDL in recognition of the many uncertainties in the understanding and simulation of bacteriological water quality in natural systems and in statistical estimates of indicators. As mentioned in Section 4.1, it is difficult to estimate stream loadings for fecal bacteria due to the variation in loadings across sample locations and time. Load estimation methods should be both precise and accurate to obtain the true estimate of the mean load. Refined precision in the load estimation is due to using a stratified approach along the flow duration intervals thus reducing the variation in the estimates. Moreover, Richards (1998) reports that averaging methods are generally biased, and the bias increases as the size of the averaging window increases. Finally, accuracy in the load estimation is based on minimal bias in the final result when compared to the true value.

Based on EPA guidance, the MOS can be achieved through two approaches (EPA, April 1991). One approach is to reserve a portion of the loading capacity as a separate term in the TMDL (*i.e.*, TMDL = LA + WLA + MOS). The second approach is to incorporate the MOS as conservative assumptions used in the TMDL analysis. . For this TMDL, the second approach was used by estimating the loading capacity of the stream based on a more stringent water quality criterion concentration. The *E. coli* water quality criterion concentration was reduced by 5%, from 126 *E. coli* MPN/100ml to 119.7 *E. coli* MPN/100ml.

4.6 TMDL Loading Caps

The TMDL loading cap is an estimate of the assimilative capacity of the monitored watershed and is provided in MPN/day. The loading caps presented in this section are for the watersheds located upstream of monitoring stations JON0184, UQQ0005, JON0082, JON0039 and SRU0005.

The TMDL is based on a long-term average hydrological condition. Estimation of the TMDL requires knowledge of how the bacteria concentrations vary with flow rate or the flow duration interval. This concentration versus flow relationship is accounted for by using the strata defined on the flow duration curve.

The TMDL loading caps are estimated by first determining the baseline or current condition loads for each subwatershed and the associated geometric mean from the available monitoring data. The baseline load is estimated using the geometric mean concentration and average daily flow for each flow stratum. The loads from these two strata are then weighted to represent average conditions (see Table 4.3.1), based on the proportion of each stratum, to estimate the total long-term loading rate.

Next, the percent reduction required to meet the water quality criterion is estimated from the observed bacteria concentrations accounting for the critical conditions (See Section 4.4). A reduction in concentration is proportional to a reduction in load, thus the TMDL is equal to the current baseline load multiplied by one minus the required reduction.

$$TMDL = L_b * (1 - R) \quad (12)$$

where

Lb = Current or baseline load estimated from monitoring data
R = Reduction required from baseline to meet water quality criterion

The bacteria TMDLs for the subwatersheds are shown in Table 4.6.1

Table 4.6.1: Jones Falls Watershed TMDL Summary

Station	Baseline Load *E. coli* (Billion MPN/day)	TMDL Load *E. coli* (Billion MPN/day)	% Target Reduction
JON0184	3,305	250	92.4%
UQQ0005	367	29	92.1%
JON0082sub	2,431	115	95.3%
JON0039sub	9,152	428	95.3%
SRU0005	1,744	38	97.8%
Total	16,998	860	-

4.7 Scenario Descriptions

Source Distribution

The final source distribution is derived from the source proportions listed in Table 2.4.4. For the purposes of the TMDL analysis and allocations, the percentage of sources identified as "unknown" were removed and the known sources were then scaled up proportionally so that they totaled 100%. The source distribution used in this scenario is presented in Table 4.7.1.

Table 4.7.1: Baseline Loads Source Distributions

Station	Domestic		Human		Livestock		Wildlife	
	%	Load (Billion *E. coli* MPN/day)	%	Load (Billion *E. coli* MPN/day)	%	Load (Billion *E. coli* MPN/day)	%	Load (Billion *E. coli* MPN/day)
JON0184	27.4%	906.5	52.0%	1,719.2	16.3%	538.1	4.3%	141.5
UQQ0005	16.8%	61.6	70.5%	258.6	7.4%	27.1	5.3%	19.3
JON0082sub	24.1%	585.5	57.8%	1,404.7	13.2%	321.8	4.9%	118.7
JON0039sub	19.9%	1,816.7	67.5%	6,175.6	9.1%	832.3	3.6%	327.3
SRU0005	13.8%	240.4	80.1%	1,396.2	5.4%	94.1	0.7%	13.0

Practicable Reduction Targets

The maximum practicable reduction (MPR) for each of the four source categories is listed in Table 4.7.2. These values are based on best professional judgment and a review of the available literature. It is assumed that human sources would potentially confer the highest risk of gastrointestinal illness and therefore should have the highest reduction. If a domestic WWTP is located in the upstream watershed, this is considered in the MPR so as to not violate the permitted loads. The domestic animal category includes sources from pets (*e.g.*, dogs) and the MPR is based on an estimated success of education and outreach programs.

Table 4.7.2: Maximum Practicable Reduction Targets

	Human	Domestic	Livestock	Wildlife
Max Practical Reduction per Source	95%*	75%	75%	0%
Rationale	(a) Direct source inputs (b) Human pathogens more prevalent in humans than animals. (c) Enteric viral diseases spread from human to human[1]	Target goal reflects uncertainty in effectiveness of urban BMPs[2] and is also based on best professional judgment	Target goal based on sediment reductions from BMPs[3] and best professional judgment	No programmatic approaches for wildlife reduction to meet water quality standards Waters contaminated by wild animal waste offer a public health risk that is orders of magnitude less than that associated with human waste.[4]

*Since much of the human sources in this watershed are due to infrastructure failure, correction of exfiltration required by a consent decree may result in greater reductions than in other watersheds.

[1]USEPA. 1984. Health Effects Criteria for Fresh Recreational Waters. EPA-600/1-84-004. U.S. Environmental Protection Agency, Washington, DC.
[2]USEPA. 1999. Preliminary Data Summary of Urban Storm Water Best Management Practices. EPA-821-R-99-012. U.S. Environmental Protection Agency, Washington, DC.
[3]USEPA. 2004. Agricultural BMP Descriptions as Defined for The Chesapeake Bay Program Watershed Model. Nutrient Subcommittee Agricultural Nutrient Reduction Workshop.
[4]Environmental Indicators and Shellfish Safety. 1994. Edited by Cameron, R., Mackeney and Merle D. Pierson, Chapman & Hall.

As previously stated, these practicable reduction targets are based on the available literature and best professional judgment. There is much uncertainty with estimated reductions from best management practices (BMPs). The BMP efficiency for bacteria reduction ranged from –6% to +99% based on a total of 10 observations (EPA, 1999). The MPR to agricultural lands was based on sediment reductions identified by the EPA (EPA, 2004).

The practicable reduction scenario was developed based on an optimization analysis whereby a subjective estimate of risk was minimized, and constraints were set on maximum reduction and allowable background conditions. Risk was defined on a scale of one to five, where it was assumed that human sources had the highest risk (5), domestic animal and livestock next (3) and wildlife the lowest (1) (see Table 4.7.2). The objective is to minimize the sum of the risk for all conditions while meeting the maximum practicable reduction constraints. The model was defined as follows:

$$\text{Min} \sum_{i=1}^{4} (Ph*5 + Pd*3 + Pl*3 + Pw*1) \qquad i = \text{hydrological condition}$$

Subject to

C = Ccr
0 <= Rh <= 95%
0 <= Rl <= 75%
0 <= Rd <= 75%
Rw = 0
Ph, Pl, Pd, Pw >= 1%

Where

Ph = % human source in final allocation
Pd = % domestic animal source in final allocation
Pl = % livestock source in final allocation
Pw = % wildlife source in final allocation
C = In-stream concentration
Ccr = Water quality criterion
Rh = Reduction applied to human sources
Rl = Reduction applied to livestock sources
Rd = Reduction applied to domestic animal sources
Rw = Reduction applied to wildlife sources

In none of the subwatersheds could the constraints of this scenario be satisfied, indicating there was not a practicable solution. A summary of the analysis is presented in Table 4.7.3.

Table 4.7.3: Practicable Reduction Results

Station	Applied Reductions				WQS Achievable
	Domestic %	Human %	Livestock %	Wildlife %	
JON0184	75.0%	95.0%	75.0%	0.0%	No
UQQ0005	75.0%	95.0%	75.0%	0.0%	No
JON0082sub	75.0%	95.0%	75.0%	0.0%	No
JON0039sub	75.0%	95.0%	75.0%	0.0%	No
SRU0005	75.0%	95.0%	75.0%	0.0%	No

The TMDL must specify load allocations that will meet the water quality standards. In the practicable reduction targets scenario none of the subwatersheds could meet water quality standards based on MPRs.

To further develop the TMDL, the constraints on the MPRs were relaxed in all five subwatersheds where the water quality attainment was not achievable with the MPRs. In this

subwatershed, the maximum allowable reduction was increased to 98% for all sources, including wildlife. A similar optimization procedure was used to minimize risk. Again, the objective is to minimize the sum of the risk for all conditions while meeting the maximum practicable reduction constraints. The model was defined as follows:

Min $\sum_{i=1}^{7}$ (Ph*5 + Pd*3 + Pl*3 + Pw*1) i = hydrological condition

Subject to

C = Ccr
0 <= Rh <= 98%
0 <= Rl <= 98%
0 <= Rd <= 98%
0 <= Rw <= 98%
Ph, Pl, Pd, Pw >= 1%

Where

Ph = % human source in final allocation
Pd = % domestic animal source in final allocation
Pl = % livestock source in final allocation
Pw = % wildlife source in final allocation
C = In-stream concentration
Ccr = Water quality criterion
Rh = Reduction applied to human sources
Rl = Reduction applied to livestock sources
Rd = Reduction applied to domestic animal sources
Rw = Reduction applied to wildlife sources

The summary of the analysis is presented in Table 4.7.4.

Table 4.7.4: TMDL Reduction Results: Optimization Model Up to 98% Reduction

Station	Domestic %	Human %	Livestock %	Wildlife %	Target Reduction
JON0184	97.7%	98.0%	90.1%	0.0%	92.4%
UQQ0005	96.6%	98.0%	90.8%	0.0%	92.1%
JON0082sub	98.0%	98.0%	98.0%	42.5%	95.3%
JON0039sub	98.0%	98.0%	98.0%	23.0%	95.3%
SRU0005	98.0%	98.0%	98.0%	75.7%	97.8%

4.8 TMDL Allocation

The TMDL allocations include the load allocation (LA) for nonpoint sources, and waste load allocations (WLA) for point sources, including WWTPs (if WWTPs are present in the watershed), stormwater (where MS4 permits are required), and CSOs (in watersheds with permitted CSOs and LTCPs not expecting complete elimination of CSOs). The margin of safety is explicit and is expressed as a 5% reduction of the *E. coli* water quality criterion concentration, from 126 MPN/100ml to 119.7 MPN/100ml. The final loads are based on average hydrological conditions with reductions estimated based on critical hydrological conditions. The load reduction scenario results in a load allocation that will achieve water quality standards. The State reserves the right to revise these allocations provided such allocations are consistent with the achievement of water quality standards.

The bacteria sources are grouped into four categories that are also consistent with divisions for various management strategies. The categories are human, domestic animal, livestock and wildlife. TMDL allocation rules are presented in Table 4.8.1. This table identifies how the TMDL will be allocated among the LA or nonpoint sources and the WLA or point sources (WWTPs, MS4 permits and CSOs, if applicable). Only the final LA or WLA is reported in this TMDL.

Table 4.8.1: Potential Source Contributions for the Jones Falls TMDL Allocations

Allocation Category	LA	WLA		
		WWTPs	MS4s	CSOs
Human		X	X	
Domestic			X	
Livestock	X			
Wildlife	X		X	

Load Allocation (LA)

All four bacteria source categories could contribute to nonpoint source loads (LA). For the human sources, the nonpoint source contribution (LA) in subwatersheds with WWTPs and CSOs is estimated by subtracting the WWTP (if applicable) and CSO loads (if applicable) from the final human load. There are two NPDES WWTPs in subwatershed JON0184, but only one will receive a WLA. There are no subwatersheds in the Jones Falls watershed with assigned NPDES CSS WLA.

Livestock loads are all assigned to the LA. Domestic animals (pets) allocation is assigned to the LA if no MS4 permits exist for the watershed. Since the entire Jones Falls watershed is covered by NPDES MS4 permits, bacteria loads from domestic animal sources are assigned to WLA-MS4 in all five subwatersheds of Jones Falls. However, wildlife sources will be distributed between the LA and the WLA-MS4, based on a ratio of the amount of urban land compared to pasture and forest land in the watershed.

Waste Load Allocation (WLA)

Municipal Separate Storm Sewer Systems (MS4)

Both individual and general NPDES MS4 Phase I and Phase II permits are point sources subject to WLA assignment in the TMDL. Quantification of rainfall-driven nonpoint source loads is uncertain. EPA recognized this in its guidance document entitled "Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs" (November 2002), which states that available data and information usually are not detailed enough to determine WLAs for NPDES-regulated stormwater discharges on an outfall-specific basis. Therefore, in watersheds with an existing MS4 permit, domestic animal bacteria loads will be lumped into a single WLA-MS4 load. In watersheds with no existing individual MS4 permits, these loads will be included in the LA.

The jurisdictions within the Jones Falls watershed, Baltimore County and Baltimore City, are covered by individual Phase I MS4 program regulations. Based on EPA's guidance, the MS4 WLA is presented as one combined load for the entire land area of each county. In the future, when more detailed data and information become available, it is anticipated that MDE will revise the WLA into appropriate WLAs and LAs, and may also revise the LAs accordingly. Note that the overall reductions in the TMDL will not change. The WLA-MS4 distribution between Baltimore City and Baltimore County is presented in Table 4.8.2.

Table 4.8.2: MS4 Stormwater Allocations

Station	WLA – MS4 Loads (Billion MPN/day)		
	Baltimore City	Baltimore County	Total
JON0184	N/A	127.95	127.95
UQQ0005	N/A	23.44	23.44
JON0082sub	N/A	89.84	89.84
JON0039sub	278.24	92.75	370.99
SRU0005	35.70	N/A	35.70
Total	313.94	333.98	647.92

N/A – not applicable – subwatersheds within the County or the City only

Municipal and Industrial WWTPs

As explained in the source assessment section above, there are no industrial WWTPs with permits regulating the discharge of bacteria into Jones Falls. There are two municipal WWTPs with permits regulating the discharge of bacteria directly into the Jones Falls watershed. Only

Villa Julie College WWTP will receive a WLA. St. Timothy's WWTP will be connected to the Baltimore County collection system by the end of July 2006 and therefore it will not receive an allocation. This allocation is derived from the human source load and it is based on the permitted flow of the plant and the *E. coli* criterion concentration.

Combined Sewer Systems

There are two jurisdictions with NPDES CSSs within the Jones Falls watershed (See section 2.4, Source Assessment, for more detailed information). These jurisdictions with CSOs permitted to discharge in the Jones Falls have developed their Long Term Control Plans (LTCP), which state that CSOs are to be eliminated by the dates noted in the LTCPs. Therefore, no load will be assigned to WLA-CSOs in these jurisdictions and the final human load in the corresponding subwatersheds is allocated to the WLA-MS4.

4.9 Summary

The TMDLs for the Jones Falls subwatersheds are presented in Table 4.9.1.

Table 4.9.1: Jones Falls Watershed TMDL

Subwatershed	TMDL	LA	WLA WWTP	WLA MS4	WLA CSOs
	Billion MPN *E. coli*/day				
JON0184	250.16	122.17	0.05	127.95	0.0
UQQ0005	29.07	5.62	0.00	23.44	0.0
JON0082sub	114.54	24.70	0.00	89.84	0.0
JON0039sub	428.36	57.37	0.00	370.99	0.0
SRU0005	37.77	2.07	0.00	35.70	0.0
TOTAL	859.90	211.93	0.05	647.92	0.0

In all five subwatersheds, based on the maximum practicable reduction rates specified, water quality standards cannot be achieved. This occurs in watersheds that require very high reductions to meet water quality standards. However, if there is no feasible TMDL scenario, then MPRs are increased to provide estimates of the reductions required to meet water quality standards. For these watersheds, it is noted that the reductions may be beyond practical limits. In these cases, it is expected that the first stage of implementation will be to implement the MPR scenario.

5.0 ASSURANCE OF IMPLEMENTATION

Section 303(d) of the Clean Water Act and current EPA regulations require reasonable assurance that the TMDL load and wasteload allocations can and will be implemented. In the Jones Falls watershed, the TMDL analysis indicates that reduction of fecal bacteria loads from all sources including wildlife are beyond the maximum practicable reduction (MPR) targets. Jones Falls and its tributaries may not be able to attain water quality standards. The extent of the fecal bacteria load reductions required to meet water quality criteria in the watershed of Jones Falls are not feasible by effluent limitations or by implementing cost-effective and reasonable best management practices. Therefore, MDE proposes a staged approach to implementation beginning with the MPR scenario, with regularly scheduled follow-up monitoring to assess the effectiveness of the implementation plan.

The most significant planned implementation measures in the Jones Falls watershed involve the separation of combined sewer systems in Baltimore City and the elimination of sanitary sewer overflows in Baltimore City and Baltimore County. Each of these jurisdictions is obligated under a judicial consent decree and judgment to adopt and implement a Long Term Control Plan ("LTCP") to eliminate sewer overflows. See Consent Decree and Judgments, Consolidated Case Number: JFM-02-12524, Baltimore City Consent Decree (entered Sept. 30, 2002); and Consolidated Case Number: AMD-05-2028, Baltimore County Consent Decree (entered Sept. 20, 2006). The judicial decrees and judgments require the jurisdictions to implement these LTCPs by January 2016 for Baltimore City and by March 2020 for Baltimore County. Deadlines for LTCP implementation will be incorporated into NPDES permits and, if shorter than the court ordered deadline, permits will reflect what can be feasibly accomplished with consideration to the complexity of the engineering, the availability of resources, and the need for inter-jurisdictional coordination.

Additional reductions will be achieved through the implementation of BMPs; however, the literature reports considerable uncertainty concerning the effectiveness of BMPs in treating bacteria. As an example, pet waste education programs have varying results based on stakeholder involvement. Additionally, the extent of wildlife reduction associated with various BMPs methods (*e.g.*, structural, non-structural, *etc*.) is uncertain. Therefore, MDE intends for the required reductions to be implemented in an iterative process that first addresses those sources with the largest impact on water quality and human health risk, with consideration given to ease of implementation and cost. The iterative implementation of BMPs in the watershed has several benefits: tracking of water quality improvements following BMP implementation through follow-up stream monitoring; providing a mechanism for developing public support through periodic updates on BMP implementation; and helping to ensure that the most cost-effective practices are implemented first.

In 1983, the EPA Nationwide Urban Runoff Program found that stormwater runoff from urban areas contains the same general types of pollutants found in wastewater, and that 30% of identified cases of water quality impairment were attributable to stormwater discharges. In November 1990, EPA required jurisdictions with a population greater than 100,000 to apply for NPDES Permits for stormwater discharges. The jurisdictions where the Jones Falls watershed is located, Baltimore County and Baltimore City, are required to participate in the stormwater

NPDES program, and have to comply with the NPDES Permit regulations for stormwater discharges. The permit-required management programs are being implemented in the County and City to meet locally established watershed protection and restoration goals and to control stormwater discharges to the maximum extent practicable. These jurisdiction-wide programs are designed to control stormwater discharges to the maximum extent practical. Funding sources for implementation include the State Water Quality Revolving Loan Fund and the Stormwater Pollution Cost Share Program. Details of this program and additional funding sources can be found at http://www.dnr.state.md.us/bay/services/summaries.html.

Additionally, MDE's "Managing Maryland for Results" (MDE, 2005) states the following related to separate sewer system overflows and combined sewer system overflows:

> Objective 4.5: Reduce the quantity in gallons of sewage overflows [total for Combined Sewer System Overflows (CSO) and Separate Sewer System Overflows (SSO)] equivalent to a 50% reduction of 2001 amounts (50, 821,102 gallons) by the year 2010 through implementation of EPA's minimum control strategies, long-term control plans (LTCPs), and collection system improvements in capacity, inflow and infiltration reduction, operation and maintenance.
>
> Strategy 4.5.1: MDE adopted new regulations effective March 28, 2005 to detail procedures that must be followed regarding reporting overflows or treatment plant bypasses and also to require public notification of certain sewage overflows.
>
> Strategy 4.5.2: MDE will inspect and take enforcement actions against those CSO jurisdictions that have not developed long-term control plans by dates set within current consent or judicial orders.
>
> Strategy 4.5.3: MDE will take enforcement actions to require that jurisdictions experiencing significant or repeated SSOs take appropriate steps to eliminate overflows, and will fulfill the commitment in the EPA 106 grant for NPDES enforcement regarding the initiation of formal enforcement actions against 20% of jurisdictions in Maryland with CSOs and significant SSO problems annually.

Implementation and Wildlife Sources

It is expected that in some waters for which TMDLs will be developed, the bacteria source analysis indicates that after controls are in place for all anthropogenic sources, the waterbody will not meet water quality standards. Neither Maryland, nor EPA is proposing the elimination of wildlife to allow for the attainment of water quality standards, although managing the overpopulation of wildlife is an option for state and local stakeholders.

After developing and implementing to the maximum extent possible a reduction goal based on the anthropogenic sources identified in the TMDL, Maryland anticipates that implementation to reduce the controllable nonpoint sources may also reduce some wildlife inputs to the waters.

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Appendix A – Table of Bacteria Concentration Raw Data per Sampling Date with Corresponding Daily Flow Frequency

SAMPLING STATION IDENTIFIER	Date	Daily flow frequency	E. Coli MPN/100ml
JON0039	10/08/2002	98.7882	160
JON0039	10/22/2002	90.3286	200
JON0039	11/13/2002	23.1182	3870
JON0039	11/25/2002	72.6870	70
JON0039	12/03/2002	78.2568	3260
JON0039	12/17/2002	43.8592	1670
JON0039	01/07/2003	26.1244	930
JON0039	01/22/2003	61.2212	2100
JON0039	02/04/2003	17.9212	24190
JON0039	03/04/2003	17.1988	4350
JON0039	03/18/2003	20.9275	8160
JON0039	04/22/2003	33.9082	350
JON0039	05/06/2003	33.9082	400
JON0039	05/20/2003	28.3151	490
JON0039	06/03/2003	17.9212	1670
JON0039	06/17/2003	17.5950	260
JON0039	06/24/2003	18.4106	540
JON0039	07/08/2003	30.9252	400
JON0039	07/22/2003	14.6586	210
JON0039	08/05/2003	39.3381	2050
JON0039	08/19/2003	54.3696	190
JON0039	08/26/2003	38.4759	140
JON0039	09/09/2003	59.6364	230
JON0039	09/23/2003	0.0932	43500
JON0082	10/08/2002	98.5318	30
JON0082	10/22/2002	93.9408	80
JON0082	11/13/2002	37.5670	3450
JON0082	11/25/2002	70.5197	10
JON0082	12/03/2002	77.6742	20
JON0082	12/17/2002	42.6474	200
JON0082	01/07/2003	30.6688	170

SAMPLING STATION IDENTIFIER	Date	Daily flow frequency	E. Coli MPN/100ml
JON0082	01/22/2003	63.1554	10
JON0082	02/04/2003	38.9187	30
JON0082	03/04/2003	17.2221	800
JON0082	03/18/2003	19.7856	40
JON0082	04/22/2003	33.1857	30
JON0082	05/06/2003	37.5670	30
JON0082	05/20/2003	26.8702	240
JON0082	06/03/2003	18.6903	570
JON0082	06/17/2003	23.1881	230
JON0082	06/24/2003	14.3323	590
JON0082	07/08/2003	29.2007	3260
JON0082	07/22/2003	50.1282	10
JON0082	08/05/2003	45.2575	930
JON0082	08/19/2003	54.3696	160
JON0082	08/26/2003	54.3696	40
JON0082	09/09/2003	57.0030	100
JON0082	09/23/2003	0.1398	22800
JON0184	10/08/2002	98.5318	380
JON0184	10/22/2002	93.9408	210
JON0184	11/13/2002	37.5670	1260
JON0184	11/25/2002	70.5197	40
JON0184	12/03/2002	77.6742	130
JON0184	12/17/2002	42.6474	150
JON0184	01/07/2003	30.6688	110
JON0184	01/22/2003	63.1554	50
JON0184	02/04/2003	38.9187	130
JON0184	03/04/2003	17.2221	100
JON0184	03/18/2003	19.7856	40
JON0184	04/22/2003	33.1857	90
JON0184	05/06/2003	37.5670	150
JON0184	05/20/2003	26.8702	310
JON0184	06/03/2003	18.6903	420
JON0184	06/17/2003	23.1881	610

SAMPLING STATION IDENTIFIER	Date	Daily flow frequency	E. Coli MPN/100ml
JON0184	06/24/2003	14.3323	610
JON0184	07/08/2003	29.2007	1210
JON0184	07/22/2003	50.1282	1190
JON0184	08/05/2003	45.2575	490
JON0184	08/19/2003	54.3696	610
JON0184	08/26/2003	54.3696	510
JON0184	09/09/2003	57.0030	390
JON0184	09/23/2003	0.1398	36500
SRU0005	10/08/2002	98.7882	2850
SRU0005	10/22/2002	90.3286	1790
SRU0005	11/13/2002	23.1182	1480
SRU0005	11/25/2002	72.6870	1200
SRU0005	12/03/2002	78.2568	5790
SRU0005	12/17/2002	43.8592	750
SRU0005	01/07/2003	26.1244	340
SRU0005	01/22/2003	61.2212	240
SRU0005	02/04/2003	17.9212	24190
SRU0005	03/04/2003	17.1988	450
SRU0005	03/18/2003	20.9275	820
SRU0005	04/22/2003	33.9082	19860
SRU0005	05/06/2003	33.9082	1370
SRU0005	05/20/2003	28.3151	1390
SRU0005	06/03/2003	17.9212	750
SRU0005	06/17/2003	17.5950	7270
SRU0005	06/24/2003	18.4106	8660
SRU0005	07/08/2003	30.9252	1940
SRU0005	07/22/2003	14.6586	24190
SRU0005	08/05/2003	39.3381	2760
SRU0005	08/19/2003	54.3696	24190
SRU0005	08/26/2003	38.4759	530
SRU0005	09/09/2003	59.6364	3450
SRU0005	09/23/2003	0.0932	54800
UQQ0005	10/08/2002	98.5318	210

SAMPLING STATION IDENTIFIER	Date	Daily flow frequency	E. Coli MPN/100ml
UQQ0005	10/22/2002	93.9408	290
UQQ0005	11/13/2002	37.5670	500
UQQ0005	11/25/2002	70.5197	60
UQQ0005	12/03/2002	77.6742	130
UQQ0005	12/17/2002	42.6474	150
UQQ0005	01/07/2003	30.6688	90
UQQ0005	01/22/2003	63.1554	30
UQQ0005	02/04/2003	38.9187	2050
UQQ0005	03/04/2003	17.2221	40
UQQ0005	03/18/2003	19.7856	310
UQQ0005	04/22/2003	33.1857	140
UQQ0005	05/06/2003	37.5670	300
UQQ0005	05/20/2003	26.8702	730
UQQ0005	06/03/2003	18.6903	460
UQQ0005	06/17/2003	23.1881	460
UQQ0005	06/24/2003	14.3323	1150
UQQ0005	07/08/2003	29.2007	2600
UQQ0005	07/22/2003	50.1282	1720
UQQ0005	08/05/2003	45.2575	1780
UQQ0005	08/19/2003	54.3696	1080
UQQ0005	08/26/2003	54.3696	590
UQQ0005	09/09/2003	57.0030	300
UQQ0005	09/23/2003	0.1398	14400

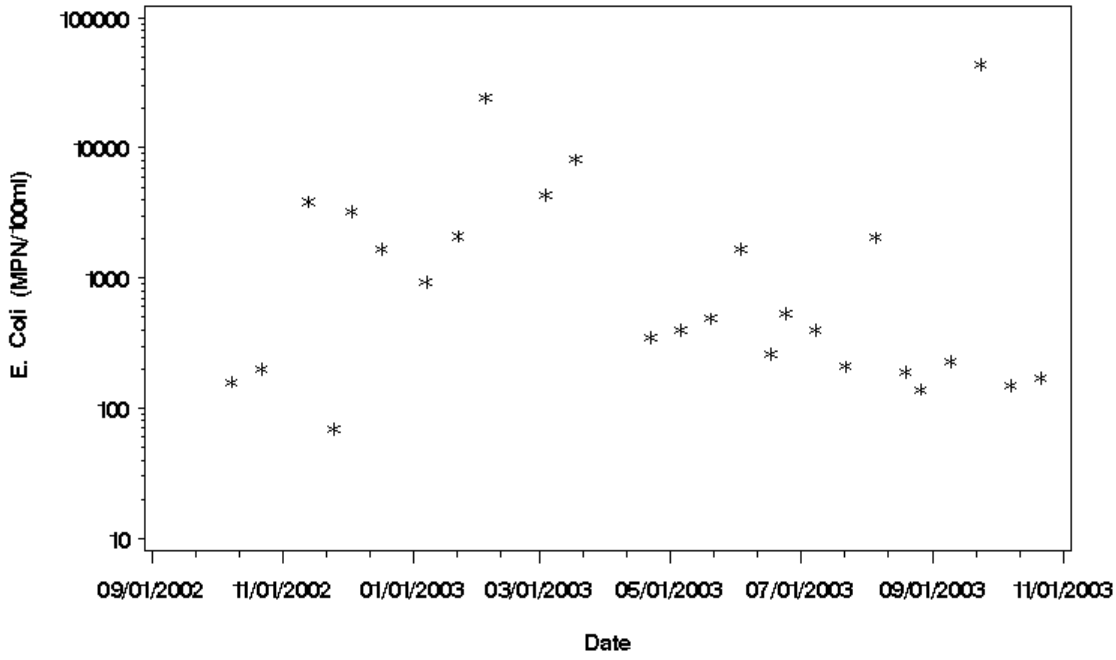

Figure A-1: *E. coli* Concentration vs. Time for Jones Falls Monitoring Station JON0039

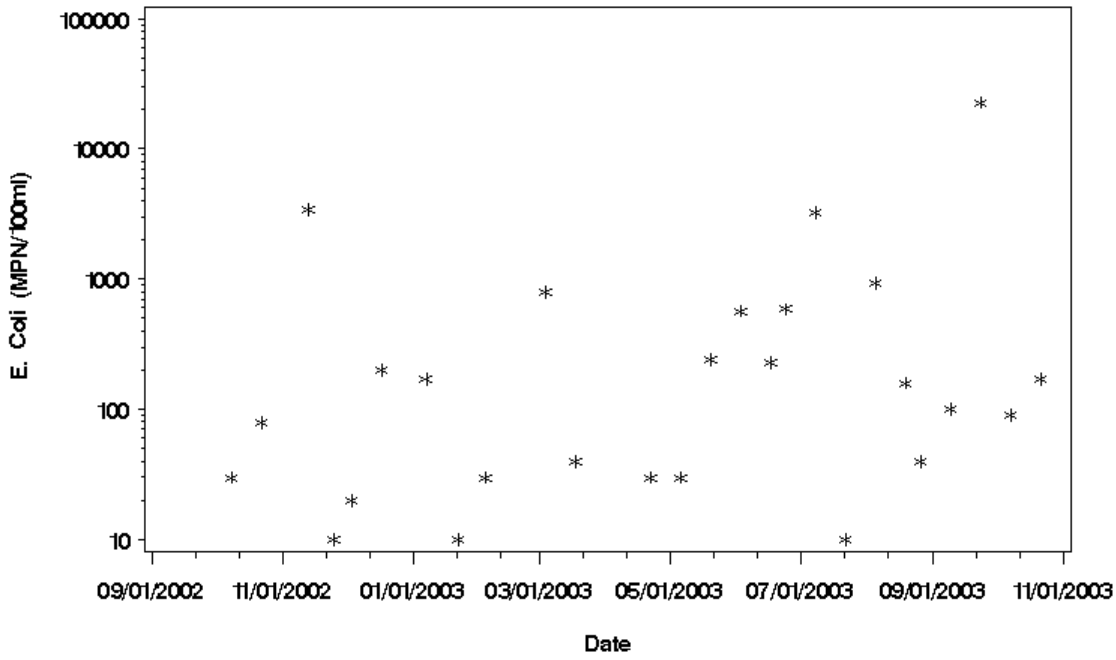

Figure A-2: *E. coli* Concentration vs. Time for Jones Falls Monitoring Station JON0082

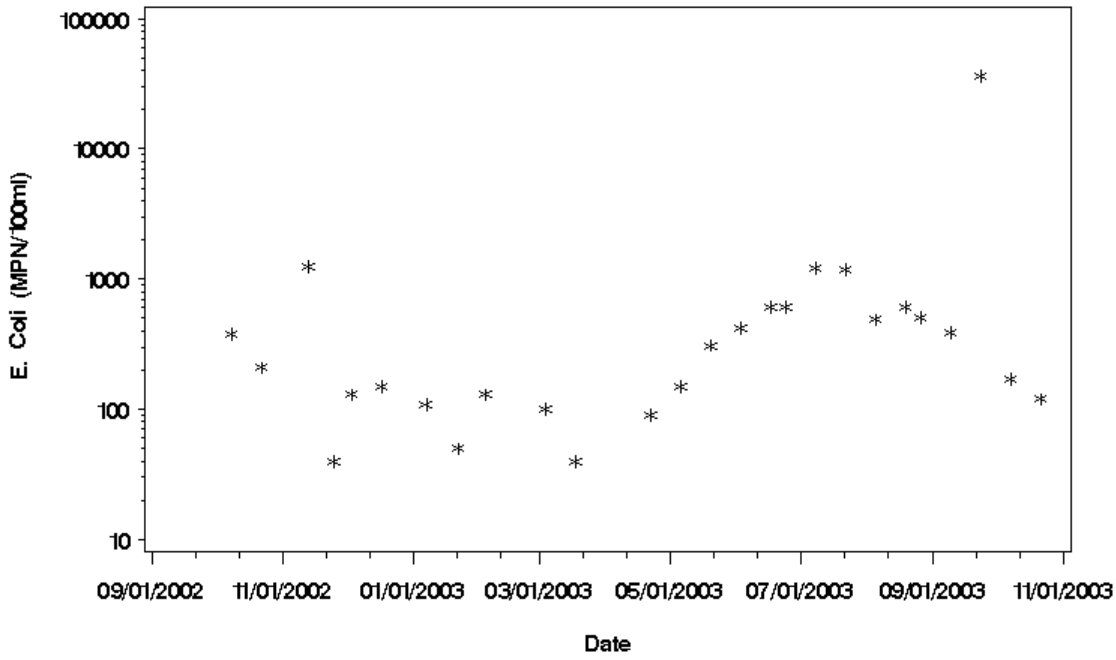

Figure A-3: *E. coli* Concentration vs. Time for Jones Falls Monitoring Station JON0184

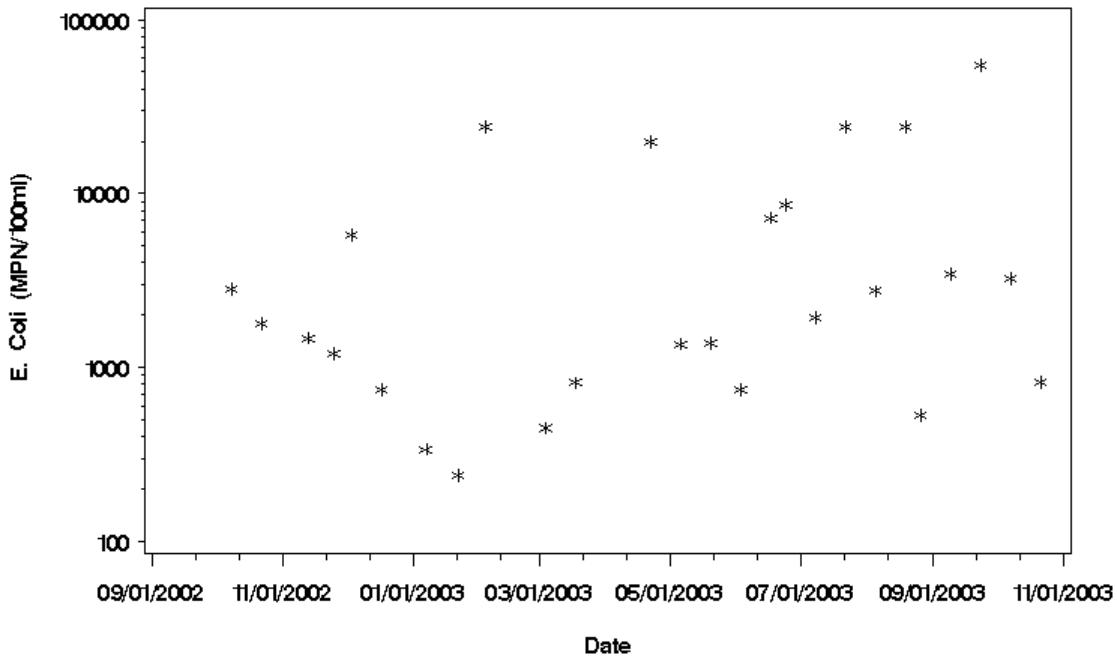

Figure A-4: *E. coli* Concentration vs. Time for Jones Falls Monitoring Station SRU0005

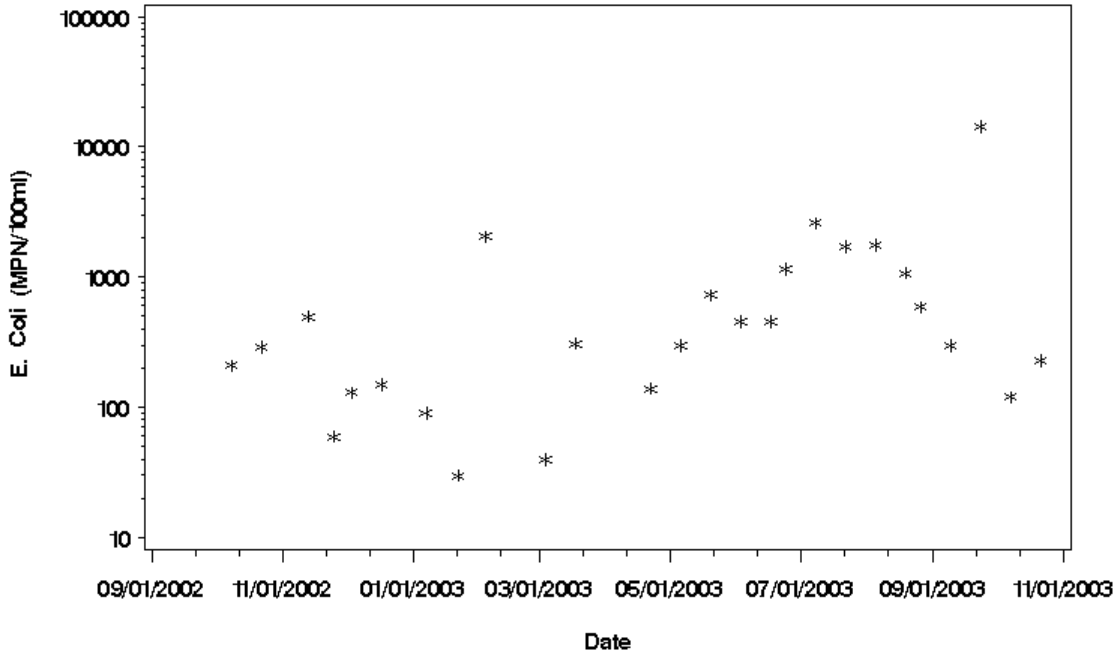

Figure A-5: *E. coli* Concentration vs. Time for Jones Falls Monitoring Station UQQ0005

Appendix B - Flow Duration Curve Analysis to Define Strata

The Jones Falls watershed was assessed to determine hydrologically significant strata. The purpose of these strata is to apply weights to monitoring data and thus (1) reduce bias associated with the monitoring design and (2) approximate a critical condition for TMDL development. The strata group hydrologically similar water quality samples and provide a better estimate of the mean concentration at the monitoring station.

The flow duration curve for a watershed is a plot of all possible daily flows, ranked from highest to lowest, versus their probability of exceedance. In general, the higher flows will tend to be dominated by excess runoff from rain events and the lower flows will result from drought type conditions. The mid-range flows are a combination of high base flow with limited runoff and lower base flow with excess runoff. The range of these mid -level flows will vary with soil antecedent conditions. The purpose of the following analysis is to identify hydrologically significant groups, based on the previously described flow regimes, within the flow duration curve.

Flow Analysis

The Jones Falls Watershed has two active USGS flow gages, 1589440 and 1589478. The gage and dates of information used are as follows:

Table B-1: USGS Gages in the Jones Falls Watershed

USGS Gage #	Dates used	Description
1589440	October 1, 1992 – September 30, 2003	Jones Falls at Sorrento, MD
1589478	December 26, 1999 – September 30, 2003 (SWWM model substituted for 1991 thru 12/25/1999).	Jones Falls at Maryland Avenue, Baltimore, MD

Flow duration curves for these gages are presented in Figure B-1.

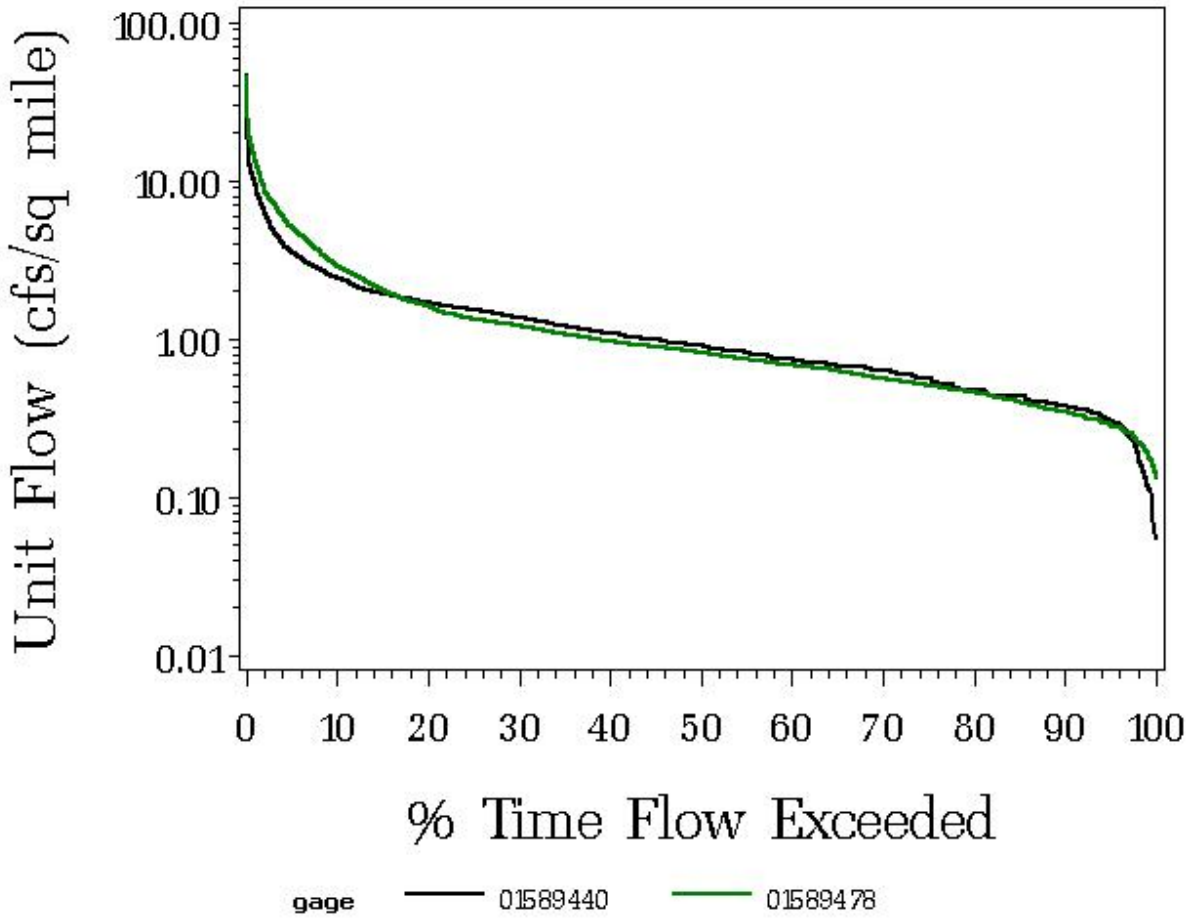

Figure B-1: Jones Falls Flow Duration Curves

Based on the long-term flow data for the Jones Falls watershed and other watersheds in the region (*i.e.* Gwynns Falls and Herring Run), the long term average daily unit flows range between 1.2 to 1.6 cfs/sq. mile, which corresponds to a range of 20th to 28th flow frequency based on the flow duration curves of these watersheds. Using the definition of a high flow condition occurring when flows are higher than the long-term average flow and a low flow condition occurring when flows are lower than the long-term average flow, the 25th percentile threshold was selected to define the limits between high flow and low flows. Therefore, a high flow condition will be defined as occurring when the daily flow duration percentile is less than 25% and a low flow condition will be define as occurring when the daily flow duration percentile is greater than 25%. Definitions of high and low range flows are presented in Table B-2.

Table B-2: Definition of Flow Regimes

High flow	Represents conditions where stream flow tends to be dominated by surface runoff.
Low flow	Represents conditions where stream flow tends to be more dominated by groundwater flow.

Flow-Data Analysis

The final analysis to define the daily flow duration intervals (flow regions, strata) includes the bacteria monitoring data. Bacteria (enterococci or *E. coli*) monitoring data are "placed" within the regions (stratum) based on the daily flow duration percentile of the date of sampling. Figures B-2 to B-6 show the Jones Falls *E. coli* monitoring data with corresponding flow frequency for the annual average and the seasonal conditions.

Maryland's water quality standards for bacteria state that a steady-state geometric mean will be calculated with available data where there are at least five representative sampling events. The data shall be from samples collected during steady-state conditions and during the beach season (Memorial Day through Labor Day) to be representative of the critical condition. If fewer than five representative sampling events are available, the previous two years will be evaluated. In Jones Falls, there are sufficient samples in the high flow strata to estimate the geometric mean. For the low flow strata less than five samples exist; therefore, the mid and low flow strata will be combined to calculate the geometric mean.

Weighting factors for estimating a weighted geometric mean are based on the frequency of each flow stratum during the averaging period. The weighting factors for the averaging periods and hydrological conditions are presented in Table B-3. Averaging periods are defined in this report as:

(1) Annual Average Hydrological Condition
(2) Annual High Flow Condition
(3) Annual Low Flow Condition
(4) Seasonal (May 1st – September 30th) High Flow Condition
(5) Seasonal (May 1st – September 30th) Low Flow Condition

Weighted geometric means for the average annual and the seasonal conditions are plotted with the monitoring data on Figures B-2 to B-6.

Table B-3: Weighting Factors for Estimation of Geometric Mean

Hydrological Condition		Averaging Period	Water Quality Data Used	Subwatershed	Fraction High Flow	Fraction Low Flow
Annual	High	365 days	All	JON0184, UQQ0005, JON0082sub	0.80	0.20
				JON0039sub, SRU0005	0.59	0.41
	Low	365 days	All	JON0184, UQQ0005, JON0082sub	0.02	0.98
				JON0039sub, SRU0005	0.08	0.92
Seasonal	High	May 1st – Sept 30th	May 1st – Sept 30th	JON0184, UQQ0005, JON0082sub	0.78	0.22
				JON0039sub, SRU0005	0.53	0.47
	Low	May 1st – Sept 30th	May 1st – Sept 30th	JON0184, UQQ0005, JON0082sub	0.01	0.99
				JON0039sub, SRU0005	0.10	0.90

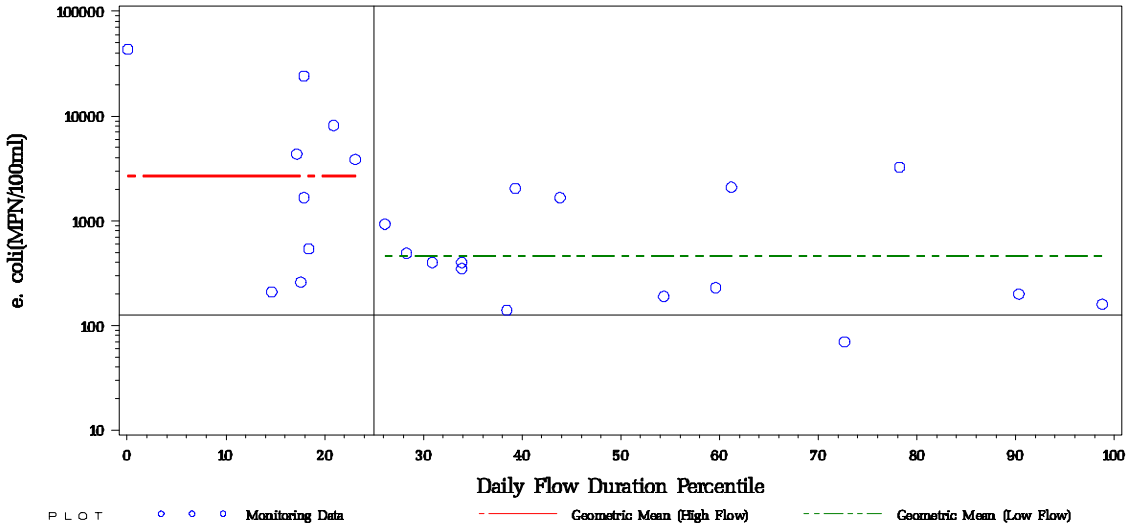

Figure B-2: *E. coli* Concentration vs. Flow Duration for Jones Falls Monitoring Station JON0039 (Average Annual Condition)

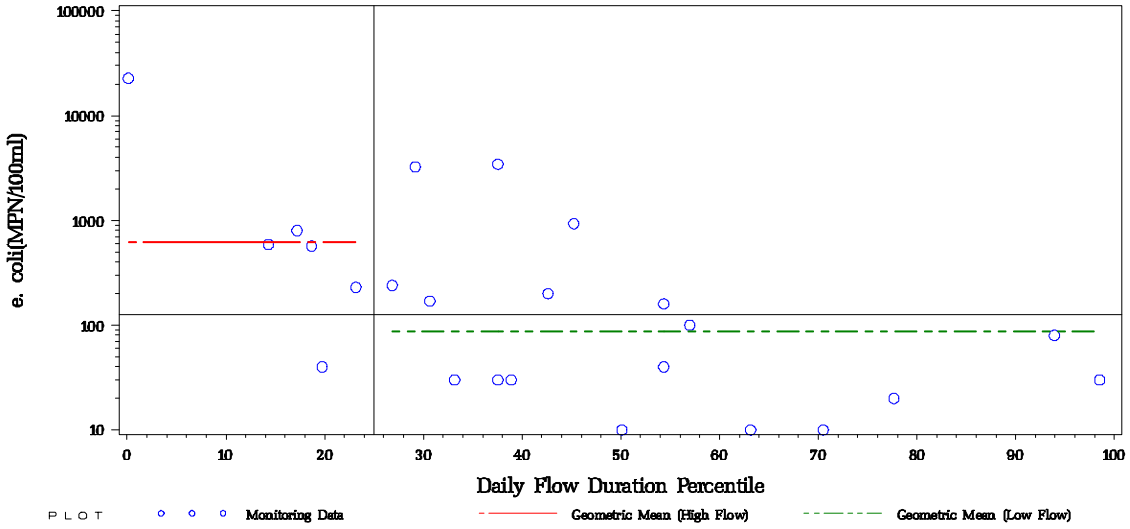

Figure B-3: *E. coli* Concentration vs. Flow Duration for Jones Falls Monitoring Station JON0082 (Average Annual Condition)

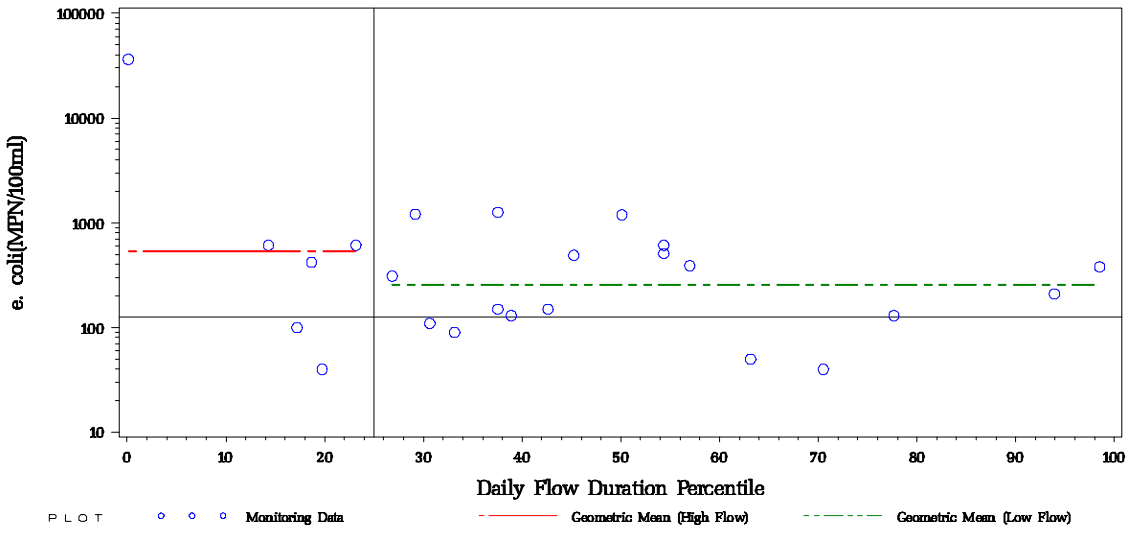

Figure B-4: *E. coli* Concentration vs. Flow Duration for Jones Falls Monitoring Station JON0184 (Average Annual Condition)

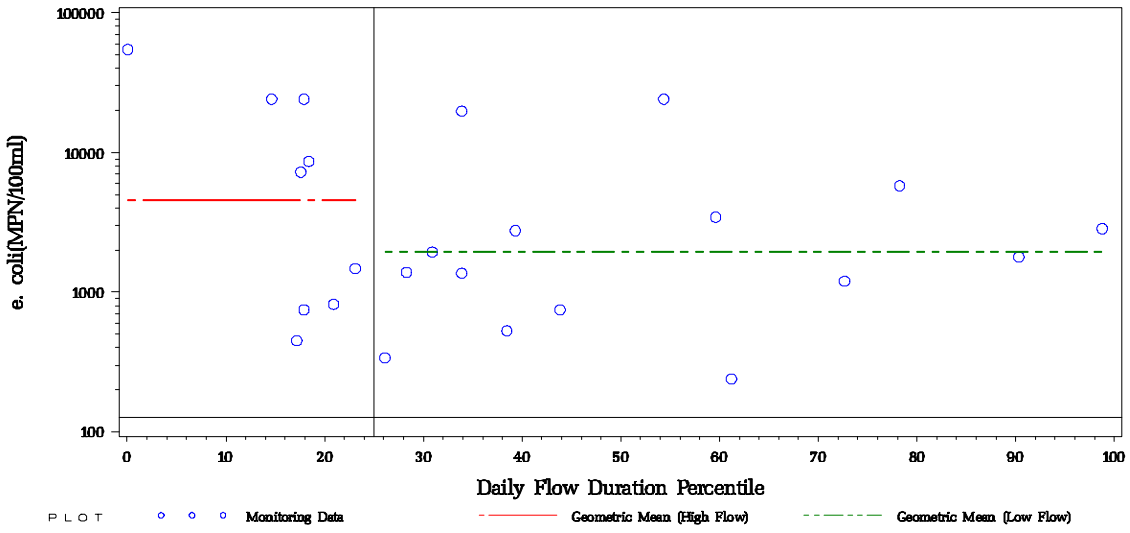

Figure B-5: *E. coli* Concentration vs. Flow Duration for Jones Falls Monitoring Station SRU0005 (Average Annual Condition)

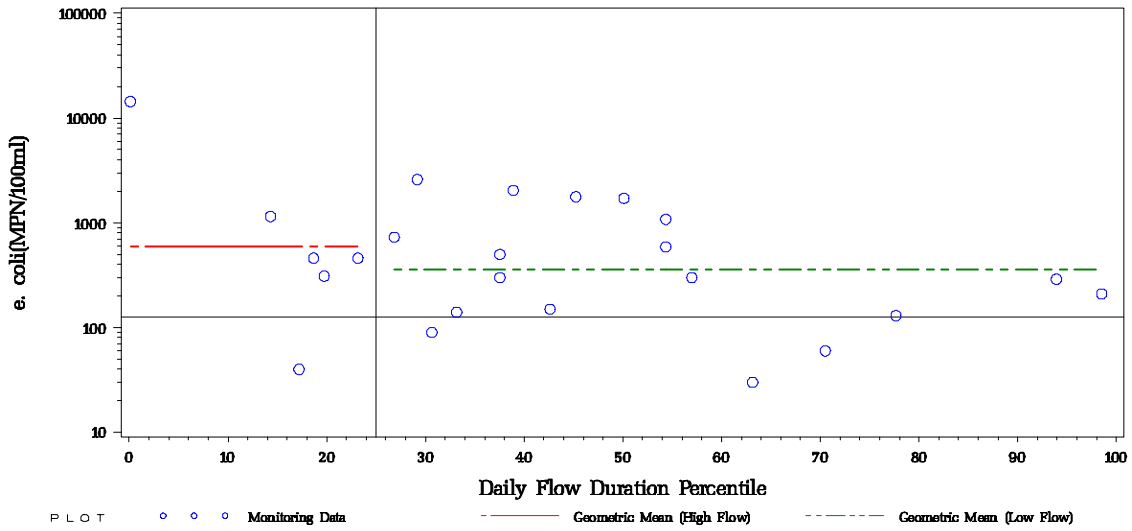

Figure B-6: *E. coli* Concentration vs. Flow Duration for Jones Falls Monitoring Station UQQ0005 (Average Annual Condition)

Appendix C - Identifying Sources of Fecal Pollution in Nontidal Waters in Maryland Watersheds

November 1, 2003 – October 31, 2005

Final Report
January 31, 2006

Revised 02.03.2006

Mark F. Frana, Ph.D. and Elichia A. Venso, Ph.D.
Co-Principal Investigators
Department of Biological Sciences and
Environmental Health Science
Salisbury University, Salisbury, MD

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INTRODUCTION

Microbial Source Tracking. Microbial Source Tracking (MST) is a relatively recent scientific and technological innovation designed to distinguish the origins of enteric microorganisms found in environmental waters. Several different methods and a variety of different indicator organisms (both bacteria and viruses) have successfully been used for MST, as described in recent reviews (Scott *et al.*, 2002; Simpson *et al.*, 2002). When the indicator organism is bacteria, the term Bacterial Source Tracking (BST) is often used. Some common bacterial indicators for BST analysis include: *E. coli*, *Enterococcus* spp., *Bacteroides-Prevotella,* and *Bifidobacterium* spp.

Techniques for MST can be grouped into one of the following three categories: molecular (genotypic) methods, biochemical (phenotypic) methods, or chemical methods. Ribotyping, Pulsed-Field Gel Electrophoresis (PFGE), and Randomly-Amplified Polymorphic DNA (RAPD) are examples of molecular techniques. Biochemical methods include Antibiotic Resistance Analysis (ARA), F-specific coliphage typing, and Carbon Source Utilization (CSU) analysis. Chemical techniques detect chemical compounds associated with human activities, but do not provide any information regarding nonhuman sources. Examples of this type of technology include detection of optical brighteners from laundry detergents or caffeine (Simpson *et al*., 2002).

Many of the molecular and biochemical methods of MST are "library-based," requiring the collection of a database of fingerprints or patterns obtained from indicator organisms isolated from known sources. Statistical analysis determines fingerprints/patterns of known sources species or categories of species (*i.e.*, human, livestock, pets, wildlife). Indicator isolates collected from water samples are analyzed using the same MST method to obtain their fingerprints or patterns, which are then statistically compared to those in the library. Based upon this comparison, the final results are expressed in terms of the "statistical probability" that the water isolates came from a given source (Simpson *et al*. 2002).

In this BST project, we studied the following Maryland nontidal watersheds: Gwynns Falls, Jones Falls, Herring Run, Georges Creek, and Wills Creek. Also included in the study was the Patuxent River Watershed shellfish harvesting area. The methodology used was the ARA with *Enterococcus* spp. as the indicator organism. Previous BST publications have demonstrated the predictive value of using this particular technique and indicator organism (Hagedorn, 1999; Wiggins, 1999). A pilot study using PFGE, a genotypic BST method, was used on a subset of known-source isolates collected from the Patuxent River Watershed.

Antibiotic Resistance Analysis. A variety of different host species can potentially contribute to the fecal contamination found in natural waters. Many years ago, scientists speculated on the possibility of using resistance to antibiotics as a way of determining the sources of this fecal contamination (Bell *et al.*, 1983; Krumperman, 1983). In ARA, the premise is that bacteria isolated from different hosts can be discriminated based upon differences in the selective pressure of microbial populations found in the gastrointestinal tract of those hosts (humans, livestock, pets, wildlife) (Wiggins, 1996). Microorganisms isolated from the fecal material of wildlife would be expected to have a much lower level of resistance to antibiotics than isolates

collected from the fecal material of humans, livestock and pets. In addition, depending upon the specific antibiotics used in the analysis, isolates from humans, livestock and pets could be differentiated from each other.

In ARA, isolates from known sources are tested for resistance or sensitivity against a panel of antibiotics and antibiotic concentrations. This information is then used to construct a library of antibiotic resistance patterns from known-source bacterial isolates. Microbial isolates collected from water samples are then tested and their resistance results are recorded. Based upon a comparison of resistance patterns of water and library isolates, a statistical analysis can predict the likely host source of the water isolates. (Hagedorn 1999; Wiggins 1999).

LABORATORY METHODS

Isolation of *Enterococcus* from Known-Source Samples. Fecal samples, identified to source, were delivered to the Salisbury University (SU) BST lab by Maryland Department of the Environment (MDE) personnel. Fecal material suspended in phosphate buffered saline was plated onto selective m-Enterococcus agar. After incubation at 37° C, up to 10 *Enterococcus* isolates were randomly selected from each fecal sample for ARA testing.

Isolation of Enterococcus from Water Samples. Water samples were collected by MDE staff and shipped overnight to MapTech Inc, Blacksburg, Va. Bacterial isolates were collected by membrane filtration. Up to 24 randomly selected *Enterococcus* isolates were collected from each water sample and all isolates were then shipped to the SU BST lab.

Antibiotic Resistance Analysis. Each bacterial isolate from both water and scat were grown in Enterococcosel® broth (Becton Dickinson, Sparks, MD) prior to ARA testing. *Enterococcus* are capable of hydrolyzing esculin, turning this broth black. Only esculin-positive isolates were tested for antibiotic resistance.

Bacterial isolates were plated onto tryptic soy agar plates, each containing a different concentration of a given antibiotic. Plates were incubated overnight at 37° C and isolates then scored for growth (resistance) or no growth (sensitivity). Data consisting of a “1” for resistance or “0” for sensitivity for each isolate at each concentration of each antibiotic was then entered into a spread-sheet for statistical analysis.

The following table includes the antibiotics and concentrations used for isolates in analyses for all the study watersheds.

Table C-1: Antibiotics and concentrations used for ARA

Antibiotic	Concentration (µg/ml)
Amoxicillin	0.625
Cephalothin	10, 15, 30, 50
Chloramphenicol	10
Chlortetracycline	60, 80, 100
Erythromycin	10
Gentamycin	5, 10, 15
Neomycin	40, 60, 80
Oxytetracycline	20, 40, 60, 80, 100
Salinomycin	10
Streptomycin	40, 60, 80, 100
Tetracycline	10, 30, 50, 100
Vancomycin	2.5

KNOWN-SOURCE LIBRARY

Construction and Use. Fecal samples (scat) from known sources in each watershed were collected during the study period by MDE personnel and delivered to the BST Laboratory at SU. *Enterococcus* isolates were obtained from known sources (e.g., human, dog, cow, beaver, coyote, deer, fox, rabbit, and goose). For each watershed, a library of patterns of *Enterococcus* isolate responses to the panel of antibiotics was analyzed using the statistical software CART® (Salford Systems, San Diego, CA). *Enterococcus* isolate response patterns were also obtained from bacteria in water samples collected at the monitoring stations in each basin. Using statistical techniques, these patterns were then compared to those in the appropriate library to identify the probable source of each water isolate. A combined library of known sources was used for Georges Creek and Wills Creek Watersheds using patterns from scat obtained from both watersheds, and the water isolate patterns of each were compared to the combined library.

STATISTICAL ANALYSIS

We applied a tree classification method, [1]CART®, to build a model that classifies isolates into source categories based on ARA data. CART® builds a classification tree by recursively splitting the library of isolates into two nodes. Each split is determined by the antibiotic variables (antibiotic resistance measured for a collection of antibiotics at varying concentrations).

1 The Elements of Statistical Learning: Data Mining, Inference, and Prediction. Hastie T, Tibshirani R, and Friedman J. Springer 2001.

The first step in the tree-building process splits the library into two nodes by considering every binary split associated with every variable. The split is chosen that maximizes a specified index of homogeneity for isolate sources within each of the nodes. In subsequent steps, the same process is applied to each resulting node until a *stopping* criterion is satisfied. Nodes where an additional split would lead to only an insignificant increase in the *homogeneity index* relative to the *stopping* criterion are referred to as *terminal* nodes.[2] The collection of *terminal* nodes defines the classification model. Each *terminal* node is associated with one source, the source that is most populous among the library isolates in the node. Each water sample isolate (*i.e.*, an isolate with an unknown source), based on its antibiotic resistance pattern, is identified with one specific *terminal* node and is assigned the source of the majority of library isolates in that *terminal* node.[3]

We imposed an additional requirement in our classification method for determining the sources of water sample isolates. We interpreted the proportion of the majority source among the library isolates in a *terminal* node as a probability. This proportion is an estimate of the probability that an isolate with unknown source, but with the same antibiotic resistance pattern as the library isolates in the *terminal* node, came from the source of the majority of the library isolates in the *terminal* node. If that probability was less than a specified *acceptable source identification probability*, we did not assign a source to the water sample isolates identified with that *terminal* node. Instead we assigned "Unknown" as the source for that node and "Unknown" for the source of all water sample isolates identified with that node. The *acceptable source identification probability* for the tree-classification model for an individual watershed is shown in the Results section for that watershed.

ARA Results: Jones Falls Watershed

Known-Source Library. The 982 known-source isolates in the library were grouped into four categories: pet (specifically dog), human, livestock (horse), and wildlife (deer, fox, goose) (Tables C-2). The library was analyzed for its ability to take a subset of the library isolates and correctly predict the identity of their host sources when they were treated as unknowns. Average rates of correct classification (ARCC) for the library were found by repeating this analysis using several probability cutoff points, as described above. The number-not-classified for each probability was determined. From these results, the percent unknown and percent correct classification (RCCs) was calculated (Table C-3).

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2 An ideal split, i.e., a split that achieves the theoretical maximum for homogeneity, would produce two nodes each containing library isolates from only one source.

3 The CART® tree-classification method we employed includes various features to ensure the development of an optimal classification model. For brevity in exposition, we have chosen not to present details of those features, but suggest the following sources: Breiman L, et al. *Classification and Regression Trees*. Pacific Grove: Wadsworth, 1984; and Steinberg D and Colla P. *CART—Classification and Regression Trees.* San Diego, CA: Salford Systems, 1997.

Table C-2: Jones Falls. Category, potential sources, total number, and number of unique patterns in the known-source library

Category	Potential Sources	Total Isolates	Unique Patterns
Pet	dog	144	68
Human	human	438	266
Livestock	horse	107	42
Wildlife	deer, fox, goose,	293	85
Total		**982**	**461**

TableC-3: Jones Falls. Number of isolates not classified, percent unknown, and percent correct for six (6) cutoff probabilities

Cutoff Probability	Number Not Classified	Percent Unknown	Percent Correct
.25	0	0%	68%
.375	0	0%	68%
.50	128	13%	71%
.60	194	20%	72%
.70	521	53%	81%
.80	668	68%	90%
.90	855	87%	98%

A cutoff probability of 0.60 (60%) was shown to yield an ARCC of 72%. An increase to a 0.70 (70%) cutoff did not increase the rate of correct classification as much as it increased the percent unknown (Figure C-1). Therefore, using a cutoff probability of 0.60 (60%), the 194 isolates that were not useful in the prediction of probable sources were removed, leaving 788 isolates remaining in the library. This library was then used in the statistical prediction of probable sources of bacteria in water samples collected from the Jones Falls Watershed. The rates of correct classification for the four categories of sources in the library, at a 0.60 (60%) cutoff, are shown in Table C-4 below.

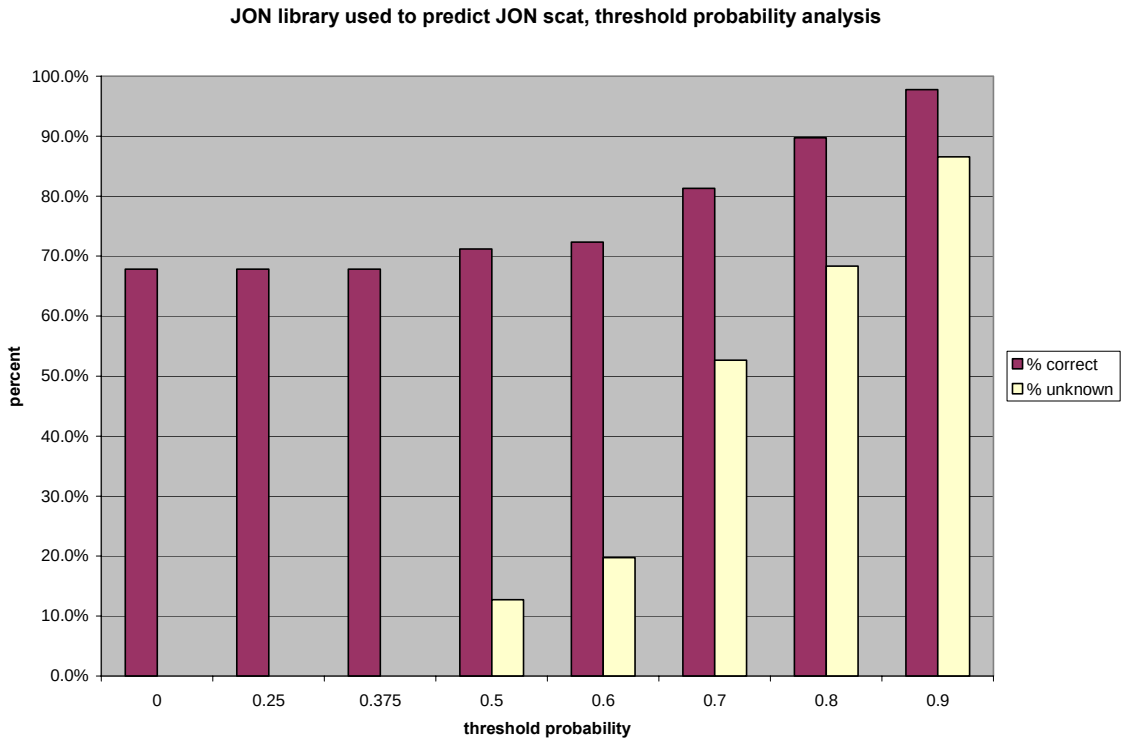

Figure C-1: Jones Falls. Classification Model: Percent Correct versus Percent Unknown.

Table C-4: Jones Falls. Actual species categories versus predicted categories, at a 60% probability cutoff, with rates of correct classification (RCC) for each category

	Predicted →					
Actual ↓	HUMAN	LIVESTOCK	PET	WILDLIFE	TOTAL	RCC[1]
HUMAN	**291**	16	37	20	364	80%
LIVESTOCK	5	**77**	2	7	91	85%
PET	8	5	**107**	3	123	87%
WILDLIFE	19	79	17	**95**	210	45%
Total	**323**	**177**	**163**	**125**	**788**	**72%**

[1]RCC = Actual number of predicted species category / Total number predicted.
Example: One hundred sixty-three (163) domestic correctly predicted / 175 total number predicted for domestic = 163/175 = 93%.

Jones Falls Water Samples. Monthly monitoring from five (5) stations on Jones Falls was the source of water samples. The maximum number of *Enterococcus* isolates per water sample was 24, although the number of isolates that actually grew was sometimes fewer than 24. A total of 1402 *Enterococcus* isolates were analyzed by statistical analysis. The BST results by species category, shown in Table C-5, indicates that 85% of the water isolates were classified after excluding unknowns when using a 0.60 (60%) probability cutoff.

Table C-5: Jones Falls. Potential host sources of water isolates by species category, number of isolates, percent isolates classified at cutoff probability of 60%.

Category	Number	% Isolates Classified 60% Prob.	% Isolates Classified (excluding unknowns)
DOMESTIC	231	16%	19%
HUMAN	771	55%	65%
LIVESTOCK	137	10%	12%
WILDLIFE	48	3%	4%
UNKNOWN	215		
Missing Data	0		
Total	1402		
% Classified	**85%**		

The seasonal distribution of water isolates from samples collected at each sampling station is shown below in Table C-6.

Table C-6: Jones Falls. *Enterococcus* isolates obtained from water collected during the fall, winter, spring, and summer seasons for each of the five (5) monitoring stations.

Station	Spring	Summer	Fall	Winter	Total
JON0039	72	68	76	70	**286**
JON0082	60	51	88	72	**271**
JON0184	72	69	70	71	**282**
SRU0005	69	66	94	55	**284**
UQQ0005	70	66	89	54	**279**
Total	**343**	**320**	**417**	**322**	**1402**

Tables C-7 and C-8 below show the number and percent of probable sources of *Enterococcus* contamination in the watershed.

Table C-7: Jones Falls. BST Analysis: Number of Isolates per Station per Date.

Date	Site	Human	Livestock	Pet	Wildlife	Unknown	Total
11/13/02	JON0039	10	1	7	1	5	24
11/13/02	JON0082	4	3	14	0	2	23
11/13/02	JON0184	8	3	10	0	2	23
11/13/02	SRU0005	17	0	2	0	3	22
11/13/02	UQQ0005	16	0	4	0	1	21
12/03/02	JON0039	13	3	2	1	5	24
12/03/02	JON0082	4	4	2	6	3	19
12/03/02	JON0184	4	10	4	1	4	23
12/03/02	SRU0005	13	0	2	0	9	24
12/03/02	UQQ0005	18	1	3	0	1	23
01/07/03	JON0039	15	2	4	1	1	23
01/07/03	JON0082	13	0	1	0	10	24
01/07/03	JON0184	12	3	3	1	5	24
01/07/03	SRU0005	0	0	1	0	4	5
01/07/03	UQQ0005	8	2	2	1	7	20
02/04/03	JON0039	21	0	1	0	2	24
02/04/03	JON0082	18	1	1	3	1	24
02/04/03	JON0184	21	0	3	0	0	24
02/04/03	SRU0005	16	0	1	0	7	24
02/04/03	UQQ0005	19	0	3	0	2	24
03/04/03	JON0039	15	0	5	1	2	23
03/04/03	JON0082	7	6	0	1	10	24
03/04/03	JON0184	3	5	1	3	11	23
03/04/03	SRU0005	23	1	0	1	1	26
03/04/03	UQQ0005	2	1	1	1	5	10
04/22/03	JON0039	21	0	2	0	1	24
04/22/03	JON0082	3	1	1	0	8	13
04/22/03	JON0184	11	2	7	2	2	24
04/22/03	SRU0005	15	0	3	0	6	24
04/22/03	UQQ0005	13	2	3	4	2	24
05/06/03	JON0039	15	2	1	2	4	24
05/06/03	JON0082	3	9	1	4	6	23
05/06/03	JON0184	13	8	2	1	0	24
05/06/03	SRU0005	17	0	1	1	4	23
05/06/03	UQQ0005	20	0	1	0	3	24
05/07/03	SRU0005	1	0	0	0	0	1
06/03/03	JON0039	15	2	1	0	6	24
06/03/03	JON0082	19	3	0	0	2	24
06/03/03	JON0184	14	3	4	0	3	24
06/03/03	SRU0005	13	2	4	0	2	21
06/03/03	UQQ0005	9	0	5	0	8	22
07/08/03	JON0039	19	0	4	0	1	24
07/08/03	JON0082	16	0	7	0	1	24

07/08/03	JON0184	11	0	10	0	3	24
07/08/03	SRU0005	11	1	6	0	5	23
07/08/03	UQQ0005	11	0	5	0	7	23
08/05/03	JON0039	11	0	11	0	2	24
08/05/03	JON0082	8	1	7	0	6	22
08/05/03	JON0184	7	2	8	0	5	22
08/05/03	SRU0005	17	0	0	0	3	20
08/05/03	UQQ0005	19	0	2	0	0	21
09/09/03	JON0039	3	9	2	2	4	20
09/09/03	JON0082	4	1	0	0	0	5
09/09/03	JON0184	12	2	5	0	4	23
09/09/03	SRU0005	14	6	2	0	1	23
09/09/03	UQQ0005	9	4	4	4	1	22
09/23/03	JON0039	11	0	8	0	3	22
09/23/03	JON0082	14	1	5	1	3	24
09/23/03	JON0184	12	4	5	3	0	24
09/23/03	SRU0005	19	1	3	0	1	24
09/23/03	UQQ0005	10	5	3	2	1	21
10/07/03	JON0039	0	3	0	0	3	6
10/07/03	JON0082	3	17	1	0	1	22
10/07/03	SRU0005	9	0	15	0	0	24
10/07/03	UQQ0005	19	0	5	0	0	24
Total		771	137	231	48	215	1402

Table C-8: Jones Falls. BST Analysis: Percentage of Sources per Station per Date.

Date	Site	human	livestock	pet	wildlife	unknown
11/13/02	JON0039	42%	4%	29%	4%	21%
11/13/02	JON0082	17%	13%	61%	0%	9%
11/13/02	JON0184	35%	13%	43%	0%	9%
11/13/02	SRU0005	77%	0%	9%	0%	14%
11/13/02	UQQ0005	76%	0%	19%	0%	5%
12/03/02	JON0039	54%	13%	8%	4%	21%
12/03/02	JON0082	21%	21%	11%	32%	16%
12/03/02	JON0184	17%	43%	17%	4%	17%
12/03/02	SRU0005	54%	0%	8%	0%	38%
12/03/02	UQQ0005	78%	4%	13%	0%	4%
01/07/03	JON0039	65%	9%	17%	4%	4%
01/07/03	JON0082	54%	0%	4%	0%	42%
01/07/03	JON0184	50%	13%	13%	4%	21%
01/07/03	SRU0005	0%	0%	20%	0%	80%
01/07/03	UQQ0005	40%	10%	10%	5%	35%
02/04/03	JON0039	88%	0%	4%	0%	8%
02/04/03	JON0082	75%	4%	4%	13%	4%
02/04/03	JON0184	88%	0%	13%	0%	0%

02/04/03	SRU0005	67%	0%	4%	0%	29%
02/04/03	UQQ0005	79%	0%	13%	0%	8%
03/04/03	JON0039	65%	0%	22%	4%	9%
03/04/03	JON0082	29%	25%	0%	4%	42%
03/04/03	JON0184	13%	22%	4%	13%	48%
03/04/03	SRU0005	88%	4%	0%	4%	4%
03/04/03	UQQ0005	20%	10%	10%	10%	50%
04/22/03	JON0039	88%	0%	8%	0%	4%
04/22/03	JON0082	23%	8%	8%	0%	62%
04/22/03	JON0184	46%	8%	29%	8%	8%
04/22/03	SRU0005	63%	0%	13%	0%	25%
04/22/03	UQQ0005	54%	8%	13%	17%	8%
05/06/03	JON0039	63%	8%	4%	8%	17%
05/06/03	JON0082	13%	39%	4%	17%	26%
05/06/03	JON0184	54%	33%	8%	4%	0%
05/06/03	SRU0005	74%	0%	4%	4%	17%
05/06/03	UQQ0005	83%	0%	4%	0%	13%
05/07/03	SRU0005	100%	0%	0%	0%	0%
06/03/03	JON0039	63%	8%	4%	0%	25%
06/03/03	JON0082	79%	13%	0%	0%	8%
06/03/03	JON0184	58%	13%	17%	0%	13%
06/03/03	SRU0005	62%	10%	19%	0%	10%
06/03/03	UQQ0005	41%	0%	23%	0%	36%
07/08/03	JON0039	79%	0%	17%	0%	4%
07/08/03	JON0082	67%	0%	29%	0%	4%
07/08/03	JON0184	46%	0%	42%	0%	13%
07/08/03	SRU0005	48%	4%	26%	0%	22%
07/08/03	UQQ0005	48%	0%	22%	0%	30%
08/05/03	JON0039	46%	0%	46%	0%	8%
08/05/03	JON0082	36%	5%	32%	0%	27%
08/05/03	JON0184	32%	9%	36%	0%	23%
08/05/03	SRU0005	85%	0%	0%	0%	15%
08/05/03	UQQ0005	90%	0%	10%	0%	0%
09/09/03	JON0039	15%	45%	10%	10%	20%
09/09/03	JON0082	80%	20%	0%	0%	0%
09/09/03	JON0184	52%	9%	22%	0%	17%
09/09/03	SRU0005	61%	26%	9%	0%	4%
09/09/03	UQQ0005	41%	18%	18%	18%	5%
09/23/03	JON0039	50%	0%	36%	0%	14%
09/23/03	JON0082	58%	4%	21%	4%	13%
09/23/03	JON0184	50%	17%	21%	13%	0%
09/23/03	SRU0005	79%	4%	13%	0%	4%
09/23/03	UQQ0005	48%	24%	14%	10%	5%
10/07/03	JON0039	0%	50%	0%	0%	50%
10/07/03	JON0082	14%	77%	5%	0%	5%
10/07/03	SRU0005	38%	0%	63%	0%	0%
10/07/03	UQQ0005	79%	0%	21%	0%	0%
Total		55%	10%	16%	3%	15%

Jones Falls Summary

The use of ARA was successful for identification of bacterial sources in the Jones Falls Watershed as evidenced by the acceptable ARCC (72%) for the library. With the exception of the RCC for wildlife (45%), the RCCs ranged from 80% to 87%. Although wildlife has a low RCC, there will be no remedial action taken for wildlife sources. When water isolates were compared to the library and potential sources predicted, 85% of the isolates were classified by statistical analysis. The largest category of potential sources in the watershed as a whole was human (65%), followed by pet and livestock, (19% and 12% of the classified isolates, respectively). Three percent (4%) of the water isolates were classified as from wildlife.

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ROBERT M. SUMMERS, PH.D.

Home Address: 7315 Yorktowne Dr. - Baltimore, MD 21204
Email: Robert.Summers.PhD@gmail.com
Telephone: 410-967-0675

EDUCATION

JOHNS HOPKINS UNIVERSITY, BALTIMORE, MARYLAND

- *B.A. NATURAL SCIENCES*
- *PH.D. ENVIRONMENTAL ENGINEERING*

CURRENT EMPLOYMENT

Principal, EcoLogix Group, Inc. (part-time, April 2015 – present).
Providing expert environmental consulting services to guide government agencies and businesses in the development of environmental strategies, building community and stakeholder support and obtaining State, federal and local government permits.

Lecturer, Johns Hopkins University, Whiting School of Engineering (part-time, April 2015 – present). Teaching environmental science and management of estuaries, with emphasis on Chesapeake Bay.

INTERNATIONAL AFFILIATION

Member of the Science and Policy Committee of the International Center for the Environmental Management of Enclosed Coastal Seas (EMECS) working in collaboration with scientists, environmental managers and government officials in other nations that are engaged in coastal pollution control and ecosystem restoration.

VOLUNTEER ACTIVITIES

Board of Directors, Blue Water Baltimore (Regional Water Quality NGO)

PREVIOUS EMPLOYMENT

BLUE WATER BALTIMORE

2631 Sisson Street, Baltimore, MD 21211

Interim Executive Director (part time, March, 2021 – November 2021).

Temporarily drafted by the Board of Directors to lead this environmental nonprofit organization and directing staff of 25 people working on water quality monitoring, environmental education, advocacy and restoration projects. Working with the Board of Directors to recruit and hire a new Executive Director.

KCI TECHNOLOGIES, INC.

936 Ridgebrook Rd. Sparks, MD 21254

Senior Scientist (part time, April 2015 – August 2018).

Environmental consultant working on various projects with University of Maryland, businesses and government agencies. Led project working on Guanabara Bay (Rio de Janeiro, Brazil) environmental diagnosis, development of a restoration plan framework based on Chesapeake Bay restoration and Environmental Report Card to monitor and report progress to elected officials and the public.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
1800 Washington Blvd. Baltimore MD 21230
Maryland Secretary of the Environment
December 2010 – January 2015.

Appointed Acting Secretary of the Environment December, 2010 by Maryland Governor Martin O'Malley and confirmed by the Maryland Senate as Secretary, to lead the Department's planning, regulatory, management and financing programs to protect public health, restore and protect air and water quality, clean up contaminated land and ensure proper management of hazardous and solid wastes, including direction of the Department's 1000 employees, $111 million operating and $191 million capital budgets.

Served as MD's Commissioner on the Susquehanna River Basin Commission and the Appalachian States' Low-Level Radioactive Waste Commission; Chairman of the Maryland Climate Change Commission; Represented the State as a member of the Chesapeake Bay Program Principal's Staff Committee, the Environmental Council of States, Regional Greenhouse Gas Initiative and other State, regional and national committees.

Represented the Administration before the State legislature and testified numerous times on behalf of Maryland's environmental programs before the U.S. Congress and Senate.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Deputy Secretary
January 2007 - December 2010.

Together with the Secretary, led the Department's planning, regulatory, management and financing programs to protect public health, restore and protect air and water quality, clean up contaminated land and ensure proper management of hazardous and solid wastes, including direction of the Department's 1000 employees, $111 million operating and $191 million capital budgets.

Served as Chairman and Maryland Commissioner for the Interstate Commission on

the Potomac River Basin and Chairman and Maryland Commissioner for the Susquehanna River Basin Commission. Department's representative on the Maryland Bay Restoration Fund Advisory Committee and the Governor's Advisory Committee on the Management and Protection of the State's Water Resources. Served on the Board of Directors of the Climate Change Registry.

JOHNS HOPKINS UNIVERSITY
LECTURER (PART-TIME).
Spring 2004 – Fall 2007.

Developed and taught graduate course titled "Water Resources Management" in the JHU Whiting School of Engineering's Engineering for Professionals program. In 2007, converted the course to be taught fully on-line.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Director, Water Management Administration
APRIL 2001-JANUARY 2007.

Served as the legally delegated representative of the Secretary of the Environment responsible for all regulatory, administrative and legal determinations on regulations and programs under the purview of the Water Management Administration, including regulation of water supply, water pollution control, erosion and sediment control, stormwater management, dam safety, wetlands and waterways protection. Led the Administration's 315 professional and support staff with a $32 million annual operating budget and $120 million capital budget for grants and loans for water supply, wastewater treatment, stormwater control and stream restoration projects.

Supervised the Administration's Deputy Director, the Manager of Regulatory Programs and Administrators of 7 major programs with functions including: ensuring that public drinking water systems provide a safe and adequate supply of water; regulating municipal and industrial wastewater discharges to prevent pollution of surface and groundwater; oversight and technical support for local health department's regulation of individual wells and septic systems; managing capital grant and revolving loan funded projects for construction of water supply and wastewater treatment facilities; reviewing local government water and sewer plans and wastewater system designs; oversight and technical support for federal, state and local sediment and stormwater pollution management; regulation of mining activities, restoring abandoned mines and mitigating acid mine drainage impacts; protecting and managing tidal and nontidal wetlands; regulating construction activities in waterways and floodplains and ensuring dam safety; providing compliance assistance to the regulated community; ensuring compliance with the

provisions of state and federal water laws and regulations through enforcement actions when necessary to protect the public health and the environment.

Department's lead technical representative for water-related issues in the development of Departmental legislation, review and development of position statements regarding legislation submitted by others and presenting Departmental testimony before the State Legislature.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
DIRECTOR, TECHNICAL AND REGULATORY SERVICES ADMINISTRATION.
May 1999-April 2001.

Responsible for the management of the Administration's staff including 140 professionals and support staff with an annual budget of over $15 million, providing scientific, engineering and other technical support to the Department of the Environment's regulatory programs and providing Departmental information technology services, including MDE's computer network support, home page on the world-wide web, geographic information systems and multi-media data base development. Responsible for managing the Department's water quality standards development and water quality monitoring programs; the State Shellfish Sanitation Program responsible for ensuring the bacterial quality of Maryland shellfish harvesting waters; emergency operations for oil and hazardous material spills, nuclear power plant emergency response and flood hazard mitigation; management of Maryland's Community Right-to-Know Program and Toxics Release Inventory; coordination of Maryland's Total Maximum Daily Load (TMDL) program as required under the federal Clean Water Act; providing technical support for environmental and public health risk assessments; representation on various inter-agency and inter-state technical groups such as the Chesapeake Bay Program, Coastal Bays Program, Dredged Material Management Committee, Patuxent River Commission, Anacostia Watershed Restoration Committee, Interstate Commission on the Potomac River Basin.

AWARDS

2014 – ADMIRAL OF THE CHESAPEAKE, PRESENTED BY MARYLAND GOVERNOR MARTIN O'MALLEY IN RECOGNITION OF 32 YEARS OF SERVICE ON MARYLAND'S CHESAPEAKE BAY RESTORATION PROGRAM

2009 – AWARD FOR DISTINGUISHED GOVERNMENT SERVICE, PRESENTED BY THE JOHNS HOPKINS UNIVERSITY

1992 – UNSUNG HERO AWARD, PRESENTED BY THE CHESAPEAKE EXECUTIVE COUNCIL (GOVERNORS OF PA, MD, VA, THE MAYOR OF THE DISTRICT OF COLUMBIA, THE

ADMINISTRATOR OF THE US EPA AND THE CHAIR OF THE CHESAPEAKE BAY COMMISSION)

Role in Maryland Environmental Legislation

As Director of two Administrations and then as Deputy Secretary and Secretary of the Environment, played a key role in the development, passage and implementation of significant State legislation that is the basis for major environmental programs in Maryland, including:

THE WATER QUALITY IMPROVEMENT ACT OF 1998. Created Maryland's mandatory nutrient management program for all farms. Started with nitrogen-based nutrient management that was part of an ongoing voluntary nutrient management program and after a phase in period of 5 years, shifted to nitrogen and phosphorus-based nutrient management.

THE CHILDREN'S ENVIRONMENTAL HEALTH AND PROTECTION RIGHTS ACT (2000). Created Maryland's Children's Health and Environmental Protection Advisory Council charged with advising the Governor and legislature regarding measures needed to protect children from environmental hazards and with reviewing all State laws and regulations to ensure children's health is protected. Council is co-chaired by Designees of the Secretaries of the Department of Health and Mental Hygiene and the Department of the Environment.

MARYLAND WATER CONSERVATION ACT (2001). Requires all permits for public water systems in Maryland to include specific provisions to ensure conservation of water supplies during treatment, storage and transmission to water users.

THE BAY RESTORATION FUND (2004). Established two dedicated funds financed by: 1) users of wastewater treatment plants and 2) users of onsite sewage treatment systems. Users were assessed a fee of $2.50 per month or $30 per year. The wastewater fund is used to finance upgrades to Maryland's 67 largest wastewater treatment plants to achieve state-of-the-art nutrient removal. The onsite treatment system fund is used to finance upgrades to existing onsite sewage treatment systems to remove nitrogen and to plant cover crops on agricultural cropland.

LOCAL GOVERNMENT PLANNING – WATER RESOURCES ELEMENT (2006). Requires local comprehensive land use plans to include a Water Resources Element that describes how the local government has taken the availability of water supply and the ability of receiving waters to accommodate wastewater discharges without violating water quality standards.

STORMWATER MANAGEMENT ACT OF 2007. Requires all new development and redevelopment projects in Maryland to employ Environmental Site Design to the maximum extent practicable to prevent stormwater runoff and associated pollution.

WETLANDS AND WATERWAYS PROGRAM FEES (2008). Requires all applicants for permits for construction activities that affect wetlands or waterways to pay reasonable fees to support the Department's wetlands and waterways program. Allowed the Department to restore program staff to ensure full protection of Maryland's wetland resources and ensure that the regulated community receives appropriate permits in a timely manner.

LIVING SHORELINE PROTECTION ACT OF 2008. Requires all shoreline erosion protection projects in Maryland to employ living shoreline techniques that establish natural vegetated shorelines, unless it can be demonstrated that the physical environment and erosive forces at the chosen location would prevent the successful establishment of a living shoreline.

CHESAPEAKE AND ATLANTIC COASTAL BAYS 2010 TRUST FUND (2008). Established a dedicated fund to be used for nonpoint source pollution control projects. The Fund is managed by the BayStat Panel, consisting of the Governor, his key staff and the Secretaries of Natural Resources, Environment, Agriculture, Planning and the Director of the Critical Areas Program.

GREENHOUSE GAS REDUCTION ACT OF 2009. Established a State goal to reduce greenhouse gas emissions by 25% from 2006 levels by 2020. Charged the Department of the Environment with developing a greenhouse gas reduction plan using a broad stakeholder involvement process starting in 2011, when a draft plan was submitted for public comments, and a final plan prepared during 2012.

SUSTAINABLE GROWTH AND PRESERVATION ACT OF 2012. Requires all counties in Maryland to designate Tiers for wastewater treatment in County Comprehensive Land Use Management Plans, including a Tier 4 area that restricts the development of major subdivisions on septic systems in order to protect rural and open space areas and prevent further water quality degradation in those areas.

BAY RESTORATION FUND (2012). Increased the Bay Restoration Fund fee from $2.50 to $5 per month in order to provide the funding needed to complete the upgrading of the State's 67 largest sewage treatment plants.

WATERSHED PROTECTION AND RESTORATION PROGRAM (2012). Requires the State's 9 most densely populated counties and Baltimore City to establish stormwater pollution remediation programs to be financed from a stormwater utility fee assessed to

property owners in an amount proportional to stormwater pollution impacts generated by their property.

OTHER EARLIER RESPONSIBILITIES:
MARYLAND DEPARTMENT OF THE ENVIRONMENT
DEPUTY DIRECTOR, TECHNICAL AND REGULATORY SERVICES ADMIN.
June 1997-May 1999.

With the Director, shared responsibility for the management of the Administration's staff including 100 professionals and other staff responsible for providing scientific, engineering and other technical support to the Department of the Environment's regulatory programs; managing the Department's emergency operations for oil and hazardous material spills, nuclear power plant emergency response and flood hazard mitigation; supporting Departmental information technology development, including MDE's home page on the world-wide web and geographic information systems and multi-media data base development; management of Maryland's Community Right-to-Know Program and Toxics Release Inventory; coordination of Maryland's Total Maximum Daily Load (TMDL) program as required under the federal Clean Water Act; providing technical support for environmental and public health risk assessments required for various air, water and land pollution problems; representation on various inter-agency and inter-state technical groups such as the Chesapeake Bay Program, Coastal Bays Program, Long-term Dredged Material Management Committee, Patuxent River Commission, Anacostia Watershed Restoration Committee, the Interstate Commission on the Potomac River Basin and other similar groups.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Environmental Program Manager, Emergency Operations and Technical Support Program, Technical and Regulatory Services Administration.
July, 1995 – June, 1997

Directed the activities of 4 divisions including 29 emergency response, planning, scientific and engineering staff. Responsibilities included: overall coordination of MDE's emergency response activities related to air, water and waste pollution; direction of emergency management planning and response staff for hazardous materials releases, oil spills, nuclear power plant emergencies, floods and other natural disasters; direction of technical support staff for multi-media project reviews (State Clearinghouse), Maryland Federal Facilities technical liaison, coordination of MDE strategic planning and growth management activities, MDE's Regional Action Plan for Toxic Pollution, Chesapeake Bay Tributary Strategies and the Maryland

Environment 2000 Comparative Risk Project.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
Environmental Program Manager, Watershed Management Program, Chesapeake Bay and Watershed Management Administration. January, 1993 - July, 1995.

Directed the activities of two divisions including 22 scientific and engineering staff. Responsibilities included: monitoring of water quality and biological impacts of pollution and the effectiveness of restoration measures; evaluation and documentation of the cost-effectiveness of Maryland's point and nonpoint source pollution control programs; development of watershed restoration and protection policy recommendations and supporting technical documentation; direction of $1.7 million annual Clean Water Act § 319 nonpoint source pollution control grant; development and management of point source and developed land nonpoint source components of Maryland's Chesapeake Bay Tributary Nutrient Reduction Strategies; representation of the Department on State and inter-state technical and policy committees including the Chesapeake Bay Program.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
***Division Chief, Watershed Projects Division, Chesapeake Bay and Special Projects Program*. January, 1988 – January, 1993.**

Supervised 7 scientific and engineering staff responsible for: nonpoint source monitoring, watershed pollution assessment projects, watershed modeling projects; development and management of the Small Creek and Estuary Restoration Cost-Share Program; representation of MDE on Chesapeake Bay technical committees.

MARYLAND DEPARTMENT OF HEALTH AND MENTAL HYGIENE, OFFICE OF ENVIRONMENTAL PROGRAMS – *Section Head, Watershed Monitoring and Modeling Section, Technical Analysis Division*. July, 1985 – January, 1988.

Supervised 4 scientific and engineering staff responsible for water quality monitoring and modeling projects designed to document the nature and extent of water quality problems in Maryland's streams and rivers and to document improvements due to pollution control programs. The Section staff were also responsible for watershed water quality model development and application to support waste load allocation studies conducted for the Patuxent, Monocacy and Chesapeake Bay Watersheds.

MARYLAND DEPARTMENT OF HEALTH AND MENTAL HYGIENE, OFFICE OF ENVIRONMENTAL PROGRAMS - ***Project Manager, Water Quality Section, May, 1983 - July, 1985.***

Responsible for the development and management of the Department's Patuxent Watershed Monitoring and Modeling Project, the Chesapeake Bay River Input Monitoring Program and other projects to document water quality conditions and predict water quality response to pollution controls. Supervised field sampling personnel, data processing, data analysis and technical report writing.

STATE UNIVERSITY OF NEW YORK AT STONY BROOK
Research Associate, Marine Sciences Research Center, June, 1981 - May, 1983.

Developed proposals and directed research projects on water quality and ecological implications of the disposal of contaminated dredged material, including the survey and analysis of municipal and industrial wastewater flows, nonpoint source pollution and their impact on sediment contamination and water quality.

JOHNS HOPKINS UNIVERSITY, BALTIMORE, MARYLAND
CHESAPEAKE BAY INSTITUTE
Research Technician. June, 1976-May, 1981.

Provided field, laboratory and data analysis support for various environmental research projects including investigations of low dissolved oxygen effects on the water intakes of the Calvert Cliffs Nuclear Power Plant, evaluation of alternate sewage treatment plant outfall locations on Maryland's Atlantic coast, evaluation of the hydrodynamic conditions in Chesapeake Bay tidal ponds.

Last Revised February 25, 2020
FINAL

Listing Methodology for Identifying Waters Impaired by Bacteria in Maryland's Integrated Report

Water & Science Administration
Maryland Department of the Environment

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Introduction

The Maryland Department of the Environment (MDE) routinely monitors shellfish harvesting waters for fecal coliform bacteria and conducts pollution source surveys to ensure that shellfish harvested in Maryland are safe for human consumption. In addition, MDE coordinates the State's Beach bacteria monitoring program. Beach sample collection and notification of advisories is delegated to the Counties in order to protect public health at Maryland's designated bathing beaches.

Fecal indicator bacteria are used in these programs since monitoring for actual pathogens is not feasible. It is assumed that if fecal indicator bacteria are present, then human pathogens may also be present. Since the primary goal of both the Shellfish and Beach programs is to ensure that public health concerns are addressed in a timely fashion, ongoing day-to-day management decisions by these programs are designed to be necessarily conservative. One such example is that beach advisories may be based on a single sampling event which shows a high level of indicator bacteria. However, bacteriological indicators are known to be variable in the environment and a single high measurement does not always coincide with fecal contamination. For this reason, this assessment methodology, developed for conducting Integrated Report (IR) assessments, will make use of larger longer-term sample sizes before making impairment determinations that could result in a Total Maximum Daily Load (TMDL). Doing this allows MDE to continue to protect public health in a timely fashion (by both the Shellfish and Beach programs) but also allows for a higher level of confidence to be used prior to initiating potentially costly TMDL development and implementation efforts. This helps to enhance the accuracy with which impairment determinations are made and enables the Department to focus on the highest priority impairments first.

Due to the complexities of collecting and assessing bacteriological indicator data, MDE strongly encourages groups to contact Heather Merritt (MDE) at Heather.Merritt@maryland.gov or (410) 537-3618 both when designing a sampling program and prior to submitting bacteria data for the Integrated Report. Ms. Merritt can provide guidance to groups interested in collected bacteria data so that this data is useful for the intended purposes.

For additional detail regarding monitoring and notification for Maryland's Shellfish Harvesting waters and Beaches Program please visit MDE's webpages at:

> Shellfish Harvesting Areas:
> https://mde.maryland.gov/programs/Marylander/fishandshellfish/Pages/index.aspx
>
> Beaches Program:
> https://mde.maryland.gov/programs/Water/Beaches/Pages/index.aspx.

Rules used by MDE to interpret bacteria data and apply the water quality standards are discussed below in the first three sections. The first section generally describes the protocols that MDE

uses. The second and third sections describe how bacteria monitoring data is assessed to determine support of the shellfish harvesting designated use and the water contact recreation use, respectively. The fourth section describes previous changes to the methodology and how MDE will provide information to the public on sewage overflows.

I. Protocols

Data are collected and analyzed using National Shellfish Sanitation Program with oversight from United States Food and Drug Administration (FDA) (for shellfish harvesting areas) or Environmental Protection Agency (EPA) (for recreational waters) approved methods, which include strict quality assurance and quality control (QA/QC) guidelines. Only Level 3 data[1] may be utilized for decision-making with respect to designated use support status. All other available data will be considered but may be used for prioritization, additional study, or revised monitoring. In all cases, it is critical that bacteria sampling be carried out in a way that is representative of conditions in time and space. High spatial and temporal variability suggest that infrequent or moderately elevated bacteriological levels alone do not necessarily represent a human health risk or impairment. The bacteriological standard is numeric but also includes a narrative component that permits the use of sanitary surveys and epidemiological studies. The methodology recognizes the inherent variability of the bacterial measurement and recognizes the inadequacies of indicator organisms. Most Probable Number (MPN) or Colonies Forming Units (CFU), reported as results used to express the level of bacteria, is not a direct count but a statistical estimation subject to a high degree of variability.

The current analytical methods used for bacteria sample analysis are specific to the use being evaluated (e.g. shellfish harvest vs. water contact). For the shellfish harvesting use, the Multiple Tube Fermentation method is used to measure fecal coliform (expressed as MPN/100 ml). For evaluating the recreational use the most commonly used tests for recreational waters are both MPN methods; the ONPG-MUG (Colilert) test measures *E. coli* and the MUG media (Enterolert) test measures enterococci.

II. Interpretation of Fecal Coliform Data for Assessing Use II Shellfish Harvesting Areas

The indicator and criteria used for shellfish (bivalve molluscan shellfish only) harvesting waters is established by the National Shellfish Sanitation Program (NSSP) and is promulgated in Code of Maryland Regulations (COMAR) 26.08.02.03-3 (COMAR 2019; NSSP 2017). In order to demonstrate support of the shellfish harvesting designated use, the measured level of fecal coliform in water must have a median of less than 14 MPN/100 ml and a 90th percentile of less than 49 MPN/100 ml, calculated from a minimum of 30 samples usually taken over a three-year

[1] For Maryland's Integrated Report, MDE evaluates submitted data according to data quality levels. The levels are based upon both the level of data quality and the authorized uses of the data provided to the agency, where Level 1 has the lowest and Level 3 has the highest data quality requirements. Level 3 datasets are used for regulatory decision-making purposes and are therefore legally defensible data. The data must be accompanied by a Quality Assurance Project Plan, and documentation of field sampling and/or laboratory testing protocols.

period. MDE conducts routine bacteria water quality sampling and pollution source surveys to assess shellfish harvesting areas so that waters can be assigned to one of three classifications used for protecting shellfish consumers. The following sections describe the different shellfish area classifications and how these classifications relate[2] to assessment categories on the IR.

A. Restricted and Prohibited (closed safety zone): A restricted classification for shellfish waters means that no direct shellfish harvesting is permitted in those waters. This classification is used in the following three scenarios:

    1. Shellfish harvesting areas that do not meet the NSSP bacteria water quality standard for an approved classification (a fecal coliform median of 14 MPN/100 ml and a 90th percentile of <49 MPN/100 ml) are classified as restricted and listed as impaired in Category 4 or 5 (depending on whether a TMDL was completed or not) of the IR.

    2. Shellfish harvesting waters located in the vicinity of wastewater treatment plant (WWTP) outfalls are classified as prohibited and a closed safety zone is established at the discharge point. This is a preventative public health protection measure and is required under the NSSP. However, these waters typically meet the standard for an approved classification under the NSSP because the discharge limit is less than 14 MPN/100 ml fecal coliform. If bacteria data shows violations with State standards it will be listed appropriately on the impaired (Category 4 or 5) part of the IR.

    3. The upper Chesapeake Bay[3] typically meets the standard for an approved classification but is restricted to shellfish harvesting for administrative reasons which are not based on water quality data. Water quality is routinely monitored in this area for fecal coliform. If bacteria data demonstrates that State standards are not being met, this area will be listed as impaired (Category 4 or 5) on the IR

B. Conditionally Approved Waters: Certain shellfish harvesting areas are classified as conditionally approved and are closed to harvesting for three days following a rainfall event of greater than or equal to one-inch in twenty-four hours. Conditionally approved harvesting areas generally meet the bacteriological water quality criteria for an approved classification (median of 14 MPN/100ml and 90th percentile <49MPN/100ml) at all other times and shellfish can be harvested from these areas when in the open status. When the water quality criteria for using a conditionally approved classification are not met, this area will be listed as impaired.

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[2] Please note that shellfish area classifications do not directly relate to bacteria water quality. In some cases, certain shellfish area classifications are made based on administrative protection measures and not water quality data. In all cases, shellfish areas are assigned to categories on the IR based on water quality data alone.

[3] The upper Chesapeake Bay, only as it's referred to in this paragraph, is defined as all of the area north of a line running in a southeasterly direction from the Robin's Point Tower to the Pooles Island Range Light, then easterly to the Worton Point Tower.

C. Approved Waters: Waters classified as approved for shellfish harvesting meet the water quality standards for shellfish harvesting waters and are placed in Category 1 or 2 (meeting water quality standards) of the IR.

D. Shellfish Waters — Geographic Scale of Assessment
For the purposes of the IR, MDE will georeference shellfish harvesting impairments as polygonal bodies of water within the larger estuarine waters (i.e. Chesapeake Bay segments, Coastal Bays, etc.). The shape of these 'polygonal' areas of estuarine water will be determined by the spatial arrangement of monitoring stations and by nearby shoreline features.

III. Interpretation of Bacteria Data for Water Contact Recreation Use

Maryland has implemented the EPA recommended enterococcus (marine or freshwater) and *E. coli* (freshwater only) standards for all recreational waters. According to EPA's *Ambient Water Quality Criteria for Bacteria -1986*, the indicators *E. coli* and enterococcus have been found through epidemiological studies to have the best quantifiable relationship between the density of an indicator in the water and the potential human health risks associated with swimming in sewage-contaminated waters. "Indicator organisms are a fundamental monitoring tool used to measure both changes in environmental (water) quality or conditions and the potential presence of hard-to-detect pathogenic organisms. An indicator organism provides evidence of the potential presence or absence of a pathogenic organism that survives under similar physical, chemical, and nutrient conditions." (EPA 2002).

These criteria are used during the beach season by beach managers to issue advisories and to notify the public. A few high values of the indicators may or may not be indicative of impairment. Therefore, it is necessary to evaluate the results from multiple sampling events over time to adequately quantify water quality conditions. EPA's recreational criteria were developed for waters where primary contact recreation was designated and therefore apply to those activities. For water bodies where primary contact is not possible or permitted, MDE will prioritize these waters for sampling based on available resources.

Assessing Support of Water Contact Recreation Use

In 2012, the EPA issued the updated *Recreational Water Quality Criteria* (RWQC) document (EPA 2012) which includes recommendations for magnitude, duration, and frequency. The 2012 RWQC magnitude is expressed as two numeric concentration thresholds consisting of a geometric mean (GM) and a statistical threshold value (STV), which are presented in Table 1. Both of these numeric thresholds are used in Maryland's bacteria assessments and were adopted into Maryland's water quality standards. These criteria correspond to a level of water quality that is associated with an estimated illness rate of 36 per 1,000 primary contact recreators (EPA 2012). The listing methodology for water contact recreation use applies to all Maryland waters. The 2012 RWQC also provides optional Beach Action Values that are for use in the beaches

notification programs. These values are not used in determining use attainment, i.e., IR impairment listings.

Table 1. EPA Recreational Water Quality Criteria (EPA 2012).

Designated Use	Bacteria Indicator	GM (cfu/100ml)	STV (cfu/100ml)
Marine & Tidal, or Freshwaters Contact Recreation	Enterococci	≤ 35	No more than 10% > 130
Freshwater Contact Recreation	E. coli	≤ 126	No more than 10% > 410
Duration and Frequency: The waterbody GM should not be greater than the selected GM magnitude in any 90-day period. There should not be greater than a ten percent excursion frequency of the STV magnitude in the same 90-day period.			

Water bodies should be monitored at least weekly to evaluate the GM and STV during an annual 90-day assessment period. For each year or 90 day period, data are evaluated independently as either meeting or not meeting the criteria[4]. In a given year, if both the resulting GM and associated STV do not exceed the bacteria indicator criteria noted in Table 1, then the waterbody meets water quality criteria for that year. If either the resulting GM or the associated STV exceeds their respective bacteria indicator criteria then the waterbody does not meet water quality criteria for that year. The waterbody assessments for the Integrated Report are assessed using the most recent and consecutive two years of data. If both years meet water quality criteria, then the waterbody is listed on Category 2 as meeting some water quality standards. If both years do not meet the water quality criteria, then the waterbody is listed on Category 5 as impaired. If one year meets the water quality criteria and one year does not, then the waterbody is listed on Category 3 for insufficient information. Because of the variable nature of bacteria data, only data from the most recent ten-year period will be considered. If there aren't two consecutive years' worth of data in the most recent ten-year period, then the waterbody is listed on Category 3 for insufficient information. Listings can change each Integrated Reporting cycle based on a new year or multiple years' worth of data.

Geographic Scale of Assessment

Beaches - For the purposes of the Integrated Report, waters identified and assessed as beaches will be georeferenced as linear stretches of water, having only the dimension of length. As a

[4] State biologists reserve the right to use best professional judgment in the use of data collected during or after rain events. Rain and the subsequent stormwater runoff has been known to sometimes elevate levels of the bacteriological indicators without a source of fecal contamination. In other locales, rain events are known to cause sewage overflows and therefore samples collected in these locations are representative of the actual risk to public health.

result, the water body size reported for beaches will be expressed in miles. Since bathing beaches are typically narrow bands of water where water contact recreation occurs, this will help focus the georeferencing process to those areas of shoreline where beach access occurs.

Recreational Waters (not beaches) - Recreational waters, as the term is used here, generally refers to non-tidal flowing waters that may, from time to time, be used for full body contact recreation. For the purposes of the Integrated Report, when a bacterial monitoring station is assessed on non-tidal flowing waters, all upstream waters within the Maryland 8-digit watershed will be georeferenced as having the same assessment result. The only exception to this rule will be when there is an in-stream impoundment that significantly alters flow up and downstream of the dam. Recreational waters can also include tidal waters that may have had special assessments completed outside of the normal beach monitoring program. Assessments for these waters will be based on the spatial arrangement of monitoring stations and any nearby shoreline features. As a result, the geographic depiction of these assessments will show a polygonal body of water.

IV. Sewage Releases

In previous iterations of the Bacteria Assessment Methodology, there was a section that discussed sewage releases and how information on combined sewage overflows (CSOs) and sanitary sewage overflows (SSOs) was used in relation to water quality data on bacteria levels. However, after further consideration, the Department determined that this part of the methodology is not appropriate for 303(*d*) assessment purposes since there is insufficient scientific basis for determining that an overflow of 30,000 gallons was significant in a wide range of waterbody types, nor are there any federal regulatory requirements to list waters solely based on overflows. Such waters will not be listed in Category 5 of the IR so as to avoid overstating the potential water quality impairment where bacterial water quality data do not exist or do not support impairment. This will not impact the Department's ability to protect public health or to remedy faulty infrastructure.

References

COMAR (Code of Maryland Regulations). 2019. Water Quality Criteria Specific to Designated Uses. Accessed April 2019. Available at: http://www.dsd.state.md.us/comar/comarhtml/26/26.08.02.03-3.htm

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_____. 2002. National Beach Guidance and Required Performance Criteria for Grants, Office of Water (4305T), Washington, DC 20460, EPA-823-B-02-004, June 2002. Accessed April 2019. Available at: https://www.epa.gov/sites/production/files/2018-12/documents/national-beach-guidance-2002-report.pdf

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Maryland Department of the Environment. 2003. Guidance for County Recreational Water Quality Monitoring and Notification Programs. Maryland Department of the Environment. Baltimore, MD. Accessed April 2019. Available at https://mde.maryland.gov/programs/Water/Beaches/Documents/MDBEACHrev2016.pdf

NSSP (National Shellfish Sanitation Program). 2017. Guide for the Control of Molluscan Shellfish, 2017 Revision. U.S. Food and Drug Administration. Available at: https://www.fda.gov/media/98328/download

DESIGN GUIDELINES
FOR
WASTEWATER FACILITIES

MARYLAND DEPARTMENT OF THE ENVIRONMENT
ENGINEERING AND CAPITAL PROJECTS PROGRAM

2016

Purpose:

- *Recommended Standards for Wastewater Facilities* (as revised) for Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers (10-State Standards) will continue to be the main source of guidance for the program's design review and construction permit functions. The 10-State Standards can be downloaded free from http://www.10statesstandards.com website, or purchased as a book from the Health Education Services (HES) at http://www.healthresearch.org/store.

- These guidelines are intended to serve as addenda to supplement the 10-State Standards.

- The 10-State Standards (as revised) and these guidelines supersede all other design guidelines for wastewater (sewerage facilities) previously issued by MDE.

- At the appearance of conflicting information, these guidelines supersede the 10-State Standards as they intended to provide further clarifications specific to MDE.

- Additional requirements beyond these guidelines and the 10-State Standards can be added by the facility's discharge permit and/or consent order or decree issued by MDE.

- If a local jurisdiction has more stringent requirements for any specific item, the more stringent requirements must be used for that item.

ADDENDUM TO CHAPTER 10
ENGINEERING REPORTS AND FACILITY PLANS

HYDRAULIC CAPACITY

Terminology and Typical Use:

Term	Description	Typical Design Use
Average Daily Flow (Current or Initial)	For existing facility, it's the current average daily flow based on the last three years data. This is done by averaging the daily flow for each year, then averaging the three years. For a proposed facility, it's the project initial flow.	To evaluate and address low flow conditions (minimum flows)
Design Average Flow (Design Capacity)	Average daily flow a facility is designed to successfully process	To develop maximum flowrates and peaking factors to be used for the design of equipment and unit processes.
Approved/Permitted Design Capacity	A treatment plant design flow approved by the County Water and Sewer Plans and permitted by the discharge permit with certain limits and conditions. It must be greater than or equal to a proposed design flow.	The maximum flow that can be evaluated to become the facility's new design capacity.
Diurnal Flow Pattern	The typical daily flow pattern for domestic wastewater with usually peaks occurring in the morning and evening.	Important in developing process control strategies for managing high flows.
Peak Hourly Flow	The largest volume of flow occurring within 1-hour period in the record examined.	Sizing of pumping facilities and conduits, sizing physical treatment units (ie grit chambers, screens, sedimentation tanks, filter hydraulic capacity). Sizing chlorine or other disinfection contact tanks. Also important in developing process control strategies for managing high flows.
Maximum or Peak Daily Flow	The largest volume of flow occurring within a 1-day period in the record examined.	Sizing of equalization tanks Sizing of sludge pumping system Sizing of chemical feed system
Maximum Monthly Flow	The average daily flows for the month with the highest total flow in the record examined.	Sizing of the bioreactor Sizing of the chemical storage tank Sizing of denitrification filter

Peaking Factor:

The peaking factor is used to forecast the maximum/peaking flows for the new proposed design capacity. The above average and maximum/peak flows are highly impacted by inflow/infiltration (I/I) and wet weather events. Therefore, the preferred method of estimating these values is by using actual data, which can account for any excessive I/I in the system and yield higher peaking factors than those of a typical system. When available, a record of three or more consecutive calendar years should be examined at an existing facility. Peaking factors should be calculated independently for each full consecutive calendar year examined, and then the highest of each type (hourly, daily, monthly) is selected.

$$\text{Peaking Factor (PF)} = \frac{\text{peak flow for the calendar year (hourly, daily, monthly)}}{\text{average daily flow for the calendar year}}$$

The following typical peaking factors (PF) should be used if there is not sufficient historical data available:

Design Capacity Range	Hourly PF	Daily PF	Monthly PF
0 to 0.25 MGD	4	3	2
0.25 to 16 MGD	$\frac{(3.2 \times \text{Design Capacity}^{5/6})}{\text{Design Capacity}}$	75% of Hourly PF	50% of Hourly PF, but not below 1.2
More than 16 MGD	2	1.5	1.2

Peak Flow = PF calculated above X Proposed Design Capacity

Proposed Design Capacity:

Proposed Design Capacity = Current Average Daily Flow (0 for new facilities)
+ Projected Future Flow

Projected Future Flow:

Future flows are projected based on 100 gallons per day per person, or 250 gallons per day per Equivalent Dwelling Unit (EDU). In addition, the following are the flow projections for different establishments:

Table I - Flow Projection Based Upon Gallons Per Person Per Day

Airports (per passenger)	5
Apartments-multiple family (per resident)	60
Bathhouses and swimming pools	10
Camps:	
Campground with central comfort stations	35
With flush toilets, no showers	25
Day camps (no meals served)	15
Resort camps (night and day) with limited plumbing	50
Luxury camps	100
Cottages and small dwellings with seasonal occupancy	50
Country clubs (per resident member)	100
Country clubs (per non-resident member present)	25
Dwellings:	
Boarding houses	50
additional for non-resident boarders	10
Luxury residences and estates	150
Multiple family dwellings (apartments)	60
Rooming houses	40
Single family dwellings	75-100
Factories (gallons per person, per shift, exclusive of industrial wastes)	35
Hospitals (per bed space)	350
Hotels with private baths (2 persons per room)	60
Hotels without private baths	50
Institutions other than hospitals (per bed space)	125
Laundries, self-service (gallons per wash, i.e., per customer)	50
Mobile home parks (per space)	250
Motels with bath, toilet and kitchen wastes (per bed space)	50
Motels (per bed space)	40
Picnic Parks (toilet wastes only) (per picnicker)	5
Picnic Parks with bathhouses, showers and flush toilets	10
Restaurants (per seat)	25
Restaurants (toilet and kitchen wastes per patron)	10
Restaurants (kitchen wastes per meal served)	3
Restaurants, additional for bars and cocktail lounges	2
Schools:	
Boarding	100
Day, without gyms, cafeterias or showers	15
Day, with gyms, cafeterias and showers	25
Day, with cafeterias, but without gyms or showers	20
Service Stations (per vehicle served)	10

Swimming pools and bathhouses	10
Theaters:	
Movie (per auditorium seat)	1
Drive-in (per car space)	5
Travel Trailer Parks without individual water and sewer hook-ups (per space)	50
Travel Trailer Parks with individual water and sewer hook-ups (per space)	100
Workers:	
Construction (at semi-permanent camps)	50
Day, at schools and offices (per shift)	15

An alternative method used to project average daily flows generated from commercial establishments, public service buildings, or dwelling units can be figured on the basis of total floor area, number of building units, or service seats multiplied by a statistical factor. Guiding factors are given in Table II.

Table II - Guiding Factors for Flow Projection Related with Commercial Establishments, Public Service Buildings, or Dwelling Units

Office Buildings	Gross Sq. Ft. x 0.09 = gpd
Medical Office Buildings	Gross Sq. Ft. x 0.62 = gpd
Warehouses	Gross Sq. Ft. x 0.03 = gpd
Retail Stores	Gross Sq. Ft. x 0.05 = gpd
Supermarkets	Gross Sq. Ft. x 0.20 = gpd
Drug Stores	Gross Sq. Ft. x 0.13 = gpd
Beauty Salons	Gross Sq. Ft. x 0.35 = gpd
Barber Shops	Gross Sq. Ft. x 0.20 = gpd
Department Store with Lunch Counter	Gross Sq. Ft. x 0.08 = gpd
Department Store without Lunch Counter	Gross Sq. Ft. x 0.04 = gpd
Banks	Gross Sq. Ft. x 0.04 = gpd
Service Stations	Gross Sq. Ft. x 0.18 = gpd
Laundries & Cleaners	Gross Sq. Ft. x 0.31 = gpd
Laundromats	Gross Sq. Ft. x 3.68 = gpd
Car Wash without Wastewater Recirculation Equipment.	Gross Sq. Ft. x 4.90 = gpd
Hotels	Gross Sq. Ft. x 0.25 = gpd
Motels	Gross Sq. Ft. x 0.23 = gpd
Dry Goods Stores	Gross Sq. Ft. x 0.05 = gpd
Shopping Centers	Gross Sq. Ft. x 0.18 = gpd

Flow projection for country clubs or public parks may be made on the basis of plumbing fixtures. The related statistical flow figures per unit of plumbing fixture are shown in Table III and Table IV.

Table III - Flow Projection for Country Clubs

	Gallons Per Day Per Fixture
Showers	500
Baths	300
Lavatories	100
Toilets	150
Urinals	100
Sinks	50

Table IV - Flow Projection for Public Parks
(During hours when park is open)

	Gallons Per Day Per Fixture
Flush toilets	35
Urinals	10
Showers	100
Faucets	15

ORGANIC CAPACITY
(For Wastewater Treatment Plant)

For existing facilities, 3-year data, if available should be evaluated, and average concentration is calculated in the treatment plant influent, primary effluent, and secondary effluent. For new wastewater treatment plant typical values are used or values from equivalent existing facility of similar capacity.

Average Organic/Mass Loading (Lbs/Day)
= Design Capacity (MGD) X Average Concentration (mg/l) X 8.34 (Conversion Factor)

Sustained Mass Loading (Lbs/Day)
= Average Mass Loading X PF (hourly, daily, monthly depending on the unit process being sized)

Computer Simulations:

Computer simulations have become more common in recent years, especially in the design of Biological and Enhanced Nutrient Removal processes. Simulators use mathematical models to allow designers to study kinetic as well as time-based solutions while determining the total mass balances of many constituents. Simulation results must be interpreted carefully given the potential limitations inherent in the calibration and validation of the computer model.

ADDENDA TO CHAPTER 30
DESIGN OF SEWERS

38.21 Minimum Distance from Water Supply Wells and other Water Supply Sources or Structures *(New Added Paragraph)*

To be consistent with COMAR 26.04.04.05, the proposed sewer line shall satisfy the following minimum horizontal distance from a water supply well and other water supply sources or structures:

(1) 100 feet from well utilizing unconfined aquifer, and surface water supply with "P" designation.

(2) 50 feet from well utilizing confined aquifer, or covered reservoir.

When it is impossible to obtain proper distance as stipulated above, the minimum horizontal separation can be reduced to 10 feet if one of the methods in Paragraph 38.4 (added below) is used, and the selected provision is extended 100 feet on both sides of an unconfined aquifer well or surface water supply with "P" designation (stream embankment may also be required), and 50 feet on both sides of a confined aquifer well or covered reservoir.

38.31 Horizontal and Vertical Separation *(Added to the Existing Paragraph)*

In addition to the above, one of the other methods in Paragraph 38.4 can be used if it is impossible to obtain the proper horizontal and vertical separation between the water and sewer lines.

38.32 Crossings *(Added to the Existing Paragraph)*

In addition to the above, one of the other methods in Paragraph 38.4 can be used if it is impossible to obtain the proper horizontal and vertical separation between the water and sewer lines. The selected provision shall be extended 10 feet on both sides of the crossing, measured perpendicular to the water main.

38.4 Methods to Address Minimum Separation Issues *(New Added Paragraph)*

When it is impossible to obtain proper horizontal and/or vertical separation as stipulated in the added 38.21 Paragraph above, and Paragraphs 38.31, and/or 38.32 of the 10-State Standards, one of the following methods can be used:

a. The sewer shall be designed and constructed equal to water pipe, of slip-on or mechanical joint pipe complying with Section 8.1 and Section 8.7 of the *Recommended Standards for Water Works*, and shall be pressure rated to at least 150 psi (1034 kPa) and pressure tested to ensure watertightness.

b. The sewer can be continuous, fused, or welded as long as it is equal to water pipe as described above.

c. Either the water main or the sewer line may be encased in concrete or other watertight carrier pipe as approved by MDE.

ADDENDUM TO CHAPTER 40
WASTEWATER PUMPING STATION

EMERGENCY OPERATION

Additional Measures for Facilities Located within Certain Critical Water Uses:

Per Paragraph 47.3 of Chapter 40 of the Recommended 10-State Standards (under Emergency Operation), the Maryland Department of Environment (MDE) hereby establishes the following supplemental design guidelines for wastewater pumping stations that can have a potential overflow that may affect public water supplies and other critical water uses identified by MDE. These supplemental guidelines apply to any existing station where pumping capacity is being increased to accommodate increased flows due to growth, and for proposed new pumping stations (not for the purpose of functional replacement); AND fall under at least one of the following categories:

1. Existing or new within 3 miles of a shellfish water

2. Existing or new within 3 miles of a bathing beach water

3. Existing or new within 3 miles of public water supply ("P" designation surface water)

4. Existing pumping stations within 3 miles of bacteria impaired water and has one or more overflow event(s) over the past 3 years that is/are attributable to a power outage, mechanical failure or human error

A. Case I

The wastewater pumping station is missing one of the four essential items: a telemetering alarm system, a standby pump unit, a stationary auxiliary power source, or a pump-around connection.

- MDE may allow a 24-hour emergency wastewater storage capacity as a substitute for the missing essential item.

B. Case II

The wastewater pumping station provides all four essential items:

1. A telemetering alarm system
2. A standby pump unit (internal)
3. A stationary auxiliary power source connected to a separate power feed substation or stationary generator
4. A pump-around connection coupling facility

AND

(a) For Pumping Capacity (Q_p) ≤ 150 gallons per minute (gpm), or serving Equivalent Dwelling Units (EDU) ≤ 200, no additional measure is required.

(b) For Pumping Capacity (Q_p) > 150 gallons per minute (gpm), or serving Equivalent Dwelling Units (EDU) > 200, one of the following items must be provided in addition to the four essential items listed above:

Option 1: A third power source must be provided by a separate feed line to a new power substation, by providing a new stationary generator, or by a stationary independently-powered pumping unit(s) with adequate capacity to maintain proper operation.

Option 2: An additional 2-hour wastewater storage capacity shall be provided for emergency need, based on the newly projected design average daily flow.

Emergency Wastewater Storage:

For existing wastewater pumping station, MDE may approve a wastewater emergency storage capacity with a detention time less than 2 hours, provided that all of the following circumstances are substantive and evidenced:

(1) Options 1 and 2 above are also not feasible;

(2) There is no physical means to provide the required storage capacity due to site restriction at the premise of the pumping station;

(3) The pumping station has had excellent operation records without Overflow of wastewaters at the premise of the station in the past five years; and

(4) An emergency plan ensuring that the maximum response time will be less than one hour to remedy the malfunction of the pumping station.

Emergency wastewater storage capacity defined as detention time is determined by the following:

Total Wastewater Storage Time + Wastewater Traveling Time = 2 Hours

(1) The traveling time of land overflow wastewaters will be calculated at 1 foot per second (fps).

(2) In water, the traveling time overflow wastewater will be calculated at 2 feet per seconds (fps).

(3) The wastewater storage time will be calculated by dividing the total storage capacity with the design average daily flow (Q_a).

Where, Q_a = design average daily flow, in gpm
Q_p = pumping capacity, in gpm

If Q_p = 0 to 694 gpm ➔ $Q_a = 0.25 \times Q_p$
If Q_p = 695 to 22,384 gpm ➔ $Q_a = 0.0668 \times Q_p^{1.2}$
If Q_p > 22,384 gpm ➔ $Q_a = 0.5 \times Q_p$

(4) The total storage capacity includes:

- the available excess storage in the wet well above the elevation of high water alarm to the elevation where the first sewer service connection is made or the sewer system's lowest ground elevation,
- the available storage in the wastewater collection system up to where the first sewer service connection is made or the sewer system's lowest ground elevation , and
- the storage basin provided, if necessary.

AMENDMENT TO CHAPTER 40
WASTEWATER PUMPING STATION

49.61 Friction Coefficient *(Amended Paragraph)*

Friction losses through force mains shall be based on the Hazen-Williams formula or other acceptable methods. When the Hazen-Williams formula is used, the value for "C" shall be 100 for unlined iron or steel pipe for design. For other smooth pipe materials such as PVC, polyethylene, lined ductile iron, etc., a higher "C" value may be allowed for design. Frictional loses should be evaluated over the life of the pipe.

ADDENDUM TO CHAPTER 50
WASTEWATER TREATMENT FACILITIES

ESSENTIAL FACILITIES

Special Requirements for Facilities Discharge to Shellfish Harvesting Waters:

Per COMAR 26.08.04.04.C (2) (c), these facilities shall incorporate a bypass control system, including a minimum 24-hour emergency holding facility,

- The facility shall provide for biocide residual control.
- The 24-hour emergency holding facility must be sized based on the design average flow of the plant.
- Retention or holding time of other unit processes used for other purposes cannot be counted toward this 24-hour emergency storage.
- Section 93.4 shall be used for pond construction details.
- Minimum freeboard shall be 3 feet. For small ponds of 5 acres or less, 2 feet may be acceptable.

ADDED CHAPTER 120
SUPPLEMENTAL DESIGN GUIDELINES FOR DRIP DISPERSAL OF TREATED WASTEWATER

Scope:

Drip dispersal is a method used to discharge treated wastewater by distributing it over an area of land at root zone depth for final polishing, reuse, and/or recharge of groundwater. The proposed drip dispersal system shall be capable of uniformly distributing the wastewater effluent over the required area of application.

Applicability:

These guidelines are applicable to the design of wastewater systems that receive discharge permits from the Maryland Department of the Environment (Department) and that employ drip dispersal discharge systems.

The Department's discharge permit must be issued and its limitations set before a construction permit can be reviewed and issued.

As for any construction permitted facility, the drip dispersal system design plans submitted to the Department for construction permit shall be signed and sealed by a Professional Engineer licensed by the State of Maryland. The system design engineer shall follow these guidelines and incorporate necessary manufacturing product specifications into the design document to ensure satisfactory performance of the drip dispersal system.

Pre-Treatment:

Wastewater effluent dispersed through this method must be treated to meet the water quality standards within the issued discharge permit limitations. The treatment process will be reviewed and approved for construction in accordance with the Department's Design Guidelines and the Recommended 10-State Standards.

Nitrogen removal capability by the vegetation planted at a drip irrigation field or other means is determined by the discharge permitting process and is accounted for in the set discharge permit limitations. The vegetation planted on the drip dispersal field shall provide a comparable nitrogen uptake rate as used in the Nitrogen Balance Calculation for achieving a zero nitrogen percolate concentration during the growing season.

Wastewater Effluent Dosing and Equalization Tank:

The treated wastewater effluent shall be discharged to the drip disposal system through a dosing tank that has sufficient volume to provide flow equalization. Storage requirements within the treatment and dispersal system shall be at least one full day-storage located between the treatment and dispersal systems.

The Wastewater Effluent Dosing and Equalization Tank will be reviewed and approved for construction in accordance with the Department's Design Guidelines and the Recommended 10-State Standards.

Drip System Dosing Pump and Filter:

The system is to be designed with the pumps, filters, and dispersal area to accommodate the following conditions:

1. Filter flushing
2. Zone dosing
3. Tubing network flushing

Dosing pump selected for the dispersal system shall be capable of delivering the design hydraulic flow. At least one standby pump must be provided and available for service at all times.

The filters shall be included as part of the drip dispersal system and meet the manufacturer's specifications as approved by the design engineer.

Wastewater Effluent Loading Rate:

The wastewater effluent loading rate will be determined and provided by the issued discharge permit and shall not exceed an annual average loading rate of two inches per week.

2 inch per week = 0.18 gal/ft^2/day

Dispersal Area Sizing:

The size of the required dispersal area is determined by the daily design flow (gpd) and the loading rate stipulated in the issued discharge permit.

Zone Layout:

Dispersal Zone, as defined by the National Onsite Wastewater Recycling Association (NOWRA), is the smallest unit of a drip dispersal system, consisting of a supply manifold, return manifold, drip laterals, and associated appurtenances, which can be loaded independently of all other parts of the dispersal system.

Zone width across contour is typically from 50 to 300 feet. Zone width is delineated by the following factors:

1. Site and soil evaluation.
2. Available distance down slope
3. Maximum linear feet of drip tubing as provided by the manufacturer

Drip Tubing (Dripper line) Runs and Laterals:

A length of dripper line across the contour is defined as a "run." The tubing should be installed on contour and laid out to drain itself through the emitters as evenly as possible so as not to cause localized overloading.

Typical Run Length = 50' to 300'

Lateral is a dripper line consisting of a run or series of runs extending from the supply manifold to the return manifold of a single dispersal zone. Lateral length is dependent on head loss, and the drip system design (i.e. dosing pump and filter).

Typical Dripper line Depth = 6 to 12 inches

Percent Run Time:

Each manufacturer offers different models with various dispersal dosing capacities. The selected model must be capable to accommodate the peak day flow within the desired Percent Run Time of less than 50%.

$$\text{Percent Run Time} = \frac{\text{Peak Day Flow (gpd)}}{\text{Dispersal Dosing Capacity (gpm)} \times 1440} \times 100\%$$

Dripper line Spacing:

Typical manufacturer recommendations call for drip tubing to be spaced 1 foot to 3 feet on center (2' o.c. is the most common).

Zone Dosing:

- A pressure regulator is required to maintain adequate residual pressure during dosing.
- The control system must allow for variable loading rate and/or dosing time at the individual zones.
- Individual zones shall be designed to be easily taken in and out of service for maintenance or repair.

Zone Forward Field Flushing:

Each drip zone must automatically undergo a periodic forward field flushing usually every 25 cycles or 15 days, whichever occurs first. Other flushing frequencies can be considered if recommended by the manufacturer. Control system must allow for adjustable flushing frequency.

A minimum velocity of 2 ft/sec should be used in the zone flushing.
A minimum velocity of 1 ft/sec is acceptable if the drip tubing is manufactured with antimicrobial inner lining to inhibit adhesion of biological growth on the inside walls of the tube and emitters.

Flush Residuals Required Treatment:

All filter flush and tubing network forward flush residuals are to return to the head of the pre-treatment system, or be treated by an acceptable side-treatment system before returning to the dosing station.

Air Release Valve:

An air release valve shall be provided for each zone at the highest elevation of the zone.

Minimum Required Horizontal Separation:

The following are the minimum horizontal separation distances required between the Drip Dispersal Area and other land features or components. Any exception may be considered by the Department using the Department's Design Guidelines and the Recommended 10-State Standards.

Land Feature or Component	Minimum Required Horizontal Separation Distances (in feet)
A flowing body of water	50
Well or suction line	100
Water service line	50
Occupied building	50
Property line	50
In-ground Swimming Pool	50

ADDED CHAPTER 130
RECOMMENDED BNR/ENR DESIGN CRITERIA

BNR TYPICAL DESIGN CRITERIA:

Usually two-stage reactor (anoxic/aerobic) would be sufficient to achieve BNR level of 8 mg/l TN.

Typical Design Criteria for Two-Stage BNR:

Parameter	Recommended
MLSS (mg/l)	3000-4000
Total HRT (hr)	12-16
Anoxic	2-4
Aerobic	8-12
MCRT (d)	15-40
F/M (g BOD/g MLVSS/d)	0.05-0.2
RAS (%Q)	50-100
Internal Recycle (%Q)	100-400
Anoxic Mix Power (hp/MG)	40-70

Typical Design Criteria For SBR BNR System:

Parameter	Recommended
BOD Load (Lbs/d/ft^3)	0.005-0.015
Cycle time (hr):	
Fill	1-3
Settle	0.75-1
Draw	0.5-1.5
MLSS (mg/l)	3000-5000
HRT (hr)	~6 per cycle per reactor
MCRT (d)	20-40
FM (g BOD/g MLVSS/d)	0.05-0.2

Additional Criteria:
Post-equalization basin with a storage capacity adequately for two decants should be provided for flows of 2.0 mgd or less, or when the total SBR system less than four (4) units.

BIOLAC Wave Oxidation Reactor BNR System:

- Nominal Hydraulic Detention Time = 36 hours
- Side-Water-Depth = 8 feet
- Free Board = 2 feet
- Aeration system and automatic control air valves shall be capable of achieving BNR.
- The reactors are earth structure lined with high quality of liners.

Typical Design Parameters for BNR Orbal/Oxidation Ditch:

Flow (mgd)	BOD Load (Lbs/d/ft^3)	MLSS (mg/l)	MCRT (d)	HRT (hr)	Side-Water Depth (ft)
<0.2	0.012	4000-5000	31-38	24	8-13
0.2 to 0.499	0.015	4000-5000	26-32	20	8-13
0.5 to 0.999	0.015-0.018	4000-5000	20-32	16.6-20	8-13
1.0 to 2.0	0.018	4000-5000	21-27	16.6	8-13
>2.0	0.02	5000-6000	24-29	15	8-13

Secondary Sedimentation Tanks for Conventional BNR:

Parameter	Recommended
Side Water Depth (ft)	12 to16
Hydraulic Overflow Rates (gpd/sq. ft.)	
Average Design Flow	400 to 700
Hourly Peak Flow	1000 to 1600
Solids Loading Rate (lbs/sq. ft.-day)	
Average Solids Loading Rate	24 to 36
Peak Solids Loading Rate	43

Secondary Sedimentation Tanks for Extended Aeration BNR:

Parameter	Recommended
Side Water Depth	12 to16
Hydraulic Overflow Rates (gpd/sq. ft.)	
Average Design Flow	200 to 400
Hourly Peak Flow	600 to 800
Solids Loading Rate (lbs/sq. ft.-day)	
Average Solids Loading Rate	15
Peak Solids Loading Rate	34

ENR TYPICAL DESIGN CRITERIA:

To achieve ENR, in general a four-stage reactor, or two-stage with denitrification filter would be needed. The biological process should be sized at 12° C will be funded

Four-Stage Bardenpho Process for ENR:

- The proposed four-stage Bardenpho process is intended to meet 3 mg/l TN. However, facilities for supplemental carbon and/or a conventional filtration process for polishing may be required to meet the nutrient goals of 3 mg/l TN and 0.3 mg/l TP.
- The width to length ratio of the reactor: 1:5
- Side-water-depth = 18 feet
- Free Board = 2 feet

Parameter	Recommended
MLSS (mg/l)	3000-5000
Total HRT (hr)	16-23 (~23 is used when high BOD with no primary)
1st Anoxic	2-4
Aerobic	8-12
2nd Anoxic	2-5
Re-aeration	0.5-1
MCRT (d)	10-40
F/M (g BOD/g MLVSS/d)	0.1-0.2
RAS (%Q)	100
Internal Recycle (%Q)	400-600
Anoxic Mix Power (hp/MG)	40-70

Carrousel Process for ENR:

- Nominal Hydraulic Detention Time = 21 hours
  1st Anoxic Zone = 3 hours
  Aerobic Zone = 15.5 hours
  2nd Anoxic Zone = 2 hours
  Re-aeration Zone = 0.5 hour
- Reactors are reinforced concrete structures.
- Side-Water-Depth = 14 feet
- MLSS = 4,000 mg/l

Conventional Filters

- The conventional filtration process is designed for polishing purpose.
- Filter Media Depth = 4 feet
- Hydraulic Loading Rate: 2.5 gpm/sq. ft. at average daily flow
- Hydraulic Loading Rate: 4.0 gpm/ sq. ft. at maximum month
- A conventional filtration process following the four-stage Bardenpho process may be required to achieve the level of 3 mg/l of TN and 0.3 mg/l of TP.

Denitrification Filters

I. Deep Bed Downflow Denitrification Filter:

Parameter	Recommended
Filter Depth	6 feet media depth plus 1.5 feet support gravel depth
Temperature	12 º C
Filter Influent DO (mg/l)	< 6 mg/l or as recommended by filter manufacturer
Nitrogen Volumetric Loading Rate for Annual Average	50 lbs NOx-N/1000 ft^3/day
Empty Bed Detention Time for Annual Average	20 minutes
Empty Bed Detention Time for Maximum Month	15 minutes
Hydraulic Loading Rate for Annual Average	2.2 gpm/ft^2
Hydraulic Loading Rate for Maximum Month	3.0 gpm/ft^2

II. Continuous Backwash Upflow Denitrification Filter:

Parameter	Recommended
Filter Depth	80 inches
Temperature	12 º C
Filter Influent DO (mg/l)	< 4 mg/l or as recommended by filter manufacturer
Nitrogen Volumetric Loading Rate for Annual Average	40 lbs NOx-N/1000 ft^3/day
Empty Bed Detention Time for Annual Average	20 minutes
Empty Bed Detention Time for Maximum Month	12 minutes
Hydraulic Loading Rate for Annual Average	2.2 gpm/ft^2
Hydraulic Loading Rate for Maximum Month	4.0 gpm/ft^2

Membrane Bioreactor (MBR)

Membrane Bioreactor (MBR) is a combination of suspended-growth activated sludge biological treatment and membrane filtration equipment performing the critical solid/liquid separation function that is traditionally accomplished using secondary clarifiers. To achieve ENR level of treatment, MBR needs to include a high performing nitrogen removal system such as Bardnepho, Johannesburg process, etc. MBR operates at high MLSS concentration almost double or triple the conventional activated sludge system, thereby allowing a smaller bioreactor to achieve the same level of treatment as the conventional system.

Typical MBR Design Parameters:

Parameter	Recommended
BOD Loading (Lbs/1,000 ft^3/day)	30-60
MLSS (mg/l)	8,000-15,000
F/M (g BOD/g MLVSS/day)	0.05-0.2
MCRT (day)	12-20
HRT (Hour)	6-15
Flux (gpd/ft^2)	8-15 (Temperature-Corrected at 12º C)
DO (mg/l)	Anoxic 0-.5 Aerobic 1.5-3 Membrane 2-6
Pore Size (μm)	0.1-0.4
RAS (Q)	3-6
Energy Consumption (KWh/1,000 gal)	0.1
Membrane Replacement	Every 3 to 5 years (Flux rate gradually declines overtime)
Pretreatment Requirements	1. Flow Equalization for peaking factor over 1.5-2.0 2. Fine Screening: 1-3 mm (0.04-0.12 in)

Facilities for Chemical Additions (Including Supplemental Carbon Source and Facilities for Phosphorus Removal):

- Chemical feed pumps shall be sized based on peak daily flow.
- Chapter 110 of the 10-State Standards shall be used for phosphorus removal by chemical treatment.
- In funding facilities for chemical addition, up to 30 days in storage capacity would be allowed for grant participation.

RECOMMENDED STANDARDS
for
WASTEWATER FACILITIES

POLICIES FOR THE DESIGN, REVIEW, AND APPROVAL OF PLANS AND SPECIFICATIONS

FOR WASTEWATER COLLECTION AND TREATMENT FACILITIES

2014 EDITION

A REPORT OF THE WASTEWATER COMMITTEE

OF THE

GREAT LAKES - UPPER MISSISSIPPI RIVER

BOARD OF STATE AND PROVINCIAL PUBLIC HEALTH AND ENVIRONMENTAL MANAGERS

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FOREWORD

In 1947, a "Committee on Development of Uniform Standards for Sewage Works" was created by the group now known as the Great Lakes - Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers. This Committee, composed of a representative from each of the ten states, was assigned the responsibility to review existing standards for sewage works, to investigate the possibility of preparing joint standards to be adopted by the states represented, and to report its findings to the Board.

Based on this initial report, the Board authorized the Committee to prepare sewage works design standards, which were first published in 1951. They subsequently were revised and published again in 1960, 1968, 1971, 1973, 1978, 1990, 1997, and 2004. In 1977, the Province of Ontario was invited, as a Great Lakes participant, to serve on the Committee.

These standards have again been revised and are published herein as the 2014 edition. They are intended for use as a guide in the design and preparation of plans and specifications for wastewater facilities insofar as these standards are applicable to normal situations for an individual project.

The design criteria in these standards are intended for the more conventional municipal wastewater collection and treatment systems. Innovative approaches to collection and treatment, particularly for the very small municipal systems, are not included. The individual reviewing authority should be contacted for design guidance and criteria where such systems are being considered.

Lack of description or criteria for a unit process or equipment in these standards does not suggest it should not be used, but only that consideration by the reviewing authority will be on the basis of information submitted with the design. Engineering data that may be required for new process and application evaluation is included in Paragraph 53.2 of these standards. The contingency planning requirement in Paragraph 11.28(j) is intended to help users determine potential risk in meeting standards of performance on a long term basis, and to help determine the stage of development for technologies satisfying the criteria of Paragraph 53.2.

These standards are intended to suggest limiting values for items upon which an evaluation of the plans and specifications will be made by the reviewing authority; and to establish, as far as practicable, uniformity of practice among the several states and province. Statutory requirements, regulations, and guidelines among the states and province are not uniform and use of the standards must adjust itself to these variations. Users also should be cognizant of locally adopted regulations or standards and applicable federal requirements.

The term "shall" is used where practices are sufficiently standardized to permit specific delineation of requirements or where safeguarding of the public health or protection of water quality justifies such definite action. Other terms, such as "should," "recommended," and "preferred," indicate desirable procedures or methods, with deviations subject to individual consideration.

Definition of terms and their use in these standards is intended to be in accordance with GLOSSARY -- WATER AND WASTEWATER CONTROL ENGINEERING, jointly prepared by APHA, ASCE, AWWA and WPCF. The International Standard Units are in accordance with those recommended in National Institute of Standards and Technology (NIST) Guide for the Use of the International System of Units (SI). The customary units of expression used are generally in accordance with Manual of Practice No. 6, INTERNATIONAL STANDARD UNITS FOR WATER AND WASTEWATER PROCESSES, jointly prepared by AWWA, IWA and WEF.

CHAPTER 10
ENGINEERING REPORTS AND FACILITY PLANS

10. GENERAL

10.1 Engineering Services

Engineering services are performed in three steps:

a. Engineering Report or Facility Plan;

b. Preparation of construction plans, specifications, and contractual documents; and

c. Construction compliance, inspection, administration, and acceptance.

Chapter 10, Engineering Reports and Facility Plans, covers only item (a) above.

10.2 Preliminary Project Submittal

A preliminary project submittal may be necessary prior to the preparation of an Engineering Report or Facility Plan. This submittal needs to include:

a. A description of problems or developments which have resulted in consideration of a wastewater facilities project;

b. Identification of governmental and consultant representatives authorized to provide information and seek regulatory agency approvals and decisions regarding the project; and

c. Identification of potential treated wastewater discharge locations and flows for the purpose of regulatory agency determinations of suitable effluent quality requirements.

No approval for construction can be issued until final, detailed plans and specifications have been submitted and approved by the appropriate reviewing authority. Refer to Chapter 20.

11. ENGINEERING REPORT OR FACILITY PLAN

An Engineering Report or Facility Plan identifies and evaluates wastewater related problems; assembles basic information; presents criteria and assumptions; examines alternate projects (with preliminary layouts and cost estimates); describes system reliability for each unit operation with the largest unit out of service; describes financing methods; sets forth anticipated charges for users; reviews organizational and staffing requirements; offers a conclusion with a proposed project for client consideration; and outlines official actions, time schedules and procedures to implement the project. The document shall include sufficient detail to demonstrate that the proposed project meets applicable criteria.

The concept (including process description and sizing), factual data, and controlling assumptions and considerations for the functional planning of wastewater facilities are presented for each process unit and for the whole system. These data form the continuing technical basis for the detailed design and preparation of construction plans and specifications.

Architectural, structural, mechanical, and electrical designs are usually excluded. Sketches may be desirable to aid in presentation of a project. Outline specifications of process units, special equipment, etc., are occasionally included.

Engineering Reports shall be completed for minor collection system, pump station, and interceptor projects. Facility Plans shall be completed or have been completed for projects involving new, expanded, upgraded, or rehabilitated wastewater treatment facilities and major collection, interceptor sewer, and pump station projects. The determination of classification as major or minor collection interceptor sewer and pump station projects will be made by the reviewing authority based on review of recommended classification by the owner.

For federal, provincial, or state financed grant or loan projects, additional requirements may apply.

11.1 Engineering Reports

Engineering reports shall contain the following and any other pertinent information as required by the reviewing authority.

11.11 Problem Definition

Description of the existing system should include an evaluation of the conditions and problems needing correction.

11.12 Flows and Organic Loads

The anticipated design average and design peak flows and waste loads for the existing and ultimate conditions shall be established. The basis of the projection of initial and future flows and waste loads shall be included and shall reflect the existing or initial service area, and the anticipated future service area. More detail on flow and organic load information and the data needed for new collection systems are included in Paragraphs 11.24 and 11.25.

11.13 Impact on Existing Wastewater Facilities

The impact of the proposed project on all existing wastewater facilities (including gravity sewers, lift stations, and treatment facilities) shall be evaluated.

11.14 Project Description

A written description of the project is required.

11.15 Location Drawings

Drawings identifying the site of the project and the anticipated

location and alignment of proposed facilities are required.

11.16 Engineering Criteria

Engineering criteria to be used in design of the project shall be included.

11.17 Site Information

Project site information should include topography, soils, geologic conditions, depth to bedrock, groundwater level, floodway or floodplain considerations, and any other pertinent site information.

11.18 Alternative Selection

The reasons for selection of the proposed alternative, including any lift station sites, feasibility, and how the project fits into a long term plan, should be discussed.

11.19 Environmental Review

Consideration should be given to minimizing any potential adverse environmental effects of the proposed project. Compliance with the planning requirements of federal, provincial, state, and local regulatory agencies shall be documented, if appropriate.

11.2 Facility Plans

Facility Plans shall contain the following and any other pertinent information as required by the reviewing authority.

11.21 Problem Evaluation and Existing Facility Review

a. Descriptions of existing system including condition and evaluation of problems needing correction.

b. Summary of existing and previous local and regional wastewater facility and related planning documents.

11.22 Planning and Service Area

A description of the planning area and existing and potential future service areas shall be included.

11.23 Population Projection and Planning Period

Present and predicted population shall be based on a 20 year planning period. Phased construction of wastewater facilities should be considered in rapid growth areas. Sewers and other facilities with a design life in excess of 20 years should be designed for the extended period.

11.24 Hydraulic Capacity

11.241 Flow Definitions and Identification

The following flows for the design year shall be identified and used as a basis of design for sewers, lift stations, wastewater treatment plants, treatment units, and other wastewater handling facilities. Where any of the terms defined in this Paragraph are used in these design standards, the definition contained in this Paragraph applies.

a. Design Average Flow

The design average flow is the average of the daily volumes to be received for a continuous 12 month period expressed as a volume per unit time. However, the design average flow for facilities having critical seasonal high hydraulic loading periods (e.g., recreational areas, campuses, industrial facilities) shall be based on the average of the daily volumes to be received during the seasonal period.

b. Design Maximum Day Flow

The design maximum day flow is the largest volume of flow to be received during a continuous 24 hour period expressed as a volume per unit time.

c. Design Peak Hourly Flow

The design peak hourly flow is the largest volume of flow to be received during a one hour period expressed as a volume per unit time.

d. Design Peak Instantaneous Flow

The design peak instantaneous flow is the instantaneous maximum flow rate to be received.

11.242 Hydraulic Capacity for Wastewater Facilities to Serve Existing Collection Systems

a. Projections shall be made from actual flow data to the extent possible.

b. The probable degree of accuracy of data and projections for all critical design flow conditions shall be evaluated. This reliability estimation should include an evaluation of the accuracy of existing data, and an evaluation of the reliability of estimates of flow reduction anticipated due to infiltration/inflow (I/I) reduction, or flow increases

due to elimination of sewer bypasses and backups or hydraulic restrictions. To ensure a higher degree of accuracy, estimates of I/I reduction shall consider design precipitation events with representative runoff characteristics and groundwater elevations.

c. Critical data and methodology used shall be included. Graphical displays of critical peak wet weather flow data [refer to Paragraphs 11.241(b), 11.241(c) and 11.241(d)] should be included for a sustained wet weather flow period of significance to the project.

11.243 Hydraulic Capacity for Wastewater Facilities to Serve New Collection Systems

a. The sizing of wastewater facilities receiving flows from new wastewater collection systems shall be based on an average daily flow of 100 gallons (380 L) per capita plus wastewater flow from industrial plants and major institutional and commercial facilities unless water use data or other justification upon which to better estimate flow is provided.

b. The 100 gal/cap/d [380 L/(capita·d)] value shall be used in conjunction with a peaking factor from Figure 1 to cover normal infiltration for systems built with modern construction techniques. Refer to Section 31. However, an additional allowance should be made where conditions are unfavorable.

c. If the new collection system is to serve existing development the likelihood of I/I contributions from existing service lines and non-wastewater connections to those service lines shall be evaluated and wastewater facilities designed accordingly.

11.244 Combined Sewer Interceptors

In addition to the above requirements, interceptors for combined sewers shall have capacity to receive a sufficient quantity of combined wastewater for transport to treatment facilities to ensure attainment of the appropriate water quality standards.

11.25 Organic Capacity

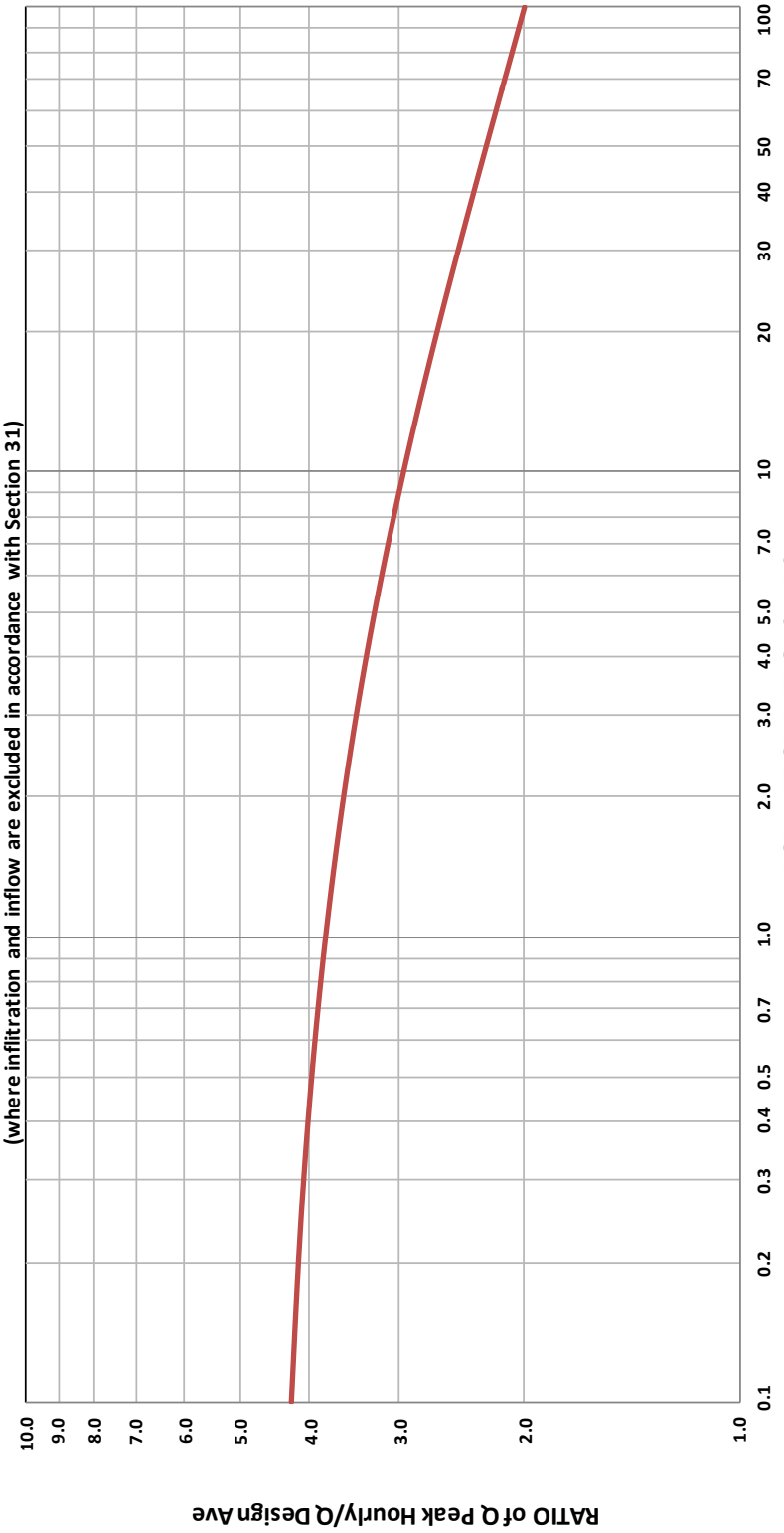
11.251 Organic Load Definitions and Identification

The following organic loads for the design year shall be identified and used as a basis for design of wastewater treatment facilities. Where any of the terms defined in this Paragraph are used in these design standards, the definition contained in this Paragraph applies.

FIGURE 1

RATIO OF PEAK HOURLY FLOW TO DESIGN AVERAGE FLOW

(where inflitration and inflow are excluded in accordance with Section 31)



Q peak hourly: Maximum Rate of Wastewater Flow (Peak Hourly Flow)

Q design ave: Design Average Daily Wastewater Flow

Source: Q Peak Hourly/Q Design Ave $= \frac{18+\sqrt{P}}{4+\sqrt{P}}$ (P= population in thousands)

Fair, G. M. and Geyer, J. C., "Water Supply and Waste-water Disposal"
1 st Ed., John Wiley & Sons, Inc., New York (1954), p. 136

a. Biochemical Oxygen Demand Defined

The 5-day Biochemical Oxygen Demand (BOD_5) is defined as the amount of oxygen required to stabilize biodegradable organic matter under aerobic conditions within a five day period in accordance with Standard Methods for the Examination of Water and Wastewater. Total 5-day Biochemical Oxygen Demand ($TBOD_5$) is equivalent to BOD_5 and is sometimes used in order to differentiate carbonaceous plus nitrogenous oxygen demand from strictly carbonaceous oxygen demand.

The Carbonaceous 5-day Biochemical Oxygen Demand ($CBOD_5$) is defined as BOD_5 less the nitrogenous oxygen demand of the wastewater. See Standard Methods for the Examination of Water and Wastewater.

b. Design Average BOD_5

The design average BOD_5 is generally the average of the organic load to be received for a continuous 12 month period for the design year expressed as weight per day. However, the design average BOD_5 for facilities having critical seasonal high loading periods (e.g., recreational areas, campuses, industrial facilities) shall be based on the average organic load to be received during the seasonal period.

c. Design Maximum Day BOD_5

The design maximum day BOD_5 is the largest amount of organic load to be received during a continuous 24 hour period expressed as weight per day.

d. Design Peak Hourly BOD_5

The design peak hourly BOD_5 is the largest amount of organic load to be received during a one hour period expressed as weight per day.

11.252 Design of Organic Capacity of Wastewater Treatment Facilities to Serve Existing Collection Systems

a. Projections shall be made from actual waste load data to the extent possible.

b. Projections shall be compared to those described in Paragraph 11.253 and an accounting made for significant variations from those values.

c. Impact of industrial sources shall be documented. For projects with significant industrial contributions, evidence of adequate pretreatment strategies shall be included along with documentation that industries are aware of the pretreatment limitations and user costs associated with the project. Documentation of the individual industrial participation in the project plan including user charges shall be provided.

d. Septage and leachate may contribute significant organic load and other materials which can cause operational problems and non-compliance with National Pollutant Discharge Elimination System (NPDES) permit limitations. If septage or leachate is to be discharged to the wastewater treatment facility, consult the state regulatory agency and the Appendix, Handling and Treatment of Septage at a Wastewater Treatment Plant.

11.253 Design of Organic Capacity of Wastewater Treatment Facilities to Serve New Collection Systems

a. Domestic wastewater treatment design shall be on the basis of at least 0.17 pounds (0.08 kg) of BOD_5 per capita per day, and 0.20 pounds (0.09 kg) of suspended solids per capita per day, unless information is submitted to justify alternate designs. If nitrification is required, 0.036 pounds (0.016 kg) TKN per capita per day may be used.

b. Where garbage grinders are commonly used in areas tributary to a domestic treatment plant, the design basis should be increased to 0.22 pounds (0.10 kg) of BOD_5 per capita per day, and 0.25 pounds (0.11 kg) of suspended solids per capita per day. If nitrification is required, 0.046 pounds (0.021 kg) TKN per capita per day may be used.

c. Industrial contributions. Refer to Paragraph 11.252(c).

d. Septage and Leachate. Refer to Paragraph 11.252(d).

e. Data from similar municipalities may be utilized in the case of new systems. However, thorough investigation that is adequately documented shall be provided to the reviewing authority to establish the reliability and applicability of such data.

11.26 Wastewater Treatment Facility Design Capacity

The wastewater treatment facility design capacity is the design average flow at the design average BOD_5. Refer to Paragraphs 11.24 and 11.25 for definitions and required peaking factors.

11.27 Initial Alternative Development

The process of selection of wastewater treatment alternatives for detailed evaluation should be discussed. All wastewater management alternatives considered, including no action, and the basis for the engineering judgment for selection of the alternatives chosen for detailed evaluation, should be included.

11.28 Detailed Alternative Evaluation

The following shall be included for the alternatives to be evaluated in detail.

a. Sewer System Revisions

Proposed revisions to the existing sewer system including adequacy of portions not being changed by the project shall be evaluated.

b. Wet Weather Flows

Facilities to transport and treat wet weather flows in a manner that complies with federal, state and local regulations shall be provided.

c. Wet Weather Flow Equalization

If the ratio of design peak hourly flow to design average flow is 3:1 or more, flow equalization shall be considered. This may be accomplished by either building a wet weather retention basin and gradually returning the excess flow to the treatment plant during off-peak periods or by providing a plant large enough to handle all flows.

d. Site Evaluation

Site evaluation shall consider the following criteria. When a site must be used which is critical with respect to the following items, appropriate measures shall be taken to minimize adverse impacts.

1. Compatibility of the treatment process with the present and planned future land use, including noise, potential odors, air quality, and anticipated sludge processing and disposal techniques, shall be considered.

Non-aerated lagoons should not be used if excessive sulfate is present in the wastewater.

Wastewater treatment facilities should be separate from habitation or any area likely to be built up within a reasonable future period and shall be separated in accordance with state and local requirements.

2. Zoning and other land use restrictions shall be identified.

3. The accessibility and topography of the site shall be evaluated.

4. Area for future plant expansion shall be identified.

5. Direction of prevailing wind shall be identified.

6. Flood considerations, including the 25 and 100 year flood levels, impact on floodplain and floodway, and compliance with applicable regulations regarding construction in flood-prone areas, shall be evaluated. Paragraph 51.2 contains requirements for protection from flooding.

7. Geologic information, depth to bedrock, karst features, or other geologic considerations of significance to the project shall be included. Lagoons shall not be located in karst areas unless the specific geologic and construction details are acceptable.

8. Protection of groundwater including public and private wells is of utmost importance. Demonstration that protection will be provided shall be included. The regulatory agency shall be contacted for required separation.

9. Soil type and suitability for construction and depth to normal and seasonal high groundwater shall be determined.

10. The location, depth, and discharge point of any field tile in the immediate area of the proposed site shall be identified.

11. Present and known future effluent quality requirements as determined by the regulatory agency shall be included.

12. Access to receiving stream for the outfall line shall be discussed and displayed.

13. A preliminary assessment of site availability shall be included.

e. Unit Sizing

Unit operation and unit process sizing and basis shall be provided.

f. Flow Diagram

Flow diagram of treatment facilities including all recycle flows shall be included.

g. Flexibility

Compliance with requirements of Paragraph 53.6 Arrangement of Units shall be assured.

h. Removal Efficiencies

Loadings to and removal efficiencies through each unit operation shall be provided in addition to total removal efficiency and effluent quality (both concentrations and mass).

i. Emergency Operation

Emergency operation requirements as outlined in Section 47 and Paragraph 56.1 shall be provided. State or local regulatory agencies may have more stringent requirements.

j. Technology Not Included In These Standards

Paragraph 53.2 outlines procedures for introducing and obtaining approval to use technology not included in these standards. Proposals to use technology not included in these standards shall address the requirements of Paragraph 53.2.

A contingency plan, in the event that such new technology fails to meet the expected performance, may be required by the reviewing authority in the absence of three separate and representative full scale installations successfully using the same technology. Each representative full scale installation should have sufficient monitoring and appropriate testing results that demonstrate reliable and effective compliance with the design performance criteria and have been operated for not less than three years at or near design capacity without major failure of either the process or equipment.

k. Sludge

The solids disposal options considered and method selected shall be included. This is critical to completion of a successful project. Compliance with requirements of Chapter 80, Sludge Processing, Storage, and Disposal shall be assured.

l. Treatment During Construction

A plan for the method and level of treatment (including sludge processing, storage and disposal) to be achieved during construction shall be developed and included in the Facility Plan submitted to the regulatory agency for review and approval. This approved treatment plan shall be implemented by inclusion in the plans and specifications to be bid for the project. Refer to Paragraph 20.15 and Section 21.

m. Operation and Maintenance

Portions of the project which involve complex operation or maintenance requirements shall be identified including laboratory requirements for operation, industrial sampling, and self-monitoring.

n. Cost Estimates

Cost estimates for capital and operation and maintenance (including basis), shall be included.

o. Environmental Review

Consideration shall be given to minimizing any potential adverse environmental effects of the proposed project. Compliance with planning requirements of federal, provincial, state, and local regulatory agencies shall be documented.

11.29 Final Project Selection

The project selected from the alternatives considered under Paragraph 11.28, including the financing considerations and recommendations for implementation of the plan, shall be set forth in the final Facility Plan document to be forwarded to the reviewing authority for review and approval.

12.0 PRE-DESIGN MEETING

A pre-design meeting is recommended for plant projects with the applicant, design engineer and reviewing authority in attendance to discuss subsequent changes to the engineering report or facilities plan approval, deviations from design standards, schedule of submittal and review, and applicable reliability

guidelines. Significant changes may require a Preliminary Project Submittal in accordance with Paragraph 10.2 and preparation of an Engineering Report or Facility Plan for review and approval.

CHAPTER 20
ENGINEERING PLANS AND SPECIFICATIONS

20. PLANS AND SUPPORT DOCUMENTS

Submissions to the reviewing authority shall include sealed plans, design criteria, the appropriate construction permit applications, review forms, and permit fee if required.

20.1 General

20.11 Plan Title

All plans for wastewater facilities shall bear a suitable title showing the name of the municipality, sewer district, or institution. They shall show the scale in feet or meters, a graphical scale, the north point, date, and the name and signature of the engineer, with the certificate number and imprint of the professional engineering seal. A space should be provided for signature and/or approval stamp of the appropriate reviewing authority.

20.12 Plan Format

The plans shall be clear and legible (suitable for microfilming). They shall be drawn to a scale that will permit all necessary information to be plainly shown. Generally, the size of the plans should not be larger than 30 inches x 42 inches (760 mm x 1070 mm). Datum used should be indicated. Locations and logs of test borings, when required, shall be shown on the plans. Blueprints shall not be submitted.

20.13 Plan Contents

Detail plans shall consist of plan views, elevations, sections, and supplementary views which, together with the specifications and general layouts, provide the working information for the contract and construction of the facilities. They also shall include dimensions and relative elevations of structures, the location and outline form of equipment, location and size of piping, water levels, and ground elevations.

20.14 Design Criteria

Design criteria shall be included with all plans and specifications and a hydraulic profile shall be included for all wastewater treatment facilities. For sewer and lift station projects, information shall be submitted to verify adequate downstream sewer, pump station and treatment plant capacity.

20.15 Operation During Construction

Project construction documents shall specify the procedure for operation during construction that complies with the plan required by Paragraph 11.28(l), Treatment During Construction.

20.2 Plans of Sewers

20.21 General Plan

A general plan of proposed and existing sewers shall be submitted for projects involving new sewer systems or substantial additions to existing systems. This plan shall show the following:

20.211 Geographical Features

a. Topography and elevations - Existing or proposed streets and all streams or water surfaces shall be clearly shown. Contour lines at suitable intervals should be included.

b. Streams - The direction of flow in all streams and the high and low water elevations of all water surfaces at sewer outlets and overflows shall be shown.

c. Boundaries - The boundary lines of the municipality or the sewer district and the area to be sewered shall be shown.

20.212 Sewers

The plan shall show the location, size, and direction of flow of relevant existing and proposed sanitary and combined sewers draining to the treatment facility concerned.

20.22 Detail Plans

Detail plans shall be submitted. Profiles should have a horizontal scale of not more than 100 feet to the inch (1200:1) and a vertical scale of not more than 10 feet to the inch (120:1). Plan views should be drawn to a corresponding horizontal scale and shall be shown on the same sheet. Plans and profiles shall show:

a. Location of streets and sewers;

b. Line of ground surface; size, material, and type of pipe; length between manholes; invert and surface elevation at each manhole; and grade of sewer between each two adjacent manholes (all manholes shall be numbered on the profile);

Where there is any question of the sewer being sufficiently deep to serve any residence, the elevation and location of the basement floor shall be plotted on the profile of the sewer which is to serve the residence in question. The engineer shall state that all sewers are sufficiently deep to serve adjacent basements except where otherwise noted on the plans;

c. Locations of all special features such as inverted siphons, concrete encasements, elevated sewers, etc.;

d. All known existing structures and utilities, both above and below ground, which might interfere with the proposed construction or require isolation setback, particularly water mains and water supply structures (i.e., wells, clear wells, basins, etc.), gas mains, storm drains, and telephone and power conduits; and

e. Special detail drawings, made to a scale to clearly show the nature of the design, shall be furnished to show the following particulars:

All stream crossings and sewer outlets, with elevations of the stream bed and high, normal, and low water levels;

Details of all special sewer joints and cross-sections; and

Details of all sewer appurtenances, such as manholes, lampholes, inspection chambers, inverted siphons, regulators, tide gates, and elevated sewers.

20.3 Plans of Wastewater Pumping Stations

20.31 Location Plan

A location plan shall be submitted for projects involving construction or revision of pumping stations. This plan shall show the following:

a. The location and extent of the tributary area;

b. Any municipal boundaries within the tributary area; and

c. The location of the pumping station and force main, and pertinent elevations.

20.32 Detail Plans

Detail plans shall be submitted showing the following, where applicable:

a. Topography of the site;

b. Existing pumping station;

c. Proposed pumping station, including provisions for installation of future pumps;

d. Elevation of high water at the site, and maximum elevation of wastewater in the collection system upon occasion of power failure;

e. Maximum hydraulic gradient in downstream gravity sewers when all installed pumps are in operation; and

f. Test borings and groundwater elevations.

20.4 Plans of Wastewater Treatment Plants

20.41 Location Plan

A location plan shall be submitted showing the wastewater treatment plant in relation to the remainder of the system. Sufficient topographic features shall be included to indicate its location with relation to streams and the point of discharge of treated effluent.

20.42 General Layout

Layouts of the proposed wastewater treatment plant shall be submitted, showing:

a. Topography of the site;

b. Size and location of plant structures;

c. Schematic flow diagram(s) showing the flow through various plant units, and showing utility systems serving the plant processes;

d. Piping, including any arrangements for bypassing individual units (materials handled and direction of flow through pipes shall be shown);

e. Hydraulic profiles showing the flow of wastewater, supernatant liquor, recycle streams, and sludge; and

f. Test borings and groundwater elevations.

20.43 Detail Plans

Detail plans shall show the following, where applicable:

a. Location, dimensions, and elevations of all existing and proposed plant facilities;

b. Elevations of high and low water level of the body of water to which the plant effluent is to be discharged;

c. Type, size, pertinent features, and operating capacity of all pumps, blowers, motors, and other mechanical devices;

d. Minimum, design average, and peak hourly hydraulic flow in profile;

e. Existing and design sludge storage volumes in plan and profile; and

f. Adequate description of any features not otherwise covered by the specifications or engineer's report.

21. SPECIFICATIONS

Complete signed and sealed technical specifications (see Paragraph 20.11) shall be submitted for the construction of sewers, wastewater pumping stations, wastewater treatment plants, and all other appurtenances, and shall accompany the plans.

The technical specifications accompanying construction drawings shall include, but not be limited to, specifications for the approved procedures for operation during construction in accordance with Paragraphs 11.28(l) and 20.15, and all construction information not shown on the drawings which is necessary to inform the builder in detail of the design requirements for the quality of materials, workmanship, and fabrication of the project.

The specifications shall also include the type, size, strength, operating characteristics, and rating of equipment; allowable infiltration; complete requirements for all mechanical and electrical equipment (including machinery, valves, piping, and jointing of pipe); electrical apparatus, wiring, instrumentation, and meters; laboratory fixtures and equipment; operating tools, construction materials; special filter materials (such as, stone, sand, gravel, or slag); miscellaneous appurtenances; chemicals when used; instructions for testing materials and equipment as necessary to meet design standards; and performance tests for the completed facilities and component units. It is suggested that these performance tests be conducted at design load conditions wherever practical.

22. REVISIONS TO APPROVED PLANS

Any deviations from approved plans or specifications affecting capacity, flow, operation of units, or point of discharge shall be approved, in writing, before such changes are made. Plans or specifications so revised should be submitted well in advance of any construction work which will be affected by such changes to permit sufficient time for review and approval. Structural revisions or other minor changes not affecting capacities, flows, or operation will be permitted during construction without approval. "As built" plans clearly showing such alterations shall be submitted to the reviewing authority at the completion of the work.

CHAPTER 30
DESIGN OF SEWERS

31. APPROVAL OF SEWERS

In general, the appropriate reviewing authority will approve plans for new systems, extensions to new areas, or replacement sanitary sewers only when designed upon the separate basis, where rain water from roofs, streets, and other areas and groundwater from foundation drains are excluded.

32. DESIGN CAPACITY AND DESIGN FLOW

In general, sewer capacities should be designed for the estimated ultimate tributary population, except when considering parts of the system that can be readily increased in capacity. Similarly, consideration should be given to the maximum anticipated capacity of institutions, industrial parks, etc. Where future relief sewers are planned, economic analysis of alternatives should accompany initial permit applications. See Paragraph 11.24.

33. DETAILS OF DESIGN AND CONSTRUCTION

33.1 Minimum Size

A public gravity sewer conveying raw wastewater shall not be less than 8 inches (200 mm) in diameter.

33.2 Depth

In general, sewers should be sufficiently deep to receive wastewater from basements and to prevent freezing. Insulation shall be provided for sewers that cannot be placed at a depth sufficient to prevent freezing.

33.3 Buoyancy

Buoyancy of sewers shall be considered. Flotation of the pipe shall be prevented with appropriate construction where high groundwater conditions are anticipated.

33.4 Slope

33.41 Recommended Minimum Slopes

All sewers shall be designed and constructed to give mean velocities, when flowing full, of not less than 2.0 feet per second (0.6 m/s), based on Manning's formula using an "n" value of 0.013. The following are the recommended minimum slopes that should be provided for sewers 42 inches (1050 mm) or less. However, slopes greater than these may be desirable for construction, to control sewer gases or to maintain self-cleansing velocities at all rates of flow within the design limits.

Nominal Sewer Size	Minimum Slope in Feet Per 100 Feet (m/100 m)
8 inch (200 mm)	0.40
10 inch (250 mm)	0.28
12 inch (300 mm)	0.22
15 inch (375 mm)	0.15
18 inch (450 mm)	0.12
21 inch (525 mm)	0.10
24 inch (600 mm)	0.08
27 inch (675 mm)	0.067
30 inch (750 mm)	0.058
33 inch (825 mm)	0.052
36 inch (900 mm)	0.046
39 inch (975 mm)	0.041
42 inch (1050 mm)	0.037

Sewers 48 inches (1200 mm) or larger should be designed and constructed to give mean velocities, when flowing full, of not less than 3.0 feet per second (0.9 m/s), based on Manning's formula using an "n" value of 0.013.

33.42 Minimum Flow Depths

Slopes that are slightly less than the recommended minimum slopes may be permitted. Such decreased slopes may be considered where the depth of flow will be 0.3 of the diameter or greater for the design average flow. The operating authority of a sewer system considering decreased slopes shall furnish the appropriate reviewing authority written assurance that any additional sewer maintenance required by reduced slopes will be provided.

33.43 Minimization of Solids Deposition

The pipe diameter and slope shall be selected to obtain the greatest practical velocities so as to minimize settling problems. Flatter slopes shall not be justified with oversize sewers. If the proposed slope is less than the minimum slope of the smallest pipe that can accommodate the design peak hourly flow, the actual depths and velocities at minimum, average, and design maximum day and peak hourly flow for each design section of the sewer shall be calculated by the design engineer and be included with the plans.

33.44 Slope Between Manholes

Sewers shall be laid with uniform slope between manholes.

33.45 High Velocity Protection

Where velocities greater than 10 feet per second (3 m/s) are attained, special provisions as necessary shall be made to avoid scour and protect against displacement caused by erosion or impact.

33.46 Steep Slope Protection

Sewers on 20 percent slopes or greater shall be anchored securely with concrete, or equal, anchors spaced as follows:

a. Not over 36 feet (11 m) center to center on grades of 20 percent up to 35 percent;

b. Not over 24 feet (7.3 m) center to center on grades of 35 percent up to 50 percent; and

c. Not over 16 feet (4.9 m) center to center on grades of 50 percent or greater.

33.5 Alignment

In general, sewers 24 inches (600 mm) or less shall be laid with straight alignment between manholes. Straight alignment shall be checked by either using a laser beam or lamping.

Curvilinear alignment of sewers larger than 24 inches (600 mm) may be considered on a case by case basis provided compression joints are specified and ASTM or specific pipe manufacturers' maximum allowable pipe joint deflection limits are not exceeded. Curvilinear sewers shall be limited to simple curves that start and end at manholes. When curvilinear sewers are proposed, the recommended minimum slopes indicated in Paragraph 33.41 shall be increased accordingly to provide a minimum velocity of 2.0 feet per second (0.6 m/s) when flowing full.

33.6 Changes in Pipe Size

When a smaller sewer joins a large one, the invert of the larger sewer should be lowered sufficiently to maintain the same energy gradient. An approximate method for securing these results is to place the 0.8 depth point of both sewers at the same elevation.

Sewer extensions should be designed for projected flows even when the diameter of the receiving sewer is less than the diameter of the proposed extension at a manhole constructed in accordance with Section 34. However, special consideration shall be given to an appropriate flow channel to minimize turbulence when there is a change in sewer size. The appropriate reviewing authority may require a schedule for construction of future downstream sewer relief.

33.7 Materials

Any generally accepted material for sewers may be given consideration, but the material selected should be adapted to local conditions, such as: character of industrial wastes; possibility of septicity; soil characteristics; exceptionally heavy external loadings, abrasion, corrosion, or similar problems.

Suitable couplings complying with ASTM specifications shall be used for joining dissimilar materials. The leakage limitations on these joints shall be in accordance with Paragraphs 33.94 or 33.95.

All sewers shall be designed to prevent damage from superimposed live, dead, and frost induced loads. Proper allowance for loads on the sewer shall be made because of soil and potential groundwater conditions, as well as the width and depth of trench. Where necessary, special bedding, haunching and initial backfill, concrete cradle, or other special construction shall be used to withstand anticipated superimposed loading or loss of trench wall stability. See ASTM D-2321 or ASTM C-12 as appropriate.

For new pipe materials for which ASTM standards have not been established, the design engineer shall provide complete pipe specifications and installation specifications developed on the basis of criteria adequately documented and certified in writing by the pipe manufacturer to be satisfactory for the specific detailed plans.

33.8 Installation

33.81 Standards

Installation specifications shall contain appropriate requirements based on the criteria, standards, and requirements established by industry in its technical publications. Requirements shall be set forth in the specifications for the pipe and methods of bedding and backfilling so as not to damage the pipe or its joints, impede cleaning operations and future tapping, create excessive side fill pressures and ovalation of the pipe, nor seriously impair flow capacity.

33.82 Trenching

a. The width of the trench shall be ample to allow the pipe to be laid and jointed properly and to allow the bedding and haunching to be placed and compacted to adequately support the pipe. The trench sides shall be kept as nearly vertical as possible. When wider trenches are specified, appropriate bedding class and pipe strength shall be used.

In unsupported, unstable soil the size and stiffness of the pipe, stiffness of the embedment and insitu soil and depth of cover shall be considered in determining the minimum trench width necessary to adequately support the pipe.

b. Ledge rock, boulders, and large stones shall be removed to provide a minimum clearance of 4 inches (100 mm) below and on each side of all pipe(s).

33.83 Bedding, Haunching, and Initial Backfill

a. Bedding Classes A, B, C, or crushed stone as described in ASTM C-12 shall be used and carefully compacted for all rigid pipe provided the proper strength pipe is used with the specified bedding to support the anticipated load, based on the type soil encountered and potential ground water conditions.

b. Embedment materials for bedding, haunching and initial backfill, Classes I, II, or III, as described in ASTM D-2321, shall be used provided the proper strength pipe is used with the specified bedding to support the anticipated load, based on the type soil encountered and potential groundwater conditions. The embedment materials shall be carefully compacted for all flexible pipe.

c. All water entering the excavations or other parts of the work shall be removed. No sanitary sewer shall be used for the disposal of trench water, unless specifically approved by the engineer, and then only if the trench water does not ultimately arrive at existing pumping or wastewater treatment facilities.

33.84 Final Backfill

a. Final backfill shall be of a suitable material removed from excavation except where other material is specified. Debris, frozen material, large clods or stones, organic matter, or other unstable materials shall not be used for final backfill within 2 feet (0.6 m) of the top of the pipe.

b. Final backfill shall be placed in such a manner so as not to disturb the alignment of the pipe.

33.85 Deflection Test

a. Deflection tests shall be performed on all flexible pipe. The tests shall be conducted after the final backfill has been in place at least 30 days to permit stabilization of the soil-pipe system.

b. No pipe shall exceed a deflection of 5 percent of the inside diameter. If deflection exceeds 5 percent, the pipe shall be excavated. Replacement or correction shall be accomplished in accordance with the requirements in the approved specifications.

c. The rigid ball or mandrel used for the deflection test shall have a diameter not less than 95 percent of the base inside diameter or average inside diameter of the pipe depending on which is specified in the ASTM Specification, including the appendix, to which the pipe is manufactured. The tests shall be performed without mechanical pulling devices.

33.9 Joints and Infiltration

33.91 Joints

The joint installation requirements and the materials used shall be included in the specifications. Sewer joints shall be designed to minimize infiltration and to prevent the entrance of roots throughout the life of the system.

33.92 Service Connections

Service connections to the sewer main shall be water tight and shall not protrude into the sewer. If a saddle type connection is used, it shall be a device designed to join with the types of pipe which are to be connected. All materials used to make service connections shall be compatible with each other and with the pipe materials to be joined and shall be corrosion proof.

33.93 Leakage Tests

Leakage tests shall be specified. This may include appropriate water or low pressure air testing. The testing methods selected should take into consideration the range in groundwater elevations during the testing and those anticipated during the design life of the sewer.

33.94 Water (Hydrostatic) Test

The leakage exfiltration or infiltration shall not exceed 100 gallons per inch of pipe diameter per mile per day [9 L/(mm of pipe diameter·km·d)] for any section of the system. An exfiltration or infiltration test shall be performed with a minimum positive head of 2 feet (0.6 m).

33.95 Air test

The air test shall, as a minimum, conform to the test procedure described in ASTM C-828 for clay pipe, ASTM C-924 for concrete pipe, and ASTM F-1417 for plastic pipe. For other materials, test procedures shall be approved by the regulatory agency.

34. MANHOLES

34.1 Location

Manholes shall be installed at the end of each line; at all changes in grade, size, or alignment; at all intersections; at distances not greater than 400 feet (120 m) for sewers that are 15 inches (375 mm) or less, and at 500 feet (150 m) for sewers that are 18 inches (450 mm) to 30 inches (750 mm). Distances up to 600 feet (185 m) may be approved in cases where adequate modern cleaning equipment for such spacing is provided. Greater spacing may be permitted in larger sewers. Cleanouts may be used only for special conditions and shall not be substituted for manholes nor installed at the end of laterals greater than 150 feet (45 m) in length.

34.2 Drop Type

A drop pipe shall be provided for a sewer entering a manhole at an elevation of 24 inches (610 mm) or more above the manhole invert. Where the difference in elevation between the incoming sewer and the manhole invert is less than 24 inches (610 mm), the invert shall be filleted to prevent solids deposition.

Drop manholes should be constructed with an outside drop connection. Inside drop connections (when necessary) shall be secured to the interior wall of the manhole and shall provide access for cleaning.

Due to the unequal earth pressures that would result from the backfilling operation in the vicinity of the manhole, the entire outside drop connection shall be encased in concrete.

34.3 Diameter

The minimum diameter of manholes shall be 48 inches (1,200 mm). Larger diameters are required for manholes with inside drops, and may be necessary for manholes with large diameter sewers or multiple pipes connecting at the manhole. A minimum access diameter of 24 inches (610 mm) shall be provided.

34.4 Flow Channel

The flow channel straight through a manhole should be made to conform as closely as possible in shape and slope to that of the connecting sewers. The channel walls should be formed or shaped to the full height of the crown of the outlet sewer in such a manner as to not obstruct maintenance, inspection, or flow in the sewers.

When curved flow channels are specified in manholes, including branch inlets, the minimum slopes indicated in Paragraph 33.41 should be increased to maintain acceptable velocities.

34.5 Bench

A bench shall be provided on each side of any manhole channel when the pipe diameter(s) are less than the manhole diameter. The bench should be

sloped no less than ½ inch per foot (40 mm/m) (4 percent). No lateral sewer, service connection, or drop manhole pipe shall discharge onto the surface of the bench.

34.6 Watertightness

Manholes shall be of the pre-cast concrete (as prescribed by ASTM C-478) or poured-in-place concrete type. Manhole lift holes and grade adjustment rings shall be sealed with non-shrinking mortar or other material approved by the regulatory agency.

Inlet and outlet pipes shall be joined to the manhole with a gasketed flexible watertight connection or another watertight connection arrangement that allows differential settlement of the pipe and manhole wall to take place.

Watertight manhole covers shall be used wherever the manhole tops may be flooded by street runoff or high water. Locked manhole covers may be desirable in isolated easement locations or where vandalism may be a problem.

34.7 Inspection and Testing

The specifications shall include a requirement for manhole inspection and testing for watertightness or damage prior to placing into service. Air testing, if specified for concrete sewer manholes, shall conform to the test procedures described in ASTM C-1244.

34.8 Corrosion Protection For Manholes

Where corrosive conditions due to septicity or other causes are anticipated, corrosion protection on the interior of the manholes shall be provided.

34.9 Electrical

Electrical equipment installed or used in manholes shall conform to Paragraph 42.35.

35. INVERTED SIPHONS

Inverted siphons shall have not less than two barrels, with a minimum pipe size of 6 inches (150 mm). They shall be provided with necessary appurtenances for maintenance, convenient flushing, and cleaning equipment. The inlet and discharge structures shall also have adequate clearances for cleaning equipment, inspection, and flushing. Design shall provide sufficient head and appropriate pipe sizes to secure velocities of at least 3.0 feet per second (0.9 m/s) for design average flows. The inlet and outlet details shall be so arranged that the design average flow is diverted to one barrel, and so that either barrel may be removed from service for cleaning. The vertical alignment should permit cleaning and maintenance.

36. SEWERS IN RELATION TO STREAMS

36.1 Location of Sewers in Streams

36.11 Cover Depth

The top of all sewers entering or crossing streams shall be at a sufficient depth below the natural bottom of the stream bed to protect the sewer line. In general, the following cover requirements shall be met:

a. One foot (0.3 m) of cover where the sewer is located in rock;

b. Three feet (0.9 m) of cover in other material. In major streams, more than 3 feet (0.9 m) of cover may be required; and

c. In paved stream channels, the top of the sewer line should be placed below the bottom of the channel pavement.

Less cover may be approved only if the proposed sewer crossing will not interfere with future modifications to the stream channel. Justification for requesting less cover shall be provided to the reviewing authority.

36.12 Horizontal Location

Sewers located along streams shall be located outside of the stream bed and at a sufficient distance to provide for future possible stream widening and to prevent pollution by siltation during construction.

36.13 Structures

The sewer outfalls, headwalls, manholes, gate boxes, or other structures shall be located so they do not interfere with the free discharge of flood flows of the stream.

36.14 Alignment

Sewers crossing streams should be designed to cross the stream as nearly perpendicular to the stream flow as possible and shall be free from change in grade. Sewer systems shall be designed to minimize the number of stream crossings.

36.2 Construction

36.21 Materials

Sewers entering or crossing streams shall be constructed of ductile iron pipe with mechanical joints; otherwise they shall be constructed so they will remain watertight and free from changes in alignment or grade. Material used to backfill the trench shall be

stone, coarse aggregate, washed gravel, or other materials which will not readily erode, cause siltation, damage the pipe during placement, or corrode the pipe.

36.22 Siltation and Erosion

Construction methods that will minimize siltation and erosion shall be employed. The design engineer shall include in the project specifications the method(s) to be employed in the construction of sewers in or near streams. Such methods shall provide adequate control of siltation and erosion by limiting unnecessary excavation, disturbing or uprooting trees and vegetation, dumping of soil or debris, or pumping silt-laden water into the stream. Specifications shall require that cleanup, grading, seeding, planting and/or restoration of all work areas shall begin immediately. Exposed areas shall not remain unprotected for more than seven days.

36.23 Alternative Construction Methods

When the alignment of a sewer crosses a stream, consideration shall be given to trenchless construction technologies as an alternative to open trench construction. Such designs may be approved by the reviewing authority on a case by case basis under the provisions of Paragraph 53.2.

37. AERIAL CROSSINGS

Support shall be provided for all joints in pipes utilized for aerial crossings. The supports shall be designed to prevent frost heave, overturning, and settlement.

Precautions against freezing, such as insulation and increased slope, shall be provided. Expansion jointing shall be provided between above ground and below ground sewers. Where buried sewers change to aerial sewers, special construction techniques shall be used to minimize frost heaving.

For aerial stream crossings, the impact of flood waters and debris shall be considered. The bottom of the pipe should be placed no lower than the elevation of the 50 year flood. Ductile iron pipe with mechanical joints is recommended.

38. PROTECTION OF WATER SUPPLIES

When wastewater sewers are proposed in the vicinity of any water supply facilities, requirements of the GLUMRB "Recommended Standards for Water Works" should be used to confirm acceptable isolation distances in addition to the following requirements.

38.1 Cross Connections Prohibited

There shall be no physical connections between a public or private potable water supply system and a sewer or appurtenance which would permit the passage of any wastewater or polluted water into the potable supply. No water pipe shall pass through or come into contact with any part of a sewer manhole.

38.2 Relation to Water Works Structures

While no general statement can be made to cover all conditions, it is generally recognized that sewers shall meet the requirements of the appropriate reviewing agency with respect to minimum distances from public water supply wells and other water supply sources or structures.

All existing waterworks units, such as basins, wells, or other treatment units, within 200 feet (60 m) of the proposed sewer shall be shown on the engineering plans.

Soil conditions in the vicinity of the proposed sewer within 200 feet (60 m) of waterworks units shall be determined and shown on the engineering plans.

38.3 Relation to Water Mains

38.31 Horizontal and Vertical Separation

Sewers shall be laid at least 10 feet (3 m) horizontally from any existing or proposed water main. The distance shall be measured edge to edge. For gravity sewers where it is not practical to maintain a 10 foot (3 m) separation, the appropriate reviewing agency may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such deviation may allow installation of the gravity sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one side of the gravity sewer and at an elevation so the bottom of the water main is at least 18 inches (460 mm) above the top of the sewer.

If it is impossible to obtain proper horizontal and vertical separation as described above for gravity sewers, both the water main and gravity sewer shall be constructed of slip-on or mechanical joint pipe complying with Section 8.1 and Section 8.7 of the “Recommended Standards for Water Works – 2012 Edition” and shall be pressure rated to at least 150 psi (1034 kPa) and pressure tested to ensure watertightness.

38.32 Crossings

Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches (460 mm) between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade.

When it is impossible to obtain proper horizontal and vertical separation as stipulated above, one of the following methods shall be specified:

a. The sewer shall be designed and constructed equal to water pipe, as described in Paragraph 38.31.

b. Either the water main or the sewer line may be encased in a watertight carrier pipe that extends 10 feet (3 m) on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be made of materials approved by the regulatory agency for use in water main construction.

CHAPTER 40
WASTEWATER PUMPING STATIONS

41. GENERAL

41.1 Flooding

Wastewater pumping station structures and electrical and mechanical equipment shall be protected from physical damage by the 100 year flood. Wastewater pumping stations should remain fully operational and accessible during the 25 year flood. Regulations of state, provincial and federal agencies regarding flood plain obstructions shall be considered.

41.2 Accessibility and Security

The pumping station shall be readily accessible by maintenance vehicles during all weather conditions. The facility should be located off the traffic way of streets and alleys. It is recommended that security fencing and access hatches with locks be provided.

41.3 Grit

Where it is necessary to pump wastewater prior to grit removal, the design of the wet well and pump station piping shall receive special consideration to avoid operational problems from the accumulation of grit.

41.4 Safety

Adequate provision shall be made to effectively protect maintenance personnel from hazards. Equipment for confined space entry in accordance with OSHA and regulatory agency requirements shall be provided for all wastewater pumping stations. Also refer to Section 57.

42. DESIGN

The following items should be given consideration in the design of wastewater pumping stations:

42.1 Type

Wastewater pumping stations in general use fall into four types: wet well/dry well, submersible, suction lift, and screw pump.

42.2 Structures

42.21 Separation

Dry wells, including their superstructure, shall be completely separated from the wet well. Common walls shall be gas tight.

42.22 Equipment Removal

Provisions shall be made to facilitate removing pumps, motors, and other mechanical and electrical equipment. Individual pump and

motor removal shall not interfere with the continued operation of remaining pumps.

42.23 Access and Safety Landings

42.231 Access

Suitable and safe means of access for persons wearing self-contained breathing apparatus shall be provided to dry wells, and to wet wells. Access to wet wells containing either bar screens or mechanical equipment requiring inspection or maintenance shall conform to Paragraph 61.13. Also refer to Section 57.

42.232 Safety Landings

For built-in-place pump stations, a stairway to the dry well shall be provided with rest landings at vertical intervals not to exceed 12 feet (3.7 m). For factory-built pump stations over 15 feet (4.6 m) deep, a rigidly fixed landing shall be provided at vertical intervals not to exceed 10 feet (3 m). Where a landing is used, a suitable and rigidly fixed barrier shall be provided to prevent individuals from falling past the intermediate landing to a lower level. A manlift or elevator may be used in lieu of landings in a factory-built station, provided emergency access is included in the design.

42.24 Buoyancy

Where high groundwater conditions are anticipated, buoyancy of the wastewater pumping station structures shall be considered and, if necessary, adequate provisions shall be made for protection.

42.25 Construction Materials

Materials shall be selected that are appropriate under conditions of exposure to hydrogen sulfide and other corrosive gases, greases, oils, and other constituents frequently present in wastewater. This is particularly important in the selection of metals and paints. Contact between dissimilar metals should be avoided or other provisions made to minimize galvanic action.

42.3 Pumps

42.31 Multiple Units

Multiple pumps shall be provided. Where only two units are provided, they shall be of the same size. Units shall have capacity such that, with any unit out of service, the remaining units will have capacity to handle the design peak hourly flow. All pumps should be tested by the manufacturer. These tests should include a hydrostatic test and an operating test.

42.32 Protection Against Clogging

42.321 Combined Wastewater

Pumps handling combined wastewater shall be preceded by readily accessible bar racks to protect the pumps from clogging or damage. Bar racks should have clear openings as provided in Paragraph 61.121. Where a bar rack is provided, a mechanical hoist shall also be provided. Where the size of the installation warrants, mechanically cleaned and/or duplicate bar racks shall be provided. Refer to Paragraphs 42.23 and 61.13.

42.322 Separate Sanitary Wastewater

Pumps handling separate sanitary wastewater from 30 inch (750 mm) diameter or larger sewers shall be protected with bar racks meeting the above requirements. Appropriate protection from clogging shall also be considered for small pumping stations. Refer to Paragraphs 42.23 and 61.13.

42.33 Pump Openings

Pumps handling raw wastewater shall be capable of passing solid spheres of at least 3 inches (80 mm) in diameter. Pump suction and discharge openings shall be at least 4 inches (100 mm) in diameter. An exception to the requirement for passing solid spheres of at least 3 inches (80 mm) in diameter may be made on a case by case basis when the design includes equivalent protection from clogging or damage (i.e., grinder pumps, etc.).

42.34 Priming

The pump shall be so placed that under normal operating conditions it will operate under a positive suction head, except as specified in Section 43.

42.35 Electrical Equipment

Electrical systems and components (e.g., motors, lights, cables, conduits, switch boxes, control circuits, etc.) in raw wastewater wet wells, or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors may be present, shall comply with the National Electrical Code requirements for Class I, Division 1, Group D locations. Equipment located in the wet well shall be suitable for use under corrosive conditions. Each flexible cable shall be provided with a watertight seal and separate strain relief. A fused disconnect switch located above ground shall be provided for the main power feed for all pumping stations. When such equipment is exposed to weather, it shall meet the requirements of weatherproof equipment NEMA 3R or 4, at a minimum. Lightning and surge protection systems should be considered. Lift station control panels located

outdoors shall be provided with a 110 volt power receptacle inside the control panel to facilitate maintenance. Ground Fault Circuit Interruption (GFCI) protection shall be provided for all outdoor outlets.

42.36 Intake

Each pump shall have an individual intake. Wet well and intake design should be such as to avoid turbulence near the intake and to prevent vortex formation.

42.37 Dry Well Dewatering

A sump pump equipped with dual check valves shall be provided in the dry well to remove leakage or drainage with discharge above the maximum high water level of the wet well. Water ejectors connected to a potable water supply will not be approved. All floor and walkway surfaces should have an adequate slope to a point of drainage. Pump seal leakage shall be piped or channeled directly to the sump. The sump pump shall be sized to remove the maximum pump seal water discharge that could occur in the event of a pump seal failure. Refer to Section 46.

42.38 Pumping Rates

The pumps and controls of main pumping stations, especially pumping stations operated as part of treatment facilities, should be selected to operate at varying delivery rates. Such stations should be designed to deliver as uniform a flow as practicable in order to minimize hydraulic surges. The station design capacity shall be based on the peak hourly flow determined in accordance with Paragraph 11.24 and should be adequate to maintain a minimum velocity of 2 feet per second (0.6 m/s) in the force main. Refer to Paragraph 49.1.

42.4 Controls

Water level control sensing devices should be located to prevent undue affects from turbulent flows entering the well or by the turbulent suction of the pumps. Bubbler type level monitoring systems shall include dual air compressors. Provision shall be made to automatically alternate the pumps in use. Suction lift stations should be designed to alternate pumps daily instead of each pumping cycle to extend the life of the priming equipment.

42.5 Valves

42.51 Suction Line

Suitable shutoff valves shall be placed on the suction line of dry pit pumps.

42.52 Discharge Line

Suitable shutoff and check valves shall be placed on the discharge line of each pump (except on screw pumps). The check valve shall be located between the shutoff valve and the pump. Check valves shall be suitable for the material being handled and shall be placed on the horizontal portion of discharge piping except for ball checks, which may be placed in the vertical run. Valves shall be capable of withstanding normal pressures and water hammer.

All shutoff and check valves shall be operable from floor level and accessible for maintenance. Outside levers are recommended on swing check valves.

42.6 Wet Wells

42.61 Divided Wells

Where continuity of pumping station operation is critical, consideration should be given to dividing the wet well into two interconnected sections to facilitate repairs and cleaning.

42.62 Size

The design fill time and minimum pump cycle time shall be considered in sizing the wet well. The effective volume of the wet well shall be based on the design average flow determined in accordance with Paragraph 11.24 and a filling time not to exceed 30 minutes, unless the facility is designed to provide flow equalization. The pump manufacturer's duty cycle recommendations shall be utilized in selecting the minimum cycle time. When the anticipated initial flow tributary to the pumping station is less than the design average flow, provisions should be made so that the fill time indicated is not exceeded for initial flows. When the wet well is designed for flow equalization as part of a treatment plant, provisions should be made to prevent septicity.

42.63 Floor Slope

The wet well floor shall have a minimum slope of 1 to 1 to the hopper bottom. The horizontal area of the hopper bottom shall be no greater than necessary for proper installation and function of the inlet.

42.64 Air Displacement

Covered wet wells shall have provisions for air displacement to the atmosphere, such as an inverted "j" tube or other means.

42.7 Safety Ventilation

42.71 General

Adequate ventilation shall be provided for all pump stations. Mechanical ventilation shall be provided for dry wells that are located below the ground surface. If screens or mechanical equipment requiring maintenance or inspection are located in the wet well, permanently installed ventilation is required. There shall be no interconnection between the wet well and dry well ventilation systems.

42.72 Air Inlets and Outlets

In dry wells over 15 feet (4.6 m) deep, multiple inlets and outlets are desirable. Dampers should not be used on exhaust or fresh air ducts. Fine screens or other obstructions in air ducts should be avoided to prevent clogging.

42.73 Electrical Controls

Switches for operation of ventilation equipment should be clearly marked and conveniently located. All intermittently operated ventilation equipment shall be interconnected with the respective pit lighting system. Consideration should be given to automatic controls where intermittent operation is used. The manual lighting/ventilation switch shall override the automatic controls. For a two speed ventilation system with automatic switch over where gas detection equipment is installed, consideration should be given to increasing the ventilation rate automatically in response to the detection of hazardous concentrations of gases or vapors.

42.74 Fans, Heating, and Dehumidification

The fan wheel shall be fabricated from non-sparking material. Automatic heating and dehumidification equipment shall be provided in all dry wells. The electrical equipment and components shall meet the requirements in Paragraph 42.35.

42.75 Wet Wells

Wet well ventilation may be either continuous or intermittent. Ventilation, if continuous, shall provide at least 12 complete air changes per hour; if intermittent, at least 30 complete air changes per hour. Air shall be forced into the wet well by mechanical means rather than solely exhausted from the wet well. The air change requirements shall be based on 100 percent fresh air. Portable ventilation equipment shall be provided for use at submersible pump stations and wet wells with no permanently installed ventilation equipment.

42.76 Dry Wells

Dry well ventilation may be either continuous or intermittent. Ventilation, if continuous, shall provide at least 6 complete air changes per hour; if intermittent, at least 30 complete air changes per hour. A system of two speed ventilation with an initial ventilation rate of 30 changes per hour for 10 minutes and automatic switch over to 6 changes per hour may be used to conserve heat. The air change requirements shall be based on 100 percent fresh air.

42.8 Flow Measurement

Suitable devices for measuring wastewater flow shall be provided at all pumping stations. Indicating, totalizing, and recording flow measurement shall be provided at pumping stations with a 350 gpm (22 L/s) or greater design peak hourly flow, determined in accordance with Paragraph 11.24, or pumping stations with variable frequency drives or screw pumps. Elapsed time meters, used in conjunction with annual pumping rate tests, may be acceptable for pump stations with constant output pumps and a design peak hourly flow up to 350 gpm (22 L/s), provided sufficient metering is configured to measure the duration of individual and simultaneous pump operation.

42.9 Water Supply

There shall be no physical connection between any potable water supply and a wastewater pumping station which, under any conditions, might cause contamination of the potable water supply. If a potable water supply is brought to the station, it shall comply with conditions stipulated under Paragraph 56.23.

43. SUCTION-LIFT PUMP STATIONS

Suction-lift pumps shall meet the applicable requirements of Section 42.

43.1 Pump Priming and Lift Requirements

Suction-lift pumps shall be of the self-priming or vacuum-priming type. Suction-lift pump stations using dynamic suction lifts exceeding the limits outlined in the following sections may be approved upon submission of factory certification of pump performance and detailed calculations indicating satisfactory performance under the proposed operating conditions. Such detailed calculations shall include static suction-lift as measured from "lead pump off" elevation to center line of pump suction, friction, and other hydraulic losses of the suction piping, vapor pressure of the liquid, altitude correction, required net positive suction head, and a safety factor of at least 6 feet (1.8 m).

43.11 Self-Priming Pumps

Self-priming pumps shall be capable of rapid priming and repriming at the "lead pump on" elevation. Such self-priming and repriming shall be accomplished automatically under design

operating conditions. Suction piping should not exceed the size of the pump suction and shall not exceed 25 feet (7.6 m) in total length. Priming lift at the "lead pump on" elevation shall include a safety factor of at least 4 feet (1.2 m) from the maximum allowable priming lift for the specific equipment at design operating conditions. The combined total of the dynamic suction-lift at the "pump off" elevation and the required net positive suction head at design operating conditions shall not exceed 22 feet (6.7 m).

43.12 Vacuum-Priming Pumps

Vacuum-priming pump stations shall be equipped with dual vacuum pumps capable of automatically and completely removing air from the suction-lift pump. The vacuum pumps shall be adequately protected from damage due to wastewater. The combined total of the dynamic suction-lift at the "pump off" elevation and the required net positive suction head at design operating conditions shall not exceed 22 feet (6.7 m).

43.2 Equipment, Wet Well Access, and Valve Location

The pump equipment compartment shall be above grade or offset and shall be effectively isolated from the wet well to prevent a hazardous and corrosive sewer atmosphere from entering the equipment compartment. Wet well access shall not be through the equipment compartment and shall be at least 24 inches (610 mm) in diameter. Gasketed replacement plates shall be provided to cover the opening to the wet well for pump units removed for servicing. Valves shall not be located in the wet well.

44. SUBMERSIBLE PUMP STATIONS - SPECIAL CONSIDERATIONS

Submersible pump stations shall meet the applicable requirements under Section 42, except as modified in this Section.

44.1 Construction

Submersible pumps and motors shall be designed specifically for raw wastewater use, including totally submerged operation during a portion of each pumping cycle, and shall meet the requirements of the National Electrical Code for such units. An effective method to detect shaft seal failure or potential seal failure shall be provided.

44.2 Pump Removal

Submersible pumps shall be readily removable and replaceable without personnel entering or dewatering the wet well or disconnecting any piping in the wet well.

44.3 Electrical Equipment

44.31 Power Supply and Control Circuitry

Electrical supply, control, and alarm circuits shall be designed to provide strain relief and to allow disconnection from outside the

wet well. Terminals and connectors shall be protected from corrosion by location outside the wet well or through use of watertight seals.

44.32 Controls

The motor control center shall be located outside the wet well, be readily accessible, and be protected by a conduit seal or other appropriate measures meeting the requirements of the National Electrical Code, to prevent the atmosphere of the wet well from gaining access to the control center. The seal shall be located so that the motor can be removed and electrically disconnected without disturbing the seal. When such equipment is exposed to weather, it shall meet the requirements of weatherproof equipment NEMA 3R or 4, at a minimum.

44.33 Power Cord

Pump motor power cords shall be designed for flexibility and serviceability under conditions of extra hard usage and shall meet the requirements of the National Electrical Code standards for flexible cords in wastewater pump stations. Ground fault interruption protection shall be used to de-energize the circuit in the event of any failure in the electrical integrity of the cable. Power cord terminal fittings shall be corrosion-resistant and constructed in a manner to prevent the entry of moisture into the cable, shall be provided with strain relief appurtenances, and shall be designed to facilitate field connecting.

44.4 Valves

Valves required under Paragraph 42.5 shall be located in a separate valve chamber. Provisions shall be made to remove or drain accumulated water from the valve chamber. The valve chamber may be dewatered to the wet well through a drain line with a gas and water tight valve. Check valves that are integral to the pump need not be located in a separate valve chamber provided that the valve can be removed from the wet well in accordance with Paragraph 44.2. Access shall be provided in accordance with Paragraph 42.231.

45. SCREW PUMP STATIONS - SPECIAL CONSIDERATIONS

Screw pumps shall meet the applicable requirements of Section 42.

45.1 Covers

Covers or other means of excluding direct sunlight shall be provided as necessary to eliminate adverse effects caused by temperature changes.

45.2 Pump Wells

A positive means of isolating individual screw pump wells shall be provided.

45.3 Bearings

Submerged bearings shall be lubricated by an automated system without pump well dewatering.

46. ALARM SYSTEMS

Alarm systems with a backup power source shall be provided for pumping stations. The alarm shall be activated in cases of power failure, dry well sump and wet well high water levels, pump failure, unauthorized entry, or any other cause of pump station malfunction. Pumping station alarm systems shall transmit and identify alarm conditions to a municipal facility that is staffed 24 hours a day. If such a facility is not available and a 24-hour holding capacity is not provided, the alarm shall be transmitted to municipal offices during normal working hours and to the home of the responsible person(s) in charge of the lift station during off-duty hours. Audio-visual alarm systems may be acceptable in some cases in lieu of a transmitting system depending upon location, station holding capacity and inspection frequency.

47. EMERGENCY OPERATION

47.1 Objective

The objective of emergency operation is to prevent the discharge of raw or partially treated wastewater to any waters and to protect public health by preventing back-up of wastewater and subsequent discharge to basements, streets, and other public and private property.

47.2 Emergency Pumping Capability

Emergency pumping capability is required unless on-system overflow prevention is provided by adequate storage capacity. Emergency pumping capability shall be accomplished by connection of the station to at least two independent utility substations, by provision of portable or in-place internal combustion engine equipment to generate electrical or mechanical energy, or by the provision of portable pumping equipment. Emergency pumping shall comply with the conditions stipulated in Paragraph 56.1. Such emergency standby systems shall have sufficient capacity to start up and maintain the total rated running capacity of the station. Regardless of the type of emergency standby system provided, a portable pump connection to the force main with rapid connection capabilities and appropriate valves shall be provided outside the dry well and wet well.

47.3 Emergency High Level Overflows

For use during possible periods of extensive power outages, mandatory power reductions, or uncontrollable emergency conditions, consideration should be given to providing a controlled, high-level wet well overflow to supplement alarm systems and emergency pumping capability in order to prevent backup of wastewater into basements, or other discharges that could cause severe adverse impacts on public interests, including public health and property damage. Where a high level overflow is utilized, consideration shall also be given to the installation of storage/detention

tanks or basins, which shall drain back to the station wet well. All structures capable of bypassing shall be controlled by a lockable, manually operated valve. Where such overflows are considered, the regulatory agency shall be contacted for the necessary treatment or storage requirements.

47.4 Equipment Requirements

47.41 General

The following general requirements shall apply to all internal combustion engines used to drive auxiliary pumps, service pumps through special drives, or electrical generating equipment:

47.411 Engine Protection

The engine shall be protected from operating conditions that would result in damage to equipment. Unless continuous manual supervision is planned, protective equipment shall be capable of shutting down the engine and activating an alarm as required in Section 46. Protective equipment shall monitor for conditions of low oil pressure and overheating. Oil pressure monitoring will not be required for engines with splash lubrication.

47.412 Size

The engine shall have adequate rated power to start and continuously operate under all connected loads.

47.413 Fuel Type

Reliability and ease of starting, especially during cold weather conditions, should be considered in the selection of the type of fuel. Where public utility gas is selected, consideration shall be given to a generator design that may be operated with an alternate fuel supply system in accordance with National Electric Code (701.11, 2008 Edition.)

47.414 Underground Fuel Storage

Underground fuel storage and piping facilities shall be constructed in accordance with applicable state, provincial, and federal regulations.

47.415 Engine Ventilation

The engine shall be located above grade and shall be provided with adequate ventilation of fuel vapors and exhaust gases.

47.416 Routine Start-up

All emergency equipment shall be provided with instructions indicating the need for regular starting and running of such units at full loads.

47.417 Protection of Equipment

Emergency equipment shall be protected from damage at the restoration of regular electrical power.

47.418 Air Quality

Regulations of state, provincial and federal agencies regarding air quality shall be considered.

47.419 Silencer

Noise control should be considered.

47.42 Engine-Driven Pumping Equipment

In addition to the general requirements of Paragraph 47.41, the following requirements shall apply to permanently-installed or portable engine-driven pumping equipment:

47.421 Pumping Capacity

Engine-driven pumps shall meet the design pumping requirements unless storage capacity is available for flows in excess of pump capacity. Pumps shall be designed for anticipated operating conditions, including suction lift if applicable.

47.422 Operation

The engine and pump shall be equipped for automatic start-up and operation of pumping equipment unless manual start-up and operation is justified. Provisions shall also be made for manual start-up. Where manual start-up and operation is justified, the storage capacity and the alarm system shall meet the requirements of Paragraphs 46 and 47.423.

47.423 Portable Pumping Equipment

Where part or all of the engine-driven pumping equipment is portable, sufficient storage capacity with an alarm system shall be provided to allow time for the detection of pump station failure and the transportation and hookup of the portable equipment.

47.43 Engine-Driven Generating Equipment

In addition to the general requirements of Paragraph 47.41, the following requirements shall apply to permanently-installed or portable engine-driven generating equipment:

47.431 Generating Capacity

a. Generating unit size shall be adequate to provide power for pump motor starting current and for lighting, ventilation, and other auxiliary equipment necessary for safety and the proper operation of the lift station.

b. The operation of only one pump during periods of auxiliary power supply shall be justified. Such justification may be made on the basis of the design peak hourly flows relative to single-pump capacity, the anticipated length of power outages, and the storage capacity.

c. Special sequencing controls shall be provided to start pump motors unless the generating equipment has capacity to start all pumps simultaneously with auxiliary equipment operating.

47.432 Operation

Provisions shall be made for automatic and manual start-up and load transfer unless only manual start-up and operation is justified. The generator shall be protected from operating conditions that could result in damage to equipment. Provisions should be considered to allow the engine to start and stabilize at operating speed before assuming the load. Where manual start-up and transfer is justified, the storage capacity and the alarm system shall meet the requirements of Paragraphs 46 and 47.433.

47.433 Portable Generating Equipment

Where portable generating equipment or manual transfer is provided, sufficient storage capacity, with an alarm system, shall be provided to allow time for the detection of pump station failure and the transportation and connection of generating equipment. Special electrical connections and double throw switches should be used to connect the portable generating equipment.

47.44 Independent Utility Substations

Where independent substations are used for emergency power, each separate substation and its associated distribution lines shall be capable of starting and operating the pump station at its rated capacity.

48. INSTRUCTIONS AND EQUIPMENT

Wastewater pumping stations and portable equipment shall be supplied with a complete set of operational instructions, including emergency procedures and maintenance schedules. Tools and spare parts shall be supplied as necessary.

49. FORCE MAINS

49.1 Velocity and Diameter

At design pumping rates, a cleansing velocity of at least 2 feet per second (0.6 m/s) should be maintained. A maximum velocity of 8 feet per second (2.4 m/s) is recommended to avoid high head loss and protect valves. The minimum force main diameter for raw wastewater shall not be less than 4 inches (100 mm).

49.2 Air and Vacuum Relief Valve

Air relief valves shall be placed at high points in the force main to prevent air locking. Vacuum relief valves may be necessary to relieve negative pressures on force mains. The force main configuration and head conditions should be evaluated as to the need for and placement of vacuum relief valves.

49.3 Termination

The force main shall enter the receiving manhole with a smooth flow transition to the gravity sewer system at a point not more than 1 foot (0.3 m) above the flow line. Corrosion protection for the receiving manhole shall be provided in accordance with Paragraph 34.8.

49.4 Pipe and Design Pressure

Pipe and joints shall be equal to water main strength materials suitable for design conditions. The force main, reaction blocking, and station piping shall be designed to withstand water hammer pressures and associated cyclic reversal of stresses that are expected with the cycling of wastewater lift stations. The use of surge valves, surge tanks or other suitable means to protect the force main against severe pressure changes shall be evaluated.

49.5 Special Construction

Force main construction near streams or water works structures and at water main crossings shall meet the applicable provisions of Sections 36, 37, and 38. There shall be at least a 10 foot (3 m) horizontal separation between water mains and sewer force mains.

49.6 Design Friction Losses

49.61 Friction Coefficient

Friction losses through force mains shall be based on the Hazen-

Williams formula or other acceptable methods. When the Hazen-Williams formula is used, the value for "C" shall be 100 for unlined iron or steel pipe for design. For other smooth pipe materials such as PVC, polyethylene, lined ductile iron, etc., a higher "C" value, not to exceed 120, may be allowed for design.

49.62 Maximum Power Requirements

When initially installed, force mains will have a significantly higher "C" factor. The effect of the higher "C" factor should be considered when calculating maximum power requirements and duty cycle time to prevent damage to the motor. The effects of higher discharge rates on selected pumps and downstream facilities should also be considered.

49.7 Identification

Where force mains are constructed of a material that might cause the forcemain to be confused with potable water mains, the force main shall be appropriately identified.

49.8 Leakage Testing

Leakage tests shall be specified including testing methods and leakage limits.

49.9 Maintenance Considerations

Isolation valves should be considered where force mains connect into a common force main. Cleanouts at low points and chambers for pig launching and catching should be considered for any force main to facilitate maintenance.

49.10 Cover

Force mains shall be covered with sufficient earth or other insulation to prevent freezing.

CHAPTER 50
WASTEWATER TREATMENT FACILITIES

51. PLANT LOCATION

51.1 General

Items to be considered when selecting a plant site are listed in Chapter 10.

51.2 Flood Protection

The treatment plant structures, electrical, and mechanical equipment shall be protected from physical damage by the one hundred (100) year flood. Treatment plants should remain fully operational and accessible during the twenty-five (25) year flood. This requirement applies to new construction and to existing facilities undergoing major modification. Flood plain regulations of state, province, and federal agencies shall be considered.

52. QUALITY OF EFFLUENT

The required degree of wastewater treatment shall be based on the effluent requirements and water quality standards established by the responsible province, state agency and/or appropriate federal regulations including discharge permit requirements.

53. DESIGN

53.1 Type of Treatment

Items to be considered in selection of the appropriate type of treatment are presented in Chapter 10.

The plant design shall provide the necessary flexibility to perform satisfactorily within the expected range of waste characteristics and volumes.

53.2 Required Engineering Data for New Process and Application Evaluation

The policy of the reviewing authority is to encourage rather than obstruct the development of any methods or equipment for treatment of wastewater. The lack of inclusion in these standards of some types of wastewater treatment processes or equipment should not be construed as precluding their use. The reviewing authority may approve other types of wastewater treatment processes and equipment under the condition that the operational reliability and effectiveness of the process or device shall have been demonstrated with one or more suitably-sized prototype units operating at their design load conditions, to the extent required.

To determine that such new processes and equipment or applications have a reasonable and substantial chance of success, the reviewing authority may require the following:

a. Monitoring observations, including test results and engineering evaluations, demonstrating the efficiency of such processes.

b. Detailed description of the test methods.

c. Testing, including appropriately-composited samples, under various ranges of strength and flow rates (including diurnal variations) and waste temperatures over a sufficient length of time to demonstrate performance under the range of climatic and other conditions which may be encountered in the area of the proposed installations.

d. Other appropriate information.

The reviewing authority may require that appropriate testing be conducted and evaluations be made under the supervision of a competent process engineer other than those employed by the manufacturer, patent holder or developer.

53.3 Design Period

The design period shall be clearly identified in the engineering report or facilities plan as required in Chapter 10.

53.4 Design Loads

53.41 Hydraulic Design

53.411 Critical Flow Conditions

Flow conditions critical to the design of the treatment plant are described in Chapter 10.

Initial low flow conditions shall be evaluated in the design to minimize operational problems with freezing, septicity, flow measurements and solids dropout. The design peak hourly flow shall be used to evaluate the effect of hydraulic peaks on unit processes, pumping, piping, settling tanks, etc.

53.412 Treatment Plant Design Capacity

The treatment plant design capacity shall be as described in Chapter 10. The plant design flow selected shall meet the appropriate effluent and water quality standards that are set forth in the discharge permit. The design of treatment units that are not subject to peak hourly flow requirements shall be based on the design average flow. For plants subject to high wet weather flows or overflow detention pumpback flows, the design maximum day flows that the plant is to treat on a sustained basis should be specified.

53.413 Flow Equalization

Facilities for the equalization of flows and organic shock load shall be considered at all plants which are critically affected by surge loadings. The sizing of the flow equalization facilities should be based on data obtained herein and from Chapter 10.

53.42 Organic Design

Organic loadings for wastewater treatment plant design shall be based on the information given in Chapter 10. The effects of septage flow which may be accepted at the plant shall be given consideration and appropriate facilities shall be included in the design. Refer to the Appendix.

53.43 Shock Effects

The shock effects of high concentrations and diurnal peaks for short periods of time on the treatment process, particularly for small treatment plants and batch processes, shall be considered.

53.5 Conduits

All piping and channels shall be designed to carry the maximum expected flows. The incoming sewer should be designed for unrestricted flow. Bottom corners of the channels, except final effluent channels, shall be filleted. Conduits shall be designed to avoid creation of pockets and corners where solids can accumulate.

Suitable gates or valves should be placed in channels to seal off unused sections which might accumulate solids. The use of shear gates, stop plates or stop planks is permitted where they can be used in place of gate valves or sluice gates. Non-corrodible materials shall be used for these control gates.

53.6 Arrangement of Units

Component parts of the plant should be arranged for greatest operating and maintenance convenience, flexibility, continuity of optimum effluent quality for water quality protection, economy of function, and ease of installation of future units.

Where duplicate units are provided, a central collection and distribution point including proportional flow splitting shall be provided for the wastewater flow before each unit operation. Exceptions to this central collection and distribution point requirement may be made on a case-by-case basis when the design incorporates more than one unit process in the same physical structure.

53.7 Flow Division Control

Flow division control facilities shall be provided as necessary to ensure organic and hydraulic loading control to plant process units and shall be designed for easy operator access, change, observation, and maintenance. The use of upflow division boxes equipped with adjustable sharp-crested weirs or similar devices is recommended. The use of valves for flow splitting is not acceptable. Appropriate flow measurement facilities shall be incorporated in the flow division control design.

54. PLANT DETAILS

54.1 Installation of Mechanical Equipment

The specifications should be written to ensure that the installation and initial operation of major items of mechanical equipment will be inspected and approved by a representative of the manufacturer.

54.2 Unit Bypasses

54.21 Removal from Service

Properly located and arranged bypass structures and piping shall be provided so that each unit of the plant can be removed from service independently. The bypass design shall facilitate plant operation during unit maintenance and emergency repair so as to minimize deterioration of effluent quality and ensure rapid process recovery upon return to normal operational mode.

Bypassing may be accomplished through the use of duplicate or multiple treatment units in any stage if the design peak instantaneous flow can be handled hydraulically with the largest unit out of service.

The actuation of all bypasses shall require manual action by operating personnel. All power-actuated bypasses shall be designed to permit manual operation in the event of power failure and shall be designed so that the valve will fail as is, upon failure of the power operator.

A fixed high water level bypass overflow should be provided in addition to a manually or power actuated bypass.

54.22 Unit Bypass During Construction

Unit bypassing during construction shall be in accordance with the requirements in Paragraphs 11.28(l), 20.15 and Section 21.

54.3 Unit Dewatering, Flotation Protection, and Plugging

Means such as drains or sumps shall be provided to completely dewater each unit to an appropriate point in the process. Due consideration shall be given to the possible need for hydrostatic pressure relief devices to

prevent flotation of structures. Pipes subject to plugging shall be provided with means for mechanical cleaning or flushing.

54.4 Construction Materials

Materials shall be selected that are appropriate under conditions of exposure to hydrogen sulfide and other corrosive gases, greases, oils, and other constituents frequently present in wastewater. This is particularly important in the selection of metals and paints. Contact between dissimilar materials should be avoided or other provisions made to minimize galvanic action.

54.5 Painting

The use of paints containing lead or mercury should be avoided. In order to facilitate identification of piping, particularly in the large plants, it is suggested that the different lines be color-coded. The following color scheme is recommended for purposes of standardization.

Raw sludge line - gray
Sludge recirculation suction line - brown with yellow bands
Sludge draw off line - brown with orange bands
Sludge recirculation discharge line - brown
Digested sludge line - black
Sludge gas line - red
Natural gas line - red
Nonpotable water line - purple
Potable water line - blue
Fire main - red
Chlorine line - yellow
Sulfur Dioxide - yellow with red bands
Sewage (wastewater) line - gray
Compressed air line - dark green
Process air line - light green
Water lines for heating digesters or buildings - blue with a 6-inch (150 mm) red band spaced 30 inches (760 mm) apart
Fuel oil/diesel - red
Plumbing drains and vents - black
Ferric Chloride - orange
Polymer - unpainted PVC

The contents and direction of flow shall be stenciled on the piping in a contrasting color.

54.6 Operating Equipment

A complete outfit of tools, accessories, and spare parts necessary for the plant operator's use shall be provided.

Readily accessible storage space and workbench facilities shall be provided. Consideration shall be given to provision of a garage for large equipment storage, maintenance, and repair.

54.7 Erosion Control During Construction

Effective site erosion control shall be provided during construction.

54.8 Grading and Landscaping

Upon completion of the plant, the ground shall be graded and sodded or seeded. All-weather walkways should be provided for access to all units. Where possible, steep slopes should be avoided to prevent erosion. Surface water shall not be permitted to drain into any unit. Particular care shall be taken to protect trickling filter beds, sludge beds, and intermittent sand filters from stormwater runoff. Provision should be made for landscaping, particularly when a plant must be located near residential areas.

55. PLANT OUTFALLS

55.1 Discharge Impact Control

The outfall sewer shall be designed to discharge to the receiving stream in a manner acceptable to the reviewing authority. Consideration should be given in each case to the following:

a. Preference for free fall or submerged discharge at the site selected;

b. Utilization of cascade aeration of effluent discharge to increase dissolved oxygen; and

c. Limited or complete across-stream dispersion as needed to protect aquatic life movement and growth in the immediate reaches of the receiving stream.

55.2 Protection and Maintenance

The outfall sewer shall be so constructed and protected against the effects of floodwater, tide, ice, or other hazards as to reasonably ensure its structural stability and freedom from stoppage. A manhole should be provided at the shore end of all gravity sewers that extend into the receiving waters. Hazards to navigation shall be considered in designing outfall sewers.

55.3 Sampling Provisions

All outfalls shall be designed so that a sample of the effluent can be obtained at a point after the final treatment process and before discharge to or mixing with the receiving waters. If disinfection is provided, a sampling point also should be located immediately prior to disinfection.

56. ESSENTIAL FACILITIES

56.1 Emergency Power Facilities

56.11 General

All plants shall be provided with an alternate source of electric power or pumping capability to allow continuity of operation during power failures, except as noted below. Refer to Paragraph 47.4 for design details. Methods of providing alternate sources include:

a. The connection of at least two independent power sources such as substations able to supply power without interruption. A power line from each substation and separate routes are recommended, and will be required unless documentation is received and approved by the reviewing authority verifying that a duplicate line is not necessary;

b. Portable or in-place internal combustion engine equipment which will generate electrical or mechanical energy; and

c. Portable pumping equipment when only emergency pumping is required.

56.12 Power for Aeration

Standby generating capacity normally is not required for aeration equipment used in the activated sludge process. In cases where a history of long-term (4 hours or more) power outages or reduced voltage have occurred, auxiliary power for minimum aeration of the activated sludge is required. Full power generating capacity may be required by the reviewing authority for waste discharges to certain critical stream segments such as upstream of bathing beaches, upstream of a public water supply intake or other similar situations.

56.13 Power for Disinfection

Continuous disinfection, where required, shall be provided during all power outages. Continuous dechlorination is required for systems that dechlorinate.

56.14 Power for Data Loggers

Computers configured to log data shall be supplied with an uninterruptable power supply (UPS). Each UPS shall monitor its own battery condition and issue alarms on low battery. UPSs configured to supply computers shall cause the computer to save all open files and data logging files, without overwriting existing files, at the time of primary power failure and again when a low battery condition occurs.

56.2 Water Supply

56.21 General

An adequate supply of potable water under pressure should be provided for use in the laboratory and for general cleanliness around the plant. No piping or other connections shall exist in any part of the treatment plant which, under any conditions, might cause the contamination of a potable water supply. The chemical quality should be checked for suitability for its intended uses such as in heat exchangers, chlorinators, etc.

56.22 Direct Connections

Potable water from a municipal or separate supply may be used directly at points above grade for the following hot and cold supplies:

a. Lavatory;
b. Water closet;
c. Laboratory sink (with vacuum breaker);
d. Shower;
e. Drinking fountain;
f. Eye wash fountain; and
g. Safety shower.

Hot water for any of the above units shall not be taken directly from a boiler used for supplying hot water to a sludge heat exchanger or digester heating unit.

56.23 Indirect Connections

Where a potable water supply is to be used for any purpose in a plant other than those listed in Paragraph 56.22, a break tank, pressure pump, and pressure tank shall be provided. Water shall be discharged to the tank through an air gap at least 6 inches (150 mm) above the maximum flood line or the spill line of the tank, whichever is higher.

A sign shall be permanently posted at every hose bib, faucet, hydrant, or sill cock located on the water system beyond the break tank to indicate that the water is not safe for drinking.

56.24 Separate Potable Water Supply

Where it is not possible to provide potable water from a public water supply, a separate well may be provided. Location and construction of the well shall comply with requirements of the governing state or province and local regulations. Requirements governing the use of the potable water supply are those contained in Paragraphs 56.22 and 56.23.

56.25 Separate Non-Potable Water Supply

Where a separate non-potable water supply is to be provided, a break tank will not be necessary, but all system outlets shall be posted with a permanent sign indicating the water is not safe for drinking.

56.3 Sanitary Facilities

Toilet, shower, lavatory, and locker facilities should be provided in sufficient numbers and at convenient locations to serve the expected plant personnel.

56.4 Floor Slope

Floor surfaces shall be sloped adequately to a point of drainage.

56.5 Stairways

Stairways shall be installed in lieu of ladders for access to units requiring routine inspection and maintenance, such as digesters, trickling filters, aeration tanks, clarifiers, tertiary filters, etc. Spiral or winding stairs are permitted only for secondary access where dual means of egress are provided.

Stairways shall have slopes between 30 and 40 degrees from the horizontal to facilitate carrying samples, tools, etc. Each tread and riser shall be of uniform dimension in each flight. Minimum tread run shall not be less than 9 inches (230 mm). The sum of the tread run and riser shall not be less than 17 inches (430 mm) nor more than 18 inches (460 mm). A stairway shall not have more than a 12-foot (3.7 m) continuous rise without a platform.

56.6 Flow Measurement

56.61 Location

Flow measurement facilities shall be provided to measure the following flows:

a. Plant influent or effluent flow;

b. Plant influent and effluent flows. If influent flow is significantly different from effluent flow, both shall be measured. This applies to installations such as lagoons, sequencing batch reactors, and plants with excess flow storage or flow equalization;

c. Excess flow treatment facility discharges;

d. Other flows required to be monitored under the provisions of the discharge permit; and

e. Other flows such as return activated sludge, waste activated sludge, recirculation, and recycle required for plant operational control.

56.62 Facilities

Indicating, totalizing, and recording flow measurement devices shall be provided for all mechanical plants. Flow measurement facilities for lagoon systems shall not be less than elapsed time meters used in conjunction with pumping rate tests or shall be calibrated weirs. All flow measurement equipment shall be sized to function effectively over the full range of flows expected and shall be protected against freezing.

See Paragraph 42.35 for the requirements concerning electrical systems and components located in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors may be present.

56.63 Hydraulic Conditions

Flow measurement equipment including approach and discharge conduit configuration and critical control elevations shall be designed to ensure that the required hydraulic conditions necessary for accurate measurement are provided. Turbulence, eddy currents, air entrainment or any other aspect that upsets the normal hydraulic conditions that are necessary for accurate flow measurement shall be avoided.

56.7 Sampling Equipment

Effluent composite sampling equipment shall be provided at all mechanical plants with a design average flow of 0.1 mgd (380 m^3/d) or greater and at other facilities where it is necessary to meet discharge permit monitoring requirements. Composite sampling equipment shall also be provided as needed for influent sampling and for monitoring plant operations. The influent sampling point should be located prior to any process return flows.

Refer to Paragraph 42.35 for the requirements concerning electrical systems and components located in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors may be present. This Paragraph shall be considered in the design and location of influent composite sampling equipment.

57. SAFETY

57.1 General

Adequate provision shall be made to effectively protect plant personnel and visitors from hazards. The following shall be provided to fulfill the particular needs of each plant:

a. Enclosure of the plant site with a fence and signs designed to discourage the entrance of unauthorized persons and animals;

b. Hand rails with toe-boards where appropriate and guards around tanks, trenches, pits, stairwells, and other hazardous structures where the top of the wall is less than 42 inches (1070 mm) above the surrounding ground level;

c. Gratings over appropriate areas of treatment units where access for maintenance is required;

d. First aid equipment;

e. "No Smoking" signs in hazardous areas;

f. Protective clothing and equipment as needed, such as self-contained breathing apparatus, gas detection equipment, goggles, gloves, hard hats, safety harnesses, hearing protectors, etc.;

g. Portable blowers and sufficient hose;

h. Portable lighting equipment complying with the National Electrical Code requirements;

i. Gas detectors listed and labeled for use in Class I, Division 1, Group D locations;

j. Appropriately-placed warning signs for slippery areas, non-potable water fixtures, low head clearance areas, open service manholes, hazardous chemical storage areas, flammable fuel storage areas, high noise areas, etc.;

k. Adequate ventilation in pump station areas in accordance with Paragraph 42.7;

l. Provisions for local lockout on stop motor controls;

m. Provisions for confined space entry and laboratory safety in accordance with OSHA and regulatory agency requirements; and

n. Adequate vector control.

57.2 Hazardous Chemical Handling

57.21 Containment Materials

The materials utilized for storage, piping, valves, pumping, metering, splash guards, etc., shall be specially selected considering the physical and chemical characteristics of each hazardous or corrosive chemical.

57.22 Secondary Containment

Chemical storage areas shall be enclosed in dikes or curbs which will contain the stored volume until it can be safely transferred to alternate storage or released to the wastewater at controlled rates which will not damage facilities, inhibit the treatment processes, or contribute to stream pollution. Liquid polymer should be similarly contained to reduce areas with slippery floors, especially to protect travelways. Non-slip floor surfaces are desirable in polymer-handling areas.

57.23 Liquefied Gas Chemicals

Areas intended for storage and handling of chlorine and sulfur dioxide and other hazardous gases shall be properly designed and isolated. Gas detection kits, alarms, controls, safety devices, and emergency repair kits shall be provided.

57.24 Splash Guards

All pumps or feeders for hazardous or corrosive chemicals shall have guards that will effectively prevent spray of chemicals into space occupied by personnel. The splash guards are in addition to guards to prevent injury from moving or rotating machinery parts.

57.25 Piping, Labeling, Coupling Guards, Location

All piping containing or transporting corrosive or hazardous chemicals shall be identified with labels every 10 feet (3 m) and with at least two labels in each room, closet, or pipe chase. Color-coding may also be used, but is not an adequate substitute for labeling.

All connections (flanged or other type), except those adjacent to storage or feeder areas, shall have guards which will direct any leakage away from space occupied by personnel. Pipes containing hazardous or corrosive chemicals should not be located above shoulder level except where continuous drip collection trays and coupling guards will eliminate chemical spray or dripping onto personnel.

57.26 Protective Clothing and Equipment

The following items of protective clothing or equipment shall be available and utilized for all operations or procedures where their use will minimize injury hazard to personnel:

a. Self-contained breathing apparatus recommended for protection against chlorine;

b. Chemical worker's goggles or other suitable goggles (safety glasses are insufficient);

c. Face masks or shields for use over goggles;

d. Dust masks to protect the lungs in dry chemical areas;

e. Rubber gloves;

f. Rubber aprons with leg straps;

g. Rubber boots (leather and wool clothing should be avoided near caustics); and

h. Safety harness and line.

57.27 Warning System and Signs

Facilities shall be provided for the automatic shutdown of pumps and sounding of alarms when failure occurs in a pressurized chemical discharge line.

Warning signs requiring the use of goggles shall be located near chemical stations, pumps, and other points of frequent hazard.

57.28 Dust Collection

Dust collection equipment shall be provided to protect personnel from dusts injurious to the lungs or skin and to prevent polymer dust from settling on walkways that can become slick when wet.

57.29 Eyewash Fountains and Safety Showers

Eyewash fountains and safety showers utilizing potable water shall be provided on each floor level or work location involving hazardous or corrosive chemical storage, mixing (or slaking), pumping, metering, or transportation unloading. These facilities shall be as close as practical to points of chemical exposure and shall be fully operable during all weather conditions.

Each eyewash fountain shall be supplied with water of moderate temperature 50°F to 90°F (10 °C to 32 °C) suitable to provide 15 to 30 minutes of continuous irrigation of the eyes. Each emergency shower shall be capable of discharging at least 20 gpm (1.3 L/s) of water at moderate temperature and should be at pressures of 30 psi to 50 psi (210 kPa to 345 kPa).

57.3 Hazardous Chemical Container Identification

The identification and hazard warning data included on shipping containers, when received, shall appear on all containers (regardless of size or type) used to store, carry, or use a hazardous substance. Wastewater and sludge sample containers should be adequately labeled. Below is an example of a suitable label to identify a wastewater sample as a hazardous substance:

RAW SEWAGE WASTEWATER

Sample point No. _____

Contains Harmful Bacteria.

May contain hazardous or toxic material.

Do not drink or swallow.

Avoid contact with openings or breaks in the skin.

58. LABORATORY

58.1 General

All treatment plants shall include a laboratory for making the necessary analytical determinations and operating control tests, except for plants utilizing only processes not requiring laboratory testing for plant control where satisfactory off-site laboratory provisions are made to meet the permit monitoring requirements. For plants where a fully equipped laboratory is not required, the requirements for utilities, fume hoods, etc., may be reduced. The laboratory shall have sufficient size, bench space, equipment, and supplies to perform all self-monitoring analytical work required by discharge permits, and to perform the process control tests necessary for good management of each treatment process included in the design.

The facilities and supplies necessary to perform analytical work to support industrial waste control programs will normally be included in the same laboratory. The laboratory arrangement should be sufficiently flexible to allow future expansion should more analytical work be needed. Laboratory instrumentation and size should reflect treatment plant size, staffing requirements, process complexity, and applicable certification requirements. Experience and training of plant operators should also be assessed when determining treatment plant laboratory needs.

Treatment plant laboratory needs may be divided into the following three general categories:

I. Plants performing only basic operational testing; this typically includes pH, temperature, and dissolved oxygen;

II. Plants performing more complex operational and permit laboratory tests including biochemical oxygen demand, suspended solids, and bacterial analysis, and;

III. Plants performing more complex operational, permit, industrial pretreatment, and multiple plant laboratory testing.

Expected minimum laboratory needs for these three plant classifications are outlined in this Section. However, in specific cases, laboratory needs may have to be modified or increased due to industrial monitoring needs or special process control requirements.

58.2 Category I: Plants performing only basic operational testing

58.21 Location and Space

A floor area up to 150 square feet (14 m^2) should be adequate. It is recommended that this be at the treatment site. Another location in the community utilizing space in an existing structure owned by the involved wastewater authority may be acceptable.

58.22 Design and Materials

The facility shall provide for electricity, water, heat, sufficient storage space, a sink, and a bench top. The lab components need not be of industrial grade materials. Laboratory equipment and glassware shall be of types recommended by Standard Methods for the Examination of Water and Wastewater and the reviewing authority.

58.3 Category II: Plants performing more complex operational and permit laboratory tests including biochemical oxygen demand, suspended solids, and bacterial analysis

58.31 Location and Space

The laboratory size should be based on providing adequate room for the equipment to be used. In general, the laboratories for this category of plant should provide a minimum of approximately 300 square feet (28 m^2) of floor space. Adequate bench space for each analyst shall be provided. The laboratory should be located at the treatment site on ground level. It shall be isolated from vibrating, noisy, or high-temperature machinery or equipment which might have adverse effects on the performance of laboratory staff or instruments.

58.32 Floors

Floor surfaces should be fire resistant and highly resistant to acids, alkalies, solvents, and salts.

58.33 Cabinets and Bench Tops

Laboratories in this category usually perform both discharge permit testing and operational control monitoring utilizing "acids" and "bases" in small quantities, such that laboratory grade metal cabinets and shelves are not mandatory. The cabinets and shelves selected may be of wood or other durable materials. Bench tops should be of acid resistant laboratory grade materials for protection of the underlying cabinets. Glass doors on wall-hung cabinets are recommended. One or more cupboard style base cabinets should be provided. Cabinets with drawers should be provided with rubber bumpers and stops to prevent accidental removal. Cabinets for Category II laboratories are not required to have gas, air,

vacuum, and electrical service fixtures. Built-in shelves should be adjustable.

58.34 Fume Hoods, Sinks, and Ventilation

58.341 Fume Hoods

Fume hoods shall be provided for laboratories where required analytical work results in the production of noxious fumes. Air intake should be balanced against all exhaust ventilation to maintain an overall positive pressure relative to atmospheric in the laboratory.

58.342 Sinks

A laboratory grade sink and drain trap shall be provided.

58.343 Ventilation

Laboratories should be air conditioned. In addition, separate exhaust ventilation should be provided.

58.35 Balance and Table

An analytical balance of the automated digital readout, single pan 0.1 milligram sensitivity type shall be provided. A heavy special-design balance table which will minimize vibration of the balance is recommended. This table shall be located as far as possible from windows, doors, or other sources of drafts or air movements, so as to minimize undesirable impacts from these sources upon the balance.

58.36 Equipment, Supplies, and Reagents

The laboratory shall be provided with all of the equipment, supplies, and reagents that are needed to carry out all of the facility's analytical testing requirements. If any required analytical testing produces malodorous or noxious fumes, the engineer should verify that the in-house analysis is more cost-effective than use of an independent off-site laboratory. Discharge permit, process control, and industrial waste monitoring requirements should be considered when specifying equipment needs. Composite samplers may be required to satisfy permit sampling requirements. References such as Standard Methods for the Examination of Water and Wastewater and the U.S.E.P.A. Analytical Procedures Manual should be consulted prior to specifying equipment items.

58.37 Utilities

58.371 Power Supply

Consideration should be given to providing line voltage regulation for the power supplied to laboratories using delicate instruments.

58.372 Laboratory Water

Reagent water of a purity suitable for analytical requirements shall be supplied to the laboratory. In general, reagent water prepared using an all glass distillation system is adequate. However, some analyses require deionization of the distilled water. Consideration should be given to softening the feed water to the still.

58.38 Safety

58.381 Equipment

Laboratories shall provide, as a minimum, the following: first aid equipment; protective clothing (including goggles, gloves, lab aprons, etc.); and a fire extinguisher.

58.382 Eyewash Fountains and Safety Showers

Eyewash fountains and safety showers utilizing potable water shall be provided in the laboratory. These should be as close as practical to work locations and shall be no more than 25 feet (7.6 m) from points of hazardous chemical exposure.

Each eyewash fountain shall be supplied with water of moderate temperature 50°F to 90°F (10 °C to 32 °C) suitable to provide 15 to 30 minutes of continuous irrigation of the eyes. Each emergency shower shall be capable of discharging at least 20 gpm (1.3 L/s) of water at a moderate temperature and should be at pressures of 30 psi to 50 psi (210 kPa to 345 kPa).

58.4 Category III: Plants performing more complex operational, permit, industrial pretreatment and multiple plant laboratory testing

58.41. Location and Space

The laboratory should be located at the treatment site on ground level, with environmental control as an important consideration. It shall be isolated from vibrating, noisy, or high temperature machinery or equipment which might have adverse effects on the performance of laboratory staff or instruments.

The laboratory facility needs for Category III plants should be described in the Engineering Report or Facility Plan. The

laboratory floor space and facility layout should be based on an evaluation of the complexity, volume, and variety of sample analyses expected during the design life of the plant including testing for process control, industrial pretreatment control, user charge monitoring, and discharge permit monitoring requirements.

Consideration shall be given to the necessity to provide separate (and possibly isolated) areas for some special laboratory equipment, glassware, and chemical storage. The analytical and sample storage areas should be isolated from all potential sources of contamination. It is recommended that the organic chemical facilities be isolated from other facilities. Adequate security shall be provided for sample storage areas. Provisions for the proper storage and disposal of chemical wastes shall be made. At large plants, office and administrative space needs should be considered.

For less complicated laboratory needs bench-top working surface should occupy at least 35 percent of the total laboratory floor space. Additional floor and bench space should be provided to facilitate the performance of analysis of industrial wastes, as required by the discharge permit and the utility's industrial waste pretreatment program. Ceiling height should be adequate to allow for the installation of wall mounted water stills, deionizers, distillation racks, hoods, and other equipment with extended height requirements.

58.42 Floors and Doors

58.421 Floors

Floor surfaces should be fire resistant and highly resistant to acids, alkalis, solvents, and salts.

Floor surfaces should be a single color for ease of locating dropped items. The structural floor shall be concrete with no basement.

58.422 Doors

Two exit doors should be located to permit straight egress from the laboratory, preferably at least one to outside the building. Doors should have a minimum width of 36 inches (915 mm) and shall open in the direction of exit traffic. Panic hardware should be used. They should have large glass windows for easy visibility of approaching or departing personnel. Automatic door closers should be installed; swinging doors should not be used.

Flush hardware should be provided on doors if cart traffic is anticipated. Kick plates are also recommended.

58.43 Cabinets and Bench Tops

58.431 Cabinets

Wall-hung cabinets are recommended for dust-free storage of instruments and glassware. Units with sliding glass doors are recommended. A reasonable proportion of cupboard style base cabinets and drawer units should be provided. All cabinet shelving should be acid resistant and adjustable.

Drawers should slide out so that entire contents are easily visible. They should be provided with rubber bumpers and stops to prevent accidental removal. Drawers should be supported on ball bearings or nylon rollers which pull easily in adjustable steel channels. All metal drawer fronts should be double-wall construction.

The laboratory furniture shall be supplied with adequate water, gas, air, and vacuum service fixtures; traps, strainers, plugs, and tailpieces, and electrical service fixtures.

58.432 Bench Tops

Bench tops should be constructed of materials resistant to attacks from normally used laboratory reagents. Generally, bench-top height should be 36 inches (915 mm). However, areas to be used exclusively for sit-down type operations should be 30 inches (760 mm) high and include kneehole space. One-inch (25 mm) overhangs and drip grooves should be provided to keep liquid spills from running along the face of the cabinet. Tops should be furnished in large sections, 1¼ inches (32 mm) thick. They should be field joined into a continuous surface with acid, alkali, and solvent-resistant cements which are at least as strong as the material of which the top is made.

58.44 Hoods

58.441 General

Fume hoods to promote safety shall be provided for laboratories where required analytical work results in the production of noxious fumes. Canopy hoods over heat-releasing equipment shall be provided.

58.442 Fume Hoods

a. Location

Fume hoods should be located where air disturbance at the face of the hood is minimal. Air disturbance may be created by persons walking past

the hood; by heating, ventilating, or air-conditioning systems; by drafts from opening or closing a door; etc.

Safety factors should be considered in locating a hood. If a hood is situated near a doorway, a secondary means of egress shall be provided. Bench surfaces should be available next to the hood so that chemicals need not be carried long distances.

b. Design and Materials

The selection, design, and materials of construction of fume hoods and their appropriate safety alarms shall be made by considering the variety of analytical work to be performed. The characteristics of the fumes, chemicals, gases, or vapors that will or may be released by the activities therein should be considered. Special design and construction is necessary if perchloric acid use is anticipated. Consideration should be given to providing more than one fume hood to minimize potential hazardous conditions throughout the laboratory. Air intake should be balanced against all exhaust ventilation to maintain an overall positive pressure relative to atmospheric in the laboratory.

Fume hoods are not appropriate for operation of heat-releasing equipment that does not contribute to hazards, unless they are provided in addition to those needed to perform hazardous tasks.

c. Fixtures

One sink should be provided inside each fume hood. A cup sink is usually adequate.

All switches, electrical outlets, and utility and baffle adjustment handles should be located outside the hood. Light fixtures should be explosion-proof.

d. Exhaust

Twenty-four hour continuous exhaust capability should be provided. Exhaust fans should be explosion-proof. Exhaust velocities should be checked when fume hoods are installed.

58.443 Canopy Hoods

Canopy hoods should be installed over the bench-top areas where hot plate, steam bath, or other heating equipment or heat-releasing instruments are used. The

canopy should be constructed of heat and corrosion resistant material.

58.45 Sinks, Ventilation, and Lighting

58.451 Sinks

The laboratory should have a minimum of two sinks (not including cup sinks). At least one of them should be a double-well sink with drainboards. A sink dedicated to hand washing should be provided. Additional sinks should be provided in separate work areas as needed, and identified for the use intended.

Sinks and traps should be made of epoxy resin or plastic materials highly resistant to acids, alkalies, solvents, and salts, and should be abrasion and heat resistant, non-absorbent, and lightweight. Traps should be made of glass, plastic, or lead when appropriate and easily accessible for cleaning. Waste openings should be located toward the back so that a standing overflow will not interfere.

All water fixtures on which hoses may be used should be provided with reduced zone pressure backflow preventers to prevent contamination of water lines.

58.452 Ventilation

Laboratories should be separately air conditioned, with external air supply for one hundred percent make-up volume. In addition, separate exhaust ventilation should be provided. Ventilation outlet locations should be remote from ventilation inlets. Consideration should be given to providing dehumidifiers. Air intake should be balanced against all supply air that is exhausted to maintain an overall positive pressure in the laboratory relative to atmospheric and other pressurized areas of the building which could be the source of airborne contaminants.

58.453 Lighting

Good lighting, free from shadows, shall be provided for reading dials, meniscuses, etc., throughout the laboratory.

Consideration shall be given to the effects of radio frequency interference when selecting luminary ballasts for laboratories using delicate instruments.

58.46 Balance and Table

An analytical balance of the automatic, digital readout, single pan, 0.1 milligram sensitivity type shall be provided. A heavy special-

design balance table which will minimize vibration of the balance shall be provided. The table shall be located as far as practical from windows, doors, or other sources of drafts or air movements, so as to minimize undesirable impacts from these sources upon the balance.

58.47 Microscope

A binocular or trinocular microscope with a 20 watt halogen light source, phase contrast condenser, mechanical stage, 10x, 40x and 100x phase contrast objectives, wastewater reticule eyepiece and centering telescope is recommended for process control at activated sludge plants.

58.48 Equipment, Supplies, and Reagents

The laboratory shall be provided with all of the equipment, supplies, and reagents that are needed to carry out all of the facility's analytical testing requirements. Discharge permit, process control, and industrial waste monitoring requirements should be considered when specifying equipment needs. Composite samplers may be required to satisfy permit sampling requirements. References such as Standard Methods for the Examination of Water and Wastewater and the U.S.E.P.A. Analytical Procedures Manual should be consulted prior to specifying equipment items.

58.49 Utilities and Services

58.491 Power Supply

Consideration should be given to providing line voltage regulation for power supplied to laboratories using delicate instruments.

58.492 Laboratory Water

Reagent water of a purity suitable for analytical requirements shall be supplied to the laboratory. In general, reagent water prepared using an all glass distillation system is adequate. However, some analyses require deionization of the distilled water. Consideration should be given to softening and/or deionizing the feed water to the still.

58.493 Gas and Vacuum

Natural or LP gas should be supplied to the laboratory. Digester gas should not be used.

An adequately-sized line source of vacuum with outlets available throughout the laboratory should be provided.

58.50 Safety

58.501 Equipment

Laboratories shall provide, as a minimum, the following: first aid equipment; protective clothing and equipment (such as goggles, safety glasses, full face shields, gloves, etc.); fire extinguishers; chemical spill kits; "No Smoking" signs in hazardous areas; and appropriately placed warning signs for slippery areas, non-potable water fixtures, hazardous chemical storage areas, flammable fuel storage areas, etc.

58.502 Eyewash Fountains and Safety Showers

Eyewash fountains and safety showers utilizing potable water shall be provided in the laboratory. These facilities are to be as close as practical to work locations and shall be no more than 25 feet (7.6 m) from points of hazardous chemical exposure.

Each eyewash fountain shall be supplied with water of moderate temperature 50°F to 90°F (10 °C to 32 °C), suitable to provide 15 to 30 minutes of continuous irrigation of the eyes. Each emergency shower shall be capable of discharging at least 20 gpm (1.3 L/s) of water at moderate temperature and should be at pressures of 30 psi to 50 psi (210 kPa to 345 kPa).

CHAPTER 60
SCREENING, GRIT REMOVAL, AND FLOW EQUALIZATION

61. SCREENING DEVICES

61.1 Coarse Screens

61.11 Where Required

Protection for pumps and other equipment shall be provided by trash racks, coarse bar racks, or coarse screens.

61.12 Design and Installation

61.121 Bar Spacing

Clear openings between bars should be no less than 1 inch (25 mm) for manually cleaned screens. Clear openings for mechanically cleaned screens may be smaller. Maximum clear openings should be 1¾ inches (45 mm).

61.122 Slope and Velocity

Manually cleaned screens should be placed on a slope of 30 to 45 degrees from the horizontal. Mechanically cleaned screens should be placed on a slope of 45 to 90 degrees from the horizontal.

At design average flow conditions, approach velocities should be no less than 1.25 feet per second (0.4 m/s), to prevent settling; and no greater than 3.0 fps (0.9 m/s) to prevent forcing material through the openings.

61.123 Channels

Dual channels shall be provided and equipped with the necessary gates to isolate flow from any screening unit. Provisions shall be made to facilitate dewatering each unit. The channel preceding and following the screen shall be shaped to eliminate stranding and settling of solids.

61.124 Auxiliary Screens

Where a single mechanically cleaned screen is used, an auxiliary manually cleaned screen shall be provided. Where two or more mechanically cleaned screens are used, the design shall provide for taking any unit out of service without sacrificing the capability to handle the design peak instantaneous flows.

61.125 Invert

The screen channel invert should be 3 to 6 inches (75 mm to 150 mm) below the invert of the incoming sewer.

61.126 Flow Distribution

Entrance channels should be designed to provide equal and uniform distribution of flow to the screens.

61.127 Backwater Effect on Flow Metering

Flow measurement devices should be selected for reliability and accuracy. The effect of changes in backwater elevation due to intermittent cleaning of screens should be considered in locations of flow measurement equipment.

61.128 Freeze Protection

Screening devices and screening storage areas shall be protected from freezing.

61.129 Screenings Removal and Disposal

A convenient and adequate means for removing screenings shall be provided. Hoisting or lifting equipment may be necessary depending on the depth of pit and amount of screenings or equipment to be lifted.

Facilities shall be provided for handling, storage, and disposal of screenings in a manner acceptable to the regulatory agency. Separate grinding of screenings and return to the wastewater flow is unacceptable.

Manually cleaned screening facilities shall include an accessible platform from which the operator may rake screenings easily and safely. Suitable drainage facilities shall be provided for both the platform and the screenings storage area.

61.13 Access and Ventilation

Screens located in pits more than 4 feet (1.2 m) deep shall be provided with stairway access. Access ladders are acceptable for pits less than 4 feet (1.2 m) deep, in lieu of stairways.

Screening devices, installed in a building where other equipment or offices are located, shall be isolated from the rest of the building, be provided with separate outside entrances, and be provided with separate and independent fresh air supply.

Fresh air shall be forced into enclosed screening device areas or open pits more than 4 feet (1.2 m) deep. Dampers should not be

used on exhaust or fresh air ducts and fine screens or other obstructions should be avoided to prevent clogging. Where continuous ventilation is required, at least 12 complete air changes per hour shall be provided. Where continuous ventilation would cause excessive heat loss, intermittent ventilation of at least 30 complete air changes per hour shall be provided when personnel enter the area. The air change requirements shall be based on 100 percent fresh air.

Switches for operation of ventilation equipment should be marked and conveniently located. All intermittently operated ventilation equipment shall be interconnected with the respective pit lighting system. The fan wheel shall be fabricated from non-sparking material. Explosion proof gas detectors shall be provided in accordance with Section 57.

61.14 Safety and Shields

61.141 Railings and Gratings

Manually cleaned screen channels shall be protected by guard railings and deck gratings, with adequate provisions for removal or opening to facilitate raking.

Mechanically cleaned screen channels shall be protected by guard railings and deck gratings. Consideration should also be given to temporary access arrangements to facilitate maintenance and repair.

61.142 Mechanical Devices

Mechanical screening equipment shall have adequate removable enclosures to protect personnel against accidental contact with moving parts and to prevent dripping in multi-level installations.

A positive means of locking out each mechanical device and temporary access for use during maintenance shall be provided.

61.143 Drainage

Floor design and drainage shall be provided to prevent slippery areas.

61.144 Lighting

Suitable lighting shall be provided in all work and access areas. Refer to Paragraph 61.152.

61.15 Electrical Equipment and Control Systems

61.151 Timing Devices

All mechanical units that are operated by timing devices shall be provided with auxiliary controls that will set the cleaning mechanism in operation at a preset high water elevation. If the cleaning mechanism fails to lower the high water, a warning should be signaled.

61.152 Electrical Equipment, Fixtures and Controls

Electrical equipment, fixtures and controls in the screening area where hazardous gases may accumulate shall meet the requirements of the National Electrical Code for Class I, Division 1, Group D locations.

61.153 Manual Override

Automatic controls shall be supplemented by a manual override.

61.2 Fine Screens

61.21 General

Fine screens, as discussed in this Paragraph, have openings of approximately 1/16 inch (2 mm). The amount of material removed by fine screens is dependent on the waste stream being treated and screen opening size.

Fine screens should not be considered equivalent to primary sedimentation. However, they may be used in lieu of primary sedimentation where subsequent treatment units are designed on the basis of anticipated screen performance. Selection of screen capacity should consider flow restriction due to retained solids, gummy materials, frequency of cleaning, and extent of cleaning. Where fine screens are used, additional provision for removal of floatable oils and greases shall be considered.

61.22 Design

Tests should be conducted to determine BOD_5 and suspended solids removal efficiencies at the design maximum day flow and design maximum day BOD_5 loadings. Pilot testing for an extended time is preferred.

A minimum of two fine screens shall be provided with each unit being capable of independent operation. Capacity shall be provided to treat design peak instantaneous flow with one unit out of service.

Fine screens shall be preceded by a coarse bar screening device, shall be protected from freezing, and shall be located to facilitate

maintenance.

61.23 Electrical Equipment, Fixtures and Control

Electrical equipment, fixtures and controls in the screening area where hazardous gases may accumulate shall meet the requirements of the National Electrical Code for Class I, Division 1, Group D locations.

61.24 Servicing

Hosing equipment shall be provided to facilitate cleaning. Provision shall be made for isolating and removing units from their location for servicing.

62. COMMINUTORS

62.1 General

Provisions for access, ventilation, shields, and safety shall be in accordance with Paragraphs 61.13, 61.14, and 61.15.

62.2 When Used

Comminutors may be used in lieu of screening devices to protect equipment where stringy substance accumulation on downstream equipment will not be a substantial problem.

62.3 Design Considerations

62.31 Location

Comminutors should be located downstream of grit removal equipment and be protected by a coarse screening device. Comminutors not preceded by grit removal equipment shall be protected by a 6 inch (150 mm) deep gravel trap.

62.32 Size

Comminutor capacity shall be adequate to handle design peak hourly flow.

62.33 Installation

A screened bypass channel shall be provided. The use of the bypass channel should be automatic for all comminutor failures.

Gates shall be provided in accordance with Paragraphs 61.123 and 61.124.

62.34 Servicing

Provisions shall be made to facilitate servicing units in place and to remove units from their location for servicing.

62.35 Electrical Controls and Motors

Electrical equipment in comminutor chambers where hazardous gases may accumulate shall meet the requirements of the National Electrical Code for Class I, Division 1, Group D locations. Motors shall be protected against accidental submergence.

63 GRIT REMOVAL FACILITIES

63.1 When Required

Grit removal facilities should be provided for all wastewater treatment plants, and are required for plants receiving wastewater from either combined sewers or from sewer systems receiving substantial amounts of grit. If a plant serving a separate sewer system is designed without grit removal facilities, the design shall include provision for future installation. Consideration shall be given to possible damaging effects on pumps, comminutors, and other preceding equipment, and the need for additional storage capacity in treatment units where grit is likely to accumulate.

63.2 Location

63.21 General

Grit removal facilities should be located ahead of pumps and comminuting devices. Coarse bar racks should be placed ahead of grit removal facilities.

63.22 Housed Facilities

63.221 Ventilation

Refer to Paragraph 61.13. Fresh air shall be introduced continuously at a rate of at least 12 air changes per hour, or intermittently at a rate of at least 30 air changes per hour. Odor control facilities may also be warranted.

63.222 Access

Adequate stairway access to above or below grade facilities shall be provided.

63.223 Electrical

Electrical equipment in enclosed grit removal areas where hazardous gases may accumulate shall meet the requirements of the National Electrical Code for Class I, Division 1, Group D locations. Explosion proof gas detectors shall be provided in accordance with Section 57.

63.23 Outside Facilities

Grit removal facilities located outside shall be protected from freezing.

63.3 Type and Number of Units

Plants treating waste from combined sewers should have at least two mechanically cleaned grit removal units, with provisions for bypassing. A single manually cleaned or mechanically cleaned grit chamber with bypass is acceptable for small wastewater treatment plants serving separate sanitary sewer systems. Facilities for larger plants serving separate sanitary sewers should have at least one mechanically cleaned unit with a bypass.

Facilities other than channel-type shall be provided with adequate and flexible controls for velocity and/or air supply devices and with grit collection and removal equipment. Aerated grit chambers should have air rates adjustable in the range of 3 to 8 cubic feet per minute per foot [4.7 L/(m·s) to 12.4 L/(m·s)] of tank length. Detention time in the tank should be in the range of 3 to 5 minutes at design peak hourly flows. Vortex-type grit chambers may also be considered.

63.4 Design Factors

63.41 General

The design effectiveness of a grit removal system shall be commensurate with the requirements of the subsequent process units.

63.42 Inlet

Inlet turbulence shall be minimized in channel-type units.

63.43 Velocity and Detention

Channel-type chambers shall be designed to control velocities during normal variations in flow as close as possible to 1 foot per second (0.3 m/s). The detention period shall be based on the size of particle to be removed. All aerated grit removal facilities should be provided with adequate control devices to regulate air supply and agitation.

63.44 Grit Washing

The need for grit washing should be determined by the method of grit handling and final disposal.

63.45 Dewatering

Provision shall be made for isolating and dewatering each unit. The design shall provide for complete draining and cleaning by means of a sloped bottom equipped with a drain sump.

63.46 Water

An adequate supply of water under pressure shall be provided for cleanup.

63.47 Grit Handling

Grit removal facilities located in deep pits should be provided with mechanical equipment for hoisting or transporting grit to ground level. Impervious, non-slip, working surfaces with adequate drainage shall be provided for grit handling areas. Grit transporting facilities shall be provided with protection against freezing and loss of material.

64. PREAERATION

Preaeration of wastewater to reduce septicity may be required in special cases.

65. FLOW EQUALIZATION

65.1 General

The use of flow equalization should be considered where significant variations in organic and hydraulic loadings are expected. The reviewing authority should be contacted for design requirements when wet weather storage facilities are considered. See also Paragraph 53.413.

65.2 Location

Equalization basins should be located downstream of pretreatment facilities such as bar screens, comminutors, and grit chambers.

65.3 Type

Flow equalization can be provided by using separate basins or on-line treatment units, such as aeration tanks. Equalization basins may be designed as either in-line or side-line units. Unused treatment units, such as sedimentation or aeration tanks, may be utilized as equalization basins during the early period of design life.

65.4 Size

Equalization basin capacity should be sufficient to effectively reduce expected flow and load variations to the extent deemed to be economically advantageous. With a diurnal flow pattern, the volume required to achieve the desired degree of equalization can be determined from a cumulative flow plot over a representative 24-hour period.

65.5 Operation

65.51 Mixing

Aeration or mechanical equipment shall be provided to maintain

adequate mixing. Corner fillets and hopper bottoms with draw-offs should be provided to alleviate the accumulation of sludge and grit.

65.52 Aeration

Aeration equipment shall be sufficient to maintain a minimum of 1.0 mg/L of dissolved oxygen in the mixed basin contents at all times. Air supply rates should be a minimum of 1.25 cfm/1000 gal [0.16 L/(m^3·s)] of storage capacity. The air supply should be isolated from other treatment plant aeration requirements to facilitate process aeration control, although process air supply equipment may be utilized as a source of standby aeration.

65.53 Controls

Inlets and outlets for all basin compartments shall be suitably equipped with accessible external valves, stop plates, weirs, or other devices to permit flow control and the removal of an individual unit from service. Facilities shall also be provided to measure and indicate liquid levels and flow rates.

65.6 Electrical

All electrical work in housed equalization basins, where hazardous concentrations of flammable gases or vapors may accumulate, shall meet the requirements of the National Electrical Code for Class I, Division 1, Group D locations.

65.7 Access

Suitable access shall be provided to facilitate cleaning and the maintenance of equipment.

CHAPTER 70
SETTLING

71. GENERAL

71.1 Number of Units

Multiple settling units capable of independent operation are desirable and shall be provided in all plants where design average flows exceed 100,000 gallons/day (380 m^3/d). Plants not having multiple settling units shall include other provisions to assure continuity of treatment.

71.2 Flow Distribution

Effective flow splitting devices and control appurtenances (i.e., gates, splitter boxes, etc.) shall be provided to permit proper proportioning of flow and solids loading to each settling unit, throughout the expected range of flows. Refer to Paragraph 53.7.

72. DESIGN CONSIDERATIONS

72.1 Dimensions

The minimum length of flow from inlet to outlet shall be 10 feet (3 m) unless special provisions are made to prevent short circuiting. The vertical side water depths shall be designed to provide an adequate separation zone between the sludge blanket and the overflow weirs. The minimum side water depths shall be as follows:

Type of Settling Tank	Minimum Side Water Depth ft (m)
Primary	10 (3.0)
Secondary tank following activated sludge process*	12 (3.7)
Secondary tank following attached growth biological reactor*	10 (3.0)

* Greater side water depths are recommended for secondary clarifiers in excess of 4,000 square feet (372 m^2) surface area [equivalent to 70 feet (21 m) diameter]. Side water depths less than 12 feet (3.7 m) may be permitted for package plants with a design average flow less than 25,000 gallons per day (95 m^3/d), if justified based on successful operating experience.

72.2 Surface Overflow Rates

72.21 Primary Settling Tanks

Primary settling tank sizing should reflect the degree of solids removal needed and the need to avoid septic conditions during low flow periods. Sizing shall be calculated for both the design average and design peak hourly flow conditions, and the larger surface area determined shall be used. The following surface overflow rates should not be exceeded in the design:

Type of Primary Settling Tank	Surface Overflow Rates at: *	
	Design Average Flow gpd/ft^2 [m^3/(m^2·d)]	Design Peak Hourly Flow gpd/ft^2 [m^3/(m^2·d)]
Tanks not receiving waste activated sludge **	1,000 (41)	1,500 - 2,000 (61-81)
Tanks receiving waste activated sludge	700 (29)	1,200 (49)

* Surface overflow rates shall be calculated with all flows received at the settling tanks. Primary settling of normal domestic wastewater can be expected to remove approximately one-third of the influent BOD when operating at an overflow rate of 1,000 gallons per day/square foot [41 m^3/(m^2·d)].

** Anticipated BOD removal should be determined by laboratory tests and should consider the character of the wastes. Significant reduction in BOD removal efficiency will result when the peak hourly overflow rate exceeds 1,500 gallons per day/square foot [61 m^3/(m^2·d)].

72.22 Intermediate Settling Tanks

Surface overflow rates for intermediate settling tanks following series units of fixed film reactor processes should not exceed 1,200 gallons per day per square foot [49 m^3/(m^2·d)] based on the design peak hourly flow. Higher surface settling rates to 1,500 gallons per day per square foot [61 m^3/(m^2·d)] based on the design peak hourly flow may be permitted if such rates are shown to have no adverse effects on subsequent treatment units.

72.23 Final Settling Tanks

Settling tests shall be conducted wherever a pilot study of biological treatment is warranted by unusual waste characteristics, treatment requirements, or where proposed loadings go beyond the limits set forth in this Section.

72.231 Final Settling Tanks - Attached Growth Biological Reactors

Surface overflow rates for settling tanks following trickling filters or rotating biological contactors shall not exceed 1,200 gallons per day per square foot [49 $m^3/(m^2 \cdot d)$] based on the design peak hourly flow.

72.232 Final Settling Tanks - Activated Sludge

To perform properly while producing a concentrated return flow, activated sludge settling tanks shall be designed to meet thickening and solids separation requirements. Since the rate of recirculation of return sludge from the final settling tanks to the aeration or reaeration tanks is quite high in activated sludge processes, the surface and weir overflow rates should be adjusted for the various processes to minimize the problems with sludge loadings, density currents, inlet hydraulic turbulence, and occasional poor sludge settleability. The size of the settling tank shall be based on the larger of the surface areas determined for surface overflow rate and solids loading rate. The following design criteria shall not be exceeded:

Treatment Process	Surface Overflow Rate at Design Peak Hourly Flow* gpd/ft^2 [$m^3/(m^2 \cdot d)$]	Peak Solids Loading Rate*** lb/day/ft^2 [$kg/(m^2 \cdot d)$]
Conventional, Step Aeration, Complete Mix, Contact Stabilization, Carbonaceous Stage of Separate Stage Nitrification	1,200** (49)	40 (195)
Extended Aeration Single Stage Nitrification	1,000 (41)	35 (171)
2 Stage Nitrification	800 (33)	35 (171)
Activated Sludge with Chemical addition to Mixed Liquor for Phosphorus Removal	900**** (37)	As Above

* Based on influent flow only.

** Plants needing to meet 20 mg/L suspended solids should reduce the surface overflow rate to 1,000 gallons per day per square foot [41 $m^3/(m^2 \cdot d)$].

*** The clarifier peak solids loading rate shall be calculated based on the design maximum day flow rate plus the design maximum return sludge rate requirement and the design MLSS under aeration.

**** When phosphorus removal to a concentration of less than 1.0 mg/L is required.

72.3 Inlet Structures

Inlets and baffling shall be designed to dissipate the inlet velocity, to distribute the flow equally, both horizontally and vertically, and to prevent short circuiting. Provision of flocculation zones shall be considered for secondary settling tanks. Channels shall be designed to maintain a velocity of at least 1 foot per second (0.3 m/s) at one-half of the design average flow. Corner pockets and dead ends shall be eliminated and corner fillets or channeling shall be used where necessary. Provisions shall be made for the elimination or removal of floating materials that may accumulate in inlet structures.

72.4 Weirs

72.41 General

Overflow weirs shall be readily adjustable over the life of the structure to correct for differential settlement of the tank.

72.42 Location

Overflow weirs shall be located to optimize actual hydraulic detention time, and minimize short circuiting. Peripheral weirs shall be placed at least 1 foot (0.3 m) from the wall.

72.43 Design Rates

Weir loadings shall not exceed:

Average Plant Capacity	Loading Rate at Design Peak Hourly Flow gpd/lin ft [$m^3/(m \cdot d)$]
equal to or less than 1 mgd (3785 m^3/d)	20,000 (250)
greater than 1 mgd (3785 m^3/d)	30,000 (375)

If pumping is required, the pumps shall be operated as continuously as possible. Also, weir loadings should be related to pump delivery rates to avoid short circuiting.

72.44 Weir Troughs

Weir troughs shall be designed to prevent submergence at design peak hourly flow, and to maintain a velocity of at least 1 foot per second (0.3 m/s) at one-half design average flow.

72.5 Submerged Surface

The tops of troughs, beams, and similar submerged construction elements shall have a minimum slope of 1.4 vertical to 1 horizontal. The underside of such elements shall have a slope of 1 to 1 to prevent the accumulation of scum and solids.

72.6 Unit Dewatering

Unit dewatering features shall conform to the provisions outlined in Paragraph 54.3. The bypass design shall provide for distribution of the plant flow to the remaining settling units.

72.7 Freeboard

Walls of settling tanks shall extend at least 6 inches (150 mm) above the surrounding ground surface and shall provide not less than 12 inches (300 mm) of freeboard. Additional freeboard or the use of wind screens is recommended where larger settling tanks are subject to high velocity wind currents that would cause tank surface waves and inhibit effective scum removal.

73. SLUDGE AND SCUM REMOVAL

73.1 Scum Removal

Full surface mechanical scum collection and removal facilities, including baffling, shall be provided for all settling tanks. The unusual characteristics of scum that may adversely affect pumping, piping, sludge handling and disposal shall be recognized in the design. Provisions shall be made to remove scum from the wastewater treatment process and direct it to either a scum concentrator or to the sludge treatment process. Other special provisions for scum disposal may be necessary.

73.2 Sludge Removal

Mechanical sludge collection and withdrawal facilities shall be designed to assure rapid removal of the sludge. Suction withdrawal should be provided for activated sludge clarifiers over 60 feet (18 m) in diameter, especially for activated sludge plants that nitrify.

Each settling tank shall have independent sludge withdrawal lines to ensure adequate control of sludge wasting rates for each tank.

73.21 Sludge Hopper

The minimum slope of the side walls shall be 1.7 vertical to 1 horizontal. Hopper wall surfaces should be made smooth with rounded corners to aid in sludge removal. Hopper bottoms shall have a maximum dimension of 2 feet (0.6 m). Sludge hoppers with extra depth for sludge thickening are not acceptable.

73.22 Cross-Collectors

Cross-collectors serving one or more settling tanks may be useful in place of multiple sludge hoppers.

73.23 Sludge Removal Pipeline

Each sludge hopper shall have an individually valved sludge withdrawal line at least 6 inches (150 mm) in diameter. The static head available for the withdrawal of sludge shall be 30 inches (760 mm) or greater as necessary to maintain a 3 foot per second (0.9 m/s) velocity in the withdrawal pipe. Clearance between the end of the withdrawal line and the hopper walls shall be sufficient to prevent "bridging" of the sludge. Adequate provisions shall be made for rodding or back-flushing individual pipe runs. Provisions shall be made to allow for visual confirmation of return sludge. Piping shall be provided to return sludge for further processing.

73.24 Sludge Removal Control

Separate settling tank sludge lines may drain to a common sludge well.

Sludge wells equipped with telescoping valves or other appropriate equipment shall be provided for viewing, sampling, and controlling the rate of sludge withdrawal. A means of measuring the sludge removal rate shall be provided. Air-lift sludge removal will not be approved for the removal of primary sludges.

74. PROTECTIVE AND SERVICE FACILITIES

74.1 Operator Protection

All settling tanks shall be equipped to enhance safety for operators. Safety features shall appropriately include machinery covers, life lines, stairways, walkways, handrails, and slip resistant surfaces.

74.2 Mechanical Maintenance Access

The design shall provide for convenient and safe access to routine maintenance items such as gear boxes, scum removal mechanisms, baffles, weirs, inlet stilling baffle areas, and effluent channels.

74.3 Electrical Equipment, Fixtures and Controls

Electrical equipment, fixtures and controls in enclosed settling basins and scum tanks, where hazardous concentrations of flammable gases or vapors may accumulate, shall meet the requirements of the National Electrical Code for Class I, Division 1, Group D locations.

The fixtures and controls shall be located so as to provide convenient and safe access for operation and maintenance. Adequate area lighting shall be provided.

CHAPTER 80
SLUDGE PROCESSING, STORAGE, AND DISPOSAL

81. GENERAL

Facilities for processing sludge shall be provided at all mechanical wastewater treatment plants. Handling equipment shall be capable of processing sludge to a form suitable for ultimate disposal unless provisions acceptable to the regulatory agency are made for processing the sludge at an alternate location.

The reviewing authority should be contacted if sludge unit processes not described in this Chapter are being considered or are necessary to meet state, provincial, or federal sludge disposal requirements.

82. PROCESS SELECTION

The selection of sludge handling unit processes should be based, at a minimum, upon the following considerations:

a. Local land use;

b. System energy requirements;

c. Cost effectiveness of sludge thickening and dewatering;

d. Equipment complexity and staffing requirements;

e. Adverse effects of heavy metals and other sludge components upon the unit processes;

f. Sludge digestion or stabilization requirements, including appropriate pathogen and vector attraction reduction;

g. Side stream or return flow treatment requirements (e.g., digester or sludge storage facilities supernatant, dewatering unit filtrate, wet oxidation return flows);

h. Sludge storage requirements;

i. Methods of ultimate disposal; and

j. Back-up techniques of sludge handling and disposal.

83. SLUDGE THICKENERS

83.1 Design Considerations

Sludge thickeners to reduce the volume of sludge should be considered. The design of thickeners (gravity, dissolved-air flotation, centrifuge, and others) should consider the type and concentration of sludge, the sludge stabilization processes, storage requirements, the method of ultimate sludge disposal, chemical needs, and the cost of operation.

The use of gravity thickening tanks for unstabilized sludges is not recommended because of problems due to septicity unless provisions are made for adequate control of process operational problems and odors at the gravity thickener and any following unit processes.

Particular attention should be given to the pumping and piping of the concentrated sludge and possible onset of anaerobic conditions.

83.2 Prototype Studies

Process selection and unit process design parameters should be based on prototype studies. The reviewing authority will require such studies where the sizing of other plant units is dependent on thickener performance. Refer to Paragraph 53.2 for any new process determination.

84. ANAEROBIC SLUDGE DIGESTION

84.1 General

84.11 Multiple Units

Multiple units or alternate methods of sludge processing shall be provided. Facilities for sludge storage and supernatant separation in an additional unit may be required, depending on raw sludge concentration and disposal methods for sludge and supernatant.

84.12 Depth

If process design provides for supernatant withdrawal, the proportion of depth to diameter should allow for the formation of a reasonable depth of supernatant liquor. A minimum side water depth of 20 feet (6.1 m) is recommended.

84.13 Design Maintenance Provisions

To facilitate emptying, cleaning, and maintenance, the following features are desirable:

84.131 Slope

The tank bottom shall slope to drain toward the withdrawal pipe. For tanks equipped with a suction mechanism for sludge withdrawal, a bottom slope not less than 1 to 12 should be provided. Where the sludge is to be removed by gravity alone, the slope should be 1 to 4.

84.132 Access Manholes

At least 2 access manholes not less than 30 inches (760 mm) in diameter should be provided in the top of the tank, in addition to the gas dome. Stairways to reach the access manholes should be provided.

A separate side wall manhole shall be provided that is large enough to permit the use of mechanical equipment to remove grit and sand. The side wall access manhole should be low enough to facilitate heavy equipment handling and may be buried in the earthen bank insulation.

84.133 Safety

Non-sparking tools, rubber-soled shoes, safety harness, gas detectors for flammable and toxic gases, and at least two self-contained breathing units, as described in Paragraph 102.56, shall be provided for emergency use. Refer to other safety items as appropriate in Section 57.

84.14 Toxic Materials

If the anaerobic digestion process is proposed, the basis of design shall be supported by wastewater analyses to determine the presence of undesirable materials, such as high concentrations of sulfates or inhibitory concentrations of heavy metals.

84.2 Sludge Inlets, Outlets, Recirculation, and High Level Overflow

84.21 Multiple Inlets and Draw-Offs

Multiple sludge inlets and draw-offs and, where used, multiple recirculation suction and discharge points to facilitate flexible operation and effective mixing of the digester contents shall be provided unless adequate mixing facilities are provided within the digester.

84.22 Inlet Configurations

One inlet should discharge above the liquid level and be located at approximately the center of the tank to assist in scum breakup. The second inlet should be opposite to the suction line at approximately the 2/3 diameter point across the digester.

84.23 Inlet Discharge Location

Raw sludge inlet discharge points should be so located as to minimize short circuiting to the digested sludge or supernatant draw-offs.

84.24 Sludge Withdrawal

Sludge withdrawal to disposal should be from the bottom of the tank. The bottom withdrawal pipe should be interconnected with the necessary valving to the recirculation piping to increase operational flexibility when mixing the tank contents.

84.25 Emergency Overflow

An unvalved vented overflow shall be provided to prevent damage to the digestion tank and cover in case of accidental overfilling. This emergency overflow shall be piped to an appropriate point and at an appropriate rate in the treatment process or sidestream treatment facilities to minimize the impact on process units.

84.3 Tank Capacity

84.31 Rational Design

The total digestion tank capacity shall be determined by rational calculations based upon factors such as: volume of sludge added, percent solids, and character; the temperature to be maintained in the digesters; the degree or extent of mixing to be obtained; the degree of volatile solids reduction required; the solids retention time at peak loadings; method of sludge disposal; and the size of the installation with appropriate allowances for gas, scum, supernatant, and digested sludge storage. Secondary digesters of two-stage series digestion systems which are utilized for digested sludge storage and concentration shall not be credited in the calculations for volumes required for sludge digestion. Calculations should be submitted to justify the basis of design.

84.32 Standard Design

When such calculations are not submitted to justify the design based on the above factors, the minimum digestion tank capacity shall be as outlined below. These requirements assume that the raw sludge is derived from ordinary domestic wastewater, a digestion temperature is to be maintained in the range of 85°F to 95°F (29 °C to 35 °C), 40 to 50 percent volatile matter in the digested sludge, and that the digested sludge will be removed frequently from the process. (See also Paragraphs 84.11 and 89.11.)

84.321 Completely Mixed Systems

For digestion systems providing for intimate and effective mixing of the digester contents, the system may be loaded up to 80 pounds of volatile solids per 1000 cubic feet of volume per day [1.3 kg/(m^3·d)] in the active digestion units.

84.322 Moderately Mixed Systems

For digestion systems where mixing is accomplished only by circulating sludge through an external heat exchanger, the system may be loaded up to 40 pounds of volatile solids per 1000 cubic feet of volume per day [0.65 kg/(m^3·d)] in the active digestion units. This loading may be modified upward or downward depending upon the degree of mixing provided.

84.323 Multistage Systems

For digestion systems utilizing two stages (primary and secondary units), the first stage (primary) may be either completely mixed or moderately mixed and loaded in accordance with Paragraphs 84.321 or 84.322. The second stage (secondary) shall be designed for sludge storage, concentration, and gas collection and shall not be credited in the calculations for volumes required for sludge digestion.

84.324 Digester Mixing

Facilities for mixing the digester contents shall be provided where required for proper digestion by reason of loading rates or other features of the system. Where sludge recirculation pumps are used for mixing they shall be provided in accordance with appropriate requirements of Paragraph 87.1.

84.4 Gas Collection, Piping, and Appurtenances

84.41 General

All portions of the gas system, including the space above the tank, liquor, storage facilities, and piping shall be so designed that under all normal operating conditions, including sludge withdrawal, the gas will be maintained under pressure. All enclosed areas where any gas leakage might occur shall be adequately ventilated.

84.42 Safety Equipment

All necessary safety facilities shall be included where gas is produced. Pressure and vacuum relief valves and flame traps together with automatic safety shut off valves shall be provided and shall be protected from freezing. Water seal equipment shall not be installed. Safety equipment and gas compressors should be housed in a separate room with an exterior door.

84.43 Gas Piping and Condensate

Gas piping shall have a minimum diameter of 4 inches (100 mm). A smaller diameter pipe at the gas production meter is acceptable. Gas piping shall slope to condensation traps at low points. Float-controlled condensate traps shall not be used. Condensation traps shall be protected from freezing.

Tightly fitted self-closing doors should be provided at connecting passageways and tunnels that connect digestion facilities to other facilities to minimize the spread of gas. Piping galleries shall be ventilated in accordance with Paragraph 84.47.

84.44 Gas Utilization Equipment

Gas burning boilers, engines, etc., shall be located in well-ventilated rooms. Such rooms would not ordinarily be classified as a hazardous location if isolated from the digestion gallery. Gas lines to these units shall be provided with suitable flame traps.

84.45 Electrical Equipment, Fixtures, and Controls

Electrical equipment, fixtures and controls, in places enclosing and adjacent to anaerobic digestion appurtenances, where hazardous gases may accumulate shall comply with the National Electric Code for Class I, Division 1, Group D locations.

84.46 Waste Gas

84.461 Location

Waste gas burners shall be readily accessible and should be located at least 50 feet (15 m) away from any plant structure. Waste gas burners shall be of sufficient height and so located to prevent injury to personnel due to wind or downdraft conditions.

84.462 Pilot Light

All waste gas burners shall be equipped with automatic ignition such as a pilot light or a device using a photoelectric cell sensor. Consideration should be given to the use of natural or propane gas to ensure reliability of the pilot.

84.463 Gas Piping Slope

Gas piping shall be sloped at a minimum of 2 percent up to the waste gas burner with a condensate trap provided in a location not subject to freezing.

84.47 Ventilation

Any underground enclosures connecting with digestion tanks or containing sludge or gas piping or equipment shall be provided with forced ventilation for dry wells in accordance with Paragraphs 42.71 through 42.74 and 42.76. The ventilation rate for Class I, Division 2, Group D locations including enclosed areas without a gas tight partition from the digestion tank or areas containing gas compressors, sediment traps, drip traps, gas scrubbers, or pressure regulating and control valves, if continuous, shall be at least 12 complete air changes per hour.

84.48 Meter

A gas meter with bypass shall be provided to meter total gas production for each active digestion unit. Total gas production for

two-stage digestion systems operated in series may be measured by a single gas meter with proper interconnected gas piping.

Where multiple primary digestion units are utilized with a single secondary digestion unit, a gas meter shall be provided for each primary digestion unit. The secondary digestion unit may be interconnected with the gas measurement unit of one of the primary units. Interconnected gas piping shall be properly valved with gas tight gate valves to allow measurement of gas production from either digestion unit and maintenance of either digestion unit.

Gas meters may be of the orifice plate, turbine or vortex type. Positive displacement meters should not be utilized. The meter shall be specifically designed for contact with corrosive and dirty gases.

84.5 Digestion Tank Heating

84.51 Insulation

Wherever possible digestion tanks should be constructed above groundwater level and shall be suitably insulated to minimize heat loss. Maximum utilization of earthen bank insulation should be used.

84.52 Heating Facilities

Sludge may be heated by circulating the sludge through external heaters or by units located inside the digestion tank. Refer to Paragraph 84.522.

84.521 External Heating

Piping shall be designed to provide for the preheating of feed sludge before introduction into the digesters. Provisions shall be made in the layout of the piping and valving to facilitate heat exchanger tube removal and cleaning of the lines. Heat exchanger sludge piping should be sized for peak heat transfer requirements. Heat exchangers should have a heating capacity of 130 percent of the calculated peak heating requirement to account for the occurrence of sludge tube fouling.

84.522 Other Heating Methods

a. Hot water heating coils affixed to the walls of the digester or other types of internal heating equipment that require emptying the digester contents for repair shall not be used.

b. Other systems and devices have been developed recently to provide both mixing and heating of anaerobic digester contents. These systems will be reviewed on their own merits. Operating data

detailing their reliability, operation, and maintenance characteristics will be required. Refer to Paragraph 53.2.

84.53 Heating Capacity

84.531 Capacity

Sufficient heating capacity shall be provided to consistently maintain the design sludge temperature, considering insulation provisions and ambient cold weather conditions. Where digestion tank gas is used for other purposes, an auxiliary fuel may be required. The design operating temperature should be in the range of 85°F to 100°F (29 °C to 38 °C) where optimum mesophilic digestion is required.

84.532 Standby Requirements

The provision of standby heating capacity or the use of multiple units sized to provide the heating requirements shall be considered, unless acceptable alternative means of handling raw sludge are provided for the extended period that a digestion process outage is experienced due to heat loss.

84.54 Hot Water Internal Heating Controls

84.541 Mixing Valves

A suitable automatic mixing valve shall be provided to temper the boiler water with return water so that the inlet water to the removable heat jacket or coil in the digester can be held below a temperature at which caking will be accentuated. Manual control should also be provided by suitable bypass valves.

84.542 Boiler Controls

The boiler should be provided with suitable automatic controls to maintain the boiler temperature at approximately 180°F (82 °C) to minimize corrosion and to shut off the main gas supply in the event of pilot burner or electrical failure, low boiler water level, low gas pressure, or excessive boiler water temperature or pressure.

84.543 Boiler Water Pumps

Boiler water pumps shall be sealed and sized to meet the operating conditions of temperature, operating head, and flow rate. Duplicate units shall be provided.

84.544 Thermometers

Thermometers shall be provided to show inlet and outlet temperatures of the sludge, hot water feed, hot water return, and boiler water.

84.545 Water Supply

The chemical quality should be checked for suitability for use as a water supply. Refer to Paragraph 56.23 for required break tank for indirect water supply connections.

84.55 External Heater Operating Controls

All controls necessary to ensure effective and safe operation are required. Provision for duplicate units in critical elements should be considered.

84.6 Supernatant Withdrawal

Where supernatant separation is to be used to concentrate sludge in the digester units and increase digester solids retention time, the design shall provide for ease of operation and positive control of supernatant quality.

84.61 Piping Size

Supernatant piping should not be less than 6 inches (150 mm) in diameter.

84.62 Withdrawal Arrangements

84.621 Withdrawal Levels

Supernatant withdrawal piping should be arranged so that withdrawal can be made from three or more levels in the tank. An unvalved vented overflow shall be provided. The emergency overflow shall be piped to an appropriate point and at an appropriate rate in the treatment process or side stream treatment units to minimize the impact on process units.

84.622 Withdrawal Selection

On fixed cover tanks, the supernatant withdrawal level should be selected by means of interchangeable extensions at the discharge end of the piping.

84.623 Supernatant Selector

A fixed screen supernatant selector or similar type device shall be limited for use in an unmixed secondary digestion unit. If such a supernatant selector is provided, provisions shall be made for at least one other draw-off level located in the supernatant zone of the tank, in

addition to the unvalved emergency supernatant draw-off pipe. High pressure back-wash facilities shall be provided.

84.63 Sampling

Provision shall be made for sampling at each supernatant draw-off level. Sampling pipes should be at least 1½ inches (40 mm) in diameter and should terminate at a suitably sized sampling sink or basin.

84.64 Supernatant Disposal

Supernatant return and disposal facilities should be designed to alleviate adverse hydraulic and organic effects on plant operations. If nutrient removal (e.g., phosphorus, ammonia nitrogen) must be accomplished at a plant, a separate supernatant side stream treatment system should be provided.

84.7 Anaerobic Digestion Sludge Production

For calculating design sludge handling and disposal needs, sludge production values from a two-stage anaerobic digestion process shall be based on a maximum solids concentration of 5 percent without additional thickening. The solids production values on a dry weight basis shall be based on the following for the listed processes:

Primary plus waste activated sludge - at least 0.12 lb/P.E./day [0.05 kg/(P.E.·d)].

Primary plus fixed film sludge - at least 0.09 lb/P.E./day [0.04 kg/(P.E.·d)].

85. AEROBIC SLUDGE DIGESTION

85.1 General

An aerobic sludge digestion system shall include provisions for digestion, supernatant separation, sludge concentration, and any necessary sludge storage. These provisions may be accomplished by separate tanks or processes or in the digestion tanks.

85.2 Multiple Units

Multiple digestion units capable of independent operation are desirable and shall be provided in all plants where the design average flow exceeds 100,000 gallons per day (380 m^3/d). All plants not having multiple units shall provide alternate sludge handling and disposal methods.

85.3 Tank Capacity

85.31 Volume Required

The following digestion tank capacities are based on a solids concentration of 2 percent with supernatant separation performed in a separate tank. If supernatant separation is performed in the digestion tank, a minimum of 25 percent additional volume shall be provided. These capacities shall be provided unless sludge thickening facilities (refer to Section 83) are utilized to thicken the feed solids concentration to greater than 2 percent. If such thickening is provided, the digestion volumes may be decreased proportionally.

	Volume/Population Equivalent
Sludge Source	ft^3/P.E. (m^3/P.E.)
Waste activated sludge -- no primary settling	4.5 (0.13)*
Primary plus waste activated sludge	4.0 (0.11)*
Waste activated sludge exclusive of primary sludge	2.0 (0.06)*
Extended aeration activated sludge	3.0 (0.09)
Primary plus attached growth biological reactor sludge	3.0 (0.09)

* These volumes also apply to waste activated sludge from single stage nitrification facilities with less than 24 hours detention time based on design average flow.

85.32 Effect of Temperature on Volume

The volumes in Paragraph 85.31 are based on digester temperatures of 59°F (15 °C) and a solids retention time of 27 days. Aerobic digesters should be covered to minimize heat loss for colder temperature applications. Additional volume or supplemental heat may be required if the land application disposal method is used in order to meet the applicable U.S. EPA requirements. Refer to Paragraph 85.9 for necessary sludge storage.

85.4 Mixing

Aerobic digesters shall be provided with mixing equipment that can maintain solids in suspension and ensure complete mixing of the digester contents. Refer to Paragraph 85.5.

85.5 Air Requirements

Sufficient air shall be provided to keep the solids in suspension and maintain dissolved oxygen between 1 mg/L and 2 mg/L. For minimum mixing and oxygen requirements, an air supply of 30 cfm/1000 ft^3 [0.5 $L/(m^3 \cdot s)$] of tank volume shall be provided with the largest blower out of service. If diffusers are used, the nonclog type should be provided, and they should be designed to permit continuity of service. If mechanical turbine aerators are utilized, at least two turbine aerators per tank shall be provided to permit continuity of service. Mechanical aerators are not recommended for use in aerobic digesters where freezing conditions will cause ice build-up on the aerator and support structures.

85.6 Supernatant Separation and Scum and Grease Removal

85.61 Supernatant Separation

Facilities shall be provided for effective separation or decanting of supernatant. Separate facilities are recommended; however, supernatant separation may be accomplished in the digestion tank if additional volume is provided per Paragraph 85.3. The supernatant drawoff unit shall be designed to prevent recycle of scum and grease back to plant process units. Provision should be made to withdraw supernatant from multiple levels of the supernatant withdrawal zone.

85.62 Scum and Grease Removal

Facilities shall be provided for the effective collection of scum and grease from the aerobic digester for final disposal, to prevent its recycle back to the plant process, and to prevent long term accumulation and potential discharge in the effluent.

85.7 High Level Emergency Overflow

An unvalved high level overflow and any necessary piping shall be provided to return digester overflow back to the head of the plant or to the aeration process in case of accidental overfilling. Design considerations related to the digester overflow shall include waste sludge rate and duration during the period the plant is unattended, potential effects on plant process units, discharge location of the emergency overflow, and potential discharge of suspended solids in the plant effluent.

85.8 Aerobic Digestion Sludge Production

For calculating design sludge handling and disposal needs, sludge production values from aerobic digesters shall be based on a maximum solids concentration of 2 percent without additional thickening. The solids production values on a dry weight basis shall be based on the following for the listed processes:

Primary plus waste activated sludge - at least 0.16 lb/P.E./day [0.07 kg/(P.E.·d)].

Primary plus fixed film sludge - at least 0.12 lb/P.E./day [0.05 kg/(P.E.·d)].

85.9 Digested Sludge Storage Volume

85.91 Sludge Storage Volume

Sludge storage shall be provided in accordance with Section 89 to accommodate daily sludge production volumes and as an operational buffer for unit outage and adverse weather conditions. Designs shall not utilize increased sludge age in the activated sludge system as a means of storage.

85.92 Liquid Sludge Storage

Liquid sludge storage facilities shall be based on the following values unless digested sludge thickening facilities are utilized (refer to Section 83) to provide solids concentrations of greater than 2 percent.

Sludge Source	Volume/Population Equivalent ft^3/P.E./day [m^3/(P.E.·d)]
Waste activated sludge -- no primary settling, primary plus waste activated sludge, and extended aeration activated sludge	0.13 (0.004)
Waste activated sludge exclusive of primary sludge	0.06 (0.002)
Primary plus attached growth biological reactor sludge	0.10 (0.003)

85.10 Autothermal Thermophilic Aerobic Digestion

Thermophilic digestion temperature should be maintained between 122°F and 158°F (50 °C and 70 °C). Systems may be either single or multiple stage. The sludge should be thickened prior to treatment in the digestion tanks. The digestion tanks should be suitably insulated to minimize heat loss.

86. HIGH pH STABILIZATION

86.1 General

Alkaline material may be added to liquid primary or secondary sludges for sludge stabilization in lieu of digestion facilities; to supplement existing digestion facilities; or for interim sludge handling. There is no direct reduction of organic matter or sludge solids with the high pH stabilization process. There is an increase in the mass of dry sludge solids. Without supplemental dewatering, additional volumes of sludge will be generated.

The design shall account for the increased sludge quantities for storage, handling, transportation, and disposal methods and associated costs.

86.2 Operational Criteria

Sufficient alkaline material shall be added to liquid sludge in order to produce a homogeneous mixture with a minimum pH of 12 after two hours of vigorous mixing. Facilities for adding supplemental alkaline material shall be provided to maintain the pH of the sludge during interim sludge storage periods.

86.3 Odor Control and Ventilation

Odor control facilities shall be provided for sludge mixing and treated sludge storage tanks when located within 1/2 mile (0.8 km) of residential or commercial areas. The reviewing authority should be contacted for design and air pollution control objectives to be met for various types of air scrubber units. Ventilation shall be provided for indoor sludge mixing, storage or processing facilities in accordance with Paragraph 42.75.

86.4 Mixing Tanks and Equipment

86.41 Tanks

Mixing tanks may be designed to operate as either a batch or continuous flow process. A minimum of two tanks shall be provided. The tanks shall provide a minimum of two hours contact time in each tank. The following items shall also be considered in determining the number and size of tanks:

a. peak sludge flow rates;

b. storage between batches;

c. dewatering or thickening performed in tanks;

d. repeating sludge treatment due to pH decay of stored sludge;

e. sludge thickening prior to sludge treatment; and

f. type of mixing device used and its associated maintenance or repair requirements.

86.42 Equipment

Mixing equipment shall be designed to provide vigorous agitation within the mixing tank, maintain solids in suspension, and provide for a homogeneous mixture of the sludge solids and alkaline material. Mixing may be accomplished either by diffused air or mechanical mixers. If diffused aeration is used, an air supply of 30 cfm/1000 ft^3 [0.5 L/(m^3·s)] of mixing tank volume shall be provided with the largest blower out of service. When diffusers are used, the nonclog type should be provided, and they should be designed to permit continuity of service. If mechanical mixers are

used, the impellers shall be designed to minimize fouling with debris in the sludge and consideration shall be made to provide continuity of service during freezing weather conditions.

86.5 Chemical Feed and Storage Equipment

86.51 General

Alkaline material is caustic in nature and can cause eye and tissue injury. Equipment for handling or storing alkaline material shall be designed for adequate operator safety. Refer to Section 57 for proper safety precautions. Storage, slaking, and feed equipment should be sealed as airtight as practical to prevent contact of alkaline material with atmospheric carbon dioxide and water vapor and to prevent the escape of dust material. All equipment and associated transfer lines or piping shall be accessible for cleaning.

86.52 Feed and Slaking Equipment

The design of the feeding equipment shall be determined by the treatment plant size, type of alkaline material used, slaking required, and operator requirements. Equipment may be either of batch or automated type. Automated feeders may be of the volumetric or gravimetric type depending on accuracy, reliability, and maintenance requirements. Manually operated batch slaking of quicklime (CaO) should be avoided unless adequate protective clothing and equipment are provided. At small plants, hydrated lime [$Ca(OH)_2$] should be used instead of quicklime due to safety and labor-saving reasons. Feed and slaking equipment shall be sized to handle a minimum of 150% of the peak sludge flow rate including sludge that may need to be retreated due to pH decay. Duplicate units shall be provided.

86.53 Chemical Storage Facilities

Alkaline materials may be delivered either in bag or bulk form depending upon the amount of material used. Material delivered in bags shall be stored indoors and elevated above floor level. Bags should be of the multi-wall moisture-proof type. Dry bulk storage containers shall be as airtight as practical and shall contain a mechanical agitation mechanism. Storage facilities shall be sized to provide a minimum of a 30-day supply.

86.6 Sludge Storage

Refer to Section 89 for general design considerations for sludge storage facilities. The design shall incorporate the following considerations for the storage of high pH stabilized sludge:

86.61 Liquid Sludge

Liquid high pH stabilized sludge shall not be stored in a lagoon. Said sludge shall be stored in a tank or vessel equipped with rapid sludge withdrawal mechanisms for sludge disposal or retreatment.

Provisions shall be made for adding alkaline material in the storage tank. Mixing equipment in accordance with Paragraph 86.42 above shall be provided in all storage tanks.

86.62 Dewatered Sludge

On-site storage of dewatered high pH stabilized sludge should be limited to 30 days. Provisions for rapid retreatment or disposal of dewatered sludge stored on-site shall be made in case of sludge pH decay.

86.63 Off-Site Storage

There shall be no off-site storage of high pH stabilized sludge unless specifically allowed by the regulatory agency.

86.7 Disposal

Immediate sludge disposal methods and options are recommended to be utilized in order to reduce the sludge inventory on the treatment plant site and the amount of sludge that may need to be retreated to prevent odors if sludge pH decay occurs. If the land application disposal option is utilized for high pH stabilized sludge, said sludge should be incorporated into the soil during the same day of delivery to the site.

87. SLUDGE PUMPS AND PIPING

87.1 Sludge Pumps

87.11 Capacity

Pump capacities shall be adequate but not excessive. Provisions for varying pump capacity should be made. A rational basis of design shall be provided with the plan documents.

87.12 Duplicate Units

Duplicate units shall be provided at all installations.

87.13 Type

Plunger pumps, screw feed pumps or other types of pumps with demonstrated solids handling capability shall be provided for handling raw sludge. Where centrifugal pumps are used, a parallel positive displacement pump shall be provided as an alternate to pump heavy sludge concentrations, such as primary or thickened sludge, that may exceed the pumping head of the centrifugal pump.

87.14 Minimum Head

A minimum positive head of 24 inches (610 mm) shall be provided at the suction side of centrifugal type pumps and should be provided for all types of sludge pumps. Maximum suction lifts should not exceed 10 feet (3 m) for plunger pumps.

87.15 Sampling Facilities

Unless sludge sampling facilities are provided, quick-closing sampling valves shall be installed at the sludge pumps. The size of valve and piping should be at least 1½ inches (40 mm) and terminate at a suitably sized sampling sink or floor drain.

87.2 Sludge Piping

87.21 Size and Head

Digested sludge withdrawal piping should have a minimum diameter of 8 inches (200 mm) for gravity withdrawal and 6 inches (150 mm) for pump suction and discharge lines. Where withdrawal is by gravity, the available head on the discharge pipe should be at least 4 feet (1.2 m), preferably more. Undigested sludge withdrawal piping shall be sized in accordance with Paragraph 73.23.

87.22 Slope and Flushing Requirements

Gravity piping should be laid on uniform grade and alignment. Slope on gravity discharge piping should not be less than 3 percent for primary sludges and all sludges thickened to greater than 2 percent solids. Slope on gravity discharge piping should not be less than 2 percent for aerobically digested sludge or waste activated sludge with less than 2 percent solids. Cleanouts shall be provided for all gravity sludge piping. Provisions shall be made for draining and flushing discharge lines. All sludge piping shall be suitably located or otherwise adequately protected to prevent freezing.

87.23 Supports

Special consideration shall be given to the corrosion resistance and permanence of supporting systems for piping located inside the digestion tank.

88. SLUDGE DEWATERING

88.1 General

On-site sludge dewatering facilities shall be provided for all plants, although the following requirements may be reduced with on-site liquid sludge storage facilities or approved off-site sludge disposal.

For calculating design sludge handling and disposal needs for sludge stabilization processes other than described in Paragraphs 84.7 for anaerobic digestion and 85.8 for aerobic digestion, a rational basis of design for sludge production values shall be developed and provided to the reviewing authority for approval on a case-by-case basis.

88.2 Sludge Drying Beds

88.21 Applicability

Sludge drying beds may be used for dewatering well digested sludge from either the anaerobic or aerobic process. Due to the large volume of sludge produced by the aerobic digestion process, consideration should be given to using a combination of dewatering systems or other means of ultimate sludge disposal.

88.22 Unit Sizing

Sludge drying bed area shall be calculated on a rational basis with the following items considered:

a. The volume of wet sludge produced by existing and proposed processes.

b. Depth of wet sludge drawn to the drying beds. For design calculation purposes, a maximum depth of 8 inches (200 mm) shall be utilized. For operational purposes, the depth of sludge placed on the drying bed may increase or decrease from the design depth based on the percent solids content and type of digestion utilized.

c. Total digester volume and other wet sludge storage facilities.

d. Degree of sludge thickening provided after digestion.

e. The maximum drawing depth of sludge which can be removed from the digester or other sludge storage facilities without causing process or structural problems.

f. The time required on the bed to produce a removable cake. Adequate provision shall be made for sludge dewatering and/or sludge disposal facilities for those periods of time during which outside drying of sludge on beds is hindered by weather.

g. Capacities of auxiliary dewatering facilities.

88.23 Percolation Type Bed Components

88.231 Gravel

The lower course of gravel around the underdrains should be properly graded, should be at least 12 inches (300 mm) in depth, extending at least 6 inches (150 mm) above the top of the underdrains, and should be placed in two or more layers. The top layer of at least 3 inches (80 mm) should consist of gravel 1/8 to 1/4 inch (3 mm to 6 mm) in size.

88.232 Sand

The top course should consist of at least 9 to 12 inches (230 mm to 300 mm) of clean, hard, and washed coarse sand. The effective size of the sand should be in the range of 0.8 mm to 1.5 mm. The finished sand surface should be level.

88.233 Underdrains

Underdrains should be at least 4 inches (100 mm) in diameter laid with open joints. Perforated pipe may also be used. Underdrains should be spaced not more than 20 feet (6.1 m) apart and sloped at a minimum of 1 percent. Lateral tiles should be spaced at 8 to 10 feet (2.4 m to 3.0 m). Various pipe materials may be selected provided the pipe is corrosion resistant and appropriately bedded to ensure that the underdrains are not damaged by sludge removal equipment.

88.234 Additional Dewatering Provisions

Consideration shall be given to provide a means of decanting the supernatant of sludge placed on the sludge drying beds. More effective decanting of supernatant may be accomplished with polymer treatment of sludge.

88.235 Seal

The bottom of the percolation bed shall be sealed in a manner approved by the reviewing authority.

88.24 Walls

Walls should extend 18 inches (460 mm) above and at least 9 inches (230 mm) below the surface of the sludge drying bed. Outer walls shall be water tight down to the bottom of the bed and extend at least 4 inches (100 mm) above the outside grade elevation to prevent soil from washing into the beds.

88.25 Sludge Removal

Each sludge drying bed shall be constructed so as to be readily and completely accessible to mechanical equipment for cleaning and sand replacement. Concrete runways spaced to accommodate mechanical equipment shall be provided. Special attention should be given to assure adequate access to the areas adjacent to the sidewalls. Entrance ramps down to the level of the sand bed shall be provided. These ramps should be high enough to eliminate the need for an entrance end wall for the sludge bed.

88.3 Mechanical Dewatering Facilities

88.31 General

Provision shall be made to maintain sufficient continuity of service so that sludge may be dewatered without accumulation beyond storage capacity. The number of vacuum filters, centrifuges, filter presses, belt filters, other mechanical dewatering facilities, or combinations thereof should be sufficient to dewater the sludge produced with the largest unit out of service. Unless other standby wet sludge facilities are available, adequate storage facilities of at least 4 days production volume, in addition to any other sludge storage needs, shall be provided. Documentation shall be submitted justifying the basis of design of mechanical dewatering facilities.

88.32 Water Supply Protection

Provisions for water supply to mechanical dewatering facilities shall be in accordance with Paragraph 56.23.

88.33 Auxiliary Facilities for Vacuum Filters

Back-up vacuum and filtrate pumps shall be provided. It is permissible to have uninstalled back-up vacuum and filtrate pumps for every three or less vacuum filters, provided that the installed units can easily be removed and replaced. At least one filter media replacement unit shall be provided.

88.34 Ventilation

Adequate facilities shall be provided for ventilation of the dewatering area in accordance with Paragraph 42.75. The exhaust air should be properly conditioned to avoid odor nuisance.

88.35 Chemical Handling Enclosures

Lime-mixing facilities should be completely enclosed to prevent the escape of lime dust. Chemical handling equipment should be automated to eliminate the manual lifting requirement. Refer to Section 57.

88.4 Drainage and Filtrate Disposal

Drainage from sludge drying beds or filtrate from other dewatering units shall be returned to the wastewater treatment process at appropriate points and rates. Sampling equipment shall be provided as needed to monitor drainage and filtrate waste streams. See also Paragraphs 56.7 and 84.64.

88.5 Other Dewatering Facilities

If other methods of sludge dewatering are proposed, a detailed description of the process and design data shall accompany the plans. Refer to Paragraph 53.2 for any new process determinations.

89. SLUDGE STORAGE AND DISPOSAL

89.1 Storage

89.11 General

Sludge storage facilities shall be provided at all mechanical treatment plants. Appropriate storage facilities may consist of any combination of drying beds, lagoons, separate tanks, additional volume in sludge stabilization units, pad areas or other means to store either liquid or dried sludge. Refer to Paragraphs 88.2 and 89.2 for drying bed and lagoon design criteria, respectively.

The design shall provide for odor control in sludge storage tanks and sludge lagoons including aeration, covering, or other appropriate means.

89.12 Volume

Rational calculations justifying the number of days of storage to be provided shall be submitted and shall be based on the total sludge handling and disposal system. Refer to Paragraphs 84.7 and 85.8 for anaerobically and aerobically digested sludge production values. Sludge production values for other stabilization processes should be justified in the basis of design. If the land application method of sludge disposal is the only means of disposal utilized at a treatment plant, storage shall be provided based on the following considerations, at a minimum:

a. Inclement weather effects on access to the application land;

b. Temperatures including frozen ground and stored sludge cake conditions;

c. Haul road restrictions including spring thawing conditions;

d. Area seasonal rainfall patterns;

e. Cropping practices on available land;

f. Potential for increased sludge volumes from industrial sources during the design life of the plant;

g. Available area for expanding sludge storage; and

h. Appropriate pathogen reduction and vector attraction reduction requirements.

A minimum range of 120 to 180 days storage should be provided for the design life of the plant unless a different period is approved by the reviewing authority. Refer to Paragraph 89.33 for other sludge land application considerations.

89.2 Sludge Storage Lagoons

89.21 General

Sludge storage lagoons may be permitted only upon proof that the character of the digested sludge and the design mode of operation are such that offensive odors will not result. Where sludge lagoons are permitted, adequate provisions shall be made for other acceptable sludge handling methods in the event of upset or failure of the sludge digestion process.

89.22 Location

Sludge lagoons shall be located as far as practicable from inhabited areas or areas likely to be inhabited during the lifetime of the structures. Siting of sludge lagoons shall comply with the requirements of the reviewing authority.

89.23 Seal

Adequate provisions shall be made to seal the sludge lagoon bottoms and embankments in accordance with the requirements of Paragraph 93.422 to prevent leaching into adjacent soils or ground water. The seal shall be protected to prevent damage from sludge removal activities. Groundwater monitoring may be required by the reviewing authority in accordance with Paragraph 93.65.

89.24 Access

Provisions shall be made for pumping or heavy equipment access for sludge removal from the sludge lagoon on a routine basis.

89.25 Supernatant Disposal

Lagoon supernatant shall be returned to the wastewater treatment process at appropriate points and rates. Sampling equipment shall be provided as needed to monitor supernatant waste streams. See also Paragraphs 56.7 and 84.64.

89.3 Disposal

89.31 General

Drainage facilities for sludge vehicle transfer stations shall be provided to allow any spillage or washdown material to be collected and returned to the wastewater treatment plant or sludge storage facility.

89.32 Sanitary Landfilling

Sludge and sludge residues may be disposed of in approved sanitary landfills under the terms and conditions of the regulatory agency.

89.33 Land Application

The reviewing authority should be contacted for specific design and approval requirements governing the land application of municipal sludges. Additional operating criteria may be obtained from applicable federal regulations. Sludge may be utilized as a soil conditioner for agricultural, horticultural, or reclamation purposes. Important design considerations include, but are not necessarily limited to: sludge stabilization process, appropriate pathogen and vector attraction reduction, sludge characteristics including the presence of inorganic and organic chemicals, application site characteristics (soils, groundwater elevations, setback distance requirements, etc.), local topography and hydrology, cropping practices, spreading and incorporation techniques, population density and odor control, and local groundwater quality and usage.

Sludge mixing equipment or other provisions to assist in the monitoring of land applied sludge should be considered in the design of sludge handling and storage facilities.

Due to inclement weather and cropping practices, alternative sludge disposal options are recommended to ensure the sludge is properly managed.

Sludge should not be applied to land which is used for growing food crops to be eaten raw, such as leafed vegetables and root crops.

89.34 Sludge Lagoons for Disposal

Sludge lagoons should not be used for ultimate disposal of sludge due to odor potential, area and volume required, and possible long term problems from groundwater contamination. The regulatory agency shall be contacted for the acceptability of lagoons for final disposal.

89.35 Other Disposal Methods

If other methods of sludge disposal are proposed, a detailed description of the technique and design data shall accompany the plans. Refer to Paragraph 53.2 for any new process determinations.

CHAPTER 90
BIOLOGICAL TREATMENT

91. TRICKLING FILTERS

91.1 General

Trickling filters may be used for treatment of wastewater amenable to treatment by aerobic biological processes. The trickling filter is a non-submerged attached-growth process. Trickling filters shall be preceded by effective settling tanks equipped with scum and grease collecting devices, or other suitable pretreatment facilities. Trickling filters shall be designed to provide for reduction in carbonaceous and/or nitrogenous oxygen demand in accordance with water quality standards and objectives for the receiving waters as established by the appropriate reviewing authority, or to properly condition the wastewater for subsequent treatment processes. Multi-stage filters should be considered if needed to meet more stringent effluent standards.

91.2 Hydraulics

91.21 Distribution

91.211 Uniformity

The wastewater may be distributed over the filter by rotary distributors or other suitable devices that will ensure uniform distribution to the surface area. At design average flow, the deviation from a calculated uniformly distributed volume per square foot of the filter surface shall not exceed plus or minus 10 percent at any point. All hydraulic factors involving proper distribution of wastewater on the filters shall be carefully calculated. Such calculations shall be submitted to the appropriate reviewing authority.

Reverse reaction nozzles, hydraulic brakes or motor-driven distributor arms shall be provided for rotary distributors to ensure that the maximum speed recommended by the distributor manufacturer is not exceeded and to attain the desired media dosing rate.

91.212 Head Requirements

For reaction type distributors, a minimum head of 24 inches (610 mm) between low water level in the siphon chamber and center of the arms is required. Similar allowance in design shall be provided for added pumping head requirements where pumping to the reaction type distributor is used.

91.213 Clearance

A minimum clearance of 12 inches (305 mm) between filter media and the bottom of the distributor arms shall be provided.

91.22 Dosing

Wastewater may be applied to the filter by siphons, pumps or gravity discharge from preceding treatment units when suitable flow characteristics have been developed. Application of the wastewater shall be practically continuous. The piping system shall be designed for recirculation.

91.23 Piping System

The piping system, including dosing equipment and distributor, shall be designed to provide capacity for the design peak hourly flow, including recirculation required under Paragraph 91.55.

91.3 Media

91.31 Quality

The trickling filter media may be crushed rock, slag, or manufactured material. The media shall be durable, resistant to spalling or flaking, and relatively insoluble in wastewater. The top 18 inches (460 mm) shall have a loss of not more than 10 percent according to the 20-cycle, sodium sulfate soundness test, as prescribed by ASCE Manual of Engineering Practice, Number 13. The balance is to pass a 10-cycle sodium sulfate soundness test using the ASCE Manual criteria. Slag media shall be free from iron or other leachable materials that will adversely affect the process or effluent quality. Manufactured media shall be resistant to ultraviolet degradation, disintegration, erosion, aging, all common acids and alkalis, organic compounds, and fungus or biological attack. Such media shall be structurally capable of supporting a person's weight or a suitable access walkway shall be provided to allow for distributor maintenance.

91.32 Depth

Trickling filter media shall have a minimum depth of 6 feet (1.8 m) above the underdrains. Rock and/or slag filter media depths shall not exceed 10 feet (3 m). Manufactured filter media depths should not exceed the recommendations of the manufacturer. Forced ventilation should be considered in accordance with Paragraph 91.43.

91.33 Size, Grading, and Handling of Media

91.331 Rock, Slag, and Similar Media

Rock, slag, and similar media shall not contain more than 5 percent by weight of pieces whose longest dimension is three times the least dimension. The media shall be free from thin, elongated and flat pieces, dust, clay, sand or fine material, and shall conform to the following size and grading when mechanically graded over a vibrating screen with square openings.

Passing 4½ inch (115 mm) screen - 100% by weight
Retained on 3 inch (75 mm) screen - 95-100% by weight
Passing 2 inch (50 mm) screen - 0-2% by weight
Passing 1 inch (25 mm) screen - 0-1% by weight

91.332 Manufactured Media

Media suitability shall be evaluated on the basis of experience with installations handling similar wastes and loadings. To ensure sufficient void clearances, media with specific surface areas of no more than 30 square feet per cubic foot (100 m^2/m^3) are acceptable for filters employed for carbonaceous reduction, and 45 square feet per cubic foot (150 m^2/m^3) for second stage ammonia reduction.

91.333 Handling and Placing of Media

Material delivered to the filter site shall be stored on wood-planked or other approved clean, hard-surfaced areas. All material shall be rehandled at the filter site and no material shall be dumped directly into the filter. Crushed rock, slag, and similar media shall be washed and rescreened or forked at the filter site to remove all fines. Such material shall be placed by hand to a depth of 12 inches (305 mm) above the tile underdrains. The remainder of the material may be placed by means of belt conveyors or equally effective methods approved by the engineer. All material shall be carefully placed so as not to damage the underdrains. Manufactured media shall be handled and placed as approved by the engineer. Trucks, tractors, and other heavy equipment shall not be driven over the filter during or after construction.

91.4 Underdrainage System

91.41 Arrangement

Underdrains with semicircular inverts or equivalent should be provided. The underdrainage system shall cover the entire floor of the filter. Inlet openings into the underdrains shall have an

unsubmerged gross combined area equal to at least 15 percent of the surface area of the filter.

91.42 Hydraulic Capacity

The underdrains shall have a minimum slope of 1 percent. Effluent channels shall be designed to produce a minimum velocity of 2 feet per second (0.6 m/s) at design average flow rates of application to the filter, including recirculated flows. Refer to Paragraph 91.43.

91.43 Ventilation

The underdrainage system, effluent channels, and effluent pipe shall be designed to permit free passage of air. The size of drains, channels, and pipe should be such that not more than 50 percent of their cross-sectional area will be submerged under the design peak instantaneous flow, including proposed or possible future recirculated flows.

Forced ventilation should be provided for covered trickling filters to ensure adequate oxygen for process requirements. Windows or simple louvered mechanisms so arranged to ensure air distribution throughout the enclosure shall be provided. The design of the ventilation facilities shall provide for operator control of air flow in accordance with outside seasonal temperature. Design computations showing the adequacy of air flow to satisfy process oxygen requirements shall be submitted.

91.44 Flushing

Provision should be made for flushing the underdrains unless high rate recirculation is utilized. In small rock and slag filters, use of a peripheral head channel with vertical vents is acceptable for flushing purposes. Inspection facilities should be provided.

91.5 Special Features

91.51 Flooding

Appropriate valves, sluice gates, or other structures shall be provided to enable flooding of filters comprised of rock or slag media for filter fly control.

91.52 Freeboard

A freeboard of 4 feet (1.2 m) or more should be provided for tall, manufactured filters to contain windblown spray. At least 6 foot (1.8 m) headroom for distributor maintenance should be provided for covered filters.

91.53 Maintenance

All distribution devices, underdrains, channels, and pipes shall be installed so that they may be properly maintained, flushed and/or drained.

91.54 Winter Protection

Covers shall be provided to maintain operation and treatment efficiencies when climatic conditions are expected to result in problems due to cold temperatures.

91.55 Recirculation

The piping system shall be designed for recirculation as required to achieve the design efficiency. The recirculation rate shall be variable and subject to plant operator control at the range of 0.5:1 up to 4:1 (ratio of recirculation rate versus design average flow). A minimum of two recirculation pumps shall be provided.

91.56 Recirculation Measurement

Devices shall be provided to permit measurement of the filter recirculation rate. Elapsed time meters and pump head recording devices are acceptable for facilities treating less than 1 mgd (3,785 m^3/d). The design of the recirculation facilities shall provide for both continuity of service and the range of recirculation ratios. Reduced recirculation rates for periods of brief pump outages may be acceptable depending on water quality requirements.

91.57 Ventilation Ports

The underdrainage ventilation ports shall be designed to ensure that the interior flow will be retained inside the trickling filter.

91.6 Rotary Distributor Seals

Mercury seals shall not be permitted. Ease of seal replacement shall be considered in the design to ensure continuity of operation.

91.7 Unit Sizing

Required volumes of filter media shall be based on pilot testing with the particular wastewater or any of the various empirical design equations that have been verified through actual full scale experience. Such calculations shall be submitted if pilot testing is not utilized. Pilot testing is recommended to verify performance predictions based on the various design equations, particularly when significant amounts of industrial wastes are present.

Trickling filter design shall consider peak organic load conditions including the oxygen demands due to recycle flows (i.e., sludge dewatering filtrate, anaerobic digester supernatant, etc.) resulting from high concentrations of BOD_5 and TKN associated with such flows. The

volume of media determined from either pilot plant studies or the use of acceptable design equations shall be based on the design maximum day BOD_5 loading rate rather than the design average BOD_5 rate. Refer to Paragraph 11.251.

92. ACTIVATED SLUDGE

92.1 General

92.11 Applicability

92.111 Biodegradable Wastewaters

The activated sludge process and its various modifications may be used where wastewater is amenable to biological treatment and the biological solids are separated from the treated water. It is a suspended growth type process that relies on secondary clarification for removal of effluent suspended solids while producing a concentrated return activated sludge flow.

92.112 Operational Requirement

The activated sludge process requires close attention and competent operating supervision, including routine laboratory testing for monitoring and process control. These requirements shall be considered when proposing this type of treatment.

92.113 Energy Requirements

The activated sludge process requires major energy usage to meet aeration demands. Energy costs and potential mandatory emergency public power reduction events in relation to critical water quality conditions shall be carefully evaluated. Capability of energy usage phasedown while still maintaining process viability, both under normal and emergency energy availability conditions, shall be included in the activated sludge process design.

92.12 Specific Process Selection

The activated sludge process and its several modifications may be employed to accomplish varied degrees of removal of suspended solids and reduction of carbonaceous and/or nitrogenous oxygen demand. Choice of the process most applicable will be influenced by the degree and consistency of treatment required, type of wastewater to be treated, proposed plant size, anticipated degree of operation and maintenance, and operating and capital costs. All designs shall provide for flexibility in operation and should provide for operation in various modes, if feasible.

92.13 Winter Protection

In severe climates, protection against freezing shall be provided to ensure continuity of operation and performance. Insulation of the tanks by earthen banks should be considered.

92.2 Pretreatment

Where primary settling tanks are not used, effective removal or exclusion of grit, debris, excessive oil or grease, and screening of solids shall be accomplished prior to the activated sludge process. Screening devices with clear openings of 1/4 inch (6 mm) or less shall be provided.

Where primary settling is used, provision shall be made for discharging raw wastewater directly to the aeration tanks to facilitate plant start-up and operation during the initial stages of the plant's design life.

92.3 Aeration

92.31 Capacities and Permissible Loadings

The size of the aeration tank for any particular adaptation of the process shall be determined by full scale experience, pilot plant studies, or rational calculations based mainly on solids retention time, food to microorganism (F/M) ratio and mixed liquor suspended solids levels. Other factors, such as size of treatment plant, diurnal load variations, and degree of treatment required, shall also be considered. When designing for nitrification, temperature, alkalinity, pH, and reactor dissolved oxygen shall be considered.

Calculations should be submitted to justify the basis of the aeration tank capacity design. Calculations using process design values differing substantially from those in the accompanying table should reference actual operational plants. Mixed liquor suspended solids levels greater than 5,000 mg/L may be allowed providing adequate data is submitted showing the aeration and clarification systems are capable of supporting such levels.

When process design calculations are not submitted, the aeration tank capacities and permissible loadings shown in the following table shall be used for the several adaptations of the processes. These values apply to plants receiving diurnal load ratios of design peak hourly BOD_5 to design average BOD_5 ranging from about 2:1 to 4:1. The utilization of flow equalization facilities to reduce the diurnal design peak hourly BOD_5 organic load may be considered by the appropriate reviewing authority as justification to approve organic loading rates that exceed those specified in the table.

PERMISSIBLE AERATION TANK CAPACITIES AND LOADINGS

Process	*Aeration Tank Organic Loading lb BOD_5/d/1000 ft^3 [kg BOD_5/ (m^3·d)]**	F/M Ratio lb BOD_5/d/lb MLVSS [kg BOD_5/(kg MLVSS·d)]**	MLSS*** mg/L
Conventional Step Aeration Complete Mix	40 (0.64)	0.2-0.5	1,000-3,000
Contact Stabilization	50****(0.80)	0.2-0.6	1,000-3,000
Extended Aeration Single Stage Nitrification	15 (0.24)	0.05-0.1	3,000-5,000

* Volumetric loadings are based on the influent organic load to the aeration tank at plant design average BOD_5.

** Refer to 11.251(a) for definition of BOD_5.

*** Maximum MLSS values are dependent upon the surface area provided for final sedimentation, the rate of sludge return, and the aeration process.

**** Total aeration capacity includes both contact and reaeration capacities. Normally the contact zone equals 30 to 35% of the total aeration capacity.

92.32 Arrangement of Aeration Tanks

a. Dimensions

The dimensions of each independent mixed liquor aeration tank or return sludge reaeration tank shall be such as to maintain effective mixing and utilization of air. Liquid depths should not be less than 10 feet (3 m) or more than 30 feet (9 m) except in special design cases. Horizontally mixed aeration tanks shall have a depth of not less than 5.5 feet (1.7 m).

b. Short-circuiting

For very small tanks or tanks with a special configuration, the shape of the tank, the location of the influent and sludge return, and the installation of aeration equipment should provide for positive control to prevent short-circuiting of the wastewater through the tank.

92.321 Number of Units

Total aeration tank volume shall be divided among two or more units, capable of independent operation, when

required by the appropriate reviewing authority to meet applicable effluent limitations and reliability guidelines.

92.322 Inlets and Outlets

a. Controls

Inlets and outlets for each aeration tank unit shall be suitably equipped with valves, gates, stop plates, weirs, or other devices that allow for flow control to any unit and to maintain a reasonably constant liquid level. The effluent weir for a horizontally mixed aeration tank system shall be easily adjustable by mechanical means and shall be sized based on the design peak instantaneous flow plus the maximum return sludge flow. Refer to Paragraph 92.41. The hydraulic properties of the system shall permit the design peak instantaneous flow to be carried with any single aeration tank unit out of service.

b. Conduits

Channels and pipes carrying liquids with solids in suspension shall be designed to maintain self-cleansing velocities or shall be agitated to keep such solids in suspension at all rates of flow within the design limits. Adequate provisions should be made to drain segments of channels which are not being used due to alternate flow patterns.

92.323 Freeboard

All aeration tanks should have a freeboard of not less than 18 inches (460 mm). However, if a mechanical surface aerator is used, the freeboard should be not less than 3 feet (0.9 m) to protect against windblown spray freezing on walkways, etc.

92.33 Aeration Equipment

92.331 General

Oxygen requirements generally depend on maximum diurnal organic loading (design peak hourly BOD_5 as described in Paragraph 11.251), degree of treatment, and level of suspended solids concentration to be maintained in the aeration tank mixed liquor. Aeration equipment shall be capable of maintaining a minimum of 2.0 mg/L of dissolved oxygen in the mixed liquor at all times and provide thorough mixing of the mixed liquor. In the absence of experimentally determined values, the design oxygen requirements for all activated sludge processes shall be 1.1 lb O_2/lb design peak hourly BOD_5 (1.1 kg

O_2/kg design peak hourly BOD_5) applied to the aeration tanks, with the exception of the extended aeration process, for which the value shall be 1.5 lb O_2/lb design peak hourly BOD_5 (1.5 kg O_2/kg design peak hourly BOD_5) to include endogenous respiration requirements.

Where nitrification is required or will occur, such as within the extended aeration process, the oxygen requirement for oxidizing ammonia shall be added to the above design oxygen requirements for carbonaceous BOD_5 removal and, where applicable, endogenous respiration requirements. The nitrogenous oxygen demand (NOD) shall be taken as 4.6 times the diurnal peak hourly TKN content of the influent. In addition, the oxygen demands due to recycle flows (i.e., sludge dewatering filtrate, anaerobic digester supernatant, etc.) shall be considered due to the high concentrations of BOD_5 and TKN associated with such flows.

Careful consideration should be given to maximizing oxygen utilization per unit of power input. Unless flow equalization is provided, the aeration system should be designed to match the diurnal organic load variation while economizing on power input. Refer to Paragraph 92.31.

92.332 Diffused Air Systems

The diffused air system shall be designed according to either of the two methods described below in (a) and (b), augmented as required by consideration of items (c) through (h):

a. Having determined the oxygen requirements per Paragraph 92.331, air requirements for a diffused air system shall be determined using any of the well known equations and incorporating such factors as:

   1. Tank depth;
   2. Alpha factor of wastewater;
   3. Beta factor of wastewater;
   4. Certified aeration device oxygen transfer efficiency;
   5. Minimum aeration tank dissolved oxygen concentration;
   6. Critical wastewater temperature; and
   7. Altitude of plant.

   In the absence of experimentally determined alpha and beta factors, wastewater oxygen transfer efficiency shall be assumed to be not greater than 50 percent of clean water oxygen transfer efficiency for plants treating primarily (90% or greater) domestic wastewater. Treatment plants where the

wastewater contains higher percentages of industrial wastes shall use a correspondingly lower percentage of clean water efficiency and shall have calculations submitted to justify such a percentage. The design oxygen transfer efficiency should be included in the specifications.

b. Normal air requirements for all activated sludge processes except extended aeration (assuming equipment capable of transmitting to the mixed liquor the amount of oxygen required in Paragraph 92.331) shall be considered to be 1,500 cubic feet at standard conditions of pressure, temperature, and humidity per pound of BOD_5 aeration tank loading (94 m^3/kg BOD_5). For the extended aeration process, the value shall be 2,050 cubic feet per pound of BOD_5 (128 m^3/kg of BOD_5).

c. The air required for channels, pumps, aerobic digesters or other air-use demand and to satisfy oxygen demands due to recycle flows (e.g., sludge dewatering filtrate, anaerobic digester supernatant) shall be added to the air requirements calculated above.

d. The specified capacity of blowers or air compressors, particularly centrifugal blowers, should take into account that the air intake temperature may reach 115°F (46 °C) or higher and that the pressure may be less than normal. The specified capacity of the motor drive should also take into account that the intake air may be -20°F (-29 °C) or less and may require oversizing of the motor or a means of reducing the rate of air delivery to prevent overheating or damage to the motor.

e. The blowers shall be provided in multiple units, so arranged and in such capacities as to meet the maximum air demand with the single largest unit out of service. The design shall also provide for varying the volume of air delivered in proportion to the load demand of the plant. Aeration equipment shall be easily adjustable in increments and shall maintain solids in suspension within these limits.

f. Diffuser systems shall be capable of providing for 200 percent of the design average day oxygen demand. The air diffusion piping and diffuser system shall be capable of delivering normal air requirements with minimal friction losses.

Air piping systems should be designed such that total head loss from blower outlet (or silencer outlet

where used) to the diffuser inlet does not exceed 0.5 psi (3.4 kPa) at average operating conditions.

The spacing of diffusers should be in accordance with the oxygen requirements through the length of the channel or tank, and should be designed to facilitate adjustment of their spacing without major revisions to air header piping.

All plants employing less than four independent aeration tanks shall be designed to incorporate removable diffusers that can be serviced and/or replaced without dewatering the tank.

g. Individual assembly units of diffusers shall be equipped with control valves, preferably with indicator markings, for throttling or for complete shutoff. Diffusers in any single assembly shall have substantially uniform pressure loss.

h. Air filters shall be provided in numbers, arrangements, and capacities to furnish at all times an air supply sufficiently free from dust to prevent damage to blowers and clogging of the diffuser system used.

92.333 Mechanical Aeration Systems

a. Oxygen Transfer Performance

The mechanism and drive unit shall be designed for the expected conditions in the aeration tank in terms of the power performance. Certified testing shall be provided to verify mechanical aerator performance. Refer to applicable provisions of Paragraph 92.332. In the absence of specific design information, the oxygen requirements shall be calculated using a transfer rate not to exceed 2 pounds of oxygen per horsepower per hour [1.22 kg O_2/(kW·h)] in clean water under standard test conditions. Design transfer efficiencies shall be included in the specifications.

b. Design Requirements

A mechanical aeration system shall accomplish the following:

1. Maintain a minimum of 2.0 mg/L of dissolved oxygen in the mixed liquor at all times throughout the tank or basin;

2. Maintain all biological solids in suspension (for a horizontally mixed aeration tank

system an average velocity of 1 foot per second (0.3 m/s) shall be maintained);

3. Meet maximum oxygen demand and maintain process performance with the largest unit out of service;

4. Provide for varying the amount of oxygen transferred in proportion to the load demand on the activated sludge process; and

5. Allow for motors, gear housing, bearings, grease fittings, etc., to be easily accessible and protected from inundation and spray as necessary for proper functioning of the unit.

c. Winter Protection

Where extended cold weather conditions occur, the aerator mechanism and associated structure shall be protected from freezing due to splashing and spray. Due to high heat loss, subsequent treatment units shall be protected from freezing.

92.4 Return Sludge Equipment

92.41 Return Sludge Rate

The minimum permissible withdrawal rate of return sludge from the final settling tank is a function of the concentration of suspended solids in the mixed liquor entering it, the sludge volume index of these solids, and the length of time these solids are retained in the settling tank. Since undue retention of solids in the final settling tanks may be deleterious to both the aeration and sedimentation phases of the activated sludge process, the rate of sludge return expressed as a percentage of the design average flow of wastewater should generally be variable between the limits set forth as follows:

Type of Process	% Design Average Flow	
	Minimum	Maximum
Conventional, Step Aeration or Complete Mix	15	100
Contact Stabilization	50	150
Single Stage Nitrification	50	150
Extended Aeration	50	150
Carbonaceous Stage of Separate Stage Nitrification	15	100
Nitrification Stage of Separate Stage Nitrification	50	200

The rate of sludge return shall be varied by means of variable speed motors, drives, or timers (small plants) to pump sludge at the above rates. All designs shall provide for flexibility in operation and should provide for operation in various process modes, if feasible.

92.42 Return Sludge Pumps

If motor drive return sludge pumps are used, the maximum return sludge capacity shall be obtained with the largest pump out of service. A positive head should be provided on pump suctions. Pumps should have at least 3 inch (80 mm) suction and discharge openings.

If air lifts are used for returning sludge from each settling tank hopper, no standby unit will be required provided the design of the air lifts facilitates their rapid and easy cleaning and provided other suitable standby measures are provided. Air lifts should be at least 3 inches (80 mm) in diameter.

92.43 Return Sludge Piping

Discharge piping should be at least 4 inches (100 mm) in diameter and should be designed to maintain a velocity of not less than 2 feet per second (0.6 m/s) when return sludge facilities are operating at normal return sludge rates. Suitable devices for observing, sampling, and controlling return activated sludge flow from each settling tank hopper shall be provided, as outlined in Paragraph 73.24.

92.44 Waste Sludge Facilities

Waste sludge control facilities should have a capacity of at least 25 percent of the design average rate of wastewater flow and function satisfactorily at rates of 0.5 percent of design average wastewater flow or a minimum of 10 gallons per minute (0.6 L/s), whichever is larger. Means for observing, measuring, sampling, and controlling waste activated sludge flow shall be provided. Waste sludge may be discharged to the primary settling tank, sludge digestion tank, sludge thickening or dewatering processes, storage tank, or any practical combination of these units.

92.5 Measuring Devices

Devices should be installed in all plants for indicating flow rates of raw wastewater or primary effluent, return sludge, and air to each tank unit. For plants designed for design average wastewater flows of 1 mgd (3,785 m^3/d) or more, these devices should totalize and record, as well as indicate flows. Where the design provides for all return sludge to be mixed with the raw wastewater (or primary effluent) at one location, then the mixed liquor flow rate to each aeration unit should be measured.

92.6 Biological Nutrient Removal

Biological Nutrient Removal (BNR) processes may be approved at the discretion of the reviewing authority on a case-by-case basis under the provisions of Paragraph 53.2. Many proprietary BNR systems are available and vendors should be consulted for design details. The design shall meet the applicable requirements under Chapters 50, 70 and 90, except as modified in this Paragraph.

All BNR designs shall provide for flexibility in operation and should provide for operation in various modes, if feasible. Vital components for internal mixed liquor recycle and mechanical mixing systems shall meet the guidelines for continuity of treatment established by the reviewing authority.

92.61 Definitions

The following terms shall be used by the design engineer to describe biological nutrient removal processes in an Engineering Report or Facility Plan.

a. Aerobic (or Oxic) Condition Defined

A condition in which free and dissolved oxygen is available in an aqueous environment.

b. Anoxic Condition Defined

A condition in which oxygen is only available in a combined form, such as nitrate (NO_3^-), nitrite (NO_2^-), or sulfate (SO_4^{--}), in an aqueous environment.

c. Anaerobic Condition Defined

A condition in which free, dissolved and combined oxygen are not available in an aqueous environment.

92.62 Biological Phosphorus Removal

A number of process configurations for enhanced biological phosphorus removal (BPR) have been developed as alternatives to phosphorus removal by chemical treatment (outlined in Section 111). BPR microorganisms incorporate phosphorus into their cell mass in excess of their metabolic requirements, allowing them to remove phosphorus from wastewater. Exposure of activated sludge microorganisms to alternating anaerobic and aerobic conditions allows BPR microorganisms to proliferate in numbers sufficient to remove phosphorus.

The design shall ensure that readily biodegradable organic matter in sufficient quantities is available in an anaerobic environment to promote the growth of BPR microorganisms. The amount of readily biodegradable organic matter can be increased by fermentation of wastewater or sludge or by the addition of a supplemental carbon source such as methanol or acetic acid.

To create truly anaerobic conditions, both oxygen and nitrate shall be excluded. Many BPR configurations include the denitrification process to limit the nitrate concentration in anaerobic zones.

Sludge containing the excess phosphorus from the BPR microorganisms can be wasted, or the excess phosphorus can be removed from the sludge by a sidestream treatment process. The BPR process may require chemical treatment as a backup system or for polishing to achieve very low effluent phosphorus levels. The BPR process is often combined with nitrification and denitrification processes.

92.63 Biological Nitrogen Removal

Biological nitrogen removal is accomplished by biological oxidation of ammonia to nitrate (nitrification) followed by biological denitrification of nitrate to nitrogen gas.

92.631 Nitrification

Biological nitrification is used to remove ammonia to meet effluent requirements or as the first step in nitrogen removal. Ammonia is oxidized to nitrite and then to nitrate by nitrifying bacteria in an aerobic environment. Nitrification consumes alkalinity.

Nitrification can be achieved with either a single stage nitrification process (combined carbonaceous oxidation and nitrification) or with a separate stage nitrification process. In each case, suspended growth, attached

growth or hybrid systems can be used. Temperature, alkalinity, pH and dissolved oxygen shall be considered in nitrification design.

92.632 Denitrification

Denitrification is the biological process where bacteria convert nitrate to nitrogen gas under anoxic conditions. Denitrification generates alkalinity and therefore restores some of the alkalinity consumed during nitrification.

A soluble carbon source is required to drive the denitrification process. The carbon requirements for denitrification may be provided by influent wastewater or by an external source such as methanol.

92.64 Combined Biological Nitrogen and Phosphorus Removal

A number of BNR processes have been developed for the combined removal of nitrogen and phosphorus. Many of these are proprietary and use a form of the activated sludge process. Combinations of anaerobic, anoxic and aerobic zones or compartments are designed to accomplish biological nitrogen and phosphorus removal.

92.7 Sequencing Batch Reactors

The fill and draw mode of the activated sludge process commonly termed the Sequencing Batch Reactor may be approved at the discretion of the reviewing authority on a case-by-case basis under the provisions of Paragraph 53.2. The design shall be based on experience at other facilities and shall meet the applicable requirements under Chapters 50, 70 and 90, except as modified in this Paragraph. Continuity and reliability of treatment equal to that of the continuous flow through modes of the activated sludge process shall be provided. Supplemental treatment units may be required to meet applicable effluent limitations and reliability guidelines. The reviewing authority should be contacted for design guidance and criteria where such systems are being considered. See also Section 65 where in-line flow equalization units are provided in addition to the decantable volume.

a. Design F/M ratios in the range of 0.05 to 0.1 are permissible. The aeration tank volumetric loading should not exceed 15 lb BOD_5/d/1000 ft^3 [0.24 kg $BOD_5/(m^3 \cdot d)$]. The reactor MLSS and MLVSS concentrations and aeration tank volumetric loading should be calculated at the low-water level.

b. More than two tanks should be provided.

c. The decantable volume and decanter capacity of the sequencing batch reactor system with the largest basin out of service should be sized to pass at least 75 percent of the design maximum day flow without changing cycle times. A decantable volume of at least 4 hours with the largest basin out of service based on 100 percent of the design

maximum day flow is permissible.

d. System reliability with any single aeration tank unit out of service and the instantaneous delivery of flow shall be evaluated in the design of decanter weirs and approach velocities. The treated effluent from each reactor should be free of scum and should have a suspended solids concentration no greater than 30 mg/L at any time. See Paragraphs 53.413 and 72.43. Scum removal shall be provided. An adequate zone of separation between the sludge blanket and the decanter(s) shall be maintained throughout the decant phase.

e. Decanters that draw the treated effluent from near the water surface throughout the decant phase are recommended.

f. Solids management to accommodate tank dewatering shall be considered.

g. The blowers shall be provided in multiple units, so arranged and in such capacities as to meet the maximum air demand in the oxic portions of the fill/react and react phases of the cycle with the single largest unit out of service. See Paragraph 92.332(e).

h. Mechanical mixing independent of aeration shall be provided for all systems where biological phosphorus removal or denitrification is required. The mixing equipment should be sized to thoroughly mix the entire tank from a settled condition within 5 minutes without aeration.

i. The design effluent quality performance requirements for the plant should be sufficiently stringent to ensure acceptable effluent quality from any reactor. Flow paced composite sampling equipment and continuous turbidity metering for separately monitoring the effluent quality from each tank may be required by the regulatory agency. All 24-hour effluent quality composite samples for compliance reporting or monitoring plant operations shall be flow-paced and include samples collected at the beginning and end of each decant phase. A programmable logic controller (PLC) shall be provided. Multiple PLCs should be provided as necessary to ensure rapid process recovery and minimize the deterioration of effluent quality from the failure of a single controller. An uninterruptible power supply with electrical surge protection shall be provided for each PLC to retain program memory (i.e., process control program, last-known set points and measured process/equipment status, etc.) through a power loss. A hard-wired backup for manual override shall be provided in addition to automatic process control. Both automatic and manual controls shall allow independent operation of each tank. In addition, a fail-safe control that cannot be adjusted by the operator shall be provided, allowing at least 20 minutes of settling between the react and decant phases.

93. WASTEWATER TREATMENT PONDS

93.1 General

This Section deals with generally used variations of treatment ponds capable of achieving secondary treatment including controlled-discharge pond systems, flow-through pond systems and aerated pond systems. Ponds utilized for equalization, percolation, evaporation, and sludge storage are not discussed in this Section. The term "pond" is used in this Section to include the total earthen treatment facility and the term "cell" is used to designate the individual units of the total facility.

93.2 Location

93.21 Surface Runoff

Adequate provision shall be made to divert stormwater runoff around the pond and protect pond embankments from erosion.

93.22 Ground Water Separation

A minimum separation of 4 feet (1.2 m) between the bottom of the pond and the maximum ground water elevation should be maintained.

93.23 Bedrock Separation

A minimum separation of 10 feet (3.0 m) between the pond bottom and any bedrock formation is recommended.

93.3 Basis of Design

93.31 Area and Loadings for Controlled-Discharge Facultative Treatment Pond Systems

Pond design for design average BOD_5 loading may range from 15 to 35 pounds per acre per day [17 kg/(ha·d) to 40 kg/(ha·d)] at the mean operating depth in the primary cells and at least 180 days detention time between the minimum and maximum operating depths of the entire pond system, as described in Paragraph 93.416. Refer to Paragraph 11.251. The detention time and organic loading rate shall depend on climatic conditions and effluent discharge limits.

93.32 Area and Loadings for Flow-Through Facultative Treatment Ponds Systems

Pond design for design average BOD_5 loading may vary from 15 to 35 pounds per acre per day [17 kg/(ha·d) to 40 kg/(ha·d)] for the primary cell(s). Refer to Paragraph 11.251. The major design considerations for BOD_5 loading shall be directly related to the climatic conditions.

Design variables such as pond depth, multiple units, detention time, and additional treatment units shall be considered with respect to applicable standards for BOD_5, total suspended solids (TSS), bacteria, dissolved oxygen and pH.

A detention time of 90 to120 days should be provided; however, this shall be properly related to other design considerations. It should be noted that the major factor in the design is the duration of the cold weather period [water temperature less than 40°F (5 °C)].

93.33 Aerated Treatment Pond Systems

For the development of final design parameters, it is recommended that actual experimental data be obtained. However, the aerated treatment pond system design for minimum detention time may be estimated using the following formula, applied separately to each aerated cell:

$$t = \frac{E}{2.3k_1 \times (100 - E)}$$

t = hydraulic detention time, days

E = percent of BOD_5 to be removed in an aerated cell

k_1 = reaction coefficient, aerated pond, base 10. For normal domestic wastewater, the k_1 value may be assumed to be 0.12/day at 68°F (20 °C) and 0.06/day at 34°F (1 °C).

The reaction rate coefficient for domestic wastewater which includes some industrial wastes, other wastes, and partially treated wastewater shall be determined experimentally for the various conditions that might be encountered in the aerated pond cells. Conversion of the reaction rate coefficient at other temperatures shall be made based on experimental data.

The design should consider the effect of any return sludge. Additional storage volume for 20 years of operation should be considered for sludge, and in northern climates, for ice cover.

Oxygen requirements generally will depend on the design average BOD_5 loading, the degree of treatment, and the concentration of suspended solids to be maintained. Aeration equipment shall be capable of maintaining a minimum dissolved oxygen level of 2 mg/L in the cells at all times. Suitable protection from weather shall be provided for electrical controls. Aerated pond cells shall be followed by a polishing cell with a volume of at least 0.3 of the total volume of the aerated cells.

See Paragraph 92.33 for details on aeration equipment.

93.34 Industrial Wastes

Consideration shall be given to the type and effects of industrial wastes on the treatment process. In some cases it may be necessary to pretreat industrial or other discharges to the wastewater treatment pond.

Industrial wastes shall not be discharged to ponds without assessment of the effects such substances may have upon the treatment process and discharge requirements in accordance with state and federal laws.

93.35 Number of Cells Required

At a minimum, a wastewater treatment pond system should consist of three cells designed to facilitate both series and parallel operations. The maximum size of a pond cell should be 40 acres (16 ha). Two-cell systems may be utilized in very small installations where authorized by the regulatory agency.

All pond systems should be designed with piping flexibility to permit isolation of any cell without affecting the transfer and discharge capabilities of the total system. The piping should be arranged such that effluent from any primary cell cannot be discharged directly to the receiving stream. In addition, the ability to discharge the influent waste load to a minimum of two cells and/or all primary cells in the system should be provided.

93.351 Controlled-Discharge Facultative Treatment Pond Systems

For controlled-discharge pond systems, the area specified as the primary cells should be equally divided into two cells. The third or secondary cell volume should, as a minimum, be equal to the volume of each of the primary cells.

In addition, the design should permit for adequate elevation difference between primary and secondary cells to allow for gravity filling of the secondary from the primary. Where this is not feasible, pumping facilities shall be provided.

93.352 Flow-Through Facultative Treatment Pond Systems

At a minimum, primary cells shall provide adequate hydraulic detention time to maximize BOD_5 removal. Secondary cells should then be provided for additional detention time with depths to 8 feet (2.4 m) to facilitate solids reduction. Design should also consider recirculation within the system.

93.353 Aerated Treatment Pond Systems

A minimum of two aerated cells, plus a polishing cell, are required. A tapered mode of aeration is recommended. The first two aerated cells should be of equal size and no one aerated cell should provide more than 50 percent of the total required volume.

93.36 Pond Shape

The shape of all cells should be such that there are no narrow or elongated portions. Round, square or rectangular cells (length not exceeding three times the width) are considered most desirable. No islands, peninsulas, or coves shall be permitted. Dikes should be rounded at corners to minimize accumulations of floating materials. Common-wall dike construction, wherever possible, is strongly encouraged.

93.4 Pond Construction Details

93.41 Embankments and Dikes

93.411 Material

Dikes shall be constructed of relatively impervious soil and compacted to at least 95 percent Standard Proctor Density to form a stable structure. Vegetation and other unsuitable materials shall be removed from the area where the embankment is to be placed.

93.412 Top Width

The minimum dike width shall be 8 feet (2.4 m) to permit access for maintenance vehicles.

93.413 Maximum Slopes

Inner and outer dike slopes shall not be steeper than 1 vertical to 3 horizontal (1:3).

93.414 Minimum Slopes

Inner slopes should not be flatter than 1 vertical to 4 horizontal (1:4). Flatter slopes can be specified for larger installations because of wave action, but such slopes have the disadvantage of added shallow areas that are conducive to emergent vegetation. Outer slopes shall be sufficient to prevent surface runoff from entering the pond.

93.415 Freeboard

Minimum freeboard shall be 3 feet (0.9 m). For small systems, 2 feet (0.6 m) may be acceptable.

93.416 Design Depth

The minimum operating depth should be sufficient to prevent the growth of aquatic plants and damage to the dikes, pond bottom, control structures, aeration equipment, and other appurtenances. In no case shall the minimum pond depth be less than 2 feet (0.6 m).

a. Controlled-Discharge and Flow-Through Facultative Treatment Pond Systems

The maximum water depth shall be 6 feet (1.8 m) in the primary cells. Greater depths in subsequent cells are permissible, but supplemental aeration or mixing may be necessary.

b. Aerated Treatment Pond Systems

The design water depth should be 10 to 15 feet (3 m to 4.6 m). This depth limitation may be altered depending on the aeration equipment, wastewater strength, and climatic conditions.

93.417 Erosion Control

A justification and detailed discussion of the method of erosion control encompassing all relative factors such as pond location and size, seal material, topography, prevailing winds, cost breakdown, application procedures, etc., shall be provided.

a. Seeding

The dikes shall have a covered layer of at least 4 inches (100 mm) of fertile topsoil to promote establishment of an adequate vegetative cover wherever riprap is not utilized. Prior to prefilling (in accordance with Paragraph 93.424), adequate vegetation shall be established on dikes from the outside toe to 2 feet (0.6 m) above the pond bottom on the interior as measured on the slope. Perennial-type, low-growing, spreading grasses that minimize erosion and can be mowed are most satisfactory for seeding on dikes. In general, alfalfa and other long-rooted crops should not be used for seeding since their roots are apt to impair the water-holding efficiency of the dikes.

b. Additional Erosion Protection

Riprap or some other acceptable method of erosion control shall be provided as a minimum around all piping entrances and exits. For aerated cells, the

design should ensure erosion protection on the slopes and bottoms in the areas where turbulence will occur. Additional erosion control may also be necessary on the exterior dike slope to protect the embankment from erosion due to severe flooding of a watercourse.

c. Alternate Erosion Protection

Alternate erosion control on the interior dike slopes may be necessary for ponds that are subject to severe wave action. In these cases, riprap or an acceptable equal shall be placed from at least 1 foot (0.3 m) above the high water mark to 2 feet (0.6 m) below the low water mark (measured on the vertical).

93.42 Pond Bottom

93.421 Soil

The soil used to construct the pond bottom (not including the seal) and dike cores shall be relatively incompressible, tight, and compacted at or up to 4 percent above the optimum water content to at least 95 percent Standard Proctor Density.

93.422 Seal

Ponds shall be sealed such that seepage loss through the seal is as low as practicably possible. Seals consisting of soils, bentonite, or synthetic liners may be considered, provided the permeability, durability, and integrity of the proposed material can be satisfactorily demonstrated for anticipated conditions. Results of a testing program which substantiates the adequacy of the proposed seal shall be incorporated into and/or accompany the engineering report. Standard ASTM International procedures or acceptable similar methods shall be used for all tests.

To achieve an adequate seal in pond systems using soil, bentonite, or other seal materials, the hydraulic conductivity (k) in centimeters per second specified for the seal shall not exceed the value derived from the following expression, where L equals the thickness of the seal in centimeters.

$$k = 2.6 \times 10^{-9} L$$

The "k" obtained by the above expression corresponds to a percolation rate of pond water of less than 500 gallons per day per acre [4.7 $m^3/(ha \cdot d)$] at a water depth of 6 feet

(1.8 m) and a liner thickness of 1 foot (0.3 m), using the Darcy's law equation.

For a seal consisting of a synthetic liner, seepage loss through the liner shall not exceed the quantity equivalent to seepage loss through an adequate soil seal.

93.423 Uniformity

The pond bottom shall be as level as possible at all points. Finished elevations shall not be more than 3 inches (75 mm) from the average elevation of the bottom.

93.424 Prefilling

Prefilling the pond should be considered in order to protect the liner, to prevent weed growth, to reduce odor, and to maintain moisture content of the seal. However, the dikes shall be completely prepared as described in Paragraphs 93.417 (a) and (b) before the introduction of water.

93.43 Influent Lines

93.431 Material

Generally accepted material for underground sewer construction will be given consideration for the influent line to the pond. Unlined corrugated metal pipe should be avoided due to corrosion problems. In material selection, consideration shall be given to the characteristics of the wastewater, exceptionally heavy external loadings, abrasion, soft foundations, buoyancy and similar problems.

93.432 Manhole

A manhole or vented cleanout wye shall be installed prior to entrance of the influent line into the primary cell and shall be located as close to the dike as topography permits. Its invert shall be at least 6 inches (150 mm) above the maximum operating level of the pond and shall provide sufficient hydraulic head without surcharging the manhole.

93.433 Flow Distribution

Flow distribution structures shall be designed to effectively split hydraulic and organic loads equally to primary cells.

93.434 Placement

Influent lines may be located along the bottom of the pond with the top of the pipe just below the average upper elevation of the pond seal or liner. However, the full seal depth shall be maintained below the bottom of the pipe and throughout the transition area from the bottom of the pipe to the pond bottom.

In situations where pipes penetrate the pond seal, provisions to prevent seepage (such as anti-seep collars) shall be made.

93.435 Point of Discharge

All primary cells shall have individual influent lines which terminate approximately at the midpoint of the width and at approximately two-thirds the length away from the outlet structure so as to minimize short-circuiting of the wastewater.

All aerated cells shall have influent lines which distribute the load within the mixing zone of the aeration equipment.

93.436 Influent Discharge Apron

The influent line shall discharge horizontally into a shallow, saucer-shaped depression.

The end of the discharge line shall rest on a suitable concrete apron large enough to prevent the terminal influent velocity at the end of the apron from causing soil erosion. A minimum size apron of 2 feet (0.6 m) square shall be provided.

93.44 Control Structures and Interconnecting Piping

93.441 Structure

Where possible, facilities design shall consider the use of multi-purpose control structures to facilitate normal operational functions such as drawdown and flow distribution, flow and depth measurement, sampling, pumps for recirculation, chemical additions and mixing, and minimization of the number of construction sites within the dikes.

As a minimum, control structures shall be: (a) accessible for maintenance and adjustment of controls; (b) adequately ventilated for safety and to minimize corrosion; (c) locked to discourage vandalism; (d) contain controls to permit water level and flow rate control, and complete shutoff; (e) constructed of non-corrodible

materials (metal-on-metal contact in controls should be of similar alloys to discourage electrochemical reactions); and (f) located to minimize short-circuiting within the cell and avoid freezing and ice damage.

Recommended devices to regulate water level are valves, slide tubes or dual slide gates. Stop logs shall not be used to regulate water levels. Regulators should be designed so that they can be preset to prevent the pond surface elevation from dropping below the desired operational level.

93.442 Piping

All piping shall be of ductile iron or other acceptable material. Pipes should be anchored with adequate erosion control.

In situations where pipes penetrate the pond seal, provisions to prevent seepage (such as anti-seep collars) shall be made.

a. Drawdown Structure Piping

1. Submerged Takeoffs

For ponds designed for shallow or variable depth operations, submerged takeoffs are recommended. Intakes shall be located a minimum of 10 feet (3.0 m) from the toe of the dike and 2 feet (0.6 m) from the top of the seal, and shall employ vertical withdrawal.

2. Multi-Level Takeoffs

For ponds that are designed deep enough to permit stratification of pond content, multiple takeoffs are recommended. There shall be a minimum of 3 withdrawal pipes at different elevations. The bottom pipe shall conform to a submerged takeoff. The other pipes may utilize a horizontal entrance, provided that the design includes provisions to ensure that scum and floating materials shall not be drawn off with the cell effluent. Adequate structural support shall be provided.

3. Near Surface Takeoffs

For use under constant discharge conditions and/or for relatively shallow ponds under warm weather conditions, near surface overflow-type withdrawal is recommended. Pond design should evaluate a floating weir

box or slide tube entrance with baffles for scum control and should permit adequate drawoff approximately 2 feet (0.6 m) below the water surface.

4. Emergency Overflow

To prevent overtopping of dikes, emergency overflow should be provided with capacity to carry the expected peak instantaneous flow.

b. Hydraulic Capacity

The hydraulic capacity for continuous discharge structures and piping shall allow for a minimum of 250 percent of the design maximum day flow of the wastewater treatment system.

The hydraulic capacity for controlled-discharge pond systems shall permit transfer of water at a minimum rate of 6 inches (150 mm) of pond water depth per day at the available head.

93.5 Sludge Removal and Disposal

Sludge removal may be required when upgrading an existing pond system to ensure the best effluent quality. The final disposal site shall be acceptable to the regulatory agency. Transferring sludge from an existing pond into a new primary pond cell for disposal is unacceptable.

Controlled discharge facultative treatment pond systems should provide a sludge storage volume which does not exceed one half of the minimum operating depth of the primary cells.

The pond system following sludge removal shall remain sealed and shall meet applicable seepage loss requirements.

93.6 Miscellaneous

93.61 Fencing

The pond area shall be enclosed with an adequate fence to prevent entry by livestock and discourage trespassing. Fencing should not obstruct maintenance vehicle traffic on top of the dikes. A vehicle access gate of sufficient width to accommodate mowing equipment shall be provided. All access gates shall be provided with locks.

93.62 Access

An all-weather access road shall be provided to the pond site to allow year-round maintenance of the facility.

93.63 Warning Signs

Appropriate permanent signs shall be provided along the fence around the pond to designate the nature of the facility and advise against trespassing. At least one sign shall be provided on each side of the site and one sign shall be provided for every 500 feet (150 m) of its perimeter.

93.64 Flow Measurement

Flow measurement requirements are presented in Paragraph 56.6. Effective weather protection shall be provided for the recording equipment.

93.65 Groundwater Monitoring

An approved system of wells or lysimeters may be required around the perimeter of the pond site to facilitate groundwater monitoring. The need for such monitoring will be determined on a case-by-case basis.

93.66 Pond Level Gauges

Pond level gauges shall be provided.

93.67 Service Building

A service building for laboratory and maintenance equipment shall be provided, if required. Refer to Section 58.

94. OTHER BIOLOGICAL SYSTEMS

94.1 General

Biological treatment processes not included in these standards may be considered in accordance with Paragraph 53.2.

CHAPTER 100
DISINFECTION

101. GENERAL

Disinfection of the effluent shall be provided as necessary to meet applicable standards. The design shall consider meeting both the bacterial standards and the disinfectant residual limit in the effluent. The disinfection process should be selected after due consideration of waste characteristics, type of treatment process provided prior to disinfection, waste flow rates, pH of waste, disinfectant demand rates, current technology application, cost of equipment and chemicals, power cost, and maintenance requirements.

Chlorine is the most commonly used chemical for wastewater disinfection. The forms most often used are liquid chlorine and calcium or sodium hypochlorite. Other disinfectants, including chlorine dioxide, ozone, bromine, or ultraviolet disinfection, may be accepted by the reviewing authority in individual cases. If halogens are utilized, it may be necessary to dehalogenate if the residual level in the effluent exceeds effluent limitations or would impair the natural aquatic habitat of the receiving stream.

Where a disinfection process other than chlorine is proposed, supporting data from pilot plant installations or similar full scale installations may be required as a basis for the design of the system. Refer to Paragraph 53.2.

102. CHLORINE DISINFECTION

102.1 Type

Chlorine is available for disinfection in gas, liquid (hypochlorite solution), and solid (hypochlorite tablet) forms. The type of chlorine should be carefully evaluated during the facility planning process. The use of chlorine gas or liquid will be most dependent on the size of the facility and the chlorine dose required. Large quantities of chlorine, such as are contained in ton cylinders and tank cars, can present a considerable hazard to plant personnel and to the surrounding area should such containers develop leaks. Both monetary cost and the potential public exposure to chlorine should be considered when making the final determination.

102.2 Dosage

For disinfection, the capacity shall be adequate to produce an effluent that will meet the applicable bacterial limits specified by the regulatory agency for that installation. Required disinfection capacity will vary, depending on the uses and points of application of the disinfection chemical. The chlorination system shall be designed on a rational basis and calculations justifying the equipment sizing and number of units shall be submitted for the whole operating range of flow rates for the type of control to be used. System design considerations shall include the controlling wastewater flow meter (sensitivity and location), telemetering equipment and chlorination controls. For normal domestic wastewater, the following may be used as a guide in sizing chlorination facilities.

Type of Treatment	Dosage
Trickling filter plant effluent	10 mg/L
Activated sludge plant effluent	8 mg/L
Tertiary filtration effluent	6 mg/L
Nitrified effluent	6 mg/L

102.3 Containers

102.31 Cylinders

One hundred fifty pound (68 kg) cylinders are typically used where chlorine gas consumption is less than 150 pounds per day (68 kg/d). Cylinders should be stored in an upright position with adequate support brackets and chains at 2/3 of cylinder height for each cylinder.

102.32 Ton Containers

The use of one-ton (907 kg) containers should be considered where the average daily chlorine consumption is over 150 pounds (68 kg).

102.33 Tank Cars

At large installations, the use of tank cars, generally accompanied by evaporators, may be considered. Area wide public safety shall be evaluated. No interruption of chlorination shall be permitted during tank car switching.

The tank car being used for the chlorine supply shall be located on a dead end, level track that is a private siding. The tank car shall be protected from accidental bumping by other railway cars by a locked derail device, a closed locked switch or both. The area shall be clearly posted "DANGER-CHLORINE". The tank car shall be secured by adequate fencing that includes gates provided with locks for personnel and rail access.

The tank car site shall be provided with a suitable operating platform at the unloading point for easy access to the protective housing or the tank car for the connection of flexible feedlines and valve operation. Adequate area lighting shall be provided for night time operation and maintenance.

102.34 Liquid Hypochlorite Solutions

Storage containers for hypochlorite solutions shall be of sturdy, non-metallic lined construction and shall be provided with secure tank tops and pressure relief and overflow piping. The overflow piping should be provided with a water seal or other device to

prevent tanks from venting to the indoors. Storage tanks should be either located or vented outside. Provision shall be made for adequate protection from light and extreme temperatures. Tanks shall be located where leakage will not cause corrosion or damage to other equipment. A means of secondary containment shall be provided to contain spills and facilitate cleanup. Due to deterioration of hypochlorite solutions over time, it is recommended that containers not be sized to hold more than one month's needs. At larger facilities and locations where delivery is not a problem, it may be desirable to limit on-site storage to one week. Refer to Section 57.

102.35 Dry Hypochlorite Compounds

Dry hypochlorite compounds should be kept in tightly closed containers and stored in a cool, dry location. Some means of dust control should be considered, depending on the size of the facility and the quantity of compound used. Refer to Section 57.

102.4 Equipment

102.41 Scales

Scales for weighing cylinders and containers shall be provided at all plants using chlorine gas. At large plants, scales of the indicating and recording type are recommended. At a minimum, a platform scale shall be provided. Scales shall be of corrosion-resistant material.

102.42 Evaporators

Where manifolding of several cylinders or ton containers will be required to evaporate sufficient chlorine, consideration should be given to the installation of evaporators to produce the quantity of gas required.

102.43 Mixing

The disinfectant shall be positively mixed as rapidly as possible, with a complete mix being effected in 3 seconds. This may be accomplished by either the use of turbulent flow regime or a mechanical flash mixer.

102.44 Contact Period and Tank

For a chlorination system, a minimum contact period of 15 minutes at design peak hourly flow or maximum rate of pumpage shall be provided after thorough mixing. When evaluating existing chlorine contact tanks, field tracer studies should be performed to assure adequate contact time.

The chlorine contact tank shall be constructed so as to reduce short-circuiting of flow to a practical minimum. Tanks not provided with continuous mixing shall be provided with "over-

and-under" or "end-around" baffling to minimize short-circuiting.

The tank should be designed to facilitate maintenance and cleaning without reducing effectiveness of disinfection. Duplicate tanks, mechanical scrapers, or portable deck-level vacuum cleaning equipment shall be provided. Consideration should be given to providing skimming devices on all contact tanks. Covered tanks are discouraged.

102.45 Piping and Connections

Piping systems should be as simple as possible, specifically selected and manufactured to be suitable for chlorine service, with a minimum number of joints. Piping should be well supported and protected against temperature extremes.

Due to the corrosiveness of wet chlorine, all lines designated to handle dry chlorine shall be protected from the entrance of water or air containing water. Even minute traces of water added to chlorine results in a corrosive attack. Low pressure lines made of hard rubber, saran-lined, rubber-lined, polyethylene, polyvinylchloride (PVC), or other approved materials are satisfactory for wet chlorine or aqueous solutions of chlorine.

The chlorine system piping shall be color coded and labeled to distinguish it from other plant piping. Refer to Paragraph 54.5. Where sulfur dioxide is used, the piping and fittings for chlorine and sulfur dioxide systems shall be designed so that interconnection between the two systems cannot occur.

102.46 Standby Equipment and Spare Parts

Standby equipment of sufficient capacity should be available to replace the largest unit during shutdowns. Spare parts shall be available for all disinfection equipment to replace parts which are subject to wear and breakage.

102.47 Chlorinator Water Supply

An ample supply of water shall be available for operating the chlorinator. Where a booster pump is required, duplicate equipment should be provided, and, when necessary, standby power as well. Protection of a potable water supply shall conform to the requirements of Paragraph 56.2. Adequately filtered plant effluent should be considered for use in the chlorinator.

102.48 Leak Detection and Controls

A bottle of 56 percent ammonium hydroxide solution shall be available for detecting chlorine leaks. Where one-ton (907 kg) containers or tank cars are used, a leak repair kit approved by the Chlorine Institute shall be provided. Consideration should be

given to the provision of caustic soda solution reaction tanks for absorbing the contents of leaking one-ton (907 kg) containers where such containers are in use. Consideration should be given to the installation of automatic gas detection and related alarm equipment.

102.5 Housing

102.51 Feed and Storage Rooms

If gas chlorination equipment or chlorine cylinders are to be in a building used for other purposes, a gas-tight room shall separate this equipment from any other portion of the building. Floor drains from the chlorine room should not be connected to floor drains from other rooms. Doors to this room shall open only to the outside of the building, and shall be equipped with panic hardware. Rooms shall be at ground level and should permit easy access to all equipment.

Storage areas for one-ton (907 kg) cylinders should be separated from the feed area. In addition, the storage area shall have designated areas for "full" and "empty" cylinders. Chlorination equipment should be situated as close to the application point as reasonably possible. For additional safety considerations, refer to Section 57.

102.52 Inspection Window

A clear glass, gas-tight, window shall be installed in an exterior door or interior wall of the chlorinator room to permit the units to be viewed without entering the room.

102.53 Heat

Rooms containing disinfection equipment shall be provided with a means of heating so that a temperature of at least 60°F (16 °C) can be maintained. The room should be protected from excess heat. Cylinders shall be kept at essentially room temperature. If liquid hypochlorite solution is used, the containers may be located in an unheated area.

102.54 Ventilation

With chlorination systems, forced, mechanical ventilation shall be installed which will provide one complete fresh air change per minute when the room is occupied. The entrance to the air exhaust duct from the room shall be near the floor. The point of discharge shall be so located as not to contaminate the air inlet to any buildings or present a hazard at the access to the chlorinator room or other inhabited areas. Air inlets shall be so located as to provide cross ventilation with air and at such temperature that will not adversely affect the chlorination equipment. The outside air inlet shall be at least three feet above grade. The vent hose from the chlorinator shall discharge to the outside atmosphere

above grade. Where public exposure may be extensive, scrubbers may be required on ventilation discharge.

102.55 Electrical Controls and Ambient Gas Detectors

Switches for fans and lights shall be outside of the room at the entrance. A labeled signal light indicating fan operation should be provided at each entrance, if the fan can be controlled from more than one point. An ambient chlorine gas detector should be provided in the chlorine storage room. The gas detector should be interlocked with the fan and audible or visual alarms.

102.56 Protective and Respiratory Gear

Respiratory air-pac protection equipment that meets the requirements of the National Institute for Occupational Safety and Health (NIOSH) shall be available where chlorine gas is handled, and shall be stored at a convenient location, but not inside any room where chlorine is used or stored. Instructions for using the equipment shall be posted. The units shall use compressed air, have at least 30-minute capacity and be compatible with the units used by the fire department responsible for the plant.

102.6 Sampling and Control

102.61 Sampling

Facilities shall be included for sampling disinfected effluent after the contact chamber as monitoring requirements warrant. In large installations, or where stream conditions warrant, provisions should be made for continuous monitoring of effluent chlorine residual.

102.62 Testing and Control

Equipment shall be provided for measuring chlorine residual using accepted test procedures. The installation of demonstrated effective facilities for automatic chlorine residual analysis, recording, and proportioning systems should be considered at all large installations.

Equipment shall also be provided for measuring bacterial organisms using accepted test procedures as required by the regulatory agency.

103. DECHLORINATION

103.1 Types

Dechlorination of wastewater effluent may be necessary to reduce the toxicity due to chlorine residuals. The most common dechlorination chemicals are sulfur compounds, particularly sulfur dioxide gas or

aqueous solutions of sulfite or bisulfite. Tablet dechlorination systems are also available for small facilities.

The type of dechlorination system should be carefully selected considering criteria including: type of chemical storage required, amount of chemical needed, ease of operation, compatibility with existing equipment, and safety.

103.2 Dosage

The dosage of dechlorination chemical should depend on the residual chlorine in the effluent, the final residual chlorine limit, and the particular form of the dechlorinating chemical used. The most common dechlorinating agent is sulfite. The following forms of the compound are commonly used and yield sulfite (SO_2) when dissolved in water.

Dechlorination Chemical	Theoretical mg/L Required to Neutralize 1 mg/L Cl_2
Sodium thiosulfate (solution)	0.56
Sodium sulfite (tablet)	1.78
Sulfur dioxide (gas)	0.9
Sodium meta bisulfite (solution)	1.34
Sodium bisulfite (solution)	1.46

Theoretical values may be used for initial approximations, to size feed equipment with the consideration that under good mixing conditions 10% excess dechlorinating chemical is required above theoretical values. Excess sulfur dioxide may consume oxygen at a maximum of 1.0 mg dissolved oxygen for every 4 mg SO_2.

The liquid solutions come in various strengths. These solutions may need to be further diluted to provide the proper dose of sulfite.

103.3 Containers

Depending on the chemical selected for dechlorination, the storage containers will vary from gas cylinders, liquid in 50 gallon (190 L) drums or dry compounds. Dilution tanks and mixing tanks are required when using dry compounds and may be required when using liquid compounds to deliver the proper dosage. Solution containers should be covered to prevent evaporation and spills.

103.4 Feed Equipment, Mixing, and Contact Requirements

103.41 Equipment

In general, the same type of feeding equipment used for chlorine gas may be used with minor modifications for sulfur dioxide gas. However, the manufacturer should be contacted for specific

equipment recommendations. No equipment should be alternately used for the two gases. The common type of dechlorination feed equipment utilizing sulfur compounds include a vacuum solution feed of sulfur dioxide gas and a positive displacement pump for aqueous solutions of sulfite or bisulfite.

The selection of the type of feed equipment utilizing sulfur compounds shall include consideration of the operator safety and overall public safety relative to the wastewater treatment plant's proximity to populated areas and the security of gas cylinder storage. The selection and design of sulfur dioxide feeding equipment shall take into account that the gas reliquifies quite easily. Special precautions shall be taken when using ton containers to prevent reliquefaction.

Where necessary to meet the operating ranges, multiple units shall be provided for adequate peak capacity and to provide a sufficiently low feed rate on turn down to avoid depletion of the dissolved oxygen concentrations in the receiving waters.

103.42 Mixing Requirements

The dechlorination reaction with free or combined chlorine will generally occur within 15 to 20 seconds. The dechlorination chemical should be introduced at a point in the process where the hydraulic turbulence is adequate to assure thorough and complete mixing. If no such point exists, mechanical mixing shall be provided. The high solubility of SO_2 prevents it from escaping during turbulence.

103.43 Contact Time

A minimum of 30 seconds for mixing and contact time shall be provided at the design peak hourly flow or maximum rate of pumpage. A suitable sampling point shall be provided downstream of the contact zone. Consideration shall be given to a means of reaeration to assure maintenance of an acceptable dissolved oxygen concentration in the stream following sulfonation.

103.44 Standby Equipment and Spare Parts

The same requirements apply as for chlorination systems. See Paragraph 102.46.

103.45 Sulfonator Water Supply

The same requirements apply as for chlorination systems. See Paragraph 102.47.

103.5 Housing Requirements

103.51 Feed and Storage Rooms

The requirements for housing SO_2 gas equipment shall follow the same guidelines as used for chlorine gas. Refer to Paragraph 102.5 for specific details.

When using solutions of the dechlorinating compounds, the solutions may be stored in a room that meets the safety and handling requirements set forth in Section 57. The mixing, storage, and solution delivery areas shall be designed to contain or route solution spillage or leakage away from traffic areas to an appropriate containment unit.

103.52 Protective and Respiratory Gear

The respiratory air-pac protection equipment is the same as for chlorine. See Paragraph 102.56. Leak repair kits of the type used for chlorine gas that are equipped with gasket material suitable for service with sulfur dioxide gas may be used (refer to The Compressed Gas Association Publication CGA G-3-1995, "Sulfur Dioxide"). For additional safety considerations, see Section 57.

103.6 Sampling and Control

103.61 Sampling

Facilities shall be included for sampling the dechlorinated effluent for residual chlorine. Provisions shall be made to monitor for dissolved oxygen concentration after sulfonation when required by the regulatory agency.

103.62 Testing and Control

Provision shall be made for manual or automatic control of sulfonator feed rates based on chlorine residual measurement or flow.

104. ULTRAVIOLET DISINFECTION

104.1 General

Ultraviolet (UV) disinfection process design, operating data, and experience are developed, but design standards are not well established. Expected performance of the UV disinfection units for the full operating range of flow rates shall be based upon experience at similar full scale installations or thoroughly documented prototype testing with the particular wastewater. Critical parameters for UV disinfection units are dependent upon manufacturers' design, lamp selection, tube materials, ballasts, configuration, control systems, and associated appurtenances. Proposals on this disinfection process will be reviewed on a case-by-case

basis at the discretion of the reviewing authority under the provisions of Paragraph 53.2.

104.2 Lamp Type

UV disinfection lamps should be low pressure-low intensity, low pressure-high intensity or medium pressure-high intensity.

104.3 Channel Design and Hydraulics

Open channel designs with modular UV disinfection units that can be removed from the flow are required. At least two banks in series shall be provided in each channel for disinfection reliability and to ensure uninterrupted service during tube cleaning or other required maintenance. The hydraulic properties of the system shall be designed to simulate plug flow conditions without short circuiting under the full operating flow range. In addition, water level control shall be provided to achieve the necessary exposure. Also refer to Paragraphs 54.2 and 54.3. Closed chamber units will be reviewed on a case by case basis in accordance with Paragraph 53.2.

104.4 Transmittance

This process should be limited to a high quality effluent having at least 65% UV radiation transmittance at 254 nanometers wave length, and BOD_5 and suspended solids concentrations no greater than 30 mg/L at any time.

104.5 Dosage

The UV dosage shall be based on the design peak hourly flow. As a general guide in system sizing for an activated sludge effluent with the characteristics described in Paragraph 104.4, a UV dosage not less than 30 $(mW \cdot s)/cm^2$ may be used after adjustments for maximum tube fouling, lamp output reduction after 8,760 hours of operation, and other energy absorption losses.

104.6 Operations, Safety and Alarm System

Operator safety (electrical hazards and exposure to UV radiation) and tube cleaning frequency shall be considered. An alarm system shall be provided to separately indicate lamp failure, low UV intensity and any other cause of UV disinfection unit failure.

104.7 Electrical Controls

A programmable logic controller (PLC) shall be provided. Multiple PLCs should be provided as necessary to ensure rapid recovery and minimize the deterioration of effluent quality from the failure of a single controller. An uninterruptable power supply with electrical surge protection shall be provided for each PLC to retain program memory (i.e. process control program, last known set-points and measured process/equipment status etc.) through a power loss. A hard-wired backup for manual override shall be provided in addition to automatic process control. Both automatic and

manual controls shall allow independent operation of each UV disinfection unit.

105. OZONE DISINFECTION

Ozone systems for disinfection should be evaluated on a case-by-case basis. Design standards, operating data, and experience for this process are not well established. Therefore, design of these systems should be based upon experience at similar full scale installations or thoroughly documented prototype testing with the particular wastewater.

CHAPTER 110
SUPPLEMENTAL TREATMENT PROCESSES

111. PHOSPHORUS REMOVAL BY CHEMICAL TREATMENT

111.1 General

111.11 Method

Addition of aluminum salts, iron salts, or lime may be used for the chemical removal of soluble phosphorus. The phosphorus reacts with the aluminum, iron, or calcium ions to form insoluble compounds. These insoluble compounds may be flocculated with or without the addition of a coagulant aid (such as a polyelectrolyte) to facilitate separation by sedimentation, or sedimentation followed by filtration.

111.12 Design Basis

111.121 Preliminary Testing

Laboratory, pilot, or full scale studies of various chemicals, feed points, and treatment processes are recommended for existing plant facilities to determine the achievable performance level, cost-effective design criteria, and ranges of required chemical dosages.

The selection of a treatment process and chemical dosage for a new facility should be based on such factors as influent wastewater characteristics, the proposed chemical, effluent requirements, and anticipated treatment efficiency.

111.122 System Flexibility

Systems shall be designed with sufficient flexibility to allow for several operational adjustments in chemical feed locations, chemical feed rates, and for feeding alternate chemical compounds.

111.2 Process Requirements

111.21 Dosage

The design chemical dosage shall include the amount needed to react with the phosphorus in the wastewater, the amount required to drive the chemical reaction to the desired state of completion, including consideration of competing reactions, and the amount required due to inefficiencies in mixing or dispersion. Excessive chemical dosage should be avoided.

111.22 Chemical Selection

The choice of aluminum salts, iron salts, or lime should be based on the wastewater characteristics, chemical availability and handling, sludge processing and disposal methods, and the economics of the total system.

When lime is used, it may be necessary to neutralize the high pH prior to subsequent treatment in secondary biological systems or prior to discharge in those flow schemes where lime treatment is the final step in the treatment process. Problems associated with lime usage, handling, and sludge production and dewatering shall be evaluated.

111.23 Chemical Feed Points

Selection of chemical feed points shall include consideration of the chemicals used in the process, necessary reaction times between precipitant chemical and polyelectrolyte additions, and the wastewater treatment processes and components utilized. Flexibility in feed locations shall be provided to optimize chemical usage and overall treatment efficiency.

111.24 Flash Mixing

Each chemical shall be mixed rapidly and uniformly with the wastewater flow stream. Where separate mixing basins are provided, they should be equipped with mechanical mixing devices. The detention period should be at least 30 seconds.

When a chemical solution is added on a batch basis to the contents of a secondary cell of a controlled-discharge facultative treatment pond system, a means of adequate dispersal and mixing should be provided, such as an outboard (propeller driven) motorboat.

111.25 Flocculation

The particle size of the precipitate formed by chemical treatment may be very small. Consideration should be given in the process design to the addition of synthetic polyelectrolytes to aid settling. The flocculation equipment should be adjustable in order to obtain optimum floc growth, control deposition of solids, and prevent floc destruction.

111.26 Liquid - Solids Separation

The velocity through pipes or conduits from flocculation basins to settling basins should not exceed 1.5 feet per second (0.5 m/s) in order to minimize floc destruction. Entrance works to settling basins should also be designed to minimize floc shear.

Settling basin design shall be in accordance with the criteria outlined in Chapter 70. For design of the sludge handling

system, special consideration should be given to the type and volume of sludge generated in the phosphorus removal process.

111.27 Filtration

Effluent filtration, such as with granular media filters or membrane separation technologies, shall be considered in conjunction with chemical treatment where effluent phosphorus concentrations of less than 1 mg/L must be achieved.

111.3 Feed Systems

111.31 Location

All liquid chemical mixing and feed installations should be installed on corrosion-resistant pedestals and elevated above the highest liquid level anticipated during emergency conditions.

The chemical feed equipment shall be designed to meet the maximum dosage requirements for the design conditions.

Lime feed equipment should be located so as to minimize the length of slurry conduits. All slurry conduits shall be accessible for cleaning.

111.32 Liquid Chemical Feed System

Liquid chemical feed pumps should be of the positive displacement type with variable feed rate. Pumps shall be selected to feed the full range of chemical quantities required for the anticipated phosphorus mass loading conditions with the largest unit out of service. Consideration should be given to systems including pumps and piping that will feed either iron or aluminum compounds to provide flexibility. Refer to Paragraph 111.51.

Screens and valves shall be provided on the chemical feed pump suction lines.

An air break or anti-siphon device shall be provided where the chemical solution stream discharges to the transport water stream to prevent an induction effect resulting in overfeed.

Consideration shall be given to providing pacing equipment to optimize chemical feed rates.

111.33 Dry Chemical Feed System

Each dry chemical feeder shall be equipped with a dissolver which is capable of providing a minimum retention time of 5 minutes at the maximum feed rate.

Polyelectrolyte feed installations should be equipped with two solution vessels and transfer piping for solution make-up and daily operation.

Make-up tanks shall be provided with an eductor funnel or other appropriate arrangement for wetting the polymer during the preparation of the stock feed solution. Adequate mixing should be provided by a large-diameter low-speed mixer.

111.4 Storage Facilities

111.41 Size

Storage facilities shall be sufficient to ensure that an adequate supply of the chemical is available at all times. Exact storage size requirements will depend on size of shipment, length of delivery time, and process requirements. Storage for a minimum supply of 10 days should be provided.

111.42 Location and Containment

The liquid chemical storage tank and tank fill connections shall be located within a containment structure that has a capacity exceeding the total volume of all storage vessels. Valves on discharge lines shall be located adjacent to the storage tank and within the containment structure. Refer to Paragraph 57.2.

Auxiliary facilities within the containment area, including pumps and controls, shall be located above the highest anticipated liquid level. Containment areas shall be sloped to a sump area and shall not contain floor drains.

Bag storage should be located near the solution make-up point to avoid unnecessary transportation and housekeeping problems.

111.43 Accessories

Platforms, stairs, and railings shall be provided as necessary, to afford convenient and safe access to all filling connections, storage tank entries, and measuring devices.

Storage tanks shall be provided with reasonable access to facilitate cleaning.

111.5 Other Requirements

111.51 Materials

All chemical feed equipment and storage facilities shall be constructed of materials resistant to chemical attack by all chemicals normally used for phosphorus removal. Refer to Section 57.

111.52 Temperature, Humidity, and Dust Control

Precautions shall be taken to prevent chemical storage tanks and feed lines from reaching temperatures likely to result in freezing or chemical crystallization at the concentrations employed. A heated enclosure or insulation may be required. Consideration shall be given to temperature, humidity, and dust control in all chemical feed room areas.

111.53 Cleaning

Consideration shall be given to the accessibility of piping. Piping should be installed with plugging wyes, tees or crosses with removable plugs at changes in direction to facilitate cleaning.

111.54 Filling Drains and Draw-Off

Above-bottom drawoff from chemical storage or feed tanks shall be provided to avoid withdrawal of settled solids into the feed system. A bottom drain shall also be installed for periodic removal of accumulated settled solids. Provisions shall be made in the fill lines to prevent back siphonage of chemical tank contents.

111.6 Safety and Hazardous Chemical Handling

The chemical handling facilities shall meet the appropriate safety and hazardous chemical handling facilities requirements of Section 57.

111.7 Sludge Handling

Consideration shall be given to the type and additional capacity of the sludge handling facilities that will be needed when chemicals are added. Refer to Chapter 80.

112. HIGH RATE EFFLUENT FILTRATION

112.1 General

112.11 Applicability

Granular media filters may be used as an advanced treatment device for the removal of residual suspended solids from secondary effluents. Filters may be necessary where effluent concentrations of less than 20 mg/L of suspended solids and/or 1.0 mg/L of phosphorus must be achieved or to obtain adequate turbidity reduction for urban water reuse. A pre-treatment process such as chemical coagulation, flocculation and sedimentation, or other acceptable process should precede the filter units where effluent suspended solids requirements are less than 10 mg/L.

112.12 Design Considerations

Care should be given in designing pipes or conduits ahead of filter units, if applicable, to minimize shearing of floc particles. Consideration should be given in the plant design to provide flow equalization facilities to moderate filter influent quality and quantity.

112.2 Filter Types

Filters may be of the gravity type or pressure type. Pressure filters shall be provided with ready and convenient access to the media for inspection or cleaning. Where abnormal quantities of greases or similar solids that result in filter plugging are expected, filters should be of the gravity type.

112.3 Filtration Rates

112.31 Allowable Rates

Filtration rates shall not exceed 5 gpm/sq ft [3.40 L/(m^2·s)] based on the design peak hourly flow rate applied to the filter units. The expected design maximum suspended solids loading to the filter should also be considered in determining the necessary filter area.

112.32 Number of Units

Total filter area shall be provided in two or more units, and the filtration rate shall be calculated on the total available filter area with one unit out of service.

112.4 Backwash

112.41 Backwash Rate

The backwash rate shall be adequate to fluidize and expand each media layer by a minimum of 20 percent based on the media selected. The backwash system shall be capable of providing variable backwash rates. Minimum and maximum backwash rates shall be based on demonstrated satisfactory field experience under similar conditions. The design shall provide for a minimum backwash period of 10 minutes.

112.42 Backwash Pumps

Pumps for backwashing filter units shall be sized and interconnected to provide the required backwash rate to any filter with the largest pump out of service. Filtered water from the clear well or chlorine tank shall be used as the source of backwash water. Waste filter backwash shall be adequately treated.

112.43 Backwash Surge Control

The rate of return of waste filter backwash water to treatment units shall be controlled so that the rate does not exceed 15 percent of the design average daily flow rate to the treatment unit. The hydraulic and organic load from waste backwash water shall be considered in the overall design of the treatment plant. Surge tanks shall have a minimum capacity of two backwash volumes, although additional capacity should be considered to allow for operational flexibility. Where waste backwash water is returned for treatment by pumping, adequate pumping capacity shall be provided with the largest unit out of service.

112.44 Backwash Water Storage

Total backwash water storage capacity provided in an effluent clearwell or other unit shall equal or exceed the volume required for two complete backwash cycles.

112.5 Filter Media Selection

Selection of proper filter media type and size will depend on the required effluent quality, the type of treatment provided prior to filtration, the filtration rate selected, and filter configuration. In dual- or multi-media filters, media size selection shall consider compatibility among media. Media shall be selected and provided to meet specific conditions and requirements relative to the project under consideration. The selection and sizing of the media shall be based on demonstrated satisfactory field experience under similar conditions. All media shall have a uniformity coefficient of 1.7 or less. The uniformity coefficient, effective size, depth, and type of media shall be set forth in the specifications.

112.6 Filter Appurtenances

The filters shall be equipped with washwater troughs, surface wash or air scouring equipment, means of measurement and positive control of the backwash rate, equipment for measuring filter head loss, positive means of shutting off flow to a filter being backwashed, and filter influent and effluent sampling points. If automatic controls are provided, there shall be a manual override for operating equipment, including each individual valve essential to the filter operation. The underdrain system shall be designed for uniform distribution of backwash water (and air, if provided) without danger of clogging from solids in the backwash water. If air is to be used for filter backwash, separate backwash blower(s) shall be provided. Provision shall be made to allow for periodic chlorination of the filter influent or backwash water to control slime growth. When chemical disinfection is not provided at the plant, manual dosage of chlorine compounds is acceptable.

112.7 Access and Housing

Each filter unit shall be designed and installed so that there is ready and convenient access to all components and the media surface for inspection

and maintenance, without taking other units out of service. Housing for filter units shall be provided. The housing shall be constructed of suitable corrosion-resistant materials. All controls shall be enclosed and the structure housing filters, controls, and equipment shall be provided with adequate heat and ventilation equipment to minimize problems with excess humidity.

112.8 Proprietary Equipment

Where proprietary filtration equipment not conforming to the preceding requirements is proposed, data which supports the capability of the equipment to meet effluent requirements under design conditions shall be provided. Such proprietary equipment will be reviewed on a case-by-case basis at the discretion of the regulatory agency. Refer to Paragraph 53.2.

APPENDIX
HANDLING AND TREATMENT OF SEPTAGE AT A WASTEWATER TREATMENT PLANT

General

One method of septage disposal is the discharge to a municipal wastewater treatment plant. All plants require special design considerations prior to the acceptance of septage.

Definition

Septage is a general term for the contents removed from septic tanks, portable vault toilets, privy vaults, holding tanks, very small wastewater treatment plants, or semi-public facilities (i.e., schools, motels, mobile home parks, campgrounds, small commercial endeavors) receiving wastewater from domestic sources.

Non-domestic (industrial) wastes are not included in the definition and are not covered by this appendix.

Contents from grease traps should not be hauled to most municipal wastewater treatment plants for disposal.

Characteristics

Compared to raw domestic wastewater from a conventional municipal sewer collection system, septage usually is quite high in organics, grease, hair, stringy material, scum, grit, solids, and other extraneous debris. Substantial quantities of phosphorus, ammonia nitrogen, bacterial growth inhibitors, and cleaning materials may be present in septage, depending on the source. Tables No. 1 and No. 2 (Tables 3-4 and 3-8 from the U.S. EPA Handbook entitled "Septage Treatment and Disposal" 1984, EPA-625/6-84-009 reprinted herein) give a comparison of some of the common parameters for septage and municipal wastewater.

Data for local septage to be received should be collected for design of septage receiving and treatment systems. The characteristics of septage should be expected to vary widely from load to load depending on the source.

Treatment

Septage is normally considered treatable at a plant. However, unless proper engineering planning and design is provided, septage may represent a shock loading or have other adverse impacts on plant processes and effluent quality which will be influenced by many factors, including the following:

a. Capacity (mgd) (m^3/d) of the plant relative to the amount and rate of septage directed to the plant;

b. Unused plant capacity available (above current sewer collection system loadings) to treat septage loadings;

c. Sensitivity of the treatment plant process to daily fluctuations in loadings brought about by the addition of septage;

d. Slug septage loadings of BOD, ammonia nitrogen, or phosphorus which may cause process upset, odor nuisance, aeration tank/aerated digester foaming, or pass through to the effluent;

e. The point of introduction of the septage into the plant process. Feasible alternative points of feed to the treatment units shall be evaluated including feed to the sludge processing units provided the unit function will not be adversely affected;

f. The ability to control feed rates of septage to the plant for off peak loading periods; and,

g. The volume and concentrations of bacterial growth inhibitors in septage from some portable vault toilets and recreational dump station holding tanks.

The permitted plant effluent limits shall be considered when evaluating these factors.

Considerations

An adequate engineering evaluation shall be made of the existing plant and the anticipated septage loading prior to receiving septage at the plant. The regulatory agency shall be contacted to obtain the appropriate approvals prior to the acceptance of septage. For proposed plant expansion and upgrading, the Engineering Report or Facility Plan (refer to Chapter 10) shall include anticipated septage loading when addressing treatment plant sizing and process selection. The following items should be included, as appropriate, in the engineering evaluation and facility planning:

a. The uninterrupted and satisfactory treatment (within the plant regulatory limits) of waste loads from the sewer system shall not be adversely affected by the addition of septage to the plant;

b. In general, the smaller the plant design capacity relative to the septage loading, the more subject the plant will be to upset and potential violation of permitted discharge effluent limits;

c. Allocation of organic plant capacity originally planned for future growth;

d. For plants to be expanded and upgraded, the sensitivity of the treatment process to receiving septage and the impact on discharge parameter limits should be jointly considered;

e. An evaluation of available plant operating personnel and the staffing requirements necessary when septage is to be received. Plant staff should be present when septage is received and unloaded. Added laboratory work associated with receiving septage for treatment should be included in the staffing and laboratory facilities evaluation;

f. The space for constructing septage receiving facilities that are to be off-line from the raw wastewater from the sewer system. Other plant activity and traffic flow should be considered when locating the septage receiving facility and the septage hauler unloading area; and,

g. The impact of the septage handling and treatment on the plant sludge handling and processing units and ultimate sludge disposal procedures.

Receiving Facility

The design of the septage receiving station at the plant should provide for the following elements:

a. A hard surface haul truck unloading ramp sloped to a drain to allow ready cleaning of any spillage and washing of the haul tank, connector hoses, and fittings. The ramp drainage shall be tributary to treatment facilities and shall exclude excessive stormwater;

b. A flexible hose fitted with easy connect coupling to provide for direct connection from the haul truck outlet to minimize spillage and help control odors;

c. Washdown water with ample pressure, hose, and spray nozzle for convenient cleaning of the septage receiving station and haul trucks. The use of chlorinated effluent may be considered for this purpose. If a potable water source is used, it shall be protected in accordance with Paragraph 56.2;

d. An adequate off-line septage receiving tank designed to provide complete draining and cleaning by means of a sloped bottom equipped with a drain sump should be provided. The design should give consideration to adequate mixing for testing, uniformity of septage strength, chemical addition (if necessary), for treatability and odor control. The capability to collect a representative sample of any truck load of waste accepted for discharge at the plant shall be provided. The operator shall have authority to prevent and/or stop any disposal that is likely to cause an effluent violation;

e. Screening, grit, and grease removal of the septage as appropriate to protect the treatment units;

f. Pumps for handling the septage should be nonclogging and capable of passing 3-inch (75 mm) diameter solids;

g. Valving and piping for operational flexibility to allow the control of the flow rate and point of septage discharge to the plant;

h. Safety features to protect the operational personnel. Refer to Section 57; and

i. Laboratory and staffing capability to determine the septage strength and/or toxicity to the treatment processes and provisions for operation reports to include the plant load attributed to septage.

TABLE NO. 1*

PHYSICAL AND CHEMICAL CHARACTERISTICS OF SEPTAGE, AS FOUND IN THE LITERATURE, WITH SUGGESTED DESIGN VALUES[a,b]

	United States (5) (9-19)				Europe/Canada (4) (20)					
Parameter	Average	Minimum	Maximum	Variance	Average	Minimum	Maximum	Variance	EPA Mean	Suggested Design Value
TS	34,106	1,132	130,475	115	33,800	200	123,860	619	38,800	40,000
TVS	23,100	353	71,402	202	31,600	160	67,570	422	25,260	25,000
TSS	12,862	310	93,378	301	45,000	5,000	70,920	14	13,000	15,000
VSS	9,027	95	51,500	542	29,900	4,000	52,370	13	8,720	10,000
BOD_5	6,480	440	78,600	179	8,343	700	25,000	36	5,000	7,000
COD	31,900	1,500	703,000	469	28,975	1,300	114,870	88	42,850	15,000
TKN	588	66	1,060	16	1,067	150	2,570	17	677	700
NH_3-N	97	3	116	39	—	—	—	—	157	150
Total P	210	20	760	38	155	20	636	32	253	250
Alkalinity	970	522	4,190	8	—	—	—	—	—	1,000
Grease	5,600	208	23,368	112	—	—	—	—	9,090	8,000
pH	—	1.5	12.6	8.0	—	5.2	9.0		6.9	6.0
LAS	—	110	200	2	—	—	—		157	150

a Values expressed as mg/L, except for pH.

b The data presented in this table were compiled from many sources. The inconsistency of individual data sets results in some skewing of the data and discrepancies when individual parameters are compared. This is taken into account in offering suggested design values.

* Appendix - Table No. 1 including footnotes is taken from the USEPA Handbook entitled "Septage Treatment and Disposal", 1984, EPA-625/6-84-009 and is designated in that document as "Table 3-4".

TABLE NO. 2*

COMPARISON OF SEPTAGE AND MUNICIPAL WASTEWATER[a]

Parameter	Septage[b]	Wastewater[c]	Ratio of Septage to Wastewater
TS	40,000	720	55:1
TVS	25,000	360	69:1
TSS	15,000	210	71:1
VSS	10,000	160	62:1
BOD_5	7,000	190	37:1
COD	15,000	430	35:1
TKN	700	40	17:1
NH_3-N	150	25	6:1
Total P	250	7	36:1
Alkalinity	1,000	90	11:1
Grease	8,000	90	89:1
pH	6.0	—	—
Linear Alkyl Sulfonate	150	—	—

a Values expressed as mg/L, except for pH.

b Based on suggested design values in Appendix - Table No. 1 (USEPA Table 3-4).

c From Metcalf and Eddy, 4th Edition, "medium strength sewage".

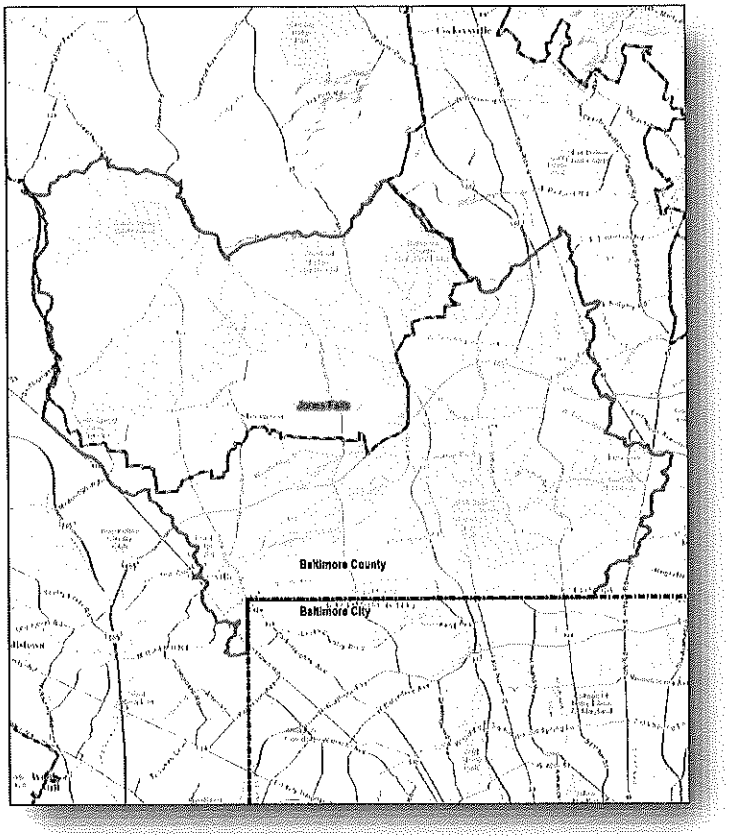
* Appendix - Table No. 2 including footnotes is taken from the USEPA Handbook entitled "Septage Treatment and Disposal", 1984, EPA-625/6-84-009 and is designated in that document as "Table 3-8".





BALTIMORE COUNTY
TMDL IMPLEMENTATION PLAN

Bacteria in Jones Falls



Kevin Kamenetz, County Executive
Vincent J. Gardina, Director
Department of Environmental Protection and Sustainability
Final

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LIST OF ABBREVIATIONS

ARA	Antibiotic Resistance Analysis
BMP	Best Management Practice
BOD	Biological Oxygen Demand
BST	Bacteria Source Tracking
BSID	Biological Stressor Identification
CBP	Chesapeake Bay Program
CBOD	Carbonaceous Oxygen Demand
CE-QUAL-Ver. 3 W2	U.S. Army Corps of Engineers Water Quality and Hydrodynamic Model,
Chl*a*	Active Chlorophyll *a*
COMAR	Code of Maryland Regulations
CRF	Code of Federal Regulations
CWA	Clean Water Act
CWAP	Clean Water Action Plan
DO	Dissolved Oxygen
DPW	Baltimore City Department of Public Works
ED	Extended Detention
EOF	Edge of Field
EOS	Edge of Stream
EPA	U.S. Environmental Protection Agency
HUC	Hydrologic Unit Code
IP	Implementation Plan
FSA	Farm Service Administration
HSG	Hydrological Soil Groups
HSPF	Hydrological Simulation Program Fortran
ICPRB	Interstate Commission on the Potomac River Basin
LA	Load Allocation
lbs/yr	Pounds per Year
MD	Maryland
MDA	Maryland Department of Agriculture
MDE	Maryland Department of Environment
MDP	Maryland Department of Planning

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MGD	Million Gallons per Day
MGS	Maryland Geological Survey
MPR	Most Practicable Reduction
mg/l	Milligrams per Liter
MPN	Most Probable Number
MOS	Margin of Safety
MS4	Municipal Separate Storm Sewer System
NBOD	Nitrogenous Biochemical Oxygen Demand
NLCD	National Land Cover Dataset
NMP	Nutrient Management Plan
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source
NQBEL	Water Quality Based Effluent Limitations
POM	Particulate Organic Matter
PO4	Phosphate
RTG	Reservoir Technical Group
SCWQP	Soil Conservation and Water Quality Plan
SOD	Sediment Oxygen Demand
SSA	Science Services Administration
SSO	Sanitary Sewer Overflow
SWAP	Small Watershed Action Plan
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSI	Trophic State Index
TSS	Total Suspended Solids
URDL	Urban Rural Demarcation Line
USLE	Urban Soil Loss Equation
WAG	Watershed Advisory Group
WLA	Waste Load Allocation
WQIA	Water Quality Improvement Act
WQLS	Water Quality Limited Segment

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WQMP	**Water Quality Management Plan**
WIP	**Watershed Implementation Plan**
WRAS	**Watershed Restoration Action Strategy**
WWTP	**Waste Water Treatment Plant**
µg/l	**Micrograms per Liter**

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This Implementation Plan (IP) has been prepared to address the bacteria problem in the Jones Falls that has the potential to negatively affect human health and the recreational use of the streams in the watershed. The amount of bacteria that needs to be reduced has been determined by a Total Maximum Daily Load (TMDL) developed by Maryland Department of the Environment and, after a public comment period, submitted to US Environmental Protection Agency (EPA) – Region 3 for review and approval. EPA approved the TMDL in 2008. Final TMDL documents can be found at MDE's website under Current Status of TMDL Development in Maryland. See the document is entitled Total Maximum Daily Loads of Fecal Bactria for the Non-Tidal Jones Falls Basin in Baltimore City and Baltimore County, Maryland.

1.1 What is a TMDL

A TMDL has two different meanings. It is the document that is produced by MDE when any Maryland waterbody is listed on the state's 303(d) list of impaired and threatened waters. MDE must then submit the TMDL to EPA for approval. Any time a TMDL document is developed, extensive scientific study is done on the pollutant of concern in the listed waterbody. This study is done with the goal of finding the maximum load of the pollutant that the waterbody can receive and still meet Maryland's water quality standards. It is often thought of as a "pollution diet" for the watershed. All of the studying and monitoring that is done in preparing the TMDL document boils down to a single maximum load number that will be the target for pollution reduction in the waterbody. This number is also called a TMDL. In other words, the goal of the TMDL document is to justify the TMDL number, which can be found within the TMDL document.

The TMDL number is expressed as a sum of all the different sources of the pollutant plus a Margin of Safety (MOS). The MOS values help to account for any lack of knowledge or understanding concerning the relationship between loads and water quality and also for any rounding errors in the TMDL calculation (calculation format shown below). Expressing the TMDL in terms of this simple equation makes it easier to see where pollution reduction efforts need to be focused. In other words, which sources can be reduced to reach the final TMDL number, by how much they need to be reduced, and which pollution sources are not practical for reduction. The sources that make up the final TMDL number are categorized as either Load Allocation (LA) or Waste Load Allocation (WLA). LAs are all nonpoint source loads, meaning that they do not come from a single source or pipe. LAs include agricultural runoff, forest runoff, and upstream loads. WLAs are all point source loads, meaning that they do come from a single traceable source. WLAs are further categorized as process water or stormwater. Process water WLA comes from sources that have permits allowing them to release a specific amount of a pollutant into the water. They include individual industrial facilities, individual municipal facilities, and mineral mining facilities. Stormwater WLA is any stormwater that is regulated by a municipal separate storm sewer systems permit (MS4), water from industrial facilities permitted to release stormwater, and all runoff from construction sites. All Baltimore County urban stormwater is regulated under Baltimore County's MS4 permit. That means that stomwater WLA includes all of the water that runs to any storm drain within the watershed area. The MOS is the final part of the equation. The MOS can be implicit, meaning that the final TMDL was calculated in such a way that it accounted for any errors without needing to tack an

explicit MOS to the end of the sum of load sources equation. When an explicit MOS is necessary, it is assumed that a 5% reduction of the final TMDL number will be sufficient.

TMDL Sum of Load Sources Equation:

$$\text{TMDL} = \text{LA} + \text{WLA}_{\text{Stormwater}} + \text{WLA}_{\text{Process Water}} + \text{MOS}$$

1.1.1 How is the Final TMDL Determined

The process of determining the TMDL number can be very complex. Pollution data are regularly collected throughout Maryland by many different federal, state, and local government agencies as well as universities and watershed organizations. The agency or organization may send individuals out to the stream to collect and measure information about the watershed as part of a study or regular monitoring program. Data are also collected from the many different monitoring stations that are located throughout Maryland's watersheds. Some of these monitoring stations have been collecting water data for tens of years. The U.S. Geological Survey and the Maryland Department of Natural Resources monitoring stations are often used as the data source for Maryland TMDLs. To find out who is keeping an eye on your watershed see MDE's Water Quality Monitoring Web Page.

Complex scientific models are often used to help find a practical number for the total reduction. Models often use existing monitoring data and observations about the watershed area in a calculation that determines the TMDL number. The type of model used and the complexity of the model varies by pollutant, waterbody type, and complexity of flow conditions. The specific model used for this TMDL is explained in Section 3.

In all cases, scientists first find a baseline load for the pollutant. The baseline load is how much of the pollutant is in the waterbody at the time of the study, before restoration actions specifically developed to reach the TMDL number are implemented. The calculated target number, that is the TMDL, is the final goal. It could be thought of as the finish line in the TMDL process. That is not to say that other restoration efforts will not continue once that target is reached, but that the waterbody will be able to meet state water quality standards and can be removed from the list of impaired and threatened waters for that particular pollutant .

When calculating the TMDL number, a percent reduction and load reduction are usually calculated as well. The load reduction is the difference between the baseline load and the TMDL target. Think of it as the amount that needs to be removed from the system in order to reach the target. The percent reduction is the percentage of the baseline load that needs to be removed in order to reach the TMDL target.

1.2 Geographic Area

Pollution reduction goals are determined by watershed. A watershed is all the land area where all of the water that runs off that land and all the water running under that land drain into the same place. Everything within a watershed is linked by a common water destination. Watersheds exist at many levels: some very large, and some quite small. Identifying your watershed is similar to identifying your current location on a map. You could say you are in the United States, or that you are in Maryland, or that you are in your kitchen at your specific street address. Similarly, you could say that you are in the Mid-Atlantic Region Watershed, which drains to the Atlantic Ocean, Long Island Sound and Riviere Richelieu, a tributary of the St.

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Lawrence River. You could also say that you are in the Upper Chesapeake Bay Watershed, which includes the area of drainage to the Chesapeake Bay that is north of the Maryland-Virginia line. Both would describe a watershed that you are located in. However, watersheds can become much more specific.

A system was established by the U.S. Geologic Survey for dividing the U.S. into successively smaller hydrologic units. Each hydrologic unit is identified by a Hydrologic Unit Code (HUC), which range from two to twelve digits. The smaller the scale of the watershed, the more digits it has in its code. For example, the Mid-Atlantic Region is a 2-digit watershed and the Upper Chesapeake Bay is a 4-digit watershed. The 6-digit unit, also known as the "basins" unit, is to serve as the common scale for watershed assessments at the national level, but the condition of these basins can be determined based on an aggregation of assessments of even smaller watershed units. Maryland has chosen to go the route of assessing smaller watershed units. As a result, TMDLs are determined at the 8-digit watershed scale. For a further explanation of HUCs or to see maps of watersheds at different HUC levels, go to: USGS Hydrologic Unit Maps. If you would like to know which Maryland 8-digit watershed you are located in, go to MDE's Find My Watershed Map.

It is important to note that 8-digit watersheds can overlap multiple counties and may, therefore, have several regulating authorities.

1.2.1 Jones Falls Geographic Area

The Jones Falls is an 8-digit (02-13-09-04) watershed that covers a total land area of 34,122 acres. The watershed originates in Baltimore County and flows through Baltimore City to the tidal waters of the Northwest Branch (Inner Harbor) of Baltimore Harbor. The Baltimore County portion of the watershed comprises 25,399 acres or 76% of the land area of the watershed (Figure 1.1).

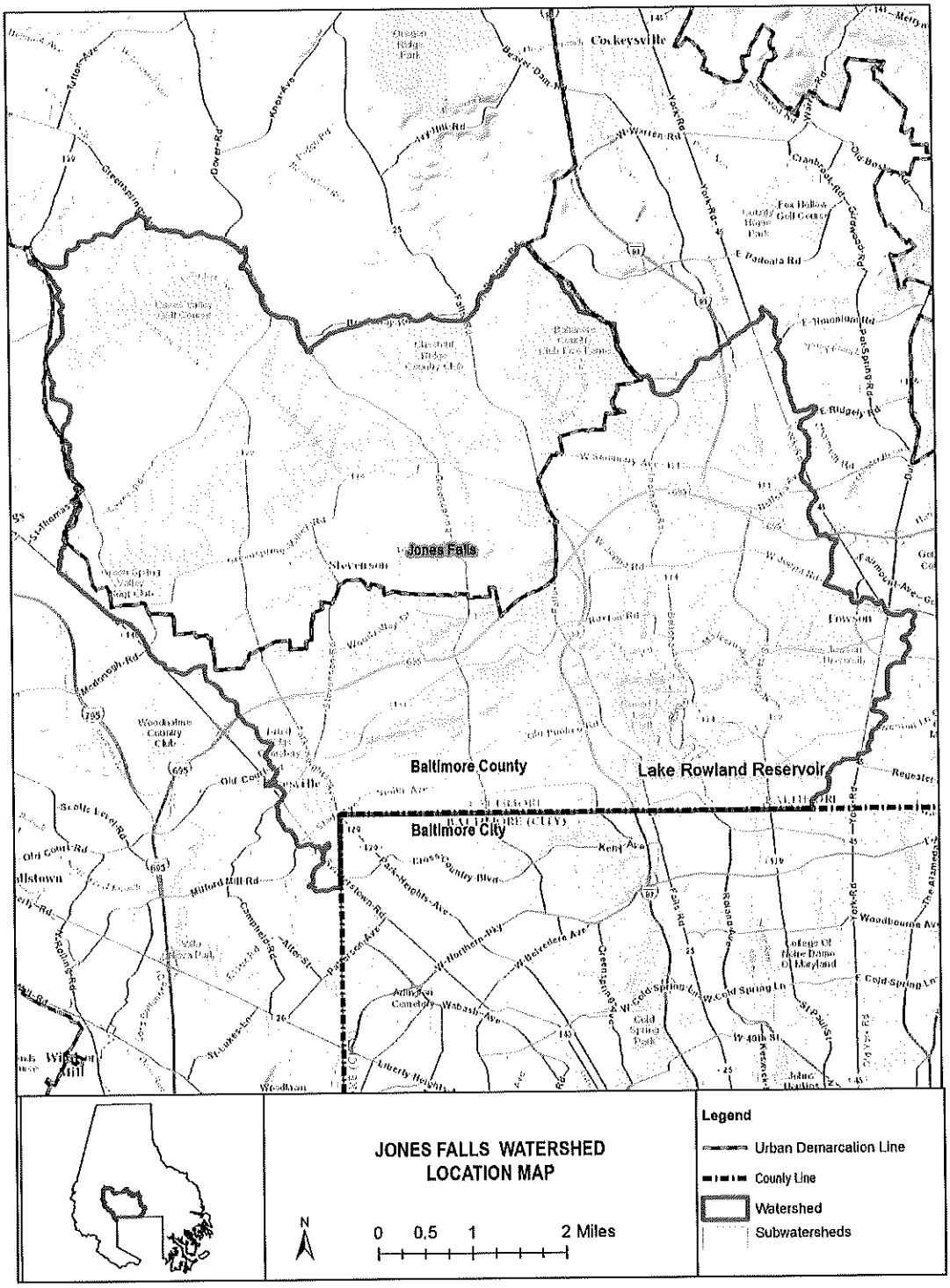

Figure 1.1: Jones Falls Watershed, Baltimore County Portion

1.3 Goal of the TMDL Implementation Actions

TMDL Implementation Plan Objective:

Through a cooperative effort of Baltimore County Department of Environmental Protection and Sustainability, other county agencies, local watershed associations, and the general public, to provide a comprehensive plan of action for achieving TMDL targets and ultimately restoring the health of Baltimore County waters to acceptable water quality standards.

Water quality standard for bacteria in the Jones Falls: geometric mean for *E. coli* of 126 MPN/100 ml.

1.4 Document Organization

The Baltimore County TMDL implementation plans provide the following information to explain the necessity of the TMDL Implementation Plan and to develop a management strategy that will be followed in order to meet county TMDL reduction targets. The County will take an adaptive management approach that will include periodic assessments to determine progress and identify changes needed in the management strategy to meet the reduction targets in a timely, cost effective manner.

Section 1 - Introduction

This Introduction states the pollutant that is being addressed by the TMDL IP, and the watershed for which the IP was developed. It provides a background on what a TMDL is and how the TMDL is determined. A general description of the geographic area for the specific IP is provided. The Introduction also states the overall goal of the TMDL IP and summarizes the actions that have been identified to bring Baltimore County to that goal. It also includes a brief summary of the contents of the thirteen sections of the TMDL Implementation Plan.

Section 2 - Regulatory Policy and Planning

This part of the document describes the administration and legal authority that mandates the development of Baltimore County's TMDL implementation plan and oversees its fulfillment. It will provide a background of how various regulating authorities and policies are related to the requirement to develop a TMDL Implementation Plan. It will also summarize the various planning guidance documents that have been produced to assist in the development of TMDL Implementation Plans and how TMDL Implementation Plans fit in the overall Baltimore County planning context.

Section 3 - TMDL Summary

The section summarizes the original TMDL document that was submitted by MDE and approved by the EPA. The summary includes: when the TMDL was developed, what is impaired, why the TMDL was developed, a description of the analysis process that was used to determine the total maximum daily load targets, the baseline year of data collection and analysis, the results from that analysis, and a further break down of the target loads by source sector.

Section 4 - Literature Summary

Each TMDL IP will address a specific pollutant. This part of the document provides an overview of the pollutant that is summarized from published literature. The literature summary includes known sources of the pollutant, the impacts associated with the pollutant, the pathways and

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transformations of the pollutant, and other relevant ecological processes that affect how the pollutant can be controlled and regulated.

Section 6 – Existing Data Summary

This section will include a summary of Baltimore County's existing monitoring data that will be pertinent to the pollutant in question. It may also include some data received from sources other than Baltimore County, such as data from the Maryland Department of the Environment, or other relevant sources.

Section 5 - Watershed Characterization

Characterization of the watershed will include geographical and technical information for the portion of the watershed that is specific to each TMDL IP. Each characterization will describe the watershed acreage, population size, geology and soils, topography, land use, streams, infrastructure related to watershed pollution sources, implemented restoration projects since the baseline year, and changes in pollutant load since the baseline year.

Section 7 - Summary of Existing Restoration Plans

Previous planning efforts will be summarized in this section. Water Quality Management Plans (WQMP) and Small Watershed Action Plans (SWAP) applicable to the IP area are identified. The process and goals for SWAP development are explained.

Section 8 - Best Management Practice Efficiencies

This section is an explanation of the best management practices that will be used for removing the particular pollutant and the known efficiency of those best management practices. A table will be found in this section of BMPs and the known reduction efficiency for the pollutants that can be reduced by each BMP. BMP efficiencies will also include a discussion of the uncertainty and research needs for BMPs.

Section 9 - Implementation

The implementation section will provide a description of programmatic, management, and restoration actions; and pollutant load reduction calculations to meet the pollutant reduction target for the specific pollutant. For each of the programmatic, management, and restoration actions there will be a list of responsible parties, actions, timeframe of actions, and performance standards.

Section 10 - Assessment of Implementation Progress

Assessment of implementation progress will give Baltimore County a formal method of reporting on the development of implementation and of describing the progressive success of implementation actions. The section will include a description of tracking and reporting mechanisms, and a monitoring plan that includes progress monitoring as well as BMP effectiveness monitoring.

Section 11 - Continuing Public Outreach Plan

This part of the document will be a continuing public outreach plan. It will encourage public involvement in the implementation process, extending beyond the finalization of this document.

Section 12 - References

A list of references used in the creation of this document will be provided.

Section 2 - Legal Authority, Policy, and Planning Framework

The Legal Authority, Policy, and Planning Framework section will present, in brief, the background on the legal requirements that pertain to the development of Total Maximum Daily Loads (TMDLs), and the preparation of TMDL Implementation Plans. This section will also cover the planning framework for the development of the TMDL Implementation Plans (IP). Furthermore, this section is intended to provide the context for the development of this TMDL Implementation Plan and understanding of the linkage between water quality and the TMDL. Whether at the federal or state level there are a number of processes at work that result in the regulations that must be followed to remain within the law. First, legislation is passed by an elected governing body (e.g. Congress, state legislature), and once passed and signed by the executive branch, they become Acts (laws), such as the Clean Water Act. In order to provide guidelines in maintaining compliance with these laws, it is often necessary that regulations be issued to specify the law's requirements. A regulation is a rule issued by a government agency that provides details on how legislation will be implemented, and may set specific minimum requirements for the public to meet if they are to be considered in compliance with the law. These regulations may come in various forms, such as the Code of Federal Regulations (CFR), or Code of Maryland Regulations (COMAR). The information that follows is generally taken from CFR and COMAR.

Under the CFR, Title 40 encompasses the regulations enforced by the U.S. Environmental Protection Agency (EPA). These regulations include not only those related to water quality, but also air quality, noise, and a variety of land based regulations (oil operations, etc.)

2.1 Regulatory and Policy Framework

The ultimate regulatory authority for protecting and restoring water quality rests with the federal government through legislative passage of the Clean Water Act in 1972 and subsequent amendments. Prior to the Clean Water Act (1972), the Federal Water Pollution Control Act (1948) served as the basis for controlling water pollution. The Clean Water Act significantly amended the Federal Water Pollution Control Act and established the basic structure for regulating discharges of pollutants into the waters of the United States. Major amendments were enacted in 1977 and 1987 that further strengthened and expanded the Clean Water Act of 1972. The 1987 amendments incorporated the requirement that stormwater discharges from urban (municipal) areas be required to obtain a permit for discharge and that stormwater discharges from industrial sources also be permitted. There have been a number of minor amendments and reauthorizations over the years that have resulted in the law as it now stands.

There are several significant provisions of the Clean Water Act that pertain to TMDLs. These provisions include the requirement that states adopt Water Quality Standards by designating waterbody uses and set criteria that protect those uses. The Clean Water Act also requires states to assess their waters and provide a list (known as the 303(d) list) of waters that are impaired. The list specifies the impairing substance and requires that a TMDL be developed to address the impairment.

Through policy (memos dated November 22, 2002 and November 12, 2010) the EPA has indicated that the pollutant loads attributable to regulated stormwater discharges are to be included in the Waste Load Allocation as a point source discharge and not as part of the non-point load. The initial memo also affirmed that the Water Quality-Based Effluent Limitations

(WQBELs) in Municipal Separate Storm Sewer System (MS4) permits may be expressed in the form of Best Management Practices (BMPs) and not as numeric limits for stormwater discharges. The second memo clarified that when the MS4 permits are expressed in the form of BMPs, the permit should contain objectives and measurable elements (e.g., schedule for BMP installation or level of BMP performance). By providing both an expected level of BMP performance and a schedule of implementation of the various practices, Baltimore County will have addressed this requirement. This plan once approved by Maryland Department of the Environment (MDE) will be enforceable under the terms of the permit.

2.2 Maryland Use Designations and Water Quality Standards

In conformance with the Clean Water Act, the State of Maryland has developed use designations for all of the waters in Maryland, along with water quality standards to maintain the use designations.

Designated uses define an intended human and aquatic life goal for a waterbody. It takes into account what is considered the attainable use for the waterbody, for protection of aquatic communities and wildlife, use as a public water supply, and human uses, such as recreation, agriculture, industry, and navigation. Water quality standards include both the Use Designation and Water Quality Criteria (numeric standards). Water Quality Criteria are developed to protect the uses of a waterbody.

2.2.1 Use Class Designations

Every stream, lake, reservoir, and tidal waterbody in Maryland has been assigned a Use Designation. The Use Designation is linked to specific water quality standards that will enable the Designated Use of the waterbody to be met. A listing of the Use Designations follows:

- Use I: Water contact recreation, and protection of nontidal warm water aquatic life.
- Use II: Support of estuarine and marine aquatic life and shellfish harvesting (not all subcategories apply to each tidal water segment)
    - Shellfish harvesting subcategory
    - Seasonal migratory fish spawning and nursery subcategory (Chesapeake Bay only)
    - Seasonal shallow-water submerged aquatic vegetation subcategory (Chesapeake Bay only)
    - Open-water fish and shellfish subcategory (Chesapeake Bay only)
    - Seasonal deep-water fish and shellfish subcategory (Chesapeake Bay only)
    - Seasonal deep-channel refuge use (Chesapeake Bay only)
- Use III: Nontidal cold water – usually considered natural trout waters
- Use IV: Recreational trout waters – waters stocked with trout

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The letter "P" may follow any of the Use Designations, if the surface waters are used for public water supply. There may be a mix of Use Classes within a single 8-digit watershed; for example, Gwynns Falls has Use I, Use III, and Use IV Designations depending on the subwatershed.

Table 2.1: Designated Uses and Applicable Use Classes

Designated Uses	Use Classes							
	I	I-P	II	II-P	III	III-P	IV	IV-P
Growth and propagation of fish (not trout), other aquatic life and wildlife	✓	✓	✓	✓	✓	✓	✓	✓
Water contact sports	✓	✓	✓	✓	✓	✓	✓	✓
Leisure activities involving direct contact with surface water	✓	✓	✓	✓	✓	✓	✓	✓
Fishing	✓	✓	✓	✓	✓	✓	✓	✓
Agricultural water supply	✓	✓	✓	✓	✓	✓	✓	✓
Industrial water supply	✓	✓	✓	✓	✓	✓	✓	✓
Propagation and harvesting of shellfish			✓	✓				
Seasonal migratory fish spawning and nursery use			✓	✓				
Seasonal shallow-water submerged aquatic vegetation use			✓	✓				
Seasonal deep-water fish and shellfish use			✓	✓				
Seasonal deep-channel refuge use			✓	✓				
Growth and propagation of trout					✓	✓		
Capable of supporting adult trout for a put and take fishery							✓	✓
Public water supply		✓		✓		✓		✓

2.2.2 Water Quality Criteria

Water quality criteria are developed to protect the uses designated for each waterbody. Certain standards apply over all uses, while some standards are specific to a particular use. The criteria are based on scientific data that indicate threats to aquatic life or human health. For the protection of aquatic communities the criteria have been developed for fresh water, estuarine water, and salt water. The criteria have been further based on acute levels (have an immediate negative effect) and chronic levels (have longer term effects). The human health criteria are based on drinking water levels, organism consumption levels, or a combination of drinking water and organism consumption levels, or recreational contact bacteria levels.

Dissolved oxygen criteria for all Use Designations is 5 mg/L, except for Use II Designations and special criteria for drinking water reservoir hypolimnion waters (bottom waters of the reservoir).

Bacteria criteria are based on human health concerns, and apply to all Uses, with additional bacteria criteria applicable in shellfish waters. Since none of the local TMDLs are related to the shellfish criteria, they are not discussed here. The human health criteria are based on either the geometric mean of 5 samples or single sample criteria based on the frequency of full body contact, these criteria are displayed in Table 2.2. For the freshwater bacteria TMDLs the indicator bacteria *E. coli* has been used in the development of the TMDL, therefore it serves as the water quality end point. The human health recreational contact bacteria criteria are displayed in Table 2.2. The table displays both the geometric mean for bacteria and single sample maximum allowable bacteria concentrations based on the frequency of full body contact.

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Table 2.2: Bacteria Criteria for Human Health (MPN/100 ml)

Indicator	Steady State Geometric Mean Density	Single Sample Maximum Allowable Density			
		Frequent Full Body Contact Recreation	Moderately Frequent Full Body Contact Recreation	Occasional Full Body Contact Recreation	Infrequent Full Body Contact Recreation
Freshwater (Either Apply)					
Enterococci	33	61	78	107	151
E. coli	126	235	298	410	576
Marine					
Enterococci	35	104	158	275	500

2.3 Planning Guidance

In March of 2008 the EPA released a guidance document on the development of watershed plans entitled *Handbook for Developing Watershed Plans to Restore and Protect Our Waters*. The handbook laid out nine minimum elements to be included in watershed plans, commonly called the "a through i" criteria. The criteria include:

a. An identification of the causes and sources or groups of sources that will need to be controlled to achieve the load reductions estimated in the watershed plan.

b. Estimates of pollutant load reductions expected through implementation of proposed Nonpoint Source (NPS) management measures.

c. A description of the NPS management measures that will need to be implemented.

d. An estimate of the amounts of technical and financial assistance needed to implement the plan.

e. An information/education component that will be used to enhance public understanding and encourage participation.

f. A schedule for implementing the NPS management measures.

g. A description of interim, measurable milestones for the NPS management measures.

h. A set of criteria to determine load reductions and track substantial progress towards attaining water quality standards.

i. A monitoring component to evaluate effectiveness of the implementation efforts over time.

EPA now evaluates watershed plans on the basis of the above criteria in consideration of its grant funding. The State of Maryland is also increasingly using the above criteria for funding consideration. Baltimore County has used these criteria since the publication of the handbook in the development of its Small Watershed Action Plans; and will use the criteria in the development of this TMDL Implementation Plan.

MDE developed a guidance document in conjunction with local government representatives entitled *Maryland's 2006 TMDL Implementation Guidance for Local Governments*, which provides a framework for the development of TMDL Implementation Plans. MDE has also provided guidance on the development of TMDL Implementation Plans related to specific pollutants. Guidance for specific pollutants includes:

- PCBs

- Bacteria
- Mercury
- Trash

These guidance documents have been taken into consideration in the development of the Baltimore County TMDL Implementation Plans.

2.4 Water Quality Standards Related to This Implementation Plan

The Jones Falls (02-13-09-04) watershed has a Use I and Use III Designation in Baltimore County. Use I includes water contact recreation and protection of warm water fisheries, while Use III includes water contact recreation and cold water fisheries. The water quality criteria applicable to the bacteria TMDL are those related to bacteria, specifically, the *E. coli* criteria above in Table 2.2. The bacteria criteria are designed to protect humans from health issues that may arise from water contact recreation.

The ultimate water quality endpoint is the attainment of an *E. coli* geometric mean concentration of 126 MPN for all weather conditions and during all seasons. Since the majority of human recreation water contact occurs during dry weather and in the warm seasons, the 126 MPN criteria target will be applied to those conditions. In addition, Baltimore County will use the frequency of full body contact criteria for single samples as measures of progress. Streams, unlike swimming beaches will not have frequent full body contact, but much more limited contact. The targets for interim periods are displayed in Table 2.3.

Table 2.3: Five Year Interim Targets for Single Sample and Geometric Mean Bacteria Densities

Single Sample Target				
Weather Condition	**2020**	**2025**	**2030**	**3035**
Dry	576	410	298	235
Wet	NA	NA	NA	NA
Geometric Mean Target				
Dry	477	360	243	126
Wet	6,880	4,630	2,380	126

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The TMDL summary provides context for the TMDL implementation plan. It is necessary to understand some basic information from the original TMDL document that preceded this particular implementation plan. The TMDL document describes the condition of the watershed at the time that the baseline load of the pollutant was calculated. The baseline load is simply a measurement of the amount of the pollutant that was in the waterbody during a specific time. The baseline load provides a starting pollutant measurement for the county to reduce from, in order to meet the TMDL target. The term TMDL is also used to describe the specific numeric load target, which is explained in detail within the TMDL document. The original TMDL document provides a detailed justification for choosing the TMDL target number. This justification is a description of the entire technical process including monitoring methods and calculations. The following section is a simplification of that section of the TMDL document and a brief explanation of why the TMDL was developed for the specific pollutant in this watershed.

3.1 TMDL Background

- **The Problem:** The TMDL was developed because the steady state geometric mean of *E.coli* in the Jones Falls watershed was found to be above the state water quality standard of 126MPN/ 100ml for freshwater.

The Jones Falls watershed was listed as being impaired by bacteria in 2002. MDE developed the TMDL and submitted it to EPA in 2006. It was approved by EPA in 2008.

The requirements for listing a watershed as category 5 for fecal bacteria, also known as the 303(d) list, are as follows for all uses:

- A steady state geometric mean must be calculated with data from the past two to five years
- The data must be from samples that were collected during the beach season in dry, steady state conditions
- The resulting steady state geometric mean is greater than 35 cfu/100 ml enterococci in marine/estuarine waters, 33 cfu/100 ml enterococci in freshwater, or 126 cfu/100 ml *E. coli* in freshwater

The geometric mean target for freshwater equates to an approximate risk of 8 illnesses per 1,000 swimmers at freshwater beaches. This means that for every thousand people that swim in the waterbody, approximately 8 people will get sick. This is only an approximation, as every individual person has a different susceptibility to disease and illness.

The TMDL analysis specifically looked at *E.coli* as the indicator of water impairment. Bacteria data was collected at Department of Natural Resources CORE monitoring stations to identify impairment. Additional monitoring was conducted at five stations throughout Jones Falls from October 2002 to June 2003. Bacteria counts were highly variable and ranged from 10 to 10,000 MPN/ 100ml. Any bacteria counts greater that 126 MPN/100ml indicates an approximate risk of illness greater than 8 per 1,000 swimmers.

The baseline year is 2003 based on the final year of bacteria monitoring used to develop the Jones Falls bacteria TMDL.

3.2 TMDL Development

The first step in the process of developing the annual average TMDLs was to find base line condition loads for each of five bacteria monitoring stations that were located in the Jones Falls watershed. The challenge was that the rate of water flow for and river and stream naturally fluctuates very regularly and it is important for baseline loads to be calculated for the average flow rate. Rates of flow were classified as high flow or mid/low flow. These classifications were called the flow strata. First, annual average geometric means were calculated for each sub-watershed's flow strata (high flow and mid/ low flow). A flow analysis of several watersheds throughout Maryland found that flows between the 20th and 28th percentile represented average daily flows. Accordingly, for the purposes of this analysis, flows above the 25th percentile were designated as high flow and flows below the 25th percentile were designated as mid/low flows. The flow levels and the steady state geometric mean data were used to calculate an annual weighted geometric mean for each of the five stations that is unbiased by flow strata.

The data was used to calculate a bias correction factor, which would ultimately be used to calculate a base line load for each station. The bias correction factor is simply a calculated number that is used in the final base line load calculation to ensure that the base line load is representative of the natural duration of high flow and mid/low flow conditions.

Federal regulations require that TMDLs take critical condition into account, meaning the condition when the waterbody is most vulnerable. For this TMDL, the critical condition was accounted for by assessing the time period when water contact recreation is expected, i.e., seasonal conditions from May 1st through Sept 30th. Accordingly, steady state and weighted geometric means were also calculated for the seasonal bacterial load. Calculating seasonal conditions is also helpful because water quality standards are measured under these conditions. The calculation for the seasonal condition was necessary for estimating reductions needed to meet water quality standards.

Bacteria source tracking (BST) was used to identify relative contributions of different bacteria sources at the four stations in the Jones falls watershed. Samples were collected once per month for one year. Samples that have known fecal sources are collected from the watershed. A technique known as antibiotic resistance analysis (ARA) is used to identify patterns of antibiotic resistance displayed in the known samples. The antibiotic resistance patterns can then be compared to patterns in water samples containing bacteria of unknown origin. The BST can identify probable sources of bacteria by matching the antibiotic resistance patterns of known bacteria origins to the unknown samples. In order to accurately represent the expected contribution of each source at each station, a stratified weighted mean of the samples was calculated. The stratified weighted mean accounted for the proportion of high to mid/low flow volume. Table 3.1 displays the results for the annual monitoring data by flow stratum and the weighted percent contribution from the various sources. Fecal bacteria source loads were also calculated at each station for the seasonal period. These results are presented in Table 3.2.

Table 3.1: Distribution of Bacteria by Source (%) – Annual Data

Station	Flow Stratum	% Pets	% Human	% Livestock	% Wildlife	% Unknown
UQQ0005 (County)	High	16	40	14	7	23
	Low	14	67	4	4	12
	Weighted	14	60	6	5	15

SRU005 (City	High	9	74	3	1	13
	Low	11	57	4	1	27
	Weighted	10	61	4	1	23
JON0184 (County)	High	16	44	17	9	14
	Low	26	46	13	2	12
	Weighted	24	45	14	4	13
JON0082 (County)	High	9	56	13	3	20
	Low	23	44	10	4	19
	Weighted	19	48	11	4	19
JON0039 (City)	High	20	62	2	1	15
	Low	17	58	10	4	11
	Weighted	17	59	8	3	12

Table 3.2: Distribution of Bacteria by Source (%) – Seasonal Data (May 1st through September 30th)

Station	Flow Stratum	% Pets	% Human	% Livestock	% Wildlife	% Unknown
UQQ0005 (County)	High	17	45	14	6	17
	Low	14	66	4	4	13
	Weighted	15	61	7	4	14
SRU005 (City	High	15	73	6	0	6
	Low	10	67	8	1	14
	Weighted	11	68	7	1	12
JON0184 (County)	High	19	53	15	8	4
	Low	28	45	11	1	14
	Weighted	26	47	13	3	11
JON0082 (County)	High	13	66	7	2	11
	Low	20	52	11	2	13
	Weighted	18	56	10	2	13
JON0039 (City)	High	23	55	3	0	18
	Low	21	51	12	4	12
	Weighted	22	52	10	3	13

The majority of bacteria in the Jones Falls was from human sources at all monitoring stations. It was assumed that human sources would have the highest risk of causing gastrointestinal illness, so those sources were targeted for the highest reductions. Maximum practicable reduction (MPR) targets were determined, based on available literature and best professional judgment, for each bacteria source by sub-watershed. The sub-watersheds are the stream segments in between the monitoring stations within the Jones Falls. Any area where a waste water treatment plant is located upstream to a watershed segment, human bacteria levels for that segment were considered to be at the MPR because the loads have already been permitted. In the case of bacteria sources from domestic animal waste, the MPR was based on the success of education and public outreach. Wild life sources were given a 0% MPR because there are no programmatic approaches to reduce wildlife waste in order to meet water quality standards. The MPRs were, thus, assigned the following values: 95% Human sources, 75% Domestic sources, 75% Livestock sources, and 0% Wildlife sources.

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In the MPR scenario, none of the five monitored segments were able to meet water quality standards using the values listed above. This means that there is no practicable solution. In this case, another scenario was applied where the allowable reduction for each of the five source categories was increased to 98%. The results indicate that the Jones Falls watershed can only meet water quality standards in a scenario where reductions exceed the maximum practicable reduction.

3.3 TMDL Results

Part of the development of the bacteria TMDL is to calculate a baseline load as the starting point. For the Gwynns Falls watershed the baseline load was calculated based on monitoring data for each of the four monitoring points, with the load calculated for both high low and low from conditions. Table 3.3 presents the results.

Table 3.3: Gwynns Falls – Annual Steady-State Geometric Means by Station and Flow Condition

Monitoring Station	Flow	N	Annual Steady-State Geometric Mean (MPN/100 ml)	Annual Overall Geometric Mean (MPN/100 ml)
JON0184 (County)	High	6	532	306
	Low	18	254	
UQQ0005 (County)	High	6	593	406
	Low	18	358	
JON0082 (County)	High	6	619	141
	Low	18	86	
JON0039 (City)	High	9	2,679	712
	Low	15	485	
SRU0005 (City)	High	9	4,545	2,392
	Low	15	1,931	

The TMDL calculated the seasonal dry weather period (May 1st – September 30th) steady state geometric mean for each of the five stations. These results were used to calculate the reductions needed to meet the bacteria water quality standards, as this is the period and weather conditions when human contact with the water are most likely to occur. The results are presented in Table 3.4

Table 3.4: Seasonal (May 1st – September 30th) Dry Weather Steady-State Geometric Means by Station (MPN/100 ml)

Monitoring Station	Flow	N	Geometric Mean (MPN/100 ml)	Seasonal Overall Geometric Mean (MPN/100 ml)
JON0184 (County)	High	4	1,545	664
	Low	8	501	
UQQ0005 (County)	High	4	1,368	976
	Low	8	872	
JON0082 (County)	High	4	1,152	236
	Low	8	139	
JON0039 (City)	High	5	1,164	495
	Low	7	372	
SRU0005 (City)	High	5	9,105	3,343
	Low	7	2,394	

The TMDL is equal to the baseline load multiplied by one minus the required reduction. The required reduction is the percentage by which the baseline load will need to be reduced to meet

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water quality standards. It is also important to note that a reduction in concentration is proportional to a reduction in load (Table 3.5).

The TMDL is equal to the baseline load multiplied by one minus the required reduction. The required reduction is the percentage by which the baseline load will need to be reduced to meet water quality standards. It is also important to note that a reduction in concentration is proportional to a reduction in load.

$$TMDL = L_b (1-R) \quad (3.1)$$

- L_b: Baseline load
- R: Reduction required from baseline to meet water quality standards

Table 3.5: Jones Falls watershed TMDL summary

Station	*E. coli* Baseline Load (Billion *E.coli* MPN/year)	Target Load Reduction (Billion E.coli MPN/year)	TMDL Load (Billion *E.coli* MPN/year)	% Required Reduction
JON0184	1,206,325	1,115,075	91,250	92.4%
UQQ0005	133,955	123,370	10,585	92.1%
JON0082sub	887,315	845,340	41,975	95.3%
JON0039sub	3,340,480	1,184,260	156,220	95.3%
SRU0005	636,560	622,960	13,870	97.8%
Total	**6,204,270**	**5,890,735**	**313,900**	**94.9%**

Jones Falls Total TMDL

3.4 TMDL Reductions Targets by Source Sector

The Jones Falls TMDL for fecal bacteria is made up of the following components:

- LA : Load Allocation for nonpoint sources not transported or discharged by stormwater systems
- WLA : LNB Waste Load Allocations for point sources, including waste water treatment plants (WWTPs), NPDES regulated stormwater discharges (MS4 permitted stormwater), and combined sewer overflows (CSOs)
- MOS : Margin of Safety was accounted for in this TMDL by estimating the loading capacity of the streams on a more stringent water quality criteria. The 126MPN/100ml criteria for *E.coli* was reduced by 5% to 119.7MPN/100ml.

Table 3.6: Jones Falls TMDL summary by source category

(Billion MPN *E. coli*/year)					
TMDL =	**LA +**	**WWTP WLA +**	**MS4 WLA +**	**CSOs WLA +**	**MOS**
28,234,210	**6,570**	**18**	**236,491**	**0.0**	**Incorporated**

Potential source contributions for TMDL allocation categories were identified as follows:

Table 3.7: Jones falls Bacteria source sector by source category

Source Category	LA	MS4 WLA	WWTP WLA	CSO WLA
Human		X	X	
Domestic		X		
Livestock	X			
Wildlife	X	X		

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Section 4 - Literature Summary

This review pertains to direct and indirect effects of bacteria on fresh water rivers and streams, specifically those effects that are relevant to the Jones Falls. This is not intended to be an exhaustive review of primary literature, but rather a summary of the sources, pathways and biological effects of bacteria in non-tidal watersheds from literature available to Baltimore County Department of Environmental Protection and Sustainability.

When we talk about bacteria in the watershed, we are specifically referring to fecal bacteria. That includes human feces, pet feces, livestock feces, and fecal matter from wild animals. The land use of a region determines which type of fecal bacteria may be a concern. Human and pet fecal matter can be a concern in both urban and rural areas, but urban areas may contribute a higher concentration of these sources of waste. Livestock waste is primarily a concern in rural land use areas. Forested areas contribute waste from wild animals, but this is considered the natural or background condition of fecal bacteria input to the watershed.

There is a wide variety of microorganisms that can be found in fecal matter. Most microorganisms do not cause disease to humans and wildlife, but some can be hazardous (US Geological Survey 2007) (World Health Organization 2003) . These disease causing microorganisms are known as pathogens. There is no specified number of pathogen cells that will make an individual sick (US Geological Survey 2007). Every person has a different state of health and immune system, which determines how susceptible his or her body is to disease. For this reason, water quality standards for bacteria are based on approximate risk of illness per 1,000 swimmers. The water quality standard is discussed in detail in the TMDL summary section. There is no way to say exactly how much bacteria will make someone sick, but it is possible to approximate the risk from a large sample of people (Maryland Department of The Environment 2009). For more information on the risk of pathogens in recreational water use see the Center for Disease Control and Prevention website on recreational water: Oceans Lakes and Rivers.

Pathogenic microorganisms can cause gastrointestinal infection from accidental ingestion of polluted water. Certain pathogenic organisms from fecal sources can also cause infections of the upper respiratory tract, ears, eyes, nasal passages, and skin (World Health Organization 2003). Infections due to recreational water contact are generally mild; however, this makes them hard to detect and attribute to water exposure (World Health Organization 2003).

Because there are so many different types of pathogens that cause many different symptoms of illness, indicator organisms are used to estimate the overall risk of illness instead of testing the water for each individual pathogen. Index organisms are also measured instead of testing for pathogens because each variety of possible pathogens requires a unique test. Tests are costly and time consuming and, therefore, testing for individual pathogens is not practical for routine monitoring (US Geological Survey 2007).

Escherichia coli (E.coli) is an index organism that is used to approximate the presence of illness causing organisms in fresh water. *E. coli* are bacteria that normally inhabit the human gut. Most *E.coli* are harmless and are actually healthy for the human intestinal tract (Centers for Disease Control and Prevention 2012). However, some are pathogenic and cause illness, in most cases diarrhea. These diarrhea causing *E.coli* are the bacteria that are associated with contaminated water (Centers for Disease Control and Prevention 2012) (World Health Organization 2003). In the late 1970s and early 1980s the USEPA conducted a study determining that *E.coli* has the strongest relationships to gastrointestinal illness in freshwater swimmers when compared to other possible fecal bacteria indicators (US Geological Survey 2007). For more information on bacteria monitoring and source tracking, see MDE's Bacterial Water Quality Monitoring page.

Bacteria enters the water mainly through feces, which is traceable to its sources through a source identification test as discussed in the TMDL summary section. Bacteria comes from both point and nonpoint sources. Nonpoint sources of pollution are those sources that do not have one discharge point but occur as runoff flows into streams. Manure spreading, the grazing of livestock, pet and wildlife deposition, and failed septic systems all create sources of bacteria that are transported to waterways as a nonpoint source. Point sources of fecal waste enter the stream or river through a pipe.

Municipal Separate Storm Sewer Systems (MS4) are point sources of stormwater discharge. This category includes Baltimore County's storm drain system. Fecal bacteria enter the watershed through the storm sewer system when domestic and wildlife wastes are washed into the local water (Clary, et al. 2008). Pet waste should always be disposed of properly, as it can wash into storm drains even when not directly dumped in or left near drains. Pet waste left in yards or on sidewalks will eventually contaminate the nearest storm drain.

Human wastes can enter water ways as a point source through illicit connections of sanitary sewers to stormwater sewers, and sanitary sewer overflows (Clary, et al. 2008). Illicit connections occur when individuals, intentionally or unintentionally, connect their sanitary sewer pipes to the storm sewer pipe. The sanitary sewer is meant to transport fecal waste to a sewage treatment plant where the water can be treated before returning it to a river or stream. The storm sewer system is not filtered. It runs directly under roadways and land to rivers and streams. Illicit connections allow the fecal waste to flow, completely unfiltered, into streams and rivers introducing pathogens directly into the waterbody. The Baltimore County Department of Environmental Protection and Sustainability Watershed Management and Monitoring Program is responsible for testing for the presence of illicit connections in the county.

Sanitary Sewer Overflows (SSO) are another source of human fecal bacteria pollution. They occur when the sewage system reaches capacity and overflows. The untreated sewage from these systems can flow into and contaminate local waters (Clary, et al. 2008). The Baltimore County Public Works Bureau of Utilities is responsible for construction, repair and maintenance of the sanitary sewer and storm sewer systems.

Human waste can also enter the waterbody as a nonpoint source through failed septic systems and damaged sanitary sewer pipes. The drainage from these systems makes its way through the drainage field and eventually into local waters.

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Livestock wastes enter waterways through runoff from farms as result of manure spreading and grazing livestock. Grazing cows contribute 47 L of manure daily to pastures (Walker, et al. 1990). The manure left from grazing animals, and all of its bacteria, are swept by rain water into the nearest waterbody or storm drain. Manure spreading contributes to water pollution in a similar way, but the manure is spread over the entire surface of a field. Certain best management practices can reduce the amount of runoff from these sites such as runoff control practices, and long term storage of waste, which allows some bacteria to die off and allows manure to be applied during appropriate weather conditions to reduce runoff (Walker, et al. 1990). For more information on agricultural BMPs see the Maryland Department of Agriculture's Watershed Implementation Plan strategies.

This section summarizes the characterization of the Jones Falls watershed. Section 5.1 describes the natural landscape and Section 5.2 describes the human modified landscape.

5.1 The Natural Landscape

5.1.1 Location

The Jones Falls watershed is located in the Patapsco River region of the Chesapeake Bay watershed in portions of Baltimore County and Baltimore City, Maryland. The Jones Falls watershed comprises approximately 25,933 acres within Baltimore County. The Jones Falls mainstem flows east and south from its headwaters in Garrison, Maryland to its discharge into the Inner Harbor in downtown Baltimore. Several tributaries drain to the Jones Falls including Moores Branch, Roland Run, Towson Run, Western Run, and Stony Run. An impoundment is located at Lake Roland, just north of the Baltimore County/City boundary. Figure 5.1 shows the location of the Jones Falls watershed.

This IP will discuss the characteristics of the portions of the Jones Falls watershed located within Baltimore County.

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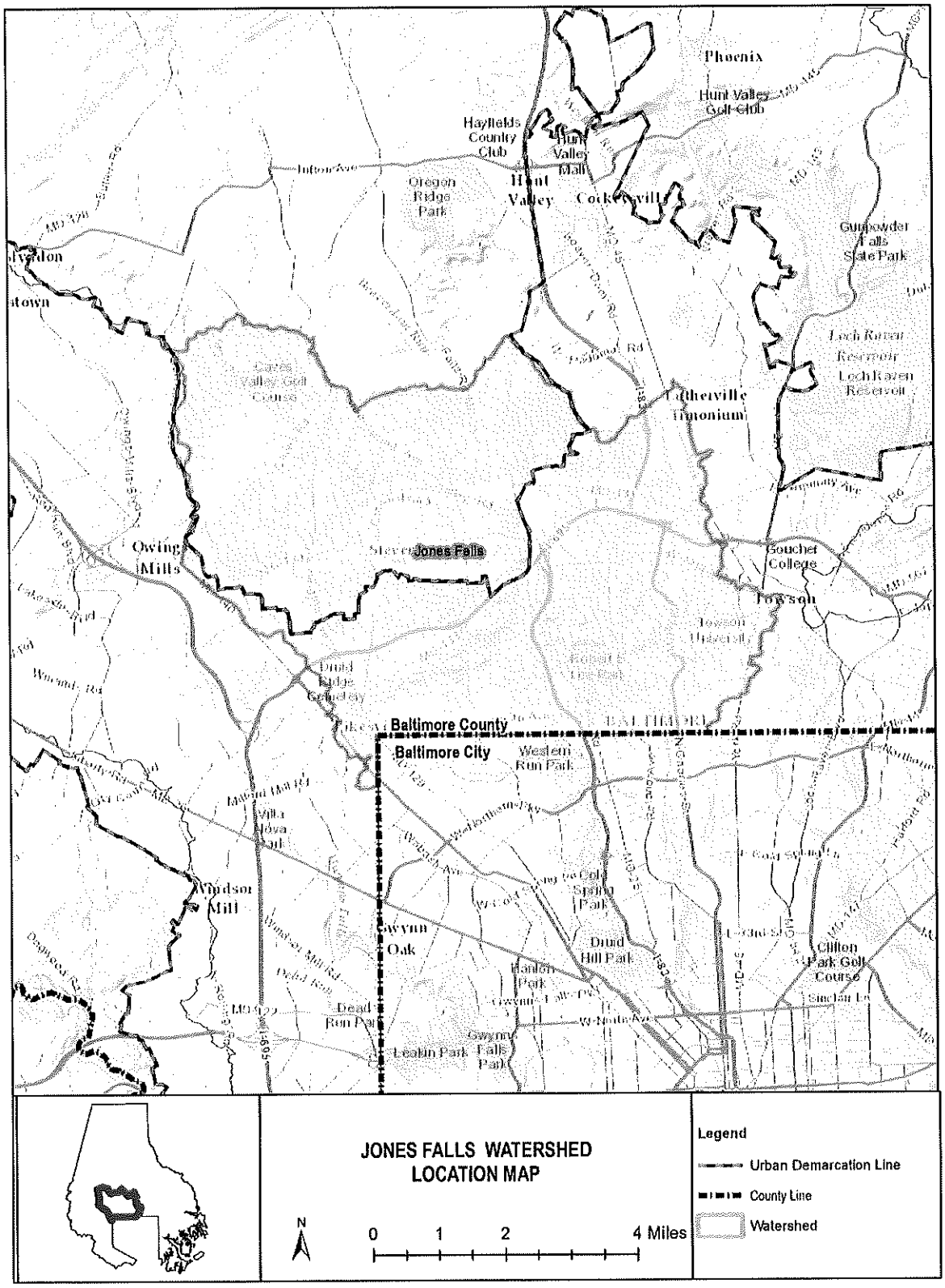

Figure 5.1: General Location Map of the Jones Falls Watershed

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5.1.2 Geology/Soils

Geology

A majority (97%) of the Jones Falls watershed is located within the Piedmont physiographic province while 3% lies within the Coastal Plain physiographic province. The natural Piedmont landscape is characterized by rolling hills, thick soils on deeply weathered crystalline bedrock, and abundant forest litter that minimizes overland flow. The natural Coastal Plain is relatively flatter with soils formed from sedimentary deposits. The dominant geological formations in the Jones Falls watershed within Baltimore County are Loch Raven Schist (30%), Baltimore Gneiss (25%), and Cockeysville Marble (24%).

Soils

Soil type and moisture conditions greatly affect how land may be used and the potential for vegetation and habitat on the land. Soil conditions are also one determining factor for water quality and quantity in streams and rivers. Soils are an important factor to incorporate in targeting projects aimed at improving water quality or habitat. The type of soil has a major effect on runoff due to its infiltration rate (USDA-NRCS Unknown). Infiltration is the flow of water through the soil surface into the soil.

The Natural Resource Conservation Service classifies soils into four Hydrologic Soil Groups (HSGs) based on the soil's runoff potential. Runoff potential is the opposite of infiltration capacity; soils with high infiltration capacity will have low runoff potential, and vice versa. The four HSG's are A, B, C and D, where A's generally have the lowest runoff potential and D's have the greatest runoff potential. Dual hydrologic soil groups can be assigned as well. This happens when certain wet soils are placed in group D based solely on the presence of a water table within 24 inches of the surface even though the saturated hydraulic conductivity may be favorable for water transmission. If these soils can be adequately drained, then they are assigned to dual hydrologic soil groups (A/D, B/D, and C/D) based on their saturated hydraulic conductivity and the water table depth when drained (USDA-NRCS 2009). When the rate of rainfall exceeds the infiltration rate, the excess water will start flowing over the soil surface and runoff begins (USDA-NRCS Unknown).

Runoff is the portion of precipitation that makes its way toward waterways as surface or subsurface flow. Runoff occurs after the evaporation, interception, infiltration and surface retention occur. The more runoff that occurs, the more likely nutrients, pollutants and pathogens are likely to enter waterways. Table 5.1 shows the percentage of each HSG in the Loch Raven Watershed within Baltimore County.

Table 5.1: Hydrologic Soil Group Data for the Jones Falls Watershed in Baltimore County

Hydrologic Soil Group (% of Baltimore County Portion of Watershed							
A	**B**	**C**	**D**	**A/D**	**B/D**	**C/D**	**No Group**
3.7	62.9	19.8	10.8	0.0	0.1	0.0	2.6

5.1.3 Stream Systems

Stream systems are a watershed's circulatory system, and the most visible attribute of the hydrological cycle. The stream system is an intrinsic part of the landscape, and closely reflects conditions on the land. Streams are a fundamental natural resource, with myriad benefits for plants, animals, and humans. Maintaining a healthy stream system is a priority for many

individuals and organizations, and requires insuring that stream flows and water quality closely mimic the conditions found in un-impacted watersheds. Streams are the flowing surface waters, and are distinct from both groundwater and standing surface water (such as lakes), though they are connected with both of them.

The Jones Falls watershed contains approximately 154 miles of streams, all of which drain to the Baltimore Harbor, which is a part of the larger Chesapeake Bay watershed. A number of tributaries drain to the Jones Fall mainstem, including North Branch Jones Falls, Dipping Pond Run, Deep Run, Slaughterhouse Run, Moores Branch, Roland Run, Towson Run, Western Run, and Stony Run.

5.1.4 Livestock

Livestock refers to agriculture-related animals and are associated with pasture, feeding operations, and breeding and training facilities. In 2003, there were 1,015 acres of pasture in the Baltimore County portion of the Jones Falls watershed: in 2011, there were 957 acres (Table 5.2). Currently, pasture represents approximately 3.7% of the Baltimore County portion of the watershed. Using the most recent land use data from Maryland Department of Planning (2010), land classified as feeding operations and agricultural buildings was summarized. Feeding operations include cattle feed lots, holding lots for animals, hog feeding lots, and poultry houses. Agricultural buildings include breeding and training facilities, storage facilities, built-up areas associated with a farmstead, small farm ponds and commercial fishing areas. In 2008, in the Baltimore County portion of the Jones Falls watershed, there were zero acres classified as feeding operations and 14.4 acres classified as agricultural buildings.

5.1.5 Wildlife

Wildlife, mammals and waterfowl, are present in both the developed and undeveloped areas of the watershed. At this time, Baltimore County does not have a way to quantify the amount of wildlife in any given area.

5.2 The Human Modified Landscape

The natural landscape has been modified for human use over time. The intensity of this modification has increased, starting with the colonization of Maryland in the 1600s. This modification has resulted in environmental impacts to both the terrestrial and aquatic ecosystems. This section will provide a characterization of the human modified landscape and how that modification is associated with impacts to the natural ecosystem. The characterization will progress from the general characteristics of land use and land cover to specific issues including population, drinking water and wastewater, storm water systems, and sanitary sewer overflows, all of which contribute to bacteria in the watershed.

5.2.1 Land Use: Baseline and Current

The land use of an area has an influence on the water quality of the watershed. Forested land absorbs nutrients and slows the flow of water into streams. Roads, parking areas, roofs and other human constructions are collectively called impervious surface. Impervious surfaces block the natural seepage of rain into the ground. Unlike many natural surfaces, impervious surfaces typically concentrate stormwater runoff, accelerate flow rates and direct stormwater to the nearest stream. This can cause bank erosion and destruction of in-stream and riparian habitat. Watersheds with small amounts of impervious surface tend to have better water quality in local streams than watersheds with greater amounts of impervious surface.

Approximately 54% of the Baltimore County portion of the Jones Falls lies within the Urban Rural Demarcation Line (URDL) and 46% lies outside the URDL. The URDL is a growth limit line established in 1967 which prohibits public water and sewer outside the line to relegate growth to the inner suburbs.

The Jones Falls watershed is comprised of 25,933 acres or 40.5 square miles of land within Baltimore County. Land use data from the USGS National Land Cover Database (Jin, 2013) from 2001, 2006, and 2011 was combined with Baltimore County impervious surface data from 1995, 1996, 1997, 2001, 2005, and 2011. This combined land use land cover data was used to interpolate the baseline (2003) land use for Jones Falls. The land use distribution for Jones Falls for 2003 and current (using 2011 data) is shown in Table 5.2.

Table 5.2: Land Use in Jones Falls Watershed in Baltimore County at Baseline and Present

Land Type	2003 (Baseline year) Acres	2003 (Baseline year) Percent	Current (2011 data) Acres	Current (2011 data) Percent	Change since Baseline Acres	Change since Baseline Percent
Crop	1,122	4.33	1,131	4.36	+9	+0.80
Extractive	13	0.05	5	0.02	-8	-61.54
Forest	10,061	38.80	9,880	38.10	-181	-1.80
Pasture	1,015	3.91	957	3.69	-58	-5.71
Urban Impervious	3,753	14.47	4,131	15.93	+378	+10.07
Urban Pervious	9,896	38.16	9,747	37.59	-149	-1.51
Water	73	0.28	83	0.32	+10	+13.70

Land classified as crop includes cultivated crops. Pasture refers to land used as pasture and as hay. Extractive land use includes barren land and anything that is bare rock, sand, or clay. Land classified as forest includes forests, natural meadows/grassland, and wetlands. Urban impervious is developed land, including any structure (houses, shopping centers, etc.), roads, parking areas, and pavement. Urban pervious is any developed land cover that is not impervious including turf, gardens, bare soil, mulch, hedges, shrubs, and trees. Water includes any ponds, reservoirs, or other open water bodies in the watershed.

5.2.2 Population

Census block data from the 2000 US Census and 2010 US Census was used to determine the population in the watershed. Data from the 2000 US Census was interpolated in order to estimate the population for 2003, which is the baseline year for the TMDL and therefore important to understand the conditions at the time the TMDL was developed. The 2010 Census is the most recent census therefore there is not more recent data. Population for 2003 and 2010 and the percent change over time in the Jones Falls watershed Areas are shown in Table 5.3.

Table 5.3: Population of Jones Falls Watershed in Baltimore County

2003 (Baseline year)	Current (2010 data)	Percent change
61,924	64,881	4.77

5.2.3 Infrastructure

5.2.3.1 Wastewater

Wastewater created through human use must be treated and properly disposed of. This may be accomplished in two ways, either through individual wastewater treatment systems (septic systems) or through public conveyance to a treatment facility. Residential wastewater consists of all of the water that is typically used by residents, including, wash water, bathing water, human waste deposal water, and any other rinse water (paint brush, floor washing, etc). Industrial operations must also dispose of any water used as part of their operation. Depending on the operation the water could contain any number of contaminants, including pathogens, metals, organic compounds, detergents, or synthetic compounds. All of these wastes have the potential to harm the natural environment.

5.2.3.2 Septic Systems

Properly functioning septic systems provide treatment for virtually all of the phosphorus, but leak nitrogen in the form of nitrates. Depending on the location of the system the nitrates may either be reduced or eliminated through denitrification as the water passes through riparian buffers, particularly forested riparian buffers. Failing systems can result in increased contamination of the aquatic environment through increased releases of nitrogen, phosphorus, and other chemicals. They can also result in increased bacterial contamination of the waterways and potential for human health concerns.

Using the Bay Restoration Fund 2014 data, we estimate 15.8% of the population of the Jones Falls watershed within Baltimore County are using septic systems.

5.2.3.3 Public Sewer System

A public sewer system conveys wastewater from individual residences or businesses to a facility that treats the wastewater prior to discharge. The part of the system that is in the public right-of-way is owned and maintained by the County government. The public system consists of the gravity piping system, access manholes, pumping stations, and force mains. Private property owners are responsible for the maintenance of the pipes and cleanouts located on their property.

Wastewater, like water, naturally flows downhill through pipes. These pipes are referred to as gravity pipes. However, sometimes it is necessary to be able to force the water in another direction, therefore creating a pressurized pipe or a force main. This scenario occurs in low lying areas. In order for the water to go against gravity, a pump is needed which is kept in a pump station. Table 5.4 shows length of sewer gravity pipe, pressurized pipe, and number of pumps stations in the Jones Falls watershed in Baltimore County.

Table 5.4: Sanitary Sewer Infrastructure in the Jones Falls Watershed in Baltimore County

Length of Gravity Pipe (miles)	Length of Pressurized Pipe (miles)	Number of Pump Stations
228.5	9.5	28

5.2.3.4 Sanitary Sewer Overflows (SSOs)

Environmental impacts associated with the public sewer system are usually the result of sewage overflows. These sanitary sewer overflows (SSOs) usually result from blockages within the sewage system, pumping station failure, or rainwater inflows exceeding the capacity of the pipe. There are several factors that may contribute to SSOs from a sewer system, including pipe capacity, operations and maintenance effectiveness, sewer design, age of system, pipe materials, geology and building codes. The U.S. EPA reports there are at least 40,000 of these incidents per year in the United States of America (U.S. EPA 2012). The environmental and human health

consequences of these overflows can be serious. *E. Coli* bacteria and other pathogens can be present, posing health risks to individuals who may come in contact with contaminated water. Sewer overflows can also contain high levels of nitrogen and phosphorus that are toxic to aquatic life and feed organisms that deplete oxygen in waterways. High levels of sediment are also present in these overflows, which can clog streams and block sunlight from reaching essential aquatic plants. As of September 2005, Baltimore County is under a consent decree with the U.S. Environmental Protection Agency to repair, replace or rehabilitate the system with the goal of eliminating all overflow structures to be completed by March 2020. Between 2000 and 2013, there were 108 SSOs totaling 637,866 gallons. See Figure 5.2 for the distribution of SSO in Jones Falls watershed in Baltimore County from 2000-2013. Figure 5.3 shows the volume of SSOs per year and Figure 5.4 shows the number of the SSOs by cause in the Baltimore County portion of the Jones Falls watershed.

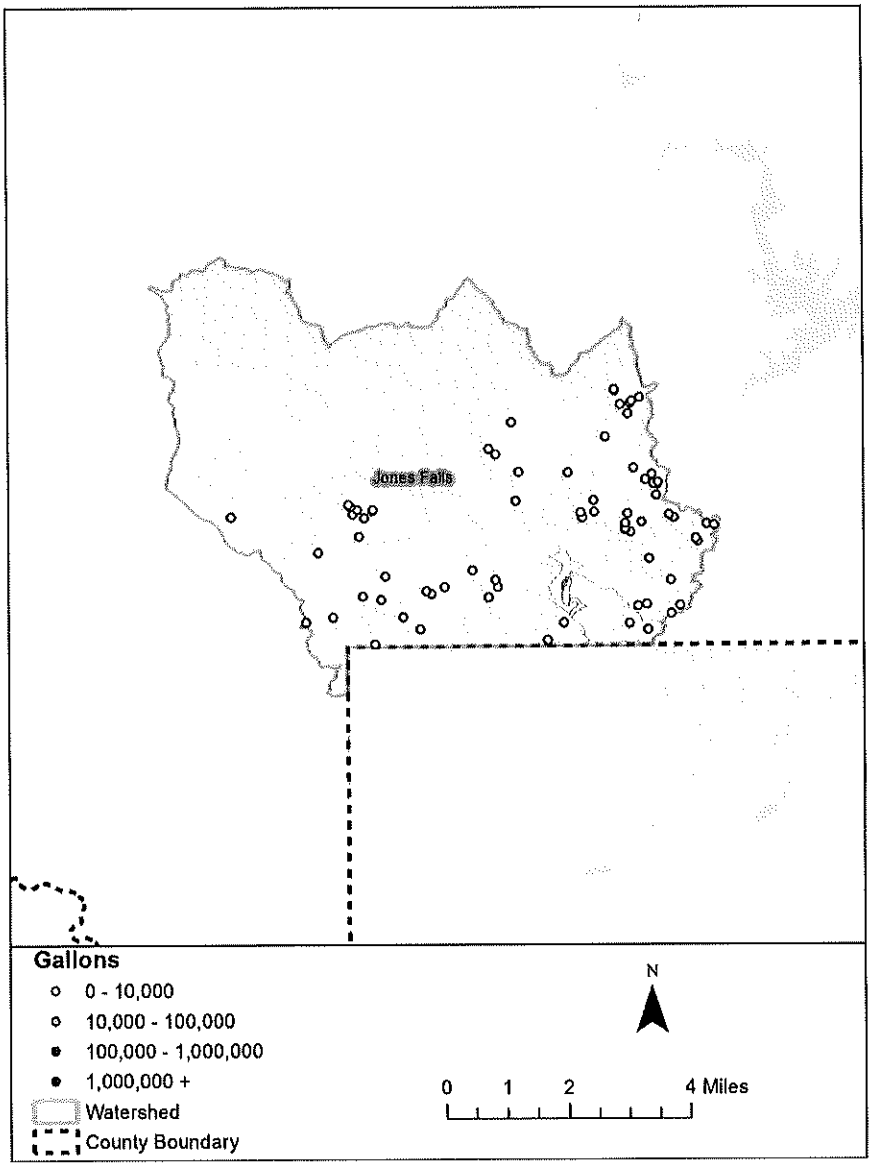

Figure 5.2: Location of SSOs in Jones Falls Watershed from 2000-2013

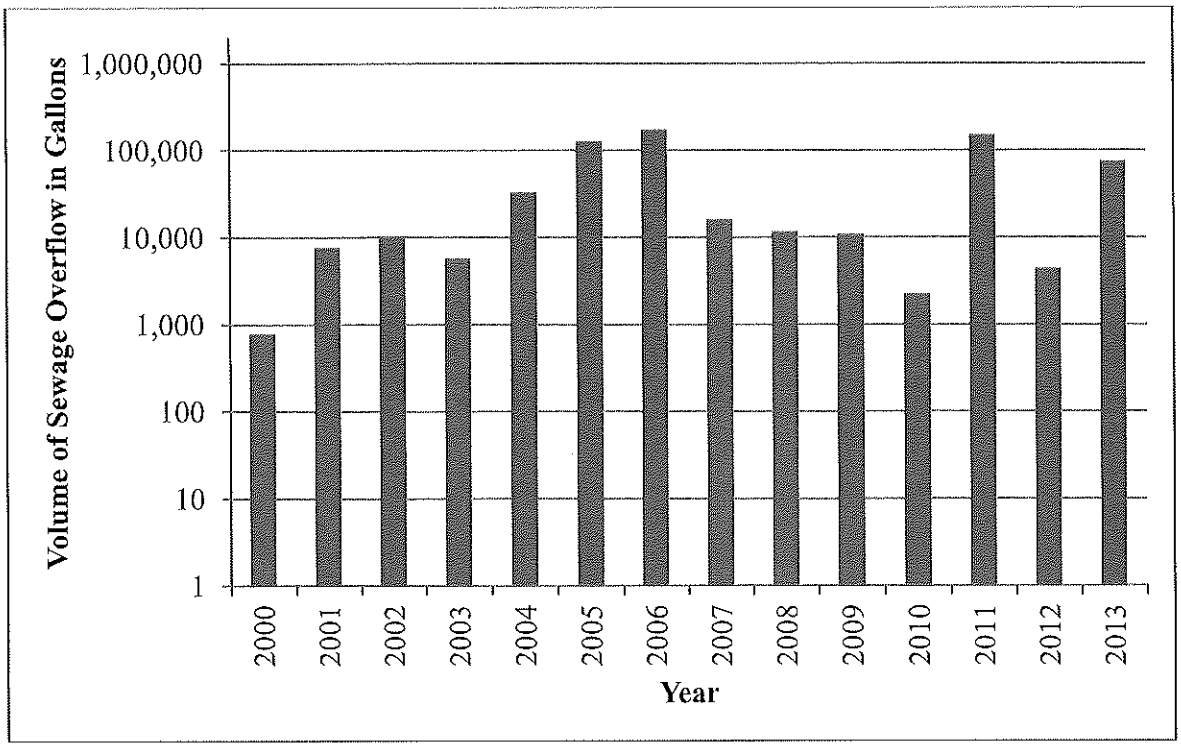

Figure 5.3: Volume of SSOs in Jones Falls Watershed per Year from 2000-2013

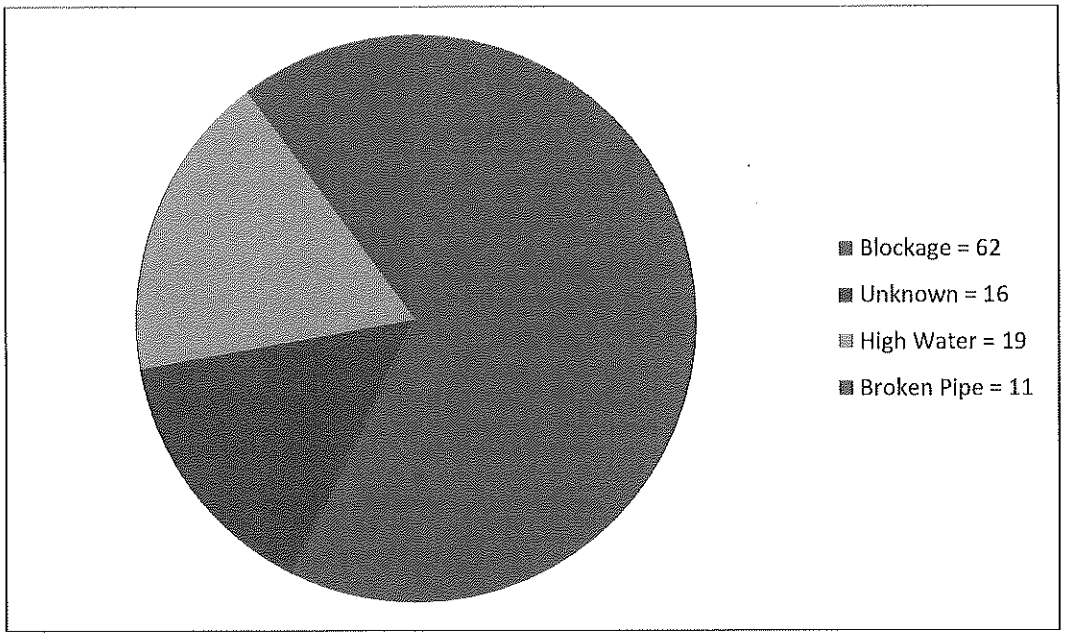

Figure 5.4: SSOs by Cause from 2000-2013

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Baltimore County conducts bacteria water quality sampling for *Escherichia coli* (*E. coli*) in the Jones Falls watershed. This section discusses the data results from the monthly Bacteria Trend Monitoring Program. Major sources of *E. coli*, as described in the TMDL are domestic animals, humans, livestock, and wildlife.

6.1. Baltimore County Bacteria Trend Monitoring Program

Baltimore County EPS has coordinated with Baltimore City Surface Water Management Division to monitor bacteria trend levels over time at 5 monitoring locations within Jones Falls watershed, beginning in June 2010. This is part of the Bacteria Trend Monitoring Program that includes Baltimore County, Baltimore City, and Carroll County to monitor bacteria trends over time at 32 monitoring locations within one subwatershed and six major watersheds. The bacteria trend monitoring program was developed in response to the development of bacteria TMDLs in Herring Run, Gwynns Falls, Loch Raven, Prettyboy, Jones Falls, Liberty Reservoir, and the Lower North Branch of the Patapsco watersheds. Bacteria monitoring began in June 2010, with 16 sites in Baltimore County, and 11 sites in Baltimore City. Bacteria monitoring in Carroll County began in 2012 and includes 5 sites in Carroll County. Jones Falls trend monitoring samples are collected on the first Thursday of every month by Baltimore City, and are brought to the Baltimore County EPS lab for *E. coli* analysis using IDEXX methodology. Table 6.1 shows the latitude/longitude locations of the current bacteria monitoring stations within the Jones Falls watershed. Figure 6.1 shows the locations of the monitoring sites for the entire trend monitoring program. There are five bacteria trend monitoring sites in the Jones Falls. Two of the monitoring sites are in the city and three are in the county.

Table 6.1: Baltimore County Bacteria Monitoring Station Locations

MDE Station Code	County Code	Watershed/ Subshed	Latitude	Longitude	Location
JON0039	JON-1	Jones Falls	39.327	-76.640	City
JON0082	JON-2	Jones Falls	39.378	-76.644	County
JON0184	JON-3	Jones Falls	39.391	-76.661	County
UQQ005	JON-4	Roland Run	39.399	-76.649	County
SRU0005	JON-5	Stoney Run	39.326	-76.626	City

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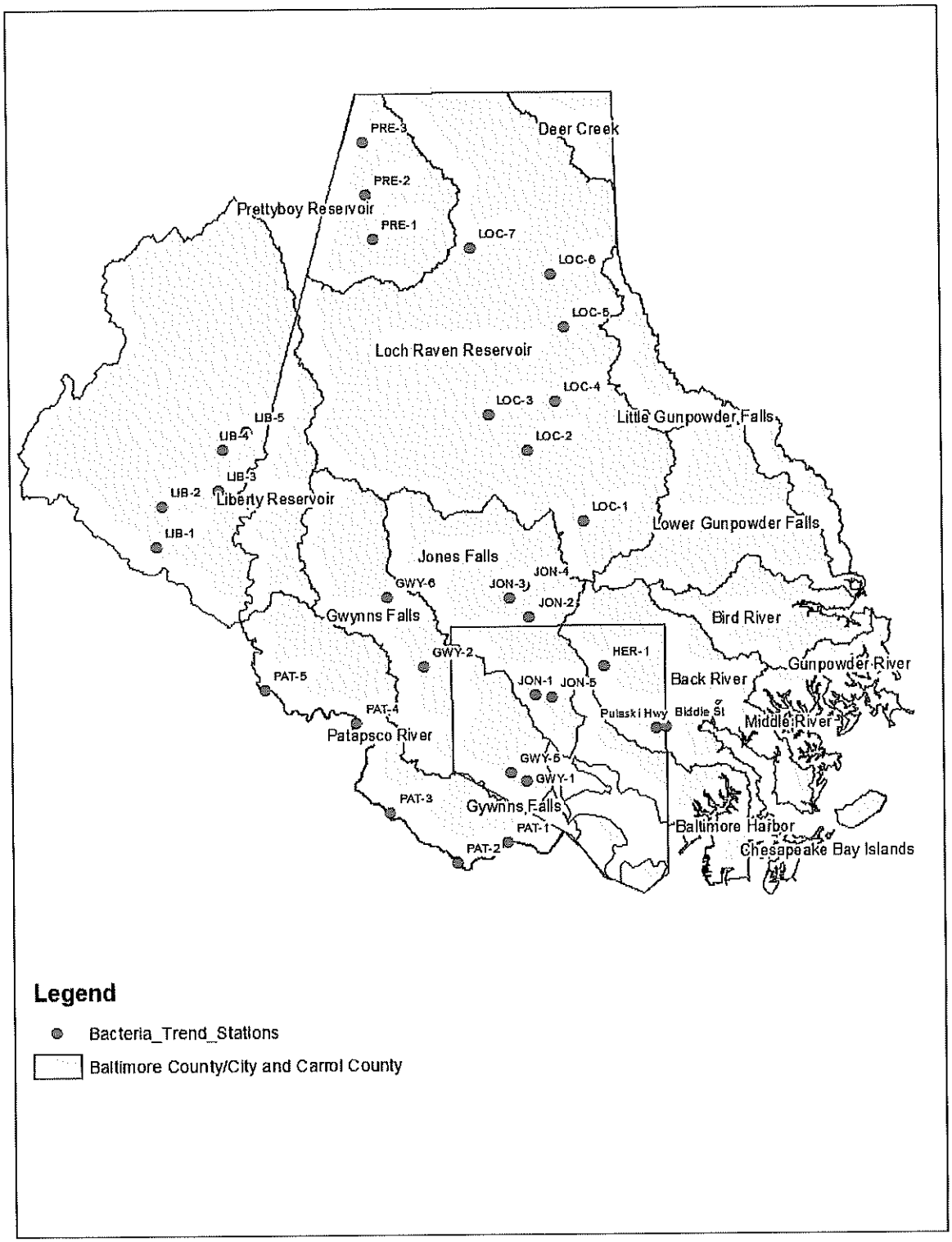

Figure 6.1: Map of Baltimore County/City, and Carroll County bacteria monitoring sites

6.1.1 Summary of Data Results

Samples are collected on the first Thursday of every month, except in circumstances of severe weather. Table 6.2 presents the number of samples and the geometric mean for high (wet) flow and low (dry) flow by year. It also presents the geometric mean of all samples by year regardless of condition. The table is stratified by annual data (includes all data collected for the year) and seasonal data (includes only those samples collected between May 1st and September 30th each year). Geometric means below the water quality standard (126 MPN) are highlighted in green. These results are displayed graphically in Figures 6.2 through 6.6.

Table 6.2: Jones Falls *E. coli* Results on an Annual and Seasonal Basis

Annual (MPN/100 ml)									
Site	Flow Type	2010		2011		2012		2013	
		N	MPN	N	MPN	N	MPN	N	MPN
JON-1 City	High	2	2,420	4	632	3	98	2	2,420
	Low	5	942	8	605	8	547	8	328
	All	7	1,233	12	614	11	342	10	489
JON-2	High	2	703	4	173	3	32	2	24
	Low	5	187	8	46	9	283	10	28
	All	7	273	12	71	12	55	12	27
JON-3	High	2	1,119	4	460	3	240	2	748
	Low	5	761	8	65	9	94	10	82
	All	7	849	12	124	12	119	12	118
JON-4	High	2	1,119	4	716	3	449	2	2,420
	Low	5	696	8	111	9	64	10	60
	All	7	797	12	207	12	105	12	110
JON-5 City	High	2	2,420	4	973	3	200	2	2,420
	Low	5	373	8	360	9	182	9	200
	All	7	636	12	502	12	186	11	315
Seasonal (May 1st to September 30th) (MPN/100 ml)									
Site	Flow Type	2010		2011		2012		2013	
		N	MPN	N	MPN	N	MPN	N	MPN
JON-1 City	High	0		2	751	1	**	1	2,420
	Low	4	1,210	3	538	4	824	4	283
	All	4	1,210	5	615	5	215	5	434
JON-2	High	0		2	228	1	75	1	63
	Low	4	147	3	186	4	35	4	17
	All	4	147	5	202	5	40	5	49
JON-3	High	0		2	551	1	387	1	770
	Low	4	994	3	377	4	254	4	266
	All	4	994	5	439	5	277	5	329
JON-4	High	0		2	2,178	1	210	1	2,420
	Low	4	889	3	869	4	251	4	152
	All	4	889	5	1,255	5	242	5	684
JON-5 City	High	0		2	773	1	166	1	2,420
	Low	4	311	3	275	4	93	4	479
	All	4	311	5	416	5	105	5	662

** Data suspect, results indicated 1 MPN/100 ml

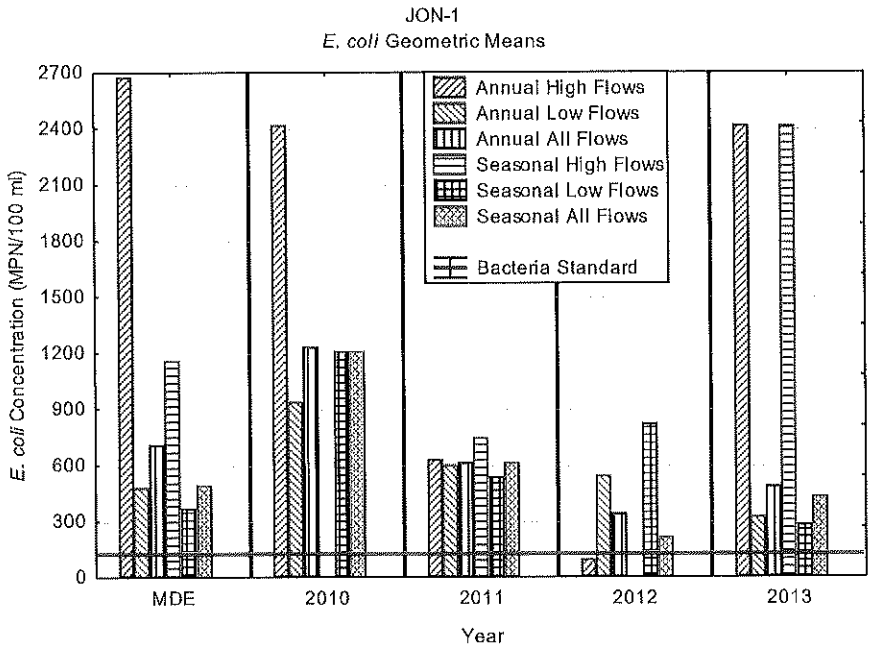

Figure 6.2: *E. coli* Geometric Mean Concentrations at Site JON-1 for both Annual and Seasonal Flow Periods Stratified by Flow Condition, MDE Results Added for Comparison

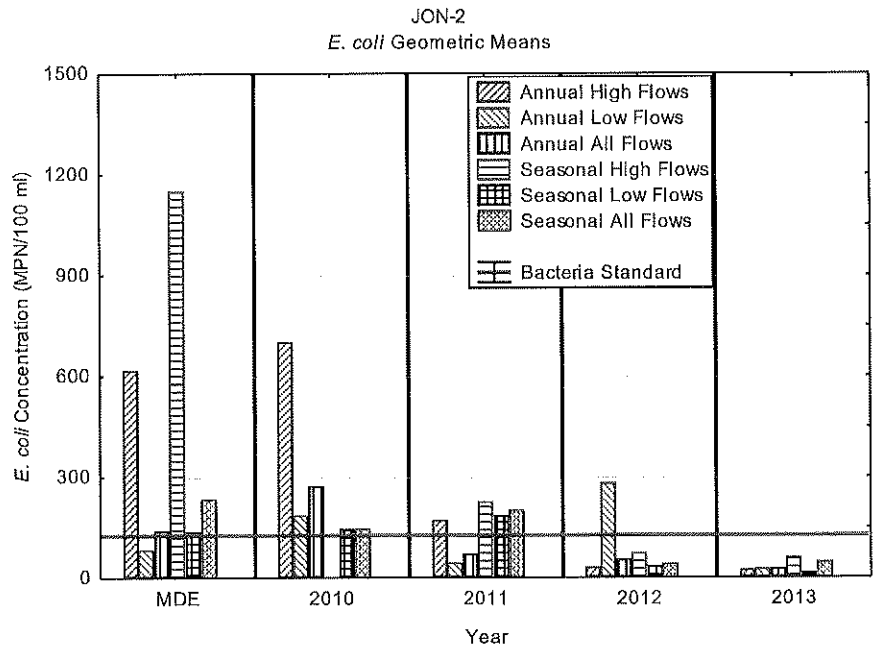

Figure 6.3: *E. coli* Geometric Mean Concentrations at Site JON-2 for both Annual and Seasonal Flow Periods Stratified by Flow Condition, MDE Results Added for Comparison

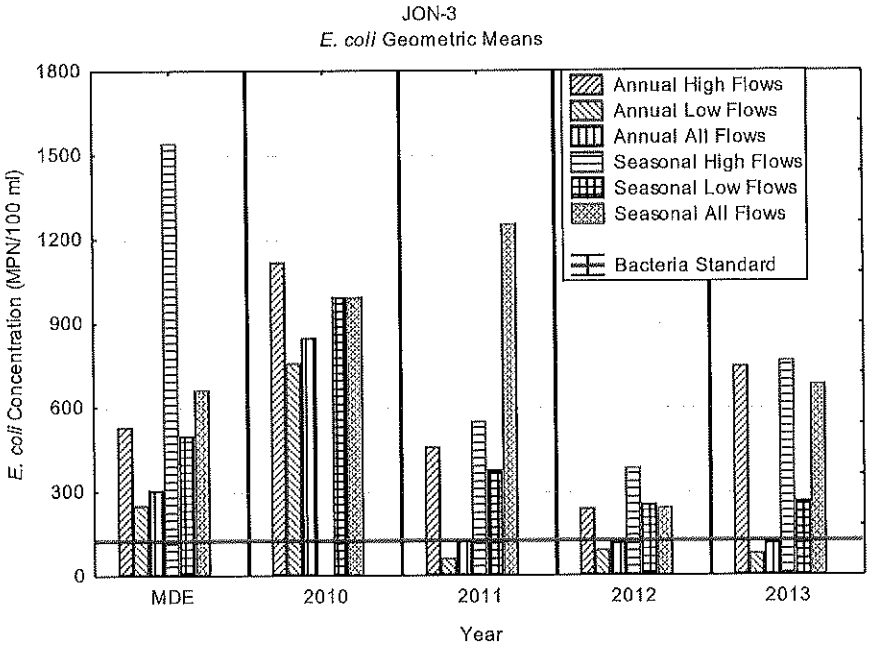

Figure 6.4: *E. coli* Geometric Mean Concentrations at Site JON-3 for both Annual and Seasonal Flow Periods Stratified by Flow Condition, MDE Results Added for Comparison

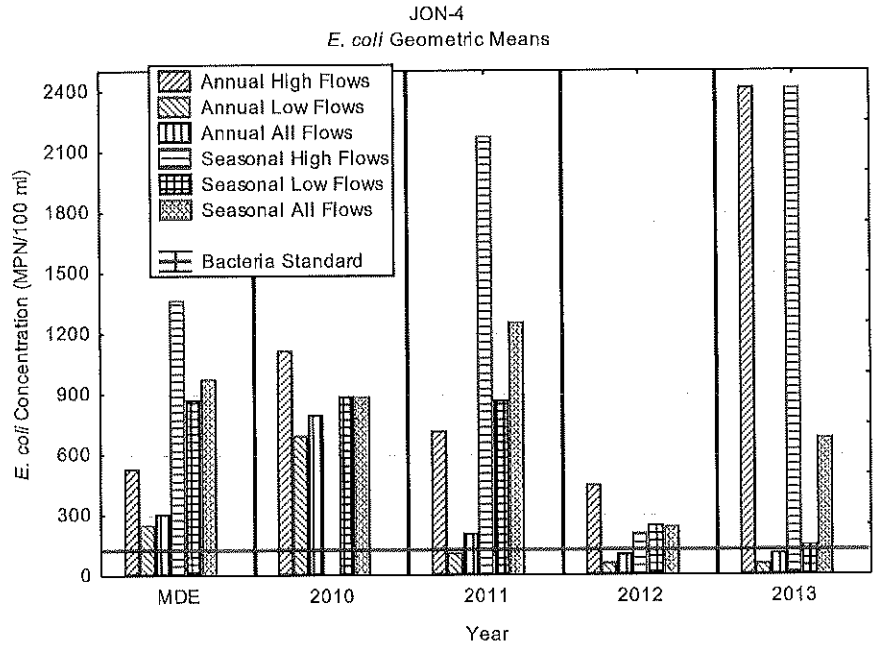

Figure 6.5: *E. coli* Geometric Mean Concentrations at Site JON-4 for both Annual and Seasonal Flow Periods Stratified by Flow Condition, MDE Results Added for Comparison

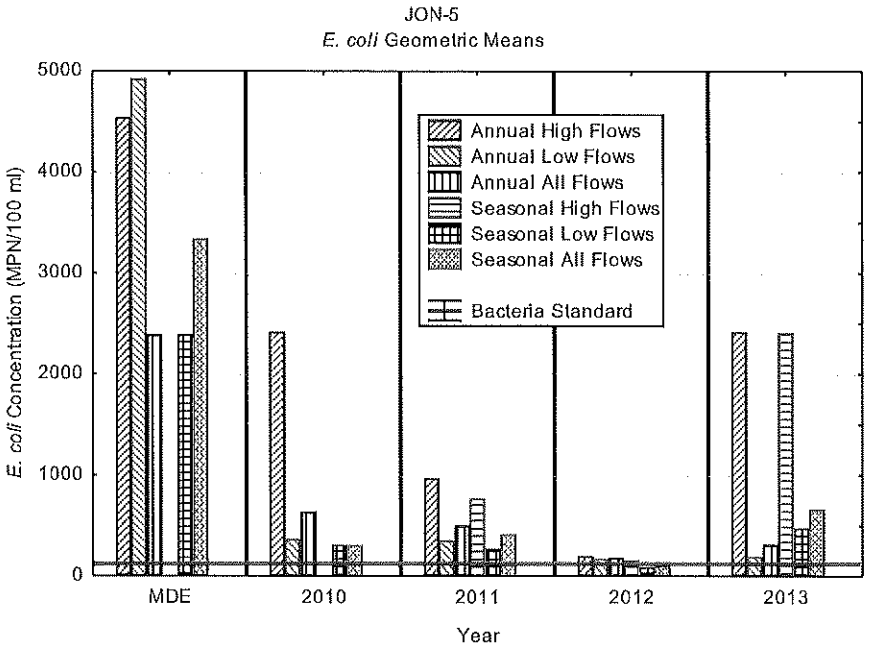

Figure 6.6: *E. coli* Geometric Mean Concentrations at Site JON-5 for both Annual and Seasonal Flow Periods Stratified by Flow Condition, MDE Results Added for Comparison

JON-1 (JON0039): This site is the located in Baltimore City on the mainstem of the Jones Falls and is the lowest monitoring point on the mainstem. It receives drainage from both Baltimore County and Baltimore City. The monitoring site is located above the confluence with Stoney Run. While the data indicate an improving trend over the four years of monitoring on an annual for both high and low flow and low flows on a seasonal basis, the geometric mean for all conditions is still higher than the water quality standard of 126 MPN/100 ml for *E. coli*. The Maryland Department of the Environment (MDE) data for this site indicted a geometric mean of 372 MPN/100ml for dry weather seasonal samples based on monitoring conducted between 10/2002 and 6/2003. A weighted mean for dry weather seasonal sampling for the four years of monitoring conducted by Baltimore County resulted in a value of 630 MPN/100ml. This would indicate the conditions are worsening at this station based on the difference between the two monitoring periods. The TMDL requires a 95.3% reduction of bacteria at this site.

JON-2 (JON0082): This monitoring site is located on the mainstem of Jones Falls in Baltimore County, below the Lake Roland dam. The entire drainage area is in Baltimore County. The Baltimore County monitoring indicated that this site has displayed continuing improvement for both low flow and high flow on an annual and a seasonal basis. Bacteria geometric mean water quality standards were met for both flow types on both the annual and seasonal basis. The MDE data for this site indicated a seasonal dry weather geometric mean of 139 MPN/100ml for this site. The four years of Baltimore County data resulted in a geometric mean of 84 MPN/100 ml for the dry weather seasonal data. This would indicate that there has been improvement at this site. The TMDL indicated a reduction of 95.3% reduction necessary for meeting bacteria water quality standards in the drainage area to this site. Based on the Baltimore County monitoring data, this site may have had enough bacteria reduction to meet the bacteria water quality

standards. Monitoring will continue at this site to confirm that bacteria water quality standards are being met.

JON-3 (JON0184): This is located on the mainstem of Jones Falls in Baltimore County upstream of Lake Roland at the Serrento Run USGS gage. The entire drainage area is in Baltimore County. The Baltimore County monitoring data indicates that the bacteria concentrations are improving, particularly for low flow conditions. Based on the annual data, bacteria water quality standards were met for low flow conditions and for all of the sample data, but not for the high flow conditions. However, on a seasonal basis while improving bacteria concentrations were found, the bacteria water quality standards were not met. The MDE data indicated a seasonal dry weather concentration of 501 MPN/100ml for this site, while the Baltimore County data, geometric mean for four years shows a concentration of 401 MPN/100ml indicating slight improvement. The TMDL requires 92.4% reduction for meeting bacteria water quality standards at this site.

JON-4 (UQQ005): This site is located in Baltimore County on Roland Run upstream from Lake Roland. The entire drainage is in Baltimore County and represents an urban subwatershed. The Baltimore County monitoring data indicates improving trends for low flow on both an annual basis and a seasonal basis. The annual low flow geometric means have met the bacteria water quality standards for the last three years (2011-2013). However, the seasonal low flow, while improving has yet to meet the bacteria water quality standards. The MDE data indicated a seasonal dry weather concentration of 872 MPN/100ml for this site, while the Baltimore County data for the four years of monitoring resulted in a geometric mean concentration of 374 MPN/100ml; indicating improvement at this site. The TMDL indicated a 92.1% reduction is necessary for meeting bacteria water quality standards at this site.

JON-5 (SRU0005): This site is located on Stoney Run in Baltimore City. A very small portion of the drainage area is in Baltimore County just above the city line. The data are somewhat variable on an annual basis, but a general improvement in low flow bacteria concentrations occurred the first three years of the monitoring program with an increase in 2013. Continued monitoring will determine if there is a consistent improvement of bacteria concentrations at this site. The MDE data indicated a seasonal dry weather concentration of 2,394 MPN/100ml at this site based on monitoring in 2002-2003, while the Baltimore County data for the four years of monitoring results in a geometric mean of 247 MPN/100 ml for the seasonal dry weather samples. This would indicate a significant improvement between the two monitoring periods. The TMDL indicated a 97.8% reduction in bacteria loads as necessary to meet bacteria water quality standards.

In addition to analyzing the data for the geometric means, the data were analyzed based on the single sample exceedance for seasonal data (May 1st to September 30th). Single sample exceedance standards are based on frequency of full body contact, ranging from infrequent (576 MPN) to frequent (235). The objective in the control of bacteria is to not only meet the geometric mean water quality standards, but to also meet the single sample water quality standards. This is particularly important for the low flow (dry weather) component of the flow regime, as this is when human recreational use of water is most likely to occur. Table 6.3 presents the results of the analysis by station, by year and by flow regime. The zero percent exceedances are highlighted in green.

Table 6.3: Frequency of Exceedance of Single Sample Water Quality Standards

Site	Year	N	Percent Single Sample Exceedance (MPN)

		Flow Type		576		410		298		235	
		High	Low	High	Low	High	Low	High	Low	High	Low
JON-1	2010	0	4		100%		100%		100%		100%
	2011	2	3	100%	67%	100%	67%	100%	67%	100%	67%
	2012	1	4	0%	75%	0%	100%	0%	100%	0%	100%
	2013	1	4	100%	25%	100%	25%	100%	50%	100%	75%
JON-2	2010	0	4		25%		25%		25%		25%
	2011	2	3	50%	0%	50%	33%	0%	33%	0%	67%
	2012	1	4	0%	0%	0%	0%	0%	0%	0%	0%
	2013	1	4	0%	0%	0%	0%	0%	0%	0%	0%
JON-3	2010	0	4		75%		100%		100%		100%
	2011	2	3	50%	0%	50%	33%	50%	100%	100%	100%
	2012	1	4	0%	50%	0%	75%	100%	75%	100%	75%
	2013	1	4	100%	50%	100%	50%	100%	50%	100%	50%
JON-4	2010	0	4		75%		75%		75%		100%
	2011	2	3	100%	100%	100%	100%	100%	100%	100%	100%
	2012	1	4	0%	25%	0%	75%	0%	75%	0%	75%
	2013	1	4	100%	25%	100%	25%	100%	25%	100%	25%
JON-5	2010	0	4		75%		75%		75%		75%
	2011	2	3	50%	33%	50%	33%	50%	33%	100%	33%
	2012	1	4	0%	0%	0%	0%	0%	25%	0%	25%
	2013	1	4	100%	25%	100%	25%	100%	25%	100%	75%

The frequency of exceedance data shows improvement for station JON-2. These data indicate that dry weather and wet weather bacteria concentrations may not be a concern at station JON-2. This site is below the Lake Roland dam and may benefit from treatment by the Lake Roland waters. The other four sites are more variable in results with no specific trends noted.

The bacteria trend monitoring program will continue until such time as all bacteria water quality standards are met in the Jones Falls watershed.

6.4 Summary of Current Condition

Based on the results of the current trend monitoring program, sampling indicates that while improvements have occurred, additional work is necessary to meet the bacteria water quality standards, particularly with respect to high flow concentrations.

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Baltimore County has already developed management plans that aim to remove certain pollutants in parts of the Jones Falls watershed. Section 7.1 is a brief summary of the Northeastern Jones Falls Small Watershed Action Plan (SWAP). Section 7.2 is a brief overview of the Lower Jones Falls SWAP and section 7.3 is a description of the Jones Falls Watershed Management Plan. SWAPs include local based goals and objectives that are beyond the scope of the TMDL IP. All completed SWAP documents and their appendices are available online. Past studies, including these SWAPs and the Watershed Management Plan, were used to inform the Implementation Plan. The following subsections provide more specific information for each plan within the Jones Falls watershed.

7.1 Northeastern Jones Falls Small Watershed Action Plan, 2012

The *Northeastern Jones Falls SWAP* addresses a 10.9 square mile portion of the Jones Falls watershed, making up the north eastern part of the Jones Falls watershed that is within Baltimore County. Northeastern Jones Falls includes the four sub-watersheds: Roland Run, Ruxton Run, Towson Run, and the Lake Roland Direct Drainage. The Northeastern Jones falls represents 19% of the entire Jones Falls watershed.

The SWAP is a strategy for restoring the Northeastern Jones Falls. It was developed, in 2012, by Baltimore County Department of Environmental Protection and Sustainability with extensive input from county citizens, county agencies, members of watershed associations, and various institutions. The action plan outlines recommendations for watershed restoration, describes management strategies for each of the four sub watersheds, and identifies priority projects for implementation. The plan also includes cost estimates for certain potential actions and a schedule for implementation over a 13 year timeline. Financial and technical partners are suggested for implementation of various potential actions.

7.1.1 SWAP Vision and Goals

Northeastern Jones Falls SWAP Vision:

The Northeastern Jones Falls Steering Committee adopted the following vision statement that served as a guide in the development of the SWAP:

We envision a healthy, vibrant Northeastern Jones Falls watershed, which protects high quality streams and is supportive of diverse aquatic life. Our watershed conserves treasured natural resources and maintains and celebrates our residential character and landscape for today and for future generations.

Northeasten Jones Falls SWAP Goals:

- Goal 1: Improve and Maintain Clean Water
- Goal 2: Enhance Stream Riparian Corridors for Water Quality and Habitat Value
- Goal 3: Increase Citizen Participation with Restoration Projects
- Goal 4: Encourage Collaboration with the Institutional Landowners and Baltimore County EPS on Restoration Projects
- Goal 5: Enhance Natural Resources on Public Property
- Goal 6: Maintain the Residential Character of the Watershed

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7.2 Lower Jones Falls Watershed Small Watershed Action Plan, 2008

The *Lower Jones Falls SWAP* addresses the southern portion of the Jones Falls watershed, including the area that crosses over into Baltimore City. The area includes six sub-watersheds and makes up 45% of the Jones Falls watershed. The Lower Jones falls is 25.9 square miles of the entire 58 square miles of the Jones Falls watershed.

This small watershed action plan was developed by a partnership between Baltimore County, Baltimore City, the Herring Run and Jones Falls Watershed Associations, and the Center for Watershed Protection Inc. The plan presents results of a thorough watershed assessment by sub-watershed, conceptual storm water retrofit project plans, overall watershed recommendations, and a draft schedule for implementation with anticipated benefits of implementation.

7.2.1 SWAP Goals

The stakeholder meetings resulted in the following set of goals to guide recommendations for the lower Jones Falls SWAP:

- Goal 1: Improve conditions in stream to achieve standards of swimmable, fishable, and water contact recreation in streams by 2022.
- Goal 2: Improve the condition of the biology in the stream by planting more stream buffers along streams and removing concrete stream channels.
- Goal 3: Implement effective watershed education.
- Goal 4: Increase the involvement of the population
- Goal 5: Disconnect impervious surfaces from the storm drain system
- Goal 6: Integrate stormwater and watershed planning goals in new and redevelopment.
- Goal 7: Continue collaboration between Baltimore City/County, watershed groups and citizens.
- Goal 8: Engage the business community in restoration
- Goal 9: Improve management of natural and turf areas

7.3 Jones Falls Watershed Management Plan (1998)

The WQMP for Jones Falls is a document that details Capital Improvement Projects (CIPs) that the County could consider to improve water quality. These Management Plans focused on County-specific actions, and not citizen-based initiatives. The plans outlined in the WQMP may be useful for determining CIPs that the County may still implement through this plan and in the future. The SWAPs include some additional CIPs along with various citizen-based plans that can reinforce the efforts of the County. The full plan is available for review at the EPS offices at 111 W. Chesapeake Ave. Towson, MD 21204.

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This section provides an overview of pollutant reduction measures and their predicted effectiveness. This overview is meant to serve as a guide to aid in selecting the most efficient possible BMPs that may be implemented to meet the pollutant reduction goals required by the TMDL. This review utilizes conservative estimates of BMP efficiency for planning purposes, as exact types of BMPs (e.g. structural BMPs) will not be chosen until appropriate on-site analysis is complete. It is possible that only some of the listed actions in this section will be selected for inclusion in Section 9 of this Implementation Plan

Bacteria can be removed from or inactivated in surface waters and stormwater through several treatment mechanisms by implementing Best Management Practices (BMPs). Treatment mechanisms include ultraviolet light (from sunlight), sedimentation, settling, plant uptake, drying, temperature, and filtration. Bacteria require specific environmental conditions to thrive and survive (Clary et al. 2010; Hathaway and Hunt 2008). BMPs commonly have moist soils and readily available nutrients, conditions that may be conducive to pathogen persistence. In some instances, BMPs can be sources of pathogens. This occurs in BMPs which attract wildlife including deer, waterfowl, rodents, and domestic animals which defecate in and around the BMP resulting in direct pathogen inputs to the system (Hathaway and Hunt 2008).

Removal efficiencies are typically calculated by comparing contaminant concentrations or loads entering and exiting a structural control (US DOI 2002). Removal efficiencies of structural controls depend on many factors including the type and design; site characteristics such as soil type, catchment size, land use, percent impervious area, storm size and intensity, bypass issues, maintenance and upkeep of the systems, and retention time (US DOI 2002). BMP systems rather than individual BMP installation tends to work better (Haynes 2006).

Several sources were consulted including the International BMP Database, research studies, and other existing TMDL implementation plans. Below is a description of several BMPs that have been studied for removal of bacteria and Table 8.1 summarizes the efficiencies of each BMP.

8.1 Types of Best Management Practices for Addressing Bacteria

8.1.1 Sanitary Sewer Repairs

Sanitary Sewer Overflows (SSOs) occur when the capacity of a sanitary sewer is exceeded. There are several factors that may contribute to SSOs from a sewer system, including pipe capacity, operations and maintenance effectiveness, sewer design, age of system, pipe materials, geology and building codes. As of September 2005, Baltimore County is under a consent decree with the U.S. Environmental Protection Agency (EPA) to repair, replace or rehabilitate the system with the goal of eliminating all overflow structures to be completed by March 2020 (US EPA et al. 2006). It is assumed that there will be a 95% bacteria efficiency removal.

8.1.2 Grass Swales/Bioswale

Grass swales are vegetated open channels designed to treat stormwater runoff by slowing the water to allow sedimentation and filtering as the water flows along these channels. Grass swales are typically located along roads because they are linear. They should be sited on relatively flat sites as steep slopes encourage erosion. Grass swales typically do not have a high efficiency of bacteria removal, in fact several studies have shown a negative bacteria removal efficiency (-50%) which indicates more bacteria left the system than entered (US EPA 2012a). This may be

because swales are attractive to animals and are not necessarily intended to completely dry between storms, potentially providing an environment where pathogens can persist (Hathaway and Hunt 2008).

8.1.3 Riparian Buffer Zones

Riparian buffer zones are vegetated areas along streams to reduce erosion, sedimentation, and pollution of water (US EPA 2012a). Densely vegetative cover removes pollutants through detention of runoff, filtration by the vegetation, and infiltration into soil (BoyerND). The effectiveness of buffers for reducing bacteria pollution, however, is dependent on the type of vegetation and the width of the buffer. Typically, the wider the buffer, the more pollution reduced. The VA DEQ Guide reports a bacteria removal efficiency of 43-57% (VA DECR and VA DEQ 2003).

8.1.4 Dry Detention Ponds

Dry detention ponds are basins whose outlets have been designed to detain stormwater runoff for some minimum time (e.g., 24 hours) to allow particles and associated pollutants to settle. They do not have a large permanent pool of water but are often designed with small pools at the inlet and outlet of the basin or can be completely dry between precipitation events (Hathaway et al. 2009; US EPA 2012a). The primary pollutant removal mechanisms are sedimentation, drying, and sun exposure (Hathaway et al. 2009). Studies show detention ponds have a bacteria removal efficiency of 25% (VA DECR and VA DEQ 2003).

8.1.5 Retention Ponds/Wet Ponds

Retention ponds/wet ponds are basins where influent runoff enters the pond and theoretically replaces captured runoff from prior events (the principle of plug flow) (Hathaway et al. 2009). The wet pond retains the runoff for 1-2 days and then slowly drains (Hathaway and Hunt 2008). Bacteria removal is facilitated through settling (sedimentation), plant uptake and sun exposure (Hathaway et al. 2009; Hathaway and Hunt 2008). According to Emmons and Olivier Resources, Inc. and the EPA, literature review studies cite average bacteria removal rates of 65-70% (Tilman et al. 2011; US EPA 2012a).

8.1.6 Bioretention/Biofiltration Ponds

Bioretention areas function as filtration and infiltration BMPs. Storm water enters the system and passes through a permeable soil media where pollutants are filtered, similar to sand filter systems, and are also vegetated. The system may pond water; however, it is drained within 12–24 hours. Tree box filters are smaller versions of bioretention systems which are installed along sidewalks as vegetated catch basins. The actual collection or entry point is typically a concrete structure with a catch basin or gutter opening integrated with the street curbing. Treated runoff is filtered into the groundwater or transported to the storm sewer system. The bioretention system is intended to dry out between storm events (Hathaway et al. 2009). Literature review studies cite average bacteria removal rates of 70% (Tilman et al. 2011).

8.1.7 Wetland Treatment Systems

Wetland treatment systems consist of a wetland constructed with the purpose of treating wastewater or stormwater inputs. The wetlands may be vegetated, open water, or a combination (Tilman et al. 2011). These BMPs promote sedimentation like wet ponds, but provide more exposure of captured stormwater to wetland soils and plants in a shallow system (Hathaway et al.

2009). Sun exposure in the open areas and natural die-off are thought to reduce the bacteria population (Tilman et al. 2011). Research studies found average measured bacteria removal efficiencies for wetland systems of 79% (Tilman et al. 2011). The level of bacteria reduction has been shown to increase as the treatment time (e.g., longer than 1-2 days) increases (Khatiwada and Polprasert 1999).

8.1.8 Sand Filters

Sand filters are a storm water treatment practice designed to remove sediment and pollutants from the first flush of runoff from pavement and impervious areas after a rain or storm event (Boyer ND). Runoff first enters a sedimentation chamber before flowing through a column of soil. Sand chamber is dry between events. Treatment mechanisms relevant to pathogen removal include drying, sedimentation and filtration (Hathaway and Hunt 2008). Stormwater Best Management practices database (2010) indicated that sand filters are effective in removing from 36 to 83% of the bacteria in urban runoff.

8.1.9 Infiltration Basin

An infiltration basin is a shallow vegetated open impoundment where incoming stormwater runoff is stored until it gradually infiltrates into the soil. Runoff enters the basin and bacteria are removed through detention and filtration. Limitations include the need for permeable soils to reduce the potential for clogging and the need for regular maintenance. The VA DEQ Guidance Manual cites infiltration basins can provide 50% bacteria removal efficiency (VA DECR and VA DEQ 2003).

8.1.10 Infiltration Trench

An infiltration trench is an excavated trench that has been lined with filter fabric and backfilled with stone to form an underground basin or reservoir (Boyer Year Unknown; VA DECR and VA DEQ 2003). Stormwater runoff is directed into the trench through the use of grass areas or pretreatment devices. Trenches tend to be more suitable for ultra-urban situations, where the soil has low permeability (Boyer Year Unknown). The VA DEQ Guidance Manual cites infiltration trenches can provide 50% bacteria removal efficiency (VA DECR and VA DEQ 2003).

8.1.11 Porous Pavement

Porous or pervious pavement allows rainfall to percolate through it to the subbase, providing storage and enhancing soil infiltration that can be used to reduce runoff and combined sewer overflows. The water stored in the subbase then gradually infiltrates the subsoil (VA DECR and VA DEQ 2003). According to the VA DEQ Guidance Manual (2003), porous pavement can provide 50% bacteria removal efficiency.

8.1.12 Stream Bank Protection and Stabilization

Waterways that are being eroded can be stabilized by constructing bulkheads, using riprap, gabion systems or establishing vegetation which can reduce the amount of bacteria, nutrients, and sediment from entering the waterway (VA DECR and VA DEQ 2003). Stream bank protection and stabilization can provide for 40-75% bacteria removal efficiency (40% without fencing and 75% with fencing) (VA DECR and VA DEQ 2003).

8.1.13 Public Education – Pet Waste

Public education and outreach are important tools for reducing bacterial pollution due to pet waste. A pet waste education program would educate pet owners to better understand the importance of appropriate pet waste management practices. This program will include the development and distribution of educational materials and the promotion of pet waste BMPs. Public education for pet waste can provide for 25% bacteria removal efficiency (VADEQ 2013).

8.1.14 Street Sweeping

There are three types of street sweepers commonly used: mechanical, vacuum-assisted, and regenerative air (US DOI 2002). The most common type of sweeper, the mechanical sweeper, lifts dirt off the street by a rotating broom and feeds it to a hopper by a conveyor system. A water spray is often used to control dust. Vacuum-assisted sweepers combine a mechanical sweeper with a high-power vacuum. Some use a water spray to control dust. Regenerative-air sweepers combine a mechanical sweeper to loosen dirt with forced air to dislodge the remaining dirt. Street sweeping frequency is an important variable in the effectiveness of removing contaminants (US DOI 2002). For example, sweeping the street at least once between storms is important to remove contaminants before they are washed away by storms. Removal efficiencies are highest for suspended solids, intermediate for removal of lead, and lowest for fecal coliform bacteria and total phosphorus (US DOI 2002). Multiple passes with the street sweeper and the speed of the street sweeper also can affect the removal capabilities. Simulation models developed by USGS show a fecal coliform removal efficiency of 1.3-5.3%, depending on sweeping frequency and land use (US DOI 2002).

8.1.15 Redevelopment

Redevelopment consists of applying new uses to previously occupied urban space. This can sometimes involve a change in zoning or land use all together, or simply finding new uses for existing structures. In many cases this can allow for a site that previously had no water quality treatment practices to incorporate them into the new development.

Table 8.1: Reduction Efficiencies for BMPs treating Bacteria

Best Management Practice	Efficiency
Sanitary Sewer Overflow repairs	100%
Grass swale	-50%
Riparian buffer zone	43-57%
Dry detention ponds	25%
Retention ponds	65-70%
Bioretention/Biofiltration ponds	70%
Wetland treatment systems	79%
Sand filters	30%
Infiltration basin	50%
Infiltration trench	50%
Porous pavement	50%
Stream bank protection and stabilization (no fencing)	40%
Stream bank protection and stabilization (with fencing)	75%
Public education – pet waste	25%
Street sweeping	1.3-5.3%
Redevelopment	Varies

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Please note, while some BMPs provide ranges, the lowest efficiency have been used in calculations to determine the acres treated by each BMP.

8.2 Agricultural and Septic System BMPs

8.2.1 Animal Waste Storage Facility

A waste storage area is made by constructing an embankment and/or excavating a pit or dugout, or by fabricating a structure in order to temporarily store wastes such as manure, wastewater, and contaminated runoff (Peterson et al. 2011). An optimal use of waste storage is to improve the timing of manure applications so that manure nutrients are distributed to fields based on crop and soil needs, instead of repeated applications on the same field based on convenience (Peterson et al. 2011). Long-term manure storage (6-30 weeks) resulted in the reducing *E. coli* by 97% (Peterson et al. 2011).

8.2.2 Exclusionary Fencing

Livestock with access to streams introduces direct deposits of fecal matter and bacteria into the waterway. By limiting access of livestock to waterways with a constructed barrier has 75% bacterial removal efficiency (VA DECR and VA DEQ 2003).

8.2.3 Livestock Water Crossing Facility

Providing a controlled crossing for livestock and/or farm machinery in order to prevent streambed erosion and reduce sediment can also reduce bacteria in streams (VA DECR and VA DEQ 2003). Stream crossings can reduce *E. coli* 46% when combined with other practices (Peterson et al. 2011).

8.2.4 Alternative Water Sources

Providing livestock access to an off-stream drinking water source such as a trough or pond system decreases the amount of direct livestock use of streams for drinking and other activities (Peterson et al. 2011). An off-stream alternative water supply can result in a 85% bacteria removal efficiency (Peterson et al. 2011).

8.2.5 Range and Pasture Management

Range and pasture management refers to systems of practices to protect the vegetative cover on improved pasture and native rangelands. It includes practices such as seeding or reseeding, brush management (mechanical, chemical, physical, or biological), proper stocking rates and proper grazing use, and deferred rotational systems. Range and pasture management results in 50% bacteria removal efficiency (VA DECR and VA DEQ 2003).

8.2.6 Septic System Pump-Out

The greatest threat to surface water bacteria impairment originates from system failure when septage comes to the soil surface and results in overland flow (VA DECR and VA DEQ 2003). A typical septic system consists of a tank that receives waste from a residence or business, and a drain field or subsurface absorption system consisting of a series of percolation lines for the disposal of the liquid effluent. Solids (sludge) that remain after decomposition by bacteria in the tank must be pumped out periodically in order to prevent septic failure. Regular septic system pump-outs can result in 5% bacteria removal efficiency (VA DECR and VA DEQ 2003).

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Table 8.2: Reduction Efficiencies for Bacteria for Agricultural and Septic BMPs

Best Management Practice	Bacteria Removal Efficiency
Animal waste storage facility	97-99%
Exclusionary fencing	75%
Livestock water crossing facility	46%
Alternative water sources	85%
Range and pasture management	50%
Septic pump-out	5%

8.3 Discussion of Uncertainty

Literature reviews have shown that pathogen removal appears to vary not only by BMP type, but also among similar BMP types at various locations (Clary et al. 2010; Hathaway and Hunt 2008). For example, there is considerable variability in the effectiveness of wet ponds, and it is believed that properly designing and maintaining ponds may help to improve their performance (Clary et al. 2010; US EPA 2012). Based on the performance data available to date in the BMP Database for fecal indicator bacteria, only general inferences regarding BMP selection are appropriate at this time. General recommendations as a result of the analysis include:

- In general, bioretention and sand filters appear to have ability to remove pathogens; these systems have little input from animals due to their lack of standing water, eliminating a common attraction for waterfowl (Clary et al. 2010; Hathaway and Hunt 2008).
- Conversely detention ponds and grass swales have not been shown to be very effective. Swales are attractive to animals and are not necessarily intended to completely dry between storms, potentially providing an environment where pathogens can persist (Clary et al. 2010; Hathaway and Hunt 2008).
- Seasonal distribution of samples may affect conclusions drawn related to BMP performance (Clary et al. 2010). For example, winter concentrations of fecal indicator bacteria may be lower than summer concentrations (Clary et al. 2010).

The majority of conventional stormwater BMPs in the BMP Database do not appear to be effective at reducing fecal indicator bacteria concentrations to primary contact stream standards, which is the ultimate target of TMDLs. Because the data are limited, both in the number of data points and the representativeness of the data, rigorous statistical conclusions cannot be drawn based on available data. Significantly more studies are needed for all BMP types to increase the confidence of performance estimates with regard to bacteria (Clary et al. 2010).

8.4 Alternative BMPs

8.4.1 Sanitary Sewer Lateral Line Program

The consent decree addresses sanitary sewer pipes that are located on public property. The connection between private owners and the county portion are referred to as lateral lines. These lateral lines are also prone to leaking which can result in bacteria entering waterways. If water quality standards are not achieved through the consent decree and other BMPs to address bacteria, the County will assess the feasibility of developing a program to monitor bacteria that may be the result of leaking lateral lines.

8.4.2 Stormtech Isolator Row

Stormtech Isolator Row is a manufactured treatment device that uses a series of subsurface chambers over geotextile fabric and crushed stone for filtration of pollutants beneath parking lots or other infrastructure. Over time, an organic filter cake forms between the chamber and geotextile fabric for enhanced chemical sorption. More research is needed to determine the bacteria removal efficiency.

In this section you will find a list of actions that together become one scenario as to how the county could reach the pollutant load target. While EPS has developed this scenario, progress will be assessed on an annual basis through results of implementation actions and monitoring data. It is intended that the IP will be reviewed on a five-year cycle for potential revisions. The county takes an adaptive management approach to all watershed planning efforts.

Adaptive management is a decision process that promotes flexible decision making that be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood (U.S Department of the Interior 2009). The tools that Baltimore County will use in adaptive management are the tracking of implementation progress through the various actions proposed in the strategy in this section, identification of barriers that prevent targeted actions from occurring, and an enhanced monitoring program to measure progress in both reductions and meeting water quality standards. While this will be an on-going process, there will be a formal review of the strategy at five year intervals to determine if changes are needed or if the strategies are on track.

The actions are broken out into three separate sections. Programmatic actions are actions that do not have a measureable load reduction, but create the condition necessary to reduce the pollutant. Some of these actions require a plan for program development because they are new programs that have not yet been developed by the county. Management actions are actions that require regular actions on county property. Restoration actions are new control measures aimed to reduce pollutant loads. Finally, you can find a discussion of the reductions, which states the year by which the reduction load will be met and describes other factors that play into meeting the water quality criteria.

The actions discussed in this section are to be implemented in addition to currently in-progress or completed programs and restoration actions. Some actions in some parts of Baltimore County have already been completed, such as certain stream restorations, or riparian area reforestations, but there are still many projects in need of completion before water quality goals are met. The Jones Falls watershed is located in parts of Baltimore County and Baltimore City. While the TMDL document requires a reduction for the entire watershed, actions described in this implementation section will be limited to what Baltimore County may oversee, as we cannot direct reduction efforts in other jurisdictions.

Of the 34,122 acre Jones Falls watershed, only 25,933 acres are included within Baltimore County's jurisdiction which is equal to roughly 76% of the watershed. Baltimore County assumes that it is responsible for reducing its *E. coli* load by 12,265.6 billion MPN/year, which is 76% of the 16,139 billion MPN/year that needs reducing for the watershed as a whole. A reduction of 94.9% is necessary for the entire Jones Falls to meet the water quality endpoint of 119.7 MPN/100 ml (5% lower than 126 MPN/ 100 ml to account for margin of safety). Table 9.1 summarizes the reductions needed by station. This section includes many actions that were planned in the SWAP and also discussed in Section 7 of this document.

Table 9.1: Annual Average TMDL and Percent Reduction by Sub-Watershed

Subwatershed	*E. coli* Baseline Load (BillionMPN/year)	Target Load Reduction (BillionMPN/year)	Long-Term Average *E. coli* TMDL Load (BillionMPN/year)	% Required Reduction

JON0184	1,206,325	1,115,075	91,250	**92.4%**
UQQ0005	133,955	123,370	10,585	**92.1%**
JON0082sub	887,315	845,340	41,975	**95.3%**
JON0039sub	3,340,480	1,184,260	156,220	**95.3%**
SRU0005	636,560	622,960	13,870	**97.8%**
Total	**6,204,270**	**5,890,735**	**313,900**	**94.4%**

As discussed in Section 3, it can be seen that high levels of bacteria in the water coincide with high flow rates. This is likely the result of bacteria being washed into the waterways during storm events. High concentrations of bacteria also coincide with warmer times of year. It is expected that human contact will occur most frequently during times of low flow, as storm events (high flow) are not as conducive to water contact recreation. The actions outlined in this section will target reducing bacteria counts during all conditions to acceptable levels, while prioritizing the meeting of Water Quality Standards (WQS) for times most suited to water contact recreation.

While the final target will be to achieve water quality standards for all flow conditions and for annual and seasonal periods, by the end of 20 years of implementation, there will be five year interim goals that will help track progress to the end goal. Table 9.2 shows the interim targets for *E. coli* concentrations when measured both by single samples and by the calculated geometric mean from longer term monitoring. The single sample targets are based on dry weather samples only. Meeting the single sample target means that all dry samples will be less than the level for each of the interim milestones. For example, by 2025 the target is for all dry weather samples to be less than 410 MPN/100 ml.

Table 9.2: Five Year Interim Targets for Single Sample and Geometric Mean *E. coli* Densities

Single Sample Target (MPN/100 ml)				
Weather Condition	**2020**	**2025**	**2030**	**2035**
Dry	576	410	298	235
Wet	NA	NA	NA	NA
Geometric Mean Target (MPN/100 ml)				
Dry	477	360	243	126
Wet	6,880	4,630	2,380	126

9.1 Action Types

The actions below are divided into programmatic actions, management actions, and restoration actions. Programmatic actions are actions that do not directly result in load reductions, but create the necessary conditions for load reduction. Management actions are those where there is regular management of county property, such as, street sweeping, and sanitary sewer maintenance. Restoration actions include the development of new control measures aimed to reduce pollutant loads as well as retrofits of existing stormwater management facilities. There are many actions that may be taken that would have an explicitly indirect impact on bacteria, however with no ability to prove the cause/effect relationship of these actions, they will be omitted (e.g. stream restorations).

9.1.1 Programmatic Actions

Programmatic actions are those that do not directly result in load reductions, but create the necessary conditions for load reduction. Actions within this category might include public education and outreach activities, monitoring, or supporting specific legislation. These actions

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will move Baltimore County closer to achieving TMDL targets; however, there is currently no way to attribute a predictable pollutant load reduction to programmatic actions. Some programmatic actions, such as investigation and monitoring, are necessary to implement management and restoration actions or make those actions more efficient. Other programmatic actions, such as education and outreach actions, are predicted to increase the load reduction over time through BMP implementation by individual citizens. The exact load reduction is not predictable because the participation rate for individual home owners installing BMPs, as a result of public education, is not yet known.

9.1.2 Monitoring and Reporting Actions

As a subset of programmatic actions, the monitoring and reporting actions will provide the means for determining progress made in meeting the load reductions. Some of the monitoring actions will be used to better target programs for remediation.

9.1.3 Management Actions

Management actions are those where there is regular management of county property, such as, street sweeping. It does not include the development of new control measures, such as, retrofitting highway yards. Management actions have predictable load reductions, which can be used to calculate the contribution of each action toward meeting the overall load reduction required by the TMDL.

9.1.4 Restoration Actions

Restoration actions include the development of new control measures aimed to reduce pollutant loads as well as retrofits of existing stormwater management facilities. It may include reforestation actions as well as any stormwater control measures that do not require regular management on county property. Restoration actions will have predictable load reductions, which will be used to calculate the contribution of each action toward meeting the overall load reduction required by the TMDL.

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9.2 Reductions by Source

The various sources of bacteria will require different management practices to achieve the overall reductions needed to meet bacteria water quality standards. The relative contributions were calculated by MDE for the fours sources; human, domestic pet, livestock, and wildlife. These relative contributions were used to calculate the *E. coli* baseline bacteria loads. Section 3 provides more information on the methods used to determine the relative contribution from sources and the calculation of the baseline loads. The information displayed in Table 9.3 was derived from Table 4.7.1 in the TMDL document.

Table 9.3: Distribution of Sources of *E. coli* Bacteria Loads (MPN/100ml) and % Relative Contribution

Station	Domestic Pet		Human		Livestock		Wildlife		Total Load	% Reduction
	%	Load	%	Load	%	Load	%	Load		
JON0184	27.4%	906.5	52.0%	1,719.2	16.3%	538.1	4.3%	141.5	3,305.3	**92.4%**
UQQ0005	16.8%	61.6	70.5%	258.6	7.4%	27.1	5.3%	19.3	366.6	**92.1%**
JON0082sub	24.1%	585.5	57.8%	1,404.7	13.2%	321.8	4.9%	118.7	2,430.7	**95.3%**
JON0039sub	19.9%	1,816.7	67.5%	6,175.6	9.1%	832.3	3.6%	327.3	9,151.9	**95.3%**
SRU0005	13.8%	240.4	80.1%	1,396.2	5.4%	94.1	0.7%	13.0	1743.7	**97.8%**
Watershed	**16.8%**		**54.6%**		**11.4%**		**3.4%**		**16,998.2**	**94.4%**

*Percentages by source do not equal 100% because the remainder is from unknown bacteria sources

9.2.1 Reductions to Human Sources

Human sources may be some of the more important bacteria sources to focus on reducing, as human fecal matter is the most probable transporter of human pathogens. Based on annual weighted average measurements in the TMDL document, approximately 54.6% of the Jones Falls inputs are from humans. The Jones Falls is serviced by sewer systems and a small portion by septic systems. Failing septic systems, leaking infrastructure, and Sanitary Sewer Overflows (SSOs) all contribute to human fecal bacteria inputs. SSOs, in the sewered portion of the watershed, are expected to be largely addressed by Baltimore County's continuing compliance with the consent decree to eliminate all SSOs within the County by March 2020. According to MDE, the Most Practicable Reduction (MPR) for reduction of human bacteria inputs is 95%. For all subwatersheds in the Jones Falls, water quality standards could not be met based on MPRs. Fecal bacteria reductions from human sources would need to reach 98% in order to meet water quality standards.

9.2.2 Reductions to Domestic Pet Sources

Based on annual weighted average measurements in the TMDL document, approximately 16.8% of total bacteria inputs to the watershed come from domestic pet sources. A large contributor of the domestic bacteria in Jones Falls comes from pet owners failing to pick up dog waste, and from runoff carrying that dog waste into streams and tributaries. MDE states the maximum possible reduction for this type of bacteria input is 75%. The majority of reductions to domestic bacteria inputs are expected to come from a focus on educational programs to promote behavioral change in pet owners. For all of the Jones Falls subwatersheds, necessary reductions matched the MPR.

9.2.3 Reductions to Livestock Sources

According to the TMDL document, livestock accounted for 11.4% of bacteria inputs to the Jones Falls watershed. MDE states the maximum possible reduction for this type of bacteria input is

75%. For all of the Jones Falls subwatersheds, necessary reductions matched the MPR. Reductions to livestock bacteria inputs can be met using sediment reducing BMPs.

9.2.4 Reductions to Wildlife Sources

Based on annual weighted average measurements in the TMDL document, approximately 3.4% of total bacteria inputs to the watershed come from wildlife sources. They are not subject to laws or property boundaries, and are not suited to educational programs. This makes managing wildlife bacteria inputs quite difficult, and MDE acknowledges that the maximum possible reduction for wildlife bacteria inputs is actually 0.0%.

9.3 Implementation Actions

Table 9.1 below outlines the specific actions intended to be taken to reduce bacteria inputs to Gwynns Falls. These actions are organized by action type, as discussed above, and they indicate which source will be addressed by implementing each action. The table also includes a time frame to indicate a predicted time period by which the action should be fully implemented, and a performance standard to measure success. The column of responsible parties will indicate who will likely be tasked with implementing that specific action.

Table 9.4: Implementation Actions for the Reduction of Bacteria in Jones Falls

Action	Time Frame	Performance Standard	Responsible Party	Source Addressed[1]			
				H	D	W	L
Programmatic Actions							
Develop an agriculture workgroup to address livestock sources of bacteria	1-20 years	Workgroup established, # of agricultural actions taken to address livestock bacteria	EPS, Agricultural Community				X
Continue to meet the requirements of the consent decree for the elimination of sanitary sewer overflows	Ongoing	Status report	Baltimore County	X			
Implement a unified restoration tracking system to track progress toward meeting TMDL reduction requirements	2 years	None	Implementation Committee	X	X	X	X
Support State and County efforts to reduce and eliminate homelessness.	10 years	Actions taken	EPS	X			
Implement an awareness campaign to spread information regarding pet waste and streams.	3-20 years	Number of educational activities performed.	EPS, Blue Water Baltimore		X		
Measure behavioral change in pet waste management as a result of educational/outreach efforts. Check behavior against state/national averages if data is available.	3-5 years	Report on behavioral change that has resulted from educational/outreach efforts.	EPS		X		

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Action	Time Frame	Performance Standard	Responsible Party	Source Addressed[1]			
				H	D	W	L
Promote PAI's "Rat Attack" program to mitigate rat infestations.	20 years	Measurable reduction in number of rat complaints; measurable reduction in rat sourced bacteria if species tracking is available.	PAI			X	
Assess alternate implementation practices over time as they become known to Baltimore County.	On-going	Take advantage of future advancements in technology and accepted practices that we may not be aware of at the time of producing this document.	All	X	X	X	
Management Actions							
Street Sweeping Existing	On-going	Historic Data	Baltimore County EPS		X	X	X
Storm Drain Inlet Cleaning	On-going	Historic Data	Baltimore County EPS		X	X	X
Restoration Actions							
Implement Consent Decree and Eliminate Sewer Overflows	6 years (Consent decree is until 2020)	SSOs addressed each year	DPW	X			
Continue to assist land owners in addressing failing septic systems	On-going	Number of failing septic systems corrected	EPS, GWM	X			
Investigate and convert existing dry detention ponds identified for water quality treatment	10 years	Acres addressed	Baltimore County EPS		X	X	X
Design and implement stormwater retrofits at all feasible sites	4 years	Acres addressed	Baltimore County EPS, Blue Water Baltimore		X	X	X
Continue Stream restoration projects	10 years	Projects completed	Baltimore County EPS	X	X	X	X
Monitoring Actions							
Continue the Bacteria Trend Monitoring Program.	On-going	Annual monitoring at all sites	EPS	X	X	X	X
Implement the Bacteria Subwatershed Prioritization Program	2-years	Annual Reporting at all sites	EPS	X	X	X	X
Implement the bacteria source tracking monitoring program, in subwatersheds with high bacteria concentrations	2-20 years	Annual monitoring at all designated sites.	EPS	X	X	X	X

Action	Time Frame	Performance Standard	Responsible Party	Source Addressed[1]			
				H	D	W	L
Continue to implement Stream Watch, a citizen-based program, to increase the ability to identify sources of water quality and habitat degradation.	On-going	Number of stream miles adopted in the Baltimore County portion of Lower North Branch of the Patapsco River	Blue Water Baltimore	X	X		
Work with MDE to repeat the bacteria source contribution monitoring, in association with the MS4 Permit renewal for all sites that are not meeting bacteria water quality standards	5 year intervals	Results at 5-year intervals	EPS, MDE	X	X	X	X
Work with MDE to investigate feasibility of a method of source tracking that will provide more specific allocations among wildlife species (e.g. DNA testing or other).	2 years	Ability to track wildlife bacteria sources by species.	EPS, MDE			X	
Reporting Actions							
Implementation Committee to meet on a semi-annual basis to discuss implementation progress and assess any changes needed to meet the goals.	20 years	2 meetings per year	EPS and Implementation Committee partners	X	X	X	X
Continue to update status of restoration projects and BMPs in the Annual MS4 Report.	Annually	MS4 Report submitted to MDE and posted on county website	EPS	X	X	X	X
Implement the Continuing Public Outreach Plan	On-going	Number of actions per year	EPS	X	X	X	X
Hold Biennial State of Our Watersheds Conference in even years	Biennially	Conference Held	EPS	X	X	X	X
Adaptive Management assessment of the Implementation Plan	5 year interval	Assessment complete	EPS	X	X	X	X

1. Sources H (Human); D (Domestic Pet); W (Wildlife); L (Livestock)

9.4 Timeframe and Responsible Parties

Baltimore County Department of Environmental Protection and Sustainability (EPS) will partner with other County agencies and with local citizen-based organizations to implement this plan. Dependant on the specific action, different parties may be responsible for implementation. Some actions involve implementing a program, such as tree planting or impervious surface removal, at an institutional site, and that institution will be one of the multiple groups responsible for implementation.

This TMDL Implementation Plan is built using an adaptive management approach. This approach requires periodic assessment of progress and an assessment of changes needed in the Implementation Plan. This periodic assessment will be coordinated with the Municipal Separate Storm Sewer System (MS4) 5-year permit cycle and will take place prior to the re-application process, and will be included as part of the re-application assessment of the success of the management programs.

9.5 Anticipated Pollutant Load Reductions

The available literature supports that the actions above will have a positive effect on bacteria load reduction, however, the exact reductions from implementing those actions is not yet known. There is no known loading rate of bacteria by land use for Baltimore County and therefore it is not possible to predict reductions from BMPs by drainage acre treated. For this reason, specific acreages and linear feet are not provided in the table above. Baltimore County acknowledges that the priority is to address human sources of bacteria due to greater health risk. The TMDL states that the reduction of human sources has a Maximum Extent Practicable of 95%; however, as previously discussed one subwatershed requires a 98% reduction to achieve water quality standards. The County feels that a goal of 100% efficiency from SSO elimination will be achievable. While Baltimore County expects a 100% reduction in SSO elimination, we cannot account for failures due to mechanical failure, natural disaster, or vandalism, which are issues that may be addressed by an adaptive management solution in the future. Additionally, through data received regarding a point in time survey for homeless people from Baltimore County Department of Planning, the County can determine outdoor public areas where there are no sanitary facilities and can conduct public outreach on the health concerns of bacteria which could prevent bacteria from entering waterways. It is important to note that due to the nature of this watershed, a significant portion of human inputs may be coming from failing septic systems, which are not controlled under the consent decree. BMPs to reduce runoff to water ways and homeowner education on septic system maintenance will be the main actions by which septic based sources are reduced.

9.6 Reductions Discussed

The timeline to implement all of the future actions with measurable reduction extends over the next 20 years. That means that all actions will be implemented by 2035. However, it is important to understand the role of lag times in watershed management and planning. Lag time is the delay from when a pollution control action is taken to when it actually results in water quality improvements. It is the sum of time required for practices to take desired effect, time required for effect to be delivered to the water source, and time required for the waterbody to respond to the effect (Meals, Dressing and Davenport 2010). Lag Times will vary depending on

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the watershed, the management action and the pollutant type. According to the Chesapeake Bay STAC Program Report from 2012, the lag time for sediment from source to stream in the Chesapeake Bay region is less than 1-5 years, but he lag time for sediment transport from stream to Bay is 5-100 years (Chesapeake Bay Program 2012). There is little data specifically for lag times of bacteria reduction. However, given this data, it is reasonable to assume that in-stream reduction will not necessarily be measurable by 2035 when all actions will be implemented. What this means is that Baltimore County may implement all of the necessary measures to meet the TMDL reductions by 2035, as TMDL is actually a limit on the amount of pollutant that is allowed to enter the stream from upland sources, but measureable in-stream effects on water quality may take a decade or more to fully reflect the load reductions. Expectations for water quality improvement should be reasonably based on the effects of lag time.

Additionally, the distribution of the stations spans Baltimore County and Baltimore City, with stations JON0184, JON0082, and UQQ0005 in the county and stations JON0039 and SRU0005 in the city. While Baltimore County has sole responsibility for achieving the bacteria water quality standards at stations JON0184, JON0082, and UQQ0005; achieving the bacteria water quality standards at the city monitoring stations is dependent on restoration actions implemented by Baltimore City. The modified Trend Monitoring Program will add stations at the city/county line to document the Baltimore County contribution to the downstream monitoring stations and meeting the interim targets and the ultimately all bacteria water quality standards at those sites is part of this implementation plan.

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The assessment of implementation progress is based on two aspects; progress in meeting programmatic, management, and restoration actions; and progress in meeting water quality standards and any interim water quality benchmarks. The assessment of progress in meeting the restoration actions; includes setting up methods of data tracking, validation of projects, and pollutant load reductions associated with the actions (10.1) and will be consistent across all TMDL Implementation Plans. The assessment of progress in meeting water quality standards and interim milestones (10.2) is the data analysis associated with the monitoring plan specific to each TMDL Implementation Plan.

10.1 Implementation Progress: Data Tracking, Validation, Load Reduction Calculation and Reporting

The Baltimore County Department of Environmental Protection and Sustainability – Watershed Management and Monitoring Section is currently preparing a document entitled *Baltimore County Method for Pollutant Load Calculations, Pollutant Load Reduction Calculations, and Impervious Area Treated*. This document will detail the data sources, data analysis (including pollutant load calculations, and pollutant load reductions calculations), validation of the practices, and reporting of progress made. It was determined that a document was needed to document how Baltimore County calculated pollutant loads and pollutant load reductions from the implementation of various best management practices, as guidance from the State continues to evolve. The document also needs modification based on the published literature and to include any additional findings that result from our monitoring programs. The document will be updated annually to account for any changes that may have occurred during the previous year. Due to the fact that implementation is being achieved through the actions of many county agencies, it was also determined that the means of data acquisition, any data manipulation, and the means of data analysis needs to be documented on an annual basis to provide consistency in the data acquisition and analysis and to document any changes in the process over time. The overall result is intended to provide transparency for the general public and users of reports on progress generated as a result of the analysis.

The Maryland Department of the Environment (MDE) has provided a guidance document for NPDES – MS4 permits entitled: *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated*. The draft document was released in June 2011, followed by a final release in August 2014. The document is intended to provide consistency among the MS4 jurisdictions in calculating baselines and reporting implementation progress. This document however, does not provide guidance on bacteria, chlordane, mercury, or PCB reduction efficiencies. MDE also provides guidance through its web site, with a webpage entitled *Maryland TMDL Data Center*. This site provides guidance on the development of the TMDL Implementation Plans and is updated on a regular basis.

The document *Baltimore County Method for Pollutant Load Calculations, Pollutant Load Reduction Calculations, and Impervious Area Treated* will be posted for review and comment in the spring of 2015. It will be modified on an annual basis to take into account any modifications to any guidance documents, monitoring results, and/or new literature; and future calculations will reference the edition on which the calculations were based.

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10.1.1 Reporting

Baltimore County will prepare two-year milestones for each local TMDL in conformance with the Chesapeake Bay TMDL two-year milestone process. Programmatic actions and monitoring data analysis will be based on the calendar year, while restoration actions will be based on the fiscal year (July 1 – June 30). The current two-year milestone period was developed in January 2014; for Programmatic actions covers January 2014 through December 2015, and for restoration actions cover July 1, 2013 through June 30, 2015. When the next two-year milestones are developed in 2016, they will be presented by watershed and will include each of the local TMDLs.

Reporting will be done through the annual NPDES – MS4 Permit Report. This is technically due on the anniversary date of the permit renewal, but will be completed for submittal to MDE in October each year. The report will detail progress made in meeting each of the local TMDLs and the Chesapeake Bay TMDL. The analysis will include progress in meeting the two-year milestone programmatic and restoration actions, along with the calculated load reduction. It will also present the results of the monitoring conducted the previous year. See below for TDML specific monitoring.

In January of each year, a progress report (mostly extracted from the MS4 report) will be prepared and posted on the web.

10.2 Implementation Progress: Water Quality Monitoring

The Jones Falls bacteria monitoring will initially focus on two of the three bacteria monitoring programs, trend monitoring and subwatershed prioritization monitoring. The bacteria source tracking monitoring program will be implemented based on the results of the subwatershed prioritization monitoring program. Table 10.1 presents the bacteria monitoring locations, by subwatershed and monitoring type and Figure 10.1 displays the locations.

Table 10.1: Existing and Future Jones Falls Bacteria Monitoring Site Locations and Type

Station Code	Subwatershed	Monitoring Type	Latitude	Longitude
JON-1	Jones Falls mainstem City	Trend	39.327	-76.640
JON-2	Jones Falls below Dam	Trend	39.378	-76.644
JON-3	Jones Falls mainstem above Lake Roland	Trend	39.391	-76.661
JON-4	Roland Run	Trend	39.399	-76.649
JON-5	Stoney Run	Trend	39.326	-76.626
JF-B-1	Towson Run	Subwatershed Prioritization	39.389	-76.641
JF-B-2	Ruxton Run	Subwatershed Prioritization	39.393	-76.642
JF-B-3	Roland Run – West Branch	Subwatershed Prioritization	39.415	-76.646
JF-B-4	Roland Run – East Branch	Subwatershed Prioritization	39.415	-76.645
JF-B-5	Deep Run – Jones Falls	Subwatershed Prioritization	39.417	-76.671
JF-B-6	Jones Falls – Unnamed Trib. 1	Subwatershed Prioritization	39.416	-76.674
JF-B-7	Dipping Pond Run	Subwatershed Prioritization	39.425	-76.689
JF-B-8	North Branch Jones Falls	Subwatershed Prioritization	39.422	-76.710
JF-B-8	Jones Falls – Headwaters	Subwatershed Prioritization	39.410	-76.719
JF-B-10	Slaughterhouse Branch	Subwatershed Prioritization	39.399	-76.668
JF-B-11	Moores Branch	Subwatershed Prioritization	39.394	-76.670
JF-B-12	Western Run – East Branch	New Trend	39.373	-76.668
JF-B-13	Western Run – West Branch	New Trend	39.372	-76.708
JF-B-14	Dipping Pond Run – East Branch	Subwatershed Prioritization	39.419	-76.670

10.2.1 Bacteria Trend Monitoring Program

The Bacteria Trend Monitoring has been implemented in conjunction with Baltimore City since June 2010 and consists of five monitoring sites within the Jones Falls watershed, which MDE used in developing the Jones Falls Bacteria TMDL. The program is designed to determine bacteria concentration trends over time and whether the sites are improving, degrading or meeting water quality standards. Monitoring at these four sites will continue until bacteria water quality standards are met at all sites. Two new trend sites will be added to this bacteria monitoring program both on Western Run – Jones Falls, one on the West Branch and one on the East Branch. These new trend sites are located on the city/county line and will be used to document bacteria concentrations as the streams discharge from the county into the city. They will also, along with three existing trend sites located in Baltimore County (JON-2, JON-3 and JON-4) serve to document improvement in bacteria concentrations as a result of restoration efforts by the county.

10.2.2 Subwatershed Prioritization Bacteria Monitoring Program

The subwatershed prioritization bacteria monitoring program is designed to provide more detailed information on bacteria on a subwatershed basis. The sites used by MDE to develop the Jones Falls TMDL do not provide sufficient information on the bacteria concentrations in the subwatersheds within the Jones Falls. In order to focus bacteria reduction efforts, 12 subwatersheds will be monitored on a fixed site, fixed interval basis over the seasonal monitoring period (May 1st through September 30th) for two successive years starting in 2015. Based on the data from the first year, subwatersheds with higher bacteria concentrations will be selected for bacteria source tracking monitoring. The second year of subwatershed prioritization will serve as confirmation of the subwatersheds with higher bacteria concentrations.

10.2.3 Bacteria Source Tracking

The bacteria source tracking program is designed to locate sources of bacterial contamination by monitoring stream reaches in tributaries identified as having high bacteria concentrations. This monitoring program has not been initiated within the Jones Falls. Bacteria source tracking monitoring sites will be added, based on the results of the subwatershed prioritization bacteria monitoring. Subwatersheds with high bacteria concentrations will be selected for bacteria source tracking monitoring.

10.2.4 Bacteria Source Relative Contribution Monitoring

In the development of the Jones Falls Bacteria TMDL, MDE used a methodology to identify bacteria sources in four categories, human, pet waste, livestock, and wildlife; and the relative contribution of each to the bacteria load. As progress is made in reducing the bacteria concentration, it is expected that the relative contribution from the various source categories will change. Since it is important to know the relative contribution from the various sources in order to target remediation actions correctly, Baltimore County will work with MDE to develop a program whereby at the beginning of each 5-year MS4 Permit cycle, the Bacteria Source Monitoring will be repeated for those Bacteria Trend Monitoring sites that are not meeting bacteria water quality standards.

For those sites that require a wildlife bacteria reduction to meet the bacteria water quality standards, Baltimore County will work with MDE to determine how to refine the wildlife source to species if possible. The results will determine if an existing program can be enhanced (rat

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control and deer control programs), if another program needs to be developed, or whether the wildlife sources are such that we will need a greater period of time to meet the bacteria standard, and if it is possible to meet the standard.

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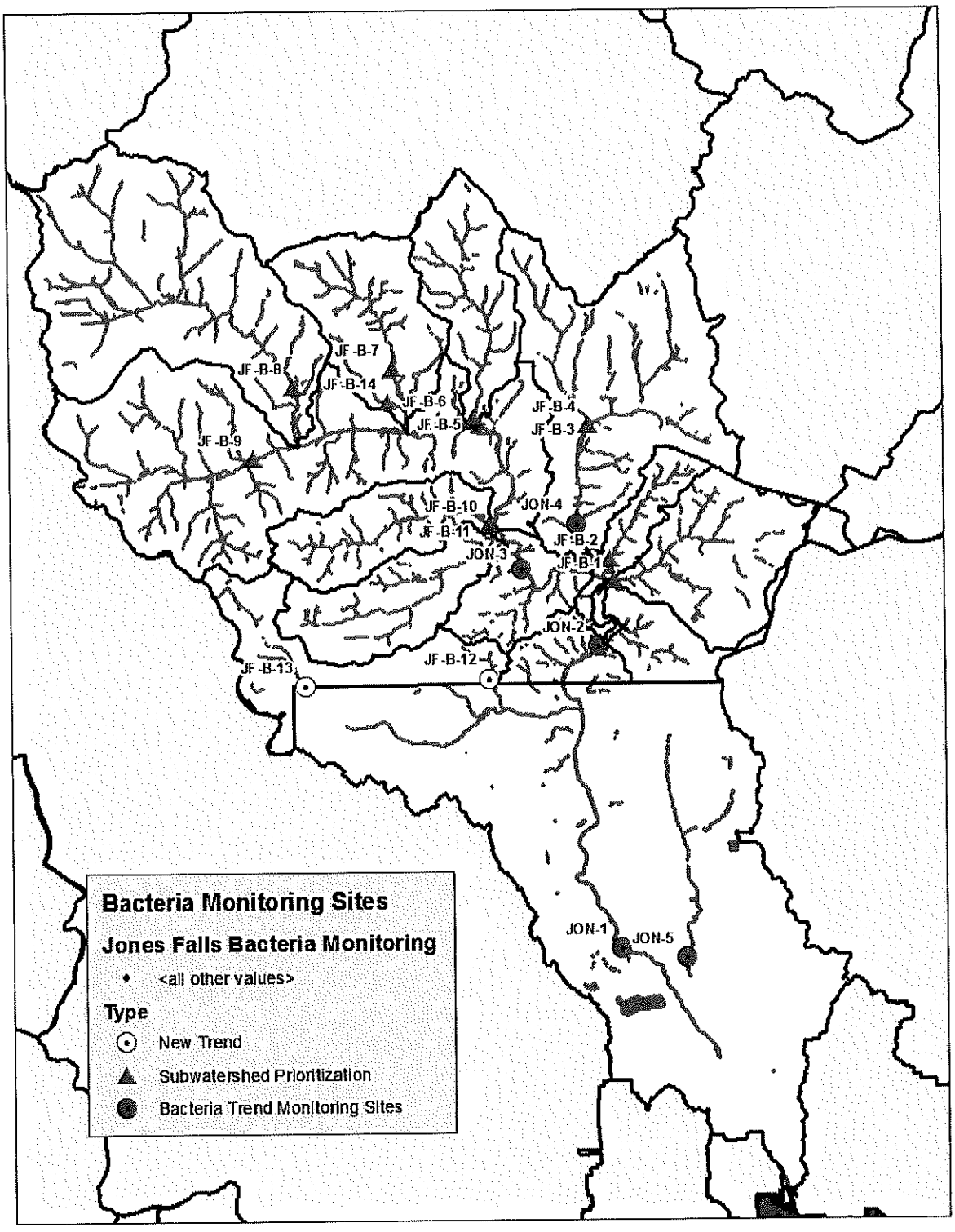

Figure 10.1: Map of Jones Falls Monitoring Locations by Monitoring Type

In order to engage the public in the TMDL implementation process this continuing public outreach plan will be implemented upon approval of this TMDL Implementation Plan. The continuing public outreach plan is applicable to all TMDL Implementation Plans that are currently being developed and those developed in the future, as well as the Trash and Litter Reduction Strategy. This continuing public outreach plan is meant to engage county agencies, environmental groups, the business community, and the general public.

11.1 County Agencies

County agencies will be engaged through two regularly scheduled NPDES Management Committee meetings per year and other agencies meetings as necessary to move implementation forward.

11.1.1 NPDES Management Committee

The NPDES Management Committee is composed of representative agencies that are involved in meeting the NPDES – MS4 Permit requirements. This committee has met irregularly in the past, generally to review information on permit requirements and other upcoming regulatory requirements, such as, the General Industrial Stormwater Discharge Permit. In the future this committee will meet twice per year and will discuss not only the NPDES – MS4 Permit requirements, but also the TMDL Implementation Plans and progress being made in meeting the implementation strategy. In order to address all components of the TMDL Implementation Plans the committee membership will be expanded to include any county agency that has some responsibility for TMDL implementation. Examples being, the County Police Department and the Department of Environmental Protection and Sustainability – Groundwater Management Section. Prior to the development of the TMDL Implementation Plans and the Trash and Litter Reduction Strategy, these agencies were not specifically engaged in NPDES – MS4 Permit activities.

The first yearly meeting will be held in January of each year. The focus of this meeting will be to review the implementation plan 2-year milestones for each plan; provide a forum for discussion of the ability to meet the implementation actions; and determine any revisions necessary to meet the interim implementation milestones set in the plan. This meeting is also the forum for discussion of data tracking and reporting to ensure that the implementation actions are properly credited.

The second yearly meeting will be held in July of each year and will provide the forum for determining data submittal for the yearly progress report on the implementation actions and the resulting load reductions. The monitoring data from the previous calendar year will be presented and contrasted with the interim water quality milestones that are detailed in each implementation plan.

11.1.2 Other Agency Meetings

In order to move forward with implementation, agency meetings regarding specific implementation actions are anticipated. These will be scheduled as needed, and tracked by meeting date, attendance, TMDL Implementation Plans discussed, and topic. Meeting minutes will be reported in the Annual NPDES – MS4 Report submitted to Maryland Department of the Environment. This report is also posted on the county website for public access.

11.2 Environmental Groups

Baltimore County is currently engaged with local watershed associations through its funding of *Watershed Association Restoration Planning and Implementation Grants*, and through inclusion of watershed association members on the Steering Committees of the Small Watershed Action Plans. Formerly, this engagement and support was coordinated through the *Baltimore Watershed Agreement*. As part of that engagement, periodic Watershed Advisory Group (WAG) meetings were held. As part of this continuing public outreach plan, WAG participation will be formalized with two meetings per year.

The first meeting will be held in March of each year and focus on the local and Chesapeake Bay TMDL implementation actions and implementation progress, including an analysis of the pollutant load reduction calculations from the previous fiscal year. The watershed associations are currently engaged in citizen-based restoration activities and report their implementation progress to the county for inclusion in the Annual NPDES – MS4 Report. This meeting will provide a forum for discussion of the progress being made, coordination between the watershed associations, and any changes to the *Watershed Association Restoration Planning and Implementation Grant* being considered for the next grant period.

The second meeting will be held in November of each year and will focus on the water quality monitoring results from the previous calendar year. The results presented will compare trends and measures against the TMDL Implementation Plans water quality benchmarks and water quality standards.

11.3 Business Community

The business community will be engaged through various business forums, targeted outreach and education efforts on specific topics, and hosting workshops on specific topics as necessary.

11.3.1 Business Forums

Business forums, such as the Hunt Valley Business Forum with greater than 200 business members, provide opportunities to present the TMDL Implementation Plans and the Trash and Litter Reduction Strategy, and discuss the role of business in helping improve water quality. These forums will be convened as the opportunities arise. Summaries of these meetings will be reported in the annual NPDES – MS4 Report and will include the name of the forum (or other business organization), approximate number in attendance, the topic presented, and audience responses.

11.3.2 Targeted Business Outreach and Education

The Small Watershed Action Plan (SWAP) process includes an upland assessment of potential pollution hotspots. Often, these potential hotspots are commercial or industrial sites. The information derived from this assessment will be used to target outreach and education to businesses specific to the issue(s) at the location identified in each SWAP. These actions will be tracked and reported in the annual NPDES – MS4 Report.

11.3.3 Business Workshops

There are certain issues that may be pervasive through a segment of the business community that can most effectively be addressed through hosting workshop education on the specific topic. These issues will be identified as SWAP implementation moves forward, but one potential topic for a business workshop is related to the recently renewed *General Discharge Permit for*

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Stormwater Associated with Industrial Activities. A workshop designed in conjunction with Maryland Department of the Environment would not only result in improved water quality, but it would also benefit the business community through increased understanding of the requirements of the permit.

11.4 General Public

The general public will be engaged through a number of mechanisms, including:

- Watershed Implementation Plan (WIP) team meetings
- Targeted outreach and education efforts on specific topics
- Steering committee meetings and stakeholder meetings in the development of Small Watershed Action Plans
- Meetings of the implementation committee for completed Small Watershed Action Plans
- Displays at various events
- Annual progress reports posted on the county website and placed in our libraries
- A biennial *State of Our Watersheds* conference.

11.4.1 WIP Team Meetings

Baltimore County has assembled a WIP team to serve as a sounding board for the development of the WIP to address the Chesapeake Bay TMDL. Members of the team include representatives from various county agencies, business community representatives (particularly the environmental engineering community), watershed associations, representatives from the agricultural community, and Baltimore County citizens.

The county will schedule at least one meeting annually to present implementation progress and to address specific topics related to the TMDL Implementation Plans and the Trash and Litter Reduction Strategy. Meetings will be scheduled as issues arise. It is anticipated that the WIP team will provide initial review of newly developed outreach and education materials, in order to provide feedback from a variety of perspectives.

11.4.2 Targeted Outreach and Education

The Small Watershed Action Plan development process includes upland assessments of neighborhoods to identify pollution sources and restoration opportunities. This information will be used to prioritize and target outreach and education efforts specific to the issue(s) in neighborhoods with the intent to affect behavioral change and/or increase citizen based restoration actions. These actions will be tracked and reported in the annual NPDES – MS4 Report.

11.4.3 SWAPS

Baltimore County has been developing SWAPs since 2008. There are 22 planning areas in the county, with 13 completed plans, 5 plans in development, and 4 areas pending. These planning areas cover the entire county. The planning process includes the development of a steering committee, the composition of which is determined by the issues, and land ownership within the planning area. At a minimum membership consists of agency representatives, watershed associations, and citizen representatives. The process also includes a number of stakeholder meetings, open to all planning area residents and businesses, which provide information on the plan and solicit input. Once the SWAP is complete, the steering committee becomes the

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implementation committee. As designed, the implementation committee is to meet twice per year, however, most implementation committees have not met this goal.

The plans have addressed to varying degrees the TMDLs that are applicable within the planning area. Some of the TMDLs have been developed subsequent to the specific SWAP development or did not address the full range of TMDLs that were applicable to the planning area. The TMDL Implementation Plans are built on incorporation of the actions from each SWAP within the applicable TMDL area. In some cases, additional actions have been identified in order to meet water quality standards.

11.4.3.1 Small Watershed Action Plans in Development and Future Plans

For SWAPs currently under development, and for plans developed in the future, the steering committee and stakeholder meetings will be used for outreach regarding the TMDL Implementation Plans and the progress being made in achieving water quality standards. The meeting participants will be informed on where they can access the TMDL Implementation Plans, the Trash and Litter Reduction Strategy and any Progress Reports that have been developed.

Applicable TMDL Implementation Plan actions will be incorporated into the SWAP based on the assessment of applicable restoration actions within the SWAP planning area. Since the SWAPs incorporate field assessments of streams and uplands, they provide more detailed information on applicable restoration actions, both on quantity and location. The accelerated schedule for developing TMDL Implementation Plans precluded conducting field work to build the plans.

11.4.3.2 Small Watershed Action Plans Already Developed

For those SWAPs already developed, the implementation committee meetings will be scheduled twice per year. The first meeting will be held in winter and will present the implementation progress not only of the SWAP, but also any applicable TMDL Implementation Plan progress. The progress analysis will be based on fiscal year. This meeting will also provide the opportunity to discuss any changes in the SWAP or the TMDL Implementation Plan based on an analysis of what actions have been successful and what actions have been more difficult to implement.

The second implementation committee meeting will be held in fall of each year and will present the monitoring data in relation to progress being made toward interim milestones and water quality standards.

11.4.4 Educational Displays at Events

Educational displays and handouts will continue to be used at applicable events as they occur. The particular display and handout materials will be determined by the location and focus of the event. The location, event type, number of citizens engaging staff at the display, and the number of handouts taken by citizens will be tracked for annual reporting in the NPDES – MS4 Report.

11.4.5 TMDL Implementation Plan, Trash and Litter Reduction Strategy, and Progress Report Availability

The TMDL Implementation Plans and the Trash and Litter Reduction Strategy will be posted on the Baltimore County website with hard copies placed in county libraries. The hard copies in the libraries will be specific to the watershed in which the library is located. Progress reports will be

posted on the county website and placed in libraries. A set of hard copy plans will be kept at the Baltimore County Department of Environmental Protection and Sustainability office in Towson, Maryland.

11.4.6 Biennial State of Our Watersheds Conference

Baltimore County, in conjunction with Baltimore City, has held *State of Our Watershed* conferences in the past to present information to county and city citizens on water quality issues applicable to the watersheds in these jurisdictions. Future conferences will be held in March of even numbered years. Information on implementation progress for local TMDLs and the Bay TMDL will be presented, along with other topics of interest. These conferences will be organized with the assistance of the WAG, and the surrounding local jurisdictions (Baltimore City, Howard County, Carroll County, Harford County, and York County, PA) will be invited to participate in the organization and presentation of the conference.

The timing of even years is related to the 2-year milestone process set up by the Maryland Chesapeake Bay TMDL WIP whereby in January of even calendar years, progress in meeting the previous 2-year milestone programmatic and restoration implementation is reported and the next 2-year programmatic and restoration implementation milestones are proposed by the local jurisdictions. The timing of the conference not only permits reporting on the progress made in meeting the previous 2-year milestones but also what is planned for the next two years.

11.5 Summary of Continuing Public Outreach Plan

A summary of the continuing public outreach plan, by component, element and frequency is presented in Table 11.1.

Table 11.1: Continuing Public Outreach Plan Summary

Plan Component	Plan Element	Frequency
Agencies	NPDES Management Committee	2x per year
	Other agency meetings	As needed
Environmental Groups	Watershed Advisory Group (WAG) meetings	2x per year
Business Community	Business forums	As identified
	Targeted business outreach and education	As identified
	Topical workshops	As identified
General Public	WIP team meetings	1x per year
	Targeted outreach and education	As identified
	SWAP – steering committee meetings	6x per year, each
	SWAP – stakeholder meetings	2x per year, each
	SWAP – implementation committee meetings	2x per year, each
	Educational displays at events	As identified
	Document availability (various)	As needed
	Biennial conference	Even # years

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DATA EVALUATION REPORT

Jones Falls Basin BC04 Sewer Rehabilitation

Bureau of Engineering and Construction
Baltimore County, MD

April 2014

O'BRIEN & GERE

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Data Evaluation Report
Jones Falls Basin BC04
Sewer Rehabilitation

Bureau of Engineering and Construction
Baltimore County, MD

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Appendix B: System Mapping – Assets Requiring Follow-up Inspection

Appendix C: System Mapping – Preliminary Rehabilitation Analysis – Trenchless versus Excavation

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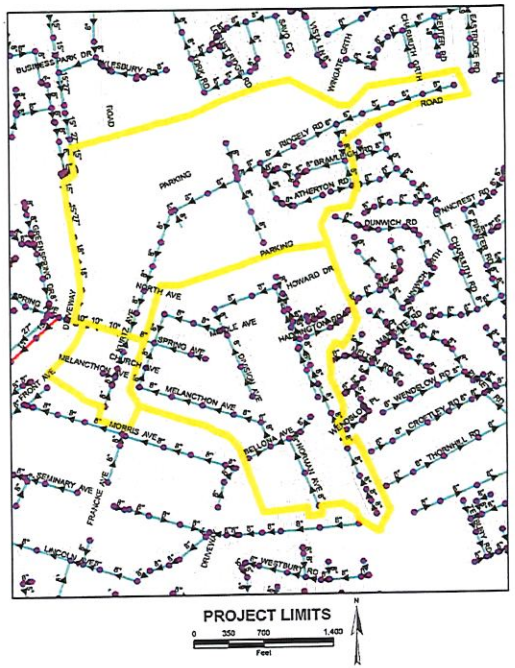
1.0 INTRODUCTION

1.1 BACKGROUND

In accordance with the recommendations included in the Jones Falls Sewershed Repair, Replacement, and Rehabilitation (SRRR) plan, the County has determined to move forward with the development of design documents for rehabilitating defective gravity collection system assets (pipelines and manholes) located within the public portion of meter basin BC04 in the Jones Falls Sewershed.

Meter basin BC04 is located along the northeast edge of the Jones Falls Sewershed and is comprised of sewer service areas (SSA's) 45-59-30-01, 45-59-30-02, and 45-59-30-03. The following **Figure 1** graphically presents the project limits.

Figure 1 – (Source of Data – Baltimore County GIS)



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In total, the project consists of approximately 21,200 linear feet (LF) of gravity sewer and 108 manholes (per the County's GIS). Piping across the project area ranges in size from 8-inches to 15-inches in diameter (distributed as follows):

- 8-inches: 20,400 LF (approximate)
- 10-inches: 450 LF (approximate)
- 15-inches: 330 LF (approximate)

* *Note these quantities do not include a portion of a 27-inch diameter trunk sewer that is located within the project limits. Evaluation and subsequent rehabilitation of this trunk sewer is not included as part of this project.*

The County has tasked O'Brien & Gere to provide professional engineering services for the development of contract documents for the rehabilitation of defective gravity system assets within the aforementioned basins (work authorized under Job Order # 213-201-0077-7158 under the On-Call Sanitary Sewer Rehabilitation Design Service contract).

Services commenced with a detailed desktop data review (of existing system information), followed by the development of this Data Evaluation report. Field confirmation inspections, Final Design, and Construction Phase Services will be provided upon review and approval of this report by the County. (Bid Phase support services are not warranted as part of this project.)

1.2 PURPOSE

As part of the preliminary engineering efforts for the project, the County requested a detailed review/evaluation of available existing system data in order to identify/accomplish the following:

- Confirm the appropriateness of Cured-in-Place Pipe Lining (CIPP) as a viable rehabilitation technique based on inspection data reviewed.
- Confirm the appropriate manhole rehabilitation techniques based on inspection data reviewed.
- Confirm basin mapping connectivity and subsequently identify locations requiring follow up investigative efforts.
- Identify rehabilitation recommendations based on cursory review of existing system data and broadly categorize recommendations for assets requiring rehabilitation.

The conclusions and recommendations of this review (discussing the aforementioned purposes) are presented in this Data Evaluation Report.

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JONES FALLS BASIN BC04 – SEWER REHABILITATION | DATA EVALUATION REPORT

1.3 REPORT ORGANIZATION

This Data Evaluation Report has been prepared to summarize the results of the data evaluation efforts, provide recommendations for follow-up field investigation/evaluation efforts, and preliminarily identify rehabilitation recommendations across the project area. The report is organized as follows:

- ***Section 1:*** ***Introduction***
- ***Section 2:*** ***Data Review Activities***
- ***Section 3:*** ***Findings and Recommendations***
- ***Appendices:*** ***Support Documentation***

Data Evaluation Report
Jones Falls Basin BC04
Sewer Rehabilitation

Bureau of Engineering and Construction
Baltimore County, MD

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Appendix C: System Mapping – Preliminary Rehabilitation Analysis – Trenchless versus Excavation

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1.2 PURPOSE

As part of the preliminary engineering efforts for the project, the County requested a detailed review/evaluation of available existing system data in order to identify/accomplish the following:

- Confirm the appropriateness of Cured-in-Place Pipe Lining (CIPP) as a viable rehabilitation technique based on inspection data reviewed.
- Confirm the appropriate manhole rehabilitation techniques based on inspection data reviewed.
- Confirm basin mapping connectivity and subsequently identify locations requiring follow up investigative efforts.
- Identify rehabilitation recommendations based on cursory review of existing system data and broadly categorize recommendations for assets requiring rehabilitation.

The conclusions and recommendations of this review (discussing the aforementioned purposes) are presented in this Data Evaluation Report.

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1.3 REPORT ORGANIZATION

This Data Evaluation Report has been prepared to summarize the results of the data evaluation efforts, provide recommendations for follow-up field investigation/evaluation efforts, and preliminarily identify rehabilitation recommendations across the project area. The report is organized as follows:

- ***Section 1:*** ***Introduction***
- ***Section 2:*** ***Data Review Activities***
- ***Section 3:*** ***Findings and Recommendations***
- ***Appendices:*** ***Support Documentation***

2.0 DATA REVIEW ACTIVITIES

2.1 GENERAL

This section introduces the data review activities that were performed as part of the Project's efforts.

2.2 DATA REVIEW ACTIVITIES

As part of the development of the SRRR plan for the Jones Falls Sewershed, the County performed a comprehensive sewer system evaluation survey (SSES) that included the mapping and inspection of gravity sewers and manholes across the sewershed. The data and documentation compiled as part of these efforts (including follow-up inspection and maintenance data) was made available by the County through web portal access to their online data library.

Data reviewed and analyzed as part of this review effort included:

- Geographic Information System (GIS)
- Closed-circuit television (CCTV) inspection videos and inspection logs
- Manhole inspection reports and photographs
- Access databases compiling characteristics, conditions, and ratings of inspected assets
- Maintenance records of assets (including repairs)
- Jones Falls Sewershed SRRR report

2.3 SYSTEM MAPPING AND CONNECTIVITY REVIEW

The County's GIS was reviewed in order to gain knowledge of the assets that comprise the collection system across the project area including infrastructure locations and flow pattern. In conjunction with reviewing the County's GIS, on-line aerial mapping and a site "drive-thru" of the project area was also performed in order to achieve familiarity with the locations of the assets and the overall environment that will support future rehabilitation construction activities. This assessment also served to identify locations across the system that may require field evaluation work to confirm system connectivity (i.e. mapped locations where the flow pattern appears irregular, confirm locations of assets classified as being "abandoned", etc.). Recommendations supporting future field work required to confirm system connectivity are provided in **Section 3** of this report.

2.4 PIPELINE DATA REVIEW

A cursory review of pipeline inspection data (CCTV inspection logs, videos, compiled access databases, and maintenance records) was performed to ascertain pipelines that will require inspection/re-inspection efforts and to

preliminarily identify the rehabilitation efforts required across the basin (based on available system information). Review efforts consisted of the following:

1: Performed a comparison of the access database file (supplemented by the individual pipeline inspection logs) against the existing GIS to identify pipelines that required inspection/re-inspection due to either missing report data or incomplete report data.

2: Review of all available CCTV inspection logs (cross-compared to the access database) to identify pipelines demonstrating moderate to significant defects/deterioration. In cases where multiple inspections are available, the most recently dated inspection report was reviewed.

3: Review of CCTV videos of pipelines observed in Step #1 that are demonstrating moderate to significant defects/deterioration in order to further assess and confirm severity of defect and subsequently identify type of rehabilitation required.

4: Review of available maintenance records/reports to confirm if defects identified in Steps #1 and #2 were repaired/rehabilitated by the County.

Upon completing the review, a preliminary rehabilitation summary assessment was developed that broadly categorized the following:

- Pipelines requiring cleaning and CCTV due to missing/incomplete inspection records.
- Pipelines suitable to accommodate cured-in-place pipe (CIPP) lining as rehabilitation alternative. *
- Pipelines requiring excavation repairs (either point repairs or complete relay) to accommodate system rehabilitation.

Conclusions and recommendations associated with the Pipeline Data Review are provided in **Section 3** of this report.

** Note: Pipelines deemed suitable for CIPP do not necessarily require rehabilitation. Pipelines categorized as such (per the cursory review of the inspection logs) possess minor structural and operational defects that can be addressed/rehabilitated without excavation efforts. During design development activities, the final determination of pipelines selected for rehabilitation via CIPP will be established by both the County and the Engineer.*

2.5 MANHOLE DATA REVIEW

Similar to the pipeline data review goals, available manhole inspection data (manhole inspection reports and the compiled access database) was reviewed in order to ascertain manholes that will require inspection/re-inspection efforts and to preliminarily identify manhole rehabilitation requirements across the project area. The manhole data review approach consisted of the following:

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1: Performed a comparison of the access database file (supplemented by the individual manhole inspection reports) against the existing GIS to identify manholes that required inspection/re-inspection due to either missing report data or incomplete report data.

2: Review manhole conditions and defects (as documented in the access database file) in order to identify manholes with moderate to significant defects (including inflow/infiltration susceptibility). No attempt was made to identify and/or correct minor cosmetic problems.

3: Review individual manhole inspection reports of manholes noted with defects (per the access database file review) to visually observe (as available) noted defects. The manhole inspections were performed in 2009 & 2010 and therefore current manhole conditions may vary from those represented in the 2009/2010 manhole inspection reports.

Upon completing the review, a preliminary rehabilitation summary assessment was developed that broadly categorized the following:

- Manholes requiring inspection/re-inspection
- Manholes requiring Operational and Maintenance work
- Manholes with Frame and/or Cover defects
- Manholes with Chimney and/or Wall defects
- Manholes with Bench/Channel defects
- Manholes demonstrating susceptibility to Inflow and Infiltration

Conclusions and recommendations associated with the Manhole Data Review are provided in **Section 3** of this report.

3.0 FINDINGS AND OBSERVATIONS

3.1 GENERAL

This section serves to introduce and summarize the findings and conclusions of the data review activities discussed in **Section 2** (including a preliminary summary of pipeline and manhole rehabilitation requirements) and the recommendations for follow-up field inspection services.

3.2 SUMMARY OF FINDINGS

Based upon the review activities described in **Section 2**, the following summarizes our conclusions concerning the completeness of available system data (critical for design development activities) and a preliminary summary assessment of assets requiring rehabilitation.

System Mapping and Connectivity Review: Based upon our review it was determined that the County's GIS and mapping system appears to be relatively thorough (with no major connectivity concerns). In turn, no locations were identified that appear to require dye testing to confirm connectivity.

Pipeline Data Review: Based upon our cursory review of existing pipeline data, the following has been determined with respect to the completeness/availability of existing system data and the overall preliminary assessment of the pipelines within the project area:

- **8 sewer segments** Missing Inspection Data/Incomplete Inspection Data (require cleaning & CCTV)
- **49 sewer segments** Defects (minor) deemed suitable for rehabilitation via CIPP
- **26 sewer segments** Deemed candidates for lining to allow for continuity of CIPP
- **11 sewer segments** Defects require excavation (point repairs) prior to lining
- **23 sewer segments** No rehabilitation required

Manhole Data Review: Based upon our cursory review of existing manhole data, the following has been determined with respect to the completeness/availability of existing system data and the overall preliminary condition of the manholes within the project area:

- **13 manholes** Missing Inspection Data/Incomplete Inspection Data (require inspection).
- **9 manholes** Frame and/or Cover defects
- **10 manholes** Cone and/or Wall defects
- **2 manholes** Bench and/or Channel defects
- **22 manholes** Operational & Maintenance Rehabilitation (i.e. Cleaning)

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- **76 manholes** Manhole coating associated with pipeline CIPP
- **4 manholes** Excavation associated with the rehabilitation
- **4 manholes** No work required

Review tables listing the pipelines and manholes reviewed as part of this effort are provided in **Appendix A.** Tables include: asset identification numbers, identified defects (respective to each asset), and comments/descriptions (as necessary). A map presenting the locations of assets requiring further evaluation (i.e. inspect/re-inspect and CCTV/re-CCTV) is included in **Appendix B.** A map broadly categorizing (and visually locating) assets that can be rehabilitated via trenchless technologies versus excavation has been provided in **Appendix C.**

3.3 RECOMMENDED FOLLOW-UP FIELD EVALUATION/INVESTIGATION EFFORTS

Based upon the observations and findings of the data review efforts completed as part of this project, the following recommendations have been determined for the project:

Recommendations:

- Pipe segments noted as requiring excavation work (i.e. point repairs) should have the excavation limits field canvassed to confirm surface features that could impact construction methods.
- Pipe segments noted as requiring CCTV/re-CCTV should be inspected under this contract against the contingent CCTV allowance included as part of this project. Based on the review, 1,324 LF of pipe is recommended for CCTV inspection. Project budgeting has allowed for up to 2,000 LF of CCTV for the project. Since the recommended CCTV work can be completed under the designated allowance included as part of the project budget, it is recommended that the work be completed at this time as opposed to being performed as pre-rehab CCTV during construction.
- Manholes designated for inspection/re-inspection should be inspected. Inspection activities would consist of top-side manhole inspections utilizing a Quickview Camera to record identified defects.

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JONES FALLS BASIN BC04 – SEWER REHABILITATION | DATA EVALUATION REPORT

Appendix A: Pipeline and Manhole Data Review Logs

Preliminary Pipeline Data Review

Segment	SSA	Preliminary Recommendation				Notes
		CIPP	Point Repair	Clean/Re-CCTV	No Action	
23057-7162	45-59-30-01	X				
23057-7163	45-59-30-01	X				
23058-23057	45-59-30-01	X				Additional CIPP for connectivity reasons
7050-7049	45-59-30-01			X		
7051-7050	45-59-30-01	X				
7052-7052M	45-59-30-01	X				
7052M-7051	45-59-30-01	X				
7161-7052M	45-59-30-01	X	X			FI
7162-7161	45-59-30-01	X				
7164-7163	45-59-30-01	X				Additional CIPP for connectivity reasons
7178-7051	45-59-30-01	X				
14546-7188	45-59-30-02	X		X		Additional CIPP for connectivity reasons - dependent on re-inspection
14547-14546	45-59-30-02	X				
14548-14547	45-59-30-02	X				
14549-14547	45-59-30-02	X				Additional CIPP for connectivity reasons
14550-14549	45-59-30-02	X				Additional CIPP for connectivity reasons
14551-14550	45-59-30-02	X	X			FI plan cont. w/ CCTV
14552-14551	45-59-30-02	X				
14553-14552	45-59-30-02	X				
14554-14549	45-59-30-02	X				
14555-14554	45-59-30-02				X	
14556-14555	45-59-30-02				X	
14557-14555	45-59-30-02				X	
14558-14557	45-59-30-02				X	
14560-14559	45-59-30-02				X	
14563-14562	45-59-30-02	X				
14564-14562	45-59-30-02				X	
16797-14563	45-59-30-02	X				
16798-16797	45-59-30-02	X				
16799-16798	45-59-30-02	X				
42832-14546	45-59-30-02	X	X			FI
42832A-42832	45-59-30-02	X				
42833-42832A	45-59-30-02	X				
6984-6983	45-59-30-02				X	
7179-7178	45-59-30-02	X				Additional CIPP for connectivity reasons
7180-7179	45-59-30-02	X				
7181-7180	45-59-30-02	X				
7182-7181	45-59-30-02	X				
7183-7182	45-59-30-02	X				Additional CIPP for connectivity reasons
7184-7183	45-59-30-02	X				
7188-7184	45-59-30-02	X		X		Additional CIPP for connectivity reasons - dependent on re-inspection
7189-7188	45-59-30-02	X				
7190-7189	45-59-30-02	X				
C469-7183	45-59-30-02	X				Additional CIPP for connectivity reasons - [illegible]
C647-14556	45-59-30-02				X	
11897-7052	45-59-30-03	X				
16536-11897	45-59-30-03	X				
19646-20985	45-59-30-03	X				
19647-19646	45-59-30-03				X	
19648-19647	45-59-30-03				X	
19649-19648	45-59-30-03				X	
19650-19649	45-59-30-03				X	
19651-19648	45-59-30-03				X	
20429-7056	45-59-30-03	X				Additional CIPP for connectivity reasons
20430-20429	45-59-30-03	X	X			
20431-20430	45-59-30-03				X	
20983-7203	45-59-30-03	X				
20984-20983	45-59-30-03	X	X			
20985-20984	45-59-30-03	X				Additional CIPP for connectivity reasons
7053-7052	45-59-30-03	X				
7054-7053	45-59-30-03	X				
7055-7054	45-59-30-03	X	X			FI broken - TP
7056-7055	45-59-30-03	X				Additional CIPP for connectivity reasons
7057-7056	45-59-30-03	X		X		Additional CIPP for connectivity reasons - dependent on re-inspection
7059-7057	45-59-30-03	X	X			FI
7060-7059	45-59-30-03	X		X		Additional CIPP for connectivity reasons - dependent on re-inspection
7165-7052	45-59-30-03	X				
7166-7165	45-59-30-03	X	X			FI collapsing - inspect
7167-7166	45-59-30-03	X	X			FI
7168-7167	45-59-30-03	X				
7169-7168	45-59-30-03	X				
7170-7169	45-59-30-03	X				
7171-7170	45-59-30-03				X	

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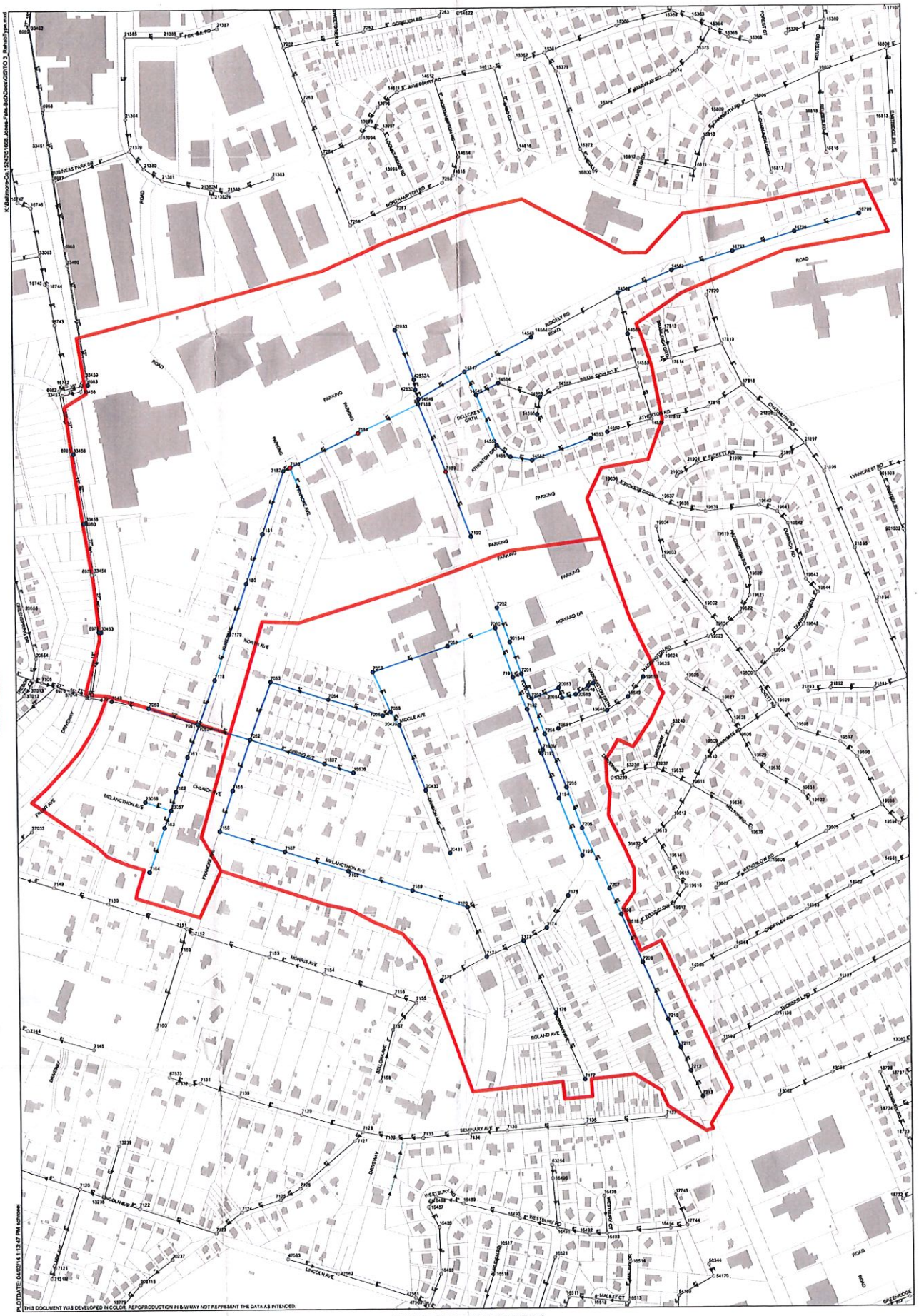

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LEGEND

- Interior MH Repair
- Excavation MH Repair
- CIPP Pipe
- Additional CIPP Pipe
- Point Repair Pipe
- Sewer MH
- Sewer Gravity Main
- Sewer Pressurized Main
- BC04 Basin Boundary
- Building

METERING BASIN BC04
PRELIMINARY REHABILITATION RECOMMENDATIONS

BALTIMORE COUNTY
JONES FALLS SEWERSHED
TIMONIUM, MARYLAND

0 100 200 400 600 800
Feet

N

APRIL 2014
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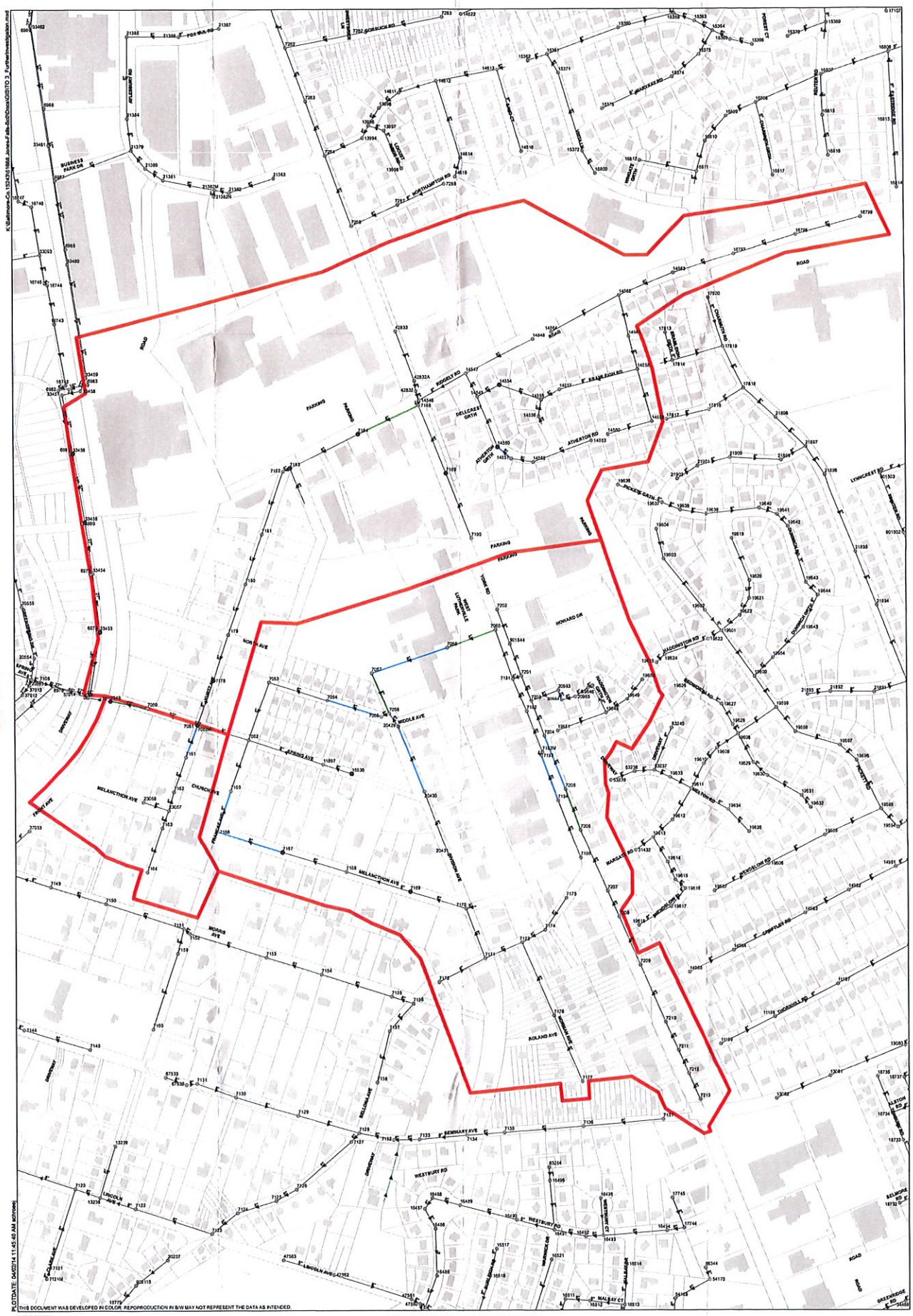
O'BRIEN & GERE


LEGEND
Field Investigate MH
Field Investigate Pipe
Clean & ReCCTV Pipe
Sewer MH
Sewer Pressurized Main
Sewer Gravity Main
BC04 Basin Boundary
Building
METERING BASIN BC04
FIELD INVESTIGATION LOCATIONS
BALTIMORE COUNTY
JONES FALLS SEWERSHED
TIMONIUM, MARYLAND
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APRIL 2014
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COPY

KEVIN KAMENETZ
County Executive

EDWARD C. ADAMS, JR., *Director*
Department of Public Works

July 23, 2013

Mr. Bruce Pierstorff, PE
Hazen and Sawyer, PC
One South Street
Suite 1150
Baltimore, MD 21202

Reference: On-Call Hydraulic Modeling – Task 2
Jones Falls Model Evaluation

Dear Mr. Pierstorff:

This is your formal notice to proceed with the subject project as presented in your proposal of June 19, 2013. Delivery Order #00022056 is being issued under separate cover.

Should you have any questions, please contact Lisa Eicholtz, of my staff, at 410-887-3781.

Very truly yours,

(SIGNED) GLEN A. KELLER

GLEN A. KELLER, PE
Chief, Sewer Design Section

GAK:LKE:bjk
H:\Documents\BARBARA\lke514 Pierstorff H&S OnCall JonesFalls HydMod Task 2 NTP.doc

cc: Lisa Eicholtz – Sewer Design Section

ATTACHMENT A
SCOPE OF SERVICES

Baltimore County Department of Public Works
On-Call Collection System Modeling Services
Project No. 2012-02

June 18, 2013

Task 002 – Jones Falls Model Evaluation

BACKGROUND

Hazen and Sawyer will review the development, calibration and verification of the Jones Falls sewershed model. This will also include a review of the Long Term Capacity/Peak Flow Management Evaluation report recommendations developed for the 10-year, 6-hour storm.

The Task Order includes the following tasks:

- Meetings, QA/QC, monthly reporting
- Collection and review of data
- Collection, pumping, and transmission system modeling

Deliverables are indentified under each Task.

GENERAL ASSUMPTIONS

For the purposes of this Task Order, the following assumptions are made as the basis for the study:

1. Community/Public Relations activities/notifications/meetings, if any, will be led by the County with assistance from the Consultant.
2. GIS, record drawing data, and existing County and City models (including any required boundary condition data for modeling purposes) will be provided by the County.
3. Rain gauge, radar rainfall, and flow monitoring (velocity, depth and flow) data will be provided by the County.
4. A contingent sub-task (3.2) has been included in the event that any adjustment to the County's model parameters and recalibration of the model is required.

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5. No model training is required.

Consultant will perform the following tasks and subtasks:

TASK 1 – PROJECT MANAGEMENT

Task 1.1 – Project Management, QA/QC

Due to the efficiency required for the On-Call work process, a detailed Work Plan will not be prepared for this Task Order. The tasks outlined herein will suffice as a Work Plan.

Prepare monthly Progress Reports presenting work activities completed during the reporting period, budget status (including MBE/WBE status), schedule status, and identification of any out of scope items. Prepare monthly invoices detailing project labor costs and other direct costs.

Quality Assurance / Quality Control (QA/QC)

QA/QC procedures shall be employed in order to maintain document quality (as well as quality of modeling and analysis). These procedures will address the use of quality control reviews, engineering and calculations checking, and other measures necessary to maintain a consistent, complete, high quality and compatible deliverable. A QA/QC review will be conducted on every submittal prior to delivery to the County. These reviews apply to all technical memoranda or reports generated for this Task Order. Members of in-house staff not associated with the Task Order will be selected to perform these reviews.

Deliverables:

- Four (4) copies of each Progress Report (electronic version also).
- Two (2) copies of each monthly invoice (1 copy that includes back-up material and 1 copy with invoice only).

Task 1.2 – Meetings

Conduct one (1) progress/technical meeting with representatives from the County's Department of Public Works (DPW) and others, as the County requires, to review results and to obtain direction on matters requiring decisions by the County.

Deliverables:

- Consultant will prepare an agenda for each meeting.
- Consultant will prepare and transmit one (1) copy of the recorded meeting minutes via email to all participants.

TASK 2 – DATA COLLECTION AND REVIEW

Task 2.1 – Data Collection

Consultant will collect and review existing InfoWorks model files and reports documenting same (including the modeling report, hydraulic capacity assessment report, and/or the Long-Term Capacity/Peak Flow Management Evaluation), for the purpose of evaluating the adequacy of model development, calibration and verification, as well as recommendations developed for the 10-year, 6-hour storm. Flow and rainfall monitoring data will be reviewed for adequacy in calibration/verification of the model. Monitoring locations with sufficient quantity and quality of data will be used as calibration points.

Consultant will also conduct interviews with DPW staff, as necessary, to ascertain their knowledge regarding the operation of the system.

Deliverables:

- Results of this task will be included in the monthly Progress Report and the Technical Memorandum (Task 4).

TASK 3 – HYDRAULIC MODELING

Task 3.1 – Model Simulations

Consultant will perform simulations using the County's existing InfoWorks model for the Jones Falls sewershed, for the purposes of reproducing a select number of calibration and verification storm events and comparing observed (measured) versus model-predicted flows. It is anticipated that up to twenty (20) storms (same data used in previous calibration/verification efforts for this model) will be investigated. Additional, more recent, flow monitoring and rainfall data may be used to perform the comparisons.

Modeled and measured flows and depths will be compared based on industry-standard guidelines, such as delineated in the *Wastewater Planning User's Group Code of Practice for the Hydraulic Modelling of Sewer Systems (Nov. 2002)*. The guidelines establish general acceptable ranges for model accuracy, as follows:

- Dry weather peak flows within +10% and -10%
- Dry weather flow volumes within +10% and -10%
- Wet weather peak flows within +25% and -15%
- Wet weather flow volumes within +20% and -10%
- Wet weather peak depths within +1.6 feet and -0.3 feet
- Timing and shape of hydrographs similar

Deliverables:

- Results of this task will be included in the monthly Progress Report and the Technical Memorandum (Task 4).

Task 3.2 – Model Re-Calibration / Verification (Optional)
This is a contingent item and may be required if calibration of current model is deemed insufficient based on the analysis performed in Task 3.1.

Consultant will utilize the flow and rainfall monitoring data received from the County to adjust the current model's dry and wet weather parameters, if determined necessary by the County. An adequate number of representative storm events of varying intensities, spatial variability, duration and depths will be selected from the rainfall data set to be used for simulating calibration and verification storm events. A minimum of six (6) storms, but no more than ten (10), will be used for calibration and two (2) for verification of the model.

The model will be re-calibrated by adjusting hydrologic and hydraulic parameters until reasonable agreement is reached between observed and predicted flows, volumes and depths. Model calibration accuracy and quality will be judged by County standards and industry-standard guidelines, such as delineated in the *Wastewater Planning User's Group Code of Practice for the Hydraulic Modelling of Sewer Systems (Nov. 2002)*, with error ranges as specified in Task 3.1.

Deliverables:

- Results of this task will be included in the monthly Progress Report and the Technical Memorandum (Task 4).

Task 3.3 – Recommendations (Optional)
This is a contingent item and may be required at the County's discretion.

Consultant will utilize the recalibrated collection system model, updated in Task 3.2, to re-simulate the 10-year, 6-hour design storm and update any recommendations developed in the Long-Term Capacity/Peak Flow Management Evaluation report. Updates to size of relief sewers or quantities of I/I reduction, or other recommendations will be revised and updated as necessary with the new model. A hydraulic capacity assessment will be performed by comparing model-predicted SSO volumes and locations to previous results, and summarizing via GIS data/maps.

Boundary conditions for the 10-year, 6-hour event simulated will be applied in the model. The boundary condition data will be provided by the County.

Deliverables:

- Results of this task will be included in the monthly Progress Report and the Technical Memorandum (Task 4).

TASK 4 – TECHNICAL MEMORANDUM

Task 4.1 – Draft Technical Memorandum

Consultant will develop and submit a Draft Technical Memorandum including sketches, technical narratives, methodologies, simulation/evaluation results, recommendations (e.g., size of relief sewer and other affected sewers as appropriate), and all pertinent information used to perform the analyses under this Task Order. The document will contain an assessment of the adequacy of the model to predict/simulate the collection system response to wet weather events. One (1) electronic copy of the Draft Technical Memorandum will be submitted to the County for review and comment.

Deliverables:

- One (1) electronic copy of the Draft Technical Memorandum.

Task 4.2 – Final Technical Memorandum

A meeting will be held to discuss the County's comments before finalizing the analysis and Technical Memorandum. The Final Technical Memorandum will build upon the Draft version and incorporate comments received from the County. Following the final changes to the Technical Memorandum, the Consultant shall submit one (1) electronic copy and five (5) hard copies of the Final Technical Memorandum to the County, no later than 60 days after comments are received from the County on the draft version. An electronic version of the revised InfoWorks model will also be provided.

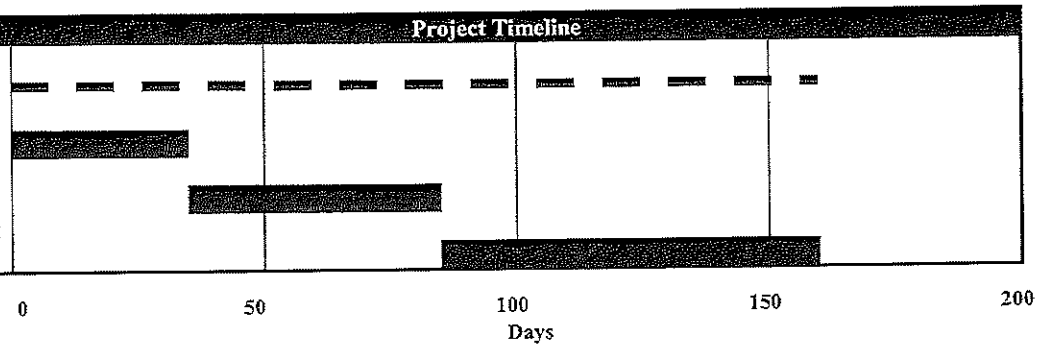
Deliverables:

- One (1) electronic copy of the Final Technical Memorandum.
- Five (5) hard copies of the Final Technical Memorandum.
- InfoWorks model files.

PIA 23-172 Hazen - 00172

Proposed Schedule
Project 2012-02
Task Order 002
6/3/2013

Task	Description	Days
1	Project Management	160
2	Data Collection and Review	35
3	Hydraulic Modeling	50
4	Technical Memorandum	75



PIA 23-172 Hazen - 00173

BALTIMORE COUNTY
DEPARTMENT OF PUBLIC WORKS
BUREAU OF ENGINEERING AND CONSTRUCTION

JOB ORDER NO.: 201-0077-7126
DATE: 6/28/13

Description of Job: On-Call Modeling Task 2 - Jones Falls Model Evalutation

Requested by: Lisa K. Eicholtz

Locality: Lutherville,Towson,Pikesvill

Zip Code: 21093, 21204, 21209, 21208

District: 3,8,9C2,3,5

Charge to: Metro

PIA 23-172 Hazen - 00174

Memorandum

HAZEN AND SAWYER
Environmental Engineers & Scientists

One South Street, Suite 1150
Baltimore, MD 21202

410-539-7681
hazenandsawyer.com

Date: September 19, 2014

To: Lisa Eicholtz, P.E. – Baltimore County DPW

From: Hazen and Sawyer

Re: Jones Falls Model Evaluation

Summary

This memorandum summarizes the evaluation and improvement of the Jones Falls InfoWorks hydrologic/hydraulic model. The County's Jones Falls sewershed model is comprised of two separate networks/files: 1) "boundary" model and 2) primary model. The boundary model is composed of several small sewer systems near the County/City line that each discharge flow into the City's sewer system. The primary model comprises the majority of the sewer system within the Jones Falls sewershed, and eventually discharges flow into the City's sewer system at a single location. Each model was evaluated on the basis of calibration adequacy as outlined in further detail below. Generally, the models are calibrated within industry-standard error tolerances, with the exception of a few meter basins that are described further herein. The models were updated and improved by refining the locations where flow is input into the modeled sewer network. In addition, the models were validated to historical flow and rainfall data.

Methodology

The analysis was performed in a step-wise process as follows, and as described further below:

1. Review existing information, including modeling report (entitled "Model Development and Calibration Report for The Jones Falls Sewershed Hydraulic Model," dated November 2011 by RK&K); also review model files, meter site sheets, flow data and rainfall data.
2. Perform model simulations of the flow and rainfall monitoring period for the Boundary model (May 9, 2006 through May 18, 2007)
3. Perform model simulations of the flow and rainfall monitoring period for the Primary model (February 1, 2008 through November 30, 2008)
4. Prepare summary calibration statistical plots comparing observed and predicted storm volume, peak flow and peak depth
5. Review model connectivity and flow input locations
6. Update the model and validate to historical data

Summary of Previous Work (2011)

2011 Jones Falls Model Development

The County previously developed and calibrated the Jones Falls sewershed model, comprised of two separate networks/files: 1) "boundary" model and 2) primary model. Figure 1 depicts both model networks. The County model network files were entitled "Boundary Meter-Baseline_Final_AdditionalNetwork!" (for the boundary model) and "Existing-Network-revised-2012-FM" (for the primary model).

The primary data source for model development was the County's geographic information system (GIS). The model data was then improved with the collection and use of manhole survey data. Dry weather flows were developed in the model using water consumption data, population, tributary areas, and flow/rainfall monitoring data. Dry weather flows were divided into sanitary (base) flow and groundwater infiltration using Sliicer software. The SWMM RUNOFF routine in InfoWorks was employed to characterize wet weather responses to rainfall in the modeled sewer system.

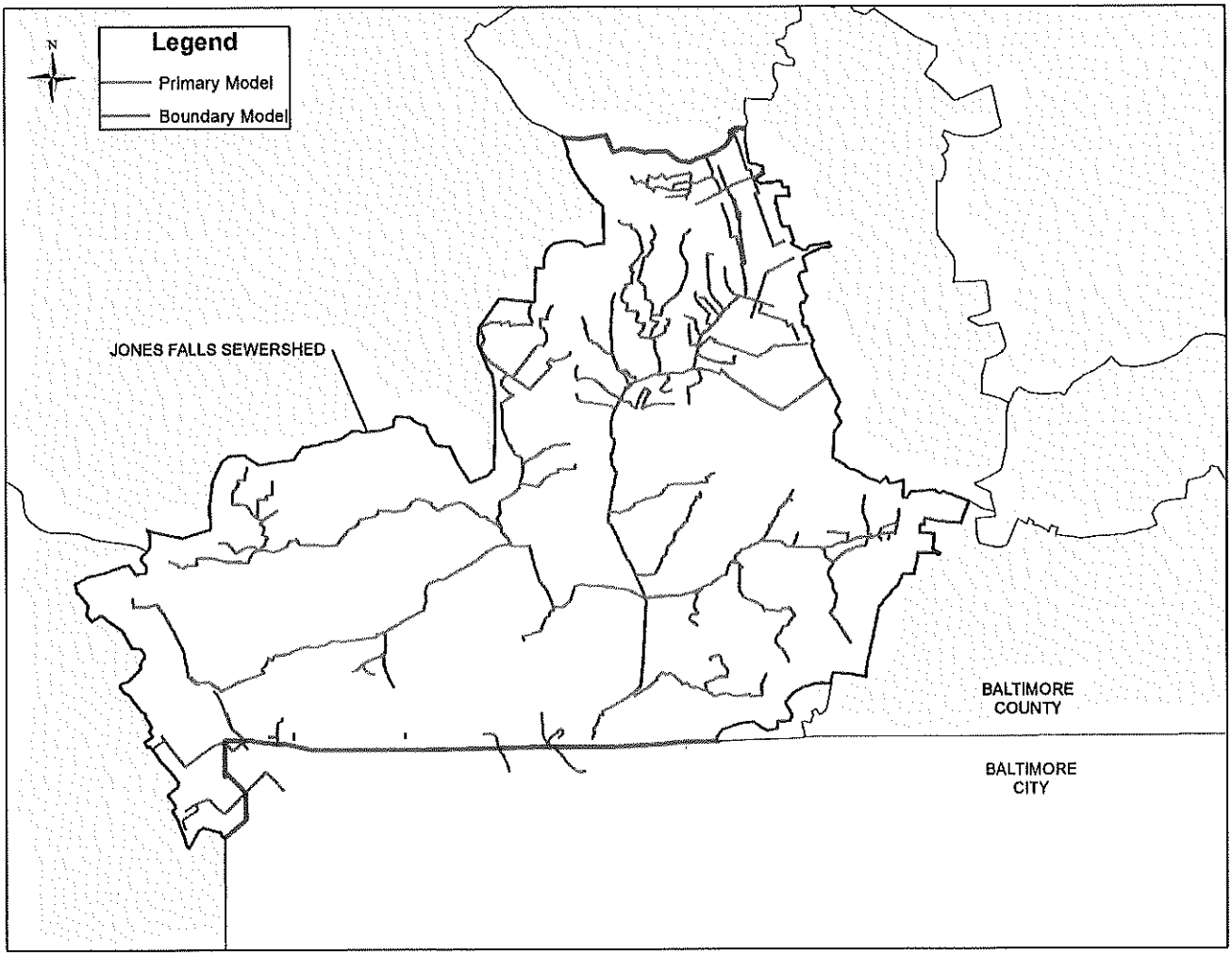


Figure 1: County's Boundary and Primary Model Networks

2011 Jones Falls Model Calibration

Calibration of the model was performed in two phases: dry weather calibration followed by wet weather calibration. A total of 26 meters in the primary model and 6 meters in the boundary model were utilized for calibration.

Dry weather calibration was completed by simulating at least 3 consecutive days of no rain in the monitoring period and comparing model output with observed data. Dry weather calibration statistics were prepared to evaluate percent differences between predicted and observed peak flow and volume. The calibration criteria used represents a larger range of error tolerance than the industry standard WaPUG guidelines. Error bounds of +20% and -20% were used in the 2011 report instead of the standard +10% and -10% ("Wastewater Planning Users Group (WaPUG) Code of Practice for the Hydraulic Modelling of Wastewater Systems, November 2002").

Wet weather calibration was completed by simulating 7 storms (Primary model) and 6 storms (Boundary model), and comparing model output with observed data, and making adjustments to model parameters until good agreement was reached between the two sets of data.

Model validation was not documented in the 2011 report or model files.

Model Evaluation and Updates (2014)

Continuous model simulations of each of the two separate monitoring periods for the Primary model (February 1, 2008 through November 30, 2008) and Boundary model (May 9, 2006 through May 18, 2007) were performed to independently evaluate the adequacy of model calibration. Model input files (networks, rainfall data, boundary conditions, wastewater data, etc.) were received and used directly in InfoWorks to re-simulate the monitoring periods. The closest rain gauge was associated to each model subcatchment to enable spatial variation of rainfall to be simulated.

In addition to simulating the six calibration events from the 2011 report, historical storm events were simulated in the model and compared with flow monitoring data to evaluate how well the model is validated. Tables 1 and 2 summarize the calibration and validation storm events simulated in the model (denoted as "C" for calibration events and "V" for validation events).

The loading points (locations where flow is input into the modeled sewer system) in the model were also evaluated relative to the latest GIS data for the sewer system. Appendix A contains the findings of this review, which include incorrect flow input locations and over-loading of certain locations. The model was corrected at these locations by revising the loading locations and/or dividing model subcatchments into smaller polygons and redistributing the flows according to the GIS data.

Finally, an evaluation was performed to identify large model subcatchments where flow is input at the upstream end of the model network that are also locations of model-predicted manhole SSOs. Table 3 summarizes this evaluation, indicating several model subcatchments (highlighted in yellow) with over 50 acres in size and predicted SSOs. At these locations, SSO volumes may be over-predicted.

Table 1: Storm Events Evaluated in Primary Model

#	Rain Start	Rain End	Duration (Hour)	Peak Intensity (Inch/Hour)	Total Depth (Inch)	Calibration or Validation
1	2/1/2008 4:25	2/1/2008 17:00	12.6	0.90	2.00	C
2	3/4/2008 17:20	3/5/2008 7:50	14.5	0.24	0.63	C
3	3/7/2008 12:40	3/8/2008 17:55	29.3	0.22	0.83	C
4	3/19/2008 11:40	3/20/2008 1:40	14.0	0.26	0.66	C
5	4/3/2008 15:20	4/4/2008 5:35	14.3	0.16	0.64	C
6	4/27/2008 22:40	4/28/2008 16:10	17.5	0.48	1.31	C
7	5/8/2008 13:05	5/9/2008 14:00	24.9	0.38	1.33	C
8	2/12/2008 22:35	2/13/2008 16:00	17.4	0.24	0.99	V
9	4/20/2008 9:20	4/21/2008 6:45	21.4	1.64	1.87	V
10	5/11/2008 16:15	5/12/2008 19:25	27.2	0.32	2.21	V
11	6/3/2008 19:30	6/5/2008 2:15	30.8	1.34	0.95	V
12	8/29/2008 5:15	8/30/2008 2:30	21.2	0.98	0.94	V
13	9/5/2008 20:15	9/6/2008 15:35	19.3	1.02	2.21	V
14	9/12/2008 12:50	9/12/2008 23:30	10.7	0.66	1.30	V
15	9/26/2008 18:55	9/28/2008 13:05	42.2	1.86	4.63	V
16	10/25/2008 1:35	10/26/2008 7:30	29.9	0.84	0.95	V
17	11/13/2008 9:10	11/15/2008 17:15	56.1	0.54	1.24	V

Table 2: Storm Events Evaluated in Boundary Model

#	Rain Start	Rain End	Duration (Hour)	Peak Intensity (Inch/Hour)	Total Depth (Inch)	Calibration or Validation
1	6/24/2006 13:30	6/24/2006 21:15	7.7	0.44	0.83	C
2	7/5/2006 11:15	7/6/2006 4:45	17.5	1.27	2.45	C
3	10/5/2006 20:30	10/6/2006 16:15	19.8	0.18	1.28	C
4	10/17/2006 8:00	10/17/2006 21:15	13.2	0.25	1.10	C
5	10/19/2006 20:30	10/20/2006 6:00	9.5	0.24	0.55	C
6	10/27/2006 14:30	10/28/2006 7:30	17.0	0.58	2.00	C
7	5/14/2006 23:30	5/15/2006 15:45	16.3	0.24	0.65	V
8	6/25/2006 16:15	6/26/2006 22:15	30.0	1.40	3.95	V
9	9/1/2006 6:30	9/2/2006 16:15	33.8	0.39	2.78	V
10	9/5/2006 2:45	9/5/2006 16:30	13.7	0.87	1.80	V
11	9/14/2006 1:15	9/14/2006 18:15	17.0	0.22	1.23	V
12	9/28/2006 17:00	9/28/2006 22:00	5.0	0.76	0.85	V
13	11/7/2006 20:15	11/8/2006 13:15	17.0	0.41	1.64	V
14	11/16/2006 8:30	11/16/2006 16:45	8.3	1.17	2.24	V
15	11/22/2006 11:45	11/23/2006 2:45	15.0	0.20	0.97	V
16	12/22/2006 12:15	12/23/2006 2:45	14.5	0.24	1.29	V
17	12/25/2006 12:30	12/25/2006 22:15	9.8	0.20	0.60	V
18	12/31/2006 22:45	1/1/2007 12:45	14.0	0.36	1.02	V
19	1/7/2007 17:45	1/8/2007 10:15	16.5	0.21	0.88	V
20	3/1/2007 18:00	3/2/2007 9:00	15.0	0.33	1.06	V
21	3/15/2007 16:15	3/16/2007 16:45	24.5	0.21	2.21	V
22	3/23/2007 13:30	3/24/2007 9:30	20.0	0.08	0.47	V
23	4/11/2007 21:30	4/12/2007 5:45	8.3	0.31	0.92	V
24	4/14/2007 19:00	4/15/2007 17:00	22.0	0.43	2.66	V

Table 3: Flow Input Location Evaluation

Subcatchment ID	Loading Node ID	Predicted SSO at Loading Node (MG)	Sewered Area (acre)
Primary model			
45-58-01-00	55272	0.0334	97.54
45-59-29-00	41020	0.0034	39.497
45-59-30-02	14548	0.0269	117.204
45-59-30-03	7177	0.0133	98.168
45-59-31-00	16754	0.0507	88.206
45-59-34-00-A	7288	0.0006	83.322
45-59-34-00-B	PVT302	0.3106	24.296
Boundary model			
45-10-22-01	15756	0.124	83.025
45-10-22-02	1585	0.0119	78.17
45-10-22-03	938	0.2501	214.401

Industry standard WaPUG calibration criteria were used in the evaluation, as summarized below:

Dry Weather Flow Calibration:

- Modeled peak flows should be within 10 percent of the observed peak flows, and
- Modeled 24-hour volumes should be within 10 percent of the observed volumes

Wet Weather Flow Calibration:

- Modeled peak flows should be within +25 percent and -15 percent of the observed peak flows,
- Modeled storm event volumes should be within +20 percent and -10 percent of the observed volumes, and
- Modeled depths of flow in surcharged sewers should be within +1.6 feet and -0.33 feet

Boundary Model Evaluation

Figure 2 shows the percent differences between model-predicted peak flows and volumes relative to observed values for the dry weather periods, for the boundary model. One continuous simulation was performed, and then the specific dry weather periods listed in Table 4B of the 2011 modeling report were used to compare model predictions with observed data. Calibration criteria ranges (pink dashed lines) are also shown on this plot. Dry weather volumes matched well (all within the criteria ranges), while peak flows were generally outside, but in close proximity of, the criteria ranges (model under-predicts peak dry weather peak flows). Since volume is the primary parameter of importance, and due to the normal fluctuations in

dry weather flow (peaky trends are common), it is not recommended to attempt to improve the dry weather peak flow calibration.

Figures 3 through 8 show the percent differences between model-predicted peak flows and volumes relative to observed values, as well as absolute differences between peak depths, for the calibration storms. Calibration criteria ranges (pink dashed lines) are also shown on these plots. In general, the model is considered adequately calibrated, as most of the storm comparisons for volume, peak flow and depth were within the calibration criteria ranges, with the exception of a few outliers and some general scatter (some points above the 45-degree line and some below). The following meters were identified as being slightly biased with respect to the wet weather response in the sewer system:

- JF0320S (volume over-estimated)
- JFWR29 (volume over-estimated for calibration events but many validation events are within tolerances)

Table 4 summarizes the calibration/validation performance for the monitoring period.

Primary Model Evaluation

Figure 9 shows the percent differences between model-predicted peak flows and volumes relative to observed values for the dry weather periods, for the primary model. One continuous simulation was performed, and then the specific dry weather periods listed in Table 4A of the 2011 modeling report were used to compare model predictions with observed data. Calibration criteria ranges (pink dashed lines) are also shown on this plot. Dry weather volumes and peak flows matched well (almost all within the guideline ranges).

Figures 10 through 35 show the percent differences between model-predicted peak flows and volumes relative to observed values, as well as absolute differences between peak depths, for the calibration storms. Calibration criteria ranges (pink dashed lines) are also shown on these plots. In general, the model is considered adequately calibrated, as most of the storm comparisons for volume, peak flow and depth were within the calibration criteria ranges, with the exception of a few outliers and some general scatter (some points above the 45-degree line and some below). Meters BC03, BC09 and BC13 were initially identified as being slightly biased with respect to the wet weather response in the sewer system when evaluating only the calibration events; however, if the validation events are considered as well, the errors generally fall within or close to the tolerance ranges. When identifying the above meters, consideration was given to the quantity of storms outside of the calibration criteria ranges, the magnitude of the storms, and whether the bias was systematic (all points above or below the 45-degree line) or random (scattered about the 45-degree line).

Table 5 summarizes the calibration/validation performance for the monitoring period.

Figure 2: Boundary Meter Dry Weather Calibration

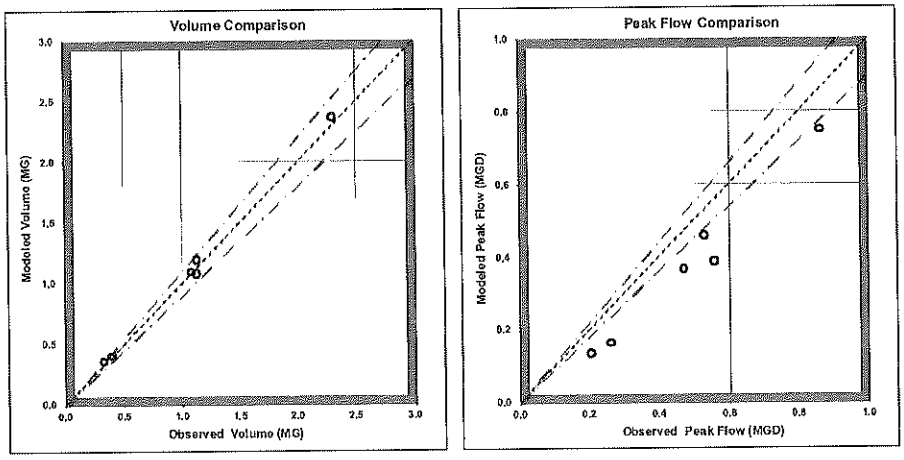


Figure 3: Boundary Meter JF0320S Wet Weather

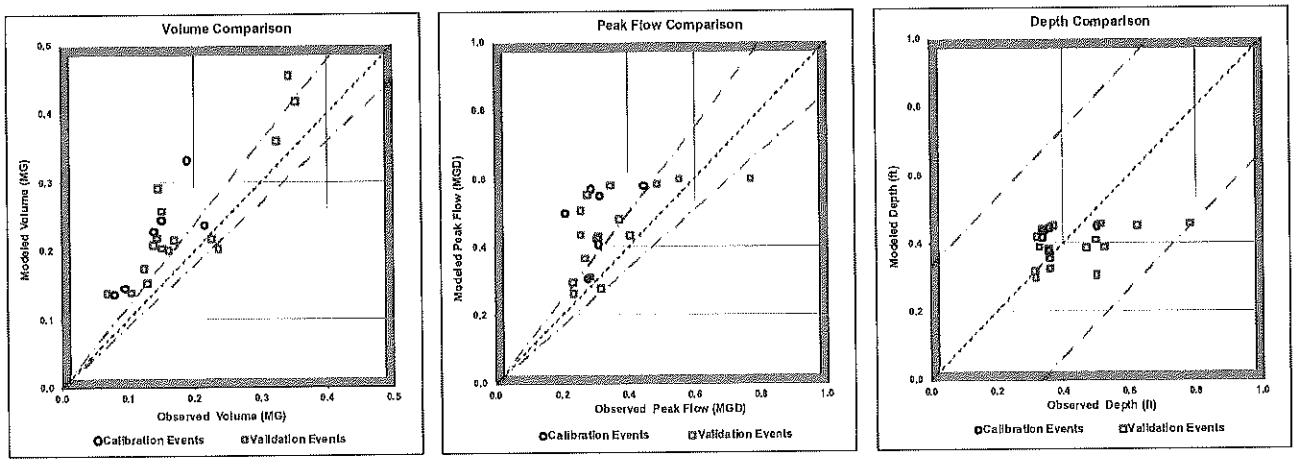


Figure 4: Boundary Meter JFWR09 Wet Weather

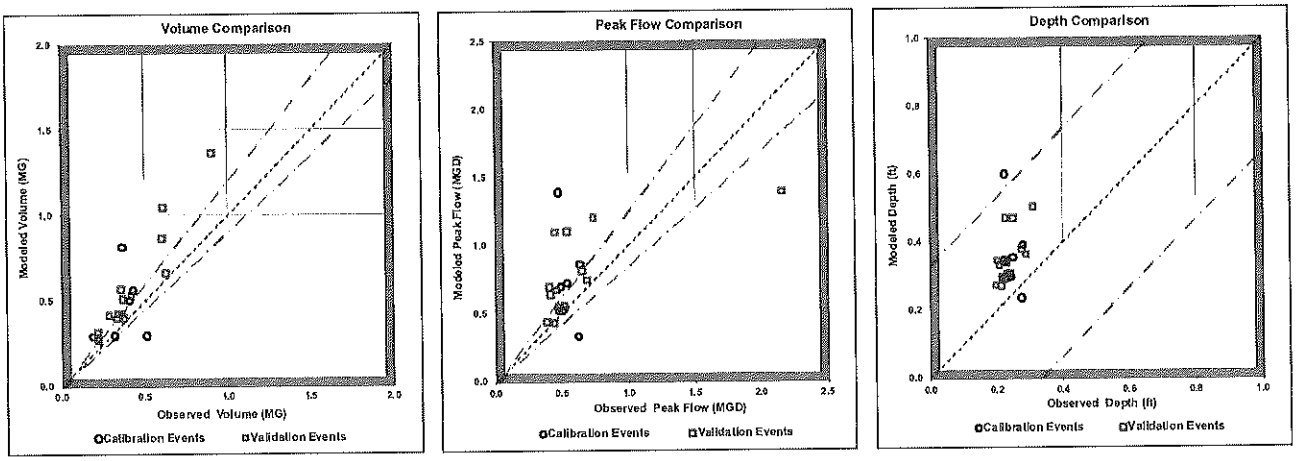


Figure 5: Boundary Meter JFWR15 Wet Weather

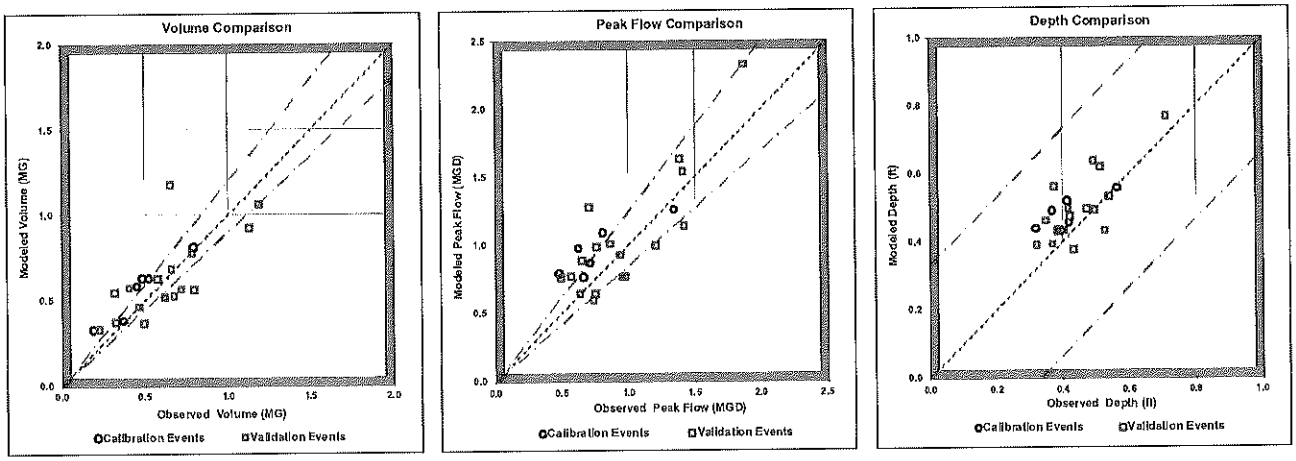


Figure 6: Boundary Meter JFWR29 Wet Weather

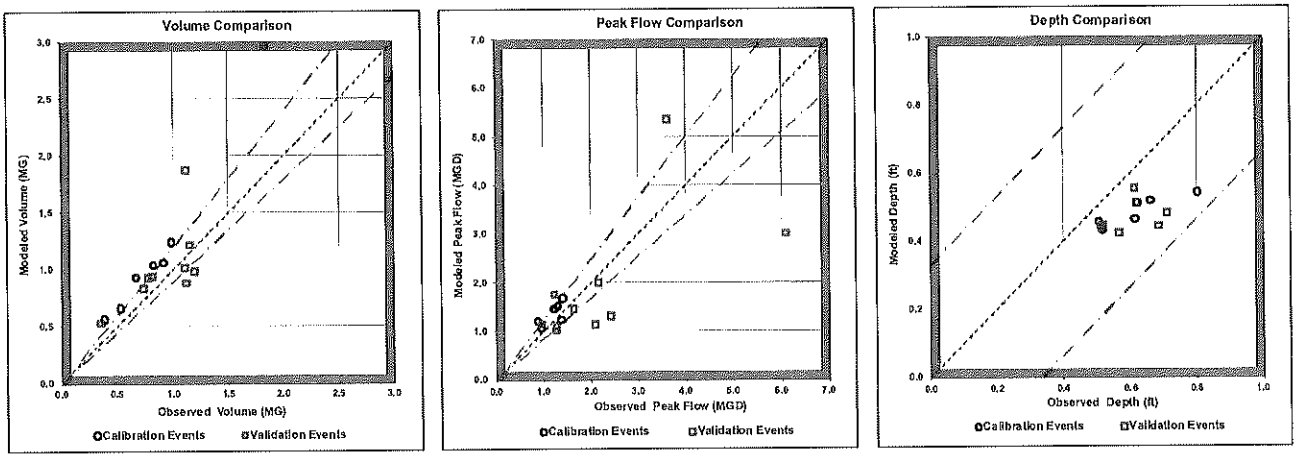


Figure 7: Boundary Meter JFWR31 Wet Weather

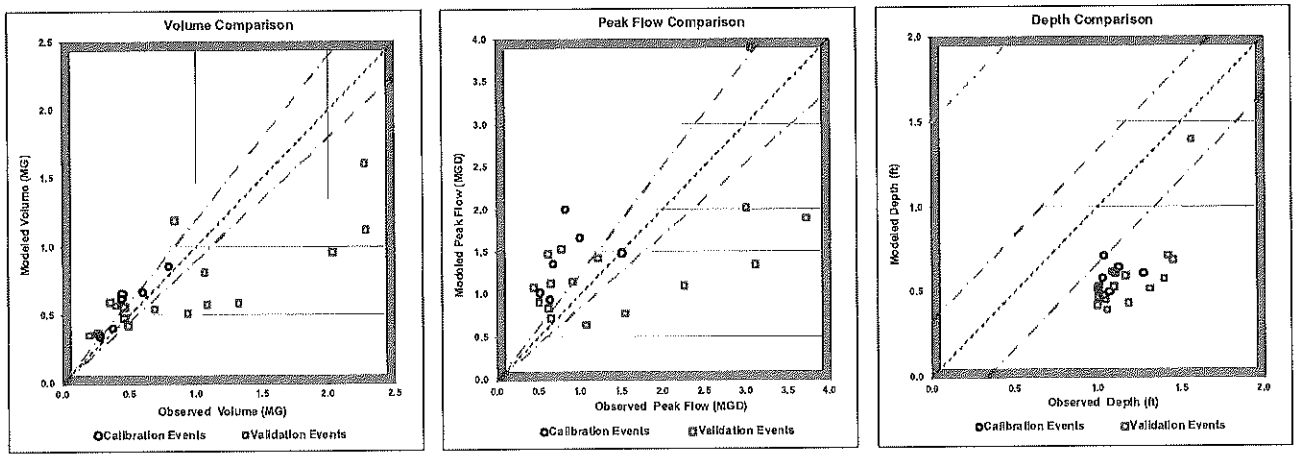


Figure 8: Boundary Meter JFWR35 Wet Weather

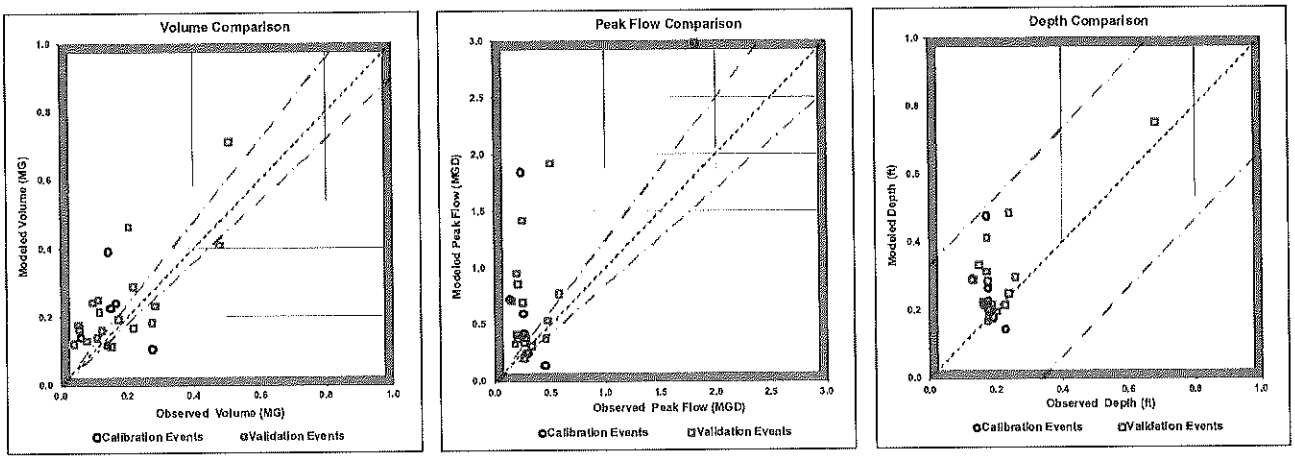


Figure 9: Primary Meter Dry Weather Calibration

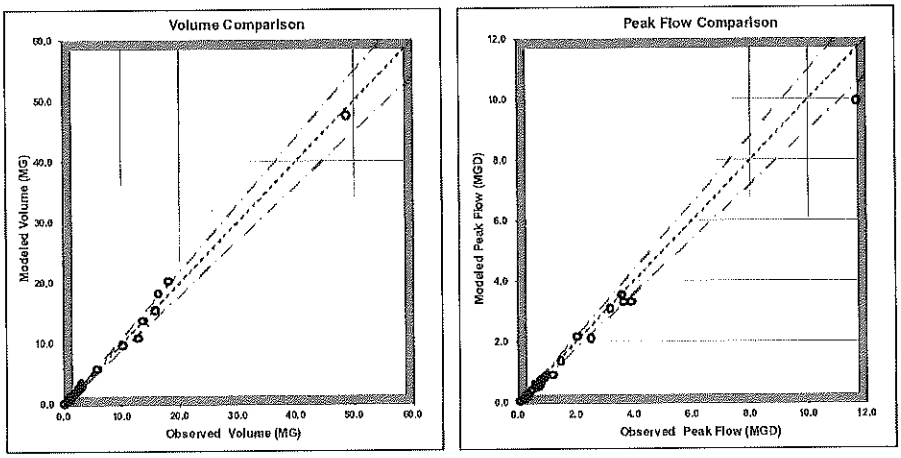


Figure 10: Primary Meter BC01 Wet Weather

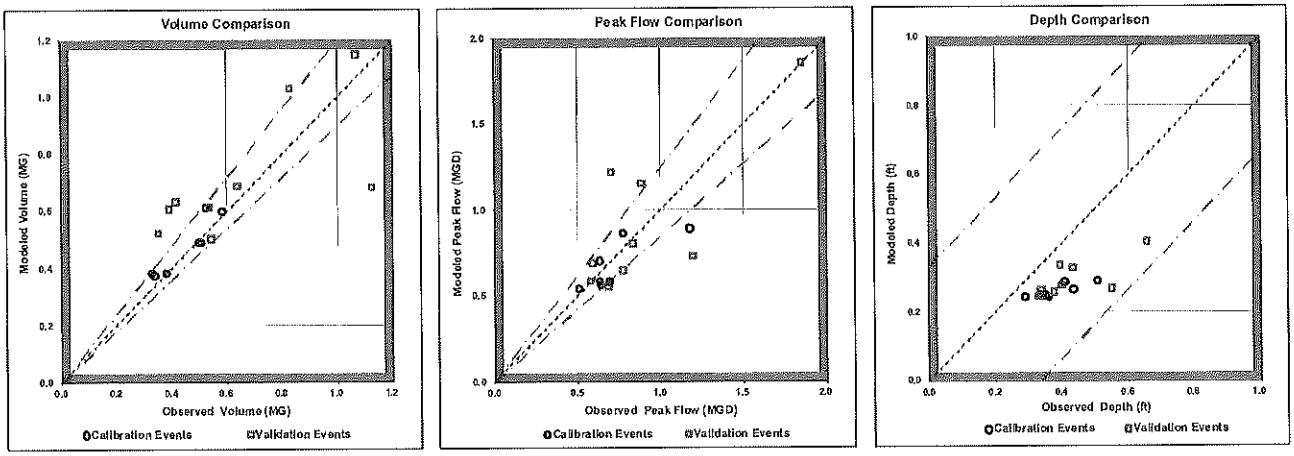


Figure 11: Primary Meter BC02 Wet Weather

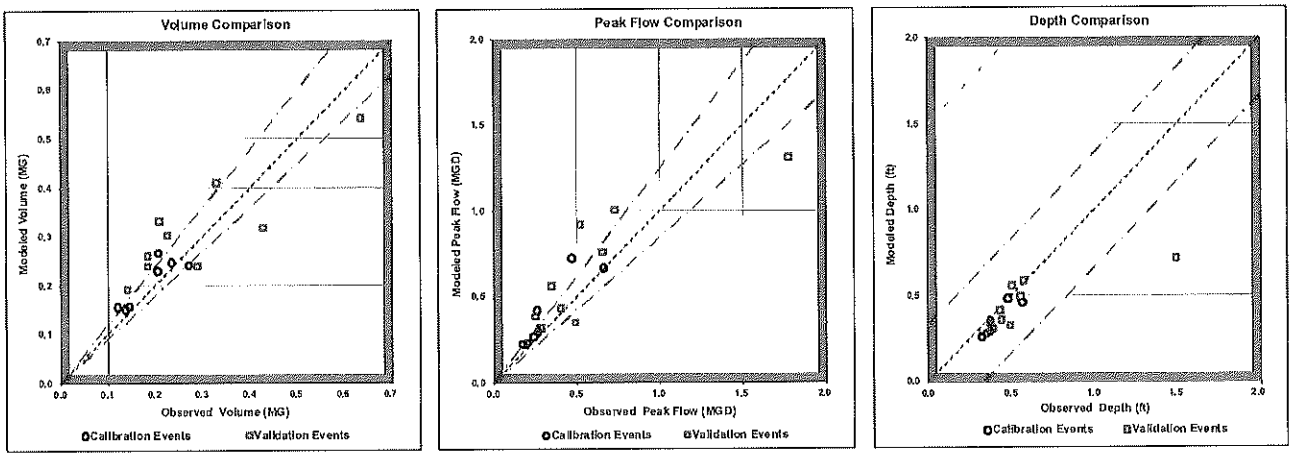


Figure 12: Primary Meter BC03 Wet Weather

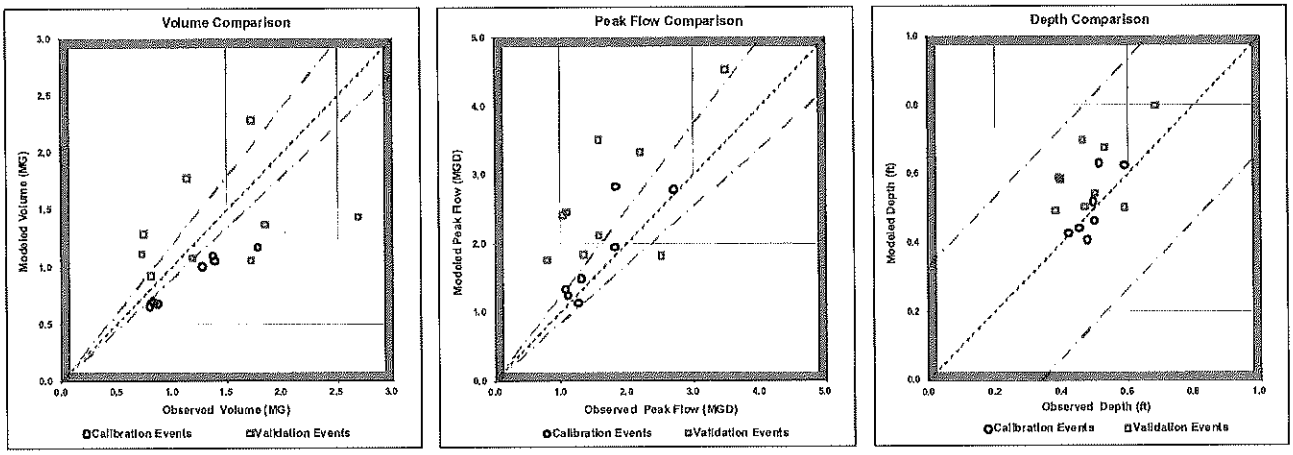


Figure 13: Primary Meter BC04 Wet Weather

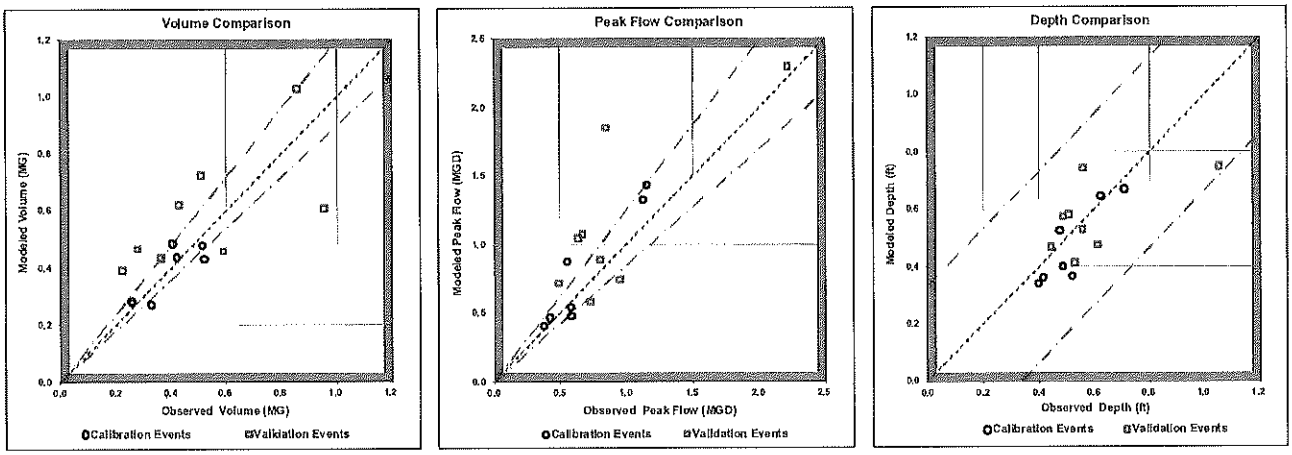


Figure 14: Primary Meter BC05 Wet Weather

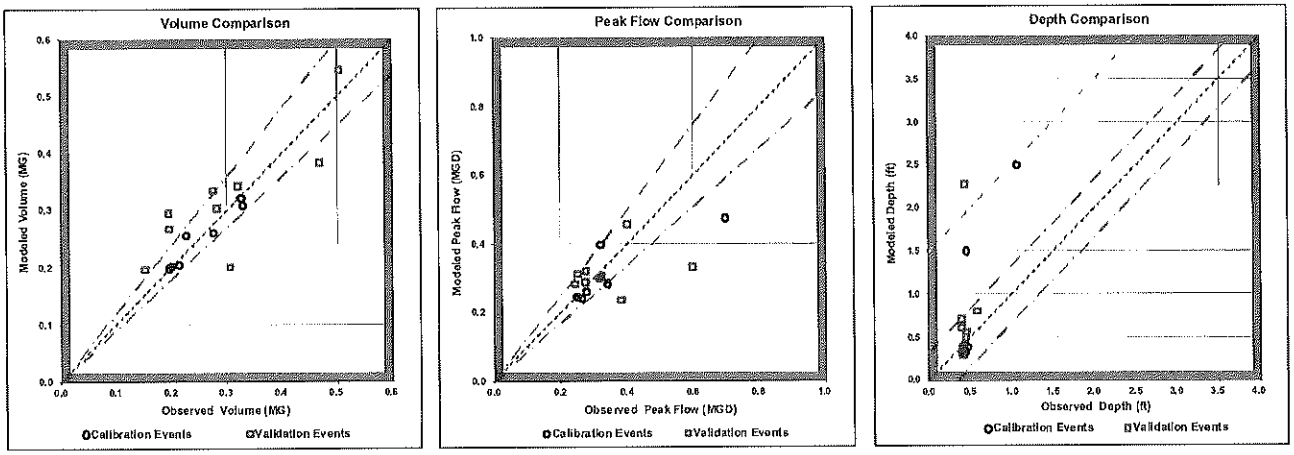


Figure 15: Primary Meter BC06 Wet Weather

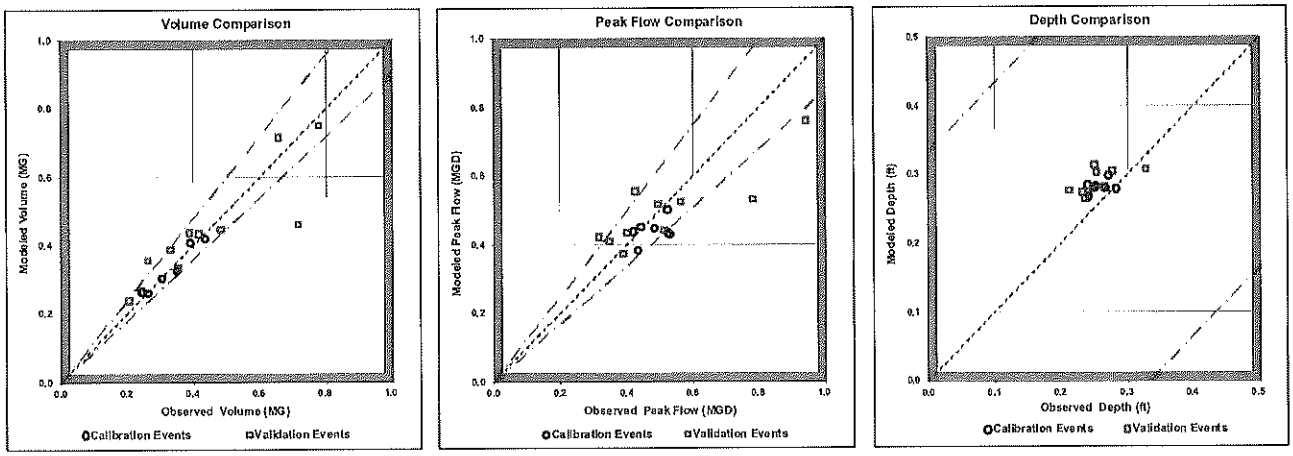


Figure 16: Primary Meter BC07 Wet Weather

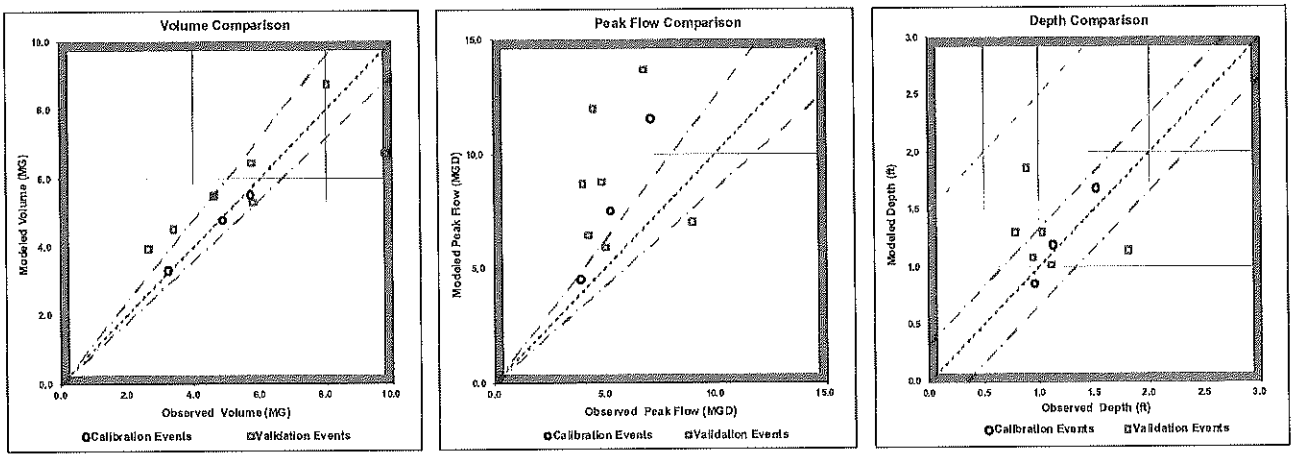


Figure 17: Primary Meter BC08 Wet Weather

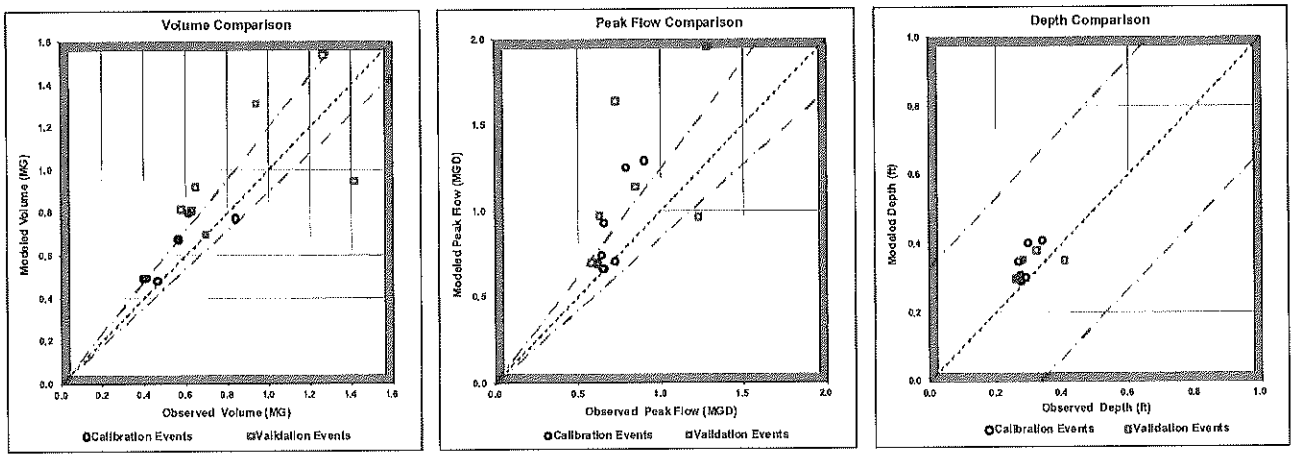


Figure 18: Primary Meter BC09 Wet Weather

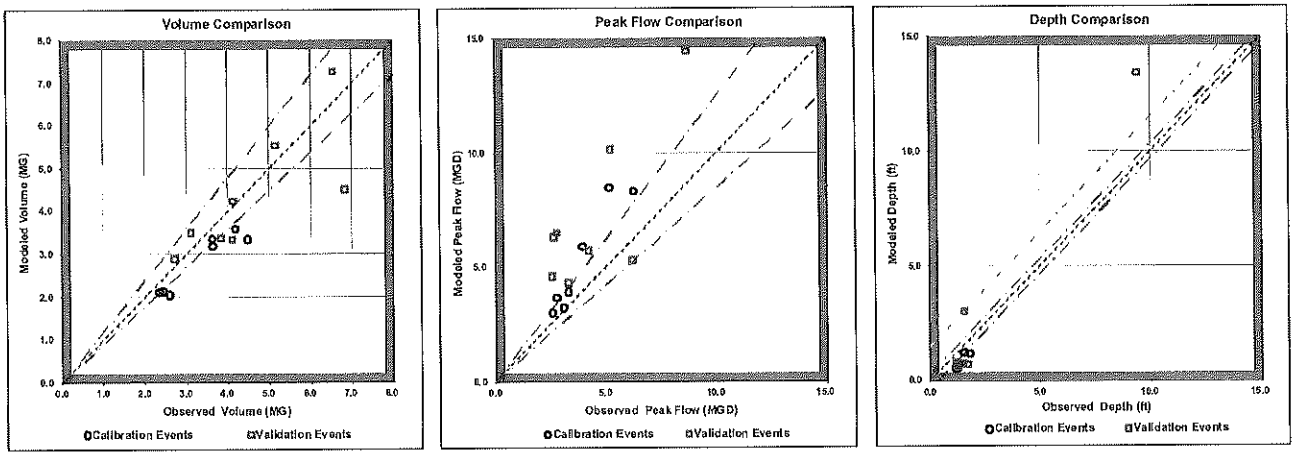


Figure 19: Primary Meter BC10 Wet Weather

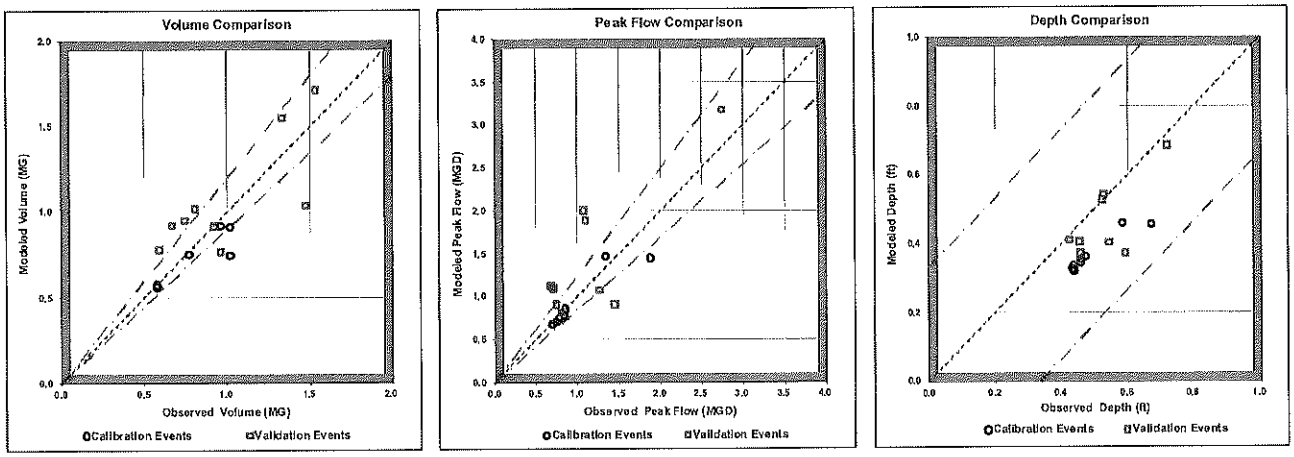


Figure 20: Primary Meter BC11 Wet Weather

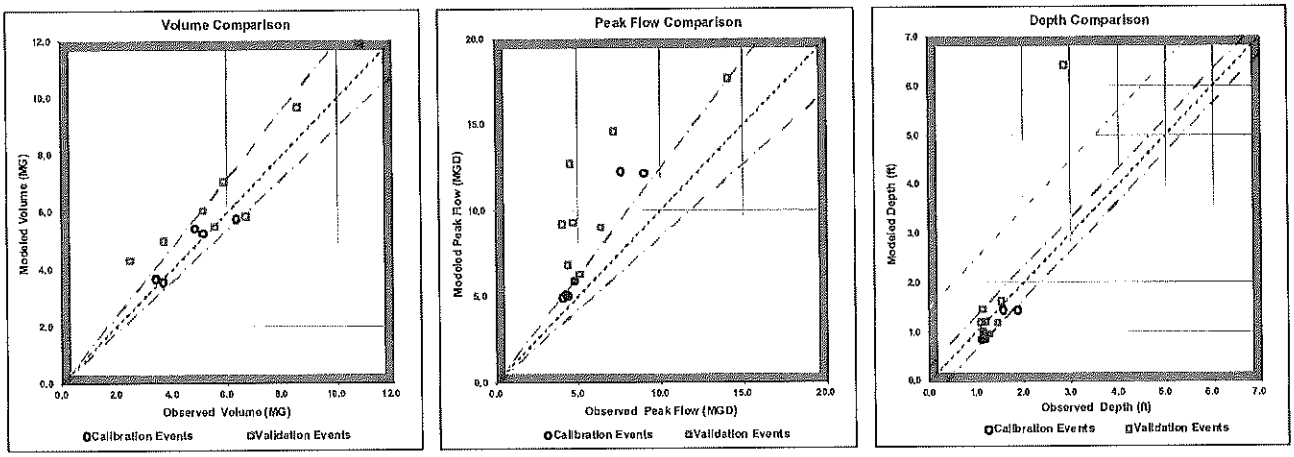


Figure 21: Primary Meter BC12 Wet Weather

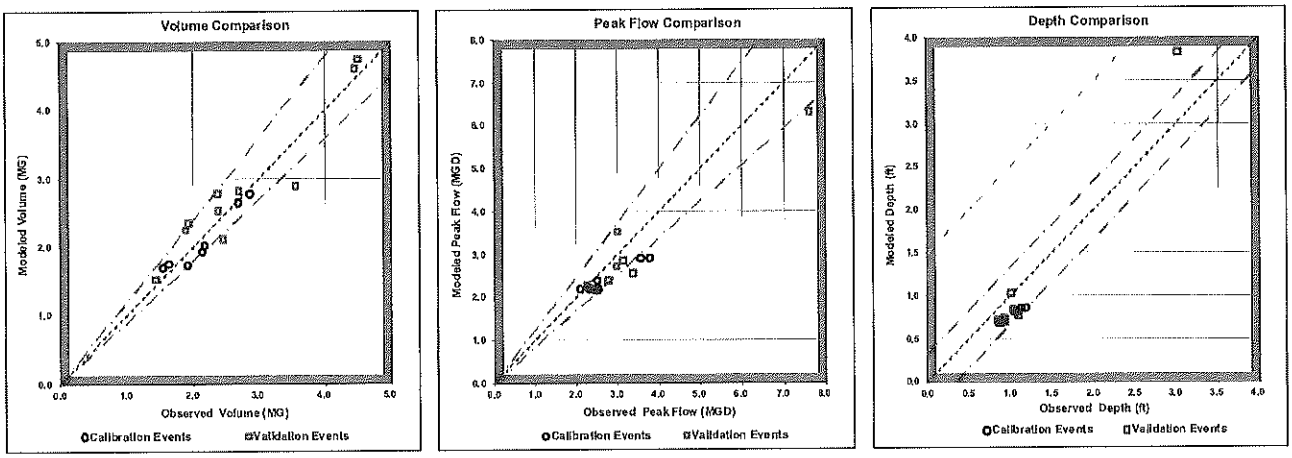


Figure 22: Primary Meter BC13 Wet Weather

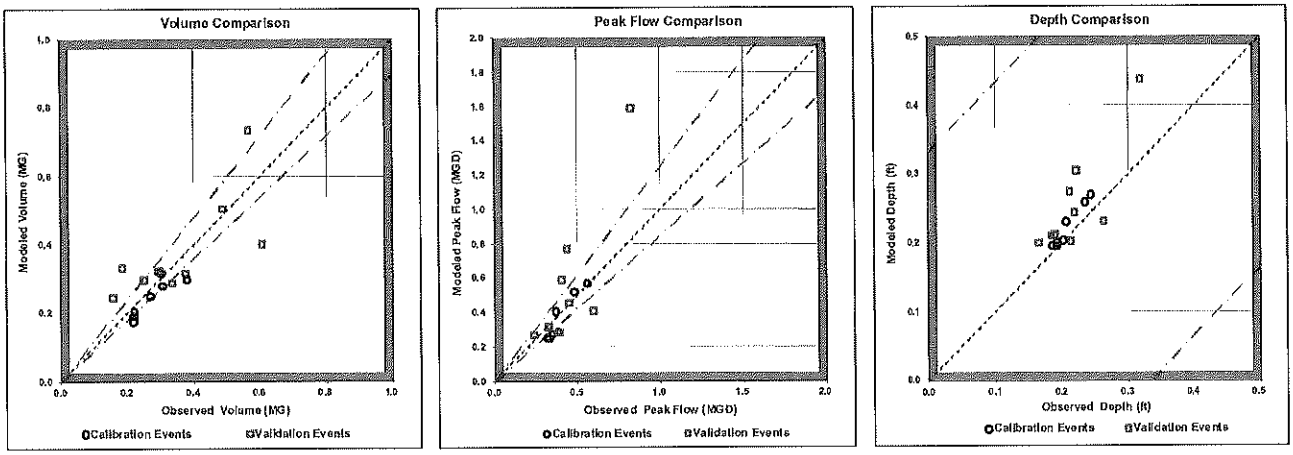


Figure 23: Primary Meter BC14 Wet Weather

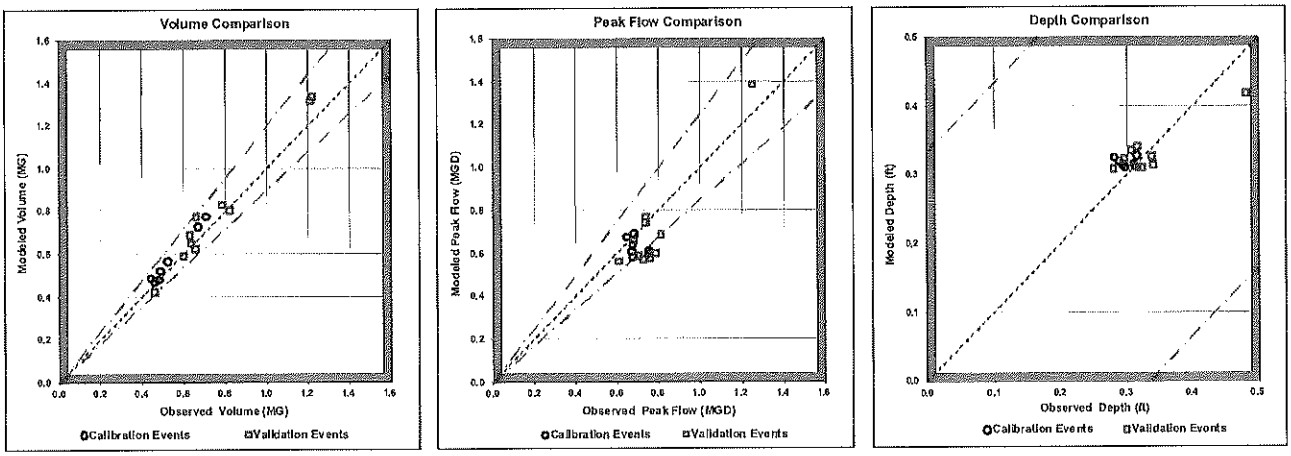


Figure 24: Primary Meter BC15 Wet Weather

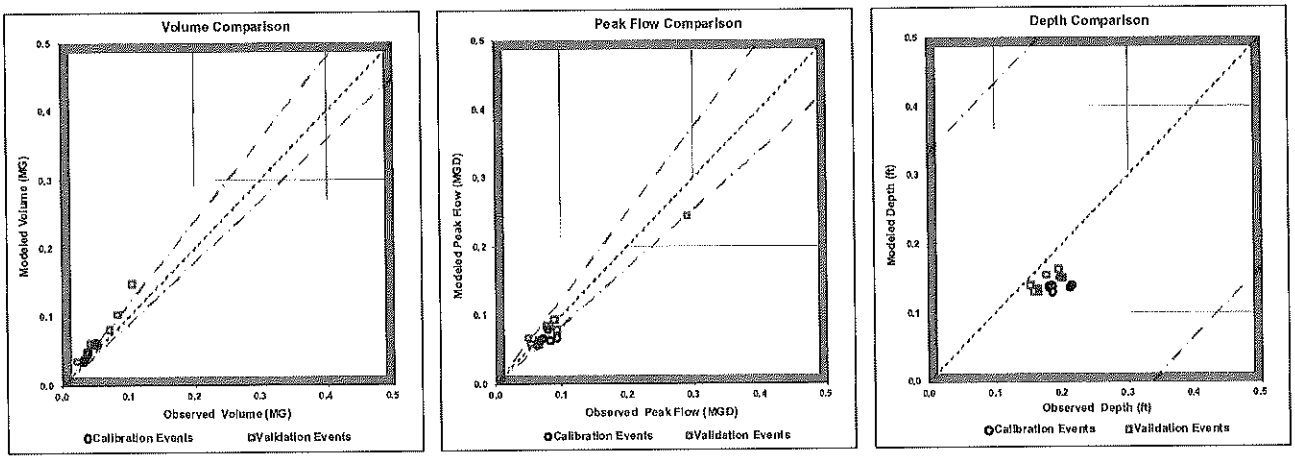


Figure 25: Primary Meter BC16 Wet Weather

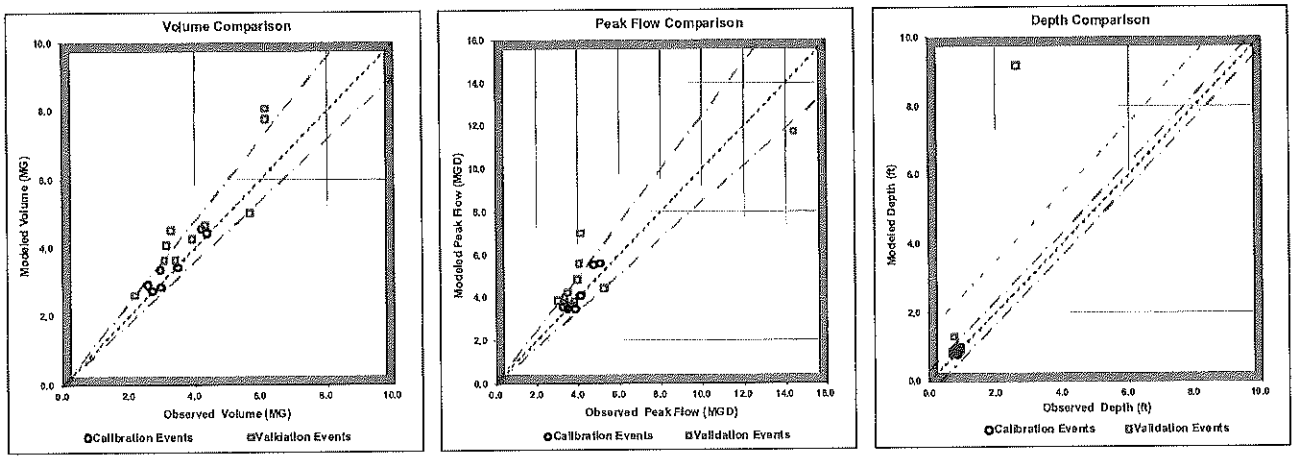


Figure 26: Primary Meter BC18 Wet Weather

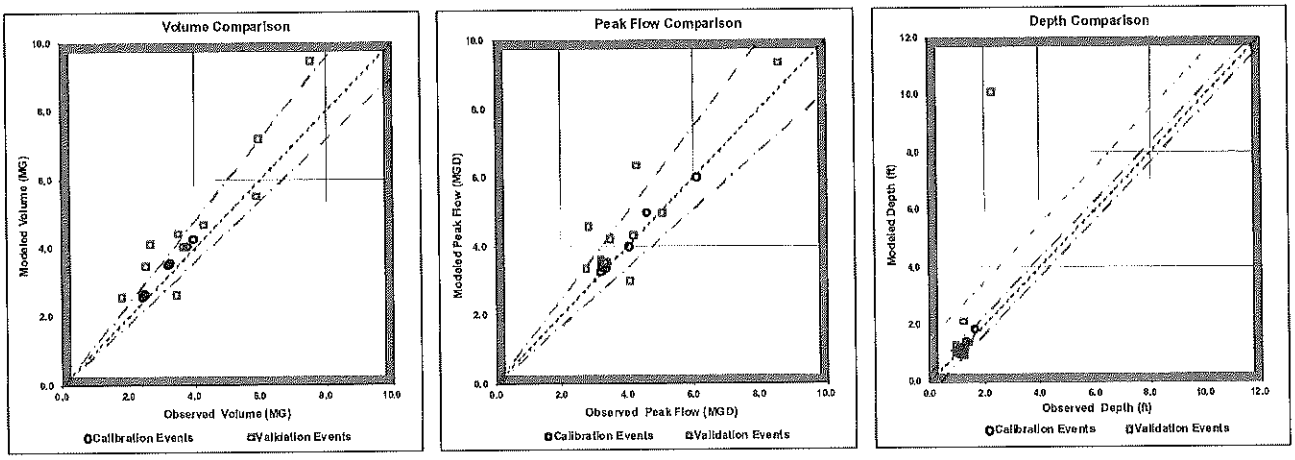


Figure 27: Primary Meter BC19 Wet Weather

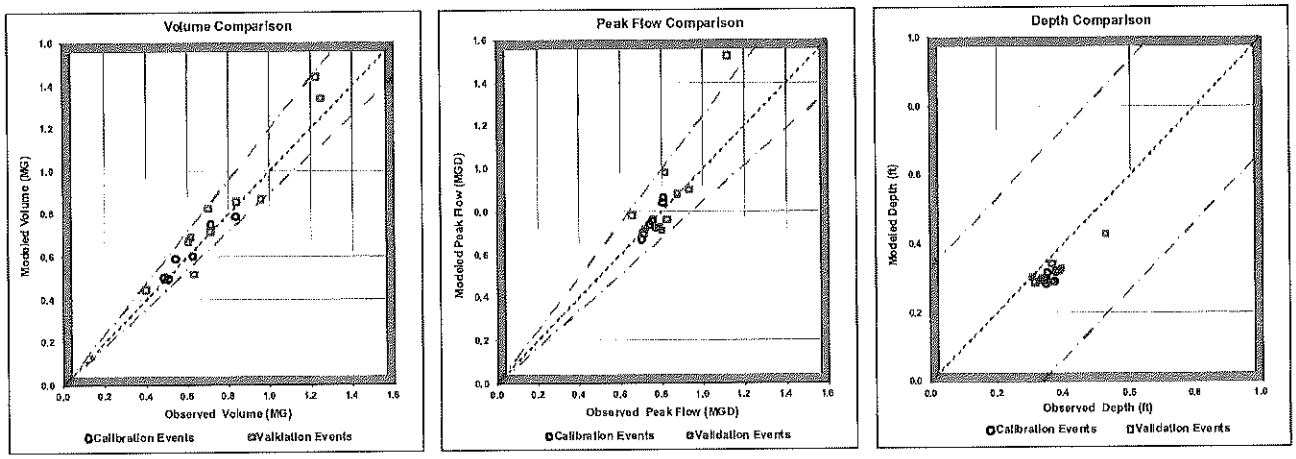


Figure 28: Primary Meter BC20 Wet Weather

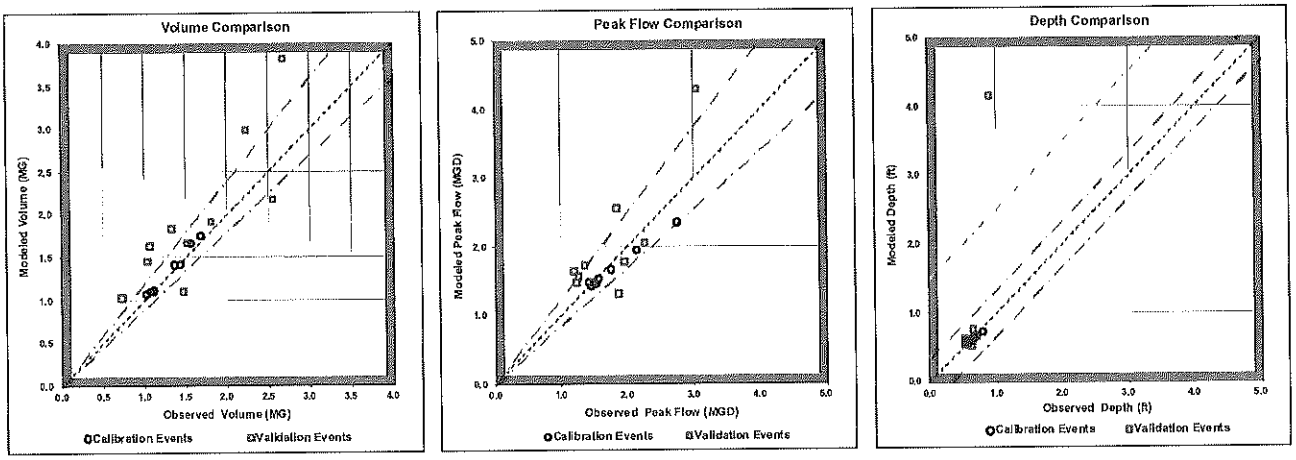


Figure 29: Primary Meter BC21 Wet Weather

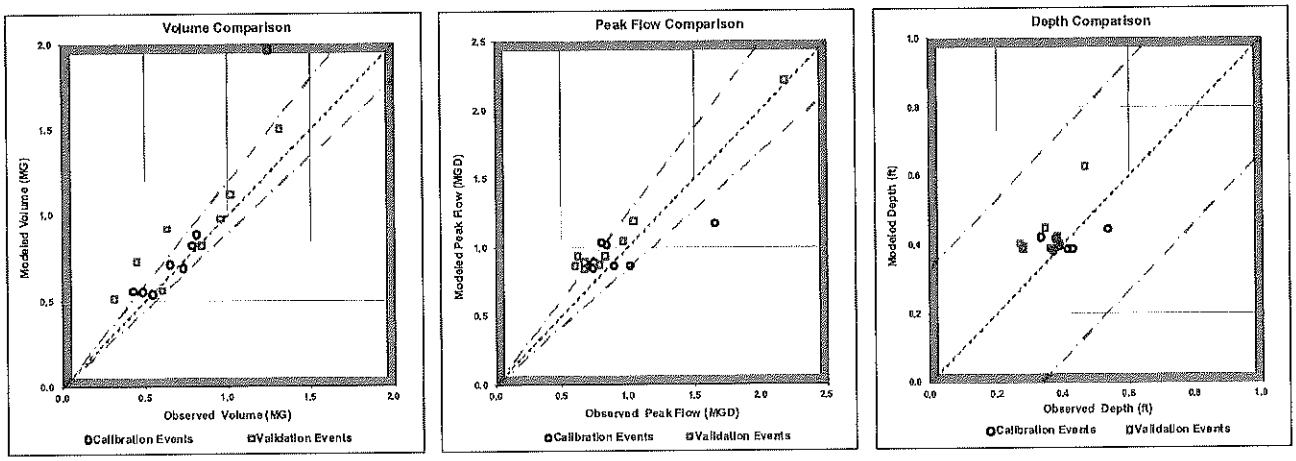


Figure 30: Primary Meter BC22 Wet Weather

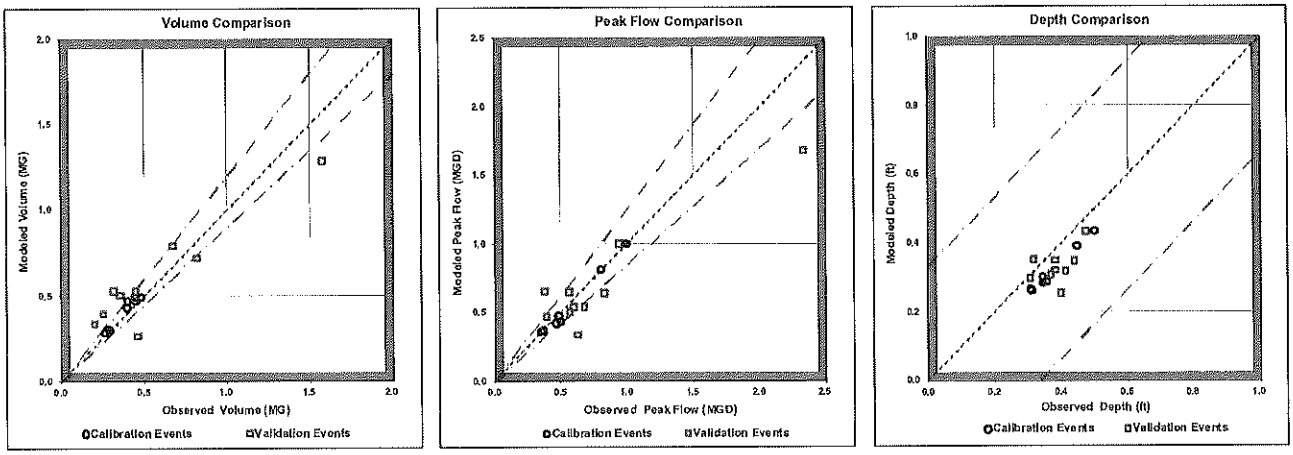


Figure 31: Primary Meter BC23 Wet Weather

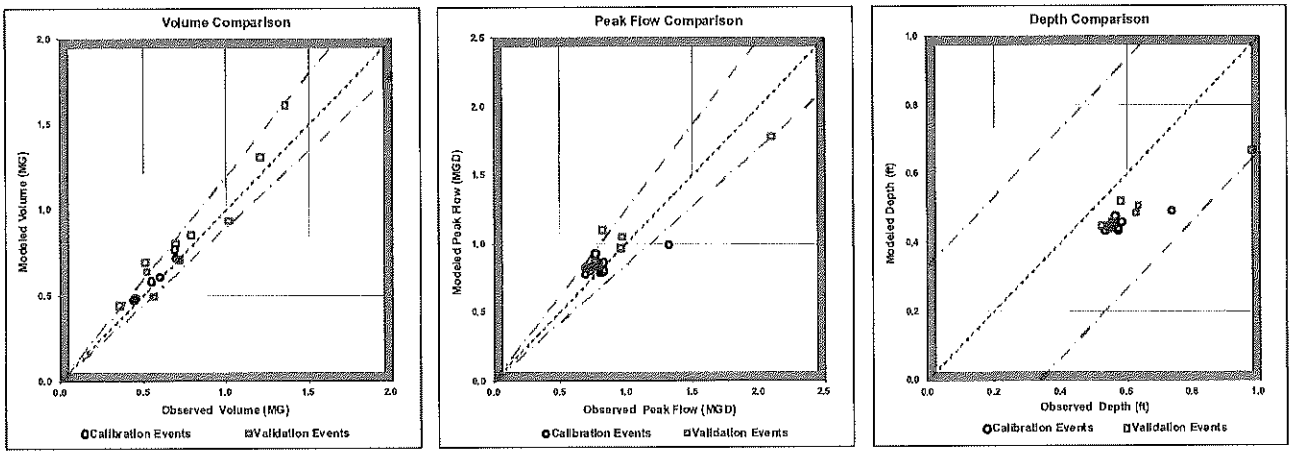


Figure 32: Primary Meter BC24 Wet Weather

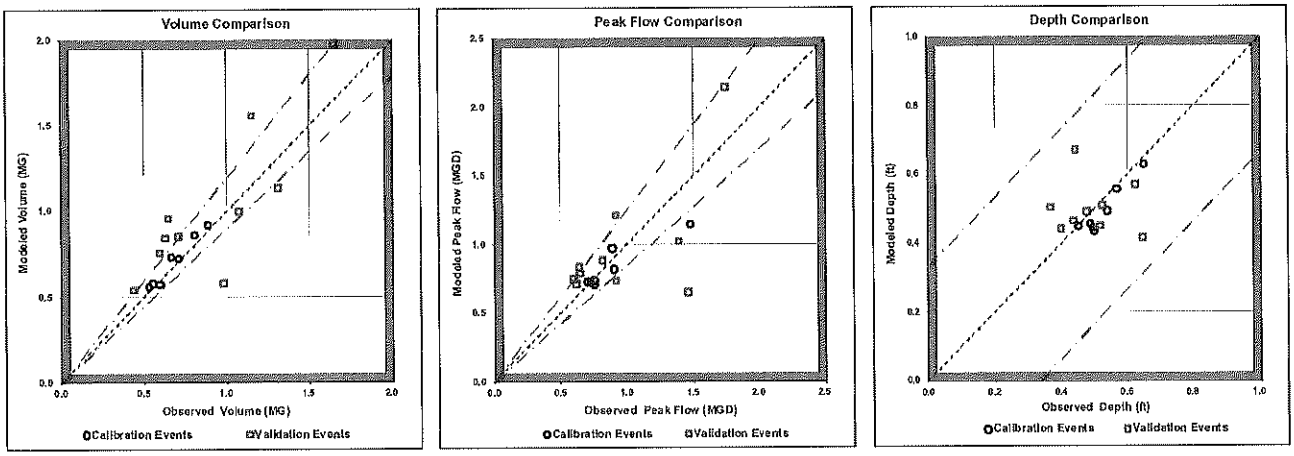


Figure 33: Primary Meter BC25 Wet Weather

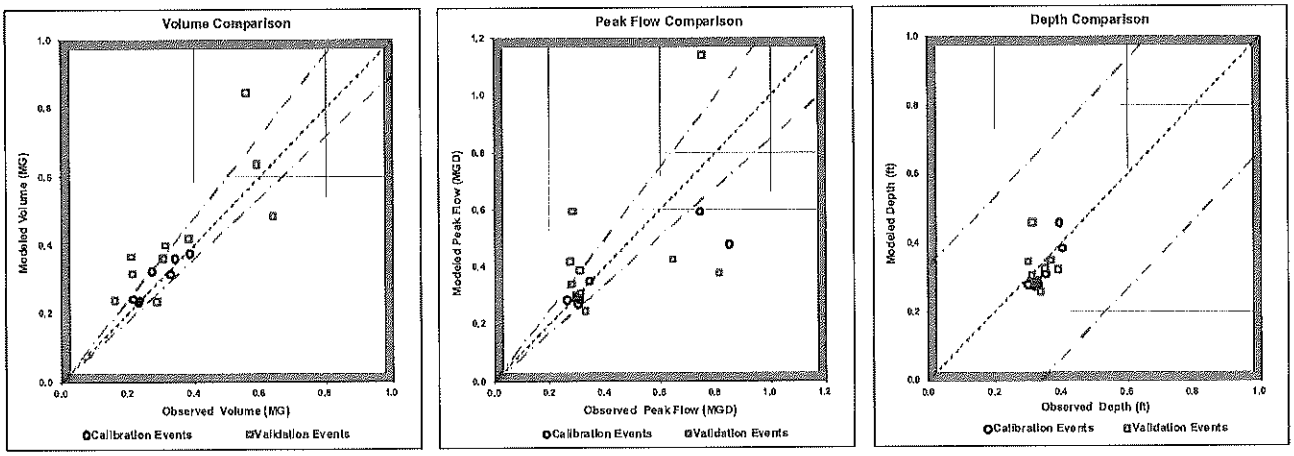


Figure 34: Primary Meter BC26 Wet Weather

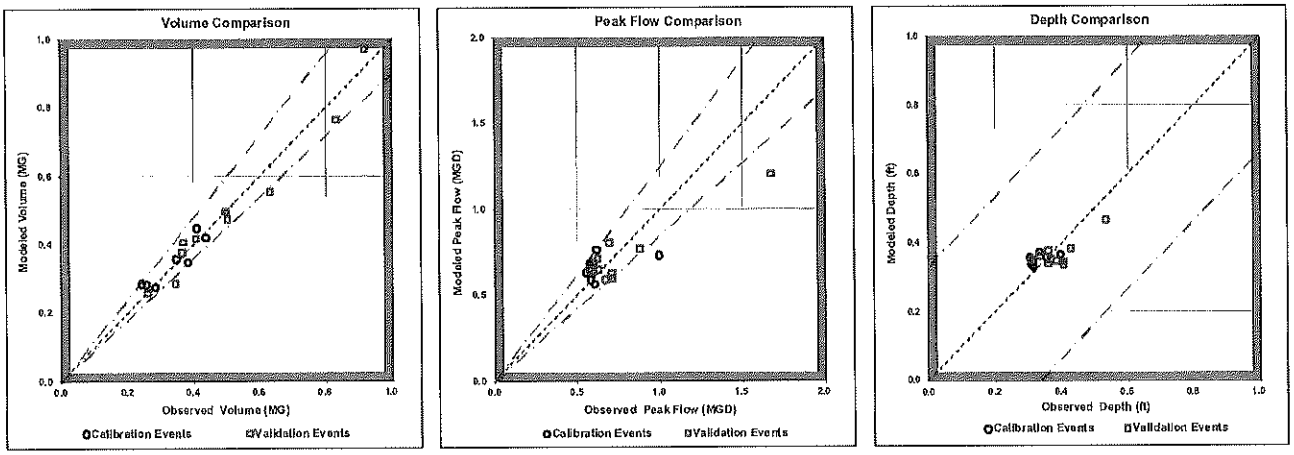


Figure 35: Primary Meter TSJF01 Wet Weather

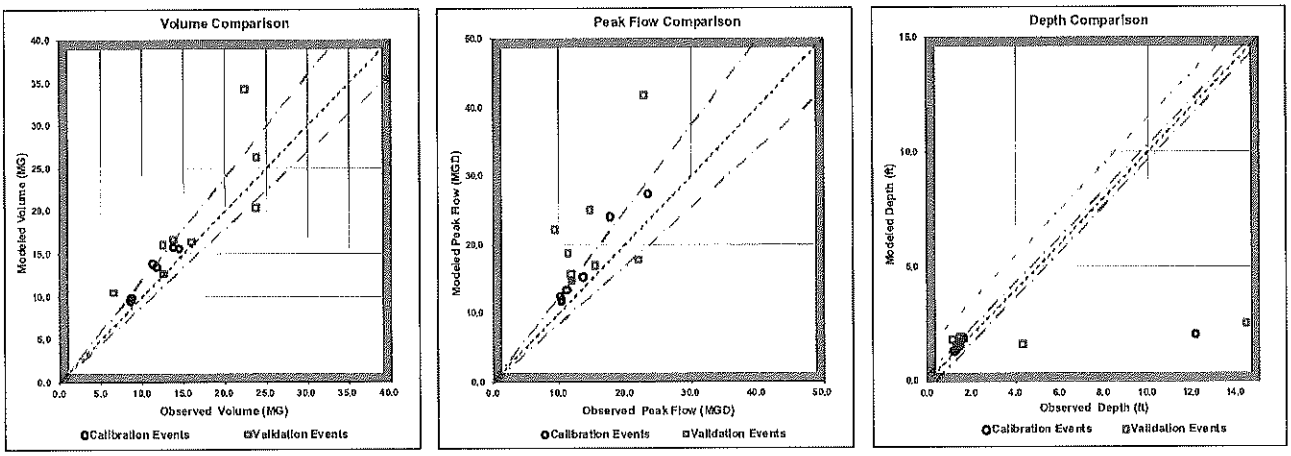


Table 4: Jones Falls Model Calibration Quality Summary - Boundary Meters

Meter Subbasin ID	Identified Exhibiting High I/I (yes/no)[1]	Contribution Meter		Dry Weather Calibration[3]		Wet Weather[3]			Vulnerability and Reason for Over/Under Prediction in Subbasin	
		Meter Subbasin ID[2]	Identified Exhibiting High I/I (yes/no)[1]	Percent Difference between Observed vs. Predicted		Total Number of Storms used for Calibration and Validation	Percent Difference between Observed vs. Predicted		Vulnerability	Reason
				Total Volume	Peak Flow		Total Volume	Peak Flow		
JF0320S	yes	--	--	2.7%	-37.3%	22	42.2%	41.6%	High	Over-predicted volume and peak flow but several large events close to or within range
JFWR09	no	--	--	0.9%	-30.5%	21	33.6%	38.0%	High	Over-predicted volume and peak flow
JFWR15	yes	--	--	6.0%	-13.7%	23	11.4%	16.3%	Low	
JFWR29	yes	--	--	2.9%	-13.1%	16	23.1%	1.3%	Medium	Over-predicted volume and peak flow
JFWR31	no	--	--	-4.3%	-22.3%	22	3.1%	37.6%	Medium	Over-predicted volume and peak flow
JFWR35	no	--	--	11.9%	-33.5%	20	36.8%	116.7%	High	Over-predicted volume and peak flow

1. It is based on R value in the calibrated model; "yes" if R value is greater than 0.04.

2. The immediate upstream meter.

3. Positive percentage means over-predicting and negative percentage means under-predicting.

4. Low = High confidence that model predictions are accurate (consider calibration quality and I/I analysis of basin and tributary basins, flow monitoring and/or modeling margins of error, supporting supplemental flow monitoring data, etc.).
High = Low confidence that model predictions are accurate.

5. No observed data available after 12/25/2006 for Meter JFWR29

Table 5: Jones Falls Model Calibration Quality Summary - Primary Meters

Meter Subbasin ID	Identified Exhibiting High I/I (yes/no)[1]	Contribution Meter		Dry Weather Calibration[3]		Wet Weather[3]			Vulnerability and Reason for Over/Under Prediction in Subbasin	
		Meter Subbasin ID[2]	Identified Exhibiting High I/I (yes/no)[1]	Percent Difference between Observed vs. Predicted		Total Number of Storms used for Calibration and Validation	Percent Difference between Observed vs. Predicted		Vulnerability	Reason
				Total Volume	Peak Flow		Total Volume	Peak Flow		
BC01	no	--	--	0.7%	-19.2%	16	12.8%	0.8%	Low	
BC02	no	--	--	-3.7%	-38.5%	16	15.4%	23.9%	Low	
BC03	yes	BC01, 02	no	16.2%	-22.8%	16	-2.9%	45.3%	Medium	Over-predicted peak flow
BC04	no	--	--	-3.4%	-24.8%	15	14.3%	23.2%	Low	
BC05	no	--	--	-2.0%	-21.2%	16	6.4%	-3.7%	Low	
BC06	no	--	--	1.6%	-11.5%	17	2.9%	-1.8%	Low	
BC07	no	BC08, 09, 10	no	11.6%	-9.6%	11	7.9%	63.2%	High	Over-predicted volume and peak flow
BC08	no	--	--	0.4%	-5.1%	14	18.0%	31.8%	Low	
BC09	no	BC03, 04	yes (BC03)	-14.9%	6.9%	15	-8.5%	51.3%	Medium	Under predicted volume and over-predicted peak flow
BC10	no	--	--	-3.3%	-17.5%	16	3.5%	14.1%	Low	
BC11	no	BC06, 07, 08	no	12.2%	-1.0%	14	12.4%	58.9%	Low	Metered flow exhibited random spikes
BC12	no	--	--	-3.7%	-15.7%	17	2.3%	-8.3%	Low	
BC13	no	--	--	-25.4%	-39.9%	16	3.5%	5.6%	Low	
BC14	no	--	--	-0.9%	-23.4%	17	4.9%	-9.2%	Low	
BC15	no	--	--	0.0%	-29.8%	14	25.0%	-4.6%	Low	
BC16	yes	BC12, 14	no	-2.0%	-15.2%	17	12.4%	12.0%	Low	
BC18	no	BC19, 20, 21, 22	no	1.1%	-2.7%	17	15.3%	10.6%	Low	
BC19	no	--	--	1.3%	-7.1%	17	3.4%	2.9%	Low	
BC20	no	BC24, 25	no	2.6%	-7.1%	17	14.6%	6.1%	Low	
BC21	no	BC23, 26	no	-3.9%	-10.1%	16	19.6%	14.6%	Low	
BC22	no	BC05	no	-0.7%	-17.7%	17	14.6%	-3.3%	Low	
BC23	no	BC26	no	1.2%	-5.7%	17	9.5%	6.8%	Low	
BC24	no	--	--	2.2%	-13.7%	17	10.4%	1.3%	Low	
BC25	no	--	--	0.7%	-19.9%	17	15.9%	4.1%	Low	
BC26	no	--	--	0.8%	-1.4%	17	0.0%	0.9%	Low	
TSJF01	no	BC11, 13, 15, 16, 18	yes (BC16)	-2.2%	-14.8%	15	17.8%	35.8%	Low	

1. It is based on R value in the calibrated model; "yes" if R value is greater than 0.04.

2. The immediate upstream meter.

3. Positive percentage means over-predicting and negative percentage means under-predicting.

4. Low = High confidence that model predictions are accurate (consider calibration quality and I/I analysis of basin and tributary basins, flow monitoring and/or modeling margins of error, supporting supplemental flow monitoring data, etc.).
High = Low confidence that model predictions are accurate.

Conclusions

This memorandum summarizes the evaluation of the Jones Falls InfoWorks hydrologic/hydraulic model, which was previously developed and calibrated in 2011. The County's Jones Falls sewershed model is comprised of two separate networks/files: 1) "boundary" model and 2) primary model. The boundary model is composed of several small sewer systems near the County/City line that each discharge flow into the City's sewer system. The primary model comprises the majority of the sewer system within the Jones Falls sewershed, and eventually discharges flow into the City's sewer system at a single location.

Each model was evaluated on the basis of calibration adequacy by simulating storms used for calibration purposes in 2011. Then, additional simulations of other historical storm events were also performed to validate the model. Validation of the model had not previously been performed. During this effort, the loading points (locations where flow is input into the modeled sewer system) in the model were also evaluated relative to the latest GIS data for the sewer system. The model was corrected at these locations by revising the loading locations and/or dividing model subcatchments into smaller polygons and redistributing the flows according to the GIS data.

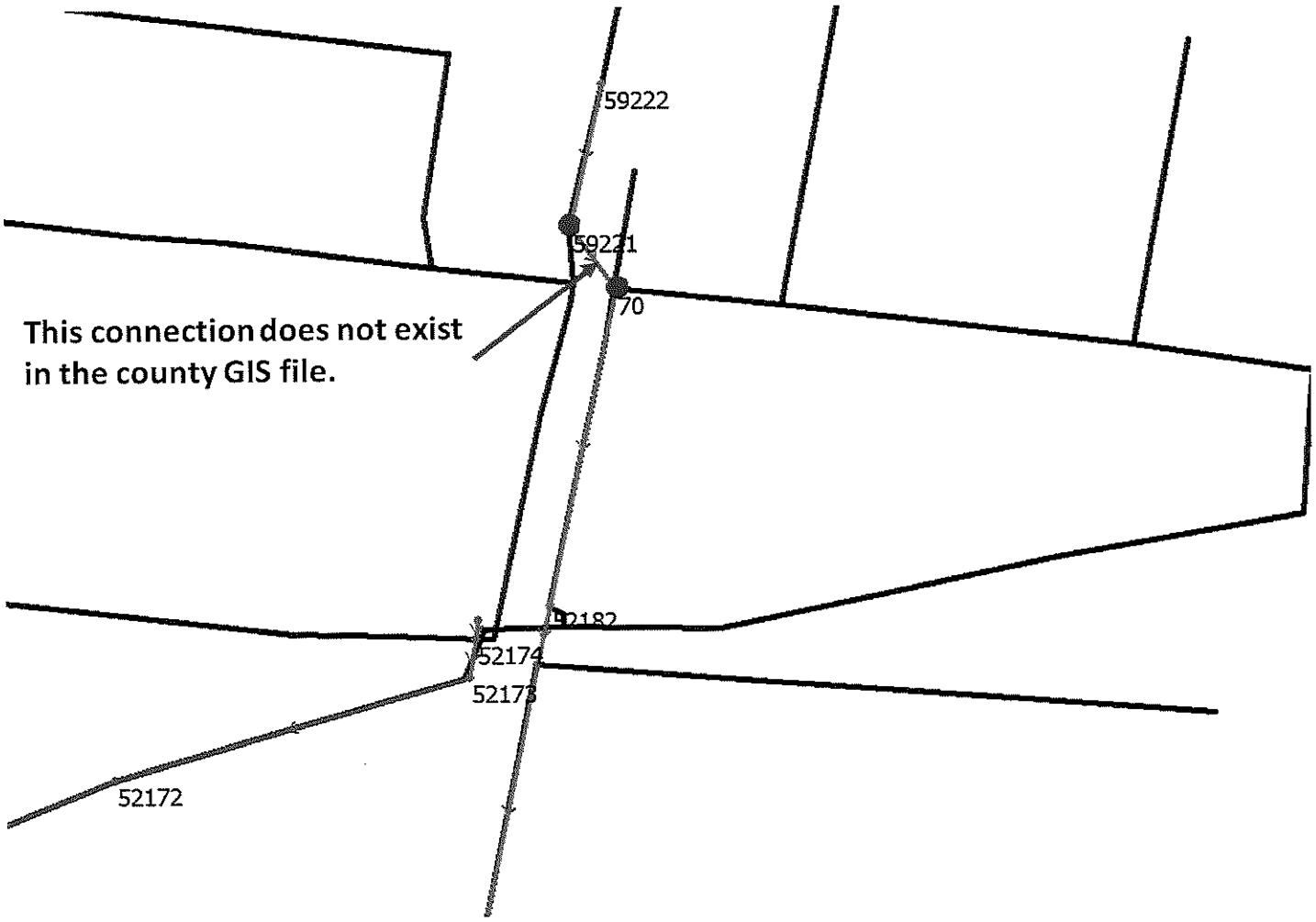
For the boundary model, meters JF0320S and JFWR29 were initially identified as being slightly biased with respect to the wet weather response in the sewer system, but upon evaluation of the totality of events (calibration and validation) meter JWR29 is considered adequately calibrated/validated. Meter JF0320S is still over-predicting volumes.

For the primary model, meters BC03, BC09 and BC13 were initially identified as being slightly biased with respect to the wet weather response in the sewer system when evaluating only the calibration events; however, if the validation events are considered as well, the errors generally fall within or close to the tolerance ranges.

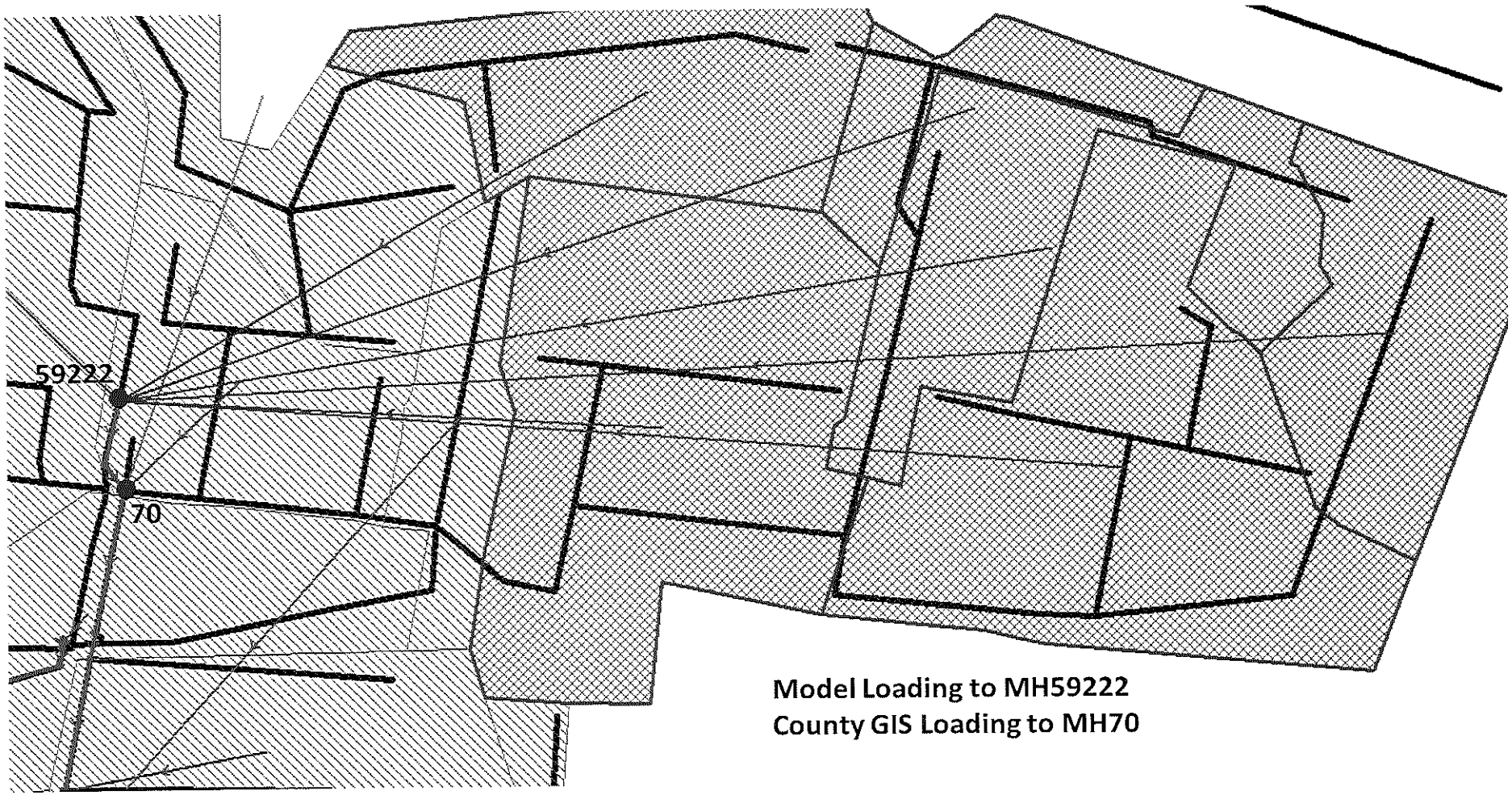
APPENDIX A

- The figures that follow and the findings they illustrate were incorporated into the Jones Falls model – the revised model results are presented in the memorandum accordingly

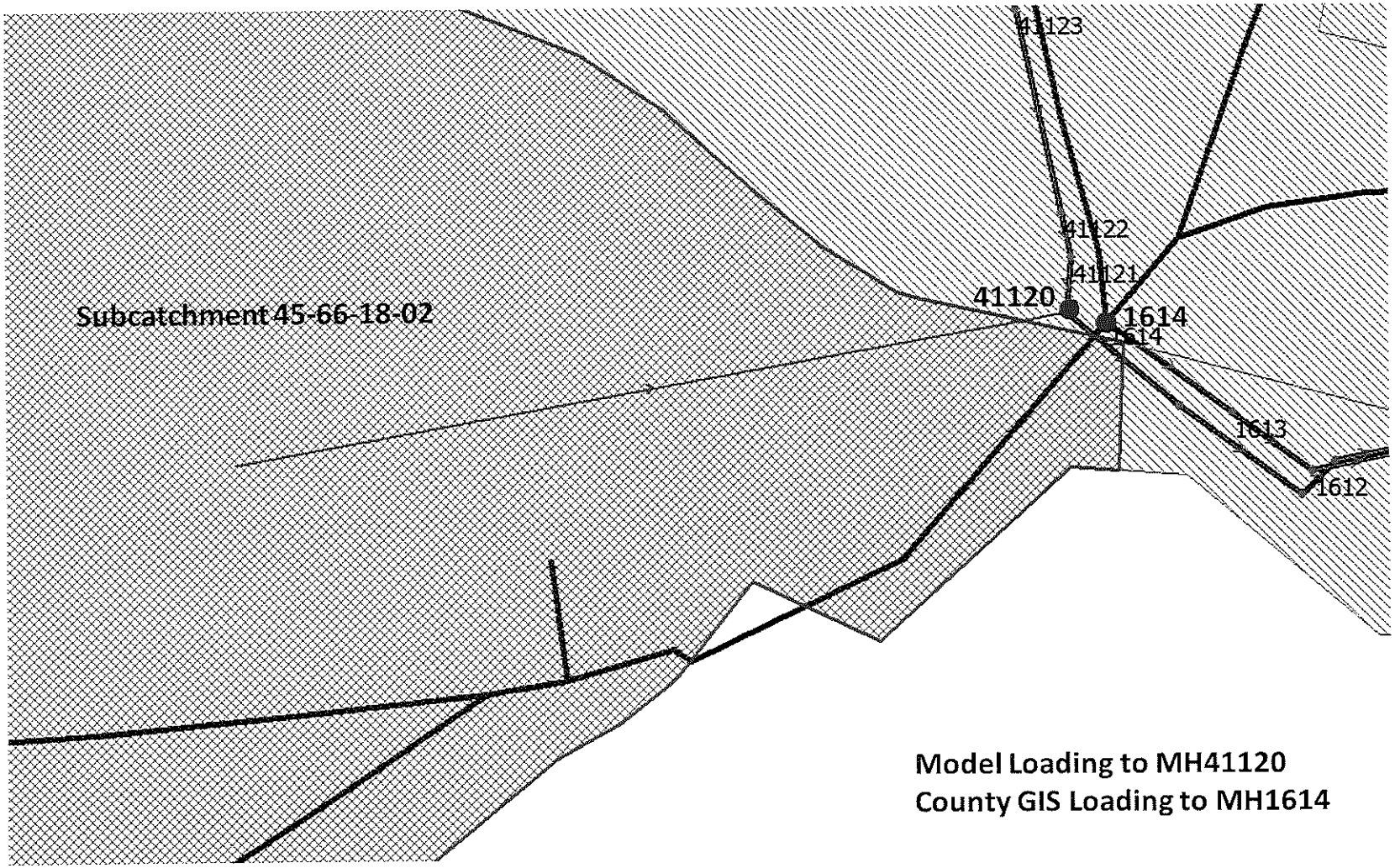
Wrong Connection from MH59221 to MH70



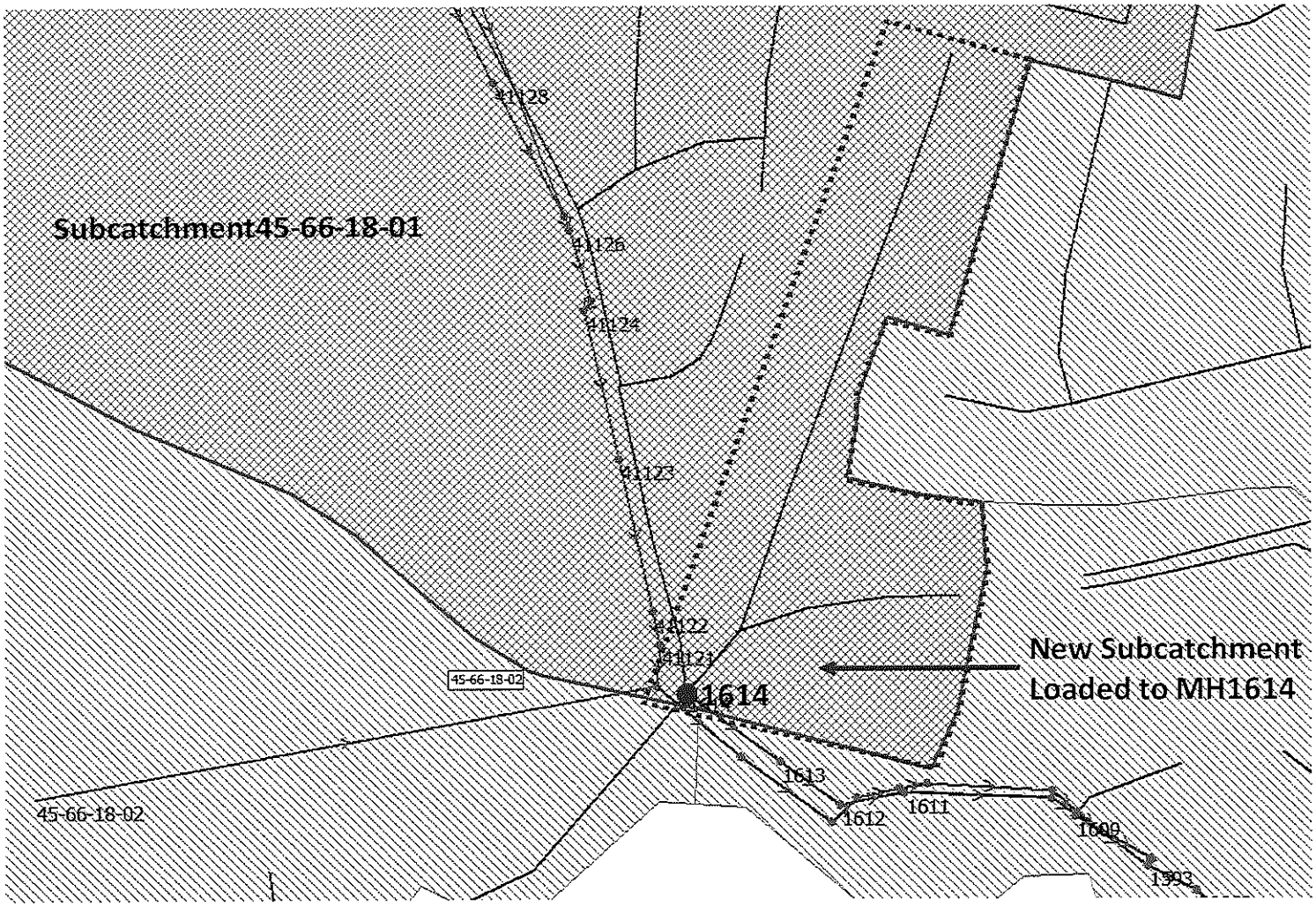
Wrong Loading Nodes for Subcatchments: 45-58-23-04,45-58-25-00, 45-58-26-01,45-58-26-02,45-58-27-00,45-58-28-00



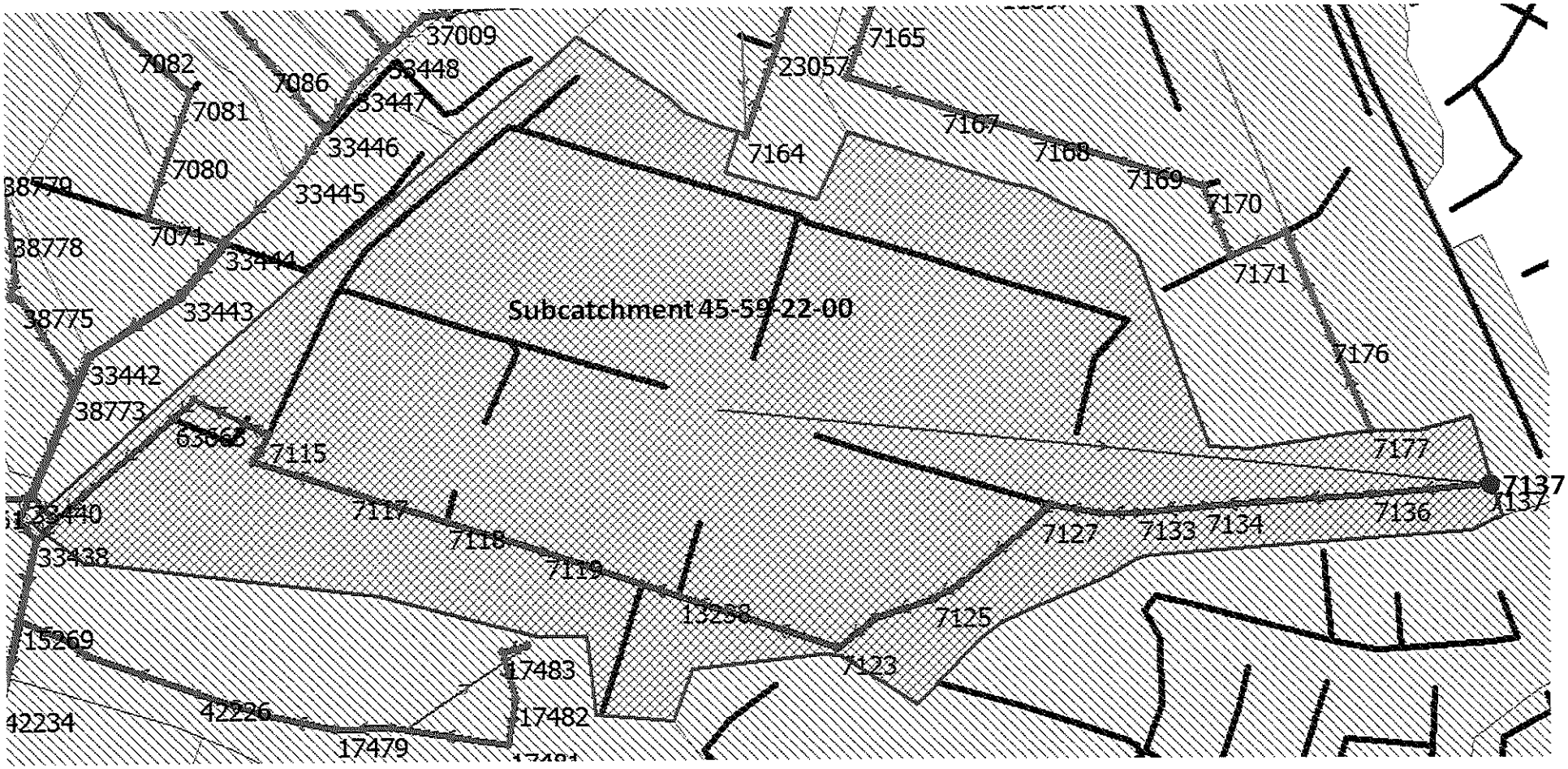
Wrong Loading Node for Subcatchment 45-66-18-02



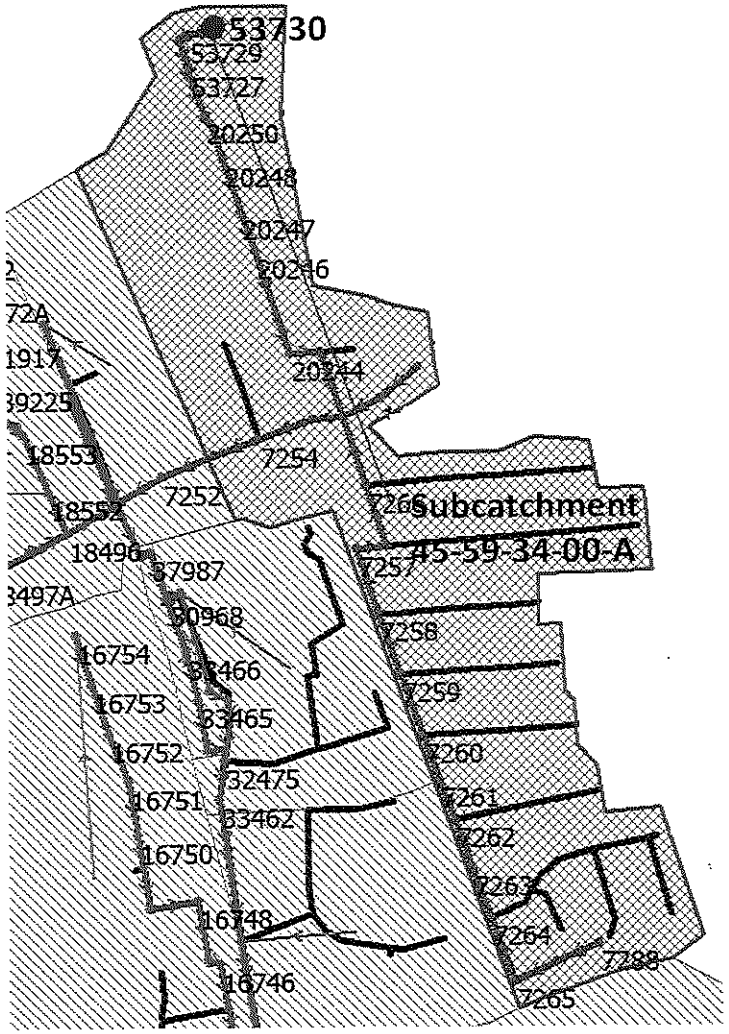
Subcatchment 45-66-18-01 Should be Split



Wrong Loading Node for Subcatchment 45-59-22-00, the subcatchment should be split



Subcatchment 45-59-34-00-A Should be Split



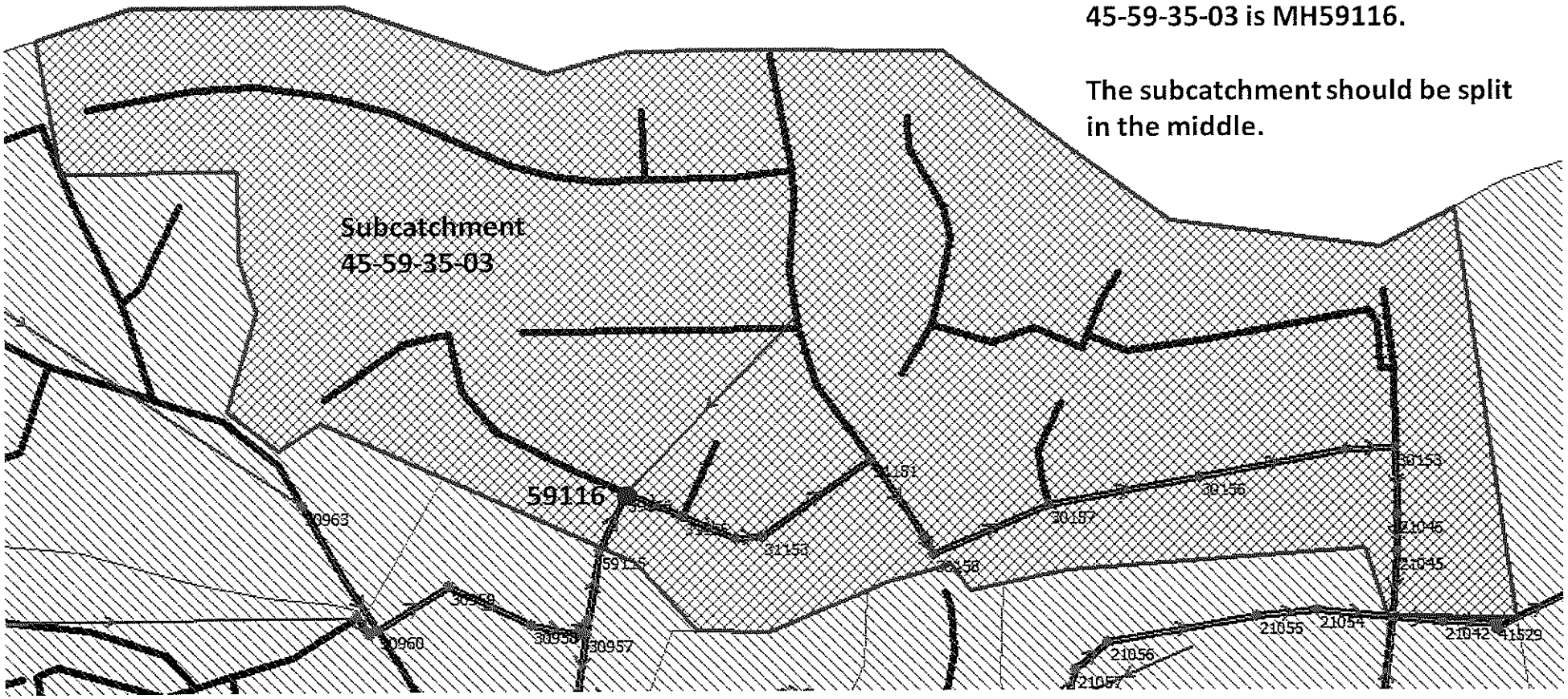
Loading node for subcatchment 45-59-34-00-A is MH53730.

The subcatchment should be split in the middle.

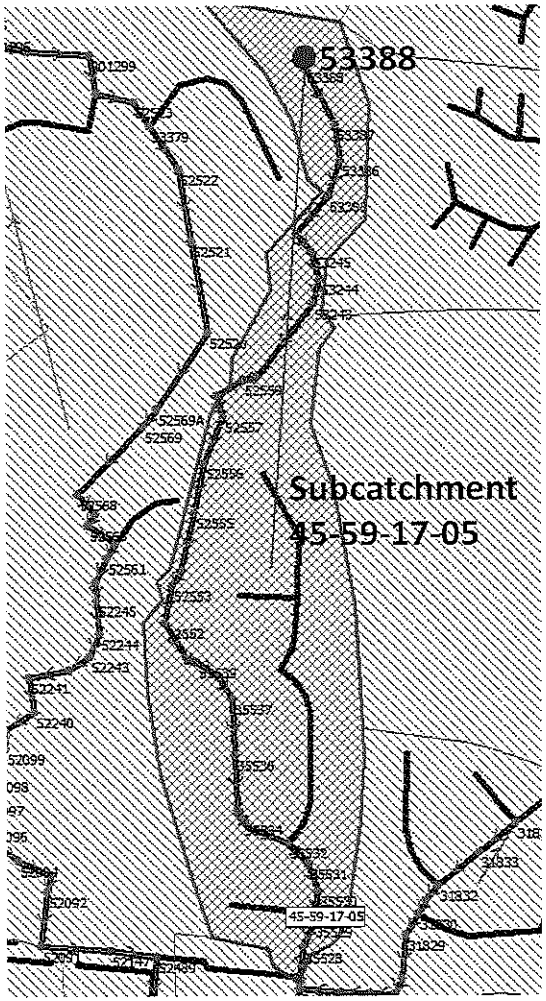
Subcatchment 45-59-35-03 Should be Split

Loading node for subcatchment 45-59-35-03 is MH59116.

The subcatchment should be split in the middle.



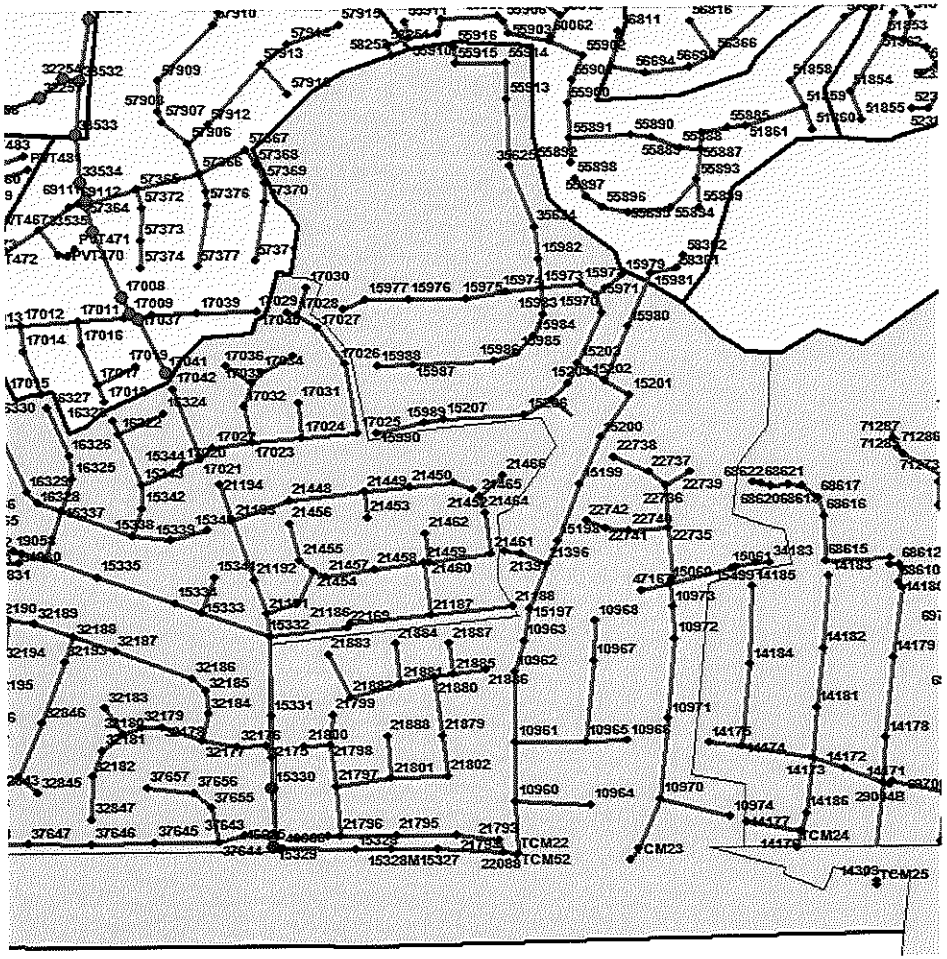
Subcatchment 45-59-17-05 Should be Split



Loading node for subcatchment 45-59-17-05 is MH53388.

The subcatchment should be split in the middle.

Missing a Subcatchment in the Boundary Network



County Model

Boundary Model

Jones Falls Sewshed

Bryan Bokey

From: Wilson, Charles <CWilson@hazenandsawyer.com>
Sent: Friday, September 09, 2016 11:26 AM
To: Bryan Bokey
Cc: Dave Bayer; Louisa Rettew; Lisa Eicholtz
Subject: RE: On-Call Modeling Task 2 - Jones Falls Model Evaluation
Attachments: Model Output Summary - Existing Conditions.xlsx; Model Output Summary - Future Conditions.xlsx

Hi Bryan,

Please find attached two Excel files. One summarizes the results for existing conditions and one summarizes the results for the future (2025) condition, which was created based on the population/employment data you provided. The "total peak flow" column in the second tab of each file represents the peak flow at the timestep during the model simulation in which an SSO is just about to occur, regardless of where in the system. There was a predicted SSO at a "loading node", however, that was ignored for the purpose of this analysis. We have often explained those away as an artifact of model resolution in many cases, and have done so here as well. The "X"s show locations where a pipe is surcharged during the storm (HGL above crown).

Please let me know if you'd like any other information on this or any follow up questions/clarifications.

Thanks,
Chuck

Charles Wilson, PE

Senior Associate | Hazen and Sawyer
24 Federal Street, 5th Floor, Boston, MA 02110
857 305-4075 (direct) | 774 535-3148 (cell)
cwilson@hazenandsawyer.com | hazenandsawyer.com

From: Bryan Bokey [mailto:bbokey@baltimorecountymd.gov]
Sent: Friday, August 26, 2016 8:44 AM
To: Wilson, Charles <CWilson@hazenandsawyer.com>
Cc: Dave Bayer <dbayer@baltimorecountymd.gov>; Louisa Rettew <lrettew@baltimorecountymd.gov>; Lisa Eicholtz <leicholtz@baltimorecountymd.gov>
Subject: RE: On-Call Modeling Task 2 - Jones Falls Model Evaluation

Chuck,

I have included the employment and population projections for Jones Falls with this email. Please incorporate these numbers in the model to account for future growth and revise these tables accordingly.

Thank you,

Bryan Bokey, PE
Project Engineer
Baltimore County DPW

PIA 23-172 Hazen - 00139

From: Wilson, Charles [mailto:CWilson@hazenandsawyer.com]
Sent: Wednesday, August 24, 2016 9:14 AM
To: Bryan Bokey <bbokey@baltimorecountymd.gov>
Cc: Dave Bayer <dbayer@baltimorecountymd.gov>; Louisa Rettew <lrettew@baltimorecountymd.gov>; Lisa Eicholtz <leicholtz@baltimorecountymd.gov>
Subject: RE: On-Call Modeling Task 2 - Jones Falls Model Evaluation

Hi Bryan,

Attached is what we have for option 1, but for existing conditions (no future growth included). We can certainly do the same tables for future growth, if you'd provide the future growth version of the Jones Falls InfoWorks model to us. When we worked on the on-call modeling task 002 back in 2014, the scope was an evaluation of the calibration only, so we only required the existing condition version of the model at that time – we don't currently have the future growth version in our possession. It's a quick turnaround now that we've dusted this off, however, so if you are able to obtain the future growth model we'll turn this around very quickly.

Thanks,
Chuck

Charles Wilson, PE

Senior Associate | Hazen and Sawyer
24 Federal Street, 5th Floor, Boston, MA 02110
857 305-4075 (direct) | 774 535-3148 (cell)
cwilson@hazenandsawyer.com | hazenandsawyer.com

From: Bryan Bokey [mailto:bbokey@baltimorecountymd.gov]
Sent: Tuesday, August 23, 2016 9:50 AM
To: Wilson, Charles <CWilson@hazenandsawyer.com>
Cc: Dave Bayer <dbayer@baltimorecountymd.gov>; Louisa Rettew <lrettew@baltimorecountymd.gov>; Lisa Eicholtz <leicholtz@baltimorecountymd.gov>
Subject: RE: On-Call Modeling Task 2 - Jones Falls Model Evaluation

Chuck,

After discussing with the team, we are going to go with 'option 1' for now. This will give us a record of all the pipes that are under capacity, for the future conditions, using your revised model.

Thanks again,

Bryan Bokey, PE
Project Engineer
Baltimore County DPW

From: Wilson, Charles [mailto:CWilson@hazenandsawyer.com]
Sent: Thursday, August 18, 2016 3:00 PM
To: Lisa Eicholtz <leicholtz@baltimorecountymd.gov>
Cc: Dave Bayer <dbayer@baltimorecountymd.gov>; Louisa Rettew <lrettew@baltimorecountymd.gov>; Bryan Bokey <bbokey@baltimorecountymd.gov>
Subject: RE: On-Call Modeling Task 2 - Jones Falls Model Evaluation

Hi Lisa,

PIA 23-172 Hazen - 00140

We are finished with populating 90% of the Appendix tables for Jones Falls. However, the last few columns of the 2nd table ("Major Gravity Sewer that Cannot Convey..") are populated in part based upon pipe segments that needed improvement (upsizing) in each storm event. Since we don't currently have the InfoWorks files for improvement networks/models, we can't readily populate those columns.

Thus,

Option 1: submit what we have now, or
Option 2: ask for the final improvement models, and then finish populating the second table

Thanks,
Chuck

Charles Wilson, PE

Senior Associate | Hazen and Sawyer
24 Federal Street, 5th Floor, Boston, MA 02110
857 305-4075 (direct) | 774 535-3148 (cell)
cwilson@hazenandsawyer.com | hazenandsawyer.com

From: Lisa Eicholtz [mailto:leicholtz@baltimorecountymd.gov]
Sent: Tuesday, July 19, 2016 9:08 AM
To: Wilson, Charles <CWilson@hazenandsawyer.com>
Cc: Dave Bayer <dbayer@baltimorecountymd.gov>; Louisa Rettew <lrettew@baltimorecountymd.gov>; Bryan Bokey <bbokey@baltimorecountymd.gov>
Subject: On-Call Modeling Task 2 - Jones Falls Model Evaluation

Chuck,

Good morning! We have a follow up request from the Jones Falls Model Evaluation Task (JO 201-0077-7126). For the Jones Falls Sewershed, please prepare tables like those I have attached from South Area reports.

Please let us know if you have any questions or need additional information.

Lisa

Lisa Eicholtz, PE
Baltimore County
Department of Public Works
111 W. Chesapeake Ave
Towson, MD 21204
410-887-3781

CONNECT WITH BALTIMORE COUNTY

PIA 23-172 Hazen - 00141

ones Falls - Modeled Capacity Restrictions - Existing Conditio

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
14546-7188	BC04	45-59-30-02	8	24.6	0.59	0.54	-0.05	91.75	x	x	x	x	x
14547-14546	BC04	45-59-30-02	8	266.8	1.32	0.54	-0.78	41.14	x	x	x	x	x
14548-14547	BC04	45-59-30-02	8	370.7	1.71	0.55	-1.16	32.36		x	x	x	x
1508-1507	BC12	45-58-09-01	8	158.9	0.78	0.24	-0.54	31.01			x	x	x
15871-6936	TSJF01	45-59-08-00	30	54.7	17.56	5.62	-11.94	32.02	x	x	x	x	x
1593-29862	BC24	45-66-17-00	12	140.4	0.43	0.30	-0.13	68.63			x	x	x
16379-16379N	TSJF01	45-51-00-00	42	79.7	20.88	7.24	-13.64	34.67	x	x	x	x	x
16379N-6877	TSJF01	45-51-00-00	42	175.5	21.44	7.21	-14.23	33.61	x	x	x	x	x
16401-C445	BC09	45-59-27-00	8	182	0.50	0.45	-0.05	90.90	x	x	x	x	x
16402-16401	BC09	45-59-27-00	8	240.1	0.49	0.47	-0.02	94.92	x	x	x	x	x
16404-16403	BC09	45-59-27-00	8	160.8	0.97	0.48	-0.49	49.86	x	x	x	x	x
16596-7333	BC12	45-58-06-01	10	122.6	1.00	0.16	-0.84	16.40					x
16743-16742	BC09	45-59-31-00	8	307.3	0.63	0.18	-0.45	29.29	x	x	x	x	x
16747-16746	BC09	45-59-31-00	8	69.7	0.66	0.21	-0.45	31.12	x	x	x	x	x
16752-16751	BC09	45-59-31-00	8	285.6	0.55	0.23	-0.32	41.04	x	x	x	x	x
16753-16752	BC09	45-59-31-00	8	281.9	0.55	0.24	-0.31	42.98	x	x	x	x	x
16754-16753	BC09	45-59-31-00	8	283.2	0.49	0.25	-0.24	50.31	x	x	x	x	x
17479-42227	BC09	45-59-21-00	8	234.2	0.79	0.25	-0.54	31.91		x	x	x	x
17480-17479	BC09	45-59-21-00	8	195.1	1.10	0.26	-0.84	23.57			x	x	x
17483-17482	BC09	45-59-21-00	8	171.1	1.63	0.27	-1.36	16.50				x	x
17484-17483	BC09	45-59-21-00	8	87.5	1.09	0.27	-0.82	24.86			x	x	x
17750-17749	TSJF01	45-55-01-00	12	149.7	1.49	0.22	-1.27	14.87		x	x	x	x
17751-17750	TSJF01	45-55-01-00	12	310.2	1.38	0.23	-1.15	16.59		x	x	x	x
17752-34447	TSJF01	45-55-01-00	12	84.1	1.28	0.20	-1.08	15.41		x	x	x	x
17753-17752	TSJF01	45-55-01-00	12	131	1.51	0.20	-1.31	13.32			x	x	x
17754-17753	TSJF01	45-55-01-00	12	257	1.51	0.21	-1.30	13.75			x	x	x
17755-17754	TSJF01	45-55-02-00	12	70.5	1.40	0.22	-1.18	15.70		x	x	x	x
17756-17755	TSJF01	45-55-02-00	12	172.2	1.10	0.17	-0.93	15.70		x	x	x	x
17757-17756	TSJF01	45-55-02-00	12	67.8	1.90	0.18	-1.72	9.48				x	x
17759-17758	TSJF01	45-55-01-00	12	180.6	1.27	0.18	-1.09	14.47			x	x	x
17762-17761	TSJF01	45-55-01-00	12	213.8	4.35	0.20	-4.15	4.61					x
17764-17763	TSJF01	45-55-02-00	12	107	2.76	0.21	-2.55	7.67					x
18202-6885	TSJF01	45-55-01-00	12	133.7	1.79	0.21	-1.58	11.47			x	x	x
18241-7311	BC16	45-58-03-00	21	327.4	7.28	1.82	-5.46	24.98				x	x
18298A-18298	BC07	45-59-18-00	8	63.4	0.43	0.07	-0.36	16.86				x	x
18299-18298A	BC07	45-59-18-00	8	85.6	0.46	0.07	-0.39	16.04				x	x
18300-18299	BC07	45-59-18-00	8	407.4	0.49	0.08	-0.41	15.35				x	x
18452-6928	TSJF01	45-59-05-01	42	167.7	7.10	5.23	-1.87	73.62		x	x	x	x
18479-18478	BC13	45-59-05-03	8	207	1.37	0.22	-1.15	16.15				x	x
18480-18479	BC13	45-59-05-03	8	263.5	1.11	0.22	-0.89	20.14		x	x	x	x
18481-18480	BC13	45-59-05-03	8	317.2	1.34	0.23	-1.11	17.04				x	x

PIA 20-173 Item 1 00142

ones Falls - Modeled Capacity Restrictions - Existing Conditio

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
18481A-18481	BC13	45-59-05-03	8	89.7	1.40	0.23	-1.17	16.59				x	x
18482-18481A	BC13	45-59-05-03	8	94.3	1.30	0.23	-1.07	17.95			x	x	x
18483-18482	BC13	45-59-05-03	8	90.2	1.40	0.24	-1.17	16.79				x	x
18484-18483	BC13	45-59-05-03	8	239.9	1.36	0.24	-1.12	17.38				x	x
18485-18484	BC13	45-59-05-03	8	236.9	1.49	0.24	-1.25	16.08				x	x
18486-18485	BC13	45-59-05-03	8	157.1	1.27	0.24	-1.03	19.06			x	x	x
18496-901391	BC01	45-59-35-01	15	230.1	1.34	0.26	-1.08	19.64		x	x	x	x
18497-19001	BC01	45-59-35-01	8	73.1	0.48	0.04	-0.44	9.15					x
18517-18486	BC13	45-59-05-03	8	341.1	1.47	0.25	-1.23	16.67				x	x
18586-902012	BC11	45-59-16-01	24	12.6	10.73	6.42	-4.31	59.79	x	x	x	x	x
18588-18587	BC11	45-59-16-01	8	119	0.61	0.05	-0.56	8.84					x
18589-18588	BC11	45-59-16-01	8	142.5	0.60	0.05	-0.55	9.15					x
18591-18590	BC11	45-59-16-01	8	150.1	0.61	0.06	-0.55	9.56					x
18592-18591	BC11	45-59-16-01	8	194.9	0.61	0.06	-0.55	9.82					x
18593-18592	BC11	45-59-16-01	8	285.5	0.60	0.06	-0.54	10.33					x
19001-18496	BC01	45-59-35-01	8	151.4	0.50	0.04	-0.46	8.50					x
19141-7308	BC16	45-58-03-00	21	83.9	11.40	2.83	-8.57	24.80				x	x
19143-22225	BC14	45-58-04-00	21	94.1	4.35	1.14	-3.21	26.24				x	x
19706-6947	BC11	45-59-13-00	24	186.9	16.10	6.29	-9.81	39.09	x	x	x	x	x
19711-19808	BC11	45-59-12-00	8	65.3	0.49	0.03	-0.46	7.06					x
19715-19714	BC11	45-59-12-00	8	389.5	0.49	0.04	-0.45	7.86					x
19808-19707	BC11	45-59-12-00	8	196.1	0.49	0.03	-0.46	6.67					x
19873-6955	BC11	45-59-16-01	24	224.5	11.35	6.50	-4.85	57.25	x	x	x	x	x
19876-19875	BC08	45-59-17-01	12	236	1.73	0.52	-1.21	29.95	x	x	x	x	x
19910-17762	TSJF01	45-55-02-00	12	154.7	3.43	0.20	-3.23	5.96					x
20244-7289	BC02	45-59-34-00	8	156.6	0.50	0.17	-0.33	34.40	x	x	x	x	x
20246-3	BC02	45-59-34-00	8	398	0.48	0.18	-0.30	37.96	x	x	x	x	x
20247-20246	BC02	45-59-34-00	8	221.9	0.49	0.19	-0.30	39.02	x	x	x	x	x
20753-21328	TSJF01	45-60-00-00	30	494.7	8.76	1.97	-6.79	22.53			x	x	x
20754-20753	TSJF01	45-60-00-00	30	760.3	1.77	1.98	0.21	112.11	x	x	x	x	x
20755-20754	TSJF01	45-60-00-00	30	529.8	8.76	1.92	-6.84	21.90			x	x	x
20756-20755	TSJF01	45-60-00-00	30	577.4	5.78	1.83	-3.95	31.68	x	x	x	x	x
20757-20756	TSJF01	45-60-00-00	30	322.5	4.99	1.86	-3.13	37.27	x	x	x	x	x
20758-20757	TSJF01	45-60-00-00	30	371.3	6.00	1.88	-4.12	31.35	x	x	x	x	x
20759-20758	TSJF01	45-60-00-00	30	630.5	5.53	1.91	-3.62	34.53	x	x	x	x	x
20760-20759	TSJF01	45-60-00-00	30	476.3	5.75	1.96	-3.79	34.13	x	x	x	x	x
20761-20760	TSJF01	45-60-00-00	27	415.8	8.89	2.01	-6.88	22.65			x	x	x
20762-21329	BC18	45-63-00-00	27	395.3	8.72	1.68	-7.04	19.24			x	x	x
20764-20763	BC18	45-64-00-00	27	597.1	8.55	1.61	-6.94	18.86				x	x
20771-20770	BC20	45-66-01-00	18	536.2	3.80	0.76	-3.04	19.88			x	x	x
20772-20771	BC20	45-66-01-00	15	599.5	4.55	0.76	-3.79	16.78				x	x

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ones Falls - Modeled Capacity Restrictions - Existing Conditio

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
20773-20772	BC20	45-66-01-00	15	476	4.54	0.76	-3.78	16.74				x	x
20774-20773	BC20	45-66-03-00	15	598.6	4.19	0.77	-3.42	18.30				x	x
20782-41252	BC20	45-66-08-00	15	254.2	2.55	0.72	-1.83	28.37		x	x	x	x
20783-56667	BC20	45-66-07-00	15	141.1	3.47	0.72	-2.75	20.71				x	x
21044-21043	BC01	45-59-35-05	8	295.1	0.78	0.10	-0.68	12.35			x	x	x
21059-21044	BC01	45-59-35-05	8	97.2	0.79	0.08	-0.71	9.80				x	x
21060-21059	BC01	45-59-35-06	8	362.6	0.78	0.08	-0.70	10.12				x	x
21062-21061	BC01	45-59-35-06	8	166.4	0.79	0.09	-0.70	10.99				x	x
21063-21062	BC01	45-59-35-06	8	228.1	0.79	0.09	-0.70	11.34				x	x
21064-21063	BC01	45-59-35-06	8	333.3	0.72	0.07	-0.65	9.07					x
21066-21065	BC01	45-59-35-07	8	112	0.73	0.07	-0.66	9.55					x
21067-21066	BC01	45-59-35-07	8	114.5	0.74	0.07	-0.67	9.61					x
21329-20761	BC19	45-62-01-00	27	401.1	8.83	1.69	-7.14	19.14			x	x	x
21622-52551	BC08	45-59-17-03	8	117.4	1.30	0.49	-0.81	37.58	x	x	x	x	x
21627-21626	BC08	45-59-17-03	8	100.1	0.60	0.19	-0.41	31.40	x	x	x	x	x
21628-21627	BC08	45-59-17-03	8	115.6	0.44	0.19	-0.25	43.14	x	x	x	x	x
21629-21628	BC08	45-59-17-03	8	149.6	0.49	0.19	-0.30	39.10	x	x	x	x	x
21630-21629	BC08	45-59-17-03	8	140.8	0.49	0.19	-0.30	39.53	x	x	x	x	x
21631-21630	BC08	45-59-17-03	8	153.6	0.50	0.20	-0.30	39.14	x	x	x	x	x
21642-21641	BC08	45-59-17-04	8	93.4	0.61	0.31	-0.30	50.38	x	x	x	x	x
21643-21642	BC08	45-59-17-04	8	134.1	0.60	0.31	-0.29	51.62	x	x	x	x	x
21645-21643	BC08	45-59-17-04	8	65.9	0.61	0.31	-0.30	51.46	x	x	x	x	x
21646-21645	BC08	45-59-17-04	8	96	0.60	0.32	-0.28	52.70	x	x	x	x	x
21651-21649	BC08	45-59-17-04	8	334.7	0.60	0.33	-0.27	54.48	x	x	x	x	x
21652-21651	BC08	45-59-17-04	8	230.9	0.49	0.32	-0.17	64.43	x	x	x	x	x
21653-21652	BC08	45-59-17-04	8	173.5	0.50	0.23	-0.27	46.84	x	x	x	x	x
21654-21653	BC08	45-59-17-06	8	125.3	0.49	0.24	-0.25	48.98	x	x	x	x	x
21806-21805	BC09	45-59-29-00	8	106.6	0.60	0.38	-0.22	64.00	x	x	x	x	x
21807-21806	BC09	45-59-29-00	8	269.2	0.61	0.39	-0.22	63.38	x	x	x	x	x
22009-6957	BC07	45-59-17-01	24	129.9	13.03	6.12	-6.91	46.94	x	x	x	x	x
22010-22009	BC07	45-59-18-00	24	60.3	11.99	6.07	-5.92	50.64	x	x	x	x	x
22011-22010	BC07	45-59-18-00	24	322.7	14.74	6.08	-8.66	41.25	x	x	x	x	x
22012-22011	BC07	45-59-19-00	24	327.3	14.71	6.14	-8.57	41.71	x	x	x	x	x
22013-22012	BC07	45-59-19-00	24	267.4	15.07	6.20	-8.87	41.13		x	x	x	x
22222-7314	BC16	45-58-05-00	21	64.9	6.07	1.41	-4.66	23.31				x	x
22223-22222	BC16	45-58-05-00	21	340.1	5.79	1.42	-4.37	24.53			x	x	x
23057-7162	BC04	45-59-30-01	8	94	0.56	0.09	-0.47	16.52					x
23777-23776	BC13	45-59-05-03	8	251.3	0.83	0.10	-0.73	12.60				x	x
23778-23777	BC13	45-59-05-03	8	131.7	0.61	0.11	-0.50	17.75			x	x	x
23779-23778	BC13	45-59-05-04	8	26.4	0.64	0.11	-0.53	17.31			x	x	x
2402-901892	BC12	45-58-06-02	6	607.7	0.66	0.17	-0.49	26.26				x	x

ɔnes Falls - Modeled Capacity Restrictions - Existing Conditio.

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
2405-2404	BC12	45-58-06-02	8	398.6	0.46	0.14	-0.32	30.65			x	x	x
29644-37991	BC03	45-59-34-00	8	8	0.55	1.05	0.50	191.00	x	x	x	x	x
29862-29861	BC24	45-66-17-00	10	180.1	0.78	0.29	-0.49	37.71			x	x	x
3-20244	BC02	45-59-34-00	8	193	0.49	0.18	-0.31	36.31	x	x	x	x	x
30153-21046	BC01	45-59-35-03	8	166.8	0.48	0.16	-0.32	33.06	x	x	x	x	x
30155-30153	BC01	45-59-35-03	8	117.4	0.52	0.13	-0.39	25.52			x	x	x
30156-30155	BC01	45-59-35-03	8	370.7	0.73	0.13	-0.60	18.34				x	x
30157-30156	BC01	45-59-35-03	8	374	0.60	0.14	-0.46	22.98				x	x
30158-30157	BC01	45-59-35-03	8	305.3	0.61	0.14	-0.47	23.33				x	x
30159-30158	BC01	45-59-35-03	8	51.2	0.58	0.15	-0.43	25.09				x	x
30726-20776	BC20	45-66-03-00	15	591.4	4.20	0.77	-3.43	18.26				x	x
30953-31001	BC01	45-59-35-08	8	112.2	0.51	0.05	-0.46	9.61				x	x
30957-30953	BC01	45-59-35-08	8	148.6	0.61	0.05	-0.56	8.28				x	x
30959-30958	BC01	45-59-35-08	8	224.3	0.93	0.17	-0.76	17.95				x	x
30960-30959	BC01	45-59-35-08	8	203.4	0.92	0.17	-0.75	18.42				x	x
31001-21071	BC01	45-59-35-07	8	84.6	0.54	0.05	-0.49	8.89				x	x
31151-30159	BC01	45-59-35-03	8	230.5	0.61	0.15	-0.46	23.97				x	x
31829-31828	BC08	45-59-17-06	8	186.8	0.78	0.25	-0.53	31.87	x	x	x	x	x
31831-31830	BC08	45-59-17-06	8	70.4	0.85	0.26	-0.59	30.20	x	x	x	x	x
31832-31831	BC08	45-59-17-06	8	81.5	0.89	0.26	-0.63	29.16	x	x	x	x	x
32254-33532	BC25	45-66-09-02	12	80.8	0.60	0.26	-0.34	43.38			x	x	x
32257-32254	BC25	45-66-09-02	12	147.6	1.03	0.26	-0.77	25.49			x	x	x
32258-32257	BC25	45-66-09-02	12	335	0.91	0.27	-0.64	29.20			x	x	x
33527-20783	BC20	45-66-08-00	15	95.3	2.88	0.72	-2.16	25.06			x	x	x
33528-33527	BC20	45-66-08-00	12	125	1.53	0.28	-1.25	18.38				x	x
33529-33528	BC25	45-66-09-02	12	34.2	1.23	0.28	-0.95	23.06			x	x	x
33530-33529	BC25	45-66-09-02	10	243.2	1.58	0.28	-1.30	18.01					x
33532-33531	BC25	45-66-09-02	10	314.8	1.79	0.29	-1.50	16.26					x
33707-20761	BC19	45-62-01-00	12	191.8	0.62	0.36	-0.26	58.15	x	x	x	x	x
34209-31835	BC08	45-59-17-07	8	230.4	0.60	0.21	-0.39	34.20	x	x	x	x	x
34210-34209	BC08	45-59-17-07	8	403.8	0.60	0.22	-0.38	36.03	x	x	x	x	x
34211-34210	BC08	45-59-17-07	8	301.1	0.61	0.23	-0.38	37.02	x	x	x	x	x
34212-34211	BC08	45-59-17-07	8	89.7	0.63	0.23	-0.40	36.86	x	x	x	x	x
34216-34215	BC08	45-59-17-07	8	92.9	1.38	0.24	-1.14	17.72				x	x
34447-17751	TSJF01	45-55-01-00	12	215.4	1.53	0.24	-1.29	15.78		x	x	x	x
38452-36953	BC26	45-68-15-01	8	269.3	0.25	0.25	0.00	100.96	x	x	x	x	x
38464-38463	BC26	45-68-16-01	8	197.4	0.20	0.02	-0.18	12.20	x	x	x	x	x
38525-6952	BC07	45-59-14-00	24	156.9	11.66	6.44	-5.22	55.24	x	x	x	x	x
38582-38581	BC09	45-59-29-00	8	198.4	0.96	0.39	-0.57	41.01		x	x	x	x
38774-38773	BC09	45-59-24-00	8	58.8	0.51	0.24	-0.27	46.92		x	x	x	x
38775-38774	BC09	45-59-24-00	8	313.2	0.83	0.24	-0.59	29.05			x	x	x

ones Falls - Modeled Capacity Restrictions - Existing Condition

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									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
38777-38776	BC09	45-59-24-00	8	58	0.78	0.25	-0.53	31.91		x	x	x	x
38778-38777	BC09	45-59-24-00	8	177.5	0.79	0.25	-0.54	31.71		x	x	x	x
38779-38778	BC09	45-59-24-00	8	217.8	0.92	0.25	-0.67	27.65			x	x	x
38780-38779	BC09	45-59-24-00	8	122.7	0.61	0.26	-0.35	42.33		x	x	x	x
38781-38780	BC09	45-59-24-00	8	189.8	1.59	0.26	-1.33	16.48					x
38782-38781	BC09	45-59-24-00	8	173.6	1.73	0.26	-1.47	15.27					x
39224-20126	BC01	45-59-35-02	15	90.1	1.32	0.25	-1.07	18.91				x	x
39739-39738	BC13	45-59-05-04	12	82.7	0.84	0.13	-0.71	16.04					x
40488-6941	TSJF01	45-59-07-00	27	63.4	10.59	5.97	-4.62	56.42	x	x	x	x	x
41020-38582	BC09	45-59-29-00	8	79.6	1.19	0.40	-0.79	33.48				x	x
41115-41114	BC24	45-66-17-00	10	87.5	0.92	0.25	-0.67	27.47				x	x
41116-41115	BC24	45-66-17-00	10	321.1	0.67	0.25	-0.42	37.78			x	x	x
41117-41429	BC24	45-66-17-00	10	113.2	0.92	0.26	-0.67	27.72				x	x
41120-41119	BC24	45-66-17-00	10	283.6	0.94	0.26	-0.68	27.35				x	x
41121-41120	BC24	45-66-18-00	10	105.9	0.95	0.26	-0.69	27.20				x	x
41124-41123	BC24	45-66-18-01	10	397.8	1.17	0.26	-0.91	22.32					x
41125-41124	BC24	45-66-18-01	10	28	0.38	0.26	-0.12	69.29				x	x
41252-20781	BC20	45-66-08-00	15	298.6	3.10	0.72	-2.38	23.34			x	x	x
41434-35551	BC09	45-59-27-00	8	78.9	1.08	0.49	-0.59	45.27		x	x	x	x
42224-15269	BC09	45-59-21-00	8	181.3	0.62	0.23	-0.39	36.84	x	x	x	x	x
42226-42225	BC09	45-59-21-00	8	401.1	0.60	0.23	-0.37	38.75	x	x	x	x	x
42227-42226	BC09	45-59-21-00	8	256.6	0.61	0.24	-0.37	39.74	x	x	x	x	x
42228-22013	BC07	45-59-19-00	24	209.1	11.46	6.22	-5.24	54.29	x	x	x	x	x
43788-43787	BC22	45-73-01-00	8	164	0.54	0.15	-0.39	27.76	x	x	x	x	x
43789-43788	BC22	45-73-02-00	8	230.9	0.50	0.15	-0.35	30.32	x	x	x	x	x
43790-43789	BC22	45-73-02-00	8	314.7	0.25	0.15	-0.10	61.80	x	x	x	x	x
43791-43790	BC22	45-73-02-00	8	60.5	0.35	0.16	-0.19	45.51	x	x	x	x	x
43792-43791	BC22	45-73-02-00	8	88.6	0.33	0.16	-0.17	48.58	x	x	x	x	x
43793-43792	BC22	45-73-02-00	8	190.9	0.37	0.14	-0.23	37.92	x	x	x	x	x
43794-43793	BC05	45-73-03-02	8	138.5	0.52	0.14	-0.38	27.33	x	x	x	x	x
43794A-43794	BC05	45-73-03-02	8	65.4	0.52	0.06	-0.46	12.13					x
43796-43795	BC05	45-73-03-02	8	242.8	0.56	0.06	-0.50	11.43					x
43820-43819	BC05	45-73-04-00	8	307.5	0.55	0.08	-0.47	14.75					x
43822-43821	BC05	45-73-04-00	8	269.4	0.57	0.08	-0.49	14.70					x
44210-44209	BC22	45-69-00-00	10	239.3	0.52	0.26	-0.26	50.94	x	x	x	x	x
44211-44210	BC22	45-69-00-00	10	363.8	0.80	0.24	-0.56	30.01	x	x	x	x	x
44212-44211	BC22	45-69-00-00	10	359.8	0.80	0.25	-0.55	31.50	x	x	x	x	x
44213-44212	BC22	45-69-00-00	10	312.3	0.81	0.27	-0.54	32.86	x	x	x	x	x
44214-53270	BC22	45-69-00-00	10	156.3	0.87	0.19	-0.68	22.01	x	x	x	x	x
44215-44214	BC22	45-69-00-00	10	371	0.80	0.20	-0.60	24.39	x	x	x	x	x
44216-44215	BC22	45-70-00-00	10	319.8	0.80	0.20	-0.60	25.16	x	x	x	x	x

ɔnes Falls - Modeled Capacity Restrictions - Existing Conditiondi

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
44218-44217	BC22	45-71-00-00	10	372.2	0.78	0.14	-0.64	18.09			x	x	x
44219-44218	BC22	45-71-00-00	10	267.6	0.79	0.14	-0.65	18.16			x	x	x
44220-44219	BC22	45-71-00-00	10	338	0.68	0.15	-0.53	21.40	x	x	x	x	x
44221-44220	BC22	45-71-00-00	10	651.5	0.72	0.15	-0.57	20.71		x	x	x	x
44222-44221	BC22	45-72-00-00	10	340.1	0.65	0.16	-0.49	24.22	x	x	x	x	x
44223-44222	BC22	45-72-00-00	10	339	0.78	0.16	-0.62	20.72			x	x	x
44224-44223	BC22	45-72-00-00	10	453.4	0.63	0.15	-0.48	24.49	x	x	x	x	x
44225-44224	BC22	45-72-00-00	10	332.8	0.69	0.16	-0.53	23.20			x	x	x
44548-20777	BC20	45-66-04-00	15	331.1	4.28	0.78	-3.50	18.29				x	x
48065-48064	BC07	45-59-20-01	8	326.8	0.61	0.09	-0.52	14.44			x	x	x
48067-48066	BC07	45-59-20-01	8	72.3	0.80	0.09	-0.71	11.79				x	x
48068-48067	BC07	45-59-20-01	8	139.7	1.00	0.10	-0.90	9.56					x
50253-34218	BC08	45-59-17-08	8	134.3	0.61	0.10	-0.51	17.13				x	x
50254-50253	BC08	45-59-17-08	8	126.9	0.60	0.11	-0.49	17.77				x	x
50281-50256	BC08	45-59-17-08	8	199.8	0.86	0.11	-0.75	13.06					x
52031-52030	BC05	45-73-04-00	8	190.8	0.52	0.09	-0.43	17.79					x
52032-52031	BC05	45-73-04-00	8	219.2	0.52	0.09	-0.43	18.00				x	x
52033-52032	BC05	45-73-04-00	8	113.5	0.52	0.10	-0.43	18.27				x	x
52034-52033	BC05	45-73-04-00	8	360.1	0.52	0.10	-0.42	18.44				x	x
52041-52034	BC05	45-73-04-00	8	227.6	0.52	0.10	-0.42	18.96				x	x
52092-52091	BC08	45-59-17-03	8	236.7	0.57	0.21	-0.36	36.54	x	x	x	x	x
52489-52488	BC08	45-59-17-03	8	260.9	0.64	0.20	-0.44	31.55	x	x	x	x	x
52521-52520	BC08	45-59-17-03	8	399	0.60	0.23	-0.37	38.37	x	x	x	x	x
52522-52521	BC08	45-59-17-03	8	312.5	0.55	0.24	-0.31	42.80	x	x	x	x	x
52523-53379	BC08	45-59-17-03	8	122.5	0.55	0.25	-0.30	44.93	x	x	x	x	x
52524-52523	BC08	45-59-17-03	8	169.4	0.56	0.25	-0.31	44.57	x	x	x	x	x
52550-14458	BC08	45-59-17-02	8	102.8	1.38	0.51	-0.87	36.96	x	x	x	x	x
52566-52562	BC08	45-59-17-03	8	140.3	0.59	0.22	-0.37	37.54	x	x	x	x	x
52567-52566	BC08	45-59-17-03	8	62.4	0.61	0.22	-0.39	36.52	x	x	x	x	x
53257-44216	BC22	45-71-00-00	8	221.5	0.79	0.07	-0.72	8.42					x
53260-53259	BC22	45-71-00-00	8	284.7	0.77	0.07	-0.70	9.57					x
53270-44213	BC22	45-69-00-00	10	217.9	0.71	0.28	-0.43	39.23	x	x	x	x	x
53293-53292	BC22	45-70-00-00	8	307.8	0.60	0.10	-0.50	17.42			x	x	x
53294-53293	BC22	45-70-00-00	8	37.1	0.54	0.11	-0.43	20.26			x	x	x
53295-53294	BC22	45-70-00-00	8	255	1.04	0.11	-0.93	10.62					x
53296-53295	BC22	45-70-00-00	8	244.9	0.62	0.11	-0.51	18.37			x	x	x
53379-52522	BC08	45-59-17-03	8	225.3	0.55	0.24	-0.31	44.07	x	x	x	x	x
53727-53727A	BC02	45-59-34-00	8	23.3	0.43	0.21	-0.22	48.51		x	x	x	x
53727A-53727B	BC02	45-59-34-00	8	28.9	0.58	0.21	-0.37	35.79		x	x	x	x
53728-53727	BC02	45-59-34-00	8	165.5	0.62	0.21	-0.41	33.82		x	x	x	x
53729-53728	BC02	45-59-34-00	8	54	0.49	0.21	-0.28	43.55		x	x	x	x

ɔnes Falls - Modeled Capacity Restrictions - Existing Conditiondi

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
54110-52045	BC05	45-73-04-00	8	247.9	0.61	0.10	-0.51	16.95					x
55251-7298	BC16	45-58-01-00	24	355.4	14.53	3.08	-11.45	21.18					x
55252-55251	BC16	45-58-01-00	8	29.7	0.59	0.39	-0.20	65.88	x	x	x	x	x
55253-55252	BC16	45-58-01-00	8	133.7	0.60	0.39	-0.21	64.93	x	x	x	x	x
55254-55253	BC16	45-58-01-00	8	141.5	0.60	0.39	-0.21	65.50	x	x	x	x	x
55255-55254	BC16	45-58-01-00	8	101.9	0.60	0.40	-0.20	66.23	x	x	x	x	x
55257-55256	BC16	45-58-01-00	8	39.8	0.81	0.40	-0.41	49.70	x	x	x	x	x
55261-55260	BC16	45-58-01-00	8	108	0.60	0.41	-0.19	67.63	x	x	x	x	x
55262-55261	BC16	45-58-01-00	8	282.7	0.60	0.41	-0.19	68.50	x	x	x	x	x
55267-55262	BC16	45-58-01-00	8	45.4	0.78	0.42	-0.36	54.45	x	x	x	x	x
55268-55267	BC16	45-58-01-00	8	168.1	0.78	0.43	-0.35	54.85	x	x	x	x	x
55270-55269	BC16	45-58-01-00	8	143.2	0.78	0.44	-0.34	56.35	x	x	x	x	x
55272-55271	BC16	45-58-01-00	8	191.5	0.80	0.45	-0.35	56.28	x	x	x	x	x
56667-20782	BC20	45-66-07-00	15	399.4	3.16	0.73	-2.43	23.07			x	x	x
57146-44548	BC20	45-66-05-00	15	30.3	3.94	0.77	-3.17	19.67				x	x
59113-59114	BC01	45-59-35-08	8	43.6	0.47	0.11	-0.36	24.17				x	x
59114-59115	BC01	45-59-35-08	8	174.4	0.47	0.11	-0.36	23.87				x	x
59115-59116	BC01	45-59-35-03	8	157	0.47	0.11	-0.36	23.60				x	x
59276-59275	BC14	45-58-04-00	20	89.8	3.80	0.64	-3.16	16.81				x	x
63664-63663	BC09	45-59-22-01	8	213.5	0.92	1.08	0.16	117.10	x	x	x	x	x
63665-63664	BC09	45-59-22-01	8	80.3	0.89	1.09	0.20	122.35	x	x	x	x	x
64082-53297	BC22	45-70-00-00	8	107	0.61	0.12	-0.49	19.95			x	x	x
64085-64084	TSJF01	45-59-06-00	8	270.8	1.05	0.13	-0.92	12.25					x
66452-67346	BC09	45-59-25-00	8	107.4	0.72	0.32	-0.40	43.99		x	x	x	x
66453-66452	BC09	45-59-25-00	8	86.4	1.06	0.32	-0.74	30.14			x	x	x
67346-7085	BC09	45-59-25-00	8	50.9	0.68	0.32	-0.36	46.38		x	x	x	x
6875-6874	TSJF01	45-51-00-00	42	165.6	21.73	7.13	-14.60	32.83	x	x	x	x	x
6876-6876N	TSJF01	45-51-00-00	42	88	21.82	7.18	-14.64	32.91	x	x	x	x	x
6876N-6875	TSJF01	45-51-00-00	42	77	22.90	7.16	-15.74	31.28	x	x	x	x	x
6877-6876	TSJF01	45-51-00-00	42	349.7	26.94	7.14	-19.80	26.49	x	x	x	x	x
6880-6879	TSJF01	45-51-00-00	42	146	26.91	7.31	-19.60	27.17	x	x	x	x	x
6882-6880	TSJF01	45-51-00-00	42	769.2	28.91	7.30	-21.61	25.26	x	x	x	x	x
6887-6886	TSJF01	45-54-00-00	42	872.2	28.63	7.44	-21.19	25.97		x	x	x	x
6888-6887	TSJF01	45-56-00-00	42	2923.6	29.56	7.46	-22.10	25.25	x	x	x	x	x
69131-33527	BC20	45-66-08-00	15	76.1	2.68	0.44	-2.24	16.51					x
69136-69133	BC24	45-66-10-00	16	59.4	2.71	0.45	-2.26	16.43					x
6924-6923	TSJF01	45-59-02-00	42	438	19.15	4.21	-14.94	21.98	x	x	x	x	x
6925-6924	TSJF01	45-59-02-00	42	795.9	19.29	4.29	-15.00	22.26		x	x	x	x
6926-6925	TSJF01	45-59-02-00	42	747.3	19.18	4.59	-14.59	23.95		x	x	x	x
6927-6926	TSJF01	45-59-04-00	42	89.5	6.87	5.01	-1.86	72.86	x	x	x	x	x
6933-6932	TSJF01	45-59-06-00	30	74.4	18.44	5.47	-12.97	29.64				x	x

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ɔnes Falls - Modeled Capacity Restrictions - Existing Condition

Baltimore County

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
6934-6929	TSJF01	45-59-06-00	30	100.3	17.76	5.62	-12.14	31.66		x	x	x	x
6945-6944	BC11	45-59-10-00	27	115.2	16.62	6.17	-10.45	37.10	x	x	x	x	x
6947-6946	BC11	45-59-11-00	24	308.8	14.95	6.22	-8.73	41.62	x	x	x	x	x
6948-32394	BC11	45-59-12-00	24	46.8	9.21	6.27	-2.94	68.07	x	x	x	x	x
6949-6948	BC11	45-59-12-00	24	270.6	16.75	6.28	-10.47	37.50	x	x	x	x	x
6950-6949	BC11	45-59-12-00	24	85.4	14.83	6.33	-8.50	42.69	x	x	x	x	x
6952-6950	BC11	45-59-12-00	24	210.2	4.40	2.07	-2.33	47.08	x	x	x	x	x
6953-38525	BC06	45-59-15-01	24	113.9	13.33	6.32	-7.01	47.42	x	x	x	x	x
6953-38525	BC06	45-59-15-01	15	113.9	3.54	0.00	-3.54	0.00	x	x	x	x	x
6954-18586	BC11	45-59-16-01	24	395.8	13.00	6.37	-6.63	48.99	x	x	x	x	x
6955-6954	BC11	45-59-16-01	24	441.5	12.80	6.43	-6.37	50.25	x	x	x	x	x
6956-19873	BC07	45-59-17-01	24	171.3	12.41	6.06	-6.35	48.80			x	x	x
6957-6956	BC07	45-59-17-01	24	142.2	10.33	6.09	-4.24	58.93	x	x	x	x	x
6957-6956	BC07	45-59-17-01	15	142.2	0.50	0.00	-0.50	0.00	x	x	x	x	x
7049-6977	BC09	45-59-28-00	10	113.2	1.22	0.92	-0.30	75.03	x	x	x	x	x
7050-7049	BC04	45-59-30-01	10	184.4	1.77	0.92	-0.85	51.99	x	x	x	x	x
7051-7050	BC04	45-59-30-01	10	256.2	1.89	0.93	-0.96	49.19	x	x	x	x	x
7052M-7051	BC04	45-59-30-01	10	5	0.00	0.49	0.49	#DIV/0!	x	x	x	x	x
7062-7061	BC09	45-59-23-00	8	95.7	1.04	0.26	-0.78	24.76				x	x
7063-7062	BC09	45-59-23-00	8	393.6	1.04	0.26	-0.78	24.91				x	x
7064-7063	BC09	45-59-23-00	8	300.9	0.53	0.26	-0.27	49.81	x	x	x	x	x
7065-7064	BC09	45-59-23-00	8	215.8	1.18	0.27	-0.91	22.94				x	x
7081-7080	BC09	45-59-25-00	8	210.4	0.50	0.28	-0.22	56.80	x	x	x	x	x
7083-7082	BC09	45-59-25-00	8	396.3	0.49	0.30	-0.19	61.06	x	x	x	x	x
7084-7083	BC09	45-59-25-00	8	150.6	0.49	0.31	-0.18	62.82	x	x	x	x	x
7085-7084	BC09	45-59-25-00	8	143.1	0.49	0.31	-0.18	63.59	x	x	x	x	x
7087-900091	BC09	45-59-26-00	8	247.6	0.55	0.11	-0.44	20.36					x
7090-7089	BC09	45-59-26-00	8	185	0.49	0.12	-0.37	23.90					x
7092-33448	BC09	45-59-27-00	8	14.5	0.62	0.42	-0.20	67.31	x	x	x	x	x
7094-7093	BC09	45-59-27-00	8	377.4	0.70	0.43	-0.27	61.06	x	x	x	x	x
7099-7098	BC09	45-59-27-00	8	109.5	0.50	0.44	-0.06	87.48	x	x	x	x	x
7102-F1757	BC09	45-59-27-00	8	157	0.69	0.45	-0.24	64.87	x	x	x	x	x
7115-63665	BC09	45-59-22-01	8	87.1	1.42	1.11	-0.31	78.35	x	x	x	x	x
71157-64085	TSJF01	45-59-06-00	8	32.1	0.58	0.13	-0.45	22.86			x	x	x
71158-71157	TSJF01	45-59-06-00	8	89.5	0.61	0.13	-0.48	21.90			x	x	x
7116-7115	BC09	45-59-22-01	8	103.9	0.47	0.41	-0.06	87.96	x	x	x	x	x
71194-38684	BC01	45-59-35-01	8	235.1	0.49	0.05	-0.44	10.39					x
7123-7122	BC09	45-59-22-00	8	396.7	0.55	0.50	-0.05	90.11	x	x	x	x	x
7126-7125	BC09	45-59-22-00	8	113.7	1.22	0.53	-0.69	43.30		x	x	x	x
7127-7126	BC09	45-59-22-00	8	354.8	1.24	0.53	-0.71	42.93		x	x	x	x
7128-7127	BC09	45-59-22-00	8	57.7	1.59	0.54	-1.05	34.14				x	x

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ones Falls - Modeled Capacity Restrictions - Existing Condition

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
7163-23057	BC04	45-59-30-01	8	91.2	0.40	0.09	-0.31	23.40				x	x
7167-7166	BC04	45-59-30-03	8	338.5	0.50	0.43	-0.07	85.38	x	x	x	x	x
7171-7170	BC04	45-59-30-03	8	260.9	1.19	0.47	-0.72	39.18	x	x	x	x	x
7173-7171	BC04	45-59-30-03	8	199.2	1.37	0.47	-0.90	34.53		x	x	x	x
7176-7173	BC04	45-59-30-03	8	390.1	1.29	0.48	-0.81	36.95	x	x	x	x	x
7177-7176	BC04	45-59-30-03	8	355.1	1.66	0.48	-1.18	29.11			x	x	x
7180-7179	BC04	45-59-30-02	8	262.7	0.50	0.46	-0.04	91.90	x	x	x	x	x
7181-7180	BC04	45-59-30-02	8	257.6	0.50	0.48	-0.02	96.06	x	x	x	x	x
7182-7181	BC04	45-59-30-02	8	325.3	0.87	0.51	-0.36	59.00	x	x	x	x	x
7184-7183	BC04	45-59-30-02	8	373.5	1.07	0.52	-0.55	48.96		x	x	x	x
7185-7184	BC04	45-59-30-02	8	288.8	1.08	0.53	-0.55	49.27	x	x	x	x	x
7188-7185	BC04	45-59-30-02	8	41	0.91	0.54	-0.37	59.31	x	x	x	x	x
7254-7253	BC02	45-59-34-00	12	257.9	0.89	0.34	-0.55	37.69	x	x	x	x	x
7255-7254	BC02	45-59-34-00	12	308.6	0.98	0.35	-0.63	35.64	x	x	x	x	x
7256-7255	BC02	45-59-34-00	12	157.2	0.84	0.37	-0.47	43.74	x	x	x	x	x
7257-7270	BC02	45-59-34-00	8	167.6	0.70	0.25	-0.45	35.44	x	x	x	x	x
7260-7259	BC02	45-59-34-00	8	354.8	0.49	0.26	-0.23	53.90	x	x	x	x	x
7261-7260	BC02	45-59-34-00	8	249.9	0.47	0.29	-0.18	60.96	x	x	x	x	x
7262-7261	BC02	45-59-34-00	8	232.7	0.44	0.30	-0.14	67.20	x	x	x	x	x
7263-7262	BC02	45-59-34-00	8	279.6	0.49	0.31	-0.18	62.78	x	x	x	x	x
7264-7263	BC02	45-59-34-00	8	284.3	0.48	0.32	-0.16	65.85	x	x	x	x	x
7265-7264	BC02	45-59-34-00	8	369.3	0.91	0.33	-0.58	36.32		x	x	x	x
7266-7256	BC02	45-59-34-00	8	387.2	0.70	0.23	-0.47	33.09	x	x	x	x	x
7270-7266	BC02	45-59-34-00	8	349.2	0.72	0.24	-0.48	33.72	x	x	x	x	x
7288-7287	BC02	45-59-34-00	8	250.4	1.44	0.34	-1.10	23.81			x	x	x
7289-7256	BC02	45-59-34-00	10	372.2	0.68	0.15	-0.53	22.62		x	x	x	x
7296-7295	BC16	45-58-01-00	24	393.5	9.00	2.92	-6.08	32.45		x	x	x	x
7297-7296	BC16	45-58-01-00	24	345	12.77	2.98	-9.79	23.35				x	x
7298-7297	BC16	45-58-01-00	24	386.6	9.58	3.02	-6.56	31.54			x	x	x
7300-55251	BC16	45-58-01-00	24	223.7	11.77	2.72	-9.05	23.14				x	x
7308-7305	BC16	45-58-03-00	21	377.7	12.52	2.80	-9.72	22.39				x	x
7311-18322	BC16	45-58-03-00	21	189.4	7.06	1.81	-5.25	25.62				x	x
7314-18241	BC16	45-58-05-00	21	194.1	3.91	1.83	-2.08	46.92	x	x	x	x	x
7315-22223	BC16	45-58-05-00	21	51.5	4.64	1.42	-3.22	30.63			x	x	x
901295-901296	BC08	45-59-17-03	8	138.9	0.95	0.26	-0.69	27.41			x	x	x
901296-901297	BC08	45-59-17-03	8	96	0.61	0.26	-0.35	42.34	x	x	x	x	x
901297-901298	BC08	45-59-17-03	8	104	0.60	0.26	-0.34	42.68	x	x	x	x	x
901298-901299	BC08	45-59-17-03	8	260.7	1.05	0.25	-0.80	24.18				x	x
902012-6953	BC11	45-59-16-01	24	199.1	11.03	6.35	-4.68	57.55	x	x	x	x	x
902012-6953	BC11	45-59-16-01	15	199.1	2.35	0.00	-2.35	0.00	x	x	x	x	x
C445-7102	BC09	45-59-27-00	8	47.2	0.36	0.45	0.09	125.75	x	x	x	x	x

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ɔnes Falls - Modeled Capacity Restrictions - Existing Conditior

Baltimore County

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
F1757-7101	BC09	45-59-27-00	8	179.1	0.70	0.44	-0.26	63.43	x	x	x	x	x
PVT302-PVT303	BC03	45-59-34-00	8	357	0.54	1.05	0.51	194.57	x	x	x	x	x
PVT303-29644	BC03	45-59-34-00	8	279	0.74	1.05	0.31	141.96	x	x	x	x	x

Notes:
1) Pipe Full Capacity (manning's equation)
2) Total peak flow was calculated by reviewing locations of model-predicted SSOs, and simulating an artifical condiditon in the model by gradually increasing the rainfall intensity until the HGL was predicted to be just below the manhole rim (~0.1 feet) - the peak flow at that moment was then reported.
3) Total Peak Flow - Pipe Design Capacity

ones Falls - Modeled Capacity Restrictions - Future Conditio

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
14546-7188	BC04	45-59-30-02	8	24.6	0.59	0.54	-0.05	92.02	x	x	x	x	x
14547-14546	BC04	45-59-30-02	8	266.8	1.32	0.54	-0.78	41.27	x	x	x	x	x
14548-14547	BC04	45-59-30-02	8	370.7	1.71	0.56	-1.16	32.46		x	x	x	x
1508-1507	BC12	45-58-09-01	8	158.9	0.78	0.25	-0.53	31.97			x	x	x
15871-6936	TSJF01	45-59-08-00	30	54.7	17.56	5.71	-11.85	32.49	x	x	x	x	x
1593-29862	BC24	45-66-17-00	12	140.4	0.43	0.30	-0.13	70.70		x	x	x	x
16379-16379N	TSJF01	45-51-00-00	42	79.7	20.88	7.52	-13.36	36.03	x	x	x	x	x
16379N-6877	TSJF01	45-51-00-00	42	175.5	21.44	7.49	-13.95	34.92	x	x	x	x	x
16401-C445	BC09	45-59-27-00	8	182	0.50	0.46	-0.04	92.34	x	x	x	x	x
16402-16401	BC09	45-59-27-00	8	240.1	0.49	0.47	-0.02	96.24	x	x	x	x	x
16404-16403	BC09	45-59-27-00	8	160.8	0.97	0.49	-0.48	50.56	x	x	x	x	x
16596-7333	BC12	45-58-06-01	10	122.6	1.00	0.17	-0.83	16.59				x	x
16743-16742	BC09	45-59-31-00	8	307.3	0.63	0.19	-0.44	29.70	x	x	x	x	x
16747-16746	BC09	45-59-31-00	8	69.7	0.66	0.21	-0.45	31.33	x	x	x	x	x
16752-16751	BC09	45-59-31-00	8	285.6	0.55	0.23	-0.32	41.36	x	x	x	x	x
16753-16752	BC09	45-59-31-00	8	281.9	0.55	0.24	-0.31	43.36	x	x	x	x	x
16754-16753	BC09	45-59-31-00	8	283.2	0.49	0.25	-0.24	50.63	x	x	x	x	x
17479-42227	BC09	45-59-21-00	8	234.2	0.79	0.25	-0.54	32.08		x	x	x	x
17480-17479	BC09	45-59-21-00	8	195.1	1.10	0.26	-0.84	23.67			x	x	x
17483-17482	BC09	45-59-21-00	8	171.1	1.63	0.27	-1.36	16.56				x	x
17484-17483	BC09	45-59-21-00	8	87.5	1.09	0.27	-0.82	24.95			x	x	x
17750-17749	TSJF01	45-55-01-00	12	149.7	1.49	0.22	-1.27	14.88		x	x	x	x
17751-17750	TSJF01	45-55-01-00	12	310.2	1.38	0.23	-1.15	16.59		x	x	x	x
17752-34447	TSJF01	45-55-01-00	12	84.1	1.28	0.20	-1.08	15.41		x	x	x	x
17753-17752	TSJF01	45-55-01-00	12	131	1.51	0.20	-1.31	13.33			x	x	x
17754-17753	TSJF01	45-55-01-00	12	257	1.51	0.21	-1.30	13.76			x	x	x
17755-17754	TSJF01	45-55-02-00	12	70.5	1.40	0.22	-1.18	15.71		x	x	x	x
17756-17755	TSJF01	45-55-02-00	12	172.2	1.10	0.17	-0.93	15.70		x	x	x	x
17757-17756	TSJF01	45-55-02-00	12	67.8	1.90	0.18	-1.72	9.48				x	x
17759-17758	TSJF01	45-55-01-00	12	180.6	1.27	0.18	-1.09	14.47			x	x	x
17764-17763	TSJF01	45-55-02-00	12	107	2.76	0.21	-2.55	7.67					x
18202-6885	TSJF01	45-55-01-00	12	133.7	1.79	0.21	-1.58	11.47			x	x	x
18241-7311	BC16	45-58-03-00	21	327.4	7.28	1.86	-5.42	25.55				x	x
18298A-18298	BC07	45-59-18-00	8	63.4	0.43	0.07	-0.36	16.86				x	x
18299-18298A	BC07	45-59-18-00	8	85.6	0.46	0.07	-0.39	16.04				x	x
18300-18299	BC07	45-59-18-00	8	407.4	0.49	0.08	-0.41	15.35				x	x
18452-6928	TSJF01	45-59-05-01	42	167.7	7.10	5.33	-1.77	75.11	x	x	x	x	x
18479-18478	BC13	45-59-05-03	8	207	1.37	0.22	-1.15	16.28				x	x
18480-18479	BC13	45-59-05-03	8	263.5	1.11	0.23	-0.88	20.31		x	x	x	x
18481-18480	BC13	45-59-05-03	8	317.2	1.34	0.23	-1.11	17.19				x	x
18481A-18481	BC13	45-59-05-03	8	89.7	1.40	0.23	-1.17	16.73				x	x
18482-18481A	BC13	45-59-05-03	8	94.3	1.30	0.24	-1.06	18.11			x	x	x
18483-18482	BC13	45-59-05-03	8	90.2	1.40	0.24	-1.16	16.93				x	x
18484-18483	BC13	45-59-05-03	8	239.9	1.36	0.24	-1.12	17.51				x	x

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ones Falls - Modeled Capacity Restrictions - Future Conditio

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
18485-18484	BC13	45-59-05-03	8	236.9	1.49	0.24	-1.25	16.21				x	x
18486-18485	BC13	45-59-05-03	8	157.1	1.27	0.24	-1.03	19.22			x	x	x
18496-901391	BC01	45-59-35-01	15	230.1	1.34	0.27	-1.07	20.01		x	x	x	x
18497-19001	BC01	45-59-35-01	8	73.1	0.48	0.04	-0.44	9.21					x
18517-18486	BC13	45-59-05-03	8	341.1	1.47	0.25	-1.22	16.80				x	x
18586-902012	BC11	45-59-16-01	24	12.6	10.73	6.48	-4.25	60.44	x	x	x	x	x
18588-18587	BC11	45-59-16-01	8	119	0.61	0.05	-0.56	8.92					x
18589-18588	BC11	45-59-16-01	8	142.5	0.60	0.06	-0.54	9.23					x
18591-18590	BC11	45-59-16-01	8	150.1	0.61	0.06	-0.55	9.66					x
18592-18591	BC11	45-59-16-01	8	194.9	0.61	0.06	-0.55	9.90					x
18593-18592	BC11	45-59-16-01	8	285.5	0.60	0.06	-0.54	10.43					x
19001-18496	BC01	45-59-35-01	8	151.4	0.50	0.04	-0.46	8.56					x
19141-7308	BC16	45-58-03-00	21	83.9	11.40	2.89	-8.51	25.31				x	x
19143-22225	BC14	45-58-04-00	21	94.1	4.35	1.16	-3.19	26.61				x	x
19706-6947	BC11	45-59-13-00	24	186.9	16.10	6.37	-9.73	39.59	x	x	x	x	x
19711-19808	BC11	45-59-12-00	8	65.3	0.49	0.04	-0.46	7.14					x
19715-19714	BC11	45-59-12-00	8	389.5	0.49	0.04	-0.45	7.94					x
19808-19707	BC11	45-59-12-00	8	196.1	0.49	0.03	-0.46	6.76					x
19873-6955	BC11	45-59-16-01	24	224.5	11.35	6.56	-4.79	57.84	x	x	x	x	x
19876-19875	BC08	45-59-17-01	12	236	1.73	0.53	-1.20	30.54	x	x	x	x	x
20244-7289	BC02	45-59-34-00	8	156.6	0.50	0.17	-0.33	34.66	x	x	x	x	x
20246-3	BC02	45-59-34-00	8	398	0.48	0.18	-0.30	38.10	x	x	x	x	x
20247-20246	BC02	45-59-34-00	8	221.9	0.49	0.19	-0.30	39.18	x	x	x	x	x
20753-21328	TSJF01	45-60-00-00	30	494.7	8.76	2.04	-6.72	23.27			x	x	x
20754-20753	TSJF01	45-60-00-00	30	760.3	1.77	2.05	0.28	115.80	x	x	x	x	x
20755-20754	TSJF01	45-60-00-00	30	529.8	8.76	1.98	-6.78	22.64			x	x	x
20756-20755	TSJF01	45-60-00-00	30	577.4	5.78	1.89	-3.89	32.76	x	x	x	x	x
20757-20756	TSJF01	45-60-00-00	30	322.5	4.99	1.92	-3.07	38.51	x	x	x	x	x
20758-20757	TSJF01	45-60-00-00	30	371.3	6.00	1.94	-4.06	32.38	x	x	x	x	x
20759-20758	TSJF01	45-60-00-00	30	630.5	5.53	1.97	-3.56	35.61	x	x	x	x	x
20760-20759	TSJF01	45-60-00-00	30	476.3	5.75	2.02	-3.73	35.20	x	x	x	x	x
20761-20760	TSJF01	45-60-00-00	27	415.8	8.89	2.08	-6.81	23.36			x	x	x
20762-21329	BC18	45-63-00-00	27	395.3	8.72	1.73	-6.99	19.87			x	x	x
20764-20763	BC18	45-64-00-00	27	597.1	8.55	1.66	-6.89	19.42				x	x
20771-20770	BC20	45-66-01-00	18	536.2	3.80	0.78	-3.02	20.44			x	x	x
20772-20771	BC20	45-66-01-00	15	599.5	4.55	0.79	-3.76	17.25				x	x
20773-20772	BC20	45-66-01-00	15	476	4.54	0.78	-3.76	17.23				x	x
20774-20773	BC20	45-66-03-00	15	598.6	4.19	0.79	-3.40	18.83				x	x
20782-41252	BC20	45-66-08-00	15	254.2	2.55	0.74	-1.81	29.18		x	x	x	x
20783-56667	BC20	45-66-07-00	15	141.1	3.47	0.74	-2.73	21.27				x	x
21044-21043	BC01	45-59-35-05	8	295.1	0.78	0.10	-0.68	12.64			x	x	x
21059-21044	BC01	45-59-35-05	8	97.2	0.79	0.08	-0.71	10.06				x	x
21060-21059	BC01	45-59-35-06	8	362.6	0.78	0.08	-0.70	10.40				x	x
21062-21061	BC01	45-59-35-06	8	166.4	0.79	0.09	-0.70	11.23				x	x

ones Falls - Modeled Capacity Restrictions - Future Condition

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
21063-21062	BC01	45-59-35-06	8	228.1	0.79	0.09	-0.70	11.57				x	x
21064-21063	BC01	45-59-35-06	8	333.3	0.72	0.07	-0.65	9.26					x
21066-21065	BC01	45-59-35-07	8	112	0.73	0.07	-0.66	9.74					x
21067-21066	BC01	45-59-35-07	8	114.5	0.74	0.07	-0.67	9.80					x
21329-20761	BC19	45-62-01-00	27	401.1	8.83	1.74	-7.09	19.76			x	x	x
21622-52551	BC08	45-59-17-03	8	117.4	1.30	0.50	-0.80	38.28	x	x	x	x	x
21627-21626	BC08	45-59-17-03	8	100.1	0.60	0.20	-0.40	32.60	x	x	x	x	x
21628-21627	BC08	45-59-17-03	8	115.6	0.44	0.20	-0.24	44.75	x	x	x	x	x
21629-21628	BC08	45-59-17-03	8	149.6	0.49	0.20	-0.29	40.53	x	x	x	x	x
21630-21629	BC08	45-59-17-03	8	140.8	0.49	0.20	-0.29	40.96	x	x	x	x	x
21631-21630	BC08	45-59-17-03	8	153.6	0.50	0.20	-0.30	40.54	x	x	x	x	x
21642-21641	BC08	45-59-17-04	8	93.4	0.61	0.31	-0.30	50.74	x	x	x	x	x
21643-21642	BC08	45-59-17-04	8	134.1	0.60	0.31	-0.29	51.98	x	x	x	x	x
21645-21643	BC08	45-59-17-04	8	65.9	0.61	0.32	-0.29	51.85	x	x	x	x	x
21646-21645	BC08	45-59-17-04	8	96	0.60	0.32	-0.28	53.10	x	x	x	x	x
21651-21649	BC08	45-59-17-04	8	334.7	0.60	0.33	-0.27	54.93	x	x	x	x	x
21652-21651	BC08	45-59-17-04	8	230.9	0.49	0.32	-0.17	64.86	x	x	x	x	x
21653-21652	BC08	45-59-17-04	8	173.5	0.50	0.24	-0.26	47.10	x	x	x	x	x
21654-21653	BC08	45-59-17-06	8	125.3	0.49	0.24	-0.25	49.24	x	x	x	x	x
21806-21805	BC09	45-59-29-00	8	106.6	0.60	0.39	-0.21	64.68	x	x	x	x	x
21807-21806	BC09	45-59-29-00	8	269.2	0.61	0.39	-0.22	64.08	x	x	x	x	x
22009-6957	BC07	45-59-17-01	24	129.9	13.03	6.16	-6.87	47.29	x	x	x	x	x
22010-22009	BC07	45-59-18-00	24	60.3	11.99	6.12	-5.87	51.02	x	x	x	x	x
22011-22010	BC07	45-59-18-00	24	322.7	14.74	6.13	-8.61	41.56	x	x	x	x	x
22012-22011	BC07	45-59-19-00	24	327.3	14.71	6.18	-8.53	42.03	x	x	x	x	x
22013-22012	BC07	45-59-19-00	24	267.4	15.07	6.25	-8.82	41.46	x	x	x	x	x
22222-7314	BC16	45-58-05-00	21	64.9	6.07	1.45	-4.62	23.95				x	x
22223-22222	BC16	45-58-05-00	21	340.1	5.79	1.46	-4.33	25.20			x	x	x
23057-7162	BC04	45-59-30-01	8	94	0.56	0.09	-0.47	16.57					x
23777-23776	BC13	45-59-05-03	8	251.3	0.83	0.11	-0.72	12.73				x	x
23778-23777	BC13	45-59-05-03	8	131.7	0.61	0.11	-0.50	17.90			x	x	x
23779-23778	BC13	45-59-05-04	8	26.4	0.64	0.11	-0.53	17.47			x	x	x
2402-901892	BC12	45-58-06-02	6	607.7	0.66	0.18	-0.48	26.80			x	x	x
2405-2404	BC12	45-58-06-02	8	398.6	0.46	0.14	-0.32	31.33			x	x	x
29644-37991	BC03	45-59-34-00	8	8	0.55	1.05	0.50	191.00	x	x	x	x	x
29862-29861	BC24	45-66-17-00	10	180.1	0.78	0.30	-0.48	38.85		x	x	x	x
3-20244	BC02	45-59-34-00	8	193	0.49	0.18	-0.31	36.49	x	x	x	x	x
30153-21046	BC01	45-59-35-03	8	166.8	0.48	0.16	-0.32	33.44	x	x	x	x	x
30155-30153	BC01	45-59-35-03	8	117.4	0.52	0.13	-0.39	25.83			x	x	x
30156-30155	BC01	45-59-35-03	8	370.7	0.73	0.14	-0.59	18.55				x	x
30157-30156	BC01	45-59-35-03	8	374	0.60	0.14	-0.46	23.27				x	x
30158-30157	BC01	45-59-35-03	8	305.3	0.61	0.14	-0.47	23.57				x	x
30159-30158	BC01	45-59-35-03	8	51.2	0.58	0.15	-0.43	25.33				x	x
30726-20776	BC20	45-66-03-00	15	591.4	4.20	0.79	-3.41	18.80				x	x

ones Falls - Modeled Capacity Restrictions - Future Condition

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
30953-31001	BC01	45-59-35-08	8	112.2	0.51	0.05	-0.46	9.84				x	x
30957-30953	BC01	45-59-35-08	8	148.6	0.61	0.05	-0.56	8.46				x	x
30959-30958	BC01	45-59-35-08	8	224.3	0.93	0.17	-0.76	18.18				x	x
30960-30959	BC01	45-59-35-08	8	203.4	0.92	0.17	-0.75	18.67				x	x
31001-21071	BC01	45-59-35-07	8	84.6	0.54	0.05	-0.49	9.11				x	x
31151-30159	BC01	45-59-35-03	8	230.5	0.61	0.15	-0.46	24.18				x	x
31829-31828	BC08	45-59-17-06	8	186.8	0.78	0.25	-0.53	32.04	x	x	x	x	x
31831-31830	BC08	45-59-17-06	8	70.4	0.85	0.26	-0.59	30.38	x	x	x	x	x
31832-31831	BC08	45-59-17-06	8	81.5	0.89	0.26	-0.63	29.35	x	x	x	x	x
32254-33532	BC25	45-66-09-02	12	80.8	0.60	0.27	-0.33	44.28			x	x	x
32257-32254	BC25	45-66-09-02	12	147.6	1.03	0.27	-0.76	26.00			x	x	x
32258-32257	BC25	45-66-09-02	12	335	0.91	0.27	-0.64	29.76			x	x	x
33527-20783	BC20	45-66-08-00	15	95.3	2.88	0.74	-2.14	25.73			x	x	x
33528-33527	BC20	45-66-08-00	12	125	1.53	0.29	-1.24	18.76				x	x
33529-33528	BC25	45-66-09-02	12	34.2	1.23	0.29	-0.94	23.53			x	x	x
33530-33529	BC25	45-66-09-02	10	243.2	1.58	0.29	-1.29	18.37					x
33532-33531	BC25	45-66-09-02	10	314.8	1.79	0.30	-1.49	16.59					x
33707-20761	BC19	45-62-01-00	12	191.8	0.62	0.37	-0.25	59.40	x	x	x	x	x
34209-31835	BC08	45-59-17-07	8	230.4	0.60	0.21	-0.39	34.53	x	x	x	x	x
34210-34209	BC08	45-59-17-07	8	403.8	0.60	0.22	-0.38	36.25	x	x	x	x	x
34211-34210	BC08	45-59-17-07	8	301.1	0.61	0.23	-0.38	37.15	x	x	x	x	x
34212-34211	BC08	45-59-17-07	8	89.7	0.63	0.23	-0.40	36.98	x	x	x	x	x
34216-34215	BC08	45-59-17-07	8	92.9	1.38	0.25	-1.13	17.79				x	x
34447-17751	TSJF01	45-55-01-00	12	215.4	1.53	0.24	-1.29	15.79		x	x	x	x
36924-36923	BC21	45-68-05-00	12	360.3	2.78	0.40	-2.38	14.54					x
38452-36953	BC26	45-68-15-01	8	269.3	0.25	0.19	-0.06	77.00	x	x	x	x	x
38464-38463	BC26	45-68-16-01	8	197.4	0.20	0.01	-0.19	5.90	x	x	x	x	x
38525-6952	BC07	45-59-14-00	24	156.9	11.66	6.53	-5.13	56.00	x	x	x	x	x
38582-38581	BC09	45-59-29-00	8	198.4	0.96	0.40	-0.56	41.55		x	x	x	x
38774-38773	BC09	45-59-24-00	8	58.8	0.51	0.24	-0.27	47.10		x	x	x	x
38775-38774	BC09	45-59-24-00	8	313.2	0.83	0.24	-0.59	29.14			x	x	x
38777-38776	BC09	45-59-24-00	8	58	0.78	0.25	-0.53	32.04		x	x	x	x
38778-38777	BC09	45-59-24-00	8	177.5	0.79	0.25	-0.54	31.84		x	x	x	x
38779-38778	BC09	45-59-24-00	8	217.8	0.92	0.26	-0.66	27.75			x	x	x
38780-38779	BC09	45-59-24-00	8	122.7	0.61	0.26	-0.35	42.48		x	x	x	x
38781-38780	BC09	45-59-24-00	8	189.8	1.59	0.26	-1.33	16.54					x
39224-20126	BC01	45-59-35-02	15	90.1	1.32	0.25	-1.07	19.26				x	x
39739-39738	BC13	45-59-05-04	12	82.7	0.84	0.14	-0.70	16.14					x
40488-6941	TSJF01	45-59-07-00	27	63.4	10.59	6.05	-4.54	57.10	x	x	x	x	x
41020-38582	BC09	45-59-29-00	8	79.6	1.19	0.40	-0.79	33.91				x	x
41115-41114	BC24	45-66-17-00	10	87.5	0.92	0.26	-0.66	28.30				x	x
41116-41115	BC24	45-66-17-00	10	321.1	0.67	0.26	-0.41	38.93		x	x	x	x
41117-41429	BC24	45-66-17-00	10	113.2	0.92	0.26	-0.66	28.55				x	x
41120-41119	BC24	45-66-17-00	10	283.6	0.94	0.26	-0.68	28.17				x	x

PIA 23-[illegible] 00155

ones Falls - Modeled Capacity Restrictions - Future Conditioniti

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
41121-41120	BC24	45-66-18-00	10	105.9	0.95	0.27	-0.68	28.03				x	x
41124-41123	BC24	45-66-18-01	10	397.8	1.17	0.27	-0.90	23.00					x
41125-41124	BC24	45-66-18-01	10	28	0.38	0.27	-0.11	71.34				x	x
41252-20781	BC20	45-66-08-00	15	298.6	3.10	0.74	-2.36	24.03			x	x	x
41434-35551	BC09	45-59-27-00	8	78.9	1.08	0.50	-0.58	45.92		x	x	x	x
42224-15269	BC09	45-59-21-00	8	181.3	0.62	0.23	-0.39	36.97	x	x	x	x	x
42226-42225	BC09	45-59-21-00	8	401.1	0.60	0.23	-0.37	38.88	x	x	x	x	x
42227-42226	BC09	45-59-21-00	8	256.6	0.61	0.24	-0.37	39.90	x	x	x	x	x
42228-22013	BC07	45-59-19-00	24	209.1	11.46	6.27	-5.19	54.75	x	x	x	x	x
43788-43787	BC22	45-73-01-00	8	164	0.54	0.15	-0.39	28.59	x	x	x	x	x
43789-43788	BC22	45-73-02-00	8	230.9	0.50	0.16	-0.34	31.20	x	x	x	x	x
43790-43789	BC22	45-73-02-00	8	314.7	0.25	0.16	-0.09	63.44	x	x	x	x	x
43791-43790	BC22	45-73-02-00	8	60.5	0.35	0.16	-0.19	46.80	x	x	x	x	x
43792-43791	BC22	45-73-02-00	8	88.6	0.33	0.16	-0.17	49.91	x	x	x	x	x
43793-43792	BC22	45-73-02-00	8	190.9	0.37	0.14	-0.23	39.08	x	x	x	x	x
43794-43793	BC05	45-73-03-02	8	138.5	0.52	0.15	-0.37	28.21	x	x	x	x	x
43794A-43794	BC05	45-73-03-02	8	65.4	0.52	0.06	-0.46	12.44					x
43796-43795	BC05	45-73-03-02	8	242.8	0.56	0.07	-0.49	11.71					x
43820-43819	BC05	45-73-04-00	8	307.5	0.55	0.08	-0.47	15.27					x
43822-43821	BC05	45-73-04-00	8	269.4	0.57	0.09	-0.48	15.18					x
44210-44209	BC22	45-69-00-00	10	239.3	0.52	0.27	-0.25	51.60	x	x	x	x	x
44211-44210	BC22	45-69-00-00	10	363.8	0.80	0.24	-0.56	30.49	x	x	x	x	x
44212-44211	BC22	45-69-00-00	10	359.8	0.80	0.26	-0.54	32.11	x	x	x	x	x
44213-44212	BC22	45-69-00-00	10	312.3	0.81	0.27	-0.54	33.51	x	x	x	x	x
44214-53270	BC22	45-69-00-00	10	156.3	0.87	0.20	-0.67	22.53	x	x	x	x	x
44215-44214	BC22	45-69-00-00	10	371	0.80	0.20	-0.60	24.94	x	x	x	x	x
44216-44215	BC22	45-70-00-00	10	319.8	0.80	0.21	-0.59	25.65	x	x	x	x	x
44218-44217	BC22	45-71-00-00	10	372.2	0.78	0.14	-0.64	18.58			x	x	x
44219-44218	BC22	45-71-00-00	10	267.6	0.79	0.15	-0.64	18.68			x	x	x
44220-44219	BC22	45-71-00-00	10	338	0.68	0.15	-0.53	22.03	x	x	x	x	x
44221-44220	BC22	45-71-00-00	10	651.5	0.72	0.15	-0.57	21.33		x	x	x	x
44222-44221	BC22	45-72-00-00	10	340.1	0.65	0.16	-0.49	25.00	x	x	x	x	x
44223-44222	BC22	45-72-00-00	10	339	0.78	0.17	-0.61	21.40			x	x	x
44224-44223	BC22	45-72-00-00	10	453.4	0.63	0.16	-0.47	25.38	x	x	x	x	x
44225-44224	BC22	45-72-00-00	10	332.8	0.69	0.17	-0.52	23.99		x	x	x	x
44548-20777	BC20	45-66-04-00	15	331.1	4.28	0.81	-3.47	18.81				x	x
48065-48064	BC07	45-59-20-01	8	326.8	0.61	0.09	-0.52	14.44			x	x	x
48067-48066	BC07	45-59-20-01	8	72.3	0.80	0.09	-0.71	11.79				x	x
48068-48067	BC07	45-59-20-01	8	139.7	1.00	0.10	-0.90	9.56					x
50253-34218	BC08	45-59-17-08	8	134.3	0.61	0.11	-0.50	17.23				x	x
50254-50253	BC08	45-59-17-08	8	126.9	0.60	0.11	-0.49	17.87				x	x
50281-50256	BC08	45-59-17-08	8	199.8	0.86	0.11	-0.75	13.13					x
52031-52030	BC05	45-73-04-00	8	190.8	0.52	0.09	-0.43	18.23				x	x
52032-52031	BC05	45-73-04-00	8	219.2	0.52	0.10	-0.42	18.44				x	x

PIA 23-[illegible] 00156

ones Falls - Modeled Capacity Restrictions - Future Condition

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
52033-52032	BC05	45-73-04-00	8	113.5	0.52	0.10	-0.42	18.71				x	x
52034-52033	BC05	45-73-04-00	8	360.1	0.52	0.10	-0.42	18.88				x	x
52041-52034	BC05	45-73-04-00	8	227.6	0.52	0.10	-0.42	19.42				x	x
52092-52091	BC08	45-59-17-03	8	236.7	0.57	0.21	-0.36	37.40	x	x	x	x	x
52489-52488	BC08	45-59-17-03	8	260.9	0.64	0.21	-0.43	32.48	x	x	x	x	x
52521-52520	BC08	45-59-17-03	8	399	0.60	0.23	-0.37	39.15	x	x	x	x	x
52522-52521	BC08	45-59-17-03	8	312.5	0.55	0.24	-0.31	43.93	x	x	x	x	x
52523-53379	BC08	45-59-17-03	8	122.5	0.55	0.25	-0.30	45.96	x	x	x	x	x
52524-52523	BC08	45-59-17-03	8	169.4	0.56	0.26	-0.31	45.54	x	x	x	x	x
52550-14458	BC08	45-59-17-02	8	102.8	1.38	0.52	-0.86	37.62	x	x	x	x	x
52566-52562	BC08	45-59-17-03	8	140.3	0.59	0.23	-0.36	38.20	x	x	x	x	x
52567-52566	BC08	45-59-17-03	8	62.4	0.61	0.23	-0.38	37.18	x	x	x	x	x
53257-44216	BC22	45-71-00-00	8	221.5	0.79	0.07	-0.72	8.43					x
53260-53259	BC22	45-71-00-00	8	284.7	0.77	0.07	-0.70	9.58					x
53270-44213	BC22	45-69-00-00	10	217.9	0.71	0.28	-0.43	39.83	x	x	x	x	x
53293-53292	BC22	45-70-00-00	8	307.8	0.60	0.10	-0.50	17.43			x	x	x
53294-53293	BC22	45-70-00-00	8	37.1	0.54	0.11	-0.43	20.26			x	x	x
53295-53294	BC22	45-70-00-00	8	255	1.04	0.11	-0.93	10.63					x
53296-53295	BC22	45-70-00-00	8	244.9	0.62	0.11	-0.51	18.39			x	x	x
53379-52522	BC08	45-59-17-03	8	225.3	0.55	0.25	-0.30	45.18	x	x	x	x	x
53727-53727A	BC02	45-59-34-00	8	23.3	0.43	0.21	-0.22	48.72		x	x	x	x
53727A-53727B	BC02	45-59-34-00	8	28.9	0.58	0.21	-0.37	35.95		x	x	x	x
53728-53727	BC02	45-59-34-00	8	165.5	0.62	0.21	-0.41	33.95		x	x	x	x
53729-53728	BC02	45-59-34-00	8	54	0.49	0.21	-0.28	43.71		x	x	x	x
54110-52045	BC05	45-73-04-00	8	247.9	0.61	0.11	-0.50	17.33					x
55251-7298	BC16	45-58-01-00	24	355.4	14.53	3.14	-11.39	21.61					x
55252-55251	BC16	45-58-01-00	8	29.7	0.59	0.39	-0.20	66.15	x	x	x	x	x
55253-55252	BC16	45-58-01-00	8	133.7	0.60	0.39	-0.21	65.18	x	x	x	x	x
55254-55253	BC16	45-58-01-00	8	141.5	0.60	0.39	-0.21	65.77	x	x	x	x	x
55255-55254	BC16	45-58-01-00	8	101.9	0.60	0.40	-0.20	66.53	x	x	x	x	x
55257-55256	BC16	45-58-01-00	8	39.8	0.81	0.40	-0.41	49.99	x	x	x	x	x
55261-55260	BC16	45-58-01-00	8	108	0.60	0.41	-0.19	68.08	x	x	x	x	x
55262-55261	BC16	45-58-01-00	8	282.7	0.60	0.41	-0.19	69.03	x	x	x	x	x
55267-55262	BC16	45-58-01-00	8	45.4	0.78	0.43	-0.35	54.90	x	x	x	x	x
55268-55267	BC16	45-58-01-00	8	168.1	0.78	0.43	-0.35	55.32	x	x	x	x	x
55270-55269	BC16	45-58-01-00	8	143.2	0.78	0.44	-0.34	56.82	x	x	x	x	x
55272-55271	BC16	45-58-01-00	8	191.5	0.80	0.45	-0.35	56.73	x	x	x	x	x
56667-20782	BC20	45-66-07-00	15	399.4	3.16	0.75	-2.41	23.73			x	x	x
57146-44548	BC20	45-66-05-00	15	30.3	3.94	0.80	-3.14	20.23				x	x
59113-59114	BC01	45-59-35-08	8	43.6	0.47	0.11	-0.36	24.38				x	x
59114-59115	BC01	45-59-35-08	8	174.4	0.47	0.11	-0.36	24.11				x	x
59115-59116	BC01	45-59-35-03	8	157	0.47	0.11	-0.36	23.83				x	x
59276-59275	BC14	45-58-04-00	20	89.8	3.80	0.66	-3.14	17.47				x	x
63664-63663	BC09	45-59-22-01	8	213.5	0.92	1.09	0.17	117.96	x	x	x	x	x

PIA 21-22 Request Number 00157

ones Falls - Modeled Capacity Restrictions - Future Condition

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
63665-63664	BC09	45-59-22-01	8	80.3	0.89	1.10	0.21	123.29	x	x	x	x	x
64082-53297	BC22	45-70-00-00	8	107	0.61	0.12	-0.49	19.97			x	x	x
64085-64084	TSJF01	45-59-06-00	8	270.8	1.05	0.13	-0.92	12.26					x
66452-67346	BC09	45-59-25-00	8	107.4	0.72	0.32	-0.40	44.53		x	x	x	x
66453-66452	BC09	45-59-25-00	8	86.4	1.06	0.32	-0.74	30.49			x	x	x
67346-7085	BC09	45-59-25-00	8	50.9	0.68	0.32	-0.36	46.97		x	x	x	x
6875-6874	TSJF01	45-51-00-00	42	165.6	21.73	7.41	-14.32	34.09	x	x	x	x	x
6876-6876N	TSJF01	45-51-00-00	42	88	21.82	7.46	-14.36	34.17	x	x	x	x	x
6876N-6875	TSJF01	45-51-00-00	42	77	22.90	7.44	-15.46	32.48	x	x	x	x	x
6877-6876	TSJF01	45-51-00-00	42	349.7	26.94	7.41	-19.53	27.52	x	x	x	x	x
6880-6879	TSJF01	45-51-00-00	42	146	26.91	7.60	-19.31	28.24	x	x	x	x	x
6882-6880	TSJF01	45-51-00-00	42	769.2	28.91	7.59	-21.32	26.27	x	x	x	x	x
6887-6886	TSJF01	45-54-00-00	42	872.2	28.63	7.74	-20.89	27.05	x	x	x	x	x
6888-6887	TSJF01	45-56-00-00	42	2923.6	29.56	7.77	-21.79	26.29	x	x	x	x	x
69131-33527	BC20	45-66-08-00	15	76.1	2.68	0.46	-2.22	17.01					x
69136-69133	BC24	45-66-10-00	16	59.4	2.71	0.46	-2.25	16.92					x
6924-6923	TSJF01	45-59-02-00	42	438	19.15	4.29	-14.86	22.39	x	x	x	x	x
6925-6924	TSJF01	45-59-02-00	42	795.9	19.29	4.37	-14.92	22.66		x	x	x	x
6926-6925	TSJF01	45-59-02-00	42	747.3	19.18	4.68	-14.50	24.41		x	x	x	x
6927-6926	TSJF01	45-59-04-00	42	89.5	6.87	5.10	-1.77	74.30	x	x	x	x	x
6933-6932	TSJF01	45-59-06-00	30	74.4	18.44	5.57	-12.87	30.18				x	x
6934-6929	TSJF01	45-59-06-00	30	100.3	17.76	5.71	-12.05	32.16		x	x	x	x
6945-6944	BC11	45-59-10-00	27	115.2	16.62	6.24	-10.38	37.55	x	x	x	x	x
6947-6946	BC11	45-59-11-00	24	308.8	14.95	6.30	-8.65	42.12	x	x	x	x	x
6948-32394	BC11	45-59-12-00	24	46.8	9.21	6.35	-2.86	68.95	x	x	x	x	x
6949-6948	BC11	45-59-12-00	24	270.6	16.75	6.36	-10.39	37.98	x	x	x	x	x
6950-6949	BC11	45-59-12-00	24	85.4	14.83	6.41	-8.42	43.24	x	x	x	x	x
6952-6950	BC11	45-59-12-00	24	210.2	4.40	2.10	-2.30	47.72	x	x	x	x	x
6953-38525	BC06	45-59-15-01	24	113.9	13.33	6.40	-6.93	48.04	x	x	x	x	x
6953-38525	BC06	45-59-15-01	15	113.9	3.54	0.00	-3.54	0.00	x	x	x	x	x
6954-18586	BC11	45-59-16-01	24	395.8	13.00	6.44	-6.56	49.51	x	x	x	x	x
6955-6954	BC11	45-59-16-01	24	441.5	12.80	6.50	-6.30	50.74	x	x	x	x	x
6956-19873	BC07	45-59-17-01	24	171.3	12.41	6.11	-6.30	49.20				x	x
6957-6956	BC07	45-59-17-01	24	142.2	10.33	6.13	-4.20	59.39	x	x	x	x	x
6957-6956	BC07	45-59-17-01	15	142.2	0.50	0.00	-0.50	0.00	x	x	x	x	x
7049-6977	BC09	45-59-28-00	10	113.2	1.22	0.92	-0.30	75.27	x	x	x	x	x
7050-7049	BC04	45-59-30-01	10	184.4	1.77	0.92	-0.85	52.16	x	x	x	x	x
7051-7050	BC04	45-59-30-01	10	256.2	1.89	0.93	-0.96	49.38	x	x	x	x	x
7052M-7051	BC04	45-59-30-01	10	5	0.00	0.49	0.49	#DIV/0!	x	x	x	x	x
7062-7061	BC09	45-59-23-00	8	95.7	1.04	0.26	-0.78	24.95				x	x
7063-7062	BC09	45-59-23-00	8	393.6	1.04	0.26	-0.78	25.10			x	x	x
7064-7063	BC09	45-59-23-00	8	300.9	0.53	0.27	-0.26	50.11	x	x	x	x	x
7065-7064	BC09	45-59-23-00	8	215.8	1.18	0.27	-0.91	23.09				x	x
7081-7080	BC09	45-59-25-00	8	210.4	0.50	0.29	-0.21	58.06	x	x	x	x	x

PIA 2[illegible] Master - 00158

ones Falls - Modeled Capacity Restrictions - Future Conditior

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
7083-7082	BC09	45-59-25-00	8	396.3	0.49	0.30	-0.19	61.88	x	x	x	x	x
7084-7083	BC09	45-59-25-00	8	150.6	0.49	0.31	-0.18	63.55	x	x	x	x	x
7085-7084	BC09	45-59-25-00	8	143.1	0.49	0.32	-0.17	64.35	x	x	x	x	x
7087-900091	BC09	45-59-26-00	8	247.6	0.55	0.11	-0.44	20.78					x
7090-7089	BC09	45-59-26-00	8	185	0.49	0.12	-0.37	24.37					x
7092-33448	BC09	45-59-27-00	8	14.5	0.62	0.43	-0.19	68.76	x	x	x	x	x
7094-7093	BC09	45-59-27-00	8	377.4	0.70	0.43	-0.27	61.86	x	x	x	x	x
7099-7098	BC09	45-59-27-00	8	109.5	0.50	0.44	-0.06	88.32	x	x	x	x	x
7102-F1757	BC09	45-59-27-00	8	157	0.69	0.45	-0.24	65.67	x	x	x	x	x
7115-63665	BC09	45-59-22-01	8	87.1	1.42	1.12	-0.30	78.98	x	x	x	x	x
71157-64085	TSJF01	45-59-06-00	8	32.1	0.58	0.13	-0.45	22.88			x	x	x
71158-71157	TSJF01	45-59-06-00	8	89.5	0.61	0.13	-0.48	21.90			x	x	x
7116-7115	BC09	45-59-22-01	8	103.9	0.47	0.41	-0.06	88.11	x	x	x	x	x
71194-38684	BC01	45-59-35-01	8	235.1	0.49	0.05	-0.44	10.45					x
7123-7122	BC09	45-59-22-00	8	396.7	0.55	0.50	-0.05	90.80	x	x	x	x	x
7126-7125	BC09	45-59-22-00	8	113.7	1.22	0.53	-0.69	43.74		x	x	x	x
7127-7126	BC09	45-59-22-00	8	354.8	1.24	0.54	-0.70	43.35		x	x	x	x
7128-7127	BC09	45-59-22-00	8	57.7	1.59	0.55	-1.04	34.43				x	x
7163-23057	BC04	45-59-30-01	8	91.2	0.40	0.09	-0.31	23.48				x	x
7167-7166	BC04	45-59-30-03	8	338.5	0.50	0.43	-0.07	85.98	x	x	x	x	x
7171-7170	BC04	45-59-30-03	8	260.9	1.19	0.47	-0.72	39.36	x	x	x	x	x
7173-7171	BC04	45-59-30-03	8	199.2	1.37	0.48	-0.89	34.69		x	x	x	x
7176-7173	BC04	45-59-30-03	8	390.1	1.29	0.48	-0.81	37.12	x	x	x	x	x
7177-7176	BC04	45-59-30-03	8	355.1	1.66	0.49	-1.17	29.24			x	x	x
7180-7179	BC04	45-59-30-02	8	262.7	0.50	0.46	-0.04	92.26	x	x	x	x	x
7181-7180	BC04	45-59-30-02	8	257.6	0.50	0.48	-0.02	96.32	x	x	x	x	x
7182-7181	BC04	45-59-30-02	8	325.3	0.87	0.52	-0.35	59.22	x	x	x	x	x
7184-7183	BC04	45-59-30-02	8	373.5	1.07	0.53	-0.54	49.08		x	x	x	x
7185-7184	BC04	45-59-30-02	8	288.8	1.08	0.53	-0.55	49.41	x	x	x	x	x
7188-7185	BC04	45-59-30-02	8	41	0.91	0.54	-0.37	59.48	x	x	x	x	x
7254-7253	BC02	45-59-34-00	12	257.9	0.89	0.34	-0.55	37.96	x	x	x	x	x
7255-7254	BC02	45-59-34-00	12	308.6	0.98	0.35	-0.63	35.92	x	x	x	x	x
7256-7255	BC02	45-59-34-00	12	157.2	0.84	0.37	-0.47	44.07	x	x	x	x	x
7257-7270	BC02	45-59-34-00	8	167.6	0.70	0.25	-0.45	35.56	x	x	x	x	x
7260-7259	BC02	45-59-34-00	8	354.8	0.49	0.27	-0.22	54.20	x	x	x	x	x
7261-7260	BC02	45-59-34-00	8	249.9	0.47	0.29	-0.18	61.28	x	x	x	x	x
7262-7261	BC02	45-59-34-00	8	232.7	0.44	0.30	-0.14	67.48	x	x	x	x	x
7263-7262	BC02	45-59-34-00	8	279.6	0.49	0.31	-0.18	62.96	x	x	x	x	x
7264-7263	BC02	45-59-34-00	8	284.3	0.48	0.32	-0.16	66.06	x	x	x	x	x
7265-7264	BC02	45-59-34-00	8	369.3	0.91	0.33	-0.58	36.46		x	x	x	x
7266-7256	BC02	45-59-34-00	8	387.2	0.70	0.23	-0.47	33.37	x	x	x	x	x
7270-7266	BC02	45-59-34-00	8	349.2	0.72	0.24	-0.48	33.85	x	x	x	x	x
7288-7287	BC02	45-59-34-00	8	250.4	1.44	0.34	-1.10	23.90			x	x	x
7289-7256	BC02	45-59-34-00	10	372.2	0.68	0.16	-0.52	22.81			x	x	x

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ones Falls - Modeled Capacity Restrictions - Future Conditior

Facility ID (US MH - DS MH)	Meter Basin ID	Assigned Sewer Service Area	Diameter (in)	Length (ft)	Pipe Design Capacity (MGD)[1]	Total Peak Flow (MGD)[2]	Flow in Excess of Pipe Design Capacity (MGD)[3]	% of Pipe Design Capacity	Capacity Restriction by Design Storm				
									2-yr, 6-hr	2-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	20-yr, 24-hr
7296-7295	BC16	45-58-01-00	24	393.5	9.00	2.99	-6.01	33.18		x	x	x	x
7297-7296	BC16	45-58-01-00	24	345	12.77	3.05	-9.72	23.86				x	x
7298-7297	BC16	45-58-01-00	24	386.6	9.58	3.09	-6.49	32.20			x	x	x
7300-55251	BC16	45-58-01-00	24	223.7	11.77	2.78	-8.99	23.66				x	x
7305-7303	BC16	45-58-03-00	21	316.6	14.82	2.84	-11.98	19.18					x
7308-7305	BC16	45-58-03-00	21	377.7	12.52	2.86	-9.66	22.87				x	x
7311-18322	BC16	45-58-03-00	21	189.4	7.06	1.85	-5.21	26.20				x	x
7314-18241	BC16	45-58-05-00	21	194.1	3.91	1.88	-2.03	47.98	x	x	x	x	x
7315-22223	BC16	45-58-05-00	21	51.5	4.64	1.46	-3.18	31.44		x	x	x	x
901295-901296	BC08	45-59-17-03	8	138.9	0.95	0.27	-0.68	27.94			x	x	x
901296-901297	BC08	45-59-17-03	8	96	0.61	0.26	-0.35	43.18	x	x	x	x	x
901297-901298	BC08	45-59-17-03	8	104	0.60	0.26	-0.34	43.53	x	x	x	x	x
901298-901299	BC08	45-59-17-03	8	260.7	1.05	0.26	-0.79	24.68				x	x
902012-6953	BC11	45-59-16-01	24	199.1	11.03	6.43	-4.60	58.29	x	x	x	x	x
902012-6953	BC11	45-59-16-01	15	199.1	2.35	0.00	-2.35	0.00	x	x	x	x	x
C445-7102	BC09	45-59-27-00	8	47.2	0.36	0.46	0.10	127.64	x	x	x	x	x
F1757-7101	BC09	45-59-27-00	8	179.1	0.70	0.45	-0.25	64.04	x	x	x	x	x
PVT302-PVT303	BC03	45-59-34-00	8	357	0.54	1.05	0.51	194.57	x	x	x	x	x
PVT303-29644	BC03	45-59-34-00	8	279	0.74	1.05	0.31	141.96	x	x	x	x	x

Notes:

1) Pipe Full Capacity (manning's equation)

2) Total peak flow was calculated by reviewing locations of model-predicted SSOs, and simulating an artifical condiditon in the model by gradually increasing the rainfall intensity until the HGL was predicted to be just below the manhole rim (~0.1 feet) - the peak flow at that moment was then reported.

3) Total Peak Flow - Pipe Design Capacity

4) This analysis was performed for the system with future (2025) flows, and no improvements.

PIA 2[illegible] 00160

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March 4, 2020

Mr. Glen Keller, P.E.
Chief, Bureau of Engineering and Construction
Department of Public Works
Bureau of Engineering and Construction
111 West Chesapeake Avenue
Towson, Maryland 21204

Subject: Baltimore County Project 2012-01 On-Call Sewershed Repair, Replacement and Rehabilitation (SRRR) Plan Services
Scope of Work and Fee Proposal – Task Order No. 14 Jones Falls Sewershed I/I Analysis and Post-Rehabilitation Performance Assessment Amendment 1
RJN Project No. 17-2658-14

Dear Mr. Keller:

Please find attached our scope of work and DPW Form 105 fee proposal for an amendment to Task Order 14 of the subject contract to continue monitoring at five flow monitoring sites in the Jones Falls Sewershed, that are currently being monitored by RJN under separate contract, for a 6-month duration. The additional flow monitoring period is proposed to allow for completion of on-going rehabilitation construction along the interceptor. The services to be performed under the amendment and the unit prices used to develop the DPW Form 105 are consistent with previous Task Orders prepared under our On-Call Sewershed Repair, Replacement and Rehabilitation (SRRR) Plan Services Agreement dated March 18, 2013.

We look forward to continuing to work with you on this project.

Sincerely,

Jon van Soestbergen, P.E.
Senior Vice President

Attachments:

Task Order 14 Amendment 1 Detailed Scope of Work, January 22, 2020
Task Order 14 Amendment 1 Fee Summary and DPW 105 Form, January 22, 2020

cc via email: Charles Poskas, Islam Khallaf, Daniel Barrett (RJN)
David Bayer (Baltimore County)

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BALTIMORE COUNTY
BUREAU OF ENGINEERING & CONSTRUCTION
DEPARTMENT OF PUBLIC WORKS
Project 2012-01 On-Call Sewershed Repair, Replacement and Rehabilitation (SRRR) Plan Services
TASK ORDER 14 – AMENDMENT 1
Jones Falls Sewershed I/I Analysis and Post-Rehabilitation Performance Assessment
March 4, 2020

DETAILED SCOPE OF WORK

Amendment 1 is to perform flow monitoring at five sites for 6 months starting February 1, 2020.

Flow monitoring and all services associated with this Amendment 1 will be performed in accordance with the Detailed Scope of Work provided herein, Baltimore County's Consent Decree, including Paragraph 9, Rainfall and Flow Monitoring, Baltimore County's Revised Flow Monitoring Plan, the County's SRRR Guidelines (Section 2.0), and any other guidelines provided by the County.

The additional services provided by RJN Group, Inc. to Baltimore County will be a continuation of flow monitoring at five sites currently being monitored by RJN for the County under Task Order 2 of Master Agreement 02668, On-Call Sanitary Sewer Flow Monitoring.

A. Scope of Services

7. Monitoring Program Start and Duration

1. Monitoring Program Start – The flow metering period for each meter will start on February 1, 2020 and extend the monitoring period at five existing sites for a period of 6 months. Extension of the flow monitoring period at these sites is desired to monitor post-rehabilitation flows after recently completed rehabilitation construction along the interceptor monitored by these five sites. The flow monitoring sites are:

Meter Site	Manhole ID	Metering Purpose	Tributary Length
BC03	33463	Flow Diversion Quantification and Modeling	-
BC09	NS1079	I/I Analysis, Modeling, and Performance Assessment	60,300
BC11	6944	I/I Analysis and Modeling	34,600
BC30	6930	I/I analysis and Modeling	18,300
BC31	14565	I/I analysis and Modeling	19,100

2. Monitoring Period - The monitoring period is estimated to be 6 months. The County may reduce this period or extend this period beyond 6 months in order to meet Consent Decree requirements, in response to site hydraulics, or for any other reason. RJN understands that the County may shorten or extend the flow-monitoring period at the sole discretion of the County. In the event the flow-monitoring period is extended beyond the anticipated 6-month duration, RJN agrees to continue working at the agreed unit prices. Furthermore, RJN understands and agrees that there is no compensation to RJN if the flow monitoring period is reduced from the anticipated 6-month duration.

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8. *Monitor Maintenance and Data Collection*

1. Wireless Remote Data Collection - RJN will utilize a host software support application program for remote wireless flow meter data collection. The host software will be capable of individually, by group or globally changing the data collection interval including collection after each measurement. The host software will enforce clock synchronization with the host system's clock for all field RTUs, thus ensuring time interval integrity for all collected data. RJN will install, operate, maintain and remove the telemetry upon the completion of the monitoring period, and will repair any disturbed areas resulting from the wireless telemetry installations.

2. Web Server Data Availability – RJN will use a system employing client/server architecture. RJN will store all project deliverables including flow and rainfall data; equipment configurations; event logs; site parameters, etc. into a SQL database on a server. Transfer of data will be seamless into the project's Enterprise data platform. The software will allow any networked computer (with the appropriate access rights) access to the data stored in the SQL database using a common web browser (e.g. Microsoft Internet Explorer). The web module will be read only; the user will not have access to modify the database or any operational system configurations. A client access control utility will be included that permits the system administrator to control data content to authorized parties by username and password. Client access control will permit different access levels. The web module will have the ability to present near-real time data (i.e. data upload every 24-hours).

3. Data Transfer to Modeling Software – Monthly flow data submittals will be in .csv file format for importation into InfoWorks CS/ICM modeling software.

4. Data Review - RJN will utilize trained data analysts experienced in processing and analyzing flow and rainfall data from sanitary sewer systems. RJN will use various analytical tools, such as hydrographs, scattergraphs, and flow balancing methods to verify the accuracy of the flow data. RJN will work diligently with the County and the County's hydraulic modeling Consultants to resolve flow balancing issues. RJN will collect data remotely from every flow meter site at least twice a week. Furthermore, RJN will schedule the data collection activities in a manner to allow data review by a trained data analyst within 24-hours of the data collection or delivery from the field. All measurements, adjustments, and efforts undertaken during site visits will be logged in an installation/maintenance log specific to that installation. Such logs will be made available to the County upon request.

5. Equipment Operation and Maintenance (O&M) - The Consultant's qualified field crews will visit each monitor installation as appropriate to perform any necessary maintenance to the equipment. All measurements, adjustments, and efforts undertaken during site visits will be logged in a maintenance log specific to that site, which will be available to the County upon request.

6. Uptime Requirement - RJN will collect useable flow data a minimum of 90% of the time throughout the monitoring period. RJN will submit to the County an "Uptime" table each

month demonstrating compliance with the uptime requirement, including an explanation of the reasons for not meeting the up-time requirement at any site. Monitor uptime will be defined as the number of five (5) minute measurement intervals where a flow value can be calculated from a measured depth and a measured or inferred velocity for a common time interval divided by the total number of measurement intervals in the reporting period. It is understood and agreed between RJN and the County that the uptime requirement is to be generally satisfied with actual measured data. However, it is also recognized that there may be occurrences where a velocity measurement may not be required to develop accurate data. Accordingly, inferred data would not be considered downtime if RJN documents to the satisfaction of the County that accurate data can be obtained without the velocity measurement and that the loss of velocity data was not caused by maintenance neglect. In any case, however, no velocity data will be inferred for any measurement interval where (1) a corresponding depth measurement has not been obtained for that measurement interval or (2) independent calibration measurements have not been acquired for the site.

9. Monitor Confirmation/Calibration

1. Dry Weather - In accordance with RJN procedures, RJN will perform dry-weather, independent depth and velocity measurements during dry weather conditions periodically throughout the project duration. Furthermore, RJN will assess monitor performance relative to these measurements, and make any adjustments to the monitor or raw depth and velocity data as necessary to maximize the accuracy of the data with respect to actual conditions. Such confirmations will be evenly scheduled and performed a minimum of two (2) times during the 6-month flow monitoring period within approximately 3-month time intervals. All measurements, adjustments, and efforts undertaken during site visits will be logged in an installation/maintenance log specific to that installation. Such logs will be provided to the County upon request.

2. Wet Weather - The County and RJN mutually recognize the difficulties and potential hazards associated with obtaining wet weather calibration measurements. Accordingly, RJN will adhere to RJN safety policies as they relate to this topic. However, RJN will demonstrate a good-faith attempt at acquiring at least one (1) independent wet weather measurements. Further, RJN will demonstrate performance relative to this issue by reporting each month during the flow monitoring period the number of independent wet-weather calibration measurements obtained to date at each site. For the purpose of this contract, a wet weather confirmation is acceptable at any time the flows are higher than normal during or following a rain event.

10. Equipment Removal

1. Notification - RJN will notify the County prior to the end of the flow monitoring period. Flow monitoring equipment will not be removed without written County approval.

2. Confirmation – Prior to removing the equipment, RJN will take manual depth and velocity readings using independent instrumentation to confirm that the in-situ monitor yields data representative of actual field conditions. Field crew(s) will also take manual velocity readings of the cross-section (velocity profile) of flow in order to determine the pipe

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hydraulic profile. All measurements, adjustments, and efforts undertaken will be logged in the maintenance log specific to that installation.

3. Site Restoration - RJN will remove all the flow meters at the completion of the flow-monitoring period and will repair any damage or disturbance from the installation and operation of the flow meters.

11. Data Analysis & Reporting

1. Flow Data Analysis - RJN will provide data analysis services for each flow-monitoring site for the entire duration of the flow-monitoring period. Data analysis will include a comprehensive review of collected data to identify data gaps, equipment service needs, as well as the conversion of raw flow data into final edited data. An experienced Data Analyst will review the flow data in order to verify diurnal patterns and reasonable depths and velocities using data diagnostic tools such as hydrographs and scattergraphs. In addition, the Analyst will check for data anomalies or unusual trends that are recognizable.

   Where applicable, metered flow data will be compared to County Pumping Station operation and flow records, as provided by the County, to correlate to the meter data.

2. Flow Data Reporting - RJN will report flow and rainfall data to the County as follows:

   a) Monthly – For each flow meter location, RJN will submit monthly reports of flow data and rainfall data. The data will be submitted electronically by the 30th day for the previous month. Each report will include (as relevant):

   - Five-minute flow, depth, and velocity data in a tabular (.csv) format.
   - Rainfall data for each metered area, correlated by meter basin either to one or more specific County rain gauges or radar-rainfall grids.
   - Five-minute flow, depth, and velocity data will be posted monthly to a web-based portal accessible to Baltimore County and other users as assigned by Baltimore County.
   - Scattergraphs of processed depth-velocity readings with discernable calibration measurements overlain.
   - Monthly hydrographs including depth, velocity, continuity-derived flow, and rainfall hyetographs.
   - An Uptime Report including each metered site, including the basis for failure in meeting uptime requirements and any data quality issues.
   - Meter Calibration Status Report indicating by site the number of calibrations for each month.

   b) Final Data Report – RJN will incorporate the data from the 6-month extension at these five sites into the final data reports for these five sites submitted under Task Order 2 of the On Call Sanitary Sewer Flow Monitoring Contract.

c) Deliverables

- Monthly Operation and Maintenance Reporting
  - Meter summary report documenting issues with the meters and uptimes
  - Meter operation and maintenance and site visit logs
  - Independent depth and velocity confirmations taken during the flow monitoring period (available upon request)
- Monthly Data Reporting
  - On-line internet data access.
  - Monthly finalized flow, depth, and velocity data submitted on CD, including:
    - Tabular finalized flow data in .csv format (Dfinal, Vfinal, Qfinal, Rain)
    - Hydrographs with rainfall hyetographs overlain,
    - Scattergraphs of depth vs velocity
    - Flow balance and summary, if applicable
    - Data and data quality review summary, including data loss summary
    - Data uptime report

B. Compensation

The current Task Order 4 authorized Delivery Order Amount is $160,373.87 (DO# 51730, November 12, 2019). The amount of this Amendment proposal is $76,854.54, which would increase the total delivery amount to $237,228.41.

C. Schedule

The additional services provided by RJN Group, Inc to Baltimore County will not require a change to the current schedule.

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BALTIMORE COUNTY
BUREAU OF ENGINEERING & CONSTRUCTION
DEPARTMENT OF PUBLIC WORKS
Project 2012-01 On-Call Sewershed Repair, Replacement and Rehabilitation (SRRR) Plan ServicesTASK ORDER 14 – AMENDMENT 2
Jones Falls Sewershed I/I Analysis and Post-Rehabilitation Performance Assessment
September 18, 2020

DETAILED SCOPE OF WORK

Under Task Order 14 of Baltimore County Project 2012-01 (MA2446), RJN Group is performing I/I analysis and post-rehabilitation performance assessment services for the Jones Falls sewershed. In support of this effort, flow monitoring was initiated in the Jones Falls sewershed under Baltimore County Master Agreement (MA) No. 00002668 for 18 months at 43 locations in the Jones Falls Sewershed, starting in 2018 and ending on January 31, 2020. It was decided to continue flow monitoring at five (5) locations under MA00002446 to capture additional data in support of the performance assessment effort and additional capacity evaluations for Jones Falls. In January 2020, Amendment 1 to this Task Order 14 extended the flow monitoring period at five (5) existing sites (BC03, BC09, BC11, BC30 and BC31) for six months, through July 31, 2020.

At the request of the County, this Amendment 2 is to extend the flow monitoring period at these existing five meters for an additional 18 months, starting on August 1, 2020. The County also requested that an additional 10 sites be added to allow for additional flow monitoring within Jones Falls in support of the performance assessment and additional capacity evaluations in the sewershed. The specific locations of the additional 10 flow meters has not yet been determined, but the monitoring period for each of the 10 additional sites is anticipated to be 18 months.

Flow monitoring and all services associated with this Amendment 2 will be performed in accordance with the Detailed Scope of Work provided herein, Baltimore County's Consent Decree, including Paragraph 9, Rainfall and Flow Monitoring, Baltimore County's Revised Flow Monitoring Plan, the County's SRRR Guidelines (Section 2.0), and any other guidelines provided by the County.

A. Scope of Services

1. Monitoring Program Start and Duration

1. Monitoring Program Start – The flow metering period for each of the existing five meters will start on August 1, 2020 and extend the monitoring period at those sites for a period of 18 months. The existing flow monitoring sites are:

Meter Site	Manhole ID	Metering Purpose	Tributary Length
BC03	33463	Flow Diversion Quantification and Modeling	-
BC09	NS1079	I/I Analysis, Modeling, and Performance Assessment	60,300
BC11	6944	I/I Analysis and Modeling	34,600
BC30	18452	I/I analysis and Modeling	18,300
BC31	6866	I/I analysis and Modeling	19,100

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The locations of the 10 additional site locations will be determined by Baltimore County, and the monitoring period for each of those additional sites will begin upon installation of the flow meter.

2. Monitoring Period - The monitoring period for each meter is estimated to be 18 months. RJN understands that the County may shorten or extend the flow-monitoring period at the sole discretion of the County. In the event the flow-monitoring period is extended beyond the anticipated 18-month duration, RJN agrees to continue working at the agreed unit prices. Furthermore, RJN understands and agrees that there is no compensation to RJN if the flow monitoring period is reduced from the anticipated 18-month duration.

2. *Monitor Maintenance and Data Collection*

1. Wireless Remote Data Collection - RJN will utilize a host software support application program for remote wireless flow meter data collection. The host software will be capable of individually, by group or globally changing the data collection interval including collection after each measurement. The host software will enforce clock synchronization with the host system's clock for all field RTUs, thus ensuring time interval integrity for all collected data. The data will be collected in Eastern Standard Time (GMT-5). The host software has an alarming capability that can be set with County's authorization. The alarms include high and high high alarms. Each type of alarm is set at a certain trigger level, that is authorized by the County, that will trigger the alarm when the water level reaches the appropriate height. RJN will install, operate, maintain and remove the telemetry upon the completion of the monitoring period, and will repair any disturbed areas resulting from the wireless telemetry installations.

2. Web Server Data Availability – RJN will use a system employing client/server architecture. RJN will store all project deliverables including flow and rainfall data; equipment configurations; event logs; site parameters, etc. into a SQL database on a server. Transfer of data will be seamless into the project's Enterprise data platform. The software will allow any networked computer (with the appropriate access rights) access to the data stored in the SQL database using a common web browser (e.g. Microsoft Internet Explorer). The web module will be read only; the user will not have access to modify the database or any operational system configurations. A client access control utility will be included that permits the system administrator to control data content to authorized parties by username and password. Client access control will permit different access levels. The web module will have the ability to present near-real time data (i.e. data upload every 24-hours).

3. Monthly flow data submittals will be in .csv file format to be submitted to the County.

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4. Data Review - RJN will utilize trained data analysts experienced in processing and analyzing flow and rainfall data from sanitary sewer systems. RJN will use various analytical tools, such as hydrographs, scattergraphs, and flow balancing methods to verify the accuracy of the flow data. RJN will work diligently with the County to resolve flow balancing issues. RJN will collect data remotely from every flow meter site at least twice a week. Furthermore, RJN will schedule the data collection activities in a manner to allow data review by a trained data analyst within 24-hours of the data collection or delivery from the field. All measurements, adjustments, and efforts undertaken during site visits will be logged in an installation/maintenance log specific to that installation. Such logs will be made available to the County upon request.

5. Equipment Operation and Maintenance (O&M) - The Consultant's qualified field crews will visit each monitor installation as appropriate to perform any necessary maintenance to the equipment. All measurements, adjustments, and efforts undertaken during site visits will be logged in a maintenance log specific to that site, which will be available and provided as a deliverable with the monthly data submittal.

6. Uptime Requirement - RJN will collect useable flow data a minimum of 90% of the time throughout the monitoring period. Monitor uptime will be defined as the number of five (5) minute measurement intervals where a flow value can be calculated from a measured depth and a measured or inferred velocity for a common time interval divided by the total number of measurement intervals in the reporting period. It is understood and agreed between RJN and the County that the uptime requirement is to be generally satisfied with actual measured data. However, it is also recognized that there may be occurrences where a velocity measurement may not be required to develop accurate data. Accordingly, inferred data would not be considered downtime if RJN documents to the satisfaction of the County that accurate data can be obtained without the velocity measurement and that the loss of velocity data was not caused by maintenance neglect. In any case, however, no velocity data will be inferred for any measurement interval where (1) a corresponding depth measurement has not been obtained for that measurement interval or (2) independent calibration measurements have not been acquired for the site. Uptime report will be provided as a deliverable with the monthly data submittal.

3. *Monitor Confirmation/Calibration*

   In accordance with RJN procedures, RJN will perform independent depth and velocity measurements periodically throughout the project duration. Furthermore, RJN will assess monitor performance relative to these measurements, and make any adjustments to the monitor or raw depth and velocity data as necessary to maximize the accuracy of the data with respect to actual conditions. All measurements, adjustments, and efforts undertaken during site visits will be logged in an installation/maintenance log specific to that installation and provided to the County with the monthly submittal.

4. *Equipment Removal*

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1. Notification - RJN will notify the County prior to the end of the flow monitoring period. Flow monitoring equipment will not be removed without written County approval.

2. Confirmation – Prior to removing the equipment, RJN will take manual depth and velocity readings using independent instrumentation to confirm that the in-situ monitor yields data representative of actual field conditions. Field crew(s) will also take manual velocity readings of the cross-section (velocity profile) of flow in order to determine the pipe hydraulic profile. All measurements, adjustments, and efforts undertaken will be logged in the maintenance log specific to that installation.

3. Site Restoration - RJN will remove all the flow meters at the completion of the flow-monitoring period.

5. *Data Analysis & Reporting*

1. Flow Data Analysis - RJN will provide data analysis services for each flow-monitoring site for the entire duration of the flow-monitoring period. Data analysis will include a comprehensive review of collected data to identify data gaps, equipment service needs, as well as the conversion of raw flow data into final edited data. An experienced Data Analyst will review the flow data to verify diurnal patterns and reasonable depths and velocities using data diagnostic tools such as hydrographs and scattergraphs. In addition, the Analyst will check for data anomalies or unusual trends that are recognizable.

   Where applicable, metered flow data will be compared to County Pumping Station operation and flow records, as provided by the County, to correlate to the meter data.

2. Flow Data Reporting - RJN will report flow and rainfall data to the County as follows:

   a) Monthly – For each flow meter location, RJN will submit monthly reports of flow data and rainfall data. The data will be submitted electronically by the 30th day for the previous month. Each report will include (as relevant):

   - Five-minute flow, depth, and velocity data in a tabular (.csv) format.
   - Rainfall data for each metered area, correlated by meter basin either to one or more specific County rain gauges or radar-rainfall grids.
   - Five-minute flow, depth, and velocity data will be posted monthly to a web-based portal accessible to Baltimore County and other users as assigned by Baltimore County.
   - Scattergraphs of processed depth-velocity readings with discernable calibration measurements overlain.
   - Monthly hydrographs including depth, velocity, continuity-derived flow, and rainfall hyetographs.
   - An Uptime Report including each metered site, including the basis for failure in meeting uptime requirements and any data quality issues.
   - Meter Calibration Status Report indicating by site the number of calibrations for each month.
   - Operation & Maintenance log report.

b) Final Data Report – RJN will incorporate the data from the existing five sites into the final data reports for these five sites to be submitted. Final Data Reports for the 10 new flow meter locations will be submitted within 30 days of the end of the flow monitoring period for each meter.

c) Deliverables

- Monthly Operation and Maintenance Reporting
  - Meter summary report documenting issues with the meters and uptimes
  - Meter operation and maintenance and site visit logs
  - Independent depth and velocity confirmations taken during the flow monitoring period (available upon request)
- Monthly Data Reporting
  - On-line internet data access.
  - Monthly finalized flow, depth, and velocity data submitted on CD, including:
    - Tabular finalized flow data in .csv format (Dfinal, Vfinal, Qfinal, Rain)
    - Hydrographs with rainfall hyetographs overlain,
    - Scattergraphs of depth vs velocity
    - Flow balance and summary, if applicable
    - Data and data quality review summary, including data loss summary
    - Data uptime report

B. Compensation

The current Task Order 14 authorized Delivery Order Amount, including Amendment 1 is $237,228.41 (DO# 51730, May 12, 2020). The amount of this Amendment 2 proposal is $723,500.00, which would increase the total Task Order 14 amount to $960,728.41.

C. Schedule

This amendment will extend the flow monitoring period at five existing locations for a period of 18 months. The scheduled flow monitoring period for each of the additional 10 flow meters will be 18 months, starting upon installation of the flow meter. The amendment will not change the schedule for other deliverables as required under this Task Order.

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BALTIMORE COUNTY
BUREAU OF ENGINEERING & CONSTRUCTION
DEPARTMENT OF PUBLIC WORKS
Project 2012-01 On-Call Sewershed Repair, Replacement and Rehabilitation (SRRR) Plan ServicesTASK ORDER 14 – AMENDMENT 3
Jones Falls Sewershed I/I Analysis and Post-Rehabilitation Performance Assessment
December 23, 2020

DETAILED SCOPE OF WORK

Under Task Order 14 of Baltimore County Project 2012-01 (MA2446), RJN Group is performing I/I analysis and post-rehabilitation performance assessment services for the Jones Falls sewershed. In support of this effort, flow monitoring was initiated in the Jones Falls sewershed under Baltimore County Master Agreement (MA) No. 00002668 for 18 months at 43 locations in the Jones Falls Sewershed, starting in 2018 and ending on January 31, 2020. It was decided to continue flow monitoring at five (5) locations under MA00002446 to capture additional data in support of the performance assessment effort and additional capacity evaluations for Jones Falls. In January 2020, Amendment 1 to this Task Order 14 extended the flow monitoring period at five (5) existing sites (BC03, BC09, BC11, BC30 and BC31) for six months, through July 31, 2020.

At the request of the County, Amendment 2 was submitted on September 18, 2020 to extend the flow monitoring period at these existing five meters for an additional 18 months, starting on August 1, 2020. The County also requested that an additional 10 sites be added to allow for additional flow monitoring within Jones Falls in support of the performance assessment and additional capacity evaluations in the sewershed. The specific locations of the additional 10 flow meters has not yet been determined, but the monitoring period for each of the 10 additional sites is anticipated to be 18 months.

At the request of the County, this Amendment 3 is to add additional 15 flow meters. Total number of meters, to include the existing 5 meters, additional 10 meters (amendment 2) and additional 15 meters (this amendment 3) will be 30 meters.

Flow monitoring and all services associated with this Amendment 3 will be performed in accordance with the Detailed Scope of Work provided herein, Baltimore County's Consent Decree, including Paragraph 9, Rainfall and Flow Monitoring, Baltimore County's Revised Flow Monitoring Plan, the County's SRRR Guidelines (Section 2.0), and any other guidelines provided by the County.

A. Scope of Services

1. Monitoring Program Start and Duration

1. Monitoring Program Start – The flow metering period for each of the existing five meters will start on August 1, 2020 and extend the monitoring period at those sites for a period of 18 months. The existing flow monitoring sites are:

Meter Site	Manhole ID	Metering Purpose	Tributary Length
BC03	33463	Flow Diversion Quantification and Modeling	-
BC09	NS1079	I/I Analysis, Modeling, and Performance Assessment	60,300

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BC11	6944	I/I Analysis and Modeling	34,600
BC30	18452	I/I analysis and Modeling	18,300
BC31	6866	I/I analysis and Modeling	19,100

The locations of the 15 additional site locations will be determined by Baltimore County, and the monitoring period for each of those additional sites will begin upon installation of the flow meter.

2. Monitoring Period - The monitoring period for each meter is estimated to be 18 months. RJN understands that the County may shorten or extend the flow-monitoring period at the sole discretion of the County. In the event the flow-monitoring period is extended beyond the anticipated 18-month duration, RJN agrees to continue working at the agreed unit prices. Furthermore, RJN understands and agrees that there is no compensation to RJN if the flow monitoring period is reduced from the anticipated 18-month duration.

2. *Monitor Maintenance and Data Collection*

1. Wireless Remote Data Collection - RJN will utilize a host software support application program for remote wireless flow meter data collection. The host software will be capable of individually, by group or globally changing the data collection interval including collection after each measurement. The host software will enforce clock synchronization with the host system's clock for all field RTUs, thus ensuring time interval integrity for all collected data. The data will be collected in Eastern Standard Time (GMT-5). The host software has an alarming capability that can be set with County's authorization. The alarms include high and high high alarms. Each type of alarm is set at a certain trigger level, that is authorized by the County, that will trigger the alarm when the water level reaches the appropriate height. RJN will install, operate, maintain and remove the telemetry upon the completion of the monitoring period, and will repair any disturbed areas resulting from the wireless telemetry installations.

2. Web Server Data Availability – RJN will use a system employing client/server architecture. RJN will store all project deliverables including flow and rainfall data; equipment configurations; event logs; site parameters, etc. into a SQL database on a server. Transfer of data will be seamless into the project's Enterprise data platform. The software will allow any networked computer (with the appropriate access rights) access to the data stored in the SQL database using a common web browser (e.g. Microsoft Internet Explorer). The web module will be read only; the user will not have access to modify the database or any operational system configurations. A client access control utility will be included that permits the system administrator to control data content to authorized parties by username and password. Client access control will permit different access levels. The web module will have the ability to present near-real time data (i.e. data upload every 24-hours).

3. Monthly flow data submittals will be in .csv file format to be submitted to the County.

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4. Data Review - RJN will utilize trained data analysts experienced in processing and analyzing flow and rainfall data from sanitary sewer systems. RJN will use various analytical tools, such as hydrographs, scattergraphs, and flow balancing methods to verify the accuracy of the flow data. RJN will work diligently with the County to resolve flow balancing issues. RJN will collect data remotely from every flow meter site at least twice a week. Furthermore, RJN will schedule the data collection activities in a manner to allow data review by a trained data analyst within 24-hours of the data collection or delivery from the field. All measurements, adjustments, and efforts undertaken during site visits will be logged in an installation/maintenance log specific to that installation. Such logs will be made available to the County upon request.

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6. Uptime Requirement - RJN will collect useable flow data a minimum of 90% of the time throughout the monitoring period. Monitor uptime will be defined as the number of five (5) minute measurement intervals where a flow value can be calculated from a measured depth and a measured or inferred velocity for a common time interval divided by the total number of measurement intervals in the reporting period. It is understood and agreed between RJN and the County that the uptime requirement is to be generally satisfied with actual measured data. However, it is also recognized that there may be occurrences where a velocity measurement may not be required to develop accurate data. Accordingly, inferred data would not be considered downtime if RJN documents to the satisfaction of the County that accurate data can be obtained without the velocity measurement and that the loss of velocity data was not caused by maintenance neglect. In any case, however, no velocity data will be inferred for any measurement interval where (1) a corresponding depth measurement has not been obtained for that measurement interval or (2) independent calibration measurements have not been acquired for the site. Uptime report will be provided as a deliverable with the monthly data submittal.

3. *Monitor Confirmation/Calibration*

   In accordance with RJN procedures, RJN will perform independent depth and velocity measurements periodically throughout the project duration. Furthermore, RJN will assess monitor performance relative to these measurements, and make any adjustments to the monitor or raw depth and velocity data as necessary to maximize the accuracy of the data with respect to actual conditions. All measurements, adjustments, and efforts undertaken during site visits will be logged in an installation/maintenance log specific to that installation and provided to the County with the monthly submittal.

4. *Equipment Removal*

1. Notification - RJN will notify the County prior to the end of the flow monitoring period. Flow monitoring equipment will not be removed without written County approval.

2. Confirmation – Prior to removing the equipment, RJN will take manual depth and velocity readings using independent instrumentation to confirm that the in-situ monitor yields data representative of actual field conditions. Field crew(s) will also take manual velocity readings of the cross-section (velocity profile) of flow in order to determine the pipe hydraulic profile. All measurements, adjustments, and efforts undertaken will be logged in the maintenance log specific to that installation.

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1. Flow Data Analysis - RJN will provide data analysis services for each flow-monitoring site for the entire duration of the flow-monitoring period. Data analysis will include a comprehensive review of collected data to identify data gaps, equipment service needs, as well as the conversion of raw flow data into final edited data. An experienced Data Analyst will review the flow data to verify diurnal patterns and reasonable depths and velocities using data diagnostic tools such as hydrographs and scattergraphs. In addition, the Analyst will check for data anomalies or unusual trends that are recognizable.

   Where applicable, metered flow data will be compared to County Pumping Station operation and flow records, as provided by the County, to correlate to the meter data.

2. Flow Data Reporting - RJN will report flow and rainfall data to the County as follows:

   a) Monthly – For each flow meter location, RJN will submit monthly reports of flow data and rainfall data. The data will be submitted electronically by the 30th day for the previous month. Each report will include (as relevant):

   - Five-minute flow, depth, and velocity data in a tabular (.csv) format.
   - Rainfall data for each metered area, correlated by meter basin either to one or more specific County rain gauges or radar-rainfall grids.
   - Five-minute flow, depth, and velocity data will be posted monthly to a web-based portal accessible to Baltimore County and other users as assigned by Baltimore County.
   - Scattergraphs of processed depth-velocity readings with discernable calibration measurements overlain.
   - Monthly hydrographs including depth, velocity, continuity-derived flow, and rainfall hyetographs.
   - An Uptime Report including each metered site, including the basis for failure in meeting uptime requirements and any data quality issues.
   - Meter Calibration Status Report indicating by site the number of calibrations for each month.
   - Operation & Maintenance log report.

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b) Final Data Report – RJN will incorporate the data from the existing five sites into the final data reports for these five sites to be submitted. Final Data Reports for the 10 new flow meter locations will be submitted within 30 days of the end of the flow monitoring period for each meter.

c) Deliverables

- Monthly Operation and Maintenance Reporting
  - Meter summary report documenting issues with the meters and uptimes
  - Meter operation and maintenance and site visit logs
  - Independent depth and velocity confirmations taken during the flow monitoring period (available upon request)
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  - Monthly finalized flow, depth, and velocity data submitted on CD, including:
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    - Hydrographs with rainfall hyetographs overlain,
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    - Flow balance and summary, if applicable
    - Data and data quality review summary, including data loss summary
    - Data uptime report

B. Compensation

The current Task Order 14 authorized Delivery Order Amount, including Amendment 1 is $237,228.41 (DO# 51730, May 12, 2020). The amount of Amendment 2 proposal is $723,500.00, The amount of this Amendment 3 proposal is $741,000.00 which would increase the total Task Order 14 amount to $1,701,728.41

C. Schedule

This amendment will add additional 15 flow meters for a period of 18 months. The scheduled flow monitoring period for each of the additional 15 flow meters will be 18 months, starting upon installation of the flow meter. The amendment will not change the schedule for other deliverables as required under this Task Order.

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Hazen and Sawyer
1 South Street, Suite 1150
Baltimore, MD 21202 • 410.539.7681

February 6, 2023

Baltimore County Department of Public Works
Bureau of Engineering and Construction
County Office Building, Room 219
111 West Chesapeake Avenue
Towson, MD 21204
Attn: Mr. David Bayer, PE/Ms. Lisa Eicholtz, PE

Re: January 2023 Progress Report for Project 2015-03, Task 003

Ms. Eicholtz and Mr. Bayer:

The following is the progress report through the month of January 2023 for Task 003, Jones Falls Sewershed Comprehensive Evaluation. Had a Progress Workshop on December 14th and a discussion on the Draft Report outline January.

I. Current Project Status

- **Task 1 – Project Administration – Ongoing**
    - Task 1 is ongoing and will continue throughout the project.
    - Invoices are up to date (through end of November 2022, December 2022 will be sent shortly) and have been submitted to the County for review/approval. The invoice submittal process has changed, as going forward invoices will be submitted electronically to the County.
    - Schedule is being updated as the project progresses with updates provided, if and when necessary. Work has progressed largely along with the Baseline Schedule to date. Flow monitoring and ensuring recent data is used for model calibration purposes has shifted the project completion date to Winter 2023/January 2024, which is past the original completion data. This will result in a more comprehensive evaluation of the sewer system in its current condition and future condition.
    - Implemented a GIS Network Drive and Virtual Desktop to allow for collaboration amongst our multi-region project team. This prevents data loss and corruption. GIS data stored in Microsoft Azure SQL storage and accessible by Database Connections. Hosted live in Hazen GIS Portal as referenced registered data and connected directly to PowerBI.
- **Task 2 – Gather and Review Existing Data – Complete (Provide additional services as required, if identified during project)**

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- Hazen completed review of past historical reports provided by the County.
- Reviewed SSO, basement backup, and work order info (cleaning, repairs, etc.) from the Bureau of Utilities.
- Reviewed latest sewerline and manhole inspection information, coupled with asset rehabilitation information, to identify assets where inspections would be warranted to assess current structural/O&M condition
- Reviewed as-built drawings and GIS data against the existing model framework to identify discrepancies and data gaps

- **Task 3 – System Characterization and Gap Analysis – Partially Complete (Provide additional services as required, if identified during project)**
  - Completed a gap analysis of the existing model.
  - Completed a QA/QC of the GIS data available to expand the hydraulic model.
  - Based on the GIS review and model gap analysis, completed survey of manholes to update the hydraulic model.
  - Completed a Hot Spot Analysis associated with all SSO, basement backup, and work order data. This Hot Spot Analysis allowed for field work areas to be identified for field reconnaissance and CCTV/manhole inspection.
  - Field Reconnaissance work has begun. An SOP was developed for data capture.
  - CCTV work has begun. An SOP was developed for data capture. Assets were identified based upon a review of RDII results, NASSCO database scores, etc. Priority 1 pipe assets are those without recent CCTV data, within high RDII basins, and without recent rehab history.
  - Phase II Field Reconnaissance (CCTV, Acoustic, and Sonar) work will follow model calibration/validation into Spring 2023.

- **Task 4 – Flow/Rainfall Monitoring Data Review and Interim I/I Analysis – Ongoing**
  - Using Hazen Q, completed a flow, level, and rainfall monitoring data review to assess current high RDII sewer service areas. These areas respond more dramatically to rainfall.
  - Using the results of the Hazen Q analysis, coupled with SSO, basement backup, work order, and rehabilitation data selected flow monitor locations in order to refine the hydraulic model calibration during model expansion.

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- County completed deployment of the additional flow monitors, based upon the recommendations, in late October 2021. Flow monitoring data has been received through September/October 2022.

- **Task 5 – Hydraulic Model Refinement and Calibration – Ongoing**

  - Completed existing model review and gap analysis.

  - Expanded the existing model to include all sewers in the sewershed (original model included 10" and larger). This expansion to include all sewers and manholes within the sewershed will allow for a more detailed sewershed wide analysis.

  - Completed subcatchment delineation updates within the model. This resulted in major improvements to metershed coverage, removal of unsewered areas that do not contribute to rainfall dependent inflow and infiltration (RDII), and increased flow distribution resolution.

  - Updated dry weather flow distribution based upon water meter billing data, which was georeferenced using GIS for accurate distribution of sewer flows. Also utilized TAZ information to help allocate flows within the hydraulic model.

  - Implemented improved wet weather simulation methodology: existing model used fixed runoff whereas the expanded model uses RTK plus a groundwater infiltration model to address antecedent moisture condition.

  - Developed initial population/employment projections. These projections were discussed with County Planning. Meetings were held with Stakeholders within the Jones Falls Sewershed to discuss wastewater flow projections, which are directly related to residential and employment projections.

  - Completed an initial climate change assessment, which aimed to assess potential rainfall impacts within the sewershed over the 50 year planning period. Climate change is believed to compress the hydrologic cycle, resulting in long periods of dry conditions punctuated with more frequent heavy rainfall. Extremes can increase at a higher rate than average annual rainfall. As a part of the Climate Action Plan, Hazen recommended a 15% increase in precipitation in the 2050's and a 30% increase in precipitation in the 2080's.

  - Completed initial septic system elimination evaluation. Next step in this evaluation will be to use the calibrated sewer model to assess the impact connecting septic systems to the public sewer system may have on capacity and needed improvements. This is anticipated to be completed in Summer/Fall 2022 when model calibration is complete.

  - Continued model validation efforts. Initial model validation of the expanded model was completed using some of the historical and ongoing flow monitoring

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within the sewershed. This is being refined with new modeling data, as it becomes available in 2022 – have received data through September 2022.

- Completed Dry Weather Flow Calibration in December 2022. A total of 63 meters were used spanning from 2018 through 2022. Only 4 meters were deemed uncalibrated, but reasons were developed for the differences in flows:
  - FM26 - New meter with flow data mass balance issues. Model calibrated to the upstream meters at BC09 (permanent) and BC10 (historical), and immediate downstream meter at BCSSO01 (historical). This is the new meter we added, add more details to explain if we have.
  - BC03 - Permanent meter with flow data mass balance issues. Poor data quality observed per the historical data. Model calibrated to the immediate downstream new meter at FM03, which was added to verify/replace BC03.
  - BC06 - Historical meter with substitute new meter at FM22 (immediate upstream). Model calibrated to the new meter FM22.
  - 6882- New meter with flow data mass balance issues. Model calibrated to the immediate upstream permanent meter at BC31, which can balance the accumulated flow from the multiple upstream meters.
- Goal is to complete wet weather calibration by February, so current and future capacity analysis can take place. Wet weather calibration is underway.

- **Task 6 – Asset Management and Capital Improvement Program Development - Ongoing**
  - Hazen completed a socioeconomic analysis for the sewershed. This analysis was completed to determine if socioeconomic and demographic characteristics of Jones Falls and other Baltimore County Sewersheds should be used to prioritize planned sewer collection system projects. Analysis also helped to answer the question of whether there are proposed projects that could receive priority ranking for Federal or State Loan or Grant Programs based on Environmental Justice Issues. Based on the analysis completed, it appearr that socioeconomic factors will have minimal impact on project prioritization within the Jones Falls sewershed.
  - Hazen has completed the initial Asset Management component of the project. This work will be expanded following the hydraulic model capacity analysis. See Task 5 above.
  - Hazen completed a stream evaluation using a risk assessment approach that complements the asset management assessment. Focus is to reduce the risk of SSO's caused by exposure of and damage to sewer assets from erosion. Outcomes of this evaluation include: inspection prioritization by risk, field inspection

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methodology, pilot field inspections, rehabilitation decision trees. Field confirmations were completed. 36 potential exposures were identified from the analysis.

- Developed a risk-based framework that can be applied to the sewershed assets. Framework includes 4 failure modes and a Triple Bottom Line Evaluation (Socia, Economic, and Environmental).
- Consequence of Failure criteria were defined in accordance with the Triple Bottom Line Evaluation. Assets have been assigned preliminary Consequence of Failure ratings.
- Likelihood of Failure criteria was also defined.
- Workshops have been held to discuss goals and best industry practices.

- **Task 7 – Sewershed Evaluation Report – Future Work**
  - Hazen has begun development of text that will populate the future Sewershed Evaluation Report, including data analysis, model gap analysis, model expansion, flow monitor selection, future flow projections, septic system evaluation, stream asset prioritization, and asset management. A Draft Outline was presented on December 14th – County and Hazen discussed additions/changes in mid-January. The Report Outline was agreed upon. Targeting a July Draft Report Submittal.

- **Task 8 – Public Outreach – Ongoing**
  - Hazen has provided the County with information, as needed, based upon inquiries about the ongoing work within the sewershed.
  - Prepared preliminary PowerBI Dashboards for results presentation purposes. These could be shared with Stakeholders to provide project updates.
  - Future Public Outreach will be conducted as deemed necessary by the County with support from Hazen.
  - Quarterly Reports are being prepared for publication – they are posted on the County's website.

- **Other Items**
  - The following innovations have been implemented on this project:
    a) Hazen Q Analysis – Better RDII Analysis Tool
    b) Model Calibration – RTK + GWI Model – Better Tool to Assess Capacity Needs

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c) Digital Field Work Approach – SOPs with Collector and Survey 1,2,3

d) Climate Sensitivity

e) Stream Assessment Approach – Utilize GIS to help characterize risk

f) Tie in Equity and Sustainability to Asset Management Framework

g) Triple Bottom Line – Social, Economic, and Environmental

h) Dashboard Visualizations

II. Upcoming Work

- Meetings to be held:
  - Meeting with the Groundwater Management Section to discuss Septic System Analysis completed.
- If required or identified by modeling efforts - Phase II CCTV Inspection, Acoustic Inspection, Sonar Inspection and manhole inspections beginning in early 2023 and continuing into Spring 2023. Hazen may rely upon data available in CityWorks, as this remains the most current information.
- Creek Walks/Exposed Asset Assessments have been completed. Additional work may be required at the 36 potential exposed assets. County and Hazen to discuss prior to any further field work.
- Dry weather model calibration is complete. Wet weather model calibration to be completed by February. New flow monitoring data was provided by the County through September/October.

III. Longer Term Work Items

- Capacity assessment using the calibrated model under future flow conditions.
- Acoustic Inspection, Sonar/CCTV Inspections, if required based upon modeling results. Otherwise, Hazen will rely upon CityWorks data.
- Review capacity assessment results and define level of service.
- Review recommended Capital Improvement Program (CIP).
- Recommended Asset Management Program features.
- Final PowerBI Dashboards (and/or ESRI Dashboards) to present results and findings.

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- Document recommended Best Management Practices for future operations and maintenance of the system.
    - Meeting with Stakeholders within the Jones Falls Sewershed to discuss wastewater flow projections, which are directly related to residential and employment projections.

IV. County Action Items

- County to weigh in on whether any of the innovation ideas discussed would be of interest for piloting within the Jones Falls Sewershed. Ideas included:
    - Artificial Intelligence/Machine Learning – "Smart" Sewer
        a) Operational Enhancements
        b) Forecasting – Weather, Flow, Failure, and Predictive.
    - Smart Manhole Cover Technology/Level Monitoring
        a) Maintenance Prioritization
        b) Strategic Complete Sewer Rehabilitation
    - Markov Chain Probabilistic Modeling
    - Resiliency/Reliability and Conservation
        a) Energy Management/Optimization
        b) Operational Enhancements/Automatic Operation
    - Tools/Software (Cover Separately)
        a) CityWorks – Condition Data, Work Order Data, Risk Scores
        b) Dude Solutions Capital Predictor – Work with GIS, CityWorks, and PowerBI
        c) GIS and PowerBI
- County working to provide Hazen with CityWorks access. Data effort will focus on pipe and manhole repair work orders. Other factors that will be considered include customer service requests/complaints, potential for internal corrosion, and choke history.

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- Continued coordination with On-Call Flow Monitoring Contractors to have flow monitoring data provided throughout the Jones Falls Sewershed. County is continuing to send this data as it becomes available – David Bayer has provided through May 2022.
- Investigate whether the County has any additional FOG data that Hazen could add to the data analysis.
- County to gather historical SL-RAT data for Hazen analysis purposes.

V. Task Budget Status

Project Costs	Total Fee	Prior Billings	This Invoice (January 1 – January 31, 2023)	Billed to Date	Percent Billed
Task 003	**2,313,083.12**	**$1,487,426.16**	**$26,161.53**	**$1,513,587.69**	**65.4%**

If you have any questions or require additional information, please don't hesitate to contact me.

Regards,

Jeremy Hise

Jeremy T. Hise, PE
Senior Associate/Project Manager

Enclosure: Project Schedule (January 2023 Update)

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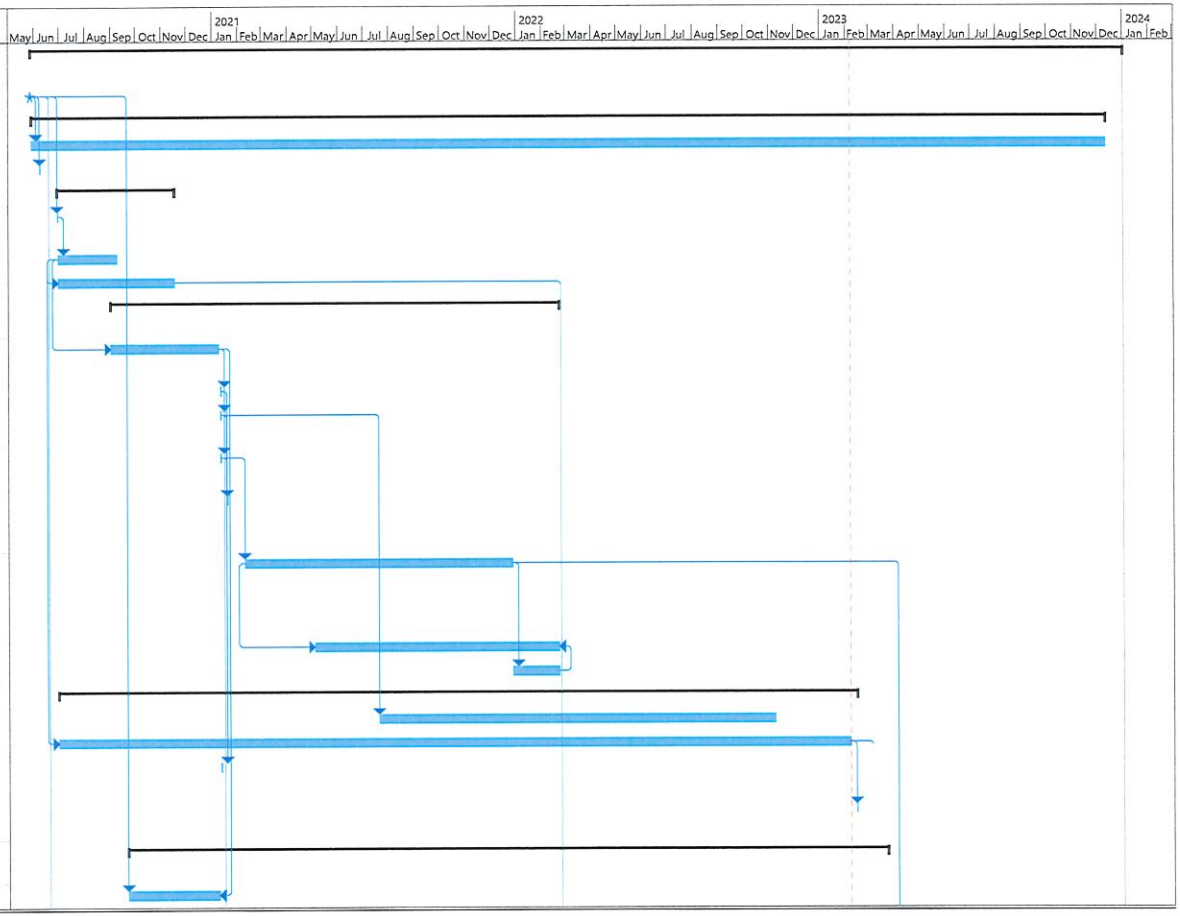
ID	Task Name	Duration	Start	Finish	Actual Start
1	**Jones Falls Sewershed Comprehensive Evaluation**	938 days	Thu 5/28/20	Mon 1/1/24	NA
2	**NTP**	1 day	Thu 5/28/20	Thu 5/28/20	NA
3	**Task 1 - Project Administration**	922 days	Fri 5/29/20	Mon 12/11/23	NA
4	Project Management	922 days	Fri 5/29/20	Mon 12/11/23	NA
5	Kick-off Meeting	1 day	Mon 6/8/20	Mon 6/8/20	NA
6	**Task 2 - Gather/Review Existing Data**	101 days	Mon 6/29/20	Mon 11/16/20	NA
7	Submit Formal Data Request to County	1 day	Mon 6/29/20	Mon 6/29/20	NA
8	Obtain Data from County	51 days	Tue 6/30/20	Tue 9/8/20	NA
9	Review Data	100 days	Tue 6/30/20	Mon 11/16/20	NA
10	**Task 3 - System Characterization and Data Gap Analysis**	385 days	Tue 9/1/20	Mon 2/21/22	NA
11	Map Data/ID Problem Areas/Gap Analysis	94 days	Tue 9/1/20	Fri 1/8/21	NA
12	Gap Analysis Results to County	1 day	Mon 1/11/21	Mon 1/11/21	NA
13	Suggested Monitoring Locations to County	1 day	Mon 1/11/21	Mon 1/11/21	NA
14	Suggested Fieldwork Recommendations to County	1 day	Mon 1/11/21	Mon 1/11/21	NA
15	Gap Analysis/Fieldwork Recommendations Meeting	1 day	Tue 1/19/21	Tue 1/19/21	NA
16	Field Inspections (MH Surveys, MH Inspections, CCTV Inspections, Acoustic Inspections, Creek Walks, Sonar/CCTV Inspections)	230 days	Tue 2/9/21	Mon 12/27/21	NA
17	Supply Fieldwork Data to County	210 days	Tue 5/4/21	Mon 2/21/22	NA
18	Summarize Field Data	40 days	Tue 12/28/21	Mon 2/21/22	NA
19	**Task 4 - Flow Data Review and I/I Analysis**	686 days	Tue 6/30/20	Tue 2/14/23	NA
20	Flow/Rainfall Monitoring (by others)	340 days	Tue 7/20/21	Mon 11/7/22	NA
21	Flow Data Review and I/I Analysis	680 days	Tue 6/30/20	Mon 2/6/23	NA
22	RDII Analysis Results (Existing Flow Monitoring Data) to County	1 day	Mon 1/11/21	Mon 1/11/21	NA
23	RDII Analysis Results (New Flow Monitoring Data) to County	1 day	Tue 2/14/23	Tue 2/14/23	NA
24	**Task 5 - Model Refinement/Calibration/Verification**	654 days	Mon 9/21/20	Thu 3/23/23	NA
25	Existing Model Review	80 days	Mon 9/21/20	Fri 1/8/21	NA

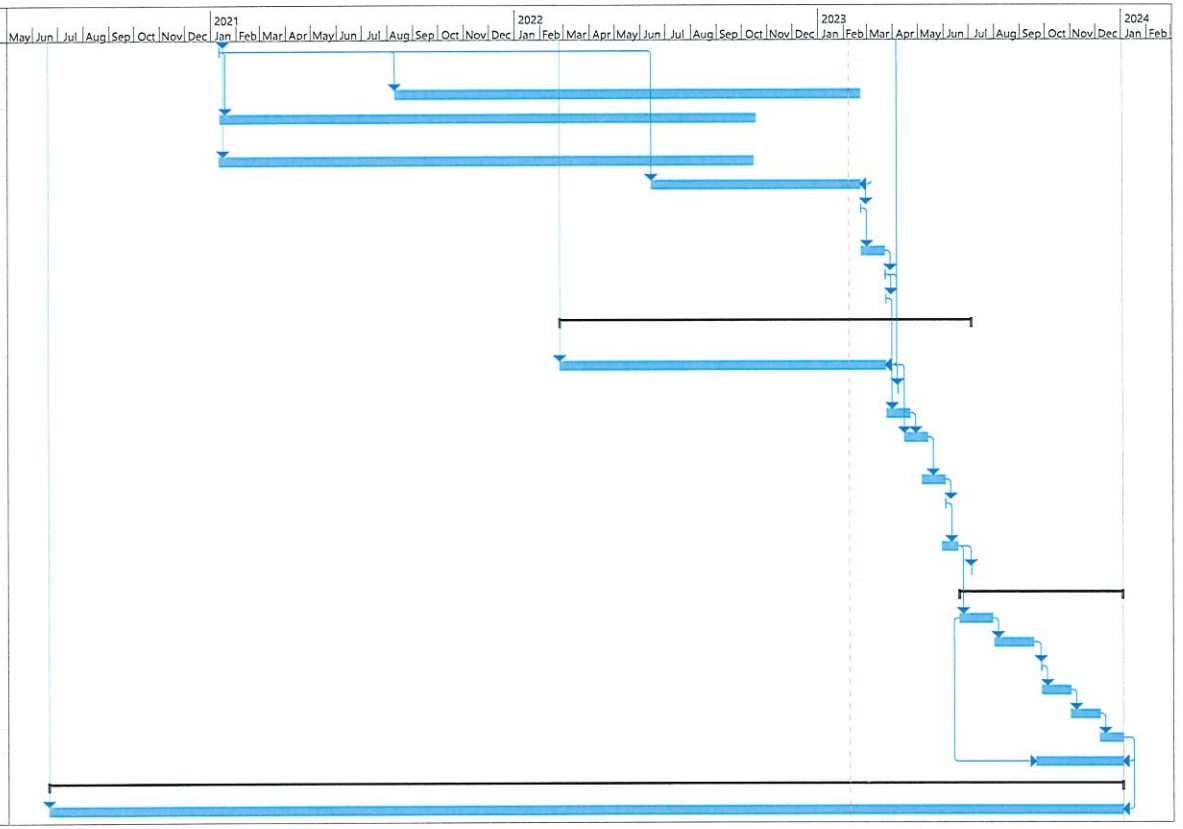


Project: Jones Falls Sewershed Comprehensive Evaluation
Date: Tue 2/7/23

Task Milestone Summary

PIA 23-172 Hazen - 00300

ID	Task Name	Duration	Start	Finish	Actual Start
26	Suggested Model Adjustments to County	1 day	Mon 1/11/21	Mon 1/11/21	NA
27	Phase 2 Field Investigations	400 days	Tue 8/10/21	Mon 2/20/23	NA
28	Future Populations and Flow Projections	460 days	Tue 1/12/21	Mon 10/17/22	NA
29	Septic System Evaluation	460 days	Mon 1/11/21	Fri 10/14/22	NA
30	Model Update/Recalibration	180 days	Tue 6/14/22	Mon 2/20/23	NA
31	Model Update/Recalibration Report to County	1 day	Tue 2/21/23	Tue 2/21/23	NA
32	Capacity Assessment	20 days	Wed 2/22/23	Tue 3/21/23	NA
33	Capacity Assessment Report to County	1 day	Wed 3/22/23	Wed 3/22/23	NA
34	Capacity Assessment/LOS Meeting	1 day	Thu 3/23/23	Thu 3/23/23	NA
35	**Task 6 - Asset Management/CIP Development**	**353 days**	**Thu 2/24/22**	**Mon 7/3/23**	**NA**
36	Risk Assessment	280 days	Thu 2/24/22	Wed 3/22/23	NA
37	Risk Assessment Results Meeting	1 day	Thu 4/6/23	Thu 4/6/23	NA
38	Capacity Alternatives	20 days	Fri 3/24/23	Thu 4/20/23	NA
39	Asset Renewal/Capacity/O&M Funding Assessment	20 days	Fri 4/14/23	Thu 5/11/23	NA
40	R&R, Capacity and O&M Recommendatic	20 days	Fri 5/5/23	Thu 6/1/23	NA
41	Asset Management Program Development Report to County	1 day	Fri 6/2/23	Fri 6/2/23	NA
42	Prioritized CIP	15 days	Mon 5/29/23	Fri 6/16/23	NA
43	CIP Recommendations Meeting	1 day	Mon 7/3/23	Mon 7/3/23	NA
44	**Task 7 - Sewershed Evaluation Reports**	**141 days**	**Mon 6/19/23**	**Mon 1/1/24**	**NA**
45	Draft Report	30 days	Mon 6/19/23	Fri 7/28/23	NA
46	County Review	35 days	Mon 7/31/23	Fri 9/15/23	NA
47	Draft Report Review Meeting	1 day	Mon 9/25/23	Mon 9/25/23	NA
48	Revised Draft Report	25 days	Tue 9/26/23	Mon 10/30/23	NA
49	County Review	25 days	Tue 10/31/23	Mon 12/4/23	NA
50	Final Report	20 days	Tue 12/5/23	Mon 1/1/24	NA
51	Power BI	75 days	Tue 9/19/23	Mon 1/1/24	NA
52	**Task 8 - Public Outreach**	**922 days**	**Fri 6/19/20**	**Mon 1/1/24**	**NA**
53	Community Meetings	922 days	Fri 6/19/20	Mon 1/1/24	NA



Project: Jones Falls Sewershed Comprehensive Evaluation
Date: Tue 2/7/23

Task Milestone Summary

PIA 23-172 Hazen - 00301

Baltimore County

Jones Falls - Modeled Pipe Capacity - Existing Conditions

Pipe Attributes									Dry Weather Flows			2-Year 6-Hour			2-Year 24-Hour			10-Year 6-Hour			10-Year 24-Hour			100-Year 24-Hour		
Upstream Node	Downstream Node	Asset ID	Meter Basin	SSA	Pipe Diameter	Manning's Coefficient	Pipe Gradient	Pipe Full Capacity	Peak Dry Weather Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State
(ID)	(ID)	(ID)	(ID)	(ID)	(in)	(-)	(%)	(MGD)	(MGD)	(%)		(MGD)	(%)		(MGD)	(%)		(MGD)	(%)		(MGD)	(%)		(MGD)	(%)	
10918	11409	10918-11409	BC10A	45-59-20-05	21	0.013	0.15	3.97	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05
11	70352	11-70352	BC12	45-58-11-00	24	0.013	1.63	18.68	0.00	0.00	0.10	0.00	0.00	0.10	0.12	0.66	0.12	0.27	1.47	0.13	0.61	3.25	0.19	0.88	4.73	0.18
11897	7052	11897-7052	BC04	45-59-20-03	8	0.013	3.72	1.51	0.00	0.00	0.10	-0.05	-3.26	1.00	-0.07	-4.43	1.00	-0.07	-4.44	1.00	-0.08	-5.40	1.00	-0.10	-6.78	1.00
12	11	42715	BC12	45-58-11-00	24	0.013	0.40	9.29	0.00	0.00	0.05	0.00	0.00	0.05	0.12	1.34	0.12	0.27	2.95	0.13	0.61	6.53	0.18	0.88	9.50	0.21
13238	7120	13238-7120	BC09	45-59-22-00	8	0.013	1.83	1.06	0.33	12.50	0.26	0.96	90.15	0.77	0.96	90.43	0.77	0.96	90.43	0.77	0.96	90.43	0.77	0.96	90.43	0.77
13409	9047	13409-9047	BC10A	45-59-20-06	21	0.013	-0.19	-4.47	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05
13939	20895	13939-20895	BC24	45-66-17-00	12	0.013	11.76	7.96	0.04	0.44	0.42	0.13	1.56	0.54	0.35	3.96	0.56	0.30	2.47	0.67	0.76	3.35	0.82	0.32	4.10	0.95
14317	13315	14317-13315	BC10A	45-59-20-06	15	0.013	2.45	6.54	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10
14454	19876	14454-19876	BC08	45-59-17-01	12	0.013	5.12	5.21	0.42	11.83	0.32	1.75	33.55	1.00	1.84	35.24	1.00	1.95	37.46	1.00	2.06	39.50	1.00	2.18	41.84	1.00
14455	14454	14455-14454	BC08	45-59-17-01	12	0.013	1.46	2.78	0.62	22.16	0.34	1.75	62.88	0.56	1.84	66.04	0.61	1.95	70.22	0.93	2.06	74.04	1.00	2.18	78.44	1.00
14456	14455	14456-14455	BC08	45-59-17-01	12	0.013	1.59	2.91	0.62	21.17	0.32	1.75	60.68	0.57	1.84	63.09	0.58	1.95	67.13	0.62	2.06	70.86	0.64	2.18	74.98	1.00
14458	14456	14458-14456	BC08	45-59-17-01	12	0.013	1.02	2.32	0.60	25.90	0.36	1.63	69.72	0.63	1.87	72.02	0.64	1.71	73.62	0.65	1.74	75.07	0.65	1.78	76.66	0.66
14546	7184	14546-7184	BC04	45-59-20-03	8	0.013	0.57	0.59	0.09	14.53	0.25	1.34	226.44	2.00	1.40	238.03	2.00	1.39	236.39	2.00	1.42	240.08	2.00	1.41	238.75	2.00
14547	14546	14547-14546	BC04	45-59-20-02	8	0.013	2.87	1.32	0.09	6.49	0.20	1.44	109.18	2.00	1.51	114.62	2.00	1.50	113.47	2.00	1.53	115.86	2.00	1.52	115.16	2.00
14548	14547	14548-14547	BC04	45-59-20-02	8	0.013	4.80	1.71	0.09	5.01	0.18	1.49	87.16	1.00	1.69	98.74	2.00	1.68	98.28	2.00	1.74	101.57	2.00	1.73	100.95	2.00
14565	6885	14565-6885	TSJF01	45-55-01-00	42	0.016	2.14	77.24	9.55	12.49	0.28	34.32	44.44	1.00	36.67	47.48	1.00	41.75	54.05	1.00	43.62	56.73	1.00	44.72	57.91	1.00
14937	5134	14937-5134	TSJF01	45-55-09-00	10	0.013	0.35	1.05	0.03	2.39	0.14	0.33	31.23	0.39	0.43	41.27	0.45	0.58	55.43	0.54	0.82	78.26	0.67	1.03	98.36	0.82
150	901871	150-901871	BC12	45-58-20-01	16	0.013	3.05	8.66	0.48	5.52	0.19	0.72	2.31	0.22	0.89	9.57	0.23	0.92	10.62	0.24	1.14	13.19	0.27	1.21	13.11	0.26
1507	16581	1507-16581	BC12	45-58-09-01	10	0.013	14.78	5.45	0.51	9.34	0.23	0.91	16.70	0.29	1.07	19.57	0.32	1.24	22.73	0.34	1.55	28.50	0.38	1.71	31.88	0.42
1508	1507	1508-1507	BC12	45-58-09-01	8	0.013	0.89	0.73	0.44	54.21	0.90	0.61	80.29	0.99	0.71	90.81	1.00	0.80	101.92	2.00	0.96	122.83	2.00	1.08	138.22	2.00
15268	42334	15268-42334	BC07	45-59-20-01	18	0.01	1.37	10.33	0.39	3.76	0.16	2.37	22.95	1.00	2.76	26.65	1.00	2.76	26.76	1.00	2.78	31.54	0.00	3.41	41.17	0.46
15270	30591	15270-30591	BC10A	45-59-20-03	15	0.013	1.38	4.91	0.21	4.34	0.17	0.91	18.44	0.31	1.11	23.66	0.34	1.39	26.33	0.36	1.70	34.64	0.42	2.01	41.17	0.46
15270	9042	15270-9042	BC10A	45-59-20-03	15	0.013	1.89	5.74	0.00	0.00	0.10	0.27	4.77	0.18	0.48	7.96	0.21	0.58	10.17	0.24	0.87	16.93	0.29	1.23	21.37	0.33
15271	22538	15271-22538	BC10A	45-59-20-05	15	0.013	2.67	6.83	0.09	1.30	0.32	0.37	5.45	0.45	0.48	6.96	0.49	0.59	8.65	0.52	0.81	11.91	0.59	0.99	14.55	0.63
15315	30592	15315-30592	BC10A	45-59-20-06	15	0.013	2.39	6.45	0.00	0.00	0.11	0.00	-0.01	0.17	0.00	-0.01	0.19	0.00	-0.01	0.21	0.00	-0.02	0.25	0.00	-0.02	0.27
15751	40488	15751-40488	TSJF01	45-59-07-00	27	0.01	0.66	21.21	3.38	15.93	0.37	17.66	83.24	1.00	17.81	83.97	1.00	18.04	85.04	1.00	18.30	86.26	1.00	18.46	87.05	1.00
15871	6936	15871-6936	TSJF01	45-59-08-00	30	0.013	0.44	17.56	3.38	19.24	0.30	17.79	101.32	2.00	17.89	101.87	2.00	17.89	101.88	2.00	17.89	86.93	1.00	17.85	86.72	1.00
15872	15871	15872-15871	TSJF01	45-59-07-00	30	0.013	0.80	20.58	3.38	16.41	0.28	17.79	86.45	1.00	17.89	86.93	1.00	17.89	86.94	1.00	17.89	86.93	1.00	17.85	86.72	1.00
1593	29862	1593-29862	BC24	45-66-17-00	12	0.013	0.04	0.48	0.48	112.12	0.61	0.76	177.70	0.81	0.89	206.42	1.00	1.05	244.23	2.00	1.31	303.77	2.00	1.50	349.40	2.00
16036	42233	16036-42233	BC10A	45-59-20-01	18	0.013	0.94	6.58	0.62	9.44	0.21	2.43	38.56	0.42	2.14	47.78	0.49	3.79	57.63	0.55	5.28	80.31	0.66	6.38	96.95	0.84
16037	16036	16037-16036	BC10A	45-59-20-01	18	0.013	0.97	6.69	0.50	7.52	0.19	2.04	30.51	0.38	2.85	39.85	0.44	3.18	47.39	0.50	4.47	68.83	0.67	5.41	80.82	0.83
16038	16037	16038-16037	BC10A	45-59-20-01	18	0.013	1.65	8.81	0.29	3.25	0.25	1.34	12.93	0.48	1.54	17.33	0.52	1.91	21.64	0.59	2.78	31.54	0.00	3.41	38.76	1.00
1609	1593	1609-1593	BC24	45-66-17-00	10	0.013	0.33	0.81	0.06	7.81	0.21	0.13	15.79	0.24	0.15	18.77	0.30	0.19	23.20	0.59	0.24	29.47	1.00	0.28	34.49	1.00
1610	1609	1610-1609	BC24	45-66-17-00	10	0.013	0.50	1.01	0.06	6.27	0.19	0.13	12.66	0.25	0.15	15.05	0.25	0.19	18.63	0.30	0.24	23.98	0.53	0.29	28.70	1.00
1611	1610	1611-1610	BC24	45-66-17-00	10	0.013	0.77	1.24	0.06	5.10	0.17	0.13	10.31	0.23	0.15	12.26	0.25	0.19	15.18	0.28	0.24	19.53	0.31	0.29	23.48	0.87
1612	1611	1612-1611	BC24	45-66-17-00	10	0.013	1.74	1.87	0.05	3.39	0.17	0.13	6.84	0.23	0.15	8.13	0.25	0.19	10.06	0.26	0.24	12.95	0.31	0.29	15.57	0.34
1613	1612	1613-1612	BC24	45-66-17-00	10	0.013	0.47	0.97	0.06	6.53	0.28	0.13	13.19	0.34	0.15	15.67	0.35	0.19	19.40	0.37	0.24	24.97	0.40	0.29	30.02	0.42
1614	1613	1614-1613	BC24	45-66-17-00	10	0.013	0.39	0.86	0.06	7.19	0.20	0.13	14.53	0.27	0.15	17.27	0.29	0.19	21.39	0.33	0.24	27.53	0.37	0.29	33.09	0.41
16379	16379N	16379-16379N	TSJF01	45-51-00-00	42	0.016	0.17	20.58	9.55	45.82	0.46	35.82	171.57	2.00	38.39	184.82	2.00	41.31	197.86	2.00	41.45	198.49	2.00	41.49	198.73	2.00
16379N	6877	16379N-6877	TSJF01	45-51-00-00	42	0.016	0.17	21.44	9.58	44.68	0.44	35.82	167.09	2.00	38.59	180.00	2.00	41.31	192.69	2.00	41.45	193.31	2.00	41.49	193.54	2.00
16401	C445	16401-C445	BC09	45-59-27-00	8	0.013	0.41	0.50	0.29	40.56	0.45	0.81	161.18	2.00	0.81	160.38	2.00	0.81	161.82	2.00	0.81	162.70	2.00	0.81	162.54	2.00
16402	16401	16402-16401	BC09	45-59-27-00	8	0.013	0.40	0.49	0.30	41.43	0.46	0.83	168.92	2.00	0.85	172.71	2.00	0.84	171.00	2.00	0.85	173.88	2.00	0.85	172.86	2.00
16403	16402	16403-16402	BC09	45-59-27-00	8	0.013	2.26	1.17	0.30	17.38	1.00	1.01	86.19	1.00	1.10	94.37	1.00	1.11	94.61	1.00	1.11	94.62	1.00	1.11	94.62	1.00
16404	16403	16404-16403	BC09	45-59-27-00	8	0.013	1.56	0.97	0.30	20.97	0.33	1.01	104.31	2.00	1.32	136.39	2.00	1.57	161.82	2.00	1.57	161.85	2.00	1.57	161.85	2.00
16535	7330	16535-7330	BC12	45-58-11-00	15	0.013	2.02	5.93	0.02	0.27	0.11	0.17	2.84	0.15	0.34	5.81	0.19	0.50	9.52	0.23	1.01	17.03	0.29	1.38	23.33	0.35
16536	11897	16536-11897	BC04	45-59-20-03	8	0.013	4.16	1.59	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10
16581	7328	16581-7328	BC12	45-58-09-02	10	0.013	4.34	2.95	0.51	17.25	0.30	0.91	30.85	0.49	1.07	36.16	0.45	1.24	41.99	0.47	1.55	52.64	0.53	1.79	60.74	0.57
16595	7333	16595-7333	BC12	45-58-06-01	8	0.013	4.68	1.69	0.23	13.79	0.27	0.47	28.10	0.37	0.57	33.47	0.42	0.89	52.64	1.00	1.00	99.57	1.00	1.24	123.66	2.00
16596	7333	16596-7333	BC12	45-58-06-01	10	0.013	0.50	1.00	0.12	11.48	0.24	0.46	45.88	0.49	0.59	58.77	0.56	0.75	75.20	1.00	1.00	99.57	1.00	1.24	123.66	2.00
16604	7320	16604-7320	BC12	45-58-07-00	10	0.013	3.39	2.61	0.15	5.60	0.56	0.34	12.99	0.76	0.41	15.77	0.83	0.49	18.87	0.90	0.65	24.84	1.00	0.77	29.66	1.00
16742	6982	16742-6982	BC09	45-59-31-00	8	0.013	2.42	1.22	0.05	4.43	0.17	0.75	61.16	0.58	0.75	61.75	0.61	0.76	61.89	0.74	0.76	62.08	1.00	0.88	72.01	1.00
16743	16742	16743-16742	BC09	45-59-31-00	8	0.013	0.65	0.61	0.05	8.59	0.22	0.75	118.63	2.00	0.75	119.57	2.00	0.76	119.84	2.00	0.76	120.13	2.00	0.81	128.60	2.00
16744	16743	16744-16743	BC09	45-59-31-00	8	0.013	1.02	0.79	0.05	6.85	0.20	0.75	94.77	1.00	0.75	95.35	1.00	0.76	95.57	1.00	0.76	95.80	1.00	0.78	98.24	1.00
16745	16744	16745-16744	BC09	45-59-31-00	8	0.013	1.07	0.81	0.05	6.48	0.20	0.75	92.46	1.00	0.75	93.00	1.00	0.76	93.21	1.00	0.76	93.41	1.00	0.77	94.51	1.00
16746	33091	16746-33091	BC09	45-59-31-00	8	0.013	1.00	0.78	0.05	6.94	0.20	0.75	96.06	0.88	0.75	96.58	0.90	0.76	96.78	0.91	0.76	97.03	0.92	0.76	97.22	0.93
16747	16746	16747-16746	BC09	45-59-31-00	8	0.013	0.72	0.66	0.05	8.20	0.22	0.75	113.62	2.00	0.75	114.29	2.00	0.76	114.59	2.00	0.76	114.67	2.00	0.76	114.89	2.00
16748	16747	16748-16747	BC09	45-59-31-00	8	0.013	1.03	0.79	0.05	6.86	0.20	0.75	94.92	0.93	0.75	95.17	0.94	0.76	95.37	0.94	0.76	95.61	0.97	0.76	95.99	0.99
16749	16748	16749-16748	BC09	45-59-31-00	8	0.013	6.64	2.01	0.05	2.79	0.15	0.75	37.24	0.71	0.75	37.49	0.74	0.76	37.56	0.75	0.76	37.66	0.76	0.76	37.74	0.77
16750	16750M	16750-16750M	BC09	45-59-31-00	8	0.013	1.91	1.08	0.05	5.02	0.18	0.75	69.51	0.66	0.75	69.77	0.66	0.76	69.91	0.66	0.76	70.10	0.66	0.76	70.23	0.66
16750M	16749	16750M-16749	BC09	45-59-31-00	8	0.013	1.86	1.06	0.05	5.11	0.18	0.75	70.42	0.64	0.75	71.08	0.64	0.76	71.23	0.64	0.76	71.42	0.64	0.76	71.56	0.64
16751	16750	16751-16750	BC09	45-59-31-00	8	0.013	1.04	0.80	0.05	6.78	0.20	0.75	93.54	0.79	0.75	94.19	0.80	0.76	94.38	0.80	0.76	94.64	0.81	0.76	94.81	0.82
16752	16751	16752-16751	BC09	45-59-31-00	8	0.013	0.49	0.55	0.05	9.85	0.23	0.75	136.51	2.00	0.75	137.00	2.00	0.76	137.27	2.00	0.76	137.65	2.00	0.76	137.91	2.00
16753	16752	16753-16752	BC09	45-59-31-00	8	0.013	0.49	0.55	0.05	9.87	0.23	0.75	136.51	2.00	0.75	137.00	2.00	0.76	137.27	2.00	0.76	137.65	2.00	0.76	137.91	2.00
16754	16753	16754-16753	BC09	45-59-31-00	8	0.013	0.40	0.49	0.05	11.08	0.24	0.75	153.31	2.00	0.80	162.86	2.00	0.80	163.82	2.00	0.82	166.47	2.00	0.82	166.29	2.00
17008	33535	17008-33535	BC20	45-66-09-01	8	0.013	5.13	1.77	0.15	8.66	0.22	0.18	10.03	0.23	0.20	11.27	0.25	0.22	12.53	0.26	0.28	15.63	0.28	0.32	17.98	0.30
17009	17008	17009-17008	BC20	45-66-09-01	8	0.013	4.02	1.57	0.15	9.78	0.23	0.18	11.33	0.25	0.20	12.70	0.26	0.22	14.13	0.27	0.28	17.62	0.30	0.32	20.28	0.32
17037	17009	17037-17009	BC20	45-66-09-01	6	0.013	5.23	1.79	0.15	8.58	0.22	0.18	9.92	0.23	0.20	11.14	0.25	0.22	12.39	0.26	0.28	15.46	0.28	0.32	17.79	0.30
17041	17037	17041-17037	BC20	45-66-09-01	5	0.013	5.23	1.79	0.15	8.58	0.22	0.18	9.92	0.23	0.20	11.14	0.25	0.22	12.39	0.26	0.28	15.46	0.28	0.32	17.79	0.30
17297	17764	17297-17764	TSJF01	45-55-02-00	12	0.013	1.61	2.92	0.04	1.28	0.13	1.05	35.93	0.43	1.40	48.03	0.50	1.71	58.47	0.57	2.17	81.01	1.00	2.79	95.40	1.00
17375	45753	17375-45753	TSJF01	45-59-07-00	30	0.013	2.07	38.12	3.38	8.86	0.28	17.80	46.09	0.91	17.90	46.95	1.00	17.94	47.06	1.00	17.98	47.17	1.00	18.26	47.37	1.00
17479	42237	17479-42237	BC09	45-59-21-00	8	0.013	1.03	0.79	0.03	3.75	0.18	0.69	87.80	1.00	0.94	118.35	2.00	1.17	148.54	2.00	1.31	165.19	2.00	1.34	121.85	2.00
17480	17479	17480-17479	BC09	45-59-21-00	8	0.013	1.97	1.10	0.03	2.66	0.15	0.70	63.59	0.59	0.96	86.92	0.73	1.17	106.75	2.00	1.34	121.46	2.00	1.34	121.85	2.00
17481	17480	17481-17480	BC09	45-59-21-00	8	0.013	3.66	1.86	0.03	1.59	0.13	0.70	37.61	0.45	0.96	53.44	0.62	1.18	83.47	1.00	1.68	90.27	1.00	1.73	92.80	1.00
17482	17481	17482-17481	BC09	45-59-21-00	8	0.013	6.53	2.60	0.03	1.48	0.13	0.70	34.98	0.42	0.96	47.87	0.50	1.18	59.19	0.57	1.70	84.83	1.00	1.73	86.35	1.00
17483	17482	17483-17482	BC09	45-59-21-00	8	0.013	4.37	1.63	0.03	1.62	0.14	0.70	42.91	0.47	0.96	58.75	0.57	1.18	72.63	0.64	1.70	104.38	2.00	1.73	106.13	2.00
17484	17483	17484-17483	BC09	45-59-21-00	8	0.013	1.94	1.09	0.03	2.72	0.15	0.70	64.17	0.59	0.96	87.83	0.74	1.18	108.60	2.00	1.71	156.72	2.00	1.77	161.97	2.00
17747	18202	17747-18202	TSJF01	45-55-01-00	12	0.013	42.19	14.86	0.04	0.28	0.11	1.33	8.90	1.00	1.71	11.45	1.00	2.21	14.76	1.00	2.30	15.40	1.00	2.35	15.69	1.00
17748	17747	17748-17747	TSJF01	45-55-01-00	12	0.013	1.61	2.92	0.04	1.42	0.13	1.33	45.61	0.49	1.71	58.64	0.57	2.23	75.90	0.66	2.31	78.94	0.69	2.34	80.29	0.70
17749	46795	17749-46795	TSJF01	45-55-01-00	12	0.013	1.67	5.48	0.04	0.76	0.12	1.33	24.32	0.35	1.71	31.26	0.40	2.22	40.45	0.45	2.31	42.06	0.47	2.34	42.78	0.47
17750	17749	17750-17749	TSJF01	45-55-01-00	12	0.013	0.42	1.49	0.04	2.78	0.13	1.33	88.44	0.73	1.71	115.01	2.00	2.22	148.77	2.00	2.31	154.70	2.00	2.34	157.36	2.00
17751	17750	17751-17750	TSJF01	45-55-01-00	12	0.013	0.36	1.38	0.04	3.01	0.14	1.33	96.68	0.80	1.72	124.59	2.00	2.22	160.64	2.00	2.31	167.04	2.00	2.34	169.90	2.00
17752	34447	17752-34447	TSJF01	45-55-01-00	12	0.013	0.31	1.28	0.04	2.97	0.13	1.15	69.72	0.73	1.46	113.80	2.00	1.85	144.77	2.00	1.84	143.45	2.00	1.82	142.31	2.00
17753	17752	17753-17752	TSJF01	45-55-01-00	12	0.013	0.43	1.51	0.04	2.52	0.13	1.15	76.36	0.71	1.46	97.00	1.00	1.86	123.00	2.00	1.85	122.43	2.00	1.83	120.88	2.00
17754	17753	17754-17753	TSJF01	45-55-01-00	12	0.013	0.43	1.51	0.04	2.52	0.13	1.16	77.05	0.66	1.48	97.75	1.00	1.86	123.44	2.00	1.91	126.20	2.00	1.92	127.27	2.00
17755	17754	17755-17754	TSJF01	45-55-02-00	12	0.013	0.37	1.40	0.04	2.71	0.13	1.16	83.94	0.67	1.49	106.63	2.00	1.87	133.88	2.00	1.99	141.09	2.00	2.06	147.31	2.00
17756	17755	17756-17755	TSJF01	45-55-02-00	12	0.013	0.23	1.10	0.04	3.28	0.14	0.95	89.54	0.73	1.27	115.77	2.00	1.56	141.64	2.00	2.22	201.81	2.00	2.24	203.65	2.00
17757	17756	17757-17756	TSJF01	45-55-02-00	12	0.013	0.68	1.80	0.04	1.89	0.12	1.00	52.16	0.53	1.33	69.46	1.00	1.61	84.57	1.00	2.22	116.88	2.00	2.24	117.81	2.00
17758	17757	17758-17757	TSJF01	45-55-01-00	12	0.013	4.60	4.94	0.04	0.75	0.12	1.00	20.26	0.39	1.25	27.31	1.00	1.65	33.49	1.00	2.27	45.88	1.00	2.75	55.86	1.00
17759	17758	17759-17758	TSJF01	45-55-01-00	12	0.013	0.31	1.27	0.04	7.93	0.13	1.00	78.91	0.66	1.36	106.23	0.56	1.69	133.35	2.00	2.27	179.07	2.00	2.73	218.54	2.00
17760	17759	17760-17759	TSJF01	45-55-02-00	12	0.013	3.42	4.26	0.04	0.87	0.12	1.01	23.76	0.35	1.28	32.29	0.41	1.70	38.84	1.00	2.31	54.17	1.00	2.80	65.66	1.00
17761	19657	17761-19657	TSJF01	45-55-01-00	12	0.013	3.84	5.56	0.04	0.67	0.12	1.02	18.13	0.30	1.38	24.60	0.36	1.70	30.62	0.39	2.45	44.07	0.57	3.07	71.39	1.00
17762	17761	17762-17761	TSJF01	45-55-01-00	12	0.013	3.57	4.35	0.04	0.86	0.12	1.02	23.47	0.35	1.39	31.85	0.40	1.70	39.17	0.44	2.87	66.01	1.00	3.28	75.43	2.00
17763	19910	17763-19910	TSJF01	45-55-02-00	12	0.013	1.95	3.22	0.04	1.16	0.13	1.03	32.11	0.41	1.40	43.33	0.48	1.70	52.95	0.53	2.40	74.52	0.68	2.78	86.19	1.00
17764	17763	17764-17763	TSJF01	45-55-02-00	12	0.013

Baltimore County

Jones Falls - Modeled Pipe Capacity - Existing Conditions

Pipe Attributes									Dry Weather Flows			2-Year 6-Hour			2-Year 24-Hour			10-Year 6-Hour			10-Year 24-Hour			100-Year 24-Hour		
Upstream Node	Downstream Node	Asset ID	Meter Basin	SSA	Pipe Diameter	Manning's Coefficient	Pipe Gradient	Pipe Full Capacity	Peak Dry Weather Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State
17768	17767	17768-17767	TSJF01	45-55-04-01	12	0.013	1.35	2.47	0.04	1.47	0.26	0.48	19.40	0.55	0.64	25.79	0.64	0.85	34.38	0.75	1.20	48.75	0.98	1.51	61.06	1.00
17769	17768	17769-17763	TSJF01	45-55-04-01	12	0.013	4.01	4.61	0.04	0.79	0.13	0.48	10.39	0.32	0.64	13.82	0.36	0.85	18.42	0.42	1.20	26.12	0.53	1.51	32.72	0.65
17770	17769	17770-17769	TSJF01	45-55-04-01	12	0.013	3.46	4.29	0.04	0.85	0.12	0.48	11.17	0.25	0.64	14.85	0.29	0.85	19.80	0.32	1.20	28.07	0.37	1.51	35.16	0.42
17771	17770	17771-17770	TSJF01	45-55-04-01	12	0.013	4.80	5.05	0.04	0.72	0.12	0.48	9.49	0.23	0.64	12.60	0.26	0.85	16.82	0.29	1.20	23.85	0.35	1.51	29.87	0.39
17772	17771	17772-17771	TSJF01	45-55-04-01	12	0.013	4.42	4.84	0.04	0.75	0.12	0.48	9.90	0.23	0.64	13.16	0.27	0.85	17.55	0.30	1.20	24.88	0.36	1.51	31.16	0.40
17773	17772	17773-17772	TSJF01	45-55-04-01	12	0.013	1.41	2.76	0.04	1.32	0.13	0.48	17.36	0.30	0.64	23.08	0.34	0.85	30.77	0.40	1.20	43.63	0.48	1.51	54.65	0.54
17774	17773	17774-17773	TSJF01	45-55-06-09	12	0.013	8.83	6.84	0.04	0.53	0.11	0.48	7.00	0.21	0.64	9.31	0.23	0.85	12.42	0.26	1.20	17.61	0.30	1.51	22.05	0.34
17775	17774	17775-17774	TSJF01	45-55-06-09	12	0.013	0.89	2.16	0.04	1.67	0.11	0.48	21.98	0.33	0.64	29.22	0.37	0.85	38.96	0.44	1.20	55.24	0.54	1.51	69.19	0.62
17945	9039	17945-9039	BC10A	45-59-20-03	15	0.013	1.61	5.39	0.17	3.27	0.26	0.82	15.43	0.28	1.24	21.55	0.33	1.41	28.68	0.37	2.11	39.50	0.45	2.61	49.37	0.51
17969	9040	17969-9040	BC10A	45-59-20-03	15	0.013	0.86	3.87	0.17	4.48	0.25	0.82	21.14	0.32	1.24	29.52	0.37	1.41	36.55	0.42	2.12	54.65	0.53	2.62	67.58	0.61
18	54841	18-54841	RC12	45-18-21-01	18	0.013	-0.57	-5.14	0.51	-9.83	0.54	1.05	-18.96	0.65	1.24	-24.07	0.69	1.44	-27.93	0.72	1.88	-39.91	0.79	2.22	-43.22	0.84
18063	17775	18063-17775	TSJF01	45-55-04-09	12	0.013	-0.41	-1.55	0.04	-2.36	0.59	0.48	-33.81	0.84	0.64	-43.30	1.00	0.85	-54.79	1.00	1.20	-77.70	1.00	1.51	-97.32	1.00
18064	18063	18064-18063	TSJF01	45-55-04-09	12	0.013	0.76	2.00	0.04	1.84	0.49	0.48	23.96	0.85	0.64	31.86	0.95	0.85	42.47	1.00	1.20	60.22	1.00	1.51	75.42	1.00
18202	6385	18202-6385	TSJF01	45-55-01-05	12	0.013	0.61	1.79	0.04	2.32	0.32	1.32	73.49	1.00	1.72	95.84	1.00	2.19	122.59	2.00	2.29	128.06	2.00	2.34	130.83	2.00
18241	7311	18241-7311	BC16	45-58-03-09	21	0.03	1.20	7.28	2.25	30.97	0.40	5.27	72.33	0.64	6.14	84.33	0.72	7.26	99.68	0.84	8.69	119.38	2.00	9.12	125.25	2.00
18297	6958	18297-6958	BC07	45-59-18-09	8	0.013	10.17	3.49	0.09	3.60	0.16	0.27	10.96	1.00	0.35	14.22	1.00	0.44	17.59	1.00	0.60	23.05	1.00	0.72	27.92	1.00
18295	18297	18298-18297	BC07	45-59-18-09	8	0.013	10.97	2.59	0.09	3.46	0.16	0.27	10.25	1.00	0.35	13.70	1.00	0.42	16.35	1.00	0.60	23.05	1.00	0.72	27.92	1.00
18298A	18298	18298A-18298	BC07	45-59-18-09	8	0.013	0.38	0.43	0.09	20.86	0.32	0.27	61.72	0.57	0.35	82.53	0.67	0.42	98.51	0.75	0.60	138.77	2.00	0.72	167.56	2.00
18299	18298A	18299-18298A	BC07	45-59-18-09	8	0.013	0.35	0.46	0.09	19.52	0.31	0.27	57.70	0.55	0.35	77.17	0.65	0.42	92.11	0.74	0.60	129.78	2.00	0.72	156.67	2.00
18300	18299	18300-18299	BC07	45-59-18-09	8	0.013	0.39	0.48	0.09	18.35	0.31	0.27	54.18	0.54	0.36	71.47	0.64	0.42	86.49	0.73	0.60	122.04	2.00	0.72	147.24	2.00
18301	18300	18301-18300	BC07	45-59-18-09	8	0.013	2.16	1.15	0.09	7.85	0.21	0.27	23.23	0.39	0.36	30.91	0.50	0.42	36.69	0.58	0.60	52.24	1.00	0.73	63.05	1.00
18302	18301	18302-18301	BC07	45-59-18-09	8	0.013	4.20	1.60	0.09	5.65	0.19	0.27	16.83	0.29	0.36	22.23	0.34	0.42	26.52	0.36	0.60	37.74	0.44	0.74	46.04	0.49
18303	18302	18303-18302	BC07	45-59-18-09	6	0.013	6.83	2.04	0.09	4.44	0.17	0.27	13.05	0.27	0.36	17.44	0.30	0.42	20.80	0.33	0.60	29.60	0.39	0.74	36.11	0.43
18321	7309	18321-7309	BC14	45-58-04-09	21	0.013	0.87	9.56	2.25	23.58	0.34	5.27	55.07	0.53	6.14	64.21	0.61	7.26	75.90	0.74	8.71	91.06	1.00	9.13	95.52	1.00
18322	18321	18322-18321	BC14	45-58-03-09	21	0.013	1.64	17.13	2.25	17.17	0.30	5.27	40.30	0.48	6.14	46.75	0.55	7.26	55.27	0.65	8.70	66.26	1.00	9.12	69.46	1.00
18363	7256	18363-7256	BC02	45-59-34-09	8	0.013	0.40	0.49	0.00	0.00	0.00	-0.06	-12.65	1.00	-0.11	-22.00	1.00	-0.12	-24.08	1.00	-0.13	-27.31	1.00	-0.13	-27.31	1.00
18364	18363	18364-18363	BC02	45-59-34-09	8	0.013	0.40	0.49	0.00	0.00	0.00	-0.06	-12.65	1.00	-0.11	-22.00	1.00	-0.12	-24.08	1.00	-0.13	-27.31	1.00	-0.13	-27.31	1.00
18452	6928	18452-6928	TSJF01	45-59-05-01	42	0.013	0.01	7.16	3.58	50.38	0.30	19.37	272.80	0.98	19.82	279.12	2.00	20.36	286.78	2.00	20.72	291.79	2.00	20.85	293.73	2.00
18453	18452	18453-18452	TSJF01	45-59-05-01	12	0.013	1.43	3.75	0.20	7.43	0.21	1.26	45.75	0.91	1.63	59.37	1.00	1.95	70.98	1.00	2.24	81.38	1.00	2.48	90.10	1.00
18454	18453	18454-18453	TSJF01	45-59-05-01	12	0.01	2.59	5.17	0.20	3.95	0.17	1.26	24.33	0.35	1.63	31.58	0.46	1.95	37.76	1.00	2.24	43.31	1.00	2.53	48.83	1.00
18455	20314	18455-20314	TSJF01	45-59-01-01	12	0.01	2.55	4.78	0.20	4.29	0.17	1.26	24.32	0.36	1.63	34.16	0.42	1.95	40.84	0.46	2.25	47.01	1.00	2.49	51.88	1.00
18456	45724	18456-45724	TSJF01	45-59-05-01	12	0.01	3.96	4.19	0.20	4.87	0.18	1.00	23.96	0.35	1.30	31.03	0.40	1.55	36.00	0.43	1.68	40.02	0.46	1.75	41.68	0.50
18457	18456	18457-18456	TSJF01	45-59-05-01	12	0.01	3.74	5.79	0.20	3.53	0.16	1.00	17.34	0.30	1.30	22.46	0.34	1.55	26.71	0.37	1.68	28.97	0.38	1.75	30.26	0.39
18458	18457	18458-18457	TSJF01	45-59-05-01	12	0.01	3.14	5.39	0.20	3.81	0.16	1.00	18.94	0.31	1.30	24.54	0.35	1.55	29.18	0.38	1.69	31.97	0.41	1.75	32.05	0.41
18463	18458	18463-18458	BC13	45-59-05-02	10	0.01	1.59	2.32	0.16	6.94	0.20	0.85	38.88	0.43	1.11	47.28	0.50	1.33	57.20	0.56	1.41	60.91	0.62	1.41	60.03	0.57
18478	18463	18478-18463	BC13	45-59-05-03	8	0.01	7.51	1.61	0.16	10.00	0.32	0.85	52.85	0.61	1.11	63.86	0.74	1.33	82.42	1.00	1.44	89.70	1.00	1.41	87.80	1.00
18479	18478	18479-18478	BC13	45-59-05-03	8	0.013	3.06	1.37	0.16	11.75	0.25	0.85	63.11	0.58	1.11	80.93	0.75	1.33	96.86	0.95	1.41	103.15	2.00	1.41	103.18	2.00
18480	18479	18480-18479	BC13	45-59-05-03	8	0.013	2.00	1.11	0.16	14.50	0.28	0.85	76.66	0.67	1.11	99.88	2.00	1.33	119.56	2.00	1.41	127.32	2.00	1.41	127.34	2.00
18481	18480	18481-18480	BC13	45-59-05-03	8	0.013	2.95	1.34	0.16	12.01	0.25	0.85	63.50	0.59	1.11	82.68	1.00	1.33	99.05	1.00	1.41	105.47	2.00	1.41	105.49	2.00
18481A	18481	18481A-18481	BC13	45-59-05-03	8	0.013	3.21	1.40	0.16	11.50	0.25	0.85	60.79	0.57	1.11	79.56	0.77	1.33	94.91	1.00	1.41	100.96	2.00	1.41	100.96	2.00
18482	18481A	18482-18481A	BC13	45-59-05-03	8	0.013	2.77	1.30	0.16	12.28	0.26	0.85	65.46	0.62	1.11	85.68	0.72	1.33	102.43	2.00	1.43	109.68	2.00	1.43	109.72	2.00
18483	18482	18483-18482	BC13	45-59-05-03	8	0.013	3.23	1.40	0.16	11.50	0.25	0.85	60.79	0.69	1.11	79.56	0.85	1.34	95.51	1.00	1.45	103.57	2.00	1.45	103.89	2.00
18484	18483	18484-18483	BC13	45-59-05-03	8	0.013	3.01	1.36	0.16	11.85	0.25	0.85	62.57	0.58	1.11	81.91	0.74	1.35	98.84	1.00	1.48	109.04	2.00	1.50	110.01	2.00
18485	18484	18485-18484	BC13	45-59-05-01	8	0.013	3.64	1.49	0.16	10.81	0.24	0.85	57.11	0.56	1.11	74.77	0.65	1.36	91.22	1.00	1.53	103.00	2.00	1.57	105.15	2.00
18486	18485	18486-18485	BC13	45-59-05-03	8	0.013	2.66	1.27	0.16	12.69	0.26	0.85	67.02	0.61	1.11	87.72	0.73	1.38	108.95	2.00	1.60	126.86	2.00	1.67	131.79	2.00
18496	901191	18496-901191	BC01	45-59-35-01	15	0.02	0.24	1.34	0.51	38.14	0.43	1.35	100.47	0.75	1.89	126.13	2.00	2.06	153.99	2.00	2.50	188.66	2.00	2.74	204.27	2.00
18497	19001	18497-19001	BC01	45-59-35-01	8	0.013	0.38	0.48	0.04	7.85	0.21	0.18	38.00	0.43	0.24	49.27	0.50	0.30	62.48	1.00	0.41	86.33	1.00	0.51	106.50	2.00
18497A	18497	18497A-18497	BC01	45-59-35-01	8	0.013	0.57	0.77	0.04	4.90	0.18	0.18	23.69	0.35	0.24	30.71	0.40	0.30	39.25	0.45	0.42	54.86	0.54	0.52	67.43	0.62
18498	18497A	18498-18497A	BC01	45-59-35-01	8	0.013	0.97	0.77	0.04	4.91	0.18	0.18	23.69	0.35	0.24	30.71	0.40	0.30	39.25	0.44	0.42	54.86	0.54	0.52	67.43	0.62
18517	18456	18517-18456	BC13	45-59-05-03	8	0.013	3.55	1.47	0.16	10.96	0.24	0.85	57.90	0.56	1.11	75.79	0.66	1.39	94.73	0.81	1.76	119.70	2.00	1.95	132.70	2.00
18552	18496	18552-18496	BC01	45-59-35-01	15	0.013	0.41	2.72	0.47	17.35	0.29	1.36	42.65	0.64	1.46	53.38	0.92	1.76	64.65	1.00	2.14	76.21	1.00	2.32	84.94	1.00
18553	18552	18553-18552	BC01	45-59-35-01	15	0.013	0.35	2.45	0.47	19.33	0.30	1.36	47.54	0.45	1.46	59.66	0.56	1.77	72.05	0.88	2.13	87.13	1.00	2.32	94.81	1.00
18554	39224	18554-39224	BC01	45-59-35-01	15	0.013	0.49	2.91	0.47	16.08	0.32	1.20	37.72	0.53	1.37	47.17	0.60	1.46	54.90	0.65	1.98	68.12	1.00	2.14	73.47	1.00
18555	20127	18555-20127	BC01	45-59-35-02	15	0.013	0.52	3.00	0.47	15.60	0.27	1.10	29.40	0.42	1.37	43.76	0.48	1.66	55.19	0.55	1.98	66.08	1.00	2.14	71.41	1.00
18586	902012	18586-902012	BC11	45-59-16-01	24	0.01	0.32	10.73	2.68	27.81	0.36	13.55	126.31	2.00	13.73	127.92	2.00	13.70	127.69	2.00	13.75	128.17	2.00	13.68	127.47	2.00
18588	902012	18588-902012	BC11	45-59-16-01	15	0.013	1.43	4.98	0.00	0.00	0.10	4.03	80.78	1.00	4.11	82.42	1.00	4.15	83.23	1.00	4.23	84.40	1.00	4.21	84.43	1.00
18587	18586	18587-18586	BC11	45-59-16-01	8	0.013	2.00	1.11	0.02	1.57	0.70	0.23	20.69	1.00	0.28	26.13	1.00	0.38	34.28	1.00	0.51	49.94	1.00	0.60	53.78	1.00
18588	18587	18588-18587	BC11	45-59-16-01	8	0.013	0.61	0.61	0.02	2.85	0.15	0.23	37.13	1.00	0.30	49.57	1.00	0.38	62.79	1.00	0.51	84.00	1.00	0.61	100.51	2.00
18589	18588	18589-18588	BC11	45-59-16-01	8	0.013	0.66	0.66	0.02	2.90	0.15	0.23	38.12	1.00	0.30	50.43	1.00	0.38	64.07	1.00	0.51	85.82	1.00	0.61	102.38	2.00
18590	18589	18590-18589	BC11	45-59-16-01	8	0.013	1.19	0.85	0.02	2.05	0.14	0.23	26.91	0.97	0.30	35.60	1.00	0.39	45.45	1.00	0.53	92.09	1.00	0.61	72.18	1.00
18591	18590	18591-18590	BC11	45-59-16-01	8	0.013	0.61	0.61	0.02	2.85	0.15	0.23	37.49	0.44	0.30	49.61	0.51	0.39	64.46	0.59	0.55	90.80	1.00	0.63	103.79	2.00
18592	18591	18592-18591	BC11	45-59-16-01	8	0.013	0.61	0.61	0.02	2.85	0.15	0.23	37.49	0.44	0.30	49.61	0.51	0.39	64.46	0.59	0.55	90.85	0.93	0.65	107.15	2.00
18593	18592	18593-18592	BC11	45-59-16-01	8	0.013	0.60	0.60	0.02	2.80	0.15	0.23	36.72	0.44	0.30	50.43	0.51	0.39	65.53	0.60	0.55	92.43	0.78	0.67	111.22	2.00
18594	18593	18594-18593	BC11	45-59-16-01	8	0.013	1.50	0.96	0.02	1.81	0.14	0.23	23.82	0.35	0.30	31.53	0.40	0.39	40.97	0.46	0.55	57.79	0.64	0.68	70.51	1.00
18595	18594	18595-18594	BC11	45-59-16-01	8	0.013	2.00	1.10	0.02	1.58	0.13	0.23	20.79	0.33	0.30	27.52	0.37	0.39	35.75	0.43	0.55	50.44	0.51	0.69	62.83	0.58
18596	18595	18596-18595	BC11	45-59-16-01	8	0.013	2.00	1.11	0.02	1.57	0.13	0.23	20.60	0.33	0.30	27.26	0.37	0.39	35.43	0.41	0.55	49.98	0.51	0.69	62.06	0.58
19	16	19-16	BC12	45-58-21-01	15	0.013	0.25	2.05	0.33	15.88	0.28	0.48	23.19	0.33	0.55	26.45	0.36	0.62	28.75	0.37	0.76	36.53	0.42	0.97	41.91	0.45
19001	18496	19001-18496	BC01	45-59-35-01	8	0.013	0.40	0.50	0.04	7.34	0.21	0.18	36.48	0.43	0.24	47.06	0.79	0.30	59.74	1.00	0.41	81.78	1.00	0.51	101.16	2.00
19141	7308	19141-7308	BC16	45-58-03-09	21	0.013	1.24	11.40	3.21	27.27	0.37	7.82	68.60	0.63	9.18	80.54	0.74	10.74	94.20	1.00	13.15	115.33	2.00	14.69	128.84	2.00
19142	34175	19142-34175	BC16	45-58-03-09	21	0.013	1.26	11.95	1.33	11.16	0.33	2.64	22.13	0.53	3.65	25.49	0.60	3.79	31.69	1.00	4.72	39.32	1.00	5.01	41.80	1.00
19143	22225	19143-22225	BC14	45-58-04-09	21	0.013	0.18	4.31	1.33	30.65	0.36	2.64	60.79	0.51	3.65	70.05	0.55	3.77	85.57	0.67	4.71	108.26	2.00	4.98	114.49	2.00
19144	59376	19143-59376	BC14	45-58-04-09	21	0.013	3.58	19.39	0.97	4.75	0.33	3.62	13.51	0.55	3.69	15.94	0.60	3.59	18.49	0.71	4.01	20.67	1.00	4.18	21.53	1.00
19657	17760	19657-17760	TSJF01	45-55-02-09	12	0.013	7.02	6.10	0.04	0.61	0.11	1.01	16.66	0.29	1.28	22.61	0.34	1.70	27.92	0.37	2.28	36.94	0.43	3.24	44.80	0.49
19706	6947	19706-6947	BC11	45-59-13-09	24	0.01	0.72	16.10	1.37	20.95	0.31	17.46	108.42	2.00	17.76	110.29	2.00	17.90	111.17	2.00	18.17	112.88	2.00	18.29	113.58	2.00
19707	19706	19707-19706	BC11	45-59-12-09	8	0.013	0.39	0.49	0.01	2.06	0.14	0.23	46.16	1.00	0.34	69.37	1.00	0.36	73.98	1.00	0.39	79.90	1.00	0.44	89.69	1.00
19711	19868	19711-19868	BC11	45-59-12-09	8	0.013	0.40	0.49	0.01	2.06	0.14	0.20	41.27	1.00	0.26	53.94	1.00	0.31	64.10	1.00	0.43	86.94	1.00	0.54	109.78	2.00
19712	19711	19712-19711	BC11	45-59-12-09	8	0.013	0.60	0.61	0.01	1.66	0.13	0.19	31.62	1.00	0.25	41.72	1.00	0.32	52.05	1.00	0.45	73.41	1.00	0.54	88.78	1.00
19714	19712	19714-19712	BC11	45-59-12-09	8	0.013	0.60	0.61	0.01	1.66	0.13	0.19	31.62	0.40	0.25	41.72	1.00	0.32	52.02	1.00	0.54	76.44	1.00	0.54	88.78	1.00
19715	19714	19715-19714	BC11	45-59-12-09	8	0.013	0.40	0.49	0.01	2.06	0.14	0.18	39.17	0.44	0.25	51.94	0.52	0.33	68.14	1.00	0.47	90.06	1.00	0.57	115.52	2.00
19716	19715	19716-19715	BC11	45-59-12-09	8	0.013	0.60	0.60	0.01	1.68	0.13	0.19	32.15	0.48	0.25	42.42	0.47	0.33	55.75	0.55	0.47	78.75	1.00	0.53	96.72	1.00
19717	19716	19717-19716	BC11	45-59-12-09	8	0.013	0.60	0.60	0.01	1.68	0.13	0.19	32.15	0.48	0.25	42.42	0.47	0.33	55.75	0.55	0.47	78.75	1.00	0.58	97.45	1.00
19805	19707	19805-19707	BC11	45-59-12-09	8	0.013	0.40	0.49	0.01	2.06	0.14	0.22	44.14	1.00	0.32	64.45	1.00	0.34	69.08	1.00	0.41	84.53	1.00	0.50	101.82	2.00
19873	6955	19873-6955	BC11	45-59-16-01	24	0.01	0.26	11.35	2.06	26.11	0.35	16.59	146.20	2.00	16.70	147.09	2.00	16.79	147.92	2.00	16.96	149.45	2.00	17.03	150.04	2.00
19874	19873	19874-19873	BC11	45-59-16-01	12	0.01	1.75	3.96	0.62	15.56	0.28	1.85	46.96	1.00	1.97	49.81	1.00	2.02	50.96	1.00	2.06	51.95	1.00	2.18	55.03	1.00
19875	19874	19875-19874	BC08	45-59-17-01	12	0.01	0.63	7.38	0.62	25.89	0.35	1.82	76.51	1.00	1.84	81.33	1.00	1.92	83.12	1.00	2.05	88.45	1.00	2.18	91.58	1.00
19876	19875	19876-19875	BC08	45-59-17-01	12	0.013	0.56	1.73	0.62	35.61	0.41	1.79	103.51	2.00	1.86	107.35	2.00	1.95	113.81	2.00	3.00	118.84	2.00	3.18	125.95	2.00
19910	19762	19910-19762	TSJF01	45-55-02-09	12	0.013	2.22	3.43	0.04	1.09	0.12	1.01	29.83	0.39	1.29	40.47	0.45	1.70	49.70	0.51	3.74	109.17	1.00	3.88	113.13	2.00
20	19	20-19	BC12	45-58-21-01	12	0.013	-0.63	-0.43	0.01	-1.76	0.39	0.01	-7.95	0.47	0.04	-10.24	0.50	0.05	-12.57	0.52	0.07	-17.45	0.53	0.09	-21.07	0.61
201	52174		BC12	45-58-22-09	8	0.013	1.57	0.96	0.04	3.87	0.26	0.12	12.30	0.26	0.15	15.40	0.28	0.19	18.92	0.31	0.25	25.60	0.36	0.30	31.04	0.40
20126	18553	20126-18553	BC01	45-59-35-02	15	0.013	0.59	3.22	0.47	14.71	0.27	1.16	36.17	0.42	1.46	45.42	0.49	1.77	55.07	0.57	2.13	66.29	1.00	2.32	71.96	1.00
20127	18554	20127-18554	BC01	45-59-35-02	15	0.013	0.30	2.28	0.47	20.52	0.31	1.10	48.15	0.44	1.37	60.21	0.54	1.66	72.62	0.61	1.98	88.95	1.00	2.14	94.80	1.00
20244	7289	20244-7289	BC02	45-59-34-09	8	0.013	0.41	0.50	0.06	12.08	0.26	0.58	118.04	2.00	0.70	140.92	2.00	0.74	148.54	2.00	0.76	152.56	2.00	0.76	152.42	2.00
20245	3	20245-20245	BC02	45-59-34-09	8	0.013	0.38	0.48	0.06	12.58	0.26	0.58	121.06	2.00	0.72	150.10	2.00	0.80	166.81	2.00	0.83	172.17	2.00	0.83	172.06	2.00
20247	20246	20247-20246	BC02	45-59-34-09	8	0.013	0.40	0.49	0.06	12.33	0.26	0.58	118.88	2.00	0.74	150.53	2.00	0.92	188.29	2.00	1.00	204.45	2.00	1.01	205.82	2.00
20248	20247

Baltimore County

Jones Falls - Modeled Pipe Capacity - Existing Conditions

Pipe Attributes									Dry Weather Flows			2-Year 6-Hour			2-Year 24-Hour			10-Year 6-Hour			10-Year 24-Hour			20-Year 24-Hour		
Upstream Node	Downstream Node	Asset ID	Major Basin	SSA	Pipe Diameter	Manning's Coefficient	Pipe Gradient	Pipe Full Capacity	Peak Dry Weather Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State
204	201		BC12	45-58-23-00	8	0.013	4.62	1.65	0.04	2.26	0.16	0.12	7.17	0.26	0.15	8.98	0.28	0.19	11.04	0.31	0.25	14.91	0.36	0.30	18.11	0.40
20553	37013	20553-37013	BC09	45-59-28-00	27	0.01	-0.69	-21.67	1.00	-4.58	0.31	8.56	-39.51	0.70	9.51	-43.90	0.73	10.56	-48.63	0.77	11.64	-53.70	0.80	12.66	-58.43	0.84
20753	21328	20753-21328	TSJF01	45-60-00-00	30	0.013	0.11	8.76	2.96	34.06	0.40	6.07	70.27	1.00	6.88	99.67	1.00	9.84	112.64	2.00	10.36	119.57	2.00	10.32	118.26	2.00
20754	20753	20754-20753	TSJF01	45-60-00-00	30	0.02	0.01	1.77	2.96	168.59	0.65	7.63	431.25	2.00	8.64	488.29	2.00	9.87	557.39	2.00	10.35	573.46	2.00	10.32	573.26	2.00
20755	20754	20753-20754	TSJF01	45-60-00-00	30	0.01	0.26	8.76	2.99	34.13	0.65	7.28	83.08	1.00	8.29	94.29	1.00	9.42	107.56	2.00	9.70	110.72	2.00	9.88	112.74	2.00
20756	20755	20756-20755	TSJF01	45-60-00-00	30	0.02	0.11	5.78	2.96	51.24	0.50	7.12	123.26	2.00	8.06	139.53	2.00	9.23	159.66	2.00	9.53	164.92	2.00	9.71	167.98	2.00
20757	20756	20757-20756	TSJF01	45-60-00-00	30	0.02	0.08	4.99	2.96	59.40	0.53	7.11	142.56	2.00	8.06	161.45	2.00	9.21	184.52	2.00	9.52	190.70	2.00	9.69	194.17	2.00
20758	20757	20758-20757	TSJF01	45-60-00-00	30	0.02	0.12	6.00	2.97	49.43	0.52	7.11	118.46	2.00	8.05	134.28	2.00	9.20	153.34	2.00	9.52	158.62	2.00	9.69	161.70	2.00
20759	20758	20759-20758	TSJF01	45-60-00-00	30	0.02	0.10	5.53	2.97	53.87	0.51	7.10	128.38	2.00	8.04	145.47	2.00	9.63	174.15	2.00	9.84	177.87	2.00	9.88	178.72	2.00
20760	20759	20760-20759	TSJF01	45-60-00-00	30	0.02	0.11	5.75	2.97	51.66	0.50	7.09	123.25	2.00	8.04	139.76	2.00	9.63	167.49	2.00	9.84	171.06	2.00	9.88	171.84	2.00
20761	20760	20761-20760	TSJF01	45-60-00-00	27	0.013	0.20	8.89	2.97	33.45	0.45	7.08	79.62	1.00	8.03	90.32	1.00	9.63	108.32	2.00	9.84	110.64	2.00	9.86	110.79	2.00
20762	21329	20762-21329	BC18	45-51-52-00	27	0.013	0.19	8.71	2.46	28.15	0.35	6.09	69.82	1.00	6.89	79.04	1.00	8.73	100.06	2.00	9.33	107.05	2.00	9.66	110.79	2.00
20763	20762	20763-20762	BC18	45-63-00-00	27	0.013	0.31	11.21	2.46	21.92	0.32	6.21	55.44	1.00	6.89	61.43	1.00	8.73	77.83	1.00	9.33	83.27	1.00	9.66	86.18	1.00
20764	20763	20764-20763	BC18	45-64-00-00	27	0.013	0.18	8.55	2.42	28.26	0.36	6.04	70.64	1.00	6.84	77.63	1.00	8.30	97.11	1.00	8.76	102.49	2.00	8.91	104.46	2.00
20765	20764	20765-20764	BC18	45-64-00-00	27	0.013	0.17	8.31	2.34	28.21	0.36	5.61	67.69	0.86	6.26	75.36	1.00	7.58	91.23	1.00	7.89	95.00	1.00	7.91	95.16	1.00
20766	20765	20766-20765	BC18	45-64-00-00	27	0.013	0.16	8.57	2.35	27.40	0.36	5.86	66.06	0.86	6.48	75.63	1.00	7.58	88.47	1.00	7.89	92.11	1.00	7.91	92.25	1.00
20767	20766	20767-20766	BC18	45-64-00-00	27	0.013	0.32	11.25	2.35	20.92	0.32	5.67	50.43	0.56	6.60	58.66	1.00	7.52	67.41	1.00	7.89	70.15	1.00	7.91	70.27	1.00
20768	20767	20768-20767	BC18	45-64-00-00	18	0.013	1.05	6.95	1.31	18.86	0.31	2.84	40.92	0.46	3.39	48.84	1.00	4.14	58.55	1.00	4.54	65.28	1.00	4.56	65.66	1.00
20769	20768	20769-20768	BC18	45-65-00-00	18	0.013	0.99	6.76	1.31	19.39	0.30	2.84	42.07	0.45	3.39	50.21	0.75	4.13	61.16	1.00	4.71	69.61	1.00	4.70	69.46	1.00
20770	20769	20770-20769	BC20	45-66-01-00	18	0.013	0.69	5.65	1.31	23.20	0.33	2.84	50.33	0.56	3.39	60.06	0.56	4.13	73.04	1.00	4.70	83.27	1.00	4.71	83.71	1.00
20771	20770	20771-20770	BC20	45-66-01-00	18	0.01	0.74	5.80	1.31	34.49	0.41	2.84	74.84	0.65	3.39	89.33	0.73	4.14	108.92	2.00	4.70	123.78	2.00	4.71	124.47	2.00
20772	20771	20772-20771	BC20	45-66-01-00	15	0.013	1.19	4.55	1.31	28.77	0.38	2.81	61.99	0.58	3.37	73.97	0.70	4.11	90.25	1.00	4.66	102.21	2.00	4.66	102.22	2.00
20773	20772	20773-20772	BC20	45-66-01-00	15	0.013	1.18	4.54	1.30	28.71	0.38	2.77	61.89	0.57	3.31	72.83	0.64	4.07	88.94	1.00	4.56	100.44	2.00	4.56	100.39	2.00
20774	20773	20774-20773	BC20	45-66-03-00	15	0.013	1.01	4.19	1.30	31.13	0.40	2.77	66.98	0.61	3.31	78.81	0.69	4.08	97.26	1.00	4.56	108.61	2.00	4.56	108.74	2.00
20775	20774	20775-20774	BC20	45-66-03-00	15	0.013	1.21	4.60	1.30	28.33	0.38	2.77	60.29	0.57	3.31	71.88	0.64	4.08	88.61	0.92	4.57	99.29	1.00	4.59	99.73	1.00
20776	20775	20776-20775	BC20	45-66-03-00	15	0.013	1.81	5.61	1.30	23.23	0.35	2.77	49.44	0.51	3.31	58.94	0.57	4.08	72.66	0.78	4.57	81.55	1.00	4.62	82.31	1.00
20777	20776	20777-20776	BC20	45-66-03-00	15	0.013	1.87	5.71	1.30	22.69	0.34	2.71	47.55	0.50	3.24	56.69	0.59	3.99	69.83	0.84	4.53	79.40	1.00	4.70	81.26	1.00
20778	57146	20778-57146	BC20	45-66-05-00	15	0.013	1.06	4.29	1.18	27.53	0.37	2.41	56.69	0.54	2.89	67.45	0.62	3.55	82.77	0.71	4.03	93.90	1.00	4.04	94.10	1.00
20779	20778	20779-20778	BC20	45-66-05-00	15	0.013	1.52	5.14	1.18	22.97	0.34	2.41	47.31	0.50	2.89	56.29	0.55	3.55	69.08	0.63	4.03	78.37	1.00	4.04	78.52	1.00
20780	20779	20780-20779	BC20	45-66-05-00	15	0.013	1.36	4.87	1.15	23.56	0.35	2.37	48.88	0.50	2.82	57.91	0.56	3.46	71.06	0.70	4.01	81.37	1.00	4.04	83.05	1.00
20781	20780	20781-20780	BC20	45-66-06-00	15	0.013	1.15	4.47	1.15	25.67	0.36	2.37	53.04	0.53	2.82	63.11	0.58	3.46	77.42	0.67	4.03	90.15	1.00	4.05	90.65	1.00
20782	41252	20782-41252	BC20	45-66-08-00	15	0.01	0.89	2.55	1.13	44.34	0.47	2.34	91.83	0.77	2.79	109.26	1.00	3.42	134.03	2.00	3.96	155.83	2.00	3.98	156.22	2.00
20783	56667	20783-56667	BC20	45-66-07-00	15	0.01	1.63	3.47	1.04	30.65	0.40	2.26	65.01	0.63	2.69	77.65	0.73	3.31	95.45	1.00	3.86	111.16	2.00	3.86	111.13	2.00
20791	69152	20791-69152	BC24	45-66-12-00	16	0.013	1.17	5.36	0.64	12.01	0.26	1.26	23.55	0.35	1.50	27.89	0.38	1.82	34.00	0.43	2.30	42.82	0.53	2.66	49.63	0.60
20794	38990	20794-38990	BC24	45-66-12-00	15	0.013	2.00	5.91	0.60	10.29	0.25	1.09	18.52	0.32	1.29	21.79	0.35	1.55	26.26	0.38	1.95	32.91	0.43	2.24	37.95	0.47
20795	37148	20795-37148	BC24	45-66-14-00	15	0.013	2.33	6.37	0.60	9.46	0.42	1.09	17.19	0.51	1.29	20.21	0.54	1.55	24.36	0.58	1.95	30.54	0.64	2.24	35.21	0.68
20796	20795	20796-20795	BC24	45-66-14-00	12	0.013	1.84	3.21	0.59	18.50	0.31	1.08	33.53	0.42	1.27	39.44	0.45	1.52	47.50	0.50	1.91	59.55	0.57	2.20	69.74	0.63
20797	20796	20797-20796	BC24	45-66-13-00	12	0.013	1.88	3.16	0.59	18.79	0.31	1.08	34.06	0.42	1.27	40.06	0.45	1.52	48.26	0.50	1.91	60.50	0.57	2.20	70.84	0.63
20798	20797	20798-20797	BC24	45-66-13-00	12	0.013	2.30	3.49	0.59	17.01	0.29	1.08	30.84	0.40	1.27	36.27	0.43	1.52	43.69	0.48	1.91	54.78	0.68	2.20	64.14	1.00
20799	20798	20799-20798	BC25	45-66-15-00	12	0.013	2.41	3.58	0.59	16.58	0.29	1.08	30.07	0.39	1.27	35.36	0.43	1.52	42.59	0.47	1.91	53.40	1.00	2.41	67.35	1.00
20803	20799	20803-20799	BC25	45-66-15-00	12	0.013	2.54	3.67	0.51	13.96	0.27	0.88	24.88	0.35	1.03	29.19	0.39	1.23	33.63	0.44	1.54	42.01	1.00	1.77	48.18	1.00
20804	20803	20804-20803	BC24	45-66-17-00	12	0.013	5.66	5.48	0.51	9.35	0.23	0.88	16.12	0.29	1.03	18.88	0.31	1.23	22.52	0.34	1.54	28.14	0.37	1.77	32.26	0.41
20805	20804	20805-20804	BC24	45-66-17-00	12	0.013	0.85	2.12	0.51	24.17	0.34	0.88	41.68	0.45	1.03	48.80	0.50	1.23	58.22	0.56	1.54	72.73	0.64	1.77	83.40	0.71
20806	20805	20806-20805	BC24	45-66-17-00	12	0.013	3.74	4.45	0.43	10.74	0.24	0.76	17.17	0.30	0.89	19.94	0.32	1.05	23.60	0.35	1.31	29.35	0.38	1.50	33.74	0.42
20807	20806	20807-20806	BC24	45-66-17-00	12	0.013	3.48	4.28	0.46	19.27	0.31	0.76	30.81	0.40	0.89	35.79	0.43	1.05	42.34	0.47	1.31	52.66	0.53	1.50	60.55	0.57
20808	20807	20808-20807	BC24	45-66-17-00	12	0.013	0.42	1.49	0.46	32.07	0.40	0.76	51.28	0.51	0.89	59.56	0.56	1.05	70.48	0.63	1.31	87.65	0.73	1.50	100.78	0.93
20809	20808	20809-20808	BC24	45-66-17-00	12	0.013	0.73	1.97	0.48	24.25	0.50	0.76	38.79	0.61	0.89	45.05	0.67	1.05	53.30	0.74	1.31	66.30	0.83	1.50	76.24	1.00
20810	20809	20810-20809	BC24	45-66-17-00	12	0.013	0.48	1.60	0.48	29.85	0.58	0.76	47.76	0.69	0.89	55.47	0.54	1.05	65.61	0.59	1.31	81.61	0.70	1.50	93.85	0.78
20811	20810	20811-20810	BC24	45-66-17-00	12	0.013	0.59	1.77	0.48	26.99	0.56	0.76	43.17	0.67	0.89	50.15	0.50	1.05	59.33	0.56	1.31	73.80	0.64	1.50	84.82	0.71
20812	20811	70412-20811	BC24	45-66-17-00	12	0.013	0.70	1.93	0.48	24.78	0.35	0.76	39.59	0.45	0.89	45.99	0.49	1.05	54.41	0.55	1.31	67.68	0.65	1.50	77.84	0.73
21	20	21-20	BC12	45-58-21-01	12	0.013	2.61	3.72	0.01	0.20	0.36	0.03	0.91	0.44	0.04	1.17	0.47	0.05	1.44	0.49	0.07	2.00	0.55	0.09	2.44	0.59
21042	41529	21042-41529	BC01	45-59-35-05	15	0.013	0.37	2.52	0.47	18.57	0.29	1.10	43.58	0.46	1.37	54.51	0.52	1.66	65.78	0.58	2.00	78.75	0.66	2.17	86.60	0.71
21043	21042	21043-21042	BC01	45-59-35-05	15	0.013	0.36	2.51	0.47	18.65	0.29	1.10	43.75	0.46	1.37	54.73	0.52	1.66	65.98	0.58	2.00	79.05	0.66	2.17	86.93	0.71
21044	21043	21044-21043	BC01	45-59-35-05	8	0.013	1.01	0.78	0.20	25.86	0.38	0.55	78.79	0.64	0.71	91.31	0.77	0.87	111.13	2.00	1.01	128.96	2.00	1.06	136.06	2.00
21045	21043	21045-21043	BC01	45-59-35-03	15	0.013	0.94	4.05	0.25	6.16	0.18	0.50	12.44	0.34	0.61	14.97	0.41	0.72	17.82	0.48	0.91	22.92	0.38	1.04	25.71	0.65
21046	21045	21046-21045	BC01	45-59-35-03	15	0.013	0.11	1.39	0.25	17.96	0.27	0.50	36.74	0.37	0.61	41.60	0.41	0.72	51.92	0.45	0.93	66.75	0.51	1.04	74.94	0.54
21047	21044	21047-21044	BC01	45-59-35-05	8	0.013	1.01	0.78	0.02	2.21	0.14	0.05	8.74	0.25	0.10	12.79	0.82	0.12	14.79	1.00	0.15	18.81	1.00	0.16	21.01	1.00
21048	21047	21048-21047	BC01	45-59-35-05	8	0.013	0.83	0.71	0.02	2.44	0.14	0.05	10.73	0.24	0.10	14.21	0.27	0.12	17.08	0.29	0.17	24.20	1.00	0.21	29.42	1.00
21049	21048	21049-21048	BC01	45-59-35-05	8	0.013	0.78	0.70	0.02	2.47	0.14	0.08	10.89	0.24	0.10	14.41	0.28	0.13	17.33	0.30	0.17	24.56	0.35	0.21	29.85	1.00
21050	21049	21050-21049	BC01	45-59-35-05	8	0.013	1.86	1.07	0.02	1.62	0.13	0.08	7.12	0.21	0.10	9.41	0.23	0.12	11.34	0.25	0.17	16.07	0.29	0.21	19.53	0.32
21051	21050	21051-21050	BC01	45-59-35-05	8	0.013	7.71	1.16	0.02	1.49	0.13	0.08	6.58	0.20	0.10	8.72	0.22	0.12	10.47	0.24	0.17	14.82	0.28	0.21	18.01	0.30
21052	21051	21052-21051	BC01	45-59-35-05	8	0.013	3.05	1.35	0.02	1.24	0.13	0.08	5.65	0.19	0.10	7.50	0.21	0.12	9.00	0.22	0.17	12.74	0.26	0.21	15.50	0.28
21053	21049	21053-21049	BC01	45-59-35-05	8	0.013	0.98	0.72	0.00	0.00	0.10	0.00	0.00	0.10	0.00	-0.03	0.13	0.00	-0.05	0.20	0.00	-0.08	0.24	0.00	-0.08	0.24
21054	21043	21054-21043	BC01	45-59-35-04	8	0.013	1.94	1.09	0.02	1.48	0.13	0.05	4.71	0.18	0.07	6.11	0.20	0.08	7.90	0.21	0.11	10.18	0.24	0.13	12.30	0.26
21055	21054	21055-21054	BC01	45-59-35-04	8	0.013	1.78	1.04	0.02	1.55	0.13	0.05	4.93	0.18	0.07	6.41	0.20	0.08	7.65	0.21	0.11	10.67	0.24	0.13	12.89	0.26
21056	21055	21056-21055	BC01	45-59-35-04	8	0.013	1.76	1.04	0.02	1.55	0.13	0.05	4.93	0.18	0.07	6.41	0.20	0.08	7.65	0.21	0.11	10.67	0.24	0.13	12.90	0.26
21057	21056	21057-21056	BC01	45-59-35-04	8	0.013	1.77	1.04	0.01	1.55	0.13	0.05	4.93	0.18	0.07	6.42	0.20	0.08	7.65	0.21	0.11	10.68	0.24	0.13	12.91	0.27
21058	21057	21058-21057	BC01	45-59-35-04	8	0.013	1.73	1.03	0.02	1.56	0.13	0.05	4.96	0.18	0.07	6.49	0.20	0.08	7.74	0.21	0.11	10.80	0.24	0.13	13.05	0.27
21059	21044	21059-21044	BC01	45-59-35-05	8	0.013	1.02	0.79	0.19	23.46	0.35	0.48	68.70	0.58	0.62	78.48	0.65	0.77	96.56	1.00	0.89	115.32	2.00	0.94	119.14	2.00
21060	21059	21060-21059	BC01	45-59-35-05	8	0.013	1.00	0.78	0.19	23.76	0.35	0.48	69.47	0.58	0.62	79.47	0.69	0.77	98.22	1.00	0.89	114.32	2.00	0.94	120.46	2.00
21061	21060	21061-21060	BC01	45-59-35-06	8	0.013	3.01	1.36	0.19	13.83	0.27	0.48	35.26	0.43	0.62	45.60	0.56	0.77	56.46	1.00	0.89	65.70	1.00	0.94	68.98	1.00
21062	21061	21062-21061	BC01	45-59-35-06	8	0.013	1.02	0.79	0.19	23.46	0.35	0.48	68.70	0.57	0.62	78.51	0.69	0.77	97.37	0.91	0.90	113.67	2.00	0.95	119.63	2.00
21063	21062	21063-21062	BC01	45-59-35-06	8	0.013	1.02	0.79	0.19	23.46	0.35	0.48	68.70	0.57	0.62	78.53	0.69	0.77	97.39	0.93	0.90	113.68	2.00	0.95	119.86	2.00
21064	21063	21064-21063	BC01	45-59-35-08	8	0.013	0.86	0.72	0.16	21.93	0.33	0.38	54.04	0.53	0.51	70.21	0.63	0.65	87.15	0.82	0.72	99.84	1.00	0.75	104.81	2.00
21065	21064	21065-21064	BC01	45-59-35-07	8	0.013	0.93	0.75	0.16	21.05	0.33	0.38	51.89	0.52	0.51	67.41	0.62	0.63	83.75	0.71	0.72	95.55	1.00	0.75	100.12	1.00
21066	21065	21069-21065	BC01	45-59-35-07	8	0.013	0.88	0.73	0.16	21.63	0.33	0.38	53.32	0.53	0.51	69.27	0.63	0.63	86.05	0.72	0.72	98.72	1.00	0.75	102.78	2.00
21067	21066	21067-21066	BC01	45-59-35-07	8	0.013	0.90	0.74	0.16	21.34	0.33	0.39	52.59	0.52	0.51	68.34	0.62	0.63	84.89	0.72	0.72	97.85	1.00	0.75	101.86	2.00
21068	21067	21068-21067	BC01	45-59-35-07	8	0.013	0.99	0.78	0.02	2.01	0.14	0.07	9.51	0.23	0.10	12.64	0.26	0.12	15.23	0.28	0.17	21.62	0.33	0.20	26.27	1.00
21071	21067	21071-21067	BC01	45-59-35-07	8	0.013	0.88	0.73	0.14	19.48	0.31	0.32	43.79	0.48	0.41	56.73	0.55	0.52	71.36	0.71	0.60	82.32	1.00	0.65	88.75	1.00
21328	6888	21328-6888	TSJF01	45-56-00-00	30	0.013	0.32	14.98	2.96	19.91	0.30	8.22	54.89	1.00	8.82	58.89	1.00	9.90	66.08	1.00	10.16	67.85	1.00	10.76	69.14	1.00
21329	20761	21329-20761	BC19	45-62-01-00	27	0.013	0.16	8.83	2.46	27.81	0.40	6.29	70.23	1.00	7.03	79.65	1.00	8.94	101.22	2.00	8.61	109.08	2.00	10.06	113.98	2.00
21589	18596	21589-18596	BC11	45-59-16-01	8	0.013	1.53	0.97	0.02	1.95	0.14	0.23	21.58	0.35	0.30	31.22	0.40	0.39	40.55	0.46	0.55	57.21	0.56	0.69	71.03	0.84
21590	21589	21590-21589	BC11	45-59-16-01	8	0.013	0.79	0.69	0.01	0.97	0.12	0.10	11.90	0.27	0.13	15.49	0.30	0.17	21.09	0.35	0.23	34.00	0.42	0.29	42.28	0.47
21591	21590	21591-21590	BC11	45-59-16-01	8	0.013	2.02	1.11	0.01	0.60	0.11	0.10	8.60	0.22	0.13	11.50	0.25	0.17	14.91	0.28	0.23	21.14	0.33	0.29	26.31	0.36
21592	21591	21592-21591	BC11	45-59-16-02	8	0.013	2.05	1.12	0.01	0.60	0.11	0.10	8.57	0.22	0.13	11.39	0.25	0.17	14.76	0.28	0.23	20.96	0.33	0.29	26.08	0.36
21593	21592	21593-21592	BC11	45-59-16-02	8	0.013	2.00	1.11	0.01	0.60	0.11	0.10	8.65	0.22	0.13	11.50	0.25	0.17	14.91	0.28	0.23	21.15	0.33	0.29	26.32	0.36
21594	21593	21594-21593	BC11	45-59-16-02	8	0.013	1.35	1.43	0.01	0.47	0.11	0.10	6.71	0.19	0.13	8.92	0.22	0.17	11.57	0.25	0.23	16.43	0.29	0.29	20.43	0.32
21595	21594	21595-21594	BC11	45-59-16-07	8	0.013	6.07	1.92	0.01	0.35	0.11	0.10	5.00	0.18	0.13	6.65	0.20	0.17	8.62	0.22	0.23	12.23	0.26	0.29	15.22	0.28
21620	21621	21620-21621	BC08	45-59-17-02	8	0.013	0.61	0.61	0.01	1.85	0.14	0.09	15.25	1.00	0.12	20.25	1.00	0.15	24.90	1.00	0.21	34.74	1.00	0.27	44.30	1.00
21621	52550	21621-52550	BC08	45-59-17-01	8	0.013	2.69	1.28	0.01	0.88	0.33	0.09	8.88	1.00	0.12	9.35	1.00	0.15	11.70	1.00	0.21	18.08	1.00	0.26	20.64	1.00
21622	52551	21622-52551	BC08	45-59-17-03	8	0.013	2.74	1.30	0.59	45.36	0.49	1.54	118.16	2.00	1.56	121.25	2.00	1.56	121.36	2.00	1.58	121.32	2.00	1.58	121.31	2.00
21623	21622	21623-21622	BC08	45-59-17-03	8	0.013	0.93	0.75	0.39	52.00	0.52	0.67	89.16	1.00	0.72	96.60	1.00	0.73	97.55	1.00	0.73	97.45	1.00	0.73	97.81	1.00
21624	21623	21624-21623	BC08	45-59-17-01	8	0.013	2.02	1.11	0.39	35.14	0.42	0.67	60.26	1.00	0.72	65.25	1.00	0.73	59.93	0.57	0.73	59.96	0.57	0.73	59.96	0.57
21625	21624	21625-21624	BC08	45-59-17-01	8	0.013	2.38	1.21	0.39	37.23	0.41	0.67	55.32	0.55	0.72	59.84	0.57	0.73	54.53	0.54	0.73	54.55	0.54	0.73	54.55	0.54
21626	21625	21626-21625	BC08	45-59-17

Baltimore County

Jones Falls - Modeled Pipe Capacity - Existing Conditions

Pipe Attributes									Dry Weather Flows			2-Year 6-Hour			2-Year 24-Hour			10-Year 6-Hour			10-Year 24-Hour			20-Year 24-Hour		
Upstream Node	Downstream Node	Asset ID	Meter Basin	SSA	Pipe Diameter	Manning's Coefficient	Pipe Gradient	Pipe Full Capacity	Peak Dry Weather Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State
21630	21629	21630-21629	BC08	45-59-17-03	8	0.013	0.40	0.49	0.39	76.61	0.68	0.67	136.63	2.00	0.72	147.78	2.00	0.73	148.00	2.00	0.73	148.06	2.00	0.73	148.06	2.00
21631	21630	21631-21630	BC03	45-59-17-03	8	0.013	0.40	0.50	0.39	78.02	0.68	0.67	133.92	2.00	0.72	144.82	2.00	0.73	145.04	2.00	0.73	145.10	2.00	0.73	145.10	2.00
21634	21631	21634-21631	BC08	45-59-17-03	8	0.013	2.99	1.35	0.39	28.50	0.38	0.67	49.81	0.59	0.72	53.64	1.00	0.73	53.72	1.00	0.73	53.74	1.00	0.73	53.74	1.00
21635	21634	21635-21634	BC08	45-59-17-03	8	0.013	2.65	1.27	0.39	30.72	0.40	0.67	53.76	0.63	0.72	57.02	0.56	0.73	57.10	0.56	0.73	57.13	0.56	0.73	57.13	0.56
21636	21635	21636-21635	BC08	45-59-17-03	8	0.013	5.84	1.89	0.39	20.65	0.33	0.67	35.45	0.43	0.72	38.32	0.44	0.73	38.37	0.44	0.73	38.39	0.44	0.73	38.39	0.44
21638	21636	21638-21636	BC08	45-59-17-03	8	0.013	1.00	0.78	0.39	50.03	0.51	0.67	85.90	0.72	0.72	92.85	0.72	0.73	92.97	0.72	0.73	93.01	0.72	0.73	93.01	0.72
21641	21622	21641-21622	BC08	45-59-17-03	8	0.013	1.48	0.95	0.20	21.04	0.40	0.67	91.79	1.00	0.86	90.57	1.00	0.88	91.11	1.00	0.88	91.37	1.00	0.88	91.54	1.00
21642	21641	21642-21641	BC08	45-59-17-04	8	0.013	0.61	0.61	0.20	32.77	0.41	0.87	142.42	2.00	0.86	141.74	2.00	0.88	144.79	2.00	0.90	147.65	2.00	0.91	148.90	2.00
21643	21642	21643-21642	BC08	45-59-17-04	8	0.013	0.59	0.60	0.20	33.33	0.41	0.87	145.47	2.00	0.87	145.12	2.00	0.89	148.58	2.00	0.91	152.03	2.00	0.92	153.37	2.00
21645	21643	21645-21643	BC02	45-59-17-04	8	0.013	0.61	0.61	0.20	32.77	0.41	0.87	142.25	2.00	0.86	143.80	2.00	0.90	147.57	2.00	0.92	151.36	2.00	0.91	153.01	2.00
21646	21645	21646-21645	BC08	45-59-17-04	8	0.013	0.59	0.60	0.20	33.32	0.41	0.88	145.50	2.00	0.88	147.42	2.00	0.91	151.40	2.00	0.93	155.42	2.00	0.95	157.25	2.00
21647	21646	21647-21646	BC08	45-59-17-04	8	0.013	1.54	0.95	0.20	20.40	0.32	0.88	89.59	1.00	0.90	91.34	1.00	0.93	95.14	1.00	0.97	98.49	1.00	0.97	99.33	1.00
21648	21647	21648-21647	BC08	45-59-17-04	8	0.013	3.99	1.56	0.20	12.83	0.26	0.88	56.69	1.00	0.90	57.78	1.00	0.93	59.77	1.00	0.97	61.89	1.00	0.00	61.62	1.00
21649	21648	21649-21648	BC08	45-59-17-04	8	0.013	6.08	1.93	0.20	10.26	0.24	0.89	46.00	1.00	0.91	47.12	1.00	0.94	48.46	1.00	0.97	50.23	1.00	0.99	51.44	1.00
21651	21649	21651-21649	BC05	45-59-17-04	8	0.013	0.60	0.60	0.20	33.32	0.41	0.89	148.05	2.00	0.91	151.87	2.00	0.94	156.12	2.00	0.97	161.47	2.00	0.99	165.72	2.00
21652	21651	21652-21651	BC05	45-59-17-04	8	0.013	0.40	0.49	0.19	26.39	0.44	0.82	168.19	2.00	0.82	166.88	2.00	0.82	167.14	2.00	0.82	167.37	2.00	0.82	167.49	2.00
21653	21652	21653-21652	BC02	45-59-17-04	8	0.013	0.42	0.50	0.09	16.38	0.30	0.60	119.60	2.00	0.59	118.96	2.00	0.59	118.36	2.00	0.58	116.66	2.00	0.58	116.02	2.00
21654	21653	21654-21653	BC06	45-59-17-05	8	0.013	0.40	0.49	0.09	18.76	0.33	0.60	121.92	2.00	0.59	121.24	2.00	0.59	120.53	2.00	0.58	118.86	2.00	0.58	118.22	2.00
21655	21654	21655-21654	BC06	45-59-17-05	8	0.013	0.95	0.76	0.09	12.09	0.25	0.74	97.00	1.00	0.74	96.96	1.00	0.74	96.93	1.00	0.74	96.93	1.00	0.74	96.95	1.00
21805	7108	21805-7108	BC09	45-59-26-05	8	0.013	7.54	1.24	0.35	11.90	0.25	0.81	65.37	0.66	0.85	74.49	0.66	0.85	76.56	0.66	0.85	76.56	0.66	0.85	76.57	0.66
21806	21805	21806-21805	BC09	45-59-29-02	8	0.013	0.59	0.60	0.35	24.82	0.35	0.81	132.92	2.00	0.95	155.49	2.00	0.95	158.22	2.00	0.95	158.23	2.00	0.95	158.25	2.00
21807	21806	21807-21806	BC09	45-59-29-03	8	0.013	0.61	0.61	0.35	24.21	0.35	0.81	132.92	2.00	0.95	155.49	2.00	0.95	155.64	2.00	0.95	155.69	2.00	0.95	155.69	2.00
22	19	22-19	BC12	45-58-21-01	15	0.013	0.41	2.66	0.32	12.14	0.28	0.45	16.82	0.33	0.53	19.09	0.36	0.57	21.33	0.38	0.69	25.85	0.42	0.78	29.48	0.45
22009	6957	22009-6957	BC07	45-59-17-01	24	0.01	0.47	13.03	2.39	16.10	0.29	14.91	114.41	2.00	15.24	116.95	2.00	15.47	118.75	2.00	15.44	118.76	2.00	15.31	117.71	2.00
22010	22009	22010-22009	BC07	45-59-17-02	24	0.01	0.40	11.99	2.31	19.28	0.30	14.75	122.99	2.00	15.08	125.79	2.00	15.28	127.44	2.00	15.54	105.42	2.00	15.43	104.66	2.00
22011	22010	22011-22010	BC07	45-59-17-03	24	0.01	0.60	14.74	2.31	15.65	0.27	14.82	100.56	2.00	15.12	102.60	2.00	15.35	104.13	2.00	15.54	105.42	2.00	15.44	104.66	2.00
22012	22011	22012-22011	BC07	45-59-17-04	24	0.01	0.60	14.71	2.31	15.71	0.27	14.82	100.77	2.00	15.19	103.24	2.00	15.47	105.16	2.00	15.64	106.28	2.00	15.64	106.34	2.00
22013	22012	22013-22012	BC07	45-59-17-05	24	0.01	0.63	15.07	2.31	15.34	0.27	14.95	99.22	1.00	17.20	114.12	2.00	17.74	117.73	2.00	18.06	119.84	2.00	18.25	121.12	2.00
22067	19717	22067-19717	BC11	45-59-13-00	6	0.013	2.61	1.27	0.01	0.89	0.13	0.19	15.19	0.38	0.35	28.05	0.32	0.33	26.34	0.40	0.47	37.31	0.54	0.59	46.43	1.00
22090	21820	22090-21820	BC08	45-59-17-03	8	0.013	0.61	0.61	0.01	1.85	0.14	0.09	15.26	0.28	0.32	39.25	0.36	0.16	26.08	0.36	0.23	38.51	0.43	0.28	45.80	0.49
22091	22090	22091-22090	BC08	45-59-17-03	8	0.013	0.60	0.60	0.01	1.83	0.14	0.09	15.42	0.28	0.32	39.58	0.32	0.16	26.53	0.36	0.23	37.57	0.43	0.25	46.60	0.49
22092	22091	22092-22091	BC08	45-59-17-02	8	0.013	1.06	0.80	0.01	1.41	0.13	0.09	11.64	0.25	0.32	35.44	0.28	0.16	19.99	0.32	0.23	28.18	0.37	0.28	29.76	0.39
22093	22092	22093-22092	BC08	45-59-17-02	8	0.013	1.44	0.94	0.01	1.20	0.13	0.09	9.56	0.23	0.32	33.34	0.27	0.16	16.36	0.29	0.23	23.99	0.35	0.28	26.65	0.36
22094	22093	22094-22093	BC08	45-59-17-02	8	0.013	1.82	1.05	0.01	1.08	0.12	0.09	8.87	0.23	0.32	31.76	0.25	0.16	15.16	0.28	0.23	21.48	0.33	0.28	25.17	0.34
22097	22094	22097-22094	BC08	45-59-17-02	8	0.013	3.89	1.54	0.01	0.72	0.12	0.09	6.65	0.19	0.32	8.01	0.21	0.16	10.34	0.24	0.23	14.65	0.28	0.28	18.17	0.30
22098	22097	22098-22097	BC08	45-59-17-02	8	0.013	4.15	1.59	0.01	0.71	0.12	0.09	5.86	0.19	0.32	7.77	0.21	0.16	10.01	0.23	0.23	14.19	0.27	0.28	17.60	0.30
22099	22098	22099-22098	BC08	45-59-17-02	8	0.013	1.41	0.93	0.01	1.22	0.13	0.09	10.01	0.23	0.32	13.28	0.27	0.16	17.12	0.30	0.23	24.26	0.35	0.28	29.53	0.36
22100	22099	22100-22099	BC08	45-59-17-02	8	0.013	0.57	0.59	0.01	1.92	0.14	0.09	15.78	0.29	0.32	20.93	0.33	0.16	26.58	0.37	0.23	37.63	0.44	0.28	46.70	0.50
22101	22100	22101-22100	BC08	45-59-17-02	8	0.013	0.59	0.60	0.01	1.88	0.14	0.09	15.52	0.28	0.32	20.60	0.33	0.16	26.53	0.36	0.23	37.63	0.44	0.28	46.78	0.50
22222	7314	22222-7314	BC16	45-58-05-00	21	0.02	0.83	6.07	2.32	34.69	0.51	4.31	70.97	1.00	5.03	82.05	1.00	5.06	98.22	1.00	7.26	119.42	2.00	7.80	134.75	2.00
22223	22222	22223-22222	BC16	45-58-05-00	21	0.02	0.76	5.76	2.32	36.58	0.42	4.31	74.36	0.88	5.03	86.94	1.00	5.96	102.94	2.00	7.25	125.22	2.00	7.80	134.75	2.00
22225	19142	22225-19142	BC16	45-58-05-00	21	0.013	0.41	6.53	1.33	20.42	0.31	2.64	40.50	0.44	3.05	46.66	0.48	3.78	57.87	0.82	4.72	72.23	1.00	4.99	76.49	1.00
22454	6921	22454-6921	BC15	45-59-01-00	12	0.02	0.79	1.33	0.06	4.36	0.15	0.12	9.31	1.00	0.15	11.44	1.00	-0.24	-17.97	1.00	-0.44	-33.00	1.00	-0.54	-40.33	1.00
22455	22454	22455-22454	BC15	45-59-01-00	12	0.02	0.40	0.95	0.05	6.11	0.18	0.09	9.43	0.22	0.11	11.63	0.24	-0.19	-20.36	1.00	-0.35	-37.01	1.00	-0.43	-45.47	1.00
22456	22455	22456-22455	BC15	45-59-01-00	12	0.02	0.69	1.49	0.06	3.80	0.13	0.09	6.01	0.18	0.11	7.47	0.17	0.16	10.72	1.00	0.24	15.52	1.00	0.27	17.98	1.00
22457	22456	22457-22456	BC15	45-59-01-00	12	0.02	0.46	1.01	0.06	5.75	0.17	0.09	8.87	0.21	0.11	10.95	0.23	0.14	14.34	0.26	0.23	14.26	0.27	0.26	25.93	1.00
22458	45585	22458-45585	BC15	45-59-01-00	12	0.02	1.23	1.66	0.06	3.51	0.16	0.09	5.40	0.19	0.11	6.66	0.20	0.14	8.61	0.22	0.19	11.42	0.25	0.23	14.00	0.27
22462	22458	22462-22458	BC15	45-59-01-00	12	0.02	1.24	1.67	0.06	3.49	0.16	0.09	5.37	0.19	0.11	6.62	0.20	0.14	8.56	0.22	0.19	11.35	0.25	0.23	13.92	0.27
22463	22462	22463-22462	BC15	45-59-01-00	12	0.013	1.98	3.24	0.06	1.82	0.14	0.09	2.77	0.15	0.11	3.41	0.16	0.14	4.41	0.17	0.19	5.85	0.19	0.23	7.17	0.21
22463A	22463	22463A-22463	BC15	45-59-01-00	12	0.013	1.66	2.96	0.06	1.97	0.14	0.09	3.01	0.15	0.11	3.74	0.16	0.14	4.83	0.18	0.19	6.41	0.20	0.23	7.85	0.21
22464	22463A	22464-22463A	BC15	45-59-01-00	12	0.013	1.58	2.89	0.06	2.02	0.14	0.09	3.10	0.15	0.11	3.83	0.16	0.14	4.94	0.18	0.19	6.56	0.20	0.23	8.04	0.21
22465	45592	22465-45592	BC15	45-59-01-00	12	0.013	0.60	1.78	0.06	3.26	0.14	0.09	5.01	0.16	0.11	6.18	0.18	0.14	7.98	0.20	0.19	10.59	0.23	0.23	12.99	0.25
22466	22465	22466-22465	BC15	45-59-01-00	12	0.013	0.42	1.49	0.06	3.92	0.15	0.09	6.01	0.18	0.11	7.42	0.20	0.14	9.59	0.22	0.19	12.72	0.25	0.23	15.60	0.28
22482	45567	22482-45567	BC15	45-59-01-00	12	0.013	1.00	2.20	0.06	2.79	0.14	0.09	2.75	0.15	0.11	3.39	0.16	0.14	4.38	0.17	0.19	5.82	0.19	0.23	7.13	0.21
22489	22482	22489-22482	BC15	45-59-01-00	12	0.013	2.71	2.79	0.06	1.54	0.13	0.09	2.36	0.14	0.11	2.92	0.15	0.14	3.77	0.16	0.19	5.00	0.18	0.23	6.13	0.20
22490	22489	22490-22489	BC15	45-59-01-00	12	0.013	2.36	3.54	0.06	1.46	0.13	0.09	2.53	0.15	0.11	3.12	0.15	0.14	4.04	0.17	0.19	5.36	0.19	0.23	6.57	0.20
22538	15270	22538-15270	BC10A	45-59-20-05	15	0.013	3.59	7.91	0.21	2.70	0.15	1.18	14.91	0.28	1.37	19.87	0.32	1.83	23.73	0.35	2.68	33.82	0.42	3.25	41.07	0.46
2354	742	234363	BC12	45-58-10-00	10	0.013	0.44	0.94	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08
2355	2354	70089	BC12	45-58-10-00	10	0.013	0.79	1.26	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08
23	22	23-22	BC12	45-58-21-01	15	0.013	1.19	4.55	0.32	7.10	0.24	0.45	9.89	0.28	0.53	11.76	0.30	0.57	12.47	0.32	0.69	15.21	0.35	0.78	17.24	0.37
23057	7142	23057-7142	BC04	45-59-30-01	8	0.013	0.51	0.56	0.02	2.83	0.15	0.24	43.39	0.48	0.33	58.57	0.57	0.40	78.62	0.64	0.58	104.02	0.90	0.71	126.27	2.00
23775	18517	23775-18517	BC13	45-59-05-03	8	0.013	0.67	1.95	0.07	3.67	0.16	0.46	24.04	0.35	0.60	31.22	0.40	0.78	40.18	0.45	1.00	52.04	1.00	1.11	57.55	1.00
23776	23775	23776-23775	BC13	45-59-05-03	8	0.013	4.24	1.61	0.07	4.66	0.18	0.46	28.81	0.38	0.60	37.42	0.43	0.78	48.16	0.50	1.00	61.97	0.58	1.10	63.20	0.62
23777	23776	23777-23776	BC13	45-59-05-03	8	0.013	1.12	0.83	0.07	9.02	0.32	0.46	55.89	0.55	0.60	72.59	0.64	0.78	93.42	0.79	1.00	120.20	1.00	1.10	132.28	2.00
23778	23777	23778-23777	BC13	45-59-05-03	8	0.013	0.60	0.61	0.07	12.25	0.26	0.46	76.05	0.66	0.60	98.77	0.88	0.78	127.11	2.00	1.00	163.57	2.00	1.10	180.62	2.00
23779	23778	23779-23778	BC13	45-59-05-04	8	0.013	0.68	0.64	0.07	11.67	0.25	0.46	72.48	0.63	0.60	94.16	0.82	0.78	121.16	2.00	1.00	155.97	2.00	1.28	199.87	2.00
2402	901693	2402	BC13	45-58-06-02	6	0.013	3.29	0.66	0.23	35.36	1.00	0.47	71.05	1.00	0.57	85.73	1.00	0.65	99.80	1.00	0.66	100.30	2.00	0.66	100.36	2.00
2402	550120-outfall		BC12	45-58-06-02	8	0.013	41.88	5.06	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.20	3.94	0.17	0.34	6.71	0.20
2403	2402		BC12	45-58-06-02	8	0.013	2.49	1.25	0.23	18.84	0.32	0.47	38.61	0.51	0.57	46.00	0.55	0.46	53.49	1.00	0.66	70.62	1.00	1.00	81.46	1.00
2404	F5313-missing		BC12	45-58-06-02	8	0.013	3.32	1.46	0.23	15.96	0.29	0.47	32.53	0.47	0.57	38.75	0.47	0.67	45.65	0.52	0.86	59.31	0.64	1.00	68.47	1.00
2405	2404		BC12	45-58-06-02	8	0.013	0.35	0.46	0.19	40.41	0.45	0.36	81.54	0.71	0.45	96.91	0.86	0.52	113.93	2.00	0.66	147.28	2.00	0.80	173.48	2.00
2416	2404		BC12	45-58-06-03	8	0.013	0.40	0.49	0.05	9.83	0.29	0.10	20.41	0.41	0.12	24.53	0.44	0.14	28.06	0.49	0.19	37.86	0.58	0.22	44.96	0.85
27	23	27-23	BC12	45-58-21-01	15	0.013	1.23	4.64	0.32	6.96	0.23	0.45	9.70	0.23	0.53	10.95	0.23	0.57	12.23	0.26	0.69	14.62	0.28	0.78	16.81	0.30
2900	7335	2900-7335	BC12	45-58-08-00	10	0.013	15.51	5.58	0.35	2.62	0.15	0.34	6.08	0.20	0.41	7.39	0.21	0.49	8.84	0.22	0.65	11.65	0.25	0.78	13.91	0.27
2936	1508	2936-1508	BC12	45-58-09-01	10	0.013	0.92	1.02	0.43	42.09	0.46	0.83	50.04	0.50	0.55	54.32	0.56	0.59	58.07	1.00	0.68	66.75	1.00	0.73	71.60	1.00
2937	2936	2937-2936	BC12	45-58-09-02	10	0.013	0.92	1.02	0.43	42.09	0.46	0.51	50.04	0.51	0.55	54.26	0.53	0.59	58.25	0.56	0.66	66.83	0.61	0.72	71.56	1.00
2938	2937	2938-2937	BC12	45-58-09-02	10	0.013	0.44	0.94	0.43	45.67	0.53	0.51	54.10	0.58	0.55	58.99	0.61	0.59	63.20	0.64	0.68	77.53	0.70	0.75	79.81	1.00
2939	2938	2939-2938	BC12	45-58-09-01	10	0.013	0.61	1.10	0.43	39.03	0.47	0.51	45.40	0.52	0.55	50.42	0.56	0.59	54.01	0.58	0.68	61.99	0.64	0.75	68.20	0.70
2940	2939	2940-2939	BC12	45-58-09-02	10	0.013	2.82	2.36	0.43	18.64	0.30	0.51	21.45	0.33	0.55	23.30	0.35	0.59	24.96	0.36	0.68	28.85	0.38	0.75	31.33	0.40
2941	2940	2941-2940	BC12	45-58-09-02	10	0.013	1.91	1.86	0.43	21.90	0.34	0.51	26.84	0.36	0.55	28.30	0.38	0.59	30.32	0.39	0.68	34.79	0.42	0.75	37.29	0.44
2942	2941	2942-2941	BC12	45-58-09-02	10	0.013	0.35	0.84	0.43	51.11	0.51	0.51	60.76	0.57	0.55	66.03	0.60	0.59	70.74	0.63	0.68	81.16	0.70	0.75	89.33	0.74
2943	4971	2943-4971	BC12	45-58-09-02	10	0.013	1.46	1.71	0.43	25.11	0.36	0.51	29.85	0.38	0.55	32.44	0.41	0.59	34.75	0.42	0.68	39.91	0.45	0.75	43.91	0.48
2945	2943	2945-2943	BC12	45-58-09-02	10	0.013	0.91	1.37	0.43	31.24	0.39	0.51	37.26	0.43	0.55	40.49	0.45	0.59	43.37	0.47	0.68	49.82	0.50	0.75	54.81	0.54
2946	2945	2946-2945	BC12	45-58-09-02	10	0.013	1.81	1.91	0.43	22.45	0.34	0.51	26.72	0.37	0.55	29.04	0.38	0.59	31.12	0.40	0.68	35.74	0.43	0.75	39.33	0.45
2947	2946	2947-2946	BC12	45-58-09-03	10	0.013	1.93	1.97	0.43	21.80	0.34	0.51	25.91	0.36	0.55	28.16	0.38	0.59	30.17	0.39	0.68	34.65	0.42	0.75	38.14	0.44
29644	37991	29644-4995	BC03	45-59-34-00	8	0.013	0.50	0.55	0.03	5.56	0.18	1.06	192.55	2.00	1.06	193.56	2.00	1.07	193.67	2.00	1.07	195.31	2.00	1.08	196.07	2.00
29645	30342	29645-30342	BC03	45-59-34-00	15	0.013	0.58	3.29	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05
29646	33471	29646-33471	BC01	45-59-35-02	30	0.013	0.65	21.30	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05
29881	30812	29881-30812	BC24	45-66-17-00	12	0.013	0.05	0.51	0.46	93.69	0.44	0.76	149.82	0.55	0.89	174.04	0.59	1.05	205.92	0.64	1.31	216.12	0.77	1.50	234.37	0.87
29882	29861	29862-29861	BC24	45-66-17-00	10	0.013	0.31	0.72	0.48	61.28	0.57	0.76	97.96	0.79	0.89	113.79	0.99	1.05	134.64	2.00	1.31	187.66	2.00	1.50	192.60	2.00
29873	30799	29873-30799	BC24	45-66-16-00	10	0.013	4.87	3.12	0.08	7.65	0.25	0.19	6.20	0.20	0.25	7.46	0.23	0.29	9.38	0.23	0.38	12.23	0.34	0.47	14.92	0.45
3	30244	30243-30244	BC03	45-59-34-00	8	0.013	0.39	0.49	0.06	12.33	0.26	0.58	118.45	2.00	0.71	145.10	2.00	0.77	157.12	2.00	0.79	161.41	2.00	0.79	161.29	2.00
30153	21046	30153-21046	BC01	45-59-35-03	8	0.013	0.38	0.48	0.25	52.00	0.81	0.50	104.94	2.00	0.61	126.25	2.00	0.71	150.55	2.00	0.93	193.29	2.00	1.04	217.02	2.00
30155	30153	30155-30153	BC01	45-59-35-03	8	0.013	0.44	0.52	0.21	41.17	0.46	0.40	77.87	1.00	0.48	92.81	1.00	0.57	168.90	2.00	0.74	141.37	2.00	0.83	113.67	2.00
30156	30155	30156-30155	BC01	45-59-35-03	8	0.013	0.88	0.72	0.21	29.33	0.38	0.41	55.52	0

Baltimore County

Jones Falls - Modeled Pipe Capacity - Existing Conditions

Pipe Attributes									Dry Weather Flows			2-Year 6-Hour			2-Year 24-Hour			10-Year 6-Hour			10-Year 24-Hour			100-Year 24-Hour		
Upstream Node	Downstream Node	Asset ID	Meter Basin	SSA	Pipe Diameter	Manning's Coefficient	Pipe Gradient	Pipe Full Capacity	Peak Dry Weather Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State
30342	37991	30342-37991	BC03	45-59-34-00	30	0.013	0.41	16.87	0.00	0.00	0.05	0.00	0.01	0.17	0.00	-0.02	0.18	0.00	0.02	0.20	-0.01	-0.03	0.21	-0.01	-0.04	0.22
30588	16037	30588-16037	BC10A	45-59-20-01	18	0.013	0.62	5.35	0.21	3.98	0.14	0.93	16.91	0.28	1.11	20.73	0.31	1.29	24.12	0.36	1.70	31.65	0.57	2.02	37.67	0.78
30588A	30586	30588A-30588	BC10A	45-59-20-01	15	0.013	1.15	4.48	0.21	4.76	0.18	0.91	20.20	0.32	1.11	24.78	0.39	1.29	28.83	0.46	1.70	37.92	0.44	2.02	45.11	0.49
30589	30588A	30589-30588A	BC10A	45-59-20-01	15	0.013	1.71	5.43	0.21	3.89	0.16	0.91	16.51	0.29	1.11	20.26	0.32	1.29	23.57	0.35	1.70	31.00	0.40	2.02	44.22	0.48
30590	30589	30590-30589	BC10A	45-59-20-03	15	0.013	1.19	4.56	0.21	4.65	0.18	0.91	19.85	0.32	1.11	24.36	0.35	1.29	28.33	0.36	1.70	37.27	0.43	2.02	54.48	0.53
30590A	30590	30590A-30590	BC10A	45-59-20-03	15	0.013	0.79	3.71	0.21	5.75	0.18	0.91	24.40	0.34	1.11	29.95	0.33	1.29	34.82	0.41	1.70	49.81	0.42	2.02	35.24	0.51
30590B	30590A	30590B-30590A	BC10A	45-59-20-03	15	0.013	1.88	5.72	0.21	3.73	0.16	0.91	15.83	0.33	1.11	19.44	0.36	1.29	77.60	0.40	1.70	29.73	0.47	2.02	55.08	0.51
30591	30590B	30591-30590B	BC10A	45-59-20-03	15	0.013	0.77	3.67	0.21	5.81	0.17	0.91	24.67	0.34	1.11	30.31	0.38	1.29	35.22	0.42	1.70	46.35	0.49	2.02	55.08	0.51
30592	15771	30592-15771	BC10A	45-59-20-08	15	0.013	2.04	5.96	0.09	1.49	0.13	0.37	6.24	0.20	0.48	7.97	0.21	0.59	9.91	0.23	0.81	13.64	0.27	0.99	16.66	0.29
30593	30592	30593-30592	BC10A	45-59-20-06	15	0.013	-2.95	-7.17	0.09	-1.24	0.41	0.37	-5.19	0.52	0.48	-6.63	0.55	0.59	-8.24	0.56	0.81	-11.34	0.64	0.99	-13.85	0.68
30594	30593	30594-30593	BC10A	45-59-20-06	15	0.013	2.24	6.25	0.09	1.42	0.33	0.37	5.96	0.44	0.48	7.61	0.47	0.59	9.45	0.50	0.81	13.01	0.56	0.99	15.89	0.60
30595	30594	30595-30594	BC10A	45-59-20-06	15	0.013	2.74	6.97	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10
30596	30595	30596-30595	BC10A	45-59-20-06	15	0.013	3.59	7.91	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10
30597	30596	30597-30596	BC10A	45-59-20-06	15	0.013	3.01	7.35	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10
30598	30597	30598-30597	BC10A	45-59-20-06	15	0.013	0.88	3.91	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05
30616	22067	30616-22067	BC11	45-59-12-00	6	0.013	0.42	0.91	0.01	1.08	0.14	0.39	37.82	0.44	0.25	49.92	0.51	0.33	65.59	0.60	0.47	92.67	0.75	0.59	115.67	0.99
30617	30616	30617-30616	BC11	45-59-12-00	6	0.013	2.76	1.30	0.01	0.78	0.12	0.39	14.84	0.28	0.25	19.58	0.32	0.33	25.73	0.36	0.47	36.35	0.43	0.59	45.38	0.49
30618	30617	30618-30617	BC11	45-59-12-00	8	0.013	3.89	1.54	0.01	0.66	0.12	0.39	12.53	0.28	0.25	16.53	0.32	0.33	21.72	0.36	0.47	30.69	0.43	0.59	38.31	0.49
30619	30618	30619-30618	BC11	45-59-12-00	8	0.013	3.80	1.52	0.01	0.66	0.12	0.39	12.69	0.28	0.25	16.75	0.29	0.33	22.01	0.34	0.47	31.09	0.40	0.59	38.82	0.44
30620	30619	30620-30619	BC11	45-59-12-00	8	0.013	3.53	1.47	0.01	0.69	0.12	0.39	13.12	0.27	0.25	17.32	0.30	0.33	22.76	0.34	0.47	32.15	0.41	0.59	40.14	0.45
30621	30620	30621-30620	BC11	45-59-12-00	8	0.013	2.85	1.33	0.01	0.76	0.12	0.39	14.50	0.28	0.25	19.14	0.31	0.33	25.15	0.36	0.47	35.53	0.43	0.59	44.36	0.48
30622	30621	30622-30621	BC11	45-59-12-00	8	0.013	0.92	0.75	0.01	1.35	0.13	0.39	25.72	0.36	0.25	33.95	0.42	0.33	44.60	0.46	0.47	63.01	0.54	0.59	78.68	0.69
30623	30622	30623-30622	BC11	45-59-12-00	8	0.013	0.92	0.75	0.01	1.35	0.13	0.39	25.72	0.36	0.25	33.95	0.42	0.33	44.60	0.46	0.47	63.01	0.54	0.59	78.68	0.69
30624	30623	30624-30623	BC11	45-59-12-00	8	0.013	9.81	2.45	0.01	0.41	0.11	0.39	7.87	0.21	0.25	10.39	0.24	0.33	13.47	0.27	0.47	19.29	0.31	0.59	24.09	0.35
30625	30624	30625-30624	BC11	45-59-12-00	8	0.013	5.85	1.83	0.01	0.53	0.11	0.39	10.21	0.24	0.25	13.47	0.27	0.33	17.70	0.30	0.47	25.01	0.36	0.59	31.23	0.40
30626	30625	30626-30625	BC11	45-59-12-00	8	0.013	5.07	1.76	0.01	0.57	0.11	0.39	10.96	0.24	0.25	14.47	0.28	0.33	19.01	0.31	0.47	26.86	0.37	0.59	33.53	0.41
30627	30626	30627-30626	BC11	45-59-12-00	8	0.013	1.53	0.97	0.01	1.04	0.12	0.39	19.89	0.32	0.25	26.25	0.36	0.33	34.48	0.42	0.47	48.73	0.50	0.59	59.45	0.57
30628	30627	30628-30627	BC11	45-59-12-00	8	0.013	2.21	1.17	0.01	0.86	0.12	0.39	16.50	0.28	0.25	21.76	0.34	0.33	28.59	0.38	0.47	40.40	0.45	0.59	50.45	0.51
30716	30778	30716-30778	BC09	45-66-01-00	15	0.013	1.01	4.29	1.20	30.85	0.48	3.72	64.68	0.66	3.74	77.07	0.67	3.99	92.89	0.87	4.47	106.53	2.00	4.49	106.87	2.00
30727	31271	30727-31271	BC22	45-70-00-00	8	0.013	2.00	1.10	0.02	1.73	0.13	0.43	38.83	1.00	0.56	51.32	1.00	0.71	64.92	1.00	0.98	88.83	1.00	1.06	98.63	1.00
30951	31001	30951-31001	BC01	45-59-35-08	8	0.013	0.43	0.51	0.14	27.88	0.37	0.32	62.69	0.58	0.42	81.22	0.69	0.52	102.14	0.86	0.82	130.37	2.00	0.86	107.48	2.00
30957	30953	30957-30953	BC01	45-59-35-08	8	0.013	0.61	0.61	0.14	23.33	0.35	0.32	52.41	0.62	0.43	67.90	0.61	0.52	85.41	0.81	0.82	108.99	2.00	1.21	76.37	1.00
30958	59133	30958-59133	BC01	45-59-35-05	8	0.013	4.84	1.71	0.31	18.30	1.00	0.59	34.09	1.00	0.72	41.91	1.00	0.87	51.40	1.00	1.23	65.74	1.00	1.31	141.24	2.00
30959	30958	30959-30958	BC01	45-59-35-08	8	0.013	1.41	0.91	0.31	33.85	0.47	0.59	63.06	0.59	0.72	77.55	0.68	0.87	93.37	0.79	1.23	123.72	2.00	1.31	143.78	2.00
30960	30959	30960-30959	BC01	45-59-35-08	8	0.013	1.40	0.92	0.31	34.22	0.42	0.59	63.75	0.59	0.72	78.39	0.73	0.87	94.38	1.00	1.23	123.11	2.00	1.37	143.78	2.00
30961	30960	30961-30960	BC01	45-59-35-08	8	0.013	2.86	1.32	0.01	3.53	0.27	0.23	17.09	0.55	0.30	22.35	0.88	0.37	28.04	1.00	0.50	38.05	2.00	0.81	45.95	1.00
30968	65375	30968-65375	BC09	45-59-33-00	18	0.013	1.60	6.60	0.00	0.00	0.10	0.00	-0.02	0.23	0.00	-0.03	0.27	0.00	-0.03	0.30	0.00	-0.05	0.36	-0.01	-0.08	0.41
31001	21071	31001-21071	BC01	45-59-35-07	6	0.013	0.47	0.54	0.14	26.33	0.36	0.32	59.20	0.57	0.41	76.69	0.66	0.52	96.44	0.79	0.61	112.94	2.00	0.65	119.58	2.00
31151	30159	31151-30159	BC01	45-59-35-03	6	0.013	0.61	0.61	0.21	35.10	0.42	0.41	68.46	0.61	0.48	79.33	0.69	0.57	93.28	0.76	0.73	123.44	2.00	0.84	137.24	2.00
31153	31151	31153-31151	BC01	45-59-35-03	8	0.013	1.36	0.91	0.21	23.54	0.35	0.41	44.56	0.51	0.48	53.59	0.61	0.57	62.54	0.79	0.76	83.85	1.00	0.86	94.05	1.00
31154	31153	31154-31153	BC01	45-59-35-03	8	0.013	1.79	1.02	0.21	21.00	0.33	0.41	39.75	0.45	0.48	47.45	0.50	0.57	55.70	0.55	0.78	76.17	1.00	0.90	87.82	1.00
31155	31154	31155-31154	BC01	45-59-35-03	8	0.013	1.75	1.02	0.21	21.00	0.33	0.41	39.75	0.45	0.48	47.45	0.50	0.57	55.50	0.55	0.79	77.44	1.00	0.93	91.63	1.00
31828	21655	31828-21655	BC08	45-59-17-06	8	0.013	2.04	1.12	0.09	8.21	0.30	0.89	79.23	1.00	0.89	79.26	1.00	0.89	79.26	1.00	0.89	79.26	1.00	0.89	79.26	1.00
31829	31828	31829-31828	BC08	45-59-17-06	8	0.013	1.00	0.75	0.09	11.78	0.25	0.89	113.77	2.00	0.89	113.83	2.00	0.89	113.85	2.00	0.89	113.85	2.00	0.89	119.86	2.00
31830	31829	31830-31829	BC08	45-59-17-06	8	0.013	1.39	0.90	0.09	6.99	0.23	0.90	97.87	1.00	0.91	98.75	1.00	0.91	98.78	1.00	0.91	98.78	1.00	0.91	98.78	1.00
31831	31830	31831-31830	BC08	45-59-17-06	8	0.013	1.19	0.85	0.09	10.81	0.24	0.90	105.91	2.00	0.92	107.68	2.00	0.93	109.13	2.00	0.94	110.95	2.00	0.94	111.13	2.00
31832	31831	31832-31831	BC08	45-59-17-06	8	0.013	1.29	0.89	0.09	10.33	0.24	0.90	101.19	2.00	0.94	105.72	2.00	0.97	108.45	2.00	1.00	112.19	2.00	1.00	112.69	2.00
31833	31832	31833-31832	BC08	45-59-17-06	8	0.013	1.93	1.10	0.09	8.35	0.22	0.90	81.99	1.00	1.02	92.83	1.00	1.08	98.75	1.00	1.09	98.46	1.00	1.09	98.64	1.00
31834	31833	31834-31833	BC08	45-59-17-06	8	0.013	4.01	1.57	0.09	5.85	0.19	0.91	57.49	1.00	1.05	85.11	1.00	1.11	70.61	1.00	1.22	77.64	1.00	1.32	83.76	1.00
31835	31834	31835-31834	BC08	45-59-17-06	8	0.013	1.04	0.80	0.07	8.89	0.22	0.75	90.88	0.77	0.78	97.41	0.96	0.79	98.93	1.00	0.80	99.49	1.00	0.80	99.53	1.00
32254	33532	32254-33532	BC25	45-66-09-02	12	0.02	0.36	0.60	0.25	40.43	0.41	0.75	124.37	0.71	0.92	154.15	0.84	1.15	191.43	2.00	1.47	244.28	2.00	1.49	249.07	2.00
32257	32254	32257-32254	BC25	45-66-09-02	12	0.02	0.47	1.01	0.25	23.79	0.34	0.75	72.45	0.64	0.92	89.80	0.73	1.15	111.50	2.00	1.47	142.70	2.00	1.52	147.46	2.00
32258	32257	32258-32257	BC25	45-66-09-02	12	0.02	0.37	0.91	0.25	26.92	0.36	0.75	82.00	0.70	0.92	101.64	0.91	1.15	129.22	2.00	1.47	84.99	1.00	1.65	94.71	1.00
32259	32258	32259-32258	BC25	45-66-09-02	12	0.013	0.58	1.76	0.25	14.00	0.26	0.75	42.65	0.55	0.93	52.90	0.76	1.15	65.64	1.00	1.49	84.99	1.00	1.68	-684.00	1.00
32260	32259	32260-32259	BC25	45-66-09-02	12	0.013	-0.01	-0.19	0.25	-129.00	0.47	0.75	-392.79	0.20	0.93	-457.74	0.92	1.15	-604.84	1.00	1.50	-789.79	1.00	1.68	-684.00	1.00
32261	32260	32261-32260	BC25	45-66-09-02	12	0.013	1.04	2.35	0.21	8.34	0.22	0.66	28.77	0.49	0.84	35.92	0.61	1.06	44.90	1.00	1.39	59.15	1.00	1.66	70.52	1.00
32262	32261	32262-32261	BC25	45-66-09-02	12	0.013	1.25	2.57	0.21	7.39	0.21	0.66	26.11	0.36	0.84	32.85	0.41	1.06	41.20	0.46	1.42	55.30	1.00	1.66	64.50	1.00
32263	32262	32263-32262	BC25	45-66-09-02	12	0.013	0.78	2.00	0.21	10.12	0.22	0.66	33.31	0.41	0.84	41.59	0.45	1.06	52.16	0.51	1.43	70.59	1.00	1.74	85.32	1.00
32394	19706	32394-19706	BC11	45-59-12-00	24	0.01	1.22	20.96	3.37	16.07	0.29	17.27	82.40	1.00	17.54	83.70	1.00	17.66	84.35	1.00	17.88	85.23	1.00	17.98	85.79	1.00
32395	32394	32395-32394	BC11	45-59-12-00	8	0.013	1.59	0.98	0.01	1.30	0.13	0.13	13.74	1.00	0.17	17.45	1.00	0.22	22.83	1.00	0.33	31.45	1.00	0.39	29.43	1.00
32396	32395	32396-32395	BC11	45-59-13-00	8	0.013	2.10	1.13	0.01	1.12	0.12	0.13	11.75	0.75	0.17	15.31	0.24	0.23	20.15	0.32	0.32	28.14	0.37	0.40	35.04	0.42
32397	32396	32397-32396	BC11	45-59-13-00	6	0.013	4.26	2.40	0.01	0.78	0.12	0.13	8.15	0.22	0.17	10.61	0.24	0.23	13.97	0.27	0.32	19.51	0.32	0.40	24.29	0.35
32475	6983	32475-6983	BC03	45-59-33-00	15	0.013	0.68	3.44	0.03	0.86	0.08	0.48	14.03	0.26	0.65	18.76	0.30	0.91	24.14	0.34	1.18	34.40	0.41	1.47	42.63	0.46
33091	16745	33091-16745	BC09	45-59-21-00	6	0.013	0.95	0.76	0.05	7.12	0.21	0.75	98.58	0.90	0.75	99.17	0.91	0.76	99.36	0.91	0.76	99.36	0.91	0.76	99.76	0.91
33295	11	33295-11	BC12	45-58-11-00	24	0.013	0.51	10.44	0.00	0.00	0.05	0.00	0.02	0.12	0.22	1.20	0.52	0.27	1.63	0.55	0.41	5.82	0.61	0.48	8.46	0.64
33296	52660	33296-52660	BC12	45-58-11-00	18	0.013	1.12	7.37	0.51	7.04	0.21	1.01	14.15	0.27	1.10	15.29	0.28	1.16	16.18	0.29	1.27	17.70	0.30	1.33	18.59	0.31
33437	42234	33437-42234	BC07	45-59-28-01	30	0.01	0.71	29.00	1.36	4.70	0.15	10.34	35.65	1.00	11.76	40.55	1.00	13.37	45.94	1.00	13.50	46.56	1.00	13.56	46.83	1.00
33438	33437	33438-33437	BC09	45-59-23-00	30	0.01	0.95	33.36	1.36	4.05	0.14	10.35	30.84	1.00	11.76	35.04	1.00	13.32	39.69	1.00	13.50	40.23	1.00	13.58	40.45	1.00
33439	33438	33439-33438	BC09	45-59-23-00	27	0.01	-0.83	-23.73	1.26	-5.74	0.55	10.24	-45.26	1.00	11.77	-49.51	1.00	13.32	-56.13	1.00	13.50	-56.82	1.00	13.57	-57.19	1.00
33440	33439	33440-33439	BC09	45-59-23-00	27	0.01	0.23	15.04	1.26	9.05	0.48	10.24	71.44	1.00	11.78	78.31	1.00	13.32	88.55	1.00	13.50	89.75	1.00	13.57	90.21	1.00
33442	38773	33442-38773	BC09	45-59-25-00	27	0.01	0.79	23.12	1.34	5.77	0.17	10.31	44.58	1.00	11.32	48.95	1.00	12.65	54.71	1.00	12.99	56.18	1.00	13.14	56.84	1.00
33443	33442	33443-33442	BC09	45-59-25-00	27	0.01	0.69	21.67	1.34	6.16	0.17	10.31	47.57	0.62	11.32	52.23	1.00	12.65	58.36	1.00	13.03	60.13	1.00	13.26	61.04	1.00
33444	6970	33444-6970	BC09	45-59-25-00	10	0.01	-0.45	-1.29	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	-91.64	0.91	1.18	-168.29	1.00	2.17	-168.29	1.00
33444	33443	33444-33443	BC09	45-59-25-00	27	0.01	0.73	22.20	1.34	6.01	0.17	10.31	46.46	0.49	11.47	51.68	0.71	12.84	56.95	1.00	13.06	56.20	1.00	14.27	61.44	1.00
33445	33444	33445-33444	BC09	45-59-25-00	27	0.01	0.80	23.23	1.23	5.28	0.16	9.69	41.70	0.45	10.71	46.10	0.48	11.84	50.98	1.00	13.06	48.31	0.81	14.28	52.70	1.00
33446	33445	33446-33445	BC09	45-59-25-00	27	0.01	1.08	27.09	1.23	4.53	0.17	9.69	35.76	0.43	10.71	39.53	0.45	11.86	43.77	0.42	13.00	48.31	0.81	13.60	49.68	0.62
33447	33446	33447-33446	BC09	45-59-26-00	27	0.01	1.52	32.84	1.16	3.63	0.16	9.49	29.61	0.39	10.47	32.65	0.41	11.55	36.05	0.43	12.71	39.68	0.43	13.83	40.06	0.45
33448	33447	33448-33447	BC09	45-59-26-00	27	0.01	1.76	34.51	1.16	3.37	0.16	9.49	27.49	0.37	10.47	30.34	0.39	11.55	33.47	0.42	12.71	36.84	0.43	13.73	80.46	0.67
33451	37014	33451-37014	BC09	45-59-23-00	27	0.013	0.33	14.36	0.91	6.28	0.18	7.82	53.72	0.52	8.80	59.04	0.56	9.59	65.85	0.59	10.69	73.41	0.64	11.71	80.46	0.67
33452	33451	33452-33451	BC09	45-59-23-00	27	0.013	0.78	17.72	0.65	3.66	0.14	3.99	22.49	0.46	4.47	25.14	0.53	5.03	28.40	0.58	5.52	31.17	0.64	6.24	35.22	0.69
33453	33452	33453-33452	BC09	45-59-30-02	27	0.013	0.86	19.63	0.65	3.30	0.13	3.99	20.10	0.31	4.47	22.78	0.33	5.03	25.64	0.35	5.52	28.14	0.36	6.25	31.83	0.39
33454	33453	33454-33453	BC09	45-59-30-02	27	0.013	1.03	20.32	0.65	3.19	0.15	3.99	19.61	0.32	4.47	22.01	0.34	5.03	24.77	0.33	5.52	27.18	0.37	6.25	30.78	0.40
33455	33454	33455-33454	BC09	45-59-30-02	27	0.013	1.42	23.47	0.65	2.72	0.15	3.99	16.70	0.29	4.47	18.74	0.31	5.03	21.09	0.33	5.52	23.14	0.34	6.26	26.23	0.36
33456	33455	33456-33455	BC09	45-59-30-02	27	0.013	1.46	24.22	0.65	2.66	0.15	3.99	16.45	0.29	4.47	18.47	0.31	5.03	20.78	0.33	5.52	22.81	0.34	6.26	25.85	0.36
33457	33456	33457-33456	BC09	45-59-30-02	27	0.013	1.50	24.53	0.65	2.64	0.15	3.99	16.25	0.28	4.47	18.24	0.30	5.03	20.52	0.32	5.52	22.52	0.34	6.26	25.54	0.36
33458	33457	33458-33457	BC09	45-59-31-00	27	0.013	3.25	36.06	0.65	1.80	0.14	3.99	11.05	0.23	4.47	12.40	0.26	5.03	13.96	0.28	5.52	15.32	0.30	6.27	17.38	0.32
33459	33458	33459-33458	BC04	45-59-30-02	27	0.013	0.47	13.75	0.65	4.71	0.15	3.99	28.50	0.37	4.47	32.53	0.40	5.03	36.60	0.42	5.52	40.17	0.44	6.27	45.57	0.48
33460	33459	33460-33459	BC04	45-59-30-02	27	0.013	1.03	20.33	0.65	3.19	0.15	3.99	19.60	0.32	4.47	22.00	0.34	5.03	24.76	0.35	5.52	27.17	0.37	6.27	30.83	0.40
33461	33460	33461-33460	BC09	45-59-32-00	27	0.013	0.77	17.59	0.65	3.71	0.14	3.99	22.77	0.33	4.47	25.56	0.35	5.03	28.76	0.37	5.52	31.57	0.39	6.28	35.91	0.42
33462	33461	33462-33461	BC09	45-59-32-00	27	0.013	0.76	17.65	0.65	3.67	0.14	3.99	22.58	0.33	4.47	25.35	0.35	5.03	28.52	0.37	5.52	31.30	0.39	6.32	35.39	0.42
33463	33462	33463-33462	BC09	45-59-33-00	27	0.013	0.80	17.85	0.65	3.63	0.14	3.99	22.33	0.33	4.47	25.07	0.35	5.03	28.20	0.36	5.53	30.96	0.38	6.32	34.95	0.42
33464	33463	33464-33463	BC09	45-59-33-00	27	0.013	0.73	17.12	0.65	3.79	0.14	3.99	23.28	0.33	4.47	26.14	0.35	5.03	29.40	0.37	5.53	32.26	0.39	6.33	36.84	0.42
33465	33464	33465-33464	BC09	45-59-33-00	27	0.013	0.74	17.18	0.65	3.77	0.14	3.99	23.20	0.33	4.47	26.05	0.35	5.03	29.30	0.37	5.53	32.17	0.39	6.34	39.05	0.44
33466	33465	33466-33465	BC09	45-59-33-00	27	0.013	0.66	16.23	0.65	4.00	0.14	3.99	24.56	0.34	4.48	27.57	0.36	5.03	31.01	0.38	5.54	34.14	0.41	6.34	39.05	0.44
33470	30342	33470-30342	BC03	45-59-34-00

Baltimore County

Jones Falls - Modeled Pipe Capacity - Existing Conditions

Pipe Attributes									Dry Weather Flows			2-Year 6-Hour			2-Year 24-Hour			10-Year 6-Hour			10-Year 24-Hour			20-Year 24-Hour		
Upstream Node	Downstream Node	Asset ID	Meter Basin	SSA	Pipe Diameter	Manning's Coefficient	Pipe Gradient	Pipe Full Capacity	Peak Dry Weather Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State
33529	33526	33529-33526	BC25	45-66-09-02	12	0.01	0.67	1.33	0.40	32.14	0.39	0.91	74.15	0.63	1.12	91.07	0.72	1.34	109.13	2.00	1.57	127.33	2.00	1.66	134.86	2.00
33530	33529	33530-33529	BC25	45-66-09-02	10	0.02	2.95	3.56	0.40	25.02	0.38	0.91	97.72	0.71	1.12	78.89	0.86	1.35	85.22	1.00	1.57	89.13	1.00	1.66	94.81	1.00
33531	33530	33531-33530	BC25	45-66-09-02	10	0.02	3.61	1.75	0.40	22.59	0.34	0.91	52.12	0.52	1.12	64.01	0.59	1.36	77.69	1.00	1.59	91.10	1.00	1.71	97.99	2.00
33532	33531	33532-33531	BC25	45-66-09-02	10	0.02	3.77	1.79	0.40	21.08	0.34	0.91	50.96	0.51	1.12	62.58	0.58	1.36	76.19	0.85	1.58	94.04	1.00	1.71	97.99	2.00
33533	33532	33533-33532	BC25	45-66-09-02	8	0.013	5.87	1.89	0.15	8.13	0.22	0.18	9.39	0.23	0.20	10.54	0.24	0.28	14.78	0.89	0.28	14.77	1.00	0.32	16.68	1.00
33534	33533	33534-33533	BC20	45-66-09-01	8	0.013	4.62	1.68	0.15	9.14	0.22	0.18	10.57	0.24	0.20	11.86	0.25	0.22	13.20	0.27	0.25	16.47	0.29	0.32	17.78	0.30
33535	57364	33535-57364	BC20	45-66-09-01	8	0.013	5.24	1.79	0.15	8.58	0.22	0.18	9.91	0.23	0.20	11.14	0.25	0.22	12.39	0.26	0.28	15.46	0.28	0.32	17.78	0.30
33707	20761	33707-20761	BC19	45-62-01-00	12	0.013	0.67	0.62	0.71	114.94	0.72	1.07	172.77	2.00	1.30	208.89	2.00	1.56	251.16	2.00	2.00	331.56	2.00	2.35	378.42	2.00
33708	33707	33708-33707	BC19	45-62-01-00	12	0.013	2.10	3.34	0.71	31.34	0.33	1.07	51.07	1.00	1.30	78.76	1.00	1.56	46.83	1.00	2.07	61.84	1.00	2.40	71.89	1.00
33709	33708	33709-33708	BC19	45-62-01-00	12	0.013	2.70	3.79	0.71	36.81	0.31	1.07	28.26	0.38	1.30	34.17	1.00	1.56	41.30	1.00	2.25	59.35	1.00	2.58	68.18	1.00
33710	33709	33710-33709	BC19	45-62-01-00	12	0.013	2.29	3.48	0.71	20.44	0.32	1.03	29.60	0.39	1.24	35.62	0.43	1.49	42.70	1.00	1.94	56.70	0.56	2.33	67.28	1.00
33711	33710	33711-33710	BC18	45-62-01-00	12	0.013	2.22	3.41	0.71	20.74	0.33	1.03	30.03	0.39	1.24	36.14	0.43	1.49	43.32	0.48	1.94	56.70	0.56	2.33	67.28	1.00
33939	33397	33939-33397	BC11	45-19-13-00	8	0.013	4.01	1.56	0.01	0.80	0.12	0.13	8.41	0.22	0.17	10.95	0.24	0.23	14.41	0.28	0.32	20.13	0.32	0.40	25.06	0.36
33940	33939	33940-33939	BC11	45-19-13-00	8	0.013	4.01	1.56	0.01	0.80	0.12	0.13	8.41	0.22	0.17	10.95	0.24	0.23	14.41	0.28	0.32	20.13	0.32	0.40	25.06	0.36
33991	33990	33991-33990	BC11	45-19-13-00	8	0.013	7.13	2.09	0.01	0.61	0.11	0.13	6.35	0.20	0.17	8.28	0.22	0.23	10.89	0.24	0.32	15.22	0.28	0.40	18.94	0.31
33992	33991	33992-33991	BC11	45-19-13-00	8	0.013	2.30	1.18	0.01	1.08	0.12	0.13	11.29	0.25	0.17	14.68	0.28	0.23	19.30	0.31	0.32	26.95	0.37	0.40	33.55	0.41
33993	33992	33993-33992	BC11	45-19-13-00	8	0.013	0.60	0.61	0.01	2.06	0.14	0.13	21.77	0.34	0.17	28.34	0.38	0.23	37.33	0.44	0.32	52.13	0.52	0.40	64.90	0.60
33994	33993	33994-33993	BC11	45-19-13-00	8	0.013	0.96	0.76	0.01	1.67	0.13	0.13	17.47	0.30	0.17	22.76	0.34	0.23	29.96	0.39	0.32	41.84	0.46	0.40	52.08	0.52
33995	33994	33995-33994	BC11	45-19-13-00	8	0.013	3.61	1.48	0.01	0.86	0.12	0.13	8.97	0.22	0.17	11.60	0.25	0.23	15.39	0.28	0.32	21.49	0.33	0.40	26.75	0.37
33996	33995	33996-33995	BC11	45-19-13-00	8	0.013	2.80	1.31	0.01	0.97	0.12	0.13	10.14	0.23	0.17	13.21	0.27	0.23	17.39	0.30	0.32	24.28	0.35	0.40	30.22	0.39
33997	33996	33997-33996	BC11	45-19-13-00	8	0.013	0.59	0.60	0.01	2.12	0.14	0.13	22.23	0.34	0.17	28.83	0.38	0.23	37.94	0.43	0.32	52.15	0.52	0.40	64.90	0.60
33998	33997	33998-33997	BC11	45-19-13-00	8	0.013	0.60	0.61	0.01	2.08	0.14	0.13	21.77	0.34	0.17	28.35	0.38	0.23	37.33	0.44	0.32	52.13	0.52	0.40	64.90	0.60
33999	33998	33999-33998	BC11	45-19-13-00	8	0.013	2.39	1.21	0.01	1.11	0.13	0.13	10.68	0.24	0.17	14.31	0.28	0.23	18.83	0.31	0.32	26.30	0.37	0.40	32.99	0.41
34000	33999	34000-33999	BC11	45-19-13-00	8	0.013	2.37	1.20	0.02	1.26	0.13	0.13	11.07	0.24	0.17	14.43	0.28	0.23	18.93	0.31	0.32	26.52	0.36	0.40	32.99	0.41
34175	19141	34175-19141	BC16	45-58-03-00	21	0.013	1.14	10.96	2.77	25.28	0.36	6.07	55.42	0.82	7.09	64.67	0.72	8.42	76.86	1.00	10.14	92.48	1.00	10.85	98.95	1.00
34176	59274	34176-59274	BC14	45-58-04-00	12	0.01	4.17	6.32	0.57	9.20	0.23	0.85	13.85	0.27	0.96	15.75	0.29	1.13	18.47	0.31	1.38	22.60	0.34	1.61	26.31	0.36
34177	34176	34177-34176	BC14	45-58-04-00	12	0.01	5.25	6.86	0.57	8.30	0.22	0.85	12.36	0.26	0.96	14.01	0.27	1.13	16.48	0.29	1.38	20.16	0.32	1.61	23.48	0.35
34178	34177	34178-34177	BC14	45-58-04-00	12	0.01	2.31	4.55	0.57	12.51	0.31	0.85	18.83	0.35	0.96	21.36	0.37	1.13	24.84	0.39	1.38	30.40	0.42	1.61	35.38	0.44
34179	34178	34179-34178	BC14	45-58-04-00	12	0.01	1.84	4.06	0.57	14.02	0.27	0.85	20.68	0.33	0.96	23.71	0.35	1.13	27.84	0.37	1.38	34.07	0.43	1.61	39.67	0.45
34180	34179	34180-34179	BC14	45-58-04-00	12	0.013	1.87	3.15	0.01	0.14	0.15	0.08	2.43	0.21	0.10	3.25	0.23	0.13	4.21	0.25	0.18	5.85	0.30	0.23	7.31	0.33
34208	31835	34208-31835	BC08	45-19-17-07	8	0.013	0.60	0.60	0.07	11.85	0.25	0.73	123.17	2.00	0.78	129.92	2.00	0.78	130.13	2.00	0.75	130.23	2.00	0.78	130.07	2.00
34210	34209	34210-34209	BC05	45-19-17-07	8	0.013	0.59	0.60	0.07	11.85	0.25	0.73	121.16	2.00	0.78	130.07	2.00	0.78	130.15	2.00	0.78	130.13	2.00	0.78	130.07	2.00
34211	34210	34211-34210	BC08	45-19-17-07	8	0.013	0.60	0.61	0.07	11.65	0.25	0.73	119.23	2.00	0.80	130.95	2.00	0.82	131.10	2.00	0.81	131.44	2.00	0.81	133.28	2.00
34212	34211	34212-34211	BC08	45-19-17-07	8	0.013	0.60	0.60	0.07	11.29	0.25	0.73	136.08	2.00	0.85	134.94	2.00	0.87	138.62	2.00	0.91	144.19	2.00	0.91	144.11	2.00
34213	34212	34213-34212	BC08	45-19-17-07	8	0.013	2.36	1.20	0.07	5.93	0.19	0.74	91.50	1.00	0.99	82.13	1.00	1.18	97.64	1.00	1.18	98.13	1.00	1.18	98.13	1.00
34214	34213	34214-34213	BC08	45-19-17-07	8	0.013	3.17	1.39	0.07	5.12	0.18	0.75	53.75	0.53	0.99	71.61	1.00	1.25	89.73	1.00	1.36	98.01	1.00	1.38	98.99	1.00
34215	34214	34215-34214	BC08	45-19-17-07	8	0.013	3.16	1.39	0.07	5.12	0.18	0.75	53.74	0.54	1.00	71.62	0.64	1.25	89.79	1.00	1.37	98.69	1.00	1.38	98.99	1.00
34216	34215	34216-34215	BC08	45-19-17-07	8	0.013	3.13	1.38	0.07	5.15	0.18	0.75	54.14	0.54	1.00	72.19	0.64	1.25	90.74	1.00	1.44	104.33	2.00	1.48	106.91	2.00
34217	34216	34217-34216	BC08	45-19-17-07	8	0.013	4.46	1.65	0.07	4.31	0.17	0.75	45.28	0.49	1.00	60.51	0.57	1.26	76.53	1.00	1.62	97.92	1.00	1.62	98.18	1.00
34218	34217	34218-34217	BC08	45-19-17-07	8	0.013	1.96	1.09	0.05	4.25	0.17	0.33	29.83	0.39	0.43	39.66	0.45	0.55	50.04	0.59	0.75	68.93	1.00	0.88	80.78	1.00
34581	20767	34581-20767	BC16	45-64-00-00	24	0.013	0.20	6.52	1.07	16.40	0.28	2.84	43.56	0.46	3.27	54.10	1.00	3.58	54.94	1.00	4.25	69.35	1.00	4.86	74.52	1.00
34582	34581	34582-34581	BC10	45-66-01-00	24	0.013	0.24	7.10	1.07	15.13	0.27	2.84	40.85	0.44	3.27	46.10	1.00	3.75	52.79	1.00	4.25	59.64	1.00	4.86	68.44	1.00
34583	34582	34583-34582	BC10	45-66-01-00	24	0.013	0.36	8.82	1.08	12.24	0.24	2.85	37.21	0.39	3.28	37.22	0.68	3.54	43.54	1.00	4.27	48.29	1.00	4.86	55.09	1.00
34584	34583	34584-34583	BC18	45-67-00-00	24	0.02	0.28	4.93	0.30	6.07	0.17	1.49	29.82	0.36	1.66	33.35	0.40	2.14	43.01	1.00	2.26	45.26	1.00	2.55	49.67	1.00
34585	34584	34585-34584	BC18	45-67-00-00	24	0.02	0.30	5.19	0.30	5.83	0.17	1.48	28.61	0.37	1.66	31.09	0.39	1.97	37.95	1.00	2.26	43.55	1.00	2.55	49.67	1.00
34447	17751	34447-17751	TSP01	45-55-01-00	12	0.013	0.44	1.53	0.04	2.71	0.13	1.25	88.12	0.73	1.72	112.48	2.00	2.22	144.97	2.00	2.31	150.56	2.00	2.35	153.39	2.00
34836	33711	34836-33711	BC19	45-62-01-00	12	0.005	0.46	4.08	0.71	17.44	0.29	1.03	25.25	0.35	1.24	30.38	0.38	1.49	36.42	0.42	1.94	47.67	0.48	2.33	56.99	0.55
35527	21652	35527-21652	BC08	45-59-17-04	8	0.013	1.94	1.09	0.10	8.84	0.22	0.27	25.17	0.36	0.35	32.08	0.41	0.44	40.31	0.45	0.60	54.80	0.54	0.73	66.87	0.62
35528	35527	35528-35527	BC08	45-59-17-05	8	0.013	1.81	1.07	0.10	9.01	0.22	0.27	25.64	0.36	0.35	32.64	0.41	0.44	41.07	0.46	0.60	55.82	0.55	0.73	68.07	0.62
35529	35528	35529-35528	BC08	45-59-17-05	8	0.013	3.17	1.39	0.10	6.94	0.22	0.27	19.74	0.36	0.35	25.13	0.41	0.44	31.61	0.46	0.60	42.98	0.56	0.73	52.40	0.64
35530	35529	35530-35529	BC08	45-59-17-05	8	0.013	3.40	1.44	0.10	6.70	0.20	0.27	19.06	0.31	0.35	24.26	0.35	0.44	30.51	0.39	0.60	41.49	0.46	0.73	49.53	0.49
35531	35530	35531-35530	BC08	45-59-17-05	8	0.013	4.21	1.60	0.10	6.01	0.19	0.27	17.15	0.29	0.35	21.83	0.34	0.44	27.47	0.37	0.60	37.34	0.43	0.73	45.24	0.49
35532	35531	35532-35531	BC08	45-59-17-05	8	0.013	4.26	1.61	0.10	5.99	0.19	0.27	17.04	0.29	0.35	21.70	0.33	0.44	27.30	0.37	0.60	37.11	0.43	0.73	45.24	0.49
35533	35532	35533-35532	BC08	45-59-17-05	8	0.013	4.45	1.65	0.02	1.50	0.13	0.08	4.84	0.18	0.10	6.25	0.20	0.13	7.79	0.21	0.18	10.82	0.28	0.22	13.23	0.34
35534	35533	35534-35533	BC08	45-59-17-05	8	0.013	4.81	1.71	0.02	1.45	0.13	0.08	4.67	0.18	0.10	6.04	0.19	0.13	7.52	0.21	0.18	10.44	0.24	0.22	12.77	0.26
35535	35534	35535-35534	BC08	45-59-17-05	8	0.013	4.49	1.65	0.02	1.50	0.13	0.08	4.84	0.18	0.10	6.25	0.20	0.13	7.79	0.21	0.18	10.82	0.24	0.22	13.23	0.27
35536	35535	35536-35535	BC08	45-59-17-05	8	0.013	4.59	1.67	0.02	1.49	0.13	0.08	4.78	0.18	0.10	6.18	0.20	0.13	7.70	0.21	0.18	10.69	0.24	0.22	13.31	0.27
35537	35536	35537-35536	BC08	45-59-17-05	8	0.013	4.40	1.64	0.02	1.51	0.13	0.08	4.87	0.18	0.10	6.29	0.20	0.13	7.84	0.21	0.18	11.02	0.24	0.22	13.48	0.27
35538	35537	35538-35537	BC08	45-59-17-05	8	0.013	4.31	1.62	0.02	1.53	0.13	0.08	4.93	0.18	0.10	6.37	0.20	0.13	9.67	0.23	0.18	13.44	0.27	0.22	16.42	0.29
35539	35538	35539-35538	BC08	45-59-17-05	8	0.013	2.91	1.33	0.02	1.86	0.14	0.08	6.01	0.19	0.10	7.76	0.21	0.13	9.67	0.23	0.18	13.44	0.27	0.22	15.76	1.00
35551	18404	35551-18404	BC09	45-59-27-00	8	0.013	7.51	2.14	0.20	9.51	0.25	1.62	47.44	0.50	1.33	62.05	1.00	1.64	76.01	1.00	1.83	89.63	1.00	1.84	85.76	1.00
36911	34383	36911-34383	BC26	45-66-02-00	18	0.013	1.30	7.11	0.81	11.31	0.25	1.37	19.21	0.31	1.62	22.78	0.34	1.94	27.20	1.00	2.49	34.88	1.00	2.91	40.88	1.00
36913	36911	36913-36911	BC26	45-68-02-00	18	0.013	1.65	8.66	0.81	9.33	0.23	1.37	15.85	0.29	1.63	18.77	0.31	1.97	22.78	0.84	2.49	28.75	1.00	2.92	33.66	1.00
36914	36913	36914-36913	BC21	45-68-02-00	18	0.013	1.57	8.51	0.81	9.50	0.23	1.37	16.07	0.29	1.62	19.04	0.33	1.97	23.19	0.35	2.49	29.28	0.38	2.92	34.13	0.42
36915	36914	36915-36914	BC21	45-68-02-00	18	0.013	1.99	9.56	0.81	8.44	0.22	1.37	14.26	0.28	1.62	16.91	0.29	1.97	20.59	0.33	2.48	25.99	0.36	2.90	30.27	0.39
36916	36915	36916-36915	BC21	45-68-02-00	18	0.013	1.71	8.92	0.81	9.08	0.23	1.37	15.35	0.28	1.62	18.20	0.30	1.98	24.57	0.35	2.50	30.98	0.40	2.91	36.86	0.43
36917	36916	36917-36916	BC21	45-68-02-00	18	0.013	1.41	8.06	0.81	10.07	0.23	1.37	17.80	0.29	1.62	20.15	0.32	1.98	24.57	0.35	2.50	34.05	0.35	2.91	37.89	0.37
36918	49997	36918-49997	BC21	45-68-02-00	18	0.013	2.34	10.39	0.81	7.82	0.21	1.37	13.20	0.27	1.62	15.64	0.28	1.99	19.11	0.31	2.50	24.05	0.35	2.87	27.68	0.37
36919	36918	36919-36918	BC21	45-68-02-00	18	0.013	2.34	10.36	0.81	7.76	0.21	1.36	13.08	0.27	1.61	15.51	0.28	1.96	18.91	0.31	2.47	23.82	0.35	2.87	28.41	0.38
36920	36919	36920-36919	BC21	45-68-02-00	18	0.013	2.22	10.12	0.81	7.87	0.21	1.36	13.42	0.27	1.61	15.91	0.29	1.97	19.43	0.31	2.47	24.44	0.35	2.87	28.41	0.38
36921	36920	36921-36920	BC21	45-68-02-00	18	0.013	3.23	12.28	0.78	6.40	0.20	1.31	10.70	0.24	1.55	12.73	0.26	1.89	15.50	0.26	2.38	19.53	0.32	2.77	22.69	0.34
36922	36921	36922-36921	BC21	45-68-02-00	18	0.013	1.83	9.32	0.78	8.39	0.22	1.31	14.02	0.27	1.55	16.68	0.29	1.89	20.30	0.32	2.39	25.59	0.34	2.77	29.71	0.39
36923	36922	36923-36922	BC21	45-68-02-00	18	0.013	1.44	8.14	0.78	9.61	0.23	1.31	16.06	0.29	1.55	19.10	0.31	1.89	23.26	0.35	2.39	29.31	0.36	2.77	34.03	0.42
36924	36923	36924-36923	BC21	45-66-05-00	12	0.013	1.46	2.78	0.78	28.16	0.36	1.21	47.03	0.58	1.36	55.95	0.55	1.89	68.16	0.62	2.39	85.87	0.72	2.77	99.64	1.00
36925	36924	36925-36924	BC21	45-66-05-00	18	0.02	2.34	6.74	0.77	13.35	0.25	1.19	17.62	0.30	1.45	20.91	0.33	1.70	25.26	0.36	2.33	31.60	0.40	2.46	36.55	0.43
36926	36925	36926-36925	BC21	45-66-05-00	15	0.02	1.64	3.48	0.77	22.05	0.34	1.18	34.14	0.42	1.41	40.56	0.45	1.71	49.02	0.50	2.33	61.27	0.58	2.46	70.80	0.64
36927	36926	36927-36926	BC21	45-68-04-01	18	0.02	1.65	5.67	0.77	13.56	0.27	1.19	20.96	0.33	1.41	24.92	0.36	1.71	30.12	0.40	2.14	37.67	0.47	2.47	45.48	0.53
36928	36927	36928-36927	BC21	45-68-04-01	15	0.02	1.77	1.61	0.76	21.08	0.33	1.25	31.94	0.41	1.37	37.95	0.44	1.66	46.82	0.50	2.06	58.28	0.56	2.38	67.21	0.62
36929	36928	36929-36928	BC21	45-68-04-01	15	0.02	1.79	3.54	0.76	21.53	0.33	1.25	32.60	0.41	1.37	38.73	0.44	1.66	46.82	0.50	2.06	58.28	0.56	2.38	66.98	0.77
36930	36929	36930-36929	BC21	45-68-04-01	15	0.02	0.87	2.67	0.76	28.43	0.37	1.13	43.37	0.46	1.34	50.57	0.50	1.63	60.93	0.57	2.01	75.45	0.65	2.32	85.47	0.76
36931	36930	36931-36930	BC21	45-66-06-01	15	0.02	1.01	2.72	0.76	27.93	0.37	1.13	41.65	0.48	1.35	49.49	0.51	1.63	59.87	0.54	2.02	74.13	0.64	2.32	83.66	0.67
36933	52089	36933-52089	BC23	45-68-08-00	15	0.02	1.71	3.55	0.76	21.53	0.33	1.14	32.58	0.41	1.39	38.03	0.44	1.64	46.05	0.49	2.02	56.92	0.58	2.33	65.66	0.67
36934	36933	36934-36933	BC23	45-68-08-00	15	0.02	2.26	3.60	0.76	20.99	0.33	1.11	30.26	0.40	1.31	36.44	0.43	1.59	44.13	0.48	1.95	54.28	0.54	2.25	62.58	0.58
36935	36934	36935-36934	BC23	45-68-08-00	15	0.02	2.07	3.90	0.76	19.40	0.31	1.11	28.10	0.38	1.31	33.68	0.42	1.59	40.74	0.46	1.96	50.17	0.51	2.26	57.83	0.56
36936	36935	36936-36935	BC23	45-68-08-00	15	0.02	1.88	3.71	0.76	20.41	0.32	1.11	30.03	0.39	1.31	35.41	0.43	1.59	42.93	0.47	1.96	53.75	0.53	2.26	55.72	0.55
36937	36936	36937-36936	BC23	45-68-07-00	15	0.02	2.23	4.05	0.76	18.71	0.31	1.11	27.51	0.37	1.31	32.44	0.41	1.59	39.34	0.45	1.96	48.35	0.50	2.26	34.21	0.42
36938	36937	36938-36937	BC23	45-68-07-00	15	0.013	2.50	6.60	0.76	11.50	0.25	1.12	16.92	0.29	1.32	19.85	0.32	1.60	24.21	0.35	1.96	29.67	0.39	2.26	36.32	0.43
36939	36938	36939-36938	BC23	45-68-08-00	15	0.013	1.00	5.95	0.74	12.42	0.26	1.08	18.07	0.30	1.26	21.26	0.33	1.54	25.84	0.36	1.88	31.54	0.40	2.16	37.74	0.44
36940	36939	36940-36939	BC23	45-66-08-00	15	0.013	1.88	5.73	0.74	12.91	0.26	1.08	18.78	0.31	1.27	22.10	0.34	1.54	26.83	0.37	1.88	32.76	0.41	2.16	37.48	0.44
36941	36940	36941-36940	BC23	45-68-08-00	15	0.013	0.81	1.75	0.74	19.75	0.30	1.08	26.77	0.37	1.27	33.78	0.41	1.54	41.08	0.45	1.88	50.61	0.50	2.17	58.25	0.56
36942	36941	36942-36941	BC23	45-68-09-00	15	0.013	0.79	1.72	0.74	19.99	0.31	1.08	29.10	0.37	1.27	34.16	0.41	1.55	41.58	0.45	1.88	47.74	0.49	2.09	53.02	0.53
36944	47025	36944-47025	BC23	45-68-09-00	15	0.013	0.81	1.80	0.74	19.36	0.30	1.06	27.78	0.36	1.23	32.48	0.40	1.50	39.60	0.44	1.81	35.17	0.42	2.00	40.66	0.46
36945	47036	36945-47036	BC23	45-68-10-00	15	0.013	1.39	4.92	0.70	14.21	0.28	1.02	20.72	0.33	1.18	23.95	0.35	1.45	29.44	0.39	1.73	35.17	0.42	1.86	76.39	0.58
36946	42603	36946-42603	BC23	45-68-12-01	15	0.013	0.34	2.44	0.68	27.93	0.35	0.98	40.01	0.41	1.11	45.36	0.44	1.39	56.77	0.50	1.61	66.13	0.54	1.86	31.07	0.53
36947	36946	36947-36946	BC23	45-68-12-01

Jones Falls - Modeled Pipe Capacity - Existing Conditions

Baltimore County

Pipe Attributes									Dry Weather Flows			2-Year 6-Hour			2-Year 24-Hour			10-Year 6-Hour			10-Year 24-Hour			100-Year 24-Hour		
Upstream Node	Downstream Node	Asset ID	Meter Basin	SSA	Pipe Diameter	Manning's Coefficient	Pipe Gradient	Pipe Full Capacity	Peak Dry Weather Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State
36950	36949	36950-36949	BC33	45-68-12-01	15	0.013	1.11	4.39	0.89	15.81	0.29	0.97	22.01	0.34	1.07	24.36	0.35	1.39	30.73	0.40	1.58	35.44	0.43	1.78	40.85	0.46
36951	36950	36951-36950	BC26	45-68-15-01	15	0.013	1.15	4.48	0.58	13.02	0.27	0.86	19.22	0.31	0.94	20.93	0.33	1.22	27.13	0.37	1.38	30.83	0.40	1.59	35.60	0.43
36952	36951	36952-36951	BC26	45-68-15-01	15	0.013	1.08	4.34	0.59	13.53	0.27	0.87	20.00	0.32	0.95	21.78	0.34	1.22	28.20	0.38	1.39	31.97	0.41	1.60	36.81	0.43
36953	36952	36953-36072	BC26	45-68-15-01	15	0.013	0.96	4.09	0.36	8.75	0.24	0.55	13.33	0.31	0.61	15.42	0.33	0.75	18.22	0.38	0.91	22.22	0.42	1.02	24.58	0.45
36954	36953	36954-36953	BC26	45-68-15-01	12	0.013	1.67	2.97	0.06	1.97	0.14	0.13	4.44	0.17	0.16	5.52	0.19	0.20	6.78	0.20	0.27	9.33	0.22	0.33	11.06	0.24
36955	32685	36955-32685	BC26	45-68-17-01	12	0.013	0.82	2.69	0.03	1.25	0.13	0.07	3.53	0.18	0.09	4.53	0.20	0.12	5.64	0.21	0.16	7.69	0.24	0.20	9.38	0.27
36956	36955	36956-36955	BC26	45-68-17-01	12	0.013	1.20	4.12	0.03	0.83	0.11	0.07	1.82	0.14	0.09	2.20	0.14	0.12	2.86	0.15	0.16	3.90	0.17	0.20	4.76	0.18
36957	36956	36957-36956	BC26	45-68-15-01	12	0.013	1.25	2.57	0.03	1.02	0.15	0.07	2.91	0.18	0.09	3.68	0.18	0.12	4.59	0.19	0.16	6.26	0.21	0.20	7.63	0.22
36958	36957	36958-36957	BC26	45-68-15-01	12	0.013	1.24	4.34	0.03	0.83	0.11	0.07	1.81	0.14	0.09	2.29	0.14	0.12	2.85	0.15	0.16	3.88	0.16	0.20	4.74	0.18
36959	36958	36959-36958	BC26	45-68-17-01	12	0.013	2.92	3.94	0.03	0.66	0.12	0.07	1.90	0.14	0.09	1.40	0.14	0.12	2.09	0.15	0.16	4.66	0.17	0.20	4.98	0.18
36960	36959	36960-36959	BC26	45-68-17-01	12	0.013	2.47	3.62	0.03	0.75	0.12	0.07	2.07	0.14	0.09	2.62	0.15	0.12	3.26	0.16	0.16	4.44	0.17	0.20	5.42	0.19
36961	36960	36961-36960	BC26	45-68-17-01	12	0.013	3.34	4.21	0.03	0.62	0.11	0.07	1.78	0.14	0.09	2.25	0.14	0.12	2.80	0.15	0.16	3.82	0.16	0.20	4.67	0.18
36962	36961	36962-36961	BC26	45-68-17-01	12	0.013	3.48	4.30	0.03	0.61	0.11	0.07	1.74	0.13	0.09	2.20	0.14	0.12	2.74	0.15	0.16	3.74	0.16	0.20	4.41	0.17
36963	36962	36963-36962	BC26	45-68-17-01	12	0.013	3.74	4.46	0.03	0.59	0.11	0.07	1.68	0.13	0.09	2.12	0.14	0.12	2.64	0.15	0.16	3.61	0.16	0.20	4.25	0.17
36990	20793	36990-20793	BC24	45-66-12-00	15	0.013	1.73	5.49	0.61	11.09	0.41	1.12	20.14	0.51	1.31	23.94	0.54	1.59	28.90	0.58	1.99	36.27	0.65	2.30	41.86	0.69
37009	33448	37009-33448	BC09	45-59-27-00	27	0.01	0.59	19.98	1.60	5.02	0.36	8.69	43.49	0.47	9.67	48.40	0.50	10.75	53.81	0.52	11.91	59.63	0.56	13.03	65.20	0.59
37010	37009	37010-37009	BC09	45-59-27-00	27	0.01	0.73	22.16	1.00	4.49	0.35	8.56	38.60	0.43	9.51	42.59	0.46	10.54	47.51	0.49	11.64	52.47	0.51	12.66	57.09	0.53
37011	37010	37011-37010	BC09	45-59-27-00	27	0.01	0.61	20.31	1.00	4.90	0.36	8.56	42.15	0.45	9.51	46.54	0.49	10.54	51.68	0.51	11.64	57.10	0.53	12.66	62.34	0.57
37012	37011	37012-37011	BC09	45-59-29-00	27	0.01	0.88	24.43	1.00	4.08	0.34	8.56	35.97	0.41	9.51	38.97	0.45	10.54	43.17	0.48	11.64	47.67	0.51	12.66	51.87	0.53
37013	37012	37013-37012	BC09	45-59-29-00	27	0.01	0.43	17.06	1.00	5.83	0.37	8.56	50.19	0.50	9.51	55.76	0.54	10.54	61.77	0.57	11.64	68.22	0.61	12.66	74.22	0.64
37014	20553	37014-20553	BC09	45-59-28-00	27	0.01	0.77	22.86	0.91	4.00	0.34	7.82	34.22	0.66	8.80	37.61	0.73	9.59	41.94	0.78	10.65	46.76	0.85	11.71	51.23	0.91
37030	45333	37030-45333	BC14	45-55-07-00	15	0.013	2.94	7.16	0.50	7.01	0.22	0.51	7.11	0.23	0.54	7.52	0.23	0.57	7.96	0.24	0.63	8.81	0.25	0.68	9.53	0.26
37031	37030	37031-37030	BC14	45-55-07-00	12	0.013	0.29	1.24	0.50	40.47	0.43	0.51	41.86	0.43	0.54	43.40	0.44	0.57	45.96	0.46	0.63	50.95	0.48	0.68	55.05	0.50
37032	37031	37032-37031	BC14	45-55-07-00	12	0.013	1.38	2.70	0.50	18.59	0.33	0.51	18.86	0.33	0.54	19.93	0.34	0.57	21.11	0.36	0.63	23.40	0.38	0.68	25.28	0.40
37054	6946	37054-6946	BC11	45-59-11-00	8	0.013	2.59	1.26	0.00	0.23	0.11	0.12	9.91	1.00	0.17	13.32	1.00	0.21	16.97	1.00	0.31	24.75	1.00	0.39	30.64	1.00
37055	37054	37055-37054	BC11	45-59-11-00	8	0.013	1.59	0.95	0.00	0.30	0.11	0.12	12.74	0.66	0.17	17.12	1.00	0.22	22.26	1.00	0.31	31.91	1.00	0.39	39.82	1.00
37056	37055	37056-37055	BC11	45-59-11-00	8	0.013	1.25	0.87	0.00	0.33	0.11	0.12	14.16	0.28	0.17	19.29	1.00	0.22	25.21	1.00	0.31	35.94	1.00	0.39	44.85	1.00
37057	37056	37057-37056	BC11	45-59-11-00	8	0.013	0.98	0.77	0.00	0.28	0.11	0.12	16.22	0.29	0.17	21.79	0.33	0.22	28.48	0.64	0.31	40.61	1.00	0.39	50.68	1.00
37058	37057	37058-37057	BC11	45-59-11-00	8	0.013	0.99	0.78	0.00	0.37	0.11	0.12	16.91	0.29	0.17	21.51	0.33	0.22	28.12	0.38	0.31	40.09	1.00	0.39	50.04	1.00
37059	38271	37059-38271	BC11	45-59-11-00	8	0.013	1.27	0.88	0.00	0.31	0.11	0.12	14.19	0.27	0.17	19.08	0.31	0.22	24.93	0.36	0.31	35.40	0.41	0.39	44.64	0.48
37060	37059	37060-37059	BC11	45-59-11-00	8	0.013	5.04	1.75	0.00	0.17	0.10	0.12	7.14	0.21	0.17	9.59	0.23	0.22	12.53	0.26	0.31	17.91	0.30	0.39	22.37	0.34
37061	37060	37061-37060	BC11	45-59-11-00	8	0.013	4.59	1.67	0.00	0.19	0.11	0.12	7.48	0.21	0.17	10.05	0.23	0.22	13.14	0.27	0.31	18.78	0.31	0.39	23.44	0.35
37148	20794	37148-20794	BC24	45-66-13-00	15	0.013	1.01	4.20	0.60	14.35	0.28	1.09	26.06	0.36	1.29	30.66	0.40	1.55	36.95	0.43	1.95	46.31	0.49	2.24	53.40	0.53
37986	33466	37986-33466	BC03	45-59-33-00	27	0.013	1.43	23.90	0.65	2.71	0.15	3.62	15.15	0.30	4.06	16.97	0.32	4.53	18.95	0.34	4.97	20.79	0.37	5.21	21.81	0.39
37987	37986	37987-37986	BC03	45-59-33-00	30	0.013	0.40	16.78	0.65	3.85	0.14	3.62	21.53	0.32	4.06	24.17	0.34	4.53	26.98	0.36	4.97	29.61	0.37	5.21	31.06	0.38
37988	37987	37988-37987	BC03	45-59-33-00	30	0.013	0.41	16.87	0.65	3.81	0.14	3.62	21.34	0.32	4.06	23.90	0.34	4.53	26.68	0.36	4.97	29.26	0.37	5.21	30.71	0.38
37989	37988	37989-37988	BC09	45-59-31-00	30	0.013	0.40	16.71	0.65	3.87	0.14	3.62	21.47	0.32	4.06	24.27	0.34	4.53	27.10	0.36	4.97	29.74	0.37	5.21	31.19	0.39
37990	37989	37990-37989	BC01	45-59-35-01	30	0.013	0.55	19.62	0.65	3.20	0.13	3.62	18.46	0.29	4.06	20.67	0.31	4.53	23.08	0.33	4.97	25.23	0.35	5.21	26.56	0.36
37991	37990	37991-37990	BC01	45-59-34-00	30	0.013	0.41	16.93	0.03	0.18	0.13	1.05	6.21	0.29	1.06	6.25	0.33	1.06	6.27	0.34	1.07	6.30	0.35	1.07	6.30	0.35
38072	38052	38072-38052	BC26	45-68-15-01	15	0.013	0.55	3.11	0.60	19.15	0.30	0.88	28.30	0.37	0.95	30.55	0.38	1.23	39.62	0.44	1.39	44.77	0.45	1.60	51.47	0.51
38073	38072	38073-38072	BC26	45-68-15-01	12	0.013	1.90	3.17	0.30	9.61	0.23	0.41	13.00	0.26	0.45	14.15	0.27	0.53	16.67	0.29	0.63	19.72	0.32	0.71	22.54	0.34
38074	38073	38074-38073	BC26	45-68-15-01	12	0.013	1.16	2.48	0.31	12.37	0.26	0.41	16.67	0.29	0.45	18.14	0.30	0.54	21.60	0.33	0.63	25.20	0.36	0.71	28.79	0.38
38075	38074	38075-38074	BC26	45-68-15-01	12	0.013	1.94	3.21	0.31	9.60	0.23	0.42	12.83	0.26	0.45	14.14	0.28	0.54	16.83	0.29	0.63	19.61	0.32	0.72	22.49	0.34
38076	38075	38076-38075	BC26	45-68-15-01	12	0.013	1.57	2.88	0.31	10.71	0.24	0.42	14.42	0.28	0.46	15.92	0.29	0.55	18.88	0.31	0.63	21.88	0.34	0.73	25.16	0.36
38077	38076	38077-38076	BC26	45-68-15-01	12	0.013	1.97	3.23	0.31	9.71	0.23	0.42	12.93	0.26	0.46	14.21	0.28	0.55	16.94	0.29	0.64	19.70	0.32	0.73	22.50	0.34
38078	38077	38078-38077	BC26	45-68-15-01	12	0.013	1.52	2.84	0.31	11.04	0.25	0.42	14.78	0.28	0.46	16.26	0.29	0.55	19.27	0.32	0.64	22.44	0.34	0.73	25.61	0.36
38079	38078	38079-38078	BC26	45-68-15-01	12	0.013	0.81	2.08	0.32	15.26	0.28	0.42	20.22	0.32	0.47	22.43	0.34	0.56	26.71	0.36	0.64	30.64	0.39	0.73	35.19	0.42
38080	38079	38080-38079	BC26	45-68-15-01	12	0.013	1.20	2.52	0.33	13.06	0.27	0.43	17.19	0.30	0.49	19.25	0.31	0.56	22.19	0.34	0.65	25.90	0.36	0.74	29.22	0.38
38081	38080	38081-38080	BC26	45-68-15-01	12	0.013	0.69	1.91	0.33	17.50	0.29	0.43	22.70	0.34	0.49	25.19	0.35	0.56	28.42	0.38	0.65	34.28	0.41	0.74	38.61	0.41
38082	38081	38082-38081	BC26	45-68-15-01	12	0.013	0.53	1.68	0.34	20.18	0.31	0.44	26.34	0.36	0.50	29.59	0.38	0.57	33.83	0.41	0.66	39.42	0.44	0.74	44.08	0.47
38084	38083	38084-38083	BC26	45-68-15-01	12	0.013	3.86	4.52	0.07	1.54	0.16	0.13	2.73	0.21	0.15	3.22	0.23	0.18	4.09	0.26	0.24	5.33	0.29	0.29	6.37	0.32
38085	36954	38085-36954	BC26	45-68-17-01	12	0.013	0.93	2.22	0.06	2.64	0.13	0.13	5.95	0.18	0.16	7.38	0.20	0.20	9.07	0.21	0.27	12.22	0.24	0.33	14.82	0.27
38269	37058	38269-37058	BC11	45-59-11-00	8	0.013	1.00	0.78	0.00	0.37	0.11	0.12	18.01	0.29	0.17	21.51	0.33	0.22	28.12	0.37	0.31	40.10	0.45	0.39	50.05	0.51
38270	38269	38270-38269	BC11	45-59-11-00	8	0.013	0.90	0.74	0.00	0.39	0.11	0.12	16.58	0.29	0.17	22.68	0.34	0.22	29.64	0.39	0.31	42.30	0.47	0.39	52.77	0.53
38271	38270	38271-38270	BC11	45-59-11-00	8	0.013	1.72	1.02	0.00	0.28	0.11	0.12	12.25	0.26	0.17	16.46	0.29	0.22	21.50	0.33	0.31	30.72	0.39	0.39	38.33	0.44
38273	38083	38273-38083	BC26	45-68-15-01	8	0.013	0.69	0.66	0.31	46.08	0.50	0.26	55.57	0.55	0.28	58.46	0.56	0.40	61.40	0.57	0.43	66.42	0.60	0.46	71.20	0.63
38452	36953	38452-36953	BC26	45-68-15-01	8	0.013	0.10	0.25	0.30	120.36	0.94	0.42	167.24	2.00	0.47	187.88	2.00	0.55	219.12	2.00	0.64	256.88	2.00	0.70	281.76	2.00
38453	38452	38453-38452	BC26	45-68-16-01	8	0.013	4.49	1.66	0.34	20.35	0.96	0.44	26.77	1.00	0.48	29.17	1.00	0.56	33.58	1.00	0.65	39.16	1.00	0.76	45.95	1.00
38454	38453	38454-38453	BC26	45-68-16-01	8	0.013	1.34	1.43	0.35	24.15	0.35	0.45	31.47	0.40	0.50	34.85	0.42	0.57	39.61	0.45	0.66	46.24	0.49	0.83	57.74	0.64
38455	38454	38455-38454	BC26	45-68-16-01	8	0.013	0.84	0.71	0.33	42.97	0.47	0.32	49.25	0.49	0.33	46.58	0.49	0.35	48.73	0.50	0.36	50.92	0.51	0.37	52.37	0.53
38456	38455	38456-38455	BC26	45-68-16-01	8	0.013	4.64	2.01	0.31	15.55	0.28	0.33	18.74	0.29	0.33	16.56	0.29	0.35	17.24	0.30	0.36	18.09	0.30	0.37	16.54	0.31
38457	38456	38457-38456	BC26	45-68-16-01	8	0.013	5.20	1.80	0.31	17.22	0.30	0.33	18.06	0.30	0.33	18.47	0.31	0.35	19.31	0.31	0.36	20.25	0.32	0.37	20.73	0.33
38458	38457	38458-38457	BC26	45-68-16-01	8	0.013	2.04	1.33	0.31	27.75	0.37	0.33	29.13	0.39	0.34	30.21	0.39	0.35	31.22	0.40	0.36	32.61	0.41	0.37	33.36	0.42
38459	38458	38459-38458	BC26	45-68-16-01	8	0.013	0.54	0.56	0.31	53.86	0.54	0.32	57.12	0.57	0.34	59.03	0.57	0.35	60.86	0.58	0.36	62.30	0.58	0.37	64.32	0.60
38460	38459	38460-38459	BC26	45-68-16-01	8	0.013	0.53	0.57	0.32	56.04	0.56	0.34	60.71	0.57	0.35	60.86	0.58	0.36	62.30	0.58	0.37	64.32	0.60	0.38	65.79	0.61
38461	38460	38461-38460	BC26	45-68-16-01	8	0.013	0.46	0.53	0.33	62.26	0.59	0.35	65.70	0.61	0.35	65.94	0.61	0.36	67.51	0.62	0.37	70.09	0.64	0.38	71.68	0.64
38462	38461	38462-38461	BC26	45-68-16-01	8	0.013	1.63	1.00	0.34	33.91	0.42	0.36	35.50	0.43	0.36	36.45	0.43	0.37	37.40	0.44	0.38	38.12	0.44	0.38	38.12	0.44
38463	38462	38463-38462	BC26	45-68-16-01	8	0.013	4.76	1.71	0.35	20.78	0.32	0.36	20.84	0.33	0.36	20.87	0.33	0.37	21.53	0.33	0.37	21.97	0.34	0.38	22.31	0.34
38464	38463	38464-38463	BC26	45-68-16-01	8	0.013	0.07	0.20	0.35	174.50	2.00	0.36	178.65	2.00	0.36	179.70	2.00	0.37	184.35	2.00	0.38	187.65	2.00	0.38	190.85	2.00
38465	38464	38465-38464	BC26	45-68-16-01	8	0.013	0.58	0.59	0.36	61.56	0.97	0.37	62.29	0.99	0.37	62.88	1.00	0.37	63.54	1.00	0.38	64.32	1.00	0.39	65.27	1.00
38525	6952	38525-6952	BC07	45-59-14-00	24	0.01	0.38	11.66	3.36	28.83	0.37	17.22	147.65	2.00	17.44	149.58	2.00	17.55	150.50	2.00	17.73	152.08	2.00	17.84	153.01	2.00
38526	38525	38526-38525	BC06	45-59-15-01	15	0.013	1.69	5.43	0.42	7.76	0.21	0.58	10.60	1.00	0.67	12.36	1.00	0.73	13.53	1.00	0.86	17.72	1.00	1.15	21.10	1.00
38527	38526	38527-38526	BC06	45-59-15-01	15	0.013	1.30	4.76	0.42	8.85	0.22	0.58	10.98	1.00	0.62	12.96	1.00	0.74	15.48	1.00	0.97	20.28	1.00	1.15	24.19	1.00
38528	38527	38528-38527	BC06	45-59-15-01	15	0.013	0.99	4.15	0.42	10.15	0.22	0.51	12.28	0.24	0.62	14.90	0.27	0.75	17.95	0.62	0.98	23.65	1.00	1.17	28.12	1.00
38529	38528	38529-38528	BC06	45-59-15-01	15	0.013	1.49	5.03	0.42	8.38	0.22	0.51	10.14	0.23	0.62	12.29	0.26	0.75	14.83	0.28	0.98	19.52	0.32	1.18	23.40	0.35
38530	38529	38530-38529	BC06	45-59-15-01	15	0.013	1.12	4.42	0.42	9.54	0.23	0.51	11.53	0.25	0.62	13.99	0.27	0.75	16.87	0.29	0.98	22.21	0.34	1.18	26.63	0.36
38530A	38530-38530	38530A-38530	BC06	45-59-15-01	15	0.013	0.00	0.00	0.42	#DIV/0!	0.32	0.51	#DIV/0!	0.35	0.62	#DIV/0!	0.38	0.75	#DIV/0!	0.42	0.98	#DIV/0!	0.47	1.18	#DIV/0!	0.52
38531	38530A	38531-38530A	BC06	45-59-15-01	15	0.013	0.72	3.54	0.42	11.91	0.32	0.51	14.40	0.35	0.62	17.47	0.38	0.75	21.07	0.42	0.98	27.73	0.47	1.18	33.25	0.52
38532	38531	38532-38531	BC06	45-59-15-01	15	0.013	0.62	1.39	0.42	17.82	0.25	0.51	15.50	0.27	0.62	18.80	0.30	0.75	22.67	0.33	0.98	29.84	0.38	1.18	35.78	0.42
38533	38838	38533-38838	BC11	45-59-16-01	15	0.013	2.21	6.21	0.42	6.79	0.20	0.51	8.21	0.21	0.62	9.96	0.24	0.75	12.01	0.26	0.98	15.41	0.29	1.18	18.96	0.32
38534	38839	38534-38839	BC11	45-59-16-01	15	0.013	1.86	5.75	0.42	7.40	0.24	0.51	8.94	0.27	0.62	10.85	0.29	0.75	13.08	0.33	0.98	17.22	0.38	1.18	20.65	0.42
38535	38534	38535-38534	BC11	45-59-16-01	15	0.013	0.63	3.32	0.42	12.70	0.25	0.51	15.36	0.27	0.62	18.63	0.29	0.75	22.46	0.33	0.98	29.57	0.37	1.18	35.46	0.42
38536	38535	38536-38535	BC11	45-59-16-01	15	0.013	-0.13	-1.41	0.42	-28.50	0.38	0.51	-34.45	0.41	0.62	-41.70	0.45	0.75	-50.39	0.48	0.98	-66.34	0.55	1.18	-79.54	0.59
38537	38536	38537-38536	BC06	45-59-15-01	15	0.013	0.62	3.25	0.42	12.86	0.25	0.51	15.54	0.27	0.62	18.86	0.30	0.75	22.74	0.33	0.98	29.93	0.38	1.18	35.89	0.43
38538	38537	38538-38537	BC06	45-59-15-01	15	0.013	0.82	3.79	0.26	10.16	0.22	0.46	12.14	0.24	0.56	14.82	0.27	0.68	17.91	0.29	0.89	23.54	0.34	1.07	28.23	0.37
38538A	38538	38538A-38538	BC06	45-59-15-01	15	0.013	1.35	7.64	0.39	5.04	0.18	0.46	6.07	0.29	0.56	7.35	0.21	0.68	8.89	0.22	0.89	11.68	0.26	1.07	14.01	0.29
38539	38538A	38539-38538A	BC06	45-59-15-01	15	0.013	1.17	4.52	0.39	8.53	0.22	0.46	10.36	0.24	0.56	12.42	0.26	0.68	15.02	0.28	0.89	19.74	0.32	1.07	23.67	0.35
38581	21807	38581-21807	BC09	45-59-29-00	8	0.013	1.93	1.06	0.15	13.69	0.27	0.81	75.17	1.00	0.96	88.80	1.00	0.96	89.18	1.00	0.97	89.86	1.00	0.97	89.82	1.00
38582	38581	38582-38581	BC09	45-59-29-00	8	0.013	1.51	0.96	0.15	15.41	1.00	0.81	84.77	1.00	0.99	103.28	2.00	1.00	104.83	2.00	1.03	107.77	2.00	1.04	108.42	2.00
38642	38539	38642-38539	BC06	45-59-15-02	15	0.013	1.72	6.05	0.39	4.78	0.21	0.46	5.76	0.23	0.56	6.90	0.25	0.68	8.43	0.27	0.89	11.09	0.31	1.07	13.29	0.34
38643	38642	38643-38642	BC06	45-59-15-02	15	0.013	0.50	2.99	0.39	13.01	0.25	0.46	15.67	0.27	0.56	18.97	0.30	0.68	22.94	0.33	0.89	30.15	0.38	1.07	36.16	0.42
38644	38643	38644-38643	BC06	45-59-15-02	15	0.013	2.66	6.81	0.39	5.66	0.19	0.46	6.81	0.20	0.56	8.25	0.22	0.68	9.97	0.23	0.89	13.10	0.27	1.07	15.72	0.29
38645	38644	38645-38644	BC06	45-59-15-03	15	0.013	0.28	2.19	0.32	14.33	0.26	0.37	17.91	0.28	0.45	20.23	0.30	0.54	24.86	0.33	0.71	32.24	0.38	0.85	38.66	0.42
38646	39458	38646-39458	BC06	45-59-15-03	15	0.013	0.50	2.99	0.32	10.79	0.23	0.37	12.83	0.24	0.45	15.08	0.27	0.54	18.45	0.29	0.71	23.93	0.34	0.85	28.49	0.42
38647	38646	38647-38646

Baltimore County

Jones Falls - Modeled Pipe Capacity - Existing Conditions

Pipe Attributes									Dry Weather Flows			2-Year 6-Hour			2-Year 24-Hour			10-Year 6-Hour			10-Year 24-Hour			20-Year 24-Hour		
Upstream Node	Downstream Node	Asset ID	Meter Basin	SSA	Pipe Diameter	Manning's Coefficient	Pipe Gradient	Pipe Full Capacity	Peak Dry Weather Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State
18683	18682	18683-18682	BC01	45-59-35-01	8	0.013	0.66	0.63	0.04	6.00	0.19	0.18	28.55	0.36	0.24	37.54	0.43	0.30	47.97	0.50	0.42	66.81	0.61	0.52	82.43	0.71
18684	18683	18684-18683	BC01	45-59-35-01	8	0.013	0.43	0.51	0.04	7.41	0.21	0.18	35.76	0.42	0.24	46.39	0.48	0.30	59.25	0.55	0.42	82.53	0.66	0.52	101.82	0.76
18775	33440	18775-33440	BC09	45-59-23-00	27	0.01	0.58	19.80	1.36	6.88	0.24	10.74	54.27	1.00	11.78	59.50	1.00	13.32	67.26	1.00	13.50	68.17	1.00	13.59	68.62	1.00
18774	18775	18774-18775	BC09	45-59-24-00	8	0.013	0.43	0.51	0.03	5.55	0.19	0.62	121.45	0.97	0.82	160.35	2.00	0.95	185.92	2.00	1.01	197.25	2.00	1.01	197.18	2.00
18775	18774	18775-18774	BC09	45-59-24-00	8	0.013	1.13	0.83	0.03	3.41	0.16	0.62	74.64	0.84	0.82	98.54	1.00	0.95	114.24	1.00	1.01	121.17	1.00	1.01	121.17	1.00
18776	18775	18776-18775	BC09	45-59-24-00	8	0.013	1.90	1.08	0.03	2.62	0.26	0.62	57.19	0.77	0.82	76.13	1.00	0.95	87.94	1.00	1.01	93.19	1.00	1.01	93.19	1.00
18777	18776	18777-18776	BC09	45-59-24-00	8	0.013	1.00	0.76	0.03	3.63	0.16	0.62	79.47	0.69	0.84	107.82	2.00	0.95	122.29	2.00	1.03	132.19	2.00	1.03	132.41	2.00
18778	18777	18778-18777	BC09	45-59-24-00	8	0.013	1.01	0.79	0.03	3.56	0.16	0.62	78.48	0.66	0.84	106.71	2.00	0.97	122.25	2.00	1.07	135.00	2.00	1.07	135.41	2.00
18779	18778	18779-18778	BC09	45-59-24-00	8	0.013	1.48	0.97	0.03	3.08	0.15	0.62	67.42	0.62	0.85	92.16	1.00	0.99	107.24	2.00	1.13	122.76	2.00	1.14	124.21	2.00
18780	18779	18780-18779	BC09	45-59-24-00	8	0.013	0.61	0.61	0.03	4.66	0.18	0.62	101.70	0.91	0.87	141.84	2.00	1.02	167.75	2.00	1.24	203.49	2.00	1.28	209.13	2.00
18781	18780	18781-18780	BC09	45-59-24-00	8	0.013	4.14	1.59	0.03	1.79	0.14	0.62	39.84	0.72	0.87	54.63	1.00	1.03	64.52	1.00	1.49	91.48	1.00	1.67	104.76	2.00
18782	18781	18782-18781	BC09	45-59-24-00	8	0.013	4.90	1.73	0.03	1.64	0.13	0.62	35.89	0.43	0.87	50.45	0.51	1.03	59.56	0.57	1.49	86.29	1.00	1.72	99.21	2.00
18838	39537	18835-38537	BC06	45-59-35-01	15	0.013	1.01	5.51	0.42	7.91	0.21	0.51	9.56	0.23	0.62	11.60	0.25	0.75	13.99	0.27	0.58	11.42	0.31	1.18	22.09	0.34
18839	38533	38839-38533	BC11	45-59-26-01	15	0.013	0.32	3.01	0.42	14.81	0.26	0.51	18.94	0.28	0.62	23.55	0.31	0.75	24.78	0.34	0.58	22.61	0.40	1.18	39.31	0.43
39117	38084	39117-38084	BC26	45-48-35-01	12	0.013	1.95	3.22	0.07	2.16	0.14	0.12	3.85	0.16	0.15	4.62	0.18	0.18	5.67	0.19	0.24	7.39	0.21	0.29	5.88	0.22
39118	39117	39118-39117	BC26	45-48-35-01	12	0.013	0.59	1.77	0.07	3.82	0.15	0.12	7.01	0.19	0.15	8.41	0.21	0.18	10.32	0.22	0.24	13.44	0.26	0.29	16.15	0.28
39124	20126	39224-20126	BC01	45-59-35-02	15	0.013	0.30	1.32	0.47	35.89	0.37	1.16	88.24	0.57	1.46	110.80	0.64	1.77	134.35	0.72	2.13	161.68	2.00	2.32	175.49	2.00
39225	39224	39225-39224	BC01	45-59-35-02	8	0.013	0.61	0.62	0.01	0.95	0.12	0.07	11.05	0.24	0.09	14.52	0.28	0.12	19.03	0.33	0.17	25.77	1.00	0.21	33.32	1.00
39458	38645	39458-38645	BC06	45-59-35-02	15	0.013	0.45	2.80	0.32	13.37	0.23	0.37	13.20	0.25	0.45	15.89	0.28	0.54	19.44	0.30	0.71	25.21	0.35	0.85	30.34	0.38
39733	23779	39733-23779	BC13	45-59-05-04	12	0.013	2.87	3.80	0.07	1.92	0.14	0.46	11.89	0.25	0.60	15.46	0.32	0.78	19.88	1.00	1.00	25.61	1.00	1.28	32.82	1.00
39734	39733	39734-39733	BC13	45-59-05-04	12	0.013	0.47	1.53	0.07	4.73	0.24	0.46	29.16	0.37	0.60	38.15	0.43	0.78	49.08	0.54	1.00	63.28	1.00	1.28	81.01	1.00
39735	39734	39735-39734	BC13	45-59-05-04	12	0.013	-0.02	-0.30	0.07	-14.90	0.31	0.46	-154.63	0.67	0.60	-200.92	0.76	0.78	-258.53	0.87	1.06	-334.87	1.00	1.28	-424.73	1.00
39736	39735	39736-39735	BC13	45-59-05-04	12	0.013	1.38	2.70	0.07	2.77	0.16	0.46	17.19	0.61	0.60	22.33	0.72	0.78	28.73	0.84	1.07	39.69	1.00	1.28	47.44	1.00
39737	39736	39737-39736	BC13	45-59-05-04	12	0.013	-0.25	-0.90	0.07	-1.20	0.45	0.46	-51.56	0.79	0.60	-66.99	0.88	0.78	-86.18	1.00	1.08	-120.29	1.00	1.28	-142.46	1.00
39738	39737	39738-39737	BC13	45-59-05-04	12	0.013	0.85	2.12	0.07	3.53	0.40	0.46	21.69	0.75	0.60	28.44	0.85	0.78	36.58	0.98	1.05	51.08	1.00	1.28	60.61	1.00
39739	39738	39739-39738	BC13	45-59-05-04	12	0.013	0.13	0.84	0.07	8.90	0.21	0.46	55.24	0.41	0.60	71.77	0.55	0.78	92.33	0.62	1.06	74.70	1.00	1.32	91.24	1.00
39741	39739	39741-39739	BC13	45-59-05-04	12	0.013	0.49	1.45	0.07	5.17	0.23	0.46	32.00	0.46	0.60	41.58	0.55	0.78	53.49	0.64	1.06	74.70	1.00	1.32	91.24	1.00
40488	6941	40488-6941	TSPO1	45-59-07-00	27	0.02	0.86	10.59	1.38	11.90	0.38	17.66	166.71	2.00	17.81	168.17	2.00	18.03	170.29	2.00	18.29	172.70	2.00	18.45	174.26	2.00
41020	38582	41020-38582	BC09	45-59-29-00	8	0.013	2.34	1.19	0.35	13.43	0.26	0.82	68.72	1.00	1.09	91.82	1.00	1.35	96.91	1.00	1.19	100.02	2.00	1.38	99.37	2.00
41036	38373	41036-38373	BC26	45-48-35-01	8	0.013	0.42	0.51	0.31	60.71	0.57	0.36	71.35	0.64	0.38	75.16	0.65	0.41	79.49	0.68	0.43	85.10	0.71	0.46	91.86	0.74
41037	41036	41037-41036	BC26	45-48-35-01	8	0.013	0.41	0.50	0.32	62.34	0.61	0.37	73.68	0.67	0.39	77.56	0.68	0.43	82.80	0.72	0.44	88.56	0.76	0.47	93.72	0.79
41038	41037	41038-41037	BC26	45-48-35-01	8	0.013	0.50	0.55	0.17	39.15	0.38	0.37	31.15	0.39	0.38	32.78	0.40	0.39	33.88	0.41	0.20	35.82	0.42	0.21	38.05	0.43
41039	41038	41039-41038	BC26	45-48-35-01	8	0.013	0.64	0.63	0.17	28.37	0.36	0.37	27.22	0.37	0.38	26.70	0.38	0.39	29.71	0.39	0.20	31.32	0.40	0.21	33.30	0.41
41040	41039	41040-41039	BC26	45-48-35-01	8	0.013	0.55	0.58	0.17	28.69	0.39	0.37	29.74	0.40	0.38	31.28	0.41	0.39	32.40	0.41	0.20	34.17	0.41	0.21	36.29	0.42
41042	41037	41042-41037	BC26	45-48-35-01	8	0.013	0.35	2.23	0.22	8.75	0.64	0.27	11.89	0.71	0.26	11.59	0.71	0.27	12.15	0.74	0.29	13.00	0.84	0.30	13.23	0.89
41043	41042	41043-41042	BC26	45-48-35-01	8	0.013	1.17	0.84	0.23	27.27	0.37	0.27	31.83	0.41	0.26	31.36	0.41	0.27	32.38	0.41	0.29	34.79	0.42	0.30	35.76	0.45
41044	41043	41044-41043	BC26	45-48-35-01	8	0.013	1.11	0.83	0.23	27.94	0.39	0.27	33.11	0.42	0.27	32.69	0.43	0.28	33.49	0.42	0.30	36.00	0.43	0.30	36.64	0.43
41045	41044	41045-41044	BC26	45-48-35-01	8	0.013	6.18	1.94	0.26	13.39	0.27	0.30	15.27	0.28	0.30	15.47	0.28	0.29	15.09	0.28	0.31	15.94	0.29	0.31	15.96	0.29
41114	41418	41114-41418	BC24	45-66-17-00	10	0.013	0.82	1.01	0.42	32.43	0.45	0.64	49.71	0.58	0.74	57.49	0.64	0.86	67.43	0.95	1.07	83.54	1.00	1.22	99.84	1.00
41115	41114	41115-41114	BC24	45-66-17-00	10	0.013	0.42	0.92	0.42	45.11	0.48	0.64	69.16	0.61	0.74	79.99	0.67	0.86	93.85	0.75	1.07	116.27	2.00	1.22	133.58	2.00
41116	41115	41116-41115	BC24	45-66-17-00	10	0.013	0.22	0.67	0.42	61.84	0.57	0.64	94.97	0.78	0.74	109.84	0.96	0.86	128.91	2.00	1.07	150.75	2.00	1.22	182.75	2.00
41117	41429	41117-41429	BC24	45-66-17-00	10	0.013	0.42	0.92	0.42	45.11	0.48	0.64	69.16	0.62	0.74	80.00	0.67	0.86	93.88	0.76	1.07	119.39	2.00	1.23	133.20	2.00
41118	41117	41118-41117	BC24	45-66-17-00	10	0.013	3.42	2.21	0.43	18.78	0.31	0.64	29.79	0.46	0.74	33.30	0.47	0.86	39.08	0.57	1.08	48.85	1.00	1.23	55.49	1.00
41119	41118	41119-41118	BC24	45-66-17-00	10	0.013	1.04	1.44	0.42	28.82	0.38	0.64	44.19	0.48	0.74	51.11	0.51	0.86	59.96	0.57	1.08	74.90	0.65	1.23	85.26	1.00
41120	41119	41120-41119	BC24	45-66-17-00	10	0.013	0.44	0.94	0.42	44.15	0.48	0.64	67.69	0.61	0.74	78.30	0.67	0.86	91.88	0.77	1.08	114.86	2.00	1.25	132.70	2.00
41121	41120	41121-41120	BC24	45-66-18-00	10	0.013	0.45	0.95	0.42	43.68	0.47	0.64	66.99	0.63	0.74	77.47	0.70	0.86	90.82	0.83	1.08	113.86	2.00	1.25	131.54	2.00
41122	41121	41122-41121	BC24	45-66-18-00	10	0.013	1.99	2.00	0.42	20.75	0.39	0.64	31.82	0.53	0.74	36.81	0.60	0.86	43.19	0.71	1.08	54.80	1.00	1.25	62.55	1.00
41123	41122	41123-41122	BC24	45-66-18-00	10	0.013	1.84	1.44	0.42	28.82	0.38	0.64	44.19	0.48	0.74	51.12	0.51	0.86	59.99	0.57	1.08	75.81	0.65	1.25	87.01	1.00
41124	41123	41124-41123	BC24	45-66-18-01	10	0.013	0.66	1.17	0.42	25.47	0.42	0.64	54.39	0.54	0.74	62.91	0.58	0.86	73.83	0.65	1.08	92.32	0.78	1.26	108.03	2.00
41125	41124	41125-41124	BC24	45-66-18-01	10	0.013	0.07	0.38	0.42	109.21	0.54	0.64	167.47	0.67	0.74	193.71	0.72	0.86	227.32	0.80	1.08	284.26	2.00	1.26	332.63	2.00
41126	41125	41126-41125	BC24	45-66-18-01	10	0.013	1.32	1.62	0.42	25.62	0.65	0.64	39.28	0.80	0.74	45.44	0.87	0.86	53.32	0.97	1.08	66.68	1.00	1.26	78.03	1.00
41127	41126	41127-41126	BC24	45-66-18-01	10	0.013	1.24	1.57	0.42	26.43	0.36	0.64	40.54	0.45	0.74	46.89	0.50	0.86	55.02	0.54	1.08	68.80	0.63	1.26	80.54	1.00
41128	41127	41128-41127	BC24	45-66-18-01	10	0.013	0.89	1.33	0.32	24.13	0.35	0.42	31.85	0.40	0.48	36.85	0.42	0.54	40.68	0.45	0.66	49.47	0.52	0.75	56.30	0.89
41129	41128	41129-41128	BC24	45-66-18-01	10	0.013	0.64	1.14	0.32	28.15	0.37	0.42	37.19	0.43	0.48	42.05	0.46	0.54	47.46	0.50	0.66	57.77	0.56	0.75	65.06	0.60
41130	41129	41130-41129	BC24	45-66-18-01	10	0.013	0.82	1.31	0.32	28.91	0.37	0.42	38.20	0.43	0.48	43.19	0.47	0.54	48.74	0.50	0.66	58.75	0.56	0.75	67.27	0.62
41131	41130	41131-41130	BC24	45-66-18-01	10	0.013	0.63	1.12	0.32	28.65	0.49	0.42	37.86	0.55	0.48	42.80	0.59	0.54	48.30	0.62	0.66	58.25	0.69	0.75	67.27	0.74
41132	41131	41132-41131	BC24	45-66-18-01	10	0.013	0.41	0.90	0.32	35.66	0.42	0.42	47.11	0.49	0.48	53.27	0.52	0.54	60.11	0.57	0.66	73.11	0.64	0.75	83.73	0.71
41133	41132	41133-41132	BC24	45-66-18-01	10	0.013	2.08	2.04	0.32	15.71	0.36	0.42	20.78	0.43	0.48	23.50	0.47	0.54	26.52	0.51	0.66	32.25	0.60	0.75	36.95	0.67
41134	41133	41134-41133	BC24	45-66-18-01	10	0.013	0.44	0.94	0.00	-0.01	0.26	0.00	-0.04	0.30	0.00	-0.12	0.32	0.00	-0.12	0.34	0.00	-0.19	0.36	0.00	-0.39	0.41
41135	41134	41135-41134	BC24	45-66-18-01	10	0.013	0.44	0.94	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08
41136	41135	41136-41135	BC24	45-66-18-01	10	0.013	-0.26	-0.72	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08
41137	41136	41117-41136	BC24	45-66-18-01	10	0.013	0.62	1.12	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08
41138	41137	41138-41137	BC24	45-66-18-01	10	0.013	0.42	0.92	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08
41139	41138	41139-41138	BC24	45-66-18-01	10	0.013	0.54	1.05	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08
41140	41139	41140-41139	BC24	45-66-18-01	10	0.013	0.13	0.59	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08
41252	20781	41252-20781	BC29	45-66-08-00	15	0.013	0.55	3.19	1.15	37.02	0.43	3.37	76.48	0.65	2.82	91.00	0.75	3.46	111.64	2.00	4.03	130.04	2.00	4.05	130.71	2.00
41427	1593	41427-1593	BC24	45-66-17-00	12	0.013	-1.16	-2.48	0.42	-16.73	0.66	0.64	-25.66	0.75	0.74	-29.67	0.79	0.86	-34.77	1.00	1.07	-43.09	1.00	1.22	-49.36	1.00
41428	41427	41428-41427	BC24	45-66-17-00	12	0.013	0.35	1.38	0.42	30.51	0.36	0.64	46.79	0.67	0.74	54.11	0.71	0.86	63.41	1.00	1.07	78.80	1.00	1.22	90.01	1.00
41429	41316	41429-41316	BC24	45-66-17-00	10	0.013	2.34	2.16	0.42	19.21	0.46	0.64	29.46	0.67	0.74	34.07	0.88	0.86	39.99	1.00	1.07	49.80	1.00	1.22	56.70	1.00
41434	35551	41434-35551	BC09	45-59-27-00	8	0.013	1.90	1.08	0.20	18.84	0.31	1.02	94.01	0.79	1.33	122.23	2.00	1.64	152.26	2.00	1.88	173.63	2.00	1.88	174.44	2.00
41529	41530	41529-41530	BC01	45-59-35-05	36	0.013	0.76	4.31	0.47	10.83	0.23	1.10	25.42	0.35	1.37	31.80	0.39	1.66	38.34	0.43	2.00	46.23	0.52	2.17	50.22	0.91
41530	43501		BC01	45-59-35-02	36	0.013	0.27	2.58	0.47	18.14	0.29	1.10	42.55	0.46	1.37	53.22	0.52	1.66	64.19	0.54	2.00	77.57	0.86	2.14	82.97	1.00
41917	39255	41917-39255	BC01	45-59-35-02	8	0.013	0.49	0.54	0.01	1.09	0.12	0.07	13.69	0.26	0.09	16.67	0.29	0.12	21.85	0.33	0.17	30.74	0.39	0.21	38.31	0.80
42050	34836	42050-34836	BC19	45-62-01-00	24	0.005	3.55	11.24	0.68	6.08	0.20	0.88	7.80	0.21	1.04	9.25	0.23	1.23	10.92	0.24	1.56	14.09	0.27	1.68	16.70	0.29
42051	42050	42051-42050	BC19	45-62-02-00	24	0.005	21.71	42.09	0.68	1.62	0.13	0.88	2.08	0.14	1.04	2.47	0.14	1.23	2.92	0.15	1.58	3.76	0.16	1.68	4.46	0.17
42052	42051	42052-42051	BC19	45-62-02-00	15	0.013	1.94	5.81	0.68	11.76	0.25	0.88	15.09	0.28	1.04	17.89	0.30	1.23	21.13	0.33	1.58	27.26	0.37	1.68	32.31	0.41
42053	42052	42053-42052	BC19	45-62-02-00	15	0.013	0.31	2.46	0.68	27.79	0.38	0.88	35.63	0.41	1.04	42.26	0.45	1.23	49.31	0.49	1.58	64.39	0.57	1.68	76.31	0.63
42054	42053	42054-42053	BC19	45-62-02-00	15	0.013	0.77	3.67	0.68	18.67	0.29	0.88	23.88	0.34	1.04	28.33	0.37	1.23	33.46	0.41	1.58	43.26	0.49	1.68	51.15	0.56
42055	42054	42055-42054	BC19	45-62-03-02	15	0.013	1.19	4.56	0.68	15.00	0.28	0.88	19.22	0.31	1.04	22.80	0.34	1.23	26.93	0.37	1.58	34.74	0.42	1.88	41.17	0.46
42224	15269	42224-15269	BC09	45-59-21-00	8	0.013	0.62	0.62	0.03	4.74	0.18	0.69	111.21	2.00	0.85	137.34	2.00	0.85	137.61	2.00	0.85	137.76	2.00	0.85	137.70	2.00
42225	42224	42225-42224	BC09	45-59-21-00	8	0.013	4.94	1.74	0.03	1.68	0.13	0.69	39.64	0.45	0.85	48.94	1.00	0.85	49.05	1.00	0.85	49.09	1.00	0.85	49.09	1.00
42226	42225	42226-42225	BC09	45-59-21-00	8	0.013	0.60	0.60	0.03	4.90	0.18	0.69	114.97	2.00	0.85	141.93	2.00	0.85	142.23	2.00	0.85	142.37	2.00	0.85	142.37	2.00
42227	42226	42227-42226	BC09	45-59-21-00	8	0.013	0.60	0.61	0.03	4.84	0.18	0.69	113.21	2.00	0.86	141.72	2.00	0.87	143.25	2.00	0.89	145.30	2.00	0.89	145.30	2.00
42228	21013	42228-21013	BC07	45-59-18-00	24	0.01	0.36	11.46	2.31	20.17	0.31	14.33	129.94	2.00	17.25	150.52	2.00	20.19	176.14	2.00	23.65	197.82	2.00	24.15	212.50	2.00
42229	42228	42229-42228	BC07	45-59-19-00	24	0.013	1.62	16.63	0.84	4.51	0.17	2.56	13.76	1.00	3.21	17.23	1.00	4.27	22.80	1.00	5.84	31.30	1.00	7.33	38.26	1.00
42230	48063	42230-48063	BC07	45-59-20-01	24	0.013	2.79	24.44	0.82	3.54	0.15	2.40	9.82	1.00	3.06	12.51	1.00	3.69	15.10	1.00	5.08	20.77	1.00	6.25	25.56	1.00
42231	42230	42231-42230	BC16A	45-59-20-01	24	0.013	2.47	22.59	0.62	2.70	0.15	2.43	10.58	1.00	3.14	13.67	1.00	3.70	16.10	1.00	5.10	22.20	1.00	6.26	27.24	1.00
42232	42231	42232-42231	BC16A	45-59-20-01	24	0.013	0.79	12.99	0.62	4.78	0.15	2.43	18.72	0.29	3.14	24.19	0.34	3.79	29.19	0.37	5.28	40.96	0.44	6.38	49.10	0.50
42233	42232	42233-42232	BC16A	45-59-20-01	24	0.013	0.25	7.28	0.62	8.53	0.20	2.43	33.41	0.39	3.14	43.18	0.45	3.79	52.09	0.50	5.25	72.58	0.60	6.38	87.82	0.68
42234	42228	42234-42228	BC07	45-59-19-00	30	0.01	0.76	29.08	1.75	5.84	0.17	12.41	41.36	1.00	14.14	47.17	1.00	16.05	53.65	1.00	17.37	57.95	1.00	17.73	59.15	1.00
42603	36945	42603-36945	BC23	45-68-17-01	15	0.013	0.99	4.36	0.70	16.81	0.28	1.00	24.16	0.34	1.15	27.65	0.36	1.42	34.10	0.41	1.68	40.36	0.44	1.94	46.57	0.49
43381	150	43381-150	BC12	45-58-20-01	15	0.013	122.06	46.14	0.46	1.01	0.20	0.66	1.42	0.23	0.74	1.61	0.24	0.82	1.78	0.26	1.00	2.17	0.29	1.14	2.47	0.30
43382	43381	43382-43381	BC12	45-58-20-01	15	0.013	0.26	2.32	0.46	21.83	0.33	0.66	31.80	0.38	0.74	35.12	0.41	0.82	38.70	0.43	1.00	47.22	0.48	1.14	53.65	0.51
43383	43382	43383-43382	BC12	45-58-20-01	15	0.013	3.57	7.89	0.46	5.39	0.32	0.66	8.33	0.38	0.74	9.44	0.41	0.82	10.40	0.43	1.00	12.60	0.48	1.14	14.42	0.51
43384	43383	43384-43383	BC12	45-58-20-02	12	0.013

Baltimore County

Jones Falls - Modeled Pipe Capacity - Existing Conditions

Pipe Attributes									Dry Weather Flows			2-Year 6-Hour			2-Year 24-Hour			10-Year 6-Hour			10-Year 24-Hour			20-Year 24-Hour		
Upstream Node	Downstream Node	Asset ID	Meter Basin	SSA	Pipe Diameter	Manning's Coefficient	Pipe Gradient	Pipe Full Capacity	Peak Dry Weather Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State
41501	18555	18556-18555	BC01	45-59-35-02	18	0.013	0.38	4.20	0.47	11.14	0.23	1.38	26.34	0.35	1.37	32.69	0.40	1.66	39.43	0.45	1.99	47.39	0.47	2.14	51.00	1.00
41502	41501	41501-41501	BC01	45-59-35-02	36	0.013	0.55	3.68	0.47	12.71	0.25	1.38	29.83	0.38	1.37	37.31	0.43	1.66	45.00	0.47	2.00	54.39	0.56	2.14	58.18	1.00
41786	44725	41786-44725	BC22	45-72-00-00	12	0.013	0.61	1.79	0.33	12.85	0.26	0.84	18.07	1.00	0.83	18.76	1.00	0.75	41.71	1.00	0.74	43.47	1.00	0.80	44.73	1.00
41787	43786	41787-43786	BC22	45-73-01-00	8	0.013	0.91	0.74	0.22	29.76	0.39	0.56	75.72	1.00	0.58	78.81	1.00	0.59	80.25	1.00	0.58	78.81	1.00	0.57	76.85	1.00
41788	43787	41788-43787	BC22	45-73-01-00	8	0.013	0.47	0.54	0.22	40.78	0.46	0.56	103.78	2.00	0.59	106.85	2.00	0.60	111.11	2.00	0.59	109.58	2.00	0.58	107.46	2.00
41789	43788	41789-43788	BC22	45-73-02-00	8	0.01	0.95	0.50	0.22	44.04	0.48	0.56	112.08	2.00	0.59	117.88	2.00	0.60	120.92	2.00	0.60	120.50	2.00	0.59	118.12	2.00
41790	43789	41790-43789	BC22	45-73-02-00	8	0.01	0.24	0.25	0.22	88.01	0.74	0.56	224.16	2.00	0.59	236.40	2.00	0.61	246.14	2.00	0.62	246.12	2.00	0.61	242.84	2.00
41791	43790	43791-43790	BC22	45-73-02-00	8	0.02	0.46	0.35	0.22	62.91	0.56	0.56	160.14	2.00	0.60	170.46	2.00	0.63	178.83	2.00	0.64	183.43	2.00	0.64	183.43	2.00
41792	43791	43792-43791	BC22	45-73-02-00	8	0.02	0.42	0.33	0.22	66.73	0.60	0.56	169.94	2.00	0.60	182.00	2.00	0.64	189.55	2.00	0.67	202.03	2.00	0.68	204.81	2.00
41793	43792	43793-43792	BC22	45-73-02-00	8	0.02	0.53	0.37	0.22	59.14	0.57	0.54	145.89	2.00	0.57	155.00	2.00	0.60	161.32	2.00	0.61	164.92	2.00	0.60	162.54	2.00
41794	41793	41794-41793	BC05	45-73-01-02	8	0.013	0.45	0.52	0.22	47.01	0.46	0.54	120.83	2.00	0.53	113.40	2.00	0.62	154.29	2.00	0.64	164.00	2.00	0.64	122.65	2.00
41794A	41794	41794A-41794	BC05	45-73-01-02	8	0.013	0.44	0.52	0.08	15.92	0.29	0.25	47.69	1.00	0.25	48.51	1.00	0.37	70.27	1.00	0.47	90.35	1.00	0.57	109.08	2.00
41795	41794A	41795-41794A	BC05	45-73-03-02	8	0.013	0.63	0.62	0.08	13.35	0.27	0.25	40.11	1.00	0.26	41.77	1.00	0.37	59.35	1.00	0.47	75.77	1.00	0.57	91.48	1.00
41796	41795	41796-41795	BC05	45-73-03-02	8	0.013	0.52	0.56	0.08	14.79	0.34	0.25	44.80	1.00	0.27	47.34	1.00	0.37	65.71	1.00	0.47	83.91	1.00	0.57	101.30	2.00
41797	41796	41797-41796	BC05	45-73-03-01	8	0.013	0.52	0.56	0.01	4.54	0.17	0.11	19.95	1.00	0.13	23.91	1.00	0.16	28.64	1.00	0.21	36.85	1.00	0.25	45.21	1.00
41798	41797	41798-41797	BC05	45-73-03-01	8	0.013	0.52	0.56	0.01	4.54	0.17	0.11	20.30	1.00	0.15	26.36	1.00	0.16	28.59	1.00	0.21	36.73	1.00	0.25	44.96	1.00
41799	41798	41799-41798	BC05	45-73-03-01	8	0.013	0.52	0.56	0.01	4.54	0.17	0.12	20.77	1.00	0.15	26.45	1.00	0.17	30.71	1.00	0.23	41.04	1.00	0.25	44.73	1.00
41800	41799	41800-41799	BC05	45-73-03-01	8	0.013	1.40	0.94	0.01	2.70	0.15	0.12	12.40	1.00	0.15	15.79	1.00	0.18	19.47	1.00	0.25	27.06	1.00	0.29	31.22	1.00
41801	41796	41801-41796	BC05	45-73-03-02	8	0.013	0.80	0.70	0.06	8.20	0.22	0.16	23.24	0.66	0.20	28.54	1.00	0.24	34.56	1.00	0.32	46.13	1.00	0.36	51.89	1.00
41802	41801	41802-41801	BC05	45-73-03-02	8	0.013	1.86	1.06	0.06	5.42	0.19	0.16	15.35	0.36	0.20	18.86	1.00	0.24	23.06	1.00	0.33	30.86	1.00	0.39	36.95	1.00
41803	43802	43803-43802	BC05	45-73-03-02	8	0.013	2.80	1.31	0.06	4.38	0.17	0.16	12.42	0.36	0.20	15.24	0.38	0.24	18.66	0.31	0.33	14.81	0.36	0.39	29.91	0.39
41804	41803	41804-41803	BC05	45-73-03-02	8	0.013	2.50	1.23	0.06	4.67	0.18	0.16	13.23	0.27	0.20	16.25	0.29	0.24	19.87	0.32	0.33	26.42	0.26	0.39	31.85	0.40
41805	41804	41805-41804	BC05	45-73-03-02	8	0.013	3.50	1.46	0.06	3.83	0.17	0.16	11.14	0.25	0.20	13.69	0.27	0.24	16.74	0.29	0.33	23.27	0.34	0.39	26.84	0.37
41810	41800	41810-41800	BC09	45-73-03-01	8	0.013	0.52	0.57	0.03	4.46	0.17	0.11	20.46	0.33	0.15	25.96	0.36	0.19	32.77	1.00	0.26	44.85	1.00	0.31	56.09	1.00
41811	41810	41811-41810	BC05	45-73-03-01	8	0.013	0.52	0.56	0.03	4.54	0.17	0.12	20.82	0.33	0.15	26.45	0.36	0.19	33.36	1.00	0.26	45.75	1.00	0.31	56.13	1.00
41812	41811	41812-41811	BC05	45-73-03-01	8	0.013	0.52	0.56	0.03	4.54	0.17	0.12	20.82	0.33	0.15	26.45	0.36	0.19	33.36	0.41	0.26	45.75	0.49	0.31	56.14	0.55
41813	41812	41813-41812	BC05	45-73-03-01	8	0.013	0.52	0.56	0.01	4.54	0.17	0.12	20.82	0.33	0.15	26.45	0.36	0.19	33.36	0.41	0.26	45.75	0.49	0.31	56.14	0.55
41814	41813	41814-41813	BC05	45-73-03-01	8	0.013	1.70	1.02	0.01	2.49	0.14	0.12	11.43	0.25	0.15	14.52	0.28	0.19	18.31	0.30	0.26	25.12	0.36	0.31	30.82	0.40
41815	41814	41815-41814	BC05	45-73-03-01	8	0.013	0.51	0.56	0.01	4.54	0.17	0.12	20.82	0.33	0.15	26.45	0.36	0.19	33.36	0.41	0.26	45.75	0.49	0.31	56.14	0.55
41818	41815	41818-41815	BC05	45-73-03-01	8	0.013	1.88	1.07	0.01	2.37	0.14	0.12	10.90	0.24	0.15	13.84	0.27	0.19	17.46	0.30	0.26	23.94	0.35	0.31	29.40	0.41
41819	43794	41819-43794	BC05	45-73-03-02	8	0.013	-0.04	-0.15	0.14	-90.73	0.62	0.30	-200.00	1.00	0.35	-235.67	1.00	0.42	-281.00	1.00	0.52	-348.27	1.00	0.59	-391.00	1.00
41820	41819	41820-41819	BC05	45-73-04-00	8	0.013	0.50	0.55	0.14	24.75	0.35	0.30	54.53	0.59	0.35	64.24	1.00	0.42	76.87	1.00	0.52	69.65	1.00	0.59	78.20	1.00
41821	41820	41821-41820	BC05	45-73-04-00	8	0.013	0.92	0.75	0.14	18.15	0.30	0.30	40.00	0.45	0.35	47.20	0.50	0.43	56.87	1.00	0.52	69.65	1.00	0.59	78.20	1.00
41822	41821	41822-41821	BC05	45-73-04-00	8	0.013	0.52	0.57	0.14	23.88	0.35	0.30	52.63	0.53	0.35	62.11	0.58	0.43	75.09	0.66	0.54	94.05	1.00	0.59	102.91	1.00
41823	41822	41823-41822	BC05	45-73-04-00	8	0.013	0.74	0.67	0.14	20.31	0.25	0.30	44.79	1.00	0.35	52.84	1.00	0.43	63.85	1.00	0.54	80.40	1.00	0.59	87.61	1.00
41824	41823	41824-41823	BC05	45-73-04-00	8	0.013	0.62	0.61	0.14	22.31	0.34	0.30	49.18	0.50	0.35	58.03	0.56	0.43	70.16	0.63	0.54	88.61	1.00	0.59	96.36	1.00
41825	41824	41825-41824	BC05	45-73-04-00	15	0.013	0.54	2.07	0.34	4.43	0.15	0.36	9.77	0.33	0.35	11.53	0.26	0.41	13.94	0.31	0.54	17.67	0.43	0.61	19.83	1.00
41826	52024	41826-52024	BC05	45-73-04-00	15	0.013	0.56	3.12	0.00	0.00	0.14	0.00	-0.01	0.19	0.00	-0.04	0.20	0.00	-0.04	0.21	0.00	-0.07	0.24	0.00	-0.07	0.26
41865	42055	41865-42055	BC19	45-62-03-01	12	0.013	0.71	1.94	0.29	14.81	0.27	0.29	14.81	0.27	0.29	14.95	0.27	0.29	14.81	0.27	0.32	16.53	0.34	0.34	16.30	0.38
44205	34385	44205-34385	BC18	45-67-00-00	24	0.02	0.24	4.66	0.29	6.27	0.18	1.21	25.94	0.34	1.33	28.44	0.36	1.72	36.91	1.00	1.69	36.21	1.00	1.58	30.83	1.00
44209	44208	44209-44208	BC27	45-69-00-00	24	0.01	0.29	5.12	0.29	5.70	0.17	1.21	23.61	0.34	1.32	25.88	0.35	1.53	29.79	1.00	1.49	29.18	1.00	1.58	30.83	1.00
44210	44209	44210-44209	BC22	45-69-00-00	10	0.02	0.32	0.52	0.29	56.15	0.54	1.21	232.46	2.00	1.32	254.29	2.00	1.38	266.10	2.00	1.43	274.46	2.00	1.47	282.66	2.00
44211	44210	44211-44210	BC22	45-69-00-00	10	0.013	0.32	0.80	0.27	33.36	0.43	1.12	139.66	2.00	1.21	150.66	2.00	1.20	150.11	2.00	1.18	147.46	2.00	1.16	144.38	2.00
44212	44211	44212-44211	BC22	45-69-00-00	10	0.013	0.32	0.80	0.27	33.38	0.41	1.12	139.91	2.00	1.20	150.01	2.00	1.20	150.05	2.00	1.18	147.35	2.00	1.15	144.23	2.00
44213	44212	44213-44212	BC22	45-69-00-00	10	0.013	0.33	0.81	0.27	33.94	0.41	1.13	141.86	2.00	1.21	151.86	2.00	1.20	149.80	2.00	1.18	147.67	2.00	1.16	145.80	2.00
44214	52270	44214-52270	BC22	45-69-00-00	10	0.013	0.36	0.87	0.25	28.53	0.37	0.83	101.79	2.00	0.93	109.03	2.00	0.95	109.63	2.00	0.96	110.06	2.00	0.99	113.49	2.00
44215	44214	44215-44214	BC22	45-69-00-00	10	0.013	0.32	0.80	0.25	31.03	0.39	0.88	110.20	2.00	0.93	116.09	2.00	0.95	110.91	2.00	0.96	110.56	2.00	0.99	113.76	2.00
44216	44215	44216-44215	BC22	45-70-00-00	10	0.013	0.32	0.80	0.25	31.03	0.39	0.88	109.64	2.00	0.93	115.71	2.00	0.95	115.54	2.00	0.96	119.42	2.00	1.01	126.24	2.00
44217	44216	44217-44216	BC22	45-71-00-00	10	0.013	0.25	0.84	0.23	27.52	0.38	0.73	88.83	1.00	0.77	92.75	1.00	0.82	97.14	1.00	0.82	97.86	1.00	0.83	99.32	1.00
44218	44217	44218-44217	BC22	45-71-00-00	10	0.013	0.31	0.78	0.23	29.64	0.38	0.72	92.79	1.00	0.77	98.27	1.00	0.81	104.05	2.00	0.82	109.29	2.00	0.83	109.77	2.00
44219	44218	44219-44218	BC22	45-71-00-00	10	0.013	0.31	0.79	0.23	29.27	0.38	0.72	90.87	1.00	0.76	96.48	1.00	0.81	102.15	2.00	0.82	103.32	2.00	0.83	105.30	2.00
44220	44219	44220-44219	BC22	45-71-00-00	10	0.013	0.23	0.68	0.23	34.00	0.41	0.71	104.81	2.00	0.76	111.50	2.00	0.84	124.22	2.00	0.91	135.63	2.00	0.97	142.04	2.00
44221	44220	44221-44220	BC22	45-71-00-00	10	0.013	0.24	0.72	0.23	32.13	0.40	0.71	98.26	1.00	0.75	104.72	2.00	0.84	117.32	2.00	0.91	128.76	2.00	0.97	134.14	2.00
44222	44221	44222-44221	BC22	45-72-00-00	10	0.013	0.21	0.65	0.23	35.58	0.42	0.70	107.94	2.00	0.75	115.42	2.00	0.84	129.65	2.00	0.91	138.76	2.00	0.97	147.58	2.00
44223	44222	44223-44222	BC22	45-72-00-00	10	0.013	0.30	0.78	0.23	29.65	0.38	0.70	89.41	1.00	0.75	96.31	1.00	0.84	109.29	2.00	0.91	116.50	2.00	0.97	123.45	2.00
44224	44223	44224-44223	BC22	45-72-00-00	10	0.013	0.20	0.63	0.23	36.52	0.43	0.64	102.23	2.00	0.68	108.20	2.00	0.75	118.42	2.00	0.78	123.56	2.00	0.80	127.22	2.00
44225	44224	44225-44224	BC22	45-72-00-00	10	0.013	0.23	0.69	0.23	33.35	0.41	0.64	92.87	1.00	0.68	99.22	1.00	0.75	108.26	2.00	0.78	112.77	2.00	0.80	116.06	2.00
44548	20777	44548-20777	BC20	45-66-04-00	15	0.013	1.05	4.28	1.30	30.28	0.39	2.72	63.47	0.59	3.24	75.63	0.66	3.99	93.18	0.78	4.54	106.05	2.00	4.70	109.75	2.00
45056	41045	45056-41045	BC26	45-68-15-01	8	0.013	2.31	1.18	0.27	22.38	0.34	0.30	25.83	0.36	0.30	25.34	0.36	0.29	24.66	0.36	0.31	26.07	0.36	0.31	26.21	0.36
45057	45056	45057-45056	BC26	45-68-15-01	8	0.013	0.93	0.75	0.25	37.37	0.44	0.30	40.11	0.46	0.39	40.64	0.46	0.30	39.73	0.46	0.31	41.68	0.47	0.31	41.97	0.47
45058	45057	45058-45057	BC26	45-66-15-01	8	0.013	1.56	0.96	0.29	29.08	0.41	0.31	31.92	0.41	0.32	32.57	0.42	0.31	31.93	0.42	0.33	33.27	0.42	0.33	33.36	0.42
45059	45058	45059-45058	BC26	45-66-15-01	8	0.013	3.38	1.44	0.32	22.39	0.34	0.33	22.72	0.35	0.34	23.29	0.35	0.33	23.11	0.35	0.34	23.48	0.35	0.34	23.35	0.35
45563	22466	45563-22466	BC15	45-59-01-00	12	0.013	4.23	4.74	0.06	1.23	0.30	0.09	1.89	0.33	0.11	2.33	0.35	0.14	3.01	0.37	0.19	4.00	0.40	0.23	4.91	0.43
45564	45563	45564-45563	BC15	45-59-01-00	12	0.013	1.40	2.73	0.06	2.14	0.34	0.09	1.28	0.16	0.11	4.05	0.17	0.14	5.23	0.18	0.19	6.95	0.20	0.23	8.52	0.22
45564A	45564	45564A-45564	BC15	45-59-01-00	12	0.013	0.46	1.55	0.05	3.77	0.15	0.09	5.78	0.27	0.11	7.14	0.19	0.14	9.22	0.21	0.19	12.23	0.24	0.23	15.00	0.27
45565	45564A	45565-45564A	BC15	45-59-01-00	12	0.013	2.42	3.59	0.05	1.65	0.13	0.09	2.50	0.14	0.11	3.08	0.15	0.14	3.98	0.17	0.19	5.28	0.19	0.23	6.48	0.22
45566	45565	45566-45565	BC15	45-59-01-00	12	0.013	4.26	4.75	0.06	1.23	0.17	0.09	1.89	0.18	0.11	2.33	0.19	0.14	3.01	0.21	0.19	3.99	0.23	0.23	4.89	0.24
45567	45566	45567-45566	BC15	45-59-01-00	12	0.013	3.74	4.46	0.06	1.31	0.13	0.09	2.01	0.14	0.11	2.48	0.14	0.14	3.20	0.15	0.19	4.25	0.17	0.23	5.21	0.18
45568	22490	45568-22490	BC15	45-59-01-00	12	0.013	3.72	4.47	0.06	1.31	0.13	0.09	2.00	0.14	0.11	2.47	0.14	0.14	3.20	0.15	0.19	4.24	0.17	0.23	5.20	0.18
45585	22457	45585-22457	BC15	45-59-01-00	12	0.02	0.60	1.36	0.06	5.02	0.26	0.09	7.72	0.20	0.11	9.55	0.22	0.14	12.31	0.25	0.19	16.34	0.28	0.23	20.03	0.44
45592	22464	45592-22464	BC15	45-59-01-00	12	0.013	1.07	2.36	0.06	2.45	0.14	0.09	3.76	0.16	0.11	4.65	0.18	0.14	6.00	0.19	0.19	7.97	0.21	0.23	9.76	0.23
45724	18455	45724-18455	TSJF01	45-59-05-01	12	0.01	1.87	4.10	0.20	4.99	0.18	1.26	30.69	0.40	1.65	39.82	0.45	1.95	47.61	0.50	2.25	54.93	0.55	2.45	60.51	1.00
45725	43818	45725-43818	BC05	45-73-03-01	8	0.013	0.60	0.60	0.03	4.33	0.17	0.12	19.45	0.31	0.15	24.68	0.35	0.19	31.13	0.40	0.26	42.70	0.47	0.31	52.41	0.53
45736	45735	45736-45735	BC05	45-73-03-01	8	0.013	1.21	0.86	0.03	2.95	0.15	0.12	13.57	0.27	0.15	17.23	0.30	0.19	21.72	0.34	0.26	29.79	0.39	0.31	36.59	0.43
45737	45736	45737-45736	BC05	45-73-03-01	8	0.013	2.36	1.20	0.03	2.12	0.14	0.12	9.71	0.23	0.15	12.35	0.26	0.19	15.57	0.28	0.26	21.35	0.33	0.31	26.23	0.36
45738	45737	45738-45737	BC05	45-73-03-01	8	0.013	3.00	1.35	0.03	1.88	0.14	0.12	8.64	0.22	0.15	10.98	0.24	0.19	13.84	0.27	0.26	18.98	0.31	0.31	23.32	0.35
45739	45738	45739-45738	BC05	45-73-03-01	8	0.013	4.44	1.65	0.03	1.54	0.13	0.12	7.07	0.21	0.15	8.98	0.22	0.19	11.32	0.25	0.26	15.53	0.28	0.31	19.08	0.31
45740	45739	45740-45739	BC05	45-73-03-01	8	0.013	4.92	1.73	0.03	1.47	0.13	0.12	6.75	0.20	0.15	8.57	0.22	0.19	10.80	0.24	0.26	14.82	0.28	0.31	18.20	0.30
45741	45748	45741-45748	BC05	45-73-03-02	8	0.013	2.61	1.26	0.06	4.56	0.17	0.16	12.91	0.26	0.20	15.87	0.29	0.24	19.40	0.31	0.33	25.80	0.36	0.39	31.11	0.40
45742	45741	45742-45741	BC05	45-73-03-02	8	0.013	3.02	1.36	0.06	4.22	0.17	0.16	11.96	0.25	0.20	14.70	0.28	0.24	17.97	0.30	0.33	23.90	0.35	0.39	28.82	0.38
45743	45742	45743-45742	BC05	45-73-03-02	8	0.013	3.03	1.36	0.06	4.22	0.17	0.16	11.96	0.25	0.20	14.70	0.28	0.24	17.97	0.30	0.33	23.90	0.35	0.39	28.82	0.38
45744	45743	45744-45743	BC05	45-73-03-02	8	0.013	0.68	0.64	0.06	8.97	0.22	0.16	25.42	0.39	0.20	31.23	0.40	0.24	38.19	0.44	0.33	50.80	0.51	0.39	61.27	0.57
45745	45744	45745-45744	BC05	45-73-03-02	8	0.013	0.63	0.62	0.06	9.26	0.22	0.16	26.26	0.36	0.20	32.24	0.41	0.24	39.42	0.45	0.33	52.44	0.52	0.39	63.24	0.58
45746	43805	45746-43805	BC05	45-73-03-02	8	0.013	2.01	1.11	0.06	5.37	0.18	0.16	14.66	0.28	0.20	18.01	0.30	0.24	22.02	0.34	0.33	29.29	0.38	0.39	35.31	0.43
45747	45746	45747-45746	BC05	45-73-03-02	8	0.013	2.64	1.27	0.06	4.52	0.17	0.16	12.81	0.26	0.20	15.74	0.29	0.24	19.24	0.31	0.33	25.60	0.36	0.39	30.87	0.40
45748	45747	45748-45747	BC05	45-73-03-02	8	0.013	2.65	1.27	0.06	4.53	0.17	0.16	12.81	0.26	0.20	15.74	0.29	0.24	19.24	0.31	0.33	25.60	0.36	0.39	30.87	0.40
45753	6937	45753-6937	TSJF01	45-59-07-00	30	0.013	0.51	18.97	1.30	17.81	0.29	17.79	93.80	0.91	17.89	94.33	1.00	17.92	94.44	1.00	17.95	94.62	1.00	17.98	94.85	1.00
45855	45059	45855-45059	BC26	45-68-15-01	8	0.013	3.15	1.39	0.33	24.09	0.35	0.34	24.52	0.36	0.34	24.68	0.36	0.34	24.64	0.36	0.34	24.73	0.36	0.34	24.69	0.35
45895	30628	45895-30628	BC11	45-59-12-00	8	0.013	2.70	1.28	0.01	0.79	0.12	0.39	15.05	0.28	0.25	19.89	0.32	0.33	26.13	0.36	0.47	36.93	0.43	0.59	46.32	0.48
46748	38465	46748-38465	BC26	45-66-16-01	8	0.013	0.47	0.54	0.39	71.74	0.64	0.39	72.28	0.64	0.39	72.56	0.65	0.39	72.76	0.65	0.40	73.48	0.65	0.40	73.83	0.65
46749	46748	46749-46748	BC26	45-68-16-01	8	0.013	2.31	1.19	0.40	31.39	0.42	0.40	33.28	0.42	0.40	33.48	0.42	0.40	33.61	0.42	0.40	33.77	0.42	0.40	33.83	0.42
46778	45745	46778-45745	BC05	45-73-03-02	8	0.013	0.60	0.60	0.06	9.57	0.23	0.16	27.33	0.37	0.20	33.32	0.41	0.24	40.73	0.45	0.33	54.20	0.53	0.39	65.35	0.59
46779	46778	46779-46778	BC05	45-73-03-02	8	0.013	0.60	0.61	0.06	9.41	0.23	0.16	26.69	0.37	0.20	32.77	0.41	0.24	40.07	0.45	0.33	53.31	0.53	0.39	64.30	0.59
46789	6931	46789-6931	TSJF01	45-59-06-00	30	0.013	0.56	19.86	1.33	17.01	0.28	16.40	91.64	0.76	16.64	93.84	1.00	13.94	99.36	1.00	19.19	96.62	1.00	19.22	97.25	1.00
46796	17748	46796-17748	TSJF01	45

Baltimore County

Jones Falls - Modeled Pipe Capacity - Existing Conditions

Pipe Attributes									Dry Weather Flows			2-Year 6-Hour			2-Year 24-Hour			10-Year 6-Hour			10-Year 24-Hour			20-Year 24-Hour		
Upstream Node	Downstream Node	Asset ID	Meter Basin	SSA	Pipe Diameter	Manning's Coefficient	Pipe Gradient	Pipe Full Capacity	Peak Dry Weather Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State
48064	48063	48064-48063	BC07	45-59-20-01	8	0.013	3.70	1.50	0.22	18.95	0.29	0.41	27.54	1.00	0.54	35.83	1.00	0.61	41.35	1.00	0.65	56.58	1.00	0.68	65.37	1.00
48065	48064	48065-48064	BC07	45-59-20-01	8	0.013	0.60	0.61	0.25	41.67	0.47	0.41	67.82	0.62	0.54	88.11	0.75	0.63	103.72	2.00	0.67	143.39	2.00	1.04	171.13	2.00
48066	48065	48066-48065	BC07	45-59-20-01	8	0.013	4.40	1.64	0.25	15.54	0.32	0.41	25.24	0.48	0.54	32.86	0.61	0.63	38.65	1.00	0.81	53.57	1.00	1.01	64.00	1.00
48067	48066	48067-48066	BC07	45-59-20-01	8	0.013	1.05	0.80	0.26	31.89	0.40	0.41	51.74	0.52	0.54	67.39	0.82	0.63	79.30	0.89	0.88	110.13	2.00	1.06	132.51	2.00
48068	48067	48068-48067	BC07	45-59-20-01	8	0.013	1.64	1.00	0.26	25.53	0.36	0.41	41.39	0.46	0.54	53.91	0.54	0.63	63.45	0.59	0.88	88.15	0.74	1.06	106.06	2.00
48069	48068	48069-48068	BC07	45-59-20-01	8	0.013	6.98	2.06	0.26	12.29	0.26	0.41	20.09	0.32	0.54	26.19	0.36	0.63	30.86	0.40	0.88	43.04	0.47	1.06	51.86	0.52
48070	48069	48070-48069	BC07	45-59-20-01	8	0.013	6.88	2.05	0.26	12.47	0.26	0.41	20.19	0.32	0.54	26.33	0.36	0.63	30.96	0.40	0.88	43.04	0.47	1.06	51.86	0.52
48208	48070	48208-48070	BC07	45-59-20-01	8	0.013	5.60	1.85	0.26	13.82	0.27	0.41	22.37	0.34	0.54	29.17	0.38	0.63	34.31	0.42	0.88	47.71	0.50	1.06	57.42	0.56
48209	48208	48209-48208	BC07	45-59-20-01	8	0.013	5.18	1.78	0.26	14.38	0.28	0.41	23.26	0.35	0.54	30.33	0.39	0.63	35.66	0.43	0.88	49.60	0.51	1.06	59.71	0.57
48242	17297	48242-17297	TSJF01	45-55-04-01	12	0.013	6.22	5.79	0.04	0.64	0.12	1.05	18.20	0.18	1.41	24.27	0.25	1.71	29.51	0.40	2.34	40.44	0.59	2.79	48.36	1.00
48243	48242	48243-48242	TSJF01	45-55-04-01	8	0.013	13.24	2.84	0.00	0.00	0.10	0.31	13.07	0.25	0.35	12.39	0.26	0.37	13.12	0.27	0.39	13.60	0.27	0.40	13.97	0.27
48244	48243	48244-48243	TSJF01	45-55-04-01	8	0.013	13.38	2.86	0.00	0.00	0.10	0.32	13.35	0.29	0.35	12.27	0.31	0.37	13.04	0.31	0.39	13.52	0.32	0.40	13.87	0.32
48245	48244	48245-48244	TSJF01	45-55-04-01	8	0.013	7.29	2.11	0.00	0.00	0.10	0.32	15.24	0.28	0.35	16.68	0.29	0.37	17.65	0.30	0.39	18.24	0.31	0.40	18.81	0.31
48246	48245	48246-48245	TSJF01	45-55-04-01	8	0.013	0.45	0.52	0.00	0.00	0.10	0.33	62.10	0.59	0.35	67.86	0.63	0.37	71.85	0.64	0.39	74.56	0.65	0.40	76.31	0.66
48247	48246	48247-48246	TSJF01	45-55-04-01	8	0.013	1.17	0.85	0.00	0.00	0.10	0.35	40.84	0.46	0.37	42.94	0.48	0.38	44.60	0.49	0.39	45.94	0.49	0.40	48.68	0.50
48247A	48247	48247A-48247	TSJF01	45-55-04-01	8	0.013	5.34	1.80	0.00	0.00	0.10	0.35	19.39	0.33	0.37	20.51	0.33	0.38	21.22	0.34	0.39	21.75	0.34	0.40	22.04	0.35
48248	48247A	48248-48247A	TSJF01	45-55-04-01	8	0.013	0.60	0.60	0.00	0.00	0.10	0.33	57.85	0.57	0.37	61.58	0.58	0.38	63.98	0.59	0.39	65.22	0.60	0.40	66.13	0.60
48249	48248	48249-48248	TSJF01	45-55-04-01	8	0.013	3.28	1.44	0.00	0.00	0.10	0.37	25.97	0.32	0.38	26.24	0.33	0.39	26.97	0.34	0.40	27.47	0.35	0.40	27.96	0.36
48250	48249	48250-48249	TSJF01	45-55-04-01	8	0.013	1.73	1.03	0.00	0.00	0.10	0.33	36.93	0.43	0.38	36.92	0.43	0.39	38.28	0.44	0.40	38.38	0.44	0.40	38.54	0.44
48251	48250	48251-48250	TSJF01	45-55-04-01	8	0.013	1.26	0.88	0.00	0.00	0.10	0.37	42.48	0.48	0.38	43.10	0.48	0.39	43.92	0.49	0.39	44.73	0.49	0.40	45.03	0.49
48252	48251	48252-48251	TSJF01	45-55-04-01	8	0.013	0.62	0.62	0.00	0.00	0.10	0.38	61.74	0.58	0.38	61.60	0.58	0.39	62.98	0.58	0.39	63.53	0.59	0.40	64.00	0.59
48253	48252	48253-48252	TSJF01	45-55-04-01	8	0.013	-0.17	-0.32	0.00	0.00	0.10	0.43	-139.58	0.84	0.41	-127.00	0.75	0.41	-128.66	0.74	0.41	-128.97	0.73	0.42	-130.13	0.73
48571	41817	48571-41817	BC01	45-59-35-02	8	0.013	0.40	0.49	0.01	1.20	0.12	0.07	13.98	0.27	0.09	18.37	0.30	0.12	24.08	0.35	0.17	33.90	0.41	0.21	42.22	0.45
48572	48572A	48572-48572A	BC01	45-59-35-02	8	0.013	0.40	0.49	0.01	1.20	0.12	0.07	13.98	0.27	0.09	18.37	0.30	0.12	24.08	0.35	0.17	33.90	0.42	0.21	42.24	0.47
48572A	48571	48572A-48571	BC01	45-59-35-02	8	0.013	0.40	0.48	0.01	1.20	0.12	0.07	13.98	0.27	0.09	18.37	0.30	0.12	24.08	0.35	0.17	33.90	0.42	0.21	42.22	0.47
49083	30960	49083-30960	BC01	45-59-35-08	8	0.013	2.09	1.13	0.27	23.78	0.33	0.37	32.20	0.44	0.43	38.04	0.49	0.51	44.60	1.00	0.64	56.91	1.00	0.73	65.87	1.00
49084	49083	49084-49083	BC01	45-59-35-08	8	0.013	2.17	1.15	0.27	23.36	0.35	0.37	31.74	0.40	0.43	37.37	0.43	0.50	43.89	0.48	0.64	55.90	0.55	0.76	65.65	1.00
4970	3942	4970-3942	BC12	45-58-09-02	10	0.013	0.38	0.88	0.43	48.80	0.50	0.51	58.00	0.56	0.55	63.02	0.58	0.59	67.52	0.62	0.68	77.50	0.67	0.75	85.28	0.72
4971	4970	4971-4970	BC12	45-58-09-02	10	0.013	2.46	2.23	0.43	19.34	0.38	0.51	22.99	0.45	0.55	24.99	0.48	0.59	26.77	0.52	0.68	30.74	0.59	0.75	33.82	0.65
49097	36917	49097-36917	BC21	45-68-02-00	18	0.013	3.29	10.27	0.81	7.99	0.21	1.37	13.35	0.27	1.82	15.82	0.29	1.98	19.31	0.31	2.56	24.34	0.35	2.91	28.28	0.38
50253	34218	50254-34218	BC08	45-59-17-08	8	0.013	0.62	0.61	0.03	7.39	0.64	0.33	53.31	0.85	0.43	70.87	0.91	0.59	89.39	0.92	0.75	123.28	2.00	0.89	145.08	2.00
50254	50253	50254-50253	BC08	45-59-17-08	8	0.013	0.59	0.60	0.05	7.72	0.21	0.33	54.20	0.54	0.43	72.10	0.64	0.55	90.95	0.77	0.76	125.87	2.00	0.94	156.17	2.00
50255	50254	50255-50254	BC08	45-59-17-08	8	0.013	2.24	1.17	0.05	3.96	0.17	0.33	27.80	0.37	0.43	36.99	0.43	0.55	46.66	0.50	0.78	66.28	0.61	0.94	80.14	1.00
50256	50255	50256-50255	BC08	45-59-17-08	8	0.013	3.81	1.88	0.05	2.46	0.14	0.33	17.31	0.30	0.43	23.03	0.34	0.55	29.04	0.38	0.78	43.30	0.46	0.95	50.69	0.51
50281	50256	50281-50256	BC08	45-59-17-08	8	0.013	1.26	0.86	0.05	5.38	0.19	0.33	37.84	0.44	0.43	50.35	0.51	0.55	63.49	0.59	0.78	90.30	0.77	0.95	110.81	2.00
50282	50281	50282-50281	BC08	45-59-17-08	8	0.013	3.24	1.41	0.05	3.28	0.16	0.33	23.09	0.34	0.43	30.72	0.40	0.55	38.73	0.45	0.78	55.17	0.65	0.96	67.79	1.00
1134	18064	1134-18064	TSJF01	45-55-06-00	12	0.013	0.81	2.07	0.03	1.57	0.11	0.33	15.84	0.28	0.43	20.93	0.32	0.58	28.12	0.37	0.82	39.72	0.59	1.01	49.83	1.00
1135	14937	1135-14937	TSJF01	45-55-06-00	10	0.013	0.98	1.09	0.00	0.00	0.08	0.00	-0.01	0.91	0.00	-0.24	0.37	0.00	-0.26	0.46	-0.01	-1.05	0.60	-0.01	-1.57	0.76
1136	1135	1136-1135	TSJF01	45-55-06-00	10	0.013	1.37	1.76	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10
1137	1136	1137-1136	TSJF01	45-55-06-00	10	0.013	1.05	1.45	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10
1138	1137	1138-1137	TSJF01	45-55-06-00	10	0.013	0.57	1.07	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08
1139	1138	1139-1138	TSJF01	45-55-06-00	10	0.013	1.87	1.94	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10
1140	1139	1140-1139	TSJF01	45-55-06-00	10	0.013	0.10	0.44	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.08
51024	902054	51024-902054	BC05	45-73-04-00	15	0.013	1.18	4.53	0.14	3.00	0.42	0.30	6.62	0.46	0.35	7.81	0.48	0.43	9.45	0.49	0.54	11.98	0.52	0.64	14.10	1.00
52025	52024	52025-52024	BC05	45-73-04-00	10	0.013	1.59	1.79	0.14	7.60	0.21	0.30	16.76	0.28	0.35	19.78	0.32	0.43	23.91	0.35	0.54	30.32	0.39	0.64	35.71	0.43
52026	52025	52026-52025	BC05	45-73-04-00	10	0.013	1.32	1.63	0.14	8.35	0.22	0.30	18.40	0.31	0.35	21.72	0.33	0.43	26.26	0.36	0.54	33.29	0.41	0.64	39.21	0.45
52027	52026	52027-52026	BC05	45-73-04-00	10	0.013	0.98	1.40	0.14	9.72	0.22	0.30	21.43	0.33	0.35	25.29	0.35	0.43	30.57	0.39	0.54	38.76	0.44	0.64	45.66	0.49
52028	52027	52028-52027	BC05	45-73-04-00	10	0.013	0.53	1.03	0.14	13.21	0.26	0.30	28.13	0.35	0.35	34.35	0.42	0.43	41.55	0.46	0.54	52.69	0.52	0.64	62.06	0.58
52029	52028	52029-52028	BC05	45-73-04-00	8	0.013	3.68	1.50	0.14	9.07	0.61	0.30	26.00	0.76	0.35	23.61	0.81	0.43	28.54	0.86	0.54	36.18	0.94	0.64	42.61	1.00
51030	52029	51030-52029	BC05	45-73-04-00	8	0.013	3.76	1.51	0.14	9.01	0.22	0.30	19.87	0.32	0.35	23.45	0.35	0.43	28.33	0.38	0.54	35.94	0.43	0.64	42.32	0.47
52031	52030	52031-52030	BC05	45-73-04-00	8	0.013	0.44	0.52	0.14	24.17	0.36	0.30	57.69	0.56	0.35	68.10	0.62	0.43	82.33	0.71	0.54	104.37	1.00	0.64	122.92	2.00
52032	52031	52032-52031	BC05	45-73-04-00	8	0.013	0.44	0.52	0.14	24.17	0.36	0.30	57.69	0.56	0.35	68.10	0.62	0.43	82.33	0.71	0.54	104.38	2.00	0.64	122.94	2.00
52033	52032	52033-52032	BC05	45-73-04-00	8	0.013	0.44	0.52	0.14	24.17	0.36	0.30	57.69	0.56	0.35	68.10	0.62	0.43	82.33	0.71	0.54	104.48	2.00	0.64	122.96	2.00
52034	52033	52034-52033	BC05	45-73-04-00	8	0.013	0.44	0.52	0.14	24.17	0.36	0.30	57.69	0.56	0.35	68.10	0.62	0.43	82.33	0.71	0.54	104.63	2.00	0.64	123.04	2.00
52041	52034	52041-52034	BC05	45-73-04-00	8	0.013	0.44	0.52	0.14	24.17	0.36	0.30	57.69	0.56	0.35	68.10	0.62	0.43	82.33	0.71	0.55	105.10	2.00	0.64	123.29	2.00
52042	52041	52042-52041	BC05	45-73-04-00	8	0.013	1.33	0.88	0.14	15.29	0.28	0.30	33.71	0.42	0.35	39.80	0.48	0.43	48.10	0.57	0.55	61.56	1.00	0.64	72.43	1.00
52043	52042	52043-52042	BC05	45-73-04-00	8	0.013	3.39	1.43	0.14	9.55	0.23	0.30	21.13	0.33	0.35	24.94	0.36	0.43	30.15	0.39	0.55	38.75	0.44	0.65	45.86	1.00
52044	52043	52044-52043	BC05	45-73-04-00	8	0.013	3.20	1.40	0.14	9.72	0.23	0.30	21.43	0.33	0.35	25.30	0.36	0.43	30.58	0.40	0.55	39.31	0.45	0.66	46.81	0.50
52045	52044	52045-52044	BC05	45-73-04-00	8	0.013	2.69	1.28	0.14	10.63	0.24	0.30	23.44	0.35	0.35	27.67	0.37	0.43	33.45	0.41	0.55	42.99	0.47	0.66	51.20	0.52
52088	36931	52088-36931	BC23	45-68-08-00	15	0.02	0.54	1.96	0.76	31.55	0.43	1.14	57.42	0.53	1.35	68.05	0.58	1.61	82.37	0.65	2.07	101.90	0.75	2.33	117.58	0.84
52089	52088	52089-52088	BC23	45-68-08-00	15	0.02	1.24	3.02	0.76	23.27	0.36	1.14	37.70	0.45	1.35	44.67	0.51	1.61	54.10	0.59	2.02	66.86	0.71	2.33	77.12	0.82
52091	52147	52091-52147	BC08	45-59-17-03	8	0.013	1.04	0.79	0.39	49.39	0.50	0.67	84.84	0.72	0.72	91.67	0.96	0.73	91.80	0.98	0.73	91.84	0.98	0.73	91.84	0.99
52092	52091	52092-52091	BC08	45-59-17-03	8	0.013	0.54	0.57	0.39	68.46	0.62	0.67	117.58	2.00	0.72	127.09	2.00	0.73	127.29	2.00	0.73	127.28	2.00	0.73	127.28	2.00
52093	52092	52093-52092	BC08	45-59-17-03	8	0.013	2.24	1.17	0.39	33.36	0.48	0.67	57.28	1.00	0.72	61.91	1.00	0.73	61.99	1.00	0.73	62.01	1.00	0.73	62.01	1.00
52094	52093	52094-52093	BC08	45-59-17-03	8	0.013	2.18	1.15	0.39	33.94	0.42	0.67	58.28	0.56	0.72	62.99	0.58	0.73	63.07	0.58	0.73	63.09	0.58	0.73	63.09	0.58
51095	51094	51095-52094	BC08	45-59-17-03	8	0.013	1.10	0.82	0.39	47.60	0.50	0.67	81.73	0.71	0.72	88.34	0.74	0.73	88.45	0.75	0.73	88.48	0.75	0.73	88.48	0.75
52096	52095	52096-52095	BC08	45-59-17-03	8	0.013	5.37	1.81	0.39	21.57	0.35	0.67	37.03	0.57	0.72	40.02	0.62	0.73	40.07	0.62	0.73	40.08	0.62	0.73	40.08	0.62
52097	52096	52097-52096	BC08	45-59-17-03	8	0.013	2.70	1.28	0.39	30.49	0.39	0.67	52.36	0.52	0.72	56.59	0.55	0.73	56.66	0.56	0.73	56.68	0.56	0.73	56.68	0.56
52098	52097	52098-52097	BC08	45-59-17-03	8	0.013	1.52	1.84	0.39	21.22	0.33	0.67	36.42	0.43	0.72	39.37	0.45	0.73	39.42	0.45	0.73	39.43	0.45	0.73	39.43	0.45
52099	52098	52099-52098	BC08	45-59-17-03	8	0.013	5.61	1.85	0.39	21.10	0.33	0.67	36.23	0.43	0.72	39.16	0.44	0.73	39.21	0.44	0.73	39.22	0.45	0.73	39.22	0.45
52100	52099	52100-52099	BC08	45-59-17-03	8	0.013	5.67	1.86	0.39	20.99	0.33	0.67	36.03	0.43	0.72	38.95	0.44	0.73	38.99	0.44	0.73	39.01	0.44	0.73	39.01	0.44
52147	52489	52147-52489	BC08	45-59-17-03	8	0.013	1.06	0.80	0.39	48.78	0.50	0.67	83.75	1.00	0.72	90.53	1.00	0.73	90.65	1.00	0.73	90.69	1.00	0.73	90.69	1.00
52170	18	52170-18	BC12	45-58-20-01	16	0.013	20.44	22.42	0.17	0.71	0.78	0.55	2.44	0.91	0.69	3.07	0.96	0.82	3.67	1.00	1.12	5.02	1.00	1.35	6.04	1.00
52171	52170	52171-52170	BC12	45-58-20-01	16	0.013	0.71	4.16	0.17	4.18	0.35	0.55	13.07	0.25	0.69	16.50	0.28	0.82	19.67	0.30	1.12	26.91	0.36	1.36	32.42	0.40
52172	52171	52172-52171	BC12	45-58-20-01	16	0.013	0.50	3.50	0.17	5.00	0.36	0.55	15.81	0.27	0.69	19.70	0.30	0.82	23.49	0.34	1.12	32.14	0.39	1.36	38.73	0.43
52173	52172	52173-52172	BC12	45-58-20-01	16	0.013	1.17	5.36	0.17	3.24	0.26	0.55	10.28	0.27	0.69	12.88	0.30	0.82	15.36	0.34	1.13	21.01	0.39	1.36	25.30	0.43
52174	52173	52174-52173	BC12	45-58-22-00	16	0.013	1.03	11.12	0.17	1.57	0.16	0.55	4.91	0.24	0.69	6.21	0.26	0.82	7.39	0.28	1.13	10.14	0.33	1.36	12.23	0.36
52175	52174	52175-52174	BC12	45-58-22-00	16	0.013	8.65	14.59	0.14	0.94	0.13	0.43	2.93	0.18	0.54	3.71	0.20	0.64	4.39	0.21	0.88	6.02	0.24	1.06	7.23	0.26
52176	52175		BC12	45-58-22-00	8	0.013	-4.95	-1.74	0.13	-7.63	1.00	0.39	-22.53	1.00	0.49	-28.41	1.00	0.58	-33.48	1.00	0.80	-45.73	1.00	0.95	-54.78	1.00
52181	52176		BC12	45-58-22-00	8	0.013	37.63	4.79	0.13	2.77	1.00	0.39	6.19	1.00	0.49	10.33	1.00	0.58	12.16	1.00	0.80	16.42	1.00	0.95	19.90	1.00
52182	52181		BC12	45-58-22-00	8	0.013	6.67	2.02	0.13	6.57	0.20	0.39	19.41	0.31	0.49	24.49	0.35	0.58	28.84	0.38	0.80	39.43	0.79	0.95	47.22	1.00
52240	52160	52240-52160	BC08	45-59-17-03	8	0.013	1.83	3.06	0.39	36.83	0.43	0.67	63.23	0.59	0.72	68.34	0.83	0.73	68.42	0.63	0.73	68.44	0.63	0.73	68.44	0.63
52241	52240	52241-52240	BC08	45-59-17-03	8	0.013	3.62	1.49	0.39	26.20	0.36	0.67	44.99	0.49	0.72	48.67	0.50	0.73	48.66	0.50	0.73	48.69	0.50	0.73	48.69	0.50
52242	52241	52242-52241	BC08	45-59-17-03	8	0.013	4.67	1.58	0.39	24.71	0.35	0.67	42.42	0.47	0.72	45.85	0.49	0.73	45.91	0.49	0.73	45.92	0.49	0.73	45.92	0.49
52243	52242	52243-52242	BC08	45-59-17-03	8	0.013	4.92	1.75	0.39	22.57	0.34	0.67	38.75	0.44	0.72	41.87	0.46	0.73	41.92	0.47	0.73	41.94	0.47	0.73	41.94	0.47
52244	52243	52244-52243	BC08	45-59-17-03	8	0.013	5.20	1.75	0.39	21.83	0.34	0.67	37.66	0.44	0.72	40.70	0.46	0.73	40.75	0.46	0.73	40.76	0.46	0.73	40.76	0.46
52245	52244	52245-52244	BC08	45-59-17-03	8	0.013	5.53	1.84	0.39	21.22	0.33	0.67	36.43	0.43	0.72	39.37	0.45	0.73	39.42	0.45	0.73	39.43	0.45	0.73	39.43	0.45
52364	36947	52364-36947	BC23	45-68-12-01	15	0.013	1.61	5.29	0.63	12.94	0.26	0.96	18.08	0.30	1.07	20.15	0.32	1.24	23.36	0.36	1.55	29.27	0.38	1.75	33.65	0.42
52468	21638	52468-21638	BC08	45-59-17-03	8	0.013	0.82	0.62	0.39	62.84	0.57	0.67	106.06	0.79	0.72	116.81	0.84	0.73	116.97	0.84	0.73	117.02	0.84	0.73	117.02	0.84
52485	52488	52485-52488	BC08	45-59-17-03	8	0.013	0.66	0.64	0.39	60.87	0.57	0.67	104.69	2.00	0.72	113.16	2.00	0.73	113.31	2.00	0.73	113.36	2.00	0.73	113.36	2.00
52520	52569A	52520-52569A	BC08	45-59-17-03	8	0.013	1.10	0.82	0.39	47.62	0.50	0.67	81.74	0.71	0.72	88.34	0.75	0.73	88.45	0.75	0.73	88.48	0.75	0.73	88.48	0.75
52521	52520	52521-52520	BC08	45-59-17-03	8	0.013	0.60	0.60	0.39	65.10	0.59	0.67	111.72	2.00	0.72	120.73	2.00	0.73	120.88	2.00	0.73	120.92	2.00	0.73	120.92	2.00
52522	52521	52522-52521	BC08	45-59-17-03	8	0.013	0.50	0.55	0.39	71.04	0.64	0.67	121.89	2.00	0.72	131.71	2.00	0.73	131.87	2.00	0.73	131.91	2.00	0.73	131.91	2.00
52523	51379	52523-51379	BC08	45-59-17-03	8	0.013	0.50	0.55	0.39	71.05	0.64	0.67	122.02	2.00	0.75	136.98	2.00	0.77	140.55	2.00	0.79	144.51	2.00	0.79	144.13	2.00
52524	52523	52524-52523

Jones Falls - Modeled Pipe Capacity - Existing Conditions

Baltimore County

Pipe Attributes									Dry Weather Flows			2-Year 6-Hour			2-Year 24-Hour			10-Year 6-Hour			10-Year 24-Hour			20-Year 24-Hour		
Upstream Node	Downstream Node	Asset ID	Meter Basin	SSA	Pipe Diameter	Manning's Coefficient	Pipe Gradient	Pipe Full Capacity	Peak Dry Weather Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State
52552A	35539	52552A-35539	BC08	45-59-17-05	8	0.013	13.38	2.86	0.02	0.87	0.15	0.08	2.79	0.21	0.10	3.61	0.23	0.13	4.50	0.24	0.18	6.25	0.28	0.22	7.64	0.31
52553	52552	52553-52552	BC08	45-59-17-05	8	0.013	7.63	2.16	0.02	1.15	0.12	0.08	3.70	0.16	0.10	4.78	0.18	0.13	5.95	0.19	0.18	8.27	0.22	0.22	10.11	0.23
52554	52553	52554-52553	BC08	45-59-17-05	8	0.013	3.62	1.49	0.02	1.66	0.13	0.08	5.36	0.19	0.10	6.93	0.20	0.13	8.63	0.22	0.18	11.99	0.26	0.22	14.66	0.28
52555	52554	52555-52554	BC08	45-59-17-05	8	0.013	7.09	2.08	0.02	1.19	0.13	0.08	3.84	0.16	0.10	4.97	0.18	0.13	6.18	0.20	0.18	8.59	0.22	0.22	10.50	0.24
52556	52555	52556-52555	BC08	45-59-17-05	8	0.013	7.16	2.09	0.02	1.19	0.13	0.08	3.82	0.16	0.10	4.94	0.18	0.13	6.15	0.20	0.18	8.55	0.22	0.22	10.45	0.24
52557	52556	52557-52556	BC08	45-59-17-05	8	0.013	0.99	0.78	0.02	3.18	0.15	0.08	10.24	0.24	0.10	13.24	0.27	0.13	16.49	0.29	0.18	22.91	0.34	0.22	28.03	0.37
52558	52557	52558-52557	BC08	45-59-17-03	8	0.013	0.98	0.77	0.02	3.22	0.15	0.08	10.38	0.24	0.10	13.43	0.27	0.13	16.70	0.29	0.18	23.22	0.34	0.22	28.40	0.38
52559	52558	52559-52558	BC08	45-59-17-03	8	0.013	2.45	1.22	0.02	2.03	0.14	0.08	6.55	0.20	0.10	8.48	0.22	0.13	10.54	0.24	0.18	14.66	0.28	0.22	17.93	0.30
52560	52545	52560-52545	BC08	45-59-17-03	8	0.013	19.07	3.13	0.39	12.47	0.26	0.67	21.42	0.33	0.72	23.14	0.34	0.73	23.17	0.35	0.73	23.15	0.35	0.73	23.18	0.35
52561	52560	52561-52560	BC08	45-59-17-02	8	0.013	5.06	1.76	0.39	22.16	0.34	0.67	38.09	0.44	0.72	41.16	0.46	0.73	41.21	0.46	0.73	41.22	0.46	0.73	41.22	0.46
52562	52561	52562-52561	BC08	45-59-17-03	8	0.013	5.07	1.76	0.39	22.16	0.34	0.67	38.09	0.44	0.72	41.16	0.46	0.73	41.21	0.46	0.73	41.22	0.46	0.73	41.22	0.46
52566	52562	52566-52562	BC08	45-59-17-03	8	0.013	0.57	0.59	0.39	66.17	0.61	0.67	113.63	2.00	0.72	122.78	2.00	0.73	122.93	2.00	0.73	122.97	2.00	0.73	122.97	2.00
52567	52566	52567-52566	BC08	45-59-17-03	8	0.013	0.61	0.61	0.39	64.02	0.59	0.67	109.89	2.00	0.72	118.75	2.00	0.73	118.90	2.00	0.73	118.93	2.00	0.73	118.93	2.00
52568	52567	52564-52567	BC08	45-59-17-03	8	0.013	3.99	1.56	0.39	25.03	0.44	0.67	42.97	1.00	0.72	46.44	1.00	0.73	46.49	1.00	0.73	46.51	1.00	0.73	46.51	1.00
52569	52568	52569-52568	BC08	45-59-17-03	8	0.013	4.99	1.75	0.39	22.51	0.34	0.67	38.38	0.44	0.72	41.39	0.46	0.73	41.45	0.46	0.73	41.46	0.46	0.73	41.46	0.46
52569A	52569	52569A-52569	BC08	45-59-17-03	8	0.013	2.31	1.33	0.39	39.36	0.38	0.67	68.49	0.51	0.72	74.47	0.54	0.73	74.53	0.54	0.73	74.55	0.54	0.73	74.55	0.54
52651	7324	52651-7324	BC12	45-58-08-00	18	0.013	1.02	6.85	1.61	23.55	0.35	2.94	42.86	0.47	3.43	50.09	0.51	4.02	58.62	0.57	5.11	74.60	0.65	5.97	87.08	0.78
52652	52651	52652-52651	BC12	45-58-08-00	24	0.013	1.04	14.94	1.09	7.29	0.21	1.86	12.44	0.30	2.06	13.76	0.33	2.22	14.82	0.40	2.56	17.16	0.55	2.81	18.79	0.69
52653	52652	52653-52652	BC12	45-58-08-00	24	0.013	15.50	57.57	1.09	1.89	0.14	1.86	3.23	0.16	2.06	3.57	0.16	2.22	3.86	0.16	2.57	4.47	0.17	2.82	4.90	0.18
52654	52653	52654-52653	BC12	45-58-08-00	24	0.013	1.07	15.09	1.09	7.21	0.21	1.86	12.32	0.26	2.06	13.63	0.27	2.22	14.74	0.28	2.57	17.05	0.29	2.82	18.69	0.31
52655	52654	52655-52654	BC12	45-58-11-00	24	0.013	15.01	56.68	1.09	1.92	0.16	1.86	3.28	0.21	2.06	3.63	0.23	2.22	3.92	0.23	2.57	4.54	0.25	2.82	4.98	0.26
52656	52655	52656-52655	BC12	45-58-11-00	24	0.013	0.10	4.65	1.09	23.41	0.33	1.86	38.93	0.43	2.06	44.23	0.45	2.22	47.82	0.47	2.57	55.24	0.51	2.82	60.65	0.53
52657	52656	52657-52656	BC12	45-58-11-00	24	0.013	0.33	8.47	1.09	12.93	0.30	1.86	23.06	0.40	2.06	26.44	0.42	2.22	28.41	0.44	2.57	32.56	0.48	2.82	35.52	0.50
52658	52657	52658-52657	BC12	45-58-11-00	24	0.013	0.98	17.49	1.09	6.29	0.19	1.71	10.87	0.36	1.92	34.19	0.41	2.08	36.97	0.43	2.41	42.78	0.48	2.63	46.67	0.49
52659	52658	52659-52658	BC12	45-58-11-00	21	0.013	0.80	9.16	0.98	10.73	0.23	1.71	18.94	0.33	1.91	20.98	0.35	2.08	22.69	0.37	2.41	26.27	0.40	2.64	28.77	0.43
52660	52659	52660-52659	BC12	45-58-11-00	21	0.013	12.95	36.86	0.98	2.67	0.17	1.74	4.71	0.24	1.92	5.22	0.26	2.08	5.64	0.27	2.41	6.53	0.30	2.64	7.15	0.33
52661	52660	52661-52660	BC12	45-58-11-00	12	0.013	9.80	7.21	0.48	6.63	0.20	0.72	10.01	0.23	0.82	11.50	0.25	0.92	12.75	0.26	1.14	15.84	0.29	1.31	18.14	0.30
52242	52559	52242-52559	BC08	45-59-17-05	8	0.013	4.70	1.69	0.02	1.47	0.13	0.08	4.73	0.18	0.10	6.12	0.20	0.13	7.81	0.21	0.18	10.59	0.24	0.22	13.10	0.27
52243	52242	52243-52242	BC08	45-59-17-05	8	0.013	4.56	1.67	0.02	1.48	0.13	0.08	4.78	0.18	0.10	6.19	0.20	0.13	7.70	0.21	0.18	10.71	0.24	0.22	13.27	0.27
52244	52243	52244-52243	BC08	45-59-17-05	8	0.013	0.81	0.70	0.02	3.54	0.16	0.08	11.43	0.25	0.10	14.77	0.28	0.13	18.38	0.30	0.18	25.56	0.36	0.22	31.27	0.40
52245	52244	52245-52244	BC08	45-59-17-05	8	0.013	0.59	0.60	0.02	4.13	0.17	0.08	13.33	0.27	0.10	17.23	0.30	0.13	21.45	0.33	0.18	29.84	0.38	0.22	36.50	0.43
52246	52245	52246-52245	BC08	45-59-17-05	8	0.013	0.61	0.61	0.02	4.07	0.17	0.08	13.11	0.26	0.10	16.97	0.29	0.13	21.10	0.33	0.18	29.36	0.38	0.22	35.90	0.43
52257	44216	52257-44216	BC22	45-71-00-00	8	0.013	1.01	0.79	0.02	2.36	0.14	0.28	36.00	1.00	0.35	46.32	1.00	0.45	57.43	1.00	0.63	79.76	1.00	0.81	103.68	2.00
52258	52257	52258-52257	BC22	45-71-00-00	8	0.013	4.47	1.65	0.02	1.04	0.12	0.29	17.35	1.00	0.38	23.16	1.00	0.48	29.25	1.00	0.69	41.61	1.00	0.81	50.80	1.00
52259	52258	52259-52258	BC22	45-71-00-00	8	0.013	2.36	1.20	0.02	1.43	0.13	0.29	23.86	0.35	0.38	31.84	0.40	0.49	41.14	0.46	0.70	58.48	0.56	0.87	72.28	0.64
52260	52259	52260-52259	BC22	45-71-00-00	8	0.013	0.98	0.77	0.02	2.22	0.14	0.29	37.18	0.43	0.38	49.62	0.51	0.49	64.17	0.59	0.70	91.14	0.77	0.87	112.64	2.00
52261	52260	52261-52260	BC22	45-71-00-00	8	0.013	3.03	1.36	0.02	1.26	0.13	0.29	21.05	0.33	0.38	28.10	0.37	0.49	36.33	0.45	0.70	51.66	0.64	0.87	63.93	1.00
52262	52261	63262-52261	BC22	45-71-00-00	8	0.013	4.81	1.71	0.02	1.00	0.12	0.29	16.74	0.29	0.38	22.35	0.34	0.49	28.89	0.38	0.70	41.09	0.46	0.87	45.76	0.49
52263	52262	52263-63262	BC22	45-71-00-00	8	0.013	5.97	1.91	0.02	0.90	0.12	0.29	14.99	0.28	0.38	20.01	0.32	0.49	25.87	0.36	0.70	36.81	0.43	0.87	41.13	0.46
52264	52263	52264-52263	BC22	45-71-00-00	8	0.013	3.34	1.43	0.02	1.20	0.13	0.29	20.02	0.32	0.38	26.72	0.37	0.49	34.56	0.42	0.70	49.16	0.51	0.87	61.33	0.58
52267	52264	52267-52264	BC22	45-71-00-00	8	0.013	6.84	2.04	0.02	0.84	0.12	0.29	14.03	0.27	0.38	18.73	0.31	0.49	24.23	0.35	0.70	34.47	0.42	0.87	42.86	0.47
52268	52267	53269-53267	BC22	45-71-00-00	8	0.013	4.76	1.70	0.02	1.01	0.12	0.29	16.84	0.29	0.38	22.48	0.34	0.49	29.07	0.38	0.70	41.36	0.46	0.87	51.45	0.52
53270	44213	53270-44213	BC22	45-69-00-00	10	0.013	0.25	0.71	0.27	37.61	0.43	1.12	157.28	2.00	1.21	170.06	2.00	1.28	169.35	2.00	1.19	167.41	2.00	1.18	166.61	2.00
53271	53270	53271-53270	BC22	45-69-00-00	8	0.013	0.92	0.75	0.02	2.53	0.14	0.41	54.34	1.00	0.51	68.51	1.00	0.67	83.71	1.00	0.69	91.75	1.00	0.67	88.71	1.00
53292	30727	53292-30727	BC23	45-70-00-00	8	0.013	1.04	1.11	0.02	1.71	0.13	0.43	38.48	0.44	0.57	51.51	1.00	0.77	64.42	1.00	0.98	88.13	1.00	1.09	97.27	1.00
53293	53292	53293-53292	BC22	45-70-00-00	8	0.013	0.60	0.60	0.02	3.17	0.15	0.43	73.18	0.64	0.57	98.32	0.80	0.73	121.53	2.00	0.88	163.90	2.00	1.09	202.00	2.00
53294	53293	53294-53293	BC22	45-70-00-00	8	0.013	0.49	0.54	0.02	3.52	0.16	0.43	79.11	0.65	0.57	106.37	0.80	0.73	133.09	2.00	0.99	94.90	1.00	1.10	105.56	2.00
53295	53294	53295-53294	BC22	45-70-00-00	8	0.013	1.79	1.04	0.02	1.83	0.14	0.43	41.06	0.46	0.57	55.11	0.54	0.73	70.23	1.00	0.99	160.21	2.00	1.11	179.13	2.00
53296	53295	53296-53295	BC22	45-70-00-00	8	0.013	0.64	0.62	0.02	3.06	0.15	0.43	68.90	0.63	0.57	92.48	0.78	0.73	118.39	2.00	1.01	69.37	1.00	1.13	77.40	1.00
53297	53296	53297-53296	BC22	45-70-00-00	8	0.013	3.49	1.46	0.02	1.30	0.13	0.43	29.27	0.48	0.57	39.37	0.64	0.73	50.32	1.00	0.74	134.67	2.00	0.74	134.58	2.00
53379	52522	53379-52522	BC08	45-59-17-01	8	0.013	0.49	0.55	0.39	71.05	0.64	0.67	121.93	2.00	0.73	132.87	2.00	0.74	133.73	2.00	0.74	134.67	2.00	0.74	134.58	2.00
53385	53246	53385-53246	BC08	45-59-17-01	8	0.013	1.01	0.78	0.02	3.18	0.15	0.08	10.26	0.24	0.10	13.27	0.27	0.13	16.59	0.29	0.18	22.97	0.34	0.22	28.09	0.37
53386	53385	53386-53385	BC08	45-59-17-05	8	0.013	2.01	1.13	0.02	2.22	0.14	0.08	7.21	0.21	0.10	9.33	0.23	0.13	11.59	0.25	0.18	16.15	0.29	0.22	19.75	0.32
53387	53386	53387-53386	BC08	45-59-17-05	8	0.013	0.95	0.76	0.02	3.26	0.15	0.08	10.53	0.24	0.10	13.63	0.27	0.13	16.91	0.29	0.18	23.50	0.34	0.22	28.73	0.38
53388	53387	53388-53387	BC08	45-59-17-05	8	0.013	0.99	0.78	0.02	3.19	0.15	0.08	10.26	0.24	0.10	13.25	0.27	0.13	16.51	0.29	0.18	235.58	2.00	1.02	236.86	2.00
53727	53727A	53727-53727A	BC02	45-59-34-00	8	0.013	0.30	0.43	0.06	14.07	0.26	0.59	137.12	0.86	0.79	183.16	2.00	0.96	163.69	2.00	1.01	174.95	2.00	1.01	175.60	2.00
53727A	53727B	53727A-53727B	BC02	45-59-34-00	8	0.013	0.55	0.58	0.06	10.43	0.24	0.59	101.66	0.77	0.79	135.75	2.00	0.96	56.53	0.56	1.01	59.69	0.79	1.01	59.91	1.00
53727B	20510	53727B-20510	BC02	45-59-34-00	8	0.013	4.72	1.70	0.06	3.54	0.16	0.59	34.65	0.42	0.79	46.32	0.49	0.96	155.02	2.00	1.01	163.66	2.00	1.01	164.27	2.00
53728	53727	53728-53727	BC02	45-59-34-00	8	0.013	0.63	0.62	0.06	9.76	0.23	0.59	85.10	0.80	0.79	157.10	2.00	0.96	198.27	2.00	1.38	282.57	2.00	1.69	345.28	2.00
53729	53728	53728-53728	BC02	45-59-34-00	8	0.013	0.35	0.49	0.06	12.35	0.26	0.59	120.39	0.92	0.79	161.27	2.00	0.97	54.54	1.00	1.39	78.70	1.00	1.69	95.83	1.00
53730	53729	53730-53729	BC02	45-59-34-00	8	0.013	5.14	1.77	0.06	3.42	0.16	0.59	33.34	0.44	0.79	44.90	1.00	0.97	54.54	1.00	1.39	78.70	1.00	1.69	95.83	1.00
53068	49779	53068-49779	BC05	45-73-03-02	8	0.013	1.52	0.96	0.05	6.36	0.20	0.16	18.09	0.30	0.20	22.22	0.34	0.24	27.17	0.37	0.33	36.14	0.43	0.39	42.59	0.48
53869	53868	53869-53868	BC05	45-73-03-02	8	0.013	0.99	0.78	0.05	7.36	0.21	0.16	20.87	0.33	0.20	25.64	0.36	0.24	31.35	0.40	0.33	41.71	0.46	0.39	49.19	0.50
53870	53869	53870-53869	BC05	45-73-03-02	8	0.013	1.49	1.23	0.05	4.67	0.18	0.16	13.24	0.27	0.20	16.26	0.29	0.24	19.88	0.32	0.33	26.46	0.36	0.39	31.20	0.40
53871	53870	53871-53870	BC05	45-73-03-01	8	0.013	4.42	1.64	0.05	3.59	0.16	0.16	9.95	0.23	0.20	12.20	0.26	0.24	14.91	0.28	0.33	19.84	0.32	0.39	23.95	0.35
53872	53871	53872-53871	BC05	45-73-03-02	8	0.013	0.82	0.71	0.05	8.08	0.21	0.16	22.93	0.34	0.20	28.17	0.38	0.24	34.44	0.42	0.33	45.83	0.49	0.39	55.27	0.55
53873	53872	53873-53872	BC05	45-73-03-02	8	0.013	0.56	0.59	0.05	9.73	0.23	0.16	27.59	0.37	0.20	33.90	0.42	0.24	41.42	0.46	0.33	55.15	0.55	0.39	66.51	0.62
53874	53873	53874-53873	BC05	45-73-03-02	8	0.013	1.14	0.83	0.06	6.92	0.20	0.16	19.61	0.32	0.20	24.10	0.35	0.24	29.46	0.38	0.33	39.23	0.44	0.39	47.35	0.50
53875	53874	53875-53874	BC05	45-73-03-02	8	0.013	0.52	0.56	0.06	10.25	0.23	0.16	29.07	0.38	0.20	35.71	0.45	0.24	43.65	0.47	0.33	54.14	0.56	0.39	70.20	0.63
53876	53875	53876-53875	BC05	45-73-03-02	8	0.013	0.78	0.69	0.06	8.32	0.22	0.16	23.59	0.35	0.20	28.99	0.38	0.24	35.45	0.42	0.33	47.20	0.50	0.39	57.00	0.56
53877	53876	53877-53876	BC05	45-73-03-02	8	0.013	4.60	1.68	0.06	3.42	0.16	0.16	9.69	0.23	0.20	11.80	0.25	0.24	14.56	0.28	0.33	19.39	0.33	0.39	23.41	0.41
53878	53877	53878-53877	BC05	45-73-03-02	8	0.013	3.82	1.53	0.05	3.75	0.16	0.16	10.64	0.24	0.20	13.07	0.27	0.24	15.99	0.29	0.33	21.29	0.33	0.39	25.71	0.36
53879	53878	53879-53878	BC05	45-73-03-01	8	0.013	6.38	1.97	0.05	2.91	0.15	0.16	8.26	0.22	0.20	10.15	0.23	0.24	12.42	0.26	0.33	16.54	0.28	0.39	19.97	0.32
53955	41333	53955-41333	BC24	45-66-18-01	10	0.013	0.25	0.84	0.32	38.20	0.92	0.42	58.48	0.56	0.48	57.08	0.99	0.54	64.40	1.00	0.66	78.33	1.00	0.75	89.71	1.00
53956	53955	53956-53955	BC24	45-66-18-01	10	0.013	0.66	1.15	0.32	27.90	0.76	0.42	34.87	0.81	0.48	41.70	0.84	0.54	47.04	0.57	0.66	57.22	0.94	0.75	65.54	1.00
53957	53956	53957-53956	BC24	45-66-18-01	10	0.013	0.36	0.85	0.32	37.78	0.43	0.42	49.58	0.50	0.48	56.41	0.55	0.54	63.65	0.58	0.66	77.43	0.66	0.75	88.66	0.73
53958	53957	53958-53957	BC24	45-66-18-01	10	0.013	0.54	1.04	0.32	30.87	0.39	0.42	40.77	0.45	0.48	46.11	0.49	0.54	52.02	0.52	0.66	63.28	0.61	0.75	72.48	0.69
53959	53958	53959-53958	BC24	45-66-18-01	10	0.013	0.38	0.88	0.32	36.48	0.43	0.42	48.18	0.50	0.48	54.49	0.54	0.54	61.48	0.57	0.66	74.78	0.65	0.75	85.67	0.72
53960	53959	53960-53959	BC24	45-66-18-01	10	0.013	0.47	0.97	0.32	33.09	0.43	0.42	43.71	0.50	0.48	49.43	0.54	0.54	55.77	0.58	0.66	67.85	0.66	0.75	77.72	0.73
53961	53960	53961-53960	BC24	45-66-18-01	10	0.013	0.44	0.94	0.32	34.15	0.41	0.42	45.11	0.48	0.48	51.01	0.53	0.54	57.55	0.56	0.66	70.01	0.63	0.75	80.21	0.69
53962	53961	53962-53961	BC24	45-66-18-01	10	0.013	0.40	0.89	0.32	36.07	0.42	0.42	47.64	0.50	0.48	53.89	0.53	0.54	60.79	0.57	0.66	73.94	0.65	0.75	84.74	0.71
54110	52045	54110-52045	BC05	45-73-04-00	8	0.013	0.69	0.65	0.14	20.94	0.33	0.30	46.15	0.49	0.35	54.49	0.54	0.43	63.68	0.49	0.55	56.16	0.64	0.66	66.89	1.00
54111	54110	54111-54110	BC05	45-73-04-00	8	0.013	1.58	0.98	0.14	13.89	0.27	0.30	30.61	0.39	0.35	36.14	0.43	0.43	41.36	0.46	0.55	52.92	0.53	0.66	63.06	0.59
54112	54111	54112-54111	BC05	45-73-04-00	8	0.013	1.76	1.04	0.14	13.09	0.27	0.30	28.85	0.38	0.35	34.06	0.42	0.43	40.26	0.61	0.55	84.68	0.72	0.66	100.85	0.85
54113	54112	54113-54112	BC05	45-73-04-00	8	0.013	0.69	0.65	0.14	20.94	0.33	0.30	46.15	0.49	0.35	54.49	0.54	0.43	63.68	0.49	0.55	56.16	0.64	0.66	66.89	1.00
54114	54113	54114-54113	BC05	45-73-04-00	8	0.013	2.46	1.23	0.14	11.07	0.25	0.30	24.59	0.35	0.35	28.80	0.39	0.43	34.80	0.46	0.55	54.50	0.54	0.66	64.95	0.60
54115	54114	54115-54114	BC05	45-73-04-00	8	0.013	1.63	1.01	0.14	13.48	0.27	0.30	29.70	0.39	0.35	35.07	0.42	0.43	42.39	0.47	0.55	57.19	0.43	0.66	44.32	0.48
54116	54115	54116-54115	BC05	45-73-04-00	8	0.013	3.59	1.48	0.14	9.20	0.23	0.30	20.27	0.32	0.35	23.93	0.35	0.43	28.93	0.38	0.55	32.19	0.41	0.66	38.37	0.44
54117	54116	54117-54116	BC05	45-73-04-00	8	0.013	4.79	1.71	0.14	7.96	0.21	0.30	17.54	0.30	0.35	20.71	0.33	0.43	25.04	0.36	0.55	29.06	0.33	0.47	29.38	0.38
54353	65512	54353-65512	BC11	45-59-12-00	8	0.013	4.29	1.62	0.01	0.75	0.12	0.09	11.91	0.25	0.11	15.72	0.29	0.33	20.65	0.33	0.59	36.44	0.43	0.59	36.44	0.43
54453	45562	54453-45562	BC15	45-59-01-00	12	0.013	3.15	4.09	0.05	1.43	0.13	0.09	2.70	0.14	0.11	3.49	0.16	0.14	4.31	0.17	0.19	5.84	0.19	0.23	6.92	0.20
54452	54451	54452-54451	BC15	45-59-01-00	12	0.013	3.05	4.02	0.05	1.46	0.13	0.09	2.75	0.15	0.11	3.55	0.16	0.14	4.72	0.18	0.19	6.53	0.20	0.23	7.78	0.21
54452A	54452	54452A-54452	BC15	45-59-01-00	12	0.013	1.59	2.91	0.06	2.01	0.14	0.09	3.02	0.15	0.11	3.80	0.16	0.14	4.81	0.18	0.19	8.21	0.22	0.23	10.06	0.23
54453	54452A	54453-54452A	BC15	45-59-01-00	12	0.013	1.01	2.31	0.06	2.54	0.15	0.09	3.82	0.16	0.11	4.79	0.18	0.14	6.19	0.20	0.19	10.96	0.23	0.23	13.44	0.25
54453A	54453	54453A-54453	BC15	45-59-01

Baltimore County

Jones Falls - Modeled Pipe Capacity - Existing Conditions

Pipe Attributes									Dry Weather Flows			2-Year 6-Hour			2-Year 24-Hour			10-Year 6-Hour			10-Year 24-Hour			20-Year 24-Hour		
Upstream Node	Downstream Node	Asset ID	Meter Basin	SSA	Pipe Diameter	Manning's Coefficient	Pipe Gradient	Pipe Full Capacity	Peak Dry Weather Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State
54556	53962	54556-53962	BC24	45-66-18-01	10	0.013	0.57	1.07	0.32	30.01	0.38	0.42	39.63	0.44	0.48	44.82	0.48	0.54	50.57	0.51	0.66	61.51	0.59	0.75	70.58	0.69
55251	7298	55251-7298	BC16	45-58-01-02	24	0.013	0.99	14.53	3.29	22.65	0.33	8.74	60.18	0.59	10.19	69.52	0.78	11.64	80.09	1.00	13.79	94.90	1.00	14.87	102.32	2.00
55252	55251	55252-55251	BC16	45-58-01-00	8	0.013	0.57	0.59	0.18	31.05	0.39	0.93	157.25	2.00	0.93	157.27	2.00	0.93	157.27	2.00	0.93	157.26	2.00	0.93	166.85	2.00
55253	55252	55253-55252	BC16	45-58-01-00	8	0.013	0.59	0.60	0.18	30.53	0.39	0.93	154.63	2.00	0.93	154.65	2.00	0.93	154.65	2.00	0.97	160.93	2.00	0.96	160.57	2.00
55254	55253	55254-55253	BC16	45-58-01-00	8	0.013	0.59	0.60	0.18	30.53	0.39	0.93	154.63	2.00	0.93	154.65	2.00	0.93	154.65	2.00	0.93	158.20	2.00	0.95	158.32	2.00
55255	55254	55255-55254	BC16	45-58-01-00	8	0.013	0.60	0.60	0.18	30.53	0.39	0.93	154.63	2.00	0.93	154.65	2.00	0.93	154.65	2.00	0.94	156.80	2.00	0.94	156.78	2.00
55256	55255	55256-55255	BC16	45-58-01-00	8	0.013	4.97	1.74	0.18	10.53	0.24	0.93	53.33	1.00	0.93	53.33	1.00	0.93	53.33	1.00	0.93	53.61	1.00	0.93	53.61	1.00
55257	55256	55257-55256	BC16	45-58-01-00	8	0.013	1.05	0.81	0.18	22.62	0.34	0.93	114.54	2.00	0.93	114.56	2.00	0.93	114.56	2.00	0.93	114.56	2.00	0.93	114.56	2.00
55258	55257	55258-55257	BC16	45-58-01-00	8	0.013	32.91	4.48	0.18	4.09	0.17	0.93	20.71	0.33	0.93	20.71	0.33	0.93	20.71	0.33	0.93	20.71	0.33	0.93	20.71	0.33
55259	55258	55259-55258	BC16	45-58-01-00	8	0.013	16.11	4.09	0.18	3.91	0.17	0.93	19.78	0.33	0.93	19.78	0.33	0.93	19.78	0.33	0.93	19.78	0.33	0.93	19.78	0.33
55260	55259	55260-55259	BC16	45-58-01-00	8	0.013	31.36	4.38	0.18	4.18	0.17	0.93	21.18	0.33	0.93	21.18	0.33	0.93	21.18	0.33	0.93	21.18	0.33	0.93	21.18	0.33
55261	55260	55261-55260	BC16	45-58-01-00	8	0.013	0.59	0.60	0.18	30.53	0.39	0.93	154.63	2.00	0.93	154.65	2.00	0.93	154.65	2.00	0.93	154.65	2.00	0.93	154.65	2.00
55262	55261	55262-55261	BC16	45-58-01-00	8	0.013	0.60	0.60	0.18	30.53	0.39	0.93	154.65	2.00	0.93	154.66	2.00	0.93	154.70	2.00	0.93	154.67	2.00	0.93	154.65	2.00
55267	55262	55267-55262	BC16	45-58-01-00	8	0.013	0.99	0.78	0.18	23.50	0.35	0.97	124.04	2.00	0.97	125.83	2.00	0.97	124.13	2.00	0.97	124.36	2.00	0.96	123.68	2.00
55268	55267	55268-55267	BC16	45-58-01-00	8	0.013	0.99	0.78	0.18	23.50	0.35	1.03	131.74	2.00	1.04	133.56	2.00	1.03	132.31	2.00	1.03	132.32	2.00	1.03	132.32	2.00
55269	55268	55269-55268	BC16	45-58-01-00	8	0.013	15.81	3.04	0.18	5.05	0.21	1.37	44.63	1.00	1.64	53.29	1.00	1.64	53.34	1.00	1.65	53.41	1.00	1.65	53.46	1.00
55270	55269	55270-55269	BC16	45-58-01-00	8	0.013	0.98	0.78	0.18	23.50	0.35	1.37	176.23	2.00	1.64	210.41	2.00	1.64	210.63	2.00	1.65	210.91	2.00	1.65	211.10	2.00
55271	55270	55271-55270	BC16	45-58-01-00	8	0.013	4.80	1.71	0.18	10.72	0.24	1.37	80.35	1.00	1.64	95.93	1.00	1.64	96.03	1.00	1.65	96.20	1.00	1.65	96.29	1.00
55272	55271	55272-55271	BC16	45-58-01-00	8	0.013	1.06	0.80	0.18	22.93	0.34	1.38	171.80	2.00	1.69	211.21	2.00	1.72	215.24	2.00	1.76	220.06	2.00	1.75	218.34	2.00
56867	20782	56867-20782	BC29	45-66-07-00	15	0.01	1.36	3.16	1.13	35.78	0.43	2.34	74.18	0.71	2.79	88.18	1.00	3.42	108.16	2.00	3.96	125.83	2.00	3.96	126.06	2.00
56841	33296	56841-33296	BC12	45-58-11-00	18	0.013	0.30	1.71	0.51	13.54	0.25	1.01	27.51	0.36	1.24	33.15	0.40	1.44	38.48	0.43	1.88	50.41	0.50	2.22	59.50	0.56
56842	56841	56842-56841	BC12	45-58-21-01	12	0.013	0.59	1.77	0.00	-0.01	0.36	0.00	-0.24	0.52	-0.01	-0.40	0.58	-0.01	-0.51	0.63	-0.02	-0.94	0.73	-0.02	-1.24	0.82
57146	44548	57146-44548	BC10	45-66-05-00	15	0.013	0.89	3.04	1.27	32.14	0.39	2.65	67.20	0.60	3.15	80.01	0.88	3.82	98.43	0.63	4.47	112.06	2.00	4.53	114.86	2.00
57167	43386	57167-43386	BC12	45-58-20-04	12	0.013	6.13	5.70	0.18	2.23	0.15	0.25	4.26	0.17	0.25	4.46	0.17	0.27	4.76	0.18	0.32	5.55	0.19	0.35	6.12	0.20
57364	69111	57364-69111	BC10	45-66-09-01	8	0.013	7.05	2.07	0.15	7.42	0.21	0.18	8.57	0.22	0.20	9.83	0.23	0.22	10.71	0.24	0.26	13.37	0.27	0.32	15.38	0.28
59113	59114	59113-59114	BC01	45-59-15-08	8	0.013	0.37	0.47	0.17	36.70	0.42	0.27	56.77	0.53	0.31	65.30	0.57	0.35	73.85	0.62	0.52	110.94	2.00	0.66	141.02	2.00
59113	30957	59113-30957	BC01	45-59-15-08	8	0.013	2.74	1.29	0.14	11.03	0.24	0.32	24.78	0.35	0.41	32.12	0.49	0.52	40.40	0.66	0.62	48.31	1.00	0.67	52.18	1.00
59114	59115	59114-59115	BC01	45-59-15-08	8	0.013	0.36	0.47	0.17	36.70	0.42	0.27	56.77	0.56	0.31	65.30	0.60	0.35	73.85	0.65	0.52	110.79	2.00	0.66	139.40	2.00
59115	59116	59115-59116	BC01	45-59-15-03	8	0.013	0.36	0.47	0.17	36.70	0.43	0.27	56.77	0.55	0.31	65.30	0.60	0.35	73.83	0.65	0.52	110.83	2.00	0.66	139.51	2.00
59116	31155	59116-31155	BC01	45-59-15-03	8	0.013	2.31	1.16	0.21	18.47	0.31	0.41	34.96	0.42	0.48	41.72	0.48	0.57	49.07	0.50	0.81	69.55	0.63	0.99	85.23	1.00
59219	204		BC12	45-58-12-00	8	0.013	5.00	1.75	0.04	2.17	0.14	0.12	6.85	0.21	0.15	8.62	0.22	0.19	10.59	0.25	0.25	14.24	0.28	0.30	17.39	0.30
59220	59219		BC12	45-58-12-00	8	0.013	2.21	1.16	0.04	3.27	0.16	0.12	10.39	0.24	0.15	13.01	0.26	0.19	15.98	0.28	0.25	21.64	0.33	0.30	26.74	0.36
59221	59220	59221-70	BC12	45-58-23-01	10	0.013	2.08	2.04	0.04	1.86	0.14	0.12	5.91	0.19	0.15	7.40	0.21	0.19	9.09	0.23	0.25	12.30	0.27	0.30	14.92	0.29
59222	59221	59222-59221	BC12	45-58-23-02	12	0.013	0.54	1.69	0.04	2.24	0.12	0.12	7.13	0.19	0.15	8.93	0.21	0.19	10.91	0.23	0.25	14.85	0.27	0.30	18.01	0.29
59274	34175	59274-34175	BC16	45-58-03-00	20	0.01	0.62	9.20	1.44	15.63	0.36	3.42	37.29	0.57	4.04	43.91	0.64	4.78	52.01	1.00	5.41	58.77	1.00	5.82	63.30	1.00
59275	59274	59275-59274	BC14	45-58-04-00	20	0.013	0.65	7.24	0.92	12.72	0.26	2.62	36.19	0.43	3.09	42.69	0.43	3.60	49.78	0.94	4.01	55.49	1.00	4.20	58.01	1.00
59276	59275	59276-59275	BC14	45-58-04-00	20	0.013	0.18	3.80	0.92	24.24	0.32	2.62	68.96	0.54	3.09	81.34	0.59	3.58	94.13	0.69	4.01	105.59	2.00	4.19	110.20	2.00
61	27	61-27	BC12	45-58-21-02	30	0.013	7.62	3.91	0.02	0.56	0.13	0.03	0.84	0.12	0.04	0.95	0.12	0.04	1.08	0.12	0.05	1.32	0.13	0.06	1.52	0.13
61831	21595	61831-21595	BC11	45-59-16-02	8	0.013	1.12	0.83	0.01	0.83	0.35	0.10	13.57	0.42	0.13	15.37	0.44	0.17	19.94	0.46	0.23	28.30	0.50	0.29	35.22	0.52
61832	61831	61832-61831	BC11	45-59-16-02	8	0.013	2.58	1.32	0.01	0.51	0.23	0.10	7.27	0.23	0.13	9.67	0.23	0.17	12.54	0.26	0.24	17.85	0.30	0.29	22.15	0.34
61833	61832	61833-61832	BC11	45-59-16-04	8	0.013	0.50	0.69	0.01	1.32	0.12	0.10	16.00	0.29	0.13	21.27	0.33	0.17	27.58	0.37	0.24	39.18	0.44	0.29	48.75	0.50
61834	61833	61834-61833	BC11	45-59-16-02	8	0.013	3.58	1.48	0.01	0.48	0.21	0.10	6.49	0.20	0.13	8.62	0.22	0.17	11.19	0.25	0.24	15.90	0.29	0.29	19.77	0.32
61946	6888	61946-6888	TSJF01	45-56-00-00	42	0.013	1.52	80.26	6.73	8.38	0.40	26.14	32.57	1.00	27.41	34.16	1.00	31.92	39.77	1.00	34.64	43.16	1.00	35.43	44.15	1.00
61947	61946	61947-61946	BC16	45-58-01-00	36	0.013	0.41	27.53	3.29	11.95	0.35	8.40	30.83	1.00	9.83	34.99	1.00	11.34	41.18	1.00	13.31	48.36	1.00	14.23	51.67	1.00
61948	61947	61948-61947	BC16	45-58-01-00	36	0.013	0.59	33.24	3.29	9.95	0.26	8.74	26.29	1.00	10.07	30.26	1.00	11.40	34.31	1.00	13.44	40.44	1.00	14.39	43.29	1.00
61663	7113	61663-7113	BC09	45-59-22-01	8	0.013	2.10	1.13	0.21	27.40	0.37	1.10	97.23	0.95	1.13	98.69	1.00	1.32	99.00	1.00	1.32	99.31	1.00	1.33	99.80	1.00
63664	63663	63663-7114	BC09	45-59-22-01	8	0.013	1.37	0.92	0.21	33.65	0.42	1.10	119.42	2.00	1.10	119.42	2.00	1.10	119.42	2.00	1.10	119.42	2.00	1.10	119.42	2.00
63665	63664	63665-7114	BC09	45-59-22-01	8	0.013	1.29	0.89	0.21	34.79	0.42	1.23	137.98	2.00	1.23	138.02	2.00	1.23	138.02	2.00	1.23	138.08	2.00	1.23	138.08	2.00
64082	53297	64082-53297	BC22	45-70-00-00	8	0.013	0.61	0.61	0.02	3.11	0.15	0.43	78.05	0.63	0.57	94.13	0.79	0.73	120.26	2.00	1.04	169.82	2.00	1.19	194.75	2.00
64083	64082	64083-64082	BC22	45-70-00-00	8	0.013	3.55	1.47	0.02	1.29	0.13	0.43	29.07	0.49	0.57	39.07	0.65	0.73	49.92	1.00	1.04	70.49	1.00	1.20	81.58	1.00
64084	64083	64084-64083	BC22	45-70-00-00	8	0.013	4.69	1.69	0.02	1.12	0.12	0.43	25.29	0.36	0.57	33.98	0.42	0.73	43.43	0.48	1.04	61.34	0.58	1.24	73.36	1.00
64085	64084	64085-64084	TSJF01	45-59-05-00	8	0.013	1.81	1.05	0.02	1.81	0.14	0.43	40.70	0.46	0.57	54.70	0.54	0.73	69.80	0.63	1.04	98.71	1.00	1.26	119.84	1.00
65315	65311	65315-65311	BC14	45-58-02-00	15	0.013	0.51	2.99	0.50	16.76	0.28	0.51	17.02	0.25	0.54	18.00	0.35	0.57	18.06	0.37	0.63	21.13	0.41	0.68	22.83	0.45
65316	65315	65316-65315	BC14	45-58-02-00	15	0.013	0.32	2.34	0.50	21.41	0.32	0.51	21.74	0.32	0.54	23.00	0.33	0.57	24.35	0.34	0.63	27.00	0.36	0.68	29.17	0.37
65317	65316	65317-65316	BC14	45-58-02-00	15	0.013	0.37	3.16	0.50	15.86	0.28	0.51	16.10	0.28	0.54	17.03	0.28	0.57	18.03	0.29	0.63	19.99	0.31	0.68	21.60	0.32
65318	65317	65318-65317	BC14	45-58-02-00	15	0.013	1.80	5.60	0.50	8.95	0.22	0.51	9.09	0.22	0.54	9.61	0.23	0.57	10.18	0.24	0.63	11.28	0.25	0.68	12.18	0.26
65319	65318	65319-65318	BC14	45-58-02-00	15	0.013	1.80	5.60	0.50	8.95	0.22	0.51	9.09	0.22	0.54	9.61	0.23	0.57	10.18	0.24	0.63	11.28	0.25	0.68	12.18	0.26
65320	65319	65320-65319	BC14	45-58-02-00	15	0.013	2.03	5.95	0.50	8.43	0.22	0.51	8.55	0.23	0.54	9.04	0.23	0.57	9.58	0.24	0.63	10.62	0.25	0.68	11.47	0.26
65321	65320	65321-65320	BC14	45-58-02-00	15	0.013	1.96	5.85	0.50	8.57	0.22	0.51	8.70	0.23	0.54	9.20	0.23	0.57	9.74	0.23	0.63	10.80	0.24	0.68	11.67	0.25
65322	65321	65322-65321	BC14	45-58-02-00	15	0.013	3.23	7.51	0.50	6.68	0.20	0.51	6.78	0.20	0.54	7.17	0.21	0.57	7.59	0.21	0.63	8.41	0.22	0.68	9.09	0.22
65323	65322	65323-65322	BC14	45-58-02-00	15	0.013	0.15	1.63	0.50	30.78	0.38	0.51	31.22	0.38	0.54	33.01	0.40	0.57	34.96	0.41	0.63	38.75	0.43	0.68	41.68	0.45
65324	65323	65324-65323	BC14	45-58-02-00	15	0.013	2.60	6.73	0.50	7.45	0.21	0.51	7.56	0.21	0.54	8.00	0.21	0.57	8.47	0.23	0.63	9.39	0.25	0.68	10.14	0.26
65325	65324	65325-65324	BC14	45-58-02-00	15	0.013	0.50	2.95	0.50	17.00	0.28	0.51	17.25	0.29	0.54	18.24	0.29	0.57	19.32	0.30	0.63	21.41	0.32	0.68	23.14	0.33
65326	65325	65326-65325	BC14	45-58-02-00	15	0.013	0.52	3.02	0.50	16.61	0.28	0.51	16.85	0.28	0.54	17.82	0.29	0.57	18.87	0.30	0.63	20.92	0.31	0.68	22.60	0.33
65327	65326	65327-65326	BC14	45-58-02-00	15	0.013	0.35	2.48	0.50	20.23	0.31	0.51	20.53	0.31	0.54	21.70	0.32	0.57	22.98	0.33	0.63	25.48	0.35	0.68	27.52	0.36
65328	65327	65328-65327	BC14	45-58-02-00	15	0.013	0.34	3.83	0.50	13.10	0.30	0.51	13.29	0.30	0.54	14.05	0.31	0.57	14.88	0.32	0.63	16.50	0.34	0.68	17.82	0.35
65329	65328	65329-65328	BC14	45-58-02-00	15	0.013	2.02	5.93	0.50	8.46	0.22	0.51	8.58	0.22	0.54	9.08	0.22	0.57	9.61	0.23	0.63	10.65	0.24	0.68	11.51	0.25
65330	65329	65330-65329	BC14	45-58-02-00	15	0.013	2.47	6.57	0.50	7.64	0.21	0.51	7.75	0.21	0.54	8.19	0.22	0.57	8.67	0.22	0.63	9.62	0.23	0.68	10.39	0.24
65331	65330	65331-65330	BC14	45-55-07-00	15	0.013	0.50	2.95	0.50	17.01	0.28	0.51	17.25	0.29	0.54	18.24	0.29	0.57	19.32	0.30	0.63	21.42	0.32	0.68	23.14	0.33
65332	65331	65332-65331	BC14	45-55-07-00	15	0.013	0.33	2.41	0.50	20.82	0.31	0.51	21.12	0.32	0.54	22.33	0.33	0.57	23.65	0.34	0.63	26.22	0.35	0.68	28.32	0.37
65333	65332	65333-65332	BC14	45-55-07-00	15	0.013	0.18	3.92	0.50	12.68	0.25	0.51	12.99	0.25	0.54	13.75	0.26	0.57	14.54	0.26	0.63	16.12	0.28	0.68	17.41	0.29
65373	6990	65373-6990	BC09	45-59-33-00	18	0.013	1.97	9.53	0.01	0.31	0.11	0.48	5.07	0.18	0.65	6.78	0.20	0.83	8.72	0.22	1.18	12.41	0.26	1.47	15.40	0.28
65374	65373	65374-65373	BC09	45-59-33-00	18	0.013	0.76	5.93	0.01	0.50	0.07	0.48	8.24	0.20	0.65	10.89	0.23	0.83	14.01	0.26	1.18	19.98	0.31	1.47	24.75	0.34
65375	65374	65375-65374	BC09	45-59-33-00	18	0.013	0.41	4.33	0.01	0.88	0.07	0.48	11.35	0.23	0.65	14.91	0.27	0.83	19.19	0.30	1.18	27.37	0.36	1.47	33.90	0.41
65497	34179	65497-34179	BC14	45-58-04-00	16	0.01	1.05	6.62	0.56	8.52	0.22	0.77	11.85	0.25	0.87	13.07	0.27	1.00	15.01	0.28	1.20	18.16	0.30	1.39	20.82	0.33
65498	65497	65498-65497	BC14	45-58-02-00	16	0.01	1.17	6.97	0.56	8.09	0.21	0.77	11.06	0.24	0.87	12.41	0.26	1.00	14.33	0.28	1.20	17.25	0.30	1.39	19.87	0.32
65499	65498	65499-65498	BC14	45-58-02-00	16	0.013	0.71	4.18	0.56	13.48	0.23	0.77	18.45	0.29	0.87	20.69	0.31	1.00	23.89	0.34	1.20	28.77	0.37	1.39	33.24	0.40
65500	65499	65500-65499	BC14	45-58-02-00	16	0.013	0.71	4.25	0.56	13.27	0.25	0.77	18.15	0.29	0.87	20.35	0.31	1.00	23.49	0.34	1.20	28.29	0.37	1.39	32.59	0.40
65501	65500	65501-65500	BC14	45-58-02-00	16	0.013	0.35	2.95	0.56	19.12	0.30	0.77	26.14	0.35	0.87	29.32	0.37	1.00	33.85	0.41	1.20	40.76	0.44	1.39	46.95	0.49
65502	65501	65502-65501	BC14	45-58-02-00	16	0.013	0.28	2.62	0.56	21.52	0.32	0.77	29.44	0.37	0.87	33.01	0.39	1.00	38.11	0.43	1.20	45.90	0.47	1.39	52.87	0.51
65503	65502	65503-65502	BC14	45-58-02-00	16	0.013	0.50	3.50	0.56	16.11	0.28	0.77	22.03	0.33	0.87	24.71	0.34	1.00	28.53	0.37	1.20	34.36	0.41	1.39	39.57	0.44
65504	65503	65504-65503	BC14	45-58-02-00	16	0.013	0.22	2.31	0.56	24.42	0.34	0.77	33.39	0.39	0.87	37.45	0.42	1.00	43.23	0.45	1.20	52.06	0.50	1.39	59.96	0.53
65505	65504	65505-65504	BC14	45-58-02-00	16	0.013	1.85	6.74	0.56	8.37	0.26	0.77	11.44	0.32	0.87	12.83	0.34	1.00	14.81	0.37	1.20	17.84	0.42	1.39	20.55	0.46
65506	65505	65506-65505	BC14	45-58-02-00	16	0.013	0.49	3.47	0.56	16.25	0.28	0.77	22.22	0.33	0.87	24.91	0.35	1.00	28.74	0.37	1.20	34.61	0.41	1.39	39.82	0.44
65507	65506	65507-65506	BC14	45-58-02-00	16	0.013	0.90	4.69	0.56	12.03	0.24	0.77	16.44	0.28	0.87	18.45	0.29	1.00	21.29	0.32	1.20	25.64	0.35	1.39	29.54	0.37
65508	65507	65508-65507	BC14	45-58-02-00	16	0.013	0.57	3.57	0.56	15.68	0.27	0.77	21.86	0.32	0.87	24.21	0.34	1.00	27.97	0.36	1.20	33.69	0.41	1.39	38.80	0.43
65509	65508	65509-65508	BC14	45-58-02-00	16	0.013	0.54	3.66	0.56	15.41	0.33	0.77	21.07	0.28	0.87	23.64	0.40	1.00	27.28	0.42	1.20	32.86	0.47	1.39	37.81	0.49
65510	65509	65510-65509	BC14	45-58-02-00	16	0.013	0.61	3.88	0.56	14.54	0.26	0.77	19.88	0.30	0.87	22.30	0.33	1.00	25.73	0.35	1.20	30.99	0.38	1.39	35.70	0.42
65511	65510	65511-65510	BC14	45-58-02-00	16	0.013	0.56	3.72	0.56	15.16	0.27	0.77	20.73	0.31	0.87	23.26	0.33	1.00	26.84	0.36	1.20	32.33	0.40	1.39	37.24	0.43
65512	45895	65512-45895	BC11	45-59-12-00	8	0.013	4.33	1.63	0.01	0.54	0.12	0.19	13.84	0.25	0.25	19.62	0.29	0.33	28.52	0.32	0.47	39.00	0.38	0.59	46.23	0.43
66	61	66-61	BC12	45-58-21-02	30	0.013	2.92	2.42	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10
66452	67946	66452-67946	BC09	45-59-25-00	8	0.013	0.85	0.72	0.11	15.11	0.28	0.66	94.57	0.79	0.80	125.32	2.00	1.11	154.01	2.00	1.26	175.28	2.00	1.27	175.83	2.00
66453	66452	66453-66452	BC09	45-59-25-00	8	0.013	1.85	1.06	0.11	10.27	0.24	0.66	64.25	0.66	0.91	85.41	1.00	1.11	104.65	2.00	1.31	123.35	2.00	1.33	123.20	2.00
67146	7085	67146-7085	BC09	45-59-25-00	8	0.013	0.77	0.68	0.11	16.00	0.29	0.66	99.43	1.00	0.88	129.21	2.00	1.11	163.06	2.00	1.26	185.60	2.00	1.27	186.18	2.00
6874	JP1	6874-TOM07	TSJF01	45-51-00-00	42	0.016	0.16	21

Baltimore County

Jones Falls - Modeled Pipe Capacity - Existing Conditions

Pipe Attributes									Dry Weather Flows			2-Year 6-Hour			2-Year 24-Hour			10-Year 6-Hour			10-Year 24-Hour			25-Year 24-Hour		
Upstream Node	Downstream Node	Asset ID	Meter Basin	SSA	Pipe Diameter	Manning's Coefficient	Pipe Gradient	Pipe Full Capacity	Peak Dry Weather Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State
6877	6876	6877-6876	TSJF01	45-51-00-00	42	0.013	0.17	16.94	9.58	56.56	0.64	35.82	211.46	2.00	38.59	227.89	2.00	41.31	243.86	2.00	41.45	244.68	2.00	41.49	244.91	2.00
6878	16379	6878-16379	TSJF01	45-51-00-00	42	0.013	-0.14	-23.28	9.58	41.15	0.51	35.82	153.89	1.00	38.59	165.77	1.00	41.31	177.46	1.00	41.45	178.08	1.00	41.49	178.24	1.00
6879	6878	6879-6878	TSJF01	45-51-00-00	42	0.013	0.46	43.91	9.58	21.82	0.49	35.82	81.59	1.00	38.59	87.89	1.00	41.31	94.09	1.00	41.45	94.37	1.00	41.49	94.45	1.00
6880	6879	6880-6879	TSJF01	45-51-00-00	42	0.013	0.17	26.91	9.58	13.60	0.38	35.82	132.17	2.00	38.59	141.91	2.00	41.31	151.80	2.00	41.45	152.31	2.00	41.49	152.45	2.00
6882	6880	6882-6880	TSJF01	45-51-00-00	42	0.013	0.20	28.91	9.58	33.24	0.42	35.67	123.37	2.00	38.39	132.80	2.00	41.02	141.90	2.00	41.16	142.39	2.00	41.20	142.53	2.00
6883	6882	6883-6882	TSJF01	45-54-00-00	42	0.013	-0.03	-3.93	9.58	-106.68	0.73	35.67	-397.70	1.00	38.39	-427.53	1.00	41.02	-456.82	1.00	41.16	-458.45	1.00	41.20	-458.89	1.00
6885	6883	6885-6883	TSJF01	45-54-00-00	42	0.013	0.55	48.09	9.58	19.91	0.40	35.67	74.17	1.00	38.39	79.84	1.00	44.44	92.42	1.00	44.61	92.76	1.00	44.71	92.97	1.00
6886	14565	6886-14565	TSJF01	45-54-00-00	42	0.013	1.98	170.77	9.58	7.35	0.33	34.33	20.44	0.95	36.67	21.79	1.00	41.74	24.45	2.00	43.82	153.04	2.00	44.73	156.28	2.00
6687	6686	6687-6686	TSJF01	45-54-00-00	42	0.013	0.19	28.63	9.58	33.46	0.40	34.29	119.77	0.99	36.66	128.04	2.00	40.57	137.26	2.00	42.28	143.03	2.00	42.77	144.62	2.00
6688	6687	6688-6687	TSJF01	45-56-00-00	42	0.013	0.21	29.56	9.58	32.42	0.40	33.20	112.99	2.00	35.54	121.57	2.00	39.53	135.49	1.00	41.24	141.23	1.00	41.71	142.87	1.00
6689	6688	6689-6688	TSJF01	45-56-00-00	24	0.013	0.42	9.51	0.00	-0.01	0.13	0.44	4.58	1.00	-0.04	-0.75	1.00	-0.13	-2.33	1.00	-0.05	-11.44	1.00	-0.19	-13.61	1.00
6690	6689	6690-6689	BC16	45-58-01-00	24	0.013	0.36	8.73	0.00	0.00	0.05	-0.13	-1.53	0.94	-0.32	-3.68	1.00	-0.68	-7.74	1.00	-0.08	-11.44	1.00	-0.19	-13.61	1.00
69111	33534	69111-33534	BC20	45-66-09-01	8	0.013	4.50	1.66	0.15	9.25	0.23	0.18	10.89	0.24	0.20	12.01	0.26	0.22	13.36	0.27	0.28	16.67	0.29	0.32	19.27	0.31
69131	33527	69131-33527	BC20	45-66-09-00	15	0.02	0.97	2.68	0.65	24.24	0.34	1.36	50.78	0.59	1.62	60.37	0.69	1.99	74.12	1.00	2.33	93.65	1.00	2.92	48.38	1.00
69132	69131	69132-69131	BC25	45-66-09-02	16	0.02	3.31	6.04	0.65	10.75	0.24	1.36	22.49	0.34	1.62	26.78	0.37	1.99	32.89	0.41	2.51	41.55	1.00	2.92	188.62	0.95
69133	69132	69133-69132	BC25	45-66-09-02	16	0.02	0.70	2.69	0.65	24.14	0.34	1.36	50.51	0.50	1.62	60.14	0.56	1.99	73.84	0.64	2.51	93.30	0.76	2.92	107.82	1.00
69136	69133	69136-69133	BC24	45-66-10-00	16	0.02	0.71	2.71	0.65	23.87	0.34	1.36	50.32	0.50	1.62	59.92	0.56	1.99	73.57	0.64	2.51	92.97	0.76	2.92	108.23	0.96
69138	69136	69138-69136	BC24	45-66-10-00	16	0.01	0.70	2.70	0.65	24.06	0.34	1.36	50.32	0.50	1.62	59.92	0.56	1.99	73.57	0.64	2.51	92.97	0.76	2.92	107.82	0.97
69139	69138	69139-69138	BC24	45-66-11-00	16	0.013	1.45	5.97	0.65	10.86	0.27	1.32	22.13	0.43	1.57	26.30	0.50	1.93	32.25	0.59	2.43	40.76	0.73	2.83	47.43	0.87
69140	69139	69140-69139	BC24	45-66-10-00	16	0.013	0.84	4.55	0.65	14.25	0.26	1.32	28.04	0.37	1.57	34.51	0.41	1.93	45.19	0.48	2.43	57.12	0.55	2.83	66.46	0.80
69143	69140	69143-69140	BC24	45-66-10-00	16	0.013	0.74	4.26	0.65	15.23	0.27	1.32	31.80	0.38	1.57	36.86	0.42	1.93	42.87	0.50	2.29	54.00	0.57	2.66	62.59	0.42
69144	69143	69144-69143	BC24	45-66-10-00	16	0.013	0.74	4.35	0.64	15.15	0.29	1.26	29.70	0.41	1.49	35.17	0.45	1.82	41.91	0.53	2.29	48.91	0.62	2.66	79.88	0.68
69145	69144	69145-69144	BC24	45-66-10-00	15	0.013	0.63	3.33	0.64	19.24	0.30	1.26	37.91	0.43	1.49	44.89	0.48	1.82	54.72	0.53	2.29	61.34	0.57	2.66	71.13	0.63
69146	69145	69146-69145	BC24	45-66-10-00	16	0.013	0.57	3.74	0.64	17.22	0.28	1.26	33.75	0.41	1.49	39.97	0.44	1.82	48.72	0.50	2.29	60.24	0.57	2.66	69.82	0.62
69147	69146	69147-69146	BC24	45-66-10-00	15	0.013	0.83	3.61	0.64	16.90	0.28	1.26	33.33	0.40	1.50	39.24	0.44	1.82	47.82	0.49	2.30	65.38	0.59	2.66	75.79	0.65
69149	69147	69149-69147	BC24	45-66-10-00	15	0.013	0.71	3.51	0.64	18.35	0.29	1.26	35.97	0.42	1.50	42.59	0.46	1.82	51.91	0.51	2.30	74.76	0.65	2.66	86.65	0.72
69150	69149	69150-69149	BC24	45-66-10-00	15	0.013	0.54	3.07	0.64	20.95	0.31	1.26	41.32	0.45	1.50	48.70	0.50	1.82	59.35	0.56	2.30	41.86	0.47	2.66	48.63	0.50
69151	69150	69151-69150	BC24	45-66-12-00	15	0.013	1.72	5.47	0.64	11.77	0.25	1.26	23.08	0.34	1.50	27.33	0.37	1.82	33.31	0.42	2.30	66.91	0.60	2.66	77.56	0.66
69152	69151	69152-69151	BC24	45-66-12-00	15	0.013	0.68	3.43	0.64	18.78	0.30	1.26	36.81	0.43	1.50	43.59	0.47	1.82	53.12	0.52	2.30	76.67	1.00	2.70	78.60	1.00
6921	61946	6921-61946	TSJF01	45-59-02-00	42	0.013	0.20	29.09	3.61	12.35	0.43	19.44	66.81	1.00	19.94	68.56	1.00	21.56	74.10	1.00	22.05	75.59	1.00	22.45	97.29	1.00
6923	6921	6923-6921	TSJF01	45-59-02-00	42	0.013	0.33	23.10	3.57	15.46	0.27	19.34	83.72	1.00	19.83	85.81	1.00	21.38	92.55	1.00	22.05	95.59	1.00	22.47	117.36	2.00
6924	6923	6924-6923	TSJF01	45-59-02-00	42	0.013	0.09	19.15	3.57	18.66	0.29	19.39	101.25	2.00	19.82	103.52	2.00	21.37	111.60	2.00	22.07	115.27	2.00	22.47	114.33	2.00
6925	6924	6925-6924	TSJF01	45-59-02-00	42	0.013	0.09	19.29	3.57	18.52	0.29	19.38	100.48	1.00	19.67	101.99	2.00	21.10	109.38	2.00	21.73	112.83	2.00	22.06	111.51	2.00
6926	6925	6926-6925	TSJF01	45-59-02-00	42	0.013	0.09	29.18	3.57	18.64	0.29	19.49	101.16	1.00	19.82	103.31	2.00	20.70	107.92	2.00	21.18	110.44	2.00	21.39	111.51	2.00
6927	6926	6927-6926	TSJF01	45-59-04-00	42	0.013	0.01	8.87	3.58	52.05	0.30	19.52	284.67	2.00	19.98	290.83	2.00	20.69	301.15	2.00	21.17	308.29	2.00	21.39	311.39	2.00
6928	6927	6928-6927	TSJF01	45-59-04-00	42	0.013	0.15	25.54	3.58	14.00	0.27	19.53	76.45	1.00	20.00	78.31	1.00	20.69	81.00	1.00	21.17	82.89	1.00	21.41	83.83	1.00
6929	6928	6929-6928	TSJF01	45-59-04-00	42	0.013	0.64	21.17	3.58	15.96	0.28	16.19	85.94	0.83	16.38	86.83	1.00	16.59	87.80	1.00	18.69	88.35	1.00	18.73	88.48	1.00
6930	18452	6930-18452	TSJF01	45-59-05-01	42	0.013	0.17	26.69	3.38	12.65	0.27	18.21	68.59	0.86	18.47	69.22	1.00	18.70	70.05	1.00	18.88	70.73	1.00	19.00	47.12	1.00
6931	6930	6931-6930	TSJF01	45-59-06-00	42	0.013	0.42	45.11	3.36	7.49	0.25	18.35	40.68	0.87	18.54	41.10	1.00	18.70	41.45	1.00	18.87	41.82	1.00	18.89	75.72	1.00
6932	46789	6932-46789	TSJF01	45-59-06-00	30	0.013	0.81	23.89	3.38	14.14	0.26	18.19	76.16	0.74	18.38	76.92	1.00	18.58	77.76	1.00	18.67	78.17	1.00	18.71	101.49	2.00
6933	6932	6933-6932	TSJF01	45-59-06-00	30	0.013	0.48	18.44	3.38	18.32	0.29	18.19	98.67	0.78	18.38	99.67	1.00	18.58	100.77	1.00	18.68	101.33	2.00	18.92	106.52	2.00
6934	6929	6934-6929	TSJF01	45-59-06-00	30	0.013	0.45	17.76	3.38	19.02	0.30	18.18	102.45	0.78	18.39	103.56	2.00	18.62	93.70	1.00	18.77	105.70	2.00	18.98	95.56	1.00
6935	6934	6935-6934	TSJF01	45-59-08-00	30	0.013	0.56	19.87	3.38	17.00	0.28	18.19	91.57	0.81	18.39	92.57	1.00	18.62	93.70	1.00	18.68	94.27	1.00	18.78	96.24	1.00
6936	6935	6936-6935	TSJF01	45-59-08-00	30	0.013	0.49	18.47	3.38	18.29	0.29	17.29	96.33	0.91	17.89	96.85	1.00	17.88	96.33	1.00	17.84	96.57	1.00	17.78	96.24	1.00
6937	15872	6937-15872	TSJF01	45-59-07-00	30	0.013	0.61	21.00	3.38	16.09	0.28	17.29	84.72	1.00	17.89	85.19	1.00	17.90	85.23	1.00	17.92	85.33	1.00	17.92	85.34	1.00
6938	17375	6938-17375	TSJF01	45-59-07-00	30	0.013	0.55	19.60	3.38	17.24	0.28	17.30	90.82	0.79	17.90	91.32	1.00	17.95	91.57	1.00	18.01	91.88	1.00	18.11	92.41	1.00
6939	6938	6939-6938	TSJF01	45-59-07-00	30	0.013	0.66	21.47	3.38	15.73	0.27	17.63	82.13	0.99	17.69	82.40	1.00	17.73	82.58	1.00	17.75	82.68	1.00	17.73	82.60	1.00
6940	6942	6940-6942	TSJF01	45-59-07-00	30	0.013	0.62	20.90	3.38	16.16	0.28	17.64	84.40	0.82	17.73	84.84	1.00	17.82	85.27	1.00	17.84	85.82	1.00	17.88	86.01	1.00
6941	6940	6941-6940	TSJF01	45-59-07-00	30	0.013	0.78	23.41	3.38	14.43	0.26	17.65	75.41	0.84	17.79	76.01	1.00	17.96	76.69	1.00	18.21	77.79	1.00	18.25	78.40	1.00
6942	6939	6942-6939	TSJF01	45-59-07-00	30	0.013	0.65	21.32	3.38	15.84	0.28	17.63	82.71	1.00	17.69	82.99	1.00	17.73	83.18	1.00	17.77	83.34	1.00	17.76	83.32	1.00
6943	R01676	6943-901676	TSJF01	45-59-09-00	27	0.01	0.59	19.93	3.38	16.95	0.28	17.59	88.27	1.00	17.73	88.97	1.00	17.93	89.97	1.00	18.15	91.06	1.00	18.28	91.74	1.00
6944	6945	6944-6945	BC11	45-59-10-00	27	0.01	0.53	18.87	3.38	17.90	0.29	17.59	93.23	1.00	17.73	93.96	1.00	17.94	95.07	1.00	18.16	96.23	1.00	18.30	96.95	1.00
6945	6944	6945-6944	BC11	45-59-10-00	27	0.01	0.41	16.62	3.37	20.30	0.31	17.57	105.71	2.00	17.70	106.52	2.00	17.90	107.72	2.00	18.11	108.97	2.00	18.24	109.77	2.00
6946	6945	6946-6945	BC11	45-59-10-00	27	0.01	0.61	20.33	3.37	16.60	0.28	17.57	86.42	1.00	17.71	87.09	1.00	17.91	88.09	1.00	18.12	89.11	1.00	18.25	89.78	1.00
6947	6946	6947-6946	BC11	45-59-11-00	24	0.01	0.62	14.96	3.37	23.56	0.33	17.46	116.76	2.00	17.75	118.73	2.00	17.89	119.66	2.00	18.16	121.44	2.00	18.22	121.84	2.00
6948	31394	6948-31394	BC11	45-59-12-00	24	0.01	0.24	9.21	3.36	36.50	0.41	17.14	186.12	2.00	17.38	188.71	2.00	17.46	189.62	2.00	17.58	190.90	2.00	17.64	191.49	2.00
6949	6948	6949-6948	BC11	45-59-12-00	24	0.01	0.78	16.75	3.36	20.07	0.38	17.14	102.35	2.00	17.39	103.80	2.00	17.47	104.31	2.00	17.60	105.05	2.00	17.66	106.40	2.00
6950	6949	6950-6949	BC11	45-59-13-00	24	0.01	0.61	14.83	3.36	22.67	0.33	17.16	115.69	2.00	17.40	117.31	2.00	17.48	117.90	2.00	17.62	118.80	2.00	17.69	119.25	2.00
6951	6950	6951-6950	BC11	45-59-12-00	24	0.01	0.71	16.01	2.31	14.43	0.30	8.69	54.37	1.00	8.68	54.20	1.00	8.67	54.14	1.00	8.71	54.40	1.00	8.71	54.38	1.00
6952	6951	6952-6951	BC07	45-59-14-00	24	0.01	0.34	11.09	2.31	20.83	0.31	6.76	79.38	1.00	8.84	79.74	1.00	8.87	80.02	1.00	8.95	80.70	1.00	8.96	80.79	1.00
6953	6950	6952-6950	BC11	45-59-12-00	24	0.013	0.09	4.49	1.05	23.50	0.31	9.41	213.82	2.00	9.84	214.57	2.00	9.47	213.18	2.00	9.50	215.99	2.00	9.52	216.44	2.00
6953	38525	6953-38525	BC06	45-59-15-01	24	0.01	0.49	13.33	2.98	22.38	0.33	14.02	105.16	2.00	14.01	105.09	2.00	14.05	105.41	2.00	14.03	105.28	2.00	14.03	104.62	2.00
6953	38525	6953-38525	BC06	45-59-15-01	15	0.013	0.72	3.54	0.00	0.00	0.05	3.60	101.62	2.00	3.62	102.23	2.00	3.64	102.90	2.00	3.69	104.23	2.00	3.70	104.62	2.00
6954	18586	6954-18586	BC11	45-59-16-01	24	0.01	0.47	13.00	2.97	22.82	0.33	16.59	127.61	2.00	16.66	128.14	2.00	16.70	128.43	2.00	16.73	128.71	2.00	16.78	129.11	2.00
6955	6954	6955-6954	BC11	45-59-16-01	24	0.01	0.45	12.80	2.98	23.24	0.33	16.58	129.53	2.00	16.66	130.13	2.00	16.71	130.56	2.00	16.80	131.24	2.00	16.85	131.67	2.00
6956	19873	6956-19873	BC07	45-59-17-01	24	0.01	0.43	12.41	2.37	19.07	0.35	12.08	97.14	1.00	12.34	99.47	1.00	12.40	99.90	2.00	12.54	101.01	2.00	12.53	100.89	2.00
6956	19873	6956-19873	BC07	45-59-17-01	15	0.013	0.54	3.06	0.00	0.00	0.05	2.87	93.07	2.00	2.95	94.69	2.00	2.95	95.73	1.00	2.98	96.85	1.00	2.98	96.59	1.00
6957	6956	6957-6956	BC07	45-59-17-01	15	0.013	0.30	10.33	2.36	22.83	0.33	11.79	114.16	2.00	12.02	116.36	2.00	12.17	117.80	2.00	12.33	119.31	2.00	12.30	119.03	2.00
6957	6956	6957-6956	BC07	45-59-17-01	15	0.013	0.01	0.50	0.00	0.00	0.05	3.10	620.58	2.00	3.17	633.08	2.00	3.21	641.40	2.00	3.25	650.32	2.00	3.24	648.16	2.00
6958	22009	6958-22009	BC07	45-59-18-00	24	0.01	2.56	30.51	0.09	0.29	0.26	0.24	0.80	1.00	0.32	1.06	1.00	0.40	1.33	1.00	0.56	1.85	1.00	0.70	2.30	1.00
6965	15369	6965-15369	BC09	45-59-21-00	18	0.01	0.70	7.40	0.36	4.88	0.16	1.75	23.61	1.00	1.96	26.48	1.00	2.08	28.15	1.00	3.25	43.97	1.00	3.97	53.63	1.00
6966	6965	6966-6965	BC09	45-59-21-00	18	0.01	0.56	6.25	0.36	5.76	0.17	1.74	27.81	1.00	1.96	31.36	1.00	2.11	33.64	1.00	3.25	52.03	1.00	3.97	63.45	1.00
6967	6966	6967-6966	BC09	45-59-22-01	15	0.01	0.58	4.14	0.05	1.25	0.20	0.64	15.44	1.00	0.86	20.80	1.00	1.02	24.61	1.00	2.23	53.76	1.00	3.21	77.59	1.00
6968	6967	6968-6967	BC09	45-59-25-00	15	0.01	0.36	3.35	0.00	0.00	0.05	-0.01	-0.41	0.25	-0.19	-11.61	1.00	-0.82	-24.61	1.00	-1.26	-18.34	1.00	2.35	47.22	1.00
6969	6968	6969-6968	BC09	45-59-25-00	15	0.01	0.70	4.96	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	1.17	24.54	0.97
6970	6969	6970-6969	BC09	45-59-25-00	15	0.01	0.77	4.77	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	1.17	25.71	1.00
6977	33451	6977-33451	BC09	45-59-28-00	18	0.013	0.81	6.09	0.23	3.74	0.14	2.28	37.48	0.43	2.31	37.89	0.43	2.38	38.00	0.43	2.44	39.99	0.44	2.47	40.82	0.44
6978	33451	6978-33451	BC09	45-59-28-00	18	0.013	0.97	6.73	0.10	1.47	0.10	1.56	23.27	0.33	1.84	27.53	0.36	2.19	32.73	0.40	2.79	41.40	0.45	3.27	48.51	0.50
6979	6978	6979-6978	BC09	45-59-29-00	18	0.013	0.96	6.74	0.10	1.46	0.10	1.56	23.13	0.33	1.84	27.37	0.36	2.19	32.53	0.40	2.79	32.64	0.41	3.27	38.25	0.44
6980	6979	6980-6979	BC09	45-59-29-00	18	0.013	1.59	8.55	0.10	1.15	0.12	1.56	18.23	0.30	1.84	21.57	0.33	2.19	25.65	0.36	2.79	55.38	0.61	3.27	64.88	0.69
6981	6980	6981-6980	BC09	45-59-29-00	15	0.013	1.48	5.04	0.10	1.95	0.31	1.56	30.93	0.53	1.84	36.60	0.56	2.19	43.51	0.59	2.79	55.16	0.55	3.27	64.04	0.59
6982	6981	6982-6981	BC09	45-59-29-00	15	0.013	1.47	5.06	0.10	1.95	0.14	1.56	30.81	0.40	1.84	36.46	0.43	2.19	43.34	0.46	2.79	42.34	0.60	2.55	52.60	1.00
6583	6982	6983-6982	BC04	45-59-30-02	16	0.013	0.95	4.84	0.04	0.82	0.08	0.83	17.16	0.29	1.11	23.96	0.33	1.44	29.70	0.38	2.05	55.30	0.53	2.35	68.45	0.79
6984	6983	6984-6983	BC04	45-59-30-02	15	0.013	0.79	3.71	0.04	1.09	0.09	0.83	22.39	0.33	1.11	29.95	0.36	1.44	34.74	0.41	2.05	49.47	0.50	2.55	61.30	0.57
6985	6984	6985-6984	BC09	45-59-32-00	15	0.013	0.89	4.35	0.04	1.07	0.08	0.83	20.02	0.31	1.11	26.73	0.36	1.44	34.33	0.42	2.05	48.09	0.50	2.55	60.77	0.57
6987	6985	6987-6985	BC09	45-59-32-00	15	0.013	1.01	4.20	0.04	1.06	0.12	0.83	19.78	0.32	1.11	26.46	0.36	1.44	34.33	0.42	2.05	26.46	0.34	1.47	32.78	0.41
6988	6987	6988-6987	BC09	45-59-32-00	15	0.013	1.15	4.47	0.03	0.66	0.12	0.48	10.80	0.24	0.65	14.43	0.28	0.83	18.57	0.31	1.18	28.64	0.68	1.47	35.49	0.73
6989	6988	6989-6988	BC09	45-59-32-00	15	0.013	0.88	4.13	0.03	0.72	0.44	0.48	11.69	0.56	0.65	15.62	0.60	0.83	70.10	0.61	1.18	31.16	0.39	1.47	38.61	0.43
6990	32475	6990-32475	BC09	45-59-33-00	15	0.013	0.83	3.85	0.03	0.78	0.08	0.48	12.71	0.25	0.65	16.99	0.28	0.83	21.86	0.32	1.18	25.96	0.43	1.47	27.81	0.45
6995	37990	6995-37990	BC01	45-59-35-01	12	0.013	5.27	5.39	0.15	2.89	0.15	1.24	23.16	0.35	1.34	25.24	0.36	1.42	26.91	0.39	1.43	26.96	0.43	1.43	27.81	0.45
70	52182	70-52182	BC12	45-58-22-00	10	0.013	4.56	3.03	0.13	4.28	0.17	0.39	12.94	0.24	0.49	16.33	0.29	0.58	19.73	0.31	0.60	31.50	0.48	0.85	31.50	0.48
70349	16535	70349-16535	BC12	45-58-11-00	18	0.013	1.87	11.31	0.00	0.00	0.10	0.00	0.00	0.10	0.12	1.08	0.12	0.27	2.38	0.14	0.61	5.26	0.18	0.88	7.67	0.21
70350	70349	70350-70349	BC12	45-58-11-00	18	0.013	2.85	11.47	0.00	0.00	0.10	0.00	0.00	0.10	0.12	1.05	0.12	0.27	2.39	0.14	0.61	5.28	0.19	0.88	7.69	0.21
70351	70350	70351-70350	BC12	45-58-11-00	18	0.013	4.12	13.78	0.00	0.00	0.10	0.00	0.00	0.10	0.12	0.90	0.12	0.27	1.99	0.14	0.61	4.

Baltimore County

Jones Falls - Modeled Pipe Capacity - Existing Conditions

Pipe Attributes									Dry Weather Flows			2-Year 6-Hour			2-Year 24-Hour			10-Year 6-Hour			10-Year 24-Hour			20-Year 24-Hour		
Upstream Node	Downstream Node	Asset ID	Meter Basin	SSA	Pipe Diameter	Manning's Coefficient	Pipe Gradient	Pipe Full Capacity	Peak Dry Weather Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State
7052	7052M	7052-7052M	BC04	45-59-10-01	8	0.013	2.36	1.20	0.13	10.51	0.36	1.16	96.74	1.00	1.17	97.66	1.00	1.17	97.73	1.00	1.17	97.79	1.00	1.17	97.77	1.00
7052M	7051	7052M-7051	BC04	45-59-10-01	10	0.013	0.00	0.00	0.14	#DIV/0!	0.28	1.32	#DIV/0!	2.00	1.35	#DIV/0!	2.00	1.35	#DIV/0!	2.00	1.34	#DIV/0!	2.00	1.64	#DIV/0!	2.00
7061	6967	7061-6967	BC09	45-59-23-00	8	0.013	2.22	1.16	0.05	4.47	0.17	0.64	55.11	0.54	0.66	74.25	0.89	1.04	89.53	1.00	1.06	92.80	1.00	1.07	93.24	1.00
7062	7061	7062-7061	BC09	45-59-23-00	8	0.013	1.78	1.04	0.05	4.99	0.18	0.64	61.48	0.58	0.66	82.83	0.71	1.04	99.85	1.00	1.06	102.39	2.00	1.06	102.39	2.00
7063	7062	7063-7062	BC09	45-59-23-00	8	0.013	1.77	1.04	0.05	4.99	0.18	0.64	61.48	0.58	0.66	82.84	0.71	1.04	99.85	1.00	1.06	102.39	2.00	1.06	102.39	2.00
7064	7063	7064-7063	BC09	45-59-23-00	8	0.013	0.47	0.53	0.05	9.81	0.23	0.64	120.64	2.00	0.88	162.57	2.00	1.04	196.82	2.00	1.10	206.81	2.00	1.10	207.17	2.00
7065	7064	7065-7064	BC09	45-59-23-00	8	0.013	2.27	1.18	0.05	4.41	0.17	0.64	54.29	0.54	0.67	73.36	1.00	1.05	89.07	1.00	1.18	99.72	2.00	1.19	100.47	2.00
7071	53444	7071-53444	BC09	45-59-25-00	10	0.02	1.25	1.03	0.00	0.00	0.30	0.00	0.00	0.30	0.00	0.00	0.30	0.00	0.00	0.30	-0.07	-6.72	1.00	-0.13	-12.69	1.00
7071	53444	7071-53444	BC09	45-59-25-00	10	0.013	0.99	1.41	0.11	7.68	0.20	0.67	47.50	0.50	0.80	56.64	0.55	0.80	56.77	0.55	0.81	57.57	1.00	0.82	57.81	1.00
7080	7071	7080-7071	BC09	45-59-25-00	8	0.013	1.91	1.06	0.11	10.01	0.23	0.67	62.02	0.58	0.82	73.94	0.65	0.80	74.12	0.65	0.80	74.20	0.65	0.80	74.20	0.65
7081	7080	7081-7080	BC09	45-59-23-00	8	0.013	0.41	0.50	0.11	21.88	0.33	0.67	133.06	2.00	0.80	159.72	2.00	0.80	160.10	2.00	0.80	160.24	2.00	0.80	160.26	2.00
7082	7081	7082-7081	BC09	45-59-25-00	8	0.013	3.14	1.38	0.11	7.86	0.21	0.67	48.55	0.50	0.80	57.81	0.56	0.80	58.01	0.56	0.80	58.07	0.56	0.80	58.07	0.56
7083	7082	7083-7082	BC09	45-59-25-00	8	0.013	0.40	0.49	0.11	22.14	0.34	0.67	134.73	2.00	0.80	163.05	2.00	0.80	163.37	2.00	0.80	163.53	2.00	0.80	163.55	2.00
7084	7083	7084-7083	BC09	45-59-25-00	8	0.013	0.40	0.49	0.11	22.14	0.34	0.67	134.88	2.00	0.80	163.84	2.00	0.81	165.04	2.00	0.81	166.22	2.00	0.82	166.39	2.00
7085	7084	7085-7084	BC09	45-59-25-00	8	0.013	0.40	0.49	0.11	22.18	0.34	0.67	137.27	2.00	0.82	167.31	2.00	0.85	172.45	2.00	0.88	180.35	2.00	0.89	180.86	2.00
7086	53449	7086-53449	BC09	45-59-26-00	8	0.013	4.41	1.64	0.06	3.85	0.17	0.21	13.00	0.26	0.27	16.66	0.29	0.33	20.38	0.32	0.47	28.40	0.38	0.56	34.14	0.42
7087	900091	7087-900091	BC09	45-59-26-00	8	0.013	0.49	0.55	0.06	12.80	0.25	0.23	38.76	0.44	0.27	49.71	0.51	0.33	60.76	0.57	0.47	84.75	0.72	0.56	102.09	2.00
7088	7087	7088-7087	BC09	45-59-26-00	8	0.013	2.46	1.22	0.06	5.32	0.19	0.21	17.48	0.30	0.27	22.43	0.36	0.33	27.39	0.43	0.47	38.22	0.58	0.57	46.34	0.88
7089	7088	7089-7088	BC09	45-59-26-00	8	0.013	0.42	0.51	0.07	12.75	0.26	0.23	41.84	0.45	0.27	53.67	0.51	0.33	65.55	0.57	0.47	91.49	0.68	0.57	111.22	0.77
7090	7089	7090-7089	BC09	45-59-26-00	8	0.013	0.40	0.49	0.07	13.27	0.27	0.23	43.55	0.47	0.27	55.88	0.55	0.33	68.22	0.62	0.47	95.27	0.79	0.57	115.78	2.00
7091	53448	7091-53448	BC09	45-59-27-00	8	0.013	0.42	0.52	0.20	32.65	0.52	0.80	128.82	2.00	0.80	128.95	2.00	0.80	128.95	2.00	0.80	128.95	2.00	0.80	128.95	2.00
7092	7092	7092-7092	BC09	45-59-27-00	8	0.013	3.27	1.41	0.20	14.35	0.28	0.80	56.70	0.56	0.80	56.70	0.56	0.80	56.70	0.56	0.80	56.70	0.56	0.80	56.70	0.56
7093	7092	7093-7092	BC09	45-59-27-00	8	0.013	0.81	0.70	0.20	28.91	0.38	0.80	114.11	2.00	0.80	114.20	2.00	0.80	114.20	2.00	0.80	114.20	2.00	0.80	114.20	2.00
7094	7093	7094-7093	BC09	45-59-27-00	8	0.013	4.87	1.72	0.20	11.77	0.25	0.80	46.44	1.00	0.80	46.44	1.00	0.80	46.44	1.00	0.80	46.44	1.00	0.80	46.44	1.00
7095	7094	7095-7094	BC09	45-59-27-00	8	0.013	4.87	1.72	0.20	11.77	0.25	0.80	46.44	1.00	0.80	46.44	1.00	0.80	46.44	1.00	0.80	46.44	1.00	0.80	46.44	1.00
7096	7095	7096-7095	BC09	45-59-27-00	8	0.013	0.45	1.06	0.20	10.23	0.24	0.80	40.34	0.45	0.80	40.37	0.45	0.80	40.37	0.45	0.80	40.37	0.45	0.80	40.37	0.45
7097	7096	7097-7096	BC09	45-59-27-00	8	0.013	8.76	2.31	0.20	8.77	0.22	0.80	34.58	0.42	0.80	34.61	0.42	0.80	34.61	0.42	0.80	34.61	0.42	0.80	34.61	0.42
7098	7097	7098-7097	BC09	45-59-27-00	8	0.013	8.43	2.27	0.20	8.83	0.22	0.80	35.19	0.42	0.80	35.22	0.42	0.80	35.22	0.42	0.80	35.22	0.42	0.80	35.22	0.42
7099	7098	7099-7098	BC09	45-59-27-00	8	0.013	0.41	0.50	0.20	40.52	0.45	0.86	158.74	2.00	0.80	159.85	2.00	0.80	159.82	2.00	0.80	159.85	2.00	0.80	159.88	2.00
7100	7099	7100-7099	BC09	45-59-27-00	8	0.013	1.05	1.12	0.70	18.09	0.30	0.80	71.32	1.00	0.80	71.38	1.00	0.80	71.38	1.00	0.80	71.38	1.00	0.80	71.38	1.00
7101	7100	7101-7100	BC09	45-59-27-00	8	0.013	1.48	0.95	0.20	21.33	0.33	0.80	84.08	0.72	0.80	84.15	0.72	0.80	84.15	0.72	0.80	84.15	0.72	0.80	84.15	0.72
7102	71757	7102-71757	BC09	45-59-27-00	8	0.013	0.77	0.69	0.20	29.38	0.39	0.80	115.77	2.00	0.80	115.86	2.00	0.80	115.86	2.00	0.80	115.86	2.00	0.80	115.86	2.00
7106	20553	7106-20553	BC09	45-59-29-00	8	0.013	3.67	1.50	0.15	9.83	0.23	0.81	54.01	0.54	0.95	63.73	0.59	0.95	63.79	0.59	0.95	63.79	0.59	0.95	63.79	0.59
7107	7106	7106-7106	BC09	45-59-29-00	8	0.013	3.65	1.49	0.15	9.80	0.23	0.81	54.40	0.54	0.95	63.66	0.59	0.95	63.72	0.59	0.95	63.72	0.59	0.95	63.72	0.59
7108	7107	7108-7107	BC09	45-59-29-00	8	0.013	3.74	1.51	0.15	9.77	0.23	0.81	53.68	0.53	0.95	62.81	0.58	0.95	62.87	0.58	0.95	62.87	0.58	0.95	62.88	0.58
7113	6966	7113-6966	BC09	45-59-22-01	8	0.013	3.25	1.41	0.31	21.96	0.34	1.11	78.44	1.00	1.13	79.89	1.00	1.13	79.96	1.00	1.13	80.16	1.00	1.13	80.19	1.00
7115	63665	7115-63665	BC09	45-59-22-01	8	0.013	3.32	1.42	0.31	21.80	1.00	1.81	127.88	2.00	1.82	128.35	2.00	1.83	128.79	2.00	1.84	129.71	2.00	1.85	130.30	2.00
71157	64085	71157-64085	TSJR01	45-59-06-00	8	0.013	0.56	0.56	0.02	3.29	0.16	0.43	73.69	0.68	0.57	99.09	0.80	0.73	126.58	2.00	1.04	179.59	2.00	1.26	217.34	2.00
71158	71157	71158-71157	TSJR01	45-59-06-00	8	0.013	0.62	0.61	0.02	3.11	0.15	0.43	70.07	0.63	0.58	94.26	0.78	0.73	120.38	2.00	1.05	171.35	2.00	1.27	208.23	2.00
7116	7115	7116-7115	BC09	45-59-22-01	8	0.013	0.37	0.47	0.13	26.17	0.37	0.74	158.43	2.00	0.75	154.66	2.00	0.74	157.23	2.00	0.74	157.64	2.00	0.74	157.32	2.00
7117	7116	7117-7116	BC09	45-59-22-00	8	0.013	4.07	1.58	0.13	8.59	0.22	0.96	60.61	1.00	0.96	60.67	1.00	0.96	60.67	1.00	0.96	60.67	1.00	0.96	60.67	1.00
7118	7117	7118-7117	BC09	45-59-22-00	8	0.013	3.84	1.53	0.13	8.66	0.22	0.96	62.59	0.58	0.96	62.65	0.58	0.96	62.65	0.58	0.96	62.65	0.58	0.96	62.65	0.58
7119	7118	7119-7118	BC09	45-59-22-00	8	0.013	2.99	1.35	0.13	9.81	0.23	0.96	70.94	0.64	0.96	71.01	0.64	0.96	71.01	0.64	0.96	71.01	0.64	0.96	71.01	0.64
71194	38684	71194-38684	BC01	45-59-35-01	8	0.013	0.40	0.49	0.04	7.71	0.21	0.38	37.22	0.43	0.34	48.29	0.50	0.50	61.67	0.57	0.42	85.90	0.72	0.52	105.98	2.00
7120	7119	7120-7119	BC09	45-59-22-00	8	0.013	1.81	1.05	0.13	12.62	0.26	0.96	91.21	0.77	0.96	91.30	0.78	0.96	91.30	0.78	0.96	91.30	0.78	0.96	91.30	0.78
7122	71238	7122-71238	BC09	45-59-22-00	8	0.013	1.68	1.01	0.13	13.13	0.27	0.96	94.82	0.80	0.96	94.91	0.80	0.96	94.91	0.80	0.96	94.91	0.80	0.96	94.91	0.80
71229	71158	71229-71158	TSJR01	45-59-06-00	8	0.013	7.71	2.17	0.02	0.88	0.12	0.43	19.71	0.32	0.58	26.53	0.36	0.73	33.87	0.42	1.01	48.52	0.50	1.30	59.77	1.00
7123	7122	7123-7122	BC09	45-59-22-00	8	0.013	0.50	0.55	0.13	24.11	0.35	0.96	174.13	2.00	0.96	174.29	2.00	0.96	174.29	2.00	0.96	174.29	2.00	0.96	174.29	2.00
7124	7123	7124-7123	BC09	45-59-22-00	8	0.013	3.45	1.45	0.13	9.15	0.22	1.21	83.63	1.00	1.32	90.80	1.00	1.32	90.82	1.00	1.32	90.83	1.00	1.32	90.83	1.00
7125	7124	7125-7124	BC09	45-59-22-00	8	0.013	3.12	1.38	0.13	9.62	0.23	1.21	87.96	1.00	1.32	95.41	1.00	1.32	95.43	1.00	1.32	95.43	1.00	1.32	95.43	1.00
7126	7125	7126-7125	BC09	45-59-22-00	8	0.013	2.46	1.22	0.13	10.88	0.24	1.22	99.67	1.00	1.32	108.07	1.00	1.32	108.08	2.00	1.32	108.11	2.00	1.32	108.11	2.00
7127	7126	7127-7126	BC09	45-59-22-00	8	0.013	2.50	1.24	0.13	10.71	0.24	1.22	98.47	1.00	1.36	109.96	2.00	1.37	110.87	2.00	1.40	112.61	2.00	1.40	112.60	2.00
7128	7127	7128-7127	BC09	45-59-22-00	8	0.013	4.12	1.59	0.13	8.35	0.22	1.23	76.38	1.00	1.36	98.04	1.00	1.57	98.99	1.00	1.61	100.97	2.00	1.61	101.04	2.00
7132	7128	7132-7128	BC09	45-59-22-00	8	0.013	2.18	1.15	0.03	2.47	0.14	0.34	29.43	0.58	0.46	40.17	1.00	0.55	47.79	1.00	0.80	69.92	1.00	0.96	83.10	1.00
7133	7132	7133-7132	BC09	45-59-22-02	6	0.013	1.58	0.98	0.03	2.60	0.15	0.34	34.54	0.42	0.46	47.22	1.00	0.55	56.12	1.00	0.81	82.17	1.00	0.96	97.64	1.00
7134	7133	7134-7133	BC09	45-59-22-02	8	0.013	2.32	1.19	0.03	2.39	0.14	0.34	28.43	0.38	0.47	39.63	0.45	0.55	46.49	0.50	0.81	68.23	1.00	0.96	81.08	1.00
7135	7134	7135-7134	BC09	45-59-22-02	8	0.013	2.48	1.23	0.03	2.31	0.14	0.34	27.53	0.37	0.47	38.41	0.44	0.55	44.99	0.49	0.83	67.27	0.62	1.00	81.01	1.00
7136	7135	7136-7135	BC09	45-59-22-02	8	0.013	1.81	1.05	0.03	2.70	0.15	0.34	32.26	0.41	0.47	45.10	0.49	0.55	52.71	0.53	0.83	78.98	0.69	1.00	95.09	0.87
7137	7136	7137-7136	BC09	45-59-22-02	8	0.013	2.80	1.11	0.03	2.18	0.14	0.34	25.87	0.36	0.47	36.11	0.43	0.55	42.35	0.47	0.83	63.73	0.59	1.02	77.74	0.68
7161	7053M	7161-7053M	BC04	45-59-30-01	8	0.013	4.47	1.65	0.02	0.96	0.16	0.23	13.94	1.00	0.31	19.01	1.00	0.38	23.94	1.00	0.54	32.99	1.00	0.65	39.65	1.00
7162	7161	7162-7161	BC04	45-59-30-01	8	0.013	7.62	2.16	0.02	0.75	0.12	0.24	13.25	0.29	0.33	15.44	0.30	0.40	18.36	1.00	0.54	24.77	1.00	0.70	32.61	1.00
7163	23057	7163-23057	BC04	45-59-30-01	8	0.013	0.26	0.40	0.02	3.05	0.16	0.24	60.78	0.57	0.33	83.43	0.68	0.40	99.76	0.77	0.58	145.90	2.00	0.71	176.90	2.00
7164	7163	7164-7163	BC04	45-59-30-01	8	0.013	1.60	0.99	0.02	1.60	0.13	0.24	24.57	0.34	0.33	33.81	0.42	0.40	40.15	0.45	0.59	59.69	0.62	0.71	71.78	1.00
7165	7052	7165-7052	BC04	45-59-30-03	8	0.013	3.70	1.50	0.13	8.41	0.22	1.16	77.40	1.00	1.17	77.86	1.00	1.17	77.91	1.00	1.17	77.93	1.00	1.17	77.92	1.00
7166	7165	7166-7165	BC04	45-59-30-03	8	0.013	3.45	1.45	0.13	8.70	0.22	1.16	80.26	1.00	1.17	80.40	1.00	1.17	80.43	1.00	1.17	80.44	1.00	1.17	80.44	1.00
7167	7166	7167-7166	BC04	45-59-30-03	8	0.013	0.41	0.50	0.13	25.22	0.36	1.16	232.74	2.00	1.16	233.74	2.00	1.16	232.80	2.00	1.16	232.78	2.00	1.16	232.84	2.00
7168	7167	7168-7167	BC04	45-59-30-03	8	0.013	2.46	1.23	0.13	10.25	0.24	1.20	97.50	1.00	1.20	97.60	1.00	1.20	97.59	1.00	1.20	97.59	1.00	1.20	97.60	1.00
7169	7168	7169-7168	BC04	45-59-30-03	8	0.013	3.36	1.43	0.13	8.82	0.22	1.27	88.96	1.00	1.38	96.41	1.00	1.38	96.56	1.00	1.38	96.56	1.00	1.38	96.56	1.00
7170	7169	7170-7169	BC04	45-59-30-03	8	0.013	3.71	1.50	0.13	8.41	0.22	1.27	84.87	1.00	1.38	91.97	1.00	1.38	92.05	1.00	1.38	92.05	1.00	1.38	92.05	1.00
7171	7170	7171-7170	BC04	45-59-30-03	8	0.013	2.34	1.19	0.13	10.60	0.24	1.30	108.83	2.00	1.41	118.77	2.00	1.42	119.38	2.00	1.42	119.37	2.00	1.42	119.81	2.00
7173	7171	7173-7171	BC04	45-59-30-03	8	0.013	3.06	1.37	0.13	9.20	0.23	1.30	94.87	1.00	1.41	101.92	2.00	1.45	106.16	2.00	1.46	106.58	2.00	1.46	106.50	2.00
7176	7173	7176-7173	BC04	45-59-30-03	6	0.013	2.75	1.29	0.13	9.78	0.23	1.31	101.29	2.00	1.51	116.69	2.00	1.51	117.37	2.00	1.52	117.90	2.00	1.52	117.76	2.00
7177	7176	7177-7176	BC04	45-59-30-03	8	0.013	4.51	1.66	0.13	7.60	0.21	1.31	78.79	1.00	1.62	97.69	1.00	1.65	99.38	2.00	1.69	101.74	2.00	1.69	101.70	2.00
7178	7051	7178-7051	BC04	45-59-30-01	8	0.013	4.11	1.58	0.09	5.42	0.32	1.01	64.06	1.00	1.02	64.49	1.00	1.01	64.13	1.00	1.01	64.07	1.00	1.01	64.07	1.00
7179	7178	7179-7178	BC04	45-59-30-02	8	0.013	1.84	1.00	0.09	8.57	0.22	1.00	100.16	1.00	1.01	101.13	1.00	1.00	100.14	1.00	1.00	100.28	1.00	1.00	100.08	1.00
7180	7179	7180-7179	BC04	45-59-30-02	8	0.013	0.40	0.50	0.09	17.14	0.30	0.98	196.46	2.00	0.98	196.66	2.00	0.98	196.58	2.00	0.98	196.46	2.00	0.98	196.38	2.00
7181	7180	7181-7180	BC04	45-59-30-02	8	0.013	0.41	0.50	0.09	17.14	0.29	0.98	195.72	2.00	0.98	195.68	2.00	0.98	195.64	2.00	0.98	195.66	2.00	0.98	195.64	2.00
7182	7181	7182-7181	BC04	45-59-30-01	8	0.013	1.23	0.87	0.09	9.65	0.23	0.98	112.38	2.00	0.98	112.30	2.00	0.98	112.34	2.00	0.98	112.29	2.00	0.98	112.28	2.00
7183	7182	7183-7182	BC04	45-59-30-01	8	0.013	2.33	1.19	0.09	7.20	0.21	1.00	84.45	1.00	1.02	85.33	1.00	1.01	84.68	1.00	1.01	85.28	1.00	1.01	85.08	1.00
7184	7183	7184-7183	BC04	45-59-30-01	8	0.013	1.87	1.07	0.09	8.01	0.21	1.04	97.33	1.00	1.07	99.86	2.00	1.05	98.03	2.00	1.07	99.79	2.00	1.06	99.24	2.00
7185	7184	7185-7184	BC04	45-59-30-02	8	0.013	1.90	1.08	0.09	7.94	0.21	1.28	118.60	2.00	1.28	118.61	2.00	1.28	118.61	2.00	1.28	118.61	2.00	1.28	118.61	2.00
7188	7185	7188-7185	BC04	45-59-30-02	8	0.013	1.37	0.91	0.09	6.42	0.33	1.30	147.82	2.00	1.32	145.41	2.00	1.32	145.31	2.00	1.32	145.27	2.00	1.32	145.21	2.00
7252	6995	7252-6995	BC02	45-59-34-00	12	0.013	1.29	2.81	0.15	5.85	0.19	1.24	47.24	0.50	1.34	51.15	0.52	1.42	54.53	0.54	1.43	54.64	0.54	1.43	54.75	0.54
7253	7252	7253-7252	BC02	45-59-34-00	12	0.013	0.44	1.53	0.15	9.88	0.22	1.24	80.75	0.69	1.34	87.24	0.72	1.42	93.03	0.78	1.43	93.21	0.78	1.43	93.41	0.78
7254	7253	7254-7253	BC02	45-59-34-00	12	0.02	0.36	0.89	0.15	17.16	0.29	1.24	138.82	2.00	1.34	150.02	2.00	1.42	159.92	2.00	1.43	160.25	2.00	1.43	160.57	2.00
7255	7254	7254-7255	BC02	45-59-34-00	12	0.02	0.43	0.98	0.15	15.59	0.29	1.24	126.08	2.00	1.34	136.26	2.00	1.42	145.23	2.00	1.43	145.53	2.00	1.43	145.83	2.00
7256	7255	7256-7255	BC02	45-59-34-00	12	0.01	0.32	0.84	0.15	18.19	0.29	1.24	147.32	2.00	1.34	159.01	2.00	1.42	169.46	2.00	1.43	169.81	2.00	1.43	170.14	2.00
7257	7270	7257-7270	BC02	45-59-34-00	6	0.013	0.61	0.70	0.09	13.21	0.56	0.74	106.37	2.00	0.75	107.29	2.00	0.76	108.13	2.00	0.76	108.01	2.00	0.76	108.01	2.00
7258	7257	7258-7257	BC02	45-59-34-00	8	0.013	1.76	1.04	0.09	8.89	0.32	0.75	71.75	1.00	0.75	71.84	1.00	0.75	71.99	1.00	0.75	72.22	1.00	0.75	72.23	1.00
7259	7258	7259-7258	BC02	45-59-34-00	8	0.013	1.20	0.86	0.09	10.76	0.24	0.75	87.31	0.73	0.75	87.31	1.00	0.75	87.31	1.00	0.75	87.31	1.00	0.75	87.31	1.00
7260	7259	7260-7259	BC02	45-59-34-00	8	0.013	0.39	0.49	0.09	16.83	0.31	0.75	152.74	2.00	0.75	153.24	2.00	0.75	153.24	2.00	0.75	153.24	2.00	0.75	153.24	2.00
7261	7260	7261-7260	BC02	45-59-34-00	8	0.013	0.36	0.47	0.09	19.42	0.32	0.75	159.77	2.00	0.75	159.77	2.00	0.75	159.77	2.00	0.75	159.77	2.00	0.75	159.77	2.00
7262	7261	7262-7261	BC02	45-59-34-00	8	0.013	0.33	0.44	0.09	21.01	0.33	0.75	170.66	2.00	0.75	170.66	2.00	0.75	170.66	2.00	0.75	170.66	2.00	0.75	170.66	2.00
7263	7262	7263-7262	BC02	45-59-34-00	8	0.013	0.39	0.49	0.09	18.90	0.31	0.76	153.90	2.00	0.77	156.51	2.00	0.77	156.43	2.00	0.77	156.67	2.00	0.77	156.61	2.00
7264	7263	7264-7263

Jones Falls - Modeled Pipe Capacity - Existing Conditions

Baltimore County

Pipe Attributes									Dry Weather Flows			2-Year 6-Hour			2-Year 24-Hour			10-Year 6-Hour			10-Year 24-Hour			20-Year 24-Hour		
Upstream Node	Downstream Node	Asset ID	Meter Basin	SSA	Pipe Diameter	Manning's Coefficient	Pipe Gradient	Pipe Full Capacity	Peak Dry Weather Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State	Peak Storm Flow	% Pipe Full Capacity	Surcharge State
7288	7287	7288-7287	BC02	45-59-34-00	8	0.013	3.38	1.44	0.09	6.43	0.20	0.93	64.85	0.76	1.23	85.21	1.00	1.45	101.00	2.00	1.50	103.96	2.00	1.50	104.43	2.00
7289	7256	7289-7256	BC02	45-59-34-00	10	0.02	0.54	0.66	0.06	8.88	0.22	0.94	79.91	1.00	0.95	96.24	2.00	0.71	104.91	2.00	0.74	108.32	2.00	0.74	108.19	2.00
7295	61948	7295-61948	BC16	45-58-01-00	24	0.013	1.62	18.62	3.29	17.61	0.30	8.74	46.93	0.69	10.69	54.17	1.00	11.56	62.10	1.00	13.57	72.87	1.00	14.48	77.76	1.00
7296	7295	7296-7295	BC16	45-58-01-00	24	0.013	0.38	9.00	3.29	36.57	0.42	8.74	97.14	0.79	10.69	117.08	2.00	11.64	129.29	2.00	13.79	153.20	2.00	14.82	164.69	2.00
7297	7296	7297-7296	BC16	45-58-01-00	24	0.013	0.76	12.77	3.29	25.77	0.37	8.74	68.47	0.76	10.69	79.00	1.00	11.64	91.12	1.00	13.79	107.97	2.00	14.85	116.14	2.00
7298	7297	7298-7297	BC16	45-58-01-00	24	0.013	0.43	9.56	3.29	34.36	0.41	8.74	91.27	0.79	10.10	105.41	0.91	11.64	121.47	2.00	13.79	143.03	2.00	14.85	154.07	2.00
7300	55251	7300-55251	BC16	45-58-01-00	24	0.013	0.65	11.77	3.15	26.41	0.35	7.82	66.42	0.60	9.35	77.97	0.86	10.71	91.01	1.00	13.11	111.37	2.00	14.14	120.23	1.00
7301	7300	7301-7300	BC16	45-58-01-00	24	0.013	2.00	20.70	3.11	15.02	0.28	7.82	37.77	0.44	9.18	44.34	0.48	10.74	51.88	0.52	13.11	63.34	1.00	14.56	64.29	1.00
7302	7301	7302-7301	BC16	45-58-03-00	24	0.013	2.40	22.65	3.11	13.72	0.27	7.82	34.52	0.42	9.18	40.52	0.45	10.74	47.41	0.50	13.12	57.90	1.00	14.60	85.55	1.00
7303	7302	7303-7302	BC16	45-58-03-00	21	0.013	2.77	17.06	3.11	18.22	0.30	7.82	45.83	0.49	9.18	53.80	0.54	10.74	62.94	0.58	13.15	77.05	1.00	14.77	99.69	1.00
7305	7303	7305-7303	BC16	45-58-03-00	21	0.013	2.09	14.82	3.11	20.98	0.33	7.82	52.76	0.53	9.18	61.93	0.58	10.74	72.46	0.64	13.15	88.70	0.74	14.77	99.69	1.00
7308	7305	7308-7305	BC16	45-58-03-00	21	0.013	1.49	12.52	3.11	24.83	0.35	7.82	62.45	0.74	9.18	73.31	1.00	10.74	85.77	1.00	13.15	105.01	2.00	14.69	117.30	2.00
7309	19143	7309-19143	BC14	45-58-04-00	21	0.013	0.85	9.14	2.25	24.67	0.34	5.27	57.60	0.55	6.14	67.16	0.60	7.26	79.38	0.68	8.71	95.30	1.00	9.14	100.05	1.00
7311	18322	7311-18322	BC16	45-58-03-00	21	0.02	1.12	7.06	2.25	31.94	0.40	5.27	74.58	0.65	6.14	86.95	0.73	7.26	102.78	0.94	8.79	123.36	2.00	9.11	129.04	2.00
7314	18241	7314-18241	BC16	45-58-05-00	21	0.02	0.35	3.91	2.25	57.66	0.54	5.27	134.67	2.00	6.14	157.02	2.00	7.26	185.83	2.00	8.89	222.18	2.00	9.16	234.16	2.00
7315	22223	7315-22223	BC16	45-58-05-00	21	0.02	0.49	4.64	2.12	45.61	0.45	4.24	91.44	0.66	4.95	106.70	0.93	5.86	126.20	2.00	7.09	152.88	2.00	7.61	164.20	2.00
7316	7315	7316-7315	BC16	45-58-05-00	21	0.013	0.96	10.03	2.12	21.10	0.33	4.24	42.30	0.60	4.95	49.34	0.86	5.83	58.36	1.00	7.06	70.61	1.00	6.01	79.81	1.00
7317	7316	7317-7316	BC12	45-58-07-00	21	0.013	0.67	8.38	1.76	20.99	0.31	3.27	39.06	0.44	3.82	45.59	0.56	4.49	53.54	1.00	5.50	65.62	1.00	6.37	76.07	1.00
7318	7317	7318-7317	BC12	45-58-07-00	21	0.013	0.55	7.59	1.76	23.17	0.33	3.27	43.13	0.46	3.82	50.33	0.50	4.47	58.93	0.76	5.48	72.22	1.00	6.37	83.93	1.00
7319	7318	7319-7318	BC12	45-58-07-00	21	0.013	0.92	9.80	1.76	17.95	0.31	3.27	33.40	0.44	3.82	38.99	0.48	4.50	45.91	0.55	5.47	55.82	1.00	6.37	65.09	1.00
7320	7319	7320-7319	BC12	45-58-07-00	21	0.013	1.27	11.54	1.76	15.24	0.28	3.27	28.37	0.38	3.82	33.17	0.41	4.50	38.99	0.44	5.64	48.84	1.00	5.69	72.02	1.00
7321	7320	7321-7320	BC12	45-58-07-00	18	0.013	1.15	7.90	1.61	20.42	0.32	2.94	37.17	0.43	3.43	43.42	0.48	4.02	50.82	0.51	5.11	63.67	0.63	5.80	79.15	1.00
7322	7321	7322-7321	BC12	45-58-07-00	18	0.013	1.16	7.31	1.61	22.01	0.34	2.94	40.07	0.45	3.43	46.80	0.50	4.02	54.77	0.54	5.11	68.62	0.63	5.92	91.29	1.00
7323	7322	7323-7322	BC12	45-58-08-00	18	0.013	0.81	6.48	1.61	24.90	0.35	2.94	45.33	0.48	3.43	52.94	0.52	4.02	61.96	0.57	5.11	77.62	0.67	5.96	76.53	1.00
7324	7323	7324-7323	BC12	45-58-08-00	18	0.013	1.32	7.79	1.61	20.71	0.33	2.94	37.70	0.44	3.43	44.04	0.48	4.02	51.54	0.52	5.11	65.51	0.62	5.96	76.53	1.00
7325	52651	7325-52651	BC12	45-58-08-00	18	0.013	1.07	6.84	0.52	7.67	0.34	1.08	15.83	0.46	1.41	20.55	0.51	1.80	26.31	0.61	2.56	37.40	0.79	3.16	46.26	0.98
7326	7325	7326-7325	BC12	45-58-09-01	18	0.013	0.81	6.13	0.52	8.56	0.20	1.08	17.61	0.39	1.41	21.89	0.33	1.80	29.35	0.37	2.56	43.42	0.46	3.17	53.74	0.52
7327	7326	7327-7326	BC12	45-58-09-01	18	0.013	0.75	5.89	0.52	8.91	0.21	1.08	18.35	0.29	1.41	23.87	0.34	1.80	30.55	0.38	2.56	43.82	0.47	3.17	54.30	0.53
7328	7327	7328-7327	BC12	45-58-08-01	18	0.013	0.74	5.83	0.52	9.00	0.21	1.08	18.54	0.29	1.41	24.11	0.34	1.80	30.85	0.38	2.56	43.82	0.47	3.18	54.42	0.36
7329	7328	7329-7328	BC12	45-58-09-02	15	0.013	1.56	5.22	0.02	0.30	0.13	0.17	3.27	0.16	0.34	4.60	0.20	0.56	16.81	0.24	1.01	19.34	0.31	1.38	37.08	0.43
7330	7329	7330-7329	BC12	45-58-11-00	15	0.013	0.80	3.73	0.01	0.43	0.07	0.17	4.58	0.15	0.34	9.23	0.21	0.56	15.13	0.27	1.01	27.07	0.36	1.38	37.08	0.43
7332	7316	7332-7316	BC12	45-58-06-01	10	0.013	1.77	1.89	0.36	18.96	0.41	0.98	51.96	0.75	1.21	61.89	1.00	1.39	73.60	1.00	1.67	88.14	1.00	1.84	97.44	1.00
7333	7332	7333-7332	BC12	45-58-06-01	10	0.013	3.45	2.63	0.36	13.62	0.27	0.98	37.36	0.43	1.21	45.93	0.49	1.43	53.94	0.56	1.71	66.56	1.00	1.96	74.51	1.00
7334	16604	7334-16604	BC12	45-58-08-00	10	0.013	3.11	2.50	0.15	5.85	0.19	0.34	13.56	0.27	0.41	16.50	0.29	0.49	19.72	0.32	0.65	25.97	0.36	0.78	31.07	1.00
7335	7334	7335-7334	BC12	45-58-08-00	10	0.013	3.77	2.76	0.15	5.32	0.18	0.34	12.33	0.26	0.41	15.00	0.28	0.48	17.93	0.30	0.65	23.62	0.35	0.78	28.21	0.38
742	754	70255	BC12	45-55-10-00	8	0.013	1.29	1.07	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10
754	902164	526568	BC12	45-58-10-00	8	0.013	4.11	1.93	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10
8195	37032	8195-37032	BC14	45-55-07-00	12	0.013	0.24	1.14	0.50	44.04	0.45	0.51	44.66	0.45	0.54	47.22	0.47	0.57	49.89	0.51	0.63	55.47	0.51	0.68	59.88	0.53
900091	7086	900091-7086	BC09	45-59-26-00	8	0.013	0.50	0.55	0.06	11.76	0.25	0.21	38.76	0.44	0.27	49.69	0.51	0.33	60.76	0.57	0.47	84.69	0.71	0.56	101.80	0.91
901295	901296	901295-901296	BC08	45-59-17-01	8	0.013	1.49	0.95	0.39	41.17	0.46	0.67	78.99	1.00	0.83	87.16	1.00	1.02	107.49	2.00	1.16	121.73	2.00	1.16	122.46	2.00
901296	901297	901296-901297	BC08	45-59-17-01	8	0.013	0.61	0.61	0.39	64.11	0.59	0.67	110.56	2.00	0.83	135.72	2.00	1.02	167.39	2.00	1.12	182.92	2.00	1.12	183.36	2.00
901297	901298	901297-901298	BC08	45-59-17-01	8	0.013	0.59	0.60	0.39	65.17	0.60	0.67	112.38	2.00	0.83	137.88	2.00	1.02	170.18	2.00	1.09	181.75	2.00	1.09	181.98	2.00
901298	901299	901298-901299	BC08	45-59-17-01	8	0.013	1.66	1.05	0.39	37.24	0.43	0.67	64.22	0.58	0.83	78.84	0.69	1.02	97.25	0.97	1.09	103.26	2.00	1.09	103.90	2.00
901299	52524	901299-52524	BC08	45-59-17-01	8	0.013	8.72	2.31	0.39	16.93	0.49	0.67	29.16	1.00	0.83	35.84	1.00	1.02	44.20	1.00	1.09	47.21	1.00	1.09	47.27	1.00
901390	37900	901390-37900	BC01	45-59-35-01	15	0.02	11.09	9.04	0.51	5.65	0.19	1.35	14.89	0.25	1.69	18.70	0.31	2.06	22.83	0.34	2.50	27.67	0.37	2.74	30.28	0.39
901391	901390	901391-901390	BC01	45-59-35-01	16	0.02	0.37	1.95	0.51	26.21	0.34	1.35	68.04	0.57	1.69	86.67	0.64	2.06	105.82	0.72	2.50	128.27	0.82	2.74	140.37	0.89
901676	15751	901676-15751	TSJR01	45-59-09-00	27	0.01	0.52	18.79	3.38	18.07	0.29	17.66	94.41	1.00	17.81	95.25	1.00	18.04	96.49	1.00	18.30	97.89	1.00	18.48	98.82	1.00
901871	51661	901871-51661	BC13	45-58-11-00	12	0.013	2.46	3.61	0.48	13.25	0.27	0.75	19.59	0.32	0.83	22.96	0.34	0.92	25.47	0.36	1.14	31.64	0.40	1.31	36.24	0.43
901880	901891		BC12	45-58-06-01	6	0.013	5.72	0.87	0.23	26.78	1.00	0.47	54.59	1.00	0.57	65.02	1.00	0.65	74.95	1.00	0.66	76.09	1.00	0.66	76.14	1.00
901893	16595		BC12	45-58-06-01	8	0.013	6.03	1.92	0.23	12.14	0.26	0.47	24.73	0.35	0.57	29.46	0.39	0.65	33.96	0.42	0.66	34.45	0.42	0.66	34.50	0.42
902012	6953	902012-6953	BC11	45-59-16-01	24	0.01	0.34	11.01	2.92	27.05	0.36	13.64	139.71	2.00	15.73	124.46	2.00	18.78	124.72	2.00	19.78	124.89	2.00	19.80	125.07	2.00
902012	6953	902012-6953	BC11	45-59-16-01	15	0.013	0.32	2.35	0.00	0.00	0.05	3.32	132.84	2.00	3.34	133.63	2.00	3.35	133.91	2.00	3.15	133.97	2.00	3.17	134.71	2.00
902054	41825	902054-41825	BC09	45-73-04-00	15	0.013	1.20	4.58	0.14	2.97	0.35	0.30	6.55	0.20	0.35	7.71	0.21	0.43	9.34	0.23	0.54	11.85	0.25	0.61	13.85	1.00
902164	902165	435858	BC12	45-58-11-00	8	0.013	6.32	1.96	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10
902165	51657	526569	BC12	45-58-11-00	8	0.013	6.21	1.95	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10
9039	16038	9039-16038	BC10A	45-59-20-01	18	0.013	0.92	6.50	0.29	4.46	0.19	1.14	17.53	0.37	1.34	23.76	0.43	1.91	29.32	0.49	2.73	42.75	0.72	3.42	52.55	0.97
9040	17949	9040-17949	BC10A	45-59-20-03	15	0.013	1.35	4.86	0.17	3.56	0.16	0.82	16.83	0.29	1.34	23.50	0.35	1.41	29.10	0.38	2.11	45.51	0.48	2.61	53.79	0.54
9041	17969	9041-17969	BC10A	45-59-20-03	15	0.013	1.15	4.46	0.03	0.64	0.12	0.42	9.38	0.26	0.65	14.40	0.34	0.82	18.21	0.39	1.30	28.96	0.58	1.63	34.26	0.58
9042	9041	9042-9041	BC10A	45-59-20-03	15	0.013	1.05	4.26	0.00	0.00	0.10	0.27	6.39	0.20	0.46	10.64	0.24	0.58	13.63	0.27	0.97	22.69	0.34	1.23	28.65	0.38
9044	14317	9044-14317	BC10A	45-59-20-06	13	0.013	4.10	8.45	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10
9045	9044	9045-9044	BC10A	45-59-20-06	15	0.013	3.35	7.65	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10
9046	9045	9046-9045	BC10A	45-59-20-06	15	0.013	0.01	1.16	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05
9047	9046	9047-9046	BC10A	45-59-20-06	21	0.013	0.25	5.11	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05
9048	18918	9048-18918	BC10A	45-59-20-06	21	0.013	0.48	7.06	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.00	0.10
9049	9048	9049-9048	BC10A	45-59-20-06	21	0.013	1.33	15.64	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.00	0.10
C445	7102	C445-7102	BC09	45-59-27-00	8	0.013	0.21	0.26	0.20	56.33	0.51	0.80	221.89	2.00	0.80	222.06	2.00	0.80	222.06	2.00	0.80	222.06	2.00	0.80	222.06	2.00
F1757	7101	F1757-7101	BC09	45-59-27-00	8	0.013	0.80	0.78	0.20	28.96	0.38	0.80	114.10	2.00	0.80	114.20	2.00	0.80	114.20	2.00	0.80	114.20	2.00	0.80	114.20	2.00
#5313-missing	2403		BC12	45-58-06-01	8	0.013	2.40	1.71	0.23	19.26	0.31	0.47	39.25	0.45	0.57	46.76	0.50	0.67	55.08	0.55	0.86	71.21	1.00	1.05	82.83	1.00
PVT302	PVT303	PVT302-PVT303	BC03	45-59-34-03	8	0.013	0.49	0.54	0.03	5.67	0.19	1.06	186.13	2.00	1.07	197.10	2.00	1.07	197.31	2.00	1.08	199.09	2.00	1.05	199.87	2.00
PVT303	29644	PVT303-PVT304_29644Model	BC03	45-59-34-03	8	0.013	0.00	0.74	0.03	4.14	0.45	1.06	143.11	2.00	1.06	143.86	2.00	1.07	143.95	2.00	1.07	145.18	2.00	1.01	145.73	2.00
PVT471	PVT471	PVT471-PVT471	BC25	45-66-09-01	8	0.013	1.39	0.92	0.04	4.33	0.17	0.07	7.66	0.21	0.08	9.01	0.22	0.10	10.62	0.24	0.12	13.57	0.27	0.15	16.01	0.28
PVT473	PVT474	PVT473-PVT474	BC25	45-66-09-01	8	0.013	5.93	1.96	0.04	2.09	0.14	0.07	3.71	0.16	0.08	4.36	0.17	0.10	5.14	0.18	0.12	6.56	0.20	0.15	7.75	0.21
PVT474	PVT475	PVT474-PVT475	BC25	45-66-09-01	8	0.013	8.60	2.29	0.04	1.74	0.13	0.07	3.01	0.15	0.08	3.62	0.16	0.10	4.27	0.17	0.12	5.45	0.19	0.15	6.43	0.20
PVT475	PVT476	PVT475-PVT476	BC25	45-66-09-01	8	0.013	0.61	0.61	0.04	6.52	0.20	0.07	11.56	0.25	0.08	13.59	0.27	0.10	16.02	0.29	0.12	20.44	0.32	0.15	24.13	0.35
PVT476	PVT477	PVT476-PVT477	BC25	45-66-09-01	8	0.013	0.60	0.60	0.04	6.62	0.20	0.07	11.75	0.25	0.08	13.82	0.27	0.10	16.28	0.29	0.12	20.78	0.33	0.15	24.53	0.35
PVT477	PVT478	PVT477-PVT478	BC25	45-66-09-01	8	0.013	11.33	2.63	0.04	1.51	0.13	0.07	2.64	0.15	0.08	3.15	0.15	0.10	3.71	0.16	0.12	4.74	0.18	0.15	5.58	1.00
PVT478	32260	PVT478-69113_32260Model	BC25	45-66-09-01	8	0.013	15.20	3.05	0.04	1.30	0.13	0.07	2.31	0.14	0.08	2.72	0.15	0.10	3.20	0.51	0.12	4.06	1.00	0.15	4.77	1.00
weir15	33295	weir15-33295	BC12	45-58-11-00	24	0.013	0.31	8.18	0.00	0.00	0.05	0.01	0.01	0.25	0.14	1.71	0.29	0.28	3.36	0.32	0.61	7.41	0.37	0.89	10.83	0.40

PIA 23-172 Hazen - 00933

Hazen

Michael McCann

From: Ella Kaplan <ekaplan@baltimorecountymd.gov>
Sent: Wednesday, May 31, 2023 11:24 AM
To: Michael McCann; Daniel O'Leary
Cc: Jeffery Livingston
Subject: RE: Greenspring Manor SWM Report

Hi Michael,

We have not received anything new.

Best,

Ella

Ella Kaplan, E.I.T.
Department of Environmental Protection and Sustainability
Stormwater Management Section
410.887.3768

From: Michael McCann <michael@mmccannlaw.net>
Sent: Tuesday, May 30, 2023 1:29 PM
To: Ella Kaplan <ekaplan@baltimorecountymd.gov>; Daniel O'Leary <djoleary@esd-associates.com>
Cc: Jeffery Livingston <jlivingston@baltimorecountymd.gov>
Subject: RE: Greenspring Manor SWM Report

CAUTION: This message from michael@mmccannlaw.net originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Hi Ella. Just checking again to see if you have anything new?

Please let know.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Ella Kaplan [mailto:ekaplan@baltimorecountymd.gov]
Sent: Monday, January 30, 2023 2:41 PM
To: Michael McCann <michael@mmccannlaw.net>; Daniel O'Leary <djoleary@esd-associates.com>
Cc: Jeffery Livingston <jlivingston@baltimorecountymd.gov>
Subject: RE: Greenspring Manor SWM Report

Michael,

That is the latest we have as far as any kind of report. I did not actually receive the November 2021 report for review until August 2022 when they were trying to get approval of a redlined development plan. At that time we had some comments regarding the redline changes which were addressed by the revisions referenced in the email from Matt Bishop from the afternoon of 8/25/22. Please see the attached correspondence.

Thanks,

Ella

Ella Kaplan, E.I.T.
Department of Environmental Protection and Sustainability
Stormwater Management Section
410.887.3768

From: Michael McCann <michael@mmccannlaw.net>
Sent: Monday, January 30, 2023 11:31 AM
To: Ella Kaplan <ekaplan@baltimorecountymd.gov>; Daniel O'Leary <djoleary@esd-associates.com>
Subject: RE: Greenspring Manor SWM Report

CAUTION: This message from michael@mmccannlaw.net originated from a non Baltimore County Government or non BCPL email system. Hover over any links before clicking and use caution opening attachments.

Ella: Please confirm that there is nothing else, specifically no other report.

From: Michael McCann
Sent: Monday, January 30, 2023 9:48 AM
To: Ella Kaplan <ekaplan@baltimorecountymd.gov>; Daniel O'Leary <djoleary@esd-associates.com>
Subject: RE: Greenspring Manor SWM Report

Thanks Ella. Yes, we were looking for anything new since the Swm report itself, which is dated May 2021. Last time we asked, in fall 2022, we were told there was nothing new. So these November 2021 reports are new to us.

Michael

Michael R. McCann
Michael R. McCann, PA
118 W. Pennsylvania Avenue
Towson, Maryland 21204
(p) 410-825-2150
(f) 410-825-2149

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From: Ella Kaplan [mailto:ekaplan@baltimorecountymd.gov]
Sent: Monday, January 30, 2023 9:05 AM
To: Michael McCann <michael@mmccannlaw.net>; Daniel O'Leary <djoleary@esd-associates.com>
Subject: Greenspring Manor SWM Report

Hi Michael and Dan,

Attached is the most recent SWM compuations we have received. Please confirm that this is the information that you were looking for.

Thanks,

Ella

Ella Kaplan, E.I.T.
Department of Environmental Protection and Sustainability
Stormwater Management Section
410.887.3768

Maryland
Department of
the Environment

Wes Moore, Governor
Aruna Miller, Lt. Governor

Serena McIlwain, Secretary
Suzanne E. Dorsey, Deputy Secretary

APR 14 2023

CERTIFIED MAIL / ELECTRONIC MAIL

Lauren Buckler, Deputy Director
Baltimore County Department of Public Works and Transportation
lbuckler@baltimorecountymd.gov
111 West Chesapeake Avenue
Towson, MD 21204

Re: *United States and State of Maryland v. Baltimore County*
Consent Decree Civil Action No. AMD 05-2028, AI# 31394
Stipulated Penalty Assessment for SSOs in CY 2018

Dear Ms. Buckler:

The Maryland Department of the Environment, Water and Science Administration, Compliance Program ("Department"), in consultation with the United States Environmental Protection Agency ("EPA") (collectively, the "Agencies"), has reviewed the additional information which the Baltimore County Department of Public Works and Transportation (the "County") provided to the Department and the EPA on November 18, 2022, regarding Sanitary Sewer Overflows from the County's collection system ("SSOs") occurring in calendar year 2018.

The County is liable for stipulated penalties to the United States and the State of Maryland for all SSOs, per Paragraph 39 of the Consent Decree, Civil Action No. AMD 05-2028 (Consent Decree). Following the review of twenty-four (24) hour and five (5) day SSO reports provided to the Agencies, and considering record corrections provided by the County during the review process, the Department has determined that the County is liable for stipulated penalties for 151 SSOs during calendar year 2018, and a total penalty of $641,750. Half of this amount, $320,875, is due to the State of Maryland.

The Agencies may, "in their own behalf and in their unreviewable exercise of discretion, reduce or waive stipulated penalties otherwise due," per Paragraph 45 of the Consent Decree. The Department, in consultation with EPA, has conducted a thorough review of all waiver requests, along with any additional data provided by the County to support these requests. While the Department declines to make *force majeure* determinations, it does agree to a waiver of certain SSO stipulated penalties at its discretion. The Department gives consideration to circumstances under the County's control and measures taken by the County to avoid or minimize delays. The Department has utilized metrics in certain categories of SSOs, such as the storm recurrence interval, in an effort to apply its discretion in a more consistent and replicable manner.

The Department, at its discretion, waives stipulated penalties for the 57 SSOs listed in Attachment I; $136,687.50 total waived penalties. These penalties would have otherwise been due to the State of Maryland. Please note that this waiver is for penalties due to the State of Maryland only. As such, the Department has determined that the County owes stipulated penalties for the remaining 94 SSOs.

Ms. Lauren Buckler, AI# 31394

Pursuant to Section XI of the Consent Decree, and as detailed in Attachment I, the County owes a total stipulated penalty of $184,187.50 to the State of Maryland, for SSOs occurring during calendar year 2018.

Please notify Mr. Arno Laud, Chief, Enforcement Division, Compliance Program at (410) 537-3510 or by email at arno.laud@maryland.gov within fourteen (14) days confirming your acceptance of this stipulated penalty assessment. Upon acceptance, an invoice payable to the Maryland Department of the Environment will be mailed to you under a separate cover.

Please note that this letter addresses the Department's request for payment of stipulated penalties only. The EPA will provide a separate letter regarding payment of penalties to the United States, and any waivers granted.

Sincerely,

D. Lee Currey, Director
Water and Science Administration

DLC:jrh

cc: Randolph Rollman/CD Admin, Baltimore County DPWT
Chad Thornton, Chief, Bureau of Utilities, Baltimore County DPWT
Lisa Eicholtz, Chief, Bureau of Engineering & Construction, Baltimore County DPWT
Jennifer Frankovich, Baltimore County Law Office
Karen Melvin, U.S. EPA
Nina Rivera, U.S. EPA
Peter Gold, U.S. EPA
Lynn Angotti, MDE OAG
Nathan P. Short, MDE OAG

Attachment I. All SSOs occurring in CY2018.

Overflow Date	Location of Overflow	Volume Released	Total Stipulated Penalty	Waiver Status
1/3/2018	7904 Seven Miles Ln & Old Court Rd	80	$ 125	Uncontested
1/14/2018	2227 Lincoln Ave.	150	$ 750	Uncontested
1/31/2018	2231 Lincoln Ave.	160	$ 750	Uncontested
2/5/2018	221 Coldbrook Rd. & Eastridge Rd.	4,700	$ 1,250	Uncontested
2/12/2018	41 Bellanca Ct. & Morane Way	9,000	$ 1,250	Uncontested
2/21/2018	1837 Clark Blvd. & Superior Ave.	160	$ 750	Uncontested
3/2/2018	Forge Acres PS (11820 Philadelphia Rd.)	5,500	$ 1,250	Waived
3/23/2018	3437 Liberty Gardens Rd. & Lord Baltimore Dr.	60	$ 125	Uncontested
4/7/2018	6601 Baltimore National Pike	70	$ 125	Waived
4/8/2018	228 Fallsbrook Rd.	65	$ 125	Uncontested
4/16/2018	7829 Aiken Ave. (SSO #41)	733	$ 750	Denied
4/16/2018	Alter & Southern Cross Rd. (SSO #22)	473	$ 750	Denied
4/16/2018	3902 Patterson Ave. (SSO #24)	47,082	$ 4,500	Denied
4/16/2018	Queen Anne Dr. (SSO #129)	1,201	$ 750	Denied
4/16/2018	3909 Southern Cross Dr. (SSO #23B)	13,287	$ 4,500	Denied
4/16/2018	Southern Cross Dr. & Parsons (SSO #23A)	12,904	$ 4,500	Denied
4/16/2018	Marnat Rd. and Hatton Rd. (SSO #113)	492	$ 750	Waived
4/25/2018	143 Othoridge Rd. & Bellona Ave.	1,000	$ 750	Uncontested
5/15/2018	7829 Aiken Ave. (SSO #41)	19,194	$ 4,500	Denied
5/15/2018	Queen Anne Dr. (SSO #129)	18,965	$ 4,500	Denied
5/21/2018	7616 Canton Center Dr. (Highlandtown)	100	$ 750	Uncontested
5/25/2018	8225 Fischer Rd. & Beachwood Rd.	50	$ 125	Uncontested
5/27/2018	7829 Aiken Ave. (SSO #41)	158,939	$ 10,000	Denied
5/27/2018	Queen Anne Dr. (SSO #129)	132,573	$ 10,000	Denied
5/27/2018	Alter & Southern Cross Rd. (SSO #22)	30,659	$ 4,500	Waived
5/27/2018	Briarwood Rd. (SSO #117)	486,082	$ 10,000	Waived
5/27/2018	Marnat Rd. and Hatton Rd. (SSO #113)	5,060	$ 1,250	Waived
5/27/2018	Nunnery Lane (SSO #116)	138,303	$ 10,000	Waived
5/27/2018	Overbrook Rd. (SSO #118)	1,822,170	$ 15,000	Waived
5/27/2018	3902 Patterson Ave. (SSO #24)	333,491	$ 10,000	Waived
5/27/2018	3909 Southern Cross Dr. (SSO #23B)	52,686	$ 4,500	Waived
5/27/2018	Southern Cross Dr. & Parsons (SSO #23A)	52,592	$ 4,500	Waived
5/27/2018	North Point Village PS (7618 New Battle Grove Rd.)	5,200	$ 1,250	Waived
5/27/2018	Frederick PS (1809 Frederick Rd.)	47,000	$ 4,500	Waived
5/27/2018	McTavish PS (50 University Ave.)	9,700	$ 1,250	Waived
5/27/2018	Oak Forest Park PS (407 Seminole Ave.)	6,000	$ 1,250	Waived
5/27/2018	Patapsco PS (4612 Annapolis Blvd.)	607,000	$ 10,000	Waived
5/27/2018	2235 Lincoln Rd. (MH #19656??)	300	$ 750	Waived
6/3/2018	Alter & Southern Cross Rd. (SSO #22)	6,393	$ 1,250	Denied
6/3/2018	3902 Patterson Ave. (SSO #24)	204,947	$ 10,000	Denied
6/3/2018	Southern Cross Dr. & Parsons (SSO #23A)	37,860	$ 4,500	Denied
6/3/2018	3909 Southern Cross Dr. (SSO #23B)	39,560	$ 4,500	Denied
6/3/2018	Marnat Rd. and Hatton Rd. (SSO #113)	4,611	$ 1,250	Waived

Attachment I. All SSOs occurring in CY2018.

Overflow Date	Location of Overflow	Volume Released	Total Stipulated Penalty	Waiver Status
6/3/2018	Overbrook Rd. (SSO #118)	398,582	$ 10,000	Waived
6/5/2018	Jenifer Rd. & W. Timonium Rd.	200	$ 750	Uncontested
6/11/2018	Overbrook Rd. (SSO #118)	16,055	$ 4,500	Waived
6/19/2018	10320 York Rd.	37,500	$ 4,500	Uncontested
6/20/2018	4835 Hollins Ferry Rd.	900	$ 750	Uncontested
6/25/2018	8776 Philadelphia Rd. & Rossville Blvd.	75	$ 125	Uncontested
6/28/2018	4835 Hollins Ferry Rd.	450	$ 750	Uncontested
7/5/2018	Rear of 8629 Berryfield Dr.	60	$ 125	Waived
7/12/2018	Stonewall Ct. r/w & Stonewall Rd.	6,750	$ 1,250	Uncontested
7/16/2018	9654 Belair Rd.	100	$ 750	Waived
7/16/2018	8 Dowling Circle	255	$ 750	Uncontested
7/21/2018	Nunnery Lane (SSO #116)	5,700	$ 1,250	Waived
7/21/2018	3902 Patterson Ave. (SSO #24)	172,411	$ 10,000	Denied
7/21/2018	3909 Southern Cross Dr. (SSO #23B)	104,020	$ 10,000	Denied
7/21/2018	Southern Cross Dr. & Parsons (SSO #23A)	74,340	$ 4,500	Denied
7/21/2018	Alter & Southern Cross Rd. (SSO #22)	66,280	$ 4,500	Denied
7/21/2018	Overbrook Rd. (SSO #118)	865,661	$ 10,000	Waived
7/21/2018	Marnat Rd. and Hatton Rd. (SSO #113)	26,334	$ 4,500	Waived
7/22/2018	7829 Aiken Ave. (SSO #41)	5,111	$ 1,250	Denied
7/22/2018	Queen Anne Dr. (SSO #129)	10,894	$ 4,500	Denied
7/23/2018	Alter & Southern Cross Rd. (SSO #22)	305,324	$ 10,000	Denied
7/23/2018	Southern Cross Dr. & Parsons (SSO #23A)	344,692	$ 10,000	Denied
7/23/2018	3909 Southern Cross Dr. (SSO #23B)	756,776	$ 10,000	Denied
7/23/2018	3902 Patterson Ave. (SSO #24)	1,259,760	$ 15,000	Denied
7/23/2018	Marnat Rd. and Hatton Rd. (SSO #113)	103,803	$ 10,000	Waived
7/23/2018	Overbrook Rd. (SSO #118)	1,320,950	$ 15,000	Waived
7/24/2018	7829 Aiken Ave. (SSO #41)	92,145	$ 4,500	Denied
7/24/2018	Queen Anne Dr. (SSO #129)	61,304	$ 4,500	Denied
7/24/2018	3098 Wells Ave.	15,000	$ 4,500	Uncontested
7/25/2018	Oak Forest Park PS (407 Seminole Ave.)	5,500	$ 1,250	Waived
7/25/2018	Frederick PS (1809 Frederick Rd.)	17,000	$ 4,500	Waived
7/27/2018	McTavish PS (50 University Ave.)	6,400	$ 1,250	Waived
7/27/2018	Oak Forest Park PS (407 Seminole Ave.)	4,700	$ 1,250	Waived
7/27/2018	Frederick PS (1809 Frederick Rd.)	5,300	$ 1,250	Waived
7/27/2018	Alter & Southern Cross Rd. (SSO #22)	4,317	$ 1,250	Waived
7/27/2018	Southern Cross Dr. & Parsons (SSO #23A)	23,796	$ 4,500	Waived
7/27/2018	3909 Southern Cross Dr. (SSO #23B)	30,366	$ 4,500	Waived
7/27/2018	3902 Patterson Ave. (SSO #24)	133,835	$ 10,000	Waived
7/27/2018	7829 Aiken Ave. (SSO #41)	113,742	$ 10,000	Waived
7/27/2018	Queen Anne Dr. (SSO #129)	105,137	$ 10,000	Waived
7/27/2018	Marnat Rd. and Hatton Rd. (SSO #113)	16,782	$ 4,500	Waived
7/27/2018	Overbrook Rd. (SSO #118)	415,257	$ 10,000	Waived
8/13/2018	Alter & Southern Cross Rd. (SSO #22)	3,008	$ 1,250	Denied

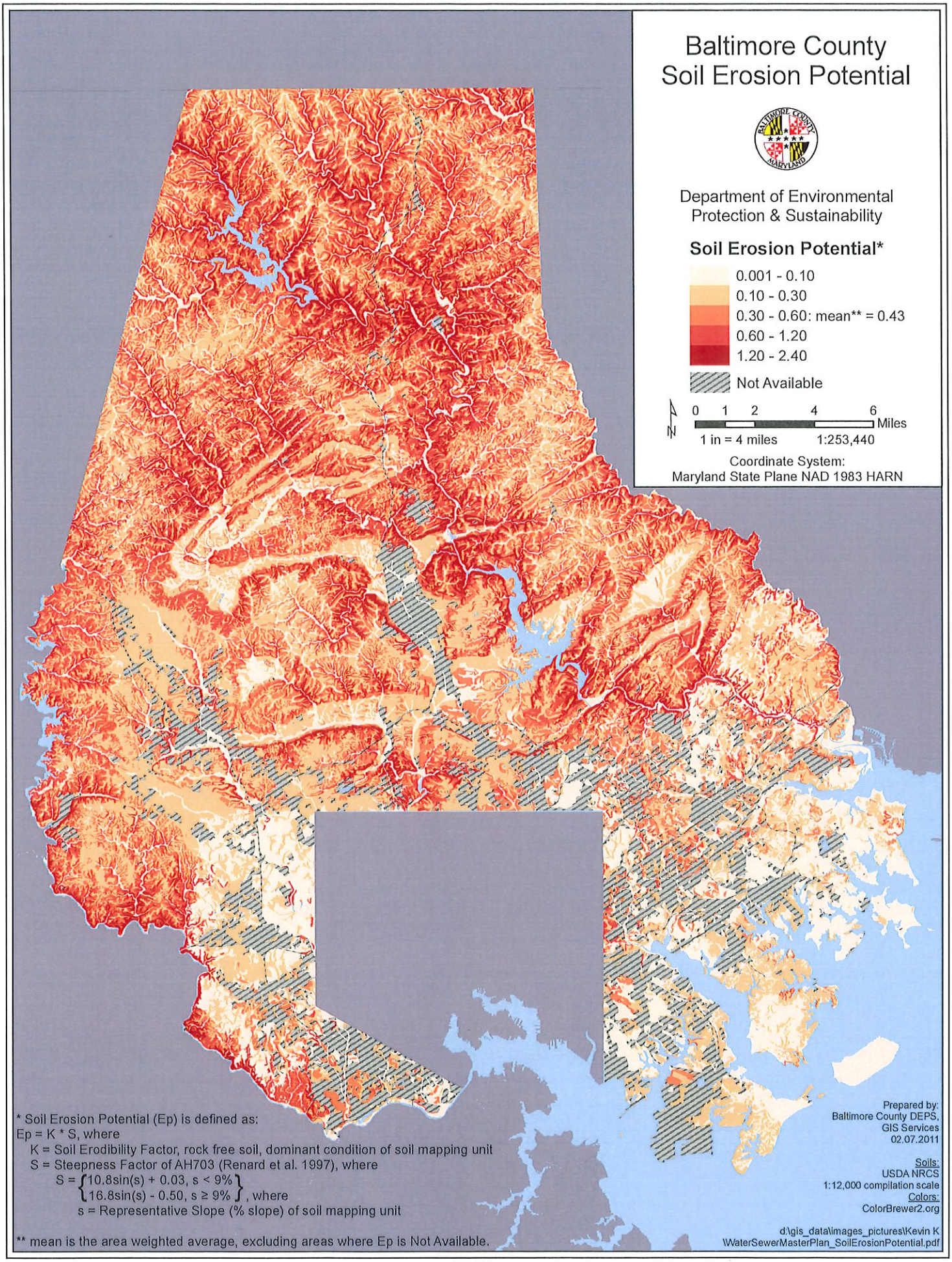
Attachment I. All SSOs occurring in CY2018.

Overflow Date	Location of Overflow	Volume Released	Total Stipulated Penalty	Waiver Status
8/13/2018	3902 Patterson Ave. (SSO #24)	37,111	$ 4,500	Denied
8/13/2018	Southern Cross Dr. & Parsons (SSO #23A)	9,270	$ 1,250	Denied
8/13/2018	3909 Southern Cross Dr. (SSO #23B)	11,116	$ 4,500	Denied
8/13/2018	7829 Aiken Ave. (SSO #41)	83,879	$ 4,500	Waived
8/13/2018	Marnat Rd. and Hatton Rd. (SSO #113)	3,074	$ 1,250	Waived
8/13/2018	Overbrook Rd. (SSO #118)	6,154	$ 1,250	Waived
8/13/2018	Queen Anne Dr. (SSO #129)	61,701	$ 4,500	Waived
8/21/2018	Overbrook Rd. (SSO #118)	7,737	$ 1,250	Waived
9/6/2018	6609 Collinsdale Rd.	17,500	$ 4,500	Denied
9/9/2018	Queen Anne Dr. (SSO #129)	40,580	$ 4,500	Denied
9/9/2018	7829 Aiken Ave. (SSO #41)	17,129	$ 4,500	Denied
9/9/2018	3909 Southern Cross Dr. (SSO #23B)	103,390	$ 10,000	Denied
9/9/2018	Southern Cross Dr. & Parsons (SSO #23A)	138,392	$ 10,000	Denied
9/9/2018	Alter & Southern Cross Rd. (SSO #22)	18,742	$ 4,500	Denied
9/9/2018	3902 Patterson Ave. (SSO #24)	577,083	$ 10,000	Denied
9/9/2018	Marnat Rd. and Hatton Rd. (SSO #113)	104,177	$ 10,000	Waived
9/9/2018	Overbrook Rd. (SSO #118)	248,106	$ 10,000	Waived
9/16/2018	8500 Cove Road	3,000	$ 1,250	Waived
9/17/2018	Queen Anne Dr. (SSO #129)	79,904	$ 4,500	Denied
9/18/2018	7829 Aiken Ave. (SSO #41)	14,038	$ 4,500	Denied
9/18/2018	Oak Forest Park PS (407 Seminole Ave)	420	$ 750	Denied
9/18/2018	Overbrook Rd. (SSO #118)	136,882	$ 10,000	Waived
9/26/2018	Alter & Southern Cross Rd. (SSO #22)	1,211	$ 750	Denied
9/26/2018	Southern Cross Dr. & Parsons (SSO #23A)	28,646	$ 4,500	Denied
9/26/2018	3909 Southern Cross Dr. (SSO #23B)	20,850	$ 4,500	Denied
9/26/2018	3902 Patterson Ave. (SSO #24)	20,048	$ 4,500	Denied
9/26/2018	Marnat Rd. and Hatton Rd. (SSO #113)	2,242	$ 750	Waived
9/27/2018	3902 Patterson Ave. (SSO #24)	477,171	$ 10,000	Denied
9/27/2018	3909 Southern Cross Dr. (SSO #23B)	93,236	$ 4,500	Denied
9/27/2018	Southern Cross Dr. & Parsons (SSO #23A)	104,835	$ 10,000	Denied
9/27/2018	Alter & Southern Cross Rd. (SSO #22)	14,354	$ 4,500	Denied
9/27/2018	Marnat Rd. and Hatton Rd. (SSO #113)	38,008	$ 4,500	Waived
9/28/2018	Overbrook Rd. (SSO #118)	40,836	$ 4,500	Waived
9/29/2018	6705 Canongate Rd. (MH #3998)	20,500	$ 4,500	Waived
10/17/2018	10 E. Towsontown Blvd at York Road	313	$ 750	Uncontested
11/2/2018	3902 Patterson Ave. (SSO #24)	24,199	$ 4,500	Denied
11/2/2018	3909 Southern Cross Dr. (SSO #23B)	3,079	$ 1,250	Denied
11/2/2018	Southern Cross Dr. & Parsons (SSO #23A)	1,688	$ 750	Denied
11/3/2018	Overbrook Rd. (SSO #118)	9,223	$ 1,250	Waived
11/14/2018	2107 East Boundary Avenue	60	$ 125	Waived
11/19/2018	Park Heights Ave & Old Court Rd	1,900	$ 750	Uncontested
11/24/2018	7829 Aiken Ave. (SSO #41)	89,110	$ 4,500	Denied
11/24/2018	Queen Anne Dr. (SSO #129)	72,812	$ 4,500	Denied

Attachment I. All SSOs occurring in CY2018.

Overflow Date	Location of Overflow	Volume Released	Total Stipulated Penalty	Waiver Status
11/24/2018	Alter & Southern Cross Rd. (SSO #22)	10,930	$ 4,500	Denied
11/24/2018	Southern Cross Dr. & Parsons (SSO #23A)	57,240	$ 4,500	Denied
11/24/2018	3909 Southern Cross Dr. (SSO #23B)	40,399	$ 4,500	Denied
11/24/2018	3902 Patterson Ave. (SSO #24)	122,945	$ 10,000	Denied
11/24/2018	Overbrook Rd. (SSO #118)	3,102	$ 1,250	Waived
12/3/2018	7839 Eastpoint Mall	9,050	$ 1,250	Uncontested
12/3/2018	3901 Hebrew Cemetery Rd.	325	$ 750	Uncontested
12/5/2018	Rear of 5 Periwinkle Ct	600	$ 750	Uncontested
12/6/2018	8267 Berryfield Dr	4,100	$ 1,250	Uncontested
12/11/2018	8375 Tapu Ct & Dunfield Rd.	375	$ 750	Uncontested
12/15/2018	Alter & Southern Cross Rd. (SSO #22)	13,949	$ 4,500	Denied
12/15/2018	Southern Cross Dr. & Parsons (SSO #23A)	78,391	$ 4,500	Denied
12/15/2018	3902 Patterson Ave. (SSO #24)	266,850	$ 10,000	Denied
12/15/2018	3909 Southern Cross Dr. (SSO #23B)	74,100	$ 4,500	Denied
12/15/2018	Overbrook Rd. (SSO #118)	164,786	$ 10,000	Waived
12/17/2018	3200 Elba Drive	1,625	$ 750	Uncontested
12/21/2018	Southern Cross Dr. & Parsons (SSO #23A)	984	$ 750	Denied
12/21/2018	3909 Southern Cross Dr. (SSO #23B)	2,600	$ 1,250	Denied
12/21/2018	3902 Patterson Ave. (SSO #24)	30,834	$ 4,500	Denied
12/21/2018	7829 Aiken Ave. (SSO #41)	1,674	$ 750	Denied
12/21/2018	Queen Anne Dr. (SSO #129)	19,585	$ 4,500	Denied
12/26/2018	908 Scotts Hill	150	$ 750	Uncontested

	SSO Count	Total Penalty	State of Maryland Penalty
Total SSOs for which the County is Liable	151	$ 641,750.00	$ 320,875.00
Total Waivers Approved by the Department	57		$ 136,687.50
Total Penalty Demanded by the Department	94		$ 184,187.50


Baltimore County
Soil Erosion Potential
Department of Environmental
Protection & Sustainability
Soil Erosion Potential*
0.001 - 0.10
0.10 - 0.30
0.30 - 0.60: mean** = 0.43
0.60 - 1.20
1.20 - 2.40
Not Available
0 1 2 4 6
Miles
1 in = 4 miles
1:253,440
Coordinate System:
Maryland State Plane NAD 1983 HARN
* Soil Erosion Potential (Ep) is defined as:
Ep = K * S, where
K = Soil Erodibility Factor, rock free soil, dominant condition of soil mapping unit
S = Steepness Factor of AH703 (Renard et al. 1997), where
S = {10.8sin(s) + 0.03, s < 9%}
{16.8sin(s) - 0.50, s ≥ 9%}, where
s = Representative Slope (% slope) of soil mapping unit
** mean is the area weighted average, excluding areas where Ep is Not Available.
Prepared by:
Baltimore County DEPS,
GIS Services
02.07.2011
Soils:
USDA NRCS
1:12,000 compilation scale
Colors:
ColorBrewer2.org
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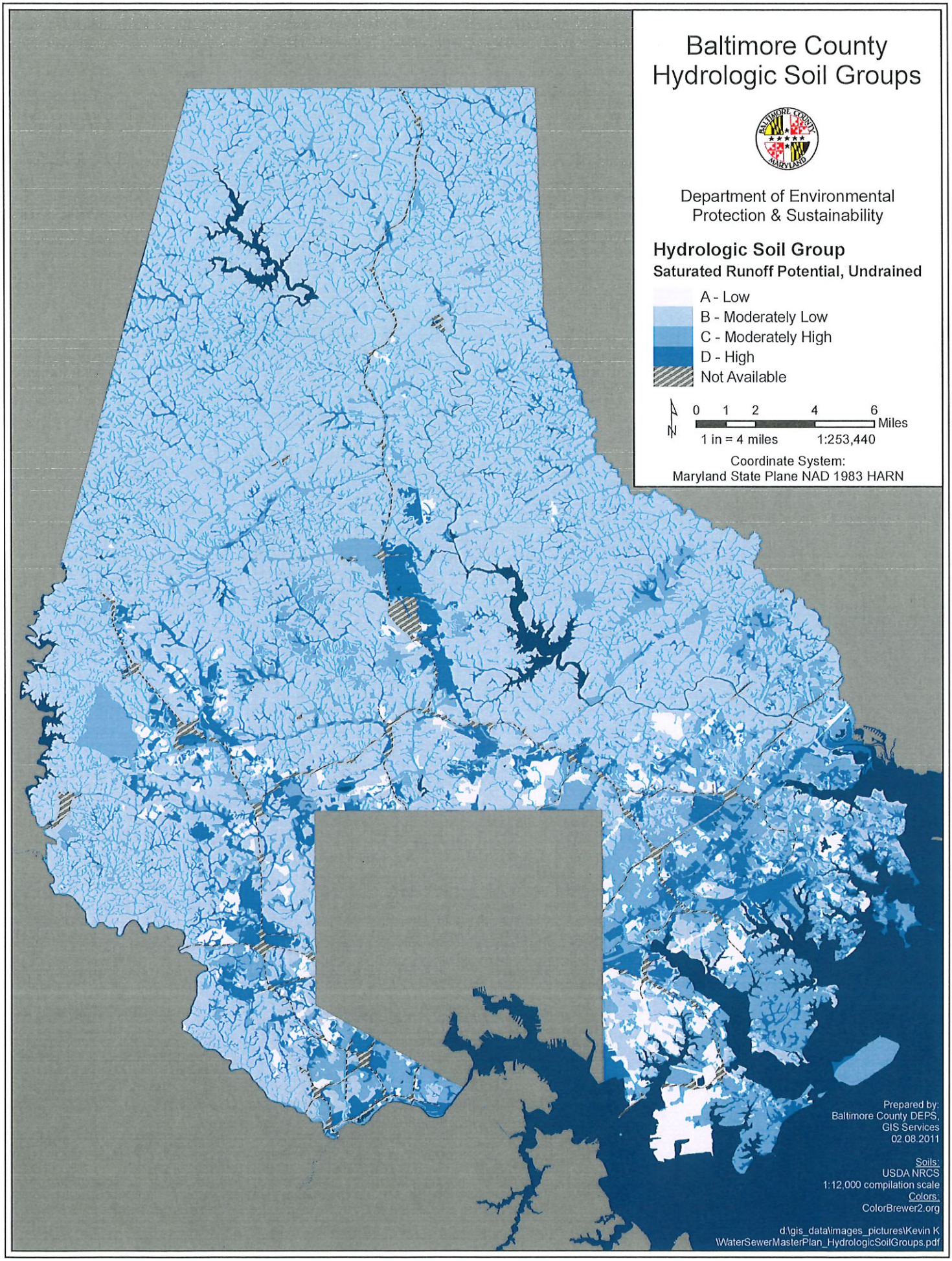
Baltimore County
Hydrologic Soil Groups
Department of Environmental
Protection & Sustainability
Hydrologic Soil Group
Saturated Runoff Potential, Undrained
A - Low
B - Moderately Low
C - Moderately High
D - High
Not Available
N
0 1 2 4 6
Miles
1 in = 4 miles
1:253,440
Coordinate System:
Maryland State Plane NAD 1983 HARN
Prepared by:
Baltimore County DEPS,
GIS Services
02.08.2011
Soils:
USDA NRCS
1:12,000 compilation scale
Colors:
ColorBrewer2.org
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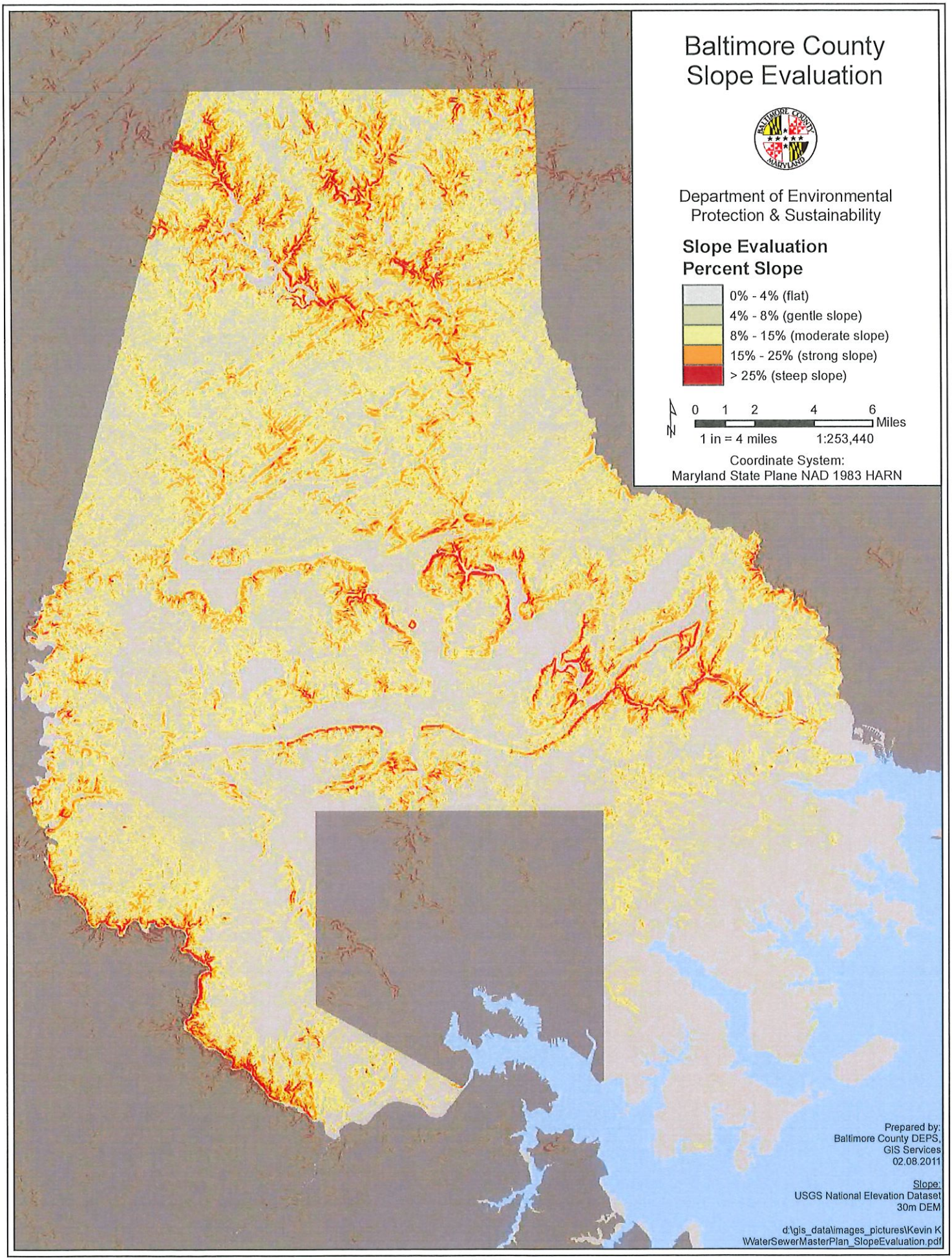
Baltimore County
Slope Evaluation
Department of Environmental
Protection & Sustainability
Slope Evaluation
Percent Slope
0% - 4% (flat)
4% - 8% (gentle slope)
8% - 15% (moderate slope)
15% - 25% (strong slope)
> 25% (steep slope)
N
0 1 2 4 6
Miles
1 in = 4 miles
1:253,440
Coordinate System:
Maryland State Plane NAD 1983 HARN
Prepared by:
Baltimore County DEPS,
GIS Services
02.08.2011
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CHAPTER III - WATER SUPPLY PLAN

GENERAL BACKGROUND

Baltimore County has received virtually all its public water supply from the Metropolitan Water System which began in Baltimore City. As early as 1881, Baltimore built a stone dam across the Gunpowder River and a tunnel to bring water into the City. In 1915, a second dam was constructed across the river at Loch Raven which is being used today along with Prettyboy Dam, built in 1936.

Owing to the need for additional raw water, Baltimore erected Liberty Dam in 1954 to impound the Patapsco River. Twelve (12) years later the Susquehanna River was tapped as a third source of water by the City. Since all of the water sources in Maryland belong to the State, Baltimore secured the State's approval to use these rivers for water supply.

The Maryland State Legislature, in 1908, granted the City exclusive use of the entire Gunpowder River[1] watershed above Loch Raven. It also granted the City the right to use the entire Patapsco River[2] watershed in 1931; and in 1931 and in 1955, the City received the legislature's approval to withdraw water from the Susquehanna River[3] above the Conowingo Dam.

The present Baltimore County water system is actually an extension of the City system. This resulted from the 1918 annexation[4] of nearly 50 square miles of County land surrounding Baltimore and Acts of the Legislature previously mentioned. As development took place along primary County roads, the distribution system was extended to serve the people. Water was brought into the City filtration plants from the impoundment reservoirs in the County, treated, and returned to the County consumers. So both the City and County are physically and legally wedded to a common water system. In looking at the history of the marriage, one might say that it has been quite successful in view of the service rendered to the people.

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[1] Acts of the Maryland General Assembly - 1908, Chapter 214, Sec. 1-16
[2] Acts of the Maryland General Assembly - 1931, Chapter 521, Sec. 1-8
[3] Acts of the Maryland General Assembly - 1955, Chapter 203, Sec. 1-12
[4] Acts of the Maryland General Assembly - 1918, Chapter 82, Sec. 1-18

DESCRIPTION OF EXISTING SYSTEM

Water served to consumers in Baltimore County is secured from three (3) surface supplies: the Gunpowder River, the North Branch of the Patapsco River and the Susquehanna River. Baltimore City developed these rivers as water supply sources as they were needed.

Gunpowder River

The Gunpowder River development consists of two (2) concrete gravity dams: one (1) at Loch Raven and the other near the mouth of Prettyboy Creek. Raw water is conveyed in a 12-foot-diameter tunnel from Loch Raven Dam to the Montebello Filtration Plant. These two dams impound 43-billion gallons of water collected as runoff from the 333 square mile watershed. Loch Raven is located about one-half (1/2) mile north of Cromwell Bridge Road, and Prettyboy Dam is located about three (3) miles southwest of Parkton.

North Branch of the Patapsco River

The Patapsco River development consists of the concrete, gravity Liberty Dam located near Falls Run on the North Branch of the river and a 10-foot diameter tunnel from the dam to the Ashburton Filtration Plant. Liberty Dam impounds 43-billion gallons of water. The reservoir collects runoff from the 164-square mile watershed.

See Impoundment and Safe Yield Data.

Susquehanna River

The Susquehanna River development consists of an intake structure at Conowingo, a 12-foot diameter tunnel and pipeline from the intake to the Deer Creek Pumping Station, a 9-foot diameter pipeline extending to Fullerton, and an 8-foot diameter pipeline from that point to the Montebello Filtration Plant. The intake structure and 12-foot line permit withdrawal of 500 million gallons per day (MGD) from the Susquehanna River which flows by gravity to the Deer Creek Pumping station and discharge line which are sized for an approximate flow of 200 MGD. At present, there are four (4) 62.5 MGD variable speed pumps in the station with one pump remaining on standby. The pipeline decreases in size to 8 feet at Fullerton in anticipation of the construction of a plant to filter the Susquehanna supply.

The Susquehanna River drains 27,000-square miles of land in New York, Pennsylvania and Maryland.

METHOD OF OPERATION

Under normal operating conditions, water flows by gravity from Loch Raven Reservoir to the Montebello Filtration Plant through the 12-foot diameter, concrete-lined tunnel which is 7 miles long.

When water in Loch Raven Reservoir recedes to about 9 feet below the crest of the dam, gates in Prettyboy Dam are opened and water flows down to Loch Raven to maintain the desired level in the reservoir. If the water level at Loch Raven continues to drop below certain elevations, low lift pumps must be started at Montebello to pump water into the filter plants and/or the Deer Creek Pumping Station must be brought into operation.

Water from the Liberty Reservoir flows by gravity through a 10-foot diameter concrete-lined tunnel to the Ashburton Filtration Plant. In low water situations, low lift pumps at Ashburton can be used to deliver water from Liberty Reservoir to the filtration plant.

All water from the Susquehanna River which enters the Baltimore System is presently pumped into the Montebello Filtration Plants. Currently, the Susquehanna supply is not used unless the water levels of the reservoirs on the Gunpowder and the Patapsco rivers drop below predetermined elevations. This method of operation is used so that water in the upland reservoirs can be drawn by gravity into the filter plants in quantities which approach what would be the total yield of the streams without the Susquehanna supply. This usually results in economical operation of the reservoirs. Some of the runoff which formerly flowed over the spillways and was lost during periods of heavy rainfall can be impounded behind the dams. This operation also diminishes pumping time and costs at Deer Creek.

FILTRATION

Water drawn from the three (3) rivers is filtered before it reaches the public. Gunpowder and Susquehanna water is treated at the Montebello Filtration Plant. There are two (2) complete filter plants at Montebello. The first plant was built in 1915, has 32 filter units and a capacity of 128 MGD. The second was constructed in 1928, has 28 filter units and a capacity of 112 MGD. The Ashburton Filtration Plant was erected in 1956, has 20 units and a capacity of 120 MGD.

The treatment process consists of chlorination, chemical treatment, coagulation, sedimentation, filtration and fluoridation. After the water leaves the filter plants, additional chlorine is added at each distribution reservoir and remote pumping station to keep it as sterile as possible.

Careful supervision is exercised in the treatment process with samples of water taken every two (2) hours at various points through the filter plant. Other samples are collected from many points in the distribution system by both the City Environmental Services Division and the State Health Department. These samples are analyzed for the chemical and bacteriological composition of the water.

FUTURE FULLTERTON FILTRATION PLANT

The proposed Fullerton Water Treatment Plant, will be the most significant addition to Baltimore's regional water supply system since the development of the Susquehanna River supply and the construction of the Susquehanna Transmission Main and the Deer Creek Pumping Station in the 1960s.

The Fullerton Plant will be located on a large tract of land in the Fullerton area of Baltimore County north of the intersection of the Baltimore Beltway and Interstate-95. The land was acquired by the City as part of the implementation of the Susquehanna River system.

The Fullerton Plant will be designed to meet the following objectives:

- Facilitate more use of the Susquehanna River supply to augment other water supplies especially during times of drought
- Increase the total water filtration capacity for the regional system to help reliably meet future needs
- Help in distributing finished water to the growing areas of Northeast Baltimore County
- Increase the overall dependability of the regional system by providing alternative means to obtain, treat, and supply water in the event that another major component of the water system is out of service, under maintenance, or experiencing emergency conditions.

The Fullerton Plant's ultimate filtration capacity will be 120 MGD.

Baltimore City and County have put a hold on moving forward with the plant at this time.

DISTRIBUTION

The Baltimore distribution system is one of the most complex systems in the United States. This is due not only to its size (although it is one of the ten (10) largest systems in the country), but also to the large number of zones of service which are established to serve areas with significantly different ground elevations. At present, there are thirteen (13) distinct zones of service. They are linked together by a series of pumping stations, transmission mains, storage reservoirs, and elevated tanks.

Water from Montebello flows by gravity into areas on the east side of the County adjacent to the harbor, and it is pumped into the north and northeast areas of Baltimore County through several pumping stations. Water leaving the Ashburton plant flows by gravity to the southwest area of the County and is pumped into the western and northwestern parts of the County.

SERVICE AREA

The service area contains about 120-square miles of land in Baltimore County in addition to the City and other adjacent counties. Elevations in the area vary from sea level at the harbor to 750 feet above sea level in Reisterstown. Most of the heavy industry is located near the harbor while

commercial development is scattered throughout the County with primary land use devoted to residential subdivisions.

Residents in the Metropolitan District[5] are eligible for water service although some people who live in the District have their own private systems. Water lines may be extended if property owners, who own 60% of the frontage, submit a petition to the County or if the Department of Environmental Protection and Sustainability deems there is a health problem.

WATER CONSUMPTION

In fiscal year 2022, Baltimore County used about 78 MGD from the Baltimore system. This amounts to about 42.4% of the average day water demand of 184.3 MGD. About 44% of the 78 MGD is used by commerce and industry (based on 1.5" and larger meters). Residential consumption accounts for the remaining 56%.

FIRE PROTECTION

The County system also supplies water for fire protection. Currently, all fire flow data is collected by Baltimore City and is distributed to Baltimore County for permanent record and future inquiries. Those areas found to be deficient are included in a yearly list (the Basic Services Map; see section 4A02 of the Baltimore County Zoning Regulations) that precipitates capital improvement programs to eliminate these deficient areas. All Basic Services deficient areas identified in the water system have been addressed as of the 2022 Basic Services map update.

The American Insurance Association conducted a study in 2008 of fire flow in Baltimore County. This study is available from the Baltimore County Fire Department.

FINANCES

The County finances the water system from a number of charges including water rates, service charges, front-foot assessments, system connection charges, and water distribution charges. Revenue from the water rates is used to reimburse the City for the County's share of the City's operation and maintenance expenses. The Metropolitan District Operations Special Revenue Fund receives any net surplus on the sale of water or water service charge.

RELATIONSHIP WITH CITY AND ADJACENT COUNTIES

Baltimore County has as its neighbors the City, the four (4) counties of Anne Arundel, Howard, Carroll and Harford, and the State of Pennsylvania. All of these political subdivisions with the exception of Anne Arundel County are interrelated by the use of water from the Baltimore System. Pennsylvania is involved only because of its location with respect to surface waters. The Gunpowder River has its origin in this state, and about 80% of the Susquehanna Basin lies in Pennsylvania.

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[5] See Title 35, Baltimore County Code.

Howard County is supplied with water from Baltimore City which flows through the Baltimore County distribution system. Although present consumption in Howard County is relatively small at 25.1 MGD, they rely heavily on the Baltimore System for future water supply. Howard County recognized this fact in 1957 when it entered into an agreement with the City and Baltimore County for the joint financing of distribution facilities to supply them with 5 MGD from the Western Third Zone of service. The City and Baltimore, Howard and Anne Arundel counties also signed an agreement in 1969 for construction of pipelines in the western part of the Second Zone. Presently, Anne Arundel County does not accept water from the Baltimore System.

In 1968, Carroll County signed an agreement with the City to purchase a maximum of 3 MGD from the Liberty Reservoir to serve the Freedom District. Although Carroll County is not consuming filtered water, it is using part of the total raw water supply. Harford County is also a raw water customer. By legislative acts, they have the right to a maximum of 25 MGD from the Susquehanna pipeline. When the Deer Creek Pumping Station (Susquehanna water) is off, Harford County uses raw water from Loch Raven Reservoir.

The relationship between Baltimore County and the City includes legal, financial, and practical arrangements for the operation and maintenance of the County water system. Legally, the City must supply water to the County at cost.[6] The question of cost has been the source of debate between the two (2) jurisdictions since 1945. An agreement resolving many cost problems was executed by the City and County on September 20, 1972[7]. In 2023, Baltimore City and County introduced emergency legislation at the State to evaluate a new governance structure. The legislation passed as House Bill 843 and will create the Baltimore Regional Water Governance Task Force. The Task Force will report its findings and recommendations to the Mayor of Baltimore City, the County Executive of Baltimore County, the Governor, and the General Assembly on or before January 30, 2024. Under the present method of operation, Baltimore County builds and finances improvements to its distribution system; and the City operates and maintains it. The City reads the water meters and bills the County consumers. The water revenue is used to pay the City for its services. Any excess is returned to the County. Any deficit is paid to the City by the County.

[6] See Title 35, Baltimore County Code.

[7] See Water Agreement, Baltimore City and Baltimore County, dated September 20, 1972.

THE PRESENT SYSTEM – ITS STRENGTHS AND WEAKNESSES

The quality of water in the three reservoirs is usually excellent, but the Susquehanna River presents a serious quality problem during periods of low stream flow (less than 10,000 CFS) which occurs during drought years in the late summer and fall. During these periods, the sulfate hardness increases. When this water is used in the system, complaints can be expected from the consumers about the hardness and possible red-water conditions which may occur. In addition, when Susquehanna water is filtered at the Montebello Plant, complaints may occur from consumers regarding taste and odor conditions.

A problem of algae blooms has developed in Liberty Reservoir and Loch Raven Reservoir. This is primarily caused by nutrients in untreated waste effluents from industries which flow into the upper reaches of the reservoirs. The problem will intensify as the watersheds are urbanized and more wastes are discharged into the reservoirs. On June 29, 1979, Baltimore County entered into a reservoir Watershed Management Agreement[8] with Carroll County and the City to continuously review and evaluate existing problems and proposed actions potentially affecting the water supply watersheds. It is of the utmost importance that the State Water Quality Standards be adhered to in order to secure a pure and constant supply of water.

The following is a summary of the improvements needed in the County water system in each zone of service:

First Zone

The southeastern part of the County is served by gravity flow from the Montebello Filtration Plants. Both of the Montebello Filtration plants are in need of extensive rehabilitation. There is currently a large infrastructure improvement construction project ongoing at Montebello plant #2. (The Fullerton Transmission Main, connecting the major transmission system to facilities located on the Fullerton site, was completed at the end of 1999). The Fullerton reservoirs (60 MG) are currently in operation

Replacement covered reservoirs are scheduled to be built by 2023 to comply with the EPA LT2ESWTR mandate at Druid Lake.

A new 16" transmission main will be needed in Ebenezer Road, between Stumpfs Road and Harewood Road, to provide a redundant source of water (to enhance system reliability) to the Chase area of Baltimore County.

New 8" and 12" water mains are currently under construction in St. Helena to replace deteriorated cast iron pipes.

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[8] See Reservoir Watershed Management Agreement, Baltimore City, Baltimore County & Carroll County dated June 29, 1979.

Water main projects to replace fifty year old, failure-prone cast iron pipe are planned for Millers Island (10,000 ft.) and along Back River Neck Road from East Homberg Avenue to Hyde Park Road (5,400 ft.).

Numerous rehabilitation and replacement projects need to be done on the existing piping network to ensure adequate pressure, fire protection, and water quality.

Second Zone

Replacement covered reservoirs is scheduled to be built by 2023 at Ashburton Reservoir to comply with the EPA LT2ESWTR mandate.

Water main projects to replace fifty year old, failure-prone cast iron pipe are planned along Hospital Drive and Lennings Lane in Rosedale (7,000 ft.)

Numerous rehabilitation and replacement projects will be needed on the existing piping network to ensure adequate pressure, fire protection and water quality.

Eastern Third Zone

New 12" water mains were recently installed in Perry Hall along Seven Courts Drive, Proctor Lane and Gunview Road to replace deteriorated cast iron pipes.

Water main projects to replace fifty year old, failure-prone cast iron pipe are planned along Ellenham Road and Ellenham Avenue in Towson (4,300 ft.) and in the Hillendale (6,000 ft.) and Fullerton (7,000 ft.) Communities in Parkville.

Numerous rehabilitation projects need to be done on the existing piping network to ensure adequate pressure, fire protection, and water quality.

Western Third Zone

New 12" water mains were recently installed along Maidens Choice Lane and Kenwood Avenue in the Catonsville area to replace deteriorated cast iron pipes.

Numerous rehabilitation and replacement projects need to be done on the existing piping network to ensure adequate pressure, fire protection, and water quality.

Catonsville Fourth Zone

New 12" water mains were recently installed along Johnnycake Road and various side streets in the Windsor Mill/Catonsville area to replace deteriorated cast iron pipes.

Numerous rehabilitation and replacement projects are needed on the existing piping network in order to ensure adequate pressure, fire protection and water quality.

Pikesville Fourth Zone

Improvements to the transmission system around the Owings Mills Area will need to be completed.

Water main projects to replace fifty year old, failure-prone cast iron pipe are planned along Reisterstown Road (I-695 to Irving Place) (6,200 lf.), Liberty Road (Washington Avenue to Rolling Road) (5,300 lf.) and the 42-inch and 30-inch Pikesville Discharge Mains (9,500 lf.).

Eventually, a 36" transmission main in Reisterstown Road, from Pikesville pumping Station to Pleasant Hill Road will be needed to support demand during the summer months and provide redundancy to ensure system reliability.

A new 1.0 MG Tank is needed and under design to replace the deteriorated and old Randallstown Tank.

Numerous rehabilitation and replacement projects are needed on the existing piping network in order to ensure adequate pressure, fire protection and water quality.

Towson Fourth Zone

A new 24" water line is needed in York Road, from Cockeysville Road to Shawan Road to replace existing problem-prone water mains.

A new 16" water main along Oakleigh Road from E. Joppa Road to Yakona Road is needed to replace deteriorating 12" cast iron pipe.

Water main projects to replace fifty year old, failure-prone cast iron pipe are planned along Seminary Avenue (Hillspring Drive I-83) (5,000 lf.) and in the Fox Chapel Community (9,400 lf.) in Timonium.

Numerous rehabilitation projects need to be done on the existing piping network to ensure adequate pressure, fire protection and water quality.

Sparks Fifth Zone

Improvements are underway at the Sparks Pumping Station and the Sparks Tank to improve safety and to maintain reliability.

A new water main to provide a redundant supply to the zone is currently being modeled due to a recent 20-inch water main break along York Road at Thornton Mill Road.

Reisterstown Fifth Zone

Increasing demands in the Reisterstown/Glyndon areas of Baltimore County will require the construction of a 2.0 million gallon elevated water storage tank in the near future. Community objections continue to delay this project.

Zones not needing Planned Improvements

- Colgate Second Zone
- Pot Springs Fifth Zone
- Sherwood Fifth Zone
- Falls Fifth Zone

IMPOUNDMENT AND SAFE YIELD DATA

Parameter	Loch Raven	Prettyboy	Liberty
Elevation at Crest of Dam	240 feet	520 feet	420 feet
Spillway Length	288 feet	274 feet	480 feet
Total Length of Dam	650 feet	845 feet	740 feet
Height of Crest Above Stream Bed	82 feet	130 feet	160 feet
Capacity of Reservoir (in billions)	23 gallons	20 gallons	43 gallons
Length of Shore Line at Crest Elevation	50 miles	46 miles	82 miles
Area of Land Owned	8,000 acres	7,380 acres	9,200 acres

Safe Yield

- Loch Raven - Prettyboy 148 MGD
- Liberty 92 MGD
- Susquehanna
  - 108-inch line 250 MGD
  - Future Additional Allowance 250 MGD
  - *Total Available Water:* 740 MGD*

*Total available water is subject to the following:

1. Liberty yield is limited to 82 MGD without the use of Ashburton pumps.
2. Present agreements would allow up to 69 MGD average day for Howard and Anne Arundel Counties.
3. Harford County has State authority for 25 MGD from the Susquehanna.
4. Baltimore City has been approved by the Susquehanna River Basin Commission (SRBC) to withdraw a maximum of 250 mgd from the Conowingo pond depending on system hydraulics, but withdraw is currently limited by its aggregate pumping capacity with three pumps operating to a withdrawal of approximately 137 mgd,. During low flow periods on the Susquehanna River (i.e., when Federal Energy Regulatory Commission Flows (Q-FERC) or lower flows occur), withdraw is limited to 64 mgd measured as a maximum 30-day average and 107 mgd (equivalent to two pumps at Deer Creek Pumping Station) any one day.

WATER DEMANDS

Round 10 Population Forecasts by the Baltimore Metropolitan Council (see Chapter II) indicate over 830,000 persons in the urban area of Baltimore County by the year 2050. The provision of public water services to this many people will require capital expenditures in nearly every zone of water service.

DOMESTIC, COMMERCIAL AND INDUSTRIAL USES

The expected domestic and commercial uses were obtained from the population figures and per-capita consumption for each zone of service. The results indicate an increase of use in some zones by the year 2050.

Industrial use is not expected to increase. It is anticipated that industrial and commercial use will replace the industrial water that was subtracted with the loss of the steel operation at Sparrows Point. After reviewing reports and available data on existing industrial use, zoning, transportation, water requirements and other parameters, it is estimated that industrial and commercial usage should increase slightly from the current rate of 24.5 MGD to 26.15 MGD through the year 2050.

About 48.6% of the industrial use is expected to be concentrated in the First Zone where most of it is now located. The other 51.4% will probably be located in existing industrial parks. Substantial water-using industries are not expected to settle in the northern part of the County.

Baltimore County's economic health depends to a significant degree on industry, and water is a prerequisite. Ensuring new industry and an ample water supply will permit some growth and will encourage industrialization where consistent with the County's *Master Plan 2020.*

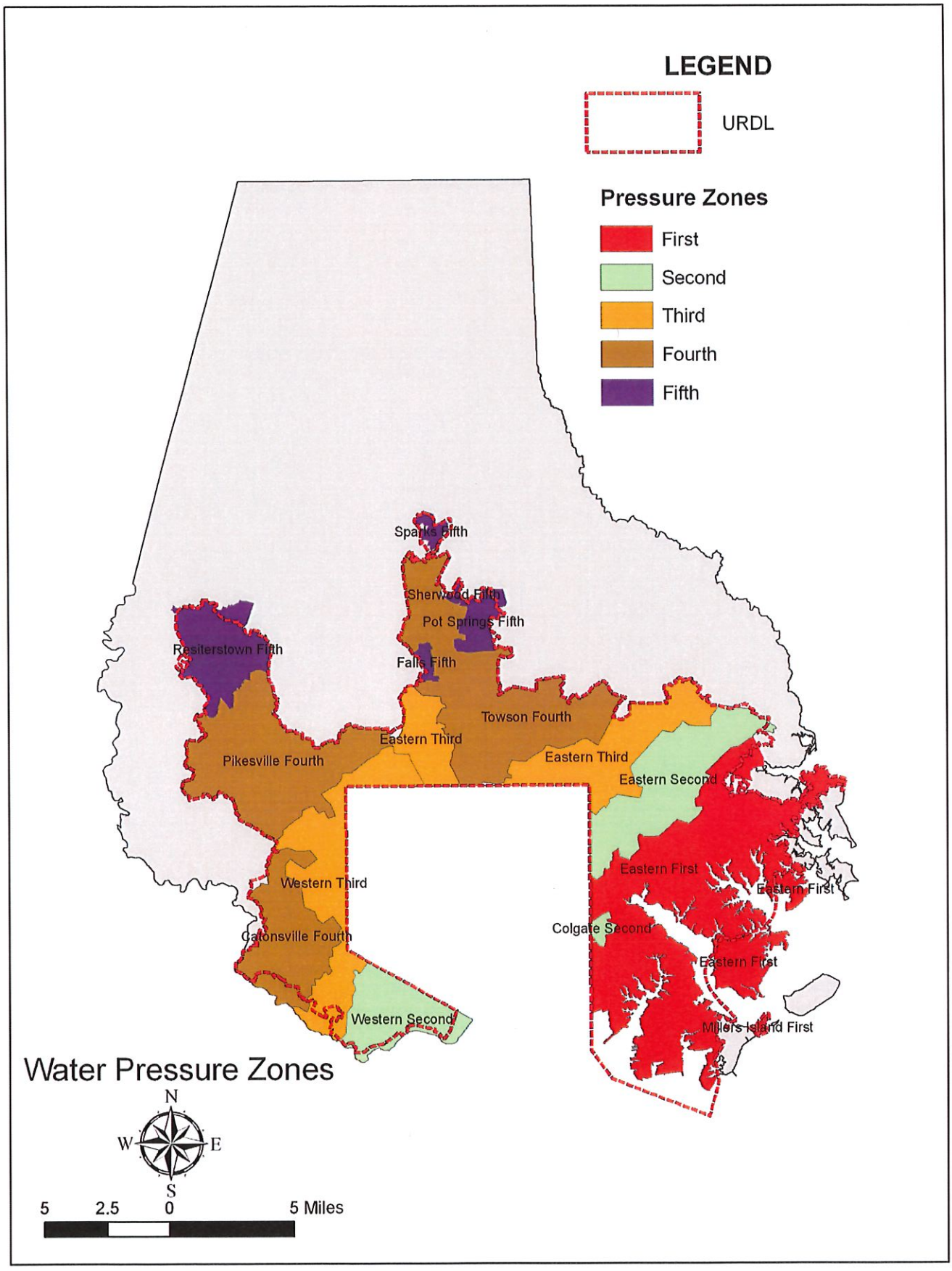
ESTIMATED DAILY USE IN THE YEAR 2050

The estimated Baltimore County 2050 average-day demand is 112.66 MGD. This quantity can be obtained from the existing sources of supply. The maximum-day demand of 201.42 MGD can be obtained from existing, raw water, reservoir storage and the Susquehanna River. Future distribution storage and pumping capacity must be designed to meet the maximum day demands. With the addition of the Fullerton Filtration Plant the water system will be able to handle anticipated future filtration water demands.

WATER DEMANDS – PRESENT TO 2050

Attempts to forecast long-range water use are only estimates based on the best available information and various engineering judgments. Fortunately, Baltimore County has some very valuable historical data which has been used to help predict the water demands through 2050. The present thinking of planners is that the water service area in the year 2050 will be virtually the same as the present one. The pressure zones (which also serve as the planning areas for public water service) are located generally within the URDL, with exceptions only for public health projects (such as in the eastern peninsula areas) and where mains are extended for redundancy

("looping") to meet system reliability and water quality requirements. The outline of the service area is shown on the following page.


LEGEND
URDL
Pressure Zones
First
Second
Third
Fourth
Fifth
Sparks Fifth
Sherwood Fifth
Pot Springs Fifth
Reisterstown Fifth
Falls Fifth
Towson Fourth
Eastern Third
Pikesville Fourth
Eastern Third
Eastern Second
Eastern First
Eastern First
Western Third
Colgate Second
Catonsville Fourth
Eastern First
Western Second
Millers Island First
Water Pressure Zones
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PER-CAPITA CONSUMPTION

The per-capita consumption is expected to be highest in the First and Second Zones of service where industrial and commercial uses will probably be most extensive. Per-capita use in the upper zones is expected to increase gradually.

For engineering purposes, "per capita" usage figures are derived by dividing the actual observed flow by the population located within the pressure zone in question. This leads to confusion in that it does not accurately reflect actual domestic usage, since it assigns industrial and commercial usage as well as losses due to fire fighting operations, system leakage and water main breaks on a "per-capita" basis. It does, however, provide the information necessary to properly size and maintain the water system. These "per capita" figures were used historically in Table No. 3.

Domestic usage for design purposes is based on 90 gpcd (gallons per capita per day) (See Design Manual adopted August 2, 2010, Chapter 6, Section IV (B)3(c)2 (a) & (b) for complete details. This is the section on sewer design. Water systems are always designed for adequate fire flow and are not usually governed by domestic usage.) This is a conservative figure for system hydraulic design purposes. Actual residential domestic usage is closer to 80 gpcd.

Domestic usage is further refined in the Central System Report, varying from a low of 63 gpcd to a high of 111 gpcd in different pressure zones. The variation is the result of the consultant's usage estimates based on lot size and type of dwelling typical in those service areas, with larger residences assumed to have a greater number of plumbing fixtures, more lawn watering and other outdoor usage. For all of these reasons, Table No. 3 has been modified to provide a better explanation of water demand.

OTHER SOURCES OF WATER

The rural areas of Baltimore County use ground water, predominantly in the northern part of the County. For more details about the use of ground water supplies, see the section on Rural Baltimore County.

THE FUTURE WATER SYSTEM

Water consumption in Baltimore County is expected to increase slowly through the year 2050.

The Water Analyzer Office has conducted extensive distribution studies of each zone of service. These studies were reviewed in detail to determine the distribution improvements which will be required to meet demands for the next twenty-five years. The improvements include additional pumping capacity, storage capacity, and transmission mains.

WATER CONSERVATION

COMPLIANCE WITH STATE REQUIREMENTS

The County Building Engineer, Building Code Official for the County in the Department of Permits, Approvals and Inspections, advised on January 24, 2011 that Baltimore County complies with the Maryland Water Conservation Plumbing Fixtures Act (see COMAR 26.03.01.07).

BALTIMORE COUNTY WATER CONSERVATION PLAN

The present Baltimore County water system is actually an extension of the City system. Raw water is brought into the City filtration plants from the City-owned impoundment reservoirs in the County, treated and returned to the County consumers through a complex system of transmission mains, distribution mains, storage facilities and pumping stations. Therefore the City and County are physically and legally bound to a common water system.

In fiscal 2022 Baltimore County used about 78 MGD from the Baltimore system. This amounts to about 42.4% of the average day water demand of 184.3 MGD. In fiscal 2022 there was 25.62% unaccountable water in the Baltimore Metropolitan Water System.

In recent years the County has financially participated at a rate of approximately 40% in the following City-managed contracts to reduce the amount of unaccountable water:

- SCADA (Supervisory Control and Data Acquisition) contract to replace or renew all of the telemetry in the system to gain more accurate readings.
- Water audit contracts to calibrate all large meters above 4" in size and to search for other unaccountable water causes.
- Valve and fire hydrant exercising and repair contract to limit leakage from these appurtenances.
- Leak detection contracts to survey large areas of the system to repair water leaks that do not reach the surface.
- Replacement of water tank altitude valves to stop unnecessary water overflows.
- Replacement of old water meters with new smart meters

In addition, Baltimore City and Baltimore County have made a comprehensive effort to find all buried meters in Baltimore County to gain a more accurate overall reading of metered water.

It is estimated that approximately 10% of the unaccountable water system wide is being lost through main breaks. Baltimore City and Baltimore County, like many large municipalities around the country, have a very old infrastructure with large inventories of old cast iron pipes that are prone to breakage, especially during the winter months. Each jurisdiction is allotting more money to replacing mains that have frequent breaks. In the fiscal year 2024 alone, Baltimore County will be replacing over 40,000 linear feet of old cast iron piping which have a history of main breaks. Baltimore City, through its emergency response network, is responding to breaks in a more timely manner to limit the amount of wasted water.

Also, over the last several years, both the City and the County public works officials, police and fire departments have put forth a lot of cooperative effort to stop illegal usage from the system's fire hydrants. Baltimore County has applied updated State standards in regard to plumbing fixtures in new construction to conform to the State's conservation requirements. Baltimore City also mails a water quality report annually to all metered accounts which gives guidance on how consumers can limit and conserve their daily water usage.

It is the objective of both Baltimore County and Baltimore City to reduce the system's unaccountable water to 15% within the next 5 years.

NEIGHBORHOOD EXTENSIONS

A petition process for facilities extensions in existing neighborhoods has been established to determine priorities for facilities planning, design, and construction as directed by Section 35-142 of the Baltimore County Code. In addition, priorities for facilities planning, design and construction are established by the Department of Environmental Protection and Sustainability and the Director of Public Works under procedures established pursuant to Section 35-144.

SUBDIVISION PROJECTS

Priorities for the extension of Metropolitan facilities for new developments (residential, commercial or industrial) are established by negotiation of Public Works Agreements pursuant to the authority of Section 32-4-304 of the Baltimore County Code.

CONSTRUCTION AT HIGHWAY SITES

Facilities are constructed at strategic locations crossing major highway projects to preclude future expenses involved in tunneling under the highways. The priority for this work is established by highway construction schedules.

RURAL BALTIMORE COUNTY

The areas outside of the Urban-Rural Demarcation Line (URDL) are predominantly served by individual "private" well water supplies. Ground water in Baltimore County may be obtained from two (2) geological and physiographical provinces that are separated by the "Fall Line" (which lies approximately along I-95 in Baltimore County). The Piedmont subarea is north of the Fall Line and the Coastal Plain subarea is south of the Fall Line.

Piedmont Subarea

Groundwater supplies in the Piedmont Subarea are generally sufficient to supply only domestic and moderate commercial demands because the yields from individual wells are relatively low, rarely exceeding 50 GPM. Crystalline rocks, including schist, gneiss, gabbro, granite, and marble are the chief aquifers. Groundwater generally occurs under water table conditions in the uppermost 250 feet of the rocks, and most wells and springs yield water from local recharge. The aquifers store groundwater in the more permeable zone of decomposed rock nearest to the land surface.

Well yields vary by geologic formation and within each formation. The following information is generalized yield data in Baltimore County:

Geologic Formation	Well Yield
Marble	Varies from 1- 500 GPM and averages 12 GPM
Pleasant Grove Schist & Prettyboy Schist	Varies from 1- 100 GPM and averages 8.5 GPM
Gneiss & Granite	Varies from 1 - 100 GPM and averages 8.5 GPM
Mafic and Ultramafic	Varies from 1 - 75 GPM and averages 8.0 GPM
Loch Raven Schist	Varies from 1 - 100 GPM and averages 6.5 GPM

Wells in the Loch Ravens Schist, particularly the area known as Chestnut Ridge, are generally the lowest yielding wells in Baltimore County. For this reason the Loch Raven Schist (and Jones Falls Schist) are known as Critical Water Areas (see map in Chapter II) as defined in the Baltimore County Code 34-2-103(f).

Coastal Plain Subarea

The Coastal Plain Subarea contains relatively large quantities of groundwater in artesian or semi-artesian and water-table conditions. Well yields vary from a few gallons per minute to as much as 1,000 GPM. The average yield is 200 GPM. Sand and gravel are the major aquifers that are separated by relatively impervious confining layers of clay.

Groundwater in the Coastal Plain Subarea is susceptible to salt water contamination. Groundwater contaminated by salt water is generally high in mineral content, high on the pH scale, and very hard. Detailed analyses can be obtained from the Geological Survey Water Supply Paper, 1499-F.

WATER QUALITY AND RELIABILITY

In general, residents of rural Baltimore County have little difficulty attaining an adequate and safe water supply from domestic wells use. The results of a County-wide 1998 study completed by the Maryland Geologic Survey entitled "Ground Water Quality in the Piedmont Region of Baltimore County" and a 2002 Supplemental Report indicate that there were no regional water quality concerns. However, subsequent water quality sampling has revealed a number of wells located in the Baltimore Gneiss Formation with elevated levels of naturally occurring radium in the ground water (see discussion below). The droughts of 1999 and 2002 raised concerns from many residents who rely on well water. Other localized ground water quality problems exist sporadically as a result of anthropogenic activities. Typically, areas of dense development and/or wells in close proximity to sources of contamination are more susceptible to groundwater quality problems. The discussion below details some of the more prevalent water quality issues that face rural Baltimore County property owners.

Radium

In 2005, a water quality survey of wells in the Baltimore Gneiss and Setters Gneiss formation revealed elevated levels of gross alpha particle emissions and radium (a human carcinogen) were present in roughly 10% of the wells. The areas of concern include Monkton, northern Phoenix, Sparks, Glencoe, Butler, and Woodstock. Radioactive elements such as uranium and radium are naturally occurring in the rock. Evaluation of the well construction data indicates no particular pattern in well depth, yield or age to wells with high gross alpha or radium concentrations. The occurrence of elevated concentrations of gross alpha and radium in ground water appears to be random within the gneiss formations and localized in various "hot spots." The County recommends (and may require) that all potentially affected wells be tested for gross alpha and/or radium to minimize exposure. Water softeners have proven to be an effective removal technique for radium. In 2005, Baltimore County sent a mailing with information regarding radium to all Baltimore County residents located in areas of concern. Baltimore County Department of Environmental Protection and Sustainability continues to work with individual residents, and realtors to educate and assist in identifying those wells where treatment may be needed.

Drought

The drought of 2002 was marked by the lowest ground water levels on record in Baltimore County and an unprecedented number of replacement wells being drilled. Approximately 500 replacement wells were drilled which equates to nearly 1.5% of the total number of domestic wells estimated to be in service. Particularly hard hit were properties underlain by Loch Raven Schist and the Bradshaw Layered Amphibolite. These formations have long been known for their relatively low yielding wells and an increased likelihood of drilling "dry holes." It was also noted that a large percentage of yield problems were experienced from hand dug wells or older shallow drilled wells that did not meet current construction and yield test standards.

Petroleum Constituents

Petroleum contamination of ground water, primarily from leaking underground storage tanks (UST) has been a known threat to drinking water supplies for many decades. The primary constituents of concern include volatile and semi-volatile compounds that the USEPA has designated as potential human carcinogens. The Baltimore County Department of Environmental Protection and Sustainability works in cooperation with Maryland Department of the Environment to monitor known cases of groundwater contamination related to petroleum fuel spills and advise residents when corrective action is necessary. The historical and current status of the major MDE remedial investigations in Baltimore County may be reviewed by accessing the Maryland Department of the Environment's web page:

http://www.mde.state.md.us/programs/Land/OilControl/Pages/remediationsites.aspx

Road Salt

Once applied, road salt or sodium chloride (the predominant form of salt used in Baltimore County) is easily dissolved with precipitation and may enter the ground water system through the nearby surface soils or discharge directly into streams through storm water run-off. Studies have shown that the sodium typically becomes bound in subsurface soils, and gradually displaces calcium, magnesium and potassium from the soil into the ground water system (Kaushal *et. al.*)[9]. However, chlorides move through the subsurface and into groundwater relatively unaffected by chemical or biological interaction. The US EPA has set a secondary maximum contaminant level (SMCL) for chlorides at 250 mg/l (parts per million (ppm)) in drinking water. An SMCL is a non-enforceable water quality standard that is recommended for aesthetic qualities such as taste and odor. While chlorides are not considered a concern for human health, they can impart a bitter taste in drinking water and increase corrosion of metal pipes and fixtures. Chlorides can also inhibit plant growth and in high concentrations cause damage to root systems. The US EPA has set a Health Advisory for sodium of 20 mg/l.

In a study by the Maryland Geological Survey, "Ground Water Quality in the Piedmont Region of Baltimore County" (Bolton 1998), it was found that approximately 5% of the 106 wells sampled throughout rural Baltimore County had chloride levels above 100 ppm, but only one well was above the SMCL of 250 ppm. In addition, it was found that chloride concentrations were significantly higher in wells located within 200 feet of a paved roadway. Impacts to wells from chlorides are generally localized and dependent on where storm water run-off is directed. No wells in the 1998 study were found to have elevated levels of sodium in the water. However, over the last twenty years, there has been a marked increase in the number of complaints and many documents cases (dozens) of chloride and sodium levels exceeding SMCLs and Health Advisory levels.

Baltimore County and the City of Baltimore have monitored salt concentrations from the drinking water reservoirs and streams leading to the reservoirs during base flow conditions (i.e.

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[9]Kaushal, S.S., Groffman, P.M., Likens, G.E., Belt, K.T., Stack, W.P., Kelly, V.R., Band,L.E., & Fisher, G.T. (2005) *Proc. Natl. Acad. Sci. USA* 102, 13517 – 13520.

during dry weather). The data show a trend of increasing chloride levels that has more than doubled over the last 30 years. Sodium levels have increased 3 fold. Of most concern is that while chloride (and sodium) levels in streams are observed to peak during the winter months (as expected), the streams are not returning to baseline levels during the summer. The sodium and chlorides levels appear to be slowly building up in the groundwater system. Even if salt application were ceased today, it would take decades to the salt to be flushed out of the freshwater system.

While sodium chloride is not found naturally in this region, there are a number of anthropogenic sources of chlorides that are contributing to the observed trends. These include road salt, sanitary wastewater, fertilizers, and industrial discharges. The largest contribution of chlorides into Baltimore County watersheds by far is road salt. However, the other contributions should also be considered for proper management of this growing problem. For example, thousands of homeowners in Baltimore County use water softeners to treat their private water supplies. The spent brine from these systems solutions is usually discharged into the ground through their septic systems. While we are not seeing direct impacts to domestic wells from the use of water softeners (wells are intentionally sited to be upgradient and at least 100 feet from septic systems), chlorides from the brine are likely loading the ground water system and contributing to elevated chloride levels in downgradient streams. For further information related to chlorides and their environmental and health impacts, please see the Maryland Department of the Environment webpage:

http://www.mde.state.md.us/programs/Marylander/Pages/roadSalt.aspx

Regarding private water treatment systems, it is recommended that homeowners maintain an on-going service contract with a qualified professional to regularly monitor their well water quality and have their system upgraded or adjusted as needed to optimize the system efficiency.

Manor Shopping Center

In recent years, Manor Shopping Center, located in Jacksonville, has been unable to fully meet onsite water demand with its existing wells. Since at least 2005, the shopping center has been purchasing water trucked in from Baltimore City. In addition, the shopping center has sporadically been in violation of the lead and nitrate standards. The shopping center's wells are also high in total dissolved solids and chlorides, exceeding national secondary standards. While Baltimore County EPS and MDE were working with the system to install treatment to address the lead and nitrate concerns, it was discovered that the onsite sewage disposal system is either at capacity or at the point of failure. Due to the limited land owned by this system, it may be difficult or impossible to pump enough water to meet potable demand and have enough space to adequately dispose of wastewater. A long term solution to this shopping center's water and wastewater needs are needed.

SMALL COMMUNITY WATER SUPPLIES

There are currently nine small community water supply systems located in Baltimore County, together serving approximately 2,149 people. With the exception of Phoenix and Sunnybrook, these systems are privately owned and operated.

Small Community Public Water Supply Systems in Baltimore County

Name	Location	Population Served
Glen Meadows Retirement Community	11630 Glen Arm Rd., Glen Arm	468[2]
The Gramercy Mansion Bed & Breakfast	1400 Greenspring Valley Rd., Stevenson	40
Granite Trailer Court	10600 Davis Ave Woodstock	100
Oldfields School	1500 Glencoe Rd. Glencoe	200
Manor Community Water Supply[1]	15626 Old York Rd Monkton	25
Phoenix Community Water Supply[1]	Sweet Air Rd. Phoenix	50
Chapel Hill Nursing Center	4511 Robosson Rd. Randallstown	125[2]
Sunnybrook Community Water Supply[1]	Club View La. Phoenix	416[2]
Woodstock Job Corp	10900 Old Court Rd., Woodstock	675
Villa Julie Infirmary	1531 Greenspring Valley Rd., Stevenson	50
Total Population Served		**2,149**

1 Maintained by Baltimore County Department of Public Works
2 Figure provided by MDE

WATER PROGRAM COST SUMMARY

ESTIMATED 5-YEAR (2025-2029)
(Source: Capital Budget FY 2024, Capital Improvement Program FY 2025 – FY 2029)

Neighborhood Water Extensions (Petitions)	$1,500,000
Miscellaneous Distribution System Improvements	$55,000,000
Construction at Highway Sites	$38,000,000
Rehabilitation & Replacement of Water Mains	$140,000,000
TOTAL NEIGHBORHOOD FACILITIES	**$234,500,000**
Major County Projects	$84,160,000
Joint City-County Projects (Baltimore County's Share Only)	$252,382,000
GRAND TOTAL ALL WATER FACILITIES	**$571,042,000**

Table No. 3
Projected Water Supply Demands and Planned Capacity

SERVICE AREA	2030								2035								2040							
	Population (Thousands)	GPCD* (Gallons)	Total Gallons* (GPCD)	Residential Demand (MGD)	Commercial Industrial Demand (MGD)	Unaccounted Water (MGD)	Total Demand (MGD)	Planned Capacity (MGD)	Population (Thousands)	GPCD (Gallons)	Total Gallons (GPCD)	Residential Demand (MGD)	Commercial Industrial Demand (MGD)	Unaccounted Water (MGD)	Total Demand (MGD)	Planned Capacity (MGD)	Population (Thousands)	GPCD (Gallons)	Total Gallons (GPCD)	Residential Demand (MGD)	Commercial Industrial Demand (MGD)	Unaccounted Water (MGD)	Total Demand (MGD)	Planned Capacity (MGD)
FIRST	162.9	76	175	12.38	11.85	4.28	28.51	34.0	166.5	76	175	12.65	12.11	4.37	29.14	34.0	169.5	76	175	12.88	12.33	4.45	29.66	34.0
SECOND	103.9	74	108	7.69	0.73	2.81	11.23	13.5	106.2	74	108	7.86	0.74	2.87	11.47	13.5	108.1	74	108	8.00	0.76	2.92	11.67	13.5
COLGATE SECOND	6.7	63	75	0.42	0.01	0.08	0.50	0.7	6.8	63	76	0.43	0.01	0.08	0.52	0.7	6.9	63	76	0.44	0.01	0.08	0.53	0.7
EASTERN THIRD	93.5	78	105	7.29	0.56	1.96	9.81	13.0	95.3	78	108	7.44	0.80	2.06	10.30	13.0	96.8	78	112	7.55	1.12	2.17	10.85	13.0
WESTERN THIRD	75.2	72	111	5.41	1.26	1.67	8.35	9.6	76.7	72	111	5.52	1.29	1.70	8.51	9.6	77.8	72	111	5.60	1.31	1.73	8.64	9.6
CATONSVILLE FOURTH	60.8	98	154	5.96	1.53	1.87	9.36	10.0	62.0	98	155	6.07	1.61	1.92	9.61	10.0	63.0	98	155	6.17	1.64	1.95	9.76	10.0
PIKESVILLE FOURTH	109.0	80	128	8.72	3.14	2.09	13.95	16.0	111.1	80	128	8.89	3.20	2.13	14.22	16.0	112.9	80	128	9.03	3.25	2.17	14.45	16.0
TOWSON FOURTH	102.3	87	147	8.90	3.13	3.01	15.04	15.5	104.2	87	147	9.07	3.19	3.06	15.32	15.5	105.8	87	147	9.20	3.24	3.11	15.55	15.5
FALLS FIFTH	7.8	64	109	0.50	0.14	0.21	0.85	1.8	8.0	64	111	0.51	0.15	0.22	0.89	1.8	8.1	64	112	0.52	0.16	0.23	0.91	1.8
POT SPRINGS FIFTH	13.2	77	133	1.02	0.48	0.26	1.76	1.9	13.5	77	140	1.04	0.57	0.28	1.89	1.9	13.7	77	146	1.05	0.65	0.30	2.00	1.9
REISTERSTOWN FIFTH	41.0	78	122	3.20	0.80	1.00	5.01	5.7	41.8	78	122	3.26	0.82	1.02	5.10	5.7	42.5	78	122	3.31	0.83	1.04	5.18	5.7
SHERWOOD FIFTH	0.5	111	156	0.05	0.01	0.01	0.08	0.2	0.5	111	156	0.05	0.01	0.01	0.08	0.2	0.5	111	156	0.06	0.01	0.01	0.08	0.2
SPARKS FIFTH	2.0	71	133	0.14	0.08	0.04	0.26	0.6	2.0	71	139	0.14	0.09	0.04	0.28	0.6	2.0	71	145	0.14	0.11	0.04	0.30	0.6
TOTAL	778.8			61.69	23.72	19.29	104.70	122.5	794.7			62.94	24.60	19.78	107.32	122.5	807.5			63.96	25.41	20.19	109.56	122.5

SERVICE AREA	2045								2050								2050	
	Population (Thousands)	GPCD (Gallons)	Total Gallons (GPCD)	Residential Demand (MGD)	Commercial Industrial Demand (MGD)	Unaccounted Water (MGD)	Total Demand (MGD)	Planned Capacity (MGD)	Population (Thousands)	GPCD (Gallons)	Total Gallons (GPCD)	Residential Demand (MGD)	Commercial Industrial Demand (MGD)	Unaccounted Water (MGD)	Total Demand (MGD)	Planned Capacity (MGD)	Max to Average-Saturation	Max Day Demand (MGD)
FIRST	171.9	76	175	13.06	12.50	4.51	30.08	34.0	174.8	76	175	13.28	12.72	4.59	30.59	34.0	1.89	57.81
SECOND	109.5	74	108	8.11	0.77	2.96	11.83	13.5	111.4	74	108	8.24	0.78	3.01	12.03	13.5	1.75	21.05
COLGATE SECOND	7.0	63	76	0.44	0.01	0.08	0.53	0.7	7.1	63	76	0.45	0.01	0.08	0.54	0.7	1.43	0.77
EASTERN THIRD	98.0	78	112	7.64	1.14	2.19	10.97	13.0	99.5	78	112	7.76	1.15	2.23	11.14	13.0	1.82	20.27
WESTERN THIRD	78.7	72	111	5.67	1.32	1.75	8.74	9.6	79.8	72	111	5.75	1.34	1.77	8.86	9.6	1.42	12.58
CATONSVILLE FOURTH	63.7	98	155	6.24	1.66	1.98	9.88	10.0	64.7	98	155	6.34	1.68	2.01	10.03	10.0	1.60	16.04
PIKESVILLE FOURTH	114.2	80	128	9.14	3.29	2.19	14.62	16.0	115.9	80	128	9.27	3.34	2.23	14.84	16.0	1.86	27.60
TOWSON FOURTH	107.0	87	147	9.31	3.27	3.14	15.72	15.5	108.5	87	147	9.44	3.32	3.19	15.95	15.5	1.69	26.95
FALLS FIFTH	8.2	64	112	0.53	0.16	0.23	0.92	1.8	8.3	64	112	0.53	0.17	0.23	0.93	1.8	2.60	2.42
POT SPRINGS FIFTH	13.9	77	146	1.07	0.65	0.30	2.02	1.9	14.1	77	146	1.08	0.66	0.31	2.05	1.9	2.02	4.14
REISTERSTOWN FIFTH	42.9	78	122	3.35	0.84	1.05	5.24	5.7	43.6	78	122	3.40	0.85	1.06	5.32	5.7	2.01	10.68
SHERWOOD FIFTH	0.5	111	156	0.06	0.01	0.01	0.08	0.2	0.5	111	156	0.06	0.01	0.01	0.08	0.2	2.02	0.16
SPARKS FIFTH	2.1	71	145	0.15	0.11	0.04	0.30	0.6	2.1	71	145	0.15	0.11	0.05	0.30	0.6	3.00	0.91
TOTAL	817.6			64.75	25.74	20.44	110.93	122.5	830.3			65.75	26.15	20.76	112.66	122.5	201.42	

Notes:
1) Water projections are determined as a function of changes in population.
2) Water projections assume the percentage of unaccounted for water remains constant per zone.
* Data provided from Baltimore City Project 658, Comprehensive Plan for Water Facilities, Central System Report, Table II-13, Filtered Water Supplied by Zone, 2015 projections (March, 200

Table No. 4
Inventory of Existing Community / Multi-use Wells

Water Supply	Well ID	Public Water Supply ID	Aquifer	Coordinates (NAD 27 in thousands of feet)	Map No.	Depth (feet)	Well Diameter (Inches)	Maximum Safe Yield (gpd)	Pumping Capacity (gpd)	Comments
Municipal (Publicly Owned)										
Glen Arm Maintenance Facility (fka Grumman Aircraft) (MU)	BA-81-1777 BA-81-2071 Well #3	103-0052	Cockeysville Marble	942-591	W-17 A	200 100 ?	6	11,000	15,000	Added*
Oregon Ridge Park (MU)	BA-81-5810 BA-81-5811 BA-81-5812 BA-81-5898	103-1121	Cockeysville Marble	890-603	W-10 B	250 300 275 300	6	6,000	22,000	Added*
Phoenix Water Supply (CS)	BA-81-6482 BA-81-6524 BA-81-6525	003-0017	Baltimore Gneiss	918-610	W-11 A	200 200 200	6	5,000	7,000	
Sunnybrook Water Supply (CS)	Well #1 Well #2 Well #3	003-0011	Loch Raven Schist	923-606	W-11 A		6	31,000	60,000	
Manor Water Supply (CS)	BA-94-3562 BA-94-3633	103-1103	Baltimore Gneiss	920-628	W-11 A	400 400	6	5,000	15,000	Serves Manor Tavern Restaurant
Private Community/Institutional										
Bais Yaakov School for Girls (MU)	BA-73-3724	103-0002	Loch Raven Schist	877-581	W-16 A	200	6	10,300	15,500	
Baptist Home (MU)	BA-81-2904 BA-81-4577 BA-88-1436 BA-88-1437	003-0201	Baltimore Gneiss	877-577	W-16 A	300 300 200 250	6			Inactive
Camp Fretterd (fka Montrose School) (MU)	BA-81-6687 BA-88-1731	103-0055	Piney Run Formation	843-607	W-9 B	305 300	6	10,000	25,000	
Camp Milldale (aka, Pearlstone Retreat) (MU)	BA-92-0995 BA-94-3778	103-1331	Pleasant Grove Schist	841-640	W-9 B	205 250	6	12,000	32,000	
Caves Valley Golf Club (MU)	BA-88-1831 BA-88-1828	103-0065	Cockeysville Marble	874-587	W-16 A	140 400	6	3,000	5,000	

Table No. 4 *(Continued)*
Inventory of Existing Community / Multi-use Wells

Water Supply	Well ID	Public Water Supply ID	Aquifer	Coordinates (NAD 27 in thousands of feet)	Map No.	Depth (feet)	Well Diameter (Inches)	Maximum Safe Yield (gpd)	Pumping Capacity (gpd)	Comments
Chapel Hill Nursing Center (MU)	BA-94-3881; BA-81-7250, Well #3	003-0202	Serpentine	840-569	W-15 B	500 300 ?	6	6,500	10,000	
Glen Arm LLC (fka Marquip Ward United, fka Koppers) (MU)	BA-73-2480 BA-81-0481	103-0040	Cockeysville Marble	941-591		202 525	6	10,000	35,000	Added*
Glen Meadows Retirement Community (aka Notchcliff Lifecare Community) (MU)	BA-73-5149 BA-81-2562	003-0208	Cockeysville Marble	936-589	W-17 A	150 100	6		(50,000)	
Gramercy Mansion Bed & Breakfast (CS)	2 Wells	003-0023	Cockeysville Marble		W16B	?				Multiple OSDS
Granite Trailer Court (MU)	BA-81-0968 Spring	003-0204	Baltimore Gneiss	838-544	W-15 B	185	6	9,700	16,200	
Greystone Country Club (MU)	BA-94-1645	103-0074	Loch Raven Schist	911-655	W-4 B	300	6	4,000	5,500	
Hayfields County Club (MU)	BA-94-3289 BA-94-0329 BA-94-0328	103-0071	Cockeysville Marble	892-608	W-10 B	256 156 200	6			
Hereford High School (MU) (See Cycle 30 Issue 12-01)	BA-94-3100 BA-94-3101 BA-93-0492 BA-94-4235	103-0017	Loch Raven Schist	895-644	W-4 B	300 400 300 250	6	7,300	12,900	Added*
Hereford Middle School (MU)	BA-81-0033 BA-73-8284	103-0018	Setters Formation	898-635	W-10 B	275 273	6	6,100	9,200	Added*
Hillendale Country Club (MU)	BA-94-0008 BA-94-0268 BA-94-1239 BA-94-2698 BA-94-2697	103-0061	Loch Raven Schist	925-607	W-11 A	350 400 300 300 300	6	10,000	17,000	Added*
Hunt Valley Golf Club	BA-71-0081	102-1071	Cockeysville Marble	910-610	W-10 B	200	6	8,200	12,300	Added*
Life Point Church (fka Carroll Community Church (MU)	BA-94-7313 BA-95-0730	103-0093	Pleasant Grove Schist	841-616	W-9B	180 130	6	3,900	10,800	

Table No. 4 *(Continued)*
Inventory of Existing Community / Multi-use Wells

Water Supply	Well ID	Public Water Supply ID	Aquifer	Coordinates (NAD 27 in thousands of feet)	Map No.	Depth (feet)	Well Diameter (Inches)	Maximum Safe Yield (gpd)	Pumping Capacity (gpd)	Comments
Manor Shopping Center (MU)	BA-73-2251 BA-73-2423 BA-81-7734 BA-73-5311 Well #5	103-0054	Loch Raven Schist	924-613	W-11 A	200 300 400 110 ?	6	9,000	15,000	Owner is reportedly hauling in water due to poor well yield
Maryland Center for Agriculture	BA-95-2832	103-0098	Cockeysville Marble		W-10 B	450	6	5,000	10,000	
Maryvale Trinity Prep School	BA-81-0767 BA-94-6047	103-0025	Loch Raven Schist	888-582		200 700	6	7,500	11,000	Added*
Oldfields School (MU)	BA-81-7175 BA-81-5475 BA-88-1108 BA-81-1180 BA-94-1075	003-0210	Baltimore Gneiss	905-630	W-10 B	450 300 700 450 500	6	22,000	30,000	
Oregon Ridge Park and Nature Center (MU)	BA-81-5810 BA-81-5811 BA81-5812 BA81-5898 BA-73-7339	103-1121 103-1120	Cockeysville Marble Baltimore Gneiss		W-10 B	250 300 275 300 273	6	6,000	22,000	Added*
Paper Mill Village (MU)	BA-81-6233; Well #2	103-0060	Loch Raven Schist	924-614	W-11 A	298	6	5,000	7,500	
Stevenson University (fka, Villa Julie College (CS)	BA-81-0564 BA-81-5471 BA-94-3047	103-0042	Cockeysville Marble	883-579	W-16 B	200 200 200	6	60,000	100,000	
Woodstock Job Corps Center (MU)	BA-94-2124 BA-81-0222 BA-81-0223 BA-81-0224 BA-92-0449	103-0012	Baltimore Gneiss	837-547	W-15 B	460 400 400 300 300	6	45,000	50,000	

* Existing facilities that use greater than 5,000 gpd, but were not included in the plan prior to the 2007 Triennial Review

Table No. 5
Inventory of Existing Impounded Supplies

Owner	Crest Elevation Above Sea Level *(Feet)*	Spillway Length *(Feet)*	Total Length of Dam *(Feet)*	Height of Crest Above Steam Bed *(Feet)*	Flooded Area of Crest Elevation *(Acres)*	Length of Shore Line at Crest Elevation *(Miles)*	Area of Land Owned *(Acres)*	Water Over Flowed Crest For First Time *(Date)*	Capacity of Reservoir *(BIL/GALS)*	Safe Yield *(MGD)*	Average Flow *(MGD)*
Municipal	520.0'	448.0'	692.5'	130.0'	1,500	46	7,380	9/23/33	20	48	
Prettyboy Dam (1)	(158.5 m)	(136.5 m)	(210.9 m)	(39.6 m)	(607 ha)	(74 km)	(2987 ha)		(76 MCM)	(182 TCMD)	
Municipal	240.0'	288.0'	650.0'	82.0'	2,400	50	8,000	5/20/23	23	100	149
Loch Raven Dam (1)	(73.2 m)	(87.8 m)	(198.1 m)	(25 m)	(971 ha)	(80 km)	(3237 ha)		(87 MCM)	(379 TCMD)	(564TCMD)
Municipal	420.0'	480.0'	704.0'	160.0'	3,100	82	9,200	2/6/56	43	95	103
Liberty Dam (2)	(128 m)	(146.3 m)	(214.6 m)	(48.8 m)	(1254 km)	(132 km)	(3723 ha)		(163 MCM)	(360 TCMD)	(390 TCMD)

PUMPED SUPPLIES
Conowingo Dam (3)

Intake (Initial)	250 MGD	(946 TCMD)
Intake (Ultimate)	500 MGD	(1893 TCMD)
Deer Creek Pumping Station (Maximum)	4 Pumps @ 62.5 MGD each	(237 TCMD each)

(1) Gunpowder River
(2) Patapsco River
(3) Susquehanna River

Table No. 6
Inventory of Existing Water Treatment Facilities

	OWNER				
				BALTIMORE COUNTY Community Water Systems	
	Municipal: Montebello Plant No. 1	Municipal: Montebello Plant No. 2	Municipal: Ashburton	Sunnybrook	Phoenix
WATER SOURCE	Gunpowder & Susquehanna Rivers		Patapsco River	Aquifer (2 wells)	Aquifer (2 wells)
TYPE OF TREATMENT	Chlorination, Chemical Treatment, Coagulation Sedimentation, Filtration, Fluoridation			Chlorination Chemical Treatment	Chlorination Chemical Treatment Filtration
PLANT COORDINATE LOCATION - NAD 27	917,124E 547,464N	915,923E 547,759N	895,645E 542,673N	923,200E 606,800N	918,500E 614,500N
PLANT COORDINATE LOCATION - NAD 83	1,429,542E 608,214N	1,428,341E 608,509N	1,408,063E 603,423N	1,435,617E 667,551N	1,430,917E 675,251N
RATED PLANT CAPACITY	128 MGD (485 TCMD)	112 MGD (424 TCMD)	120 MGD (454 TCMD)	70,000 GPD	36,000 GPD
AVERAGE PRODUCTION	Total of Plants 1 & 2 103.68 MGD (392.43TCMD)		80.63 MGD (305.18 TCMD)	32,500 GPD	3,000 GPD
MAXIMUM PEAK FLOW	Total of Plants 1 & 2 132.63 MGD (502.00 TCMD)		99.07 MGD (374.98 TCMD)	52,000 GPD	7,000 GPD
STORAGE CAPACITY	Total of Plants 1 & 2 51.41 MG (194.49TCM)	Druid Lake (1) 266.5 MG (1008.70 TCM)	Lake Ashburton (2) 220 MG (832.8 TCM)	70,000 GAL	8,000 GAL
PLANNED EXPANSION	None	None	None	None	None
METHOD OF SLUDGE (*) REMOVAL	Sedimentation Lagoon	Sedimentation Lagoon	Sedimentation Lagoon	None	Pump Out
OPERATING AGENCY	Baltimore City	Baltimore City	Baltimore City	Baltimore County	Baltimore County

* Ultimate Disposal of Sludge: Co-disposal with BRWWTP Sludge
(1) Druid Lake scheduled to be decommissioned and replaced with 46.19 MG (174.83TCM) Tank Storage
(2) Lake Ashburton scheduled to be decommissioned and replaced with 50.9 MG (192.65 TCM) Tank Storage

Table No. 7
Problem Areas

1.	Susquehanna River: Red Water and hardness. Potential taste and odor problems.
2.	Loch Raven Reservoir: Algae Growth.

Table No. 8
Baltimore County Water Facilities
Capital Improvement Program

Project Job Order	Construction Start Date Fiscal Year	Priority	Maryland State Plane Coordinates NAD 83		Map	Project Description	Estimated Costs		Project Construction Capital Budget Program Number	Status Start (Design) Fiscal Year
							Total $	Baltimore County $		
First Zone										
3-67-0625	2021	W-1	577912.8	1447794.2	W23A	3,500 LF of 20" and 9,300 LF of 12" water main in St. Helena along Willow Spring Road and various side streets	5,000,000	5,000,000	0067	2019
3-67-0671	2024	W-1	591667.7	1476666.5	W23A	7,000 LF of 8" water main in Turkey Point along Seneca Road and Bauernschmidt Drive	7,000,000	7,000,000	0067	2019
3-67-0763	2023	W-1	570081.6	1464392.9	W23B	2,000 LF of 8" water main in Sparrows Point	1,000,000	1,000,000	0021	2022
3-36-0690	2024	W-1	596556.5	1457786.9	W23A	5,600 LF of 24" water main in Eastern Blvd. from Mace Ave. to Selig Ave.	7,500,000	7,500,000	0050	2018
3-67-0783	2026	W-1	599583.5	1468625.2	W23B	5,400 LF of 24" & 16" water main along Back River Neck Road (Phase III)	5,000,000	5,000,000	0067	2026
3-67-0697	2026	W-1	602191.6	1476701.5	23B	12,000 LF of 12" water main along Wilson Point Road	6,000,000	6,000,000	0067	2024
3-67-0775	2023	W-1	571326.1	1481615.6	23B	9,000 LF of 8" water main in Millers Island along Cuckhold Point Road and various sides treets	4,500,000	4,500,000	0067	2022
3-35-0308	TBD	W-6	617750.8	1487418.5	W17B	9,500 LF of 16" water main in Ebenezer Rd. from Stumpfs Rd. to Harewood Rd.	3,000,000	3,000,000	0035	2011
Second Zone										
3-67-0732	2024	W-1	612294.8	1457929.5	W17A	1,900 LF of 12" and 4,900 LF of 8" water main along Lennings Lane and Hospital Drive	4,000,000	4,000,000	067	2021

Table No. 8 *(continued)*
Baltimore County Water Facilities
Capital Improvement Program

Project Job Order	Construction Start Date Fiscal Year	Priority	Maryland State Plane Coordinates NAD 83		Map	Project Description	Estimated Costs		Project Construction Capital Budget Program Number	Status Start (Design) Fiscal Year
							Total $	Baltimore County $		
Eastern Third Zone										
3-67-0754	2024	W-1	633633.1	1409912.0	W16B	4,300 LF of 8" water mains along Ellenham Road and Ellenham Avenue	2,000,000	2,000,000	0067	2022
3-67-0769	2024	W-1	619767.2	1438962.1	W17A	2,200 LF of 8" water mains along Linganore Avenue and Hillcrest Avenue	1,000,000	1,000,000	0067	2022
3-67-0685	2028	W-1	625110.8	1435360.5	W17A	6,000 LF of 8" water mains in the Hillendale Park Community in Parkville	6,500,000	6,500,000	0035	2019
3-67-0597	2028	W-1	616674.7	1444642.1	W17A	7,000 LF of 8" water mains in the Fullerton Community in Parkville	7,000,000	7,000,000	0035	2019
Pikesville Fourth										
3-12-0489	2023	W-1	625775.5	1383633.3	W16A	Pikesville PS Discharge Main-42"	16,000,000	16,000,000	0012	2015
3-67-0488	2028	W-1	612174.7	1380236.5	W16A	6,200 LF of 12" water mains along Liberty Road WMR (Washington Ave to Rolling Road)	8,000,000	8,000,000	0035	2013
3-12-0687	2026	W-1	618347.9	1390383.5	W16A W16B	2,500 LF of 24" and 3,600 LF of 12" water mains along Reisterstown Road WMR Ph. 4 (I-695 to Irving Place)	14,000,000	14,000,000	0012	2015
3-12-0567	2026	W-1	619628.7	1368641.4	W16A	Randallstown Tank	2,000,000	2,000,000	012	2022
Towson Fourth Zone										
3-35-445	2024	W-1	627900.6	1425927.8	W16B	Towson PS Rehab	6,500,000	6,500,000	0035	2014
3-50-466	2015	W-1	665335.7	1409884.4	W10B	1,000 LF of 24" water main in York Rd. from Cockeysville Rd. to Shawan Rd.	7,000,000	7,000,000	0050	2013
3-35-	2028	W-1	641042.2	1410816.5	W16B	5,000 LF of 8" water main in Seminary Avenue WMR (Hill Spring Dr to I-83)	5,000,000	5,000,000	0035	2019

Table No. 8 *(continued)*
Baltimore County Water Facilities
Capital Improvement Program

Project Job Order	Construction Start Date Fiscal Year	Priority	Maryland State Plane Coordinates NAD 83		Map	Project Description	Estimated Costs		Project Construction Capital Budget Program Number	Status Start (Design) Fiscal Year
							Total $	Baltimore County $		
Towson Fourth Zone (Continued)										
3-67-0749	2024	W-1	647065.4	1424408.7	W16B	9,400 LF of 8" water main in the Fox Chapel community in Timonium	5,000,000	5,000,000	0035	2022
3-35-0691	2024	W-1	635969.9	1416297.3	W16B	Charles Street WMR (w/ SHA) Bellona Ave. to City Line	6,000,000	6,000,000	050	2020
Catonsville Fourth Zone										
3-35-332	2018	W-1	589848.2	1379609.3	W22A	Catonsville PS Rehab-New 36" Suction and Discharge Main	8,000,000	8,000,000	0035	2012
Sparks Fifth Zone										
TBD	TBD	W-1	665006.4	1409054.1	10B	New redundant water main	TBD	TBD	0050	2026
Reisterstown Fifth Zone										
3-78	2018	W-1	641749.9	1372417.1	W16A	Replace 20,000 LF of 16" Main in Reisterstown Rd. from Pleasant Hill PS to Butler Rd.	15,000,000	15,000,000	0078	2016
3-78-0002	2020	W-3	655804.6	1371593.7	W16A	2.0 MG Bond Avenue Tank	5,500,000	5,500,000	0078	2008
Central System										
3-71-202	2020	W-3	619338.9	1456415.9	W17A	Fullerton Treatment Plant	530,782,000	232,412,000	0071	2013
3-71-239	2017	N/A	611199.9	1421278.1	N/A	Guilford Reservoir Replacement	67,000,000	44,000,000	0071	2011

Table No. 8 *(continued)*
Baltimore County Water Facilities
Capital Improvement Program

Project Job Order	Construction Start Date Fiscal Year	Priority	Maryland State Plane Coordinates NAD 83		Map	Project Description	Estimated Costs		Project Construction Capital Budget Program Number	Status Start (Design) Fiscal Year
							Total $	Baltimore County $		
Central System (continued)										
3-71-474	2017	N/A			N/A	Druid Lake Storage Replacement	120,000,000	53,000,000	0071	2013
3-71-475	2017	N/A			N/A	Ashburton Storage Replacement	110,000,000	48,000,000	0071	2013

CAPITAL BUDGET FY 2024

CAPITAL IMPROVEMENT PROGRAM FY 2025 - 2029
STAGE 7 - DEPT. 203 WATER SYSTEM

Project No.	Title	Total Estimated Cost	Prior Authorizations	Total for 6-year Program	FY 2024*	FY 2026*	FY 2028*
0002	Neighborhood Petitions Water Ext.	6,694,484	5,194,484	1,500,000	500,000	500,000	500,000
0006	Towson Fourth Zone	70,489,140	52,489,140	18,000,000	18,000,000	0	0
0012	Pikesville Fourth Zone	58,643,918	42,543,918	16,100,000	16,100,000	0	0
0035	Misc. Distribution System Improvements	157,423,146	102,423,146	55,000,000	15,000,000	20,000,000	20,000,000
0036	First Zone	187,301,432	137,301,432	50,000,000	0	25,000,000	25,000,000
0050	Construction at Highway Sites	76,800,888	38,800,888	38,000,000	8,000,000	15,000,000	15,000,000
0067	Main Replacement and Rehabilitation	342,287,582	202,287,582	140,000,000	40,000,000	50,000,000	50,000,000
0070	Fire Hydrants	850,778	790,778	60,000	20,000	20,000	20,000
0071	City/County Joint Use Facilities	1,014,774,774	804,418,774	210,356,000	76,768,000	66,794,000	66,794,000
0080	Fullerton Filtration Plant	38,598,000	0	38,598,000	18,598,000	10,000,000	10,000,000
0085	Cromwell Pumping Station Rehabilitation	21,713,000	18,285,000	3,428,000	3,428,000	0	0
	TOTAL	**$1,975,577,142**	**$1,404,535,142**	**$571,042,000**	**$196,414,000**	**$187,314,000**	**$187,314,000**

* Baltimore County employs a Biennial Capital Budget.

CHAPTER IV - SEWERAGE PLAN

GENERAL BACKGROUND

Baltimore County constructs, operates and maintains all sewage collection and pumping facilities within the County. There are twenty-three (23) sewersheds which contain 2,060 miles of gravity sewer and 163 miles of pressure sewer. Baltimore County operates one hundred twenty (120) pumping stations and one (1) 90-thousand gallon per day treatment plant at Richlyn Manor, east of Belair Road, adjacent to the Gunpowder River.

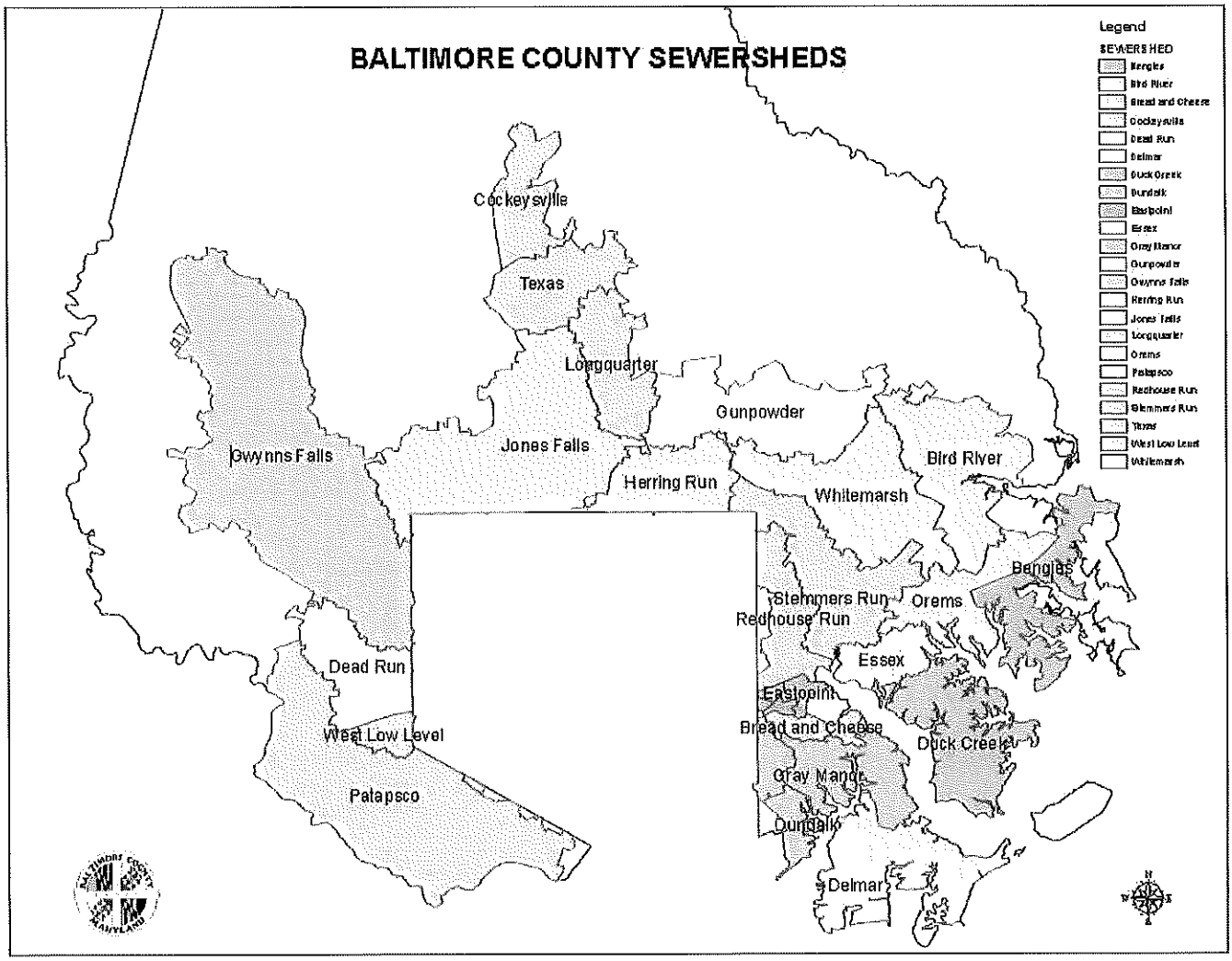
County generated sewage is treated and disposed of at the City-owned and operated treatment plants, Back River and Patapsco. The City and County agree to pay for new capital projects and for the repair to, and enlargement of, additions or improvements to sewerage facilities. The total flow conveyed from the County to the treatment plants determines the County's portion of capital improvement and/or operation and maintenance cost.

Baltimore County receives flow from Anne Arundel and Howard Counties. By agreement, these counties pay their portion of operating and capital costs. Copies of the sewer agreements with Baltimore City, Anne Arundel County and Howard County are included in the Appendices.

On September 20, 2005, Baltimore County entered into a Consent Decree with the U.S. Department of Justice, the U.S. Environmental Protection Agency and the Maryland Department of the Environment. This document requires Baltimore County to completely evaluate its sewer system and make corrections in order to eliminate sanitary overflows in the collection system. This massive effort will involve field investigations, studies, reports, designs and construction projects. As of September 29, 2016 MDE and the EPA approved all Sewershed Repair, Replacement and Rehabilitation (SRRR) Plans. The County is in the process of implementing the corrective actions from these plans.

System Overview

The following is a description of each of the twenty-three (23) sewersheds with a discussion of their location, major system components, pumped flow, existing conditions and proposed projects:


BALTIMORE COUNTY SEWERSHEDS
Legend
SEWERSHED
Bengies
Bird River
Bread and Cheese
Cockeysville
Dead Run
Delmar
Duck Creek
Dundalk
Eastpoint
Essex
Gray Manor
Gunpowder
Gwynns Falls
Herring Run
Jones Falls
Longquarter
Orems
Patapsco
Redhouse Run
Stemmers Run
Texas
West Low Level
Whitemarsh
Cockeysville
Texas
Longquarter
Gunpowder
Gwynns Falls
Jones Falls
Herring Run
Bird River
Whitemarsh
Bengies
Stemmers Run
Orems
Redhouse Run
Essex
Eastpoint
Bread and Cheese
Duck Creek
Gray Manor
Dundalk
Delmar
Dead Run
West Low Level
Patapsco

STEMMERS RUN

Location

This area includes Parkville, Fullerton, Rossville, and Victory Villa and is located between Parkville and Essex in Eastern Baltimore County. The area encompassed by the drainage basin is approximately 3,950 acres serving a population of 32,916 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
Brien Run	2.57	30" to 54"
Montross Farms	0.45	10" to 16"
Northeast Creek	1.40	12" to 24"
Stemmers Run	4.90	18" to 27"
Parkville	0.77	10" to 18"
Carney Heights	0.85	15" to 18"
Orems Road	1.05	30" to 36"

Pumped Flow

Stemmers Run receives flow from the Orems Road and White Marsh Pumping Stations via the Brien Run Interceptor. Flow is then split between the 42.0 MGD Stemmers Run and the 71.7 MGD New Stemmers Run Pumping Stations. The sewage is then transported through 48" and 54" force mains discharging into the outfall sewer at Back River Treatment Plant, located approximately three (3) miles south of the Stemmers Run Pumping Station.

Existing Conditions

The Stemmers Run SRRR Plan was accepted by the EPA on September 9, 2013, and is scheduled to be constructed by June 2026.

Proposed Projects

There are multiple projects under design in Stemmers Run. The list of the proposed projects is shown below.

Project	Description	Estimated Cost
SR02B & 03 Rehabilitation	32,527 LF of sewer rehabilitation	$3,412,514
SR05 & 06 Rehabilitation	77,476 LF of sewer rehabilitation	$6,516,414
	Total	$9,928,928

BIRD RIVER

Location

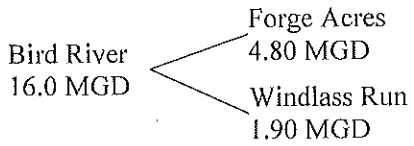
This area is in eastern Baltimore County includes Perry Hall and White Marsh and is boarded on the east by the Big Gunpowder Falls. The area encompassed by the drainage basin is approximately 5,710 acres serving a population of 14,222 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
Honeygo Run Interceptor	3.34	24" to 27"
Bird River Interceptor	4.58	16" to 42"

Pumped Flow

The 16.0 MGD Bird River Pumping Station receives flow from two (2) pumping stations, Forge Acres and Windless Run.



Existing Conditions

The Bird River SRRR Plan was accepted by the EPA on September 29, 2016. Implementation of the SRRR plan recommendations is constructed.

Proposed Projects

There one project under design in Bird River, which is listed below.

Project	Description	Estimated Cost
Chapel Road Sewer Extension	2200 LF of sewer (health project)	$878,000
	Total	$878,000

OREMS

Location

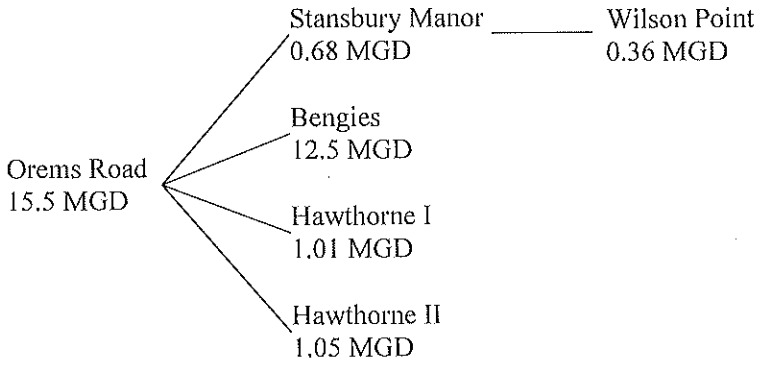
This area is in eastern Baltimore County, between Essex and Bengies, and encompasses the areas around Aero Acres, Martin Plaza, Ballard Gardens, Hawthorn, and Wilson Point including the Chesapeake Industrial Park and the Glen L. Martin State Airport. It serves approximately 1,600 acres with a population of 17,379 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
Middle River Diversion	1.27	15" to 36"
Middlesex Outfall	0.62	12" to 30"
Leland Avenue Interceptor	2.34	42" to 48"
Aero Acres Outfall	0.45	12" to 18"

Pumped Flow

The 15.5 MGD Orems Road Pumping station receives flows from five (5) pumping stations as shown below:



The sewage is then transported from Orems Road Pumping Station through a 30" force main to the Brien Run Interceptor in the Stemmers Run System

Existing Conditions

The Orems Sewershed SRRR Plan was accepted by the EPA on September 29, 2016. Implementation of the Orems SRRR plan recommendations have been delayed by real estate acquisition issues and will occur after the original September 29, 2020 deadline. The expected complete construction is August 2025.

Proposed Projects

There is one project under design in Orems, which is listed below.

Project	Description	Estimated Cost
Stansbury Manor Force Main Replacement	Replace force main	$3,508,477
	Total	$3,508,477

BENGIES

Location

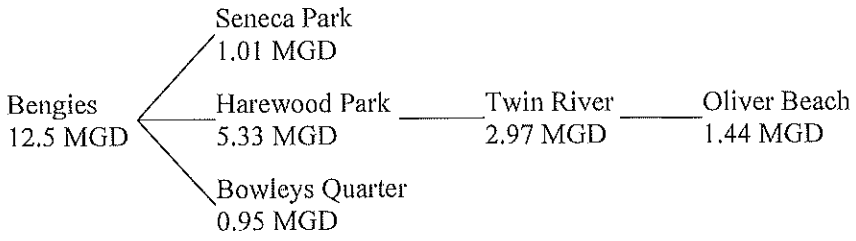
The Bengies Sewershed is in eastern Baltimore County and includes the Bowleys Quarters Peninsula and the area along Eastern Avenue northeast of Carroll Island Road. The area serves approximately 1,450 acres with a population of 13,758 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
Eastern Avenue Int. West	0.93	18" to 42"
Bowleys Quarters Interceptor	1.19	18" to 24"
Eastern Avenue Int. East	3.31	24" to 48"
Olivia Road Outfall Sewer	0.29	12" to 15"
Oliver Beach PS Outfall Sewer	0.63	15" to 18"
Middle River Neck Interceptor	1.44	20"

Pumped Flow

The 12.5 MGD Bengies Pumping Station receives flow from five (5) pumping stations.



Existing Conditions

The Bengies SRRR Plan was accepted by the EPA on September 29, 2016. Implementation of the Bengies SRRR plan recommendations have been delayed by real estate acquisition issues

and will occur after the original September 29, 2020 deadline. The expected date of complete construction is May 2026.

Proposed Projects

There are no planned projects in design in the Bengies sewershed..

WHITE MARSH

Location

This area includes Perry Hall, Carney and the White Marsh Town Center and is located in eastern Baltimore County. The area encompassed by the drainage basin is approximately 4,025 acres serving a population of 52,581 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
North Branch White Marsh	4.75	30" to 54"
White Marsh South Interceptor	0.82	12" to 18"
South Branch White Marsh	2.29	12" to 24"
Barrington Outfall	0.59	10" to 20"
West Branch White Marsh	4.41	10" to 27"
Belmont Outfall Sewer	0.58	12" to 18"
Bird River Interceptor	2.50	24" to 48"

Pumped Flow

The 72.8 MGD White Marsh Pumping Station receives flows from the Gunpowder and Bird River Pumping stations. The sewage is then transported through dual 42" force mains extending southerly to Compass Road and the Brien Run Interceptors.

Existing Conditions

The White Marsh sewershed SRRR Plan was accepted by the EPA on April 18, 2016, and is scheduled to be completely constructed by August 2027.

Proposed Projects

There are multiple projects under design in White Marsh, below is a list of the proposed projects.

Project	Description	Estimated Cost
White Marsh Run PS Electrical Upgrades	Pump station electrical upgrades	$2,694,000
Richlyn Manor Interceptor Rehabilitation	4,600 LF of force main rehabilitation	$2,380,000
White Marsh Sewer Structural Rehabilitation - West	41,341 LF of sewer rehabilitation	$3,635,000
White Marsh Sewer Structural Rehabilitation - East	36,906 LF of sewer rehabilitation	$4,730,000
Richlyn Manor WWTP Decommissioning	Removal of the Richlyn Manor wastewater treatment plant and construction of a sewage pumping station	$7,500,000
Richlyn Manor Force Main	4,350 LF of sewer force main	$2,500,000
	Total	$23,439,000

GUNPOWDER

Location

The Gunpowder Sewershed is located in northeast Baltimore County, generally north of Joppa Road and south of the Gunpowder River. The area served by this Sewershed is approximately 4,100 acres with a population of 36,509 people.

System Components

Main Sewers	Length (Miles)	Pipe Size
Gunpowder Interceptor	6.60	27" to 42"
Perry Hall Interceptor	1.94	12" to 24"
Jenifer Run Interceptor	1.85	12" to 18"
Satyr Hill Interceptor	1.84	12" to 16"

Pumped Flow

There are two (2) pumping stations tributary to Gunpowder Pumping Station, the Campus Hills and Longquarter Pumping Stations. The 37.0 MGD Gunpowder Pumping Station pumps flow through a 36" force main to the northern end of the Whitemarsh Sewershed.

Existing Conditions

The Gunpowder SRRR Plan was accepted by the EPA on April 18, 2016, and is scheduled to be completely constructed by July 2026.

Proposed Projects

There are multiple projects under design in Gunpowder, below is a list of the proposed projects.

Project	Description	Estimated Cost
Gunpowder PS to White Marsh PS System Improvement	32,446 LF of gravity and force main relief sewer	$206,000,000
Gunpowder Relief Sewer	35,815 LF of relief sewer	$175,000,000
Gunpowder Sewer Structural Repairs – Off Road	65,795 LF of sewer rehabilitation	$17,511,000
Jennifer Branch Relief Sewer	6,273 LF of relief sewer	$5,765,000
Perry Hall Manor Sewer Extension	Extension of the sewer system to serve all of the Perry Hall Manor community with failing septic systems	$10,800,000
Schroeder Avenue Sewer Extension	1,600 LF of low pressure sewer	$1,220,000
	Total	$416,296,000

LONGQUARTER

Location

The Longquarter Sewershed is located in north-central Baltimore County, between Towson and the Loch Raven Reservoir. The area served by this Sewershed is approximately 4,150 acres with a population of 20,177 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
Greenridge (Fairmount Avenue)	2.30	10" to 24"
Spring Branch Outfall	1.12	16" to 66"
Timonium Interceptor	1.54	33" to 42"
Spring Branch Interceptor	1.02	10" to 15"

Pumped Flow

The Longquarter System receives flows from the Texas Pumping Station. The present capacity at Longquarter Pumping Station is 36.0 MGD. The sewage from Longquarter Pumping Station is pumped through dual force mains to the top of the Gunpowder System.

Existing Conditions

The Longquarter SRRR Plan was accepted by the EPA on April 18, 2016, and is scheduled to be completely constructed by December 2026.

Proposed Projects

There are multiple projects under design in Longquarter, below is a list of the proposed projects.

Project	Description	Estimated Cost
Long Quarter Structural Repair On road	48,052 LF of sewer rehabilitation	$5,518,290
Long Quarter Structural Repair Off Road	51,534 LF of sewer rehabilitation	$8,112,915
Long Quarter Force Main Replacement	Force main replacement	$15,500,000
Long Quarter South Interceptor Rehabilitation	14,241 LF of sewer rehabilitation	$16,000,000
	Total	$45,131,205

TEXAS

Location

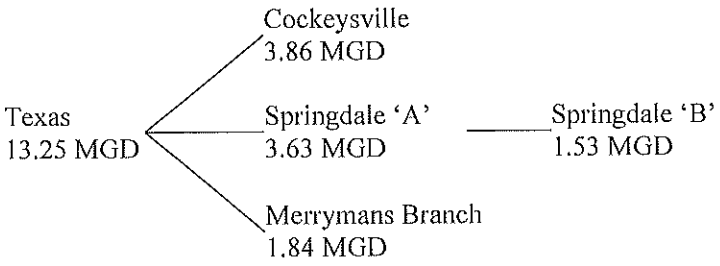
The Texas Sewershed is located between Cockeysville and Timonium in north-central Baltimore County. The Texas System serves approximately 2,100 acres with a population of 25,794 people.

System Components

Major Sewers	Length (Miles)	Pipe Sizes
Texas East Interceptor	1.86	12" to 24"
Texas South Interceptor	1.77	15" to 24"
Padonia Road West	1.38	10" to 16"

Pumped Flow

There are four (4) pumping stations tributary to the Texas Pump Station as shown below:



The Texas Pumping Station pumps through a 30" force main to the Longquarter Sewershed.

Existing Conditions

The Texas SRRR Plan was accepted by the EPA on April 18, 2016, and is scheduled to be constructed by January 2024.

Proposed Projects

There no planned projects in design in the Texas sewershed.

COCKEYSVILLE

Location

The Cockeysville Sewershed is located in north-central Baltimore County. The area served by this system is approximately 1,400 acres with a population of 5,931 persons.

System Components

Major Sewers	Length (Miles)	Pipe Size
Oregon Branch Interceptor	1.14	21" to 36"
Beaver Dam Run Interceptor	1.02	27" to 30"
Western Run Interceptor	3.67	12" to 36"

Pumped Flow

There is one (1) pumping station tributary to the Cockeysville Pump Station, Loveton Estates. The sewage is pumped from the 3.86 MGD Cockeysville Pumping Station through a 24-inch force main southerly along the Pennsylvania Railroad to the Texas Pumping Station.

Existing Conditions

The Cockeysville SRRR Plan was accepted by the EPA on September 29, 2016. Implementation of the Cockeysville SRRR plan recommendations have been delayed by real estate acquisition issues and will occur after the original September 29, 2020 deadline. Projects in this sewershed are expected to be constructed by October 2023.

Proposed Projects

There no planned projects in design in the Cockeysville sewershed.

ESSEX

Location

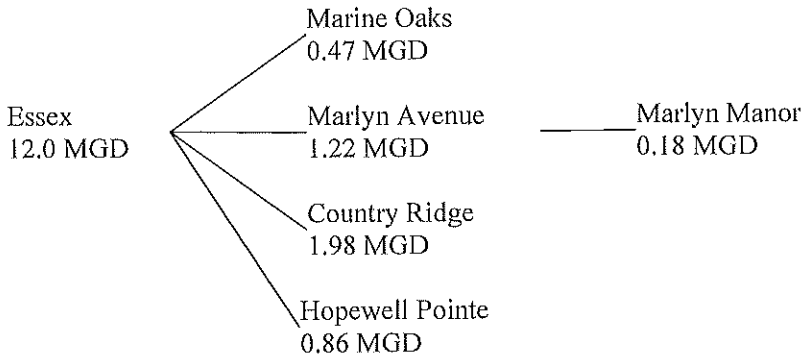
The Essex Sewershed consists of the Essex area in eastern Baltimore County. The area served is approximately 1,900 acres with a population of 17,193 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
Essex Outfall Sewer	1.94	12" to 18"
Cedar-Taylor Avenue Outfall	1.33	12" to 30"
Cedar Avenue Outfall	2.77	18" to 30"

Pumped Flow

The 12.0 MGD Essex Pumping Station receives flows from five (5) pumping stations as shown below:



The sewage is then pumped through one of two 20" force mains, either under the Back River or along Eastern Avenue, and outfalls to the Back River Wastewater Treatment Plant.

Existing Conditions

The Essex SRRR Plan was accepted by the EPA on April 18, 2016.

Proposed Projects

There are currently no planned nor active projects in the Essex sewershed.

DUCK CREEK

Location

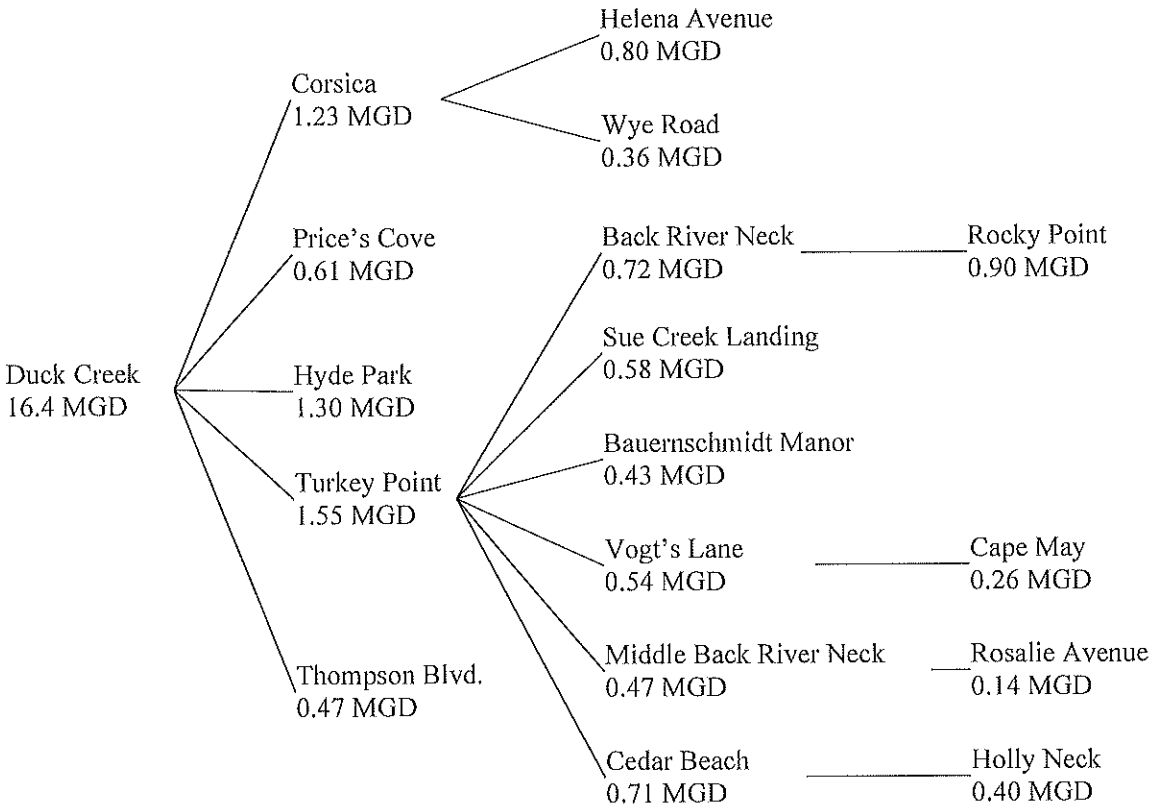
The Duck Creek Sewershed is located south of Essex in eastern Baltimore County and includes Cape May, Turkey Point and the Back River Neck Peninsula. The area encompassed by the drainage basin is approximately 1,475 acres serving a population of 18,544 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
Marlyn Avenue Hyde Park	1.41	12" to 42"
Middleborough Interceptor	1.54	12" to 24"
Turkey Point Interceptor	0.99	8" to 24"

Pumped Flow

The existing capacity of the Duck Creek Pumping Station is 16.4 MGD. The pumping station receives flows from seventeen (17) pumping stations as shown below:



The sewage is then transported through a 30" force main along Eastern Avenue and outfalls to the Back River Treatment Plant.

Existing Conditions

The Duck Creek SRRR Plan was accepted by the EPA on April 18, 2016, and is scheduled to be constructed by July 2026.

Proposed Projects

There are multiple projects under design in Duck Creek, below is a list of the proposed projects.

Project	Description	Estimated Cost
Browns Road & Annetta Road Sewer Extension	Low pressure sewer to serve failing septic systems	$300,000
Duck Creek structural rehabilitation	4,184 LF of sewer rehabilitation	$2,736,217
	Total	$3,036,217

BREAD & CHEESE

Location

The Bread and Cheese Sewershed is located in the south eastern portion of Baltimore County, generally southeast of Eastern Avenue, along the south side of North Point Boulevard to a point where it intersects Bread and Cheese Creek and then both sides of North Point Boulevard to Coves Road. The area encompassed by the drainage basin is approximately 700 acres serving a population of 5,925 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
North Point Blvd. Interceptor	1.02	18" to 24"
Bread and Cheese Creek Interceptor	1.13	12" to 24"
Gray Manor FM Outfall	0.64	30" to 36"

Pumped Flow

The 16.7 MGD Bread and Cheese Pumping Station normally has no other pump stations tributary to it. However, the Gray Manor Pumping Station has the option of pumping a small percentage of its flow to Bread and Cheese. The Bread and Cheese Pumping Station transports sewage through a force main that outfalls to the Back River Treatment Plant.

Existing Conditions

The Bread & Cheese SRRR Plan was accepted by the EPA on September 29, 2016, and was completed September 29, 2020.

Proposed Projects

There are currently no active nor planned projects in the Bread & Cheese sewershed.

GRAY MANOR

Location

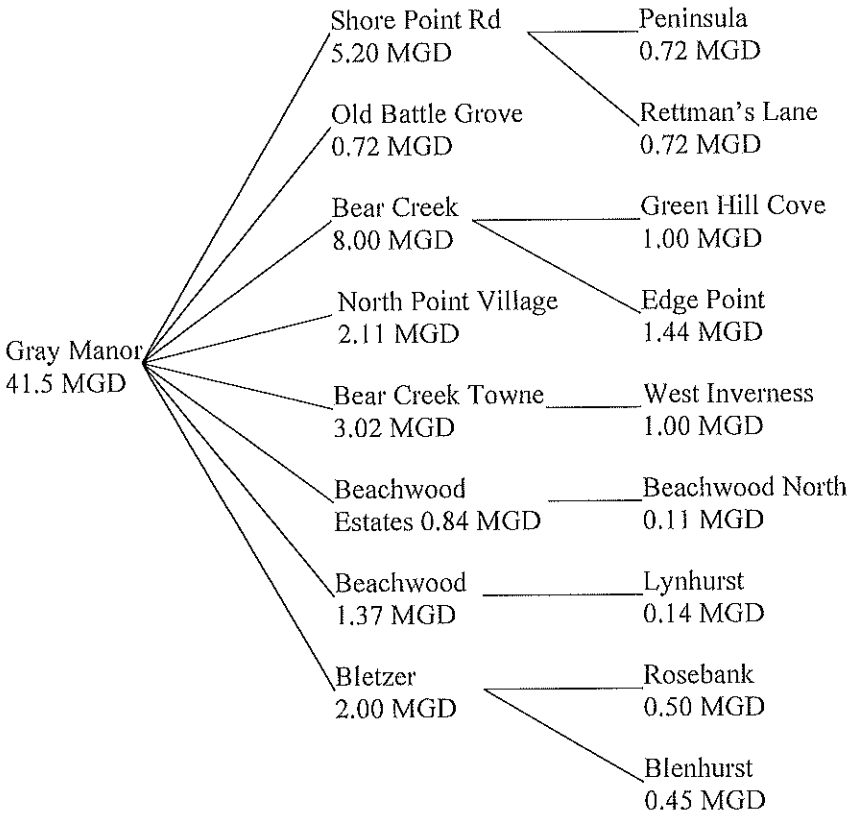
The Gray Manor Sewershed is in the southeastern portion of Baltimore County, generally bounded by Back River on the east, German Hill Road and North Point Road on the north, Sollers Point Road and Merrit Boulevard on the west, and Patapsco Freeway and North Point Boulevard on the south. The area encompassed by the drainage basin is approximately 2,225 acres serving a population of 30,219 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
Lynch Road - Wise Avenue Sewer	0.78	30" to 48"
Patapsco Neck Outfall	2.03	33" to 48"
Shore Road PS Collector Sewer	0.94	12" to 18"
Wise Avenue (Bear Creek PS Outfall)	1.20	24" to 30"

Pumped Flow

There is a total of seventeen (17) pumping stations that are tributary to the Gray Manor Pump Station as shown below:



The 41.5 MGD Gray Manor Pumping Station has the option of pumping a small percentage of its flow to the Bread and Cheese Sewershed but normally pumps directly to the main outfall sewer at Back River Wastewater Treatment Plant.

Existing Conditions

The Gray Manor SRRR Plan was accepted by the EPA on April 18, 2016, and is scheduled to be constructed by April 2026.

Proposed Projects

There are multiple projects under design in Gray Manor, below is a list of the proposed projects.

Project	Description	Estimated Cost
Gray Manor Interceptor Rehabilitation	16,665 LF of sewer rehabilitation	$7,354,104
Fischer Road Relief and Replacement Sewer	3,580 LF of relief sewer	$6,521,713
	Total	$13,875,817

DELMAR

Location

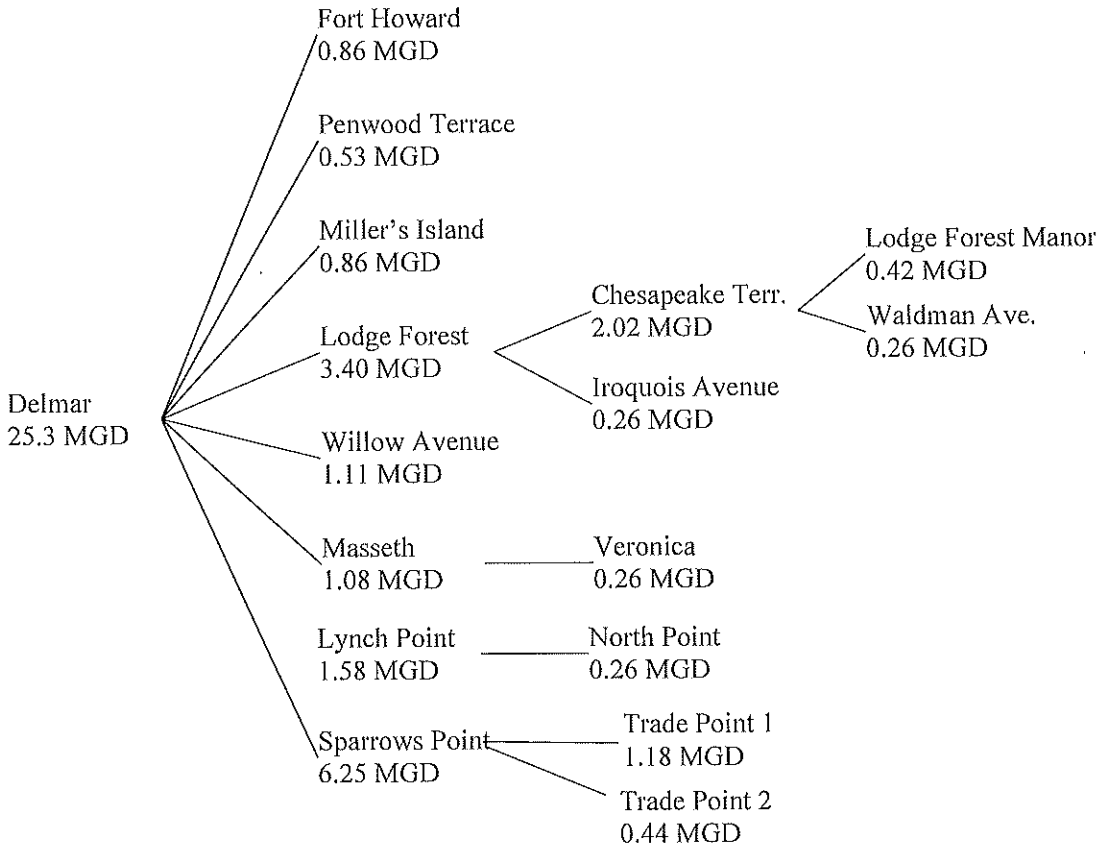
The Delmar Sewershed is located in the extreme southeastern end of Baltimore County, south and east of North Point Boulevard and Patapsco Freeway. The area encompassed by the drainage basin is approximately 1,600 acres serving a population of 8,210 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
Glen Echo Interceptor	1.38	15" to 36"
Sparrows Point Force Main Outfall	0.47	24"
Chesapeake Terrace Collector Sewer	0.89	10" to 24"

Pumped Flows

The 25.3 MGD Delmar Pumping Station receives flows from sixteen (16) pumping stations as shown below:



The sewage is then pumped through a 30" force main to the Patapsco Neck Outfall Sewer at the upper end of the Gray Manor Sewershed.

Existing Conditions

The Delmar SRRR Plan was accepted by the EPA on April 18, 2016, and is scheduled to be constructed by March 2028.

Proposed Projects

There is one project under design in Delmar, which is listed below.

Project	Description	Estimated Cost
Delmar Force Main Replacement	Replacement of existing 30-inch force main	$4,415,324
	Total	$4,415,324

EASTPOINT

Location

The Eastpoint Sewershed is a small area in eastern Baltimore County. The system is along Eastern Boulevard in the area of North Point Boulevard. The system has one (1) pumping station and a small gravity system all tributary to the Back River Treatment Plant. The system serves 226 acres with a population of 5,578 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
Eastpoint Outfall Sewer	0.58	8" to 12"

Pumped Flow

The Eastpoint Pumping Station has a capacity of 2.7 MGD and pumps to outfall to the Back River Wastewater Treatment Plant.

Existing Conditions

The Eastpoint SRRR Plan was accepted by the EPA on April 18, 2016, and is scheduled to be constructed by October 2025.

Proposed Projects

There is one project under design in Eastpoint, which is listed below.

Project	Description	Estimated Cost
Eastpoint Force Main Improvements	Force main relocation	$4,000,000
	Total	$4,000,000

REDHOUSE RUN

Location

The Redhouse Run Sewershed is on the east side of Baltimore County along the eastern boundary of Baltimore City, north of the Back River Treatment Plant. The system serves 2,500 acres and 17,508 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
Redhouse Run Interceptor	4.35	18" to 30"
Chesaco Park Outfall	0.64	15" to 24"

Pumped Flow

There are two (2) pumping stations tributary to the Redhouse Run Pumping Station. The 3.44 MGD Chesaco Park Pumping Station pumps to the Chesaco Park Outfall Sewer and 1.15 MGD Quad Avenue Pumping Station pumps directly to Redhouse Run Pumping Station. The 15.0 MGD Redhouse Run Pumping Station pumps directly to outfall line to the Back River Wastewater Treatment Plant.

Existing Conditions

The Redhouse Run SRRR Plan was accepted by the EPA on April 18, 2016, and is scheduled to be constructed by March 2025.

Proposed Projects

There are multiple projects under design or in evaluation in Redhouse Run, below is a list of the proposed projects.

Project	Description	Estimated Cost
Redhouse Run Structural Repairs Phase 3	40,000 LF of sewer rehabilitation	$7,000,000
Redhouse Run Relief Sewer	7,716 LF of relief sewer and upsizing	$14,500,000
	Total	$21,500,000

DUNDALK

Location

The Dundalk Sewershed is located in southeastern Baltimore County west of Baltimore City. The area served is approximately 1,500 acres with a population of 23,663 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
Woodland Avenue	0.31	20" to 24"
Cameron Drive Outfall	0.76	10" to 24"
Liberty Parkway (Dundalk)	0.70	12" to 24"

Pumped Flow

The 7.5 MGD Dundalk Pumping Station receives flows from the Day Village and Lyons Homes Pumping Stations. The sewage is then transported through a force main into Baltimore City before eventually being pumped to outfall to the Back River Wastewater Treatment Plant.

Existing Conditions

The Dundalk SRRR Plan was accepted by the EPA on April 18, 2016, and is scheduled to be constructed by July 2026.

Proposed Projects

There is one project under design in Dundalk, which is listed below.

Project	Description	Estimated Cost
Dundalk Force Main Replacement	Force main replacement	$4,000,000
	Total	$4,000,000

HERRING RUN

Location

The Herring Run Sewershed is located at the north boundary of Baltimore City south of the Baltimore Beltway, between Harford Road and York Road. The system serves an area of approximately 3,200 acres with a population of 44,493 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
East Branch Herring Run	2.32	12" to 24"
West Branch Herring Run	2.17	12" to 24"
E. Fork W. Branch Herring Run	1.30	12" to 18"
W. Fork E. Branch Herring Run	1.55	12" to 15"

Pumped Flow

There are no pumping stations located in the Herring Run Sewershed.

Existing Conditions

The Herring Run SRRR Plan was accepted by the EPA on September 9, 2013 and is scheduled to be constructed by May 2026.

Proposed Projects

There is one project under design in Herring Run, which is listed below.

Project	Description	Estimated Cost
Herring Run Structural Repairs Phase 2	13,381 LF of sewer rehabilitation	$3,185,786
	Total	$3,185,786

JONES FALLS

System Components Location

The Jones Falls Sewershed is located in central Baltimore County from the north boundary of Baltimore City to Green Spring Valley and from York Road on the east to Reisterstown on the west. The system serves approximately 7,100 acres and 64,217 people.

Major Sewers	Length (Miles)	Pipe Size
Jones Falls Interceptor	5.23	8" to 42"
Towson Run Interceptor	3.83	8" to 24"
Roland Run Interceptor	5.60	15" to 42"
Moores Branch	3.11	12" to 18"

Pumped Flow

There are four (4) pumping stations in the Jones Falls System, Stevenson at Anton, Templegate, Stanton Woods and Buchanan Road. The sewage from these stations flow to the Jones Falls Interceptor and then to the Mt. Washington Flume at the Baltimore City Line.

Existing Conditions

The Jones Falls SRRR Plan was accepted by the EPA on December 9, 2013 and is anticipated to be substantially constructed in May 2026.

Proposed Projects

There are multiple projects under design or in evaluation in Jones Falls, below is a list of the proposed projects.

Project	Description	Estimated Cost
Towson Run Relief Sewer	4,899 LF of 24"-27" relief sewer	$4,003,461
Lake Roland	Rehabilitation of 19,550 LF of sewer	$10,000,000
	Total	$14,003,461

WEST LOW LEVEL

Location

The West Low Level Sewershed is located in the southwest part of Baltimore County. The area is south of Baltimore National Pike to south of Frederick Road and from an area west of the Baltimore Beltway (I-695) easterly to the boundary of Baltimore City. The area served by this system is approximately 880 acres with a population of 10,870 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
West Low Level Interceptor	1.51	10" to 21"

Pumped Flow

There are no pump stations within the West Low Level Sewershed.

Existing Conditions

The West Low Level SRRR Plan was accepted by the EPA on December 9, 2013 and certified by the County as substantially complete on September 6, 2017.

Proposed Projects

There are currently no planned projects in the West Low Level Sewershed.

DEAD RUN

Location

The Dead Run Sewershed is located on the west side of Baltimore County from an area south of Windsor Mill Road southerly to Baltimore National Pike and from west of Rolling Road easterly to the west boundary of Baltimore City. The area served is approximately 3,250 acres with a population of 32,175 people.

System Components

Major Sewer	Length (Miles)	Pipe Size
Dead Run Interceptor	3.25	15" to 30"
Ingleside Avenue Outfall	1.63	12" to 16"
Catonsville Manor Outfall	0.65	12" to 15"
Dead Run Branch	1.85	16" to 24"

Pumped Flow

There is one (1) County maintained pump station in Dead Run, Putnam Green Pumping Station.

Existing Conditions

The Dead Run SRRR Plan was accepted by the EPA on December 9, 2013 and was certified by the County as substantially complete on September 6, 2017.

Proposed Projects

There are currently no planned projects in the Dead Run Sewershed.

GWYNNS FALLS

Location

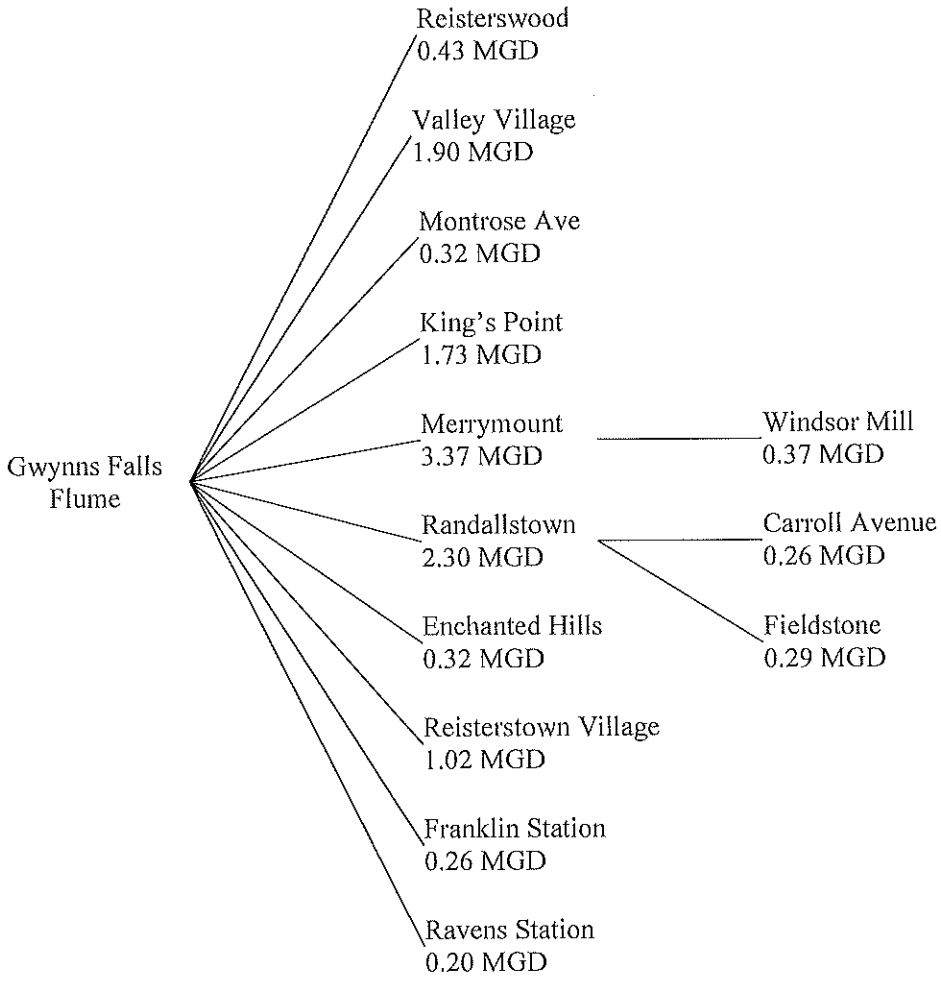
The Gwynns Falls sewershed covers a large portion of the northwest part of Baltimore County, from the northwest corner of Baltimore City, generally northwest along Garrison Forest Road, and out to the area of Hanover Pike north of Butler Road then southerly along Berrymans Lane and Deer Park Road to the area of Lyons Mill and Liberty Roads then southeasterly along Windsor Mill Road to the Baltimore City Line. The area served is approximately 13,600 acres with a population of 168,867 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
Gwynns Falls Interceptor	30.39	10" to 60"
Powder Mill Interceptor	3.17	12" to 31"
Scotts Level Interceptor	9.81	10" to 24"
Horse Head Branch Interceptor	1.14	18" to 21"
Red Run Interceptor	4.71	16" to 36"
Lyons Mill Road North Interceptor	1.32	12" to 16"
Roaches Run Interceptor	2.62	10" to 18"

Pumped Flow

There are thirteen (13) pump stations in the Gwynns Falls area as shown below. Flow from the Gwynns Falls Flume has the option of a diverting a portion of flow to the Back River Treatment Plant but normal operation directs flow to the Patapsco Treatment Plant.



Existing Conditions

The Gwynns Falls SRRR Plan was accepted by the EPA on December 9, 2013 and is anticipated to be substantially constructed in May 2024.

Proposed Projects

There are multiple projects under design in Gwynns Falls, below is a list of the proposed projects.

Project	Description	Estimated Cost
Powder Mill Relief Sewer Ph 3	1,800 LF relief sewer	$5,273,000
	Total	$5,273,000

PATAPSCO

Location

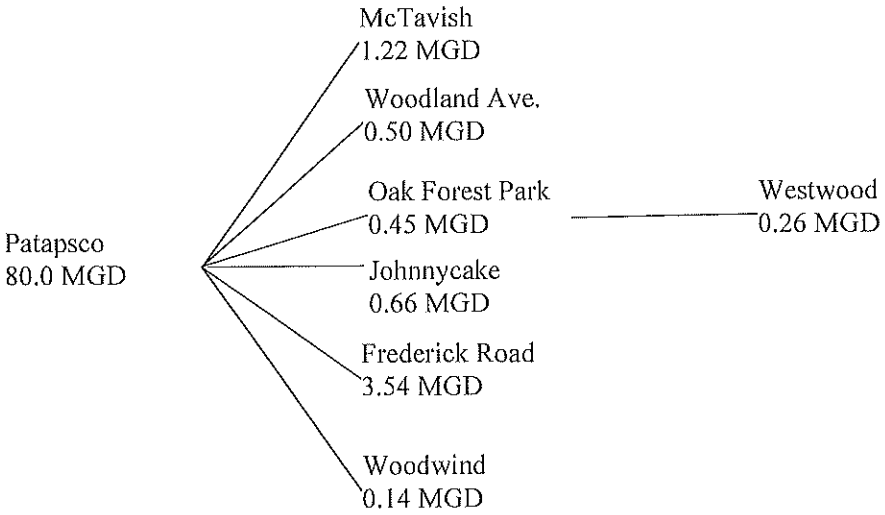
The Patapsco River Basin is located in the southwest end of Baltimore County. The area covers everything south and west of the southwest corner of Baltimore City, along Frederick Road to the Baltimore Beltway, and then Baltimore National Pike west to Rolling Road north to Route 70 then west to the Patapsco River and then along the River south and east back to the Baltimore City Line. The area served is approximately 8,775 acres with a population of 80,221 people.

System Components

Major Sewers	Length (Miles)	Pipe Size
Patapsco (Top to MH34848)	9.40	42" to 54"
Old Patapsco, 85-15 to 85-10	0.84	54"
Old Patapsco, 85-10 to 85-01	2.72	42" to 54"
Patapsco Supplemental Interceptor	3.64	48" to 72"
Baltimore Highlands	2.08	12" to 24"
Herbert Run	4.10	12" to 30"
Herbert Run West	2.88	12" to 30"
UMBC Outfall Sewer	0.84	12" to 18"
Maiden Choice Outfall	0.57	10" to 12"
Bull Branch Interceptor	3.53	18" to 24"
Mellor Avenue Diversion	1.05	12" to 15"
Thistle Branch Interceptor	1.84	10" to 12"
Coopers Branch Interceptor	1.33	10" to 15"

Pumped Flow

The 80.0 MGD Patapsco Pump Station receives flow from six (6) pumping stations as shown below.



Existing Conditions

The Patapsco SRRR Plan was accepted by the EPA on December 9, 2013 and is anticipated to be substantially constructed in June 2026.

Proposed Projects

There is one project under design in Patapsco, which is listed below.

Project	Description	Estimated Cost
Patapsco Force Main Replacement	Replacement of force main	$45,000,000
	Total	$45,000,000

RURAL BALTIMORE COUNTY

The use of private onsite sewage disposal systems (OSDS), commonly known as septic systems are predominantly in the areas outside of the Urban-Rural Demarcation Line (URDL). However, there are also clusters and isolated occurrences of developed properties within the URDL that are served by OSDS due to the proximity of existing public sewer to the properties and the relative cost/complication of extending the sewer to serve them. Currently it is estimated that there are approximately 36,000 septic systems in Baltimore County, of which approximately 5,000 are located inside the URDL and within the existing sewer service area.

Generally speaking, soils in Baltimore County are conducive to the installation of reliable septic systems that meet state and county regulations. However, there are also certain areas where there are generally poor soils for onsite sewage disposal and as a result, these areas have a higher incidence of septic system failures and complicated repairs.

In northern Baltimore County, several older communities continue to experience septic system failures due to limited areas for repair (small lot sizes), poor soils, and high water tables. These areas were developed prior to zoning and environmental protection regulations (i.e., prior to 1970) that were designed to protect against building on poor soils and on undersized lots. These areas include the following: the old town of Phoenix, Hereford, Monkton, Butler, Baldwin, Freeland, Trenton and Kingsville. Because these problems involve a relatively small number of privately owned properties that are far removed from the metropolitan district, there is no straightforward mechanism or procedure to accomplish community-wide septic system corrections. Efforts to organize a Rural Sanitary District to resolve these types of problems were initiated in the early 1990s, but were ultimately put on hold due to complexity of establishing such a district, and the concerns for increased development as a result.

Dating as far back as the late 1960's, the County recognized that existing well and septic systems in many of the waterfront areas in the Bowleys Quarters and Back River Neck Peninsulas (both designated as "No Planned Service Areas) posed public health and environmental concerns due to shallow water tables and soils with low permeability. In the 1980's, the county approved extension of public water and sewer service to serve most of the existing properties in those areas as a health project. Over the subsequent 20 years, hundreds of developed properties were connected to public water and sewer. To address the questions of serving undeveloped existing lots of record in these areas, the County passed Bill 65-99.

Due to the historic development pattern, certain developed properties in the Bowleys Quarters and Back River Neck areas were deemed too remote to be served by public water and/or sewer economically. Similarly, there are also several other areas along the Chesapeake Bay waterfront in Baltimore County where existing septic systems may be considered to be "failing" due shallow water tables. These areas include properties along the southern shores of Saltpeter Creek, and Bird River. In these cases, the Department of Environmental Protection and Sustainability works with each property owner to determine the best method of providing safe and adequate water supplies and sewage disposal and may conduct sanitary surveys to evaluate if extension of public water and/or sewer is recommended.

Since 2015, Baltimore County has been focusing on efforts to identify where septic systems are located within the metropolitan district and assess the feasibility of getting these facilities connected to public sewerage through the Bay Restoration Fund Grant Program. The grant program assists residents as well as businesses and non-profit organizations with the dual purpose of resolving septic system problems and reducing nitrogen loading to the Chesapeake Bay and its tributaries.

TABLES

Table 9A
Projected Sewerage Demands and Planned Capacity
Back River Waste Water Treatment Plant

JURISDICTION	POPULATION			PER CAPITA	TREATMENT CAPACITY	
	TOTAL	SERVED	UNSERVED	DEMAND (GPCD) NOTE 1.	DEMAND (MGD)	PLANNED (MGD)
2020						
City						
Baltimore County	551,202	461,452	89,750	150.23	69.32	
Total						180.00
2025						
City						
Baltimore County	560,794	469,839	90955	150.23	70.58	
Total						180.00
2030						
City						
Baltimore County	566,582	474,769	91,812	150.23	71.32	
Total						
2035						
City						
Baltimore County	578,294	484,655	93,639	150.23	72.81	
Total						180.00
2040						
City						
Baltimore County	587,846	492,734	95,112	150.23	74.02	
Total						
2045						
City						
Baltimore County	595,346	499,097	96,249	150.23	74.98	
Total						180.00
2050						
City						
Baltimore County	604,761	507,061	97,700	150.23	76.18	
Total						180.00

NOTES:

1. GPCD (gallons per capita per day) includes residential commercial industrial and infiltration/inflow.
2. Population and flows from the Gwynns Falls sewershed have been allocated to the Patapsco Wastewater Treatment Plant reflecting the typical system operations. Flows can be diverted from the Gwynns Falls sewershed through the Southwest Diversion pressure sewer to the Back River Wastewater Treatment Plant if required.

Table 9B
Projected Sewerage Demands and Planned Capacity
Patapsco Waste Water Treatment Plant

JURISDICTION	POPULATION			PER CAPITA	TREATMENT CAPACITY	
	TOTAL	SERVED	UNSERVED	DEMAND (GPCD) NOTE 1	DEMAND (MGD)	PLANNED (MGD)
2020						
City						
Baltimore County	303,321	300,127	3194	155.67	46.72	
Howard County	81,341	81,341	0	100.20	8.15	12.40
A. Arundel Co.	45,612	45,612	0	102.82	4.69	6.39
Total						73.00
2025						
City						
Baltimore County	307,318	304,083	3263	155.67	47.34	
Howard County	87,912	87,912	0	102.72	9.03	12.40
A. Arundel Co.	48,737	48,737	0	107.93	5.26	6.39
Total						73.00
2030						
City						
Baltimore County	310,145	312,921	3263	155.67	48.71	
Howard County	91,542	91,542	0	98.97	9.06	12.40
A. Arundel Co.	53,211	53,211	0	109.56	5.83	6.39
Total						73.00
2035						
City						
Baltimore County	316,247	312,921	3326	155.67	48.71	
Howard County	91,846	91,846	0	99.84	9.17	12.40
A. Arundel Co.	58,334	58,334	0	103.97	6.07	6.39
Total						73.00
2040						
City						
Baltimore County	321,154	317,778	3377	155.67	49.47	
Howard County	91,846	91,846	0	100.60	9.24	12.40
A. Arundel Co.	62,981	62,981	0	100.03	6.30	6.39
Total						73.00
2045						
City						
Baltimore County	324,929	321,514	3415	155.67	50.05	
Howard County	91,846	91,846	0	101.14	9.29	12.40
A. Arundel Co.	64,707	64,707	0	103.23	6.68	6.39
Total						73.00
2050						
City						
Baltimore County	329,761	326,296	3465	155.67	50.79	
Howard County	91,846	91,846	0	101.95	9.36	12.40
A. Arundel Co.	65,538	65,538	0	100.40	6.58	6.39
Total						73.00

NOTES:

1. GPCD (gallons per capita per day) includes residential commercial industrial and infiltration/inflow.
2. Population and flows from the Gwynns Falls sewershed have been allocated to the Patapsco Wastewater Treatment Plant reflecting the typical system operations. Flows can be diverted from the Gwynns Falls sewershed through the Southwest Diversion pressure sewer to the Back River Wastewater Treatment Plant if required.
3. Howard County data based on "Howard County Maryland Master Plan for Water and Sewerage, 2015 Amendment" and correspondence with Howard County DPW staff.
4. Anne Arundel County data based on "Master Plan for Water Supply & Sewerage Systems, 2022".

Table 10
Inventory of Small Sewage Treatment Facilities

Owner	NPDES Permit Number	Treatment Type*	Location (NAD 27)	Map No.	Population Equivalent	Point of Discharge	Design Flow (MGD)	Operating Agency	Comments
Municipal (Publicly Owned)									
Richlyn Manor	MD0022713	f, k, l, q, w	959-579	S-17B	500	Gunpowder Falls	0.090	Baltimore County	Scheduled to be taken out of service
Private / Community / Institutional									
Bais Yaakov School For Girls	MDG766211	h	877-581	S-16A	940	North Branch	0.010	Private	
Camp Millidale (Pearlstone Retreat)	MDG675029	h,a	841-640	S-9B	200	Sycamore Creek	0.012	Private	
Camp Fretterd (fka, Montrose School)	MDG775043	e, f, k, l, q, u, v	847-608	S-10A	310	Patapsco River	0.0105	State	3 separate septic systems
Cargill Salt	MD0060437	h, b, k	962-568	S-17B	47	Bird River Trib.	0.002	Private	Public Water Res. 49-92
Caves Valley Golf Club	MDG870240	h	872-588	S-16A			0.012	Private	
Glen Arm LLC (fka Marquip Ward United, fka Koppers)	MDR001355	b, g, k, l, v, w	943-592	S-17A	250	Long Green Creek	0.014	Private	
Glen Arm Maintenance Facility (fka Grumman Aircraft)	MDG675046	b, g, k, l, v, w	942-591	S-17A	50	Long Green Creek	0.010	Baltimore County	
Glen Meadows Retirement Community (aka Notch Cliff Life Care Comm.)	MD0022951	h, p	937-587	S-17A	150	Minebank Run	0.050	Private	
Granite Trailer Court	Not Available	h	842-545	S-15B	100	Patapsco River	0.007	Private	3 separate septic systems;
Greystone Golf Course	MD0012C17 MDG870260 MD012C17	h	911-655	S-4B	25	First Mine Branch	0.005	Baltimore County	
Hayfields Country Club	MDG766499	h	892-608	S-10B	200	Oregon Branch	0.005	Private	
Hereford High School (See Cycle 30 Issue 12-01)	MD3785D13	h	895-644	S-4B	1100	Panther Branch	0.014	Baltimore County	
Hereford Middle School	Not Available	h	898-635	S-10B	1100	Gunpowder Falls	0.006	Baltimore County	

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Owner	NPDES Permit Number	Treatment Type*	Location (NAD 27)	Map No.	Population Equivalent	Point of Discharge	Design Flow (MGD)	Operating Agency	Comments
Private / Community / Institutional									
Hunt Valley Golf Club	MDG766274	h	910-610	S-10B	250	Greene Branch	0.010	Private	
Hillendale Country Club	MDG767197	h, a	925-607	S-11A	200	Overshot Run	0.015	Private	
Life Point Church (fka, Carroll Community Church)	Not Available	h	841-616	S-9B	25	Broad Run	0.005	Private	
Manor Shopping Center	MD3848C18	h	924-613	S-11A	75	Overshot Run	0.010	Private	GWDP Pending
Manor Tavern Restaurant	Not Available	h	620-628	S-11A	25	Nelson Branch	0.005	Private	
Maryvale Trinity Prep School	Not Available	h,	888-582	S-16B	380	Dipping Pond Run	0.005	Private	
Oldfields School	MD3428C03	h, a	905-630	S-10B	200	Gunpowder Falls	0.022	Private	
Oregon Ridge Park	MDG675142	h	890-603	S-10B	25	Baisman Run	0.005	Baltimore County	
Paper Mill Village	Not Available	h	924-614	S-11A	25	Greene Branch	0.007	Private	
Saint Paul's School	MD3858C19	h, b	891-582	S-16B	1450	Deep Run	0.015	Private	GWDP Pending
State Aviation Admin.	Not Available	d, g, k, l, u	968-540	S-23B	450	Frog Mortar Creek	0.015	State	Public Water
Stevenson Univ (fka Villa Julie College)	MD0066001		885-579	S-16B	1300	Jones Falls	0.025	Private	Zoning Case No. 92-285 - SPHXA
Woodstock Job Corp Center	MD0023906	a, k, l, t, w	836-546	S-15B	500	Patapsco River	0.050	State	

Treatment Types
(Footnotes from Table 10)

(a)	Aeration Activated Sludge, Difused Air	(h)	Septic Tank	(q)	Filters, High Capacity
(b)	Extended Aeration	(i)	Digester (Separate Sludge Stirring Mechanism)	(r)	Filters, Fixed Nozzle, Standard Capacity
(c)	Open Sludge Beds	(j)	Digester (Separate Sludge Open Top)	(s)	Filters, Rotary Distributors, Standard Capacity
(d)	Two Story (Imhoff Settling Tanks)	(k)	Chlorination with Contact Tank	(t)	Sludge Storage Tanks, Covered
(e)	Clarigester Settling Tanks	(l)	Chlorination by Chlorine Gas	(u)	Sludge Tanks, Open
(f)	Mechanically Equipped Settling Tanks	(m)	Chlorination by Hypochlorite	(v)	Screens, Comminutor
(g)	Plain Hopper Bottom Settling Tanks	(o)	Filters, Rapid Sand	(w)	Screens, Bar
		(p)	Filters, Intermittent Sand		

Table 11
Inventory of Problem Septic Areas
Individual and Community - Active

Service Area	Location	Number of Properties	Date of DEPS Memo	Status
White Marsh	4832, 4838, 4842, 4900, 4902, and 4904 Joppa Rd	6	9-12-07	Designed but on Hold
	4323 – 4364 Chapel Road	14	6-21-07	Designed but on Hold
	Babikow Rd and Shirleybrook Rd	30	11-14-05	No Current Plans to Correct
Duck Creek	Browns Rd	8	4-4-17	In Design
Gwynns Falls	Clifmar Rd	22	10-12-17	Project completed in 2022
Delmar	Waterfront Rd	3	11-28-17	No Current Plans to Correct
Longquarter	Merediths Ford Rd	5	3-31-18	Construction completed in 2020
Orems	Bengies, Bourque, and Gladway Rds	28	6-1-18	In Design
Bird River	Perry Hall Manor	129	11-8-18	Study completed. Pending approval to begin design.
Delmar	North Point Rd @ Millers Island Rd	6	7-1-20	In design
Bird River	Schroeder Ave	17	12-16-22	In design
No Planned Service Area	Baldwin	10		Outside URDL; No Current Plans to Correct
	Monkton	22		Outside URDL; No Current Plans to Correct
	Freeland	16		Outside URDL; No Current Plans to Correct
	Old Town of Phoenix	43		Outside URDL; No Current Plans to Correct
	Kingsville	53		Outside URDL; No Current Plans to Correct
	Trenton	16		Outside URDL; No Current Plans to Correct
	Asher Rd, Beach Dr and Carroll Island Rd	19		Outside URDL: No Current Plans to Correct
	Earls Beach	40		Outside URDL: No Current Plans to Correct
	Bird River Beach	82		Outside URDL; No Current Plans to Correct

Table 12
Water Quality Problems due to Storm Drainage
Outfalls and to Non-Point Sources

Baltimore County has no combined sanitary sewer and storm drain systems that would be tabulated under this item. Please refer to the Water Resources Element of *Master Plan 2020* for a detailed discussion of water quality issues throughout the County.

Table 13
Sewer Capital Program
(Additional information on individual projects is available on the Baltimore County Web Site at https://resources.baltimorecountymd.gov/Documents/Budget/24budget/2024submittedcapitalbudgetsupportingdetail.pdf)

Job Order	Project Name	Program Funding	Budget Program
201-0002	Neighborhood Petition/Health Extensions	$7,500,000	FY24 thru 29
201-0052	Construction at Highway Sites	$300,000	FY24 thru 29
201-0072	City/County Joint Use Facilities	$300,000,000	FY24 thru 29
201-0073	Special Sewer House Connections	$3,000,000	FY24 thru 29
201-0077	Main Relining, Rehab & Replacement	$316,900,000	FY24 thru 29
201-0090	Miscellaneous System Improvements	$128,255,336	FY24 thru 29
201-0104	Gunpowder Relief Sewer	$111,500,000	FY24 thru 29
201-0105	Redhouse Run Interceptor Relief Sewer	$18,300,000	FY24 thru 29
201-0106	Gunpowder to White Marsh System Improvements	$205,500,000	FY24 thru 29
201-0109	Outfall Phase II Sewershed Improvements	$67,000,000	FY24 thru 29
201-0506	Perry Hall Manor Sewer Extension	$7,500,000	FY24 thru 29

CAPITAL BUDGET 2021

CAPITAL IMPROVEMENT PROGRAM FY 2024 - 2029
DEPT. 201 SEWER SYSTEM

Proj. No.	Title	Total Estimated Cost	Prior Authorizations	Total for 6-year Program	Budget Year FY 2024	FY2025*	FY 2026*	FY 2027*	FY 2028
0002	Neighborhood Petition / Health Ext	31,546,672	24,046,672	7,500,000	2,500,000	0	2,500,000	0	2,500,000
0052	Construction at Highway Sites	2,255,636	2,055,636	300,000	100,000	0	100,000	0	100,000
0072	City/County Joint Use Facilities	1,259,389,375	959,389,375	300,000,000	100,000,000	0	100,000,000	0	100,000,000
0073	Special Sewer House Connections	14,944,628	11,944,628	3,000,000	1,000,000	0	1,000,000	0	1,000,000
0077	Main Relining, Rehab & Replacement	1,044,126,780	727,226,780	316,900,000	87,300,000	20,000,000	87,800,000	25,000,000	96,800,000
0090	Miscellaneous System Replacements	497,956,479	369,701,143	128,255,336	21,255,336	0	20,000,000	0	87,000,000
0104	Gunpowder Relief Sewers	175,000,000	63,500,000	111,500,000	111,500,000	0	0	0	0
0105	Redhouse Run Interceptor Relief Sewer	48,000,000	29,700,000	18,300,000	18,300,000	0	0	0	0
0106	Gunpowder to White Marsh System Improvement	205,500,000	0	205,500,000	205,500,000	0	0	0	0
0109	Outfall Phase II Sewershed Improvements	72,000,000	5,000,000	67,000,000	0	0	67,000,000	0	0
0506	Perry Hall Manor Sewer Extension	10,000,000	0	10,000,000	7,500,000	2,500,000	0	0	0
	TOTAL	3,360,819,570	2,192,564,234	1,168,255,336	554,955,336	22,500,000	278,400,000	25,000,000	287,400,000

* Baltimore County employs a Biennial Capital Budget. No money is funded for FY29

RURAL BALTIMORE COUNTY

The use of private onsite sewage disposal systems (OSDS), commonly known as septic systems are predominantly in the areas outside of the Urban-Rural Demarcation Line (URDL). However, there are also clusters and isolated occurrences of developed properties within the URDL that are served by OSDS due to the proximity of existing public sewer to the properties and the relative cost/complication of extending the sewer to serve them. Currently it is estimated that there are approximately 36,000 septic systems in Baltimore County, of which approximately 5,000 are located inside the URDL and within the existing sewer service area.

Generally speaking, soils in Baltimore County are conducive to the installation of reliable septic systems that meet state and county regulations. However, there are also certain areas where there are generally poor soils for onsite sewage disposal and as a result, these areas have a higher incidence of septic system failures and complicated repairs.

In northern Baltimore County, several older communities continue to experience septic system failures due to limited areas for repair (small lot sizes), poor soils, and high water tables. These areas were developed prior to zoning and environmental protection regulations (i.e., prior to 1970) that were designed to protect against building on poor soils and on undersized lots. These areas include the following: the old town of Phoenix, Hereford, Monkton, Butler, Baldwin, Freeland, Trenton and Kingsville. Because these problems involve a relatively small number of privately owned properties that are far removed from the metropolitan district, there is no straightforward mechanism or procedure to accomplish community-wide septic system corrections. Efforts to organize a Rural Sanitary District to resolve these types of problems were initiated in the early 1990s, but were ultimately put on hold due to complexity of establishing such a district, and the concerns for increased development as a result.

Dating as far back as the late 1960's, the County recognized that existing well and septic systems in many of the waterfront areas in the Bowleys Quarters and Back River Neck Peninsulas (both designated as "No Planned Service Areas) posed public health and environmental concerns due to shallow water tables and soils with low permeability. In the 1980's, the county approved extension of public water and sewer service to serve most of the existing properties in those areas as a health project. Over the subsequent 20 years, hundreds of developed properties were connected to public water and sewer. To address the questions of serving undeveloped existing lots of record in these areas, the County passed Bill 65-99.

Due to the historic development pattern, certain developed properties in the Bowleys Quarters and Back River Neck areas were deemed too remote to be served by public water and/or sewer economically. Similarly, there are also several other areas along the Chesapeake Bay waterfront in Baltimore County where existing septic systems may be considered to be "failing" due shallow water tables. These areas include properties along the southern shores of Saltpeter Creek, and Bird River. In these cases, the Department of Environmental Protection and Sustainability works with each property owner to determine the best method of providing safe and adequate water supplies and sewage disposal and may conduct sanitary surveys to evaluate if extension of public water and/or sewer is recommended.

Since 2015, Baltimore County has been focusing on efforts to identify where septic systems are located within the metropolitan district and assess the feasibility of getting these facilities connected to public sewerage through the Bay Restoration Fund Grant Program. The grant program assists residents as well as businesses and non-profit organizations with the dual purpose of resolving septic system problems and reducing nitrogen loading to the Chesapeake Bay and its tributaries.

TABLES

Table 9A
Projected Sewerage Demands and Planned Capacity
Back River Waste Water Treatment Plant

JURISDICTION	POPULATION			PER CAPITA	TREATMENT CAPACITY	
	TOTAL	SERVED	UNSERVED	DEMAND (GPCD) NOTE 1.	DEMAND (MGD)	PLANNED (MGD)
2020						
City						
Baltimore County	551,202	461,452	89,750	150.23	69.32	
Total						180.00
2025						
City						
Baltimore County	560,794	469,839	90955	150.23	70.58	
Total						180.00
2030						
City						
Baltimore County	566,582	474,769	91,812	150.23	71.32	
Total						
2035						
City						
Baltimore County	578,294	484,655	93,639	150.23	72.81	
Total						180.00
2040						
City						
Baltimore County	587,846	492,734	95,112	150.23	74.02	
Total						
2045						
City						
Baltimore County	595,346	499,097	96,249	150.23	74.98	
Total						180.00
2050						
City						
Baltimore County	604,761	507,061	97,700	150.23	76.18	
Total						180.00

NOTES:

1. GPCD (gallons per capita per day) includes residential commercial industrial and infiltration/inflow.
2. Population and flows from the Gwynns Falls sewershed have been allocated to the Patapsco Wastewater Treatment Plant reflecting the typical system operations. Flows can be diverted from the Gwynns Falls sewershed through the Southwest Diversion pressure sewer to the Back River Wastewater Treatment Plant if required.

Table 9B
Projected Sewerage Demands and Planned Capacity
Patapsco Waste Water Treatment Plant

JURISDICTION	POPULATION			PER CAPITA	TREATMENT CAPACITY	
	TOTAL	SERVED	UNSERVED	DEMAND (GPCD) NOTE 1	DEMAND (MGD)	PLANNED (MGD)
2020						
City						
Baltimore County	303,321	300,127	3194	155.67	46.72	
Howard County	81,341	81,341	0	100.20	8.15	12.40
A. Arundel Co.	45,612	45,612	0	102.82	4.69	6.39
Total						73.00
2025						
City						
Baltimore County	307,318	304,083	3263	155.67	47.34	
Howard County	87,912	87,912	0	102.72	9.03	12.40
A. Arundel Co.	48,737	48,737	0	107.93	5.26	6.39
Total						73.00
2030						
City						
Baltimore County	310,145	312,921	3263	155.67	48.71	
Howard County	91,542	91,542	0	98.97	9.06	12.40
A. Arundel Co.	53,211	53,211	0	109.56	5.83	6.39
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2035						
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Woodstock Job Corp Center	MD0023906	a, k, l, t, w	836-546	S-15B	500	Patapsco River	0.050	State	

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(c)	Open Sludge Beds	(j)	Digester (Separate Sludge Open Top)	(s)	Filters, Rotary Distributors, Standard Capacity
(d)	Two Story (Imhoff Settling Tanks)	(k)	Chlorination with Contact Tank	(t)	Sludge Storage Tanks, Covered
(e)	Clarigester Settling Tanks	(l)	Chlorination by Chlorine Gas	(u)	Sludge Tanks, Open
(f)	Mechanically Equipped Settling Tanks	(m)	Chlorination by Hypochlorite	(v)	Screens, Comminutor
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Bird River	Schroeder Ave	17	12-16-22	In design
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	Freeland	16		Outside URDL; No Current Plans to Correct
	Old Town of Phoenix	43		Outside URDL; No Current Plans to Correct
	Kingsville	53		Outside URDL; No Current Plans to Correct
	Trenton	16		Outside URDL; No Current Plans to Correct
	Asher Rd, Beach Dr and Carroll Island Rd	19		Outside URDL: No Current Plans to Correct
	Earls Beach	40		Outside URDL: No Current Plans to Correct
	Bird River Beach	82		Outside URDL; No Current Plans to Correct

Table 12
Water Quality Problems due to Storm Drainage
Outfalls and to Non-Point Sources

Baltimore County has no combined sanitary sewer and storm drain systems that would be tabulated under this item. Please refer to the Water Resources Element of *Master Plan 2020* for a detailed discussion of water quality issues throughout the County.

Table 13
Sewer Capital Program
(Additional information on individual projects is available on the Baltimore County Web Site at https://resources.baltimorecountymd.gov/Documents/Budget/24budget/2024submittedcapitalbudgetsupportingdetail.pdf)

Job Order	Project Name	Program Funding	Budget Program
201-0002	Neighborhood Petition/Health Extensions	$7,500,000	FY24 thru 29
201-0052	Construction at Highway Sites	$300,000	FY24 thru 29
201-0072	City/County Joint Use Facilities	$300,000,000	FY24 thru 29
201-0073	Special Sewer House Connections	$3,000,000	FY24 thru 29
201-0077	Main Relining, Rehab & Replacement	$316,900,000	FY24 thru 29
201-0090	Miscellaneous System Improvements	$128,255,336	FY24 thru 29
201-0104	Gunpowder Relief Sewer	$111,500,000	FY24 thru 29
201-0105	Redhouse Run Interceptor Relief Sewer	$18,300,000	FY24 thru 29
201-0106	Gunpowder to White Marsh System Improvements	$205,500,000	FY24 thru 29
201-0109	Outfall Phase II Sewershed Improvements	$67,000,000	FY24 thru 29
201-0506	Perry Hall Manor Sewer Extension	$7,500,000	FY24 thru 29

CAPITAL BUDGET 2021

CAPITAL IMPROVEMENT PROGRAM FY 2024 - 2029
DEPT. 201 SEWER SYSTEM

Proj. No.	Title	Total Estimated Cost	Prior Authorizations	Total for 6-year Program	Budget Year FY 2024	FY2025*	FY 2026*	FY 2027*	FY 2028
0002	Neighborhood Petition / Health Ext	31,546,672	24,046,672	7,500,000	2,500,000	0	2,500,000	0	2,500,000
0052	Construction at Highway Sites	2,255,636	2,055,636	300,000	100,000	0	100,000	0	100,000
0072	City/County Joint Use Facilities	1,259,389,375	959,389,375	300,000,000	100,000,000	0	100,000,000	0	100,000,000
0073	Special Sewer House Connections	14,944,628	11,944,628	3,000,000	1,000,000	0	1,000,000	0	1,000,000
0077	Main Relining, Rehab & Replacement	1,044,126,780	727,226,780	316,900,000	87,300,000	20,000,000	87,800,000	25,000,000	96,800,000
0090	Miscellaneous System Replacements	497,956,479	369,701,143	128,255,336	21,255,336	0	20,000,000	0	87,000,000
0104	Gunpowder Relief Sewers	175,000,000	63,500,000	111,500,000	111,500,000	0	0	0	0
0105	Redhouse Run Interceptor Relief Sewer	48,000,000	29,700,000	18,300,000	18,300,000	0	0	0	0
0106	Gunpowder to White Marsh System Improvement	205,500,000	0	205,500,000	205,500,000	0	0	0	0
0109	Outfall Phase II Sewershed Improvements	72,000,000	5,000,000	67,000,000	0	0	67,000,000	0	0
0506	Perry Hall Manor Sewer Extension	10,000,000	0	10,000,000	7,500,000	2,500,000	0	0	0
	TOTAL	3,360,819,570	2,192,564,234	1,168,255,336	554,955,336	22,500,000	278,400,000	25,000,000	287,400,000

* Baltimore County employs a Biennial Capital Budget. No money is funded for FY29

MAPS

MAP MAINTENANCE POLICY (From 1993 Triennial Review)

WHEREAS, it is a benefit to the general public, the Baltimore County Council, the Baltimore County Executive, and appropriate agencies of both local and state government to have access to the WATER SUPPLY AND SEWERAGE PLAN which is as current as possible; and

WHEREAS, each capital improvement program adopted by the County Council may introduce water or sewer facilities, 12 inch in diameter or larger, which may not appear on the plan; and

WHEREAS, each capital improvement contract which is completed in the field automatically changes the map designation of a project from a proposed to an existing facility; and

WHEREAS, any capital facilities area (W-3 or S-3) in which a capital, development, or neighborhood improvement project has been completed and put in service becomes legally and automatically an existing service area (W-1 or S-1);

NOW THEREFORE, the Department of Public Works is directed by the County Council of Baltimore County to maintain the original water and sewer maps in as current a condition as possible with regard to the capital improvement program, as adopted by the County Council, and with regard to construction completed in the field, and to any changes from a W-3 or S-3 designation to a W-1 or S-1 designation, without recourse to further public hearings or Council action; and

Further, it is directed that copies of such maps which are as current as possible be available to members of the County Council, the Baltimore County Executive, agencies of local and state government, and the general public through the Engineering Records Section, Bureau of Engineering, Room 206 Baltimore County Office Building, 111 West Chesapeake Avenue, Towson, Maryland, and that they be available under the same conditions as apply to the production of any other record from that unit.

February, 1993

WATER SUPPLY& SEWERAGE PLAN DESIGNATIONS

Areal designations noted on each page of analysis and on the petition exhibits:

W-1 or S-1 EXISTING SERVICE AREAS Areas in which Metropolitan water and sewerage facilities are presently available to 90 % of the properties.

W-3 or S-3 CAPITAL FACILITIES AREAS Areas in which water and sewerage facilities are required, and are possible, within the framework of the six-year capital program, subject to annual budgeting, neighborhood petitions, determination of health hazards and the negotiation of Public Works Agreements.

W-4 or S-4 STUDY AREAS Areas, rural centers, outside the Metropolitan District which shall be studied to determine the feasibility of future community water supply and sewer service.

W-5 or S-5 MASTER PLAN AREAS Areas in which water and sewerage facilities are required and are intended within the framework of the Baltimore County Master Plan.

W-5 X or S-5 X MASTER PLAN AREAS Areas to become CAPITAL FACILITIES AREAS upon annexation into the Baltimore County Metropolitan District.

W-6 or S-6 AREAS OF FUTURE CONSIDERATION Areas which are to be considered in the design of major facilities for growth and development beyond the Land Use Master Plan.

W-7 or S-7 NO PLANNED COMMUNITY OR MULTI-USE SERVICE (NPS) Areas of planned, low-density growth (also known as "Resource Conservation Zoning") for which Metropolitan water and sewerage facilities are neither planned nor intended.

The following definitions have been derived from Maryland State Law and the Baltimore County Code and are set forth here as they relate specifically to Water Supply and Sewerage Planning in Baltimore County:

INDIVIDUAL WATER SUPPLY A water supply well and plumbing system within a single property, intended for domestic use of less than 5,000 gallons of ground water per day.

INDIVIDUAL SEWERAGE SYSTEM A sewerage system, within a single property, comprising a treatment system (septic tank) which receives waste water from a plumbing system and has a ground water recharge system of less than 5,000 gallons per day.

MULTI-USE SYSTEM A water supply or sewerage system which is identical to an individual system, as defined above, except that use and recharge of ground water is equal to or greater than 5,000 gallons per day.

COMMUNITY SYSTEM (Public or Private)
A system of water supply or sewerage disposal involving two or more property owners, regardless of the quantity or point of disposal.

Note: Any of the above may be a community system under the Clean Water Act of the Federal Government relative to the required water quality and frequency of testing.

Disclaimer

Information shown on the maps in this document **does not guarantee** that public water or sewerage service is available in any given area.

Baltimore County
Water Supply and Sewerage Plan

2023 Triennial Review

Draft Report of the Review
as submitted to the
Baltimore County Planning Board

September 21, 2023

Errata & Addenda
1. Insert County Council Resolution 2. Insert Transmittal Letter from DPW&T Director to MDE

Errata & Addenda
1. Insert Final Action Letter from MDE Director



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F – Sewer Agreement with Howard County ..... 28 pages
G – Sewer Agreement with the Maryland Aviation Administration ..... 8 pages
H – Board of Arbitration Decision of 1991 ..... 120 pages
I – Reservoir Watershed Management Agreement (1979) between Baltimore City, Baltimore County and Carroll County ..... 21 pages
J – Watershed Agreement (2006) between Baltimore City and County Consent Decree & Appendices ..... 194 pages

INTRODUCTION

The Environmental Article of the Annotated Code of Maryland (Section 9-503) requires Baltimore County to adopt a Plan for the provision of adequate water supply and sewerage throughout the County that is consistent with the County comprehensive land use plan. This Plan is to be reviewed by the County governing body at least once every three years.

The 10-year Baltimore County Water Supply and Sewerage Plan 2020 Triennial Review was adopted on August 2, 2021 by County Council Resolution No. 99-21.

Baltimore County *Master Plan 2020* was adopted by County Council Resolution 94-10 on November 15, 2010.

The 2020 Triennial Review was approved by Maryland Department of the Environment (MDE) in the letter from MDE's Director of the Water Management Administration dated November 30, 2021.

The next Triennial Review is due for submission to MDE in 2023.

STATEMENTS AND CERTIFICATIONS

Upon approval of the *Water Supply and Sewerage Plan 2023 Triennial Review*, COMAR 26.03.01.04 requires the following statements to be provided in this Introduction:

1. Statement certifying that the county governing board has officially adopted the plan. This will be the County Council Resolution, endorsed by the County Executive, adopting the *Triennial Review*.

2. Statement certifying that the plan incorporates subsidiary plans. This is not applicable to Baltimore County in that there are no subsidiary jurisdictions within the County.

3. Statement certifying that the sections covering the engineering aspects of water and sewerage projects have been prepared and reviewed for adequacy by a registered engineer licensed in the State. This statement is usually made in the letter from the Director of Public Works and Transportation submitting the *Triennial Review* to the Maryland Department of the Environment.

4. The letter of approval from the Maryland Department of the Environment.

Statements and certifications will be attached when the Plan is adopted and approved.

CHAPTER I: GOALS AND ORGANIZATION

GOALS OF THE COUNTY CONSISTENT WITH COMPREHENSIVE PLANNING

MASTER PLAN 2020

To promote policies and actions resulting in a safe, sustainable environment for future generations, the County Council in partnership with the Citizens of Baltimore County, Maryland, adopted *Master Plan 2020* on November 15, 2010 (Resolution 94-10). The Master Plan 2030 is in progress and has not been approved or finalized at this time. The goals of the Mater Plan 2020 are as follows:

Goal One: Continue the Success of Growth Management

- Direct the future growth within the Urban-Rural Demarcation Line (URDL)
- Protect and enhance Community Conservation Areas
- Promote redevelopment with an emphasis on ailing commercial or industrial properties
- Develop compact, mixed-use, transit-oriented and walkable neighborhoods
- Advance economic wellbeing by promoting a high quality labor force
- Provide a mixture of housing types for an emerging diversity of residents
- Support quality public schools to enhance communities
- Prioritize infrastructure improvements via the Capital Improvement Program to endorse sustainable development
- Protect the character and economic vitality of the rural communities

Goal Two: Improve the Built Environment

- Provide adequate open space and recreational opportunities and increase connections to nature by linking open spaces and parks
- Invest in public grounds by tree planting, buffer conservation and habitat restoration
- Expand and deliver multi-modal transportation services
- Reduce pollutant loadings of runoff with enhanced stormwater management
- Meet desire for green communities by providing regulatory incentives
- Ensure integration between regulations and sustainability programs such as LEED

Goal Three: Strengthen Resource Conservation and Protection

- Protect health of the natural environment and maintain a valuable biodiversity
- Restore ecosystems and encourage fair, efficient use of natural resources
- Preserve cultural assets to establish a tangible sense of community
- Nurture farming activities and importance of the agricultural industry
- Conserve rural characteristics and scenic vistas

WATER AND SEWER PLAN

Sustainable development has been defined as that which "meets the needs of the present in a responsible manner without compromising the ability of current and future generations to meet their own needs" (United Nations General Assembly (1987)). To help ensure a sustainable community, Baltimore County will continue the following actions to protect the public water supplies and sewer systems:

- Work with Baltimore City and adjacent jurisdictions to protect and enhance the water supply reservoirs;
- Maintain and upgrade all capital facilities as required;
- Implement the water resource conservation practices established in the Baltimore county plumbing code;
- Where technically and economically feasible, require property owners with developed properties that utilize septic systems that are located within areas designated as S-1, to connect to public sewer and abandon their septic systems.
- As determined by the Department of Environmental Protection and Sustainability (EPS), individual properties, communities, and subdivisions with failing, inadequate, and substandard private onsite water or septic systems or other public health concerns that exist inside of the Metropolitan District and outside of the URDL in W-7 and/or S-7 (no planned service) designated areas, public water and/or sewer may be extended to existing lots of record if evaluated and required by DPW&T as an economically feasible solution. Such extensions are permitted through the County's existing Water Supply and Sewerage Master Plan Amendment process.
- Actively participate in the Metropolitan District;
- Also actively participate in the Susquehanna River Basin Commission.

Master Plan 2020 was prepared in accordance with Article 66B of the Annotated Code of Maryland, Section 523 of the Baltimore County Charter, and pertinent sections in the Baltimore County Code. Development of the master plan involved all "stakeholders", such as citizens and community associations, county and state agencies, government officials, and businesspersons. Similarly, in preparing this Water and Sewer Plan, the appropriate comprehensive planning agencies were consulted: the Maryland Department of Planning, the Baltimore County Department of Planning, and the regional planning group, the Baltimore Metropolitan Council (BMC). This unified effort helped to ensure the Water and Sewer Plan is indeed consistent with, and in fact supportive of the County's goals of comprehensive planning.

The Water and Sewer Plan shall remain in effect concurrently with the Master Plan. Any revision to one plan that has substantive impact on the other will require commensurate modification of the other plan.

ADDITIONAL PLANS

Additional plans and studies are amendments to the *Master Plan 2020*, which further define land use and growth management strategies countywide, and for specific areas of the County. The County's Master Planning web page lists all adopted community and other plans:
https://www.baltimorecountymd.gov/departments/planning/masterplanning/adoptedcommunityplans/index.html

Furthermore, "The Baltimore County, Maryland Land Preservation, Parks and Recreation Plan," was adopted by the Baltimore County Council as a *Master Plan 2020* Amendment on June 5, 2017. The full document is posted at:
https://www.baltimorecountymd.gov/departments/planning/masterplanning/parkrecplan

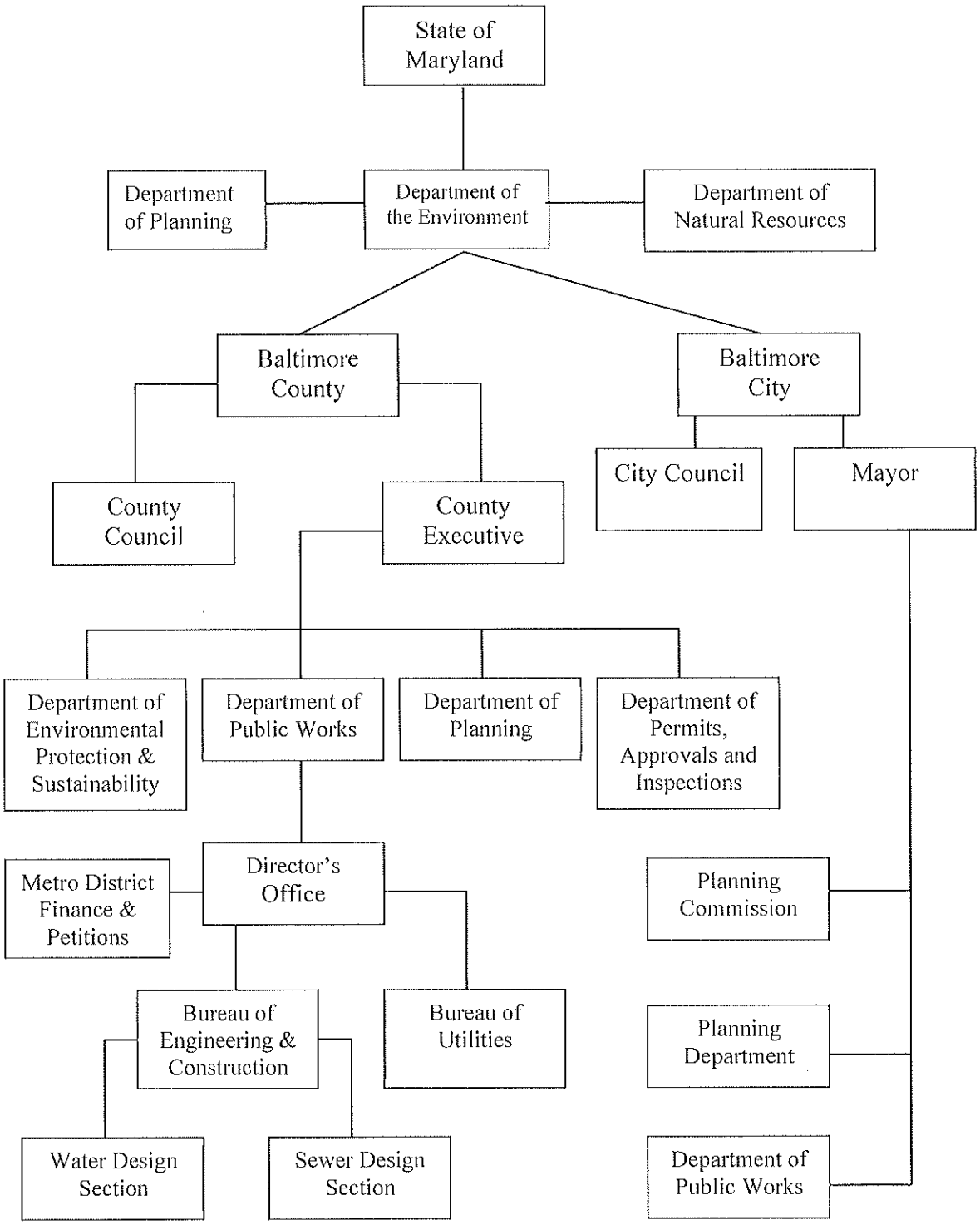
ARTICLE 66B, ANNOTATED CODE OF MARYLAND

In response to directives from the United States Environmental Protection Agency (EPA), the General Assembly of Maryland passed legislation amending Article 66B of the Annotated Code of Maryland. In 2012, the Maryland General Assembly repealed Article 66B and Article 28 and replaced them with the Land Use Article.

Specifically House Bill 1141 (HB 1141, 2006) required, among other items, a thorough examination of the safety and adequacy of all drinking water supplies and sewerage disposal systems for existing and future populations. The analysis contained in the master plan, called a Water Resources element (WRE), revealed that, with continued maintenance and protection, the public water supply and sewerage systems serving Baltimore County will be safe and adequate for the projected population until at least 2035. The WRE had a major influence on the policies and actions developed in *Master Plan 2020*, especially concerning protection of surface waters and the Chesapeake Bay. One of the primary goals is to direct virtually all new land development (or *redevelopment*) inside the Priority Funding Area (PFA), which is essentially the urban area closest to Baltimore City. Even with this anticipated population growth, there will be enough potable water in the public supply system, and adequate capacity in the public sewer system.

ORGANIZATIONAL CHART

State & Local Government as Related to Water & Sewer Management



COUNTY GOVERNMENT AS IT RELATES TO WATER AND SEWERAGE MANAGEMENT

In order for property to be served by public water and sewer in Baltimore County, it must meet two geographic conditions:

1. Located within the Baltimore County Metropolitan District, and
2. Located within an area designated as Capital Facilities or Existing Service on the Water and Sewerage Plan Maps.

METROPOLITAN DISTRICT

Under the Metropolitan District Act (established by the Acts of the General Assembly of Maryland of 1924, Chapter 539) the Baltimore County Metropolitan Sewer and Water Operating District (the "Metro District") was created as a separate and financially self-supporting entity under the jurisdiction of the County to supply water and to provide sewer and wastewater systems to residents of the County living within certain prescribed areas primarily in the most densely populated areas. The extension of these boundaries is subject to the approval of the County Council with the consent and approval of the Mayor and City Council of Baltimore. The Department of Public Works under the direction of the County Administrative Office carries out the administration of the Metropolitan District. The Metro District has its own revenue and bond issuance powers, subject to authorization by the County Council. The Metropolitan District Act requires the City of Baltimore (the "City") to provide water to the Metro District at cost. Although the Metro District constructs water facilities within its boundaries, under an agreement between the City and the County, the City maintains and operates the facilities at cost, including billing and collecting water usage. Under said agreements, the City and the County have also agreed to pay for certain new capital projects and the repair and enlargement of additions or improvements to certain existing water facilities on a specified pro-rata basis. In addition, the County, from time to time, has entered into agreement with adjacent Anne Arundel and Howard counties under which, certain of the County's water facilities are made available to each of said counties. For such use, these other jurisdictions have agreed to pay for a pro-rate share of capital and operating costs.

The Metro District is operated like a regulated utility company. However, instead of using a quasi-public commission or appointed authority, the system is managed, financed and operated directly by Baltimore County. The County Charter states that all funds expended by the County must be appropriated and be contained in an operating or capital budget that has been approved by County Council. Therefore, the Metro District's Capital Improvement Program (CIP) is part of the overall County CIP.

WATER AND SEWERAGE PLAN MAPS, ANNUAL AMENDMENT CYCLE

Owners of properties for which public water and sewer utility service is desired but are not within Capital Facilities or Existing Service areas must petition the County for a map amendment. The executive order of April 11, 1990, established an **annual amendment cycle** for this purpose. Petitions for map amendments must be submitted by May 1 of each year. After being reviewed by Planning, DEPS and DPW&T, staff recommendations are forwarded to the Planning Board for public hearing and report to the County Executive. The County Executive may then forward any favorable recommendations to the County Council for approval. The County Council resolution approving any map amendments is then forwarded to the State Department of the Environment (MDE) for final approval. MDE uses this information during review of permits under its jurisdiction.

Properties having designations W-4 or S-4, W-5 or S-5, W-6 or S-6 must petition for amendment to receive any service. The special designation W-5X or S-5X automatically becomes W-3 or S-3 when the property is included in the Metro district. When capital facilities are completed in W-3 or S-3 areas, those areas become W-1 or S-1 areas automatically (see map maintenance policy). Properties designated as W-7 or S-7 (No Planned Service) are served by private well water and sewage disposal systems, with the exception of those areas where public water and sewer has been extended for public health and environmental protection. Properties using in excess of 5,000 gallons per day must be added to the list of "multi-use facilities" and so designated on the maps. Two or more properties served by the same well water supply or sewage disposal system must be listed as a "community system" and so designated on the maps. Although the Water and Sewerage Plan is primarily intended as a tool for ensuring public health and safety, there are land uses permitted by right under certain RC zones for which density may be controlled only through the Water and Sewerage Plan cycle amendment process.

WATER AND SEWERAGE PLAN VARIANCES

Variances to the Water and Sewerage Plan Maps are given consideration under certain circumstances. A property designated W/S-1, 2, 3 or 4 where it is contested that extension of or connection to public utility mains is not feasible, a property owner may apply for a variance to allow the use of private well(s) and/or septic system(s). Such variance requests must be submitted to DPW&T in the specified format, and subject to review by both DEPS and DPW&T. In such cases where the variance is approved by DPW&T, the petitioner must execute and record an "interim agreement" which requires the owner of such property to connect to any future public utility main extension, including participation in all costs and assessments as required. Properties designated W/S-5 or 6 may be served by private water supply and/or sewage disposal systems not of an interim nature. See COMAR 26.03.01.05 for authority to allow interim systems.

CHAPTER II: BACKGROUND INFORMATION: PHYSICAL, POPULATION PROJECTION, LAND USE

COMPREHENSIVE PLAN

Master Plan 2020 is the guiding document for County's future development. The *Master Plan* embodies the broad goals, formulating policies for sustaining livable communities and achieving balanced development in Baltimore County. The County has begun the process of updating the *Master Plan*, *Master Plan 2030*, per the County Charter.

The County's water and sewer planning is based on the County's landmark Urban Rural Demarcation Line (URDL), which also corresponds to the state's Priority Funding Area (PFA) boundaries delineated for the state permitting and financing purposes. The ideal areas for redevelopment include adequate public water and sewer as well as other public facilities and services. Items to be analyzed in determining suitability of an area to accommodate population growth are the adequacy of existing and proposed infrastructure (*Master Plan 2020*, page 34).

Since the establishment of URDL in 1967, the residential construction and redevelopment within the URDL has continued to prove that the County excels in conserving its urban and rural communities by revitalizing existing communities and directing new development into the County's community conservation and designated growth areas. Water and sewer planning to allow those public utilities only in urban areas ensures development is concentrated inside the URDL, thus reducing sprawl (*Master Plan 2020*, page 2).

Public facilities such as water and sewer built in the urban area have been consistent with the County's pattern and timing of growth. Public infrastructure is important in determining the timing, location, and intensity of development, serving as a valuable tool for master plan implementation. Basic infrastructure provides the foundation for the location where private and public sector redevelopment and reinvestment take place (*Master Plan 2020*, page 46).

The County's *Master Plan* has language with regard to water or sewer extensions outside the URDL as public health projects. *Master Plan 2020* stipulates that the County must, "Ensure that sewer extensions to correct failing septic areas outside the URDL only address existing problems and do not stimulate growth and development" (p. 49).

For public health projects to proceed, the Executive Order [for the] Baltimore County Water & Sewerage Plan Amendment Process indicates that the Planning Board must find that there has been "a danger to public health" and water and sewerage facilities are necessary to resolve the health concerns. In practice, the extension of water and/or sewer services to areas outside the URDL, is initiated when it has been determined by the County Department of Environmental Protection and Sustainability (DEPS) that there is public health concern related to existing on-site water supplies and septic systems and where the County Department of Public Works and Transportation (DPW&T) has determined that the extension is an economically feasible

solution. The process for making such extensions would be through the aforementioned Amendment process, which allows the Maryland Departments of Planning and the Environment as well as the County Planning Board, County Council, and the County Administration to weigh in, ensuring that the extension is appropriate and would not intensify development in areas outside the URDL.

The referenced *Master Plan* also stipulates that, "the proper siting, design, and construction of on-site sewerage disposal systems (OSDS) [in rural areas or places outside the URDL] is critical to protecting ground water supplies and public health. Should community health threats be documented in areas that are accessible to the Metropolitan District, extension of public water or sewerage is provided on a long-term financing basis" (p. 159).

The referenced *Master Plan* further states that the County must "continue to manage and protect groundwater supplies, particularly in areas where citizens, businesses, industry and agriculture rely solely on wells; review development proposals and permits to assure the proper siting, design, and construction of drinking water wells and OSDS in accordance with the Code of Maryland Regulations and Code of Baltimore County Regulations. The current regulations and standards for drinking water wells and OSDS are considered effective in protecting public health while ensuring that there is adequate supply for current and future demands." (p. 160)

The growth tiers, as amended in *Master Plan 2020*, identify where major and minor residential subdivisions may develop and what type of sewage disposal system will serve them. The County's Growth Tiers were developed in response to Maryland's Sustainable Growth and Agricultural Preservation Act of 2012 (SB 236). A parcel divided into four or more lots is considered a major subdivision in Baltimore County. Existing geographic data such as existing and planned sewer areas, zoning, URDL and a variety of conservation or preservation layers (PDF) were analyzed and used to classify County land into one of four Growth Tiers:

- Tier I: Major or minor subdivisions served by public sewers are allowed.
- Tier II: Major or minor subdivisions served by public sewers are allowed. Minor Subdivisions on individual on-site disposal systems shall be viewed as interim.
- Tier III: Major subdivisions on individual on-site disposal systems are allowed, with the recommendation of approval by an approving authority. Minor subdivisions on individual on-site disposal systems are allowed.
- Tier IV: Only minor subdivisions on individual on-site disposal systems are allowed.

In addition to amendments to *Master Plan 2020* as reported in the 2017 Triennial Review, Chapter II, there are two new amendments to the *Master Plan* to ensure sustainable development, environmental protection, and resource conservation: *The 2017 Land Preservation, Parks and Recreation Plan* and renewal of sustainable communities.

The Land Preservation, Parks and Recreation Plan (LPPRP) serves as the advisory master plan for the Baltimore County Department of Recreation and Parks. The LPPRP outlines the County's recreation, parks and open space policies, goals, objectives and priorities, particularly those associated with parklands and recreational facilities. The *Land Preservation, Parks and*

Recreation Plan, was adopted by the Baltimore County Council as a *Master Plan 2020* Addendum on June 5, 2017.

From 2019 to 2022, the Maryland Department of Housing and Community Development approved renewals for the following sustainable community designations. Those eight sustainable community designations are eligible to apply for the resources in order to strengthen reinvestment and revitalization in those communities within the URDL.

- Arbutus approved in September 2021
- Pulaski Highway Redevelopment Area approved in March 2019.
- Greater Dundalk-Sparrows Point Area approved in March 2019.
- Catonsville Patapsco Area approved in March 2019.
- Towson Area approved in November 2019.
- Hillendale-Parkville-Overlea Area approved in November 2019.
- Reisterstown Main Street approved in November 2019.
- Northwest Gateway, approved in 2020.

POPULATION TRENDS

Information in Table 1 is computed on the basis of the Baltimore County's Round 10 population forecasts, most recently adopted in August 2022. The population forecast dataset is prepared by transportation analysis zone (TAZ) for the regional transportation planning purposes. The results of this analysis confirm that approximately 90% of the County's population resides within the URDL, which takes up one-third of the County's land area (640 square miles).

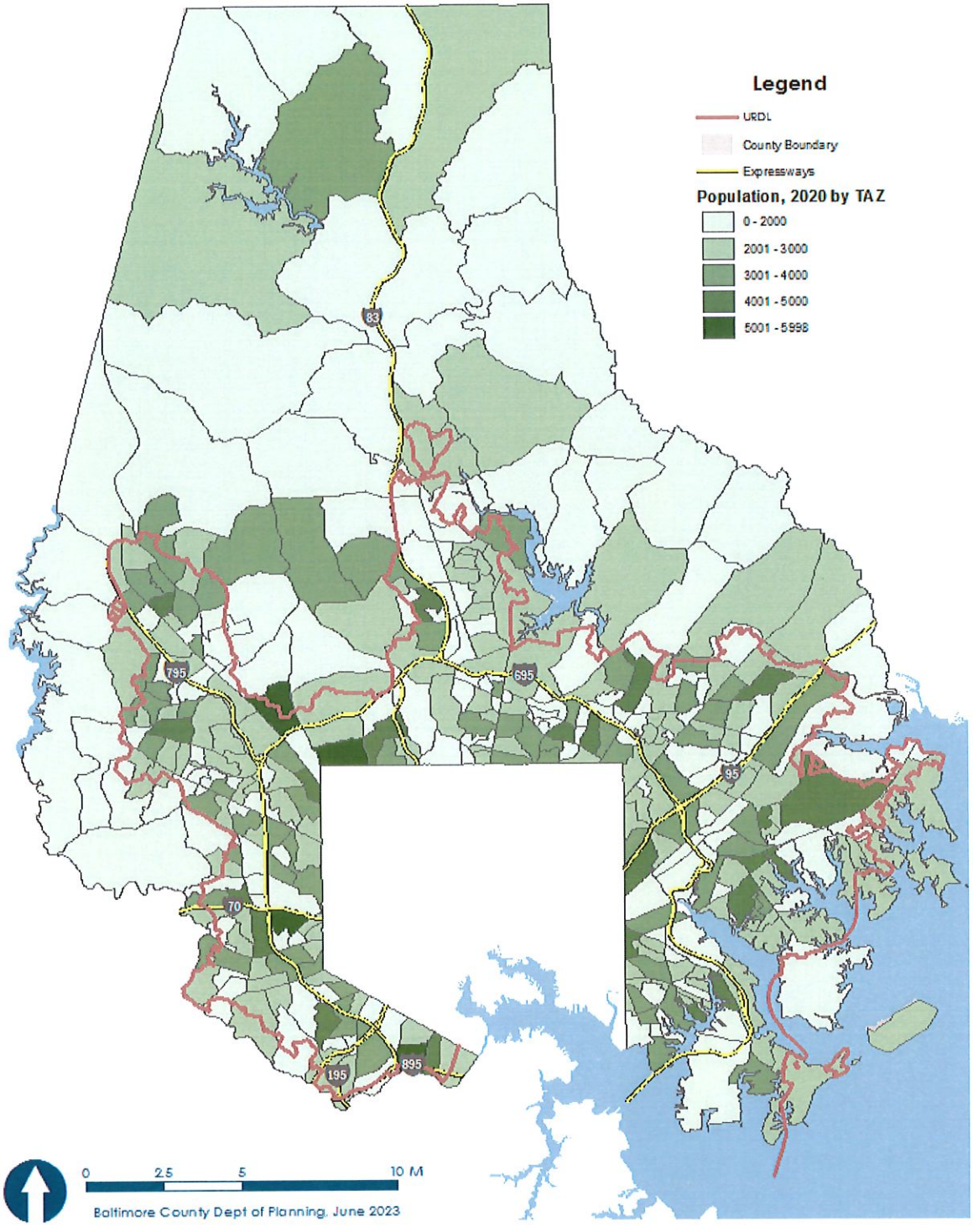
Table 1: Population Forecasts

Forecast Year	Population Forecasts				
	Urban (Inside URDL)		Rural (Outside URDL)		Total
	Total Urban	% County Total	Total Rural	% County Total	
2020	761,579	89.12%	92,944	10.88%	854,523
2025	773,922	89.15%	94,190	10.85%	868,112
2030	781,651	89.16%	95,075	10.84%	876,726
2035	797,576	89.16%	96,965	10.84%	894,541
2040	810,512	89.17%	98,488	10.83%	909,000
2045	820,611	89.17%	99,664	10.83%	920,275
2050	833,357	89.17%	101,164	10.83%	934,521

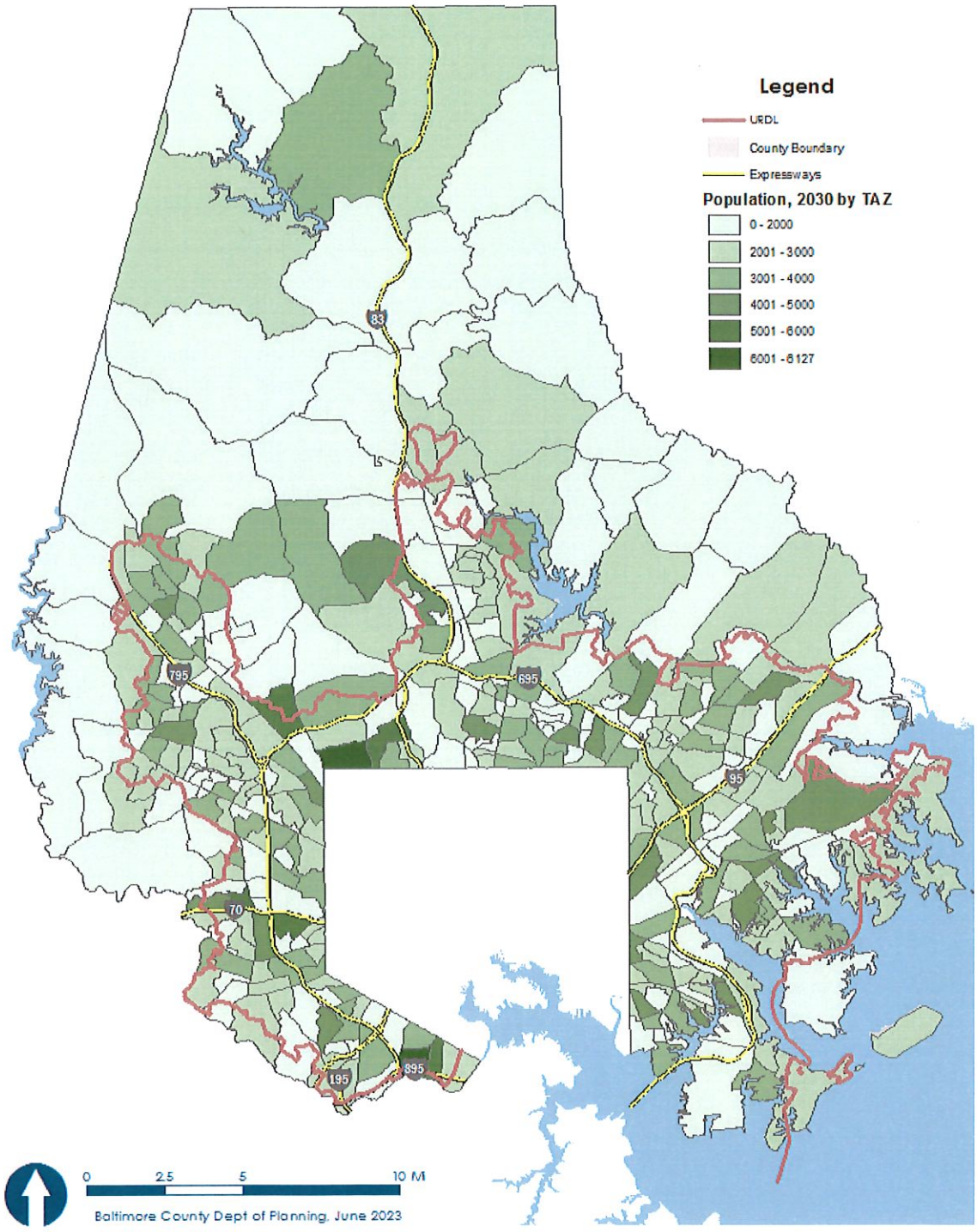
Source: Baltimore County Department of Planning, Round 10 Forecasts, August 2022

The following maps (1 through 8) by TAZ provide a general overview of population distribution patterns and trends throughout the County (2020 - 2050) based on Round 10 forecasts. Maps 1 to 4 show total population distribution by TAZ, while Maps 5 to 8 display population density by TAZ. The maps indicate that while population growth is projected to remain consistent with past trends – the majority occurring within the URDL, and some spilling over into neighboring rural TAZ's – major increases in population density will only occur within the URDL, with over 40% in the eastern portions of the County.

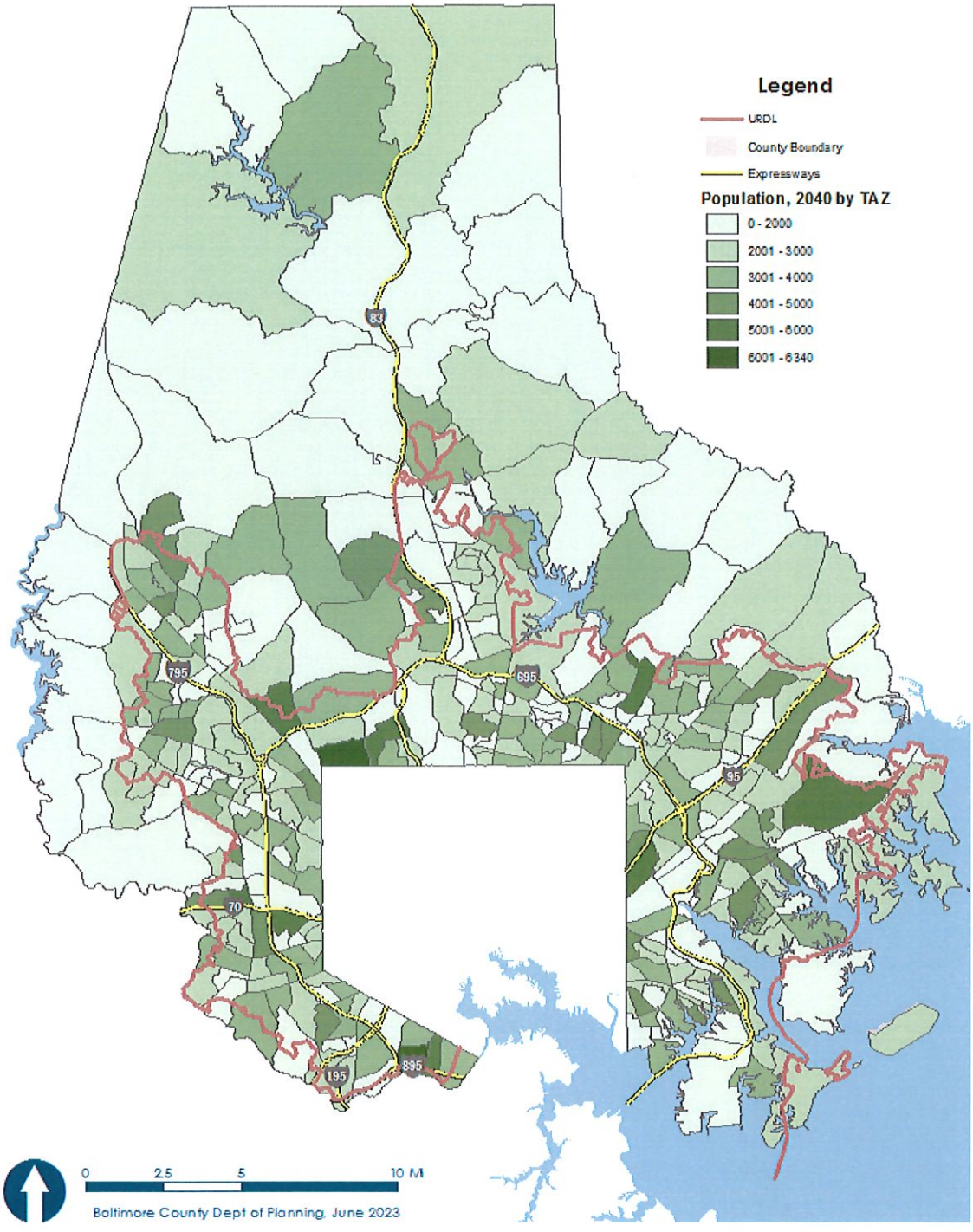
Map 1. Population Forecasts, 2020



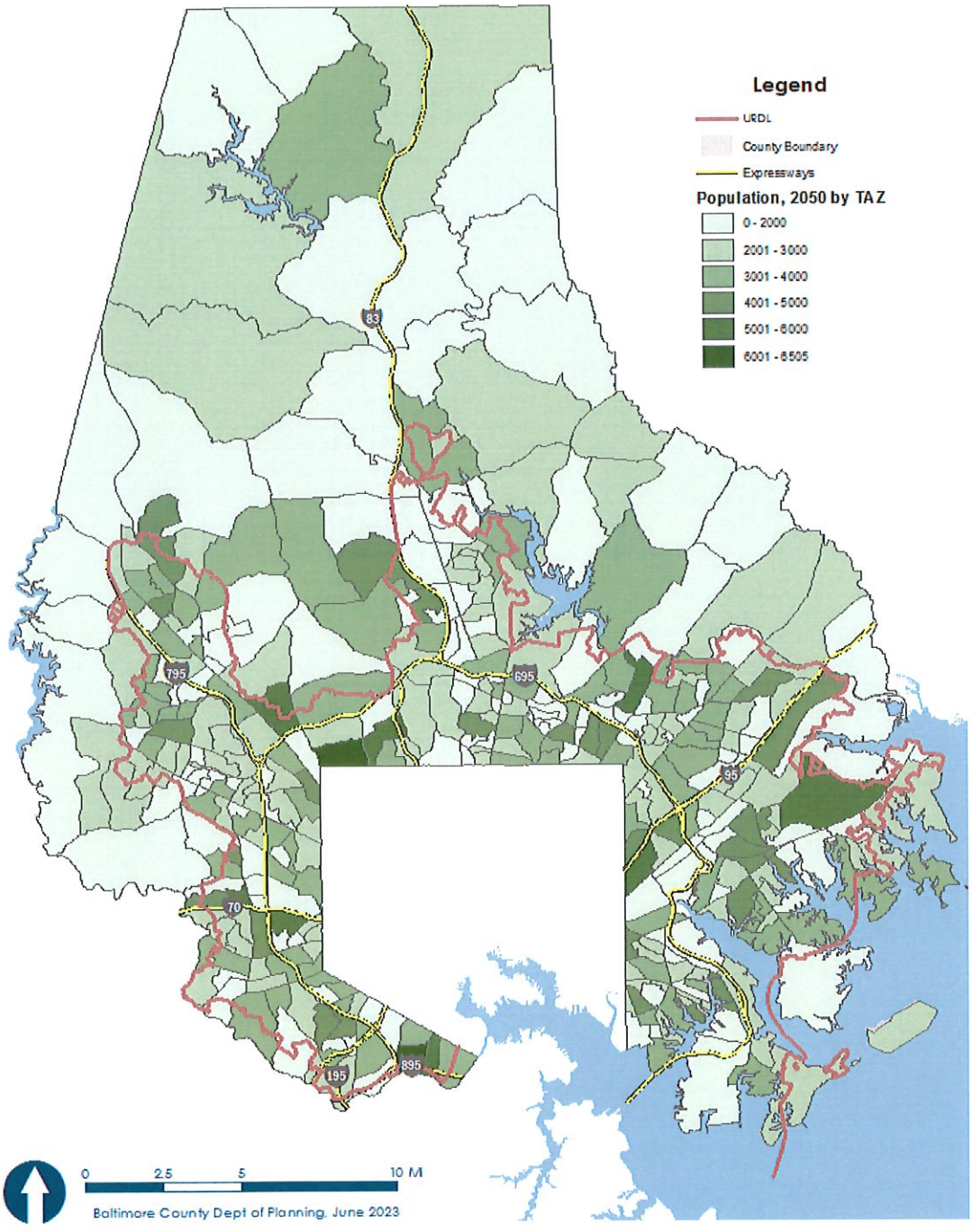
Map 2. Population Forecasts, 2030



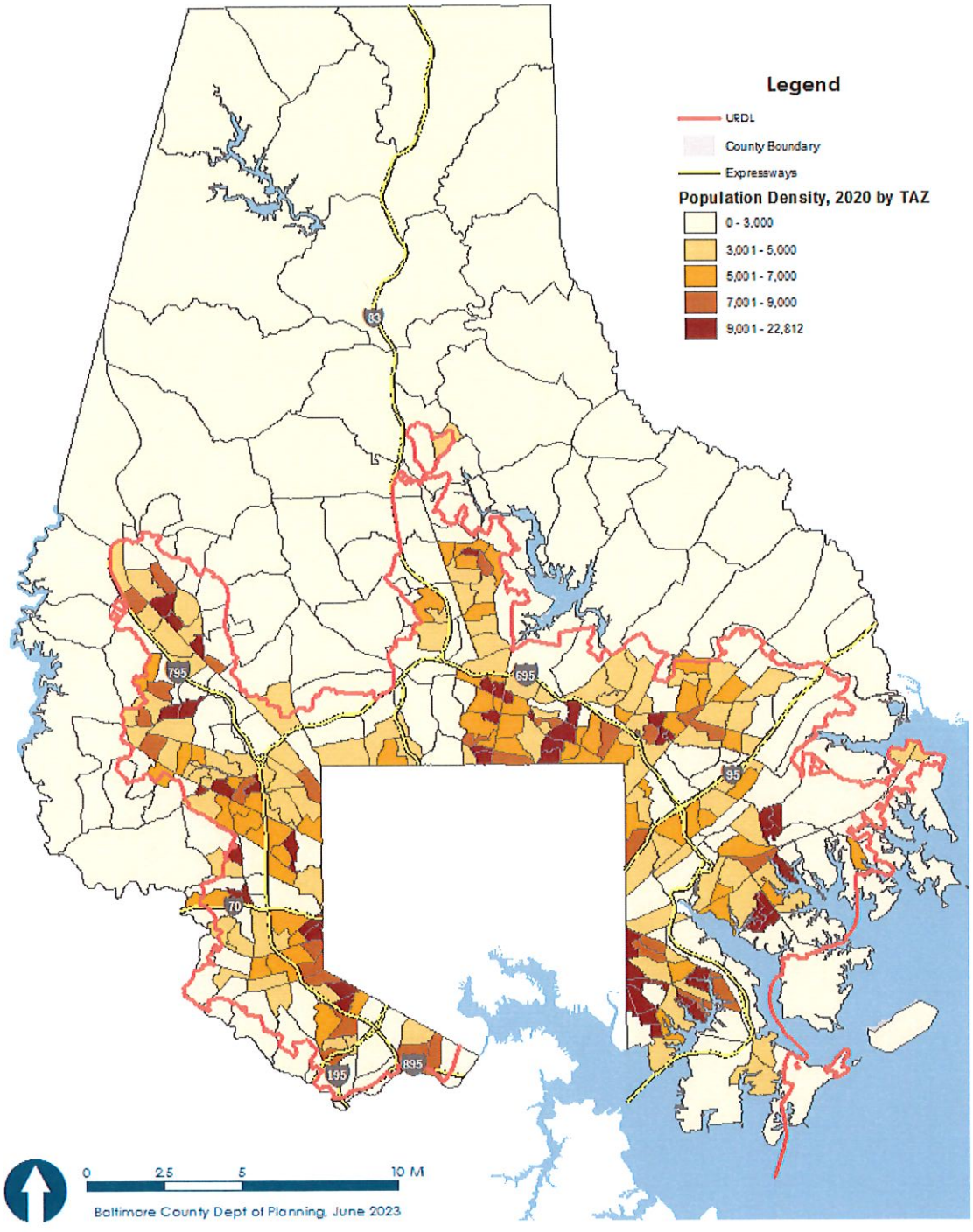
Map 3. Population Forecasts, 2040



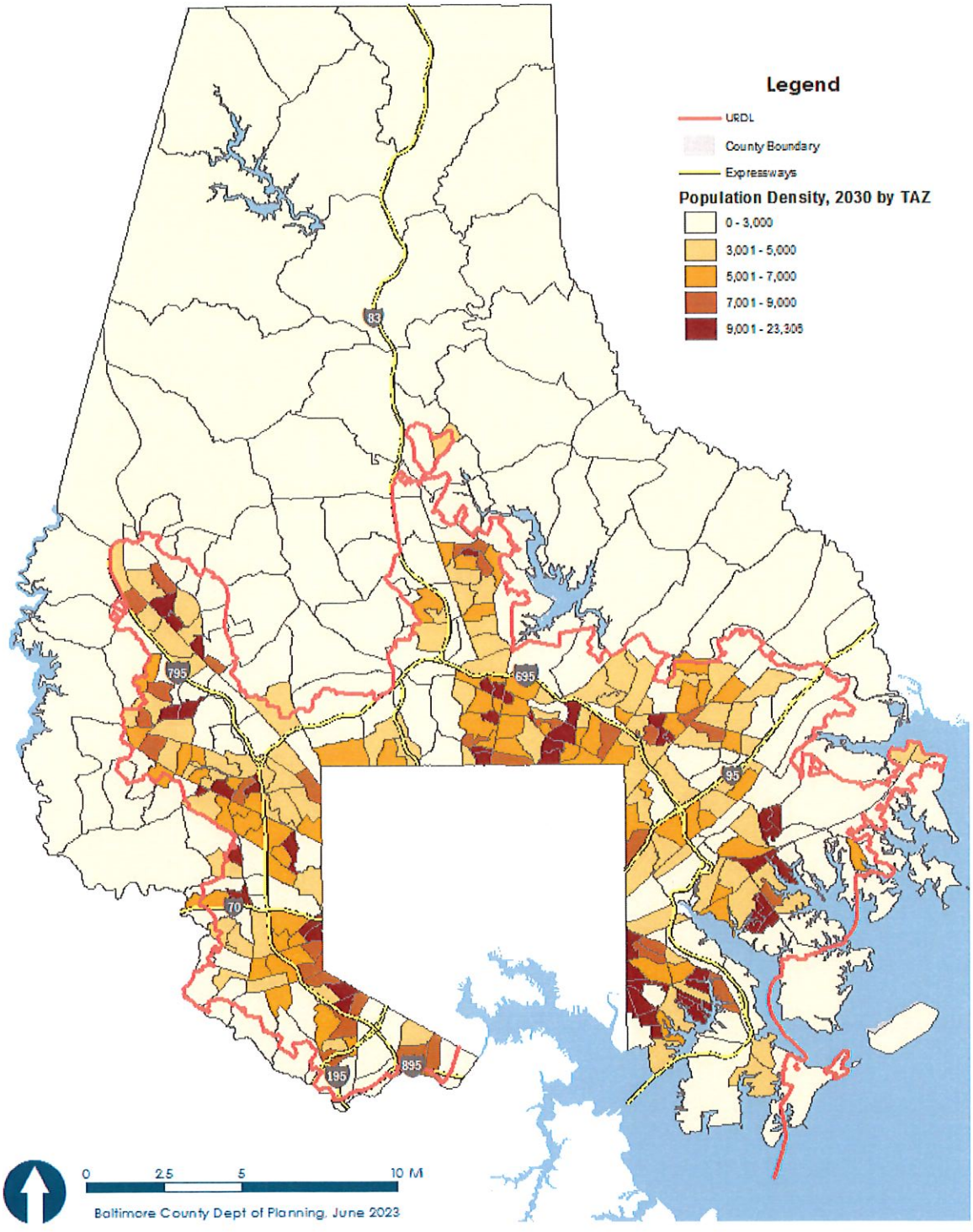
Map 4. Population Forecasts, 2050



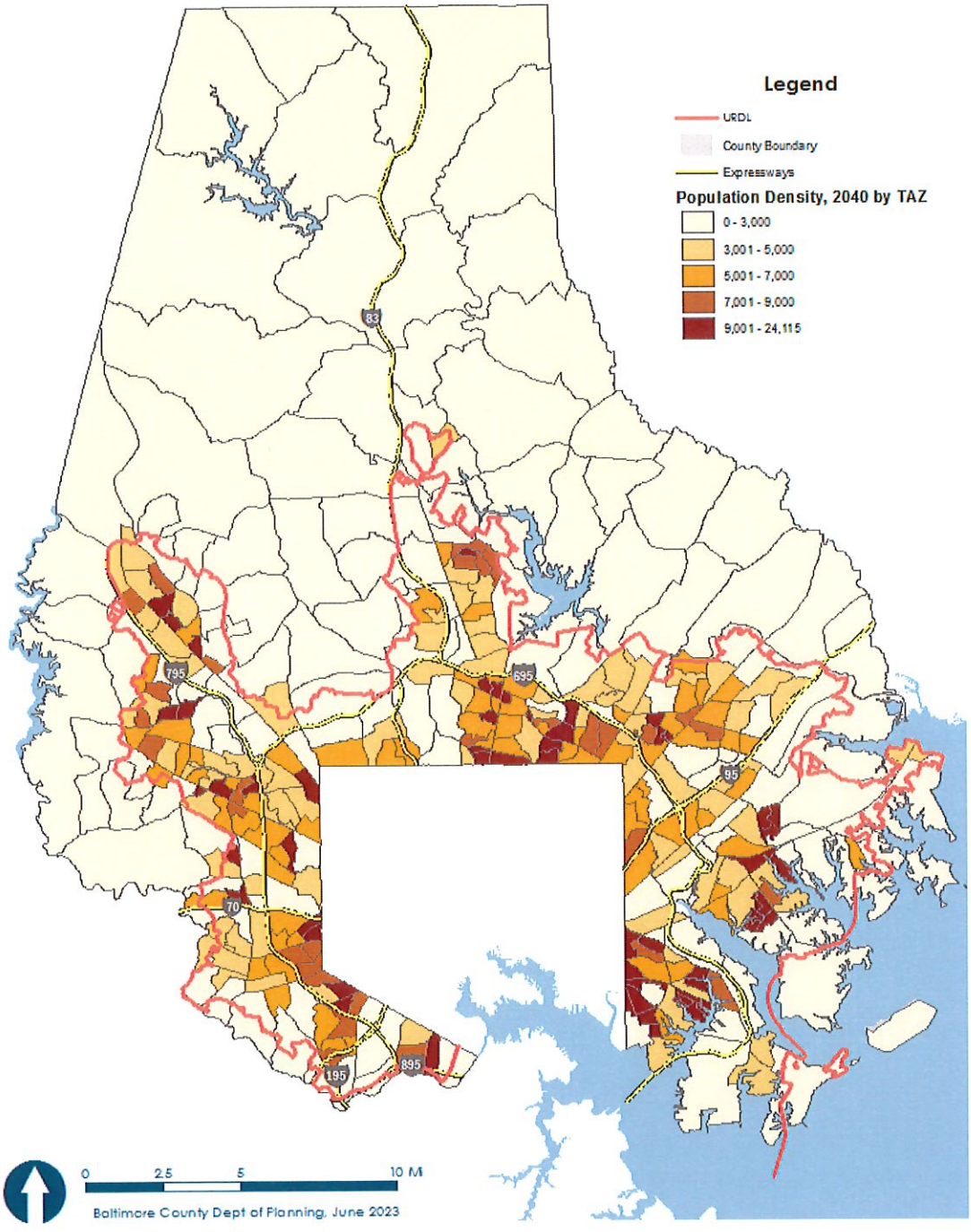
Map 5. Population Density, 2020



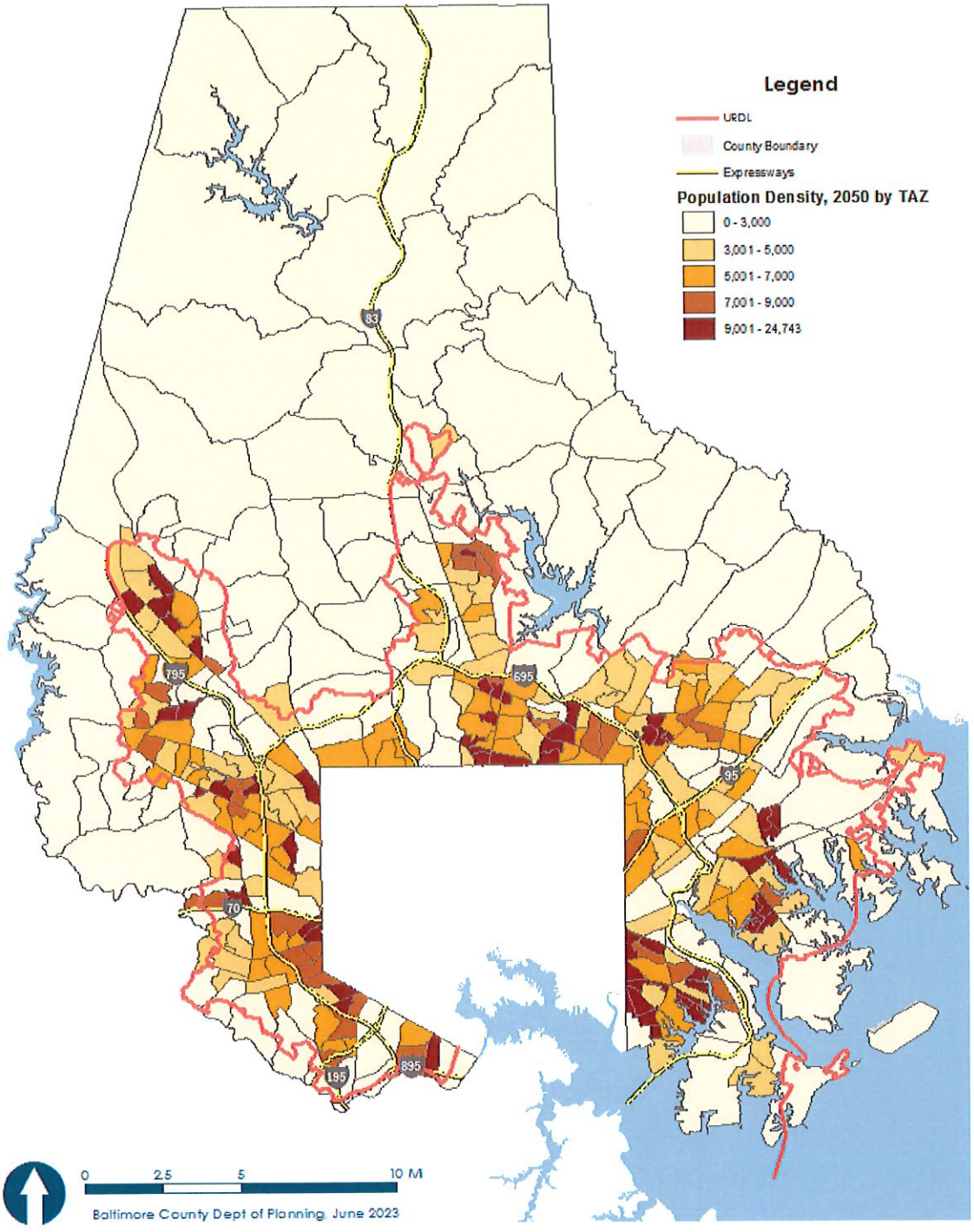
Map 6. Population Density, 2030



Map 7. Population Density, 2040



Map 8. Population Density, 2050



LAND USE AND ZONING

The existing land use data (Table 2a) show that among all the land use types, the largest amount and percent share of the County's total land area is Land Preservation followed by Rural Residential and Open Space. Those types of land use account for 53.51% of the total land acreage of the County. Map 9 on page II-15 depicts existing land use patterns.

Table 2a: Existing Land Use

Land Use Type	Acreage	Percent Total
Agricultural	38,008	9.79%
Commercial	7,721	1.99%
Environmentally Constrained	1,094	0.28%
Industrial	11,619	2.99%
Institutions	17,472	4.50%
Land Preservation	83,124	21.40%
Landfill	1,086	0.28%
Mixed Use	1,212	0.31%
Multi-family	5,272	1.36%
Office	1,424	0.37%
Open Space	62,235	16.02%
Rural Residential	62,486	16.09%
Single-Family Semi-Detached and Attached	5,670	1.46%
Single-Family Detached	40,345	10.39%
Transportation	27,742	7.14%
Utility	6,094	1.57%
Vacant	15,794	4.07%
Total	388,397	100%

Land use date updated summer of 2021 by Baltimore County Department of Planning.

The land use data demonstrate the County's commitment and endeavor on sensible development and resource preservation, which has been consistent with the County's Master Plan goals and in concert with the *Annual Report on Growth* series mandated by the Sections 1-207 and 1-208 of the Land Use Article in the *Annotated Code of Maryland*, aiming to monitor the growth patterns and trends in a charter county and denoting implementation of the County's Master Plan.

This land use pattern is determined by the zoning classifications, one of the most effective tools to implement *Master Plan 2020.* The zoning classification table (Table 2b) summarizes that the majority of the land acres is set aside for agricultural preservation and resource conservation (36.79% and 30.41% correspondingly). The zoning for residential uses ranks third, representing 24.32% of the County's land area, which includes low, medium, and high density residential. Land zoned for business, manufacturing, and office combined amount to 8.49% of the County's total acreage. Map 10 on page II-16 presents current zoning patterns throughout the County.

Table 2b: Zoning Classifications

Zoning Classification	Acreage	Percent Total	Zones in Each Category
Agricultural Preservation	143,251	36.79%	RC 2, RC 50
Resource Conservation	118,409	30.41%	RC 20, RC 3, RC 4, RC 5, RC 6, RC 7, RC 8, RCC
Residential:	94,716	24.32%	As listed below:
Low Density Residential	50,050	12.85%	DR 1, DR 2, DR 3.5
Medium Density Residential	32,900	8.45%	DR 5.5
High Density Residential	11,766	3.02%	DR 10.5, DR 16, RAE 1, RAE 2
Manufacturing	20,204	5.19%	MH, ML, MLR, MR
Business	9,993	2.57%	BL, BLR, BM, BMB, BMM, BMYC, BR, CB
Office	2,847	0.73%	O 3, OR 1, OR 2, OT, RO, ROA, SE
Total	**389,420**	**100.00%**	

Data compiled by Baltimore County Department of Planning, June 2023.

The proposed land use in *Master Plan 2020* applies the transect zone concept. As indicated in *Master Plan 2020* (pages 27 to 31), the transect "T-zones" are a framework that identifies a range of habitats from the most natural to the most urban. Its continuum, when subdivided, lends itself to the creation of zoning categories (Table 2c). The standards overlap, reflecting the sequential pattern of development and ecosystems. The concept provides general direction for the County's future land use decisions that are subject to amendments to *the Master Plan 2020* and new update to the Plan.

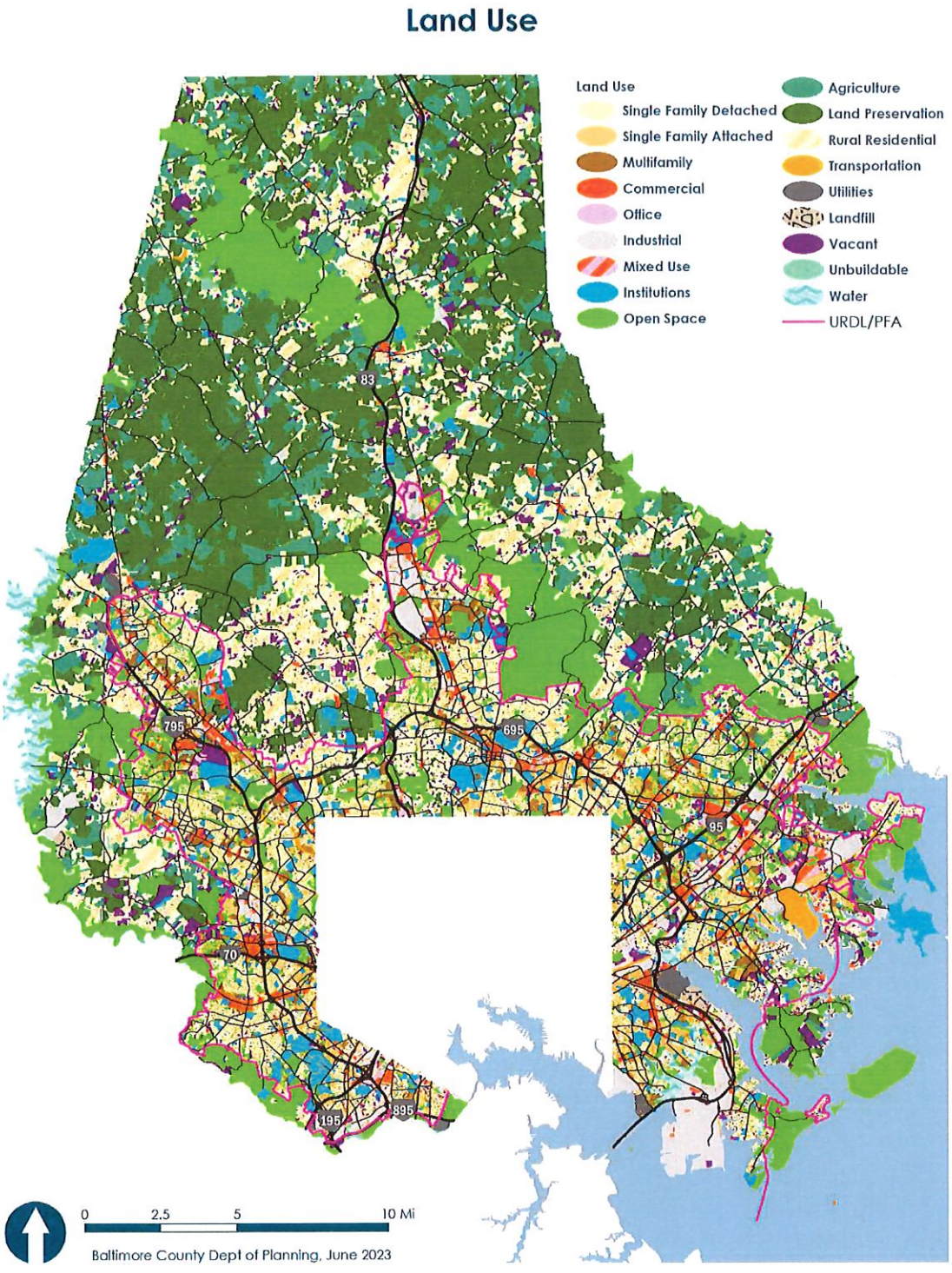
Table 2c: Proposed Land Use

Smart Code	Land Use Type	Acreage	Percent Total
T1	Natural	53,054	13.62%
T2	Rural	172,483	44.29%
T2 R	Rural Residential	35,057	9.00%
T2 V	Rural Village	175	0.04%
T3	Suburban	46,183	11.86%
T4	General Urban	67,730	17.39%
T5	Urban Center	14,420	3.70%
T6	Urban Core	320	0.08%
TOTAL		**389,421**	**100.00%**

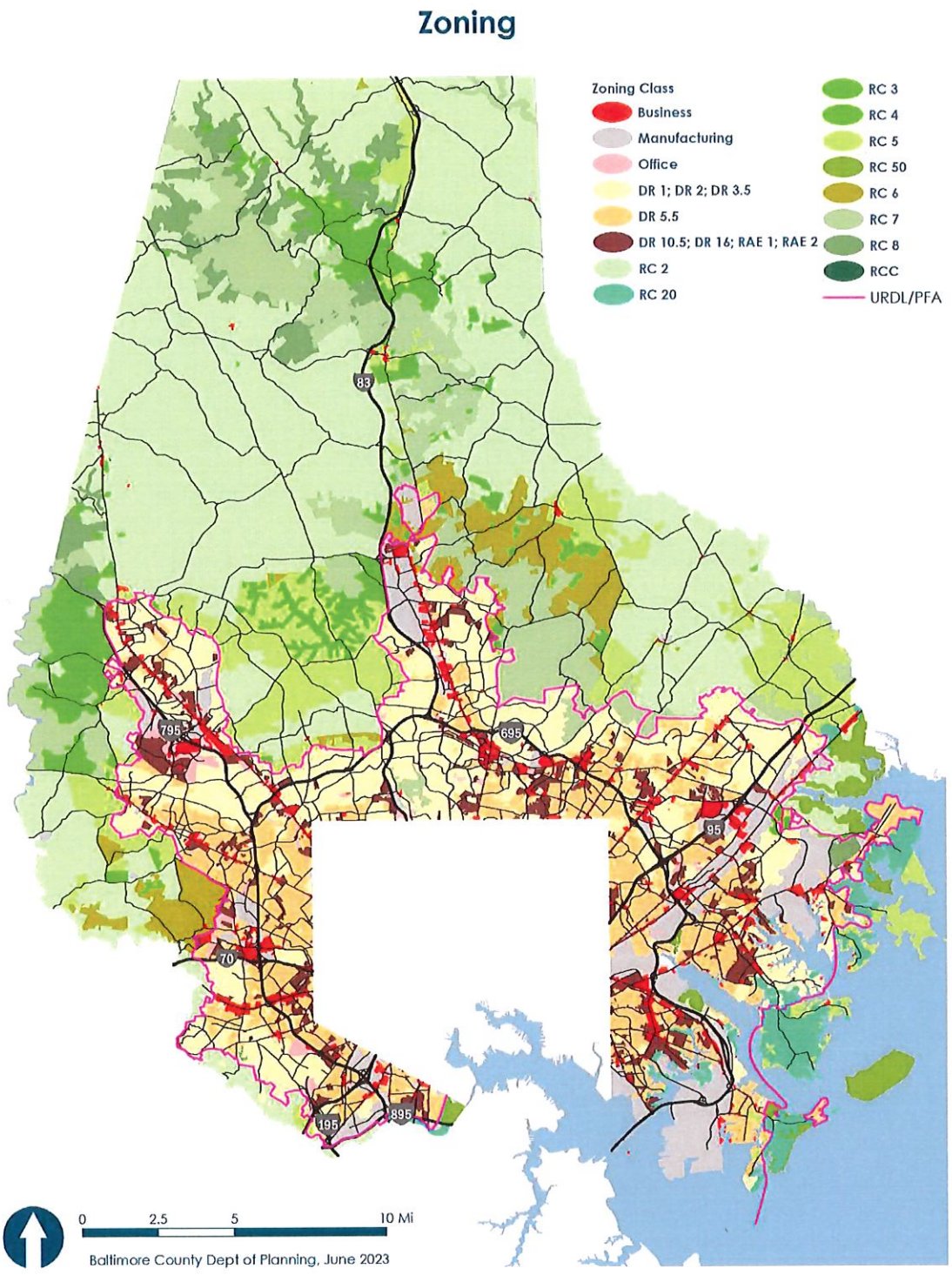
Data compiled by Baltimore County Department of Planning, June 2023.

The proposed land use map (Map 11 on page II-17) illustrates the transect "T-zones" designed for the intent to support compact mixed-use communities within the URDL and protect natural resources outside the URDL. In addition, Map 12 shows major public institutions throughout the County.

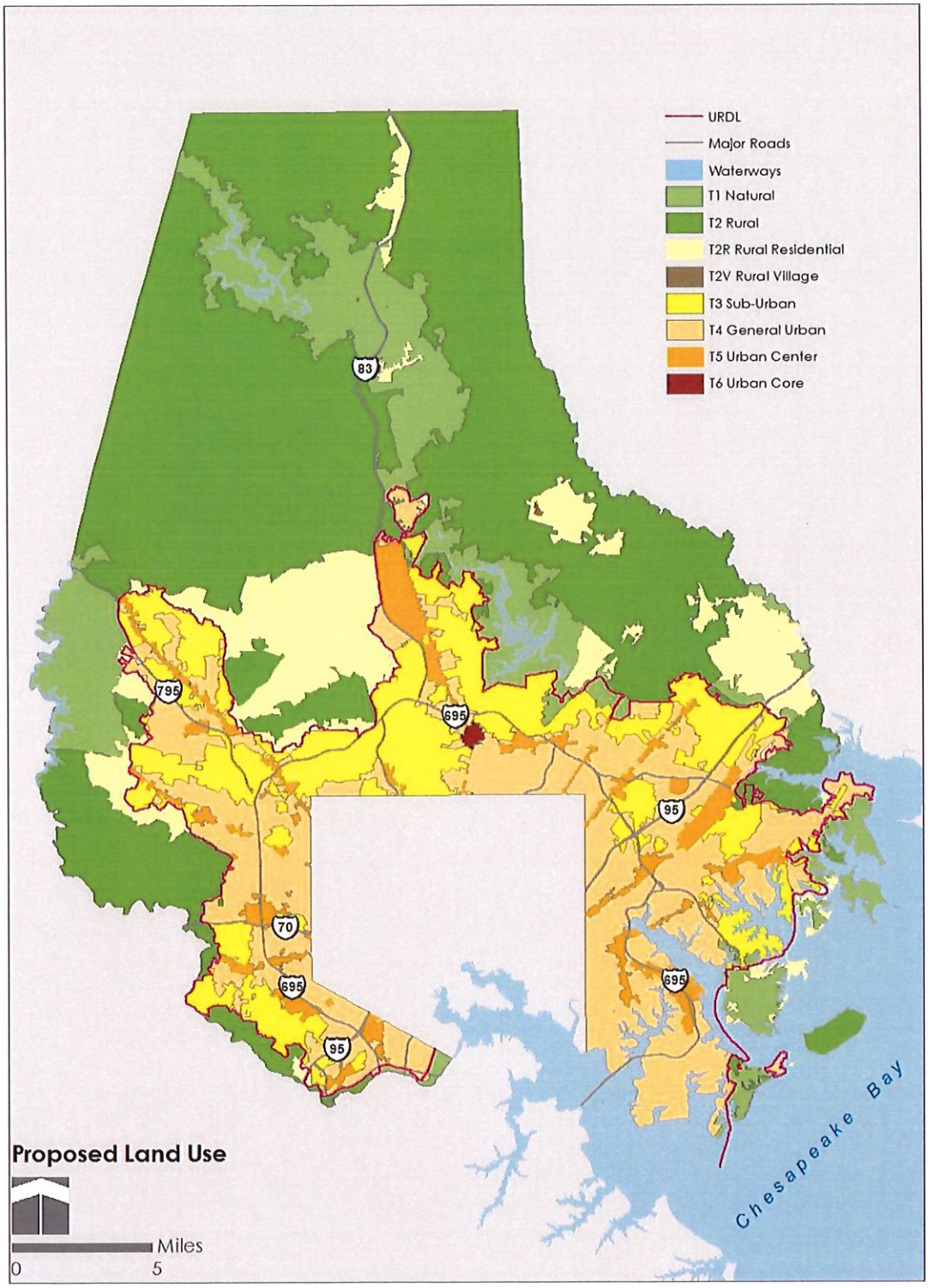
Map 9. Existing Land Use



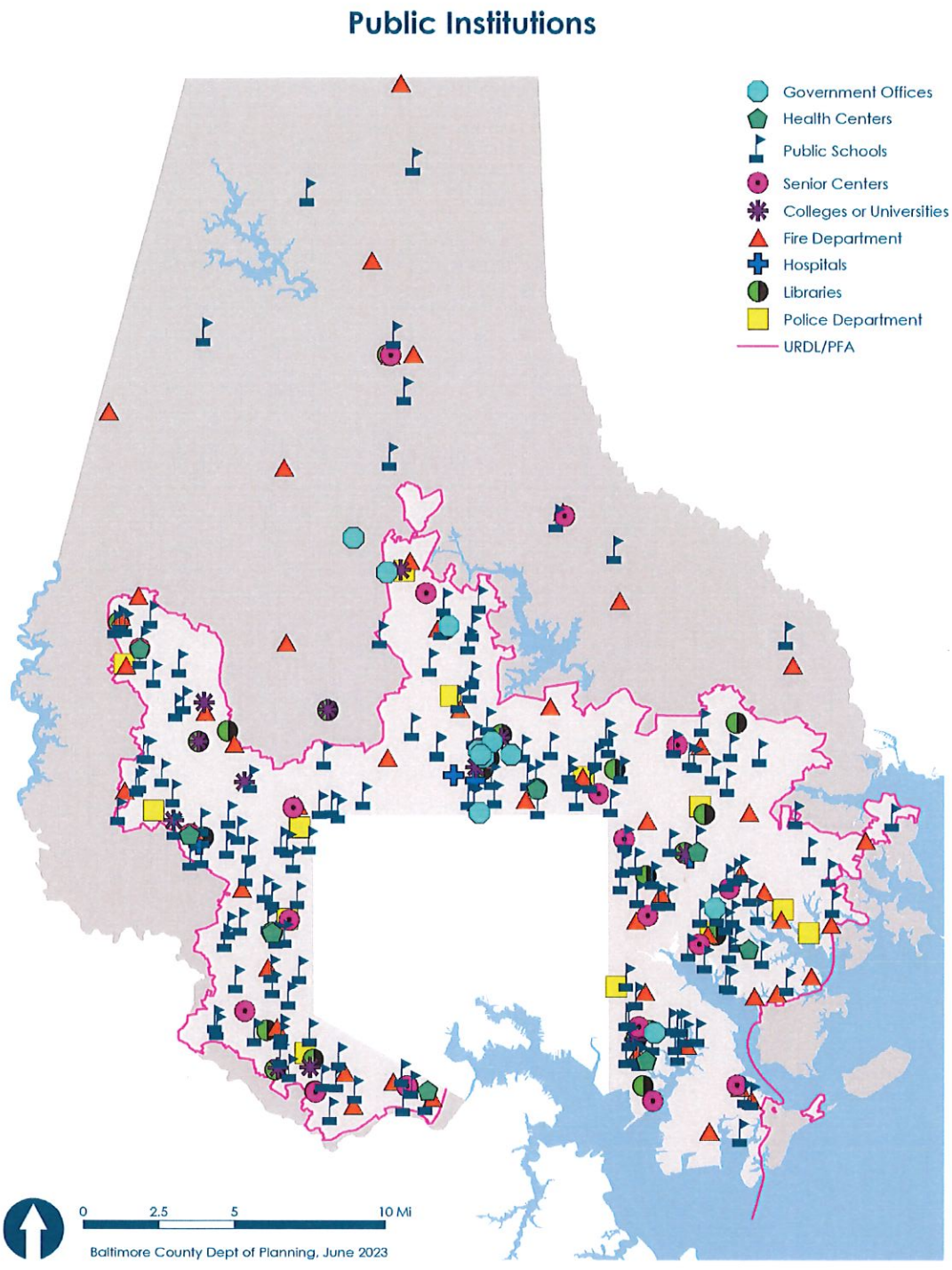
Map 10. Current Zoning

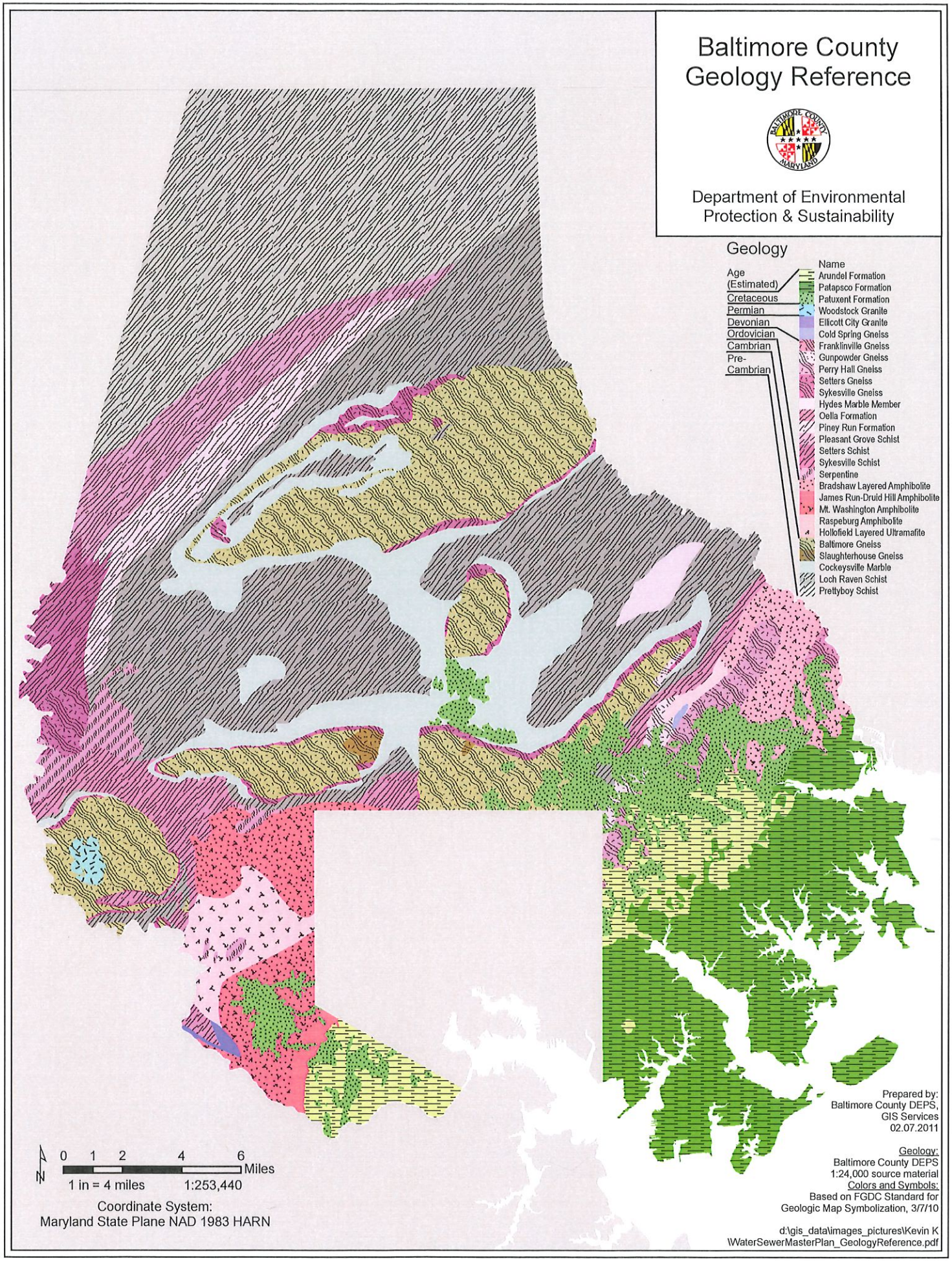


Map 11. Proposed Land Use



Map 12. Public Institutions




Baltimore County
Geology Reference
Department of Environmental
Protection & Sustainability
Geology
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Devonian
Ordovician
Cambrian
Pre-Cambrian
Name
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Patapsco Formation
Patuxent Formation
Woodstock Granite
Ellicott City Granite
Cold Spring Gneiss
Franklinville Gneiss
Gunpowder Gneiss
Perry Hall Gneiss
Setters Gneiss
Sykesville Gneiss
Hydes Marble Member
Oella Formation
Piney Run Formation
Pleasant Grove Schist
Setters Schist
Sykesville Schist
Serpentine
Bradshaw Layered Amphibolite
James Run-Druid Hill Amphibolite
Mt. Washington Amphibolite
Raspeburg Amphibolite
Hollofield Layered Ultramafite
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Slaughterhouse Gneiss
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Based on FGDC Standard for
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Miles
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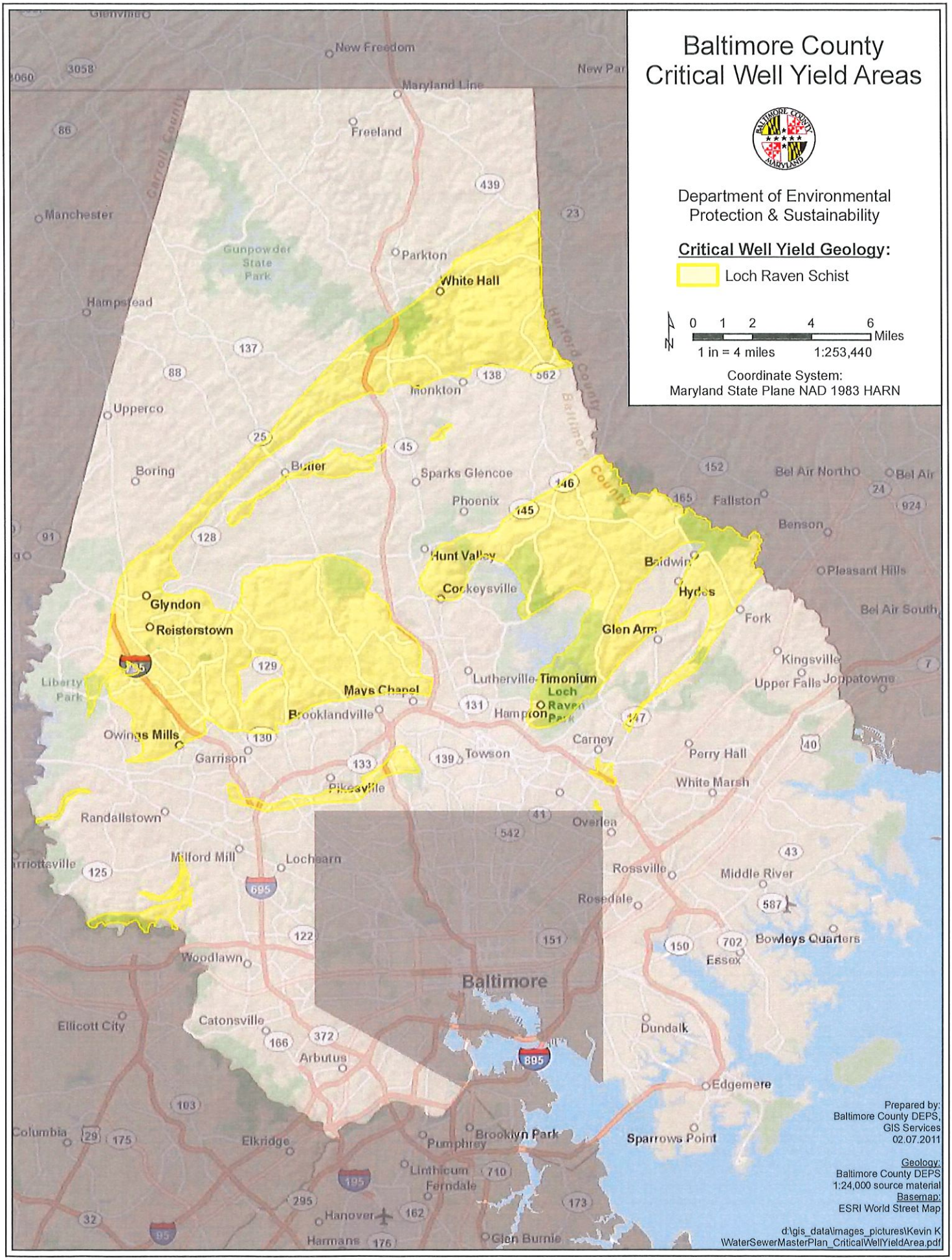
Baltimore County
Critical Well Yield Areas
Department of Environmental
Protection & Sustainability
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GIS Services
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New Freedom
Maryland Line
Freeland
Manchester
Gunpowder
State
Park
Parkton
White Hall
Hampstead
Hunkton
Upperco
Boring
Butler
Sparks Glencoe
Phoenix
Hunt Valley
Corkeysville
Glyndon
Reisterstown
Glen Arm
Baldwin
Hydes
Fallston
Bel Air North
Bel Air
Benson
Pleasant Hills
Bel Air South
Fork
Kingsville
Upper Falls
Joppatowne
Timonium
Loch
Raven
Lutherville
Mays Chapel
Brooklandville
Hampton
Liberty
Park
Owings Mills
Garrison
Towson
Carney
Perry Hall
White Marsh
Pikesville
Randallstown
Overlea
Milford Mill
Lochearn
Rossville
Middle River
Rosedale
Bowleys Quarters
Essex
Woodlawn
Baltimore
Catonsville
Arbutus
Ellicott City
Dundalk
Edgemere
Sparrows Point
Brooklyn Park
Pumphrey
Elkridge
Linthicum
Ferndale
Hanover
Glen Burnie
Harmans
Columbia
Carroll County
Harford County
Baltimore County



EXHIBIT

113




TRITON+

IN THE MATTER OF:

GREENSPRING MANOR
2310 W. Joppa Road

CASE NUMBERS: 08-0922 & 2021-0250-SPH

Hearing Date: February 26, 2024

Pursuant to Notice, the above-entitled hearing was held before the Office of Administrative Hearings for Baltimore County by remote access.

PRESIDING:

MAUREEN J. MURPHY, ADMINISTRATIVE LAW JUDGE

FOR THE PARTIES:

ADAM ROSENBLATT, ESQUIRE
CHRISTOPHER MUDD, ESQUIRE

MICHAEL MCCANN, ESQUIRE

CAROLE DEMILLIO, PEOPLE'S COUNSEL
FOR BALTIMORE COUNTY

Christine R. Leary
crleary1@comcast.net

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(ON RECORD)

ALJ: Good morning, everyone. Calling case number 08-0922 and 2021-250-SPH. This is the property address at 2310 West Joppa Road. And you're attending the Motion for Reconsideration hearing for the Order on the combined development plan and zoning case known as Greenspring Manor. And we're going to have counsel introduce themselves for the record, beginning with the Developer.

MR. ROSENBLATT: Good morning, Judge Murphy. Adam Rosenblatt and Chris Mudd of Venable, LLP on behalf of the Developer and Petitioner.

ALJ: All right. Mr. McCann?

MR. MCCANN: Good morning, Judge. Michael McCann on behalf of the Protestants.

ALJ: Mr. Wyatt? You're muted.

MR. WYATT: Yeah. Good morning, Your Honor. Michael Wyatt, I'm an adjoining property owner.

ALJ: All right. And Ms. Demillio, you're here for Mr. Zimmerman? Yep, you're muted. I just unmuted you. Can you hear me?

MS. DEMILLIO: Yes, I can. Good morning, Judge Murphy. Good to see you.

ALJ: Good to see you. All right. And you're here for People's Counsel.

MS. DEMILLIO: Yes.

ALJ: All right. I think that's everyone. All right. So, let's see. We are here on the Motion for Reconsideration hearing in that it's a limited hearing as outlined in the Order that was dated September 25th, 2023. And so, I know that Mr., I guess Mr. Mudd or Mr. Rosenblatt, have a witness to present or two.

Before we get to that, let me do this. I believe everyone on, it looks like on Friday afternoon, we all received an e-mail from the County Attorney, I believe. And so, I just wanted to start with that. Sorry. I'm just having a minute to open it and see if this works. For some reason it's putting up, try again. There we go, okay. All right.

So, just to, just so we can get, I guess, just the beginning here. We all got this e-mail. It looks like it was, it was dated Friday, and this was at 1:16. And it looks like everyone received it. I guess counsel of record received it. And it, attached to this e-mail was a letter from the County Attorney, which I'm now pulling up, is also on the screen and hopefully you all can see that. Can you all see that?

MR. ROSENBLATT: Yes.

ALJ: All right, great. And so here, this is the letter and I, I wasn't going to read it, but I think maybe everyone hopefully has had a chance to read it. It has to do with the, it looks like the, the sewer line and really the MOU that really formed a basis for a lot of the comments that came

in from the County on this case.

And so, this, this document, obviously, it shows, you know, it indicates that the, the MOU has expired. It expired in, looks like in, it was a September 27, 2017 MOU.

It expired and it looks like the County is in the middle of trying to negotiate a new MOU for the sewer segments that were, you know, there was, I guess, just express information from the County, from DPR, from DPW&T, I should say, that indicated that, you know, this was a, that these were, Hopkins was supposed to fix it and whatever, I'm not going to go through it and read it.

But it looks like they're going through there and they're, they're negotiating now a new MOU. And so, I, you know, I appreciate this letter that, that we received, that actually highlights some of the information and really kind of, in contrast, to some of the information that we had.

Here's the Memorandum of Understanding. I'm just showing it on the screen. This was referenced in the letter. In 2017, it has attachments to it. It shows what the land was, the pavilion that Hopkins was building at the time. And it also shows, you know, that there were sewer improvements. And so, there was an agreement here, under this MOU, who was supposed to do what.

But in summary, it was really, it looks like and, and everyone can read it in their time. But a coordinated effort

between the County and Hopkins to actually make these improvements, which are listed, referenced in Exhibit C, which is attached again. And so, there were specific things that each one was supposed to do.

But basically, it was a coordinated effort between the two. And, and, but I guess, what the County Attorney highlighted in his letter here for all of us, just to make clear, that what, that the use and occupancy permit, I guess, was one of the issues and the suggestion was that, you know, that, that the use and occupancy permit shouldn't have been issued, the, if the sewer improvements weren't completed.

But, in fact, what this MOU indicates, and what the County Attorney's letter indicates, that, in fact, the occ, use and occupancy permit could have been issued and should have been issued and was issued regardless of whether the improvements were done.

So, this, this document and, and this MOU in this letter, with the attachments, you can see it was signed, this was the prior administration, because Mr. Homan signed it and it looks like Steve Weber was the, was the Director of the Department of Public Works at the time.

And, and here are the attachments. And so, these are, I mean, you don't really need these, but you can see them, they're hard to read. But essentially, these are the ones that are referenced in the letter that he sent all of us.

So, in any event, I was going to make this, because this kind of, you know, gives us a, a bigger scope of just an understanding of the sewer system, I'm going to make this County Exhibit, I think we left off on, this should be fourteen. Make this an exhibit in our, in our case. So, this will be County exhibit number fourteen. And so, I just wanted to kind of put that out there before we got started today. And with that, let's see.

The next thing would be, on my list would be that Mr. Rosenblatt or Mr. Mudd, you all were going to provide a blue lined development plan and you did that, I see, back in January. And that is, you said marked as Exhibit 1-C. And so, I just wanted to note for the record we received that blue lined plan, it has to do with the emergency gate. And so, we actually are admitting that. And the Order indicates that we're not taking testimony on that, we're just admitting that in evidence.

MR. MCCANN: Your Honor, Your Honor, --

ALJ: So, --

MR. MCCANN: -- may I be heard on both of those issues?

ALJ: Okay, sure.

MR. MCCANN: Yeah, there's a lot here. It looks like you've already, with respect to the letter from Mr. Benjamin, it looks like you've already looked at it. But, and I do have

a lot of respect for Mr. Benjamin. I, I work with him often. But I, I think the admission of this letter at this time, after the hearing has closed, is, is really highly inappropriate. This, the County, if it wanted to chime in on any of this, it had plenty of opportunity to do so.

In fact, I think the record would reflect that someone from Mr. Benjamin's office has attended I don't know every day in this hearing, but has certainly been attending the hearings in this matter. So, this could have been submitted months ago. It could have been raised on the very first day of the hearing when the issue of this, Johns Hopkins segments first came up. So, I think for that reason alone it shouldn't come in.

It's new evidence and, you know, I've had conversations with counsel for Johns Hopkins, so I can surmise what's behind all this. But I don't think we need to get into that. But what I would say is I, I think it's absolutely irrelevant anyway. I think as Your, Your Honor's opinion makes clear, it doesn't matter, he, he addresses a number of things.

He addresses who is responsible for submitting plans, who is responsible for the permitting. You know, you described it as a coordinated effort. That may all be well and good, but it doesn't matter at all. The bottom line is that these sewer segments, as we sit here today, as we sat here on the first, very first day of this hearing, have not been replaced. And

they haven't been. So, it doesn't matter, at all frankly, whose responsibility it is or, or was to undertake the repairs.

And, in fact, Your Honor, you addressed this at the very end of your opinion. You said, because I guess there was some suggestion, maybe there wasn't, I don't recall specifically, whether the plan could be approved upon condition that these, what I'm calling this Johns Hopkins sewer segments, I'm calling them those, them that, Your Honor, because, just for ease of reference, there's eight of them. But what we know from the evidence that is in the record, that only six of them, of those eight were required to have been completed in connection with the Hopkins improvements.

But in any event, getting back to your opinion, you explicitly addressed this, and you said that I'm not willing, quote, I'm not willing to condition approval here on the possibility that Johns, Johns Hopkins may or may not complete that work.

And you cited the Bluestem decision, which is, as you know, I was involved in, and there was a similar condition proposed in connection with that case and you, essentially, took the position in your opinion that you didn't need to impose such a condition.

That it didn't matter whether Hopkins did or did not complete the work. You weren't going to impose that condition. And that's consistent, frankly, with the entirety of your

opinion, which you found, Your Honor, capacity problems, not just with these sewer segments, but beyond. So, I don't see any relevance, even if this was submitted on the first day as it should have been or some time thereafter, I don't see any relevance to this at all. It just simply doesn't matter.

ALJ: And you said that the law office was here in the, in the, in the hearing, who, who --

MR. MCCANN: Ms. Frankovich, Jennifer Frankovich, she was from Mr. Benjamin's office. I've noted, I, I can't say specifically, Your Honor, which day she was here, but she has definitely been here throughout the course of this hearing. And I've had conversations with her and Mr. Benjamin in connection with my multiple PIA requests. So, I think that's in part may have been why she's participating.

But, you know, again, I have a lot of respect for Mr. Benjamin. But I, I, I just think this cannot come in at this late hour.

ALJ: All right, understood. I, and I don't know Ms. Frankovich and so, I don't know whether she was in the hearing, or she wasn't in the hearing. I don't, I'm not privy to any of the conversations either, obviously, between you and Mr. Benjamin or with you and Hopkins.

I'm just reading this letter that I got that, that actually, you know, provides some background information in regard to, to the sewer segment --

MR. MCCANN: Let me say, let me just add. I'm not even sure to the extent it matters, I'm not even sure what this, you know, put aside relevance just for a moment, what, what corrections, he talks about factual inaccuracies Mr. Benjamin is seeking to advance. I mean, the state of the record right now, I think it's fair to say, is that the County has deemed that there's insufficient capacity to allow this development to go through because of these eight sewer segments.

I think, if I recall correctly, there have been random statements to the, to the effect that Johns Hopkins is to have, or was to or is to have replaced the segments. But beyond that, I'm not so sure what, what, what is inaccurate about the record.

I think, frankly, to be honest with Your Honor, and just to, you know, I'm basing this on my conversations, that this is an, is an attempt to sort of correct the record. Not our record, but some other record, as to who or who is not obligated under this now outdated or rather expired MOU. I think Hopkins is trying to protect itself, which I understand it wants to do. But this isn't the forum for that.

ALJ: Okay, understood. Understood your position --

MR. MCCANN: And I can speak to the, to the, the new development plan as well, because I think it's very much a similar issue. And that is, the evidence in this case has

closed, it was closed a long time ago. I know you ruled on the, the issue of the pass through. But you also indicated in your opinion, Your Honor, explicitly that you would not consider an amended plan showing, showing a pass through.

You said on page 109, I got the blue, blue lined plan this morning, though I didn't know it was submitted in January. But you say at the bottom of page 109, I find the green lined development plan must be denied because the proposed emergency access only gate violates DPR policy manual, etcetera. Given, moreover, given that the development proposal for May's Chapel was emergency access only and not a full access road, that proposal can only be approved or denied. The (inaudible) not rectify this policy, this policy non-compliance by changing the May's Chapel gate to a full access road in order to approve the green lined plan.

So, I think for very similar reasons, the now blue lined plan, which I got this morning, is both too little too late and is irrelevant anyway because you've already indicated in your ruling that you wouldn't consider it and wouldn't change, well, I guess your ruling or your approval or denial of the plan based on it.

ALJ: So, you read the Order on the Motion for Reconsideration though, right? Because the last part of it says that they can submit the, a, a revised version of the development plan as a separately numbered exhibit, right? And

that there would be no testimony? It's the last paragraph on the Order.

MR. MCCANN: Yeah. I do recall that.

ALJ: I just wanted to say it for the record that we had received it and that it's going to be marked as 1-C.

MR. MCCANN: Still, I, you know, I'd like to, you know, at least on that issue, that is, the, the issue of its belatedness, and its, and its relevance, frankly, I would like to preserve that objection. So, --

ALJ: Okay. Understand.

MR. MCCANN: I, I do recall now that you say it, and I apologize, I didn't recall that offhand. That you did say that.

ALJ: Yeah, right. So, yeah, that's 1-C.

MR. MCCANN: Okay.

ALJ: All right. Okay. I, and, I, you know, I don't want to open anything else up to a dialogue but I, I hesitate now, Mr. Rosenblatt, Mr. Mudd, is there anything you want to say? See, Mr. Benjamin is also here. I just, I, you know, obviously, you know, we don't want to give you all an opportunity to respond to Mr. McCann if you, if you need to.

MR. ROSENBLATT: Sure, I, I can, I'm happy to address both issues. I'm going to share my screen just for a moment, Judge Murphy. This is first, the last paragraph of your Order on Motion for Reconsideration, which you just explained allowed

the submittal of a blue lined plan and just because there's people watching, I wanted to just share that plan.

It's marked as Exhibit 1-C. And this is identical to the green lined plan in all respects except for crossing out with blue lines the note regarding the request that emergency access gate and access through the actual gate itself, is the only change to the plan. So, that is all we would say on that topic.

On the other topic, Judge, throughout, throughout this case the Developer has not taken any position on the Johns Hopkins sewer segment requirements, whether they're responsible, Baltimore County is responsible.

It's been our position throughout that we understand that those segments have to be upsize, have to be improved before any homes from this project connect to Baltimore County sewer system.

To the extent that the letter from the County attorney paints an updated and more accurate interpretation of, of where things stand, the development process is ongoing. There's case law we cite in every memo, in every opinion, the Monkton Preserve case that speaks to that.

It's an ongoing process. Months have gone by. To the extent it's helpful to have an up-to-date interpretation of where things stand, we obviously have no objection to that. The point today is to, is to provide information from Baltimore

County because you've heard only from experts on one side and another side about sewer issues. So, that's, we think that if the letter helps in any way, it's, it should be admitted for, into the record and considered as, as you see fit.

MR. MCCANN: Your Honor, may, quickly, I'm sorry. The standard isn't whether it helps you or not. This is an evidentiary proceeding, and the record is the record. It closed. This is not an ongoing development process that allows up until the day you make your decision to add additional, and believe me, believe me, I could add additional sewer evidence today as we speak. So, by that, by that argument, all that could happen today.

But the other thing I wanted to mention is, is the, the, the plan in any event, the blue line plan now, is moot. It doesn't matter. Your Honor has already denied the plan on the independent ground that the intersection is failing, and the Developer did not meet its burden of proving a Petition for Special Variance.

The development plan is denied, period. And this plan does not change that. And frankly, nor do the proceedings today. So, the, the plan is moot. And shouldn't be admitted for that additional reason.

ALJ: Okay, all right. Thank you. Mr. Benjamin, you didn't want to say anything, did you? I wasn't sure if you were just observing.

MR. BENJAMIN: I am observing but I did want to clarify a couple of things, if I may, Your Honor.

ALJ: Sure, absolutely.

MR. BENJAMIN: One, with regard to the, and by the way, I appreciate Mr. McCann's kind words. We do hold each other in very high regard, so I do appreciate that. But with regard to the representations as to Ms. Frankovich, she was merely observing, she wasn't participating in the prior hearing. She was observing the hearing.

And then also too, again, the reason why the letter was written was just to provide clarifications that we thought were necessary for purposes of the record that were developed earlier. Whether or not it's to be used as evidence, that's certainly Your Honor's call. But we were just simply trying to clarify the record for Your Honor, as well as counsel of record. That's all I wanted to say. And then I will go back to observing.

ALJ: Okay, thank you.

MR. BENJAMIN: Thank you.

ALJ: All right, great. Well, I mean, this is an administrative hearing and, and I do think that the, the information provided by Mr. Benjamin in his letter, as I said, is going to be County exhibit number fourteen.

And, and I do think it does add to clarify some of the inaccuracies, namely, there are references in the concept

plan comments, or the development plan comments, different documents that were submitted by both Protestants, I think, actually just the Protestants, that indicated that, you know, for example, an UNO should never have been given by the County for, to Hopkins.

And that, you know, essentially, the project was (inaudible). This actually adds light to that. It actually gives more clarification to, to that, that issue. And so, again, that will be County fourteen. And so, this, we are now going to proceed with, there is a witness, I think, Mr. Rosenblatt or Mr. Mudd, you're going to call today?

MR. ROSENBLATT: Yes, that's correct.

ALJ: All right.

MR. ROSENBLATT: We have Dave Bayer is here.

ALJ: All right. Mr. Bayer, I see you. All right. You unmuted yourself. Good morning.

MR. BAYER: Good morning.

ALJ: All right. I've never, I've never met you before. I've seen your name on things. Looks like you're in your office.

MR. BAYER: I am.

ALJ: Surrounded by paper, piles of paper.

MR. BAYER: I am.

ALJ: All right.

MR. BAYER: That's not mine. That paper belongs to

Baltimore County.

ALJ: Oh, it belongs to Baltimore County, okay. All right. Well, listen, I need to swear you in, so if you could raise your right hand, please? Do you swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. BAYER: I do.

ALJ: All right. Mr. Rosenblatt or Mr. Mudd?

MR. ROSENBLATT: Yes, Mr. Rosenblatt. Thank you.

ALJ: All right, sure.

MR. ROSENBLATT: Good morning, Mr. Bayer.

MR. BAYER: Good morning.

MR. ROSENBLATT: Can you explain, what is your position with Baltimore County?

MR. BAYER: I'm a project engineer in the Sewer Design Section (inaudible) Construction and Department of Public Works and Transportation.

MR. ROSENBLATT: Okay. How long have you had that job?

MR. BAYER: About twenty-two years.

MR. ROSENBLATT: Were you with the Sewer Design Section for all twenty-two years?

MR. BAYER: Yes, yep.

MR. ROSENBLATT: And before that, did you have any other job with Baltimore County?

MR. BAYER: I did. I was in the Development Plan Review Section for about ten years.

MR. ROSENBLATT: Can you just describe your general duties and responsibilities, a couple sentences about what you do?

MR. BAYER: Actually, reviewing and designing capital improvement projects for Sewer Design Section.

MR. ROSENBLATT: Do you have, in terms of education, do you have a Bachelor's degree in Engineering?

MR. BAYER: I do, yes.

MR. ROSENBLATT: Do you have any other type of degree in engineering?

MR. BAYER: A Master's, a Master's degree in Environmental Pollution Control.

MR. ROSENBLATT: And have you, you've worked for Baltimore County for over thirty years?

MR. BAYER: Yes.

MR. ROSENBLATT: How often on a day to day basis in your job are you dealing with issues relating to Baltimore County sewer system?

MR. BAYER: Every day.

MR. ROSENBLATT: Were you subpoenaed to testify at this hearing?

MR. BAYER: Yes.

MR. ROSENBLATT: Have you ever testified at a

development plan hearing before?

MR. BAYER: No.

MR. ROSENBLATT: What did you do to prepare for this hearing?

MR. BAYER: Gathered my information and read, and read the testimony.

MR. ROSENBLATT: Okay. Did you, did you meet with me?

MR. BAYER: Yes, I did.

MR. ROSENBLATT: Was your attorney present?

MR. BAYER: Yes.

MR. ROSENBLATT: Did Mr. McCann or Mr. Zimmerman or any other lawyers in the case ask to meet with you?

MR. BAYER: No.

MR. ROSENBLATT: Okay. I'm going to go through some of the exhibits that were presented in this case and just ask you some questions about them. So, starting with Protestant's Exhibit 65, the Consent Decree. And I want to ask you, Mr. Bayer, what was your involvement with the, with the Consent Decree from 2005?

MR. MCCANN: Objection, Your Honor. Your ruling was very specific. It says, quote, a hearing will be conducted to consider testimony and/or documents from DPW representatives or representative regarding the sewer path from the subject property.

ALJ: Um hm.

MR. MCCANN: So, I suspect what we're getting into now is what Mr. Bayer does or does not believe the County's obligations are under the Consent Decree. And I think that's, number one, it's beyond the scope of your ruling, which was very limited. I think purposely so.

And number two, this gentleman is a project engineer. He's, he's, he does not hold a leadership position, so the extent, to the extent he's going, he's purporting to speak on behalf of the County, I think that's problematic as well. But more importantly, I think this is beyond the scope of your ruling.

ALJ: Well, we don't --

MR. MCCANN: In fact, in fact, I don't even think, just to --

ALJ: We're not going to know until he asks the question. I mean, the, this Consent Decree was put in by you all and it has to do with, with the sewer line. I mean, I don't, I don't know where, where the question is going, so let's see where it goes.

MR. MCCANN: Fair enough. I thought I heard a question about, about the substance of the Consent Decree. So, before, I did, I thought I did hear a question, maybe I --

ALJ: It could be, it could just be background information but over, overruled. We're, we're going to let

him, go ahead and ask the question, Mr. Rosenblatt.

MR. ROSENBLATT: Judge, to, to prevent what may be constant disruption of flow, there are a number of exhibits submitted by Mr. McCann in this case all talking about the Jones Falls sewer shed, all relating to the path of sewage from this property down to Baltimore City. And Mr. Bayer, as you'll hear, is going to testify to his understanding of what a lot of these documents mean with respect to the sewage that is proposed from this project.

MR. MCCANN: The fact --

MR. ROSENBLATT: And it's all directly related to your Order and sheds light on the issue from the County's perspective.

MR. MCCANN: The, the fact that these exhibits are in evidence doesn't mean he gets to speak about them.

ALJ: Okay. I, I, I appreciate both of your positions. Overruled. Go ahead. Ask your question.

MR. ROSENBLATT: Okay. Mr. Bayer, what was your involvement with the Consent Decree, Pet, or Protestant's Exhibit 65?

MR. BAYER: From day one, we began negotiating with the Department of Justice, EPA and, and MDE.

MR. ROSENBLATT: Are you generally familiar with the Consent Decree and its requirements?

MR. BAYER: Yes.

MR. ROSENBLATT: Is this --

MR. MCCANN: Your Honor, may I have, again, I don't want to interrupt Mr. Rosenblatt, but I have to preserve my objection. May I have a continuing objection about, at least about this document, and I'll try not to interrupt again, all right?

ALJ: Yes, continuing objection.

MR. MCCANN: And any questions regarding his involvement in it.

ALJ: Yes, you can have a continuing objection.

MR. MCCANN: Or understanding of it.

ALJ: Okay, continuing objection. Thank you. Understood. I understand you want to preserve your objection for the record. I understand, Mr. McCann.

MR. MCCANN: Thank you.

ALJ: Thank you.

MR. ROSENBLATT: So, I'll ask you again, Mr. Bayer. Are you generally familiar with the Consent Decree and its requirements?

MR. BAYER: Yes.

MR. ROSENBLATT: Do you interpret and look to this document throughout your regular course of work?

MR. BAYER: Yes.

MR. ROSENBLATT: Okay. Does the Consent Decree require Baltimore County to fix the sewer system to meet any

specific level of storm?

MR. BAYER: No.

MR. ROSENBLATT: Does it specifically exclude such a requirement?

MR. BAYER: Yes.

MR. ROSENBLATT: Did the Consent Decree require Baltimore County to prepare an SRRR plan?

MR. BAYER: It did, yes.

MR. ROSENBLATT: And did the Consent Decree require Baltimore County to prepare an LTC, long term capacity, report?

MR. BAYER: Yes.

MR. ROSENBLATT: Did Baltimore County hire RK&K as a consultant to prepare these reports for the Jones Falls sewer shed?

MR. BAYER: Yes.

MR. ROSENBLATT: Show you what's been marked as Protestant's Exhibit 68. The LTC report by RK&K. Are you familiar with this document?

MR. BAYER: Yes.

MR. ROSENBLATT: What is the purpose of this document?

MR. MCCANN: Same objection, Your Honor. And also, that question in particular, what's the purpose of the document, I, I have a problem with that for, I guess, additional reasons --

ALJ: All right, overruled. You can cross examine him on those points.

MR. MCCANN: Okay, thank you.

MR. ROSENBLATT: Go ahead, Mr. Bayer. What is, what was the purpose of developing this long-term capacity report?

MR. BAYER: To evaluate the impacts of dry and wet weather on the sewer system.

MR. ROSENBLATT: Does this report require any specific improvements?

MR. WYATT: Objection, Your Honor. The report would speak for itself.

ALJ: Okay. Mr. Wyatt?

MR. MCCANN: And these questions are also leading, Your Honor. And this is, this is classic, the classic hearsay objection that I get. Does this document say X? I get that all the time from Mr. Rosenblatt.

ALJ: That is true. You do get that objection a lot.

MR. MCCANN: Mr. Rosenblatt and Mr. Mudd. So, and I, listen, I understand while we want to cut to the chase here, but I think that is a loaded and hearsay question.

MR. ROSENBLATT: And again, this, these are issues that, if there's going to be constant objections, it's just to disrupt flow here, Your Honor. This is --

MR. MCCANN: It is not. Jesus.

ALJ: Okay, all right. All right, all right. So,

what we're going to do is we're going to let him ask his questions. It's overruled. But, Mr. Rosenblatt, please, you know, don't lead him through the questions. Again, he's a County witness so if you could please just ask him the questions.

MR. ROSENBLATT: And, and he is, Judge, to that point though, he is a County witness, just like the witnesses that--

ALJ: Right.

MR. ROSENBLATT: -- (inaudible) at the beginning of the case.

ALJ: Correct, right. And Mr. Wyatt and Mr. McCann will both have the opportunity to cross.

MR. ROSENBLATT: Right, okay. So, did RK&K model Baltimore County sewer system under five separate storm events, Mr. Bayer?

MR. BAYER: Yes.

MR. ROSENBLATT: And are there maps at the conclusion of this report that show the results under each of the modeled storms?

MR. BAYER: Yes.

MR. ROSENBLATT: Are you familiar with what was marked as Protestant's Exhibit 67, the SRRR plan, prepared by RK&K?

MR. BAYER: Yes.

MR. ROSENBLATT: What is, what is the purpose of, of

the SRRR plan?

MR. MCCANN: Objection. Standing, please.

ALJ: Yeah, you have a continuing objection.

MR. MCCANN: Thank you, Judge.

MR. BAYER: To evaluate the, the sewer system and prepare any corrective actions necessary.

MR. ROSENBLATT: Did RK&K adopt all of the improvements for all of the storms that were modeled and identified in the LTC report?

MR. BAYER: Did they adopt? I don't know, could you ask me that question again?

MR. ROSENBLATT: Sure. So, we, we showed the five different maps contained in the LTC report. Does this SRRR plan require all of the improvements to address all of the issues that were modeled under the five different storms?

MR. BAYER: No, --

MR. MCCANN: Objection, leading.

ALJ: Overruled.

MR. BAYER: No.

MR. ROSENBLATT: What storms did Baltimore County select for the purpose of determining what improvements to make to its sewer system?

MR. BAYER: We evaluated all five and, and we wanted to normalize across all sewer sheds, so we looked at the ten-year six-hour event.

MR. ROSENBLATT: And why did you choose that level storm?

MR. BAYER: Because the Maryland Department of Environment has suggested that that rainfall pattern from that design storm closely matched what's in the area. And we were cur, and we were curious to see how our system would respond during that particular rainfall event.

MR. ROSENBLATT: Did the Consent Decree allow Baltimore County to choose a level storm like the one you chose?

MR. BAYER: Yes.

MR. ROSENBLATT: Did the SRRR plan focus on measures that would reduce inflow and infiltration?

MR. BAYER: Yes.

MR. ROSENBLATT: Does the SRR plan outline repairs that are deemed necessary to eliminate SSOs in the Jones Falls sewer shed?

MR. BAYER: Yes.

MR. ROSENBLATT: And were those repairs outlined in a corrective action recommended plan?

MR. BAYER: Yes.

MR. ROSENBLATT: Okay. I'm going to show you a few maps from within this SRRR plan. Start with, pardon my scrolling, okay. Starting with map 4-2 and ask you, does the, does the SRR plan contain a map identifying areas of high

infiltration and SSOs throughout the Balt, throughout the Jones Falls sewer shed?

MR. BAYER: Yes, the SRR plan includes a map, this map that shows areas that exhibit high I&I.

MR. ROSENBLATT: Are you familiar with the path of sewage from the Greenspring Manor project down, from Joppa Road down to Baltimore City?

MR. BAYER: Yes.

MR. ROSENBLATT: And downstream from the project, were there any areas identified on this map as exhibiting high I&I?

MR. BAYER: No.

MR. ROSENBLATT: Does this map show any SSOs downstream from the path of sewage from this project?

MR. BAYER: No.

MR. ROSENBLATT: Show you another map. Okay. Map 6-1 and ask you, is this a map of the corrective action recommendations plan?

MR. BAYER: Yes.

MR. ROSENBLATT: And how would you characterize the recommended actions downstream from the Baltimore, I'm sorry, from the Greenspring Manor project, down to Baltimore City?

MR. BAYER: Hard, hard to see at this scale of the map, but I'm, I believe there were structural repairs, corrective actions that were needed to the sewer system

downstream.

MR. ROSENBLATT: Looking at the overall map, was the area downstream from the Greenspring Manor project a primary area of concern for Baltimore County?

MR. BAYER: The corrective actions were, were a concern. We wanted to get those repaired. The structure, structural defects downstream, they were a concern, yes. As well as the, the I, I&I areas that are shown in the upper righthand corner of that map.

MR. ROSENBLATT: So, is the area in the upper righthand corner, is that downstream from the Greenspring Manor project?

MR. BAYER: No.

MR. ROSENBLATT: And are, what type of fixes were required in that area?

MR. BAYER: In the upper righthand corner area?

MR. ROSENBLATT: Yes.

MR. BAYER: We opted to do what we call comprehensive lining effort, which is lining as much of the public portion of the sewer system as we possibly could in the hopes that that would reduce the I&I. And also correct the, the structural defects and ultimately extend the service life of the existing sewer system.

MR. ROSENBLATT: Were there any projects as significant as that downstream from the Greenspring Manor

project?

MR. BAYER: No.

MR. MCCANN: (inaudible) on this exhibit or, I'm sorry. Your Honor, the questions are so leading, I mean, Mr. Rosenblatt is not following your instruction, I mean, he just keeps asking the same questions he has on his paper, which, and essentially, testifying.

I think a witness as important as this on a Motion for Reconsideration after the hearing is concluded and he could have called this gentleman before, I think it's imperative that we stick to non-leading questions. This gentleman has something to say on the issue that you said he could talk about, then he should say it.

MR. ROSENBLATT: And he is saying it.

MR. MCCANN: No, he's not.

MR. ROSENBLATT: (inaudible) his own words.

ALJ: So, I, I (inaudible) --

MR. MCCANN: Your own words.

ALJ: -- I didn't find those questions to be particularly leading, let me say that, number one. Number two, the, you know, the Protestants could also have called Mr. Bayer. I just highlight that, I mean, a lot of the documents that were put in had to do with Mr. Bayer.

So, you could also have called him. So, that's for either party to call him and we're here on a Motion for

Reconsideration, it was granted. He's testifying in regard to the sewer path. I don't find that particular question to be leading. So, overruled. Go ahead, Mr. Rosenblatt.

MR. ROSENBLATT: Okay. Mr. Bayer, I'm now showing you what was marked as Developer's Exhibit 43, two-page document, first from Maryland Department of the Environment and second page, from United States Environmental Protection Agency. And ask you, did MDE and EPA confirm in writing that the SRRR plan developed by RK&K meets the requirements of the Consent Decree?

MR. BAYER: Yes, that letter on, on the screen right now is MDE's letter that says the SRR plans meet the requirements of the Consent Decree.

MR. ROSENBLATT: And page two, is that a similar letter from EPA?

MR. BAYER: Yeah, that's United States Environmental Protection Agency letter acknowledging that the plans, SR plans, meet the requirements of the Consent Decree.

MR. ROSENBLATT: Okay. I want to ask you some questions about the various consultants that Baltimore County hired in this case, so. Starting with RJN and ask you, did the Consent Decree require Baltimore County to conduct performance assessments for each sewer shed?

MR. BAYER: Yes.

MR. ROSENBLATT: Did Baltimore County hire RJN to prepare a report for the Jones Falls sewer shed?

MR. BAYER: Prepare, prepare the performance assessment report? Yes.

MR. ROSENBLATT: Yes, and did RJN identify improvements made under the SRR plan between 2010 and 2019?

MR. BAYER: Yes.

MR. ROSENBLATT: Show you a few maps attached to this report. So, map one, is this the same corrective action recommendations map that was contained in the, in the RK&K report?

MR. BAYER: Yes.

MR. ROSENBLATT: And then map two is entitled, sorry. (inaudible). I can't get that bottom to go away, sorry.

ALJ: Oh, it, we can't see it, we just see the map.

MR. ROSENBLATT: Oh, okay. Good. All right. Map two entitled rehabilitation completed, what does this map show?

MR. BAYER: A lining that we did and, and corrective actions, including frame seals and replacing framing covers, inflow inserts, other structural repairs.

MR. ROSENBLATT: Has Baltimore County made the improvements shown on this map?

MR. BAYER: Yes.

MR. ROSENBLATT: So, if we compare the corrective actions recommendations map, map one to the report, with the rehabilitation completed, do you know if there are any projects in the Jones Falls sewer shed that have not been completed to

date?

MR. BAYER: There are maybe four or five segments and two manholes that have not yet been, the corrective actions have not been completed yet.

MR. ROSENBLATT: Okay. Can you, can you talk to where those are located?

MR. BAYER: The Towson Run interceptor at this scale, it's very difficult for me to --

MR. ROSENBLATT: Sure.

MR. BAYER: -- say exactly where it is but. They're located on the Towson Run interceptor.

MR. ROSENBLATT: Is, and why hasn't that been completed?

MR. BAYER: We were going to try to build a relief sewer that we thought was necessary and at the time when we build the relief sewer we will use that as the bypass and then we'll be able to only impact regulated resources. And when I say regulated resources, I mean flood plain, wetlands, will only impact that one time and then we'll save money by using a relief sewer as the bypass.

MR. ROSENBLATT: Okay and is that Towson area improvement, is that downstream from the Greenspring Manor project?

MR. BAYER: No.

MR. ROSENBLATT: And is there another area beyond the

Towson improvements that, that have not been, an area of repair that has not been completed yet?

MR. BAYER: Not that I'm aware of.

MR. ROSENBLATT: We've, we've heard testimony in this case about Marnat Avenue. Can you explain what the situation is with Marnat Avenue?

MR. BAYER: That's an existing SSO and a sanitary sewer overflow structure that's over in the Pikesville area. Over there, if you look at JF 03206, it's over in that area, I think. And that's an existing structure that we can't eliminate because the downstream restriction and capacity is on the City property. The City hasn't completed their improvements yet.

MR. ROSENBLATT: Okay and is that downstream from the Greenspring Manor project?

MR. BAYER: No.

MR. ROSENBLATT: RJN's report contains an executive summary at the outset. Have you reviewed this document in its, in total?

MR. BAYER: A while ago, yes.

MR. ROSENBLATT: Okay. Did RJN find the rehabilitation performed and relief sewers constructed to be effective?

MR. BAYER: Yes.

MR. MCCANN: Objection, leading. Particularly since

he read it so long ago. Did it find X?

ALJ: Okay. Overruled. Go ahead.

MR. ROSENBLATT: Okay. Mr. Bayer, I want to ask you about the Hazen report. So, did Baltimore County hire Hazen as a consultant in 2022?

MR. BAYER: Yes.

MR. ROSENBLATT: And what was the purpose of Baltimore Count hiring Hazen in 2022?

MR. BAYER: They wanted them to do a comprehensive evaluation or a needs analysis.

MR. ROSENBLATT: Was it to identify short term or immediate improvements that were required to the system?

MR. BAYER: Mostly long, medium and long term.

MR. ROSENBLATT: What, what type of long term, what, what level outlook? How many years out in the future?

MR. BAYER: I think we had a fifty-year planning horizon.

MR. ROSENBLATT: The, is Hazen to make maintenance recommendations to Baltimore County?

MR. BAYER: I don’t know about recommendations. They may offer strategies or options or alternatives.

MR. ROSENBLATT: Well, will the Hazen report help with future allocation of funding to specific sewer projects?

MR. BAYER: It, it might be a benefit, yes.

MR. ROSENBLATT: Will this report identify actions

that will require immediate fix before any connections are made to the Jones Falls sewer shed?

MR. BAYER: No.

MR. ROSENBLATT: And is there a final report from Hazen at this time?

MR. BAYER: For the comprehensive evaluation or the needs analysis? No.

MR. ROSENBLATT: Okay. I want to talk to you about the Ramboll report from June 2022. Did Baltimore County hire, hire Ramboll for a Lake Roland sewer rehabilitation project?

MR. BAYER: Yes.

MR. ROSENBLATT: And what was the purpose of hiring Ram, Ramboll?

MR. BAYER: We wanted a consultant on board that could help us with some design for some rehabilitation, (inaudible) the sewers in that Lake Roland area.

MR. ROSENBLATT: Did Baltimore County pursue this report because of concerns about capacity in the Jones Falls sewer shed?

MR. BAYER: No, we had seen, we finally got a good look at the interior, the inside the, the interceptor underneath the lake and we saw some corrosion which concerned us, and we felt we should be pro-active and try to initiate a rehabilitation project to take care of that corrosion.

MR. ROSENBLATT: So, was, was the purpose of

obtaining this, of, of retaining this consultant and this report related to the capacity of sewage in the Jones Falls sewer shed?

MR. BAYER: No. The benefit would be from the lining could be as increased capacity.

MR. ROSENBLATT: And does this Ramboll report, does it identify issues that must be corr, corrected before any new homes or fixtures are connected in the Jones Falls sewer shed?

MR. BAYER: No.

MR. ROSENBLATT: So, why did Baltimore County, why did you seek this analysis?

MR. BAYER: Like I said, we wanted to correct the, the corrosion that we saw on the interior of that Lake Roland sewer.

MR. ROSENBLATT: Would adding sixty homes to the Jones Falls sewer shed have any effect on this project?

MR. BAYER: No.

MR. MCCANN: Objection. That's an expert question that I don't think this gentleman is qualified to answer or has been qualified to answer.

ALJ: Sure, it is. He's, that's in the scope of his employment, what he does every day.

MR. MCCANN: It is --

ALJ: Sure, it is.

MR. MCCANN: I didn't, I didn't catch that, that he

does --

ALJ: Sure, it's in the scope of what he does every day. He's in the Sewer Design Section, he's a project manager and so the question, no, the question is within his scope of expertise. Overruled.

MR. ROSENBLATT: Take a break from documents for a minute. Mr. Bayer, are you aware, since the Consent Decree was entered into, how much money has Baltimore County spent on Consent Decree and non-Consent Decree projects to make repairs to the Jones Falls sewer system?

MR. BAYER: That's, the construction costs that we've got since the Consent Order, probably would be a little bit more than $25 million. And that's just the construction, that doesn't include design costs or anything else like that.

MR. ROSENBLATT: Okay and how many SSOs were there County wide when the Consent Decree was first entered into?

MR. BAYER: Forty-four structures, I believe.

MR. ROSENBLATT: How many have been eliminated since?

MR. BAYER: Thirty-four structures have been eliminated.

MR. ROSENBLATT: And so, ten remaining. How many of the ten remaining require Baltimore City improvements to fix?

MR. BAYER: Four require Baltimore City's assistance.

MR. ROSENBLATT: And of the ten remaining, how many are in the Jones Falls sewer shed?

MR. BAYER: One, that's the Marnat.

MR. ROSENBLATT: Just Marnat Avenue?

MR. BAYER: Yeah.

MR. ROSENBLATT: I want to talk about your bureau's involvement with development projects. So, when, when a project is first proposed, is your bureau often asked to analyze a proposed development to see if the sewer system is sufficient to handle a proposed project?

MR. BAYER: Yes, we evaluate all proposed subdivisions.

MR. ROSENBLATT: And I'm going to show you what was marked as Developer's, or sorry, Protestant's Exhibit 55 in this case. And ask you did, did Matt Bishop reach out to Lisa Eicholtz asking that question?

MR. BAYER: That's what that e-mail appears to do, is ask Lisa for some information on the capacity.

MR. ROSENBLATT: Okay and if we scroll up to the first page of this Exhibit 55, did Ms. Eicholtz copy you in responding to Mr. Bishop?

MR. BAYER: Yes.

MR. ROSENBLATT: Okay and did Ms. Eicholtz identify the eight sewer segments that we have spoken about, six referring to Johns Hopkins and two additional sewer segments as needing repair?

MR. BAYER: Yes.

MR. ROSENBLATT: Does Baltimore County use a model to conduct this analysis when people ask the question can the sewer system handle my additional project?

MR. BAYER: Yes.

MR. ROSENBLATT: Let me show you what was marked as Protestant's Exhibit 4, sorry, Protestant's Exhibit 64. And ask you is this the model that was used in this case?

MR. BAYER: Yes, that's our old, what we call the SS Cap model, yes.

MR. ROSENBLATT: Okay. I just want to ask you, does this, does this model only account for dry weather?

MR. BAYER: No.

MR. ROSENBLATT: What, I'm looking at all these columns. Where would you point to show that it, that it does not just account for dry weather?

MR. BAYER: It's been my understanding that in, that infiltration column, that infill column that you see there, includes extraneous flow, which would be infill, and infiltration.

MR. ROSENBLATT: Okay. So, the inflow column has all zeroes?

MR. BAYER: Yeah, it's my understanding that we combined the extraneous flow and filtration and inflow together and it's placed in that inflow column.

MR. ROSENBLATT: And would you, would you say that

that infill column accounts for wet weather?

MR. BAYER: Yeah, it was, yes, it was our best guess at what we thought the wet weather impacts would be.

MR. ROSENBLATT: Is Baltimore County working on a new model to evaluate projects?

MR. BAYER: Yes.

MR. ROSENBLATT: Is the model finished yet?

MR. BAYER: Not yet.

MR. ROSENBLATT: Were you able to use the model to, to evaluate this project?

MR. BAYER: This project?

MR. ROSENBLATT: Yes.

MR. BAYER: The Greenspring Manor project?

MR. ROSENBLATT: Yes.

MR. BAYER: Yeah, I was curious to see --

MR. MCCANN: Objection. Objection, Your Honor.

ALJ: What's your objection?

MR. MCCANN: Now we're getting way afield. We have a model that was used to, for the County's comments on this particular project. Apparently the County has a new model that hasn't been finalized but he's going to now tell us what this new model has to say.

This is, this is new evidence. This isn't, this isn't clarification, which is what the subject of your Order is, as to the County's position as, on the sewer path. This is

new evidence that Mr. Rosenblatt is seeking to introduce.

ALJ: Okay. I didn't hear it that way, so overruled. Go ahead.

MR. ROSENBLATT: Mr. Bayer, did you run your new model with respect to the Greenspring Manor project?

MR. BAYER: Yes.

MR. ROSENBLATT: And did you run the model --

MR. MCCANN: I would, again, interrupt. I'm going to ask for a continuing objection on this.

ALJ: Okay.

MR. MCCANN: This is absolutely new evidence --

ALJ: You have a continuing, you have a continuing objection. It is a Motion for Reconsideration hearing. He is here, he's never testified in the case before. So, he's going to have new information by just, you know, as, as (inaudible)--

MR. MCCANN: I, I hope that works both ways, Your Honor. I hope it does.

ALJ: Well, I'm just saying, he's going to have, he's going to have, he can't not have new information because he's, he hasn't been in the hearing before, you know, but again, either party could have called him and probably would have been helpful to everybody if Mr. Bayer had come earlier maybe to go through some of this stuff. So, overruled. Go ahead.

MR. ROSENBLATT: Okay. Mr. Bayer, did, were you able to run the new model considering that the eight segments Ms.

Eicholtz identified in Exhibit 55 were repaired?

MR. BAYER: Yes.

MR. ROSENBLATT: And did the system show any downstream problems from the project when these eight segments were repaired?

MR. BAYER: No, once the eight segments were improved there weren't any issues.

MR. ROSENBLATT: What was Jeff Peluso's role with Baltimore County before he retired?

MR. BAYER: He was the Bureau Chief of the Bureau of Engineering Construction.

MR. ROSENBLATT: I'm going to show you what was marked as Protestant's Exhibit 90. It's an e-mail from Jeff Peluso to you and Lisa Eicholtz dated March 22nd, 2021. Do you see this e-mail? Can you see it, Mr. Bayer?

MR. BAYER: I can, yes.

MR. ROSENBLATT: Okay and I want to turn your attention to, in particular, to number four. So, Mr. Peluso asks four questions, the fourth being, if Greenspring Manor were to continue through development, is there another way to provide capacity? Is there a breaking point for Greenspring Manor and number of units?

And then, at the top of this document is an e-mail back from you, from Dave Bayer to Jeff Peluso and Lisa Eicholtz, and you respond to number four. In particular you

say, zero is the breaking point of number of, number of units that could be built without causing an SSO. I want to ask you, did your response assume that the eight identified segments from Ms. Eicholtz are not improved before the new homes are connected?

MR. BAYER: Yes.

MR. ROSENBLATT: If the eight identified --

ALJ: Hold on, hold on. Can you say that question one more time? You're, you're going kind of fast.

MR. ROSENBLATT: Sure.

ALJ: One more time with the question, thanks.

MR. ROSENBLATT: No problem, Judge. Let me try and make this easy. So, Mr. Bayer, just to go back real quick to Exhibit 55, there were eight segments, six that say part of John, part of Hopkins project and two additional segments.

And then moving forward to Protestant's Exhibit 90, my question is, when you said that zero is the breaking point of number of units that could be built without causing an SSO, does your response assume that the eight segments identified by Ms. Eicholtz in Exhibit 55, were not improved prior to the connection of the sewer system to the new homes?

MR. BAYER: Yeah, those eight segments needed to be improved before, because there was a high possibility of overflow. So, those eight segments needed to be improved.

MR. ROSENBLATT: Okay. So, if you were asked if

those eight segments are repaired, then what is the breaking point for number of units that can connect, what would your answer be?

MR. BAYER: They could, they could connect once the, once the capacity has been improved, they could connect all the units.

MR. ROSENBLATT: I want to talk to you about modeled results versus real results that you see in the field. And I'll start with, this is map three, so Protestant's Exhibit 78 was the RJN report. We've talked about maps one and two. This is map three and entitled model predicted SSO and flow restriction locations. And my question is, does this map show issues downstream from the eight segments that Ms. Eicholtz identified as needing repair?

MR. BAYER: Yes.

MR. ROSENBLATT: And when you wrote your e-mail to Jeff Peluso saying zero is the breaking point without causing an SSO, did that e-mail have anything to do with the modeled issues shown in this map downstream from the eight segments that Ms. Eicholtz identified?

MR. BAYER: No.

MR. ROSENBLATT: When a model like this shows potential problems, do you immediately go and make those changes in the, in the field?

MR. BAYER: No.

MR. ROSENBLATT: Do you try to verify the issues such as those shown on this map three that are actually happening in the field before you allocate funding to repair or replacement project?

MR. MCCANN: Goodness that's leading, Your Honor. Come on, geez.

ALJ: It's getting a little long, Mr. Rosenblatt. So, could, could you, could you rephrase that question, please?

MR. ROSENBLATT: Sure. Do you try to verify issues in the field prior to allocating funding to a re, rehab or rehabilitation project?

MR. BAYER: Try to, yes.

MR. ROSENBLATT: And how do you do that? What do you do to, to verify in the field?

MR. BAYER: We install flow monitors, for example.

MR. ROSENBLATT: I'll turn your attention to, this is Developer's Exhibit 47-B. And were you asked to identify flow monitors in the vicinity of the Greenspring Manor property?

MR. BAYER: Yes.

MR. ROSENBLATT: And this e-mail, which is, again, Developer's Exhibit 47-B, does this identify the flow monitors that are in the vicinity of Greenspring Manor?

MR. BAYER: They were as of last, last March, yes.

MR. ROSENBLATT: Okay and how many were there?

MR. BAYER: Five.

MR. ROSENBLATT: In addition to flow monitoring, are there any other tools that you used to, to evaluate the state of the system?

MR. BAYER: Yeah, the, the models, simulations that are run.

MR. ROSENBLATT: Okay. Do you use tools such as SSES?

MR. BAYER: That's one tool we do use, yes.

MR. ROSENBLATT: Can you explain what that means?

MR. BAYER: That's sanitary sewer evaluation surveys. So, what essentially we do is we might go out and do night flow isolations to try to find out how much flow is in the pipes in the middle of the night. And then we would also do smoke testing so we could try to find if there are illegal connections.

MR. ROSENBLATT: And is there any kind of chart or, or map that shows a comparison of what has, what you've seen, observed in the field versus what is modeled under various models that you used to evaluate the system?

MR. BAYER: Yes, every one of the SRR plans that we had we required our consultants to compare model calibrations summary table, those are included in the SRR plans and that particular one in the Jones Falls is table 5-3.1, which was prepared by RK&K.

MR. ROSENBLATT: Bear with me. So, in the RK&K

report, share my screen. Which again was Protestant's Exhibit 67. You mentioned table 5-3.1. And can you explain what this table shows? It's entitled model calibration summary table.

MR. BAYER: Yeah, I'll do my best to, to try to explain so we can all understand it. This is kind of a self-assessment that we ask our consultants to do when they prepare their model simulations so we can have a quick look at if there are any issues we should be concerned about related to, that's under predicting or over predicting. And this table provides that information for each meter basin location.

MR. ROSENBLATT: Okay and how, how did this, how did this information impact Baltimore County's use of, of modeled outcomes like the map three that we just went over?

MR. BAYER: Map three?

MR. ROSENBLATT: So, map three being the --

MR. BAYER: Oh, okay. So, RJN, I'm sorry.

MR. ROSENBLATT: Map three of, sorry, let me just, just so the record is clear, how did that chart that we just went over, how does that impact Baltimore County's interpretation of map three from the RJN report, which is the model predicted SSO and flow restriction locations?

MR. BAYER: Okay. I'll, I'll start with RJN used the same model that RK&K did. So, if you could go back to the RK&K table, I should try to better explain.

MR. ROSENBLATT: Okay.

MR. BAYER: So, again, this is a, a calibration summary table that we had every consultant prepare. If you look at, go to the next page because I want to look at BC-22, which you'll see on the RJN map. So, we were quite concerned at BC-22 of the over predicting that we were seeing at that location.

So, an over prediction means, if it's significant, which you'll see in the far-right column, there was at this location, BC-22, a significant, we have low confidence in the, in the predictions that are, accuracy of the predictions that were being provided. So, that was a big concern to us.

MR. ROSENBLATT: Okay and which, where is that particular area located on, on map three?

MR. BAYER: You see BC-22, it's right at the, out of the middle of your map.

MR. ROSENBLATT: Okay.

MR. BAYER: That's downstream of the beltway.

MR. ROSENBLATT: Okay.

MR. BAYER: Where you see a lot of the red.

MR. ROSENBLATT: Got it.

MR. BAYER: So, the insight we were getting from that, those simulations we had low confidence in that, in those.

MR. ROSENBLATT: Okay. I want to ask you some questions about the timing of comments in this case. Let's go

to, sorry, I have so many things open. All right. Let's start with RJN report. So, this was sent directly to you. This is Protestant's Exhibit 78 again, the first page of it. And this was sent to you on May 27th, 2021, okay?

Okay and then, bear with me. Okay. Then in August, a few months later, there's correspondence from Ms. Eicholtz that we've gone over listing the eight segments, the six Hopkins, six part of Hopkins project, two additional segments as required for this project. You see that?

MR. BAYER: Yes.

MR. ROSENBLATT: So, my question is, after the RJN report and map three came out, did Ms. Eicholtz add any additional downstream improvements to these eight segments as being requirements for the Greenspring Manor project?

MR. BAYER: She did not.

MR. ROSENBLATT: And on August 10th, 2021, so the memo is dated August 2nd, then August 10th, the development plan conference comments come out for this case. And again, we go to number twenty, I'm at number twenty, provides the eight segments. Were any other additional downstream requirements listed in the development plan conference comments for this case?

MR. BAYER: Not, not that I'm aware of.

MR. ROSENBLATT: Okay. Now, both the Lisa Eicholtz memo and the development plan conference comments say that

issuance of use and occupancy permits for the residential units from Greenspring Manor should be subject to completion. And that's Eicholtz memo. And then, again, in the development plan conference comments, it says issuance of use and occupancy permits should be subject to the completion of the system improvements.

Any my question for you is, did your Department ever oppose approval of the development plan? Not use and occupancy permits, but the development plan for Greenspring Manor, prior to the eight segments being replaced?

MR. BAYER: Can you ask that question again?

MR. ROSENBLATT: Sure. Did your Department ever oppose approval of the development plan, not, not the issuance of use and occupancy permits, but the approval of the development plan for Greenspring Manor prior to the eight segments being replaced?

MR. BAYER: Not that I'm aware of.

MR. ROSENBLATT: All right. I just want to ask you a couple more questions about, about pipe design in general. So, some models show that pipes in the Jones Falls sewer shed will operate at or over a hundred percent capacity under certain storm events. In your opinion, when models show that, when pipes are shown at a hundred percent or higher, does that mean that the pipes are unsafe?

MR. BAYER: Not necessarily, no.

MR. ROSENBLATT: Do you look at other factors to determine whether the pipes are safe?

MR. BAYER: Other factors, we would try to find out what, what the frame and cover elevation would be at the ground surface where this surcharging might be.

MR. ROSENBLATT: Okay and in the design manual, which I'll share one more time. So, Protestant's Exhibit 70, the DPW sewer design manual, under hydraulic design of sewers, it speaks to sewers shall be designed to flow at depths not exceeding ninety percent and then for laterals and mains eighty percent and building connections seventy percent. And my question to you is, is this the standard you use when evaluating whether a project can connect to an existing sewer system?

MR. BAYER: This is guidance that we provided for design of new sewers.

MR. ROSENBLATT: If it's for new sewers, is this the standard you use when you're evaluating a proposed project and whether the project can connect to the existing sewer system?

MR. BAYER: Yeah, we would make, try to make sure that any new design would not exceed this guidance providing, provided in the design manual.

MR. ROSENBLATT: All right. Would you try and ensure that the entire system downstream meets these percentage requirements?

MR. MCCANN: Objection. Asked and answered and speculation. Would he, would he --

ALJ: (inaudible), I'm sorry, go ahead, Mr. McCann.

MR. MCCANN: Yeah, I mean, the question is would he do X. I, I, we have no circumstances under which or context to that question. Aside from the fact it's, it's, it's leading, and he's already answered and hasn't, twice hasn't answered the question, said what Mr. Rosenblatt wants him to say.

ALJ: Mr. Rosenblatt, could you rephrase your question, please?

MR. ROSENBLATT: Sure. So, Mr. Bayer, when you're evaluating a project, a new project, hooking up to Baltimore County sewer system, are these percentages the, that you see on the screen in the design manual, the ninety, eighty, seventy, are you evaluating a new project and ensuring that the entire existing sewer system meets these percentage requirements?

MR. BAYER: Someone is constructing a new sewer, they're supposed to follow these guidelines.

MR. ROSENBLATT: Okay. For the, for new constructed pipes or existing pipes?

MR. BAYER: New, new sewer construction.

MR. ROSENBLATT: All right. Were there improvements downstream of this project identified in the SRRR plan?

MR. BAYER: Improvements?

MR. ROSENBLATT: Yes.

MR. BAYER: Downstream there were structural repairs that were required to be, that we, we're going to complete.

MR. ROSENBLATT: Okay and were you asked to see if those improvements have been completed?

MR. BAYER: Yeah, I was asked to do some research to see if those, those structural repairs were completed, yes.

MR. ROSENBLATT: Okay. I'm going to show you what is marked as Developer's Exhibit 45-A. And ask you, is this an e-mail that you sent on May 30th, 2023 answering that question?

MR. BAYER: Yes.

MR. ROSENBLATT: And there's both an e-mail and then 45-B, a spreadsheet, and my question to you is, are the improvements that were identified in the SS, in the SRRR plan downstream from Greenspring Manor, were those improvements all completed?

MR. BAYER: To the best of my knowledge, they were. Or it could have been eliminated like for one instance you'll see on the top there, two things were not needed.

MR. ROSENBLATT: Okay. What else is left to complete downstream from this project under the SS, under the SRRR plan?

MR. BAYER: Downstream from this along that flow path, not, nothing that I'm aware of.

MR. ROSENBLATT: Okay. One final topic. I want to talk about areas of special concern. Can you explain what is an area of special concern?

MR. BAYER: On the basic services maps, the areas of special concerns were areas where we had those sanitary sewer overflow structures.

MR. ROSENBLATT: And is the area including and surrounding the Greenspring Manor property, is that in an area of special concern?

MR. BAYER: That was, that was another area we didn't have a sanitary sewer overflow structure at that location, but we did have information that one of the staff members had gathered that we were very concerned about the possibility of overflow. So, that, we added that to the area of special concern.

MR. ROSENBLATT: Okay and if the eight segments that we've gone over, that Ms. Eicholtz identified, if those eight segments are improved would that resolve DPWT's concern for this being an area of special concern?

MR. BAYER: If there's, if capacity is added, then, then that concern would go away.

MR. ROSENBLATT: So, if, if those eight segments are improved, does DPWT believe the County's sewer system can function safely?

MR. BAYER: Yes.

MR. ROSENBLATT: And can it function without detrimental impact to public health or environment?

MR. BAYER: Yes.

MR. ROSENBLATT: Thank you. That's all the questions I have.

ALJ: Mr. McCann, cross?

MR. MCCANN: Yes. Two things, Your Honor. First of all, because I did not object to every single question and I think that would have been too disruptive, I want to move to, to strike, just for the record, Mr. Bayer's entire testimony on the grounds I've already stated, as well as those set forth in the Motion. This is all new evidence that could have been submitted long ago and this is just a, yet another bite of, at the apple that has been afforded the Developer.

Number two, I would like a short break to look at my notes, since this is, this is a lot of new stuff. And number three, just to, I would ask certainly, if not only out of fairness, but for a host of other reasons, that we be allowed the opportunity at, at a future date to call witnesses to rebut, to respond to Mr. Bayer's testimony, since again, this all could have been submitted during the course of the hearing, certainly in, in the Developer's case.

So, I'm just asking those, those things now, but I would immediately anyway, I would ask that his testimony be stricken and that I be given a little bit of an opportunity, ten-minute break of so, just to collect my notes here.

ALJ: Okay. The motion to strike is denied. Obviously, Mr. Bayer was coming in today, the motion, the Order

has been in place set for today's hearing. And again, I've said it, and this is probably the third time now, Protestants had every opportunity as well to call Mr. Bayer as a witness.

And you can see in this kind of case, it actually is, you know, something that maybe some party should have done, have Mr. Bayer come in and testify. So, the motion to strike is denied. (inaudible) --

MR. MCCANN: But, Your Honor, it wasn't our burden, it wasn't --

ALJ: There is, there is no additional day for, for more testimony here. This is a County witness so if this County witness had shown up on, when all the other County witnesses came on day one, then you would have had the opportunity just like you, you would today to have, to cross examine. And, and Mr. Wyatt does, and Ms. Demillio does and, and we give that opportunity to, to cross examine, you know, the, the County witnesses.

Even more so as probably what, than what is contemplated in the Code, which is really for the County witnesses to come in and say whether or not there are unresolved comments or open conditions or something like that. I actually go beyond that and let everybody cross examine. So, so there would be no difference.

So, if he came in day one, you would have had the same opportunity to do that and, and again, or in your own

case, either one of you, Protestants or Developers, could have called Mr. Bayer. There's nothing to prevent somebody from issuing a subpoena, either to him or, or the other people.

And, and all this evidence, you know, the reason he's testifying, he's responding now to, that these are all things that the Protestants put in evidence. So, it's not new and surprising, it's, it's in response to those things. So, I hear you but a Motion for Reconsideration by, by its nature is going to have new information. It's going to have new testimony. We can't, we're not going to, so it, you know, he's explaining things as, as within his, you know, expertise.

So, there's no additional days. We're not going about it like that. The, the Motion and the Order was limited to one, the County witness coming in and explaining their position. That's what it was limited to, not back and forth and so, all right?

MR. MCCANN: I'm not going to argue with you (inaudible) --

ALJ: Okay, good.

MR. MCCANN: -- although it may appear that I am.

ALJ: No, you won't. I know, I know, you're stating your position and you're zealously advocating for your client, and I always appreciate that. I --

MR. MCCANN: (inaudible) what's missing from, what's missing from it you just said, and what's missing from your

comment that we could have called him is, first and foremost, it is the Developer's burden in this case. And you've already ruled in your opinion, by the way, that a presumption didn't rise on this issue and therefore, the burden at no time has shifted to us.

But today it apparently has and now I'm being denied the opportunity to respond to new evidence asserted for the first time on behalf of the Developer to meet its burden that it had on the very first day of this hearing. So, this is the first time anything like this has ever happened to me in twenty years. It's unprecedented --

ALJ: Actually, if you note in the Order for the Motion for Reconsideration, actually Judge Beverungen had actually --

MR. MCCANN: Nothing to do with this case. That, there's no similarity at all.

ALJ: No, no, but I'm saying, he, but he issued, but he allowed a, an additional evidentiary hearings in two different cases.

MR. MCCANN: That's not what happened at all.

ALJ: I think you were in those, weren't you?

MR. MCCANN: That's not what happened at all, Your Honor. I was in that case.

ALJ: Okay.

MR. MCCANN: So, in any event, --

ALJ: Yeah, I thought you were in those cases.

MR. MCCANN: I got your ruling, I got your ruling. If I could have fifteen minutes to go through my notes, I think that's fair,

ALJ: Yes, absolutely.

MR. MCCANN: And I'll be, I'll be ready for cross.

ALJ: Okay. Fifteen minutes, we'll come back. I'll pause the record.

MR. MCCANN: Great, thank you.

ALJ: Thank you.

MR. ROSENBLATT: Thank you.

(PAUSE)

ALJ: All right. We're back on the record. Mr. McCann, you had cross?

MR. MCCANN: Okay, thank you. Mr. Bayer, I don't see you. Are you there?

MR. BAYER: I am.

MR. MCCANN: Okay. How you doing?

MR. BAYER: Great, thanks.

MR. MCCANN: Good. So, I want to jump around here a little bit, as you might suspect. You are a project engineer for the Sewer Design Section, correct?

MR. BAYER: Correct.

MR. MCCANN: You are not chief of that section, correct?

MR. BAYER: Correct.

MR. MCCANN: Do you hold, other than project engineer, do you hold any other titles with DPW?

MR. BAYER: No.

MR. MCCANN: And you mentioned your experience in the Sewer Design Section, and I think you also mentioned some other experience with the County. Prior to that, did you ever have a job in the private industry?

MR. BAYER: I did, yes.

MR. MCCANN: And where were you and what'd you do?

MR. BAYER: Whitman Requardt and Associates.

MR. MCCANN: I'm sorry?

MR. BAYER: Whitman Requardt and Associates.

MR. MCCANN: Okay.

MR. BAYER: And I was civil engineering.

MR. MCCANN: And what type of work did you do there?

MR. BAYER: Civil engineering.

MR. MCCANN: (inaudible)?

MR. BAYER: Water, water, sewer, storm drains, dams, landfills.

MR. MCCANN: Okay. What, what, describe the work that that firm does in general? What, are they just a general --

MR. BAYER: They're a multi-disciplinary engineering company.

MR. MCCANN: Okay.

MR. BAYER: Structural, mechanical, electrical, civil, water resources.

MR. MCCANN: And where are they based?

MR. BAYER: I think they're in Canton now.

MR. MCCANN: Okay. Yeah, I think I've heard of them. And when was that? When were you there?

MR. BAYER: Nineteen eighty to 1989.

MR. MCCANN: So, just one year?

MR. BAYER: Nineteen eighty to 1989.

MR. MCCANN: Okay, I'm sorry. And then you went to the County after that?

MR. BAYER: Correct.

MR. MCCANN: Okay and during those nine years, it sounds like your work was more in the general area of civil engineering as opposed to limited to or specializing in sewer design or sewer evaluation, is that fair?

MR. BAYER: Yeah, I did, yes, landfill, yep, etcetera.

MR. MCCANN: Okay.

MR. BAYER: (inaudible) kind of engineering, yep.

MR. MCCANN: And any other --

MR. BAYER: (inaudible).

MR. MCCANN: -- I'm sorry?

MR. BAYER: Along with water and sewer, storm drain.

MR. MCCANN: Okay.

MR. BAYER: Sorry.

MR. MCCANN: Any other work in the private industry, other than that experience with that firm from 1980 to 1989?

MR. BAYER: No.

MR. MCCANN: Okay and where, where'd you go to school?

MR. BAYER: Penn State (inaudible).

MR. MCCANN: Okay and when did you graduate?

MR. BAYER: Let's see, 1980 for my Bachelor's and I, I don't recollect the year on my Master's degree.

MR. MCCANN: Okay. Who is the, the Chief of the Sewer Design Section?

MR. BAYER: Amy Bley.

MR. MCCANN: B-L-E-Y?

MR. BAYER: Yes.

MR. MCCANN: Okay and then in terms of the hierarchy, if, if there is one, above her in, in terms of sewer anyways, there, is there such a person?

MR. BAYER: No, she's Chief of the Sewer Design Section.

MR. MCCANN: Okay and that falls under DPW?

MR. BAYER: DPWT.

MR. MCCANN: DPWT, okay. All right. Let's talk quickly, as you might expect, about the meeting that you had,

it sounds like, with Mr. Rosenblatt. Do you recall that meeting?

MR. BAYER: Yes.

MR. MCCANN: What, when was that meeting?

MR. BAYER: Friday.

MR. MCCANN: This past Friday?

MR. BAYER: Yes, and then we had another meeting, I don't recollect the date, prior to that.

MR. MCCANN: Okay. When, when approximately was that prior meeting?

MR. BAYER: It would have been a week or so before this was canceled because of snow.

MR. MCCANN: Right, so sometime in the end of January of 2024?

MR. BAYER: I, I don't recollect the date.

MR. MCCANN: But it, a couple days before that last hearing, is that fair?

MR. BAYER: Plus or minus, I guess, yeah.

MR. MCCANN: Okay, very well. And who else attended that meeting other than it sounds like Mr. Benjamin or someone from his staff?

MR. BAYER: Mr. Benjamin.

MR. MCCANN: Okay. He attended both meetings, that is?

MR. BAYER: Yes.

MR. MCCANN: Okay. Did Mr. Rosenblatt tell you the questions he was going to ask you today?

MR. BAYER: Yes.

MR. MCCANN: Did you provide any documents to Mr. Rosenblatt during that meeting or at any other time since the last hearing in this case?

MR. BAYER: Did I provide any documents since the last, not that I'm aware of.

MR. MCCANN: Okay. Did you have any e-mail correspondence with Mr. Rosenblatt or anybody from his firm about the meetings or the hearing in this case?

MR. BAYER: Yes, I did e-mail Adam because I couldn't get into the, into the Webex when the meeting was canceled.

MR. MCCANN: Okay.

MR. BAYER: So, I e-mailed Adam telling him I could not get into the Webex.

MR. MCCANN: Other than that, --

MR. BAYER: I didn't know the, I didn't know the meeting was canceled, so.

MR. MCCANN: Got it.

MR. BAYER: Or the hearing, I'm sorry, the hearing was canceled. So, yes, I e-mailed Adam.

MR. MCCANN: Any other e-mail communications with Mr. Rosenblatt, his firm, about this hearing or the meetings that you had?

MR. BAYER: I don't believe so.

MR. MCCANN: Okay. Okay. I'm going to show you a couple documents, which we've already seen or talked about. Bear with me one second, Mr. Bayer. There we go. This is Protestant's Exhibit 13 for the record. It's a March 3rd, 2021 e-mail from you to Mr. Desai. I think Mr. Rosenblatt asked you about this. Do you, you see that?

MR. BAYER: I do see it, yes.

MR. MCCANN: Okay and do you recall it?

MR. BAYER: Yeah, because I've seen it before, yes, um hm.

MR. MCCANN: Okay. At the time you wrote this, drafted this memo in March of 2021, was it, was it accurate?

MR. BAYER: Actually, I think Lisa drafted it, since she signed it on my behalf, that's where you see LKE for, so as far as I know, at the time it was accurate.

MR. MCCANN: Okay. But you authorized her to sign and/or send it to Mr. Desai?

MR. BAYER: Yes, she could sign and send on my behalf.

MR. MCCANN: Okay and likewise, I want to show you Protestant's Exhibit 90, which Mr. Rosenblatt did ask you about. And that is your e-mail exchange with Mr. Peluso, do you see that?

MR. BAYER: I do.

MR. MCCANN: Okay. So, your response, specifically, your response is at the top of this exhibit on March 20th, 2021, where you mention, as we've discussed, a zero breaking point comment. Was, at the time this e-mail was sent from you to Mr. Peluso and Ms. Eicholtz, was it accurate?

MR. BAYER: As far as I know.

MR. MCCANN: Okay and then, more specifically, the other comment that you make in here, in response to Mr. Peluso's questions about what are the ramifications of a new connection, your answer about, your answer was sanitary sewer overflows. Was that response to Mr. Bayer's question accurate at the time you wrote this e-mail in March of 2021?

MR. BAYER: Was that an accurate response to Mr. Peluso's question? Yeah, we were concerned that, that if the added units, there was high probability of an SSO.

MR. MCCANN: You say a high probability?

MR. BAYER: Yes.

MR. MCCANN: Okay. So, as I understand your testimony today, there is some new model that Baltimore County is working on that you applied, correct?

MR. BAYER: Yes.

MR. MCCANN: Tell me about that new model.

MR. BAYER: It's a (inaudible) model that Hazen is developing on our behalf. So, I thought it was important to know that if the, the proper size of the improvement, so those

eight segments, if they were sized properly so I, I asked to have a simulation run.

MR. MCCANN: You asked Hazen for that?

MR. BAYER: I did, yes.

MR. MCCANN: And when you say simulation run, what do, what do you, be a little more specific about that. What does that entail?

MR. BAYER: To analyze what would happen if capacity was improved, how the sewer system would react.

MR. MCCANN: Okay and before I get, I guess, into the substance of that, you said Hazens, Hazen has prepared this model, correct?

MR. BAYER: In, in response to my request, they, they ran that simulation, yes.

MR. MCCANN: Yeah, I'm not asking about the simulation, about the, I'm asking about the model itself. The, the model is Hazen's?

MR. BAYER: They, they were develop, developing it on our behalf, yes, um hm.

MR. MCCANN: Okay and it sounds like, based on your testimony just now and before that they are still in the process of developing that model?

MR. BAYER: They are, yes.

MR. MCCANN: Okay and I, at least according to their newsletters, which I've, we don't need to get into. But let me

know if you need to see them. That was one of the things Hazen was tasked to do, that is, recalibrate or update the model that the County is using, correct?

MR. BAYER: There are quite a few things that they were tasked to do on our behalf.

MR. MCCANN: Okay. Was that one of them?

MR. BAYER: That was one of them.

MR. MCCANN: Okay. So, again, not the simulation, but the model, has, has that model, the one that the County has asked Hazen to, to prepare, has that model been, I guess, completed, for lack of a better word? Are you suggest --

MR. BAYER: Not that I'm, not that I'm aware of, no.

MR. MCCANN: Okay. Even though it hadn't been completed, you nevertheless asked Hazen to, to run a simulation, correct?

MR. BAYER: I did, yes.

MR. MCCANN: Okay. Did, is there any, did you pick up the phone and call someone at Hazen or did you send them an e-mail? How did that connection happen with Hazen?

MR. BAYER: Yeah, I think they sent them an e-mail asking them to run a simulation in that area where the eight segments were.

MR. MCCANN: Okay and when you say the area where the eight segments were, what specific, what specifically did you ask?

MR. BAYER: I wanted to make sure that, that the proposed size of the sewers were adequate.

MR. MCCANN: So, was the, was your request of Hazen limited to those eight segments?

MR. BAYER: Yeah.

MR. MCCANN: And you said that was an e-mail correspondence, your request anyway?

MR. BAYER: Yeah, I think so.

MR. MCCANN: Any, and was, did Hazen respond by e-mail and/or provide in writing or by e-mail the results of that simulation?

MR. BAYER: Yes.

MR. MCCANN: And what, when did that take place? Number one, when did your request take place and when did Hazen's response take place?

MR. BAYER: I think it was November, late November maybe of, of 2023.

MR. MCCANN: That is both your request and the response?

MR. BAYER: Yeah, I believe so.

MR. MCCANN: And remind me, maybe you've already said it but what, what prompted you to do that? That is, to ask Hazen to run a simulation regarding these eight segments?

MR. BAYER: I thought it was very important to know that the fix was going to correct the situation.

MR. MCCANN: And why did you think it was very important to know?

MR. BAYER: Well, that's what we should always be doing is making sure that what's going to be constructed will correct the deficiency.

MR. MCCANN: Well, did you, did you ask Hazen to run a simulation on a model that hadn't been completed yet for any other projects?

MR. BAYER: I'm sorry, can you ask that question again? What was it, I'm sorry?

MR. MCCANN: Did you ask Hazen to run a simulation or a model that had, hasn't yet been completed on any other projects?

MR. BAYER: On other projects? Yes. We, we, they are, they are modeling on our behalf, yes.

MR. MCCANN: Well, my question was, on other projects, you've asked them to do that?

MR. BAYER: Other, other subdivisions, yes. That's not my role, but yes, as far as I know that they are doing modeling when we have a (inaudible) subdivision.

MR. MCCANN: And when, when did they start doing that, do you know?

MR. BAYER: I don't know.

MR. MCCANN: Okay. Again, my question was, you said you thought it important to ask Hazen for that information,

which you said is something you don't normally do. Why did you, why specifically did you ask Hazen to do that in November of 2023?

MR. BAYER: I wanted to make sure that the design that was being done by both consultants would, would work, would, would correct the deficiency, the capacity deficiency.

MR. MCCANN: Well, why didn't you do it a year or so earlier, or back in 2021 when you first issued your comments in this case?

MR. BAYER: Well, I think that the, the issue back then was we could only improve the size to a twelve inch, I believe, because there are twelve inch downstream. So, you can't, we are opposed to building a fifteen-inch sewer, for example, that would discharge into a twelve-inch sewer.

That's not something that we find is the best way to operate our system. So, that the design was kind of fixed, that they could only improve it to a twelve because there's a twelve immediately downstream.

MR. MCCANN: Yeah, I --

MR. BAYER: So, I, I just wanted to make sure that would work.

MR. MCCANN: I understand why, I think you've answered why it is you made this request in November of 2023. I'm asking you why you didn't make it earlier in connection with this project, when this project has been going on for two

years.

MR. BAYER: Be, because that, that twelve inch was the largest that could possibly be done. There was, you couldn't make it any larger.

MR. MCCANN: I'm not sure what that has to do with the timing of your request, that's what I'm asking about --

MR. BAYER: (inaudible), there was no reason to, to run a simulation because that was the largest that could be done.

MR. MCCANN: Okay. I'm not sure you're answering my question, but I'll move on. Were you involved in any way, Mr. Bayer, in collecting documents responsive to my Public Information Act request, including the most recent one just about a month and a half ago or so?

MR. BAYER: Oh, yeah. I think we were all asked to search our documents, yep.

MR. MCCANN: Is there a reason why you did not produce to me, why the County did not produce to me, either your e-mail exchange with Hazen, or the simulations that were run, that were sent back to you from Hazen in response to your request?

MR. BAYER: I, I can't answer that question. I don't know when the dates were when you had your PIA request.

MR. MCCANN: Well, I'll, I'll tell you my PIA request was, was, was much later than November 2023.

MR. BAYER: Okay.

MR. MCCANN: But my question now is, do you know of any reason why you'd, why those documents that you already described, were not produced to me?

MR. BAYER: I, sorry, I can't answer that question, I don't know why.

MR. MCCANN: Were you told not to produce them?

MR. BAYER: No.

MR. MCCANN: Were you told not to produce any, any other documents?

MR. BAYER: No.

MR. MCCANN: Let me finish the question.

MR. BAYER: I'm sorry.

MR. MCCANN: Were you told not to produce any other documents to me in response to my PIA request, either the most recent one or any of the ones in the past?

MR. BAYER: No, not that I'm aware of, nope.

MR. MCCANN: So, there is a document either in your e-mail folder or printed somewhere in your office that shows the results of the simulation run by Hazen?

MR. BAYER: Yes.

MR. MCCANN: Did you tell Mr. Rosenblatt about that?

MR. BAYER: I don't think so.

MR. MCCANN: Well, you, you, did you tell him that you reran a model, a different model?

MR. BAYER: We, we run simulations all the time, I don't, I don't know if I recollect if I told Mr. Rosenblatt that.

MR. MCCANN: Okay. Let me show you Exhibit 45-A, which Mr. Rosenblatt asked you about and this is Developer's Exhibit 45-A, I'm sorry, which was produced and discussed previously in this case. Do you see that?

MR. BAYER: Yes.

MR. MCCANN: Okay and this is dated, your response, I guess, to internal request, well, your response is May 30th, 2023, right?

MR. BAYER: Yes.

MR. MCCANN: Okay and I think you've indicated --

MR. BAYER: Wait, no, it says May 23rd, doesn't it? The date is May 23rd, not May 30th?

MR. MCCANN: Well, the --

MR. BAYER: There it is, I'm sorry. My bad.

MR. MCCANN: Yeah, May 30th, 2023.

MR. BAYER: Yep, sorry.

MR. MCCANN: It's okay. And I think those under, the repairs that and, and, well, let me back up a little bit. This e-mail, if I recall, or that rather this information in this e-mail was produced by you in response to a request from Venable asking for the repairs that have been made by the County downstream of the subject property, correct?

MR. BAYER: Yes.

MR. MCCANN: Okay and those repairs are identified here un, in red where it says corrective actions status?

MR. BAYER: Yes.

MR. MCCANN: Okay and then, there's also an Exhibit 45-B I think that has the same ones. But a lot of these, without going through them in detail, would you agree with me that several of these corrective actions were, in fact, not done, it says deleted, for instance, correct?

MR. BAYER: Yeah, my research, these were not my projects, so I did a little research and yes, in that instance, right there at the bottom in accordance with the contractor RFI that lining was deleted from that manhole.

MR. MCCANN: Okay. So, for instance, we know that with, with respect to manhole at 43819, manhole lining was not needed so that work was eliminated, right?

MR. BAYER: That's what that says, I think.

MR. MCCANN: Yep. So, the work that was installed, I think, is, is, is in here. It's, we've got a rain pan installation, a brick collar installation and a watertight frame and cover. These were all, these are the dates as well when, when those things were done, 2017, 2019, correct?

MR. BAYER: That's what my research showed, I think, yeah.

MR. MCCANN: Okay. So, and again, since this was

produced in response to Mr. Rosenblatt's or, I'm sorry, Venable's question about repairs downstream of the subject property, is there a reason why in May of 2023 you didn't, well, strike that. Other, let me ask you this. Other than the repairs reflected in this e-mail, which is Developer's Exhibit 45-A, in May of 2023, have any other repairs been undertaken downstream from the subject property?

MR. BAYER: Yeah, I believe that this, these corrective actions were, was done by the Bureau of Utilities. So, and, and some contractors, so, --

MR. MCCANN: Right.

MR. BAYER: -- yep.

MR. MCCANN: Well, I'm asking you whether there's been anything else since.

MR. BAYER: Not, not that I'm aware of.

MR. MCCANN: Okay and then let's look at, I think you, you spoke with Mr. Rosenblatt about map two in RJN's report. This is Protestant's Exhibit 78. I'll blow it up. Do you see that?

MR. BAYER: I do.

MR. MCCANN: Oops, sorry about that. Would you agree with me that, well, this map, which is part of RJN's report, is intended, as its title indicates, to show the rehabilitation completed, at least as of the date of RJN's report in 2021, correct?

MR. BAYER: Yes.

MR. MCCANN: Okay and would you agree with me that, if I blow this up, that this map shows, and I know you, and I think you indicated you're familiar with the sewer path, so I won't ask you about that. But that this map shows only two repairs, right here where my cursor is, in the sewer path from the subject property, correct?

MR. BAYER: It shows two, looks like above the Green, yeah, above the, above that. I can't see what's down below, but it looks like there's only two.

MR. MCCANN: When you say above, what do you mean by above?

MR. BAYER: Well, where you had your cursor there, that's right there, yeah.

MR. MCCANN: Okay. Do you know where the subject property is?

MR. BAYER: Yeah, right there.

MR. MCCANN: Is it right here where my cursor is?

MR. BAYER: Close by, yeah.

MR. MCCANN: Well, where exactly is it, do you know?

MR. BAYER: I think it's right across Joppa, Joppa Road there.

MR. MCCANN: Okay. Is it where my cursor is right now, below, in other words, below or to the right of the green, the green square?

MR. BAYER: No.

MR. MCCANN: Is it, is it up here?

MR. BAYER: Yes, I believe so.

MR. MCCANN: Okay.

MR. BAYER: So, I was looking at the path. If you could scroll down.

MR. MCCANN: Oh, I'm sorry.

MR. BAYER: Yeah.

MR. MCCANN: So, no repairs along the sewer path other than those two before this, this, the sewer system (inaudible) reaches Lake Roland, correct?

MR. BAYER: I'm trying to think, there was two segments in pink up there.

MR. MCCANN: Yeah.

MR. BAYER: It could be.

MR. MCCANN: Well, could be or --

MR. BAYER: Well, like my research showed what, what was in that e-mail.

MR. MCCANN: Okay. Okay and in terms of what has not been done, we know from the long-term capacity report, which you've talked about, this is Protestant's Exhibit 68. I'm going to show you map 5.1, bear with me one sec. Okay. So, first map in Protestant's Exhibit 68 is hydraulic improvements for the two-year twenty-four storm, correct? Map 5.1?

MR. BAYER: Uh huh, yes.

MR. MCCANN: Which is a lesser storm than a ten six, correct?

MR. BAYER: It's more frequent, so, I guess you could describe it as less.

MR. MCCANN: Okay. For the two-year twenty-four-hour storm, RKK, RK&K recommended, did it not, in the sewer path a, replacement of a ten-inch sewer with an eighteen-inch sewer in this area, correct?

MR. BAYER: That's what it looks like is shown there.

MR. MCCANN: Okay and we know that was not done, correct?

MR. BAYER: Correct.

MR. MCCANN: And then for the ten-year six storm, which I'll scroll down to, which is the next map, map 6.1, do you see that in Protestant's Exhibit 68. We know, according to RK&K that the same replacement or upsizing rather, was recommended along with additional manhole repairs, correct? Right here?

MR. BAYER: Yeah, but I don't know, you said manhole corrections.

MR. MCCANN: Well, the, the dots, the brown dots and the yellow dots reflect, and I can go to the legend if you want, --

MR. BAYER: Yeah, that would be helpful, thank you.

MR. MCCANN: Well, the, the brown dots indicate a

manhole to be sealed, correct?

MR. BAYER: Yeah.

MR. MCCANN: Okay. So, for the ten year six an upsizing was proposed along with sealing of manholes, correct?

MR. BAYER: Yeah.

MR. MCCANN: Okay and I think there's a, in the legend, there's a description of, upper lefthand corner, this same map, the description of the upsize. So, thirteen hundred and seventy-seven linear feet, correct?

MR. BAYER: Yes, looks that, looks that way.

MR. MCCANN: All right. And that's just for those two storms. Would you agree with me that the, the other storms reflect considerable more upsizing, repairs, relief sewers, correct?

MR. BAYER: It could be.

MR. MCCANN: Okay. I want to talk about the Randoll report, which are you familiar with that?

MR. BAYER: Yes.

MR. MCCANN: Okay and how is it that you're familiar? Were you involved in any way personally --

MR. BAYER: Discussions before we opted to request a proposal from Ramboll.

MR. MCCANN: You were involved in those discussions?

MR. BAYER: We had some discussions about, yeah, what we saw on the internal inspection, yes.

MR. MCCANN: Okay. I'm looking through my notes to exactly what you said about the Ramboll report. But what, what I thought you said, correct me if I'm wrong, is that, let me find it. Bear with me one second, Mr. Bayer, I'm sorry. In your words, I think as you put it, you saw some corrosion in the pipe underneath Lake Roland, is that, did I say that, did I write that down correctly?

MR. BAYER: Yes, that's correct. We were concerned by the corrosion that, internal corrosion that we saw on the video, yes.

MR. MCCANN: And in that, that concern is that what prompted the Ramboll report? Is that what you were suggesting?

MR. BAYER: Yeah, we had, had discussions and we thought that it would probably be a good idea to, to be proactive and try to get started on the project to address that corrosion.

MR. MCCANN: Well, isn't it true the, the Ramboll report, and I'll pull it up as I'm asking you this question, that the Ramboll report is directed to, or covers not just the, the long sewer segment under Lake Roland, but all of the segments and interconnectors in and around Lake Roland, correct?

MR. BAYER: Yeah, that's correct.

MR. MCCANN: In fact, bear with me one second. I don't know why I'm having problems finding it. Okay. Let me

show you the report. Okay. This is, for the record, is Protestant's Exhibit 87. Do you see that? I'll go to the first page.

MR. BAYER: I do.

MR. MCCANN: You do see that?

MR. BAYER: Yes.

MR. MCCANN: Okay. In terms of what was asked of Ramboll, as I understand it, and by the way, figure 1.1, do you see that?

MR. BAYER: I do.

MR. MCCANN: So, in red, and I'm sure the Judge is familiar with it, but this is the sewer segment under Lake Roland that you were speaking to, correct?

MR. BAYER: Yes.

MR. MCCANN: Okay. But this map actually figure 1.1, it says project map, this in red identifies all of the sewer segments that are the, within the scope of this report, not just the sewer line under Lake Roland, correct?

MR. BAYER: Correct.

MR. MCCANN: Okay and I, am I correct, I'm sorry I'm scrolling around so much, I'm sure it's annoying on your end. I highlighted this sentence. Quote, the primary focus of this project is to minimize the inflow and infiltration, I&I, into the interceptors to reduce the likelihood of sanitary sewer overflows, and correct, end, end quote. Did, did I read that

correctly?

MR. BAYER: Yes.

MR. MCCANN: And do you agree with that, that is, what Ramboll has indicated in it, in its own report what it is, what is the focus of its report, for the project, that is?

MR. BAYER: That's their, their language.

MR. MCCANN: But do you agree with that?

MR. BAYER: Well, I, I said the initial inferences for the project was we saw some corrosion which was concerning. And then we decided that, well, rather than impact those resources with flood plain, wetlands and environmentally sensitive areas, that we would expand the scope and then just line everything in that area at the same time.

MR. MCCANN: So, are you, are you, are you telling me that the, the sewer segments that we, that I just showed you in that figure 1.1, other than the one under Lake Roland, don't need any work? Is that what you're suggesting?

MR. BAYER: I said, we, we expanded the scope to include all that work (inaudible) --

MR. MCCANN: (inaudible).

MR. BAYER: -- while we were doing the interceptor. We expanded the scope.

MR. MCCANN: But, so you're not suggesting that those segments don't need the repairs that are called for?

MR. BAYER: I, I didn't look at the video on all

those segments, so I can't say if they are in need of structural repairs or not.

MR. MCCANN: Okay. Well, isn't it true and I can, we can go through the, the, the report, but isn't it true that Ramboll, number one, takes a look at all of the CCTV inspection videos that the County has, County had, correct?

MR. BAYER: Oh, yeah, they were tasked with reviewing that, yes.

MR. MCCANN: Okay. In fact, this 2.3 is a helpful section. It says, quote, a review of pipeline inspection data was performed, correct? Ramboll did that, right?

MR. BAYER: As far as I know. Again, this was not my project, but as far as I know they did.

MR. MCCANN: Okay and then, in addition, they reviewed available red zone sonar reports to confirm condition of existing pipeline for rehabilitation, correct?

MR. BAYER: That's what that report says, yep.

MR. MCCANN: And then number three under 2.3 it says, provided, provided, past tense, a corrective action recommendation for each pipeline reviewed, right?

MR. BAYER: Um hm.

MR. MCCANN: And then the very next paragraph it says, quote, upon completing the review, it was determined that all pipe segments within the system can be rehabilitated using lining. Since the goal of the rehabilitation project is to

minimize the amount of I&I and prevent overflows, all lines have been identified for rehabilitation, correct?

MR. BAYER: That's what the report says.

MR. MCCANN: Even if structural damage was not identified, I just continued reading, sorry about that. But, in fact, doesn't, does not this report specifically say that, identify anyway, the amount of structural defects or active infiltration that was discovered by Ramboll in its review of the data, correct?

MR. BAYER: I'm sorry, could you repeat that question (inaudible) --

MR. MCCANN: I'm just referring to this highlighted section. It talks about --

MR. BAYER: Yeah, --

MR. MCCANN: -- twenty-four segments with active I, infiltration, correct?

MR. BAYER: That's what it says.

MR. MCCANN: Fourteen of which included some level of structural defects, correct?

MR. BAYER: That's what it says.

MR. MCCANN: Okay. Well, and you did agree, I think, as my notes reflect, Mr. Bayer, that these, this rehabilitation of all these segments will help, as you put it, benefit capacity, correct?

MR. BAYER: If, if there is I&I and we line it and

that's reduced, then it should be an improve in capacity. As well as lining provides, makes the interior pipe more slippery. So, in theory, the pipe can carry more flow as well --

MR. MCCANN: That's a good point. That's a good point. And so, a lining of pipe doesn't --

MR. BAYER: And, and it, I'm sorry, and last but not least is what's really important is we extend the, the service life of this, of the pipes in the area. The other fifty, sixty, seventy, eighty years old so.

MR. MCCANN: Okay.

MR. BAYER: Another benefit is we extend the service life, sorry.

MR. MCCANN: Okay. So, I understand that shovel has not been put to ground, put to the ground yet, correct, (inaudible)?

MR. BAYER: Yeah, this is not my project so I, I don't know, but as far as I know, no, they have not (inaudible) design and we have not started construction.

MR. MCCANN: Having, but having looked at the Ramboll report, you would agree with me that Ramboll has reviewed all the data and based on that data made recommendations for where the rehabilitation needs to take place, correct?

MR. BAYER: Yeah, that, that's apparently what this report says.

MR. MCCANN: Okay and, in fact, is it not true that

this project will cost the County $10 million? Does that sound familiar to you?

MR. BAYER: I did, I never saw the budgetary estimate, I don't think, so I don't know if $10 million is accurate or not.

MR. MCCANN: But there is a, there is, this, the amount of work to make these repairs in and around Lake Roland has, in fact, been budgeted for, correct?

MR. BAYER: As far as I know, we have the funds available to complete the project.

MR. MCCANN: Well, let me show you, and Your Honor, I believe we're on Exhibit 109. I'm going to show Mr. Bayer this document. Do you see that, Mr. Bayer?

MR. BAYER: Triennial Review?

MR. MCCANN: Yep. Are you familiar with the Triennial Review?

MR. BAYER: Draft report? That's not my role and responsibility.

MR. MCCANN: But what is, what is the Tri, Triennial Review, if you know?

MR. BAYER: I, I, I don't. Like I say, it's not my role and not my responsibility to --

MR. MCCANN: You don't, you don't know what it is?

MR. BAYER: It's not my responsibility to draft that report.

MR. MCCANN: Well, it's not your responsibility to say a lot of things but, well. Let me show you, and maybe this will help you. Bear with me one second, it's page twenty-two. Bear with me one second. I'm having problems finding it. Well, I don't think he recognizes it anyway, Your Honor. Or won't recognize it. But I would offer this as Protestant's Exhibit 109 as I said.

MR. ROSENBLATT: I do object, Judge. It's a draft report. It's only been presented to a witness that says he doesn't know what this is or have any role in it. I don't know how that gets into evidence.

ALJ: I'm not, I'm not sure either, Mr. McCann. I mean, I, I don't know how it comes in if he can't say what it is and he doesn't work on it, he's not familiar with it. It's not --

MR. MCCANN: He doesn't, he doesn't need to say what it is. It's a County document. We introduce County documents all the time. I simply went to the County website. This is, this is what the County has on its website for its --

ALJ: I, I know but what if, if he can't add to it, if he can't, he's here to talk about the (inaudible), I don't know what, I don't even know what this document is.

MR. MCCANN: Okay. Well, I'll wait till he's off the stand then I'll move it into evidence. But it, it, I don't need this witness to get this document into evidence. It's a

County record. It is --

ALJ: Mr., Mr. Rosenblatt, do you recognize this as a County record?

MR. ROSENBLATT: I, I've never seen it before, I, I don't know where it comes from and I don't think it is relevant to the reason we're here, which is not, as Mr. McCann said, a complete reopening of the case, but limited to a specific issue and the witness that's here to testify about that issue doesn't know anything about this.

ALJ: Yeah, I, I just, yeah. And so, yeah, I mean, I'm, this, this document just can't come in at this time. Again, we're here for a limited purpose, for, for Mr. Bayer to discuss the sewage path from this property. The documents that were discussed were already in evidence and this is some other new thing that he says he doesn't even --

MR. MCCANN: Your Honor, do, you don't recognize the irony of that?

ALJ: I, I, no, I don't. I, I, I think it's trying to put this document in when you can say that this is something that maybe you wanted to put in in the past and he doesn't know what it is. I mean, I thought you, he was going to be able to discuss it or --

MR. MCCANN: I'll represent to you, as an officer of this court, of this office, that I, this is a County document that was received from the County --

ALJ: Okay, I --

MR. MCCANN: -- it says Baltimore County, everybody knows what the water supply and sewerage plan is. Mr. Bayer apparently does not. But everybody knows what it is. Everybody, it's self-authenticating, it's obviously --

ALJ: But we're not, but we're not reopening the case for, for some information that could have been presented in the, in the, you know, bef, previously. This is, this hearing is just for the Motion for Reconsideration in regard to his testimony about the sewage path from this project. And not, not reopening it to put other documents in evidence. So --

MR. MCCANN: It's the doc, it's the document you have a problem with, it's the document --

ALJ: -- even, even if you could say that you, you got it by a PIA request at this point, I, you know, unless it has to do with his testimony today about this sewage path, it doesn't come in. He says he doesn't know what it is. I can't let the document in, okay?

MR. MCCANN: Your Honor, he just testified, downplayed, in fact, I will suggest, the significance of the Ramboll report, suggesting that it was something that was prospective, planning, whatever, something that was, that was not something, something that was, in fact, limited to the Lake Roland interceptor itself.

And the fact, the fact that I introduced a document

that wasn't previously produced doesn't automatically mean that it's beyond the scope of cross. It, the irony, the irony, the irony of your ruling that this does not limit it to the sewer path is thick. Everything that was discussed already this morning had nothing, or very little, or tangentially to do with the sewer, with the sewer --

ALJ: If that, if that, that's the case, then why did you, if it didn't have anything to do with the sewer path, all the documents introduced, then why did you introduce them in the case in the first place? Because you, all the documents that were pulled up other than one were all your documents that you produced.

MR. MCCANN: I think --

ALJ: So, if they didn't have anything to do with the case, then why do we have a hundred exhibits?

MR. MCCANN: I didn't say it didn't have anything to do with the case. What I'm, what I'm directing you to, Your Honor, is your ruling, which limited to the sewer path, which to me --

ALJ: Right.

MR. MCCANN: If you didn't, if you didn't say sewer path and you instead said sewer capacity issue or yes, sewer capacity issue whether the County, you know, what, you could have used a lot of different language that would have, you know, addressed my objection. But you didn't. You said sewer

path and that, to me, that's very specific.

And that's why, and I don't agree it shouldn't even be limited, there, we shouldn't be discussing the sewer path, frankly. I hope that's clear by now. But, in any event, if, if, if I'm, if my cross examination is limited to the sewer path and Mr. Rosenblatt's is not, --

ALJ: Well, your, your, okay, its sewer path, sewer capacity, deficiencies, structural improvements, to me that's all the same thing. I'm trying to find out whether the, whether the, the sewage can flow from, from this development down to where it goes. That, you know, so, so it's not the, you know, the specific, it includes all those things --

MR. MCCANN: Well, that's news to me.

ALJ: -- and Mr. Rosenblatt went through those documents, if you want to cross examine on the documents and things that he asked, then that's fine.

MR. MCCANN: Okay. I just can't use any new documents in my cross examination.

ALJ: Well, I, it, it's not that you, you couldn't, but he doesn't recognize that document.

MR. MCCANN: That's a different issue. That's a different issue. I'm not talking about the, I'm not talking about authenticity. I'll deal with that. I'll get an e, I'll get an e-mail for, like I always do when you ask me whether something's authentic, --

ALJ: But, but then, this isn't the, your case was already presented. This, this is just one County witness who's talking about the limited issue of the sewer flow from this project. Not, not opening it up again to add in all these new documents and PIA requests.

MR. MCCANN: Your Honor, I'll say one more thing and then I'll --

ALJ: Okay.

MR. MCCANN: -- stop arguing with you --

ALJ: Okay, okay --

MR. MCCANN: -- because I don't mean to argue with you. But it, it's just shocking to me so I can't refrain myself. It's absolutely shocking.

ALJ: It's shocking?

MR. BAYER: It is absolutely shocking to me, and I think if Mr. Zimmerman were here or Mr. Wyatt or Mrs. Demillio chimed in, I think they would agree. They're nodding their heads. It is shocking what's going on in this, in this proceeding today.

ALJ: Okay. I don't, I don't understand why you're even saying it's shocking when, when the Order was issued that we were going to have one more County witness, there's nothing shocking about it. I, I don't, it just doesn't even, I don't, doesn't ring true. I mean, we spent thirteen days on this case, putting in hundreds of documents. And there was only

maybe one excluded, I think, from either side, I excluded one from either side. I, as I recall.

So, I mean, but we're not here to reopen the case. We're here to discuss this one County witness' testimony. If he can identify it and he can, he, you know, that's part of what he needs to talk about and the sewer capacities, sewer paths, improvements, you know, whatever you want to talk about in terms of whether the sewage can flow or not from Greenspring Manor property down to where it needs to go. That, that's all I need to know, right? Okay. So, I mean, I'm, I'm not sure where you're going with it but I, okay? So, --

MR. MCCANN: Then, then, then why did you not grant my motion to strike this new testimony about a new model being run recently and a new, a completely new opinion that obviously could have been introduced long ago in this case, either by the County or by Mr. Rosenblatt and his clients?

ALJ: Because it, it pertains to the Order, it pertains to the, the Motion for Reconsideration, the Order that was issued that he's going to come in and talk and he's going to testify like any other County witness does.

MR. MCCANN: Okay. I'll stop arguing with you. I will.

ALJ: All right, thank you.

MR. MCCANN: I promise, I promise. Okay. Re, regarding Hazen, Mr. Bayer. Were you involved in that in any

way? That is either the solicitation of that work or the, the, its ongoing nature in any way?

MR. BAYER: When you reference that work, are you talking about the needs analysis of the comprehensive evaluation that Hazen is doing right now?

MR. MCCANN: Yeah, you, well, yeah, let's start with those two things because you were very careful to say those two things, yes.

MR. BAYER: Well, you said that work, I, I, it's hard for me to answer your question --

MR. MCCANN: I appreciate that.

MR. BAYER: -- unless you're more specific. So, what was your question then? Am I involved in that needs analysis and comprehensive evaluation? Yes, a little bit, yes. Correct.

MR. MCCANN: And how are you involved in that?

MR. BAYER: We've been discussing with them what we, what we expect from them, which was outlined in the proposal that we sent them and, and asked them to provide.

MR. MCCANN: So, those two, those two aspects of it and, and again, I think you were careful to say that, comprehensive evaluation --

MR. BAYER: Evaluation.

MR. MCCANN: -- evaluation and needs analysis, those have not been accomplished by Hazen as we sit here today,

correct?

MR. BAYER: No, they're still working on it, correct.

MR. MCCANN: Okay. Is there some other aspect of Hazen's work that has been completed and has been provided to the County?

MR. BAYER: Of the needs analysis or that --

MR. MCCANN: No, other than those, other than those two things.

MR. BAYER: Are there other things that Hazen is doing on our behalf? Yes, they are.

MR. MCCANN: Okay, that have not been completed as we sit here today?

MR. BAYER: That have not been completed? Yeah, I have, I have passed them with some work to actually add in the (inaudible) sewers and some of the other sewer shed models.

MR. MCCANN: Okay.

MR. BAYER: So, the task is ongoing. There's lots of tasks that Hazen has, working on on our behalf.

MR. MCCANN: Okay. Do we know when the report, the comprehensive evaluation, I guess, is what you're referring to and needs analysis will be completed?

MR. BAYER: I don't have the latest schedule in front of me so I don't answer, I can't answer that. I don't know.

MR. MCCANN: Okay and did, did you really say, did I hear it correctly, that you didn't, that County didn't hire

Ramboll to determine sewer capacity?

MR. BAYER: Well, like I said, we, we hired them to do a design for the rehabilitation as the sewers that were in that, within that Lake Roland area.

MR. MCCANN: I'm sorry, you're talking about Ramboll now, right?

MR. BAYER: That's exactly, that's what I thought you said, Ramboll.

MR. MCCANN: Right and I, and I switched gears, I'm sorry. Hazen. Was, was Hazen hired to, to evaluate capacity?

MR. BAYER: That will be part of the needs analysis, I suspect.

MR. MCCANN: Okay. Okay. Let me show you, this is Protestant's Exhibit 64. Mr. Rosenblatt was asking about that. Do you recall that testimony?

MR. BAYER: Yes.

MR. MCCANN: Okay. This is our exhibit and our exhibit as introduced have these manholes highlighted in yellow. Do you see that?

MR. BAYER: Yes.

MR. MCCANN: Okay. Am I correct, do you recognize these manholes, maybe you have the manhole numbers memorized by heart by now, but do you recognize that these highlighted manholes are the eight segments, so called Johns Hopkins segments, that are across the street from this property?

MR. BAYER: Yeah, it looks like those are the eight segments that were in that memo that you showed me a little while ago.

MR. MCCANN: Okay and this chart, as I think you've already described, well, strike that. Does, does this chart in the column percent full, does it not reflect what the, the percent, capacity percentages are for those segments, correct? This column --

MR. BAYER: Scroll back up the top and see what that says at the top of that column, please.

MR. MCCANN: Percent full.

MR. BAYER: Yeah, there you go.

MR. MCCANN: Okay. So, putting aside this new model that you apparently ran or you asked for, a simulation for, is it, it, is it a safe assumption on my part, Mr. Bayer, that if I were to look at RK&K's work product and RJN's work product, for capacity numbers, if I were to see capacity numbers that were either 94.32 or greater for any sewer segments, that those are probably sewer segments that should cause us con, some concern, correct? Would you agree with that?

MR. BAYER: If you're talking about a simulation, prediction that the model was run and it showed something like this it could be a cause of concern, yes.

MR. MCCANN: Okay.

MR. BAYER: We use, we use a model as a tool to kind

of direct us to areas that might be a concern, like we do with other tools, like the I&I analysis that you, that Mr. Rosenblatt showed me with, there was areas exhibiting high I&I. Those are all tools that we use to try to point us in the direction (inaudible) be concerned about.

MR. MCCANN: Well, those may be tools that you use day to day, but that's not what the Consent Decree requires, is it?

MR. BAYER: The Consent Decree required us to do a long-term capacity peak flow and management evaluation.

MR. MCCANN: Specifically, the Consent Decree, let me ask you about that, you, you agree with me, that the Consent Decree requires the County to conduct a long-term evaluation to identify corrective actions necessary to ensure long term capacity, do you agree with that?

MR. BAYER: I believe that's what be what the language is in the Consent Decree.

MR. MCCANN: And then the Consent Decree also then requires the County to prepare an SRR plan to iden, to identify the deficiencies in the system and then perform all corrective actions necessary to address those deficiencies, correct?

MR. BAYER: I believe that's what the language in the CD says.

MR. MCCANN: Okay. Your Honor, this is, this is probably a good time to stop. I think the benefit of a, of a

lunch break would be, would be great. So, if it's okay with you, that's what I would like to do.

ALJ: How long do you all need?

MR. MCCANN: I mean, a half hour, forty-five minutes would be great, would be fine.

ALJ: All right. Mr. Rosenblatt, a half hour, forty-five minutes? You must be muted, I don't know.

MR. ROSENBLATT: I did it, sorry. A half hour is fine by me.

ALJ: And Ms. Demillio, any longer that you needed?

MS. DEMILLIO: No, half hour is fine.

ALJ: Okay. Mr. Wyatt?

MR. WYATT: Half hour is perfect.

ALJ: Okay, sounds good. All right. We'll come back, you know, one-ish or so. I'll pause the record.

MR. MCCANN: This, is this the last witness for the day, Mr. Rosenblatt?

MR. ROSENBLATT: It's the last witness, yes, that we have.

MR. MCCANN: Okay, all right. Thank you, Judge.

(PAUSE)

ALJ: All right, we're back on the record. Mr. McCann, you were still in cross.

MR. MCCANN: Okay, thank you. Mr. Bayer, can you hear me?

MR. BAYER: Yes.

MR. MCCANN: Okay. One of the things I didn't ask you about your work with the County is, as I understand it, at least my interactions, that there are one or more folks within the County that are charged with ensuring compliance with the Consent Decree. I don't know what you call those people, compliance, CD compliance folks, or something like that. Is, is that correct?

MR. BAYER: There's staff that, that are involved and we also have a program manager, if that's what you mean.

MR. MCCANN: Yeah, who's the program manager?

MR. BAYER: WSP.

MR. MCCANN: Okay. But you're not involved in that is, as I understand it, correct?

MR. BAYER: Not involved in what? No, I don't work for the program manager now. We work together on, on a lot of things relating to the CD, as do the other staff.

MR. MCCANN: You're not, but you're not part of the staff that's charged with determining whether or not compliance with the Consent Decree is being accomplished?

MR. BAYER: I don't know if that's the County's decision to make. The compliance is probably related to MDE, EPA and DOJ.

MR. MCCANN: Okay. So, there's no one in, no one in the County that is charged with determining whether or not what

it's doing complies with the Consent Decree?

MR. BAYER: I, I think we submit everything that we are obligated to do and then we wait for comments back from EPA, MDE, EPA and MDE.

MR. MCCANN: Okay. Let's talk about map three. I think, and I've got it up on the board here, it is Protestant's, part of it, Protestant's Exhibit 78. I'm sorry, let me make sure of that. Yeah, Exhibit 78. I think you acknowledged during examination by Mr. Rosenblatt, can you see that, by the way, Mr. Bayer?

MR. BAYER: Yes.

MR. MCCANN: That, in your words, map three does show some, quote, issues of concern downstream, is that, from the subject site, is that fair?

MR. BAYER: Well, I think if you go to the legend in the upper right, it describes what is shown on the map. So, it looks like model predicted hydraulic restrictions.

MR. MCCANN: I'm just asking you about your testimony. Your, I think you said, did you not, that, at least agreed, that map three shows issues of concern downstream from the subject property?

MR. BAYER: Yes, it was predictions of surcharging, yep.

MR. MCCANN: Okay. But then you said, well, excuse me. Then you said in response to Mr. Rosenblatt's leading

question, that you don't, that that doesn't mean --

MR. ROSENBLATT: Objection, objection.

MR. MCCANN: -- that doesn't mean you --

MR. ROSENBLATT: Is this --

MR. MCCANN: (inaudible) --

ALJ: Hold on, hold on. You guys are both talking at the, hold on. You're both talking over each other. Mr. McCann, yeah, you don't need to say his leading question, but. I know that's what he's, Mr. Rosenblatt is getting at, right, Mr. Rosenblatt?

MR. ROSENBLATT: Yes, Judge.

ALJ: All right. Let's play nice, as I always say to you two.

MR. MCCANN: Okay. I think what you said during that discussion as well, Mr. Bayer, is that that does not mean, in your opinion, that you do repairs right away, is that, I think you put it like that, right?

MR. BAYER: Yeah, we like to evaluate and try to confirm, validate what is predicted by those models.

MR. MCCANN: Yeah. Well, and what, and I think you put it in terms of verifier, right? That's what you said. It's called, you verified it somehow?

MR. BAYER: Yeah, we tried to, to see if we can't verify what the predictions are.

MR. MCCANN: Yeah. And let me, in that regard, let

me pull up another document, which is Developer's Exhibit 47. And one, and I think when you were asked how do you verify, you said flow monitoring, correct?

MR. BAYER: Yes, that's one, one way, yep.

MR. MCCANN: Okay. So, here's, during the last hearing, and then again, you were referred to it today, this is 47-A and 47-B, which is, bear with me one second, sorry. It's the e-mail associated with that. Mr. Rosenblatt asked you about this e-mail, do you correct, do you recall?

MR. BAYER: Yes.

MR. MCCANN: Okay. So, these are five level sensors downstream of this subdivision, right? You have them right here listed, correct?

MR. BAYER: Yes.

MR. MCCANN: And so, and a, a level sensor is, essentially, a flow monitor, correct? Is, are they one and the same thing?

MR. BAYER: A level sensor only gives a limited information compared to the flow monitor, which gives us more information.

MR. MCCANN: Okay. But this was introduced last time, and it was spoken about again today and where's all the data from these sensors? Is that available to you?

MR. BAYER: Oh, yeah, um hm.

MR. MCCANN: Okay. If you wanted to look at it?

MR. BAYER: Yes.

MR. MCCANN: Okay. But you haven't brought it with you today, I take it, right?

MR. BAYER: No, I do not. It's actually hosted by our consultant that provides that service to us.

MR. MCCANN: All right. Well, in the past, the County has done flow monitoring, correct?

MR. BAYER: We have run staff that does our own flow monitoring sometimes, yes.

MR. MCCANN: Yeah, in fact, RJN did flow monitoring, did it not, in two thousand and, when it submitted its report in 2021?

MR. BAYER: Yes, they've done some flow monitoring for us.

MR. MCCANN: Bear with me one second, I'm trying to pull that report up. So, flow monitoring, flow monitoring, I'm sorry, is a way to verify model predicted SSOs, for instance, of the type shown in map three, correct?

MR. BAYER: That's one way.

MR. MCCANN: Okay. So, but RJN did it, in its actual report, the same report that map three is attached to, it did flow monitoring, correct?

MR. BAYER: They were doing some flow monitoring in Jones Falls, yes.

MR. MCCANN: Okay. So, I'm showing you, again, this

is the report, May 27, 2021, RJN performance assessment report. And at page thirty-two, I'll direct you to it, bear with me. It says this paragraph, and I'll highlight it just to focus us in on it.

Can you read it? I'll blow it up a little bit. It says, and I'm going to paraphrase, but correct me if I get anything wrong. It says, flow monitoring was performed in twenty-six locations back in 2008 apparently in connection with the SRR plan.

And then the second sentence says, or at the bottom here it says, post-rehabilitation flow monitoring, I'm sorry, post-rehabilitation flow meter locations were selected on the previously 2008 monitored locations, supplemented by additional locations selected to address the County's intent. So, and then the next paragraph, it goes on about the post-rehabilitation flow monitoring that was performed. Do you see that and does that ring a bell with you?

MR. BAYER: I see that.

MR. MCCANN: Does do, are you familiar with that, the fact that RJN did post-rehabilitation flow monitoring?

MR. BAYER: Yeah, that's in order for us to assess how effective we were in the rehabilitation side, we have to do post-rehab flow monitoring (inaudible).

MR. MCCANN: And, in fact, it refers to figure 1.2, which I think is on this page, I'll scroll down to the next

page in this exhibit. And it shows in table 1-1, pre- and post-rehabilitation flow monitoring. And it looks like, correct me if I'm wrong, but it looks like post-rehab flow monitoring was done for, between 2018 and 2020, for all of the, the water meter basins, correct?

MR. BAYER: For the basins, looks like, yep.

MR. MCCANN: Okay. So, when RJN prepared its map three, it had conducted post-rehabilitation flow monitoring, correct?

MR. BAYER: Yes.

MR. MCCANN: One other point about this report is I think you, you know, you were talking about the rehabilitation that was performed up in the, the water meter basins up here in the northeast corner, 03, 02, 04, I think. Do you recall that testimony?

MR. BAYER: Yes.

MR. MCCANN: Okay. I want to, I want to focus in on these two sentences here. This is again on page four of the RJN report, which is Exhibit 78. And I'll just read it. Quote, flow monitoring in basins 02, 03, 04 and 09, I'm sorry, I keep on doing this, was performed to evaluate the effectiveness of comprehensive I&I rehabilitation performed in these four-meter basins. Did I read that correctly?

MR. BAYER: I think so.

MR. MCCANN: And then the remaining meters listed in

table 1.1, which we just discussed, were installed to evaluate flows at model predicted SSO locations, as identified in support of the 2013 Jones Falls SRRR plan or to calibrate and verify the model. Did I read that correctly?

MR. BAYER: I think so.

MR. ROSENBLATT: Objection. Judge, I'm trying to let this go, but we, we're having repeat questions of just reading a document and asking if it's read correctly. And the document says what it says.

ALJ: And the same objection, I think, came when you were asking questions as well. I, I'm thinking Mr. McCann is going to get to his next question. Maybe this is the --

MR. MCCANN: Yeah.

ALJ: -- background question for the next question. So, I'll overrule it. Go ahead, Mr. McCann.

MR. MCCANN: So, it sounds to me, and correct me if I'm wrong, Mr. Bayer, that the flow monitoring that was performed elsewhere, other than in these four meter basins up in the northeast corner, was not used by RJN to evaluate the effectiveness of the rehabilitation, but rather for the purposes I just indicated in the second sentence, correct?

MR. BAYER: I believe that's what it says.

MR. MCCANN: Okay and that flow monitoring data for all these water meter basins, including the ones that would receive sewage from the subject property, you have that data

available to you, correct?

MR. BAYER: It should have been provided to us.

MR. MCCANN: Okay. Okay. Let's switch subjects. You, actually one more thing about the RJN map three. So, the, the map three, which indicates modeled capacity issues, the, the data that on the, that underlies those or the, the capacity numbers specifically, can be found in other data that was supp, was supplied by RJN in connection with that port, report, correct?

MR. BAYER: Can you ask that question again --

MR. MCCANN: Yeah, that was a, that was a terrible question. Let me, let me show you the exhibit first and see if you recognize it. So, this is Protestant's Exhibit 82. You see that?

MR. BAYER: I do.

MR. MCCANN: Okay. Are you familiar with this document?

MR. BAYER: Yeah, I believe this came from the performance assessment.

MR. MCCANN: Right. So, and it's a long document, and I won't go through all of it obviously, but what it basically is, it tells us what RJN found for each of the storm events post-rehabilitation as part of a wet weather capacity analysis, correct?

MR. BAYER: It appears to be.

MR. MCCANN: Okay. So, I could go down to the ten six storm, for instance, and see what capacities RJN found post-rehabilitation for the sewer segments that are the sub, that would receive flow from the subject property, correct?

MR. BAYER: I guess you could scroll down to the ten-year six hour.

MR. MCCANN: And RJ, RK&K had that same information, did it not?

MR. BAYER: Yes. Well, they didn't do a post-rehab, but they did a capacity analysis, yeah.

MR. MCCANN: Yes, so, this is Protestant's Exhibit 72. And this is entitled future pipe capacity and manhole surcharge summary. Again, a long document beginning with the two-year six-hour storm. This, this document, which was attached to the RK&K work product, likewise, would tell us what percentages of capacity RK&K found for all the pipe segments downstream of the subject property, correct?

MR. BAYER: It looks like it shows a column of capacity use and percent and capacity remaining and the gallons a day.

MR. MCCANN: Okay. Okay. I'll switch gears. You, you mentioned, you said that the County found and looks like fixed with exception of one, thirty-four structural SSOs. Do you recall talking about that?

MR. BAYER: We eliminated, I think, that many.

MR. MCCANN: Yeah, Mr., Mr., I think, Rosenblatt was asking you about what you had done as far, had accomplished under the Consent Decree in terms of eliminating structural SSOs, do you recall that?

MR. BAYER: Yes.

MR. MCCANN: And let me show you, there is a very distinct and significant difference between structural SSOs and just SSOs, is there not?

MR. BAYER: Yeah, the structural SSOs are structures that constructed.

MR. MCCANN: Yeah, so here's the Consent Decree. I can go to the top, but you probably recognize it. This is, I just lost it, I'm sorry. This is at the bottom of page eleven. It has the definition, under Z, it has the definition of sanitary sewer overflow or SSO, quote, shall mean any spill, release or discharge from the collection system, including all building backups, end quote. Do you see that?

MR. BAYER: I do.

MR. MCCANN: And then next page, double A, it talks about SSO structures. Is that what you were, or sanitary sewer overflow structures. Is that what you were refer, referring to in your testimony with Mr. Rosenblatt?

MR. BAYER: Yes, it's a structure that was constructed.

MR. MCCANN: Right. So, these structural SSOs, I

think as this definition reflects, are structures that are actually constructed by the County for the purpose of allowing discharge, correct?

MR. BAYER: I don't know the purpose of why they were constructed. That's way before my time. But they were constructed by the County as far as I know.

MR. MCCANN: Well, the definition is here, that's why I'm, I'm paraphrasing the language. It says, shall mean any structure in Baltimore County constructed for the purpose of allowing discharge, end quote. Do you see that?

MR. BAYER: I do.

MR. MCCANN: Okay. As you were suggesting, and maybe I didn't catch you, but you're not suggesting that there haven't been any SSOs in the Jones Falls recently have, are you?

MR. BAYER: No, they're not, no, there's been SSOs, as far as I know.

MR. MCCANN: In fact, there was one right in Lake Roland just about a month ago in January, correct?

MR. BAYER: I was sent an e-mail that showed that the lid was off the top of one of our manholes and it appeared that there could have been evidence of an overflow.

MR. MCCANN: Were you shown photographs?

MR. BAYER: Yes.

MR. MCCANN: Okay. Let me show you, I'll mark this

as Protestant's Exhibit 110. Do you see that? I'm going to scroll down, it's just a couple pages. Do you see that, Mr. Bayer?

MR. BAYER: Yes.

MR. MCCANN: Is that, are those the photographs or is that the same manhole that you were sent photographs?

MR. BAYER: Yeah, I believe those are the same photographs and that's the same, yeah, same manhole, I believe.

MR. MCCANN: And then, aside from that, it occurred in January, correct, of this year?

MR. BAYER: I believe it did.

MR. MCCANN: Do you know, do you know what manhole that was by, by chance?

MR. BAYER: I, I don't.

MR. MCCANN: And there was a, an SSO in a, in a, nearby, very nearby manhole a couple years ago as well, correct?

MR. BAYER: The same situation, yeah. I was sent photographs of what appeared to be evidence of an overflow a couple years ago, yes.

MR. MCCANN: Okay. Your Honor, I would move this, these photographs in as Protestant's Exhibit 110.

ALJ: Mr. Rosenblatt?

MR. ROSENBLATT: No objection.

ALJ: You object?

MR. ROSENBLATT: No objection.

ALJ: Oh, no objection. Thank you. So, one ten, Mr. McCann, that's the number? I don't know --

MR. MCCANN: That's what I have, yes.

ALJ: Okay, accepted.

MR. MCCANN: Thank you. And, Your Honor, if I could just have a minute, I think I may be done, quicker than I thought. So, can I have a minute or two?

ALJ: Sure.

MR. MCCANN: I may just go on mute while I do that.

(PAUSE)

MR. MCCANN: That is all I have. Thank you, Judge. Thank you, Mr. Bayer.

ALJ: All right. We have Mr. Wyatt. Mr. Wyatt, do you have any cross?

MR. WYATT: Yes, Your Honor. I just have a, a few questions for Mr. Bayer.

ALJ: Sure.

MR. WYATT: Good afternoon, Mr. Bayer. How are you?

MR. BAYER: Fine, thanks.

MR. WYATT: I reached out, you and I actually spoke a couple of weeks ago about this case, did we not?

MR. BAYER: Yes.

MR. WYATT: And you and I know one another socially, I don't think we've ever interacted professionally, is that

accurate?

MR. BAYER: Correct.

MR. WYATT: All right. And by the way, is that your desk behind you? Is that your, are those files you're working on behind you?

MR. BAYER: Paperwork.

MR. WYATT: I've never been to your office, that's why I ask. Anyway. Fair to say at the time we spoke, you were a little bit reticent in speaking to me about this project?

MR. BAYER: Yes.

MR. WYATT: I think your words to me were, you're, you're a little uneasy about talking about it with me?

MR. BAYER: Yes.

MR. WYATT: And I was respectful of that, correct? I didn't push you in any uncomfortable position in terms of trying to get you to answer questions that I may have had about the project, right?

MR. BAYER: Correct.

MR. WYATT: All right. But I did ask you one question and the question was, we were talking about, I think it's Exhibit 90, but it's your e-mail, it's the, it's the zero breaking point e-mail. I asked you just one question and you did answer it, looking at my notes. Has anything changed since your e-mail? And your response was, nothing has changed. Is that, is that a fair description of our conversation?

MR. BAYER: Yeah, as far as I know nothing has changed, yep.

MR. WYATT: Okay, all right. Thank you, Mr. Bayer. I have no further questions.

ALJ: All right. Mr. Sachse, do you have any cross?

MR. SACHSE: No, thank you, though.

ALJ: Thank you, Mr., Mr. Sachse. And then, Ms. Demillio, do you have any cross?

MS. DEMILLIO: No, I don't, Your Honor.

ALJ: Okay, thank you. All right. And so, I guess, I mean, it's an odd situation to come back to Mr. Rosenblatt. Let, let me do, let me do this. Maybe this first. Mr. Bayer, you've been so good with us and patient with us. So, I am just a visual person and I apologize if you've already answered all these questions. But just, just humor me, okay?

MR. BAYER: Certainly.

ALJ: You see, you see what's on the screen?

MR. BAYER: I do, yes.

ALJ: All right. So, the last number for the, what we keep calling the Hopkins segments, but we see from Mr. Benjamin's letter that perhaps, you know, this was more of a joint effort. But in any event, what I'm looking at is the number, 43, 4, 43786.

And this My Neighborhood map was produced by the Protestants. And it shows, it is, oh, it says it on there

actually. Let me hit the number just for the, sixty-three was Protestant's exhibit. All right. So, so this is the, the, the, the property, right? You recognize that?

MR. BAYER: Yes.

ALJ: So, this is the My Neighborhood map, everybody can pull this up. And this was submitted by the Protestants, but in reality, everybody agrees that this is the sewer path, right? Okay, so, so the last, so the last number is 43, 43786 and that's like right in here where my cursor is. And that's the last part. The, the rest, all this up to the property is either the Developer or it's the Hopkins segments, right?

MR. BAYER: Correct.

ALJ: All right. So, then we had this other document that the Protestants produced, which was seventy-seven, and this thing was a chart. It was an appendix to the SSR report. And you see that? Have you seen this before? It's an appendix to it.

MR. BAYER: I might have a long time ago.

ALJ: So, what I'm doing is just, and again, you're the expert. But here I am, I'm the lay person, right? I'm looking at this. It gives me the manhole number, 44212, and it shows, if you can see that, def, defects in the segment sixty-seven. One of them is a defective joint. The rest of it says grease. So, my first question is, what, what's the deal with where it says grease? What, what does that mean? And does,

does that pose any worries to you at all?

MR. BAYER: Yeah, grease means when, sometimes people will put their grease into the sewer system and then that clogs up our sewer system. Yes, that's a huge concern of ours. It creates problems, blockages, which will cause, or could cause an overflow, or capacity deficiency. So, yes, grease is a very big concern.

ALJ: So, what happens when you see that grease? What do you, what happens? What's the remedy for that?

MR. BAYER: So, the Bureau of Utilities would be the ones that would have to clean that. So, they would run a jetter through it, let's just say for example, to try to flush the grease out.

ALJ: Okay. So, on this --

MR. BAYER: Or they could, they could also --

ALJ: I'm sorry.

MR. BAYER: -- add a chemical sometimes maybe.

ALJ: Add a chemical. So, so, if you look at this chart, where it says, this is again the SRRR plan and all these segments where it says grease, is, does the Bureau of Utilities just automatically correct that? And can I assume that these, all of these are corrected?

Like the first one here, for example, is in the sewer path. So, 44212 and 44211 is right here. So, see I'm a visual person, so I'm looking at this going now there's, there's

grease in here. So, do I assume that that's fixed or what?

MR. BAYER: I think the table you're looking at is very old (inaudible) --

ALJ: Is that right? So, that's the, yeah, you, you tell me, you're the expert, which is why I want, yeah, this is from the SRR report --

MR. BAYER: Which is 2012.

ALJ: Yeah.

MR. BAYER: So, I would hope they fixed it by now, but I don't know the answer to that without researching it and pulling up work orders and see.

ALJ: Okay.

MR. BAYER: That could, grease could get eliminated and come back in time, over time.

ALJ: But is there, so, but is there general maintenance that gets done by the Bureau of Utilities where, where they would, just on a regular basis do this?

MR. BAYER: Some, some segments are on what they call specials, that they do get regular maintenance. We're working on, what, what we have now is an asset management plan, which hopefully would, would identify some of those maintenance issues, which would require, or, or, yeah, they (inaudible) schedule that on a regular basis for cleaning, if it's a grease problem.

ALJ: Okay and in your research, because you looked

at all the, the sewer path, again, from, for this property, which, you know, it goes on for multiple pages here, did you see any, any issue then in terms of, I, you know, that, that would give you concern if, you know, homes were built? Obviously there's going to be plumbing, if, you know, they were connected to this path that you were concerned about?

MR. BAYER: Yeah, if you scroll up a little bit there was a concern, oops, you're going too fast.

ALJ: Which one, which one is it?

MR. BAYER: Scroll up a little bit further, yes. Keep going, okay. So, some of the segments there, 44222, 44223, so there was, we iden, when I was flow monitoring out there last year, we identified some issues. So, I asked the Bureau of Utilities to go out and clean some of those segments. And I think they went from 43786 all the way across the beltway. So, if you scroll down a little bit farther.

ALJ: 786, oh, scroll down again?

MR. BAYER: Yeah.

ALJ: Okay.

MR. BAYER: So, I think they, they went all the way down and cleaned up all the way across the beltway, maybe down to 44219.

ALJ: Uh huh, that's here.

MR. BAYER: Yeah, but I don't recollect, but there was a concern on, on those segments, what I was seeing on flow

monitoring. So, I asked the Bureau of Utilities if they would go out there and, and clean and inspect.

ALJ: Okay and, and when you say, and you, and how did you know that, that it was an issue? Was that the flow sensors?

MR. BAYER: Yes. Sometimes we see the flow censors will, will indicate that there's a, a blockage downstream or restriction downstream, and I think that's what I saw on that flow monitor, so I asked Bureau of Utilities to go out there and clean and inspect.

ALJ: Okay. So, and, is it your job then to, to watch the flow monitor sensors and, and to figure out whether you see new problems? Is, is that how it works?

MR. BAYER: Yeah, the ones that I have out in the field, yeah, we try to, we try to pass along any information like that that we get to the Bureau of Utilities so they can help their maintenance.

ALJ: Okay. So, so, okay. So, all right. That probably, you know, answers my questions on, on those. There were some, also some information, I guess, through evidence and, again, you weren't here.

It's not really fair to you to, I mean, I'm just highlighting for you that, that there was evidence produced that, that indicated that, at least the Protestants believe that there should be relief sewers installed, like down here

where it says 20767, to 20766. And then even on the next page over here at the top. You know, different size relief sewers. It, it, but it, was that something that was completed or did that even need to be done in the first place?

MR. BAYER: It was not completed and then yes, you bring up a good question, does it need to get done in the first place. So, that was, we go back and look at that model calibration summary table, where it indicated, I think, in these locations that there was some relief sewer necessary.

But again, we questioned that because of the over predicting that we were seeing in that table 5-3.1. So, when we have low confidence, we like to try to confirm before we move forward with anything.

ALJ: And so, you're still confirming?

MR. BAYER: I have meters out there and then, yep, we're watching, we watch to see if there's any kind of issues, so.

ALJ: Watch to see if there are issues, okay. And so, really that's, that's the game plan from here is, is watching the flow sensors, monitoring those and seeing what data you collect from that. And then you decide whether or not you're going to need relief sewers?

MR. BAYER: Yes, and then what we'll do is, we'll do an I&I analysis once we get all that data so we can try to find out if there's an area that is contributing a lot of extraneous

flow. And then also, we also are looking for, when we did those, we do those flow isolations in the middle of the night, we're looking for areas that are segments of pipe that are very leaky. So, there's a couple different tools that we use to keep an eye on things.

ALJ: Okay. But even with that, so the, you know, this flow sensor monitoring is ongoing. Is it, can you, sitting here today though you feel comfortable that, or do you, or can you tell me whether you do, that if this property is hooked up to this sewer, and these, saying that these Hopkins segments, keep calling them Hopkins segments, get repaired and the developer here does the first, the two that they have to do, you know.

But the rest of it are, you have any concern that hooking up this, these proposed houses to this sewer line as shown, that it would not be a problem or are you comfortable with that or what?

MR. BAYER: I'm not seeing anything on my flow monitoring that's concerning right now, but that doesn't mean I won't see something in the future.

ALJ: Okay. So, right, obviously that in the future there could always be something. But I just was curious as to, you know, at least as you see it today, sitting here today, is there any issue that you see?

MR. BAYER: Like I said, I'm not seeing anything in

that flow path there that we ran a couple minutes ago.

ALJ: Okay and then the other issue that I guess Mr. McCann showed you those photos of that lid that came off.

MR. BAYER: Yes.

ALJ: In the Jones Falls, that's down here, again, I'm just a visual person so I like to look at all these things. So, you know, with that, did, did, was work, did, did work take place to try to correct that problem? What, and so it, is there any concern that you have having seen those photos with this project?

MR. BAYER: Not with the project, but yeah, I was very concerned, so I immediately directed some staff to go out there and put that lid back on because that's a safety issue. I didn't want someone to get hurt. So, he went out there immediately after I got that e-mail and put the lid back on and locked it. It's a particular type of lid, so it needs to be locked.

ALJ: Understood. So, but for this particular project, does the fact that you saw those lids off in that Lake Roland, in that area, does that have any concern that the, you know, the sewage, again, from this project, would not be able to flow safely?

MR. BAYER: There was a concern, so I have sensors all the way down to the Jones Falls pumping station in Baltimore City.

ALJ: That's down here, right?

MR. BAYER: Yes, it goes way down, miles or so down into the City, along the Jones Falls interceptor in the City and all the way up into, into this area, so --

ALJ: So, you add, did you say you added sensors because of this?

MR. BAYER: No, no, no. I'm just saying I've had sensors in there for about a year.

ALJ: Oh.

MR. BAYER: All the way down to the City's Jones Falls pumping station. So, and this is a preliminary review of that January 13th storm, I think, showed that the wastewater was backing up all the way from the City back up into the County. Every one of my sensors or meters down below. So, again, that's just a preliminary review of what it appears might have happened.

ALJ: Okay.

MR. BAYER: So, to answer your question, I'm concerned, yeah.

ALJ: Well, you, you were concerned and so what you do is, what do you do then as a result of that concern?

MR. BAYER: Well, like I said, preliminary review is I, I looked at the information I was getting from all those meters, all the way down to the City's Jones Falls pumping station.

ALJ: And you just keep going, gathering the information and then, so then at what, is there a breaking point at one point where do you say, you know, there, something has to be done or, or you just, how long does it take?

MR. BAYER: Well, as I said, it's just a preliminary analysis so far. What, what is occurring is Baltimore City has some issues at their Jones Falls pumping station and they need to install some equipment and I think that that's part of the problem is the station wasn't able to pump as much as it possibly could, resulting in a backup into the County. But again, this is just a preliminary review.

ALJ: Yeah.

MR. BAYER: But that appears as, as what's happening is the City's Jones Falls pumping station is struggling to keep up.

ALJ: Okay, okay.

MR. BAYER: And then to, to ask you what we, what happens moving forward is hopefully the City is going to complete their improvements sometime in June, is what I've heard. And we'll continue to monitor and see if they're effective in their improvements.

ALJ: Okay, all right. But from your experience, you believe that these flow sensors, the flow monitors, I keep calling them sort of the same thing. Obviously, you're, you know, but using those is giving you a better picture of what is

going on and you just want to continue to look at that and gather that data?

MR. BAYER: Oh, yes. It gives us great information on how it, how, how the sewer system responds to wet weather, which is what we're really trying to figure out.

ALJ: Okay, understood. All right. That's all the questions that I have. You've been very patient with us. Most of your, most of your day today has been taken up with, with, with this, this, this case. We do appreciate it. Let's see. What's that?

MR. BAYER: I was just going to say, hopefully I answered all your questions as best I could, hopefully.

ALJ: Yeah, thank you very much. All right. So, Mr. McCann, you're going to e-mail over the, the pictures that you have and you're also going to drop off a copy of those pictures, that's 110. You might want to do a, revise an exhibit list as well. And so, this is due, my Order is due in thirty days from today, all right, everyone? Just trying to give everyone a heads up.

MR. MCCANN: Are we, are we submitting anything to you, Judge?

ALJ: Do you all need to? Would you, would you like to?

MR. MCCANN: As much as I don't want more work, I think it's, I think it's necessary. We, I, we can do it, I can

do it as soon as possible and, you know, not, not make it long. But I think it needs to be briefed, at least from my side anyway. So, if, if you're okay with that, I can suggest a date that will allow you time to do what you have to do.

ALJ: All right. Well, Mr. Rosenblatt?

MR. ROSENBLATT: Yeah, I mean, I was going to say we don't need it, we wrote sixty, seventy-page memos already. But if they're going to write one, we're going to write one.

ALJ: Mr. McCann does indicate that he wants to do that so, so what day would then work for you all, because I was counting the days and the Motion, or the Order would have been due end of March, if you count thirty days from today, which is under our rules, that's what it is, the Order has to be done. But I can leave it open to get your memos.

MR. MCCANN: Yeah, I mean, part of the problem is, Your Honor, kids' spring break is, you know, the 9th through the 16th, so.

ALJ: Yeah, you and I have the same spring break, (inaudible).

MR. MCCANN: Yeah, and I, there's no way I can get it done between then, now and then, unfortunately. But the, the week after. So, the week of the 18th at some point later in that week.

ALJ: All right. The 22nd, Friday?

MR. MCCANN: That's as good as any day, yes, thank

you.

ALJ: Mr. Rosenblatt?

MR. ROSENBLATT: Yeah, I mean, that's plenty of time. Do we want to put a page limit on what we submit?

ALJ: I don't, I don't, I don't like page limits. I don't know. I mean, what's, you know, what do you do then? Reduce the font size, expand the margin?

MR. ROSENBLATT: No, no, trying to save work on --

ALJ: I know.

MR. ROSENBLATT: -- on all sides --

ALJ: I know. Well, this isn't the Circuit Court, so I get you. But I, you know, I tend to go on and on, I always so, I'll let you guys do what you need to do, whatever you think you need to do. But, all right. We'll say the 22nd of March memos are due. We always say 3:30 because that's just end of the day to, to file those by e-mail and then drop off a copy. And I'm just assuming, I guess, Ms. Demillio, you're welcome to also do it if you'd like.

MS. DEMILLIO: I'm sure our office will have a memo--

ALJ: Okay.

MS. DEMILLIO: -- (inaudible) for the 22nd.

ALJ: Twenty-second, all right. And then, Mr. Wyatt, you're also welcome, if you feel like it, Mr. Sachse, you know you're both welcome to as well if you feel like it. I don't know that you all did last time, is what I'm trying to

remember. I don't think so, I'm trying to remember. Maybe you did. But in any event, both of you are also welcome. Okay. Anyone, anything else?

MR. MCCANN: No, thank you, Judge.

ALJ: All right. Thank you, all.

MS. DEMILLIO: Thank you. Thank you.

MR. WYATT: Thank you, Your Honor.

ALJ: All right, thank you.

[OFF THE RECORD]

CERTIFICATE OF TRANSCRIBER

I hereby certify that the hearing in the matter of Greenspring Manor, 2310 W. Joppa Road, case numbers 08-0922 and 2021-0250-SPH, heard before the Office of Administrative Hearings for Baltimore County, February 26, 2024, was recorded digitally.

I further certify that, to the best of my knowledge and belief, page numbers 1 through 132 constitute a complete and accurate transcript of the proceedings as transcribed by me.

I further certify that I am neither a relative to nor an employee of any attorney or party herein, and that I have no interest in the outcome of this case.

In witness thereof, I have affixed my signature this 11th day of March 2024.

Christine R. Leary

Christine R. Leary

Transcriber

IN THE MATTER OF:

GREENSPRING MANOR
2310 W. Joppa Road

CASE NUMBERS: 08-0922 & 2021-0250-SPH

Hearing Date: February 26, 2024

Pursuant to Notice, the above-entitled hearing was held before the Office of Administrative Hearings for Baltimore County by remote access.

PRESIDING:

MAUREEN J. MURPHY, ADMINISTRATIVE LAW JUDGE

FOR THE PARTIES:

ADAM ROSENBLATT, ESQUIRE
CHRISTOPHER MUDD, ESQUIRE

MICHAEL MCCANN, ESQUIRE

CAROLE DEMILLIO, PEOPLE'S COUNSEL
FOR BALTIMORE COUNTY

Christine R. Leary
crleary1@comcast.net

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(ON RECORD)

ALJ: Good morning, everyone. Calling case number 08-0922 and 2021-250-SPH. This is the property address at 2310 West Joppa Road. And you're attending the Motion for Reconsideration hearing for the Order on the combined development plan and zoning case known as Greenspring Manor. And we're going to have counsel introduce themselves for the record, beginning with the Developer.

MR. ROSENBLATT: Good morning, Judge Murphy. Adam Rosenblatt and Chris Mudd of Venable, LLP on behalf of the Developer and Petitioner.

ALJ: All right. Mr. McCann?

MR. MCCANN: Good morning, Judge. Michael McCann on behalf of the Protestants.

ALJ: Mr. Wyatt? You're muted.

MR. WYATT: Yeah. Good morning, Your Honor. Michael Wyatt, I'm an adjoining property owner.

ALJ: All right. And Ms. Demillio, you're here for Mr. Zimmerman? Yep, you're muted. I just unmuted you. Can you hear me?

MS. DEMILLIO: Yes, I can. Good morning, Judge Murphy. Good to see you.

ALJ: Good to see you. All right. And you're here for People's Counsel.

MS. DEMILLIO: Yes.

ALJ: All right. I think that's everyone. All right. So, let's see. We are here on the Motion for Reconsideration hearing in that it's a limited hearing as outlined in the Order that was dated September 25th, 2023. And so, I know that Mr., I guess Mr. Mudd or Mr. Rosenblatt, have a witness to present or two.

Before we get to that, let me do this. I believe everyone on, it looks like on Friday afternoon, we all received an e-mail from the County Attorney, I believe. And so, I just wanted to start with that. Sorry. I'm just having a minute to open it and see if this works. For some reason it's putting up, try again. There we go, okay. All right.

So, just to, just so we can get, I guess, just the beginning here. We all got this e-mail. It looks like it was, it was dated Friday, and this was at 1:16. And it looks like everyone received it. I guess counsel of record received it. And it, attached to this e-mail was a letter from the County Attorney, which I'm now pulling up, is also on the screen and hopefully you all can see that. Can you all see that?

MR. ROSENBLATT: Yes.

ALJ: All right, great. And so here, this is the letter and I, I wasn't going to read it, but I think maybe everyone hopefully has had a chance to read it. It has to do with the, it looks like the, the sewer line and really the MOU that really formed a basis for a lot of the comments that came

in from the County on this case.

And so, this, this document, obviously, it shows, you know, it indicates that the, the MOU has expired. It expired in, looks like in, it was a September 27, 2017 MOU.

It expired and it looks like the County is in the middle of trying to negotiate a new MOU for the sewer segments that were, you know, there was, I guess, just express information from the County, from DPR, from DPW&T, I should say, that indicated that, you know, this was a, that these were, Hopkins was supposed to fix it and whatever, I'm not going to go through it and read it.

But it looks like they're going through there and they're, they're negotiating now a new MOU. And so, I, you know, I appreciate this letter that, that we received, that actually highlights some of the information and really kind of, in contrast, to some of the information that we had.

Here's the Memorandum of Understanding. I'm just showing it on the screen. This was referenced in the letter. In 2017, it has attachments to it. It shows what the land was, the pavilion that Hopkins was building at the time. And it also shows, you know, that there were sewer improvements. And so, there was an agreement here, under this MOU, who was supposed to do what.

But in summary, it was really, it looks like and, and everyone can read it in their time. But a coordinated effort

between the County and Hopkins to actually make these improvements, which are listed, referenced in Exhibit C, which is attached again. And so, there were specific things that each one was supposed to do.

But basically, it was a coordinated effort between the two. And, and, but I guess, what the County Attorney highlighted in his letter here for all of us, just to make clear, that what, that the use and occupancy permit, I guess, was one of the issues and the suggestion was that, you know, that, that the use and occupancy permit shouldn't have been issued, the, if the sewer improvements weren't completed.

But, in fact, what this MOU indicates, and what the County Attorney's letter indicates, that, in fact, the occ, use and occupancy permit could have been issued and should have been issued and was issued regardless of whether the improvements were done.

So, this, this document and, and this MOU in this letter, with the attachments, you can see it was signed, this was the prior administration, because Mr. Homan signed it and it looks like Steve Weber was the, was the Director of the Department of Public Works at the time.

And, and here are the attachments. And so, these are, I mean, you don't really need these, but you can see them, they're hard to read. But essentially, these are the ones that are referenced in the letter that he sent all of us.

So, in any event, I was going to make this, because this kind of, you know, gives us a, a bigger scope of just an understanding of the sewer system, I'm going to make this County Exhibit, I think we left off on, this should be fourteen. Make this an exhibit in our, in our case. So, this will be County exhibit number fourteen. And so, I just wanted to kind of put that out there before we got started today. And with that, let's see.

The next thing would be, on my list would be that Mr. Rosenblatt or Mr. Mudd, you all were going to provide a blue lined development plan and you did that, I see, back in January. And that is, you said marked as Exhibit 1-C. And so, I just wanted to note for the record we received that blue lined plan, it has to do with the emergency gate. And so, we actually are admitting that. And the Order indicates that we're not taking testimony on that, we're just admitting that in evidence.

MR. MCCANN: Your Honor, Your Honor, --

ALJ: So, --

MR. MCCANN: -- may I be heard on both of those issues?

ALJ: Okay, sure.

MR. MCCANN: Yeah, there's a lot here. It looks like you've already, with respect to the letter from Mr. Benjamin, it looks like you've already looked at it. But, and I do have

a lot of respect for Mr. Benjamin. I, I work with him often. But I, I think the admission of this letter at this time, after the hearing has closed, is, is really highly inappropriate. This, the County, if it wanted to chime in on any of this, it had plenty of opportunity to do so.

In fact, I think the record would reflect that someone from Mr. Benjamin's office has attended I don't know every day in this hearing, but has certainly been attending the hearings in this matter. So, this could have been submitted months ago. It could have been raised on the very first day of the hearing when the issue of this, Johns Hopkins segments first came up. So, I think for that reason alone it shouldn't come in.

It's new evidence and, you know, I've had conversations with counsel for Johns Hopkins, so I can surmise what's behind all this. But I don't think we need to get into that. But what I would say is I, I think it's absolutely irrelevant anyway. I think as Your, Your Honor's opinion makes clear, it doesn't matter, he, he addresses a number of things.

He addresses who is responsible for submitting plans, who is responsible for the permitting. You know, you described it as a coordinated effort. That may all be well and good, but it doesn't matter at all. The bottom line is that these sewer segments, as we sit here today, as we sat here on the first, very first day of this hearing, have not been replaced. And

they haven't been. So, it doesn't matter, at all frankly, whose responsibility it is or, or was to undertake the repairs.

And, in fact, Your Honor, you addressed this at the very end of your opinion. You said, because I guess there was some suggestion, maybe there wasn't, I don't recall specifically, whether the plan could be approved upon condition that these, what I'm calling this Johns Hopkins sewer segments, I'm calling them those, them that, Your Honor, because, just for ease of reference, there's eight of them. But what we know from the evidence that is in the record, that only six of them, of those eight were required to have been completed in connection with the Hopkins improvements.

But in any event, getting back to your opinion, you explicitly addressed this, and you said that I'm not willing, quote, I'm not willing to condition approval here on the possibility that Johns, Johns Hopkins may or may not complete that work.

And you cited the Bluestem decision, which is, as you know, I was involved in, and there was a similar condition proposed in connection with that case and you, essentially, took the position in your opinion that you didn't need to impose such a condition.

That it didn't matter whether Hopkins did or did not complete the work. You weren't going to impose that condition. And that's consistent, frankly, with the entirety of your

opinion, which you found, Your Honor, capacity problems, not just with these sewer segments, but beyond. So, I don't see any relevance, even if this was submitted on the first day as it should have been or some time thereafter, I don't see any relevance to this at all. It just simply doesn't matter.

ALJ: And you said that the law office was here in the, in the, in the hearing, who, who --

MR. MCCANN: Ms. Frankovich, Jennifer Frankovich, she was from Mr. Benjamin's office. I've noted, I, I can't say specifically, Your Honor, which day she was here, but she has definitely been here throughout the course of this hearing. And I've had conversations with her and Mr. Benjamin in connection with my multiple PIA requests. So, I think that's in part may have been why she's participating.

But, you know, again, I have a lot of respect for Mr. Benjamin. But I, I, I just think this cannot come in at this late hour.

ALJ: All right, understood. I, and I don't know Ms. Frankovich and so, I don't know whether she was in the hearing, or she wasn't in the hearing. I don't, I'm not privy to any of the conversations either, obviously, between you and Mr. Benjamin or with you and Hopkins.

I'm just reading this letter that I got that, that actually, you know, provides some background information in regard to, to the sewer segment --

MR. MCCANN: Let me say, let me just add. I'm not even sure to the extent it matters, I'm not even sure what this, you know, put aside relevance just for a moment, what, what corrections, he talks about factual inaccuracies Mr. Benjamin is seeking to advance. I mean, the state of the record right now, I think it's fair to say, is that the County has deemed that there's insufficient capacity to allow this development to go through because of these eight sewer segments.

I think, if I recall correctly, there have been random statements to the, to the effect that Johns Hopkins is to have, or was to or is to have replaced the segments. But beyond that, I'm not so sure what, what, what is inaccurate about the record.

I think, frankly, to be honest with Your Honor, and just to, you know, I'm basing this on my conversations, that this is an, is an attempt to sort of correct the record. Not our record, but some other record, as to who or who is not obligated under this now outdated or rather expired MOU. I think Hopkins is trying to protect itself, which I understand it wants to do. But this isn't the forum for that.

ALJ: Okay, understood. Understood your position --

MR. MCCANN: And I can speak to the, to the, the new development plan as well, because I think it's very much a similar issue. And that is, the evidence in this case has

closed, it was closed a long time ago. I know you ruled on the, the issue of the pass through. But you also indicated in your opinion, Your Honor, explicitly that you would not consider an amended plan showing, showing a pass through.

You said on page 109, I got the blue, blue lined plan this morning, though I didn't know it was submitted in January. But you say at the bottom of page 109, I find the green lined development plan must be denied because the proposed emergency access only gate violates DPR policy manual, etcetera. Given, moreover, given that the development proposal for May's Chapel was emergency access only and not a full access road, that proposal can only be approved or denied. The (inaudible) not rectify this policy, this policy non-compliance by changing the May's Chapel gate to a full access road in order to approve the green lined plan.

So, I think for very similar reasons, the now blue lined plan, which I got this morning, is both too little too late and is irrelevant anyway because you've already indicated in your ruling that you wouldn't consider it and wouldn't change, well, I guess your ruling or your approval or denial of the plan based on it.

ALJ: So, you read the Order on the Motion for Reconsideration though, right? Because the last part of it says that they can submit the, a, a revised version of the development plan as a separately numbered exhibit, right? And

that there would be no testimony? It's the last paragraph on the Order.

MR. MCCANN: Yeah. I do recall that.

ALJ: I just wanted to say it for the record that we had received it and that it's going to be marked as 1-C.

MR. MCCANN: Still, I, you know, I'd like to, you know, at least on that issue, that is, the, the issue of its belatedness, and its, and its relevance, frankly, I would like to preserve that objection. So, --

ALJ: Okay. Understand.

MR. MCCANN: I, I do recall now that you say it, and I apologize, I didn't recall that offhand. That you did say that.

ALJ: Yeah, right. So, yeah, that's 1-C.

MR. MCCANN: Okay.

ALJ: All right. Okay. I, and, I, you know, I don't want to open anything else up to a dialogue but I, I hesitate now, Mr. Rosenblatt, Mr. Mudd, is there anything you want to say? See, Mr. Benjamin is also here. I just, I, you know, obviously, you know, we don't want to give you all an opportunity to respond to Mr. McCann if you, if you need to.

MR. ROSENBLATT: Sure, I, I can, I'm happy to address both issues. I'm going to share my screen just for a moment, Judge Murphy. This is first, the last paragraph of your Order on Motion for Reconsideration, which you just explained allowed

the submittal of a blue lined plan and just because there's people watching, I wanted to just share that plan.

It's marked as Exhibit 1-C. And this is identical to the green lined plan in all respects except for crossing out with blue lines the note regarding the request that emergency access gate and access through the actual gate itself, is the only change to the plan. So, that is all we would say on that topic.

On the other topic, Judge, throughout, throughout this case the Developer has not taken any position on the Johns Hopkins sewer segment requirements, whether they're responsible, Baltimore County is responsible.

It's been our position throughout that we understand that those segments have to be upsize, have to be improved before any homes from this project connect to Baltimore County sewer system.

To the extent that the letter from the County attorney paints an updated and more accurate interpretation of, of where things stand, the development process is ongoing. There's case law we cite in every memo, in every opinion, the Monkton Preserve case that speaks to that.

It's an ongoing process. Months have gone by. To the extent it's helpful to have an up-to-date interpretation of where things stand, we obviously have no objection to that. The point today is to, is to provide information from Baltimore

County because you've heard only from experts on one side and another side about sewer issues. So, that's, we think that if the letter helps in any way, it's, it should be admitted for, into the record and considered as, as you see fit.

MR. MCCANN: Your Honor, may, quickly, I'm sorry. The standard isn't whether it helps you or not. This is an evidentiary proceeding, and the record is the record. It closed. This is not an ongoing development process that allows up until the day you make your decision to add additional, and believe me, believe me, I could add additional sewer evidence today as we speak. So, by that, by that argument, all that could happen today.

But the other thing I wanted to mention is, is the, the, the plan in any event, the blue line plan now, is moot. It doesn't matter. Your Honor has already denied the plan on the independent ground that the intersection is failing, and the Developer did not meet its burden of proving a Petition for Special Variance.

The development plan is denied, period. And this plan does not change that. And frankly, nor do the proceedings today. So, the, the plan is moot. And shouldn't be admitted for that additional reason.

ALJ: Okay, all right. Thank you. Mr. Benjamin, you didn't want to say anything, did you? I wasn't sure if you were just observing.

MR. BENJAMIN: I am observing but I did want to clarify a couple of things, if I may, Your Honor.

ALJ: Sure, absolutely.

MR. BENJAMIN: One, with regard to the, and by the way, I appreciate Mr. McCann's kind words. We do hold each other in very high regard, so I do appreciate that. But with regard to the representations as to Ms. Frankovich, she was merely observing, she wasn't participating in the prior hearing. She was observing the hearing.

And then also too, again, the reason why the letter was written was just to provide clarifications that we thought were necessary for purposes of the record that were developed earlier. Whether or not it's to be used as evidence, that's certainly Your Honor's call. But we were just simply trying to clarify the record for Your Honor, as well as counsel of record. That's all I wanted to say. And then I will go back to observing.

ALJ: Okay, thank you.

MR. BENJAMIN: Thank you.

ALJ: All right, great. Well, I mean, this is an administrative hearing and, and I do think that the, the information provided by Mr. Benjamin in his letter, as I said, is going to be County exhibit number fourteen.

And, and I do think it does add to clarify some of the inaccuracies, namely, there are references in the concept

plan comments, or the development plan comments, different documents that were submitted by both Protestants, I think, actually just the Protestants, that indicated that, you know, for example, an UNO should never have been given by the County for, to Hopkins.

And that, you know, essentially, the project was (inaudible). This actually adds light to that. It actually gives more clarification to, to that, that issue. And so, again, that will be County fourteen. And so, this, we are now going to proceed with, there is a witness, I think, Mr. Rosenblatt or Mr. Mudd, you're going to call today?

MR. ROSENBLATT: Yes, that's correct.

ALJ: All right.

MR. ROSENBLATT: We have Dave Bayer is here.

ALJ: All right. Mr. Bayer, I see you. All right. You unmuted yourself. Good morning.

MR. BAYER: Good morning.

ALJ: All right. I've never, I've never met you before. I've seen your name on things. Looks like you're in your office.

MR. BAYER: I am.

ALJ: Surrounded by paper, piles of paper.

MR. BAYER: I am.

ALJ: All right.

MR. BAYER: That's not mine. That paper belongs to

Baltimore County.

ALJ: Oh, it belongs to Baltimore County, okay. All right. Well, listen, I need to swear you in, so if you could raise your right hand, please? Do you swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. BAYER: I do.

ALJ: All right. Mr. Rosenblatt or Mr. Mudd?

MR. ROSENBLATT: Yes, Mr. Rosenblatt. Thank you.

ALJ: All right, sure.

MR. ROSENBLATT: Good morning, Mr. Bayer.

MR. BAYER: Good morning.

MR. ROSENBLATT: Can you explain, what is your position with Baltimore County?

MR. BAYER: I'm a project engineer in the Sewer Design Section (inaudible) Construction and Department of Public Works and Transportation.

MR. ROSENBLATT: Okay. How long have you had that job?

MR. BAYER: About twenty-two years.

MR. ROSENBLATT: Were you with the Sewer Design Section for all twenty-two years?

MR. BAYER: Yes, yep.

MR. ROSENBLATT: And before that, did you have any other job with Baltimore County?

MR. BAYER: I did. I was in the Development Plan Review Section for about ten years.

MR. ROSENBLATT: Can you just describe your general duties and responsibilities, a couple sentences about what you do?

MR. BAYER: Actually, reviewing and designing capital improvement projects for Sewer Design Section.

MR. ROSENBLATT: Do you have, in terms of education, do you have a Bachelor's degree in Engineering?

MR. BAYER: I do, yes.

MR. ROSENBLATT: Do you have any other type of degree in engineering?

MR. BAYER: A Master's, a Master's degree in Environmental Pollution Control.

MR. ROSENBLATT: And have you, you've worked for Baltimore County for over thirty years?

MR. BAYER: Yes.

MR. ROSENBLATT: How often on a day to day basis in your job are you dealing with issues relating to Baltimore County sewer system?

MR. BAYER: Every day.

MR. ROSENBLATT: Were you subpoenaed to testify at this hearing?

MR. BAYER: Yes.

MR. ROSENBLATT: Have you ever testified at a

development plan hearing before?

MR. BAYER: No.

MR. ROSENBLATT: What did you do to prepare for this hearing?

MR. BAYER: Gathered my information and read, and read the testimony.

MR. ROSENBLATT: Okay. Did you, did you meet with me?

MR. BAYER: Yes, I did.

MR. ROSENBLATT: Was your attorney present?

MR. BAYER: Yes.

MR. ROSENBLATT: Did Mr. McCann or Mr. Zimmerman or any other lawyers in the case ask to meet with you?

MR. BAYER: No.

MR. ROSENBLATT: Okay. I'm going to go through some of the exhibits that were presented in this case and just ask you some questions about them. So, starting with Protestant's Exhibit 65, the Consent Decree. And I want to ask you, Mr. Bayer, what was your involvement with the, with the Consent Decree from 2005?

MR. MCCANN: Objection, Your Honor. Your ruling was very specific. It says, quote, a hearing will be conducted to consider testimony and/or documents from DPW representatives or representative regarding the sewer path from the subject property.

ALJ: Um hm.

MR. MCCANN: So, I suspect what we're getting into now is what Mr. Bayer does or does not believe the County's obligations are under the Consent Decree. And I think that's, number one, it's beyond the scope of your ruling, which was very limited. I think purposely so.

And number two, this gentleman is a project engineer. He's, he's, he does not hold a leadership position, so the extent, to the extent he's going, he's purporting to speak on behalf of the County, I think that's problematic as well. But more importantly, I think this is beyond the scope of your ruling.

ALJ: Well, we don't --

MR. MCCANN: In fact, in fact, I don't even think, just to --

ALJ: We're not going to know until he asks the question. I mean, the, this Consent Decree was put in by you all and it has to do with, with the sewer line. I mean, I don't, I don't know where, where the question is going, so let's see where it goes.

MR. MCCANN: Fair enough. I thought I heard a question about, about the substance of the Consent Decree. So, before, I did, I thought I did hear a question, maybe I --

ALJ: It could be, it could just be background information but over, overruled. We're, we're going to let

him, go ahead and ask the question, Mr. Rosenblatt.

MR. ROSENBLATT: Judge, to, to prevent what may be constant disruption of flow, there are a number of exhibits submitted by Mr. McCann in this case all talking about the Jones Falls sewer shed, all relating to the path of sewage from this property down to Baltimore City. And Mr. Bayer, as you'll hear, is going to testify to his understanding of what a lot of these documents mean with respect to the sewage that is proposed from this project.

MR. MCCANN: The fact --

MR. ROSENBLATT: And it's all directly related to your Order and sheds light on the issue from the County's perspective.

MR. MCCANN: The, the fact that these exhibits are in evidence doesn't mean he gets to speak about them.

ALJ: Okay. I, I, I appreciate both of your positions. Overruled. Go ahead. Ask your question.

MR. ROSENBLATT: Okay. Mr. Bayer, what was your involvement with the Consent Decree, Pet, or Protestant's Exhibit 65?

MR. BAYER: From day one, we began negotiating with the Department of Justice, EPA and, and MDE.

MR. ROSENBLATT: Are you generally familiar with the Consent Decree and its requirements?

MR. BAYER: Yes.

MR. ROSENBLATT: Is this --

MR. MCCANN: Your Honor, may I have, again, I don't want to interrupt Mr. Rosenblatt, but I have to preserve my objection. May I have a continuing objection about, at least about this document, and I'll try not to interrupt again, all right?

ALJ: Yes, continuing objection.

MR. MCCANN: And any questions regarding his involvement in it.

ALJ: Yes, you can have a continuing objection.

MR. MCCANN: Or understanding of it.

ALJ: Okay, continuing objection. Thank you. Understood. I understand you want to preserve your objection for the record. I understand, Mr. McCann.

MR. MCCANN: Thank you.

ALJ: Thank you.

MR. ROSENBLATT: So, I'll ask you again, Mr. Bayer. Are you generally familiar with the Consent Decree and its requirements?

MR. BAYER: Yes.

MR. ROSENBLATT: Do you interpret and look to this document throughout your regular course of work?

MR. BAYER: Yes.

MR. ROSENBLATT: Okay. Does the Consent Decree require Baltimore County to fix the sewer system to meet any

specific level of storm?

MR. BAYER: No.

MR. ROSENBLATT: Does it specifically exclude such a requirement?

MR. BAYER: Yes.

MR. ROSENBLATT: Did the Consent Decree require Baltimore County to prepare an SRRR plan?

MR. BAYER: It did, yes.

MR. ROSENBLATT: And did the Consent Decree require Baltimore County to prepare an LTC, long term capacity, report?

MR. BAYER: Yes.

MR. ROSENBLATT: Did Baltimore County hire RK&K as a consultant to prepare these reports for the Jones Falls sewer shed?

MR. BAYER: Yes.

MR. ROSENBLATT: Show you what's been marked as Protestant's Exhibit 68. The LTC report by RK&K. Are you familiar with this document?

MR. BAYER: Yes.

MR. ROSENBLATT: What is the purpose of this document?

MR. MCCANN: Same objection, Your Honor. And also, that question in particular, what's the purpose of the document, I, I have a problem with that for, I guess, additional reasons --

ALJ: All right, overruled. You can cross examine him on those points.

MR. MCCANN: Okay, thank you.

MR. ROSENBLATT: Go ahead, Mr. Bayer. What is, what was the purpose of developing this long-term capacity report?

MR. BAYER: To evaluate the impacts of dry and wet weather on the sewer system.

MR. ROSENBLATT: Does this report require any specific improvements?

MR. WYATT: Objection, Your Honor. The report would speak for itself.

ALJ: Okay. Mr. Wyatt?

MR. MCCANN: And these questions are also leading, Your Honor. And this is, this is classic, the classic hearsay objection that I get. Does this document say X? I get that all the time from Mr. Rosenblatt.

ALJ: That is true. You do get that objection a lot.

MR. MCCANN: Mr. Rosenblatt and Mr. Mudd. So, and I, listen, I understand while we want to cut to the chase here, but I think that is a loaded and hearsay question.

MR. ROSENBLATT: And again, this, these are issues that, if there's going to be constant objections, it's just to disrupt flow here, Your Honor. This is --

MR. MCCANN: It is not. Jesus.

ALJ: Okay, all right. All right, all right. So,

what we're going to do is we're going to let him ask his questions. It's overruled. But, Mr. Rosenblatt, please, you know, don't lead him through the questions. Again, he's a County witness so if you could please just ask him the questions.

MR. ROSENBLATT: And, and he is, Judge, to that point though, he is a County witness, just like the witnesses that--

ALJ: Right.

MR. ROSENBLATT: -- (inaudible) at the beginning of the case.

ALJ: Correct, right. And Mr. Wyatt and Mr. McCann will both have the opportunity to cross.

MR. ROSENBLATT: Right, okay. So, did RK&K model Baltimore County sewer system under five separate storm events, Mr. Bayer?

MR. BAYER: Yes.

MR. ROSENBLATT: And are there maps at the conclusion of this report that show the results under each of the modeled storms?

MR. BAYER: Yes.

MR. ROSENBLATT: Are you familiar with what was marked as Protestant's Exhibit 67, the SRRR plan, prepared by RK&K?

MR. BAYER: Yes.

MR. ROSENBLATT: What is, what is the purpose of, of

the SRRR plan?

MR. MCCANN: Objection. Standing, please.

ALJ: Yeah, you have a continuing objection.

MR. MCCANN: Thank you, Judge.

MR. BAYER: To evaluate the, the sewer system and prepare any corrective actions necessary.

MR. ROSENBLATT: Did RK&K adopt all of the improvements for all of the storms that were modeled and identified in the LTC report?

MR. BAYER: Did they adopt? I don't know, could you ask me that question again?

MR. ROSENBLATT: Sure. So, we, we showed the five different maps contained in the LTC report. Does this SRRR plan require all of the improvements to address all of the issues that were modeled under the five different storms?

MR. BAYER: No, --

MR. MCCANN: Objection, leading.

ALJ: Overruled.

MR. BAYER: No.

MR. ROSENBLATT: What storms did Baltimore County select for the purpose of determining what improvements to make to its sewer system?

MR. BAYER: We evaluated all five and, and we wanted to normalize across all sewer sheds, so we looked at the ten-year six-hour event.

MR. ROSENBLATT: And why did you choose that level storm?

MR. BAYER: Because the Maryland Department of Environment has suggested that that rainfall pattern from that design storm closely matched what's in the area. And we were cur, and we were curious to see how our system would respond during that particular rainfall event.

MR. ROSENBLATT: Did the Consent Decree allow Baltimore County to choose a level storm like the one you chose?

MR. BAYER: Yes.

MR. ROSENBLATT: Did the SRRR plan focus on measures that would reduce inflow and infiltration?

MR. BAYER: Yes.

MR. ROSENBLATT: Does the SRR plan outline repairs that are deemed necessary to eliminate SSOs in the Jones Falls sewer shed?

MR. BAYER: Yes.

MR. ROSENBLATT: And were those repairs outlined in a corrective action recommended plan?

MR. BAYER: Yes.

MR. ROSENBLATT: Okay. I'm going to show you a few maps from within this SRRR plan. Start with, pardon my scrolling, okay. Starting with map 4-2 and ask you, does the, does the SRR plan contain a map identifying areas of high

infiltration and SSOs throughout the Balt, throughout the Jones Falls sewer shed?

MR. BAYER: Yes, the SRR plan includes a map, this map that shows areas that exhibit high I&I.

MR. ROSENBLATT: Are you familiar with the path of sewage from the Greenspring Manor project down, from Joppa Road down to Baltimore City?

MR. BAYER: Yes.

MR. ROSENBLATT: And downstream from the project, were there any areas identified on this map as exhibiting high I&I?

MR. BAYER: No.

MR. ROSENBLATT: Does this map show any SSOs downstream from the path of sewage from this project?

MR. BAYER: No.

MR. ROSENBLATT: Show you another map. Okay. Map 6-1 and ask you, is this a map of the corrective action recommendations plan?

MR. BAYER: Yes.

MR. ROSENBLATT: And how would you characterize the recommended actions downstream from the Baltimore, I'm sorry, from the Greenspring Manor project, down to Baltimore City?

MR. BAYER: Hard, hard to see at this scale of the map, but I'm, I believe there were structural repairs, corrective actions that were needed to the sewer system

downstream.

MR. ROSENBLATT: Looking at the overall map, was the area downstream from the Greenspring Manor project a primary area of concern for Baltimore County?

MR. BAYER: The corrective actions were, were a concern. We wanted to get those repaired. The structure, structural defects downstream, they were a concern, yes. As well as the, the I, I&I areas that are shown in the upper righthand corner of that map.

MR. ROSENBLATT: So, is the area in the upper righthand corner, is that downstream from the Greenspring Manor project?

MR. BAYER: No.

MR. ROSENBLATT: And are, what type of fixes were required in that area?

MR. BAYER: In the upper righthand corner area?

MR. ROSENBLATT: Yes.

MR. BAYER: We opted to do what we call comprehensive lining effort, which is lining as much of the public portion of the sewer system as we possibly could in the hopes that that would reduce the I&I. And also correct the, the structural defects and ultimately extend the service life of the existing sewer system.

MR. ROSENBLATT: Were there any projects as significant as that downstream from the Greenspring Manor

project?

MR. BAYER: No.

MR. MCCANN: (inaudible) on this exhibit or, I'm sorry. Your Honor, the questions are so leading, I mean, Mr. Rosenblatt is not following your instruction, I mean, he just keeps asking the same questions he has on his paper, which, and essentially, testifying.

I think a witness as important as this on a Motion for Reconsideration after the hearing is concluded and he could have called this gentleman before, I think it's imperative that we stick to non-leading questions. This gentleman has something to say on the issue that you said he could talk about, then he should say it.

MR. ROSENBLATT: And he is saying it.

MR. MCCANN: No, he's not.

MR. ROSENBLATT: (inaudible) his own words.

ALJ: So, I, I (inaudible) --

MR. MCCANN: Your own words.

ALJ: -- I didn't find those questions to be particularly leading, let me say that, number one. Number two, the, you know, the Protestants could also have called Mr. Bayer. I just highlight that, I mean, a lot of the documents that were put in had to do with Mr. Bayer.

So, you could also have called him. So, that's for either party to call him and we're here on a Motion for

Reconsideration, it was granted. He's testifying in regard to the sewer path. I don't find that particular question to be leading. So, overruled. Go ahead, Mr. Rosenblatt.

MR. ROSENBLATT: Okay. Mr. Bayer, I'm now showing you what was marked as Developer's Exhibit 43, two-page document, first from Maryland Department of the Environment and second page, from United States Environmental Protection Agency. And ask you, did MDE and EPA confirm in writing that the SRRR plan developed by RK&K meets the requirements of the Consent Decree?

MR. BAYER: Yes, that letter on, on the screen right now is MDE's letter that says the SRR plans meet the requirements of the Consent Decree.

MR. ROSENBLATT: And page two, is that a similar letter from EPA?

MR. BAYER: Yeah, that's United States Environmental Protection Agency letter acknowledging that the plans, SR plans, meet the requirements of the Consent Decree.

MR. ROSENBLATT: Okay. I want to ask you some questions about the various consultants that Baltimore County hired in this case, so. Starting with RJN and ask you, did the Consent Decree require Baltimore County to conduct performance assessments for each sewer shed?

MR. BAYER: Yes.

MR. ROSENBLATT: Did Baltimore County hire RJN to prepare a report for the Jones Falls sewer shed?

MR. BAYER: Prepare, prepare the performance assessment report? Yes.

MR. ROSENBLATT: Yes, and did RJN identify improvements made under the SRR plan between 2010 and 2019?

MR. BAYER: Yes.

MR. ROSENBLATT: Show you a few maps attached to this report. So, map one, is this the same corrective action recommendations map that was contained in the, in the RK&K report?

MR. BAYER: Yes.

MR. ROSENBLATT: And then map two is entitled, sorry. (inaudible). I can't get that bottom to go away, sorry.

ALJ: Oh, it, we can't see it, we just see the map.

MR. ROSENBLATT: Oh, okay. Good. All right. Map two entitled rehabilitation completed, what does this map show?

MR. BAYER: A lining that we did and, and corrective actions, including frame seals and replacing framing covers, inflow inserts, other structural repairs.

MR. ROSENBLATT: Has Baltimore County made the improvements shown on this map?

MR. BAYER: Yes.

MR. ROSENBLATT: So, if we compare the corrective actions recommendations map, map one to the report, with the rehabilitation completed, do you know if there are any projects in the Jones Falls sewer shed that have not been completed to

date?

MR. BAYER: There are maybe four or five segments and two manholes that have not yet been, the corrective actions have not been completed yet.

MR. ROSENBLATT: Okay. Can you, can you talk to where those are located?

MR. BAYER: The Towson Run interceptor at this scale, it's very difficult for me to --

MR. ROSENBLATT: Sure.

MR. BAYER: -- say exactly where it is but. They're located on the Towson Run interceptor.

MR. ROSENBLATT: Is, and why hasn't that been completed?

MR. BAYER: We were going to try to build a relief sewer that we thought was necessary and at the time when we build the relief sewer we will use that as the bypass and then we'll be able to only impact regulated resources. And when I say regulated resources, I mean flood plain, wetlands, will only impact that one time and then we'll save money by using a relief sewer as the bypass.

MR. ROSENBLATT: Okay and is that Towson area improvement, is that downstream from the Greenspring Manor project?

MR. BAYER: No.

MR. ROSENBLATT: And is there another area beyond the

Towson improvements that, that have not been, an area of repair that has not been completed yet?

MR. BAYER: Not that I'm aware of.

MR. ROSENBLATT: We've, we've heard testimony in this case about Marnat Avenue. Can you explain what the situation is with Marnat Avenue?

MR. BAYER: That's an existing SSO and a sanitary sewer overflow structure that's over in the Pikesville area. Over there, if you look at JF 03206, it's over in that area, I think. And that's an existing structure that we can't eliminate because the downstream restriction and capacity is on the City property. The City hasn't completed their improvements yet.

MR. ROSENBLATT: Okay and is that downstream from the Greenspring Manor project?

MR. BAYER: No.

MR. ROSENBLATT: RJN's report contains an executive summary at the outset. Have you reviewed this document in its, in total?

MR. BAYER: A while ago, yes.

MR. ROSENBLATT: Okay. Did RJN find the rehabilitation performed and relief sewers constructed to be effective?

MR. BAYER: Yes.

MR. MCCANN: Objection, leading. Particularly since

he read it so long ago. Did it find X?

ALJ: Okay. Overruled. Go ahead.

MR. ROSENBLATT: Okay. Mr. Bayer, I want to ask you about the Hazen report. So, did Baltimore County hire Hazen as a consultant in 2022?

MR. BAYER: Yes.

MR. ROSENBLATT: And what was the purpose of Baltimore Count hiring Hazen in 2022?

MR. BAYER: They wanted them to do a comprehensive evaluation or a needs analysis.

MR. ROSENBLATT: Was it to identify short term or immediate improvements that were required to the system?

MR. BAYER: Mostly long, medium and long term.

MR. ROSENBLATT: What, what type of long term, what, what level outlook? How many years out in the future?

MR. BAYER: I think we had a fifty-year planning horizon.

MR. ROSENBLATT: The, is Hazen to make maintenance recommendations to Baltimore County?

MR. BAYER: I don't know about recommendations. They may offer strategies or options or alternatives.

MR. ROSENBLATT: Well, will the Hazen report help with future allocation of funding to specific sewer projects?

MR. BAYER: It, it might be a benefit, yes.

MR. ROSENBLATT: Will this report identify actions

that will require immediate fix before any connections are made to the Jones Falls sewer shed?

MR. BAYER: No.

MR. ROSENBLATT: And is there a final report from Hazen at this time?

MR. BAYER: For the comprehensive evaluation or the needs analysis? No.

MR. ROSENBLATT: Okay. I want to talk to you about the Ramboll report from June 2022. Did Baltimore County hire, hire Ramboll for a Lake Roland sewer rehabilitation project?

MR. BAYER: Yes.

MR. ROSENBLATT: And what was the purpose of hiring Ram, Ramboll?

MR. BAYER: We wanted a consultant on board that could help us with some design for some rehabilitation, (inaudible) the sewers in that Lake Roland area.

MR. ROSENBLATT: Did Baltimore County pursue this report because of concerns about capacity in the Jones Falls sewer shed?

MR. BAYER: No, we had seen, we finally got a good look at the interior, the inside the, the interceptor underneath the lake and we saw some corrosion which concerned us, and we felt we should be pro-active and try to initiate a rehabilitation project to take care of that corrosion.

MR. ROSENBLATT: So, was, was the purpose of

obtaining this, of, of retaining this consultant and this report related to the capacity of sewage in the Jones Falls sewer shed?

MR. BAYER: No. The benefit would be from the lining could be as increased capacity.

MR. ROSENBLATT: And does this Ramboll report, does it identify issues that must be corr, corrected before any new homes or fixtures are connected in the Jones Falls sewer shed?

MR. BAYER: No.

MR. ROSENBLATT: So, why did Baltimore County, why did you seek this analysis?

MR. BAYER: Like I said, we wanted to correct the, the corrosion that we saw on the interior of that Lake Roland sewer.

MR. ROSENBLATT: Would adding sixty homes to the Jones Falls sewer shed have any effect on this project?

MR. BAYER: No.

MR. MCCANN: Objection. That's an expert question that I don't think this gentleman is qualified to answer or has been qualified to answer.

ALJ: Sure, it is. He's, that's in the scope of his employment, what he does every day.

MR. MCCANN: It is --

ALJ: Sure, it is.

MR. MCCANN: I didn't, I didn't catch that, that he

does --

ALJ: Sure, it's in the scope of what he does every day. He's in the Sewer Design Section, he's a project manager and so the question, no, the question is within his scope of expertise. Overruled.

MR. ROSENBLATT: Take a break from documents for a minute. Mr. Bayer, are you aware, since the Consent Decree was entered into, how much money has Baltimore County spent on Consent Decree and non-Consent Decree projects to make repairs to the Jones Falls sewer system?

MR. BAYER: That's, the construction costs that we've got since the Consent Order, probably would be a little bit more than $25 million. And that's just the construction, that doesn't include design costs or anything else like that.

MR. ROSENBLATT: Okay and how many SSOs were there County wide when the Consent Decree was first entered into?

MR. BAYER: Forty-four structures, I believe.

MR. ROSENBLATT: How many have been eliminated since?

MR. BAYER: Thirty-four structures have been eliminated.

MR. ROSENBLATT: And so, ten remaining. How many of the ten remaining require Baltimore City improvements to fix?

MR. BAYER: Four require Baltimore City's assistance.

MR. ROSENBLATT: And of the ten remaining, how many are in the Jones Falls sewer shed?

MR. BAYER: One, that's the Marnat.

MR. ROSENBLATT: Just Marnat Avenue?

MR. BAYER: Yeah.

MR. ROSENBLATT: I want to talk about your bureau's involvement with development projects. So, when, when a project is first proposed, is your bureau often asked to analyze a proposed development to see if the sewer system is sufficient to handle a proposed project?

MR. BAYER: Yes, we evaluate all proposed subdivisions.

MR. ROSENBLATT: And I'm going to show you what was marked as Developer's, or sorry, Protestant's Exhibit 55 in this case. And ask you did, did Matt Bishop reach out to Lisa Eicholtz asking that question?

MR. BAYER: That's what that e-mail appears to do, is ask Lisa for some information on the capacity.

MR. ROSENBLATT: Okay and if we scroll up to the first page of this Exhibit 55, did Ms. Eicholtz copy you in responding to Mr. Bishop?

MR. BAYER: Yes.

MR. ROSENBLATT: Okay and did Ms. Eicholtz identify the eight sewer segments that we have spoken about, six referring to Johns Hopkins and two additional sewer segments as needing repair?

MR. BAYER: Yes.

MR. ROSENBLATT: Does Baltimore County use a model to conduct this analysis when people ask the question can the sewer system handle my additional project?

MR. BAYER: Yes.

MR. ROSENBLATT: Let me show you what was marked as Protestant's Exhibit 4, sorry, Protestant's Exhibit 64. And ask you is this the model that was used in this case?

MR. BAYER: Yes, that's our old, what we call the SS Cap model, yes.

MR. ROSENBLATT: Okay. I just want to ask you, does this, does this model only account for dry weather?

MR. BAYER: No.

MR. ROSENBLATT: What, I'm looking at all these columns. Where would you point to show that it, that it does not just account for dry weather?

MR. BAYER: It's been my understanding that in, that infiltration column, that infill column that you see there, includes extraneous flow, which would be infill, and infiltration.

MR. ROSENBLATT: Okay. So, the inflow column has all zeroes?

MR. BAYER: Yeah, it's my understanding that we combined the extraneous flow and filtration and inflow together and it's placed in that inflow column.

MR. ROSENBLATT: And would you, would you say that

that infill column accounts for wet weather?

MR. BAYER: Yeah, it was, yes, it was our best guess at what we thought the wet weather impacts would be.

MR. ROSENBLATT: Is Baltimore County working on a new model to evaluate projects?

MR. BAYER: Yes.

MR. ROSENBLATT: Is the model finished yet?

MR. BAYER: Not yet.

MR. ROSENBLATT: Were you able to use the model to, to evaluate this project?

MR. BAYER: This project?

MR. ROSENBLATT: Yes.

MR. BAYER: The Greenspring Manor project?

MR. ROSENBLATT: Yes.

MR. BAYER: Yeah, I was curious to see --

MR. MCCANN: Objection. Objection, Your Honor.

ALJ: What's your objection?

MR. MCCANN: Now we're getting way afield. We have a model that was used to, for the County's comments on this particular project. Apparently the County has a new model that hasn't been finalized but he's going to now tell us what this new model has to say.

This is, this is new evidence. This isn't, this isn't clarification, which is what the subject of your Order is, as to the County's position as, on the sewer path. This is

new evidence that Mr. Rosenblatt is seeking to introduce.

ALJ: Okay. I didn't hear it that way, so overruled. Go ahead.

MR. ROSENBLATT: Mr. Bayer, did you run your new model with respect to the Greenspring Manor project?

MR. BAYER: Yes.

MR. ROSENBLATT: And did you run the model --

MR. MCCANN: I would, again, interrupt. I'm going to ask for a continuing objection on this.

ALJ: Okay.

MR. MCCANN: This is absolutely new evidence --

ALJ: You have a continuing, you have a continuing objection. It is a Motion for Reconsideration hearing. He is here, he's never testified in the case before. So, he's going to have new information by just, you know, as, as (inaudible)--

MR. MCCANN: I, I hope that works both ways, Your Honor. I hope it does.

ALJ: Well, I'm just saying, he's going to have, he's going to have, he can't not have new information because he's, he hasn't been in the hearing before, you know, but again, either party could have called him and probably would have been helpful to everybody if Mr. Bayer had come earlier maybe to go through some of this stuff. So, overruled. Go ahead.

MR. ROSENBLATT: Okay. Mr. Bayer, did, were you able to run the new model considering that the eight segments Ms.

Eicholtz identified in Exhibit 55 were repaired?

MR. BAYER: Yes.

MR. ROSENBLATT: And did the system show any downstream problems from the project when these eight segments were repaired?

MR. BAYER: No, once the eight segments were improved there weren't any issues.

MR. ROSENBLATT: What was Jeff Peluso's role with Baltimore County before he retired?

MR. BAYER: He was the Bureau Chief of the Bureau of Engineering Construction.

MR. ROSENBLATT: I'm going to show you what was marked as Protestant's Exhibit 90. It's an e-mail from Jeff Peluso to you and Lisa Eicholtz dated March 22nd, 2021. Do you see this e-mail? Can you see it, Mr. Bayer?

MR. BAYER: I can, yes.

MR. ROSENBLATT: Okay and I want to turn your attention to, in particular, to number four. So, Mr. Peluso asks four questions, the fourth being, if Greenspring Manor were to continue through development, is there another way to provide capacity? Is there a breaking point for Greenspring Manor and number of units?

And then, at the top of this document is an e-mail back from you, from Dave Bayer to Jeff Peluso and Lisa Eicholtz, and you respond to number four. In particular you

say, zero is the breaking point of number of, number of units that could be built without causing an SSO. I want to ask you, did your response assume that the eight identified segments from Ms. Eicholtz are not improved before the new homes are connected?

MR. BAYER: Yes.

MR. ROSENBLATT: If the eight identified --

ALJ: Hold on, hold on. Can you say that question one more time? You're, you're going kind of fast.

MR. ROSENBLATT: Sure.

ALJ: One more time with the question, thanks.

MR. ROSENBLATT: No problem, Judge. Let me try and make this easy. So, Mr. Bayer, just to go back real quick to Exhibit 55, there were eight segments, six that say part of John, part of Hopkins project and two additional segments.

And then moving forward to Protestant's Exhibit 90, my question is, when you said that zero is the breaking point of number of units that could be built without causing an SSO, does your response assume that the eight segments identified by Ms. Eicholtz in Exhibit 55, were not improved prior to the connection of the sewer system to the new homes?

MR. BAYER: Yeah, those eight segments needed to be improved before, because there was a high possibility of overflow. So, those eight segments needed to be improved.

MR. ROSENBLATT: Okay. So, if you were asked if

those eight segments are repaired, then what is the breaking point for number of units that can connect, what would your answer be?

MR. BAYER: They could, they could connect once the, once the capacity has been improved, they could connect all the units.

MR. ROSENBLATT: I want to talk to you about modeled results versus real results that you see in the field. And I'll start with, this is map three, so Protestant's Exhibit 78 was the RJN report. We've talked about maps one and two. This is map three and entitled model predicted SSO and flow restriction locations. And my question is, does this map show issues downstream from the eight segments that Ms. Eicholtz identified as needing repair?

MR. BAYER: Yes.

MR. ROSENBLATT: And when you wrote your e-mail to Jeff Peluso saying zero is the breaking point without causing an SSO, did that e-mail have anything to do with the modeled issues shown in this map downstream from the eight segments that Ms. Eicholtz identified?

MR. BAYER: No.

MR. ROSENBLATT: When a model like this shows potential problems, do you immediately go and make those changes in the, in the field?

MR. BAYER: No.

MR. ROSENBLATT: Do you try to verify the issues such as those shown on this map three that are actually happening in the field before you allocate funding to repair or replacement project?

MR. MCCANN: Goodness that's leading, Your Honor. Come on, geez.

ALJ: It's getting a little long, Mr. Rosenblatt. So, could, could you, could you rephrase that question, please?

MR. ROSENBLATT: Sure. Do you try to verify issues in the field prior to allocating funding to a re, rehab or rehabilitation project?

MR. BAYER: Try to, yes.

MR. ROSENBLATT: And how do you do that? What do you do to, to verify in the field?

MR. BAYER: We install flow monitors, for example.

MR. ROSENBLATT: I'll turn your attention to, this is Developer's Exhibit 47-B. And were you asked to identify flow monitors in the vicinity of the Greenspring Manor property?

MR. BAYER: Yes.

MR. ROSENBLATT: And this e-mail, which is, again, Developer's Exhibit 47-B, does this identify the flow monitors that are in the vicinity of Greenspring Manor?

MR. BAYER: They were as of last, last March, yes.

MR. ROSENBLATT: Okay and how many were there?

MR. BAYER: Five.

MR. ROSENBLATT: In addition to flow monitoring, are there any other tools that you used to, to evaluate the state of the system?

MR. BAYER: Yeah, the, the models, simulations that are run.

MR. ROSENBLATT: Okay. Do you use tools such as SSES?

MR. BAYER: That's one tool we do use, yes.

MR. ROSENBLATT: Can you explain what that means?

MR. BAYER: That's sanitary sewer evaluation surveys. So, what essentially we do is we might go out and do night flow isolations to try to find out how much flow is in the pipes in the middle of the night. And then we would also do smoke testing so we could try to find if there are illegal connections.

MR. ROSENBLATT: And is there any kind of chart or, or map that shows a comparison of what has, what you've seen, observed in the field versus what is modeled under various models that you used to evaluate the system?

MR. BAYER: Yes, every one of the SRR plans that we had we required our consultants to compare model calibrations summary table, those are included in the SRR plans and that particular one in the Jones Falls is table 5-3.1, which was prepared by RK&K.

MR. ROSENBLATT: Bear with me. So, in the RK&K

report, share my screen. Which again was Protestant's Exhibit 67. You mentioned table 5-3.1. And can you explain what this table shows? It's entitled model calibration summary table.

MR. BAYER: Yeah, I'll do my best to, to try to explain so we can all understand it. This is kind of a self-assessment that we ask our consultants to do when they prepare their model simulations so we can have a quick look at if there are any issues we should be concerned about related to, that's under predicting or over predicting. And this table provides that information for each meter basin location.

MR. ROSENBLATT: Okay and how, how did this, how did this information impact Baltimore County's use of, of modeled outcomes like the map three that we just went over?

MR. BAYER: Map three?

MR. ROSENBLATT: So, map three being the --

MR. BAYER: Oh, okay. So, RJN, I'm sorry.

MR. ROSENBLATT: Map three of, sorry, let me just, just so the record is clear, how did that chart that we just went over, how does that impact Baltimore County's interpretation of map three from the RJN report, which is the model predicted SSO and flow restriction locations?

MR. BAYER: Okay. I'll, I'll start with RJN used the same model that RK&K did. So, if you could go back to the RK&K table, I should try to better explain.

MR. ROSENBLATT: Okay.

MR. BAYER: So, again, this is a, a calibration summary table that we had every consultant prepare. If you look at, go to the next page because I want to look at BC-22, which you'll see on the RJN map. So, we were quite concerned at BC-22 of the over predicting that we were seeing at that location.

So, an over prediction means, if it's significant, which you'll see in the far-right column, there was at this location, BC-22, a significant, we have low confidence in the, in the predictions that are, accuracy of the predictions that were being provided. So, that was a big concern to us.

MR. ROSENBLATT: Okay and which, where is that particular area located on, on map three?

MR. BAYER: You see BC-22, it's right at the, out of the middle of your map.

MR. ROSENBLATT: Okay.

MR. BAYER: That's downstream of the beltway.

MR. ROSENBLATT: Okay.

MR. BAYER: Where you see a lot of the red.

MR. ROSENBLATT: Got it.

MR. BAYER: So, the insight we were getting from that, those simulations we had low confidence in that, in those.

MR. ROSENBLATT: Okay. I want to ask you some questions about the timing of comments in this case. Let's go

to, sorry, I have so many things open. All right. Let's start with RJN report. So, this was sent directly to you. This is Protestant's Exhibit 78 again, the first page of it. And this was sent to you on May 27th, 2021, okay?

Okay and then, bear with me. Okay. Then in August, a few months later, there's correspondence from Ms. Eicholtz that we've gone over listing the eight segments, the six Hopkins, six part of Hopkins project, two additional segments as required for this project. You see that?

MR. BAYER: Yes.

MR. ROSENBLATT: So, my question is, after the RJN report and map three came out, did Ms. Eicholtz add any additional downstream improvements to these eight segments as being requirements for the Greenspring Manor project?

MR. BAYER: She did not.

MR. ROSENBLATT: And on August 10th, 2021, so the memo is dated August 2nd, then August 10th, the development plan conference comments come out for this case. And again, we go to number twenty, I'm at number twenty, provides the eight segments. Were any other additional downstream requirements listed in the development plan conference comments for this case?

MR. BAYER: Not, not that I'm aware of.

MR. ROSENBLATT: Okay. Now, both the Lisa Eicholtz memo and the development plan conference comments say that

issuance of use and occupancy permits for the residential units from Greenspring Manor should be subject to completion. And that's Eicholtz memo. And then, again, in the development plan conference comments, it says issuance of use and occupancy permits should be subject to the completion of the system improvements.

Any my question for you is, did your Department ever oppose approval of the development plan? Not use and occupancy permits, but the development plan for Greenspring Manor, prior to the eight segments being replaced?

MR. BAYER: Can you ask that question again?

MR. ROSENBLATT: Sure. Did your Department ever oppose approval of the development plan, not, not the issuance of use and occupancy permits, but the approval of the development plan for Greenspring Manor prior to the eight segments being replaced?

MR. BAYER: Not that I'm aware of.

MR. ROSENBLATT: All right. I just want to ask you a couple more questions about, about pipe design in general. So, some models show that pipes in the Jones Falls sewer shed will operate at or over a hundred percent capacity under certain storm events. In your opinion, when models show that, when pipes are shown at a hundred percent or higher, does that mean that the pipes are unsafe?

MR. BAYER: Not necessarily, no.

MR. ROSENBLATT: Do you look at other factors to determine whether the pipes are safe?

MR. BAYER: Other factors, we would try to find out what, what the frame and cover elevation would be at the ground surface where this surcharging might be.

MR. ROSENBLATT: Okay and in the design manual, which I'll share one more time. So, Protestant's Exhibit 70, the DPW sewer design manual, under hydraulic design of sewers, it speaks to sewers shall be designed to flow at depths not exceeding ninety percent and then for laterals and mains eighty percent and building connections seventy percent. And my question to you is, is this the standard you use when evaluating whether a project can connect to an existing sewer system?

MR. BAYER: This is guidance that we provided for design of new sewers.

MR. ROSENBLATT: If it's for new sewers, is this the standard you use when you're evaluating a proposed project and whether the project can connect to the existing sewer system?

MR. BAYER: Yeah, we would make, try to make sure that any new design would not exceed this guidance providing, provided in the design manual.

MR. ROSENBLATT: All right. Would you try and ensure that the entire system downstream meets these percentage requirements?

MR. MCCANN: Objection. Asked and answered and speculation. Would he, would he --

ALJ: (inaudible), I'm sorry, go ahead, Mr. McCann.

MR. MCCANN: Yeah, I mean, the question is would he do X. I, I, we have no circumstances under which or context to that question. Aside from the fact it's, it's, it's leading, and he's already answered and hasn't, twice hasn't answered the question, said what Mr. Rosenblatt wants him to say.

ALJ: Mr. Rosenblatt, could you rephrase your question, please?

MR. ROSENBLATT: Sure. So, Mr. Bayer, when you're evaluating a project, a new project, hooking up to Baltimore County sewer system, are these percentages the, that you see on the screen in the design manual, the ninety, eighty, seventy, are you evaluating a new project and ensuring that the entire existing sewer system meets these percentage requirements?

MR. BAYER: Someone is constructing a new sewer, they're supposed to follow these guidelines.

MR. ROSENBLATT: Okay. For the, for new constructed pipes or existing pipes?

MR. BAYER: New, new sewer construction.

MR. ROSENBLATT: All right. Were there improvements downstream of this project identified in the SRRR plan?

MR. BAYER: Improvements?

MR. ROSENBLATT: Yes.

MR. BAYER: Downstream there were structural repairs that were required to be, that we, we're going to complete.

MR. ROSENBLATT: Okay and were you asked to see if those improvements have been completed?

MR. BAYER: Yeah, I was asked to do some research to see if those, those structural repairs were completed, yes.

MR. ROSENBLATT: Okay. I'm going to show you what is marked as Developer's Exhibit 45-A. And ask you, is this an e-mail that you sent on May 30th, 2023 answering that question?

MR. BAYER: Yes.

MR. ROSENBLATT: And there's both an e-mail and then 45-B, a spreadsheet, and my question to you is, are the improvements that were identified in the SS, in the SRRR plan downstream from Greenspring Manor, were those improvements all completed?

MR. BAYER: To the best of my knowledge, they were. Or it could have been eliminated like for one instance you'll see on the top there, two things were not needed.

MR. ROSENBLATT: Okay. What else is left to complete downstream from this project under the SS, under the SRRR plan?

MR. BAYER: Downstream from this along that flow path, not, nothing that I'm aware of.

MR. ROSENBLATT: Okay. One final topic. I want to talk about areas of special concern. Can you explain what is an area of special concern?

MR. BAYER: On the basic services maps, the areas of special concerns were areas where we had those sanitary sewer overflow structures.

MR. ROSENBLATT: And is the area including and surrounding the Greenspring Manor property, is that in an area of special concern?

MR. BAYER: That was, that was another area we didn't have a sanitary sewer overflow structure at that location, but we did have information that one of the staff members had gathered that we were very concerned about the possibility of overflow. So, that, we added that to the area of special concern.

MR. ROSENBLATT: Okay and if the eight segments that we've gone over, that Ms. Eicholtz identified, if those eight segments are improved would that resolve DPWT's concern for this being an area of special concern?

MR. BAYER: If there's, if capacity is added, then, then that concern would go away.

MR. ROSENBLATT: So, if, if those eight segments are improved, does DPWT believe the County's sewer system can function safely?

MR. BAYER: Yes.

MR. ROSENBLATT: And can it function without detrimental impact to public health or environment?

MR. BAYER: Yes.

MR. ROSENBLATT: Thank you. That's all the questions I have.

ALJ: Mr. McCann, cross?

MR. MCCANN: Yes. Two things, Your Honor. First of all, because I did not object to every single question and I think that would have been too disruptive, I want to move to, to strike, just for the record, Mr. Bayer's entire testimony on the grounds I've already stated, as well as those set forth in the Motion. This is all new evidence that could have been submitted long ago and this is just a, yet another bite of, at the apple that has been afforded the Developer.

Number two, I would like a short break to look at my notes, since this is, this is a lot of new stuff. And number three, just to, I would ask certainly, if not only out of fairness, but for a host of other reasons, that we be allowed the opportunity at, at a future date to call witnesses to rebut, to respond to Mr. Bayer's testimony, since again, this all could have been submitted during the course of the hearing, certainly in, in the Developer's case.

So, I'm just asking those, those things now, but I would immediately anyway, I would ask that his testimony be stricken and that I be given a little bit of an opportunity, ten-minute break of so, just to collect my notes here.

ALJ: Okay. The motion to strike is denied. Obviously, Mr. Bayer was coming in today, the motion, the Order

has been in place set for today's hearing. And again, I've said it, and this is probably the third time now, Protestants had every opportunity as well to call Mr. Bayer as a witness.

And you can see in this kind of case, it actually is, you know, something that maybe some party should have done, have Mr. Bayer come in and testify. So, the motion to strike is denied. (inaudible) --

MR. MCCANN: But, Your Honor, it wasn't our burden, it wasn't --

ALJ: There is, there is no additional day for, for more testimony here. This is a County witness so if this County witness had shown up on, when all the other County witnesses came on day one, then you would have had the opportunity just like you, you would today to have, to cross examine. And, and Mr. Wyatt does, and Ms. Demillio does and, and we give that opportunity to, to cross examine, you know, the, the County witnesses.

Even more so as probably what, than what is contemplated in the Code, which is really for the County witnesses to come in and say whether or not there are unresolved comments or open conditions or something like that. I actually go beyond that and let everybody cross examine. So, so there would be no difference.

So, if he came in day one, you would have had the same opportunity to do that and, and again, or in your own

case, either one of you, Protestants or Developers, could have called Mr. Bayer. There's nothing to prevent somebody from issuing a subpoena, either to him or, or the other people.

And, and all this evidence, you know, the reason he's testifying, he's responding now to, that these are all things that the Protestants put in evidence. So, it's not new and surprising, it's, it's in response to those things. So, I hear you but a Motion for Reconsideration by, by its nature is going to have new information. It's going to have new testimony. We can't, we're not going to, so it, you know, he's explaining things as, as within his, you know, expertise.

So, there's no additional days. We're not going about it like that. The, the Motion and the Order was limited to one, the County witness coming in and explaining their position. That's what it was limited to, not back and forth and so, all right?

MR. MCCANN: I'm not going to argue with you (inaudible) --

ALJ: Okay, good.

MR. MCCANN: -- although it may appear that I am.

ALJ: No, you won't. I know, I know, you're stating your position and you're zealously advocating for your client, and I always appreciate that. I --

MR. MCCANN: (inaudible) what's missing from, what's missing from it you just said, and what's missing from your

comment that we could have called him is, first and foremost, it is the Developer's burden in this case. And you've already ruled in your opinion, by the way, that a presumption didn't rise on this issue and therefore, the burden at no time has shifted to us.

But today it apparently has and now I'm being denied the opportunity to respond to new evidence asserted for the first time on behalf of the Developer to meet its burden that it had on the very first day of this hearing. So, this is the first time anything like this has ever happened to me in twenty years. It's unprecedented --

ALJ: Actually, if you note in the Order for the Motion for Reconsideration, actually Judge Beverungen had actually --

MR. MCCANN: Nothing to do with this case. That, there's no similarity at all.

ALJ: No, no, but I'm saying, he, but he issued, but he allowed a, an additional evidentiary hearings in two different cases.

MR. MCCANN: That's not what happened at all.

ALJ: I think you were in those, weren't you?

MR. MCCANN: That's not what happened at all, Your Honor. I was in that case.

ALJ: Okay.

MR. MCCANN: So, in any event, --

ALJ: Yeah, I thought you were in those cases.
MR. MCCANN: I got your ruling, I got your ruling. If I could have fifteen minutes to go through my notes, I think that's fair,
ALJ: Yes, absolutely.
MR. MCCANN: And I'll be, I'll be ready for cross.
ALJ: Okay. Fifteen minutes, we'll come back. I'll pause the record.
MR. MCCANN: Great, thank you.
ALJ: Thank you.
MR. ROSENBLATT: Thank you.
(PAUSE)
ALJ: All right. We're back on the record. Mr. McCann, you had cross?
MR. MCCANN: Okay, thank you. Mr. Bayer, I don't see you. Are you there?
MR. BAYER: I am.
MR. MCCANN: Okay. How you doing?
MR. BAYER: Great, thanks.
MR. MCCANN: Good. So, I want to jump around here a little bit, as you might suspect. You are a project engineer for the Sewer Design Section, correct?
MR. BAYER: Correct.
MR. MCCANN: You are not chief of that section, correct?

MR. BAYER: Correct.
MR. MCCANN: Do you hold, other than project engineer, do you hold any other titles with DPW?
MR. BAYER: No.
MR. MCCANN: And you mentioned your experience in the Sewer Design Section, and I think you also mentioned some other experience with the County. Prior to that, did you ever have a job in the private industry?
MR. BAYER: I did, yes.
MR. MCCANN: And where were you and what'd you do?
MR. BAYER: Whitman Requardt and Associates.
MR. MCCANN: I'm sorry?
MR. BAYER: Whitman Requardt and Associates.
MR. MCCANN: Okay.
MR. BAYER: And I was civil engineering.
MR. MCCANN: And what type of work did you do there?
MR. BAYER: Civil engineering.
MR. MCCANN: (inaudible)?
MR. BAYER: Water, water, sewer, storm drains, dams, landfills.
MR. MCCANN: Okay. What, what, describe the work that that firm does in general? What, are they just a general --
MR. BAYER: They're a multi-disciplinary engineering company.

MR. MCCANN: Okay.
MR. BAYER: Structural, mechanical, electrical, civil, water resources.
MR. MCCANN: And where are they based?
MR. BAYER: I think they're in Canton now.
MR. MCCANN: Okay. Yeah, I think I've heard of them. And when was that? When were you there?
MR. BAYER: Nineteen eighty to 1989.
MR. MCCANN: So, just one year?
MR. BAYER: Nineteen eighty to 1989.
MR. MCCANN: Okay, I'm sorry. And then you went to the County after that?
MR. BAYER: Correct.
MR. MCCANN: Okay and during those nine years, it sounds like your work was more in the general area of civil engineering as opposed to limited to or specializing in sewer design or sewer evaluation, is that fair?
MR. BAYER: Yeah, I did, yes, landfill, yep, etcetera.
MR. MCCANN: Okay.
MR. BAYER: (inaudible) kind of engineering, yep.
MR. MCCANN: And any other --
MR. BAYER: (inaudible).
MR. MCCANN: -- I'm sorry?
MR. BAYER: Along with water and sewer, storm drain.

MR. MCCANN: Okay.
MR. BAYER: Sorry.
MR. MCCANN: Any other work in the private industry, other than that experience with that firm from 1980 to 1989?
MR. BAYER: No.
MR. MCCANN: Okay and where, where'd you go to school?
MR. BAYER: Penn State (inaudible).
MR. MCCANN: Okay and when did you graduate?
MR. BAYER: Let's see, 1980 for my Bachelor's and I, I don't recollect the year on my Master's degree.
MR. MCCANN: Okay. Who is the, the Chief of the Sewer Design Section?
MR. BAYER: Amy Bley.
MR. MCCANN: B-L-E-Y?
MR. BAYER: Yes.
MR. MCCANN: Okay and then in terms of the hierarchy, if, if there is one, above her in, in terms of sewer anyways, there, is there such a person?
MR. BAYER: No, she's Chief of the Sewer Design Section.
MR. MCCANN: Okay and that falls under DPW?
MR. BAYER: DPWT.
MR. MCCANN: DPWT, okay. All right. Let's talk quickly, as you might expect, about the meeting that you had,

it sounds like, with Mr. Rosenblatt. Do you recall that meeting?

MR. BAYER: Yes.

MR. MCCANN: What, when was that meeting?

MR. BAYER: Friday.

MR. MCCANN: This past Friday?

MR. BAYER: Yes, and then we had another meeting, I don't recollect the date, prior to that.

MR. MCCANN: Okay. When, when approximately was that prior meeting?

MR. BAYER: It would have been a week or so before this was canceled because of snow.

MR. MCCANN: Right, so sometime in the end of January of 2024?

MR. BAYER: I, I don't recollect the date.

MR. MCCANN: But it, a couple days before that last hearing, is that fair?

MR. BAYER: Plus or minus, I guess, yeah.

MR. MCCANN: Okay, very well. And who else attended that meeting other than it sounds like Mr. Benjamin or someone from his staff?

MR. BAYER: Mr. Benjamin.

MR. MCCANN: Okay. He attended both meetings, that is?

MR. BAYER: Yes.

MR. MCCANN: Okay. Did Mr. Rosenblatt tell you the questions he was going to ask you today?

MR. BAYER: Yes.

MR. MCCANN: Did you provide any documents to Mr. Rosenblatt during that meeting or at any other time since the last hearing in this case?

MR. BAYER: Did I provide any documents since the last, not that I'm aware of.

MR. MCCANN: Okay. Did you have any e-mail correspondence with Mr. Rosenblatt or anybody from his firm about the meetings or the hearing in this case?

MR. BAYER: Yes, I did e-mail Adam because I couldn't get into the, into the Webex when the meeting was canceled.

MR. MCCANN: Okay.

MR. BAYER: So, I e-mailed Adam telling him I could not get into the Webex.

MR. MCCANN: Other than that, --

MR. BAYER: I didn't know the, I didn't know the meeting was canceled, so.

MR. MCCANN: Got it.

MR. BAYER: Or the hearing, I'm sorry, the hearing was canceled. So, yes, I e-mailed Adam.

MR. MCCANN: Any other e-mail communications with Mr. Rosenblatt, his firm, about this hearing or the meetings that you had?

MR. BAYER: I don't believe so.

MR. MCCANN: Okay. Okay. I'm going to show you a couple documents, which we've already seen or talked about. Bear with me one second, Mr. Bayer. There we go. This is Protestant's Exhibit 13 for the record. It's a March 3rd, 2021 e-mail from you to Mr. Desai. I think Mr. Rosenblatt asked you about this. Do you, you see that?

MR. BAYER: I do see it, yes.

MR. MCCANN: Okay and do you recall it?

MR. BAYER: Yeah, because I've seen it before, yes, um hm.

MR. MCCANN: Okay. At the time you wrote this, drafted this memo in March of 2021, was it, was it accurate?

MR. BAYER: Actually, I think Lisa drafted it, since she signed it on my behalf, that's where you see LKE for, so as far as I know, at the time it was accurate.

MR. MCCANN: Okay. But you authorized her to sign and/or send it to Mr. Desai?

MR. BAYER: Yes, she could sign and send on my behalf.

MR. MCCANN: Okay and likewise, I want to show you Protestant's Exhibit 90, which Mr. Rosenblatt did ask you about. And that is your e-mail exchange with Mr. Peluso, do you see that?

MR. BAYER: I do.

MR. MCCANN: Okay. So, your response, specifically, your response is at the top of this exhibit on March 20th, 2021, where you mention, as we've discussed, a zero breaking point comment. Was, at the time this e-mail was sent from you to Mr. Peluso and Ms. Eicholtz, was it accurate?

MR. BAYER: As far as I know.

MR. MCCANN: Okay and then, more specifically, the other comment that you make in here, in response to Mr. Peluso's questions about what are the ramifications of a new connection, your answer about, your answer was sanitary sewer overflows. Was that response to Mr. Bayer's question accurate at the time you wrote this e-mail in March of 2021?

MR. BAYER: Was that an accurate response to Mr. Peluso's question? Yeah, we were concerned that, that if the added units, there was high probability of an SSO.

MR. MCCANN: You say a high probability?

MR. BAYER: Yes.

MR. MCCANN: Okay. So, as I understand your testimony today, there is some new model that Baltimore County is working on that you applied, correct?

MR. BAYER: Yes.

MR. MCCANN: Tell me about that new model.

MR. BAYER: It's a (inaudible) model that Hazen is developing on our behalf. So, I thought it was important to know that if the, the proper size of the improvement, so those

eight segments, if they were sized properly so I, I asked to have a simulation run.

MR. MCCANN: You asked Hazen for that?

MR. BAYER: I did, yes.

MR. MCCANN: And when you say simulation run, what do, what do you, be a little more specific about that. What does that entail?

MR. BAYER: To analyze what would happen if capacity was improved, how the sewer system would react.

MR. MCCANN: Okay and before I get, I guess, into the substance of that, you said Hazens, Hazen has prepared this model, correct?

MR. BAYER: In, in response to my request, they, they ran that simulation, yes.

MR. MCCANN: Yeah, I'm not asking about the simulation, about the, I'm asking about the model itself. The, the model is Hazen's?

MR. BAYER: They, they were develop, developing it on our behalf, yes, um hm.

MR. MCCANN: Okay and it sounds like, based on your testimony just now and before that they are still in the process of developing that model?

MR. BAYER: They are, yes.

MR. MCCANN: Okay and I, at least according to their newsletters, which I've, we don't need to get into. But let me

know if you need to see them. That was one of the things Hazen was tasked to do, that is, recalibrate or update the model that the County is using, correct?

MR. BAYER: There are quite a few things that they were tasked to do on our behalf.

MR. MCCANN: Okay. Was that one of them?

MR. BAYER: That was one of them.

MR. MCCANN: Okay. So, again, not the simulation, but the model, has, has that model, the one that the County has asked Hazen to, to prepare, has that model been, I guess, completed, for lack of a better word? Are you suggest --

MR. BAYER: Not that I'm, not that I'm aware of, no.

MR. MCCANN: Okay. Even though it hadn't been completed, you nevertheless asked Hazen to, to run a simulation, correct?

MR. BAYER: I did, yes.

MR. MCCANN: Okay. Did, is there any, did you pick up the phone and call someone at Hazen or did you send them an e-mail? How did that connection happen with Hazen?

MR. BAYER: Yeah, I think they sent them an e-mail asking them to run a simulation in that area where the eight segments were.

MR. MCCANN: Okay and when you say the area where the eight segments were, what specific, what specifically did you ask?

MR. BAYER: I wanted to make sure that, that the proposed size of the sewers were adequate.

MR. MCCANN: So, was the, was your request of Hazen limited to those eight segments?

MR. BAYER: Yeah.

MR. MCCANN: And you said that was an e-mail correspondence, your request anyway?

MR. BAYER: Yeah, I think so.

MR. MCCANN: Any, and was, did Hazen respond by e-mail and/or provide in writing or by e-mail the results of that simulation?

MR. BAYER: Yes.

MR. MCCANN: And what, when did that take place? Number one, when did your request take place and when did Hazen's response take place?

MR. BAYER: I think it was November, late November maybe of, of 2023.

MR. MCCANN: That is both your request and the response?

MR. BAYER: Yeah, I believe so.

MR. MCCANN: And remind me, maybe you've already said it but what, what prompted you to do that? That is, to ask Hazen to run a simulation regarding these eight segments?

MR. BAYER: I thought it was very important to know that the fix was going to correct the situation.

MR. MCCANN: And why did you think it was very important to know?

MR. BAYER: Well, that's what we should always be doing is making sure that what's going to be constructed will correct the deficiency.

MR. MCCANN: Well, did you, did you ask Hazen to run a simulation on a model that hadn't been completed yet for any other projects?

MR. BAYER: I'm sorry, can you ask that question again? What was it, I'm sorry?

MR. MCCANN: Did you ask Hazen to run a simulation or a model that had, hasn't yet been completed on any other projects?

MR. BAYER: On other projects? Yes. We, we, they are, they are modeling on our behalf, yes.

MR. MCCANN: Well, my question was, on other projects, you've asked them to do that?

MR. BAYER: Other, other subdivisions, yes. That's not my role, but yes, as far as I know that they are doing modeling when we have a (inaudible) subdivision.

MR. MCCANN: And when, when did they start doing that, do you know?

MR. BAYER: I don't know.

MR. MCCANN: Okay. Again, my question was, you said you thought it important to ask Hazen for that information,

which you said is something you don't normally do. Why did you, why specifically did you ask Hazen to do that in November of 2023?

MR. BAYER: I wanted to make sure that the design that was being done by both consultants would, would work, would, would correct the deficiency, the capacity deficiency.

MR. MCCANN: Well, why didn't you do it a year or so earlier, or back in 2021 when you first issued your comments in this case?

MR. BAYER: Well, I think that the, the issue back then was we could only improve the size to a twelve inch, I believe, because there are twelve inch downstream. So, you can't, we are opposed to building a fifteen-inch sewer, for example, that would discharge into a twelve-inch sewer.

That's not something that we find is the best way to operate our system. So, that the design was kind of fixed, that they could only improve it to a twelve because there's a twelve immediately downstream.

MR. MCCANN: Yeah, I --

MR. BAYER: So, I, I just wanted to make sure that would work.

MR. MCCANN: I understand why, I think you've answered why it is you made this request in November of 2023. I'm asking you why you didn't make it earlier in connection with this project, when this project has been going on for two

years.

MR. BAYER: Be, because that, that twelve inch was the largest that could possibly be done. There was, you couldn't make it any larger.

MR. MCCANN: I'm not sure what that has to do with the timing of your request, that's what I'm asking about --

MR. BAYER: (inaudible), there was no reason to, to run a simulation because that was the largest that could be done.

MR. MCCANN: Okay. I'm not sure you're answering my question, but I'll move on. Were you involved in any way, Mr. Bayer, in collecting documents responsive to my Public Information Act request, including the most recent one just about a month and a half ago or so?

MR. BAYER: Oh, yeah. I think we were all asked to search our documents, yep.

MR. MCCANN: Is there a reason why you did not produce to me, why the County did not produce to me, either your e-mail exchange with Hazen, or the simulations that were run, that were sent back to you from Hazen in response to your request?

MR. BAYER: I, I can't answer that question. I don't know when the dates were when you had your PIA request.

MR. MCCANN: Well, I'll, I'll tell you my PIA request was, was, was much later than November 2023.

MR. BAYER: Okay.

MR. MCCANN: But my question now is, do you know of any reason why you'd, why those documents that you already described, were not produced to me?

MR. BAYER: I, sorry, I can't answer that question, I don't know why.

MR. MCCANN: Were you told not to produce them?

MR. BAYER: No.

MR. MCCANN: Were you told not to produce any, any other documents?

MR. BAYER: No.

MR. MCCANN: Let me finish the question.

MR. BAYER: I'm sorry.

MR. MCCANN: Were you told not to produce any other documents to me in response to my PIA request, either the most recent one or any of the ones in the past?

MR. BAYER: No, not that I'm aware of, nope.

MR. MCCANN: So, there is a document either in your e-mail folder or printed somewhere in your office that shows the results of the simulation run by Hazen?

MR. BAYER: Yes.

MR. MCCANN: Did you tell Mr. Rosenblatt about that?

MR. BAYER: I don't think so.

MR. MCCANN: Well, you, you, did you tell him that you reran a model, a different model?

MR. BAYER: We, we run simulations all the time, I don't, I don't know if I recollect if I told Mr. Rosenblatt that.

MR. MCCANN: Okay. Let me show you Exhibit 45-A, which Mr. Rosenblatt asked you about and this is Developer's Exhibit 45-A, I'm sorry, which was produced and discussed previously in this case. Do you see that?

MR. BAYER: Yes.

MR. MCCANN: Okay and this is dated, your response, I guess, to internal request, well, your response is May 30th, 2023, right?

MR. BAYER: Yes.

MR. MCCANN: Okay and I think you've indicated --

MR. BAYER: Wait, no, it says May 23rd, doesn't it? The date is May 23rd, not May 30th?

MR. MCCANN: Well, the --

MR. BAYER: There it is, I'm sorry. My bad.

MR. MCCANN: Yeah, May 30th, 2023.

MR. BAYER: Yep, sorry.

MR. MCCANN: It's okay. And I think those under, the repairs that and, and, well, let me back up a little bit. This e-mail, if I recall, or that rather this information in this e-mail was produced by you in response to a request from Venable asking for the repairs that have been made by the County downstream of the subject property, correct?

MR. BAYER: Yes.
MR. MCCANN: Okay and those repairs are identified here un, in red where it says corrective actions status?
MR. BAYER: Yes.
MR. MCCANN: Okay and then, there's also an Exhibit 45-B I think that has the same ones. But a lot of these, without going through them in detail, would you agree with me that several of these corrective actions were, in fact, not done, it says deleted, for instance, correct?
MR. BAYER: Yeah, my research, these were not my projects, so I did a little research and yes, in that instance, right there at the bottom in accordance with the contractor RFI that lining was deleted from that manhole.
MR. MCCANN: Okay. So, for instance, we know that with, with respect to manhole at 43819, manhole lining was not needed so that work was eliminated, right?
MR. BAYER: That's what that says, I think.
MR. MCCANN: Yep. So, the work that was installed, I think, is, is, is in here. It's, we've got a rain pan installation, a brick collar installation and a watertight frame and cover. These were all, these are the dates as well when, when those things were done, 2017, 2019, correct?
MR. BAYER: That's what my research showed, I think, yeah.
MR. MCCANN: Okay. So, and again, since this was

produced in response to Mr. Rosenblatt's or, I'm sorry, Venable's question about repairs downstream of the subject property, is there a reason why in May of 2023 you didn't, well, strike that. Other, let me ask you this. Other than the repairs reflected in this e-mail, which is Developer's Exhibit 45-A, in May of 2023, have any other repairs been undertaken downstream from the subject property?
MR. BAYER: Yeah, I believe that this, these corrective actions were, was done by the Bureau of Utilities. So, and, and some contractors, so, --
MR. MCCANN: Right.
MR. BAYER: -- yep.
MR. MCCANN: Well, I'm asking you whether there's been anything else since.
MR. BAYER: Not, not that I'm aware of.
MR. MCCANN: Okay and then let's look at, I think you, you spoke with Mr. Rosenblatt about map two in RJN's report. This is Protestant's Exhibit 78. I'll blow it up. Do you see that?
MR. BAYER: I do.
MR. MCCANN: Oops, sorry about that. Would you agree with me that, well, this map, which is part of RJN's report, is intended, as its title indicates, to show the rehabilitation completed, at least as of the date of RJN's report in 2021, correct?

MR. BAYER: Yes.
MR. MCCANN: Okay and would you agree with me that, if I blow this up, that this map shows, and I know you, and I think you indicated you're familiar with the sewer path, so I won't ask you about that. But that this map shows only two repairs, right here where my cursor is, in the sewer path from the subject property, correct?
MR. BAYER: It shows two, looks like above the Green, yeah, above the, above that. I can't see what's down below, but it looks like there's only two.
MR. MCCANN: When you say above, what do you mean by above?
MR. BAYER: Well, where you had your cursor there, that's right there, yeah.
MR. MCCANN: Okay. Do you know where the subject property is?
MR. BAYER: Yeah, right there.
MR. MCCANN: Is it right here where my cursor is?
MR. BAYER: Close by, yeah.
MR. MCCANN: Well, where exactly is it, do you know?
MR. BAYER: I think it's right across Joppa, Joppa Road there.
MR. MCCANN: Okay. Is it where my cursor is right now, below, in other words, below or to the right of the green, the green square?

MR. BAYER: No.
MR. MCCANN: Is it, is it up here?
MR. BAYER: Yes, I believe so.
MR. MCCANN: Okay.
MR. BAYER: So, I was looking at the path. If you could scroll down.
MR. MCCANN: Oh, I'm sorry.
MR. BAYER: Yeah.
MR. MCCANN: So, no repairs along the sewer path other than those two before this, this, the sewer system (inaudible) reaches Lake Roland, correct?
MR. BAYER: I'm trying to think, there was two segments in pink up there.
MR. MCCANN: Yeah.
MR. BAYER: It could be.
MR. MCCANN: Well, could be or --
MR. BAYER: Well, like my research showed what, what was in that e-mail.
MR. MCCANN: Okay. Okay and in terms of what has not been done, we know from the long-term capacity report, which you've talked about, this is Protestant's Exhibit 68. I'm going to show you map 5.1, bear with me one sec. Okay. So, first map in Protestant's Exhibit 68 is hydraulic improvements for the two-year twenty-four storm, correct? Map 5.1?
MR. BAYER: Uh huh, yes.

MR. MCCANN: Which is a lesser storm than a ten six, correct?

MR. BAYER: It's more frequent, so, I guess you could describe it as less.

MR. MCCANN: Okay. For the two-year twenty-four-hour storm, RKK, RK&K recommended, did it not, in the sewer path a, replacement of a ten-inch sewer with an eighteen-inch sewer in this area, correct?

MR. BAYER: That's what it looks like is shown there.

MR. MCCANN: Okay and we know that was not done, correct?

MR. BAYER: Correct.

MR. MCCANN: And then for the ten-year six storm, which I'll scroll down to, which is the next map, map 6.1, do you see that in Protestant's Exhibit 68. We know, according to RK&K that the same replacement or upsizing rather, was recommended along with additional manhole repairs, correct? Right here?

MR. BAYER: Yeah, but I don't know, you said manhole corrections.

MR. MCCANN: Well, the, the dots, the brown dots and the yellow dots reflect, and I can go to the legend if you want, --

MR. BAYER: Yeah, that would be helpful, thank you.

MR. MCCANN: Well, the, the brown dots indicate a

manhole to be sealed, correct?

MR. BAYER: Yeah.

MR. MCCANN: Okay. So, for the ten year six an upsizing was proposed along with sealing of manholes, correct?

MR. BAYER: Yeah.

MR. MCCANN: Okay and I think there's a, in the legend, there's a description of, upper lefthand corner, this same map, the description of the upsize. So, thirteen hundred and seventy-seven linear feet, correct?

MR. BAYER: Yes, looks that, looks that way.

MR. MCCANN: All right. And that's just for those two storms. Would you agree with me that the, the other storms reflect considerable more upsizing, repairs, relief sewers, correct?

MR. BAYER: It could be.

MR. MCCANN: Okay. I want to talk about the Randoll report, which are you familiar with that?

MR. BAYER: Yes.

MR. MCCANN: Okay and how is it that you're familiar? Were you involved in any way personally --

MR. BAYER: Discussions before we opted to request a proposal from Ramboll.

MR. MCCANN: You were involved in those discussions?

MR. BAYER: We had some discussions about, yeah, what we saw on the internal inspection, yes.

MR. MCCANN: Okay. I'm looking through my notes to exactly what you said about the Ramboll report. But what, what I thought you said, correct me if I'm wrong, is that, let me find it. Bear with me one second, Mr. Bayer, I'm sorry. In your words, I think as you put it, you saw some corrosion in the pipe underneath Lake Roland, is that, did I say that, did I write that down correctly?

MR. BAYER: Yes, that's correct. We were concerned by the corrosion that, internal corrosion that we saw on the video, yes.

MR. MCCANN: And in that, that concern is that what prompted the Ramboll report? Is that what you were suggesting?

MR. BAYER: Yeah, we had, had discussions and we thought that it would probably be a good idea to, to be proactive and try to get started on the project to address that corrosion.

MR. MCCANN: Well, isn't it true the, the Ramboll report, and I'll pull it up as I'm asking you this question, that the Ramboll report is directed to, or covers not just the, the long sewer segment under Lake Roland, but all of the segments and interconnectors in and around Lake Roland, correct?

MR. BAYER: Yeah, that's correct.

MR. MCCANN: In fact, bear with me one second. I don't know why I'm having problems finding it. Okay. Let me

show you the report. Okay. This is, for the record, is Protestant's Exhibit 87. Do you see that? I'll go to the first page.

MR. BAYER: I do.

MR. MCCANN: You do see that?

MR. BAYER: Yes.

MR. MCCANN: Okay. In terms of what was asked of Ramboll, as I understand it, and by the way, figure 1.1, do you see that?

MR. BAYER: I do.

MR. MCCANN: So, in red, and I'm sure the Judge is familiar with it, but this is the sewer segment under Lake Roland that you were speaking to, correct?

MR. BAYER: Yes.

MR. MCCANN: Okay. But this map actually figure 1.1, it says project map, this in red identifies all of the sewer segments that are the, within the scope of this report, not just the sewer line under Lake Roland, correct?

MR. BAYER: Correct.

MR. MCCANN: Okay and I, am I correct, I'm sorry I'm scrolling around so much, I'm sure it's annoying on your end. I highlighted this sentence. Quote, the primary focus of this project is to minimize the inflow and infiltration, I&I, into the interceptors to reduce the likelihood of sanitary sewer overflows, and correct, end, end quote. Did, did I read that

correctly?

MR. BAYER: Yes.

MR. MCCANN: And do you agree with that, that is, what Ramboll has indicated in it, in its own report what it is, what is the focus of its report, for the project, that is?

MR. BAYER: That's their, their language.

MR. MCCANN: But do you agree with that?

MR. BAYER: Well, I, I said the initial inferences for the project was we saw some corrosion which was concerning. And then we decided that, well, rather than impact those resources with flood plain, wetlands and environmentally sensitive areas, that we would expand the scope and then just line everything in that area at the same time.

MR. MCCANN: So, are you, are you, are you telling me that the, the sewer segments that we, that I just showed you in that figure 1.1, other than the one under Lake Roland, don't need any work? Is that what you're suggesting?

MR. BAYER: I said, we, we expanded the scope to include all that work (inaudible) --

MR. MCCANN: (inaudible).

MR. BAYER: -- while we were doing the interceptor. We expanded the scope.

MR. MCCANN: But, so you're not suggesting that those segments don't need the repairs that are called for?

MR. BAYER: I, I didn't look at the video on all

those segments, so I can't say if they are in need of structural repairs or not.

MR. MCCANN: Okay. Well, isn't it true and I can, we can go through the, the, the report, but isn't it true that Ramboll, number one, takes a look at all of the CCTV inspection videos that the County has, County had, correct?

MR. BAYER: Oh, yeah, they were tasked with reviewing that, yes.

MR. MCCANN: Okay. In fact, this 2.3 is a helpful section. It says, quote, a review of pipeline inspection data was performed, correct? Ramboll did that, right?

MR. BAYER: As far as I know. Again, this was not my project, but as far as I know they did.

MR. MCCANN: Okay and then, in addition, they reviewed available red zone sonar reports to confirm condition of existing pipeline for rehabilitation, correct?

MR. BAYER: That's what that report says, yep.

MR. MCCANN: And then number three under 2.3 it says, provided, provided, past tense, a corrective action recommendation for each pipeline reviewed, right?

MR. BAYER: Um hm.

MR. MCCANN: And then the very next paragraph it says, quote, upon completing the review, it was determined that all pipe segments within the system can be rehabilitated using lining. Since the goal of the rehabilitation project is to

minimize the amount of I&I and prevent overflows, all lines have been identified for rehabilitation, correct?

MR. BAYER: That's what the report says.

MR. MCCANN: Even if structural damage was not identified, I just continued reading, sorry about that. But, in fact, doesn't, does not this report specifically say that, identify anyway, the amount of structural defects or active infiltration that was discovered by Ramboll in its review of the data, correct?

MR. BAYER: I'm sorry, could you repeat that question (inaudible) --

MR. MCCANN: I'm just referring to this highlighted section. It talks about --

MR. BAYER: Yeah, --

MR. MCCANN: -- twenty-four segments with active I, infiltration, correct?

MR. BAYER: That's what it says.

MR. MCCANN: Fourteen of which included some level of structural defects, correct?

MR. BAYER: That's what it says.

MR. MCCANN: Okay. Well, and you did agree, I think, as my notes reflect, Mr. Bayer, that these, this rehabilitation of all these segments will help, as you put it, benefit capacity, correct?

MR. BAYER: If, if there is I&I and we line it and

that's reduced, then it should be an improve in capacity. As well as lining provides, makes the interior pipe more slippery. So, in theory, the pipe can carry more flow as well --

MR. MCCANN: That's a good point. That's a good point. And so, a lining of pipe doesn't --

MR. BAYER: And, and it, I'm sorry, and last but not least is what's really important is we extend the, the service life of this, of the pipes in the area. The other fifty, sixty, seventy, eighty years old so.

MR. MCCANN: Okay.

MR. BAYER: Another benefit is we extend the service life, sorry.

MR. MCCANN: Okay. So, I understand that shovel has not been put to ground, put to the ground yet, correct, (inaudible)?

MR. BAYER: Yeah, this is not my project so I, I don't know, but as far as I know, no, they have not (inaudible) design and we have not started construction.

MR. MCCANN: Having, but having looked at the Ramboll report, you would agree with me that Ramboll has reviewed all the data and based on that data made recommendations for where the rehabilitation needs to take place, correct?

MR. BAYER: Yeah, that, that's apparently what this report says.

MR. MCCANN: Okay and, in fact, is it not true that

this project will cost the County $10 million? Does that sound familiar to you?

MR. BAYER: I did, I never saw the budgetary estimate, I don't think, so I don't know if $10 million is accurate or not.

MR. MCCANN: But there is a, there is, this, the amount of work to make these repairs in and around Lake Roland has, in fact, been budgeted for, correct?

MR. BAYER: As far as I know, we have the funds available to complete the project.

MR. MCCANN: Well, let me show you, and Your Honor, I believe we're on Exhibit 109. I'm going to show Mr. Bayer this document. Do you see that, Mr. Bayer?

MR. BAYER: Triennial Review?

MR. MCCANN: Yep. Are you familiar with the Triennial Review?

MR. BAYER: Draft report? That's not my role and responsibility.

MR. MCCANN: But what is, what is the Tri, Triennial Review, if you know?

MR. BAYER: I, I, I don't. Like I say, it's not my role and not my responsibility to --

MR. MCCANN: You don't, you don't know what it is?

MR. BAYER: It's not my responsibility to draft that report.

MR. MCCANN: Well, it's not your responsibility to say a lot of things but, well. Let me show you, and maybe this will help you. Bear with me one second, it's page twenty-two. Bear with me one second. I'm having problems finding it. Well, I don't think he recognizes it anyway, Your Honor. Or won't recognize it. But I would offer this as Protestant's Exhibit 109 as I said.

MR. ROSENBLATT: I do object, Judge. It's a draft report. It's only been presented to a witness that says he doesn't know what this is or have any role in it. I don't know how that gets into evidence.

ALJ: I'm not, I'm not sure either, Mr. McCann. I mean, I, I don't know how it comes in if he can't say what it is and he doesn't work on it, he's not familiar with it. It's not --

MR. MCCANN: He doesn't, he doesn't need to say what it is. It's a County document. We introduce County documents all the time. I simply went to the County website. This is, this is what the County has on its website for its --

ALJ: I, I know but what if, if he can't add to it, if he can't, he's here to talk about the (inaudible), I don't know what, I don't even know what this document is.

MR. MCCANN: Okay. Well, I'll wait till he's off the stand then I'll move it into evidence. But it, it, I don't need this witness to get this document into evidence. It's a

County record. It is --

ALJ: Mr., Mr. Rosenblatt, do you recognize this as a County record?

MR. ROSENBLATT: I, I've never seen it before, I, I don't know where it comes from and I don't think it is relevant to the reason we're here, which is not, as Mr. McCann said, a complete reopening of the case, but limited to a specific issue and the witness that's here to testify about that issue doesn't know anything about this.

ALJ: Yeah, I, I just, yeah. And so, yeah, I mean, I'm, this, this document just can't come in at this time. Again, we're here for a limited purpose, for, for Mr. Bayer to discuss the sewage path from this property. The documents that were discussed were already in evidence and this is some other new thing that he says he doesn't even --

MR. MCCANN: Your Honor, do, you don't recognize the irony of that?

ALJ: I, I, no, I don't. I, I, I think it's trying to put this document in when you can say that this is something that maybe you wanted to put in in the past and he doesn't know what it is. I mean, I thought you, he was going to be able to discuss it or --

MR. MCCANN: I'll represent to you, as an officer of this court, of this office, that I, this is a County document that was received from the County --

ALJ: Okay, I --

MR. MCCANN: -- it says Baltimore County, everybody knows what the water supply and sewerage plan is. Mr. Bayer apparently does not. But everybody knows what it is. Everybody, it's self-authenticating, it's obviously --

ALJ: But we're not, but we're not reopening the case for, for some information that could have been presented in the, in the, you know, bef, previously. This is, this hearing is just for the Motion for Reconsideration in regard to his testimony about the sewage path from this project. And not, not reopening it to put other documents in evidence. So --

MR. MCCANN: It's the doc, it's the document you have a problem with, it's the document --

ALJ: -- even, even if you could say that you, you got it by a PIA request at this point, I, you know, unless it has to do with his testimony today about this sewage path, it doesn't come in. He says he doesn't know what it is. I can't let the document in, okay?

MR. MCCANN: Your Honor, he just testified, downplayed, in fact, I will suggest, the significance of the Ramboll report, suggesting that it was something that was prospective, planning, whatever, something that was, that was not something, something that was, in fact, limited to the Lake Roland interceptor itself.

And the fact, the fact that I introduced a document

that wasn't previously produced doesn't automatically mean that it's beyond the scope of cross. It, the irony, the irony, the irony of your ruling that this does not limit it to the sewer path is thick. Everything that was discussed already this morning had nothing, or very little, or tangentially to do with the sewer, with the sewer --

ALJ: If that, if that, that's the case, then why did you, if it didn't have anything to do with the sewer path, all the documents introduced, then why did you introduce them in the case in the first place? Because you, all the documents that were pulled up other than one were all your documents that you produced.

MR. MCCANN: I think --

ALJ: So, if they didn't have anything to do with the case, then why do we have a hundred exhibits?

MR. MCCANN: I didn't say it didn't have anything to do with the case. What I'm, what I'm directing you to, Your Honor, is your ruling, which limited to the sewer path, which to me --

ALJ: Right.

MR. MCCANN: If you didn't, if you didn't say sewer path and you instead said sewer capacity issue or yes, sewer capacity issue whether the County, you know, what, you could have used a lot of different language that would have, you know, addressed my objection. But you didn't. You said sewer

path and that, to me, that's very specific.

And that's why, and I don't agree it shouldn't even be limited, there, we shouldn't be discussing the sewer path, frankly. I hope that's clear by now. But, in any event, if, if, if I'm, if my cross examination is limited to the sewer path and Mr. Rosenblatt's is not, --

ALJ: Well, your, your, okay, its sewer path, sewer capacity, deficiencies, structural improvements, to me that's all the same thing. I'm trying to find out whether the, whether the, the sewage can flow from, from this development down to where it goes. That, you know, so, so it's not the, you know, the specific, it includes all those things --

MR. MCCANN: Well, that's news to me.

ALJ: -- and Mr. Rosenblatt went through those documents, if you want to cross examine on the documents and things that he asked, then that's fine.

MR. MCCANN: Okay. I just can't use any new documents in my cross examination.

ALJ: Well, I, it, it's not that you, you couldn't, but he doesn't recognize that document.

MR. MCCANN: That's a different issue. That's a different issue. I'm not talking about the, I'm not talking about authenticity. I'll deal with that. I'll get an e, I'll get an e-mail for, like I always do when you ask me whether something's authentic, --

ALJ: But, but then, this isn't the, your case was already presented. This, this is just one County witness who's talking about the limited issue of the sewer flow from this project. Not, not opening it up again to add in all these new documents and PIA requests.

MR. MCCANN: Your Honor, I'll say one more thing and then I'll --

ALJ: Okay.

MR. MCCANN: -- stop arguing with you --

ALJ: Okay, okay --

MR. MCCANN: -- because I don't mean to argue with you. But it, it's just shocking to me so I can't refrain myself. It's absolutely shocking.

ALJ: It's shocking?

MR. BAYER: It is absolutely shocking to me, and I think if Mr. Zimmerman were here or Mr. Wyatt or Mrs. Demillio chimed in, I think they would agree. They're nodding their heads. It is shocking what's going on in this, in this proceeding today.

ALJ: Okay. I don't, I don't understand why you're even saying it's shocking when, when the Order was issued that we were going to have one more County witness, there's nothing shocking about it. I, I don't, it just doesn't even, I don't, doesn't ring true. I mean, we spent thirteen days on this case, putting in hundreds of documents. And there was only

maybe one excluded, I think, from either side, I excluded one from either side. I, as I recall.

So, I mean, but we're not here to reopen the case. We're here to discuss this one County witness' testimony. If he can identify it and he can, he, you know, that's part of what he needs to talk about and the sewer capacities, sewer paths, improvements, you know, whatever you want to talk about in terms of whether the sewage can flow or not from Greenspring Manor property down to where it needs to go. That, that's all I need to know, right? Okay. So, I mean, I'm, I'm not sure where you're going with it but I, okay? So, --

MR. MCCANN: Then, then, then why did you not grant my motion to strike this new testimony about a new model being run recently and a new, a completely new opinion that obviously could have been introduced long ago in this case, either by the County or by Mr. Rosenblatt and his clients?

ALJ: Because it, it pertains to the Order, it pertains to the, the Motion for Reconsideration, the Order that was issued that he's going to come in and talk and he's going to testify like any other County witness does.

MR. MCCANN: Okay. I'll stop arguing with you. I will.

ALJ: All right, thank you.

MR. MCCANN: I promise, I promise. Okay. Re, regarding Hazen, Mr. Bayer. Were you involved in that in any

way? That is either the solicitation of that work or the, the, its ongoing nature in any way?

MR. BAYER: When you reference that work, are you talking about the needs analysis of the comprehensive evaluation that Hazen is doing right now?

MR. MCCANN: Yeah, you, well, yeah, let's start with those two things because you were very careful to say those two things, yes.

MR. BAYER: Well, you said that work, I, I, it's hard for me to answer your question --

MR. MCCANN: I appreciate that.

MR. BAYER: -- unless you're more specific. So, what was your question then? Am I involved in that needs analysis and comprehensive evaluation? Yes, a little bit, yes. Correct.

MR. MCCANN: And how are you involved in that?

MR. BAYER: We've been discussing with them what we, what we expect from them, which was outlined in the proposal that we sent them and, and asked them to provide.

MR. MCCANN: So, those two, those two aspects of it and, and again, I think you were careful to say that, comprehensive evaluation --

MR. BAYER: Evaluation.

MR. MCCANN: -- evaluation and needs analysis, those have not been accomplished by Hazen as we sit here today,

correct?

MR. BAYER: No, they're still working on it, correct.

MR. MCCANN: Okay. Is there some other aspect of Hazen's work that has been completed and has been provided to the County?

MR. BAYER: Of the needs analysis or that --

MR. MCCANN: No, other than those, other than those two things.

MR. BAYER: Are there other things that Hazen is doing on our behalf? Yes, they are.

MR. MCCANN: Okay, that have not been completed as we sit here today?

MR. BAYER: That have not been completed? Yeah, I have, I have passed them with some work to actually add in the (inaudible) sewers and some of the other sewer shed models.

MR. MCCANN: Okay.

MR. BAYER: So, the task is ongoing. There's lots of tasks that Hazen has, working on on our behalf.

MR. MCCANN: Okay. Do we know when the report, the comprehensive evaluation, I guess, is what you're referring to and needs analysis will be completed?

MR. BAYER: I don't have the latest schedule in front of me so I don't answer, I can't answer that. I don't know.

MR. MCCANN: Okay and did, did you really say, did I hear it correctly, that you didn't, that County didn't hire

Ramboll to determine sewer capacity?

MR. BAYER: Well, like I said, we, we hired them to do a design for the rehabilitation as the sewers that were in that, within that Lake Roland area.

MR. MCCANN: I'm sorry, you're talking about Ramboll now, right?

MR. BAYER: That's exactly, that's what I thought you said, Ramboll.

MR. MCCANN: Right and I, and I switched gears, I'm sorry. Hazen. Was, was Hazen hired to, to evaluate capacity?

MR. BAYER: That will be part of the needs analysis, I suspect.

MR. MCCANN: Okay. Okay. Let me show you, this is Protestant's Exhibit 64. Mr. Rosenblatt was asking about that. Do you recall that testimony?

MR. BAYER: Yes.

MR. MCCANN: Okay. This is our exhibit and our exhibit as introduced have these manholes highlighted in yellow. Do you see that?

MR. BAYER: Yes.

MR. MCCANN: Okay. Am I correct, do you recognize these manholes, maybe you have the manhole numbers memorized by heart by now, but do you recognize that these highlighted manholes are the eight segments, so called Johns Hopkins segments, that are across the street from this property?

MR. BAYER: Yeah, it looks like those are the eight segments that were in that memo that you showed me a little while ago.

MR. MCCANN: Okay and this chart, as I think you've already described, well, strike that. Does, does this chart in the column percent full, does it not reflect what the, the percent, capacity percentages are for those segments, correct? This column --

MR. BAYER: Scroll back up the top and see what that says at the top of that column, please.

MR. MCCANN: Percent full.

MR. BAYER: Yeah, there you go.

MR. MCCANN: Okay. So, putting aside this new model that you apparently ran or you asked for, a simulation for, is it, it, is it a safe assumption on my part, Mr. Bayer, that if I were to look at RK&K's work product and RJN's work product, for capacity numbers, if I were to see capacity numbers that were either 94.32 or greater for any sewer segments, that those are probably sewer segments that should cause us con, some concern, correct? Would you agree with that?

MR. BAYER: If you're talking about a simulation, prediction that the model was run and it showed something like this it could be a cause of concern, yes.

MR. MCCANN: Okay.

MR. BAYER: We use, we use a model as a tool to kind

of direct us to areas that might be a concern, like we do with other tools, like the I&I analysis that you, that Mr. Rosenblatt showed me with, there was areas exhibiting high I&I. Those are all tools that we use to try to point us in the direction (inaudible) be concerned about.

MR. MCCANN: Well, those may be tools that you use day to day, but that's not what the Consent Decree requires, is it?

MR. BAYER: The Consent Decree required us to do a long-term capacity peak flow and management evaluation.

MR. MCCANN: Specifically, the Consent Decree, let me ask you about that, you, you agree with me, that the Consent Decree requires the County to conduct a long-term evaluation to identify corrective actions necessary to ensure long term capacity, do you agree with that?

MR. BAYER: I believe that's what be what the language is in the Consent Decree.

MR. MCCANN: And then the Consent Decree also then requires the County to prepare an SRR plan to iden, to identify the deficiencies in the system and then perform all corrective actions necessary to address those deficiencies, correct?

MR. BAYER: I believe that's what the language in the CD says.

MR. MCCANN: Okay. Your Honor, this is, this is probably a good time to stop. I think the benefit of a, of a

lunch break would be, would be great. So, if it's okay with you, that's what I would like to do.

ALJ: How long do you all need?

MR. MCCANN: I mean, a half hour, forty-five minutes would be great, would be fine.

ALJ: All right. Mr. Rosenblatt, a half hour, forty-five minutes? You must be muted, I don't know.

MR. ROSENBLATT: I did it, sorry. A half hour is fine by me.

ALJ: And Ms. Demillio, any longer that you needed?

MS. DEMILLIO: No, half hour is fine.

ALJ: Okay. Mr. Wyatt?

MR. WYATT: Half hour is perfect.

ALJ: Okay, sounds good. All right. We'll come back, you know, one-ish or so. I'll pause the record.

MR. MCCANN: This, is this the last witness for the day, Mr. Rosenblatt?

MR. ROSENBLATT: It's the last witness, yes, that we have.

MR. MCCANN: Okay, all right. Thank you, Judge.

(PAUSE)

ALJ: All right, we're back on the record. Mr. McCann, you were still in cross.

MR. MCCANN: Okay, thank you. Mr. Bayer, can you hear me?

MR. BAYER: Yes.

MR. MCCANN: Okay. One of the things I didn't ask you about your work with the County is, as I understand it, at least my interactions, that there are one or more folks within the County that are charged with ensuring compliance with the Consent Decree. I don't know what you call those people, compliance, CD compliance folks, or something like that. Is, is that correct?

MR. BAYER: There's staff that, that are involved and we also have a program manager, if that's what you mean.

MR. MCCANN: Yeah, who's the program manager?

MR. BAYER: WSP.

MR. MCCANN: Okay. But you're not involved in that is, as I understand it, correct?

MR. BAYER: Not involved in what? No, I don't work for the program manager now. We work together on, on a lot of things relating to the CD, as do the other staff.

MR. MCCANN: You're not, but you're not part of the staff that's charged with determining whether or not compliance with the Consent Decree is being accomplished?

MR. BAYER: I don't know if that's the County's decision to make. The compliance is probably related to MDE, EPA and DOJ.

MR. MCCANN: Okay. So, there's no one in, no one in the County that is charged with determining whether or not what

it's doing complies with the Consent Decree?

MR. BAYER: I, I think we submit everything that we are obligated to do and then we wait for comments back from EPA, MDE, EPA and MDE.

MR. MCCANN: Okay. Let's talk about map three. I think, and I've got it up on the board here, it is Protestant's, part of it, Protestant's Exhibit 78. I'm sorry, let me make sure of that. Yeah, Exhibit 78. I think you acknowledged during examination by Mr. Rosenblatt, can you see that, by the way, Mr. Bayer?

MR. BAYER: Yes.

MR. MCCANN: That, in your words, map three does show some, quote, issues of concern downstream, is that, from the subject site, is that fair?

MR. BAYER: Well, I think if you go to the legend in the upper right, it describes what is shown on the map. So, it looks like model predicted hydraulic restrictions.

MR. MCCANN: I'm just asking you about your testimony. Your, I think you said, did you not, that, at least agreed, that map three shows issues of concern downstream from the subject property?

MR. BAYER: Yes, it was predictions of surcharging, yep.

MR. MCCANN: Okay. But then you said, well, excuse me. Then you said in response to Mr. Rosenblatt's leading

question, that you don't, that that doesn't mean --
MR. ROSENBLATT: Objection, objection.
MR. MCCANN: -- that doesn't mean you --
MR. ROSENBLATT: Is this --
MR. MCCANN: (inaudible) --
ALJ: Hold on, hold on. You guys are both talking at the, hold on. You're both talking over each other. Mr. McCann, yeah, you don't need to say his leading question, but. I know that's what he's, Mr. Rosenblatt is getting at, right, Mr. Rosenblatt?
MR. ROSENBLATT: Yes, Judge.
ALJ: All right. Let's play nice, as I always say to you two.
MR. MCCANN: Okay. I think what you said during that discussion as well, Mr. Bayer, is that that does not mean, in your opinion, that you do repairs right away, is that, I think you put it like that, right?
MR. BAYER: Yeah, we like to evaluate and try to confirm, validate what is predicted by those models.
MR. MCCANN: Yeah. Well, and what, and I think you put it in terms of verifier, right? That's what you said. It's called, you verified it somehow?
MR. BAYER: Yeah, we tried to, to see if we can't verify what the predictions are.
MR. MCCANN: Yeah. And let me, in that regard, let

me pull up another document, which is Developer's Exhibit 47. And one, and I think when you were asked how do you verify, you said flow monitoring, correct?
MR. BAYER: Yes, that's one, one way, yep.
MR. MCCANN: Okay. So, here's, during the last hearing, and then again, you were referred to it today, this is 47-A and 47-B, which is, bear with me one second, sorry. It's the e-mail associated with that. Mr. Rosenblatt asked you about this e-mail, do you correct, do you recall?
MR. BAYER: Yes.
MR. MCCANN: Okay. So, these are five level sensors downstream of this subdivision, right? You have them right here listed, correct?
MR. BAYER: Yes.
MR. MCCANN: And so, and a, a level sensor is, essentially, a flow monitor, correct? Is, are they one and the same thing?
MR. BAYER: A level sensor only gives a limited information compared to the flow monitor, which gives us more information.
MR. MCCANN: Okay. But this was introduced last time, and it was spoken about again today and where's all the data from these sensors? Is that available to you?
MR. BAYER: Oh, yeah, um hm.
MR. MCCANN: Okay. If you wanted to look at it?

MR. BAYER: Yes.
MR. MCCANN: Okay. But you haven't brought it with you today, I take it, right?
MR. BAYER: No, I do not. It's actually hosted by our consultant that provides that service to us.
MR. MCCANN: All right. Well, in the past, the County has done flow monitoring, correct?
MR. BAYER: We have run staff that does our own flow monitoring sometimes, yes.
MR. MCCANN: Yeah, in fact, RJN did flow monitoring, did it not, in two thousand and, when it submitted its report in 2021?
MR. BAYER: Yes, they've done some flow monitoring for us.
MR. MCCANN: Bear with me one second, I'm trying to pull that report up. So, flow monitoring, flow monitoring, I'm sorry, is a way to verify model predicted SSOs, for instance, of the type shown in map three, correct?
MR. BAYER: That's one way.
MR. MCCANN: Okay. So, but RJN did it, in its actual report, the same report that map three is attached to, it did flow monitoring, correct?
MR. BAYER: They were doing some flow monitoring in Jones Falls, yes.
MR. MCCANN: Okay. So, I'm showing you, again, this

is the report, May 27, 2021, RJN performance assessment report. And at page thirty-two, I'll direct you to it, bear with me. It says this paragraph, and I'll highlight it just to focus us in on it.
Can you read it? I'll blow it up a little bit. It says, and I'm going to paraphrase, but correct me if I get anything wrong. It says, flow monitoring was performed in twenty-six locations back in 2008 apparently in connection with the SRR plan.
And then the second sentence says, or at the bottom here it says, post-rehabilitation flow monitoring, I'm sorry, post-rehabilitation flow meter locations were selected on the previously 2008 monitored locations, supplemented by additional locations selected to address the County's intent. So, and then the next paragraph, it goes on about the post-rehabilitation flow monitoring that was performed. Do you see that and does that ring a bell with you?
MR. BAYER: I see that.
MR. MCCANN: Does do, are you familiar with that, the fact that RJN did post-rehabilitation flow monitoring?
MR. BAYER: Yeah, that's in order for us to assess how effective we were in the rehabilitation side, we have to do post-rehab flow monitoring (inaudible).
MR. MCCANN: And, in fact, it refers to figure 1.2, which I think is on this page, I'll scroll down to the next

page in this exhibit. And it shows in table 1-1, pre- and post-rehabilitation flow monitoring. And it looks like, correct me if I'm wrong, but it looks like post-rehab flow monitoring was done for, between 2018 and 2020, for all of the, the water meter basins, correct?

MR. BAYER: For the basins, looks like, yep.

MR. MCCANN: Okay. So, when RJN prepared its map three, it had conducted post-rehabilitation flow monitoring, correct?

MR. BAYER: Yes.

MR. MCCANN: One other point about this report is I think you, you know, you were talking about the rehabilitation that was performed up in the, the water meter basins up here in the northeast corner, 03, 02, 04, I think. Do you recall that testimony?

MR. BAYER: Yes.

MR. MCCANN: Okay. I want to, I want to focus in on these two sentences here. This is again on page four of the RJN report, which is Exhibit 78. And I'll just read it. Quote, flow monitoring in basins 02, 03, 04 and 09, I'm sorry, I keep on doing this, was performed to evaluate the effectiveness of comprehensive I&I rehabilitation performed in these four-meter basins. Did I read that correctly?

MR. BAYER: I think so.

MR. MCCANN: And then the remaining meters listed in

table 1.1, which we just discussed, were installed to evaluate flows at model predicted SSO locations, as identified in support of the 2013 Jones Falls SRRR plan or to calibrate and verify the model. Did I read that correctly?

MR. BAYER: I think so.

MR. ROSENBLATT: Objection. Judge, I'm trying to let this go, but we, we're having repeat questions of just reading a document and asking if it's read correctly. And the document says what it says.

ALJ: And the same objection, I think, came when you were asking questions as well. I, I'm thinking Mr. McCann is going to get to his next question. Maybe this is the --

MR. MCCANN: Yeah.

ALJ: -- background question for the next question. So, I'll overrule it. Go ahead, Mr. McCann.

MR. MCCANN: So, it sounds to me, and correct me if I'm wrong, Mr. Bayer, that the flow monitoring that was performed elsewhere, other than in these four meter basins up in the northeast corner, was not used by RJN to evaluate the effectiveness of the rehabilitation, but rather for the purposes I just indicated in the second sentence, correct?

MR. BAYER: I believe that's what it says.

MR. MCCANN: Okay and that flow monitoring data for all these water meter basins, including the ones that would receive sewage from the subject property, you have that data

available to you, correct?

MR. BAYER: It should have been provided to us.

MR. MCCANN: Okay. Okay. Let's switch subjects. You, actually one more thing about the RJN map three. So, the, the map three, which indicates modeled capacity issues, the, the data that on the, that underlies those or the, the capacity numbers specifically, can be found in other data that was supp, was supplied by RJN in connection with that port, report, correct?

MR. BAYER: Can you ask that question again --

MR. MCCANN: Yeah, that was a, that was a terrible question. Let me, let me show you the exhibit first and see if you recognize it. So, this is Protestant's Exhibit 82. You see that?

MR. BAYER: I do.

MR. MCCANN: Okay. Are you familiar with this document?

MR. BAYER: Yeah, I believe this came from the performance assessment.

MR. MCCANN: Right. So, and it's a long document, and I won't go through all of it obviously, but what it basically is, it tells us what RJN found for each of the storm events post-rehabilitation as part of a wet weather capacity analysis, correct?

MR. BAYER: It appears to be.

MR. MCCANN: Okay. So, I could go down to the ten six storm, for instance, and see what capacities RJN found post-rehabilitation for the sewer segments that are the sub, that would receive flow from the subject property, correct?

MR. BAYER: I guess you could scroll down to the ten-year six hour.

MR. MCCANN: And RJ, RK&K had that same information, did it not?

MR. BAYER: Yes. Well, they didn't do a post-rehab, but they did a capacity analysis, yeah.

MR. MCCANN: Yes, so, this is Protestant's Exhibit 72. And this is entitled future pipe capacity and manhole surcharge summary. Again, a long document beginning with the two-year six-hour storm. This, this document, which was attached to the RK&K work product, likewise, would tell us what percentages of capacity RK&K found for all the pipe segments downstream of the subject property, correct?

MR. BAYER: It looks like it shows a column of capacity use and percent and capacity remaining and the gallons a day.

MR. MCCANN: Okay. Okay. I'll switch gears. You, you mentioned, you said that the County found and looks like fixed with exception of one, thirty-four structural SSOs. Do you recall talking about that?

MR. BAYER: We eliminated, I think, that many.

MR. MCCANN: Yeah, Mr., Mr., I think, Rosenblatt was asking you about what you had done as far, had accomplished under the Consent Decree in terms of eliminating structural SSOs, do you recall that?

MR. BAYER: Yes.

MR. MCCANN: And let me show you, there is a very distinct and significant difference between structural SSOs and just SSOs, is there not?

MR. BAYER: Yeah, the structural SSOs are structures that constructed.

MR. MCCANN: Yeah, so here's the Consent Decree. I can go to the top, but you probably recognize it. This is, I just lost it, I'm sorry. This is at the bottom of page eleven. It has the definition, under Z, it has the definition of sanitary sewer overflow or SSO, quote, shall mean any spill, release or discharge from the collection system, including all building backups, end quote. Do you see that?

MR. BAYER: I do.

MR. MCCANN: And then next page, double A, it talks about SSO structures. Is that what you were, or sanitary sewer overflow structures. Is that what you were refer, referring to in your testimony with Mr. Rosenblatt?

MR. BAYER: Yes, it's a structure that was constructed.

MR. MCCANN: Right. So, these structural SSOs, I

think as this definition reflects, are structures that are actually constructed by the County for the purpose of allowing discharge, correct?

MR. BAYER: I don't know the purpose of why they were constructed. That's way before my time. But they were constructed by the County as far as I know.

MR. MCCANN: Well, the definition is here, that's why I'm, I'm paraphrasing the language. It says, shall mean any structure in Baltimore County constructed for the purpose of allowing discharge, end quote. Do you see that?

MR. BAYER: I do.

MR. MCCANN: Okay. As you were suggesting, and maybe I didn't catch you, but you're not suggesting that there haven't been any SSOs in the Jones Falls recently have, are you?

MR. BAYER: No, they're not, no, there's been SSOs, as far as I know.

MR. MCCANN: In fact, there was one right in Lake Roland just about a month ago in January, correct?

MR. BAYER: I was sent an e-mail that showed that the lid was off the top of one of our manholes and it appeared that there could have been evidence of an overflow.

MR. MCCANN: Were you shown photographs?

MR. BAYER: Yes.

MR. MCCANN: Okay. Let me show you, I'll mark this

as Protestant's Exhibit 110. Do you see that? I'm going to scroll down, it's just a couple pages. Do you see that, Mr. Bayer?

MR. BAYER: Yes.

MR. MCCANN: Is that, are those the photographs or is that the same manhole that you were sent photographs?

MR. BAYER: Yeah, I believe those are the same photographs and that's the same, yeah, same manhole, I believe.

MR. MCCANN: And then, aside from that, it occurred in January, correct, of this year?

MR. BAYER: I believe it did.

MR. MCCANN: Do you know, do you know what manhole that was by, by chance?

MR. BAYER: I, I don't.

MR. MCCANN: And there was a, an SSO in a, in a, nearby, very nearby manhole a couple years ago as well, correct?

MR. BAYER: The same situation, yeah. I was sent photographs of what appeared to be evidence of an overflow a couple years ago, yes.

MR. MCCANN: Okay. Your Honor, I would move this, these photographs in as Protestant's Exhibit 110.

ALJ: Mr. Rosenblatt?

MR. ROSENBLATT: No objection.

ALJ: You object?

MR. ROSENBLATT: No objection.

ALJ: Oh, no objection. Thank you. So, one ten, Mr. McCann, that's the number? I don't know --

MR. MCCANN: That's what I have, yes.

ALJ: Okay, accepted.

MR. MCCANN: Thank you. And, Your Honor, if I could just have a minute, I think I may be done, quicker than I thought. So, can I have a minute or two?

ALJ: Sure.

MR. MCCANN: I may just go on mute while I do that.

(PAUSE)

MR. MCCANN: That is all I have. Thank you, Judge. Thank you, Mr. Bayer.

ALJ: All right. We have Mr. Wyatt. Mr. Wyatt, do you have any cross?

MR. WYATT: Yes, Your Honor. I just have a, a few questions for Mr. Bayer.

ALJ: Sure.

MR. WYATT: Good afternoon, Mr. Bayer. How are you?

MR. BAYER: Fine, thanks.

MR. WYATT: I reached out, you and I actually spoke a couple of weeks ago about this case, did we not?

MR. BAYER: Yes.

MR. WYATT: And you and I know one another socially, I don't think we've ever interacted professionally, is that

accurate?

MR. BAYER: Correct.

MR. WYATT: All right. And by the way, is that your desk behind you? Is that your, are those files you're working on behind you?

MR. BAYER: Paperwork.

MR. WYATT: I've never been to your office, that's why I ask. Anyway. Fair to say at the time we spoke, you were a little bit reticent in speaking to me about this project?

MR. BAYER: Yes.

MR. WYATT: I think your words to me were, you're, you're a little uneasy about talking about it with me?

MR. BAYER: Yes.

MR. WYATT: And I was respectful of that, correct? I didn't push you in any uncomfortable position in terms of trying to get you to answer questions that I may have had about the project, right?

MR. BAYER: Correct.

MR. WYATT: All right. But I did ask you one question and the question was, we were talking about, I think it's Exhibit 90, but it's your e-mail, it's the, it's the zero breaking point e-mail. I asked you just one question and you did answer it, looking at my notes. Has anything changed since your e-mail? And your response was, nothing has changed. Is that, is that a fair description of our conversation?

MR. BAYER: Yeah, as far as I know nothing has changed, yep.

MR. WYATT: Okay, all right. Thank you, Mr. Bayer. I have no further questions.

ALJ: All right. Mr. Sachse, do you have any cross?

MR. SACHSE: No, thank you, though.

ALJ: Thank you, Mr., Mr. Sachse. And then, Ms. Demillio, do you have any cross?

MS. DEMILLIO: No, I don't, Your Honor.

ALJ: Okay, thank you. All right. And so, I guess, I mean, it's an odd situation to come back to Mr. Rosenblatt. Let, let me do, let me do this. Maybe this first. Mr. Bayer, you've been so good with us and patient with us. So, I am just a visual person and I apologize if you've already answered all these questions. But just, just humor me, okay?

MR. BAYER: Certainly.

ALJ: You see, you see what's on the screen?

MR. BAYER: I do, yes.

ALJ: All right. So, the last number for the, what we keep calling the Hopkins segments, but we see from Mr. Benjamin's letter that perhaps, you know, this was more of a joint effort. But in any event, what I'm looking at is the number, 43, 4, 43786.

And this My Neighborhood map was produced by the Protestants. And it shows, it is, oh, it says it on there

actually. Let me hit the number just for the, sixty-three was Protestant's exhibit. All right. So, so this is the, the, the, the property, right? You recognize that?

MR. BAYER: Yes.

ALJ: So, this is the My Neighborhood map, everybody can pull this up. And this was submitted by the Protestants, but in reality, everybody agrees that this is the sewer path, right? Okay, so, so the last, so the last number is 43, 43786 and that's like right in here where my cursor is. And that's the last part. The, the rest, all this up to the property is either the Developer or it's the Hopkins segments, right?

MR. BAYER: Correct.

ALJ: All right. So, then we had this other document that the Protestants produced, which was seventy-seven, and this thing was a chart. It was an appendix to the SSR report. And you see that? Have you seen this before? It's an appendix to it.

MR. BAYER: I might have a long time ago.

ALJ: So, what I'm doing is just, and again, you're the expert. But here I am, I'm the lay person, right? I'm looking at this. It gives me the manhole number, 44212, and it shows, if you can see that, def, defects in the segment sixty-seven. One of them is a defective joint. The rest of it says grease. So, my first question is, what, what's the deal with where it says grease? What, what does that mean? And does,

does that pose any worries to you at all?

MR. BAYER: Yeah, grease means when, sometimes people will put their grease into the sewer system and then that clogs up our sewer system. Yes, that's a huge concern of ours. It creates problems, blockages, which will cause, or could cause an overflow, or capacity deficiency. So, yes, grease is a very big concern.

ALJ: So, what happens when you see that grease? What do you, what happens? What's the remedy for that?

MR. BAYER: So, the Bureau of Utilities would be the ones that would have to clean that. So, they would run a jetter through it, let's just say for example, to try to flush the grease out.

ALJ: Okay. So, on this --

MR. BAYER: Or they could, they could also --

ALJ: I'm sorry.

MR. BAYER: -- add a chemical sometimes maybe.

ALJ: Add a chemical. So, so, if you look at this chart, where it says, this is again the SRRR plan and all these segments where it says grease, is, does the Bureau of Utilities just automatically correct that? And can I assume that these, all of these are corrected?

Like the first one here, for example, is in the sewer path. So, 44212 and 44211 is right here. So, see I'm a visual person, so I'm looking at this going now there's, there's

grease in here. So, do I assume that that's fixed or what?

MR. BAYER: I think the table you're looking at is very old (inaudible) --

ALJ: Is that right? So, that's the, yeah, you, you tell me, you're the expert, which is why I want, yeah, this is from the SRR report --

MR. BAYER: Which is 2012.

ALJ: Yeah.

MR. BAYER: So, I would hope they fixed it by now, but I don't know the answer to that without researching it and pulling up work orders and see.

ALJ: Okay.

MR. BAYER: That could, grease could get eliminated and come back in time, over time.

ALJ: But is there, so, but is there general maintenance that gets done by the Bureau of Utilities where, where they would, just on a regular basis do this?

MR. BAYER: Some, some segments are on what they call specials, that they do get regular maintenance. We're working on, what, what we have now is an asset management plan, which hopefully would, would identify some of those maintenance issues, which would require, or, or, yeah, they (inaudible) schedule that on a regular basis for cleaning, if it's a grease problem.

ALJ: Okay and in your research, because you looked

at all the, the sewer path, again, from, for this property, which, you know, it goes on for multiple pages here, did you see any, any issue then in terms of, I, you know, that, that would give you concern if, you know, homes were built? Obviously there's going to be plumbing, if, you know, they were connected to this path that you were concerned about?

MR. BAYER: Yeah, if you scroll up a little bit there was a concern, oops, you're going too fast.

ALJ: Which one, which one is it?

MR. BAYER: Scroll up a little bit further, yes. Keep going, okay. So, some of the segments there, 44222, 44223, so there was, we iden, when I was flow monitoring out there last year, we identified some issues. So, I asked the Bureau of Utilities to go out and clean some of those segments. And I think they went from 43786 all the way across the beltway. So, if you scroll down a little bit farther.

ALJ: 786, oh, scroll down again?

MR. BAYER: Yeah.

ALJ: Okay.

MR. BAYER: So, I think they, they went all the way down and cleaned up all the way across the beltway, maybe down to 44219.

ALJ: Uh huh, that's here.

MR. BAYER: Yeah, but I don't recollect, but there was a concern on, on those segments, what I was seeing on flow

monitoring. So, I asked the Bureau of Utilities if they would go out there and, and clean and inspect.

ALJ: Okay and, and when you say, and you, and how did you know that, that it was an issue? Was that the flow sensors?

MR. BAYER: Yes. Sometimes we see the flow censors will, will indicate that there's a, a blockage downstream or restriction downstream, and I think that's what I saw on that flow monitor, so I asked Bureau of Utilities to go out there and clean and inspect.

ALJ: Okay. So, and, is it your job then to, to watch the flow monitor sensors and, and to figure out whether you see new problems? Is, is that how it works?

MR. BAYER: Yeah, the ones that I have out in the field, yeah, we try to, we try to pass along any information like that that we get to the Bureau of Utilities so they can help their maintenance.

ALJ: Okay. So, so, okay. So, all right. That probably, you know, answers my questions on, on those. There were some, also some information, I guess, through evidence and, again, you weren't here.

It's not really fair to you to, I mean, I'm just highlighting for you that, that there was evidence produced that, that indicated that, at least the Protestants believe that there should be relief sewers installed, like down here

where it says 20767, to 20766. And then even on the next page over here at the top. You know, different size relief sewers. It, it, but it, was that something that was completed or did that even need to be done in the first place?

MR. BAYER: It was not completed and then yes, you bring up a good question, does it need to get done in the first place. So, that was, we go back and look at that model calibration summary table, where it indicated, I think, in these locations that there was some relief sewer necessary.

But again, we questioned that because of the over predicting that we were seeing in that table 5-3.1. So, when we have low confidence, we like to try to confirm before we move forward with anything.

ALJ: And so, you're still confirming?

MR. BAYER: I have meters out there and then, yep, we're watching, we watch to see if there's any kind of issues, so.

ALJ: Watch to see if there are issues, okay. And so, really that's, that's the game plan from here is, is watching the flow sensors, monitoring those and seeing what data you collect from that. And then you decide whether or not you're going to need relief sewers?

MR. BAYER: Yes, and then what we'll do is, we'll do an I&I analysis once we get all that data so we can try to find out if there's an area that is contributing a lot of extraneous

flow. And then also, we also are looking for, when we did those, we do those flow isolations in the middle of the night, we're looking for areas that are segments of pipe that are very leaky. So, there's a couple different tools that we use to keep an eye on things.

ALJ: Okay. But even with that, so the, you know, this flow sensor monitoring is ongoing. Is it, can you, sitting here today though you feel comfortable that, or do you, or can you tell me whether you do, that if this property is hooked up to this sewer, and these, saying that these Hopkins segments, keep calling them Hopkins segments, get repaired and the developer here does the first, the two that they have to do, you know.

But the rest of it are, you have any concern that hooking up this, these proposed houses to this sewer line as shown, that it would not be a problem or are you comfortable with that or what?

MR. BAYER: I'm not seeing anything on my flow monitoring that's concerning right now, but that doesn't mean I won't see something in the future.

ALJ: Okay. So, right, obviously that in the future there could always be something. But I just was curious as to, you know, at least as you see it today, sitting here today, is there any issue that you see?

MR. BAYER: Like I said, I'm not seeing anything in

that flow path there that we ran a couple minutes ago.

ALJ: Okay and then the other issue that I guess Mr. McCann showed you those photos of that lid that came off.

MR. BAYER: Yes.

ALJ: In the Jones Falls, that's down here, again, I'm just a visual person so I like to look at all these things. So, you know, with that, did, did, was work, did, did work take place to try to correct that problem? What, and so it, is there any concern that you have having seen those photos with this project?

MR. BAYER: Not with the project, but yeah, I was very concerned, so I immediately directed some staff to go out there and put that lid back on because that's a safety issue. I didn't want someone to get hurt. So, he went out there immediately after I got that e-mail and put the lid back on and locked it. It's a particular type of lid, so it needs to be locked.

ALJ: Understood. So, but for this particular project, does the fact that you saw those lids off in that Lake Roland, in that area, does that have any concern that the, you know, the sewage, again, from this project, would not be able to flow safely?

MR. BAYER: There was a concern, so I have sensors all the way down to the Jones Falls pumping station in Baltimore City.

ALJ: That's down here, right?

MR. BAYER: Yes, it goes way down, miles or so down into the City, along the Jones Falls interceptor in the City and all the way up into, into this area, so --

ALJ: So, you add, did you say you added sensors because of this?

MR. BAYER: No, no, no. I'm just saying I've had sensors in there for about a year.

ALJ: Oh.

MR. BAYER: All the way down to the City's Jones Falls pumping station. So, and this is a preliminary review of that January 13th storm, I think, showed that the wastewater was backing up all the way from the City back up into the County. Every one of my sensors or meters down below. So, again, that's just a preliminary review of what it appears might have happened.

ALJ: Okay.

MR. BAYER: So, to answer your question, I'm concerned, yeah.

ALJ: Well, you, you were concerned and so what you do is, what do you do then as a result of that concern?

MR. BAYER: Well, like I said, preliminary review is I, I looked at the information I was getting from all those meters, all the way down to the City's Jones Falls pumping station.

ALJ: And you just keep going, gathering the information and then, so then at what, is there a breaking point at one point where do you say, you know, there, something has to be done or, or you just, how long does it take?

MR. BAYER: Well, as I said, it's just a preliminary analysis so far. What, what is occurring is Baltimore City has some issues at their Jones Falls pumping station and they need to install some equipment and I think that that's part of the problem is the station wasn't able to pump as much as it possibly could, resulting in a backup into the County. But again, this is just a preliminary review.

ALJ: Yeah.

MR. BAYER: But that appears as, as what's happening is the City's Jones Falls pumping station is struggling to keep up.

ALJ: Okay, okay.

MR. BAYER: And then to, to ask you what we, what happens moving forward is hopefully the City is going to complete their improvements sometime in June, is what I've heard. And we'll continue to monitor and see if they're effective in their improvements.

ALJ: Okay, all right. But from your experience, you believe that these flow sensors, the flow monitors, I keep calling them sort of the same thing. Obviously, you're, you know, but using those is giving you a better picture of what is

going on and you just want to continue to look at that and gather that data?

MR. BAYER: Oh, yes. It gives us great information on how it, how, how the sewer system responds to wet weather, which is what we're really trying to figure out.

ALJ: Okay, understood. All right. That's all the questions that I have. You've been very patient with us. Most of your, most of your day today has been taken up with, with, with this, this, this case. We do appreciate it. Let's see. What's that?

MR. BAYER: I was just going to say, hopefully I answered all your questions as best I could, hopefully.

ALJ: Yeah, thank you very much. All right. So, Mr. McCann, you're going to e-mail over the, the pictures that you have and you're also going to drop off a copy of those pictures, that's 110. You might want to do a, revise an exhibit list as well. And so, this is due, my Order is due in thirty days from today, all right, everyone? Just trying to give everyone a heads up.

MR. MCCANN: Are we, are we submitting anything to you, Judge?

ALJ: Do you all need to? Would you, would you like to?

MR. MCCANN: As much as I don't want more work, I think it's, I think it's necessary. We, I, we can do it, I can

do it as soon as possible and, you know, not, not make it long. But I think it needs to be briefed, at least from my side anyway. So, if, if you're okay with that, I can suggest a date that will allow you time to do what you have to do.

ALJ: All right. Well, Mr. Rosenblatt?

MR. ROSENBLATT: Yeah, I mean, I was going to say we don't need it, we wrote sixty, seventy-page memos already. But if they're going to write one, we're going to write one.

ALJ: Mr. McCann does indicate that he wants to do that so, so what day would then work for you all, because I was counting the days and the Motion, or the Order would have been due end of March, if you count thirty days from today, which is under our rules, that's what it is, the Order has to be done. But I can leave it open to get your memos.

MR. MCCANN: Yeah, I mean, part of the problem is, Your Honor, kids' spring break is, you know, the 9th through the 16th, so.

ALJ: Yeah, you and I have the same spring break, (inaudible).

MR. MCCANN: Yeah, and I, there's no way I can get it done between then, now and then, unfortunately. But the, the week after. So, the week of the 18th at some point later in that week.

ALJ: All right. The 22nd, Friday?

MR. MCCANN: That's as good as any day, yes, thank

you.

ALJ: Mr. Rosenblatt?

MR. ROSENBLATT: Yeah, I mean, that's plenty of time. Do we want to put a page limit on what we submit?

ALJ: I don't, I don't, I don't like page limits. I don't know. I mean, what's, you know, what do you do then? Reduce the font size, expand the margin?

MR. ROSENBLATT: No, no, trying to save work on --

ALJ: I know.

MR. ROSENBLATT: -- on all sides --

ALJ: I know. Well, this isn't the Circuit Court, so I get you. But I, you know, I tend to go on and on, I always so, I'll let you guys do what you need to do, whatever you think you need to do. But, all right. We'll say the 22nd of March memos are due. We always say 3:30 because that's just end of the day to, to file those by e-mail and then drop off a copy. And I'm just assuming, I guess, Ms. Demillio, you're welcome to also do it if you'd like.

MS. DEMILLIO: I'm sure our office will have a memo--

ALJ: Okay.

MS. DEMILLIO: -- (inaudible) for the 22nd.

ALJ: Twenty-second, all right. And then, Mr. Wyatt, you're also welcome, if you feel like it, Mr. Sachse, you know you're both welcome to as well if you feel like it. I don't know that you all did last time, is what I'm trying to

remember. I don't think so, I'm trying to remember. Maybe you did. But in any event, both of you are also welcome. Okay. Anyone, anything else?

MR. MCCANN: No, thank you, Judge.

ALJ: All right. Thank you, all.

MS. DEMILLIO: Thank you. Thank you.

MR. WYATT: Thank you, Your Honor.

ALJ: All right, thank you.

[OFF THE RECORD]

CERTIFICATE OF TRANSCRIBER

I hereby certify that the hearing in the matter of Greenspring Manor, 2310 W. Joppa Road, case numbers 08-0922 and 2021-0250-SPH, heard before the Office of Administrative Hearings for Baltimore County, February 26, 2024, was recorded digitally.

I further certify that, to the best of my knowledge and belief, page numbers 1 through 132 constitute a complete and accurate transcript of the proceedings as transcribed by me.

I further certify that I am neither a relative to nor an employee of any attorney or party herein, and that I have no interest in the outcome of this case.

In witness thereof, I have affixed my signature this 11th day of March 2024.

Christine R. Leary

Christine R. Leary

Transcriber

IN THE MATTER OF:

GREENSPRING MANOR
2310 W. Joppa Road

CASE NUMBERS: 08-0922 & 2021-0250-SPH

Hearing Date: May 31, 2023

Pursuant to Notice, the above-entitled hearing was held before the Office of Administrative Hearings for Baltimore County by remote access.

PRESIDING:

MAUREEN J. MURPHY, ADMINISTRATIVE LAW JUDGE

FOR THE PARTIES:

ADAM ROSENBLATT, ESQUIRE
CHRISTOPHER MUDD, ESQUIRE

MICHAEL MCCANN, ESQUIRE

PETER MAX ZIMMERMAN, PEOPLE'S COUNSEL
FOR BALTIMORE COUNTY

Christine R. Leary
crleary1@comcast.net

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(ON RECORD)

ALJ: Good morning, everyone. You're attending day thirteen, case number 08-0922 and 2021-250-SPH. Property address is 2310 West Joppa Road. This is the combined development plan and zoning case for the project known as Greenspring Manor. Let's have counsel for the record identify themselves beginning with the Developer.

MR. ROSENBLATT: Judge, I think you're muted.

MR. MUDD: I can hear.

MR. SACHSE: I can hear.

ALJ: Did you hear me call the case?

MR. SACHSE: I did.

MR. MUDD: I did. While Mr. Rosenblatt is figuring out his sound, Judge Murphy, I'll enter our appearance. Christopher Mudd and Adam Rosenblatt with Venable, LLP here on behalf of the Applicant and the, the Developer.

ALJ: Okay.

MR. MCCANN: Good morning, Judge. Michael McCann on behalf of the Protestants.

MR. ZIMMERMAN: Peter Max Zimmerman, People's Counsel for Baltimore County. Good morning.

ALJ: All right. Good morning. I see that Mr. Wyatt is here, Mr. Sachse is also here. So, can you hear me now, everyone?

VOICES: Yes.

ALJ: Yeah, all right. I think it was Mr. Rosenblatt's sound.

MR. ROSENBLATT: Yeah, sorry about that.

ALJ: That's, that's all right. At least it wasn't me. So, we are here, as I said, in day thirteen and so we're still in the rebuttal case, the Developer. And what I had in my notes was that there was one witness remaining, is that correct?

MR. MUDD: That's right.

ALJ: Okay. One witness, so we're going to finish today?

MR. MUDD: We, we will, yes.

ALJ: All right. So, let's do this. I don't think there's anything preliminarily. I don't, I don't think, let me just ask and no one has anything? All right. Silence is good. We did get your exhibits, so, Mr. Mudd, and just so you know that we have, you know, the binders that you delivered to us. And we have made sure that we have the most recent Developer's exhibit list, which has in there 45-A and B. So, just to make sure that you knew that I had those.

MR. MUDD: Thank you.

ALJ: All right. So, with that said, I guess, everyone keep your microphones muted. If you've been here before, you know the drill. And the only people talking are the, are the attorneys or, you know, the witnesses that they're

calling. So, with that, Mr. Mudd, Mr. Rosenblatt, who are we calling?

MR. MUDD: We're going to call Mr. Nick Leffner.

ALJ: All right. I see him. Mr. Leffner? Oh, there he is. All right. So, let's swear you in. If you could raise your right hand, please? Do you swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief? Are you muted? Yep, you have to unmute yourself.

MR. LEFFNER: I do.

ALJ: Okay. You do? Okay, thank you. All right. Is it Mr. Mudd or Mr. Rosenblatt?

MR. MUDD: Yes, it'll be me.

ALJ: Okay, take it away. I'll mute myself.

MR. MUDD: All right. Good morning, Mr. Leffner. How are you?

MR. LEFFNER: Good morning.

MR. MUDD: Let me get situated here. Sorry. Do you see a copy of Exhibit 41 on your screen?

MR. LEFFNER: I do.

MR. MUDD: Okay.

ALJ: And I should say, Mr. Leffner has been here, at least been admitted as an expert before. I'm not sure what you're offering him as, but if, you know, we can short this at all. I don't know if anyone is going to have cross but what,

what areas are you offering him as an expert in?

MR. MUDD: I am going to offer him as an expert professional engineer with specific knowledge of the Baltimore County development regulations and related policies, sewerage design and capacity analysis and stormwater management design.

ALJ: All right. That's a lot, I'm trying to write it down. Development related, one more time, development related --

MR. MUDD: Sure. Development regulations and related policies.

ALJ: Related policies. Okay.

MR. MUDD: Sewerage design and capacity analysis.

ALJ: And capacity analysis. Okay.

MR. MUDD: And I should say sewer design and sewer capacity analysis, I guess is the best way to put that. And stormwater management design.

ALJ: Design.

MR. MUDD: Yes.

ALJ: Okay and with that, so, I, I believe, you counsel has probably seen Mr. Leffner before. Does anyone have any voir dire for Mr., Mr., excuse me, Mr. McCann, do you have any voir dire.

MR. MCCANN: Yeah, at least on the sewer design and sewer capacity analysis.

ALJ: Okay.

MR. MCCANN: (inaudible).

MR. MUDD: (inaudible). I'm sorry. Judge Murphy, I, I intended to ask him a few questions to describe his experience, if I may?

ALJ: Yep, understood. Well, now that Mr. McCann has voir dire anyway go right ahead. I'll be quiet.

MR. MUDD: That, that's okay, thank you. So, your, your resume speaks for itself here, Mr. Leffner. But can you just describe a little bit about, for Judge Murphy, about how long you've been an engineer?

MR. LEFFNER: Yeah, I've been an engineer for about fifteen years.

MR. MUDD: Okay and you've, you handled the zoning and development plan cases in Baltimore County, been involved in those before?

MR. LEFFNER: I have.

MR. MUDD: Okay and approximately how many cases have you been involved with in Baltimore County?

MR. LEFFNER: A couple development plan cases. A lot of the development plan cases that we work on have limited exemptions so we're not coming to a hearing necessarily.

MR. MUDD: Okay. Let's talk a little bit about, about sewer design. Have you previously designed sewer systems?

MR. LEFFNER: Yeah, I have.

MR. MUDD: And in general, how many sewer systems have you, have you designed over the years?

MR. LEFFNER: I mean, probably hundreds. Really any project that we work on that has any kind of wastewater generating use has a sewer system.

MR. MUDD: Okay and how many would you say you designed in Baltimore County?

MR. LEFFNER: Probably a dozen or two.

MR. MUDD: Okay and are you familiar with Baltimore County's sewerage design criteria?

MR. LEFFNER: I am.

MR. MUDD: Okay and where are the design criteria found?

MR. LEFFNER: They're in the Baltimore County design manual, I think it's chapter six.

MR. MUDD: Okay and, and have you applied that before in your, in your design of sewerage systems in Baltimore County?

MR. LEFFNER: Yeah, yeah. Every project in Baltimore County and they're, they're pretty similar to a lot of the other jurisdictions in the state.

MR. MUDD: Okay and are you familiar with how to evaluate capacity within a sewer system?

MR. LEFFNER: Yes.

MR. MUDD: And how is that performed?

MR. LEFFNER: It, it can be a mix depending on what the, the proposed design is. But I'd say generally it's a mix of determining projected sewer flows, you know, maybe just applicable to the use itself. Looking at long term or future use areas that the sewer system might use. As well as looking at any kind of existing condition uses that the sewer supports. Looking at infiltration into the system and then, you know, looking at the, essentially, the hydraulic capacity of the sewer line pipes.

MR. MUDD: Okay and to, to the extent that it matters, have, have you, have you designed these or, sorry, performed similar analysis like this on residential projects?

MR. LEFFNER: Yeah, I have.

MR. MUDD: Okay and have you also designed sewer systems for residential projects?

MR. LEFFNER: Yes.

MR. MUDD: Okay. Did you review the state of the sewer line that serves this property, and by that, I mean the public sewer line through which sewerage will connect?

MR. LEFFNER: I did.

MR. MUDD: Okay and can you just describe for the Judge the types of things that you did to evaluate that sewer line?

MR. LEFFNER: Sure. I think, you know, starting at the beginning of the project, there's a lot of record drawing

requests and receipts we get, which includes reviewing the My Neighborhood GIS mapping system, as well as getting record drawings from the County staff, the site survey, (inaudible) survey done that identifies the depths of some of the manholes, as well as pipe sizes and materials.

Met with County staff to discuss the system, put together a sewer capacity request letter to the County, which they responded to that helps identify any offsite improvements that are required. And then, you know, especially because of this case, just, you know, a lot of the documents related to the Jones Falls sewer shed and the various studies that the County and some of their consultants had done.

MR. MUDD: Okay. Let's switch for a second to stormwater management. Have you designed stormwater management facilities in Maryland before?

MR. LEFFNER: Yes.

MR. MUDD: How many?

MR. LEFFNER: Hundreds.

MR. MUDD: How about in Baltimore County?

MR. LEFFNER: Ditto. Probably dozens in Baltimore County.

MR. MUDD: Okay. Have you designed stormwater management facilities for residential projects?

MR. LEFFNER: I have.

MR. MUDD: And how many?

MR. LEFFNER: Hundreds, again.

MR. MUDD: And how many in Baltimore County would you say?

MR. LEFFNER: Yeah, a couple dozen.

MR. MUDD: Okay and what regulations or documents do you rely on when performing those, those design?

MR. LEFFNER: I think it was really two. I think the local regulations and design manual and then also the state manuals, especially the state manual has a lot of other technical guidance, supplements, they refer to other design manuals. But kind of the two main ones is the Baltimore County design manual and then the MDE stormwater design manual.

MR. MUDD: Okay.

MR. LEFFNER: And the supplement.

MR. MUDD: All right and then last question, and this is with regard to both sewerage and, and stormwater, are there any, any associations that you have with any engineering groups or is there any sort of continuing educational type of, of classes that you might take that would help you, to help your work in these areas?

MR. LEFFNER: Yeah, they, you know, there's, you know, state licensure required continuing education credit that we do. So, I take those. You know, I'm a member of ULI, which I wouldn't say is necessarily a technical association. But I also attend other events with organizational groups like ASCE

and then some of the other, you know, (inaudible).

MR. MUDD: What is ASCE?

MR. LEFFNER: ASCE is the American Society of Civil Engineers.

MR. MUDD: Okay, all right. I have no further questions. I would offer Mr. Leffner for the, the reasons previously stated, or for the purposes previously stated.

ALJ: Mr. McCann, did you have voir dire?

MR. MCCANN: I do, thank you. Good morning, Mr. Leffner, can you hear me?

MR. LEFFNER: Yep, good morning.

MR. MCCANN: Good morning. So, when you say you've designed sewer systems, obviously, I want to get some more clarity on that, is, prior to your experience with this project, is it fair to say that your experience with the design of sewer systems is, is what was in connection with proposed development of specific sites. Is that, is that a fair characterization?

MR. LEFFNER: I'd say it's typically related to proposed development, but a lot of that usually include analysis of the existing system in support of the proposed development. So, in some cases there may be an issue where there's an overflow or a break or some kind of system improvement required to just an existing system that has nothing to do with proposed development. And I'll work on

those as well.

MR. MCCANN: Okay. Well, let me put it this way. Have you ever conducted just an independent evaluation of a jurisdiction's or an area's sewer system or its capacity? Aside from any connection with a development project for a particular property.

MR. LEFFNER: I'd say yeah.

MR. MCCANN: You'd say yeah. What does that mean?

MR. LEFFNER: Looking at (inaudible) existing system that supports existing uses to identify pipe size increases or deficiencies in the (inaudible) system.

MR. MCCANN: Okay. When have you done that, as you just described?

MR. LEFFNER: I, it was years, you know, it kind of depends on the project and the, the area needing to look at it. I'd say a few years ago (inaudible) an existing residential zoned area. So, it was a large residentially owned area that they were looking at both sewer, sewer upsize requirements, relocation requirements and it was related to some pump station planning that they were doing.

MR. MCCANN: Okay and when was that? You said a couple years ago?

MR. LEFFNER: Yeah.

MR. MCCANN: And where was that?

MR. LEFFNER: One of them was in the state of Kansas

on a military facility and the other was located here in Maryland, also on a federal facility.

MR. MCCANN: Where, where was that? What, what federal facility was that?

MR. LEFFNER: It was Fort Meade.

MR. MCCANN: Okay. So, is it at least fair to say that you've never done what you've done in, in this case, I know you haven't described it fully yet, but in connection with any other project that you've ever worked on?

MR. LEFFNER: Could you, I'm not sure what you mean--

MR. MCCANN: Yeah, what, you've described some of the things you, you've done in, in this case for which we're here today. And I'm asking you whether you've ever done those sorts of things or, or not sorts of things, but done what, done that before in any other case or in connection with any other project?

MR. LEFFNER: I guess (inaudible) the analysis that I've done for this case that we've performed is very consistent with every development project that we work on.

MR. MCCANN: And, and --

MR. LEFFNER: As far as analyzing the downstream sewer capacity, meeting with the local jurisdiction, applying the design manual and identifying any downside, downstream upsizing required to support the project.

MR. MCCANN: When you say, when you say it's very

consistent, what do you mean by that --

MR. LEFFNER: Yeah.

MR. MCCANN: -- what do you, you've done the, you've done the (inaudible) --

MR. LEFFNER: Same process --

MR. MCCANN: Go ahead, I'm sorry.

MR. LEFFNER: Sorry. The, it's a standard process. We, we do, what, what I've done on this project is the same that we do for all projects.

MR. MCCANN: But have you done a comprehensive eval, let's put it this way. Have you done a comprehensive evaluation of capacity in a sewer shed or sub sewer shed before?

MR. LEFFNER: Yes.

MR. MCCANN: Without any connection to a particular development?

MR. LEFFNER: Again, those two areas that I shared. We analyze just the existing sewer system.

MR. MCCANN: All right. Are you a sanitary sewer engineer or a wastewater engineer?

MR. LEFFNER: I'm a civil engineer, which includes both of those disciplines.

MR. MCCANN: Okay. When you say includes both of those disciplines, do you, have you either published any articles in the area of wastewater engineering or sanitary

sewer engineering?

MR. LEFFNER: I have not published any articles.

MR. MCCANN: Do you perf, do you belong to any professional associations in, in the civil engineering field in the areas of wastewater engineering or sanitary sewer engineering?

MR. LEFFNER: Again, I'm not a member of the organizations, but I've attended events.

MR. MCCANN: Bear with me one second. I didn't see, I think your resume has been marked as Exhibit 41. I didn't see any reference in your resume to any sewer design or sanitary sewer design experiences. Is there a reason why it's not in your resume?

MR. LEFFNER: I'd have to look and see. I don't know if you guys have a copy of it. Usually, I think it's included up at the top with the design of water and sewer or utility infrastructure, which is common of all projects that I work on.

MR. MCCANN: Okay. I see a reference to utilities in this but no reference to sewer design.

MR. LEFFNER: Yeah, --

MR. MCCANN: Am I wrong about that?

MR. LEFFNER: Yeah, utilities would include water utilities, sewer utilities, conduit to support electrical and telecom utilities. So, a variety of different utilities.

MR. MCCANN: Okay, not just sewer?

MR. LEFFNER: Not just sewer.

MR. MCCANN: Right.

MR. LEFFNER: But including sewer.

MR. MCCANN: Have you ever, again, independent of any particular project or development that you, you're working on, have you ever served as an expert witness, whether you testified or not, on sanitary sewer or wastewater sewer design or capacity issues?

MR. LEFFNER: Hm. I don't think it was the only thing that I testified to, but there are often times, Board of Appeals, Planning Commission meetings where I have to provide testimony related to sewer, yes.

MR. MCCANN: Related to sewer. My question was specific to sewer design and then sewer capacity issues, as an expert witness?

MR. LEFFNER: Yes.

MR. MCCANN: When was that?

MR. LEFFNER: Again, it was a few years ago, maybe five years ago, six years ago. There was a specific case that included, you know, a retail center that had downstream sewer capacity analysis, (inaudible), onsite sewer design. It included the, the design of the system as well as the capacity analysis.

MR. MCCANN: And where was that again?

MR. LEFFNER: That property was in Matcom's

territory, down in St. Mary's County.

MR. MCCANN: Okay and again, I'm sorry, how long ago? I missed that.

MR. LEFFNER: It was like five, five years ago.

MR. MCCANN: Five years ago.

MR. LEFFNER: Five, six years ago. It too had many, many hearing (inaudible) it was about five or six years ago.

MR. MCCANN: Okay. Have you ever been involved at, in any modeling of sewer capacity? That is prepared the model, evaluated the model itself, things of that nature?

MR. LEFFNER: Yes.

MR. MCCANN: You've prepared modeling before?

MR. LEFFNER: Yes.

MR. MCCANN: In, in what, in what connection?

MR. LEFFNER: In doing the capacity analysis (inaudible) modeling software to identify the capacity and hydraulic design of the sewer system.

MR. MCCANN: Okay and what, and that's actual modeling that you did, you performed yourself?

MR. LEFFNER: Correct, yeah, in the computer.

MR. MCCANN: What modeling software are you talking about?

MR. LEFFNER: There was a couple of different sewer modeling kind of like software packages. In some cases, it's as simple as an Excel spreadsheet with engineering equations

used for the capacity analysis. In some cases, software programs that identify just hydraulic design of, you know, conduits where round circular pipe are used, like Flow Master. And then it's some more complicated hours. You can actually develop a network of, of the sewer model.

MR. MCCANN: Okay and where was that and when was that, as you just described it?

MR. LEFFNER: Again, I, we kind of used each of those three practices on all projects that have any kind of sewer generating wastes. So, yeah. Yesterday and over the past few years, it's common place on projects.

MR. MCCANN: Okay. Maybe, my, my question about modeling was really directed to a modeling pertaining to an entire sewer system in, in a sewer shed or sub sewer shed as opposed to some modeling in connection with something more localized. Have you ever engaged in the former?

MR. LEFFNER: Yes.

MR. MCCANN: You have?

MR. LEFFNER: Yes.

MR. MCCANN: In the modeling of a, of a sewer shed capacity or a sub sewer shed?

MR. LEFFNER: Yes.

MR. MCCANN: And what, what jurisdiction was that?

MR. LEFFNER: Again, there's, there's probably more. We did it on both of those cases with, on the federal

properties and there's a planning tool called the hydraulic planning analysis and the WSSC sewer territory that you prepare that look at both the existing conditions as well as proposed development. Where you come up with kind of a, a plan submission to WSSC to confirm that you have either support for any proposed development or identified downstream improvements that are required.

MR. MCCANN: Yeah, I'm sorry. I should have couched that question in terms of preparing the model itself. Did you, were, were you involved in that in, in the case in --

MR. LEFFNER: Yeah, yeah, in all three of those cases.

MR. MCCANN: Okay and how about the evaluation of an existing model? Have you done any of that type of work? That is, its efficacy? In other words, for example, and I'm sorry to, let me, let me rephrase. Have you ever been involved in the recalibration or updating of, of a model for sewer design or capacity?

MR. LEFFNER: I don't know that we've ever, I've ever verified or recalibrated the model. In some cases, we will update an existing model and include our proposed development.

MR. MCCANN: And whose model would that be? Not, not yours, but someone else's that --

MR. LEFFNER: Yeah, you know, usually it's another consultant that actually prepared the model.

MR. MCCANN: Okay. In your fifteen years, let me see if I can get this question out in a clear manner. You, you've been offered this morning as an expert in stormwater design, as well as the development regulations, related policies, in addition to being an expert in sewer design and sewer capacity and analysis.

In your fifteen years, particularly given you don't reference sewer design in your resume, what percentage of your time has been sent, has been spent rather, in the area of sewer design and sewer capacity analysis as opposed to stormwater management design or any of the other land development engineering type things that you're involved in and is represented in your resume, Exhibit 41? You understand that question?

MR. LEFFNER: Yeah, and I'd say, it's tough to say. I think there are periods working on projects where if there's a heavy need, again, some of those existing sewerage area analysis where it's a significant portion of your time because, you know, on a, on an annual basis.

There's other periods where, you know, I may be more focused on stormwater management support over a project or sediment erosion control in support of a project. So, I'd say it's a, a percentage of my fifteen years. Some periods it's a much higher percentage, some other times it's a much lower percentage.

MR. MCCANN: Overall, what's the amount of time in percentage, in a percentage, you spent over those fifteen years doing sewer design or sewer capacity analysis as opposed to the many other things you apparently do?

MR. MUDD: Objection. He was asked and answered it.

MR. MCCANN: No, he didn't.

ALJ: It's, it's, he wants a total percentage. What Mr. Leffner said is it's, you know, there's a percentage --

MR. LEFFNER: Yeah.

ALJ: -- as opposed to what the number is. He's looking for the number, I think.

MR. LEFFNER: I would have to totally guess at a number.

MR. MCCANN: Okay, fair enough. Bear with me one second. What, what modeling, you mentioned modeling software that, I guess, you or your firm uses or has access to, what, what is the name of that modeling software? Do you know offhand?

MR. LEFFNER: Which one?

MR. MCCANN: I'm asking you which one. You, you made reference to modeling software and I'm asking you, I think you were mentioning it, Mr. Leffner, in connection with what you have access to at your office and what you sometimes use.

MR. LEFFNER: Yeah, there were, there's a lot of software modeling programs that we have access to that I'm not

using on day, personally on a day-to-day basis.

MR. MCCANN: Um hm.

MR. LEFFNER: Previously, again, there were Excel, Flow Master, there's one that's like infra work that I'm very limited in and then there's plug ins for auto cad. There's storm and sanitary sewer analysis that I'd say is most commonly used on projects that we're working on.

MR. MCCANN: You're, are you familiar with the modeling that the County uses?

MR. LEFFNER: Not the specific model that they use, but yes.

MR. MCCANN: You've looked at it in connection with this case?

MR. LEFFNER: Yes.

MR. MCCANN: How so?

MR. LEFFNER: Well, there's a variety of reports from the engineering firms the County has retained related to the Consent Decree. And there's also the modeling software and outputs that the County generates, depending on proposed development for the model that they maintain. And I, I would say, I think pretty much all those have already been entered in as exhibits to this case.

MR. MCCANN: Yeah, I'm not talking about outputs or reports, I'm talking about the modeling itself, the software itself. Have you, are you familiar with and have you, are you

familiar with that (inaudible) --

MR. LEFFNER: I have not received any of the County models related to this project, just the reports and outputs.

MR. MCCANN: Okay. That's it, Judge. Thank you, Mr. Leffner. Appreciate it.

ALJ: And Mr. Zimmerman, did you have any voir dire?

MR. ZIMMERMAN: Yes, and let me say, this is the first case where I have the pleasure of being in a case with Mr. Leffner. And I haven't seen any of the later, new exhibits, so I'd just mention that. So, Mr. Leffner, what year did you graduate UPI?

MR. LEFFNER: I graduated in 2008.

MR. ZIMMERMAN: Okay and how long have you been a registered professional engineer in Maryland?

MR. LEFFNER: Since 2013.

MR. ZIMMERMAN: Okay. Are there any master's degrees available in specialties of engineering?

MR. LEFFNER: There are.

MR. ZIMMERMAN: That, would that include wastewater engineering, sanitary sewer engineering, anything like that?

MR. LEFFNER: I'm not sure of the specifics but yes, I would imagine so.

MR. ZIMMERMAN: Okay, okay. Are you currently in any master's program?

MR. LEFFNER: I'm not.

MR. ZIMMERMAN: Okay and in the last three years, how many projects have you worked on and, and testified in in Baltimore County, on County projects?

MR. LEFFNER: Hm. I think there have been one or two in the last three years.

MR. ZIMMERMAN: Okay and have they involved the Jones Falls sewer shed?

MR. LEFFNER: No.

MR. ZIMMERMAN: Okay.

MR. LEFFNER: Well, yes, one, one case is within the Jones Falls sewer shed.

MR. ZIMMERMAN: And which one is that?

MR. LEFFNER: There was a variance, zoning variance, case that was located in, at 6400 Falls Road. I believe Judge Murphy was involved in that case.

MR. ZIMMERMAN: And what was the nature of the variance?

MR. LEFFNER: Building setback variance.

MR. ZIMMERMAN: Okay. So, that did not involve the study of the whole sewer system, did it?

MR. LEFFNER: It did not, but it did include proposed development generated sewer flows (inaudible).

MR. ZIMMERMAN: (inaudible) I'm sorry, what was that? A house addition?

MR. LEFFNER: Commercial building renovate, total

redevelopment.

MR. ZIMMERMAN: Okay and what's the name of that case?

MR. LEFFNER: I don't know the for, the formal name of it (inaudible).

MR. ZIMMERMAN: Okay and, and did you testify in the Torch Hill case?

MR. LEFFNER: I did not.

MR. ZIMMERMAN: Okay, okay.

MR. LEFFNER: (inaudible) our company was not involved in that case.

MR. ZIMMERMAN: All right. Okay. All right. Those, that's all the questions I have. I have a comment, whether it's an objection or qualification. I, I certainly recognize Mr. Leffner as an expert engineer.

As I always say that, their opinions, the legal opinions of engineers and other such experts, I think, have to be taken with either a grain of salt or some limitations as to the extent to which they can interpret the law. So, I'll just say that, as I do with just about every expert.

The other comment, since I don't really know the scope of the testimony, or what is planned, to the extent that there's any interaction with County staff that's been mentioned, if there's any correspondence from County back, then I think we need to have County staff testify.

I don't think we can have hearsay e-mails or letters back and forth from Mr. Leffner from, to and from County staff. Maybe to County staff, but if County staff has communicated with Mr. Leffner in writing or, or verbally, then I think we need to have County staff here. Just as we kind of did with Chris Nebre.

And the other thing is, it's not clear to me whether much, if not all, of Mr. Leffner's testimony is, is really the presentation of the main case for the Developer, rather than actually rebuttal.

So, unless it's specifically rebutting certain things that witnesses for the Protestants said, namely, Mr. Grachek, Mr. Summers and maybe one of the other experts. Unless it's specific rebuttal we should not be sort of having the Developer's main case be, being presented at this time. So, that, so we'll, we'll see what happens but those are my concerns.

ALJ: Thank you, Mr. Zimmerman. Mr. Wyatt, did you have any voir dire?

MR. WYATT: None, thank you.

ALJ: Okay and Mr. Sachse, just to, did you have any voir dire?

MR. SACHSE: No.

ALJ: Okay.

MR. SACHSE: No, I don't.

ALJ: Thank you. All right. Sorry, just muted myself. All right. So, Mr. Leffner will be admitted as an engineer with specific knowledge in development regulations, related policies of sewer design and sewer capacity analysis, as well as stormwater management design. Okay. Mr. Mudd, go ahead.

MR. MUDD: Thank you. Mr. Leffner, let's, let's start with stormwater. Were you here for the testimony of Mr. O'Leary?

MR. LEFFNER: I was.

MR. MUDD: Okay and did you review the exhibits that he presented in this case?

MR. LEFFNER: I did.

MR. MUDD: Do, do you agree with his assessment, assessment of the stormwater management design for this project?

MR. LEFFNER: I don't.

MR. MUDD: And, and why not, generally speaking?

MR. LEFFNER: I think he, the main piece that he seemed to point out or propose was that the existing condition for the property used in the pre-development hydrology analysis was to be meadow instead of the, the current state, which it was as a farm field. And I think, you know, he didn't, didn't really make any specificity to the Baltimore County design requirements and mainly just focused on the, the MDE design

manual.

MR. MUDD: Okay. I'm going to show you what was submitted as Petitioner's Exhibit, or excuse me, Protestant's Exhibit 50. Do you see that?

MR. LEFFNER: I do.

MR. MUDD: Okay and do you recognize this?

MR. LEFFNER: I do.

MR. MUDD: And just remind the Judge what this, what this document is.

MR. LEFFNER: Sure. It's one of the sections from the Maryland stormwater design manual.

MR. MUDD: Okay and it's specifically Section 2.4 in this exhibit, right?

MR. LEFFNER: Correct, 2.4, which is related to overbank flood protection, which is kind of the ten-year storm, then Section 2.5, the extreme flood control, which is referred to as the hundred year.

MR. MUDD: Okay and did you hear Mr. O'Leary's testimony regarding these sections?

MR. LEFFNER: I did.

MR. MUDD: Did you agree with his testimony?

MR. LEFFNER: I did not.

MR. MUDD: Okay. So, first, I'd like you, well, I'd like you to explain why not but, but first describe or remind the Judge what your understanding of what Mr. O'Leary's

testimony is and then why you disagree with it.

MR. LEFFNER: Sure. I think, if this is the exhibit, I think down below there was a box made around one of the statements. Yeah, that I guess was proposing that the standard for characterizing pre-development hydrologic land use for non-forested areas, including agriculture, should be meadow in good condition.

But above, kind of before getting to that standard there's, again, the Maryland manual, that has generally been adopted by all the jurisdictions, including Baltimore County, that makes reference to it.

But the first paragraph above, I think the, I don't know which sentence it is, but it says overbank flood protection for the ten-year storm shall only be required if the local approval authorities have no control over flood plain development, no control over infrastructure and conveyance system capacity design or determine that downstream flooding would occur as a result of the development.

So, reading that, I think the, the criteria below aren't necessarily required, which I say is what Mr. O'Leary had proposed. Instead, as Baltimore County does have control over flood plain development, they also have control over infrastructure and conveyance system design.

And through the stormwater management or flood plain or any of the other studies that coordinate with the County,

determine whether they'll be any downstream flooding as a result of the development.

MR. MUDD: Okay and so what, so what, what specifically then is your opinion about whether or not this, this red box on Exhibit 2.4, excuse me, Section 2.4, Exhibit, Protestant's Exhibit 50, whether or not this applies in Baltimore County?

MR. LEFFNER: Yeah, I don't, I do not think it's a requirement in Baltimore County.

MR. MUDD: Okay. So, explain if you will for the Judge a little bit about why you think it is not a requirement, in, in more detail than you have already.

MR. LEFFNER: So, as I say, because the County does have control over those three areas, --

MR. MUDD: I'm sorry, let me cut you off there. Can you describe how Baltimore County has control over those three areas?

MR. LEFFNER: Yeah, related to the, kind of I'd say the first bullet point, which is flood plain development, the County --

MR. ZIMMERMAN: I, I object. That calls for a legal interpretation.

ALJ: Overruled. Go ahead.

MR. LEFFNER: So, the, the County does have a flood plain ordinance, which can prevent, which restricts, prevents

the development in the flood plain, requires flood plain studies in some cases, so they have control over development within the flood plain.

The no control over infrastructure conveyance system capacity design, again, the County, I know we've been referring to the sewer design manual. There's also a storm drain design manual. So, you know, which has to be applied to projects within Baltimore County and the County reviews and approves those, so they do have control over infrastructure conveyance system design.

And again, related to the downstream flooding that would occur as the proposed development, there's a requirement to prepare stormwater management plans that have to be reviewed and approved, as well as, you know, in some cases, a flood plain study depending on contributing drainage areas in a location within a certain watershed. So, they have control over all three of those, to which different engineering standards are applied to.

MR. MUDD: Okay. So, so then, it, it's your, let me, let's skip that. It, does, in your experience, does Baltimore County actually use overbank protection, even though it's not required?

MR. LEFFNER: In most cases they do, yes.

MR. MUDD: Okay. In, in your experience, does Baltimore County apply the meadow in good condition evaluation

that Mr. O'Leary states is mandatory under this section?

MR. ZIMMERMAN: Objection. Unless we've got County documents on when they do or don't, I don't think it's up to this witness to tell us when the County does or does not use meadow or anything else.

MR. MUDD: I think it's perfectly fine in his experience to explain whether or not he's done it.

ALJ: Right, yeah. It's, it's overruled. I'm sure he can explain what his experience is with the County and in terms of what the, he believes the County. I mean, he's familiar with these things. So, he can certainly (inaudible) that. Overruled.

MR. LEFFNER: Yeah, I mean, I would say the approved stormwater management concept plan for this project is a perfect example that it was not applied. Subsequent to the approval of the stormwater management and hearing Mr. O'Leary's testimony, I, we, I confirmed with the County that it, it was not their standard and that the standard used to develop the stormwater concept plan for this project was applicable.

MR. ZIMMERMAN: Move to strike. It's hearsay.

MR. MCCANN: And I, I join in that motion. On an issue like this, I think we need witnesses, not hearsay.

ALJ: Okay. Well, I, I, I'll strike the, the statement that the County said what, you know, that this was the standard that you confirmed with them, because it is

hearsay to the extent that, you know, the Protestants can't, and People's Counsel can't, cross examine on that, on that issue. They can cross examine you, but, but not in terms of what your understanding is and your experience is in the County in, in doing this, this type of work, so. Go ahead.

MR. MUDD: Did, did you, following the testimony of Mr. O'Leary, did you engage in discussions with Baltimore County?

MR. LEFFNER: Yes.

MR. MUDD: Is there anything that you learned in those discussions that caused you to want, to need to re-evaluate or want to re-evaluate stormwater management in this case?

MR. LEFFNER: No.

MR. MUDD: Okay.

MR. ZIMMERMAN: Same objection, same objection. That's, that's just another way of getting indirectly kind of hearsay in.

ALJ: Over, overruled. Mr. Leffner can testify about what he learned in, in terms of, you know, his discussions and so he can tell us what he's learned and understands.

MR. MUDD: Thank you, Judge. Let's talk about other, other jurisdictions. Have, have, what has been your experience in other jurisdictions in Maryland regarding this meadow in good condition evaluation?

MR. MCCANN: Objection. Relevance, Your Honor.

ALJ: Yeah, is, is it relevant to, to this case in the County?

MR. MUDD: Well, I, I would say it's relevant in the sense that this is a Maryland, a Maryland manual and the, I believe, and I realize that this is a, an argument here and not testimony. But I believe the assertion from Mr. O'Leary was that this is, this is required across Maryland. So, I think it's worthwhile to understand what other jurisdictions do to see whether or not they do, they evaluate things the same as Baltimore County does.

MR. MCCANN: I, I don't think that answers the question. I think that begs the question. The question is, there's, there's a state manual and there are local requirements in Baltimore County. Yes, this, this manual is adopted elsewhere.

But the fact that it's adopted elsewhere and how it's applied elsewhere doesn't make a whit of difference as to how, if at all, or when it's applied in this jurisdiction. The, the objection is still the same. The relevance is the same regardless of whether it's a state manual or not. That doesn't answer anything relevant.

MR. MUDD: I, I mean, Your Honor, I would say to, to the extent that there's an intimation that because this is a state document that it applies statewide uniformly, I think

it's worthwhile to understand what happens in other jurisdictions.

MR. MCCANN: I, when Mr., when Mr. O'Leary, just to finish that thought. When Mr. O'Leary said that, if he said that, I don't recall if he said that, I think that was entirely by way of background. That this is a state manual that's adopted by local jurisdictions.

He, when he said that, he was not trying to make a statement about extent to which it's applied in other jurisdictions. So, I think we're in new territory here, number one. It's not in response to anything Mr. O'Leary said. And number two, it's, it's irrelevant.

ALJ: So, I reviewed Mr. O'Leary's testimony, I, I don't recall, I mean, it didn't jump out to me that he was going through what other jurisdictions have, have said or what they apply.

And so, but I guess I'm trying to figure out is this going to move the ball forward for me at all? Or is this just a point that you thought maybe you needed to, that you thought maybe he said that, I, I mean, I, you know, I always have a tendency to like allow testimony. It's just that I'm not sure if this is something that I need, is this?

MR. MUDD: Well, I guess, Your Honor, if, if you're, if you're not accepting this as some sort of statewide mandate, then I'm not sure you do need it. If you're focused on, on

Baltimore County.

But I, but again, I know I'm saying it for the third time, to, to the extent that there's a suggestion, or that there will be argument made that the state manual says that you have to do it this way, and Baltimore County is some sort of outlier, I, I think this question is important.

ALJ: Okay, all right. Well, I'm going to, based on that last statement, I'm going to allow it just if, just for the sake of making sure the record is clear. And, in fact, if argument is made. It, the, it didn't jump out to me in his testimony. But I, I could have missed that. And so, if I missed that, I want to make sure that, that I got the point as well. So, I'm going to overrule the objection. Go ahead.

MR. MUDD: Thank you. Mr. Leffner, have you seen any other jurisdictions require the meadow in good condition evaluation?

MR. LEFFNER: Yes, yes.

MR. MUDD: And how many?

MR. LEFFNER: A couple in this state. And I'd say in most cases it's kind of project by project reviewed. Many times, projects that are on federal properties may be required to use the meadow in good condition for unforested areas. But, you know, pavement areas they'll consider as existing, which isn't identified down below there. There's a few other counties that I would say just do it across the board, just all

projects that are unforested use it.

There are some jurisdictions in Maryland that are more strict than this. They have a higher standard. But I'd say the majority of the jurisdictions that I've done work in do not apply this standard and specifically with agricultural farm fields to allow the existing land use to be considered as ag or (inaudible) cropland.

MR. MUDD: Okay. Let's assume for a second that Mr. O'Leary is correct, that you would need to evaluate using meadow in good condition as the pre-existing condition here. How, if at all, would that change your analysis in this case?

MR. LEFFNER: I think, there's kind of two parts that Mr. O'Leary, that I think did a good job of summarizing, which was the existing hydrologic analysis would be affected. When, when doing it, I think that his exhibits, he, he had had a mark up saying that the runoff curve number or kind of the land use within the property would change. You know, in general, those numbers would go down from what they're currently approved at.

Likewise, the time and concentration, so, how long water takes to move across the site would likely be increased some. So, with the land use going down and the time of concentration going up, the amount of runoff or the rate of runoff leaving the site would likely be reduced if we implemented what Mr. O'Leary said with the existing being meadow.

Similarly, in the proposed development, the current approved concept plan had some pretty conservative assumptions made related to both of those same two factors that affect the runoff rates. The land use curve numbers, when we do the final design, may also go down. The time of concentration paths were assumed at minimums when we prepared the concept plan, just in, to be conservative.

So, those two would likely become longer that would reduce the, the post-development runoff rates. And really what it does is the, the amount of quantity control, or the amount of (inaudible) that you have to do onsite to just maintain those existing runoff rates from the project, the more those rates are different. In general, there's more storage required within a stormwater management practice.

MR. MUDD: Okay. So, in a, in a, in a more direct way, do you think if, if Mr. O'Leary is correct, could you achieve a design that would work on this, this site, a stormwater management design?

MR. LEFFNER: Yes, --

MR. MCCANN: Objection, objection. Was, and I'm sorry if I misheard, was the question, could you achieve?

MR. MUDD: Yeah.

MR. MCCANN: I, well, I object to that.

ALJ: Well, it was based on the hypothetical before so.

MR. MCCANN: Yeah, but the point is, we're dealing with a plan, a hypothetical plan, that hasn't been apparently, hasn't been reviewed and approved by Baltimore County. So, will you meet, in other words, the question effectively is, if you have to, will you meet the regulations. And I don't think that's appropriate because we have a concept plan in front of us. And number two, I don't think it's, frankly, it's not relevant to the plan that's before us.

ALJ: Could you achieve the design, Mr., could you achieve the design if you used a meadow as existing conditions, wasn't that, wasn't that the question?

MR. MUDD: It is, yeah. Could, could, could you, could you achieve a stormwater design that would comply with laws and regs if, if you assumed that Mr. O'Leary's analysis was the way that you had to apply it?

ALJ: Yeah, overruled. Go ahead.

MR. LEFFNER: Yes.

MR. MUDD: Okay and how do you know that?

MR. LEFFNER: We performed an analysis and did just that.

MR. MUDD: Okay.

MR. MCCANN: That's, Your Honor, that's my, that's exactly my problem. What they're doing right now is they're amending the, the stormwater management plan and, you know, even if it's couched in, in terms of a hypothetical, what, what

they're effectively doing is saying that Mr. O'Leary was right and just to make sure, we changed the plan and to, to accommodate his, his points. And I don't think we should be doing that at this stage of this proceeding.

MR. MUDD: Judge Murphy, there was expert testimony on the other side that said this plan should fail because of this issue and all I'm trying to demonstrate, and will demonstrate, through Mr. O'Leary, excuse me, through Mr. Leffner's testimony is that, is that it would not fail and should not fail.

And as, as we talk about the testimony of when stormwater management design is finalized and achieved, I think you'll understand exactly what we're trying to do in presenting this exhibit and having this discussion and this testimony.

MR. MCCANN: Yeah, it, it will not fail if we're, if we amend the plan and that's the problem --

MR. ZIMMERMAN: Can, can I add something? If they wanted to do this, they should have presented an alternative plan already to the County for review and not just talk about it, you know, all of a sudden today in, in some hypothetical way. They should have presented it as a specific alternative plan.

MR. MCCANN: And I've asked --

MR. ZIMMERMAN: Months ago.

MR. MCCANN: And I've asked stormwater management, by

the way, for any updated plans, so.

MR. MUDD: Right, and, and, and Judge Murphy, this is a hypothetical. The testimony is we don't need to do it. And the purpose --

ALJ: Well, that's what I got out of it. I didn't get out of it they're changing the plan to meet what Mr. O'Leary decided was, should happen. I, I, what I got out of it is let's go through his hypothesis and see if his analysis is correct. That, that, that's the question --

MR. MCCANN: Well, I understand, Your Honor, I understand completely. My problem is, is the hypothesis is irrelevant because that's not the plan we have. It sounds great. Yeah, let's, let's let an expert hypothesize, that's what experts do. But the hypothesis is irrelevant, because that's not the plan. Period.

ALJ: Okay. I mean, but, but still, they have a right to go back and rebut what Mr. O'Leary says. So, to that extent, I mean, it may serve two purposes, but they can go back and rebut what his, his opinion was. So, I'm going to overrule, go ahead.

MR. MCCANN: (inaudible).

MR. ZIMMERMAN: But the timing is unfair the way it's being presented.

ALJ: It, it's not, it's not a new plan. It, right now, what it is is rebutting what Mr. O'Leary says. So,

that's, that's how I'm taking it. So, overruled.

MR. MUDD: Mr. Leffner, do you recognize Exhibit 42?

MR. LEFFNER: I do.

MR. MUDD: Okay and can you describe for the Judge what this shows?

MR. LEFFNER: Sure. The, what this exhibit shows is revisions to the preliminary grading within the two stormwater management areas that are proposed that would accommodate the additional quantity control storage that would be required of the project if the existing condition land use was considered meadow.

MR. MUDD: Okay and there are other stormwater management devices on site, aside from these two devices, is that correct?

MR. LEFFNER: Correct.

MR. MUDD: Would, would Mr. O, would, assuming Mr. O'Leary's analysis require any changes to those other facilities?

MR. LEFFNER: No.

MR. MUDD: Okay. When, when would you, in any development case, but in this case, when would you finalize the stormwater management design for this project?

MR. LEFFNER: During the phase two process, prior to permits.

MR. MUDD: Okay.

MR. MCCANN: That's where we are, Your Honor. We ended up exactly where I said we were going to end up.

MR. MUDD: Well, if I can continue with the questioning --

MR. MCCANN: (inaudible).

ALJ: It's not, no, but it's not, it's not an objection, you're not objecting, you're making (inaudible) --

MR. MCCANN: Well, I didn't say the word objection, but it is an objection. So, I'll just ask, I know you're, I'll ask for a continuing objection. But we're ending up exactly where I said we would.

ALJ: Okay, understood. All right. Overruled.

MR. MUDD: Thank you. Can you please remind Judge Murphy what is required in regard to stormwater management design for advancement of a development plan at this stage?

MR. LEFFNER: Sure. The stormwater management plan is supposed to identify the type and location of stormwater management practices and have preliminary computations prepared to support the design. And that the stormwater management requirements can be met as proposed.

MR. MUDD: Okay and so what, if anything, would change in that respect if you were required to apply the meadow in good condition and, and utilize this, this revised version of the plan?

MR. LEFFNER: Really nothing related to the

stormwater design. The, both the types of facilities and locations would remain the same. The fine grading and retaining wall design for the project would be really the only thing that's revised. And again, for a development plan, it's preliminary grading that's shown and it typically evolves during the final design phase two process.

MR. MUDD: Okay. Does, does the development plan as submitted show stormwater management easement areas?

MR. LEFFNER: It does.

MR. MUDD: Do the blue lines or any of the work that you are proposing or would propose if you were required to, require any changes to that easement area?

MR. LEFFNER: It would not.

MR. MUDD: Okay. In your opinion, should the concerns raised by Mr. O'Leary prevent the development plan from being approved?

MR. LEFFNER: No.

MR. MUDD: Does the green line plan that was previously presented in this case, which I'll refer to as the development plan, in your opinion, satisfy all County laws, rules and regulations pertaining to stormwater management?

MR. LEFFNER: Yes.

MR. MUDD: What is your opinion about the applicability or need for this blue line exhibit to accommodate an approval of the development plan in this case?

MR. LEFFNER: I don't think it should be required.

MR. MUDD: Are you asking the Judge to apply this blue line exhibit in response to Mr. O'Leary's concerns?

MR. LEFFNER: No.

MR. MUDD: Then why did you prepare it?

MR. LEFFNER: Based on Mr. O'Leary's testimony that the stormwater management design is, and specifically the areas, would not work should the meadow standard be required. So, we put this together to say, you know, it, it does not have some type of catastrophic affect on the stormwater management design.

Instead, with some refinement of the grading and quantity control that's provided, even if that standard did somehow become required during the final design, we should be able to accommodate in those blue line areas.

MR. MUDD: Okay. I'll move Exhibits 41 and 42 into evidence, Judge Murphy.

ALJ: And Mr. McCann, you're objecting?

MR. MCCANN: Yes, for the reasons I've stated. Thank you.

ALJ: Sure. Forty-two, forty-one is his resume though.

MR. MUDD: That's right.

ALJ: Yeah, you don't object to forty-one, Mr. McCann?

MR. MCCANN: No, I do not, I'm sorry.

ALJ: Okay and then, so forty-two --

MR. ZIMMERMAN: I join in the objection to forty-two.

ALJ: Forty-two. Okay and, and Mr. Wyatt, Mr. Sachse, Mr. Sachse? Let's see.

MR. SACHSE: I know you don't have my video up there but, yes, I join in the objection.

ALJ: All right. Mr. Wyatt?

MR. WYATT: So too do I join in.

ALJ: Okay, all right. Thank you. All right. We're going to accept exhibit number forty-two, just to the extent of his testimony here today.

MR. MUDD: Thank you. Let's move on and talk about sewer, Mr. Leffner. Were you, have you been present for all the days of testimony in this case?

MR. LEFFNER: No, not all of them.

MR. MUDD: Okay. Were you here for the testimony of Mr. Randall Grachek?

MR. LEFFNER: I was.

MR. MUDD: And Mr. Summers?

MR. LEFFNER: Yes.

MR. MUDD: Okay and have you reviewed all the exhibits that the Protestants submitted through those witnesses?

MR. LEFFNER: I believe so, yes. Some of them were

out of number, but I, I think I got the final copy of all them were, that were accepted.

MR. MUDD: Okay. Do you think that the testimony and exhibits presented by those witnesses provide any evidence that the development plan as proposed does not satisfy the County laws, rules and regulations pertaining to sewerage and the development plan standards?

MR. LEFFNER: No.

MR. MUDD: Okay. Let's talk about the Consent Decree. Are you familiar with that document, when I use that term?

MR. LEFFNER: I am.

MR. MUDD: All right. Bear with me here. And I'm showing you Protestant's Exhibit 65. Are you familiar with this?

MR. LEFFNER: Yes.

MR. MUDD: Can you see it?

MR. LEFFNER: Yep.

MR. MUDD: Okay. What's your, what, what is the stated purpose for the Consent Decree?

MR. LEFFNER: I, the kind of overall requirement for, for the purpose is to make sure that Baltimore County is taking all the measures to meet the Clean Water Act requirements. Specifically with the goal of eliminating sewer overflows.

MR. ZIMMERMAN: Move to strike. First, first of all,

the Consent Decree speaks for itself and there is much more in the Consent Decree as to its purposes than in that answer.

ALJ: Understood. Overruled. The other witnesses have actually said the same thing and they've described what they think the purpose is. It is, does speak for itself but I'll allow Mr. Leffner to testify.

MR. MUDD: Mr. Leffner, I'm directing your attention to the bottom of page three and the top of page four. Do you see, do you see that purpose?

MR. LEFFNER: Yes.

MR. MUDD: Okay. Is it this provision that, did, did, how did this provision impact your testimony that you just gave?

MR. LEFFNER: That's pretty much the main purpose I was referring to.

MR. MUDD: Okay and what, what measures has the County undertaken, are, are they undertaking, that you understand, to comply with the Consent Decree to achieve that goal?

MR. LEFFNER: A lot.

MR. MUDD: Okay. Are they contained in this document?

MR. LEFFNER: They are, yeah, and it's a, you know, a mix of existing condition assessments, studies that are being performed, improvements that are being constructed, programs

that are being established, maintenance and operation programs. There's, there's a lot packed in, at least that I'm aware of, that the County has been doing in order to react and compliant with this Consent Decree.

MR. MUDD: Okay and I, I, I want to be cognizant of the fact that the document does speak for itself, but I do want to touch on some of the, the provisions and, and go through a few things with you. So, let me zoom out a little bit here. Do you see this at the bottom of page eight?

MR. LEFFNER: I do.

MR. MUDD: Okay and we're in section seven here, paragraph seven?

MR. LEFFNER: Yep.

MR. MUDD: Okay. So, are you, do you know whether, strike that. Are you familiar with the long-term capacity analysis that, that Baltimore County performed?

MR. LEFFNER: I am.

MR. MUDD: Okay and do you know whether or not that was a requirement of the Consent Decree?

MR. LEFFNER: It was.

MR. MUDD: Okay. Bear with me here. What was the purpose for the long-term capacity analysis?

MR. LEFFNER: I'd say in general, it was to consider population, the existing infrastructure, so the existing sewer network within the Jones Falls. Well, I guess the Consent

Decree had a requirement across Baltimore County --

MR. ZIMMERMAN: Can I have a continuing, Judge Murphy, I'd like a continuing objection. This is a hundred-and fifteen-page Consent Decree. It speaks for itself. If there are any documents showing what the County did, then the documents speak for themselves.

It's not for this witness to give a narrative of, you know, the County's done this, that or the other. The County has done whatever it's done and the documents either are there or are not there. But I think this is all hearsay as to what the County's done or not done.

ALJ: Right, so Mr., Mr. Grachek did the same thing. He went through the Consent Decree, other witnesses have gone through the Consent Decree and highlighted paragraphs and gone through the long-term capacity analysis report as well, it extensive, extensively. So, we're going to allow this witness to do the same. Overruled.

MR. MUDD: Thank you. I think you were cut off, Mr. Leffner. I had asked you, I had asked you what your understanding of the purpose of the long-term capacity analysis was.

MR. LEFFNER: Yeah, and in the Consent Decree it, it was required in Baltimore County as kind of an evaluation tool to analyze the existing sewer network within Baltimore County, as well as existing uses and anticipated growth as a, kind of a

model or an appropriate baseline for considering future growth and system capacity within the County.

MR. MUDD: Okay. Let me draw your attention to paragraph 9.C., I guess roman two, g. And I'm going to ask you, what did the Consent Decree require of Baltimore County regarding implementation of design and construction activities relevant to any particular design storm? I'll (inaudible) it down there.

MR. LEFFNER: Yeah, I, I think it, it, there was kind of differing requirements of the Consent Decree. They identified, I believe it was three storm events that needed to be considered in the analysis of the long-term capacity and other studies. But didn't necessarily require Baltimore County to implement or construct improvements to meet any of those three storms.

MR. MUDD: Okay and are you aware that Baltimore County prepared a sewer shed repair and replacement, excuse me, sewer shed repair, replacement and rehabilitation plans?

MR. LEFFNER: Yes.

MR. MUDD: And they prepared one for, for the Jones Falls sewer shed?

MR. LEFFNER: Yes.

MR. MUDD: Okay and was that a requirement of the Consent Decree?

MR. LEFFNER: It was.

MR. MUDD: Okay. Did you hear Mr. Grachek's testimony regarding whether or not, sorry, and you're, you're familiar, let me show you, (inaudible), I think there's somebody --

ALJ: Hold on one second. Yeah, there are people who keep unmuting. Somebody keeps, hold on one second. Let me see what that is.

MR. MUDD: Thank you.

ALJ: If everyone, if everyone could just keep their microphones muted, please? Thank you.

MR. MUDD: So, I'm, I'm showing you Protestant's Exhibit 67. Are you familiar with this, Mr. Leffner?

MR. LEFFNER: Yes.

MR. MUDD: And this is the sewer shed repair, replacement and rehabilitation plan?

MR. LEFFNER: Correct.

MR. MUDD: Also know as the SRRR plan?

MR. LEFFNER: Yes.

MR. MUDD: Okay and this was performed by RK&K?

MR. LEFFNER: Correct.

MR. MUDD: Okay. Did you hear Mr. Grachek's testimony regarding whether or not this plan had been accepted or approved by MDE and EPA?

MR. LEFFNER: Yeah.

MR. MUDD: What, what did he say?

MR. LEFFNER: I believe he said it was not approved by MDE or the EPA.

MR. MUDD: Okay. Bear with me here. Share with you what we've marked as Developer's Exhibit 43. Do you recognize this, these documents?

MR. LEFFNER: I do.

MR. MUDD: Okay and what is, it's two pages, correct?

MR. LEFFNER: Correct.

MR. MUDD: All right. What does the first page say generally?

MR. LEFFNER: The first page --

MR. MUDD: I know it's, I'm sorry, I know that these speak for themselves. I just would like you to identify it for the record.

MR. LEFFNER: Yeah, the, this letter is from the Maryland Department of the Environment that identifies the review of the SRRR, which included the Jones Falls SRR plan and their, essentially, acceptance or approval of it.

MR. MUDD: Okay.

MR. LEFFNER: Meeting the requirements of the Consent Decree but also expresses that they, they do not speak on behalf of the EPA.

MR. MUDD: Okay and then, what's the second page?

MR. LEFFNER: The second letter is a similar letter from the EPA which, again, is related to the SRR plan, which

includes the Jones Falls SRR plan and acknowledges that it meets the requirements of the Consent Decree.

MR. MUDD: Okay, thank you. I'm going to switch back to Protestant's sixty-seven. And I'm going to ask you what, what, what specific improvements to the sewer system are dictated by this plan? You know where they're shown, or can you direct me to that?

MR. LEFFNER: Yeah, the figure near the end, I think it was map 5.1, 6.1.

MR. MUDD: Is this it?

MR. LEFFNER: Yes.

MR. MUDD: Okay, great. So, this is, this is from the SRR plan, map 6.1. All right. Sorry I keep bouncing around here. I'm going to move, I'm sorry, move Exhibit 43 into evidence while I'm pulling up this next exhibit.

ALJ: Any objection, Mr. McCann?

MR. MCCANN: No objection.

ALJ: And Mr. Zimmerman?

MR. ZIMMERMAN: No objection to that one.

ALJ: Thank you.

MR. MUDD: Okay. I'll show you what we marked as Developer's Exhibit 44. Can you explain what this document is?

MR. LEFFNER: Sure. It, it's a, a mark up of map 6.1 that I prepared identifying the one, just the route from the proposed project area down to the limits of Baltimore County

where it meets Baltimore City system. I think the route is very similar to some of the exhibits that were shared by the Protestant.

In addition, we identified manhole numbers and pipe run segments and tried the best to, to kind of color code them to the required improvement at each of those locations down in the legend key in the bottom left corner.

MR. MUDD: Okay. So, I want to go through it point by point. So, what, what's this, this pink line here?

MR. LEFFNER: The, the pink line is the sewer route from the proposed project area down to the, kind of the limits of the Baltimore County/Baltimore City line.

MR. MUDD: Okay and then each of these boxes, can you describe what these are? You don't, I'm not going to go box by box yet, but what are these boxes meant to show?

MR. LEFFNER: Yeah, any of the boxes with one number in it, it's a manhole improvement that was required and any of the boxes with two numbers in it, it was a pipe improvement that was required.

MR. MUDD: Okay and then what does the color have to do with it?

MR. LEFFNER: It's the type of repair that was recommended and required.

MR. MUDD: Okay and if we look on the bottom, I'm going to zoom in a little bit. If we look on the bottom left

of this plan, you, what, what, what, what, if any, impact or, not impact, but what's the, the meaning of this key versus what you've prepared on, what you've added to the plan?

MR. LEFFNER: I haven't really added much, just trying to call out manhole numbers, since the manhole numbers weren't included on this exhibit.

MR. MUDD: Uh huh.

MR. LEFFNER: And then also kind of color coded it with a key, just to help differentiate between, for example, the 6875 to 6874, I believe, the red box, was a lining improvement that was required along the sewer pipe.

MR. MUDD: Got it. So, it's red over here where you call it out and that's meant to correspond with the red over here?

MR. LEFFNER: Right, yep. And same for the (inaudible).

MR. MUDD: All right. So, then let's go, let's go through these improvements if we can, if you know. So, what, what was required to be performed in 43820, at manhole 43820?

MR. LEFFNER: Yeah, I think that was line, they were supposed to clean the manhole, line it and then do frame and cover work?

MR. MUDD: Okay and how about 43819?

MR. LEFFNER: Similar, but it was just a clean and line of the manhole.

MR. MUDD: Okay and 43794?

MR. LEFFNER: The, the same as the previous, the three, the 43820.

MR. MUDD: Okay and then 43794 to 43793, what's that?

MR. LEFFNER: Was a lining of the existing pipe.

MR. MUDD: Okay and 43793, stand alone, this, this pink box?

MR. LEFFNER: The, the same as the 43794.

MR. MUDD: Okay and then maybe these three, because they're the same color, can be handled the same. But how about 53270, 44213 and 44212? For those three, it was just frame and cover work.

MR. MUDD: Okay and then 6883?

MR. LEFFNER: The same as those previous three.

MR. MUDD: Okay and did you undertake any effort to verify whether that work has been completed?

MR. ZIMMERMAN: Objection, objection. That calls for, you know, hearsay. The County needs to be there to talk about that.

ALJ: But Mr. Grachek testified about that, and his testimony was that he did not believe the County did do these remedies. So, Mr. Leffner can come back in rebuttal and say what he thinks, whether they did or they didn't. So, overruled.

MR. MUDD: Thank you. What's your understanding, Mr.

Leffner?

MR. LEFFNER: I think the County has evaluated and either completed all of the work that was identified in those locations or, in some cases, it, I'd say, kind of overlaps with improvements that are required by either a development project and, specifically, our development project.

MR. MUDD: Okay. So, let's go, let's go, let's do this. I'm going to show you Exhibit 45-A. Do you recognize this?

MR. LEFFNER: I do.

MR. MUDD: Okay and what, what is the, is, is this part of, how does this influence, or how did it influence the testimony you just gave about your understanding of the work performed?

MR. LEFFNER: I'd say it summarizes a lot of the conversations that I've had with Dave Bayer related to the improvements at each of those locations shown on the map.

MR. MUDD: Okay and this is 45-A, which is an e-mail, correct?

MR. LEFFNER: Correct.

MR. MUDD: Okay and 45-A, let's, let's go to 45-B. What is, what is this document?

MR. LEFFNER: That's a tabular list of each of those asset numbers, which again, where the manholes are, pipe section length and the required corrective action.

MR. MUDD: Okay.

MR. LEFFNER: As well as whether the status is complete or not complete.

MR. MUDD: Okay and there's a reference in 45-A to the spreadsheet. Is that the spreadsheet that it's referencing?

MR. LEFFNER: Correct.

MR. MUDD: Okay. All right. Let's talk about each, let's go back to forty-four and talk about each of these then, relative to what you know has been completed or not completed. So, forty, 43820, do you know what, what the result is of that?

MR. LEFFNER: I, I believe that 4320, that the County, yeah, they went to the manhole and inspected it, and lining was deemed not required, but they instead did a flow insert improvement.

MR. MUDD: Okay and then 43819?

MR. LEFFNER: Likewise, with the inspection from the County staff, the lining wasn't necessarily required and so they removed that as an improvement.

MR. MUDD: Okay. Now, let's talk about 43794, 43793, both the manhole and the work in between. What, what is your understanding of this area?

MR. LEFFNER: Those three boxes, or kind of the two manholes and the pipe between the two, are actually associated with the required offsite improvements with this project.

MR. MUDD: Okay. So, and are those reflected on the development plan, that work?

MR. LEFFNER: I believe so, yes.

MR. MUDD: Okay and its work, is it work to be done by the, this developer and/or others?

MR. LEFFNER: Yes.

MR. MUDD: Okay. So, these three boxes then have, have not been completed, is that correct?

MR. LEFFNER: Correct, I don't believe they have.

MR. MUDD: Okay. Let's go down to 53270, 44213, 44212 and take a look at this e-mail. What is, what is, what did we learn for 53270?

MR. LEFFNER: That they went to the site and installed the watertight frame and cover, as was recommended.

MR. MUDD: And 43213?

MR. LEFFNER: Yeah, and frame and cover work was done by the insertion of a rain pan.

MR. MUDD: And 43212?

MR. LEFFNER: The same.

MR. MUDD: Okay. I'll go back to the map for a second and make our way down to 6883 and go back to 45-A. What, what is 6883? What did we learn there?

MR. LEFFNER: It's saying the frame and cover was improved by adding a brick collar around the manhole. And the manhole was (inaudible).

MR. MUDD: And then the last, go back to the last was this red 6875 to 6874. And what does the e-mail suggest for that?

MR. LEFFNER: That the lining was completed.

MR. MUDD: Okay, okay. I, I'll move 44, 45-A and 45-B into evidence.

ALJ: Any objection, Mr. McCann?

MR. MCCANN: No objection, Your Honor, thank you.

ALJ: All right. Mr. Zimmerman?

MR. ZIMMERMAN: Yeah, actually I do object. When you, when it gets to specific e-mail from Mr. Bayer, this is at another level. Mr. Bayer needs to be here for the opportunity to cross examine him. This is not some general, well, maybe they, they did comply, they didn't comply, whatever. This is just like the Chris Nebre situation.

Mr. Bayer needs to be here to testify, in my opinion, for procedural due process. Especially since this is just being produced today, you know, without any prior opportunity for, for Mr. McCann or anybody to investigate what's going on. So, anyway, I think, I think this is objectionable and I would move to strike the narrative about what Mr. Bayer told Mr. Leffner.

ALJ: All right. Well, the County Exhibit 45-A and 45-B are both County documents. They are from, with County e-mail addresses. They're obviously e-mails from the County.

Other e-mails have been produced in a similar way. In fact, in the Protestant's case, there are numerous e-mails with regard to different, different issues and, and they all came into evidence --

MR. MCCANN: (inaudible).

ALJ: Yeah, we're not, we're not going to exclude, we're not going to exclude an e-mail from the DPW&T answering specific questions. I mean, this is, this could be provided by, you know, even a, a Public Information Act. But however, it was provided, it certainly is a County document. These are both County documents. Mr. McCann?

MR. MCCANN: Yeah, I'm sorry to interrupt, Your Honor. I didn't mean to cut you off.

ALJ: Yeah, yep.

MR. MCCANN: The only thing I wanted to add to that is, and I, the distinction between these e-mails and the ones that were introduced before and have been introduced throughout this case, is these are specific e-mails. And you'll see by their date, that are in specific response to queries by Mr. Leffner, or, or his team about these issues.

So, these aren't, I happened to submit a PIA requesting to get this. I didn't get the complete e-mail, frankly. But so, yes, they are public records, but they're public records generated for the purpose of assisting this Developer in presenting evidence.

So, I think there's a clear distinction and I think that the e-mails and, and the testimony really, are problematic for that reason.

ALJ: But you didn't object.

MR. MCCANN: Yeah, I know. I wasn't paying close enough attention and I apologize for that.

ALJ: Okay. I mean, but for the purposes of this, these, these two documents, 45-A and 45-B, I think they're, they're a fair, they are, they are similar to the other e-mails, numerous e-mails that were submitted in your case. And so, you know, this is --

MR. MCCANN: Well, I just --

ALJ: I understand County document. I, I'm not, these, these, this document in particular it is, this is just a review by Mr. Bayer of, of what either work was done or wasn't done and, and the reasoning and with a spreadsheet. So, I, I don't see these particular documents as being drafted or created to assist the Developer. I understand it's answering some questions. I mean, it's answering (inaudible) --

MR. MCCANN: I didn't (inaudible) it that way, I just meant --

ALJ: Yeah, I, I didn't see it as that for, for this particular one so I'm going to admit 45-A and 45-B.

MR. MCCANN: Thank you.

MR. MUDD: Thank you. And forty-four is admitted as

well?

ALJ: Sorry. Forty-four is on the screen, was there any objection for forty-four, Mr. McCann?

MR. MCCANN: In and of itself, no. It's just a map with some numbers on it, but no.

ALJ: Right, understood. And Mr. Zimmerman?

MR. ZIMMERMAN: Yeah, which, and I know you've already ruled, but which is A, and which is B? I, I'm --

ALJ: This is forty-four. We already put (inaudible).

MR. ZIMMERMAN: Right, 45-A and 45-B, which one is A (inaudible)?

ALJ: Well, if you look at the document, 45-A is the, is the e-mail and 45-B is the Excel spreadsheet.

MR. ZIMMERMAN: Okay. So, 45-A, the date, just so, so the record is clear, the date of Mr. Bayer's e-mail looks to be May 30th?

ALJ: Yeah.

MR. ZIMMERMAN: This is, this is May, yesterday. This e-mail is yesterday to D'Andrea, Dave Bayer to D'Andrea Walker. How, how does this get to Mr. Leffner?

ALJ: Okay. Well, you can, you can ask those questions on cross examination. So, those documents are admitted. The only question is forty-four, (inaudible).

MR. ZIMMERMAN: I'm sorry, the (inaudible) --

ALJ: Forty-four was the map with the numbers for the manholes in this --

MR. ZIMMERMAN: Can I see the top of the exhibit?

MR. MUDD: Sure.

MR. ZIMMERMAN: Okay. So, it's D'Andrea Walker to Charles Conner, okay.

ALJ: So, Mr. Zimmerman, --

MR. ZIMMERMAN: All right.

ALJ: -- Mr. Zimmerman, this has already been admitted. Mr. Mudd, can you go back to forty-four? Mr. Zimmerman, the question is whether you object to this map, which is--

MR. ZIMMERMAN: Yeah, I object to the whole thing in context --

ALJ: Okay.

MR. ZIMMERMAN: -- because they're all interrelated.

ALJ: Okay. I just wanted to get your objection on the record.

MR. ZIMMERMAN: Yeah, thank you. I know, I know you're overruling it.

ALJ: I, you're right. So, it, we're going to admit forty-four, 45-A and B have already been admitted. Okay. Go ahead, Mr. Mudd.

MR. MUDD: Thank you. Mr. Leffner, do you rec, recognize what I've put up as Exhibit 46?

MR. LEFFNER: I do.

MR. MUDD: Okay and what's this document?

MR. LEFFNER: I believe it's a fact sheet that was prepared by Baltimore County when having discussions with the public related to the sewer mapping.

MR. MUDD: Okay. It speaks for itself, but I'll also submit this as a County document as well, Exhibit 46.

ALJ: Yeah, I, this one I, I've looked at. I reviewed this last night. I, this, this one, I, it doesn't show who drafted it. It, it does, this one specifically in my view does look like it's in response to, you know, kind of Developer's concerns. I, I mean, I, I've never, I've never seen this before in the sense that Mr. McCann issued a PIA request, and this is dated May the 1st.

This report to me does seem to be generated for the purposes of litigation. So, I have, I have issues with, with this one. And it doesn't even show who drafted it other than being on the County letterhead. So, where did this document come from?

MR. MUDD: You asking me or Mr. Leffner?

ALJ: Yeah, I, whoever, I, I, --

MR. MUDD: I mean, there, there were, there were numerous discussions, Judge Murphy, between people in the community, County Council members, developers and Baltimore County representatives, including D'Andrea Walker and members

of her staff.

And this was prepared and submitted by D'Andrea Walker to the County Council in direct response to concerns raised by the Council, which were generated from community concerns. And Mr., Mr. McCann is aware of this and can dispute how I described it if he wants to. But I, I think that's a pretty fair explanation.

ALJ: So, so, did, did Ms., did, did D'Andrea Walker draft this?

MR. MUDD: It was presented by her office to the County Council and to myself and to Mr. McCann.

ALJ: To, okay, I mean, so, so, for, to the County Council during what, a hearing that the County Council had?

MR. MUDD: Yes.

ALJ: Well, do you know what hearing that was?

MR. MUDD: Yes. There were discussions about the basic services maps.

ALJ: Do you know, again, what was the hearing date for that? For the County Council?

MR. MUDD: I think the date was May 1st. I'm not positive though.

MR. MCCANN: I'll just add, I disagree, Judge, may I, just add?

ALJ: Yeah, okay, Mr. McCann.

MR. MCCANN: Yeah, I, I don't disagree with anything

Mr. Mudd just said in terms of the context, except that this wasn't really introduced at the hearing. It was intro, introduced outside of the hearing by, as you indicate, some unknown person from DPW prepared it. I know it came from her office but, so it wasn't in the hearing to the extent that makes a difference, I'm not sure if it does.

But my problem with it is, if I may, is very much similar to yours, Your Honor. That it's just a document that has no author to it, no one is signing their name to it and attributing, you know, their, you know, their reputation, much less their signature, to what's said.

What, I have problems with ninety-nine percent of what's actually said. So, if it is going to be introduced, I, I wouldn't even know, if I were even allowed the opportunity, to even ask, you know, who it, ask questions about who to ask questions about it.

I think it's, it's, it's quintessential hearsay, not, no authorship and, so I think it's, it shouldn't come in for that reason. But Mr. Mudd has described the context accurately.

MR. ZIMMERMAN: Can, can I add something at some point, Judge Murphy?

ALJ: Well, let Mr. McCann finish. Mr. McCann?

MR. ZIMMERMAN: I thought he was finished, sorry.

MR. MCCANN: That's it. I, I just, I don't have any

opportunity to challenge this and I, for whatever it's worth, I challenge nearly all of it, so that's a problem.

MR. ZIMMERMAN: Yeah, yeah. So, can I say, I recognize that this is a de novo hearing. For what it's worth, I've never seen this document. I was not involved in any discussions that were described. So, I've never even had a chance to read it.

But what I would say, once again, is if somebody from Public Works Department wants to come in and testify, whoever may have been involved in this memo, you know, we could cross examine them. But it's another situation of putting in a document prepared by somebody else that's really, is being put in here because obviously Developer thinks it's important. And we don't get a chance to really dig into it.

So, it, it's just another and it's getting, it's like we're going, you know, up, up or down a staircase of it's more, more and more hearsay --

MR. MUDD: Judge Murphy, --

MR. ZIMMERMAN: -- so I, I object for lack of a witness.

ALJ: Okay, okay. All right. Mr. Mudd?

MR. MUDD: Can I briefly respond?

ALJ: Yep, go ahead.

MR. MUDD: Sure. So, so with regard to authorship, I, I'm not sure how much more authorship we can get than being

on the letterhead of the County Executive and the Director. And Mr. McCann agreed with me that this came from the Director's office. And I think that, that generally speaking, it should be allowed in the same way that any number of public documents that have made their way into this, this process have been allowed.

We had, we had pages upon pages of reports generated by third parties who were not here, available for cross examination that, that have made their way in because they were found in a County file.

And I would ask you to accept this if for nothing more than what it's worth, which I know you may say this doesn't help you, it does help you. But I think it should come in and it should be fodder for Mr. McCann to explain why he disagrees and for us to explain why we think this shows the County's response to specific concerns raised by many people.

ALJ: Okay. So, so, I, I see this document, forty-six, differently than forty-five, 45-A and 45-B. 45-A being an e-mail from DPW&T and, and in regard to specific actions that were taken in regard to the, the manholes and the sewer linings.

This document, again, doesn't have an author. And I, and I have to agree with Mr. Zimmerman and Mr. McCann in regard to not having a witness here to be able to ask questions about it. I mean, this would be, this document could take, you know,

a couple days, I mean, not really, but it could take a day, but a County employee really should be here to, to be able to be cross examined in regard to all the information that's put on here.

This document, again, does not have an author. It, it, it's dated May the 1st. Mr. McCann's documents that he, is someone talking? Is, is someone talking? I keep hearing someone talk. Mr. McCann's documents that he put in were in response to a Public Information Act request.

And, and so it took, and, and we know though that the, with the hearings, we've actually had, you know, an issue where we had to delay the hearings because of trying to get responses from the County for, for the, the documents that he had requested.

So, I'm not sure, I mean, again, this was produced to him, but this is not in response to a Public Information Act. I see the seal on the top of it. And typically, I, I, you know, allow, you know, public documents from County records. But, but this one really needs a witness.

And, and the, you know, at the beginning of development plan hearings, we all know, the, the agencies come in and testify and DPR always comes in and testifies for DPW&T. And in regard to the traffic, I said, you know, it's really not good enough. We have to have Mr. Nebre here. So, we did.

In the same, this is another issue. And, and so if

these, these facts and, that are outlined on this document are, you know, just allowed in, there's no opportunity for cross examination. I think this one is prejudicial to the Protestants and People's Counsel in that there's not a witness.

If there's a witness who, from DPW&T came in and said, this is the document, here's what the situation was, here's why we generated it and then could be cross examined, I think that that's fair. But this is not just a, a, you know, a public record that should come in.

So, I'm not going to, I'm not going to allow forty-six to come in.

MR. MUDD: Okay.

ALJ: And I do hear people talking. And I don't know why. I keep hearing someone talk, but I'm looking at everybody's microphone. I want to make sure everybody keeps their microphones muted. It's as if there's background noise. I'm not sure, maybe it's in someone's office or something.

But please make sure that there's nobody in, in your office that's, that's talking so our record is clear. We don't want a bunch of noise in the background. All right. So, forty-six is, is not in evidence.

MR. MUDD: Okay. Thank you, Judge Murphy. All right. Mr. Leffner, getting back to, I think I'm going to put forty-four back up. So, what other work generally was required within the Baltimore County, sorry, within the Jones Falls

sewer shed under the SRRR plan, meaning under map 6.1?

MR. LEFFNER: A lot of the same type of improvements that were highlighted that we just walked through along the sewer outflow run that we had. I'd say specifically a complete re, complete rehabilitation of, with lining up in the Cockeysville area, which is highlighted in yellow on this map.

MR. MUDD: Okay and what --

MR. LEFFNER: Lining --

MR. MUDD: Go ahead. I'm sorry, go ahead.

MR. LEFFNER: Yeah, the kind of purpose of all of the improvements that were required on this, whether it be lining of pipes, lining of manholes, frame and covers, was to reduce inflow and infiltration into the system. By reducing the inflow and infiltration, preventing, you know, essentially ground water or rain sources from entering into the system, increasing the capacity for wastewater generated flows.

MR. MUDD: Okay and do you know why there was a focus in the Cockeysville area?

MR. LEFFNER: There was very high amounts of infiltration and infiltrate, inflow and infiltration that were monitored.

MR. MUDD: Okay. Do you know how many linear feet of pipe were relined in that area?

MR. LEFFNER: I, I think it was over a hundred thousand linear feet. It was a lot of pipe.

MR. MUDD: Okay and can you give examples of other types of repairs that were, that were performed in that area and elsewhere around the sewer shed?

MR. LEFFNER: Yeah, I mean, I think, you know, specific to that area, there was the rehabilitation efforts with lining, manhole improvements, frame and cover repairs. I know with visual inspection, there was a, a valve that's essentially a bypass for the Texas Station forest main that was found to be partially open, which allowed, essentially was allowing water to come into the Jones Falls water shed that's typically, or sewer shed, that's typically diverted into a different sewer shed.

So, that valve was closed to, essentially, reduce, I think it was like a, you know, it was a lot of flow coming through that, that valve. I think at one time the County mentioned a quarter million gallons a day. That was reduced, so that valve was closed.

Similar lining and manhole rehabilitation was done throughout the entire sewer shed. And then specifically, at some of the constructed sanitary sewer overflows there were, I believe there were three within the Jones Falls watershed. One of them I think was completely removed up by Riderwood Ave.

Essentially, the, the constructed overflow was plugged and blocked, and they've had no sewer overflow since. There was a second over at Marnat Road, that I think was found

to not be able to be closed yet, just because of coordination and, essentially, improvements needed to happen on the City line and if the overflow was plugged before those improvements were made then basement backups within the County would likely occur. So, they kind of chose to not close that SSO until the, the coordination with the City has been complete.

And there was a third on Charles Street Ave that I believe was closed and that they're still monitoring just to make sure there's no overflows.

MR. MUDD: Okay. Getting back to this yellow area, what, what, what impact would the repairs performed in that highlighted area have on the system and its capacity in general?

MR. LEFFNER: It, essentially, the lining and rehabilitation efforts meet what the, I'd say, kind of global intent of that SRRR plan was, which is do improvements within the existing infrastructure to keep inflow and infiltration out of the system.

By keeping those inflow and infiltration sources out of the system, essentially, there's more reserve capacity or capacity for wastewater flow. So, it improves the capacity of the existing system by preventing non-wastewater sources from entering into it.

MR. MUDD: Okay and you mentioned the Texas Station valve repair reducing hundreds of thousands of, of gallons per

day of, of water into the system. How many gallons per day of sewerage would be added to the system by the sixty-one lots in this subdivision?

MR. LEFFNER: I believe it's around nineteen thousand gallons per day.

MR. MUDD: Okay. Are you familiar with the performance assessment completed by RJN for this sewer shed?

MR. LEFFNER: Yes.

MR. MUDD: Which was, let me pull it up, Protestant's Exhibit 78, I believe. Sorry. Can you see that?

MR. LEFFNER: Yes.

MR. MUDD: Okay and this is Protestant's seventy-eight. Do you, you recognize this document?

MR. LEFFNER: I do.

MR. MUDD: Okay. Have you reviewed it?

MR. LEFFNER: I have.

MR. MUDD: Do you know why it was prepared in the first place?

MR. LEFFNER: It was required in the Consent Decree.

MR. MUDD: Okay and let's look at the Consent Decree for a second. And direct you, I'm sorry, page thirty-five. This is what you're referring to?

MR. LEFFNER: Correct.

MR. MUDD: This is on page thirty-four. What, what specifically did the Consent Decree require with regard to

performance assessment?

MR. LEFFNER: Again, this, this was, I'd say across the County within the, applicable to the Consent Decree but they were, to once improvements from SRR plans had been implemented, the performance assessment was supposed to be done to, as is summarized in the Consent Decree, essentially, evaluate and report any SSOs within the sewer shed, quantify the reduction of I&I, evaluate whether the repairs and rehabilitation projects within the sewer sheds was effective and evaluate whether the preventative and proactive maintenance requirements for the (inaudible) and root system were effective, essentially, in preventing SSOs.

MR. MUDD: Okay and is there any requirement that this document be approved by MDE or EPA?

MR. LEFFNER: I don't believe so. I think it's supposed to be provided to them and they could be commented on. But it did not necessarily need to be approved.

MR. MUDD: Okay --

MR. ZIMMERMAN: Move, move to strike that answer. It's obvious that EPA and MDE are supposed to review all these things, I mean.

MR. MUDD: Could I draw your attention please to roman three on page thirty-five and read that into the record?

ALJ: I'm going to overrule the objection. Go ahead.

MR. MUDD: Mr. Leffner, can you read roman three into

the record?

MR. LEFFNER: Baltimore County shall submit the performance assessment report for each sewer shed summarizing the results of the performance assessment for that sewer shed to the EPA and MDE for review and comment within ninety days after completion of the performance assessment for that sewer shed.

MR. MUDD: Okay. Is there any requirement that, in there, that this be approved by EPA or MDE?

MR. LEFFNER: No.

MR. ZIMMERMAN: And I'm going to object again. I think there are other provisions in the hundred and fifteen pages.

ALJ: (inaudible) now you're making a speaking objection. You can cross examine him on those points and so overruled.

MR. MUDD: Do you recall Mr. Grachek's testimony, moving back to the RJN report, Mr. Grachek's testimony about what work within the sewer shed was analyzed by RJN? In other words, what work had been performed prior to this RJN report?

MR. LEFFNER: Yes.

MR. MUDD: And what did he say?

MR. LEFFNER: I believe he said that the only work was the, the, the rehabilitation project up in that Cockeysville area.

MR. MUDD: And do you agree with that?
MR. LEFFNER: No.
MR. MUDD: Why not?
MR. LEFFNER: The report specifically calls out other improvements that were included within the report. I think the, the two main ones was the, kind of, though it wasn't required by the Consent Decree, or identified in the SRR plan, there was relief sewer constructed both along Copper Mine Terrace and then also along Towsontowne.
MR. MUDD: Okay. I'm showing you Protestant's Exhibit 78, map two, do you see this?
MR. LEFFNER: I do.
MR. MUDD: And what's this map entitled?
MR. LEFFNER: The rehabilitation completed.
MR. MUDD: Okay and there's a legend on this map?
MR. LEFFNER: Correct.
MR. MUDD: And what does that legend show?
MR. LEFFNER: It shows all the different types of improvements that had been done within the sewer shed.
MR. MUDD: Okay and am I, can you, am I correct that BC-09, BC-04, BC-02, BC-03, that's where the Cockeysville yellow area is from 6-1?
MR. LEFFNER: Correct.
MR. MUDD: Okay and are there improvements shown outside of that area on this map?

MR. LEFFNER: Yes.

MR. MUDD: Okay. What was the, what was RJN's report with regard to SSOs and the status of SSOs within the sewer shed? I'm back to Protestant's seventy-eight.

MR. LEFFNER: I believe in the RJN report they went through and identified each of the constructed SSOs. Those were the three at Riderwood Ave, Marnat Road and Charles Street Ave. And provided, you know, essentially, where I found the summary that the, two of them had essentially been closed and then Marnat Road was kind of on hold because of the further downstream coordination that they needed with Baltimore City.

They reported on the constructed overflows and then they also kind of go through an analysis saying, you know, based on the modeling, there was no projected dry weather overflows. I think the two-year six-hour event had no projected overflows. And beyond that, they kind of report the, the number of expected overflows for kind of modeled larger events.

MR. MUDD: All right. Let's, let's move back real quick to Marnat Road. To the extent this isn't known already but is, is the Marnat Road constructed SSO along the sewer path for this project?

MR. LEFFNER: No.

MR. MUDD: Okay. Where is it?

MR. LEFFNER: It's over on the, kind of, I don't know

if you have the, one of the maps up. Yeah, it's over on the west side.

MR. MUDD: Okay and, and, and --

MR. LEFFNER: West of, west of 83, I would say. Kind of outside both the --

MR. MUDD: Okay.

MR. LEFFNER: -- sewer, the sewer path for this project and the, the Lake Roland drainage area.

MR. MUDD: Okay. Well, will the additional sewerage from this development have any impact on that constructed SSO?

MR. LEFFNER: No.

MR. MUDD: Okay. Let's talk about non-constructed SSOs a little bit. Can you, can you discuss a little bit about what the RJN report reported about these non-constructed SSOs?

MR. LEFFNER: Yeah, they, they summarize and kind of, on the graph there, they identify the number of SSOs and kind of the amount that was released within specific year storms identifying that most of them were related to some type of blockage, defective pipe, or high flows. That 2018 was kind of an outlier year because of the amount of rainfall. And that there was a, kind of a significant SSO, or at least a discharge related to a forced main break.

MR. MUDD: Okay and then what happened in 2019?

MR. LEFFNER: In 2019, they had, kind of, you can see the last sentence. It says that it was caused by two breaks in

a forced main, was the result of almost all of the, the discharges in 2019.

MR. MUDD: What, and where were you reading, were you reading from somewhere here?

MR. LEFFNER: After it says figure 2.1, the last sentence.

MR. MUDD: Okay. Okay. What was the, the RJN report with regard to, with regard to I&I and quantification of I&I?

MR. LEFFNER: I think the, the quantification reduction for both base flow and then rain driven I&I was mainly focused up in that Cockeysville area, where the rehabilitation project had been complete. And identified that the, the measures taken by the County kind of achieved with the SSR, the SRR plan had proposed. Which by doing the rehabilitation, the lining, that it was able to reduce both base flow and rain, rain driven I&I.

MR. MUDD: Okay and what was the RJN report on, essentially, the effectiveness of the work performed under the SRRR plan?

MR. LEFFNER: One, that I think in the area where the improvements had been completed, I think they said that the, the model predicted SSOs was reduced by like eighty-nine to a hundred percent within those areas. And that with continued improvements within the other areas, it would be reduced by the same.

MR. MUDD: Okay and what was the RJN's report with regard to routine maintenance?

MR. LEFFNER: There were a few pieces because they, it was kind of focused throughout the report one on the, the fat, oil and grease program, which a majority of the sewer overflows that were kind of summarized in that Section 2.1 we were talk, looking at earlier --

MR. MUDD: Um hm.

MR. LEFFNER: A lot of the sanitary sewer overflows were related to blockages. So, whether that be a defective pipe or a blockage within the system, so, the, kind of the FOG program is to keep and regulate fat, soils and grease from leak, getting into the sewer system, which is a major contributor to blockages within the system.

Likewise, roots. So, kind of inspection and maintenance programs that the County has implemented to improve and, essentially, prevent blockages, which could result in a, in an overflow.

MR. MUDD: Okay. Did you, I'm sorry, lastly, what's the, what was the overall conclusion of, of the report?

MR. LEFFNER: Essentially, that, I think, the measures that had been done by the County were working as intended. That the constructed sanitary sewer overflows had been eliminated to the best extent that the County could at the time.

Again, the main exception being Marnat Road requiring coordination with Baltimore City and then with the kind of modeling for both I&I into the system and projected sewer overflows that, essentially, the infiltration and inflow within lined areas was going down as intended. And, you know, essentially, the improvements were working that the County's been working on.

MR. MUDD: Okay. Did you review map three of the, the RJN report?

MR. LEFFNER: I did.

MR. MUDD: All right. I'm showing that to you now, Exhibit 78, map three. Did you hear the testimony of Mr. Grachek about this map?

MR. LEFFNER: I did.

MR. MUDD: Okay and did you perform any other evaluations related to the RJN report and/or this map following that testimony?

MR. LEFFNER: Not necessarily modifying their model at all, but just reviewing the results that they had.

MR. MUDD: Okay and, and did you, did you engage with the Department of Public Works regarding this as, as well?

MR. LEFFNER: I did.

MR. MUDD: Okay. What, what's your understanding of what this map is meant to depict?

MR. LEFFNER: I would kind of say like a snapshot in

time on the performance of the improvements and the ongoing main, the County kind of programs that are being just continuously rolled out within the County. But it kind of takes a snapshot of time. So, you know, a, a period where rainfall data has been gathered, inspections have been done, flow monitoring is ongoing, additional flow monitoring is being added.

So, it's, it's kind of a snapshot in time and a model update mainly related to the SSO closures and Cockeysville improvements that were made to show the effectiveness of the SRR improvements as they're being implemented within the County.

MR. MUDD: Okay and there are, just looking at the key here, there are, there are, sorry, something in my way here. There are certain storm codes here, correct?

MR. LEFFNER: Correct.

MR. MUDD: Okay and this says modeled predicted overflow for each of these?

MR. LEFFNER: Correct.

MR. MUDD: Is that right? And, and it shows, do you recall Mr. Grachek's testimony about the model predicted overflows along the sewer path for this project?

MR. LEFFNER: Yes.

MR. MUDD: What, what's your understanding about those model predicted overflows in these red areas?

MR. LEFFNER: I think they're, they're kind of just that. They're model predicted based on whatever information was available to the modeler at the time. And don't necessarily include, I would say like current day information, nor has it been verified in the field. So, a lot of it, it's model predicted.

The model may have been calibrated, but it hasn't since been verified by the County because some of the other County kind of ongoing measures that aren't included necessarily in this would be flow monitoring within some of the sub sewer basins, as well as level censors.

So, you know, at, at some locations where they may have a model predicted overflow, the County could install an actual level censor to identify if there is actually an overflow or, you know, a problem that is occurring that the model is predicting.

MR. MUDD: Okay. Did you review Protestant's Exhibit 81, which I'm going to show you in a second here. Do you recall this exhibit?

MR. LEFFNER: I do.

MR. MUDD: Okay and you recall the testimony about this exhibit?

MR. LEFFNER: I do.

MR. MUDD: Okay and is your understanding, what, what's your understanding about where this exhibit, where the

information on this exhibit came from?

MR. LEFFNER: Again, I, I haven't gone through, and kind of fact checked all of these. And it sounded like most of them had been by Mr. Grachek. So, going on that assumption, there were, essentially, just forming a tabular summary from the RJN post-rehab model and comparing it to the RJN pre-rehab model and RK&K re, rehab model.

MR. MUDD: Okay and again, what's your understanding about that modeling?

MR. LEFFNER: It's model predicted, so it's the models that were developed by, I would say, each of those two companies. And then, for the RJN report the two scenarios, both pre- and post-rehab.

MR. MUDD: And has, to your knowledge, has the model been field verified?

MR. LEFFNER: No.

MR. MUDD: Okay. Let me show you Exhibit 47-A. Do you recognize this document?

MR. LEFFNER: I do.

MR. MUDD: Okay and what, what is this?

MR. LEFFNER: It's kind of the, the same exhibit or map figure from the RK&K SRR plan. It has the same highlighted outfall sewer route from the project area down to the County and City line. And instead of improvements labeled on that previous exhibit, this exhibit identifies manhole numbers with

the, essentially, level censors that had been installed by Baltimore County DPW.

MR. MUDD: Okay and I'm going to show you Exhibit 47-B. Do you recognize this?

MR. LEFFNER: I do.

MR. MUDD: Okay and what is this document?

MR. LEFFNER: It's a list of, from Dave Bayer with Baltimore County, confirming the manhole structure numbers that the, essentially, the, the flow meters that have been installed that capture the flow from our subdivision --

MR. ZIMMERMAN: Okay. I, I move to strike. Again, objecting to these e-mails that were, you know, part of the trial preparation and, for this case, and not the usual County, you know, comments that are filed in the ordinary course of business. If we get Mr. Bayer, Mr. Bayer in, that's one thing and --

ALJ: Understood. And I, I see these e-mails differently though, as that the document forty-six was excluded. Because this is an e-mail which just provides factual information. There is, there are a lot, I mean, hundreds of exhibits the Protestants have produced.

There are lots of e-mails that, that have the same type of information. So, to be fair to both parties, we're going to put the, this document in. This is forty-seven, so. I mean, in other words, it's, I'm going to overrule your

objection.

MR. MUDD: Thank you. What, what is your understanding of why the, the County would have installed these flow meters in this location? I'm sorry, these meters.

MR. LEFFNER: As, as part of that verification process, the, to monitor and measure whether there are issues occurring at those manhole locations, I'd also say it's kind of tied to some of the other Consent Decree requirements that just shows the County's, I'd say, action towards developing maintenance and operation, as well as emergency action preparedness.

MR. MUDD: Okay and are you aware of any, any active overflows in this area based on everything you reviewed?

MR. LEFFNER: No.

MR. MUDD: Okay. Did you, well, strike that. Is there anything that you learned in, in obtaining this information, putting this exhibit together, from Baltimore County that would, would cause you to change that understanding? In other words, is that part of, is that part of what forms your basis for your opinion, or your understanding?

MR. LEFFNER: Correct.

MR. MUDD: Okay. So, let, let's assume for a second that, that the pipe capacity numbers that RJN's model demonstrated are, are accurate. Does that mean that there will

be sewerage overflows within this system necessarily?

MR. LEFFNER: No.

MR. MUDD: And why not?

MR. LEFFNER: The sewer capacities have, you know, one hundred percent would be the pipe flowing full. In most cases, the pipes may be ten, twelve, twenty-four inches. So, that's, that's really only, you know, a foot to two feet in those instances of sewage flowing through a manhole or in a pipe and the pipe is not under pressure.

If it, if the pipe capacity, if it's exceeding it, so it's say a hundred and five percent, that just means that the amount of flow that's being conveyed through the pipe is above the pipe capacity and it's operating under a little, essentially, like pressure. To where sewage in the upstream manhole may back up above the top of the pipe.

But it would take a significant amount of capacity over the pipe capacity before you would actually have, essentially, sewage backing up in a manhole that would come above grade. In a lot of cases, these sewers are very deep below grade. So, seeing some of those, you know, slightly above a hundred percent or even kind of well above a hundred percent, they're likely still contained within the sewer.

MR. MUDD: Okay. So, what, by the way, what's your understanding of what the sewer design manual says about how a, a sewer system should be designed?

MR. LEFFNER: It identifies that new sewage systems and then new sewage systems that are serving existing areas should be designed kind of in accordance with standard capacities, depending on what type of sewer it is that you're designing.

So, there's, kind of a recommendation for smaller sewer laterals and mains to be designed at one percentage threshold. I think it's around seventy percent. Kind of a little bit larger diameter pipes at maybe interceptor lines designed at eighty. And then big transmission lines up at ninety.

MR. MUDD: Okay and then how does that design then translate to, to, you know, actively conveying sewer once installed?

MR. LEFFNER: Yeah, I think, there is a lot of variables that go into sewer design. Growth projections is one. Kind of, you know, you don't know what's going to happen however many years from now.

So, there's a lot of guidance as far as how to accommodate and plan for future growth, sewer projections for actual development that's occurring, using best information available as far as monitored or, you know, verified field, verified field information in the sizing, with the, kind of intent to maintain those thresholds.

But, you know, the, designing to your best guess what

the sewage is going to be some day, as well as the actual conditions within the sewer pipe. Those percentages are going to vary. They're never going to be dead on.

For instance, you, you don't want to oversize a sewer too much because then the velocities may be really low and that can result in damage to the sewer lines or maintenance concerns.

Similarly, you may have more flow going through the pipe that was, it was designed for. But there's nothing in the design manual that limits the County or project to exceed those percentage thresholds and actually operate the pipe at a slightly higher percent capacity.

And I'd say it's pretty common, right? There's a lot of restrictions when doing sewer design, you know, shallow slopes or roadway or utility crossings, stream beds, which are just a less than ideal slope might be feasible to avoid some other type of environmental impact.

To where it's pretty common to where, you know, there, there may be certain circumstances where the pipes are operated above those thresholds.

MR. MUDD: Okay and do the, do the manhole structures themselves, how, how, if at all, do they play into the overall design?

MR. LEFFNER: It, it's kind of a mix, right? So, there's things, there's kind of impacts from having changes and

directions through manholes. If pipes are being operated above the full flow capacity, you can kind of get that build up, I would say, in the upstream manholes to where the pipes were operating under a little pressure.

In some cases, there's, it may be under so much pressure that it would overtop the manhole. And within the analysis, you may elect to just bolt the manhole down and make it watertight so none of the sewage can come out. That can result in upstream issues as well. So, you know, there's kind of a, there's a lot of balancing when looking at the existing sewer systems and the improvements that are done to them.

MR. MUDD: Okay. Assuming, let's assume that capacity figures in Exhibit 81, the RJN modeling are accurate, do you have an opinion as to whether they identify an actual capacity problem within this sewer system?

MR. LEFFNER: I don't think the charts do, no.

MR. MUDD: Okay. Let's get back to the Consent Decree for a minute. Okay. So, I'm down at the bottom of page thirty-five. And again, I know this document speaks for itself, but I just, I want to, I want to kind of quickly go through this. So, paragraph eleven in this, in this Consent Decree, what is, what, what was required under the Consent Decree with regard to this fats, oils and grease program?

MR. LEFFNER: It was kind of, I would kind of summarize it as further development of the FOG program by

controlling, permitting and then kind of reporting issues due to fats, oils and grease causing damage or blockages to the system.

MR. MUDD: Okay and do you know, are you aware if that has happened?

MR. LEFFNER: I understand it has from talking to County staff.

MR. MUDD: Okay. Anything else that you've reviewed in addition to County staff?

MR. LEFFNER: I think the FOG is included as part of the update within the performance assessment.

MR. MUDD: Okay. Paragraph twelve, sorry, I'm getting there. What was required in the, under the Consent Decree as of paragraph twelve?

MR. LEFFNER: I think it was controlling, you know, that kind of statement is controlling stormwater discharges into the sewer system.

MR. MUDD: Okay and do you know whether that effort has been undertaken by the County?

MR. ZIMMERMAN: Objection. Again, that's hearsay.

ALJ: He can, he can tell us what his understanding is.

MR. ZIMMERMAN: I mean, unless we have a specific document that he can identify that shows (inaudible) --

ALJ: But, but Mr. Grachek testified to the same

thing, about whether he thought that the County undertook the, the steps or not. So, he, Mr. Leffner can testify. Overruled.

MR. MUDD: So, --

MR. LEFFNER: I, I do believe, I understand that they have been doing that in addition to kind of not calling out as many of the specific elicit discharges in the RJN report. Also required by the Consent Decree is quarterly and annual reporting related to the sewer shed. And I believe stormwater discharges are identified there.

MR. MUDD: Okay. How about paragraph thirteen, pump station inspection, rehabilitation, repair and replacement?

MR. LEFFNER: Yes, I think those, those are covered and I, I think a lot of the reports, I think the LTC, SRRR and RJN report all identify pump station repairs. The majority of the pump stations were already adequately sized and had capacity without any kind of projected overflows. So, each of those reports kind of identify the various improvements done to pump stations within the sewer shed.

MR. MUDD: Okay. Down to paragraph fourteen. Sorry, I'm getting there. Collection and transmission system model. What, what was required under the Consent Decree with regard to this, this paragraph?

MR. LEFFNER: A lot of that is the model being talked about between the three different reports.

MR. MUDD: Okay, all right. Paragraph fifteen. When

you say three different reports, which are you talking about?

MR. LEFFNER: The model being developed between the long-term capacity and then the SRRR and RJN reports.

MR. MUDD: Okay and then onto paragraph fifteen, the collection system operation and maintenance. What's your understanding of what's required under this, this section of the Consent Decree?

MR. LEFFNER: Developing a, I'd say further developing the operation and maintenance program at the County to identify, you know, kind of reporting standards for failures, blockages, repairs that were done, quantifying SSOs at the locations, if, if there was an SSO associated with the blockage or failure. So, it's, it's more so on the, the, somewhat pro-active, but also kind of reactive operation and maintenance program with the County.

MR. MUDD: Okay and are you aware if that has happened?

MR. LEFFNER: Yes, again, I think, I think most of that is best summarized in some of the quarterly and annual reports.

MR. MUDD: Okay and is there a reporting requirement in fact under this section relative to this quarterly and annual reports?

MR. LEFFNER: I believe so, yeah.

MR. MUDD: Okay. Let's go onto sixteen, paragraph

sixteen. This is information management program. What, what's required under this section?

MR. LEFFNER: It's the development of a, essentially, a GIS system that has for, and I'd say it really supports a lot of the O&M, but it can also be tied to the future improvements that are being done to, I'd say, information tracking and gathering. So, coming up with a, a better, the better developed GIS system than what the County had. And I think there were specific requirements in the Consent Decree on what the GIS program should be able to do.

MR. MUDD: And are you aware of whether this has been implemented?

MR. LEFFNER: I believe so, or it is currently being implemented.

MR. MUDD: Okay. Paragraph seventeen is emergency response plan. Can you describe what this is re, what re, what, what the Consent Decree requires here?

MR. LEFFNER: Yeah, it, like the first sentence says, is develop and implement an emergency response plan, which is kind of related to any discharges, reported breaks, failures or improvements needed within the, the sewer system.

MR. MUDD: And are you aware if the County has this system in place?

MR. LEFFNER: I believe so.

MR. MUDD: Okay. Do you know how it's operated at

all?

MR. LEFFNER: I don't know all of the ins and outs on the emergency response plan. But I do know from meetings with the County that they're, like going back to the level censor models that are located in some of the manholes, is, I believe they get, they get notifications.

So, whether it's on a cell phone or on a technician's computer, that if, they're essentially, able to use, it's called SCATA (phonetic) equipment, which is like telecommunications to monitor pump station locations, level censors within manholes and so that way they can kind of, I'd say, identify but then also predict when there might be an issue at a location and they can have staff respond to it and deal with it accordingly.

MR. MUDD: Okay and then paragraph eighteen. What is required under this paragraph?

MR. LEFFNER: That's kind of the, the recordkeeping and re, reporting for building backups --

MR. MUDD: Okay and, and where does the reporting have to go, do you know?

MR. LEFFNER: I think it has to be included in the quarterly and annual reports, but there's a lot of backup data also included in the, the RJN report and I believe the SRR report as well.

MR. MUDD: Okay. So, you mentioned reporting quite a

bit. Paragraph nineteen, this deals with the quarterly reports, is that, is that what you're referring to when you're talking about quarterly reports under the Consent Decree?

MR. LEFFNER: The requirement for them, yes.

MR. MUDD: Okay and then, paragraph twenty, you mentioned annual, annual reports. Is this the paragraph that you were referring to there?

MR. LEFFNER: Correct.

MR. MUDD: Okay and the, they, they definitely speak for themselves. But can you just briefly describe what an, and let me ask you this. Have you reviewed quarterly and annual reports for this sewer shed?

MR. LEFFNER: Yes.

MR. MUDD: Okay and based on that review and your review of this Consent Decree, just generally speaking, what, what's the purpose for those reports? What do they, what do they contain?

MR. LEFFNER: I'd say a synopsis or summary of each of the required kind of updates. So, depending on the sewer shed, any CIP, or construction projects that are either under design, under construction, they would report any SSOs within the sewer shed. If there's any delays associated with something that's reported in the, in the quarterly or annual report. So, it's very much a comprehensive progress update related to each of the sewer sheds.

MR. MUDD: Okay.

ALJ: So, Mr. Mudd, I was just going to, if you had a, a pause to --

MR. MUDD: Yep.

ALJ: -- (inaudible) break.

MR. MUDD: Sure.

ALJ: (inaudible) and so I, you know, was thinking, I mean, I don't know how much, you're going to be a while, I think. So, maybe after, after we come back, that you finish direct and then take a lunch break. Does that work or --

MR. MUDD: Yes, that works for me.

ALJ: Okay. So, you would be able --

MR. MUDD: I, I am through the bulk of my questions. I'm sure I probably have another twenty or twenty-five minutes or so when we get back.

ALJ: Well, that, that's fine. I wasn't trying to rush you, you know, I just was, just trying to give everyone a break. I think it's 12:11, so let's just take, let's just take, you know, maybe a, fifteen minutes, how's that sound? We'll come back at 12:30.

MR. MUDD: Okay.

ALJ: Okay, thank you. I'll pause the record.

MR. MUDD: Sounds good, thank you.

(PAUSE)

ALJ: All right. We're back on the record. We're

still in the Developer's direct. Mr. Mudd?

MR. MUDD: I'm here. I'm waiting for Mr. Leffner to pop back on the camera.

ALJ: Oh, sure.

MR. MUDD: There you are. Can you hear me, Mr. Leffner? All right. So, we, we, we finished off before talking about quarterly reports and annual reports required under the Consent Decree. Have you reviewed quarterly reports and annual reports for the Jones Falls sewer shed?

MR. LEFFNER: I have.

MR. MUDD: Okay. I'm going to share with you Petitioner's Exhibit, or Developer's Exhibit, oh, sorry, forty-eight. And I just want to ask you and, and, Judge, I might proffer this if you don't mind, just to save time.

But Exhibit 48, 49, 50, 51, 52, 53 and 54 are all a mix of quarterly reports and annual reports. And they're, they're County documents from the website. I do not intend to go through them in great detail and I would offer all of them as being County records and ask for them to be admitted.

ALJ: Mr. McCann, do you have any objection?

MR. MCCANN: No, I do not. The only qualification I would add is that with respect to a couple, a couple of them, they are not signed, which is, there's a signature line but they're not signed. And I think those are, one particular, forty-nine and fifty. I just did a quick check.

MR. MUDD: Okay.

MR. MCCANN: Which, whatever that means, it means. But so, I would have a problem with those coming in. And then the other thing is is I'm sure you understand this, Judge, but these aren't specific to the Jones Falls.

But they are, obviously, a public document, they obviously are on the County's website. So, I would have to object to forty-nine and fifty. But not the others, as long as they have signatures, and I think that they are, I just haven't been through all of them.

ALJ: Okay. So, Mr. Mudd, these were just printed off the website so, --

MR. MUDD: That's right.

ALJ: -- (inaudible) with the signatures?

MR. MUDD: It's what's available on the website. So, --

ALJ: Yeah.

MR. MUDD: -- if you go onto the website and follow the, where, where, the same location where the Consent Decree is, --

ALJ: Yeah.

MR. MUDD: -- quarterly reports exist there.

ALJ: Okay.

MR. MUDD: And they were printed directly from the website.

ALJ: Right, (inaudible) seal on it, okay. So, the, the, sorry, Mr. Zimmerman, I hear you.

MR. ZIMMERMAN: Yeah, I accept Mr. Mudd's representation they're on the website. So, I don't object. But can we get the dates? Can, can he just give us the dates.

MR. MUDD: Yeah, I, I'll do that, I'll march through. I just didn't, I didn't think it was efficient time to spend with this witness identifying each. So, Exhibit 48 is quarterly report, all, all four quarterly reports for calendar year 2019. Exhibit 49 is the annual report for calendar year 2019.

Exhibit 50 are all four quarterly reports for 2020. Exhibit 51 is the annual report for 2020. Exhibit 52 are all four quarterly reports for 2021. Exhibit 53 is the annual report for 2021. And Exhibit 54 are three quarterly reports for, the three that are available, for 2022. And I'd move all those.

ALJ: Okay. We'll accept them. I mean, I hear you with the signatures. This is what's available on the County website, even Mr. Zimmerman verified that. So, it is, these are and what the County put up there. Why the County put up their documents that weren't signed, I'm not sure.

But maybe it was just an oversight on the County's part. But I think we all know what, what these are and certainly any questions about, you know, their relevance get,

or, or in terms of the, the project here and how they relate to the project, you guys can all handle that on cross.

MR. MUDD: Thanks.

ALJ: So, we'll admit fif, forty-nine through fifty-four.

MR. MUDD: Forty-eight through fifty-four.

ALJ: Forty-eight, whoops, forty-eight to fifty-four, got it. Thank you.

MR. MUDD: Thank you. Sure. And Mr. Leffner, back to you. So, are these, these reports that we've just went through, you've reviewed each of these?

MR. LEFFNER: I have.

MR. MUDD: Okay. Is there anything, I know we're not going to go through them in detail, but is there anything that you would specifically like to point out to the ALJ with regard to these reports?

MR. LEFFNER: I think in a lot of the reports, there, there are specific references to the Jones Falls sewer shed, one. So, it's not just the County wide updated is sewer shed specific. That's why it was worth reading all of them.

There's also discussions on the County's progress in meeting all the requirements of the Consent Decree. So, each of those Consent Decree outlined items are included in the, the quarterly and annual reports.

There are some areas where things haven't been

completed. So, there's a lot of good, kind of updates, through the course of the quarterly report saying, you know, X number of improvements have been done out of Y number. And that number continues to go down throughout the course of the quarterly reports for the Jones Falls sewer shed.

There are some areas where improvements haven't been completed and in pretty much every instance, there's, you know, a schedule delay, coordination with the City or some kind of justification provided for why it's not done.

In it, you know, they report the majority of the work has all been done or, you know, they're continuing to make progress to complete all the work within the Jones Falls sewer shed or the SRR plan.

So, it's a great, I think, representation of, aside from the reports, which are a snapshot at the time, I think this shows over the course of the last three years all the progress that the County has made in completing all the requirements for the Consent Decree.

And I think the one thing that really stands out in it, is that there hasn't been a single, non-structural sanitary sewer overflow reported in the Jones Falls sewer shed. So, even if there's model predicted overflows in some of the analysis that had been done, the computer system, while the County is validating it, that, you know, there, there wasn't a single overflow reported for a non-structured SSO in the Jones

Falls sewer shed in the quarterly or annual reports.

MR. MUDD: Okay. Has there been a structural SSO reported in the, in the report, in the annual reports?

MR. LEFFNER: There are, yeah. There, there are structural SSOs, again, the main one being Marnat Road.

MR. MUDD: Okay and after reviewing all the material we've discussed today, the Consent Decree, the long-term capacity report, the SRRR plan, the RJN report and the quarterly and annual reports, do you have an opinion about the work that the County has performed to date in response to the Consent Decree?

MR. LEFFNER: There's a lot of it that's been done, one. And then I also think, you know, with the reporting of having no overflows, I think that the, you know, it's kind of showing the main purpose of the Consent Decree as, as being met.

The, within the Jones Falls sewer shed, if there hasn't been a single reported non-structural SSO and then with the understanding that the Consent Decree would remain open because of the one constructed SSO on Marnat Road until they can get coordinated with the County to close that one out. That, they're, they're meeting the, the overall purpose of the Consent Decree, which is to prevent sanitary sewer overflows within the sewer shed.

MR. MUDD: Okay. What about, what about the models

that have predicted SSOs in the future? What do you, what do you make of those? Let's start with the RJN model.

MR. LEFFNER: Yeah, I mean, there, the RJN model that has model predicted overflows, one, with regard to the rainfall monitoring and, and rainfall that's included as an inflow and infiltration into the model. The large storm events that they report.

If you look at, I believe it was the RJN report has actual measured rainfall data for a few of the years that was included in the report. I think the long-term capacity does as well. That the, the storms that are happening, that were measured within the County, are far below the amount associated with some of the larger storm events, specifically, the, the twenty year that was required by the Consent Decree.

So, I think, you know, the rainfall data, just what's being measured versus being modeled, there's, you know, I'd say discrepancies in the rainfalls actually, you know, what's being modeled is on the conservative end.

For some of the other reports regarding flow monitoring and actual manhole structures that come up with the amount of infiltration, that's still being verified by the County. And I think that's represented by the additional flow monitoring stations and level censors that they put in to, to structures.

And then I think, you know, specific to the RJN

report is the, the model predicted overflows within some of the sewer locations. Some of them being in the same area as the County's level censors, which would, you know, essentially, read or flag that there's been an overflow.

And then in turn, you know, reading the available reports that, that, that there hasn't been a single overflow within that period that, you know, the model predicted. It may be overly conservative, which is represented, I think, in the reports as well.

MR. MUDD: Okay. Do you have an opinion as to whether the addition of sixty-one units to this area would increase the risk for any SSOs in the future?

MR. LEFFNER: No. The, the amount of flow associated with the sixty-one homes is, is very minimal compared to the flows that are in the existing system.

MR. MUDD: Okay. Aside from reviewing these materials and all the exhibits and everything that have been submitted in this case, have you done anything else to verify the system capacity for the sixty-one units?

MR. LEFFNER: Let me, I think beyond submitting a capacity request letter to DPW at the beginning of the project was, I would say the main piece that we did outside of our office engaging others.

MR. MUDD: Okay. Let me show you Exhibit 55. Can you explain what this is?

MR. LEFFNER: Yeah. I'd say what's on the screen now is the County's response that our team received from the County after receiving the request to propose, at the time it was sixty-two new homes within the subdivision on the subject property.

MR. MUDD: Okay and I guess, and I'm sorry, the, the date, the date of this, this was August of 2020. So, when would this have been in the, in the snapshot of time here with this case? When would you have done this?

MR. LEFFNER: At the beginning.

MR. MUDD: Okay and have you learned any information since receiving this e-mail that you're aware of, that changes the County's conclusion in this e-mail? In other words, have you heard anything different from the County beyond this e-mail?

MR. LEFFNER: Not necess, like I would say, nothing different in the sense of capacity issues that need to be resolved limited to that list. We have, you know, taken the pro-active approach of designing the improvements associated with that and, essentially, having, having plans approved by the County for upsizing of the two sections of sewer line that need to be upsized to support the development.

MR. MUDD: Okay, great. Do you, do you recall Mr. Grachek's testimony about the County, County's static model used for evaluating sewer capacity?

MR. LEFFNER: I do.

MR. MUDD: Okay and do you agree with his assessment that County only runs a dry weather analysis?

MR. LEFFNER: I don't.

MR. MUDD: Okay. Let me show you Protestant's Exhibit 64. Can you see that?

MR. LEFFNER: yes.

MR. MUDD: Sorry, let me rotate it. Do you recognize this document?

MR. LEFFNER: I do.

MR. MUDD: And what, what is it?

MR. LEFFNER: It, I, the Protestant's exhibit I think that was presented, essentially, as the, the model output from the County for this project.

MR. MUDD: Okay and do you recall, do you recall Mr. Grachek's testimony about what flow, sorry, dry flow versus wet flow? Or dry weather versus wet weather analysis?

MR. LEFFNER: Yes.

MR. MUDD: And what, what is your understanding of what he was, his opinion was?

MR. LEFFNER: That this, this capacity analysis and projected flow only included, essentially, like domestic and non-domestic sewage, with no infiltration or inflow accounted for.

MR. MUDD: Okay and do you agree with that?

MR. LEFFNER: I don't.

MR. MUDD: And why not?

MR. LEFFNER: There's a column that's one, two, three, four, nine over from the left on the bottom that says infill with MGD below it.

MR. MUDD: Uh huh. Here?

MR. LEFFNER: Yeah, which then confirmation with the County, it's infiltration and inflow. And rather than separating those two kind of different types of inflow into the system it's all represented in a single column.

MR. MUDD: Okay.

MR. LEFFNER: So, that's (inaudible) discussions with Baltimore County, that column is meant to represent other flows beyond the domestic flows into the sewer system, which account for the infiltration and inflow from wet weather.

MR. MUDD: Okay. Let's move on to Protestant's Exhibit 75. Do you recognize this document?

MR. LEFFNER: I do.

MR. MUDD: Okay and what, what, just what is this, what is this meant to show from your ex, your understanding?

MR. LEFFNER: The sampling locations along Lake Roland where they're doing ongoing water sampling for specifically E.coli and bacteria.

MR. MUDD: Okay and is there anything in this report that surprised you?

MR. LEFFNER: I don't remember the entire report. I think there was one, I think there was a lot of I recall being variability between the, the monitoring. And just like levels that were measured. And likewise, could you keep scrolling down?

MR. MUDD: Sure.

MR. LEFFNER: Yeah, just looking at the different data sources.

MR. MUDD: Okay. What, is, is there anything about E.coli in, in the water body at all? What's, what's your opinion about whether the, the E.coli, the fact that there are E.coli readings here at all?

MR. LEFFNER: Yeah, I, I think the variability is one. I think the screen that you have there is great. It shows just in the span of twenty days how drastic the measurements are. I think that what the, and I don't know that of all thirty sheets, but assuming (inaudible) just for longer duration, it doesn't identify the source of E.coli, just more so that it exists within the water sample.

MR. MUDD: Okay and how many, how many testing locations are depicted on this exhibit?

MR. LEFFNER: Five.

MR. MUDD: All right. I'm going to show you Protestant's Exhibit 56, I'm sorry, Developer's Exhibit 56. Do you recognize this?

MR. LEFFNER: I do.

MR. MUDD: And what is this?

MR. LEFFNER: Those are the sample locations that I think are from the County's website.

MR. MUDD: Okay and how many locations are shown here?

MR. LEFFNER: There's kind of four red dots, but there's five sample locations because location three and four are both within the dog park.

MR. MUDD: Okay and what is your understanding with regard to these locations and the Developer, the Protestant's Exhibit 75 that we were just looking at?

MR. LEFFNER: Each of these is where those water quality samples are being taken at.

MR. MUDD: Okay. All right. Is Lake Roland the only place in Baltimore County where this type of testing occurs?

MR. LEFFNER: No, no, they're taken throughout the County.

MR. MUDD: Okay. I'm going to show you, I'm going to move Exhibit 56.

ALJ: Mr. McCann?

MR. MCCANN: No, no objection.

ALJ: And what about fifty-five?

MR. MUDD: Oh, I'm sorry, I thought I moved that.

MR. MCCANN: Fifty-five was the water sampling

results or was that something different --

ALJ: Fifty-five was the other one, it was the e-mail, the two e-mails from (inaudible) with the sewer.

MR. MCCANN: Oh, no, no, no, I'm sorry. No problem with that as well.

ALJ: Okay, fifty-five and fifty-six. And Mr. Zimmerman, any objection?

MR. ZIMMERMAN: Yeah, no objection to the --

ALJ: Okay, thank you.

MR. MUDD: Thank you. All right. And I'll show you fifty-seven. Do you recognize this document?

MR. LEFFNER: I do.

MR. MUDD: Okay and what is this meant to show?

MR. LEFFNER: It's the water sampling, I think it's from the County's website where water sampling locations are.

MR. MUDD: Okay. I'll scroll all the way down to the bottom, that map show up, do you see that?

MR. LEFFNER: Yeah.

MR. MUDD: What does this map show?

MR. LEFFNER: That's just one map that identifies even more water sampling locations on the coastal areas of Baltimore County within, primarily within recreational waterway areas.

MR. MUDD: Okay and what is your understanding of anything you've reviewed about, on the County website, about

why water testing occurs at these locations? And I'm sorry, these locations meaning the ones we see here and Lake Roland?

MR. LEFFNER: Yeah, I think the, Lake Roland, these locations and others in the County, the reason that the water quality samples are being taken is, is as they are potential recreational waterways, to identify any issues, bacterial or other, that additional notification or prevention of people coming in contact with the waterway should be implemented.

MR. MUDD: Okay. Did you hear Mr. Grachek's opinion about what was causing the E.coli readings in Lake Roland?

MR. LEFFNER: Yes.

MR. MUDD: What's your understanding of his opinion?

MR. LEFFNER: I think he said that the majority of the reason was because of sewer overflows and acknowledged that agriculture, I think he specifically referenced feeding, I don't know if it was some kind of cattle, or some type of feeding use of agricultural land could also be a main contributor. As well as septic systems potentially, but it was, it was maybe less likely that septic systems could contribute to the bacterial growth in the waterways.

MR. MUDD: Okay and did you hear Mr. Summers' opinion about septic systems?

MR. LEFFNER: I did.

MR. MUDD: What was his opinion from your, your recollection?

MR. LEFFNER: I think he, he too said that septic systems have issues. I think he was primarily focused on like nitrogen phosphorus loading in waterways with protection of the Bay. And that there's kind of a, a duality to whether septic is best treated in a centralized facility with public collection systems or locally with septic tanks.

MR. MUDD: Okay and what, what, do you agree with their opinions about the E.coli, the cause of E.coli in the Lake Roland watershed?

MR. LEFFNER: I, I agree that there's multiple sources that it could come from. But I also think that there was no where near as much of an understanding of the amount of potential agricultural, septic, wildlife, urban land use within the watershed.

It's pretty, it's a pretty unique, I'd say watershed, as it is sewer shed. In addition to the potential for sanitary sewer overflows. Having reviewed the quarterly reports saying there have not been any for, you know, since 2019, you know, I think they may not have looked at all of the other sources that could contribute to it.

MR. MUDD: Okay. I'm going to show you Exhibit 58. Do you know what this, this document shows?

MR. LEFFNER: I do. That's the, the overall Jones Falls watershed.

MR. MUDD: Okay, I'm sorry --

MR. LEFFNER: (inaudible) --

MR. MUDD: Okay. This, so this is the watershed and not just the sewer shed?

MR. LEFFNER: Correct.

MR. MUDD: Okay. I should move, I'll move fifty-seven and fifty-eight at this time.

ALJ: Mr. McCann, any objection?

MR. MCCANN: Fifty, fifty-seven being the location of other testing sites?

MR. MUDD: Yes, this is fifty-seven.

ALJ: (inaudible).

MR. MCCANN: Yeah, I, I'm not sure what the relevance of that is. So what if there's a lot of sites? That just means that there's a lot of recreational waters all over the, you know, all over this area. Without the test results, I guess is my point, Your Honor, just, there's been no testimony about what the test results are. So, what's the relevance of that?

ALJ: Yeah, un, understood. You can cross examine him on that. I'm, you know, for, for what it's worth, we'll, we'll put in, I, I, well, let me ask Mr. Zimmerman any objection?

MR. ZIMMERMAN: We'll let it go for what it's worth, but.

ALJ: Okay. Fifty-six and fifty-seven and I think

you just said fifty-eight, didn't you, Mr. Mudd?

MR. MUDD: I offered fifty-eight.

MR. MCCANN: No objection.

ALJ: And fifty-eight, yeah, fifty-six through fifty-eight. Thank you.

MR. MUDD: Thank you. I'm going to show you Exhibit 59. Do you recognize this document, Mr. Leffner?

MR. LEFFNER: I do.

MR. MUDD: Okay and then, while we're at it, I'll show you, whoops, I'll show you fifty, we'll stick with fifty-nine, sorry about that. So, so, how, how big, how large is the Jones Falls watershed?

MR. LEFFNER: Acreage, I don't, I don't recall off the top of my head.

MR. MUDD: Okay. Do you know how much of the area is served by public sewer versus, versus well and septic?

MR. LEFFNER: I don't know the exact acreage or percentage, but I'd say half, probably half to a third of the watershed is served by the sewer shed. However, portions of the sewer shed within the watershed are not served by public sewer.

MR. MUDD: Okay and do you know where, do you know how many, how many septic systems exist within the entire watershed, by any chance?

MR. LEFFNER: Thousands.

MR. MUDD: Okay.

MR. LEFFNER: I forget the exact number offhand, yeah, it's in the, it was in one of the reports.

MR. MUDD: Okay. If you don't know, that's fine.

MR. LEFFNER: I want to say it was like sixty thousand or something. It's, you know, tens of thousands.

MR. MUDD: Okay and does the, let's go back to fifty-eight. What's the, what's the difference here between the hatched area on fifty-eight and the, the other areas that are not hatched?

MR. LEFFNER: The hatched area represents areas within the watershed that are outside of the, the URDL, the urban --

MR. MUDD: Okay. Urban demarcation line?

MR. LEFFNER: Yeah, that, that would represent the area that's outside of the, the sewer shed that I referenced earlier.

MR. MUDD: Okay and are areas that are outside the URDL served by public water and sewer?

MR. LEFFNER: They're not.

MR. MUDD: Okay and are there, are those then served by well and septic?

MR. LEFFNER: Correct.

MR. MUDD: Okay and did you investigate whether there are also areas inside the URDL that are served by well and

septic or, or at least septic?

MR. LEFFNER: Yes.

MR. MUDD: All right. I'm going to show you Developer's Exhibit 60. Do you recognize this document?

MR. LEFFNER: I do.

MR. MUDD: Okay and, and what is this?

MR. LEFFNER: That's a map that is, you know, it's zoomed in a little bit, but just around the Lake Roland area, so within the Jones Falls watershed and the Jones Falls sewer shed that represents the number of septic lots that are served by onsite septic systems in lieu of public sewer, within kind of just that area focused around Lake Roland.

MR. MUDD: Okay and where did you get this map?

MR. LEFFNER: From Baltimore County.

MR. MUDD: And who in particular?

MR. LEFFNER: Mr. Kopnick.

MR. MUDD: Okay and does this, does this show how many septic systems exist in this area?

MR. LEFFNER: Approximately, yeah.

MR. MUDD: And what's that number?

MR. LEFFNER: About six hundred and thirty-five homes or lots.

MR. MUDD: On, on this exhibit, what color dots mean what?

MR. LEFFNER: On this, the blue dots are public sewer

service, and the orange dots are septic lots.

MR. MUDD: Okay. Do you know why there are so many septic systems that remain in this area that can be served by public sewer?

MR. LEFFNER: There could be a lot of reasons.

MR. MUDD: Okay. Do, do you have any, if, if you don't know, that's fine. But what, what would be your, why would you think there are septic systems still here?

MR. MCCANN: Objection. Speculation, Your Honor.

ALJ: Overruled. Go ahead.

MR. LEFFNER: So, there's a variety of different issues. I think one is availability of public sewer when the lots were developed. So, you know, if they were old lots with old homes, which a lot of this area is, public sewer may not have been available. And, you know, the house may have always been on a septic system.

Likewise, if the cost to connect to the public sewer system, whether it be because of a main extension to support a home, which just a homeowner couldn't burden, or rates. I know a lot of times with development and coordinating with the public that, you know, being charged water and sewer rates by a jurisdiction as opposed to not to have a, a privately owned and operated, you know, well and septic system.

Likewise, topography, I think is another one where, you know, main extensions via the gravity main system, which

serves most of this sewer shed area just may not be feasible. The topography really falls down along the, the waterways. So, Lake Roland, Roland Run, the Jones, upper branch of the Jones Falls, even Towson Run.

So, just from a gravity flow perspective, a house may not be able to connect easily to where they would need some kind of pumping station or low-pressure force main to connect to the public sewer system.

MR. MUDD: So, in, with regard to that last point, are the, what, what is the elevation? Are the homes above or below the lake when you say that?

MR. LEFFNER: Well, the homes are above the lake, but I think along a lot of the roads, you know, being familiar with the area, a lot of these homes follow high spots or ridges along roads and the homes are set back, you know, obviously above the waterways and the stream. But the whole area drains down to Lake, Lake Roland.

MR. MUDD: Okay. Do you know whether the County monitors these septic systems?

MR. LEFFNER: I don't believe they do.

MR. MUDD: Okay. You described the topography. From a sewerage design standpoint, as a professional engineer, what, what do you think the preferred method of handling sewerage from an environmental and ecological perspective is?

MR. LEFFNER: I too can see the duality in the types

of practices. I think from an urbanization and densification standpoint, centralized sewers are, you know, usually a little more conducive to the more populated area, just because of the, the room available and the maintenance associated with that many septic systems that's burdened by an individual as opposed to having public sewer systems.

So, I'd say in this area specifically, you know, the, the, having a public sewer system that is centrally managed by, you know, an entity is probably better.

MR. MUDD: Okay. I'll move Exhibit 60 into evidence.

MR. MCCANN: No objection.

ALJ: Any objection, Mr. McCann?

MR. MCCANN: Nope.

ALJ: Nope. And Mr. Zimmerman? Mr. Zimmerman?

MR. ZIMMERMAN: No objection. Sorry, I was muted, sorry.

ALJ: Okay, thank you.

MR. MUDD: I'm going to show you Exhibit 61. Do you recognize this, this document?

MR. LEFFNER: I do.

MR. MUDD: What is this?

MR. LEFFNER: It's an aerial view with in red a copy of the Jones Falls watershed. In blue is, kind of starting at the bottom right corner, Lake Roland and then some of the waterways are highlighted in kind of a darker blue area, some

of the other areas are highlighted in a lighter blue. It's kind of difficult to see those heading off to the, kind of the eastern side of the, the watershed, which would include like Towson Run. In green are all the properties that are identified as agricultural land uses through Baltimore County My Neighborhood.

MR. MUDD: Okay and who prepared this?

MR. LEFFNER: I did.

MR. MUDD: Okay and if you know, do you know approximately how many acres of farmland exist within the watershed?

MR. LEFFNER: Not off the top of my head I don't.

MR. MUDD: Okay. So, why did you prepare this document?

MR. LEFFNER: Being familiar with the area and seeing the number, you know, A, hearing Mr. Grachek's testimony that agricultural land uses, especially if they're livestock or feeding, could contribute to bacteria, being familiar with the area, knowing that there are properties that are, either have or propose to have livestock on them, horse farming is very familiar in a lot of these agricultural areas. And just the amount of agricultural area within the watershed that could be contributing to the, the, the bacteria within the waterways.

MR. MUDD: Okay. I'll move this exhibit into evidence.

ALJ: Mr. McCann?

MR. MCCANN: No objection, thank you.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

ALJ: Thank you.

MR. MUDD: So, with all this additional information that you've put together regarding the septic systems and the, the, the agricultural uses and then, you know, drawing on everything else you've read and the testimony you've heard, what, what is your overall opinion about the E.coli readings at Lake Roland?

MR. ZIMMERMAN: Objection. I don't, I don't see where he, his expertise extends to parsing or breaking down how much is contributed by each item.

ALJ: You can cross examine him on that, so overruled.

MR. LEFFNER: Can you repeat the question, Chris?

MR. MUDD: Sure. Just, based on everything that you've read, prepared, evaluated regarding potential E.coli sources, what is your, in this, in this sewer shed and watershed, what is your opinion about the E.coli readings in Lake Roland that were presented in Protestant's Exhibit 75?

MR. LEFFNER: The, I think the sources are varied and as reported in, I think, even some of the exhibits that we didn't review today, as far as the TMDL exhibits that were

entered in by the Protestants at that time, where there's differentiation between wildlife, urban areas, agricultural uses. All of those exist within this watershed.

Likely if there are human sources saying that they're from sanitary sewer overflows, seeing the, the large majority of the watershed flowing into Lake Roland is actually not even on the public sewer system, it's on a private septic system.

That there is a huge number of properties within the overall watershed that are on private well and septic, which also discussing with the County, they're, they're not necessarily regulated or managed. It's just kind of on the local homeowner to, to repair and maintain them. So, just the number of sources are great as far as where, what could be contributing to the bacteria within the, the waterway.

And then on top of that, you know, reading, knowing that the County has gone through measures of adding more monitoring stations within the watershed, closing constructed sanitary sewer overflows and that they've been monitoring the sewer shed for the last, at least three years, and they haven't reported a single non-structural sanitary sewer overflow within the watershed, you know, I, I don't know how you could say that, that the source of the bacteria is just from sanitary sewer overflows.

There hasn't been a, a, there hasn't been a reported sanitary sewer overflow within the watershed in the last three

years. And the number of sources are, you know, pretty vast through the rest of the watershed that contributes down to Lake Roland, that's outside of the, you know, this project area and even the, the URDL itself.

MR. MUDD: Okay. I'm going to show you Exhibit 62. Do you recognize this document?

MR. LEFFNER: I do.

MR. MUDD: Sorry it's in a weird format. What is this meant to show?

MR. LEFFNER: I think this is from the, likewise, the County website regarding recreational waterways and warnings for potential alerts or advisories for not coming in contact, you know, washing your hands and kind of staying safe if there's a potential for impacted waterways.

MR. MUDD: Okay and does report any, any advisories currently in effect?

MR. LEFFNER: No.

MR. MUDD: And the date of this, and there's a date here that it was prepared, correct?

MR. LEFFNER: Yep.

MR. MUDD: As of May 26th?

MR. LEFFNER: Yeah, a couple days ago.

MR. MUDD: Okay. I'll move this into evidence as well.

ALJ: Mr. McCann?

MR. MCCANN: No objection.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

ALJ: Thank you.

MR. MUDD: Do you recall seeing the stream sense sign photographs presented by the Protestants, I think it was Protestant's Exhibit 76?

MR. LEFFNER: I do.

MR. MUDD: Okay. You're, you're familiar with those signs?

MR. LEFFNER: Yeah.

MR. MUDD: Okay. Do you know if this is the only location where these signs are located in, in Baltimore County?

MR. LEFFNER: It, it's, it's not. There's more beyond Lake Roland.

MR. MUDD: Okay. I'm going to show you Exhibit 63. Do you recognize this document?

MR. LEFFNER: I do.

MR. ZIMMERMAN: Yeah, I'm going to object. I don't, I don't see what other places have to do with, with what we're dealing with here.

ALJ: Okay. I'm going to just overrule it for now and we'll just see where it goes.

MR. MUDD: Where did you get, where did this come from?

MR. LEFFNER: That's also on the County's website.

MR. MUDD: Okay and what's it meant, I'm sorry, I forget whether you answered this, but what's it meant to show?

MR. LEFFNER: Locations of where the stream signs, stream sense signs kind of warning or limiting contact with recreational waters are posted in the County. And I would, you know, I do assume too it's not an all-encompassing list just because, you know, Lake Roland is not listed on there.

MR. MUDD: Okay. I'll move this in evidence as well.

MR. MCCANN: No objection.

ALJ: Mr. Zimmerman, you still object? Mr. Zimmerman, do you still object?

MR. ZIMMERMAN: I was muted again, sorry. Yeah, I, I see no value in this but I'm sure you'll give it what weight you think it's worth.

ALJ: I think the, the, what they identified was that Lake Roland was not listed. I think it's --

MR. ZIMMERMAN: Yeah, well, --

ALJ: -- it's not there.

MR. ZIMMERMAN: -- obviously it's a mistake. It, it's there, you know.

ALJ: Well, all right. Well, that could be your fodder for cross. Mr., Mr. McCann, any objection?

MR. MCCANN: No objection.

ALJ: Thank you.

MR. MUDD: Thank you, both. Did you review the reports from Hazen as well as the Ramble report, which Protestants submitted, which were Exhibits 85, 86 and 87?

MR. LEFFNER: I did.

MR. MUDD: And in light, did, did you investigate anything relative to those reports as well or did you just review them?

MR. LEFFNER: I reviewed them and also discussed them with Baltimore County staff.

MR. MUDD: Okay and in light of your investigations and evaluations, what's your opinion about what those reports show?

MR. ZIMMERMAN: Objection again. It's hearsay conversations with County staff. Let's get the County staff in here to explain what's going on if, if we, if we're going to get into this.

ALJ: Understand. So, but he's entitled to his opinion, so let's hear what his opinion is in regard to his review of the Hazen and Ramble report so overruled.

MR. MCCANN: Well, Your Honor, I think the question was beyond that. It was not just what he, what his opinion is with respect to the reports, it's what his opinion was based on apparent conversations he's had with County staff.

And it's one thing if, if the County staff put their comments in an e-mail like some of the e-mails we've seen, you

know, the e-mails that have the manhole numbers, etcetera. But here we have no idea what County staff actually said and under these circumstances I don't think he should be allowed to rely upon hearsay.

ALJ: So, he hasn't given us any information about what the County staff has said, only what his understanding of, of, of his discussion --

MR. MCCANN: No, --

ALJ: -- so, --

MR. MCCANN: -- no, the questions was, Mr. Mudd asked the question, did you, or Mr., rather, Mr. Leffner said that he had conversations with County folks. And then the next question is, what's your understanding of what these reports mean. I mean, obviously, that question is directed to hearsay and the information he obtained from County staff, you know, who we can't cross examination in this case, that's classic --

ALJ: Yes.

MR. MCCANN: -- it's a classic problem with hearsay.

MR. MUDD: I, I'll, I'll instruct the witness, I, I don't want him to say what he was told. I want him to understand or say, give what his opinion is based on everything he's done, which includes conversations.

MR. MCCANN: Well, that's, that is a false line. You can't draw that line in his head. How is he going to do that?

ALJ: Okay. Well, he, he's not going to tell us what

the County staff said because they're not here and I agree, you should be able to cross examine them on those issues. But he's entitled to his opinion, and you can cross examine him on his opinion and highlight all of that. So, we'll overrule it.

MR. ZIMMERMAN: Wow.

MR. MUDD: So, just give your opinion based on everything you've, you've done to date with regard to the review of those reports, as to what you think, or what your opinion gen, in general, is about those reports?

MR. LEFFNER: Yeah, I think in general, neither of those reports were prepared in response to a Consent Decree requirement. We went through the Consent Decree earlier that specifically outlined what the requirements were.

And I think, you know, the, the Ramble report regarding the lining of the sewer main that was not included on the SRR plan is just an example of the County being proactive. And I would just say, doing what they do, which is own, maintain, operate, repair the sewer system.

So, specific to the Ramble report, I think in reviewing it, it was clear that the County, you know, the County does further improvements beyond just what's included or required as part of the Consent Decree requirements.

For the Hazen report, kind of likewise. I think the Hazen, and there wasn't necessarily a complete report provided in the Protestant's Exhibits, but reviewing some of the scoping

documents and kind of excerpts that were pulled from it, understand that the, the Hazen report is even kind of like a further horizon study that the, the County is embarking on that's going to involve, you know, I would say analysis, future long-term planning for sewer system upgrades, considering costs and strategy, operation and maintenance kind of protocol or systems that they can implement.

So, I think the, the Hazen report too is kind of an example of the County, the County doing more with regard to the analysis and development of standard County practices beyond what just the Consent Decree requirement would be.

MR. ZIMMERMAN: Move to strike that opinion. It's entirely without foundation and totally beyond speculation. Those, those documents speak for themselves and there's no way to say that that has nothing to do with the Consent Decree, in my opinion.

ALJ: Understood. You can cross examine him, overruled. I'm not going to strike that testimony.

MR. MUDD: Did these reports give you any cause for concern, Mr. Leffner?

MR. LEFFNER: No.

MR. MUDD: Why not?

MR. LEFFNER: I think the Ramble report was, essentially, a study and improvement that the County is planning to do for relining the main under Lake Roland. It's

not necessarily any kind of capacity improvement. It's the relining of the main.

And, you know, our project is not going to have any significant impact on that. So, you know, this, the proposed development project, should, should it be approved and move forward is, again, like fractions of the amount of sewage that goes down through the Lake Roland collector. So, it would have no impact on that project.

And likewise, the Hazen study, it's more so a planning document, right? Continuing to identify analysis, capacity studies, long term planning to help influence the County's future capital spending in the County.

MR. MUDD: Okay. Judge, bear with me for one second. I just want to make sure, I think that may be all the questions that I have for this witness. Just want to verify. Okay, I think that's it. I think I have nothing further. Thank you very much, Mr. Leffner.

MR. LEFFNER: Thanks.

ALJ: Okay. So, we had sixty-three and sixty-four is not in evidence.

MR. MUDD: Oh, I'm sorry. I will, no, sixty-four was offered last time. That was a cross examination exhibit that we --

ALJ: Oh.

MR. MUDD: We had, we had already pre-marked things,

so that was, that was when, when Mr. Summers testified.

ALJ: Oh, that's right. He, that's right, he referenced him, and he testified about that, I remember that now, okay. So, we would start with Mr. McCann. Mr. McCann, do you want to take a lunch break first and then come back?

MR. MCCANN: That'd be great, yeah.

ALJ: Okay. We'll come back and what do you guys need, a half hour or, sound good?

MR. MCCANN: Can we do 2:00 (inaudible)?

ALJ: Sounds good, 2:00.

MR. MCCANN: Okay. Thank you, Judge.

ALJ: All right, thank you.

(PAUSE)

ALJ: We are back on the record after lunch and Mr. McCann was going to start his cross of Mr. Leffner.

MR. MCCANN: Thank you, Judge. Good morning, or rather good afternoon, Mr. Leffner. Can you hear me?

MR. LEFFNER: Yep, I can. How are you?

MR. MCCANN: Great, thank you. So, I'm going to jump around here a little bit, unfortunately. But, a couple, maybe preliminary things. In terms of stormwater management, am I correct, and I can show you our exhibit, that there has not been a new stormwater management concept plan submitted since the one I'm going to show you right now. This is Protestant's Exhibit 51. Do you see that?

MR. LEFFNER: I do.

MR. MCCANN: Yeah, this one is dated May 2021 and received on May 20th. Does this look to be the last report, concept stormwater management report that was submitted to the County?

MR. LEFFNER: I forget the date of the most recent report submitted to the County. I would need to look because we had, we had two or three resubmissions, one of, the latest which showing the reduction of one of the storm water facilities.

MR. MCCANN: Okay. But nothing recent, I take it, is that fair? In other words --

MR. LEFFNER: Yeah, no, nothing since this hearing has been going on.

MR. MCCANN: Yeah, okay. Your Honor, I would have, I have an e-mail here. This would, this is an e-mail exchange between myself and the stormwater management reviewer, Ella Kaplan, just confirming as of, actually, 11:24 a.m. this, today that they hadn't received anything new. The e-mail speaks for itself, but it, it sort of, it's only a couple pages. It tracks my request for the plans and what, so I would have, want to introduce that as Protestant's Exhibit 109.

ALJ: Mr. Mudd, any objection?

MR. MUDD: Other, other than being incredulous that how can it be possibly have an exhibit from today like I had

one from yesterday and no, no objection.

MR. ZIMMERMAN: Yeah, you can throw them all out if you'd like, Judge, I mean.

ALJ: I, I already let them in. See, but see what happens, Mr. Zimmerman? We have this, we have a, one that's even newer today. That's why, you know, so, okay. So, this is Exhibit 51? Is that, no, no. This is exhibit, what is --

MR. MCCANN: 109.

ALJ: -- this exhibit, Mr. McCann?

MR. MCCANN: 109.

ALJ: 109, okay. So, this was a May 31st, '23 e-mail from Ella Kaplan.

MR. MUDD: Michael, would you mind scrolling through the whole e --

MR. MCCANN: Sure, absolutely.

MR. MUDD: Thanks. I just want to see what you asked, actually. Okay.

MR. MCCANN: Okay?

MR. MUDD: Okay.

MR. MCCANN: Okay. Mr. Leffner, also, I want to ask you a question about Developer's Exhibit 55. This is the memo that you received from Ms. Eicholtz in September 2020. Do you recall this memo?

MR. LEFFNER: Yeah, the e-mail.

MR. MCCANN: Yep, yeah and at the second page in this

Exhibit 55, is, looks to be Mr. Bishop's e-mail to her asking for, or asking effect, essentially, whether there's adequate capacity for the new, for the proposed development, is that correct?

MR. LEFFNER: Correct.

MR. MCCANN: Okay and this, this inquiry by Mr. Bishop in August 2020, is that, is that typical of the inquiry that you might do in connection with a proposed development plan that you were handling?

MR. LEFFNER: It is.

MR. MCCANN: Okay, all right. All right. So, let's back up. I did want to touch upon the Consent Decree a little bit, but not very much hopefully. And maybe just hit some highlights. Can, can we agree, Mr. Leffner, that the Consent Decree requires Baltimore County to conduct a long-term capacity evaluation to identify corrective actions necessary to ensure long term capacity? Is that a requirement in the Consent Decree, correct?

MR. LEFFNER: To do, yeah.

MR. MCCANN: Okay. When you say, and I'm being specific in my words because I'm quoting. I'm not going to go to the Consent Decree if you'd like, but the Consent Decree requires the County to conduct the evaluation and that evaluation is to identify corrective actions necessary to ensure long term capacity. That, that's what the Consent

Decree says, does it not?

MR. LEFFNER: Verbatim, I'm not sure, but in generality, yes.

MR. MCCANN: Okay.

MR. LEFFNER: If you're quoting it.

MR. MCCANN: Yeah, paragraph 9-C-ii for the Judge's benefit. Can we also agree that the Consent Decree then requires the County to prepare an SRR plan to identify the deficiencies in the system and then perform corrective actions necessary to address those deficiencies, is that also what the Consent Decree says?

MR. LEFFNER: I, yes, in generality, yeah.

MR. MCCANN: And then, so let me just show you, in fact, I will show you this. This is the, I'll scroll up to the top so you can see it. This is the SRR plan. Do you recognize it as such? One second. Do you recognize that as the SRR plan?

MR. LEFFNER: Yep.

MR. MCCANN: Okay. This is, for the record, is Exhibit 67. Our Exhibit 7, 67. So, I just want to go to some language in the executive summary on page ES-1. This language in particular. And I'll just read it to you.

The objective of paragraph ten of the CD was to prepare a sua, sewer shed repair, replacement and rehabilitation plan that describes the deficiencies identified

through Collection System Inspection and the Long-Term Capacity/Peak Flow Management Evaluation and recommends repair, replacement, rehabilitation or other corrective actions necessary to address those deficiencies. Did I read that correctly?

MR. LEFFNER: Yes.

MR. MCCANN: Okay. So, what happened here is the County, to comply with the Consent Decree, hired RK&K to identify corrective actions necessary to ensure long term capacity, correct? That's what RK&K did, right?

MR. LEFFNER: Correct.

MR. MCCANN: And that evaluation, as we've been talking about, is our Protestant's, for the record, our Exhibit 68. I can show it to you if you'd like. But, you need me to show it to you? Maybe I should.

MR. LEFFNER: Just which report are you referencing?

MR. MCCANN: Let me just show it to you. So, this is Protestant's Exhibit 68. Do you recognize this document as the long, what I'll call the long-term capacity report?

MR. LEFFNER: Correct.

MR. MCCANN: Okay and would you agree with me that the corrective actions that are in this document are in the form of recommended corrective actions? That's the language of this report, correct?

MR. LEFFNER: I'm not sure if they use recommended

specifically but identify improvements for the different scenarios.

MR. MCCANN: You don't recall whether they're called recommended or not?

MR. LEFFNER: I don't know the specific word. I know that they have a recommended, like a recommendation section for each of the, each of the storm events (inaudible) --

MR. MCCANN: Well, let me scroll down and I'll ask it maybe a different way. Bear with me one second. I'm sorry. Let me get to the, almost there. Okay. So, beginning on this page, which is page nine, the long-term capacity report goes through model predicted corrective actions for each of the storm events, correct? Beginning with the two year six?

MR. LEFFNER: Correct.

MR. MCCANN: Okay and is there, in the language of the long-term capacity report, is there any, and I can certainly go through it if you'd like, but is there any distinction between what RK&K recommends and something less? That is, that it doesn't recommend but just provides for informational purposes or as a guide or some sort of half recommendation? Would you agree with me that its recommendations are its recommendations?

MR. LEFFNER: I think the summaries are the summaries, if that's what you're asking.

MR. MCCANN: Okay. Well, let me ask it this way

then. Do you have any reason to believe that the corrective actions that RK&K identified in this long-term capacity report to ensure long term capacity, are not necessary to correct the deficiencies that were identified?

MR. MUDD: Objection as to the form of question.

ALJ: You didn't, you didn't like the question?

MR. MUDD: Well, I, I'm not sure, it's very open ended. He's talking about deficiencies, deficiencies that were identified. What's, what, what deficiencies?

ALJ: Mr. McCann, did you want to --

MR. MCCANN: Yeah, I could try to rephrase.

ALJ: Rephrase the question, please.

MR. MCCANN: Yeah. Would you agree with me that RK&K identified a deficiency, deficiencies in the system that were needed to be corrected, would you agree with that much?

MR. LEFFNER: Yes.

MR. MCCANN: And those deficiencies were, took the form of both, you know, current repairs and rehabilitation of the system, as well as deficiencies that were reflected as a result of modeling, that is future capacity problems? Both were, both are part of what was done, correct?

MR. LEFFNER: They looked at the long-term capacity with like both growth population increases and the different rainfall scenarios to identify this pot, I'd say potential corrective actions. And I, the, there could be other

corrective action alternatives too, but they're just the recommendations in the report.

MR. MCCANN: Okay. Well, any reason to believe that the recommendations of RK&K in the long-term capacity report are not necessary to address the, the deficiencies in long term capacity?

MR. MUDD: Objection. Same objection.

ALJ: Overruled.

MR. LEFFNER: I think there's a difference in what you're asking in that one, the recommendations for the different scenarios are specific to those scenarios and the data they used to prepare the long-term capacity study that wasn't verified.

So, growth population differences, there's a lot of assumptions that go into the long-term capacity model. So, they may not necessarily be required improvements to repair deficiencies. It's a long-term capacity study that's projected out years ahead of time.

MR. MCCANN: Well, that's fair, yeah. We'll actually get into that a bit. Let me ask it this way, then I'll move on. To your knowledge, did Baltimore County ever make a determination that one or more of the recommendations in the long-term capacity report were not necessary to ensure long term capacity? Did that deter, determination ever made by Baltimore County?

MR. LEFFNER: I don't --

MR. MUDD: Objection. Still an open-ended question.

ALJ: I think it's a fair question. I mean, did the County determine if any of the corrective actions were not necessary. I don't think that's, I think that's fair.

MR. MCCANN: Were you aware of any such determination?

MR. LEFFNER: I, I don't know that they said any of those recommendations were not required.

MR. MCCANN: Okay. Let's talk about the SRR plan itself. Is it your opinion, I, I, I (inaudible) is, that the SRRR plan has been fully implemented by Baltimore County? Is that your opinion?

MR. LEFFNER: It has not.

MR. MCCANN: Okay and let's, if we could, you didn't address this section of, I'm going to go to six, 6.14. Bear with me. Okay. So, this is Section 6.14 of SRR plan, which is again, Protestant's Exhibit 67. Do you recognize this provision?

MR. LEFFNER: I do.

MR. MCCANN: Okay. You didn't really speak to it, but is it your contention that this, this, in essence, is the County's corrective action recommendation plan in the SRR, SRRR plan? Is this it? Is this --

MR. LEFFNER: Yes.

MR. MCCANN: Okay and it sounds like you acknowledge that this plan, as set forth in 6.14, has not been fully implemented, correct?

MR. LEFFNER: The majority has been done, but not fully.

MR. MCCANN: Okay. Well, let's talk about each of these items. Number one, it says complete comprehensive I&I reduction rehabilitation within SSA's exhibit excessive I&I, or other areas that contribute to model predicted SSOs determined by model simulations using the ten-year, six-hour storm event. I paraphrased that a bit, but did I read that correctly?

MR. LEFFNER: Paraphrasing, yeah.

MR. MCCANN: Yeah, okay. As we sit here today, and this is since the SRR plan was issued back in 2013, we know that there are still significant areas in Baltimore County that are exhibiting excessive I&I, isn't that true?

MR. LEFFNER: There are areas in the County, yes.

MR. MCCANN: Okay. Well, let me show you and we'll get back to this plan in a moment, but this is Hazen's newsletter. Do you recognize it as such?

MR. LEFFNER: Yeah, I believe it's not marked, but I believe this was one of your exhibits.

MR. MCCANN: Yeah, this is Exhibit 85. So, and we went over this with Mr. Summers. This newsletter indicates, does it not, the areas of rain dependent I&I in the Jones Falls

sewer shed, correct?

MR. LEFFNER: Presumably. But I think the figure says that it has high R values.

MR. MCCANN: All right. But this is I&I and in Bal, in the Jones Falls according to Hazen, right?

MR. LEFFNER: The, the R values in the winter, whether there's high I&I associated with it or not.

MR. MCCANN: Right and the red, do, do you recognize the area of our site? The red is, the area of our site is in the area of significant red, which is the, the most significant R values, amongst the more significant R values in the entire sewer shed, correct?

MR. LEFFNER: I'd have to zoom in some, but the R's might be the white area right between the red.

MR. MCCANN: Okay. Assuming it is, there is, and I'll take your word for it, you may be right about that. But it's surrounding the site, certainly, or areas of excessive I&I, correct?

MR. LEFFNER: High R values.

MR. MCCANN: Well, amongst the, amongst the highest as far as this map is concerned, right?

MR. LEFFNER: For the R values, yes.

MR. MCCANN: Okay.

MR. LEFFNER: Whether that's relating to high I&I would be an assumption. There would have to be measurements

done to confirm that.

MR. MCCANN: Okay. Well, Hazen, as we know is still in the process of, of doing its work, right?

MR. LEFFNER: As I understand, yes.

MR. MCCANN: Yep. And then getting back to the language of SRR plan, it talks about complete rehab in areas that contribute to model predicted SSOs determined by model simulations. We know since this report back in 2013 that RJN and, has identified significant areas, including the areas that will be served by where, including the areas that will receive sewage from the subject property, of model predicted SSOs, correct?

MR. LEFFNER: They did.

MR. MCCANN: Okay. Specifically, map three that we've been looking at. This map right here, which is Protestant's Exhibit 78, correct?

MR. LEFFNER: Correct.

MR. MCCANN: Okay and we'll, we'll get to your snapshot opinion in a moment, but in addition, and sticking to item one of the SRR plan, we also know dealing with SSOs and excessive, excessive I&I, that the County's consultant Ramble, within the last year, has specifically identified numerous segments in and around Lake Roland that need to be repaired in order to address I&I and model predicted SSOs, correct?

MR. LEFFNER: I think that they, specific to Ramble,

they've identified sections of the pipe that could be repaired to control I&I. I don't know that they're, I&I is the reason for the model predicted overflows.

MR. MCCANN: Well, let's, well, I'm not sure what you just said, if it's the same thing or not. But the purpose of the rehabilitation that's proposed by Lake, in and around Lake Roland by Ramble is for the purpose of addressing I&I and model predicted SSOs. That's the express purpose of this report, is it not?

MR. LEFFNER: I don't remember if that's the specific purpose. They were relining the main.

MR. MCCANN: Yeah, well, let's look at the purpose. It says, this is on page, Section 1.1 of Protestant's Exhibit 87 of the Ramble report, it's page one. It says right here, does it not, primary focus of this project is to minimize the inflow and infiltration into the interceptors to reduce the likelihood of sanitary sewer overflows, correct?

MR. LEFFNER: Correct. That's what the lining of those mains would do.

MR. MCCANN: Okay. Well, there's a lot, you, you seem to suggest that the work that was, is being proposed by Ramble, number one, was, was somewhat minor. The, do, do, do you have an understanding of the scope of the work that's proposed by Ramble?

MR. LEFFNER: A general idea from reading the report,

yes.

MR. MCCANN: Well, here, here's a specific idea. On the very same page is, in figure one, is a project map that identifies all the sewer segments that are the subject of this report. Do you see that?

MR. LEFFNER: Yes.

MR. MCCANN: Next page discusses the extent of those repairs. Are you familiar with the details of everything that's being done? It sounds like you're not.

MR. LEFFNER: Generally familiar, yes.

MR. MCCANN: Yeah, are you, it says forty-three segments, nineteen thousand five hundred fifty linear feet of pipe. That's a lot of work, is it not?

MR. LEFFNER: That's a long run of pipe, yes.

MR. MCCANN: Several miles, right?

MR. LEFFNER: Yes.

MR. MCCANN: And then, bear with me one second. In addition to the forty-three segments, there's discussion here about repairs to manholes and junction chambers, forty-three of those. Do you see that?

MR. LEFFNER: Correct. Those would be along the runs of pipe.

MR. MCCANN: Right. And then, in terms of the existing condition, go to page four. This report says, the CCTV inspection showed twenty-four of those forty-three

segments to have active I&I, active infiltration, fourteen of which includes some level of structural defects. Do you see that?

MR. LEFFNER: I do.

MR. MCCANN: And then, of the remaining nineteen, eleven segments have structural defects. Do you see that?

MR. LEFFNER: Correct.

MR. MCCANN: Then in terms of the, the, the impact on Lake Roland, page six of this report, talks about the enormous, what I'll call enormous, you tell me if you disagree, staging that's going to be necessary to line or otherwise repair forty-three segments and forty-three junction boxes in and around Lake Roland. Do you see that, this right here?

MR. LEFFNER: Yes.

MR. MCCANN: So, to paraphrase, it says, tell me if I'm wrong, nine sites along, in and around Lake Roland, each staging area to be fifty by a hundred feet. Do you see that?

MR. MUDD: Objection, Judge. I, I know that, that there's some leeway given to walking someone through an exhibit. But I feel like here the questions are am I reading this correctly? And then we're asking to agree with paraphrasing of a document that speaks for itself. I, I think he should be asked substantive questions.

MR. MCCANN: Well, it sounds like he's not very familiar with it so, I, I'm going through it more than I

otherwise would. But --

ALJ: I'm going to overrule it. I mean, it is, it is cross, so --

MR. MCCANN: I'm not going to --

ALJ: -- and he did say in the beginning of the, of the, I think he said at the beginning of his testimony on direct that he was familiar with these reports, so.

MR. MCCANN: Okay. Just one last question about the scope. Do you recall how many private property owners the, the work will require easements from in order to do, to do this type of staging? Do you remember?

MR. LEFFNER: I don't remember the number cited in the report.

MR. MCCANN: Okay, all right. I'll move on. Back to number one. So, given, given the Hazen bulletin, given the RJN, RJN map three and given the Ramble report, can we agree that number one, item one, in 6.14 is not completed as we sit here today?

MR. LEFFNER: Yeah, I, you know, there's the, the balance of the area within the sewer shed. I'm not sure how many are outstanding. The one that I do know that is, we covered earlier in testimony that it's within the limits of the proposed development improvements. So, I --

MR. MCCANN: I'm talk, yeah, I'm talking, well, I mean, Hazen hasn't even done its work yet. So, we know based

on that fact alone, don't we, that there may be comprehensive rehabilitation to certain areas that either exhibit excessive I&I or contribute to model predicted SSO, SSOs. That, we know that may happen, right?

MR. MUDD: Objection. This is, this is an RK&K report.

MR. MCCANN: That's not the question.

ALJ: I think he then, then changed it to, it really, the question is, is number one complete and the answer was it's not complete. And then the question was, Hazen hasn't done its work yet, is that correct. And I think his answer before was, I think he acknowledged that it wasn't done. Is that right, Mr. Leffner?

MR. LEFFNER: Yeah, the Hazen report is not done.

MR. MCCANN: Okay. Yeah, I'll move on. Let's just quickly go through a couple more of these. Number two, complete select capacity improvements based on a model simulation of the ten year, six storm event. We know quite a bit, number one, what did the County mean by select? Any idea what that meant, what that term means?

MR. LEFFNER: As this is part of the SRR plan, I believe select means the locations that are identified in this plan.

MR. MCCANN: Right. Did, did the County perform any capacity improvements recommended by RK&K in its long term

capacity report? Do you know?

MR. LEFFNER: I don't know.

MR. MCCANN: Okay. Well, the, let me give you an example, I'll go with the RK&K real quick. Bear with me one second. I'll just, let's just start with the ten-year six-hour storm. Do you recall, do you recall that there's maps attached to the long-term capacity report?

MR. LEFFNER: Yes.

MR. MCCANN: Okay. So, I need to share this with you. This is Protestant's Exhibit 68. It's, it's a map attached to, at the end of the report. And this is, the first map is, amongst the first maps is a two-year twenty-four-hour storm. This map here, I'll just stop here for argument sake, ten-year six-hour event. Do you see that? Map 6.1?

MR. LEFFNER: I do.

MR. MCCANN: And these are, in red, are the sewer segments that RK&K recommended, that relief sewers be installed and/or that manholes be sealed, correct?

MR. LEFFNER: Correct.

MR. MCCANN: Okay and amongst those is this pink right here, I'm zooming in. There is a recommendation by RK&K in its long-term capacity report that manhole 44219 be sealed and that there be a relief sewer of some significant length installed right here, correct, where the pink is?

MR. LEFFNER: I forget if the pink is relief sewer or

just upsizing.

MR. MCCANN: That's a good question. Upsize, you're right, I'm sorry. Upsize to eighteen inches. So, RK&K recommended that this, or it looks like multiple segments, be upsized, correct?

MR. LEFFNER: As an alternative, yes, for that storm.

MR. MCCANN: Well, before I get to, to what you just said was this, was, was this work done, was manhole 44219 sealed, and was the relief sewer identified, at least on this 10/6 map, was that in, was that upsized?

MR. LEFFNER: I forget. Looking at this map, just the manhole numbers, whether they were sealed or not, because I believe that's the area that some of them were rehabilitated with that list that we shared earlier --

MR. MCCANN: (inaudible) --

MR. LEFFNER: -- County confirmed done. The upsizing of the pipe I don't believe was done.

MR. MCCANN: Okay and you think this was an alternative for the County to do or not do, this particular upsizing?

MR. LEFFNER: Yeah, I think that that's one of the, it's, I would say, the recommendation that they probably landed on to the point of upsizing a pipe versus building a relief sewer, like there could be an alternative to it related to the storm event. Same with anchoring some of the other manholes.

MR. MCCANN: I'm just asking why it's, why you call it an alternative.

MR. LEFFNER: This is for, it's a, the, the summary of recommendations within each of the storm events of the long-term capacity --

MR. MCCANN: Um hm.

MR. LEFFNER: -- report. As a long-term document, was, was their recommendations I, I would say at the time for consideration. But it, I do not believe it was meant to be an exhaustive list of potential improvements.

MR. MCCANN: Okay. Any other reason why you call it an alternative?

MR. LEFFNER: For that reason, I just said, where they said upsize of pipe versus being, having a relief sewer. I think they just identified it as being an upsize pipe.

MR. MCCANN: Okay. Number three, back to the SRR plan, correct identified structural deficiencies through, through rehabilitation or replacement. This one is easy. We, we know this has not been completed from, among other reasons, we have a report from Ramble that identifies quite a number of structural rehabilitation that is, that is to be performed, correct?

MR. LEFFNER: I think the Ramble report identifies section of pipe to be repaired. Those are not identified in this report --

MR. MCCANN: I'm not asking you that. I'm asking you, remember this SRR plan was in 2013, I'm asking as we sit here today, again, I should, maybe I should have prefaced my question. I'm asking whether or not number three has been completed, this portion of the, the plan, as we sit here today. And, and my question in that regard is simply we know it's not completed because Ramble has just proposed a whole, a whole, a whole bunch of work that's going to be done in and around Lake Roland, correct?

MR. MUDD: Objection.

ALJ: What's the objection?

MR. MUDD: I, I'm sorry, I'll withdraw the objection.

ALJ: Okay. Go ahead, sir.

MR. LEFFNER: Could you, could you repeat the question?

MR. MCCANN: Yeah, I'm just, again, I'm getting to whether or not the, three, as we can, sit here today, can we, can say that it's been done, that this part of the plan has been accomplished. And my question is, we know that it has not been accomplished because of the Ramble report, correct?

MR. LEFFNER: I would say that this section of the report identifies, correctly identifies structural deficiencies. But I interpret it as specific to this report. Not inclusive of any report that's ever done in the future. Which would include the Hazen or Ramble reports.

MR. MCCANN: Which, which would include the Hazen, you said, or not include?

MR. LEFFNER: It would not. I, I don't think that statement is made to be an all encompassing forever more recommendation. I think it's specific to correcting the identified structural deficiencies in this report, through rehabilitation and replacement.

MR. MCCANN: Well, I, okay. I, I think that's, let me ask you this. Isn't it really the, the purpose of the Consent Decree to identify problems, fix them and then reassess, do some more modeling and re, reassess? Is, is that, I know that's a simplified way of putting it, but isn't that, essentially, what the Consent Decree requires? An ongoing analysis, in other words?

MR. LEFFNER: I think the, the Consent Decree does include ongoing analysis, but for a finite amount of work.

MR. MCCANN: So, you're saying all the work that was required by number three is identified within the confines of this report?

MR. LEFFNER: It, it could be, yes.

MR. MCCANN: Could be, okay. What about number five, for instance? Confirm model simulations or revise the collection system model, if necessary. Do you see that?

MR. LEFFNER: Yes.

MR. MCCANN: We, we know, do we not, that RK&K

prepared a model but then also RJN recalibrated that model, correct?

MR. LEFFNER: RJN did the model.

MR. MCCANN: Recalibrated the model, did it not?

MR. LEFFNER: The majority of what the --

MR. MUDD: Objection. Asked and answered.

MR. MCCANN: Did it recalibrate the model? Did RJN recalibrate the model?

ALJ: Overruled, go ahead.

MR. LEFFNER: The majority of what RJN did to the RK&K model was update their model. Most of the model inputs will remain the exact same, which is summarized in the RJN report.

MR. MCCANN: How do you possibly know what portion of the model was re, was recalibrated versus updated or --

MR. MUDD: Ob, objection. Objection. He asks him for his opinion, he gives it, and now he's accusing the witness --

MR. MCCANN: No, I'm not. I'm asking him how he knows what he says.

ALJ: I think it's just a follow-up question. So, I, I don't think it is, so overruled.

MR. LEFFNER: There's a section in the RJN report that says that the model from RK&K used for the SRR was used in preparation of the RJN report. And that the updates to that

model were limited. I didn't perform the updates, so I'm not sure of the all-inclusive list. But it's, it's in the RJN report. I can't cite the exact section though.

MR. MCCANN: Okay. Well, I'll give you an opportunity to find it. And I won't belabor it now. But it's your testimony that RJN did not recalibrate the model?

MR. LEFFNER: Not the entire model, no.

MR. MCCANN: Okay. Some portion of it?

MR. LEFFNER: Yes.

MR. MCCANN: In any event, what this item five calls for is confirming the model in some respect, and then revising the collection system model if necessary. So, it's an ongoing evaluation, fair?

MR. LEFFNER: Yes.

MR. MCCANN: Okay and we also know, you didn't mention it, but we also know that in addition to RJN doing what it did with the model, we also know that Hazen, as we sit here today, is in the process of redoing the model as well, isn't that true?

MR. LEFFNER: The, yeah, they're in the process of completing a study, but the, you know, reviewing the documents regarding the scope of their effort. It's not just limited to the existing model. It's a much further planning horizon document for the County.

MR. MCCANN: Yeah, you, you called it a planning tool

and it may be that, but are you suggesting, and I'll find it for you certainly. Let me close the, are you suggesting that Hazen is not conducting a comprehensive evaluation of sewer capacity in the Jones Falls? Are you saying that?

MR. LEFFNER: No.

MR. MCCANN: It is, is it not?

MR. LEFFNER: It is.

MR. MCCANN: And it says as much in the newsletters, doesn't it? Does it not?

MR. LEFFNER: Again, quoting it, I'm not sure. But, yeah, that they're doing a comprehensive evaluation that also includes, I think it's in the documents too, that's for a much further out planning horizon as far as like projected population growth, time, as well as a planning document that I, I believe it was the newsletters or in their scope document that, again, your exhibits that you entered into the hearing. But it's used to be a tool to help the County inform future capital spending.

So, I'd say that's a planning document, not necessarily a list of, of must dos. It's to help inform long term capacity improvements within the County and to help influence maintenance, further studies that should be required, improvements, capital spending. So, it's, it's a study that I would, based on, I believe, their scope is helped, to help the County as a planning tool for overall sewer rehabilitation and

improvements in the sewer shed.

MR. MCCANN: Well, you, you, you can call it whatever you want, the County can call it whatever it wants. But my question is simply does whatever Hazen is doing included, including a, as, as the newsletter says, I'm referring right now to Exhibit 85, expanded model calibration verification with new flow monitoring data. It says that, does it not?

MR. LEFFNER: Yes.

MR. MCCANN: And I guess while we're on Hazen, on what basis do you contend, because you've made the contention, that the Hazen report, when it's finished, has nothing to do or, I forget the word they used, is unrelated to the Consent Decree? On what basis do you say that?

MR. LEFFNER: I think the, based on these memo fliers and the scope documents, essentially, everything that was entered I reviewed, it's beyond the study period of what's required by the Consent Decree. So, I, I, similar to some of the earlier testimony I gave regarding the Copper Mine and Towsontowne relief sewers that were built, those were things that the County did that were not necessarily a specific requirement contained within the Consent Decree.

I would say the same about this Hazen study. It, it's a study that the County is embarking on and having complete, but it's not, you know, I don't think it's a specific response or requirement to the Consent Decree.

MR. MCCANN: I'm asking you why do you say that? How, how come you --

MR. LEFFNER: I, I mean, one point is the planning horizon for the Hazen study is far beyond the planning and population growth horizon in the Consent Decree.

MR. MCCANN: Okay. Anything else, other than what you've already said?

MR. LEFFNER: Yeah, I mean, I think capital spending is another one that they reference in here to come up with an approach to sec, I believe they say secure funding and plan for capital spending in future years. I don't think that was a requirement of the Consent Decree.

MR. MCCANN: Okay. Anything else?

MR. LEFFNER: I'm sure there's others.

MR. MCCANN: Yeah, well, I don't disagree that some portion of the Hazen study may, may, may include things that aren't included in the Consent Decree. But would you also agree with me that there are things that, as far as we know, within the Hazen scope of proposal that is reflected in this newsletter, that are exactly what the Consent Decree calls for?

MR. LEFFNER: They, depending on, again, the scope of the Hazen study, they may identify repairs that were included in earlier recommendations of the SRR plan if they have not been complete yet or again, I would assume, Marnat Road is probably one of those items that the County has said with

completing their work required by the SSRR, there's something beyond their control for getting that item complete.

I would assume that's going to show up in the Hazen report because it, it's, it's an ongoing effort that the County is making, it's a repair that's required and it hasn't been completed at the time of the report being finished. But yeah, if, and I believe Hazen is supposed to be done by the end of this year, if Marnat Road is not resolved with Baltimore City, I would hope that it shows up in the Hazen report.

MR. MCCANN: Okay. Let's keep it simple. Put aside all the trappings in this newsletter. The Consent Decree calls for an assessment of model predicted future capacity, correct?

MR. LEFFNER: Correct.

MR. MCCANN: And the Hazen study also proposes to undertake an evaluation of model predicted future capacity, correct?

MR. LEFFNER: Correct.

MR. MCCANN: Okay. You don't think that MDE would like to know what the Hazen report says?

MR. MUDD: Objection.

MR. MCCANN: I'm asking you, do you think MDE would, would, would want to know what the Hazen study reveals?

ALJ: Okay, hold on. There's an objection. Mr. Mudd?

MR. MUDD: Relevance.

ALJ: I mean, you know, we had testimony about whether MDE approved or reviewed a lot of these reports, so I'll allow it, go ahead. Overruled.

MR. LEFFNER: I don't, I don't think I should assume what MDE wants to or not see. But based on Mr. Summers' testimony that MDE is understaffed and not able to respond to their own efforts in progressing things, you know, if this is a, a County led study that's being, you know, directed and procured by the County for their use, I would leave it up to MDE.

MR. MCCANN: Well, that's a, you think MDE wouldn't be interested because it's understaffed?

MR. LEFFNER: I'm not, I, I think tracking the progress, is Baltimore County interested in seeing the results? Absolutely.

MR. MCCANN: Yeah.

MR. LEFFNER: Is MDE, I'm not sure. I don't, I've never been employed by MDE, and I don't know how much of the granular studies that's being completed by each of the jurisdictions they, they need to keep tabs on.

MR. MCCANN: Well, in accounting firms, it's two sets of books, isn't it, Mr. Leffner?

MR. MUDD: Objection. Relevance. Objection.

MR. MCCANN: Just asking.

ALJ: So that one, so that one I didn't get, is a

question I didn't get. So, what accounting to, to --

MR. MCCANN: In accounting firms, isn't this, isn't this two sets of books?

ALJ: Yeah, well, I mean, I don't know. I, I think he's answered the question about MDE, he's not sure if MDE is interested.

MR. MCCANN: All right, okay.

ALJ: Yeah.

MR. MCCANN: Getting back to the, the modeling. We also know, do we not, that in addition to RJN's, whatever it did, in connection with the model and in connection whatever with, and whatever Hazen is doing in connection with the model, we also know that back in 2014, after RK&K's report, Hazen itself back then did an evaluation of the model, did it not?

MR. LEFFNER: (inaudible).

MR. MCCANN: Okay. Okay. I'm going to cut to the chase in the plan, back to 6.14 and then move on. The, again, we're on 6.41 of the corrective, corrective action recommendation plan. This paragraph below that says areas selected for I&I reduction in the sewer shed include meter basins, include meter basins BC-02, 03, 04 and 09. These meter basins and all structural recommendations are shown on six, map 6.1. Do you see that?

MR. LEFFNER: I do.

MR. MCCANN: So, I take it from your testimony that

this map 6.1, which you, which we, which you looked at with Mr. Mudd, well, maybe, maybe I'm wrong about that. But does that map identify all of the work that the County is supposed to do pursuant to the SRRR plan? Is that your testimony?

MR. LEFFNER: That map 6.1 includes all those improvements?

MR. MCCANN: I'm asking you whether 6.1, I'll rephrase. Whether map 6.1 identifies the universe of repairs that the County was supposed to do, that it is required to do, under its SRRR plan?

MR. LEFFNER: Yeah, I believe so.

MR. MCCANN: And nothing else, correct?

MR. LEFFNER: I don't believe so.

MR. MCCANN: Okay. What about the paragraph immediately below. Well, it says the capacity improvements that address items one and two will be implemented as follows. Do you see that language?

MR. LEFFNER: Yeah.

MR. MCCANN: Okay. Is that, are those capacity improvements, are those in addition to or part of what map 6-1 shows us?

MR. LEFFNER: I think number one and two are included on map 6.1. Okay. I'm going to show you Developer's exhibit, the approval letter from MDE. I think what you said was the letter was an acceptance or, or approval of the SRR plan. Is

that your testimony?

MR. LEFFNER: Yeah.

MR. MCCANN: Okay. This is Developer's Exhibit 43. I was going to mark it separately but, do you see that?

MR. LEFFNER: Yes.

MR. MCCANN: So, this, this letter is date stamped September 2013, correct?

MR. LEFFNER: Correct.

MR. MCCANN: And all it says, does it not, in the fifth line, the Department acknowledges that the above noted SRR plan meets the requirements of the Consent Decree, end quote? Did I read that correctly?

MR. LEFFNER: Correct.

MR. MCCANN: And doesn't that mean, even a fair reading of that, isn't all that means is that, is that the plan, as it was then submitted, complied with the Consent Decree requirements and nothing more?

MR. LEFFNER: I'm not sure what you're asking. It meets the requirements --

MR. MCCANN: Well, certainly, I think, I think we can agree on this. This letter does not purport to approve any of the work that the County has done or not done pursuant to the SRR plan, correct?

MR. LEFFNER: You mean approved to implement?

MR. MCCANN: No, just approved the work after the

work that's been done, past tense?

MR. LEFFNER: I, I think this letter is saying exactly what it does, and the Consent Decree requires, which is MDE reviewed the SRR plan, and it meets the requirements of the Consent Decree.

MR. MCCANN: Right. But it doesn't, again, it doesn't approve any of the work that's actually been done, correct?

MR. LEFFNER: The, the County is reporting on what work has been completed.

MR. MCCANN: And that's in the form, at least in part, in the performance assessment back, we talked, we spoke about, right?

MR. LEFFNER: And quarterly reports, annual reports, in addition to the performance assessment.

MR. MCCANN: And the performance assessment has not been reviewed or commented on by MDE as we sit here today, correct?

MR. MUDD: Objection.

ALJ: What's the objection?

MR. MUDD: That, that's not the testimony.

ALJ: Well, I think it was a different question. Was the performance assessment report reviewed by MDE, right? Wasn't that the question, Mr. McCann?

MR. MCCANN: Review, yeah, reviewed or commented on,

was it?

ALJ: Okay, okay. So, overruled. Go ahead, sir.

MR. LEFFNER: I'm not sure based on documents I've seen, they've at least received it.

MR. MCCANN: No knowledge, as you sit here today, or understanding as to whether it's been reviewed or commented on by MDE?

MR. LEFFNER: No. Again, I don't work there and, nor have I seen any documents that said they were reviewed or commented.

MR. MCCANN: Right. You didn't pick up the phone and call them and ask them whether it's been reviewed or commented on?

MR. MUDD: Objection.

MR. MCCANN: I was asking --

ALJ: He had answered it, I think he answered it, he has no information that it's been reviewed or commented on.

MR. MCCANN: All right. Okay. There was a suggestion, I think, during Mr. Mudd's questioning of either Mr. Grachek or Mr. Summers that the future capacity numbers reflected in RK&K and RJN's reports do not account for all the rehab work that has been performed by the County. Do you recall that testimony, or that question?

MR. LEFFNER: I believe so.

MR. MCCANN: Isn't it true that the Consent Decree

requires that the SRR plan determine future capacity based on an assumption that rehabilitation and repair were already completed? Doesn't the Consent Decree require that?

MR. LEFFNER: I'm not sure.

MR. MCCANN: Okay. Doesn't the SRR plan itself reflect that this assumption was applied in the modeling that RK&K did? Are you familiar with that?

MR. LEFFNER: What assumption do you mean? Improvements have been made already?

MR. MCCANN: The assumption, yeah, I think you, you said you're not sure if the Consent Decree requires capacity based on an assumption that the repairs and rehabilitation were already completed. I just asked you whether or not the SRR plan itself reflects that this, that that assumption was, in fact, applied in the modeling that RK&K did, do you know?

MR. LEFFNER: I, I'm not sure what you're asking yet.

MR. MCCANN: Do you understand the assumption I'm talking about?

MR. LEFFNER: No, I think that's the question. The assumption that work had been done prior to the preparation of the SSRR or --

MR. MCCANN: No, in the, in the modeling. In the modeling, in determining future capacity, is, isn't, does, does the Consent Decree require the, an assumption that the rehabilitation and repairs called for in RK&K's report and were

already completed, follow me?

MR. LEFFNER: No, I think the, just the dating on the completed, so I think the SRR plan proposes recommendations, and their modeling includes if the, like if those improvements were to be made.

MR. MCCANN: So, they, that, that there is an assumption that they were, they were, they were to be made, correct?

MR. LEFFNER: They are being recommended to be made, yes, not --

MR. MCCANN: No, that they were performed. You don't, you don't recall that in the Consent Decree?

MR. LEFFNER: The SRR plan was prepared proposing recommendations to be completed. It was not a study showing all of the repairs that had already been made to show the results.

MR. MCCANN: You're not, I don't think you understand my question. I'll move on. The Consent Decree says what it says. So, turning to, this is map two from the RJN report, do you see that?

MR. LEFFNER: Yes.

MR. MCCANN: And I don't think you, this is a, a map identifying all the rehabilitation completed, as it says down at the bottom, correct?

MR. LEFFNER: Correct.

MR. MCCANN: Okay and just, and this is as of the date of RJN's report in 2021, correct?

MR. LEFFNER: Correct.

MR. MCCANN: And you spoke quite a bit about all the rehab that was conducted up in meter basins near Cockeysville, Timonium. Would you agree with me that according to this map there has been little if any rehab along the path where sewerage would flow from the subject site to Lake Roland? Would you agree with that?

MR. LEFFNER: As far as, are there as many dots along the line? No, but of the, I'd say it's like a percentage of the improvements that were required, there has been work done along that alignment.

MR. MCCANN: Where has it been done?

MR. LEFFNER: Right where your hand just was. Kind of at the intersection of where the --

MR. MCCANN: I understand that. I'm not --

MR. MUDD: Objection. I'd like to ask the witness to finish his answer, please.

ALJ: Yeah, go ahead. You were saying where his hand was. So, the cursor I think was up by the property --

(EVERYONE SPEAKING AT ONCE)

ALJ: Hold on, hold on, Mr. Leffner. Hold on one second. Okay. Go ahead now, what'd you say?

MR. MCCANN: I'm directing him to where he's talking

about, that's all --

ALJ: Oh, got it, okay --

MR. MCCANN: I'm allowing him the opportunity to explain what rehab was done.

ALJ: Great, thank you.

MR. MCCANN: Go ahead.

MR. LEFFNER: Yes, the, the yellow dot with the green box around it, the yellow dot with the orange box around it. And then, subsequent to this report being done with the confirmation that was presented earlier, there had been more rehabilitation efforts completed along (inaudible) presumably since the date of this report.

MR. MCCANN: You said presumably?

MR. LEFFNER: Yep.

MR. MCCANN: Okay. Well, first of all, let's just identify what the, the rehab that was done. These are not relief sewers or upsizing, are they? Just identify for us what rehab, according to RJN, was done as of the date of its report in 2021?

MR. LEFFNER: Lining (inaudible).

MR. MCCANN: And you're saying all, the, the work that you've identified in other exhibits, as you said, that's all been done since RJN's test, assessment?

MR. LEFFNER: Some of those manhole locations are included on the list.

MR. MCCANN: Yeah.

MR. LEFFNER: Because it was inclusive of all the recommendations along the alignment from the project location to the boundary of the City/County line.

MR. MCCANN: But certainly, none of the improvements, the recommended corrective actions called for by RK&K in its long-term capacity report, none of those were, have been accomplished, I think you've already acknowledged that, correct?

MR. LEFFNER: I, I don't know that I said none of them have been done the long-term capacity because there's also recommendations that are made that have been done from the long-term capacity.

MR. MCCANN: I'm talking about those directed from future capacity, model predicted future capacity problems.

MR. LEFFNER: The constructed sewer overflows were identified as items to repair, which have been done.

MR. MCCANN: Yeah. Okay. Judge, would it be okay if we took a five-minute break, just a little breather and --

ALJ: Sure, absolutely. Go ahead, we'll take five minutes.

MR. MCCANN: Okay, great. Thank you.

ALJ: I'll pause the record.

MR. MCCANN: Okay.

(PAUSE)

ALJ: We're back on the record. Mr. McCann, you're still in cross.

MR. MCCANN: Okay. Thank you, Judge, for the break, appreciate it. Mr. Leffner, I'm going to show you the, the RJN performance assessment, which is Protestant's Exhibit 78. And ask you, I guess generally speaking, that this assessment is really only assessment of the effect of rehabilitation performed in four-meter basins, specifically, 02, 03, 04 and 09, correct?

MR. LEFFNER: No, not necessarily.

MR. MCCANN: Okay. What do you mean by that?

MR. LEFFNER: There's other information or modeling that was updated in the RJN report outside of those four-meter basins.

MR. MCCANN: Okay. Yeah, we'll, and I guess we can get to that, that you're referring to map three?

MR. LEFFNER: Not necessarily map three. The section regarding the modeling.

MR. MCCANN: Okay. Well, let me, let me just ask it this way. I, I've been through this, every single word of it and wherever I see a conclusion about the effect of the rehabilitation undertaken on those four water meter basins, it's always qualified by the language as in here. For those basins where comprehensive reduction rehabilitation was performed.

So, for instance, this is on page four. See this sentence, model simulation show that I/I reduction rehabilitation etcetera reduced predicted overflow volumes for those basins where comprehensive rehabilitation was performed. Did I read that correctly?

MR. LEFFNER: Correct.

MR. MCCANN: Okay. So, and, and it's repeated. Let me go to page, the other conclusions, page eight, bottom paragraph. A comparison of the BI determined from the pre-rehabilitation condition to the BI determined from the post-rehabilitation condition determines the percentage of BI reduction in the meter basins studied. Did I read that correctly?

MR. LEFFNER: Correct.

MR. MCCANN: Then ultimately the report projected twenty-three percent reduction of BI in meter basins where, where rehabilitation was performed, per the SRR guidelines, correct? That's probably --

MR. LEFFNER: Correct.

MR. MCCANN: -- that's probably not a good example. Next page dealing with the results, I'm sorry, page twelve. The results in table three were, indicate that rehabilitation work has reduced the extent of inflow into the sewer system within all basins where rehabilitation was completed.

So, and then finally, I'll just point you to one,

one, page fourteen, just sort of the heart of the matter. The tables that you spoke about present the model predicted occurrences of overflows and flood volumes for all the five storm event, storm events in the meter basins where re, comprehensive rehabilitation was performed.

So, I guess my question is, well, number one. Just as a practical matter, those four water meter basins, if we look at the map that's attached. None of the sewage, I don't have the map attached, bear with me a second. None of the flow from those four water meter basins is going to go along the same sewer path as sewage from the subject site, correct?

MR. LEFFNER: I believe it does down at Lake Roland.

MR. MCCANN: Once it hits Lake Roland, but before it gets to Lake Roland, sewage from the subject site will, will go through the Jones Falls portion of the interceptor, correct?

MR. LEFFNER: Correct.

MR. MCCANN: And sewage, any improvements, or any sewage flowing from the four water meter basins where comprehensive rehab was performed, will head down, will not head through that interceptor but rather through the, the Roland Run interceptor, correct?

MR. LEFFNER: Yeah, I believe it was the Roland Run.

MR. MCCANN: So, in other words, that rehab isn't going to have any affect at all on the segments that are below the subject site, at least until you get to Lake Roland, fair?

MR. LEFFNER: I wouldn't say they have no impact because they do meet each other at Lake Roland.

MR. MCCANN: Aside from that, until that point, no effect, correct?

MR. LEFFNER: The improvements within the section that do conclude, they hit each other, could affect the run that goes up the Jones Falls.

MR. MCCANN: Oh, it could? How so?

MR. LEFFNER: It could reduce the flows.

MR. MCCANN: Um hm.

MR. LEFFNER: And same with, because I think the first section that you highlighted referring to the four sub meter basins, it also said, I think it kind of said or, or and the relief sewers that were built, because one of them was in Towson Run, one was in the Jones Falls Run. And I think it was Section 4.2 says that their model includes both the comprehensive I&I reductions and completed relief sewer projects.

MR. MCCANN: Well, --

MR. LEFFNER: So, there are, there are other improvements that were modeled in the RJ&N report.

MR. MCCANN: Well, you're not suggesting that the, the rehabilitation performed in those four, four water meter, meter basins is improving the situation in the Jones Falls interceptor, are you? Are you really saying that?

MR. LEFFNER: I could and there's also the Texas valve, which was closed, reducing the amount of runoff that's going down to the same interceptor.

MR. MCCANN: You mentioned that. But again, that's not the same interceptor, that's the Roland Run interceptor, correct?

MR. LEFFNER: It is, and then they meet each other at Lake Roland.

MR. MCCANN: Okay. Let's talk about map three. I think in your, in your words, map three is just a snapshot in time, is that how you put it?

MR. LEFFNER: Yeah, I believe so.

MR. MCCANN: Okay. Well, it's a model, isn't it? Models aren't snapshots in time, are they?

MR. LEFFNER: The inputs that are used to develop the model are.

MR. MCCANN: Okay, but that's not what you said. You said that map three itself is a snapshot in time. It's not that at all, is it?

MR. LEFFNER: I'm not sure what you mean that it's not.

MR. MCCANN: Well, it's a model that shows us what can happen under, under various storm events.

MR. LEFFNER: Right.

MR. MCCANN: It's not a snapshot in time, is it?

MR. MUDD: Objection. Objection. It's the third time the question has been asked.

ALJ: Well, I think Mr. Leffner is trying to answer the question or what, needed more clarification. I mean, see, because he said, I'm not sure what you mean is by a snapshot. So, so, so the question is is it static, is, is it one, you know, present time or is, does this map actually show us, you know, what could happen, you know, in terms of the modeling. So, that's the question, Mr. Leffner.

MR. LEFFNER: The, the model is, I would say it's finite in the inputs used to develop the model are based on that point in time. There's no future information included in the model. They, they couldn't do that.

MR. MCCANN: So, it's not the, it's not the map itself that's a snapshot in time, it's the, it's the numbers that are used in the model are, by definition, finite?

MR. LEFFNER: The map doesn't reflect a single second in time --

MR. MCCANN: Okay. Well, that, there's a big difference, is there not? Is there a big difference between those two things, Mr. Leffner?

MR. LEFFNER: Does this map reflect a single second in time or does the model have a specific time of the inputs used?

MR. MCCANN: Yeah, there's a big difference between

those two, isn't there?

MR. LEFFNER: Correct. And, and I said, this reflects a snapshot of time in that all of the information that's used to put into the model ends, right? There's no future information included in the model, they wouldn't be able to do that. Likewise, if there were ongoing repairs that had been made or were in the process of being made that they weren't aware of or having been complete when they did this model, it would, I would assume it would not be included either --

MR. MCCANN: Okay. Well, that's not what you said, that's not what you said when Mr. Mudd asked you. So, what is it?

MR. LEFFNER: I, I think it, what I just said is what I said earlier.

MR. MCCANN: Well, all models, all models are a snapshot in time based on the, the numbers that are inputted at the time they're inputted, right?

MR. MUDD: Objection. Objection.

MR. MCCANN: Is that true?

ALJ: So, I think, I think I, you know, I get his, what his answer is.

MR. MCCANN: I'll move on.

ALJ: Yeah, yeah, I get the --

MR. MCCANN: Okay.

ALJ: -- gist of the thing. Sustained.

MR. LEFFNER: The, there are --

MR. MCCANN: Hold on.

ALJ: Hold on.

MR. MUDD: There's no question on the floor.

ALJ: Mr. Leffner, hold on one second. Okay, go ahead, Mr. McCann. Next question.

MR. MCCANN: Okay, thank you. Are you, maybe to put it differently, are you challenging the results of the modeling as reflected in this map, R, RJN map three? Are they inaccurate, is it inaccurate in some way?

MR. LEFFNER: I, I have not done an independent review of their entire model, so no. I'm taking the report for what it is.

MR. MCCANN: You also said something about the model has not been verified without any real explanation. What did you mean by that?

MR. LEFFNER: With flow monitoring.

MR. MCCANN: Okay. But you, you just said that you don't have any specific flow monitoring data, do you, that, as I think you've already indicated, that challenges or refutes anything shown in this map three, do you?

MR. LEFFNER: I'm not sure what you mean.

MR. MCCANN: Are you aware of any flow monitoring data, you mentioned it, but you didn't speak to any, anything

specific, that, that indicates that what is reflected in map three is not an acc, is not accurate?

MR. LEFFNER: I'll use the example of the level censor locations that we reviewed earlier. Is that some of those level censors are located in the areas of model predicted overflows. And the flow monitoring, the level censors have been installed, according to the County, but yet none of the annual or quarterly reports report any sewer overflows.

MR. MCCANN: Okay. Is that, is that, but does that information indicate to you that, that the information shown in map through, map three rather, is inaccurate?

MR. LEFFNER: I would say model predicted versus realized. So, I'm not saying that this map is wrong and that they're model predicted that location. Again, that was up to them preparing it. But what's being realized is that there's flow censors and there's no reported overflows and the model predictions aren't being realized.

MR. MCCANN: Okay. Well, this isn't just talking about model predicted SSOs. This is also talking about hydraulic restrictions, correct?

MR. LEFFNER: Correct.

MR. MCCANN: And there's a difference, right?

MR. LEFFNER: There is.

MR. MCCANN: Yep. Okay, bear with me one sec. Sorry, Judge, I'm trying to. The, I think you've acknowledged

as much already, the RJN performance assessment has not been, as far as you know, reviewed or commented on yet, correct?

MR. MUDD: Objection.

ALJ: He already said he, he did not, it was not, I believe.

MR. MCCANN: Right, I'm just confirming that.

ALJ: Yep.

MR. MCCANN: And isn't it true that the Consent Decree contemplates that once a performance assessment is undertaken the County is supposed to modify its, its evaluations and its improvements as appropriate in order to achieve the purpose of the Consent Decree? Isn't that what the Consent Decree calls for?

MR. LEFFNER: I'm not sure of all the updates that's required to the SRR.

MR. MCCANN: You're not sure what the Consent Decree requires in terms of what happens after the performance assessment?

MR. LEFFNER: Correct. I'd have to read the Consent Decree.

MR. MCCANN: All right. Well, would you agree with me that RJN map three, in terms of model predicted SSOs and hydraulic restrictions, shows, shows the situation to be far worse than even RK&K showed in its capacity numbers, at least in terms of the area where sewage would flow from the subject

site? Would you agree with that?

MR. LEFFNER: No, I, I don't think, I don't think this shows it being far worse than the RK&K report. One specific example is the hydraulic restriction that you mentioned. That could be just as simple as a pipe is flowing more than a hundred percent full. Nothing is failing, the pipe is just flowing more than a hundred percent full so there's a hydraulic restriction.

Similarly, the pipe might not even be flowing entirely full but the characteristics of the pipe either being really flat or really long, that it may present a hydraulic restriction within the model, so it shows up red.

MR. MCCANN: Well, sitting here today, you don't know what the, what hydraulic restrictions there are as reflected in this map as opposed to what, what, what may be reflected in the RK&K mapping, correct?

MR. LEFFNER: Not every single one, but the RK&K capacity, I think the charts that you've shared numerous times, show that some of the pipes are over a hundred percent full. That would be considered a hydraulic restriction and it would show up red on this map.

MR. MCCANN: Okay, yeah. Let's just keep it simple to SSOs. Would you agree with me that, that this map three, in the RJN report from May of 2021 indicates a situation that is far worse than, than even RK&K showed in its reporting back in

2013?

MR. MUDD: Objection. Asked and answered.

ALJ: He was asking the question though about SSOs. So, it's a different question. So, overruled.

MR. LEFFNER: I wouldn't say it's drastically different than the RK&K report.

MR. MCCANN: Okay. All right. Let's go onto this chart, which you spoke a little bit about. And this is Protestant's Exhibit 81. I think, I think as you've indicated, you have no reason to doubt any of the capacity numbers reflected in this exhibit, is that fair?

MR. LEFFNER: I wouldn't say I doubt them. I, I would say I trust whoever put it together copied and pasted the flows correctly. So, I have not fact checked every single one of these numbers, but if they were testified previously as being correct, I'll take it for what it's worth.

MR. MCCANN: Okay and these numbers alone reflect, do they not, that after the rehabilitation that RJN spoke to in its performance assessment, the capacity numbers in most instances, this is the righthand column, are actually worse than they were before, before the rehab, correct?

MR. LEFFNER: Comparing those two columns is kind of all I can take for these, so yeah. Anything in red, I believe, is an increase and anything that was shown in the parenthesis was a reduction.

MR. MCCANN: Okay. Let me show you Protestant's Exhibit 69, which is a different chart. Do you recall seeing this chart, Mr. Leffner?

MR. LEFFNER: I do.

MR. MCCANN: Okay and this is a comparison that was prepared of DPW capacity numbers with those of RK&K, correct?

MR. LEFFNER: Correct.

MR. MCCANN: So, let's just focus on these eight segments that we've been talking about throughout the course of the hearing. According to DPW, and I can show you the backup documentation if you want, DPW has identified the capacity for these eight segments as ranging between ninety-four and a hundred and one, correct?

MR. LEFFNER: Correct.

MR. MCCANN: Then are you, are those wet or dry weather flows, do you know?

MR. LEFFNER: In the DPW analysis?

MR. MCCANN: Yes.

MR. LEFFNER: I understand it to be wet weather.

MR. MCCANN: Okay. I guess we'll get to that. But these are the, these are the, the eight segments, and I don't think we need to go through the exhibits that say this. But these are the eight segments that the County has said, in fact, said long ago, lack adequate capacity, correct?

MR. LEFFNER: Correct.

MR. MCCANN: So, we can, we can dispute what the design manual says in terms of capacity or whether that's the governing standard or not. But let's, let's just assume that ninety-four percent, the least of these, is the standard that the County uses in determining adequacy of a sewer segment, okay? Can you assume that for me?

MR. LEFFNER: I can assume it. I don't know if it's a correct assumption.

MR. MCCANN: So, it may be less or more, what, what's wrong with that assumption?

MR. LEFFNER: It's a County assumption, I don't know what the County assumption is.

MR. MCCANN: Well, the County has said that ninety-four percent is inadequate capacity, correct?

MR. LEFFNER: They said the pipe run is, yes.

MR. MCCANN: Right. So, at a minimum, is it a fair, fair conclusion and not much of an assumption, that ninety-four percent at a minimum is the percentage that the County says is an inadequate, is a sewer segment with inadequate capacity? Can we agree on that much?

MR. LEFFNER: I, I don't think the County said ninety-four is the minimum. They just said that that pipe is of insufficient capacity.

MR. MCCANN: Okay. Well, assuming that to be the minimum, the County said it's, it's a problem. Would you agree

with me that there are, below those eight segments, there are numerous sewer segments, at least under the ten-year six-hour storm, whose capacity is well above ninety-four percent? Would you agree with that?

MR. MUDD: Objection. The wit, the witness has said that, that he has, that he cannot make that assumption and now he's being asked to assume it and to draw a conclusion on the basis of extrapolated data.

ALJ: I mean, the question was the, the segments below the eight that we were talking about (inaudible) --

MR. MUDD: Understood. But he, but, but, but Mr. McCann asked him to say that ninety-four was assumed to be, was assumed to be insufficient, or inadequate, and the witness said, I cannot make that assumption. And now he's asking him to make that assumption to draw a conclusion about inadequacy of other areas along the, the, the, the pipeline.

ALJ: Well, I don't think he tied it to the ninety-four percent. I think he just said are the, are the segments below the eight we were talking about for the ten-year six-hour storm, do they lack capacity is what I heard him say, right, Mr. McCann? I mean, is that what you said?

MR. MCCANN: Correct. But (inaudible) --

MR. MUDD: (inaudible) ninety-four percent.

MR. MCCANN: Are they above the ninety-four percent regardless of whether he's remarkably unable to make the

assumption that I asked him about.

ALJ: Okay. So, --

MR. MUDD: So, the document speaks for itself. They're above ninety-four.

MR. MCCANN: Well, you asked plenty of questions --

ALJ: Okay, but he gets to cross examine. So, overruled. Go ahead, Mr. Leffner.

MR. LEFFNER: Can you ask the question again?

MR. MCCANN: Well, let me ask you again and maybe I, maybe I misheard you or maybe you said, and I didn't hear, and I apologize for that. Why is it that you cannot, at a minimum, assume that what the County believes to be an insufficient capacity is ninety-four percent? Why can't you make that assumption?

MR. LEFFNER: Ninety-four being as far as an assumption I won't make on the County's behalf. It could be higher than that, it could be lower than that. I don't know the number that the County is assuming to say that it's insufficient.

MR. MCCANN: That's not the question I'm asking. I'm not asking you to make an assumption about ninety-four percent in and of itself. I'm asking you to make an assumption that at a minimum, at a minimum, ninety-four percent is the, is the point at which the County says a sewer segment is over capacity. That's a different question. Can you make that

assumption?

MR. LEFFNER: Again, in this instant, did they make that determination, yes.

MR. MCCANN: Okay.

MR. LEFFNER: Is that they're overarching, I can't say that.

MR. MCCANN: Okay. (inaudible) document speaks for itself. I'll just move on, Judge. I did want to talk to you about the County's sewer capacity chart. This is Protestant's Exhibit 64. I think, if I heard you correctly, I think you indicated that this capacity analysis is based on wet weather as opposed to dry weather by virtue of this column that says infill MDG, is that, is that your testimony?

MR. LEFFNER: Correct.

MR. MCCANN: And what do you base that on other than the fact that it says infill MDG?

MR. LEFFNER: A conversation with the County who manages and updates this model.

MR. MCCANN: What did he or she say?

MR. LEFFNER: They said that that column is a combined column of both infiltration and inflow represented in the single column as opposed to separating both of them. And that that column reflects the wet weather condition used in their model.

MR. MCCANN: Said both things, said both of those

things to you?

MR. LEFFNER: Correct. That there's two separate columns, but they only use one of them and that that column represents the wet weather included in their model.

MR. MCCANN: Okay. I guess, number one, which, which storm event does, is that column, it goes on to, just that page, what storm event is that for? The information in that, in that column?

MR. LEFFNER: I'm not sure.

MR. MCCANN: Didn't bother to ask that?

MR. LEFFNER: I didn't.

MR. MCCANN: Isn't it true that you can have in, infill, infiltration rather, in dry weather?

MR. LEFFNER: You can.

MR. MCCANN: And just, you know, as a practical matter, these capacity numbers in the percent full column, I'm sorry if I'm, those don't suggest to you this is dry weather?

ALJ: So, there's nothing on the screen if you wanted something on the screen.

MR. MCCANN: Oh, there isn't? I'm sorry, Judge, I'm sorry.

ALJ: No, no, yeah.

MR. MCCANN: I'm talking to myself. So, and I guess you didn't see this. This is the column infill MGD, that's the column that you were referring to, correct?

MR. LEFFNER: Correct.

MR. MCCANN: Okay. Just in terms of the shared numbers in this exhibit, on this righthand column, I'm sorry, this column fourth from the left, which says percent full. Don't those numbers suggest to you that this is dry weather?

MR. LEFFNER: No.

MR. MCCANN: They don't, okay. Bear with me one sec. Okay. I'm going to show you an exhibit. I'm going to mark this, Your Honor, as Exhibit 110, I think. And let me first ask you, are you familiar with, amongst the other documents that RK&K prepared, in addition to the long-term capacity report, which is part of the SRR plan. That also part of the SRR plan is a report called hydraulic capacity assessment, do you remember that document?

MR. LEFFNER: I'm not sure that I do.

MR. MCCANN: Oh, okay. This is, I'll represent to you, this is an appendix to that document, which as its title indicates, dry weather pipe capacity analysis. And ask you whether or not, given this righthand column, I know this is a long document, righthand column entitled pipe percent full, doesn't this also suggest to you that the numbers in the document that we were just looking at, that is, Protestant's Exhibit 64, represents dry weather rather than wet weather flow?

MR. LEFFNER: I think this tale does. But I think

these, the numbers in this column, again, not having the chance to compare the two of them, are all, I mean, --

MR. MCCANN: Okay.

MR. LEFFNER: -- below thirty percent or thir, forty to fifty percent. Whereas the chart you just shared was higher.

MR. MCCANN: The chart I just shared was higher?

MR. LEFFNER: The, the pdf with the highlighted areas (inaudible) --

MR. MCCANN: No, I wasn't, --

MR. LEFFNER: -- the eight-inch pipe that was all one hundred and --

MR. MCCANN: Yeah, I wasn't talking about --

MR. LEFFNER: -- (inaudible).

MR. MCCANN: Yeah, can you see this document? I guess you can't, huh? When I was showing you this Exhibit 64, I wasn't referring to the, the numbers in highlight under percent full, I was referring to all the numbers.

MR. LEFFNER: Yeah, and, you know, --

MR. MCCANN: That, these numbers, hold on a second. These numbers don't suggest to you that this capacity analysis is based on dry weather?

MR. LEFFNER: No, it's based on the flow through that pipe.

MR. MCCANN: Wet weather flow, you're suggesting?

MR. LEFFNER: As I understand it.

MR. MCCANN: Okay, all right. Your Honor, I know he hasn't seen the document I just showed before, but I would, it is part of RK&K's reporting. So, I would ask that Exhibit 110 be introduced. It speaks for itself --

ALJ: Mr. Mudd, do you (inaudible)?

MR. MCCANN: I'll, I'll show it again.

MR. MUDD: I do not recognize it.

MR. MCCANN: Well, there are hundreds and thousands of documents RK&K prepared, but this is appendix 5-A to one of the appendices of this, of the SRRR plan.

ALJ: And the SRR plan is Protestant's, I can't remember the number, but do you have this document in that?

MR. MCCANN: No, no, not all the appendices were attached because it's so long. The only appendices that was, that's attached is actually the long-term capacity report and that's a separate exhibit. So, I mean, I don't, if there's some question that I'm not making, that I'm making this up, I can certainly provide you with a copy of the SR plan that has this attached to it, if that's --

ALJ: It wasn't me, I mean, the witness does not, did not recognize it and I wasn't sure if Mr., if Mr. Mudd recognized it as part of a, the long, the SSR, SRR plan then that --

MR. MCCANN: I don't think he does.

MR. MUDD: I, I don't. I do see that, in the, in the table of contents, that this appendix is listed as pipe capacity analysis county meters – future conditions. So, it, it, from that perspective it matches. I just don't know whether, you know, I, I can't identify it, the witness cannot either.

ALJ: Hm, okay. So, I mean, we don't have anyone who could identify the document and we don't have a full copy of it. (inaudible) a lot of times you can pull out, you'll have a full copy of a document exhibit, and then you'll pull out and remark it as a separate exhibit, part of what's already included, but we don't have --

MR. MCCANN: This is --

ALJ: -- I mean, this is on the, apparently the table of contents but it's not on the, it's not, this part is not part of an exhibit that's already been admitted.

MR. MCCANN: No, I'm not suggesting that it is. I'm, this is a --

ALJ: No, but how are we going to admit it if it's not, the witness couldn't recognize it, Mr., Mr. Mudd is objecting to it, I don't know how it comes in without (inaudible) --

MR. MCCANN: Yeah, it comes in for the same reason the SRR plan comes in, it comes in for the same reason the long-term capacity report comes in.

ALJ: Yeah, well, I mean, but those documents were not objected to because everybody has those. But just the problem is with this one is nobody knows, nobody's seen this one, I mean, so, you're the only one that's looked at it.

MR. MCCANN: I know, but I'm not sure what that has to do with its admissibility. I --

ALJ: Well, I mean, how could it not? You have to identify it, you have to, somebody has to identify that they know what it is.

MR. MCCANN: Yeah, no, I understand. I, I can share the table of contents --

ALJ: I mean, you know, can't just, can't just like hand documents in. It's like the, you know, we had one earlier that, the Hazen letter, the Hazen scope of services and we had to go back and get something to show that it was, just because it, it was from them. But this, who knows how, you know, again, I, I mean, unless Mr. Mudd agrees. I mean, I'm not sure I can put this in.

MR. MCCANN: Well, I'll introduce the entire SRR plan. All hundreds and hundreds of pages. I'll just replace the exhibit that I already have, and I'll put this in if that's what I'll have to do.

ALJ: So, is that, is that good with you, Mr. Mudd? You have to show Mr. Mudd it before. I guess we could just leave it open. That would work. And then if you wanted to

replace it and put all those in, replace, well, what exhibit number was it again? I just for, SRR plan was what number?

MR. MUDD: Sixty-eight.

ALJ: Sixty-eight. Okay. So, Protestant's sixty-eight will be replaced with the entire plan that has all the appendices to it. And then, you could keep this one as one ten, because we'll be able to match it. How's that sound?

MR. MCCANN: It sounds cumbersome, but that's okay.

ALJ: (inaudible) it's not my, it's not my exhibit. I'm just trying to help.

MR. MCCANN: I know, I know you are. I know you are. I just --

MR. ZIMMERMAN: Wasn't it sixty-seven? Am I missing something?

ALJ: Sixty-seven anyone? Anyone for sixty-seven?

MR. MCCANN: What was sixty-seven?

ALJ: The SSR.

MR. ZIMMERMAN: The RKK exhibit.

ALJ: This is SSR.

MR. ZIMMERMAN: Right, right. Isn't that the RKK we're talking about?

ALJ: No, he said SSRR plan.

MR. ZIMMERMAN: Well, that's what they did, the SSRR --

MR. MUDD: You're right, that's, I mean, it, the

long-term capacity, well, --

MR. ZIMMERMAN: I, I just want to double check which exhibit we're talking about, whether it's sixty-seven or sixty-eight.

MR. MUDD: You're exactly right, and I guess this is the perils of trying to do what we did. Mr. McCann said that this was an exhibit to the SRRR plan.

ALJ: Yeah.

MR. MUDD: It actually appears to be an exhibit to the long-term capacity analysis and not the SRRR plan.

ALJ: Okay.

MR. MCCANN: It doesn't make any difference, whatever. It's still part of a document, --

ALJ: Well, I just want to get the numbers right. I, I just want to make sure that you got your numbers right.

MR. MCCANN: Don't, I don't disbelieve Mr. Mudd. I don't disbelieve when he says that, that it's sixty-eight. For some reason, he disbelieves that this is an attachment to it, but that's fine. I'll introduce the entire long term capacity report, which apparently this is attached to, as Exhibit 68, replace it, --

ALJ: Okay.

MR. MCCANN: -- and then I'll keep this as Exhibit 110 as a separate exhibit.

ALJ: Okay, that works. Okay, we'll do that.

MR. MCCANN: Sounds great.

ALJ: Okay.

MR. MCCANN: Okay. I guess, Mr. Leffner, regardless of what you, what you say about the County's sewer capacity chart that we just looked at, you don't disagree that the Consent Decree requires an evaluation of capacity based on wet weather, correct?

MR. LEFFNER: Correct.

MR. MCCANN: And the Consent Decree requires the, that the model used by the County be calibrated to address wet weather, correct?

MR. LEFFNER: Correct.

MR. MCCANN: And the Consent Decree requires that any corrective actions be based on wet weather, correct?

MR. LEFFNER: It does not identify a wet weather storm, corrective measures has to be improved too.

MR. MCCANN: Well, I'm not asking about any specific storm, I'm just talking about wet weather, peak flow, as opposed to dry flow. The Consent Decree requires corrective actions based on that, correct?

MR. LEFFNER: Yeah, I believe so.

MR. MCCANN: Okay, all right. Okay. Just making sure I've got everything, Judge. Bear with me. Also, Mr. Leffner, with regard to the performance assessment, the RJN model that was used, was based on what's called a free

discharge assumption, correct?

MR. LEFFNER: Yeah, I believe so.

MR. MCCANN: Okay and that's, essentially, an assumption that the sewage is able to be conveyed and handled by the City when it leaves the County, is that basically what the assumption is?

MR. LEFFNER: Yeah, I believe so.

MR. MCCANN: Okay. Also, in terms of, you, you mentioned population employment projections a couple times. Do you know, am I correct that RJN in its performance assessment, it used the same population employment conditions that were used back when RK&K did its modeling, isn't that true?

MR. LEFFNER: Yeah, I believe so.

MR. MCCANN: And I can certainly show you the documents, but it, isn't it the case that the population employment conditions that RK&K relied upon, or projections rather, that RK&K relied upon in its reporting in 2013, was based on, were from 2008, did you catch, did you follow that question?

MR. LEFFNER: I did not.

MR. MCCANN: My question was whether or not the population employment projections used by RK&K were based on, were from, rather, 2008? So, in other words, several years prior to its reporting. Do you recall that?

MR. LEFFNER: Yeah, I think they were, I forget the

year that they were provided but they were for the year 2025.

MR. MCCANN: Right, but the projections were made in 2008, does that sound right? Or, or from 2008?

MR. LEFFNER: Around that time.

MR. MCCANN: Okay. I'm going to show you Developer's Exhibit 44, which are the, do you see that, Mr. Leffner?

MR. LEFFNER: I do.

MR. MCCANN: Okay. So, as I understand it, the, actually 44-B is the, forty-five, 45-A rather, is the e-mail. Let me pull that up as well. Okay. So, apparently you, although it's not reflected in the e-mails, you asked Mr. Bayer to give you, to identify any, any improvements that were made along the path, sewage flow path on the subject site down to the City line, was that basically the, the nature of your inquiry with him?

MR. LEFFNER: Not any. It was to confirm whether these locations that were recommended has been complete.

MR. MCCANN: Okay and just dealing with the first two, can we agree 43820 and 43819, if we were to zoom in, (inaudible) show you in, show you in another exhibit, sewage from the subject site is, is not going to go to either of those manholes, correct?

MR. LEFFNER: I believe it goes in with the 43819.

MR. MCCANN: You believe it does?

MR. LEFFNER: Through, through them, yeah.

MR. MCCANN: Let me just get a better, maybe a better exhibit that shows that just to be clear. Okay. This is Exhibit 63, Your Honor. Do you see that, Mr. Leffner?

MR. LEFFNER: I do.

MR. MCCANN: Okay, okay. So, again, these are the, do you recognize this as sort of the sewer segments just below the subject site?

MR. LEFFNER: Correct.

MR. MCCANN: So, 43819 is where the sewer would connect if the development were approved, right?

MR. LEFFNER: Just upstream.

MR. MCCANN: Right, okay. So, 43820 is, is not in the sewage, on the sewage path as, as you can put it, right?

MR. LEFFNER: It's upstream.

MR. MCCANN: It's above it?

MR. LEFFNER: Correct.

MR. MCCANN: And then, in terms of these other repairs, the nature of those repairs are identified in 45-A, correct?

MR. LEFFNER: Correct.

MR. MCCANN: Right here?

MR. LEFFNER: Correct.

MR. MCCANN: These are all, would you agree with me, these are all relatively minor --

MR. LEFFNER: Correct.

MR. MCCANN: -- repairs? None of which deal necessarily with or address capacity issues, do they?

MR. LEFFNER: They do.

MR. MCCANN: In what, in what way? Other --

MR. LEFFNER: Limiting, limiting inflow.

MR. MCCANN: In terms of the, the lining, you mean?

MR. LEFFNER: Correct.

MR. MCCANN: Inflow and infiltration?

MR. LEFFNER: Correct, reducing I&I.

MR. MCCANN: Okay. But in terms of increasing capacity, none of these repairs actually increase the function, the capacity of this, of the segment itself, either the segment itself or the manhole for which the segment is attached to, is that fair?

MR. LEFFNER: Not of the pipes, but if the, the manhole cover at 6883 was sealed, that would prevent overflows.

MR. MCCANN: Overflows, okay. But none of these repairs, the ones reflected in forty-four and described in 45-A address either the capacity SSOs, hydraulic restrictions indicated in map three of the RJN performance assessment or the Ramble report, would you agree with that?

MR. LEFFNER: Again, if the manhole was sealed, it would prevent sanitary sewer overflows and the section 6875 to 6874, if it was lined, in, in the report they discussed the lining can improve the roughness coefficient in the pipe and if

it were reduced by lining the pipe, it would increase capacity of that pipe.

MR. MCCANN: No, I understand that. You've said as much. My question is simply whether or not these repairs that are identified in this Exhibit 44, whether they, well, put in the simplest of terms, whether this constitutes all, all the repairs, either to, proposed to be undertaken by Ramble or, or the, let's start there. This is not, this obv, these repairs obviously are not the repairs that Ramble was proposing in its report, correct?

MR. LEFFNER: Correct.

MR. MCCANN: And would you agree with me that these repairs are not going to cure or correct all of the SSOs, and hydraulic restrictions reflected in map three of the RJN report, correct?

MR. LEFFNER: Individually, they won't repair all those, correct.

MR. MCCANN: Hey, Judge, can I have like five minutes to take a look through all my notes rather than sitting here and making everybody wait?

ALJ: Yeah, that's a good idea.

MR. MCCANN: See if I have anything else.

ALJ: Yep, I'll pause the record.

MR. MCCANN: Okay, thank you.

(PAUSE)

ALJ: We're back on the record, we just took a short break.

MR. MCCANN: Okay. Mr. Leffner, I want to go back real quick, just a couple housekeeping things. To the RJN performance assessment, I was asking you earlier about modeling and what, if anything, RJN did with respect to the model, at least by RK&K. I'm going to show you the report. So, this is, and I can go to the top if you want. But this is roman numeral little iv, at the top. It says pre- and post-rehabilitation flow monitoring data was used to update the hydraulic model based on monitored flow conditions. Do you see that?

MR. LEFFNER: I do.

MR. MCCANN: Okay. So, the model is updated using pre and post flow monitoring data, correct?

MR. LEFFNER: Correct.

MR. MCCANN: Okay. Can you, you mentioned something else, somewhere else in this report, about some way in which the, the model was, was used by RJN. Can you point me to that? Because I didn't find it anywhere.

MR. LEFFNER: 4.2 on page thirteen.

MR. MCCANN: Thirteen, okay. Where, where am I looking?

MR. LEFFNER: Just that, that section down to the paragraph that begins with other.

MR. MCCANN: Why don't you just tell me what it says?

MR. MUDD: Judge Murphy, --

MR. MCCANN: Again, the question was, the question is what, what, what does this section tell us about what, if anything, RJN did with respect to the model used by RK&K in terms of updating, recalibrating, etcetera, if anything?

MR. LEFFNER: The, the post-rehab condition model is different than the pre-rehab condition model in the following aspects.

MR. MCCANN: Okay.

MR. LEFFNER: Post-rehab condition model reflects reduced infiltration rates, as identified by quantification, construction of the Copper Mine relief sewer, construction of the Towsontowne Boulevard relief sewer. Other than the differences noted above, the pre- and post-rehabilitation condition models for the Jones Falls sewer shed are identical to one another and both models reflect rehabilitation projects completed prior to beginning of the 2008 rehab flow monitoring.

MR. MCCANN: Well, that's what the model reflects. I'm talking, my question was, was directed to what, if anything, was done with respect to the model itself in terms of recalibration and updating, etcetera. And I think, as I just read to you, the model was updated, right?

MR. LEFFNER: Correct and --

MR. MUDD: Objection, Judge. And Judge, this has been asked and answered --

MR. MCCANN: It has not.

MR. MUDD: -- multiple times.

ALJ: So, I, I don't really, I didn't follow the question. I've been trying to follow the question. I wasn't sure what exactly you're getting to. I'm not really sure, I mean, so, but (inaudible) --

MR. MCCANN: (inaudible) the document speaks for itself. I don't mean to belabor it. The document speaks for itself. I, I'm not sure his answer was responsive, but that's fine. Then a couple other questions regarding the, Lake Roland itself.

You, I just want to confirm you, there was an exhibit you used that reflect, that showed all the other areas in, I guess, in the County where water quality testing is performed. Do you recall that? I think it's Exhibit 57, do you recall that?

MR. LEFFNER: I don't remember, it wasn't all of the locations but yes, other locations in the County that water quality testing was done.

MR. MCCANN: Well, what was it purporting to show? Was it purporting to show all of them or some of them in some particular area, do you know?

MR. LEFFNER: There, there are multiple other locations that water quality is being tested in Baltimore County, not just Lake Roland.

MR. MCCANN: And do you have, did you bring with you, did you, I, I take it you, it hasn't been introduced as an exhibit, but do you have the results of any of the water quality, water quality sampling from those locations, at least for E.coli?

MR. LEFFNER: I don't, but any testing would be available online (inaudible) --

MR. MCCANN: Why, is there, is there a reason why you didn't present that?

MR. LEFFNER: Because they're not in the sewer shed.

MR. MCCANN: Okay. So, bottom line, Exhibit 57 tells us that there are a lot of recreational waters in or near Baltimore where water sampling is performed by the, by the County. Did I summarize that accurately?

MR. LEFFNER: Correct.

MR. MCCANN: You made some assumptions about why it is that folks were not on public sewer in and around, I guess, the Lake Roland area. Well, let me ask you this way. In, in connection with the septic system, there's a, I'm sure the Judge is aware of this, there are septic reserve areas required for any septic system?

MR. LEFFNER: Correct, any new septic system.

MR. MCCANN: Correct, and what, what's the required size for a septic, a standard size for a septic reserve system in Baltimore County?

MR. LEFFNER: I don't know, I don't, I'm not sure the standard size, but they, they vary depending on the use.

MR. MCCANN: Okay and the purpose of a septic reserve area is what?

MR. LEFFNER: It, it's an area identified to be reserved for the use of a septic infiltration system.

MR. MCCANN: Did, like I'm sorry, say that again, Mr. Leffner, I missed that.

MR. LEFFNER: It's an area that's reserved on the property that has restrictions for the use of a septic infiltration system.

MR. MCCANN: What's, it's an area reserved in case there's some sort of failure, right --

MR. LEFFNER: Or req, or requirement to provide sewage to the property.

MR. MCCANN: Okay, all right. You were here for Mr. Summers' testimony, correct?

MR. LEFFNER: Correct.

MR. MCCANN: Did you read the, the TMD reports that we submitted in the course of his testimony?

MR. LEFFNER: Yes.

MR. MCCANN: And it's, and did you read them prior to testifying this morning?

MR. LEFFNER: Not immediately, a few days ago.

MR. MCCANN: So, you don't believe that the TMDL

reporting suggests, or indicates rather, that the predominant source of E.coli in this area of the sewer shed is from, is a human source? You don't recall seeing that in the TMD, TMDL reporting?

MR. LEFFNER: Some of the locations it did have human as the main, I would say higher percentage than other sources.

MR. MCCANN: Yeah, I'm, I'm wondering why we're talking, I know Mr. Grachek may, may have said something, why, why we're challenging, why is it that you're challenging that the predominant source of E.coli in this area in and around Lake Roland is human sourced? Just summarize that for me, if you would.

MR. LEFFNER: I didn't say that.

MR. MCCANN: You're not challenging that?

MR. LEFFNER: I'm not challenging the TMDL testing. I'm just saying that there's the, that previous testimony stated that it had to be sanitary sewer overflows resulting in that. We simply said that there's been no reported sanitary sewer overflows within the Jones Falls based on the quarterly and annual reports. However, there's significant amount of septic systems.

MR. MCCANN: Okay, all right. So, just to sort of wrap up, the, would you agree with me that as we sit here today, the Consent Decree is still in force? It has not been terminated, correct?

MR. LEFFNER: I agree.

MR. MCCANN: The County, as we sit here today, is still subject to the terms and requirements of the Consent Decree?

MR. LEFFNER: Yes.

MR. MCCANN: In fact, the County was just recently assessed monetary penalties for a hundred and fifty SSOs that had occurred in the past, correct?

MR. LEFFNER: I'm not aware of that.

MR. MCCANN: You're not familiar with that?

MR. LEFFNER: No.

MR. MCCANN: Let me show you a letter that I'll mark as Exhibit 111. It's stamped April 14th, 2023. Have you seen this document before?

MR. LEFFNER: No.

MR. MCCANN: It's to Lauren Buckler, Deputy Director, from Lee Currey, the Director. No?

MR. LEFFNER: I have not.

MR. MCCANN: Okay. Okay. Your Honor, I would move this, that in as Exhibit 111. It's obviously a public record and speaks for itself. And with that, I do not believe I have any further questions of Mr. Leffner.

ALJ: Any objection, Mr. Mudd?

MR. MUDD: No, I just, it's a public record, but I would like Mr. McCann to send us a copy, please.

MR. MCCANN: I shall.

ALJ: Understood. So, we'll accept one eleven. All right and no other questions, Mr. McCann?

MR. MCCANN: That's it.

ALJ: All right. Mr. Zimmerman?

MR. ZIMMERMAN: Good afternoon. So, while we're talking about compliance with Consent Decree or penalties, that last exhibit, what awareness, if any, do you have, Mr. Leffner, that Howard County was able to resolve its Consent Decree and is no longer subject to their sewage Consent Decree?

MR. MUDD: Objection.

ALJ: Mr. Mudd?

MR. MUDD: Howard County?

ALJ: Yeah, I know, I was thinking the same thing. Do we care, Mr., Mr. Zimmerman, --

MR. ZIMMERMAN: I think it highlights the problems with Baltimore County, if another County was --

MR. MUDD: Objection, objection.

MR. ZIMMERMAN: -- able to resolve, resolve its Consent Decree when the County (inaudible) --

ALJ: I don't know if that, I don't know if you can make, I don't know if you can make that leap.

MR. ZIMMERMAN: All right.

ALJ: You really can't. I mean, in this case, I know there was a document was, that had to do with Baltimore City's

Consent Decree, and I excluded it because, because really in the end, I mean, we're talking about Baltimore County. And, and so, whether or not there were, you know, they were able to get it done quickly or not, or we just have, you know, the County here has to wait for the City to do something and the City says you're waiting for the County to do something, yeah. It's all, so, yeah, we don't, we don't really need (inaudible).

MR. ZIMMERMAN: Okay.

ALJ: Okay.

MR. ZIMMERMAN: All right. So, let me ask you this, and for the record, you were not working as an engineer when the 2005 Consent Decree was entered, were you?

MR. LEFFNER: I was not. I was in school to become one.

MR. ZIMMERMAN: Right. You were at, at VPI. So, have you looked into any of the appendices of the Consent Decree?

MR. LEFFNER: I've just reviewed the Consent Decree that was presented here.

MR. ZIMMERMAN: Do you know whether it has any appendices?

MR. LEFFNER: I'm not sure.

MR. ZIMMERMAN: Okay. Do, did you ever review any of the history leading up to the Consent Decree?

MR. LEFFNER: Not specifically.

MR. ZIMMERMAN: Okay. Could you recite for us once again the, the three, was it the three or four? How, however many different storms the Consent Decree requests to be included in the, the various studies?

MR. LEFFNER: I believe the Consent Decree required the two-year twenty-four-hour storm event, the ten-year twenty-four-hour storm event and the twenty-year twenty-four-hour storm event.

MR. ZIMMERMAN: Okay, okay. And those were, therefore, included in the RK&K and sub, subsequent reporting as part of the modeling, is that correct?

MR. LEFFNER: Correct.

MR. ZIMMERMAN: Okay and did you testify or was it shown in any of the documents that the population projections were to 2025.

MR. LEFFNER: That's what's summarized in the reports, correct.

MR. ZIMMERMAN: Okay. So, based on that, can we reasonably say that the intent was that the County would totally resolve the Consent Decree by 2025 at the latest?

MR. LEFFNER: I can't say that for sure.

MR. ZIMMERMAN: Well, if it, if it was anticipated that it would take longer wouldn't they have required the analysis of storms of a longer duration?

MR. LEFFNER: I'm not sure what you mean.

MR. ZIMMERMAN: Well, are there such things as fifty-year storms, thirty-year storms, hundred-year storms, flood, you know?

MR. LEFFNER: There are larger storm events, but that, that's not indicative of the amount of rainfall that happens within that amount of time. It's instead a likelihood that that amount could happen in any given storm event.

MR. ZIMMERMAN: Well, isn't it clear that the Consent Decree anticipated a likelihood of a twenty odd year time frame to study and if the, if the Count was going to take longer than twenty odd years, then it would have been appropriate to have a thirty- or forty-year storm analyzed and a population projection longer?

MR. MUDD: Objection. I've been trying to listen to see where this is going and I'm not, I'm not, I mean, the document requires what it requires. I don't know why we're guessing what, what else it might have required or should have required.

ALJ: Yeah, I'm not sure either, Mr. Zimmerman.

MR. ZIMMERMAN: Well, what I'm suggesting, Mr. Leffner, is the failure of the County to resolve the Consent Decree yet is, is effectively inconsistent with the intent of the Decree, don't you agree with --

MR. MUDD: That sounds like memo material.

ALJ: What's that, what was that material?

MR. MUDD: Sounds like memo material. He's arguing and through a witness.

ALJ: I'm not sure, yeah, I'm not sure that, that he can even answer that.

MR. ZIMMERMAN: Okay.

ALJ: How could he answer what the intent of the, he doesn't work for the County, the intent of the County is. How do we, how do we know what the, you said, what did the Consent Decree anticipate and, and so, I mean, this would all be speculation and guess. You can certainly argue it, but I'm not sure how he's supposed to answer that.

MR. ZIMMERMAN: Well, he's been allowed to interpret a lot of things, which I think goes beyond really, you know, engineering and into legal interpretation, so, so I thought it was fair to ask those questions. But, all right.

ALJ: Yeah, I mean, I, I'm not sure, you know, this would all be, you know, kind of --

MR. ZIMMERMAN: Okay.

ALJ: -- philosophical and I don't know.

MR. ZIMMERMAN: Okay, all right. Let me, let me move on then. Let me ask you this. The, the reason for including any storms in the modeling would, correct me if I'm wrong, would be the sanitary sewer overflows tend to occur or occur with more intensity after rain events, is that correct?

MR. LEFFNER: They can, with the exception of, you

know, breaking, blockages, other, other events can actually result in sanitary sewer overflows too during dry conditions.

MR. ZIMMERMAN: But the only reason to bother putting storms into the modeling is they have something to do with the sanitary sewer overflows, isn't that true?

MR. LEFFNER: Yeah, it can contribute to the overflows.

MR. ZIMMERMAN: Yeah, okay. Okay. All right. All right. I'm going to, I want to ask you a few questions about Lake Roland. And before we get to any exhibits, let me ask you did you include in your exhibits the numbers of homes on public sewers that are in the Jones Falls sewer shed?

MR. LEFFNER: Not on the figure, no.

MR. ZIMMERMAN: Oh, well, what, what's the answer? How many are there?

MR. LEFFNER: I'm not sure the number.

MR. ZIMMERMAN: You didn't even try to find out?

MR. LEFFNER: I don't remember the number. I believe it's published somewhere, but.

MR. ZIMMERMAN: Okay.

MR. LEFFNER: I'm not going to guess.

MR. ZIMMERMAN: You didn't include it because you didn't think it was going to help your case, isn't that correct?

MR. MUDD: Objection.

ALJ: All right. Mr. Zimmerman, now you're arguing with him.

MR. ZIMMERMAN: No, well, I mean, I'm asking him why he didn't include it --

ALJ: (inaudible) --

MR. ZIMMERMAN: -- it's an obvious thing to include if you're going to --

ALJ: -- (inaudible) but that's their case and they can prepare their case the way they want to prepare it. But you made the point that he, you asked the number of homes and he said he doesn't know what the number is.

MR. ZIMMERMAN: Okay and generally speaking, is land use intensity higher where there's public sewer than when there's not public sewer?

MR. LEFFNER: Not necessarily. But I would say yes, there's a tipping point to where --

MR. ZIMMERMAN: Yeah.

MR. LEFFNER: -- septic systems only allow such a divert, dense development.

MR. ZIMMERMAN: And are there institutions on public sewer in the Jones Falls sewer shed?

MR. LEFFNER: By institutions you, are you referring to like hospital systems or schools?

MR. ZIMMERMAN: Is, is G, is GBMC in the sewer shed?

MR. LEFFNER: Yes, I believe so.

MR. ZIMMERMAN: How about St. Joseph's Hospital?

MR. LEFFNER: Not sure.

MR. ZIMMERMAN: We're talking about the Jones Falls sewer shed by the way. How about Towson University?

MR. LEFFNER: Yes.

MR. ZIMMERMAN: Okay. How about Greenspring Station?

MR. LEFFNER: Yes.

MR. ZIMMERMAN: That, that being commercial. How about the Johns Hopkins Pavilion at, at the Greenspring Station area?

MR. LEFFNER: Yes.

MR. ZIMMERMAN: Okay. You didn't include those in your exhibit, did you?

MR. LEFFNER: No.

MR. ZIMMERMAN: Okay.

MR. MUDD: Objection, objection. Which, which exhibit?

MR. ZIMMERMAN: The exhibit that showed the agricultural, should we, maybe we, if you want to share it here, it's one of the Developer's exhibits from today that showed some agricultural area, that showed some septic systems and, in the Jones Falls sewer shed. Maybe, all right, why don't we put it up? Maybe some, if somebody wouldn't mind sharing it. I can, I can try to look through my notes and find the number.

MR. MCCANN: Which exhibit, Pete?

MR. ZIMMERMAN: It's the exhibit, Mr. Leffner, do, do you remember your exhibit where you were showing the Jones Falls sewer shed and how many septic systems you thought there were and how much --

MR. MCCANN: Yeah, I can find --

MR. ZIMMERMAN: -- agriculture and so on? I mean, I don't want to have to take a few minutes to go through my notes. I'm sure Mr. Mudd or Mr. Leffner know --

MR. MUDD: I have it, I have it up.

MR. ZIMMERMAN: Okay. Can we see it? There we go. Okay. I'm not going to belabor the point, Mr. Leffner, but you made an effort to, to show septic systems and, and so on, but not any institutions or any homes on public sewer or commercial developments on public sewer, correct?

MR. LEFFNER: I mean, any of those that are located in this vicinity are shown, they're just not highlighted.

MR. ZIMMERMAN: Right. What's the square, and you didn't give numbers on it like how many there were and how much sewage they would generate, did you? You didn't, right?

MR. LEFFNER: No, those would be included in the studies.

MR. ZIMMERMAN: Yeah, and what's the, can you give us about how many square miles are included in the Jones Falls sewer shed?

MR. LEFFNER: I, earlier I said I forget the total acreage.

MR. ZIMMERMAN: Can't even, can't even come close in miles, in square miles?

MR. MUDD: Objection. You ask him to speculate, the witness said more than once he doesn't know.

ALJ: Yeah, he actually said that on direct. He does not remember that, that data.

MR. ZIMMERMAN: And are you, okay, are you an expert on septic systems? Is that part of your expertise?

MR. LEFFNER: I'm not, not an expert in the design of septic systems.

MR. ZIMMERMAN: Okay. Now, you wouldn't know whether they, they're designed to take care of the sewage, whether or not it's raining or not raining? Can you answer that?

MR. LEFFNER: I mean, I can, I can say that they're designed not to treat rainwater, so.

MR. ZIMMERMAN: Yeah.

MR. LEFFNER: Yeah, rainwater can contribute to backups, --

MR. ZIMMERMAN: Okay.

MR. LEFFNER: -- as well as --

MR. ZIMMERMAN: Okay. I want, I'd like to share an exhibit on Lake Roland, which I sent a few minutes ago to the other attorneys, which parallels, to some extent, Developer's

exhibit. Okay. Let's see if we've got it. Okay. Can everybody see my Lake Roland exhibit?

MR. LEFFNER: Yes.

MR. ZIMMERMAN: Okay and this is from the web, Baltimore County. I'm scrolling down. Do, do you see, Mr. Leffner, there's a link to current testing results?

MR. LEFFNER: Yeah, that says good.

MR. ZIMMERMAN: Yeah, current good, yes, current good. But as you pointed out in your direct testimony, I think, E.coli levels can fluctuate, right?

MR. LEFFNER: Correct.

MR. ZIMMERMAN: Okay and, and, and in the exhibit you produced, there was some fluctuation, wasn't there?

MR. LEFFNER: There was.

MR. ZIMMERMAN: Okay. So, let's take a look. Okay. Wait a minute, where's, oh here. Okay, so here's actually the same map that the Developer produced of the location, the sample locations, right?

MR. LEFFNER: Correct.

MR. ZIMMERMAN: Okay, okay. So, let's, let's look at the latest water sampling results.

MR. MUDD: I'm going to object to the ongoing testimony about this exhibit.

ALJ: Ongoing testimony?

MR. MUDD: Well, I'm sorry, ongoing questioning,

pardon me. Before, before we continue questioning, I have, I have an objection to asking questions about this exhibit.

ALJ: Okay. So, what's your objection?

MR. MUDD: I don't think a foundation has been laid for where this information has come from.

ALJ: Oh, he said the County website earlier.

MR. ZIMMERMAN: Well, it, it's actually, it, it is a County document. The County runs Lake Roland and I, do I have to scroll all the way back? But it's available on the web. There's the Baltimore County, Maryland logo. Anyone can look at it on the web.

ALJ: Well, is this on the County website?

MR. MUDD: It looks to me to be from (inaudible) --

MR. ZIMMERMAN: I don't know, I don't --

MR. MUDD: -- (inaudible).

MR. ZIMMERMAN: Yeah, I don't, I don't know if it's on the County website. I googled Lake Roland Park, and this is what came up and I don't think the water sampling is, parts of it are similar to what we saw from the Developer. And I don't remember where they got their information, frankly --

ALJ: From the County, from the County website. So, Mr. Mudd, the, the map looked like the same one that you had. Is this where you got your map?

MR. MUDD: No, I mean, I'm sorry. The map was obtained from the Lake Roland website, correct. And it's the

same map that was used in the Torch Hill case. And I have no objection to the water sample results that Mr. McCann submitted, which were clearly from the website. I do have concerns about potential third party testing of this. That, that's not a County government source.

MR. ZIMMERMAN: Well, I'll tell you what. Some of the data, this is more recent, this comes up to more recent than the Developer's exhibit. But we can put the exhibit, we can, it goes back far enough, and we can see whether the, the earlier sampling matches the Developer's sampling and then we can --

MR. MUDD: (inaudible) they were not our develop, they were not our exhibits, first, Mr. McCann. Well, excuse me, Mr. Zimmerman. They were Mr. McCann's exhibits. And it still doesn't answer the question about where this information is coming from.

ALJ: Right. So, so, if it's, it's a County document, if it's a County document from the County website, then that would make sense. We already have that, unless this is updated. But this looks like it's not from that, it looks like it's from some other Lake Roland Council or something.

MR. ZIMMERMAN: Well, okay.

ALJ: That's what it says at the top, right? At the top of the document, that's what it said.

MR. ZIMMERMAN: It's, yeah, we'll go back. It's the

Lake Roland Nature Council. It also has a Baltimore County, Maryland logo, Baltimore County runs the park, we know that. So, to, to say that it should be excluded, I think, goes too far.

ALJ: Well, Lake Roland Nature Council is a different entity that's not here and, and so we don't, we can't --

MR. ZIMMERMAN: All right.

ALJ: -- again, it goes back to like the other, the other attorneys here can't cross examine on what the information --

MR. ZIMMERMAN: Okay, all right. Let's, okay, all right. Well, --

ALJ: You can use Mr. McCann's. He has --

MR. ZIMMERMAN: All right. Let's, I guess, I would just offer it and it's been, obviously you've sustained the objection so. I would ask it be, I would ask it be i.d., just for i.d.

ALJ: Yeah, no, --

MR. ZIMMERMAN: So, let's go to Mr. McCann's exhibit then.

ALJ: So, what was, what was the number going to be for that, what --

MR. ZIMMERMAN: Forty-four. Sorry, forty-four.

ALJ: Forty-four, --

MR. ZIMMERMAN: And I did send it, I did send it a

little while ago --

ALJ: Okay. So, you said thirty, thirty --

MR. ZIMMERMAN: -- to everybody.

ALJ: -- thirty-four or forty-four?

MR. ZIMMERMAN: Forty-four, forty-four.

ALJ: Forty-four, got it, okay.

MR. ZIMMERMAN: Forty-four.

ALJ: It's not admitted then so, and just for the record.

MR. ZIMMERMAN: Right, i.d., i.d. So, I think I can stop sharing at the moment, so I'll do that. I think I know how to do that. If Mr. McCann wouldn't mind putting up his exhibit that was admitted. And, and, and let's see if we can, okay. So, --

MR. MCCANN: This is Exhibit 75 for the record.

MR. ZIMMERMAN: Exhibit 75. So, Mr. Leffner, do you, you can see how the, --

MR. MUDD: You're sharing e-mails.

ALJ: Yeah.

MR. ZIMMERMAN: I've lost, I've lost it.

ALJ: That's all right. Mr., yeah, Mr. McCann, be careful. We're reading your e-mails.

MR. MCCANN: Sorry, guys. Sorry.

ALJ: No, we just don't want to have, I'm sure you don't want to share your e-mails.

MR. MCCANN: No.

MR. MUDD: Mr. McCann, Mr. Rosenblatt sent you a thank you note e-mail, we can look at that one.

MR. MCCANN: I know he did. He always sends me things like that, nice little notes.

ALJ: Look at that, look at that.

MR. ZIMMERMAN: Okay. So, so you see how the sampling i.d. numbers, we'll start with the most recent on this exhibit, August 18th, 2022. It's E.coli MPN. Do you know what MPN stands for, Mr. Leffner?

MR. LEFFNER: I forget the acronym.

MR. ZIMMERMAN: Do you have any idea?

MR. LEFFNER: It, it's, I don't want to mess it up.

MR. ZIMMERMAN: Okay. Would, to maybe see if I can refresh your recollection, would it be most probable number?

MR. LEFFNER: I believe so, yes.

MR. ZIMMERMAN: Okay and then it would be the numbers, do you remember per how many milliliters?

MR. LEFFNER: Of the sampling? I don't.

MR. ZIMMERMAN: Yeah, per like, you don't know whether it's like standard per, per hundred milliliters?

MR. LEFFNER: It is standard, the exact number of milliliters I don't recall.

MR. ZIMMERMAN: Okay. Can Mr. McCann scroll down? Obviously the numbers, and do you know whether or not if the

number gets above a hundred, that that's major, major pollution issues?

MR. LEFFNER: There's a threshold both on the, the testing limits that they'll report and when that would be considered a concern.

MR. ZIMMERMAN: So, let's go, let's go, scroll down, keep scrolling. So, then you get July 20th, 2022, it's, it's all of a sudden up to nine hundred twenty-one, you see that?

MR. LEFFNER: I do.

MR. ZIMMERMAN: Okay. So, do you know whether or not that indicates a, a massive pollution problem?

MR. LEFFNER: Not necessarily a massive pollution problem. I think all four, five of those samples were taken at the same time and they're all relatively in the same area and you can see the variability between each of them.

MR. ZIMMERMAN: Yeah, okay. So, if we, if the literature says one hundred is the threshold then you're at nine twenty-one, you just, do we just blow that off? I mean, well, that's my question. I mean, do we just disregard it, excuse me for being more colloquial.

MR. LEFFNER: If, if that's what was measured, I don't think you blow it off, as you said.

MR. ZIMMERMAN: Okay. Let's go down further just so we see what's, by the way, it says other parameters. Do you know what that is? Do you know what that means?

MR. LEFFNER: It, it's, essentially, other measurements that were taken in the sample.

MR. ZIMMERMAN: And do, do you have any expertise to tell us whether that number would be a problem, the one ninety on the other, the others?

MR. LEFFNER: No.

MR. ZIMMERMAN: Okay. Let's keep scrolling down, see what we find. Let's see. Wow. May 23rd, 2022, greater than twenty-four twenty. What do you have to say about that?

MR. LEFFNER: That's a lot higher than the others.

MR. ZIMMERMAN: The fact that it, it fluctuates, the fact that these numbers fluctuate, you know, in some months it's under, well under a hundred, isn't it a reasonable inference that the variation has to do with storm events and sanitary sewer overflows related to the storm events?

MR. LEFFNER: I think there's a lot of factors that could contribute to it.

MR. ZIMMERMAN: Yeah, okay. Okay. Have you done any analysis of this or are you, is that part of your expertise, I mean?

MR. LEFFNER: I've done no analysis of it, no.

MR. ZIMMERMAN: Okay. Have you discussed, I know you presented some exhibits in your direct testimony. Have you, have, do you have any documents from the Department of Environment, which would support any suggestion by you that

there's not a pollution problem in Lake Roland or that sanitary sewer overflow has nothing to do with it? Do you have any documents from the Department of Environment on that?

MR. LEFFNER: The Maryland Department of the Environment?

MR. ZIMMERMAN: No, the County Department of Environment.

MR. LEFFNER: Stating what?

MR. ZIMMERMAN: Stating that there's no problem in Lake Roland as far as E.coli pollution goes and any way sanitary sewer overflow is, is irrelevant and has nothing to do with it? Do you have any documents from the County to suggest that?

MR. LEFFNER: I don't, there's nothing specific from the County that says --

MR. ZIMMERMAN: Okay.

MR. LEFFNER: -- (inaudible) that.

MR. ZIMMERMAN: And as far as the stream sense sign, that stream sense sign, correct me if I'm wrong, and I'm paraphrasing, basically says don't touch the water, right? Is, am I wrong? Am I misrepresenting it?

MR. LEFFNER: No, I think it says to avoid water contact.

MR. ZIMMERMAN: Yeah, and you wouldn't let your dog swim in Lake Roland, would you? If you have a dog.

MR. LEFFNER: I have a dog, but I'm not a member of the dog park when I go there, so.

MR. ZIMMERMAN: Okay. You've been to Lake Roland Park recently?

MR. LEFFNER: Yes.

MR. ZIMMERMAN: Have you? Yeah, okay.

MR. LEFFNER: Yeah, I frequent it.

MR. ZIMMERMAN: Okay, yeah. Okay. Okay. I think that's, thank you, Mr. McCann, I think that's enough on that subject. As far as the potential sewage generation if this development were approved, correct me if I'm wrong, I think you said, you estimated nineteen thousand gallons per day?

MR. LEFFNER: Correct.

MR. ZIMMERMAN: Is, did I get that right?

MR. LEFFNER: Correct.

MR. ZIMMERMAN: Okay. How did you come up with that number?

MR. LEFFNER: The Baltimore County sewer design manual.

MR. ZIMMERMAN: Okay. So, did you happen to multiply that by three hundred sixty-five days to see what the annual generation would be?

MR. LEFFNER: I did not.

MR. ZIMMERMAN: Does six thousand nine hundred and seventy, or nine hundred and thirty-five thousand sound in the

ballpark?

MR. LEFFNER: I can get a calculator if you want me to multiply it.

MR. ZIMMERMAN: All right. Well, I don't want to take too much time. We can all do the numbers. Do you agree that modeling is state of the art for evaluating these sewer systems? That, that it was reasonable for the Consent Decree and all the reporters reporting to do modeling?

MR. LEFFNER: Yeah, modeling is common practice.

MR. ZIMMERMAN: Okay and are you an expert on types of models and running models and finding errors in models and, and/or their, either choice of models or their implementation?

MR. LEFFNER: It depends on the models. I'm not familiar with all different types of models.

MR. ZIMMERMAN: Okay. Were you familiar with the models used by RKK or RJN?

MR. LEFFNER: Some of them, yes.

MR. ZIMMERMAN: Some of them no. Which, which ones were you familiar with and which ones not?

MR. LEFFNER: I forget all the models they used.

MR. ZIMMERMAN: Okay. Anyway, you didn't try to do a study of how they modeled and their choice of model to suggest that, that they made a mistake in their modeling choice or their implementation?

MR. LEFFNER: No.

MR. ZIMMERMAN: Okay and to the best of your knowledge, has the County, MDE or EPA stated anywhere that there was any error by any of these companies in their modeling?

MR. LEFFNER: I don't recall any.

MR. ZIMMERMAN: Okay. So, it looks like, correct me if I'm wrong, the County has had four consultants in more or less the last decade with Hazen around for a second go at it. Is that a fair description?

MR. LEFFNER: They retained multiple different companies to do studies, yes.

MR. ZIMMERMAN: Did you ever look into why the consultants kept changing?

MR. LEFFNER: No, but I think large studies that are solicited by a jurisdiction are, it's pretty common that they may change companies.

MR. ZIMMERMAN: Yeah, I mean, so you don't know why they didn't just stick with RKK or at least stick with RJN after they did theirs?

MR. LEFFNER: I don't.

MR. ZIMMERMAN: Based on what we've seen, what would be the most reasonable estimate as to how many more consulting studies we'll see in the next ten years?

MR. LEFFNER: That would be a total guess.

MR. ZIMMERMAN: Yeah. Now, as far as Hazen goes, is

there some documentation indicating that a further report, a larger, I guess a larger document, is expected this fall of 2023, is that, am I, is my understanding correct?

MR. LEFFNER: I believe, yeah, that there's a deliverable expected later in 2023.

MR. ZIMMERMAN: And, and is it reasonably foreseeable that it will address the Consent Decree in some way?

MR. LEFFNER: I'm not sure. I don't think it'll be specific to the Consent Decree requirements.

MR. ZIMMERMAN: Have you checked with the people at Hazen?

MR. LEFFNER: No.

MR. ZIMMERMAN: Okay and while you called it a planning document, it projects a study of fifty years out, correct?

MR. LEFFNER: I believe that's part of it, yeah.

MR. ZIMMERMAN: Okay. Isn't it just as reasonable an inference that the fifty year, well, let me withdraw that for a moment. Has, to the best of your knowledge, has anyone in the County or MDE or anybody criticized Hazen for their publication, or claimed it was erroneous or problematic --

MR. MUDD: Objection. Relevance.

ALJ: Yeah, so, Mr. Zimmerman, I'm not sure why, why you're asking that question.

MR. ZIMMERMAN: Well, I want to know if there's been

any criticism of, of Hazen's publication so far in, in writing. Or whether we can take the Hazen publication as being meaningful.

ALJ: Okay. Well, all right. Overruled to the extent Mr. Leffner, do you know that answer?

MR. LEFFNER: I have no idea.

MR. ZIMMERMAN: Okay. Isn't it just as reasonable to infer that the fifty-year horizon referred to by Hazen, means that the County is nowhere close to complying and resolving the Consent Decree and they've got, they've got so much more work to do? Isn't that a reasonable, as reasonable an interpretation, if not more reasonable than your suggestion that this is just kind of a make way planning document?

MR. LEFFNER: (inaudible).

MR. ZIMMERMAN: Okay. But you never made it an inquiry of Hazen as to the significance of their publication, did you?

MR. LEFFNER: (inaudible).

MR. ZIMMERMAN: Um hm. Okay. To the best of your knowledge, is there any document from the Environmental Protection Agency or the Maryland Department of Environment indicating that based on what the County has done so far, it's, there's a reasonable expectation that the Consent Decree will be totally resolved within the next several years?

MR. LEFFNER: (inaudible).

MR. ZIMMERMAN: Okay. Okay. You mentioned something about field inspections. Are you suggesting that relates to sanitary sewer overflows?

MR. MUDD: Objection. Form, form of the question.

MR. ZIMMERMAN: Well, I, I don't mind rephrasing it.

ALJ: If you could rephrase it, Mr. Zimmerman?

MR. ZIMMERMAN: Well, what was the relevance in your mind of mention of field inspections? What does that have to do with what we're talking about?

MR. MUDD: Same objection. I'm not sure what field inspections he's referring to. And I'm not sure (inaudible) --

ALJ: Yeah, I think he used the term field verification when he was testifying.

MR. ZIMMERMAN: Okay.

ALJ: So, I think it was field verification (inaudible) --

MR. ZIMMERMAN: All right, field --

ALJ: -- it hasn't been, it hasn't been, he said it hasn't been verified in the field, I think is what Mr. Leffner said. But so, --

MR. ZIMMERMAN: Okay.

ALJ: -- Mr. Leffner, what, what was the significance of, of the field verification?

MR. LEFFNER: I think it goes back to when I said the difference between model predictions and realized --

MR. ZIMMERMAN: Okay.

MR. LEFFNER: -- is actually occurring in the field.

MR. ZIMMERMAN: Okay. So, first of all, the emphasis in the Consent Decree and all the reports is using the modeling, isn't that correct?

MR. LEFFNER: Well, there's an emphasis on modeling, as well as verification.

MR. ZIMMERMAN: Okay, all right. Well, let me ask you this. Have you ever heard of the term ISR, kind of used in the military?

MR. LEFFNER: Not sure I have.

MR. ZIMMERMAN: It, it's like intelligence surveillance reconnaissance. So, if I can use that as a metaphor, does the County have some mechanism or system where the moment there's a significant storm, the County immediately knows whether it's a two year storm, any of those storms that, that are, that are in those reports, there's some immediate communication with somebody in the County that there's a storm of this magnitude that's within the Consent Decree and the studies, and they immediately send somebody out to every single manhole and they give a report on a sanitary sewer overflow? Is there any system like that?

MR. LEFFNER: I'm not sure.

MR. ZIMMERMAN: Okay. I mean, is, is there any document which records, that the County has produced, that

records every single storm of the type that's reviewed in the report and who went out immediately to all the manholes, if anyone did, and reported on the level, if any, of sanitary sewer overflows? Is there anything like that?

MR. LEFFNER: So, that was a bunch of questions. Yes, part of the Consent Decree and the studies that have been done include establishing or using rainfall data collection points. They're identified in one of the exhibits. I think they had specifically as part of the Consent Decree kind of surround the County and the study areas.

So, there, there is rainfall monitoring data. Specific to showing up at every single manhole (inaudible) during the specific storm event, I'm not sure what the emergency response action plan for the County fails. There are --

MR. ZIMMERMAN: (inaudible) go ahead. I'm sorry, I didn't mean to interrupt you, go ahead.

MR. LEFFNER: Yeah, like that would just be based on weather predictions and I think we all know how accurate or inaccurate those can be. So, it, it, the more likely response to a problem would be the, the level monitoring stations that are located at pump stations, that are located at (inaudible)--

MR. ZIMMERMAN: Okay and --

MR. LEFFNER: -- (inaudible) it's not just a censor to say that it's overflowing, come and check on it. Both at

pump stations and the level censors in the manholes, there's typically stages. So, once it gets above a specific stage, there's a likelihood that a problem could exist and then, you know, someone could report to the area to see whether A, it even happened or if it just hit that kind of first level censor. Or B, if it does, try to resolve the issue.

MR. ZIMMERMAN: But to make a long story short, there's no immediate, whether you call it emergency, there's no immediate response system that every time there's a storm, the County knows precisely the level of the storm and they, they have staff to go out to every manhole, and/or other facility and check what's going on?

MR. LEFFNER: Again, they're, the County's standard practices, I'm not sure of all the details.

MR. ZIMMERMAN: Yeah, and which department would, would even do that, do you know?

MR. LEFFNER: I don't know. I would assume.

MR. ZIMMERMAN: And isn't, isn't it the reason why modeling is so important, that, that it's really not practical to, to have a massive kind of field verification program?

MR. LEFFNER: Modeling is used for a lot of different purposes, but I would say modeling can help identify potential problem areas.

MR. ZIMMERMAN: Yeah.

MR. LEFFNER: (inaudible) get a heightened level of

response.

MR. ZIMMERMAN: So, how did the EPA know back in the period leading up to the 2005 Consent Decree that there were major problems in the Baltimore County and the Jones Falls sewer shed? How, how did they know that?

MR. LEFFNER: I'm not sure how they came to the conclusion.

MR. ZIMMERMAN: Um hm. Okay. Let me ask you something. Since you made some reference to staff of the Department of Public Works, would that be Mr. David Bayer and Lisa Eicholtz?

MR. LEFFNER: They're among their staff, yes.

MR. ZIMMERMAN: I mean, are those the ones you were referring to when you were able to testify that you had some discussions?

MR. LEFFNER: Yeah.

MR. ZIMMERMAN: Did you ever ask them or suggest to them that it would be a good idea that they come in and testify and explain what's going on from their point of view?

MR. LEFFNER: I don't think that's my place.

MR. ZIMMERMAN: Um hm, okay. Okay. Let me ask you a few questions about the stormwater management. You've explained why you disagree with Mr. O'Leary, correct?

MR. MUDD: I'm going to object to any questions by People's Counsel for stormwater management issues.

ALJ: I was just going to ask, can you tell me again, Mr. Zimmerman, why (inaudible) --

MR. ZIMMERMAN: Yeah, it's in one of my exhibits, sorry, it's in one of my exhibits. This issued was raised, you know, some, maybe months ago by Mr. Rosenblatt and I had to include in the exhibits the portions of master plan 2020 on stormwater management.

ALJ: Okay, that's right. I remember now.

MR. ZIMMERMAN: Yeah.

ALJ: He did, he did, and it was objected to before.

MR. ZIMMERMAN: Yeah.

ALJ: So, we did allow it, so (inaudible) for the reminder --

MR. ZIMMERMAN: Yeah, my memory is not totally shot, so.

ALJ: Okay, thank you.

MR. ZIMMERMAN: I, this won't be too long actually.

ALJ: Okay, all right.

MR. ZIMMERMAN: So, what I'd like to ask you, Mr. Leffner, is whether you made any inquiry of the County to get some document from them, or even an e-mail frankly, to support your point of view that the meadow is not the appropriate criteria. Do you have any document from the County on how they were looking at it and what's, what's the appropriate way to interpret the, the manual? I mean, a document?

MR. LEFFNER: No, I, I'd say the document would be implementing standard design practices with the submission of our concept plan, which was ultimately approved by County staff.

MR. ZIMMERMAN: Well, where, what document do you have in evidence here to indicate that the County has, in fact, approved your plan? Is there any document you can point to?

MR. LEFFNER: There was the concept stormwater management report. I believe that was one of the earlier exhibits.

MR. ZIMMERMAN: Can you tell us what exhibit it is?

MR. LEFFNER: I don't know the number.

MR. ZIMMERMAN: Can anyone, all right. Let, let me, let me share one more thing. I think I know how to do it. Okay. So, do you, back in March 9th, 2021, there were development plan review comments. This is People's Counsel six. Do you remember this? Actually, it has, it's confusing, it has March 8th, 2020, that might be an error. So, for the concept plan conference, March 9th, 2021, do you remember this document?

MR. LEFFNER: Yeah, I believe so.

MR. ZIMMERMAN: There was, there was some discussion of, I'm looking at number twenty-three, number twenty-four, twenty, you know, there was some discussion of storm drain and flooding issues, correct?

MR. LEFFNER: In those comments, yeah.

MR. ZIMMERMAN: Yeah. So, really, the only question I have, is there any subsequent comment from, from the County updating this that you're aware of, from DPR, Development Plans Review, or, or any other department discussing the stormwater management or Department of Environment?

MR. LEFFNER: I think it was the later approvals.

MR. ZIMMERMAN: Yeah. Is, is there any document that you have in evidence that you can refer us to?

MR. LEFFNER: I'm not sure.

MR. ZIMMERMAN: Okay.

MR. LEFFNER: The, the initial development plan process hearing cited, I wasn't able to attend all of them. So, I'm not sure what was entered in in earlier hearings.

MR. ZIMMERMAN: All right. Well, Judge Murphy, I see the witching hour is upon us, so to speak, and it, so I think I can, I can leave it there, Judge Murphy. Thank you for all your respectful rulings, even those that don't necessarily agree with me. Okay.

ALJ: All right.

MR. ZIMMERMAN: I'm going to stop.

ALJ: Thank you, Mr. Zimmerman. So, we, we don't have Mr. Wyatt. Mr. McCann, any idea where Mr. Wyatt is?

MR. SACHSE: I, I know.

ALJ: Oh, Mr. Sachse?

MR. SACHSE: Yeah, he texted and said he had a client emergency and to let you know once it was his turn, that he had to go, he couldn't stay.

ALJ: He could not stay. Okay, all right. So, yeah, I, we would have called him earlier, I mean, we could have let, taken him out of turn, but he's not here. Did, Mr. Sachse, did you have questions?

MR. SACHSE: No, I don't, no.

ALJ: Okay, all right. So, back to Mr. Mudd. Any re-direct?

MR. MUDD: Just a very, very few. Thank you very much. Mr. Leffner, we'll get you out of here quickly. I know it's been a long day. Which, which, which County Department approves stormwater management plans?

MR. LEFFNER: Stormwater management plan we submitted, DPR.

MR. MUDD: DPR or, or, --

MR. LEFFNER: The Public Works Department reviews it.

MR. MUDD: Okay, all right. Let's, let's talk a little bit about, I want to show you development plan exhibit, I'm sorry, Developer's Exhibit. Sorry, bear with me. There we go, sorry. This Exhibit 61, can you see that?

MR. LEFFNER: Yes.

MR. MUDD: All the dark blue lines, what are those meant to reflect again?

MR. LEFFNER: Water courses.
MR. MUDD: And what do those water courses run to?
MR. LEFFNER: Lake Roland.
MR. MUDD: And what would happen in a storm event along those water courses?
MR. LEFFNER: They'd all drain to Lake Roland.
MR. MUDD: Okay. I think that's all I have. Thank you.
ALJ: Okay. Thank you, Mr. Leffner.
MR. LEFFNER: Thank you.
ALJ: All right. So, I think that is it, right, Mr., Mr. Mudd? That is all your case for rebuttal, right?
MR. MUDD: Correct.
MR. ROSENBLATT: That's all.
ALJ: What was that, Mr. Rosenblatt?
MR. ROSENBLATT: That's me.
ALJ: You just wanted to say something? Oh, wait, I'm sorry. Did you, are you, you have a case? You have somebody to put on?
MR. ROSENBLATT: No, that's all. We're, we're done with rebuttal.
ALJ: Oh, you just wanted to shout that out?
MR. MUDD: Mercifully, we're finished.
ALJ: Mercifully, oh, my. I can't believe it. So, all right. So, then I'm going to say housekeeping, Mr. McCann,

you owe me a revised exhibit list and Protestant's 109, 110, I don't know if you sent them by e-mail yet, but just e-mail them and, you know, drop them off (inaudible) do it today.

MR. MCCANN: (inaudible) and 111.

ALJ: Oh, yeah, 111, that's right, 111.

MR. MCCANN: And then, and then a new LTC report that includes that appendix, appendices.

ALJ: Yeah, that includes the append, so yeah, three exhibits, so a new exhibit list with that. So, I mean, again, you don't have to do that today.

MR. MCCANN: Okay.

ALJ: So, of course, that leaves us with memos in lieu of closing argument. And so, let me ask, Mr. Sachse, were you going to write something?

MR. SACHSE: Is it okay to, yeah, I, I don't know. I, I, I hadn't really planned on it, but.

ALJ: Okay. Yeah, you can think about it. But, but we need to come up with a date, so.

MR. SACHSE: Right, right.

ALJ: You know, there's a lot of dates here, so everyone, I mean, obviously thirteen days. I don't know if you all had the, or if you even need to get the, you know, copy of the, of the recording from our office.

But, you know, I'm not sure if people need that in order to prepare their memo in lieu of closing or, or how you

guys are going to do it. But, you know, we just, we need these, some time here to get everyone to write their memos, file them and then just to make sure I have time to read them. So, because obviously I want to, to read them carefully.

So, I mean, we need to go, we need to at least go past June, right? I mean, you know, thirty days for this case with all these days. What, what's everybody looking like in terms of vacation and what, what, what is reasonable? Anybody thought about anything? I'll start with Mr. McCann.

MR. MCCANN: Yeah, I, I hadn't thought about it. But no, I, maybe, maybe into the, you know, a week into July, for instance, maybe Friday, July 7th, gives us an extra week than normal, which --

ALJ: Yeah, I was going to say the 14th of July, but we could even extend it. But, and I mean, I know it sounds a long time, it's really not with all these days of testimony.

MR. MCCANN: Part of the problem is, is I, I haven't gotten all the transcripts, I requested them, and I know that takes a lot of time.

ALJ: It doesn't really. They should just e-mail them to you. Did you already from our office? It takes, it takes two minutes.

MR. MCCANN: I didn't know you guys had the transcripts.

ALJ: Oh, yeah, we just, I mean, I get them as soon

as the hearing is done, just --

MR. MUDD: I, I think he means written transcripts.

ALJ: Oh.

MR. MCCANN: Yeah, I'm sorry, I get the, I get the written transcripts.

ALJ: So, you're saying you get the e-mail, and you have to send the e-mail or, excuse me, not the e-mail --

MR. MCCANN: Yeah, I send the video out to someone.

ALJ: Oh, oh, and you want to attach the transcript to it?

MR. MCCANN: Well, it takes, so not, not all of it, but I can certainly provide you with a copy of all of it. But, anyway, my point was that --

ALJ: If that's the way you want to do it, I don't, you know, so yeah, maybe it's going to take longer than that.

MR. MCCANN: Well, no, I actually have some already, I just don't have all of them.

ALJ: Okay.

MR. MCCANN: So, I don't want to, that's not, I shouldn't say that's a major reason for extending it. I'm happy to show you, I can give them to Chris and Adam if they want. But I think, the 14th would be great if that's what's being suggested, I think that would be better for me.

MR. ROSENBLATT: Yeah, that, that works.

ALJ: That works for you? How about Mr. Mudd, does

that work for you with vacations, whatever?

MR. MUDD: I'm along for the ride with Mr. Rosenblatt. So, yes.

ALJ: He's doing the work, got it. Right, yeah. And Mr. Zimmerman, (inaudible) --

MR. ZIMMERMAN: Yeah, that, that works fine. I do have some vacation, but the July 14th is fine, is fine.

ALJ: Okay. So, I'm going to put on, I'm going to tell, that was easy, it was just too easy. All right. Greenspring Manor memos due, so you know the rule, July 14th and you just submit them by 3:30, I think is what we always say, 3:30, you know, before that and just, you don't have to submit them before that, just, submit them before that. What's going to happen is people can read yours and reply, as you know.

So, we do it all, always do it simultaneous so that there's no like, you know, brief and then reply brief and all that stuff, because, so you're going to give an advantage to the other side if you file it e-mail, and it is --

MR. ZIMMERMAN: Paper copy, I'm sorry, paper copy as well?

ALJ: Paper copy, yeah, because we still have paper files, so it's not for me (inaudible).

MR. ZIMMERMAN: Right.

ALJ: It's for the file. Yeah, paper copies and e-mail, drop them off. So, if, Mr. Sachse, if you want to do

that, 3:30 July 14th. If Mr. Wyatt wants to do that, he's welcome to as well. He participated and I, I can't believe I want to say that's it. I feel like there must be something more that I'm missing. No?

MR. MCCANN: Nothing else from me.

ALJ: Okay.

MR. MCCANN: Other than thank you.

MR. SACHSE: (inaudible) raise something.

ALJ: You're happy to raise something? What more could you raise?

MR. SACHSE: I can't, but you know, just to make it more fun.

ALJ: More fun. We've had a great time, right, so.

MR. SACHSE: Again, I appreciate all of you.

ALJ: So, yeah, so, all right. So, and everyone here is, the same people are, just for the record, have been in attendance are the same people who have been here a lot of the time, not every single day, but a lot of the, the same people, the same names I recognize, so everybody has been in attendance. That's it, okay?

MR. MUDD: Judge Murphy, I think, I, I can ask Adam, I guess, but I'm sorry, did, what time did you say on the, on the 14th?

MR. ROSENBLATT: Three-thirty.

ALJ: I think we always, don't we always tell people,

I'm asking you all, I think it's always 3:30. I think at 3:30, just because, because that's when if you had to hand deliver it, that's when Debbie and Donna leave, I think, for the day.

MR. MUDD: Okay.

ALJ: They work like 7:30 to 3:30, I think that's their, their deal.

MR. MUDD: Gotcha.

MR. SACHSE: Just say 3:30.

MR. MUDD: Yeah.

ALJ: Right, yeah.

MR. MUDD: Okay.

ALJ: And, and I, I guess it wouldn't be the worse thing if you just, if, if you can't get it there hand delivered on Friday, you could always just, as long as you get it e-mailed by 3:30. And then if you wanted to deliver it, you know, when you got a chance, that, that would be fine because it's just for the file.

MR. MUDD: Okay.

MR. MCCANN: Okay.

ALJ: Okay, everyone.

MR. MCCANN: Thank you, Judge.

MR. ROSENBLATT: Thank you.

MR. MUDD: Thank you.

ALJ: That's it. Thank you all for, you know, really doing a great job. Everyone really did. A long, long, long

case, but, you know, we wanted to make sure everybody got to speak and, and all the documents got in. And of course, you all have outdone yourself again with the number, Mr. McCann exceeded his record for exhibits as usual. And so, you know, just going down into the Guinness Book of World Records for long hearings. So, --

MR. MCCANN: Thank you, Judge.

MR. MCCANN: -- appreciate everyone's, you know, patience and really get us all working together, so it really was a pleasure, as usual.

MR. MCCANN: Take care.

MR. SACHSE: Thank you, Your Honor.

MR. ROSENBLATT: Thank you, Judge.

ALJ: Thank you.

MR. SACHSE: Thank you again, everybody.

ALJ: Bye.

MR. ZIMMERMAN: Thank you.

ALJ: Okay.

(OFF THE RECORD0

CERTIFICATE OF TRANSCRIBER

I hereby certify that the hearing in the matter of Greenspring Manor, 2310 W. Joppa Road, case numbers 08-0922 and 2021-0250-SPH, heard before the Office of Administrative Hearings for Baltimore County, May 31, 2023, was recorded by means of audiotape.

I further certify that, to the best of my knowledge and belief, page numbers 1 through 254 constitute a complete and accurate transcript of the proceedings as transcribed by me.

I further certify that I am neither a relative to nor an employee of any attorney or party herein, and that I have no interest in the outcome of this case.

In witness thereof, I have affixed my signature this 20th day of June 2023.

Christine R. Leary

Christine R. Leary

Transcriber

IN THE MATTER OF:

GREENSPRING MANOR
2310 W. Joppa Road

CASE NUMBERS: 08-0922 & 2021-0250-SPH

Hearing Date: April 11, 2023

Pursuant to Notice, the above-entitled hearing was held before the Office of Administrative Hearings for Baltimore County by remote access.

PRESIDING:

MAUREEN J. MURPHY, ADMINISTRATIVE LAW JUDGE

FOR THE PARTIES:

ADAM ROSENBLATT, ESQUIRE
CHRISTOPHER MUDD, ESQUIRE

MICHAEL MCCANN, ESQUIRE

PETER MAX ZIMMERMAN, PEOPLE'S COUNSEL
FOR BALTIMORE COUNTY

Christine R. Leary
crleary1@comcast.net

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[ON RECORD]

ALJ: Good morning, everyone. You're attending day twelve, case number 08-0922 and 2021-250-SA. Property address 2310 West Joppa Road. This is the combined development plan and zoning case for the project known as Greenspring Manor. And can we have counsel for the record identify themselves, beginning with the Developer.

MR. ROSENBLATT: Good morning, Judge Murphy. Adam Rosenblatt and Chris Mudd of Venable, LLP on behalf of the Developer.

MR. MCCANN: Good morning, Judge. Michael McCann on behalf of the Protestants.

MR. ZIMMERMAN: Peter Max Zimmerman, People's Counsel.

ALJ: All right, looks like everyone is here. And Mr. Sachse, are you leaving us or are you staying? Usually you, you let us know. You're muted, go ahead.

MR. SACHSE: It's a, since it's Tuesday, no, I can stay.

ALJ: Okay, just making sure.

MR. SACHSE: Appreciate it though, appreciate you asking.

ALJ: Yeah, no, no problem, no problem. All right. So, my notes reflect that the last time we were together, it was day eleven and the Protestants, Mr. McCann, was not, had

not finished his case, he didn't rest because he had Public Information Act issues and he had wanted to make sure that he had all the documents that he had requested. And so, he was going to go back and do that.

There was a request by the Developers to request another hearing day, day thirteen. I did that. I don't know what's happened with that. So, I just, guess I'm back to you all. Let me know, Mr. McCann, where are we?

MR. MCCANN: Yeah, good morning again, Judge. Yeah, so we, based on the documents that I've gotten over the past several days, we are going to recall Mr. Summers and Mr. Grachek, but very, very briefly. I was thinking about with respect to Mr., Mr. Summers, just introducing a document, which, but I think I'll just call him for the couple minutes it will take to get the document in. So, yes, we, we, we will be doing that based strictly on the documents that I have received.

I've let Mr. Rosenblatt know about what's going on. The main problem I have, Your Honor, with that is that Mr. Grachek has a conference with multiple clients scheduled today and isn't available until about 1:00. So, I've asked Mr. Rosenblatt, I've made him aware of that and asked him whether or not he would mind putting any non-sewer rebuttal folks on after I put on Mr. Summers first thing. And I'm not sure we resolved that yet.

But the other thing I just wanted to real quick, Judge, if I could just tell you what has happened over the last couple days just for the record, to clarify what's going on. What happened with the PIA request. When we were here last it was Monday the 27th.

That afternoon is when I got the four rather, or three rather large folders, three or four large folders with all the documents in them from the County. I wasn't able to open that link because of the size. So, I e-mailed the County right away and it wasn't until Thursday of that week that I received the documents in a format that I could pull up individual files.

So, it ended up being seventy-seven hundred or so documents. So, I spent the next several days looking at all of those, finished that review this past Wednesday, I think, or Thursday and then passed some of the documents on, a number of the documents on to Mr. Summers and Mr. Grachek and my folks.

And then, over, over the weekend, including the weekend, they reviewed them, and we came to some agreement really, frankly, yesterday about what to do. Because Monday, Sunday night, Easter night, around 10:00 p.m., I received another folder of documents from the County, about eight hundred and twenty more documents.

So, that's just sort of what's been going on. I think I keep, kept Mr. Rosenblatt relatively informed about all

of that, but, as I said, the main problem today is that Mr. Grachek isn't available until 1:00. What I could do is put Mr. Summers on real quick. I do have number, six in total, exhibits that I sent to Mr. Rosenblatt and Mr. Mudd last time, which were sort of these e-mail clarifications that they had asked for and I said I would follow up on.

So, I sent those to them and I think, based on my response, response I got from Mr. Mudd, that they are okay with those six, six exhibits. So, I spent a little time getting those in and explaining to you what they are. But aside from that, we do have this issue of Mr. Grachek's unavailability.

ALJ: And, and so, Mr. Rosenblatt, do you need to hear from these witnesses to get these documents in or can you all look at them and say whether or not you would agree?

MR. ROSENBLATT: We, we likely can look at them. I think one was sent over this morning and Mr. Mudd can address that. I think that's the document that Mr. Summers would either testify to or not. Overall today, I, I'd say the proposal for us to, to put testimony on before everyone's rested is unusual.

But I, I really want to make use of this time. So, maybe if, if Mr. McCann can deal with whatever documents it is that Mr. Summers is here to address, we take care of that, and if every, if all the lawyers, all the parties, can agree that they have rested cases with respect to everything except what

Mr. McCann's going to talk about, sewer only this afternoon with Mr. Grachek, then I can use the morning to put on some rebuttal witnesses about other topics, other than sewer so we're not just wasting a couple hours.

ALJ: So, I guess, I guess my question was though do you actually need to hear from Mr. Summers or Mr. Grachek to get these documents in?

MR. ROSENBLATT: No, --

ALJ: In other words, could we just look at the documents and say, I mean, I'm not, I don't want to oppress you, but that's what my question was. So, we can avoid having more witnesses.

MR. ROSENBLATT: I, I have to ask Mr. Mudd. I guess we don't, we don't know what the documents are for Mr. Grachek --

ALJ: Oh, okay. I see.

MR. ROSENBLATT: We do know, just got an e-mail some time after 9:00 this morning with a document that Mr. Summers would address and, and I think probably the answer is no. I, I don't think we need testimony on top of that. If it, it's just a document that, Mr. Mudd, you want, you want to address whether you --

MR. MCCANN: For the one this morning, sure. So, the one that Mr. McCann sent us this morning, it looks like a, a, well, a, it's a record that was received from, from Baltimore

County's files. And it is a follow-up of the TMDL plan that Mr. McCann presented from, excuse me, 2006, I think. My only concern and, and might form into an objection, is that it, it indicates on its face that it's been submitted by MDE to the County but doesn't indicate that it's been approved by MDE. So, I would have, I'd be, I'd be, I think it'd be helpful to be able to ask some questions about that.

ALJ: Got it, okay. Yeah, that makes sense. I, I didn't want to suggest that you should just, you know, agree, but I also didn't want to make Mr. McCann go through these paces if we didn't, if we were just authenticating the document, yep. But you've made sense that you need to ask some questions.

MR. MUDD: That, that, that's fine and I don't think it's going to be too long, as --

MR. MCCANN: Yeah.

MR. MUDD: -- Mr. McCann said and, and then just to be clear, I think Mr. Rosenblatt indicated this, but we have, to the extent there are more documents coming for Mr. Grachek, we don't have those. And I'm not, I'm not saying that for any other reason than we, we can't, you know, we, I can't say right now whether or not we think Mr. Grachek needs to be called or not because we don't know what he would be called for. We don't have any documents related to that.

MR. MCCANN: Yeah, I, and on that issue, if I may,

Judge? I know I sent your office some new exhibits on, last week and I did that, frankly, out of an abundance of caution because I hadn't really even spoken to my experts about them. So, I'm going to withdraw a number of them and, at the end of the day, we're only going to introduce two, two new documents through Mr. Grachek, one of which I received Sunday night. So, I, I couldn't have provided to you. But I think on those two exhibits, I think a little of testimony from Mr. Grachek is required. But as I said, the, Adam and Chris, I really, really don't think it's going to take longer than a half hour just to get through the two documents. But I can, I can send, I can send those to, to them and so, I can do that.

ALJ: Yeah, you might as well just, can you do that now? I guess --

MR. MCCANN: Yeah, sure, I can do that now.

ALJ: -- to them? I, it, so it's fine with me. I just wanted to see just to make sure, again, I didn't want to have you, Mr. McCann, go through the paces of putting on an expert or a witness just to authenticate a document --

MR. MCCANN: Yeah, believe me, I didn't, I don't want to either.

ALJ: But, no, no, no, it's fine. I mean, if you all need to do that and then sounds like questions might need to be asked so, we can do that. We can accommodate. And so, but Mr. Rosenblatt then, went, sort of skirted to was, are you then

resting your case?

MR. MCCANN: Yes, yes, yeah, I'm resting, I'm resting and I, and I think I told Adam that. So, this would be it for us.

ALJ: Okay, agrees to rest, you agree to rest now and that you're just going to put Mr. Grachek on at 1:00?

MR. MCCANN: Well, Mr. Summers on real quick now.

ALJ: Yeah, yeah, I know.

MR. MCCANN: Yeah.

ALJ: Mr. Summers first. But I'm talking about Mr. Grachek though, you're resting, you know, except that you do have to put Mr. Grachek on at 1:00.

MR. MCCANN: Correct and just I'll, if I, if you want me to, I can explain these exhibits I'm withdrawing from your list, although they haven't been identified yet.

ALJ: Yeah, so, yes, I had, so that was my next thing. We had, last time, the last exhibit I had for you was 101 and that was in evidence, 100 and 101 were both in evidence. And then you've submitted since 102 through 107. And then, of course, we go back to 86 as well, because 86, we were, we were, we needed that, a document showing that it was part of the County's records, that was the Hazen scope of services.

MR. MCCANN: Yeah, and I have that as well.

ALJ: Okay.

MR. MCCANN: So, I'm withdrawing, just on that point, Your Honor, I'm withdrawing, 102 is the document that we've been speaking about, that Mr. Summers will speak to briefly. I'm withdrawing 103 that's on your list and 105, 106-A, 106-B and 106-C. And then, there was a new document that didn't make it to your list, which as I indicated, was received Sunday night, that'll be, I guess, 108, just to keep it clean.

ALJ: Yes.

MR. MCCANN: Okay.

ALJ: Whatever document that is, I don't know what document it is.

MR. MCCANN: Yeah, and those, the, the, that document and 104 I will send to Mr. Rosenblatt and Mr. Mudd now. I guess the other thing is, do you want me to go through these six e-mails? I can do it in just a (inaudible) --

ALJ: Yeah, actually, I was going to ask you to do that just so we have the record clear.

MR. MCCANN: Okay.

ALJ: Because there were, you know, objections to, I guess, them coming in. So, so, why don't you, yeah, go ahead. I have 64-A as the first one.

MR. ZIMMERMAN: May I say one thing, Judge Murphy?

ALJ: Yeah.

MR. ZIMMERMAN: First of all, to corroborate or, in reference to Mr. Rosenblatt's observation, last time I did say

that our office concluded its case. What I want to say about exhibits, there's been a lot of exhibit changes, exchanges, without us being involved. So, we, at the moment, we only have Exhibits 1 to 34 from the Developer, you know, in our computer. And we only have for the Protestants one to twenty-three, twenty-six, twenty-eight, thirty-five, forty-five, forty-six.

So, I would just ask that in due course, as convenient in the next few days if, if the other parties could, you know, send us online their exhibits so that we have a full exhibit situation. And, and we did provide you, I think, an update of our exhibits, including marked out which ones were withdrawn or not admitted and so on. And hopefully, everybody has all of our exhibits.

ALJ: We did that last time. There was only one of yours that wasn't admitted. It was that article from Howard County.

MR. ZIMMERMAN: Right.

ALJ: The last one. And there was just one issue with Mr. Rosenblatt.

MR. ZIMMERMAN: Right.

ALJ: I was looking at to make sure that the addendum was attached, was part of the master plan.

MR. ZIMMERMAN: Right.

ALJ: He sent an e-mail confirming that, right, Mr. Rosenblatt?

MR. ZIMMERMAN: Right, my point is, that I think, I think I, I think we sent all the exhibits to everybody. Everybody should have all of our exhibits. But we don't have most of everybody else's exhibits.

ALJ: Heard that, yep.

MR. ZIMMERMAN: So, I hope they could provide us with that. At least in the next few days.

ALJ: Mr. Rosenblatt, did, did I say that correctly? That you agreed that the addendum that Mr. Zimmerman attached was part of the master plan?

MR. ROSENBLATT: Yes, that's correct. And, and I just want to be clear. We only have submitted thirty-four exhibits. So, you have --

MR. ZIMMERMAN: Is that --

MR. ROSENBLATT: Yeah, you have all --

MR. ZIMMERMAN: Okay, then, okay, I'm sorry. I thought there were more, but --

MR. MUDD: There was, there was one more on rebuttal.

MR. ZIMMERMAN: Okay, all right then. If that's, then, then we have all of them. I've, for some reason, I thought there were more. But I definitely don't have the majority of Mr. McCann's exhibits.

MR. ROSENBLATT: Okay.

MR. ZIMMERMAN: Okay.

ALJ: All right, Mr. McCann, that sounds like another

job for you.

MR. MCCANN: Yep.

ALJ: At some point. But you're, you're still revising and moving this list, so let's go back to where we were.

MR. ZIMMERMAN: Okay.

MR. MCCANN: Okay.

ALJ: 64-A, I think you were on.

MR. MCCANN: Okay. Can I share, Your Honor?

ALJ: Yeah, oh, yeah, sure. Can you just, can you just use this? Oh, let's see.

MR. MCCANN: I think I got it.

ALJ: I don't even have to move it to you anymore. You can just --

MR. MCCANN: Yeah, okay. So, again, I sent these all to Mr. Rosenblatt and Mr. Mudd. The first one is 64-A. And this is, just by way of explanation, Your Honor, sixty-four was the chart that had the DPW sewer capacities on it. And this is the e-mail that confirms that the chart that we introduced as sixty-four is the sewer capacity for this development, for Greenspring Manor.

ALJ: Got it, okay.

MR. MCCANN: So, so that's sixty, 64-A.

ALJ: Yep.

MR. MCCANN: Okay and --

ALJ: And there's no objection, right, Mr. Mudd and Mr. Rosenblatt?

MR. MUDD: Correct.

ALJ: Okay. You'll jump in if there's an objection.

MR. MUDD: Yes.

MR. MCCANN: And then, the next one is 79-A. This is, there was, seventy-nine was a letter from MDE regarding the performance assessment for other sewer sheds, not for the Jones Falls, the approval, that is. And sixty, I'm sorry, 79-A is confirmation from MDE that the, that MDE has not provided any specific feedback nor approval for the Jones Falls performance assessment. And that's what this e-mail is, e-mail chain.

And then 80-A is, I think Mr. Mudd or Mr. Rosenblatt had asked for a complete e-mail chain on my correspondence regarding the Jones Falls performance assessment and its approval or not. So, this is, I said I would produce the complete e-mail chain and that's 80-A.

And then, 83-A is my PIA request from long ago asking for population data and, which I said I would produce. And then 83-B is DPW's response to that PIA request, with the population data attached.

And then lastly, on eighty-six, there was a question about whether the scope of service, services for Hazen had that, was the one, was the one that I had introduced, was the one that the County had accepted, or acted upon, I guess. And

then, this is e-mail confirmation, certification I think we called it, about the final scope of services and DPW confirmed that.

And then attached to the e-mail, just to keep it together, was the, the final one. I can't recall, but I think the one that I had introduced was a couple days before this January 29th date. So, this is the one that, as I said, DPW has certified is, was the final Hazen scope of service.

ALJ: Okay.

MR. MCCANN: And that's it.

ALJ: Okay, that was it.

MR. MCCANN: Yeah.

ALJ: Okay, all right. Hearing no objection, all of those are admitted.

MR. MCCANN: Okay.

ALJ: And then, we just go to the documents that you have that you need introduced today.

MR. MCCANN: Right.

ALJ: So, I guess we're going to call, at this point, unless there's something else, we'll call Mr. Summers back to the stand.

MR. MCCANN: Yes, please.

ALJ: Mr., I see Mr. Summers is here. Just want to turn your video on?

MR. SUMMERS: Not letting me, it's not letting me

turn it on. There it is.

ALJ: There it is. Yep, it worked. All right. So, we swore you in last time, but let me just, since it's been some time, if you could raise your right hand, please? Do you swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. SUMMERS: Yes, I do.

ALJ: Go ahead, Mr. McCann.

MR. MCCANN: Okay, thank you. Mr. Summers, I'm going to show you the document that's been marked as Protestant's Exhibit 102. Do you see this document?

MR. SUMMERS: Yes.

MR. MCCANN: Okay. Tell us what it is and where it came from, if you would.

MR. SUMMERS: This was part of the PIA response from the County that you received recently.

MR. MCCANN: Okay and how would you characterize the document in whole? What exactly is it?

MR. SUMMERS: Well, this is a required implementation plan for the bacterial TMDL that I discussed in my testimony last time. And I had read through this implementation plan, and it follows along with the TMDL document that I testified on and basically I believe confirms what I said about the TMDL previously.

MR. MCCANN: Okay and just so we're, the record is clear, the, the, the TMDL report that you spoke about last time was Exhibit 96, I guess you may not know the exhibit number, but that was from 2006, is that correct?

MR. SUMMERS: Yeah, the 2006 TMDL plan talks about the bacteria, source load being dominated by human sources, that is restated in the implementation plan here. Based on the 2006 TMDL document, I calculated sixteen percent of the households in the watershed used septic systems and this report comes up with 15.8% of the population from septic systems.

MR. MCCANN: And when you say this report, you're referring to this new Exhibit 102?

MR. SUMMERS: The new exhibit, the, the 20, I believe it's dated 2014, correct? Yeah. Submitted to MDE 2014. So, that confirms that part of my testimony. It has some discussion of bacteria monitoring, which basically shows that while some of the data could be interpreted to indicate the improvements of the, additional work as necessary to meet the bacteria water quality standards with respect particularly to high flow concentrations, which I did discuss the high variability of bacteria data in the TMDL document from 2006. And there's really nothing in this report that would change my opinions on that.

MR. MCCANN: Okay. Rather than go through the document itself, could, if you could just identify for Judge

Murphy and counsel the, the page numbers in this report that, that, I think as you indicated, support your prior testimony?

MR. SUMMERS: Yeah, page 3-3 talks about the domination of bacterial sources by human sources. Page 5-6 talks about 15.8% of the population on septic systems. Page, pages 6-, or page 6-8 talks about bacteria data and what was observed there.

And the, page 6-8, I believe in the summary says based on results of current trend monitoring sampling indicates that while improvements have occurred, additional is necessary to meet the bacterial water quality standards, particularly with respect to high flow concentrations.

And that is not, that is consistent and does not indicate any statistically significant trends. It's just general statement and that, I believe, is consistent with what I said previously on the TMDL document.

That the data is just too highly variable to provide statistical trend of either improvement or degradation. Conditions are pretty much staying the same based on the very limited data that's reported, and all these reports acknowledge the limitation of the small number of samples and the high variability.

MR. MCCANN: Okay. Any other pages that just, at least for the record, that we should identify?

MR. SUMMERS: There are sections toward the end of

the report that talk about the different types of practices that need to be implemented to address bacteria. Page 8-2 says that sanitary sewer repairs are a major component and I think need to scroll down. I don't know the page number but Section 9.2.1 talks about reductions in human sources being most important.

MR. MCCANN: Okay. Right here? This is page fifty-nine of seventy-six, 9.2.1, that section?

MR. SUMMERS: Yeah, reductions to human sources. I'm sorry, I lost track of the page.

MR. MCCANN: That's okay. That's page 9-4 for the record. Okay. So, anything in this report, that is Exhibit 102, has anything changed the opinions you expressed when you testified before?

MR. SUMMERS: No, it, it, I believe, is consistent with my previous testimony.

MR. MCCANN: Okay and, and I think you mentioned it, but does this report, Exhibit 102, is this based on any new data than the report from 2006?

MR. SUMMERS: Yes, it does have additional data through, I believe, 2013.

MR. MCCANN: Okay.

MR. SUMMERS: So, it has some more current data in it. But it, as I've said, it doesn't change my opinions previously stated.

MR. MCCANN: Okay and then lastly, to your knowledge, was, was this report, it's indicated final on the first page, was it, was it actually approved by MDE to your knowledge?

MR. SUMMERS: Well, I did, based on receiving this report, dig more deeply into the web and I found a more current version of this report, the 2014 report I just mentioned, dated 2016, posted on the webpage at the County. And actually, I found it, a link to it on the MDE webpage, which then referred the reader to the County webpage.

So, while there's no definitive statement that was approved, it would appear that the 2016 version was approved. And I compared all the sections in that report to what I had just talked about in the 2014 report, and they are pretty consistent, except that the 2016 report includes data through 2015. So, it adds 2014 and 2015 data. But again, that, there's nothing in that data that would change any previous testimony I gave.

MR. MCCANN: Okay. So, just on that point, the, the, the 2016 report that you just referenced, is that consistent with your prior testimony in this case?

MR. SUMMERS: Yes.

MR. MCCANN: In fact, does it reenforce your testimony in the prior, previously?

MR. SUMMERS: It, it, it does in that 2014 and 2015 data show the same variability that the earlier data does. So,

it, it just confirms with a little bit more data the same points.

MR. MCCANN: Okay, all right. Thank you, Mr. Summers. Your Honor, I would move Exhibit 102 into evidence and I'm happy to move in the, the 2016 version that he just referenced. But I don't, I'm not sure it's necessary, but I'm happy to do that.

ALJ: Mr. Mudd, any objection to 102?

MR. MUDD: I, I do. I have the same objection just about the finality of this agreement, or of this document. I understand it came from a County file and it says what it says. But I would object on that basis.

ALJ: Okay. Well, we'll overrule, we're going to allow 102 into evidence. You can cross examine him on that point. So, any cross for him?

MR. ZIMMERMAN: Oh, can I ask a question? Or should I wait for Mr. Mudd?

ALJ: Sorry, Mr. Zimmerman, I did it again.

MR. ZIMMERMAN: Just one, just one or two.

ALJ: Sorr, sorry, Mr. Zimmerman. You're right. I'll, I'll go to you first. I, I keep forgetting that you're into this, this --

MR. ZIMMERMAN: Okay, thanks.

ALJ: My apologies, go right ahead.

MR. ZIMMERMAN: No, this will be brief. So, Mr.

Summers, as far as you know, there's no data after the 2016 review?

MR. SUMMERS: There is not a report that refers to more recent data. There is more recent data on the County webpage. But again, I've looked at that and it is highly variable limited sampling. So, all the previous statements I've made apply.

MR. ZIMMERMAN: Well, how much more recent is that data that you just mentioned?

MR. SUMMERS: Well, you can find data on the, the webpage of the County to a pretty current timeframe.

MR. ZIMMERMAN: So, if I understand, what are you saying that, as to whether, whatever data you've seen up till now does not change your conclusions?

MR. SUMMERS: Yeah, the data are, as I've said, very limited number of samples. They are highly variable, and they do not indicate statistically significant trends, either of improvement or further degradation.

MR. ZIMMERMAN: Okay and what should we make of the apparent fact that there's been no report since either 2014, or as adjusted, 2016, in the last seven years, no, no new reports or summaries?

MR. SUMMERS: Yeah, I think it's, it's basically a situation where all the agencies have a lot of different reports that have to be produced and their staffing and ability

to get all of those reports done requires them to prioritize other activities. So, I think the fact that bacteria is so highly variable and difficult to address, and does not appear to be changing significantly, they have put their priority in other things.

But that is simply based on my conjecture. I hadn't spoken to anyone about that, but I know from my time at the Department, we had to do that kind of triage, if you will, all the time in terms of which reports to focus on first.

MR. ZIMMERMAN: Well, let me just, one or two more. Given that we're eighteen years after the Consent Decree was signed, what would you sign as to whether this, to the extent there's been a lack of updating activity that, that this is an indication that the, the expectations of resolving the issues in the Consent Decree have not been met?

MR. SUMMERS: Well, I believe, and I testified previously on the performance evaluation reports, that the modeling and the monitoring both indicate that expectations have not been met. So, hence the, the Consent Decree is still open, and work is still being done and the e-mail that Mr. McCann showed just previously, that MDE has not approved the performance assessment for the Jones Falls, I believe, speak for themselves.

MR. ZIMMERMAN: Okay. Thank you, Mr. Summers. That's all I have, Judge. Thank you.

ALJ: And let me just ask real quick, Mr. Wyatt, did you have any questions?

MR. WYATT: I do not.

ALJ: Thank you. Mr. Sachse, I'm just going to make sure also, any questions? He's nodding no. Okay, no? All right, great. All right, Mr. Mudd.

MR. MUDD: Good morning, again, Mr. Summers. How you doing?

MR. SUMMERS: Doing well, thank you.

MR. MUDD: What is your, you mentioned that the Consent Decree is still open, and work is ongoing. What's your understanding of, of why the Consent Decree remains open?

MR. SUMMERS: Well, there are many reasons why it's open. But at this point, there is not an approved performance assessment. There are still overflows, that structured overflow at Marnat Road, is, has not been closed. There are many items that have not been addressed.

I testified last time about the City and their request for flow projections that the County was not able to provide at that time. So, there are a lot of unanswered issues, questions, with respect to requirements of the Consent Decree that the County is still working on.

MR. MUDD: Okay and where, what, when you, when you give that, all that testimony and reasons that you gave, is that, is that your personal opinion?

MR. SUMMERS: That is my opinion. It is not based on any conversation with the County or MDE with respect to this. But simply looking at the documentation, you can see that the work is still ongoing?

MR. MUDD: Okay and do you think it's a requirement of the Consent Decree to have a performance assessment approved by MDE?

MR. SUMMERS: Yes.

MR. MUDD: Okay. You, you cited to Section 9.2.1 of the, of the TMDL report, the 2014 TMDL report that you testified about. Do you recall that section?

MR. SUMMERS: Yes.

MR. MUDD: And that, that section deals with reductions to human sources of, of E.coli bacteria?

MR. SUMMERS: Yes.

MR. MUDD: And do you agree with me, and, the, the section also says that SSOs, sewerage overflows, are, are at least in part, contribute to that, do you agree with that?

MR. SUMMERS: Yes, sanitary sewer overflows definitely contribute.

MR. MUDD: Okay and so you, you would agree that if SSOs are eliminated or reduced, then that would likewise, or should likewise, reduce the amount of human bacteria in the receiving waters?

MR. SUMMERS: I believe the TMDL document prepared by

MDE, and the County TMDL implementation plan are counting on that as a major component of what's needed to reduce the bacteria load.

MR. MUDD: Okay and what do you think personally about that? Do you think that the, if you eliminate or significantly reduce SSOs, that that will improve the human bacteria load in the, in the water?

MR. SUMMERS: Yes, it should.

MR. MUDD: Okay, all right. I don't have any other questions. Thank you.

MR. SUMMERS: Thank you.

ALJ: Mr. Summers?

MR. SUMMERS: Yes?

ALJ: Thank you, appreciate it. All right. So, Mr. McCann, that's everything for Mr. Summers, correct?

MR. MCCANN: That is. Yes, thank you, Mr. Summers.

ALJ: Okay. Okay and so, you indicated we're just going to wait for Mr. Grachek at 1:00. But Mr. Rosenblatt, and you indicated that maybe you would have someone to put on in rebuttal?

MR. ROSENBLATT: Yeah, are we, are we all in agreement that all parties, I know there have been three main lawyers, but two additional lawyers involved in the case. Has everyone rested everything with the exception of Mr. McCann putting on Mr. Grachek this afternoon on sewer only?

ALJ: I tell you what. We'll, let's go one by one. Mr. Zimmerman, you indicated you're, you've rested your case.

MR. ZIMMERMAN: Yes, last time I actually said that, yes.

ALJ: Okay and Mr. Wyatt?

MR. WYATT: I have nothing to put on in terms of re, I've rested to the extent I have a case, putting it on not through anyone else involved in the case, no further evidence.

ALJ: Got it. Mr. Sachse?

MR. SACHSE: Ditto, nothing.

ALJ: Same, okay. All right. Mr. Rosenblatt, I think that's your answer.

MR. ROSENBLATT: Yeah, and I think we, for the sake of everyone's time, we'll, we'll put on a witness that has nothing to do with sewer. So, --

ALJ: All right.

MR. ROSENBLATT: -- if I could recall Nick Driban.

ALJ: All right. Mr. Driban, you have to turn your camera on. All right. Mr. Driban, it's been a while, so if you could raise your right hand, please? Do you swear and affirm under penalties of perjury, that the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. DRIBAN: Yes, I do.

ALJ: Okay. Mr. Rosenblatt.

MR. ROSENBLATT: Okay. Just, sorry, Your Honor. I didn't know how long that was going to take so I am right now e-mailing the exhibits to Mr. Zimmerman and Mr. McCann. And Mr. Zimmerman, I included Ms. Wheatley because there's a link to the exhibits, so hopefully that helps, if needed.

Okay and just for the record, Mr. Driban was admitted as an expert traffic engineer, and he will be testifying in that same capacity. Is there anything needed to confirm he's still accepted as that expert?

ALJ: He's still an expert. He was admitted and so, he will still testify as the same.

MR. ROSENBLATT: Okay, all right. Good morning, Mr. Driban.

MR. DRIBAN: Good morning.

MR. ROSENBLATT: We've heard a lot of testimony in this case and we're going to go over some of the, the testimony about traffic and I'm going to ask you questions about various topics related to traffic, okay?

MR. DRIBAN: Okay.

MR. ROSENBLATT: So, let's start with the special variance standard and have, have you listened to all of the testimony in this case? All the eleven days of hearing until today?

MR. DRIBAN: Yes, I have.

MR. ROSENBLATT: And have you heard testimony about

the state of the Falls and Joppa Road intersection and Greenspring Valley and Falls Road intersections?

MR. DRIBAN: Yes.

MR. ROSENBLATT: And testimony that even after the improvements that we're proposing that they may remain at a level F rating under the County's loaded cycle methodology?

MR. DRIBAN: I have heard that testimony, yes.

MR. ROSENBLATT: Okay. I want to talk about the, the statute at issue and the, the district standard language. So, I'm going to share my screen and --

ALJ: So, I just, just want to caution that we, we, I think we went through this on, in, in his direct. I mean, I, and we all have the benefit of listening to the WebEx. I just, again, will let you go forward here some, but I mean, it, I don't want to repeat the testimony that he had before or change the testimony that he had before. And we went through the special variance standard.

MR. ROSENBLATT: We, we did and, and maybe a few of these are reiterating that nothing has changed his opinion, but there's probably --

ALJ: Okay.

MR. ROSENBLATT: -- five topics and they're, they're quick. I'm, I'm getting in the flow of (inaudible) --

ALJ: (inaudible) understood that you would say, that you would ask that question. I, I should, I, I probably jumped

in too early, but I understand that you asked that question. Whether the testimony from some of the Protestants, whether that changed your view --

MR. ROSENBLATT: Right.

ALJ: -- I just caution you that, you know, he did testify and that, you know, I have access to his testimony and so, --

MR. ROSENBLATT: Okay.

ALJ: -- (inaudible) --

MR. ROSENBLATT: I appreciate it, we're not going to be --

ALJ: (inaudible) I just want to make sure he's not changing his testimony so --

MR. ZIMMERMAN: May I jump in? I was just going to object that this is not sounding like rebuttal. This is sounding like either a repeat or a supplement of the main case and not rebutting any specific testimony --

ALJ: Well, that's why, that's why I just asked him about that.

MR. ZIMMERMAN: Yeah.

ALJ: And he just said that a lot of the Protestants had testified in regard to whether or not they thought the improvements would do anything to the roadways and so, he's now saying, asking him whether or not that information would change and so, to that extent, and of course, with rebuttal testimony,

it's always a, you know, a tricky, a tricky decision to make because if, if it's not allowed in, it obviously is just something that, you know, I, I don't want there to be an issue with it later on.

But just having said that, I just want to make sure everyone understood that we all have access to the prior testimony, so, okay. With that said, we're going to let, we're going to let him testify. Is that Mr. McCann?

MR. MCCANN: It is, I'm sorry. Judge Murphy, I do, I do want to, I do want to, you know, impose an objection on this issue of the special variance standard in particular because the only, the only persons to my recollection, I, I've read a bit of the past transcript, not all of them, but the only persons who have spoken to that issue are Mr. Driban himself and the gentleman from DPWT, whose name escapes me right now. But, so we --

ALJ: Mr. Niebre.

MR. MCCANN: Niebre, that's right.

ALJ: Yep.

MR. MCCANN: So, Mr. Driban had the, certainly had the opportunity to respond to that testimony. My clients didn't speak to the standard itself. Nor, nor did they speak to whether or not the, after the proposed improvements, the level of service would remain at level F. In fact, Mr., again, Mr. Driban and Mr. Niebre are the only ones who have, have

spoken to that issue. So, I think if we're going to limit rebuttal to just the testimony of my clients, which I think is, is appropriate to some extent, that discussions about the special variance standard is not part of that. So, --

MR. ROSENBLATT: Judge, I'm happy to explain and this, this whole exercise has taken longer than the amount of questions I intend to ask about this topic.

ALJ: That's usually Mr. McCann's objection. He usually interposes that and says, you're stealing that from him. That was one, that's one of his lines. He's always good with that.

MR. ROSENBLATT: Yeah, so, it, there's been a lot of testimony that these intersections are still going to be failing and it should be denied because they're still going to be failing. That is, I intend to ask him questions related to testimony that was presented in this case.

ALJ: Yeah.

MR. ROSENBLATT: And --

ALJ: (inaudible) it's a difficult issue with rebuttal, to make a decision about whether or not it's, you know, it comes in or not. And so, I'm going to err on the side of obviously letting you ask those questions.

But again, I just caution that, you know, given Mr. McCann's objection and also Mr. Zimmerman's, I think even before they objected I said that I, I know what the testimony

is. And so, Mr. McCann is actually accurate that, you know, there were no expert witnesses on this issue. So, rehashing special variance standard isn't going to, you know, move the ball here, so, or counter what, that, that the Protestants said, but I'm still going to allow it.

MR. ZIMMERMAN: All right.

ALJ: Mr. Zimmerman, I know you're dying to say something.

MR. ZIMMERMAN: I just want to say briefly, we certainly acknowledge that Mr. Driban is a traffic expert. That does not mean that he can interpret the law.

ALJ: I understand.

MR. ZIMMERMAN: I just want, if that, if that's what we're getting at. That's all.

ALJ: Yeah, but that's what, that happens all the time in these cases, that the experts come in and they say this is what the law says. And that's, that's a, you know, that's from, you know, from, from the beginning of administrative practice, that's, that's what they, they do. It doesn't mean that I agree with it.

MR. ZIMMERMAN: All right.

ALJ: Or, or, or, you know, could be that he has a different (inaudible) --

MR. ZIMMERMAN: All right.

ALJ: So, go ahead. All right.

MR. ZIMMERMAN: We'll trust you to sort things out, Judge. Thank you.

ALJ: Thank you, Mr. Zimmerman. Okay, all right. Mr. Rosenblatt, go right ahead.

MR. ROSENBLATT: Okay and I do think that this is the only topic I intend to ask him about where this type of objection may make any sense but. All right, Mr. Driban. I have the Code section up on the screen. I'm going to turn your attention to Section G, the petitions for special variance from this section, ask you again, you've sat through all the testimony in this case, is that correct?

MR. DRIBAN: That's correct, yes.

MR. ROSENBLATT: Okay and have you heard testimony that even after the improvements are made that people suspect the intersections may still be, quote unquote, failing?

MR. DRIBAN: I have heard that testimony.

MR. ROSENBLATT: Have you and, and you've testified about this already, but do you have an opinion as to what the, what the review is, what the district standard is, as explained in the subsection that's shown on the screen now, Section G?

MR. DRIBAN: Yes, the, the district standard is that the, after the development traffic is in place, the, the development must mitigate so their impact is zero or less than zero. In other words, they must, they must leave the intersection better than they found it with their traffic

included.

MR. ROSENBLATT: What, what did you do to form that opinion?

MR. DRIBAN: We met with County Traffic Reviewer, Mr. Niebre, reviewed the regulations myself, and also reviewed the Torch Hill ruling on Seminary Avenue.

MR. ROSENBLATT: Okay. I, I have marked, there's been a number of cases marked and submitted as exhibits, Judge. I normally don't do this, but Exhibit 37, Mr. Driban, is this the, the Torch Hill opinion you referenced?

MR. MCCANN: Your Honor, may I have a continuing objection? I don't want to interrupt any more.

ALJ: Yes, you can. Overruled.

MR. MCCANN: Thank you.

MR. ROSENBLATT: Okay.

MR. DRIBAN: This is, this is the opinion I reviewed.

MR. ROSENBLATT: And if we scroll down to page forty of this opinion, there's analysis on special variance. Did you, did you review this section?

MR. DRIBAN: I did.

MR. ROSENBLATT: Okay and based on your meetings and review of documents yourself, the testimony that the intersection will still remain failing potentially after the improvements are made, can you explain how the different methodologies play into that still failing assumption?

MR. DRIBAN: Right, so as I, as I testified in my original testimony, there are a number of different methodologies that can be reviewed for traffic. The County's, the County's mapping, basic services mapping, is based on the loaded cycle methodology, which is based on a field review of actual cuing at the intersections.

And the only way to understand what's happening with that cuing are to, to, to review loaded cycle methodology, is based on a field review. So, there's no way to identify, you know, the extent of an improvement until that improvement is actually in place. And so, we use other methodologies to evaluate operations and the improvement caused by various changes to an intersection.

MR. ROSENBLATT: Okay. Let's, let's move on from special variance standard and talk about the proposed improvements that are being made in this case. I'm showing you Developer's Exhibit 16, which was previously admitted. If you recall, this is a two-page exhibit of a before and after view of the proposed improvements to Falls Road and Joppa Road. Do you remember this exhibit?

MR. DRIBAN: I do.

MR. ROSENBLATT: And we've heard testimony that the improvements that are proposed and adding lanes on Joppa Road, will potentially create more traffic at this intersection. And can you explain your position on that assertion?

MR. DRIBAN: Yeah, my position is based on the traffic analysis that we conducted, which was reviewed by the County and by the State. And showed that the improvements proposed at this intersection will have not only benefits to this intersection but to the entire corridor of Falls Road.

You know, mitigating well, well above the amount of traffic that we are, that we're adding along this corridor. Some, in some locations, actually in excess of, you know, close to a thousand percent mitigation.

MR. ROSENBLATT: Okay and there was testimony that, as you can see on the top left of both sheets of Exhibit 16, there's an access road or alley that runs behind the gas station sort of parallel to Falls Road, can you see that in the upper left?

MR. DRIBAN: Yes.

MR. ROSENBLATT: And there was testimony that it will become more difficult for people to make a left turn out of that access road onto Joppa Road. And can you speak to your, your opinion as to whether that is the case?

MR. DRIBAN: Yes, if you, I think that the, the best way to see it is just kind of flipping back and forth between these two pages as you're doing. If you look at page one --

MR. ROSENBLATT: Sorry, (inaudible) that happen.

MR. DRIBAN: Yeah, if you look at page one where the existing double yellow center line is as it relates to that

driveway and then flip to page two.

MR. ROSENBLATT: Okay.

MR. DRIBAN: You can see that that line really isn't shifting by more than, more than a foot or two at the location where the driveway is. It's, you know, it's basically in the same spot and so, today a vehicle coming out of that driveway has to cross three lanes, there are going to be looking, assuming they're going to be turning left onto Joppa Road, they're going to be looking to their left, and they're going to be looking at three lanes of oncoming traffic.

If you flip to page two, there is, in our improvement, we are opening up a fourth lane, but that fourth lane starts to develop kind of beyond where that driveway is. So, the center line isn't shifting and the amount of traffic or the, the lanes of traffic that a vehicle turning left out of that driveway, out of that intersection onto Joppa have to cross, it's still three lanes of traffic. There's really no change as to how a vehicle exiting that intersection would, would see the intersection or the traffic coming towards it.

MR. ROSENBLATT: Okay.

MR. DRIBAN: So, I, I, in my opinion, there's no change to operations or safety as a result of this, this modification.

MR. ROSENBLATT: Okay. We've heard testimony from, or an argument from Mr. Zimmerman, testimony about the trip

projections that were used for this project. And can you just respond as to whether the ITE manual can appropriately project trips in this case?

MR. DRIBAN: Yes, --

MR. ZIMMERMAN: Objection.

MR. DRIBAN: -- as I testified previously --

MR. ZIMMERMAN: Objection. That's not rebuttal of any testimony. I mean, he's not here to be the lawyer, you know, a co, co-attorney to respond to my whatever, I don't, whatever argument or whatever, you know, I don't, I don't know what we're getting into, but this is not rebutting certain testimony.

ALJ: What, what I remember is that Mr. Zimmerman asked a question on cross, the response was given by Mr. Driban and, and that's where it ended, because there is no other witness that testified for either People's Counsel or for the Protestants here in regards to those projections. And so, Mr. Driban already answered the question as I recall. Mr. Rosenblatt?

MR. ROSENBLATT: Yeah, and that, that's fine. But there have been citizens that have complained that we are underestimating the amount of traffic from this project. So,--

ALJ: Okay.

MR. ROSENBLATT: -- I'm asking him to rebut their testimony.

ALJ: Okay. So, you, but you couched the question as what Mr. Zimmerman said. So, so your question really has to do with what the Protestants said?

MR. ROSENBLATT: Yeah, there's, there's been testimony in this case that, about whether we're properly accounting for the number of trips. And I can specifically ask him about at least one of the witnesses saying how many trips he takes to and from his home.

ALJ: Okay.

MR. ROSENBLATT: And how that impacts the analysis.

ALJ: Then that's fine. That, that testimony, that's fine. But that's what you had said when you phrased the question, you said Mr. Zimmerman said this. And this, so he questioned the (inaudible).

MR. ZIMMERMAN: And I still object, because there's no foundation for him to rebut what a particular witness said about how many trips that witnessed observed. Either the witness observed them, or they didn't. Okay? This, Mr. Driban can't say what a witness observed on a particular day.

ALJ: Understood. No, I understand that, but they're still entitled to rebuttal. So, we're going to allow it. Go ahead, Mr. Rosenblatt. Overruled.

MR. ROSENBLATT: This, just for the record, feels extremely disruptive for People's Counsel to be making objections about a topic that is arguably not even within the

role of People's Counsel and it's repeated lengthy speaking objections. And I don't know if the goal is to throw off the, the cadency here or what, but it is very disruptive this morning.

MR. ZIMMERMAN: No, it's definitely legitimate and this is part of our case to deal with the special variance and traffic, public safety issues that are part of the development review. And consistent with the master plan and the special variance issues.

ALJ: Okay. Well, I'm going to overrule his objection. So, go ahead, Mr. Rosenblatt.

MR. ROSENBLATT: Okay. Mr. Driban, again, can you speak to the validity of the trip projection that you entertained for this project?

MR. DRIBAN: Yeah, I, I mean, I think there's been an array of testimony, talking about the impact of traffic from this development. And the way we evaluate that is the industry standard. It's the ITE trip generation manual. It's based on, it's used nationally, locally, by the State. It is the standard manual that is used for this type of analysis.

And the trips in that manual are based on hundreds of studies done throughout the country for a specific type of use. And actually, in this case, for single family housing, there are over the rates that we utilize in our study are based on over two hundred studies in that manual for both the a.m. and

the p.m. peak hour where someone has gone out and counted the, the, the number of trips going into and out of a specific development, you know, based on the number of units in that development.

So, this is, this is, this is a, this is, the way this is, this is the way this is done and, and the data in this case is overwhelming in terms of the, the manual. You know, there are, there are some uses in the manual that only have a couple of studies that support them. And in those cases, you know, there might be something to needing to look at, you know, different data.

But when there are two hundred studies, you know, that is, that is, that is plenty, more than enough data, to evaluate the number of trips during the peak hours. And in this case, it's really not even a close call because as I, as I mentioned in my, you know, earlier today and also my previous testimony, our development, the improvements that are being made is a (inaudible) you know, close to a thousand percent mitigation of the trips that are being generated.

MR. ROSENBLATT: Let's, let's talk about the, if you recall, a, a resident, I believe, in the Tallyho neighborhood who said he takes approximately fifteen trips on some days with three kids in and out of his home. How does, how does that type of testimony impact the trip projections for this project?

MR. DRIBAN: Right, I mean, I certainly can't speak

to his specific trip patterns. You know, I, I didn't go out and observe, you know, how that gentleman conducts his daily business. But, you know, as I testified to a moment ago, the ITE trip generation manual is based on, you know, hundreds of, hundreds of studies that have been averaged to develop the, the average rate for someone, you know, for a, given the type of single family development based on the number of units.

And so, you know, while that gentleman may have more trips than the average, the average homeowner, you know, we can't infer from that that sixty homes here would each have, you know, fifteen trips a day or multiple trips during the peak hour.

We use the data that is in the ITE manual, just as, as the State uses it, the County uses it, the Federal, you know, Federal studies use it. And that is the best source of data available. And based on that, we get our trip generation for the analysis that we conducted.

MR. ROSENBLATT: Let's move on to the issue of the gate. So, sharing my screen, I'm reshowing you Developer's Exhibit 28. And I'm going to ask you, you've heard testimony, a fair amount of testimony from the Meadows and Boxwood community, as well as the Tallyho community, about the proposed emergency only access gate in the rear of this project?

MR. DRIBAN: Yes.

MR. ROSENBLATT: And can you address the testimony

where you have people for and against and can, can you explain your position about the, the varying testimony and what, in your opinion, leads to the most efficient flow of traffic?

MR. DRIBAN: Yes, so as I testified to previously, the challenge with --

MR. ZIMMERMAN: Objection. I just got to, I just want to object again. This is definitely not rebuttal testimony. This is just kind of elaborating the main case, repeating the main case. I mean, you know, this is extending the hearing with --

MR. ROSENBLATT: It's just not true. There was a lot of testimony about this issue, and he's allowed to rebut people saying it's a good idea or a bad idea or rending their opinions. I, I know this is the first ever Hearing Officer's hearing you've ever attended, but this, this is common. We, we have to rebut what was said.

ALJ: Yeah, understood. Under Elm Street, especially, that's what Elm Street says. And so, again, as, as I repeated, it's a tough call in terms of rebuttal and whether to exclude it or not and so --

MR. ZIMMERMAN: All right.

ALJ: -- some of it might be repetitive of what it was before. And I just caution, again, you know, the Developer's counsel he knows that obviously we don't want to repeat all that testimony again. But again, the other side of

it is they're allowed to rebut what people have said in, in the, in the Protestant's case. So, overruled.

MR. ZIMMERMAN: All right.

ALJ: Go ahead, Mr. Rosenblatt.

MR. ROSENBLATT: Okay. The, the crux of the question is what do you believe will lead to the most efficient flow of traffic and why?

MR. DRIBAN: So, as I, I'll keep it brief, but as I previously testified, opening Mays Chapel Road would induce, based on our analysis, a substantial amount of traffic to use, to use that local, local street as a cut through. It's a very direct route, you can see on this map, it's a very direct route between Joppa Road and Seminary Road. Unlike Falls Road, which is arterial, Mays Chapel Road does not have traffic signals on it.

And so, it would, it would likely cause a high volume of traffic to cut through what is, essentially, a neighborhood street. And so, best planning practices from again, local, state and federal guidelines, all dictate that there should, the higher functional class, which is Falls Road arterial, is where the traffic should be prioritized and, and, you know, essentially, pushed to and you do not want for both, for safety purposes, as well as a number of other reasons, you don't want to put a high volume of traffic on a, on a street that's designed for, you know, driveways, children, people walking,

bicyclists.

And so, I think the evidence is very clear that, that May, that opening Mays Chapel to traffic by not having a gate is, is against all best practices, you know, on every level.

MR. ROSENBLATT: Okay. Let's move on to some accident data. Do you recall testimony about there being a number of accidents at the Falls and Joppa Road intersection?

MR. DRIBAN: Yes.

MR. ROSENBLATT: Did you investigate any of the actual numbers related to accident data?

MR. DRIBAN: Yes.

MR. ROSENBLATT: And what did you find?

MR. DRIBAN: Okay. So, we, we reviewed SHA's crash data, the Maryland State Highway Administration's crash data, for the three intersections along the Falls Road corridor. And we also looked at the volumes of the traffic study in order to determine the crash rate for those three intersections.

Generally, the crash rate is calculated as the volume, the, excuse me, the number of crashes per one million vehicles entering an intersection, and typically, if you have a crash rate greater than 1.0 crashes per million vehicles entering an intersection indicates that the intersection may need further evaluation or study for safety issues.

In this case, the crash rate for all three of the intersections, Joppa, Greenspring Valley and Seminary, along

Falls Road were all below the 1.0 threshold. Specifically, Joppa was 0.54 crashes per million vehicles entering, Greenspring Valley was 0.29 and Seminary was 0.31 crashes per million vehicles entering.

And so, based on the data provided by SHA, there's, there's not a safety issue, measurable safety issue, at these, at these intersections.

MR. ROSENBLATT: Okay. There was testimony that the improvements that we're proposing are potentially going to increase the number of crashes. And can you speak to that assertion?

MR. DRIBAN: Sure. So, when we look at safety and how potential changes are going to, to affect an intersection or a section of roadway, we look at something called crash modification factors. There's a database federally maintained that, that includes crash modification factors for different types of intersection improvements.

And for the addition of a left turn lane at an intersection, which is what we're doing on both of the approaches at the, at the Joppa intersection, the crash modification factor would indicate that crashes would be reduced along those approaches by as much as twenty percent.

MR. ROSENBLATT: Okay and there was testimony about fatal crashes, a recent fatal crash at the Joppa/Falls Road intersection. Have there been any fatal crashes in the, in the

last three years that you were able to find?

MR. DRIBAN: The three years of SHA data that we were able to review did not indicate any fatal crashes at the intersection.

MR. ROSENBLATT: Okay. There's a lot of testimony about just the, the level of traffic on these roads and, essentially, about it being difficult or even horrific, quote, all the time. And my question for you is did you collect any additional data after hearing the testimony in this case to address these allegations?

MR. DRIBAN: Yes, we did. We, we went out and we set data collection cameras. When we collect intersection data, or traffic data, we use video collection cameras that are designed to record traffic in relatively high definition and record over a period of several days. And so, we set a series of nine cameras along the corridor and recorded three and a half days' worth of data with those cameras each, each camera.

MR. ROSENBLATT: Okay and I'm going to show you what has been marked as Developer's Exhibit 38. Can you see a, the start of a video on my screen?

MR. DRIBAN: Yes, I can.

MR. ROSENBLATT: I believe this video is approximately one minute long. It's been sent to counsel. Can you explain, well, it's time stamped. When was this video taken?

MR. DRIBAN: So, this video is from 9:30 in the morning on Fri, on Friday, January 20th, 2023.

MR. ROSENBLATT: Okay and I'm just going to hit play. If you could explain what, what the video shows or, and before I do, I'm sorry. Can you orient everyone to where this, where this is?

MR. DRIBAN: Yes. So, we're looking southbound along Falls Road at the intersection of Joppa Road. So, if you sort of look past the intersection toward the, I guess the top of the video or so, where the sky is, that would be traffic coming off of 83 and, and the beltway interchange and entering the Falls Road, traveling northbound to enter the Falls Road at Joppa intersection.

MR. ROSENBLATT: Okay and I'm going to hit play and just, can you explain what, what the video shows?

MR. DRIBAN: Yes. So, this, this is a sixty second clip. Just to get, just to sort of orient everyone. I, I explained what direction we're looking and, again, this is just a, this is just a representative sample of kind of what these videos look like, so you can get a sense of, you know, the definition and, you know, and what we see when we look at the videos.

And basically, what we, what we were trying to do with, with this data collection after was to get a better sense of how traffic fluctuates throughout the day. We, we've heard

testimony, you know, from a number of individuals in the area that traffic is horrific throughout the day, every day.

And so, again, we captured data from midday Wednesday the 18th of January through, as long as the cameras lasted on Saturday, January 21st, which again, was about three and a half days of data. And, and we used that data to, to just get a better understanding.

Those, those dates were not, that's the only days we set cameras, those dates weren't sort of cherry picked in any way. They, we decided to do this data collection (inaudible), and this was the first day we could get out there prior to the hearing that was originally scheduled for the end of January, when I was expecting to do this rebuttal testimony. So, that's, that's what this shows.

MR. ROSENBLATT: Okay and did you prepare another video as well?

MR. DRIBAN: I did, yes.

MR. ROSENBLATT: Okay, bear with me. I want to show you what's been marked as Developer's Exhibit 39. And ask you to explain what this second video shows. So, just to orient everyone, what is the, the time and date of this video?

MR. DRIBAN: This is, this is the same location looking, again, southbound at the Joppa intersection. And this is starting at 7:00 in the morning, 7:02 in the morning on Jan, Friday, January 20th.

MR. ROSENBLATT: Okay and I note this video moves quickly. Can you explain what we're going to see just in, in terms of overall time?

MR. DRIBAN: Yes, so this video is sped up to a hundred- and twenty-time speed. And the purpose of this video is just to kind of give you a sense, give everyone a sense, of, you know, again, what we see when we look at these videos. We do have the ability to, you know, use video software to speed them up and, you know, watch things more quickly, more, you know, slowly.

But this one specifically is sped up really fast, obviously, much faster than we'd watch it, in order to, you know, again, just sort of provide an overview of how traffic fluctuates during a, during a peak, peak hour. Typically, the peak period is from 7:00 in the morning to 9:00 in the morning. And so, this is just a, a sampling again of this location and, and what we observed, you know, based on the videos we set out there. So, if you want to go ahead and click play.

MR. ROSENBLATT: I will, I will play it and just explain what, what we will see.

MR. DRIBAN: Sure. So, again, typically peak hours are between 7:00 and 9:00 a.m. And so, you can see that, you know, as we build from 7:00 in the morning, you know, particularly southbound, people heading to I-695 and I-83, which would be towards the right side of the screen, you do

see, you know, traffic, some cuing for the left turn, the southbound left turn lane and onto Joppa Road. You know, you see traffic coming northbound.

You can also see the, the eastbound approach coming up Falls Road by the park there that there's some traffic along that approach. And as this goes through, we're now at 8:15, so this is kind of in the heart of the peak hour.

You can see that there is cuing, you know, again, the southbound direction kind of coming back towards the edge of the screen as far as, as far as we can see. And so, so the video is kind of jumping around a little bit on my end.

But as we get to 9:00, there is still some traffic, but as we move past 9:00, you can really see that the traffic will start to die down here, so the volumes start to decrease and, you know, the cuing that you saw is really, is really non-existent once we sort of get past 9:30 or 10:00.

You know, certainly there are vehicles stopping. It's a signalized corridor. This is an arterial. We would expect there to be, you know, a volume of traffic here. And of course, when the light is red they do have to stop. So, there is some inherent delay in having any traffic signal.

But this sort of discussion that there's constant traffic and, you know, and, and that there's no, there's no time when this corridor is not congested, I think if you watch this video, and then we'll go through some additional data that

we prepared as well, you can see that here we are at 10:45 and, you know, there's a couple of vehicles cuing when the light turns red, when the signal turns red, but you're not seeing those heavy southbound left turn cues.

You're really seeing very little traffic cuing northbound. And so, you know, again, here by noon, you know, you can see the intersection is operating, essentially, at, at a relative, relatively free flow state. Certainly, would not be a failing level of service.

I would say just based on visual observation. This is maybe a level of service A or B, which are among the best possible levels of service. And so, that is, you know, again, just of, just of a five-hour clip kind of showing how traffic changes from the beginning of the peak hour through the midday.

MR. ROSENBLATT: Okay and I, I'll show you one more exhibit you prepared, which is Developer's Exhibit 40. And this is a series of slides. Can you explain what, what this exhibit is before I flip through it?

MR. DRIBAN: Yes. So, again, this is the, the same camera that we had placed, and this is starting, when we, when we first set the camera on Wednesday, January 18th, this is 1:00 in the afternoon. And this series of slides, which hopefully we'll go through pretty quickly, basically just shows a snapshot of traffic every hour on the hour over the three and a half days that we, that we had the cameras out there.

You know, certainly it's not showing everything, but I think that is a representative sample of kind of how traffic fluctuates. So, starting here, at 1:00, you can see that there's, there's very little traffic at the intersection. You know, certainly no long cues on the, on any of the, the northbound or southbound approach.

MR. ROSENBLATT: Okay.

MR. DRIBAN: And as we flip through, you know, 2:00 on a Wednesday, basically the same. By 3:00, you know, schools are starting to let out around this time. We're sort of building volumes, you know, are starting to build toward the peak hour volumes, so increasing.

Here's 4:00. By 5:00, you can see the traffic coming from I-695 and I-83. There's some cuing going northbound so certainly, you know, that, that movement is starting to get a heavier volume and, you know, that approach likely is operating at a lower level of service certainly than it was at 1:00 or 2:00.

Six o'clock, you know, you can see traffic, there's still some traffic out there and notably there is, there was a truck that broke down in the, in the auxiliary lane around, along northbound Falls Road and was there for some amount of time, which you know, may have had an effect with, on traffic in terms of, of impeding it or slowing it down more.

Here's 8:00. You can see there's not, other than

maybe one vehicle along westbound Joppa Road, there's really no, no traffic at the intersection, you know, other than the broken-down truck.

MR. ROSENBLATT: I'm going to flip through the night quickly, but can you just summarize what the night shows?

MR. DRIBAN: Yeah, so we, so we didn't, sorry, Adam.

MR. ROSENBLATT: Go ahead. No, I'm sorry.

MR. DRIBAN: So, we didn't, you know, certainly didn't want to include every single hour overnight, but you can see that overnight there's, you know, little to no traffic. And then, you know, by 6:00, 7:00, this is starting the Thursday, you know, peak hour.

By 8:00, you can see there is some volume at the intersection. Nine o'clock, again, southbound there's some traffic, the truck is still there. By 10:00, minimal, minimal traffic in the, in the photo. Same with 11:00. You know, 12:00, again, kind of similar.

The volumes do tend to spike a little bit during the lunchtime hours, as people run to, you know, maybe Greenspring Station or, you know, just out from their office to run errands, things like that. So, you do tend to see a, a small peak, not as high as the a.m. or p.m. peaks, but there is typically a smaller peak between 12:00 and 1:00.

Here we are at 2:00. Three o'clock you can see traffic starting to build. There's a school bus. You know,

this is, again, when schools are starting to let out and you might see traffic. Here's the beginning of the peak period, 4:00. You can see volumes are getting a little heavier.

By 5:00, again, that traffic coming off of 83 and the beltways, both directions of the beltway is, is relatively steady, pretty heavy. And again, this is, you know, 6:00, still within the peak period. Again, this is what you would expect of an arterial volume.

There is volume, you know, during the peak hours, during the peak periods and as we flip to 7:00 and 8:00 here in the evening, you can see those volumes start to die down. By 8:00, minimal traffic. Here's midnight, 4:00 a.m., you know, again, no cuing, no, no operational issues.

We're now approaching 7:00 a.m. on a Friday, so the beginning of a peak. The truck has finally been removed. You can see volumes at 8:00 or, you know, are starting to build. Again, this is within a peak hour. Nine o'clock there's still some traffic at the intersection.

Ten o'clock, again, we've, we've, we left that peak period and volumes are starting to die down. Here's 11:00. Twelve o'clock, no traffic northbound, a little bit southbound. Here's 1:00, again, that, a little bit of the, the lunchtime peak that you would typically see on an arterial. Two o'clock, some traffic.

By 3:00, again, this is that school peak that I've

discussed and, you know, start building towards the p.m. peak hour. Four o'clock. Five o'clock, there's some traffic. Six, and again, we get into the overnight hours, 7:00 almost nothing, 8:00.

By 10:00, midnight, 4:00 a.m., very little traffic. I mean, this is level of service is the best, there's no vehicles out there to speak of. Now, we're on to Saturday morning, you know, Saturday morning the peak tends to be a bit later. It's usually between 11:00, noon, 1:00 in most locations, as opposed to the 7:00 a.m. to 9:00 a.m. you'd see on weekdays.

So, this is 8:00 on Saturday, January 21st, very little traffic. Nine o'clock in the morning Saturday, nothing. Ten o'clock, you can start to see some volume, but certainly not substantial cuing. Eleven o'clock, again, there are some cars out there. Twelve o'clock, kind of similar. One o'clock.

But generally, you know, this video doesn't show any substantial cuing when we reviewed it on, on Saturday at all. So, here's a little bit at 3:00 in the afternoon. Four o'clock you can see some traffic coming off both directions of the beltway and 83. Here's 5:00, not much going on. Six, 7:00, 8:00, 10:00.

And so, again, just to summarize this, in the three and a half days of video that we captured, there certainly are sometimes when volumes are, you know, are substantial at the

intersection. This is, this is standard arterial volume. If you look at a graph of most arterials, they peak from around 7:00 to 9:00. They drop back down. There's a smaller peak from, call it, you know, noon to 1:00, drops back down and then starting from 3:00, 4:00, 5:00, 6:00, there's another peak, which is typically the highest peak.

And that, and so that's standard for arterial. And if you, and, but if you look at the remaining hours of the video, you know, at this location, there really is not any sort of traffic issue. You would be able to progress through this corridor with --

MR. MCCANN: Objection. Hold, hold on. Sorry to interrupt. Judge, I'm sorry to interrupt the witness. The, the testimony is veering off from what's in front of the witness, and thus, in front of everybody else, to other video that he apparently looked at and he's now, he's testifying as, you know, his, his own words, if you look at the, at this other video, you'll see x.

I, I don't, I really don't think that's appropriate to be characterizing video that isn't in evidence, that we don't have the opportunity to see and particularly the conclusory fashion in which he's testifying about that video, as well as the photographs we're looking at right now. I mean, the leaps and bounds here are remarkable. Particularly for, for photos we haven't seen, so. That's my objection on –

MR. ZIMMERMAN: And, and I'd like to supplement, just to understand, Judge, you're being very lenient on the, the testimony. And, but just, for the record, I, I just want to kind of reiterate that I think all of this testimony is either elaborating or things that could, should be in the main case. This is not truly rebuttal. And I'll, and I'll stop at that so as not to be disruptive.

ALJ: Sure. I didn't hear when Mr. McCann said that he was talking about other videos. All I heard was the three days of videos that were in front of us, or the slides that are in front of us. I didn't hear anything else. Was there something, was there something else, Mr. Rosenblatt, that he was referring to that we haven't seen?

MR. ROSENBLATT: No, not, not yet.

ALJ: Okay.

MR. ROSENBLATT: I, I must say though, in every traffic study, there's, it relies upon data that we don't see, you, you don't put on the entire video of traffic counts. Experts routinely summarize what they, data they collected and what they see in the field. So, --

MR. MCCANN: That's, that's data though. Now we're talking, and maybe I misheard him. I said, I thought he said if you look at other video, or the entire video, or something, then you'll see x. That's what I heard him say. If that's not what he's referring to, then, then okay.

ALJ: I, I --

MR. ROSENBLATT: Well, Judge, --

ALJ: Go ahead.

MR. ROSENBLATT: -- sorry, go ahead. I, I was just going to say, we, we don't plan to, to put into evidence nine cameras that each show three and a half days of video. We picked a few of the videos. I do intend now to ask him some questions about some other points without putting in entire videos and I do think that's appropriate and consistent with any traffic engineer testifying about data they've collected.

ALJ: Okay, understood. Yeah, I'll, I'll overrule it, go ahead.

MR. ROSENBLATT: Okay. So, he was in the middle of answering just what, what these images or video showed. Is there anything else, Mr. Driban, you were in the middle of a sentence when Mr. McCann objected.

MR. DRIBAN: No, I mean, I think that sums it up. The, the, the point is, you know, if you watch the, the images that we just flipped through, you know, and I did watch the video that supports these images and, you know, in order to create them and also in order to conduct my own observations.

You know, it, it shows as I described it, which is that there is traffic as one would expect on an arterial during the peak periods and really, outside of those peaks, there's, there's not what would be considered any sort of, you know,

operational issues or anything that would rise to the, you know, to the classification of being, being considered failing level of service or, you know, really everything outside of the peaks looks like a level of service A or B based on my observations.

MR. ROSENBLATT: Okay. I'm going to show you, because I think it's the best exhibit to get an aerial, it's actually a Protestant exhibit number twenty-five. And can you see my screen now?

MR. DRIBAN: I can, yes.

MR. ROSENBLATT: Okay and did you, did you collect additional data for other points other than the camera view that you just showed and took images of?

MR. DRIBAN: Yes, we had a total of nine cameras, both along the, the Maryland 25 corridor, Falls Road corridor, as well as several along Joppa Road closer to the site access and, you know, further back to the east along, along Joppa Road.

MR. ROSENBLATT: Okay. What, what did your data show you with respect to Falls and Greenspring Valley Road? Are there any major differences from the pattern that we just showed via video and image for Falls and Joppa Road?

MR. DRIBAN: No, the, the patterns, as, as I described them for Falls and Joppa were very similar for Falls and Greenspring. You do see some traffic during the peaks.

But during the off-peak periods, things are operating relatively free flow, minimal delay and the intersection operates quite well.

MR. ROSENBLATT: Okay and I just, I just want to ask you about a few specific statements that were raised in testimony by Protestants in this case. Okay?

MR. DRIBAN: Um hm.

MR. ROSENBLATT: So, in, in your data collection efforts, did you see any cuing on Joppa Road back past the proposed entrance to this project or back to Tallyho?

MR. ZIMMERMAN: I got to repeat the objection. This isn't rebutting any specific testimony. This is just giving his, his own observations as if it's his case, but --

MR. ROSENBLATT: I just said, somebody testified that that happens. Did you see in your data collection any of that happening. That is directly rebutting a specific statement of a Protestant, Mr. Zimmerman.

MR. ZIMMERMAN: No, it is not because that, that observation by a witness might be on a certain time and a certain day. And Mr. Driban is talking about some other time or some other day, it's, it's apples and oranges in my opinion.

ALJ: All right. Well, you can, you can cross examine him on that so overruled. Go ahead.

MR. ROSENBLATT: Judge, is there any way to curtail Mr. Zimmerman's interruptions?

MR. MCCANN: You can't, you can't, --

ALJ: No, no, there isn't.

MR. MCCANN: -- you can't do that, come on.

ALJ: So, so understood, Mr. Zimmerman is making the objections that he thinks is, he needs to make for his case and for the record. And so, no.

MR. ZIMMERMAN: It's just possible that I'm right and Mr. Rosenblatt is wrong. But I understand that the Judge is being very lenient here and I do appreciate that so I'm not criticizing any of the rulings. But I happen to think that I am correct.

MR. ROSENBLATT: Of course, you do.

ALJ: All right, understood. All right, all right. Everybody play nice in the sandbox. Okay, boys. Let's go. Mr., Mr. Rosenblatt, go ahead.

MR. ROSENBLATT: I had asked, based on the testimony, that traffic cues to the site access point or to the Tallyho, in all of your data collection efforts, did you see cuing back to our site or back to Tallyho?

MR. DRIBAN: No, the data that we collected along that approach over the three and a half days, did not show anything even close to either the site access point or to the Tallyho Road.

MR. ROSENBLATT: Okay. I'm going to, I'm going to zoom in a little bit and ask you about Station Drive. So, for

the record is clear, Station Drive is the road that runs perpendicular to Joppa Road, into the parking lot behind Greenspring Station. Can you see that on Protestant's Exhibit 25, to the left of the, of the indicator for Baltimore Orthodontic Group?

MR. DRIBAN: Yes.

MR. ROSENBLATT: Okay. So, there was testimony that cues from Joppa Road extend back past Station Drive. Did you see any of that in your data collection efforts?

MR. DRIBAN: In the videos that we collected during the a.m. peak and off peak, there was not cuing that extended back to Station Drive. Vehicles, in my observation of the videos, were able to enter and exit that access point without issue.

MR. ROSENBLATT: Okay and I previously asked you about the proposed improvements and their potential impact on the alley that's located closer to Falls Road. But do you believe that the improvements we're proposing will impact in any way the movements in and out of Station Drive?

MR. DRIBAN: I don't believe they'll impact them negatively. They're, you know, as we discussed at the location closer to the intersection, there are, the approach coming up towards Joppa does widen to four lanes, but that's really just as you approach the intersection.

Prior to that, it's, you know, it's three lanes at

the, the other location we discussed today and that will remain three lanes. And then further back towards the driveway that we're discussing right now, you know, again, we're not proposing to change the land configuration.

And so, traffic should be able to operate similarly. If anything, the fact that there's now a fourth lane at the intersection will provide a little bit of additional space for vehicles to cue closer to the intersection. And so, if there are, you know, days where there, where there could be any spillback to that location that would be reduced by the fact that you have additional space for vehicles to cue closer to the intersection.

MR. ROSENBLATT: Okay and having heard all the testimony in this case throughout the Protestant's case, Mr. Zimmerman's case, etcetera, has your opinion as to the potential impact this project would have on traffic in the surrounding area changed?

MR. DRIBAN: It has not changed.

MR. ROSENBLATT: Okay. Thank you. No further questions.

ALJ: Mr. McCann, any cross?

MR. MCCANN: Yeah, I do. Your Honor, would it be okay to take a bathroom break and then maybe just a little bit long, maybe ten minutes, just to collect my --

ALJ: Ten minutes. Sure, absolutely. I'll pause the

record.

MR. MCCANN: Great, thank you.

(PAUSE)

MR. MCCANN: Is it a link you said?

MR. ROSENBLATT: No, it's in, maybe what I'll do is send you five separate e-mails.

MR. MCCANN: Okay.

MR. ROSENBLATT: Try it that way.

MR. MCCANN: Whatever works is great, thank you.

ALJ: Do you need those documents, Mr. McCann?

MR. MCCANN: No, I can go ahead, Judge. That's okay, I'll go ahead.

ALJ: I, I don't want to rush you, if you need to --

MR. MCCANN: No, I'll, if I can have a moment when they do arrive, I'll, I'll take a quick look at them.

ALJ: Sure. And I, I went back on the record. So, we're on the record.

MR. MCCANN: Okay. Should I go ahead?

ALJ: Yep, absolutely. Yeah, go right ahead.

MR. MCCANN: Okay. Good morning, Mr. Driban.

MR. DRIBAN: Good morning.

MR. MCCANN: You --

MR. ROSENBLATT: So sorry. It just sent. I just wanted to say that.

MR. MCCANN: Okay.

MR. ROSENBLATT: I apologize.

MR. MCCANN: Okay.

MR. ROSENBLATT: Okay.

MR. MCCANN: Mr. Driban, you referred to your, or maybe it was Mr. Rosenblatt, data collection efforts. The, the videos that were taken, is that the sum, sum and total of the, your data collection efforts? Beside from the traffic accident issue, but the, the data collection efforts that you undertook since your testimony the first time consisted of these videos over three days, is that, is that accurate?

MR. DRIBAN: That's correct, yes.

MR. MCCANN: And the videos were taken from nine different cameras you said?

MR. DRIBAN: That's correct.

MR. MCCANN: Where were, where, where were the cameras located, do you know?

MR. DRIBAN: Yes, there were, I believe, two cameras on opposite approaches at the Falls Road and Joppa intersection. We had placed a camera at Greenspring Valley and Falls. I believe there were two at, again, on opposite approaches of Falls Road and Seminary.

And then there was a series, there were a series of four cameras that were placed along Joppa Road, along the east side of, the east leg of Joppa Road, one closer to the Station Drive access and then a few kind of proceeding back towards the

proposed site access point and Tallyho Road and White Manor Drive.

MR. MCCANN: Okay and those three days were January 19th, 20th and 21st, is that right?

MR. DRIBAN: I believe we started the afternoon of the 18th. So, Wednesday the 18th, around 1:00, plus or minus, and then proceeding through Saturday the 21st. It was about three and a half days in total of, that the data was collected.

MR. MCCANN: Okay and then in terms of the, the proof or evidence of, of, of that data collection, we have these Exhibits 38, 39 and 40, correct? You've discussed --

MR. DRIBAN: At this point, yes.

MR. MCCANN: Okay. Did, did you watch the videos from all nine cameras for all three days?

MR. DRIBAN: I cert, I certainly did not watch every minute of every camera, you know, in real time. I did watch key locations, you know, again, at varying speeds of, of either, you know, peak hours I tried to watch mostly real time or maybe at two-to-four-time speed, which is still, you can still see what's happening within every cycle of the signal.

And then, you know, other locations, for instance, the locations along Joppa that were further away from the Falls Road intersection, I watched at a much sped up rate, you know, to understand how that flow, how traffic fluctuated over the three and a half days. So, at some capacity, in some speed, I

did, I did view, you know, all the data that was collected. But certainly, did not watch all of it in, in real time.

MR. MCCANN: Okay. Well, you said a couple things there. Did you or did you not, first of all, in real time, did you watch the, the three days of, or so, video from all nine cameras? Did you do that?

MR. DRIBAN: In real time speed? No, I did not.

MR. MCCANN: Did you at any speed watch the video from all nine cameras for the entirety of all three or so days?

MR. DRIBAN: There were probably overnight sections, I, I don't believe so. There were probably overnight sections of, of, you know, some or many of the videos that I didn't review, at any speed, particularly --

MR. MCCANN: Okay. Did you --

MR. DRIBAN: -- again the ones farther away from Falls Road along Joppa where there just wasn't as much, you know, volume of traffic.

MR. MCCANN: Did you, did you keep a log of those portions of the videos from the nine different cameras that you did or did not watch? Did you keep any such log?

MR. DRIBAN: I do not have a log of that.

MR. MCCANN: You mentioned Station Drive, and I wrote down exactly what you said. You didn't observe, at least during the times that you were looking, any cuing in the a.m. peak or non-peak hours. Is that correct?

MR. DRIBAN: I believe what I stated was that during the a.m. peak and off-peak hours, there, we did not observe cuing back to Station Drive from the Falls Road intersection, yes, that is correct.

MR. MCCANN: From the Falls Road intersection to Station Drive?

MR. DRIBAN: Yes.

MR. MCCANN: What about east of Station Drive? Did you observe any cuing, at least during the times that you watched the video, in the a.m. peak or non-peak hours?

MR. DRIBAN: Well, we, I did observe some vehicles cuing trying to turn into Station Drive. And in those circumstances, where a vehicle was traveling east along Joppa Road, trying to make a left turn into Station Drive, what I saw in the videos was that vehicles were able to, those that wanted to go through along Joppa Road, it's wide enough there that they were able to bypass vehicles turning, turning left into Station Drive.

MR. MCCANN: (inaudible).

MR. DRIBAN: There was some cuing approaching Station Drive in that direction.

MR. MCCANN: Okay. Yes or no questions. The, the, during the times that you watched the, the video, did you see any cuing at Station Drive, from its intersection, from Joppa Road's intersection with Falls in the p.m. peak hour, non-peak

hour? You didn't mention p.m. in your testimony.

MR. DRIBAN: Yeah, I believe during the p.m. we did observe --

MR. MCCANN: Yes or no? Yes or no, Mr. Driban? You can explain --

MR. ROSENBLATT: Objection. That, he can explain his answer.

MR. MCCANN: No, he can't. It's a yes or no question, he can explain on re-direct if he wants. But I'm asking yes or no questions.

MR. ROSENBLATT: That's absolutely not how it works.

ALJ: I mean, he can, he can explain. Mr. Driban, did, so, did you see any peak, any cuing from Station Drive to Falls and Joppa in the peak hours, yes or no?

MR. MCCANN: P.m., p.m. peak, Your Honor.

ALJ: P.m., p.m.

MR. MCCANN: Yeah.

MR. DRIBAN: I believe during the p.m. peak on occasion there was cuing back to Station Drive.

ALJ: Okay, so.

MR. MCCANN: All right, thank you, Judge. Are you challenging or disputing Baltimore County's F level of service at these intersections over the past many years?

MR. DRIBAN: I think it depends what methodology you look at. I believe, you know, that the study that we conducted

that was reviewed and approved by both the County and SHA shows that based on CLV and HCM methodologies, you know, during most of the peak hours under those two methodologies, these are, this intersection is not failing.

Certainly, I, I would not challenge, you know, the data that they collected using the loaded cycle methodology. I believe that they have capable staff and, you know, the data that they collected using that methodology shows what it shows.

MR. MCCANN: Okay. So, you are not challenge, just to be clear, yes or no, you're not challenging the County's level of service for these intersections, F level of service for these intersections over the past many of years, true?

MR. DRIBAN: Again, I would state that the, that the data that we have in the studies shows that under the CLV methodology --

MR. MCCANN: I'm not asking you about the CLV, I'm asking you about the County's methodologies --

MR. ROSENBLATT: Judge, Judge, he has to be able to answer the question. He can't get cut off mid-sentence.

MR. MCCANN: He's repeating his answer. I'm, I'm trying to --

MR. ROSENBLATT: Because you asked the same question.

MR. MCCANN: I'm speeding things along here.

ALJ: Okay. So, I didn't hear the little, loaded cycle methodology was what you had asked about. I thought you

just said are you disputing the level of service of F in those three intersection --

MR. MCCANN: (inaudible). The County doesn't do another level of service --

ALJ: No, I realize that. Yep, but I wasn't sure you were narrowing it to that, so he keeps coming back to the, so, are your, your question is under the loaded cycle methodology, correct?

MR. MCCANN: Yeah, I'll rephrase it. I think he --

ALJ: Okay.

MR. MCCANN: -- I don't disagree with Mr. Rosenblatt that he may have answered, but I'm just doing it for clarity purposes.

ALJ: Yeah, understood.

MR. MCCANN: Are you challenging the County's F level of service under its loaded cycle methodology at these intersections, all three of them, over the past many years?

MR. DRIBAN: The County's data shows that the intersections under that methodology operate at a failing level of service.

MR. MCCANN: Okay. In terms of the cuing thing with that, whether it's at Station Drive or at any of the other locations that you didn't speak about, did, you've heard, you've heard the testimony of my clients and other members of the community about cuing, correct?

MR. DRIBAN: I have heard that testimony, yes.

MR. MCCANN: So, you, you're not suggesting that these folks aren't telling the truth, are you?

MR. DRIBAN: I am cert, I am certainly not suggesting that. I'm suggesting that, I'm stating that the videos that we collected over three and a half days, which were, essentially, randomly selected days showed, showed that, that there was no cuing during the time period that we have videos --

MR. MCCANN: On the --

MR. DRIBAN: -- back to those, back to those locations.

MR. MCCANN: On the, on the, the portions of video that you watched, correct?

MR. DRIBAN: At the, at the locations in question, where there was specific testimony, I, I did watch, you know, those videos in, at some speed, greater than real time speed.

But at some speed, you know, for the entire three and a half days in order to understand whether there was cuing at any point that, that extended back to there. So, over the three and a half days, the videos at, at the site access point and at Tallyho Road do not show cuing extending back from Falls Road to those locations.

MR. MCCANN: Okay and be specific about, again, I won't, you, you just said, you just said for all of the videos, from, from all nine cameras over the entirety of the three plus

hours, you observed, you did observe, you did review all of those videos and you didn't observe cuing at which specific locations? Be specific if you would.

MR. DRIBAN: So, I didn't, so just, just to clarify my testimony, I didn't say all nine cameras that I observed. What I specifically said was the cameras along Joppa Road, we had one at, again, Station Drive, which we've already talked about.

But I believe the question here was pertaining to previous testimony from area residents about cuing back to Tallyho Road and to the site access point, extending from Falls Road to those locations, we did have a camera at each of those, at each of those intersections, looking westbound towards Falls Road and I did, at some speed, again, not real time speed, but at a speed that was sub, that was, where I was capable of, of seeing whether cues spilled back or not.

I did watch the entirety of the three and a half days of video that we collected at those two locations and cuing did not extend back to either Tallyho Road or the site access point from Falls Road in any of the three and a half days of video that we captured.

MR. MCCANN: Just on, just on Joppa at Station and at Tallyho, correct?

MR. DRIBAN: I didn't say Station. I said at the site access point, our site access point and Tallyho Road.

MR. MCCANN: Got it. Okay. In terms of, you, you characterized some accident data that you received apparently from State Highway Administration, is there any reason why that accident data wasn't introduced as an exhibit? Do you have that?

MR. ROSENBLATT: Objection.

MR. MCCANN: Do you have that data?

ALJ: What, what's the, what's the objection?

MR. ROSENBLATT: How, how we choose to present our case is our prerogative.

ALJ: Yeah, understood. But, I mean, but he can ask the question if he has access to the data, so --

MR. ROSENBLATT: Yeah, the second question I don't object to. Sorry, that wasn't clear.

ALJ: So, yeah, you can ask the question about whether or not he has that data in his hand, I mean, whether or not it becomes an exhibit is, is their choice so.

MR. MCCANN: Got it, got it. And I understand that. Do you have access to that data that we're talking about?

MR. DRIBAN: I do.

MR. MCCANN: Okay. Is there a reason why it wasn't introduced?

MR. ROSENBLATT: Objection.

MR. MCCANN: That, that's a legitimate question.

ALJ: Well, I think it's counsel's choice to decide

whether or not it was introduced or not. I mean, so, you can ask him questions about it. I mean, he has it.

MR. MCCANN: That's a common question, but I'll move on. Did you obtain any data from either the State Police or the County Police for accidents at any of these intersections?

MR. DRIBAN: I did not, but the, the data that SHA reports is based on, they collect that data from both State and County, local jurisdictions, which is what makes up the SHA data.

MR. MCCANN: You certain about that? That is that State Highway, for its accident data, collects all of the accident reports or other data from both the State Police and the County Police? Are you certain about that?

MR. DRIBAN: My understanding is that, is that SHA has, there's a crash reporting system, statewide crash reporting system and that data is funneled to, into SHA's crash data base, which has, the SHA has a specific division, the TDSD, the traffic development and support division --

MR. MCCANN: Um hm.

MR. DRIBAN: -- who is responsible for compiling that data from the statewide crash reporting system and, and, and providing crash reports as necessary.

MR. MCCANN: As necessary, you said?

MR. DRIBAN: As, yeah, I mean, as requested. They have, they have that data, you know, within, within a database

and they can, they can generate reports when they, when they need them, as necessary.

MR. MCCANN: Okay. You said, I guess in conclusion in some respect, that there is no quote, measurable safety issue at these intersections. What, what does that even mean? What is, what is a measurable safety issue?

MR. DRIBAN: Yeah, that, that maybe wasn't the best choice of language. What I intended to state was that SHA and generally accepted practices, is crash rate great, greater or equal to 1.0 crashes per million vehicles entering an intersection is considered a location that would, that would warrant further attention to, to safety issues and, you know, possibly additional study for safety, you know, safety related reasons. In this case, the crash rates at the intersections did not rise to that threshold, is what I was intending by that statement.

MR. MCCANN: Got it, appreciate that. So, you're not saying there's no safety issues at this, at these intersections, you're just saying that according to the data from, from the State, the, there, there, there has not been enough safety incidents that would warrant some further action by the State, correct?

MR. DRIBAN: That's correct.

MR. MCCANN: I mean, any safety issue is a safety issue, isn't it, for the, for the driver's who use these roads?

MR. DRIBAN: I, I think that, you know, any, anytime you have vehicles traveling, you're going to have, unfortunately, crashes. And the way those crashes are evaluated by the State and other agencies, there has to be some mechanism for prioritizing, you know, how safety dollars are, are spent and how studies are conducted.

And so, this sort of screening mechanism is, isn't greater than 1.0 crashes per million vehicles entering or not, and if it's not, then, you know, for the State, it typically doesn't rise to the level of further consideration for, for safety improvements.

MR. MCCANN: Yeah, yeah, I understand that's the kind of thing traffic engineers look at. But what I'm asking you is whether or not, regardless of whether the, the safety incidents rise to a level that require some further action by the State, I guess in terms of road improvements or otherwise, do you have any specific knowledge that would allow us to determine whether or not the safety issues are, around these three intersections, are any better here than they are say elsewhere in this area of Baltimore County?

MR. DRIBAN: I mean, other than the crash rate data that I testified to that, you know, the State wouldn't consider this a, a corridor that would need, you know, that would need to, it'd, it'd be worthy of additional study for safety issues. That's all I can say about it.

MR. MCCANN: Okay, all right. With respect to the, the special variance standard, you were talking about that and then, and then you mentioned somewhat in the same breath that you had a meeting with Mr. Nebre. Do you recall that testimony?

MR. DRIBAN: Yes.

MR. MCCANN: Is that a meeting that took place prior to his testimony and prior to the hearings in this case?

MR. DRIBAN: Yes, he and I had, he, he and I had a number of calls and virtual meetings over the course of the, you know, year and a half to two years, I guess now going almost on three years, that we've been working on this project, where, wherein we discussed various traffic issues, including, the, the need for a special variance and what that standard was.

MR. MCCANN: Yeah, no, I, I agree, there's a lot of evidence about that in terms of e-mails and testimony but you haven't met with Mr. Nebre on that issue, that is, the special variance standard issue since his testimony in this case at the beginning of this case?

MR. DRIBAN: That's correct. I have not.

MR. MCCANN: Because you were here for his testimony, were you not? You heard him testify, right?

MR. DRIBAN: I was, yes.

MR. MCCANN: Yeah, and you heard him say that the

district standard under, under the regulation that you just discussed with Mr. Rosenblatt, is the County's level of service. Did, did he not say that?

MR. ROSENBLATT: Objection.

MR. MCCANN: I'm just asking whether he --

ALJ: He can ask, he can ask, he can ask the question. Mr. Driban, what is, what is your recollection?

MR. DRIBAN: I believe if you go back, Mr. Nebre testified twice and, you know, he had cited different answers to that question in his, his two, two testimonies. I don't recall the specific wording. I haven't reviewed the transcript of his testimony. So, I'm, I'm not certain what he said.

MR. MCCANN: Okay. Did you ever meet with or speak with Mr. Nebre's supervisors or colleagues, specifically, Mr. Karski or Mr. Filsinger on that issue? That is, the special variance standard.

MR. DRIBAN: I do not recall specifically whether we discussed that issue. At some point, a year, maybe two years ago --

MR. MCCANN: Okay.

MR. DRIBAN: -- at this point, there was, we did meet with Mr. Karski, and I believe Mr. Filsinger may have been in attendance, although I'm not certain. A lot of the discussion, we, you know, again, we discussed a number of, of traffic issues and I'm not certain whether at that meeting, you know,

that was specifically discussed.

Although, I, I know that when I testified earlier, and I believe it's in evidence, there was an e-mail from Mr. Filsinger stating that the special variance requirements had been met from, again, from about two years ago.

MR. MCCANN: We, we have all that in evidence, including do we not, e-mails from those gentlemen suggesting that the district standard is the County's level of service methodology? Do, do you recall those e-mails?

MR. DRIBAN: I believe I recall what you're speaking about.

MR. MCCANN: Okay. I'm just going to check the exhibits real quick, if I may, Your Honor. And that may be all I have, bear with me one second. Okay. Thank you, Mr. Driban. No other questions, Your Honor.

ALJ: Mr. Zimmerman, any questions?

MR. ZIMMERMAN: Yes, yes, thank you, Judge. And first of all, I'd like to correct one observation by Mr. Rosenblatt, who said that this is the first case, development case, we've ever been in. That is not correct.

We've been in a number of development cases over the years, including some with Venable. But we do it on a priority basis as to which cases are most problematic. And we were in Woodley Park at the Board of Appeals, a development case. We were in Davis Farms at the Board and on remand, which we view

as prequels to this case in part.

And we review every special variance case. And we were involved in the Hopkins case. So, we, you know, this is not the only case, okay, that we've, development case and/or special variance case that we've ever been in in the history of Baltimore County. So, I would like to correct that statement. But presumably, Mr. Rosenblatt is just not aware of these other --

MR. ROSENBLATT: No, Mr. Zimmerman, I'll put this to rest if we could. Have you ever appeared at a Hearing Officer's hearing before, an Administrative Law Judge before? That's what I meant.

MR. ZIMMERMAN: Yes, many times, many times, yes.

MR. ROSENBLATT: Because you just mentioned the Board of Appeals in the other cases, so.

MR. ZIMMERMAN: Okay. We can, we're in a case with Patricia Malone down at the Charlestown development. We were in the Galloway Creek case, which eventually went to the Board of Appeals. And we were at the A, we tried that at the ALJ level. We were recently at the ALJ level on the Edgemere Trust case. I could go through --

ALJ: Yeah, --

MR. ZIMMERMAN: -- many other, many other cases. But we don't get into every single case. We prioritize. Okay? So, at some point, you know, I could prov, I'm not going to, I

don't think I need to do it, but I could provide a series of cases where we're participated.

Every special variance case that starts at the ALJ level, we enter our appearance. We litigated the Hopkins case back five or ten years ago and I think the, the decisions, some of the decisions are in, are in the record here.

So, there are plenty of cases, but we do it on a selective basis, where we see a significant problem relating to the master plan or zoning. So, that's, that's what we do. And I'll just take it that Mr. Rosenblatt was not aware of the history, that's all.

ALJ: All right. Well, you don't have to explain yourself, you're (inaudible) --

MR. ZIMMERMAN: (inaudible) for the benefit of all the parties, including the Developer, you know, we do this from time to time based on our perception of the law and the public interest. So, so this is not the only situation where we participate, okay?

ALJ: Nope, understood. So, just go right ahead.

MR. ZIMMERMAN: Okay, all right. Having said that,--

ALJ: Thank you.

MR. ZIMMERMAN: So, Mr. Driban, am I correct in having the impression that you've been listening to most, if not all, of the testimony in the, in this case over the last number of months?

MR. DRIBAN: Yes.

MR. ZIMMERMAN: Okay and, and were you linking in during the testimony by various citizens, such as Sister Kathleen McAnany (phonetic), Michael Brassert, Peter George, (inaudible) James Gary, Dan Radebaugh, (inaudible), Dr. Lum, do those names ring a bell?

MR. DRIBAN: Can't speak to every single name but I've been here for the entirety of everyday of testimony that's happened. So, --

MR. ZIMMERMAN: Okay.

MR. DRIBAN: -- if that's the list, then yes, I've heard all --

MR. ZIMMERMAN: And just to take an example, were you ever in the car or, or on foot with Sister Kathleen Macanany at the times upon which she said she saw certain things and made certain observations? Were you with her?

MR. DRIBAN: I was not.

MR. ZIMMERMAN: Okay. So, you can't say whether the things that she saw were things that she made up or did not see?

MR. DRIBAN: I cannot say that, nor would I ever imply that anyone made anything up. All I can present is the data that I've collected.

MR. ZIMMERMAN: So, and that would be true for all the other citizen witnesses, that you were not personally with

them on the days and times, one or more times, based on which they said they saw certain things --

MR. DRIBAN: Correct.

MR. ZIMMERMAN: -- and observed certain things?

MR. DRIBAN: That's correct.

MR. ZIMMERMAN: So, would you say there, are you, are you implying, based on your testimony, that all those citizens' observations should be disregarded?

MR. DRIBAN: You can make whatever implication you would like. I've presented the data that we collected.

MR. ZIMMERMAN: Okay, okay. Just a few more questions. All right. You mentioned that you did look at the Torch Hill opinion, correct?

MR. DRIBAN: That is correct.

MR. ZIMMERMAN: Okay. Have you looked at any other Zoning Commissioner or Administrative Law Judge opinions relating to special variances pertinent to transportation over the years?

MR. DRIBAN: I don't know that I have.

MR. ZIMMERMAN: Okay. Have you looked at any County Council Bills relating to the growth management law on transportation and basic services maps?

MR. DRIBAN: At various points, I have, I have reviewed several County Council Bills.

MR. ZIMMERMAN: Can you identify which bills you

reviewed by number?

MR. DRIBAN: I can't specifically, but I have looked at some of them.

MR. ZIMMERMAN: Which ones, if any?

MR. DRIBAN: Again, I can't specifically identify them, but in the course of my research and, you know, again, about two years plus of trying to, you know, understand this, this special variance and get to the bottom of --

MR. ZIMMERMAN: Um hm.

MR. DRIBAN: -- this case and the traffic requirements, I did, at some point, review some of those counsel bills, you know, in some part trying to understand how the, how the, how the policy areas are developed and, you know, again, just, just trying to understand the history of, of all this so I, I can really, you know, understand how that was developed.

MR. ZIMMERMAN: How many council bills are there related to the basic services maps on transportation?

MR. DRIBAN: I'm not certain how many there are, but I do know they go back quite a ways, a number of years.

MR. ZIMMERMAN: As you're sitting here today, can you identify any particular bill or anything about any particular bill --

MR. ROSENBLATT: Objection. Asked and answered.

MR. ZIMMERMAN: -- (inaudible) number?

ALJ: I think his testimony was that he --

MR. ZIMMERMAN: All right.

ALJ: -- couldn't identify them by number.

MR. ZIMMERMAN: Um hm. Can you identify any particular section of any particular bill that you would want to highlight right now? And if so, give us the number of the bill.

MR. ROSENBLATT: Objection.

ALJ: So, he doesn't have the bill numbers.

MR. ZIMMERMAN: All right.

ALJ: But (inaudible), Mr. Driban, do you remember any particular bill or any section of the, of one of the bills, the transportation bills on the growth management act?

MR. DRIBAN: There's nothing specific that comes to mind. I know one of the more recent ones discussed pretty specifically the, the boundaries of one of the more recent, the more recent areas traffic sheds that, that was developed. Again, I couldn't speak to specifically which one it is. But I, I, it's just something that sticks out in my mind from having reviewed some of them.

MR. ZIMMERMAN: Yeah. Do you know whether there's anything in any of the counsel bills which particularly exempts the Greenspring Manor property from the basic services map's legislation?

MR. DRIBAN: I, I'm not aware.

MR. ZIMMERMAN: Okay. Just a couple more questions. (inaudible) what is your hourly rate?

MR. ROSENBLATT: Judge, it's not a jury trial. Object to relevance.

ALJ: I think this was asked, maybe it was you, Mr. Zimmerman. Do you recall on --

MR. ZIMMERMAN: I don't think I asked this question. I don't know if Mr. McCann did.

ALJ: Somebody asked the question. I'm almost positive they asked the question and what was the, the, I think it was Mr. Wyatt, in fact. Mr. Wyatt may have asked the questions and, and asked about the retainer and all that. But, you know, to the extent it wasn't asked, and my memory is, is not serving me right, so overruled. Go, go ahead, sir.

MR. DRIBAN: We, hourly rate in terms of billing or how much I get paid an hour?

MR. ZIMMERMAN: Well, the company's billing rate, yeah.

MR. DRIBAN: Yeah, I, I believe we bill an hour at $250 an hour.

MR. ZIMMERMAN: Okay. For everyone that works on the project?

MR. DRIBAN: Some of our technician level folks, that would be my rate, some of our technician level folks and lower-level engineers would be billed at a lower rate than that. But

that is the (inaudible) --

MR. ZIMMERMAN: Okay. Do you have any ballpark figure on the, the billing so far, the total billing?

MR. ROSENBLATT: Judge, objection. Continuing objection. What, what relevance does this have to, we've established he is a paid expert. What relevance do these continuing questions have to the case?

ALJ: It goes to, you know, supposedly the credibility of the witness and so, overruled. Go ahead.

MR. DRIBAN: I'm not certain what our total billing on this project is.

MR. ZIMMERMAN: Okay and that's all I have. Thank you, Judge. Thank you, Mr. Driban.

ALJ: Sure. Mr. Wyatt, any questions?

MR. WYATT: I do, I have a few, thank you, Your Honor.

ALJ: Sure.

MR. WYATT: Mr. Driban, good afternoon. So, I'm gathering from your testimony you all put cameras up in late January of this year, nine cameras for about three and a half days, that's what you said, right?

MR. DRIBAN: That's correct, yep.

MR. WYATT: All right and that was, that was a short work week, was it not?

MR. DRIBAN: The week in question was, I believe,

Martin Luther King holiday was that Monday. Typically, for data collection, you don't set cameras after the immed, the day immediately following a holiday. So, we did not set them on Tuesday, but we did put them out on Wednesday, which again, would be considered a, a standard data collection day.

MR. WYATT: But it was not a standard work week, is my, my point, correct?

MR. DRIBAN: It was a four-day week, that's correct.

MR. WYATT: Okay and you put these up at various locations, including, I think for Mr. McCann's questioning, you had at least two, maybe three locations along Joppa Road as it approaches Falls Road and I-83, is that accurate?

MR. DRIBAN: That's accurate.

MR. WYATT: All right and none of those videos were shown for purposes of this hearing today, correct?

MR. DRIBAN: That's correct.

MR. WYATT: All right. And you said, based on your observations, well, one other question. With all the, when Baltimore County does the loaded cycle methodology, they use cameras as well, correct?

MR. DRIBAN: I'm not certain whether they do or not.

MR. WYATT: In all of your research for this case, you don't know if Baltimore County uses cameras or whether they actually have people out there doing hand counts? You're not sure?

MR. DRIBAN: I'm not certain. I mean, the, the data typically is taken as, you know, we have a count on a spreadsheet or a pdf and that's the data that, that we would provide or that the County would provide. I'm not sure how they collect that data, whether it's manually or, or by a camera.

MR. WYATT: You've never come across that in any of the cases you've worked on in Baltimore County, to know whether or not Baltimore County uses cameras or actual personnel onsite doing the counts?

MR. ROSENBLATT: Objection. Asked and answered.

MR. WYATT: I don't think it was answered. I asked him for this case, counsel. Now I'm asking him for all cases.

ALJ: Overruled. Go ahead.

MR. DRIBAN: We look at the data that's provided. The method of collection is typically not something, I mean, whether it's us giving them the data or vice versa or for any State agent, you know, any agency within the State, that's not, it's not particularly relevant how it's collected. In this case, you know, we did go out and set cameras because we wanted to have that ability to go back and conduct the observations that were conducted.

But for typical traffic impact study or evaluation of level of service, what matters is that the data at the end, at the end of the day, the end product, the spreadsheet or the pdf

that shows the volume by fifteen-minute period throughout the day.

MR. WYATT: All right. Baltimore County can retrieve or obtain data through cameras, would you agree with that statement?

MR. DRIBAN: If, if they have cameras, they certainly could do that. I'm, again, I'm not aware whether they, whether they use that method or whether they field collect it.

MR. WYATT: And the use of cameras for the loaded cycle methodology, data collection is permissible, is it not, in your industry?

MR. DRIBAN: Sure, as long as you can see the, the rear of the cue on all approaches, you could do, you could do that with a camera.

MR. WYATT: All right and so, with the nine cameras over three and a half days, did your firm do any loaded cycle methodology collection of data?

MR. DRIBAN: We did not review the loaded cycle methodology.

MR. WYATT: Okay and yet I heard you testify that based on your observations, you were comfortable that what you were observing was a level of service of an A or a B for Falls Road at the intersection of Joppa and Falls, correct? You, didn't you say that? Multiple times you said that actually, didn't you?

MR. DRIBAN: I did say that. That's based on my, my expertise in the field and having looked at intersections and what the level of service criteria are based on. You know, that, that's not necessarily specific, I mean, we didn't calculate the loaded cycle methodology. But my observation, based on volumes and having observed the videos is that those intersections are operating at a very good level of service.

MR. WYATT: All right. But that was your opinion today, is that you, your --

MR. DRIBAN: Correct.

MR. WYATT: -- your thumbnail view of the world based on casually looking at these videos without taking or discerning any of the data from them is that you're comfortable that these level, the level of service was an A or a B?

MR. ROSENBLATT: Objection.

MR. WYATT: That was your opinion today, correct, sir?

ALJ: Overruled, go ahead.

MR. DRIBAN: What I testified to is that during the off peak periods, specifically at certain points when we are looking at the, the power point or pdf slides or portions of the video, that my observation of that time point in the, in the videos was that, at that point, it was operating at level of service A or B.

I did say that during the peak periods, traffic

volumes were heavier, you know, and I specifically said at one point northbound, the northbound approach coming off of the beltway and off of I-83 appeared to be operating at a, at a worse level of service.

So, when I referenced level of service A and B, that was specific to off-peak periods, where there appeared to be very little traffic. For instance, you know, overnight there's almost no volume out there and that is, I can say with near certainty that that is a level of service A.

When there's no traffic at the intersection, there's no delay, you know, that's a level of service A. So, other observations that I made during off peak periods were based on my expertise of the, of the level of service methodology and review of those videos.

MR. WYATT: Okay. So, now I'm understanding you to be walking back your opinions from earlier because now you're saying it's certain times that they're level A or B. Whereas I understood earlier, you were, you were saying during peak hours, they were A or B.

MR. DRIBAN: I don't believe I said that. I believe, I believe my testimony throughout this, this testimony has been that it was off peak periods and pointing to specific times within the video that I, it appeared to be level of service A or B based on my observations.

MR. WYATT: And the level of service we're talking

about for purposes of this hearing is the basic service map level of service?

MR. DRIBAN: When I'm speaking about level of service A or B in this context, what I'm talking about is more the highway capacity manual methodology, which is based on delay at the intersection, average delay per vehicle.

MR. WYATT: So, your, your perspective of level of service that you've expressed today is different than the basic service map?

MR. DRIBAN: I think if you, if you were to observe, what I specifically, what I'm testifying to is that based on the highway capacity manual methodology, which is based on average delay per vehicle, in, in the off peak periods that I pointed to, that I believe the intersection is operating at a level of service A or B.

It's clearly operating well within acceptable thresholds. I believe the loaded cycle methodology would correspond to that level of service but or, or a similar level of service. But again, we did not specifically review for the loaded cycle methodology based on our data.

MR. WYATT: All right and you testified in response to a question that Mr. McCann posed to you, you're not taking issue with Baltimore County's classification under its basic service map of, of level of service F for this intersection at Joppa, Falls and, and 83, correct?

MR. DRIBAN: I don't, we did not provide data to either corroborate or refute that classification.

MR. WYATT: I believe that's all I have, thank you.

ALJ: Mr. Sachse?

MR. SACHSE: Mr. Driban, how far along Jop, how far east on Joppa Road were your cameras placed?

MR. DRIBAN: There were, there were a series of cameras and I believe the furthest one to the east was just east of Tallyho Road.

MR. SACHSE: But nothing back as far as Thornton or Bellona?

MR. DRIBAN: No.

MR. SACHSE: So, no opinion as to traffic on the, at that in, those intersections as a result of the development?

MR. DRIBAN: I did not evaluate that as part of this data collection effort.

MR. SACHSE: I understand. Did you have any cameras along Seminary?

MR. DRIBAN: I believe we had two cameras in the vicinity of the Seminary and Falls Road intersection.

MR. SACHSE: Were they on Seminary? And if so, how far east on Seminary?

MR. DRIBAN: I'm not, I'm not certain exactly where they were on Seminary.

MR. SACHSE: No, that's fine, if you don't know, you

don't know. And no, no, no cameras along Tallyho, is that correct?

MR. DRIBAN: Nothing on Tallyho cameras wise.

MR. SACHSE: All right. That's all the questions I have, thanks.

ALJ: Mr. Rosenblatt, any follow-up?

MR. ROSENBLATT: I don't, thank you.

ALJ: Okay. Okay, all right. I think we're finished with Mr. Driban. It's 12:30, so I know you have more witnesses, correct? But we have Mr. Grachek coming at 1:00.

MR. ROSENBLATT: Yeah, we propose maybe take lunch until 1:00 and do Mr. Grachek and then I'll get, I'll get another witness ready for this afternoon.

ALJ: All right. That sounds good. That, is that right, Mr. McCann, with you?

MR. MCCANN: That sounds good, thank you. Do we have a sense of how far we'll go today and whether we'll finish and all that in terms of planning?

MR. ROSENBLATT: We are going to need one more day. We're going to need the day we previously asked for.

ALJ: And can I just ask on the record, did you all hear from the scheduler? Because I know I sent that e-mail, Mr. Mudd asked me at the last hearing. I sent the e-mail, it included all of you on it. Did you hear anything?

MR. ROSENBLATT: I have not heard anything.

ALJ: Okay. I wasn't sure about that. I'm going to send an e-mail now then to make sure to follow-up with them, with that request.

MR. ROSENBLATT: Okay.

ALJ: Now that you've let me know. Okay.

MR. ROSENBLATT: Thank you.

MR. MUDD: Thanks.

MR. MCCANN: Thank you.

ALJ: That's good. We'll come back at 1:00.

MR. MCCANN: Bye.

(PAUSE)

ALJ: Back on the record after lunch and Mr. McCann has another witness, Mr. Grachek.

MR. MCCANN: Correct.

ALJ: All right. Mr. Grachek, it's been a while, raise your right hand, please. Do you swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. GRACHEK: I do.

ALJ: All right. All yours, Mr. McCann.

(MR. GRACHEK IS VERY DIFFICULT TO UNDERSTAND)

MR. MCCANN: Okay, thank you. Mr. Grachek, I'll cut to the chase here. I'm going to show you what has been pre-marked as Protestant's Exhibit 104. Start with this document. Do you see that first page there?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. I'm going to scroll down just so it says forty-five pages, but just so you, you see exactly what it is. Are you familiar with this document?

MR. GRACHEK: Yes, I am.

MR. MCCANN: Okay, great. Why don't you tell, tell the Judge what it is and where we got it from?

MR. GRACHEK: The first document is an e-mail with the scope of services from Hazen to validate the RK&K model, flow model, in the sewer shed.

MR. MCCANN: Okay. So, you said e-mail, you mean, a letter, is that what you meant?

MR. GRACHEK: Yeah, yeah.

MR. MCCANN: Okay.

MR. GRACHEK: A letter I mean, not e-mail, a letter, excuse me.

MR. MCCANN: Okay. So, the letter and then the second page in this Exhibit 104 is what?

MR. GRACHEK: That is the scope of services for Hazen to provide modeling services. And if you read into the, into the scope of services, it's to validate the RK&K model.

MR. MCCANN: Okay. In fact, there's a, on this second page under background, there's a reference, second sentence, to, it says long term capacity, peak flow management, evaluation report. Is that the, is that an RK&K document?

MR. GRACHEK: That's the RK&K report.

MR. MCCANN: Okay and then, scroll down, I think I stopped at page nine. There's a third document in here. What is this document on, beginning on page nine?

MR. GRACHEK: That's a summary of the evaluation that was performed under that scope of services.

MR. MCCANN: Okay. Once you, have, have you read this document?

MR. GRACHEK: Yes, I have.

MR. MCCANN: Okay. Why don't you explain to the Judge, if you would, what, what, what happened and what the document tells us, if anything?

MR. GRACHEK: Yeah, very simply, what, what Hazen and Sawyer did is they performed an evaluation of the accuracy and the validity of the RK&K model by taking the data generated from the model as far as the, the sewer, the sewer shed and all the capacity elements of the model. And they related them to a guidance document, I believe it was from 2002, I can't recall the exact name of the guidance document that talked about the relative bands of accuracy for each one.

And then they plotted their data. They made a few adjustments to the model, minor adjustments to the model. But then they plotted the data to that accuracy, and they came to a conclusion that with just some minor exceptions that was really kind of not, not major to the overall process, that the RK&K

model was validated by this work.

MR. MCCANN: Okay, all right. Okay. Your Honor, I would move Exhibit 104 into evidence.

MR. MUDD: No objection.

ALJ: Any objection? Okay, thank you.

MR. MCCANN: Okay. Moving on, Mr. Grachek, to what's been pre-marked as Protestant's Exhibit 108, which I have right here. And I know it's, it's fifteen pages. I know it's very small print but tell us what this document is.

MR. GRACHEK: That's the evaluation from the Hazen work, showing the calculation of capacity of each pipe in the system.

MR. MCCANN: Okay.

MR. GRACHEK: Using, using (inaudible) equation and different parameters. Then they did an assessment of what the peak capacity would be during dry weather flow.

MR. MCCANN: Okay.

MR. GRACHEK: And after that, they, they divided the, the full capacity into the, into the calculated capacity and determined the pipe percent capacity. So, when you look at those numbers, a number under one hundred percent would be the pipe is not flowing full --

MR. MCCANN: Yeah, hold on one second. Let me, I'm sorry to interrupt you. I just want to, this is a lot to look at first glance, and the Judge hasn't actually seen it yet.

So, just, there are columns here, obviously, and I'll try to blow them out without distorting the entirety of the document.

But just, if you would, just go across the chart and tell us what the columns are. There's actually headings at the top, which I think are self-explanatory. But just tell us what the big headings are, maybe.

MR. GRACHEK: Yeah, big headings are the pipe, the pipe attributes that says, that shows, it shows the meter basin, it shows the, the, the length of pipe. So, for example, the second line is 10918, 13049.

MR. MCCANN: Yeah.

MR. GRACHEK: It provides a pipe diameter and a manning's coefficient, which is the coefficient that you use for determining the flow along with pipe gradient.

MR. MCCANN: Okay.

MR. GRACHEK: And they calculated then a full flow capacity, a million gallons per day, which on that second line, we use that as an example, is 3.97 million per day.

MR. MCCANN: Right.

MR. GRACHEK: Then for dry weather flow, they did a calculation of what the surcharge (inaudible), what the overall capacity is (inaudible) that first one isn't a very good example because it's got zero.

MR. MCCANN: Yeah.

MR. GRACHEK: But if you go down to say BC-09, it

would be the, let's see, one, two, three, four, five, six, the fifth, fifth column down.

MR. MCCANN: Right here?

MR. GRACHEK: The fifth, fifth row down, I'm sorry.

MR. MCCANN: Yeah. Okay, right here, where it says .13?

MR. GRACHEK: Yeah, .13, .13.

MR. MCCANN: Okay.

MR. GRACHEK: You would see, you would see a, a number of 12.5%. And that is the .13 divided by the 1.8 or, excuse me, the 1.06.

MR. MCCANN: Right here, these two numbers, .13 and 1.06?

MR. GRACHEK: You got the, the dry weather flow divided by the full capacity, so that means that pipe at dry weather flow is at 12.5% full.

MR. MCCANN: Okay.

MR. GRACHEK: Okay and then moving up, they do that same assessment using that same denominator with five different storms. And what the, what the flow is to determine peak capacity or the (inaudible) percent pipe flow during, during those times. As you can see, the numbers start rising and there are some numbers that are above one hundred percent and those are pipes represented by the model as being fully full or beyond full (inaudible) surcharging.

MR. MCCANN: Okay.

MR. GRACHEK: (inaudible).

MR. MCCANN: Okay. So, let me back out here a little bit and get some, get some perspective and scroll down. This is, as I said, fifteen pages. I'm going to scroll down to, first to, there are some highlighting in this exhibit. Do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: Is that our highlighting?

MR. GRACHEK: Yeah.

MR. MCCANN: Okay and you looked at these numbers in the highlighting?

MR. GRACHEK: Yes, I have.

MR. MCCANN: Okay. So, and without going through all of it, just take one at a time. Actually, before I do that, let me go back, if I could, to Protestant's Exhibit 69. Do you see that, Mr. Grachek?

MR. GRACHEK: Yes.

MR. MCCANN: I can blow that up if you need, it's probably small --

MR. GRACHEK: I, I can see it fine.

MR. MCCANN: Okay. So, tell, remind us what this, what this is again, this is Exhibit --

MR. GRACHEK: This was, this was, was a, a summary that's provided by one of our people.

MR. MCCANN: Um hm.

MR. GRACHEK: From the RK&K report.

MR. MCCANN: Right.

MR. GRACHEK: That determined the, the percentage full capacities similar to those columns that you're looking at. This was from the RK&K report and not the Hazen report.

MR. MCCANN: Right.

MR. GRACHEK: And, and this represents also the, the pipes that leave from Greenspring Manor all the way down to the end of, to the County, to the County line.

MR. MCCANN: Okay.

MR. GRACHEK: And as, and this, what it shows here is that, as you can see, that when you have storm events that are, any storm event, but particularly those in the last four columns, the model represents over one hundred percent capacity, sometimes up to over five hundred percent capacity in some of these lines.

MR. MCCANN: Okay. So, and what, what is the green, I take it it speaks for itself, but the green column?

MR. GRACHEK: Yeah, the, the green, the green is the, is the normal dry weather flow capacity.

MR. MCCANN: From where?

MR. GRACHEK: From, from the, (inaudible) pipeline coming from Greenspring Manor all the way down to the County line.

MR. MCCANN: No, I mean, the source. It says DPW--

MR. GRACHEK: That's, that was my understanding because that was from the RK&K report.

MR. MCCANN: RK&K or from DP, it says DPW this column and then these columns say RK&K.

MR. GRACHEK: Oh, I'm sorry, I'm sorry. Excuse me. That was the DPW, DPW (inaudible), the Department of Public Works' numbers, I apologize.

MR. MCCANN: Okay.

MR. GRACHEK: Yeah, those are Department of Public Works numbers that, for dry weather flow.

MR. MCCANN: Okay.

MR. GRACHEK: And then the remaining are the RK&K numbers from wet weather flow.

MR. MCCANN: Okay and I think you've said as much, but is 43794, this pipe right here, and 43793, is that immediately below the subject property, Greenspring Manor?

MR. GRACHEK: That's my recollection, yes. I don't have it out in front of me, but.

MR. MCCANN: Okay. Well, I can pull up a map if you need me to.

MR. GRACHEK: The, yeah, if you would, (inaudible) verify that.

MR. MCCANN: Okay, yeah. Let's do that, just to make sure before we move back to the exhibit. One second. Let, let

me find what number it is. I believe it's sixty-two. Bear with me one second. It's not sixty-two.

MR. GRACHEK: And I, and I believe, based on what I recall, that was right --

MR. MUDD: Objection, objection. I'm not sure there's a question on the floor right now.

ALJ: Okay, just hold on a second, Mr. Grachek. Mr. McCann is just trying to pull up that map. So, you can verify that (inaudible) number.

MR. GRACHEK: Thank you.

MR. MCCANN: Okay. Let me show you, this is Protestant's Exhibit 3, just to refresh your recollection. Do you see that, Mr. Grachek?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and it's, it's already in evidence. It's eleven pages.

MR. GRACHEK: Yes.

MR. MCCANN: It goes all the way down to Lake Roland and to the City line, correct?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and just, we were, we were talking about the, the sewer segment immediately below the subject site. Can you tell us by looking at this Exhibit 2 refresh your recollection about what --

MR. GRACHEK: Yes, you can see 437593 --

MR. MCCANN: Yep.

MR. GRACHEK: -- just off the County line and then 43795. Yeah, so, so those are --

MR. MCCANN: Okay. You said the County, you said the County line. Did you mean to say that?

MR. GRACHEK: Excuse me, not the County line, the prop, near the property line, between the property and the sewer (inaudible).

MR. MCCANN: Okay, all right. So, getting back to Exhibit 69, if we can. And I want to ask you to focus in, if you would, on, when we go back to the new exhibit, focus in on this column, the third column, RK&K column, ten-year six-hour storm. So, focus in on that column, and you have, there's some blue and red here, correct?

MR. GRACHEK: Correct.

MR. MCCANN: Okay. So, just, starting, well, let's start with, before we get to the blue, just for 43794 to these first eight segments. Do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Are those colored in the new exhibit, amongst the coloring that we have in the new exhibit that's here?

MR. GRACHEK: (inaudible).

MR. MCCANN: Yeah, I'll, I'll scroll down.

MR. GRACHEK: Scroll down to where that is.

MR. MCCANN: So, this is page nine of fifteen.

MR. GRACHEK: Yes.

MR. MUDD: Judge Murphy? I, I want to, I, I want to object here. And I, I think I can do it at the time of introduction, but I think it's better now before questions are asked about this exhibit. I'm, I'm not, I'm not sure there's been really any foundation laid for what this exhibit shows.

I understand there was, for what is shown on the, on the columns themselves. But where it came from, what year it's from, how it was put together, I mean, I, I'm, I'm a little concerned about having testimony on it without having any of that information.

ALJ: Okay. So, yeah, what I understood Mr. Grachek said it was the evaluation from Hazen and Sawyer and it was in regard to the capacity for each pipe in the system. And so, that's what, that's how the, that's how it started, I, I believe. Mr. McCann, can you just lay some more foundation questions for this?

MR. MCCANN: Yeah, I think he's already said but I can ask him again. But, that this is the evaluation that, the evaluation itself that, that --

MR. MUDD: I'd rather have the witness explain it.

MR. MCCANN: Okay. Well, I think he already has, but I'll ask him. Mr. Grachek, what is this document and where did it come from?

MR. GRACHEK: This is the evaluation that Hazen did as the validation, as part of the evaluation and the validation of the RK&K model.

MR. MCCANN: Okay.

MR. GRACHEK: This was done by Hazen and particularly here, the reason we have data here is because RK&K did not model pipes less than ten inches, but Hazen did. And so, we have numbers here that didn't appear in the RK&K document.

MR. MCCANN: Well, you're talking about this first band here. I'm not asking about that yet, so I think you're ahead of us. But did this, where did the document come from, this document?

MR. GRACHEK: My understanding, it came from the Hazen doc, the Hazen evaluation as --

MR. MCCANN: No, whose, whose document is it? Where, if, and I, you, Judge, I think it's, I mean, it's obvious. This is a Bate stamped document. I can represent to you is, as, as counsel in this case that this is amongst the documents, that this is, in fact, this was received Sunday night from Baltimore County, Bate stamped by Baltimore County, and it has Hazen's letterhead on it. So, I think the document is self-authenticating as much as the prior exhibit is.

ALJ: Okay. So, that, that's what you were talking about when the, in, in the opening today. That, that, that this is the document that you received on, on Sunday night.

MR. MCCANN: This is amongst the eight hundred documents I received Sunday night. The first document was amongst the seventy-seven hundred that I received last week.

ALJ: Oh, okay, got it. So, so Mr. Mudd, does that clarify for you?

MR. MUDD: Well, I, and I, to be clear, I'm not suggesting that this came from somewhere other than the County. What I'm, what I'm, what I'm concerned about is how we know that this was performed on the basis of what occurred under Exhibit 104.

ALJ: Okay. Well, you can ask those questions when you get to cross of, of Mr. Grachek. So, --

MR. MUDD: Okay. Well, I'd, I'd like to object to this line of questioning in, in advance.

ALJ: Okay, all right. Understood. But overruled. Go ahead, Mr. McCann.

MR. MCCANN: Okay. I wanted to address quickly, and I won't go through all of them but the, the first band and the coloring that we have in this exhibit, which is on ninth page, Bate stamped 927. And I'll blow it up. So, identify the pipes that this, these groupings, this grouping refers to.

MR. GRACHEK: It, well, it refers to the notes 43787 down to 43793.

MR. MCCANN: Okay. Are those the same segments that are depicted in this exhibit, this first grouping in Exhibit

69?

MR. GRACHEK: They're, they're very close. They're very close. They're not exact, but they're very close.

MR. MCCANN: Okay. Well, where --

MR. GRACHEK: They're just, they're just in different orders. But they are close, and they represent (inaudible) pipes.

MR. MCCANN: Okay. So, the first on this Exhibit 69, the first pipe is 43794. On the exhibit, the new Exhibit 108, what is the first pipe listed?

MR. GRACHEK: It's 437, it's 4351, so everything is looking upstream rather than downstream in this exhibit. So,--

MR. MCCANN: What do you mean by that?

MR. GRACHEK: -- 43793 is the last one at the bottom on the right, under this second column and the other one, the, the first one, in the left column.

MR. MCCANN: So, it's, it's reversed in order than --

MR. GRACHEK: It, yes, (inaudible).

MR. MCCANN: Okay.

MR. GRACHEK: (inaudible).

MR. MCCANN: Somebody is not muted, I believe. And then the highlighting, what's the, tell me what the, tell us what the highlighting is.

MR. GRACHEK: The highlighting is the percent pipe full capacity. This is from the Hazen, from the Hazen work,

that was not (inaudible) RK&K because, like I said, they didn't do eight-inch pipes. And you can see, virtually all the pipes were above a hundred percent (inaudible) a lot of them considerably over a hundred percent.

MR. MCCANN: Okay, all right. Going back to Exhibit 69. If we start, go down to sort of what I'll call the next grouping of colored numbers here. Do you see what I'm talking about? So, beginning with 44225 segment, going down to 44210, that, those, that segment of, are those, is that, are those segments depicted in this Exhibit 108?

MR. GRACHEK: Yes, they are, they are.

MR. MCCANN: Okay and I'll scroll down to the second highlighted section on page nine of Exhibit 108. Is that, in this band of blue and the highlighting, is that, are those the segments?

MR. GRACHEK: Yes.

MR. MCCANN: Again, in reverse order?

MR. GRACHEK: Yes, 44, yeah, in reverse order is 44224 to 44210.

MR. MCCANN: Okay.

MR. GRACHEK: At the (inaudible).

MR. MCCANN: And just focusing in on the, the ten year six storm, so if we go over to this column, I'm sorry, ten year six, all the way to the right here, the highlighted number beginning with 266.10 down to 108, how do those numbers compare

to the, the RK&K numbers in Exhibit 69?

MR. GRACHEK: I actually looked at those numbers and did the reverse order and while they are not exact, they are very close. And, and that would reflect, you know, some of the things that Hazen probably did with the models. But they are all very close.

MR. MCCANN: Okay. Okay. Going, I'm still on sixty-nine. If I, we go down to the next page of this exhibit beginning with the first pipe that shows the ten year six in blue. So, 20761 to 20753, do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: That pipe, is that, are those segments also reflected in Exhibit 108?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. So, let's go to page, Bate stamped page 921. This would be the, the third page of this exhibit and highlighted and banded section on this page on the left-hand column, again, of Exhibit 108 goes from 27, 20753 to 20761. Do you see that, or 60?

MR. GRACHEK: Yes, 20760, (inaudible) --

MR. MCCANN: Is that --

MR. GRACHEK: -- it's in reverse to what we looked at on the other, other exhibit.

MR. MCCANN: Okay and do the ten year six, without going through all the, all the details --

MR. GRACHEK: Yeah.

MR. MCCANN: -- does the ten year six in Hazen --

MR. GRACHEK: Yeah, --

MR. MCCANN: -- let me, let me just finish the question, Mr. Grachek. Does the ten --

MR. GRACHEK: Sorry.

MR. MCCANN: -- year six storm capacities in this Exhibit 108, how do they compare with the, the capacities for the same segments in Protestant's Exhibit 69?

MR. GRACHEK: They're all relatively (inaudible), very close. They're all very close to those numbers. Not exact, but they are very close.

MR. MCCANN: Okay, all right. And I don't think it's necessary to go through all the bands. I think there's five in total. But, at least for the record, are the, on this Exhibit 108, are the banded and highlighted segments, do those correspond to the, the capacity, over capacity segments in Protestant's Exhibit 69.

MR. GRACHEK: They, they do. They do, within a, within a (inaudible) but they do, yes.

MR. MCCANN: Okay. Any reason why in this Exhibit 108 that you're aware of that the pipe segments aren't, or at least the band, banded ones with the highlighting, are not in order? You understand, do you un, know why that may be?

MR. GRACHEK: I, I do not know, probably just the

preference of those making the table. They, they went, went upstream rather than downstream.

MR. MCCANN: What about the, did they do a, is, is, are these pipe segments chronological?

MR. GRACHEK: Yes.

MR. MCCANN: Or numer, numerically speaking?

MR. GRACHEK: Numerically speaking they are.

MR. MCCANN: Okay.

MR. GRACHEK: They're in numerical order.

MR. MCCANN: Okay, all right. And since I'm sure Mr. Mudd will ask you, was any other information provided by the County in connection with this, this document? Or was this document just produced?

MR. GRACHEK: I, I (inaudible) looked at this document (inaudible).

MR. MCCANN: Any reason to believe that Hazen did not prepare this pipe capacity chart, or the capacities indicated in it are not what Hazen produced?

MR. GRACHEK: No, there's no reason to believe that they did (inaudible), they did because it's consistent with what, what they were indicating in their validation work and, and the minor adjustments there were making to the model. But it didn't change the outputs and significantly. So, they, they couldn't have come up with the numbers this close by accident.

MR. MCCANN: Okay. And when you say close, do you

mean, mean to, to, to what the RK&K?

MR. GRACHEK: Yes, to the RK&K.

MR. MCCANN: Okay.

MR. GRACHEK: As close to the RK&K.

MR. MCCANN: Okay and, Your Honor, I would move Exhibit 108 into evidence.

ALJ: Mr. McCann? I mean, excuse me, Mr. Mudd?

MR. MUDD: I, I object for the same reasons, for lack of foundation. But I understand your ruling so far and I'll ask questions on cross.

ALJ: Sure, and it was a, a document obtained during the Public Information Act that was produced to Mr. McCann and has a Bate stamp on it and so it's authenticated in that way. And so, I'll accept 108. Mr. McCann, I don't have 107, did you --

MR. MCCANN: Yeah, I was just about to show you 107.

ALJ: Oh, okay.

MR. MCCANN: I don't intend to ask Mr. Grachek any questions about it because it says what it says. And it was produced to me, and I think it speaks for itself. It's a letter dated February 6th, 2023, and I think as you'll see, Your Honor, it's a progress report for Hazen to the County. It's Bate stamped 292. It's only a couple pages. And I think, now that I look at it, I don't think I sent it to Mr. Mudd and Mr. Rosenblatt like I did the others, but I'll do that now.

ALJ: They haven't seen it? Mr. Mudd, have you seen this?

MR. MUDD: I have not.

MR. MCCANN: Yeah, I did not send this one to them. So, I'll do that right now.

ALJ: All right. We're going to let them look at this before we say whether or not it comes in.

MR. MCCANN: Okay. All right. I'll send it to them now. Other than that, Your Honor, I don't have any other questions of Mr. Grachek.

ALJ: Mr. Zimmerman, do you have questions?

MR. ZIMMERMAN: I, I do. I do. May I start?

ALJ: Y?

MR. GRACHEK: Yes, please.

MR. ZIMMERMAN: Okay. So, Mr. Grachek, when did you learn about this 2023 Hazen document, Protestant's Exhibit 107

MR. GRACHEK: It was, it was identified to me --

MR. MUDD: Object, objection. Objection. We're asking questions about an exhibit that we haven't had a chance to look at, Your Honor. And I, I don't mind him asking questions, but I'd rather take a few minutes to look at it. And, and I don't need to do that now but --

MR. MCCANN: It's a different document. It's not the document --

MR. MUDD: Yeah, he said, he said Exhibit 107. That

was the question he just asked.

MR. ZIMMERMAN: Yeah, I mean, we can take a break, we can, we can do it in --

MR. MCCANN: Oh, I'm sorry.

MR. ZIMMERMAN: -- May or June or whatever. But I want to ask him about this document.

ALJ: Mr. Zimmerman, you're asking for, just to be clear, you're, about 107 and not about --

MR. ZIMMERMAN: Well, I, at the moment, I'm asking, at the moment, I'm asking for the one that was just identified, and I think, was it admitted? I think it was, right? 107, the Hazen February 6, 2023?

ALJ: Mr. Zimmerman, so what I just said was, 107 he just, Mr. McCann just showed on the screen he had not sent it over to Mr. Mudd, so he was doing that now.

MR. ZIMMERMAN: Oh, okay.

ALJ: Mr. Mudd was going to review it and then we were going to decide whether or not it comes in, just because he hadn't had a chance to look at it.

MR. ZIMMERMAN: Okay, okay. So, you want me to ask some other questions and then get back to it or what?

MR. MUDD: I have, I have a suggestion, Your Honor.

ALJ: Yes, sir? Yes, Mr. Mudd?

MR. MUDD: Maybe, maybe he can ask questions he wants to ask and then we can take a brief break before I would start

and I could, he can, he can ask a handful of questions about 107 if we don't --

MR. MCCANN: The letter is, the letter is a County document, Your Honor. It's no different than any others, so I don't --

MR. ZIMMERMAN: If there's going to be a break, let's take the break now, you know, --

ALJ: Oh, my.

MR. ZIMMERMAN: If there's going to be a break at some point, I don't want to have to break up my questions.

ALJ: Okay, understood. We were just --

MR. ZIMMERMAN: And I haven't seen the document either, by the way. Okay? I mean, you know.

ALJ: Okay, right? So, I don't think Mr. McCann had a chance to send it over to --

MR. MCCANN: I just sent it, I just sent it a couple --

ALJ: Okay. So, he just sent it to, to Mr., how about, let's do this. Mr. Zimmerman, do you have other questions about the other documents while we're all looking at 107?

MR. ZIMMERMAN: I have some other questions, I can go ahead and maybe come back. I'll, I'll try. I'll try.

ALJ: Okay, that would, that would be good. How about if we do that?

MR. ZIMMERMAN: But one thing I would like to, has Mr. Grachek looked at this Protestant's Exhibit --

ALJ: He has not, well, what I understand is Mr., Mr. McCann said he didn't need to ask Mr. Grachek any questions about 107. He was just admitting it, because it was a document, and so Mr. Grachek only talked about the other document, 108.

MR. ZIMMERMAN: All right. Okay. Well, we can come back after Mr. Mudd and I, I guess, have a chance to see what it is but. All right. So, Mr. Grachek, as I understand it, you were now provided with several documents to show that the County hired Hazen back around 2013/'14 to review what RKK had done, is that correct?

MR. GRACHEK: That's correct.

MR. ZIMMERMAN: Okay and you didn't have that, those documents when you originally testified? Those were recently--

MR. GRACHEK: No, --

MR. ZIMMERMAN: -- provided to you.

MR. GRACHEK: -- those were new documents provided to me recently.

MR. ZIMMERMAN: Okay. What explan, based on everything you've seen so far, can, can you explain how or why the County would promptly get Hazen to review RKK and, and I'll make it a comprehensive question, then get RJN into it, then get Ramble into it, then bring back Hazen. I mean, can you,

can you explain what is going on here?

MR. GRACHEK: It was --

MR. ZIMMERMAN: Based on the documents you've seen or, and your, your experience?

MR. GRACHEK: Well, it would require me to speculate based on my experience. But the, the idea of having a second look at a model that extensive is not uncommon.

MR. ZIMMERMAN: Okay.

MR. GRACHEK: You know, --

MR. ZIMMERMAN: And what about a third look, a fourth look, a fifth look or, or what, are, are we seeing updating? Are we, is Hazen coming back in now almost starting over? I mean, what is going on?

MR. GRACHEK: Well, based, based on what I saw from Hazen, there really wasn't anything significant that they changed as far as the general conclusions from the RK&K. They, they still showed --

MR. ZIMMERMAN: All right.

MR. GRACHEK: -- problems.

MR. ZIMMERMAN: Yeah, I mean, that's based on what they did in 2014, correct?

MR. GRACHEK: Right.

MR. ZIMMERMAN: Well, let me ask you this. And I wonder if Mr. McCann could share Protestant's, I think it's eighty-five. Is that the Hazen newsletter?

MR. MCCANN: Yes, I can share that.

MR. ZIMMERMAN: And, and also if Mr. McCann kind of could, I don't know if you can do a double, but number eighty-six as well.

MR. MCCANN: Okay.

MR. MUDD: Your Honor, while, while we're waiting for this, I'm, I'm going to object to any questions about this exhibit as being beyond the scope of direct.

ALJ: This exhibit meaning what, which one?

MR. MUDD: Eighty-five. The exhibit that we're pulling up now --

ALJ: (inaudible).

MR. MUDD: Excuse me, excuse me. The exhibit that's being pulled up that has yet to be discussed today.

ALJ: Okay, understood.

MR. ZIMMERMAN: May I respond or, or will you just promptly overrule the objection?

ALJ: Will I promptly overrule the objection? It does have to do with the Hazen reports and so, I'm going to let him ask his questions. Go ahead.

MR. ZIMMERMAN: Okay.

ALJ: Overruled.

MR. ZIMMERMAN: So, Mr., and just by, by way of background, Mr. Grachek, you, you discussed this to some extent in your direct testimony, correct? I mean, previously.

MR. GRACHEK: I, I did some cursory reviews of the Hazen newsletters.

MR. ZIMMERMAN: Yeah.

MR. GRACHEK: So, --

MR. ZIMMERMAN: And then, and that's Protestant's eighty-five, the newsletter. And have, have, you've read the whole thing? It's only a few pages, right?

MR. GRACHEK: Yeah, yes, I, I, I've, I've read and if you, yeah, I've read it.

MR. ZIMMERMAN: Okay and separately, eighty-six was the scope of services? Can, can Mr. McCann put that up? Okay. That's back in, is that the Hazen scope of services from 2020?

MR. MCCANN: And actually, that's the accurate, yeah, that should be eighty-six.

MR. ZIMMERMAN: Was that, I have that down as a scope of services, am I wrong? Let's see.

MR. MCCANN: It is. No, this is, the scope of services for Hazen, is that what you're asking for?

MR. ZIMMERMAN: Yeah, yeah. I thought it went right with the newsletter but. I, I mean, it's what you sent me, Mr. McCann, as your list of exhibits. And you have eighty-six for Hazen.

MR. MCCANN: This is the wrong, this is the exhibit that was replaced so bear with me one second. That I certified with the corrected scope of service. Which is 86-A.

MR. ZIMMERMAN: Okay.

MR. MCCANN: I'm pulling it up. Or replaced, not 86-A, but rather a new eighty-six. There it is.

MR. ZIMMERMAN: Okay.

MR. MCCANN: This is the e-mail cover and attachment as I indicated earlier.

MR. ZIMMERMAN: All right. Do you recall this document as well, Mr. Grachek?

MR. GRACHEK: This one, this one, it looks like it's for pumping stations.

MR. ZIMMERMAN: Okay, all right. Well, let's go back to eighty-five. What, what I want to ask you, and based on your combination of testimony from today and, and previously, based on your review of the records and anything else you've reviewed, you know, what explanation is there for the County having four different consultants in the last decade and now coming back to Hazen for what looks like a very comprehensive review, like fifty years out? You know, what, what can you tell us as, as to what's, you know, what's going on with, with Hazen now and, and where everything stands?

MR. MUDD: Objection. Calls for speculation by somebody who is not making those decisions.

MR. ZIMMERMAN: No, I'm asking him not to speculate. I'm asking him to say whether he can explain based on what he's seen so far.

ALJ: All right. Well, Mr. Grachek, don't speculate. I think last time the question was asked, I think sort of the same question was asked, you did say I would be speculating. So, if you could not speculate, but if you know, we'd like to hear it. So, overruled.

MR. GRACHEK: I, I am not connected directly with the County in any way, so I do not know what their motivations are.

MR. ZIMMERMAN: What can you tell us as to the time period, based, based on the Hazen newsletter, assuming it's accurate, what can you tell us as to the timeframe for what they're expecting to study? Can we go back to Protestant's eighty-five?

MR. MUDD: Objection. That's information that's available right on the document.

ALJ: Okay. Well, he can ask the question. Overruled. Go ahead.

MR. ZIMMERMAN: And can Mr. McCann put it up there? Can, can we scroll down a bit? Yeah, so, what I want to ask you about with reference to the introduction in page one, and without asking you about every single sentence, based on what's stated there and including the 20, you know, in the, in the like fifth indented paragraph, the twenty year and fifty year planning horizons, system deficiencies at year 2025 and that twenty year and fifty year planning horizons, I mean, what, if anything, does that tell you as an expert about the status of

the situation in the Jones Falls sewer shed and what is going on here?

MR. MUDD: Objection. Calls for speculation.

ALJ: Yeah, I'm not sure he's going to be able to answer it, but I'll overrule --

MR. ZIMMERMAN: (inaudible) --

ALJ: Now, Mr. Grachek, Mr. Grachek, to the extent you can answer it without speculating, can you answer that, sir?

MR. GRACHEK: What, what I can say is and I, I just read these bullets right now again too, this is a public relations document. And it is designed to provide the public a positive, a positive viewpoint on how their, their taxpayer money is being spent for development.

And they're saying all the right things in this. This, this may, may or may not be totally accurate based on, based on, you know, reality. But what it is saying here is a lot of the right things that, that are looking at all of the facilities, they're looking at a long horizon, they're looking at a massive capital improvements program, they're looking at BMPs, best management practices for operation and maintenance.

And looking at the overall sewer vulnerabilities. In other words, they're doing troubleshooting in the system. They're saying all the right things in this newsletter. And whether they're actually performing those changes though is

something that I can't --

MR. ZIMMERMAN: All right.

MR. GRACHEK: -- I can't, I can't speculate or (inaudible) --

MR. ZIMMERMAN: Okay.

MR. GRACHEK: -- the reason they're saying it is because that's what needs to be said.

MR. ZIMMERMAN: All right. Now, this was from the summer of 2022, correct? At least that's --

MR. GRACHEK: I believe so.

MR. ZIMMERMAN: Or, I'm sorry, was it 2021?

MR. GRACHEK: It's third quarter 2022 it says up here in the corner.

MR. ZIMMERMAN: Okay. In any of the documents, to, to the extent Mr. McCann has provided you with documents from the County in response to the PIA request, can you tell us whether there's a, any County document which contradicts anything Hazen is saying here or indicates that anything they're saying here is, is wrong?

MR. GRACHEK: I have, I have not read any documentation that disputes the findings of both RK&K and Hazen with regards to the over capacity of the pipeline systems within Baltimore County.

MR. ZIMMERMAN: Okay. Is there any document that you're aware of, at least at this point, which indicates that

the County staff believes that the Hazen newsletter description is a bad plan, a bad, a bad project, unnecessary, inappropriate, incorrect, anything like that?

MR. GRACHEK: I'm not aware of that.

MR. ZIMMERMAN: Okay and, of course, we haven't looked at that February 6th, 2023, correspondence yet. And just for the record, may, may I assume that you have not personally had any conversations with any County Department of Public Works staff that deals with the sewer issues?

MR. GRACHEK: Not to my recollection. I, I don't believe I have, but I, I've been involved in projects in Baltimore and Baltimore County for many years. I don't recall. But I, I don't believe that I have, no.

MR. ZIMMERMAN: Is there a single document, that you've seen at least, that gives a, what you would call a justifiable or reasonable prediction as to what year, if any, in the future Baltimore County will ever totally satisfy the Consent Decree?

MR. GRACHEK: I haven't seen any technical documents that would, that would prove to me that they're on that path of achieving what they're supposed to be achieving in the Consent Decree.

MR. ZIMMERMAN: Okay. Thank you, Mr. Grachek. That's all I have.

ALJ: Mr. --

MR. ZIMMERMAN: Other than, other than getting back to Exhibit 107 at some point.

ALJ: Okay. So, let's, let's, well, let's ask Mr. Mudd. Have you had a chance to look at 107? I have not. Mr. Rosenblatt, I think, took a look at it and I, I, it seems like, it seems like it, it, it is, there's no objection that we would have to it.

ALJ: Okay, all right. So, Mr., Mr. Zimmerman then, do you want to, have any questions about 107?

MR. ZIMMERMAN: Well, I haven't seen --

ALJ: Mr. Grachek hasn't reviewed it.

MR. ZIMMERMAN: Oh, I haven't, I haven't seen it myself. Can I take a quick look at it? I mean, I think we're going to, I think we're printing it out at the moment.

ALJ: Well, Mr. McCann I think e-mailed it to you.

MR. MCCANN: No, I'm sorry, I --

MR. ZIMMERMAN: Do we have, I'm not sure we got it.

MR. MCCANN: I haven't e-mailed it to Mr. Gra, to, to Mr. Zimmerman yet but I can do that right now.

MR. ZIMMERMAN: If you don't mind, I'll take a quick look and maybe, you know, maybe I won't have any questions, but at least, but maybe I will.

MR. ROSENBLATT: Either way, didn't this witness say he has not seen this exhibit and we're not objecting to it being admitted. But he didn't answer any questions about it.

So, --

MR. ZIMMERMAN: I may want to ask him about it. It's in. I mean, you know, --

MR. ROSENBLATT: He hasn't seen it.

MR. ZIMMERMAN: So, he'll see it, he'll see it.

MR. ROSENBLATT: How, this is not his witness and it's beyond the scope of the direct testimony. He did not ask a single question about this. This was a separate issue, this exhibit coming into evidence.

ALJ: Yeah, Mr. Zimmerman, I'm just trying, I mean, I'm giving you all the latitude here, but I mean, he, Mr. McCann specifically said I'm not asking Mr. Grachek any questions about 107. It is what it is. It's a public record and then Mr. Mudd, it was, the question was, does it come into evidence. So, how is Mr. Grachek going to answer a question? You just want him to read it? I mean, --

MR. ZIMMERMAN: I don't, I don't know until I see it. It's, it is, I think it's, it's either been offered in evidence or maybe it's in evidence, I'm not sure but --

ALJ: It, well, it, it was offered in evidence, Mr. McCann offered it. He didn't ask Mr. Grachek any questions about it. Mr. Mudd said I need to review it.

MR. ZIMMERMAN: Right.

ALJ: Mr. Rosenblatt reviewed it. They now have no objections to it coming in --

MR. ZIMMERMAN: Okay, so it's in evidence.

ALJ: It's a Public, it's a Public Information Act doc, yes, document, so it's in evidence.

MR. ZIMMERMAN: Right --

ALJ: (inaudible) you're not objecting.

MR. ZIMMERMAN: No, I'm not objecting, it may be something I might want to ask him a question about. It is in evidence and --

ALJ: I think what, Mr. McCann sent it to you. Do you have it? Pull it up on your screen. Do you have any questions? We need to get through this and we're not going to come back like another day and ask Mr. Grachek to come back another day. I mean, he's, presumably, you know, (inaudible).

MR. ZIMMERMAN: Well, let me see, let me see if it's on our screen. Is it on the screen? I have to get to my, I have to shift over to the e-mail then. You can't print it out?

MR. MCCANN: I can pull it up.

MR. ZIMMERMAN: Yeah, I'm --

ALJ: Could, could you pull it up, Mr. McCann?

MR. MCCANN: Sure.

ALJ: He's putting it on the screen, Mr. Zimmerman. There you are.

MR. MCCANN: Yep.

MR. ZIMMERMAN: You know, we're going to have to scroll down a bit. All right and while we're doing this, Mr.

Grachek is seeing this as well as we are, right?

MR. GRACHEK: Yes.

MR. ZIMMERMAN: Okay. Okay. Okay. We'll try to do this briefly, very, very briefly. Okay and I'm just seeing this. It looks like an eight-page letter with some attachments, does it not, Mr. Grachek?

MR. ROSENBLATT: Objection.

MR. MUDD: Yeah, objection, Your Honor. I know that (inaudible) --

MR. ZIMMERMAN: I'm trying to do this quickly, okay.

ALJ: It's in evidence, Mr. Zimmerman. And Mr. Grachek hasn't reviewed it, or it's not, he doesn't have it in, he's just looking at it on the screen like we are. Why are you asking him that? What, what questions do you have?

MR. ZIMMERMAN: Okay.

ALJ: Or what real questions do you have?

MR. ZIMMERMAN: I'll ask you, I'll simply, Mr., Mr. Grachek, other than this February 6th, 2023 letter, which, of course, will speak for itself as to Hazen's re, reporting to the County, are you aware of any other document between Hazen and the County from, in between the Hazen update, Protestant's eight-five and, and now? Or is, or is, as far as you know, does this give us a sense of what's going on with Hazen, at least as far as you know?

MR. GRACHEK: As I said, I have not reviewed this

document. But I presume, since it is a progress report for the work they're doing, that this would give us the most, most recent update as to the work (inaudible).

MR. ZIMMERMAN: Okay and you're not aware of anything else in between? At least, --

ALJ: Don't, just don't, don't speculate or presume, Mr. Grachek. Just whatever you know, based on (inaudible).

MR. GRACHEK: No, I, I'm not aware of anything else.

MR. ZIMMERMAN: Between, between the 2022 update, or prog, memorandum and this, this correspondence.

MR. GRACHEK: Yes.

MR. ZIMMERMAN: Okay, all right. That's all I have, Madam Judge. Yeah, that's all.

ALJ: All right. Thank you, Mr. Zimmerman. Thank you, Mr. McCann, for putting it back on the screen.

MR. ZIMMERMAN: Thank, yeah, thank you very much.

ALJ: Serving as Mr. Zimmerman's law clerk. (inaudible) joke.

MR. ZIMMERMAN: That's all, that's all. I'm muting myself.

ALJ: Okay, all right. Mr. Wyatt, any questions?

MR. WYATT: No questions.

ALJ: Thank you. Mr. Sachse?

MR. SACHSE: No.

ALJ: All right. And so, back to Mr. Mudd.

MR. MUDD: Yes, thank you. So, just to be clear, Mr. Grachek, that last question asked by Mr. Zimmerman, your answer about what that document did or did not show. That was pure speculation, correct?

MR. GRACHEK: Based on what I read in the last three minutes, that's what it was based on. But if I reviewed the document, I'd give you a good answer. But it looks like, it says progress report. So, I presume I know what progress report is.

MR. MUDD: Okay. But you're not aware of anything that's been at issue since then?

MR. GRACHEK: No.

MR. MUDD: And you're not aware of anything that had been at issue prior to that?

MR. GRACHEK: Other than the newsletters --

MR. MUDD: Okay.

MR. GRACHEK: -- and the, that I reviewed.

MR. MUDD: Okay. So, did you, were you here when Mr. McCann was talking about the number of documents he's received in the past several, several, I guess in the past week from Baltimore County?

MR. GRACHEK: I think that was stated at the start of my testimony, --

MR. MUDD: Okay. So, does the number seventy-seven hundred sound right --

MR. GRACHEK: Yeah.

MR. MUDD: -- for last week?

MR. GRACHEK: Yeah.

MR. MUDD: And eight, and eight hundred on Sunday?

MR. GRACHEK: That, that's what I heard.

MR. MUDD: Okay and how many of those documents did you review?

MR. GRACHEK: I'm trying to remember, five or six, five, five, I believe.

MR. MUDD: Okay and those five were sent to you directly by Mr. McCann?

MR. GRACHEK: Yes.

MR. MUDD: And, and if you had to guess, you're, you're aware that, that the, Mr. McCann has done other, in fact, I won't ask you to guess. But you're aware that Mr. McCann has done other PIA requests, correct?

MR. GRACHEK: I'm, I'm not involved in that. I know about this PIA request, but I don't know about any other ones.

MR. MUDD: Okay. So, how many documents, you, you said you reviewed five or six from this latest request. How many documents did you review aside from those five or six in preparation for your testimony today, today, or your original testimony?

MR. GRACHEK: Well, my original testimony, I can't give you an exact number, but probably fifty to a hundred.

MR. MUDD: Okay and, and then another five to six today?

MR. GRACHEK: Yes.

MR. MUDD: Okay and the fifty to a hundred that you received, were, did you get all of those directly from Mr. McCann or from someone, well, I'll, I'll start there. From Mr. McCann?

MR. GRACHEK: Yes.

MR. MUDD: Okay and when Mr. Zimmerman asked you whether or not you had read any documents that, that dispute the findings of RK&K and Hazen, you, you said you have not, correct?

MR. GRACHEK: That is correct.

MR. MUDD: But that's based on all the documents that were, that were given to you by Mr. McCann, correct?

MR. GRACHEK: Yes.

MR. MUDD: So, that doesn't mean that there, that there would be other documents potentially in the thousands of other documents you haven't read that could do that, correct?

MR. GRACHEK: I can't speculate to that.

MR. MUDD: Okay. Let's talk about Exhibit 104. I want to pull this up. All right. Can you see that?

MR. GRACHEK: Yes.

MR. MUDD: Can you still see it? I just moved it to a different screen.

MR. GRACHEK: Yes.

MR. MUDD: Can you still see it?

MR. GRACHEK: Yes.

MR. MUDD: Okay, great. So, I know you kind of quickly went through this with Mr. McCann, I, I don't want to, I'd like to do it a little bit more slowly. Can you describe what this exhibit, what this attachment A is meant to be?

MR. GRACHEK: In my reading of this document, this is a scope of services for Hazen to perform on call collection system modeling services. In other words, perform a, a validation on the RK&K model.

MR. MUDD: Okay and, and I'm sorry. I'm going to skip, skip back up to the first page. Do you know whether, were, were, were all of these documents, I think you referred to three separate documents within this, this single PDF, do you know whether all of these were delivered to you together.

MR. GRACHEK: All, all the documents you're looking at right now were delivered together, forty-five pages.

MR. MUDD: Okay and do you know whether they were assembled together in, within the County's files?

MR. GRACHEK: No, I do not.

MR. MUDD: Okay. So, as far as you know, Mr. McCann assembled it, or at least that's, you received it directly from him, correct?

MR. MCCANN: Objection. They're Bate stamped,

they're Bate stamped. And before we get along this path too much, Your Honor, I, I really, I, I think, it's a question of relevance, but these, this, the assumptions that are underlying these questions are, I think, are just, they're, they're speculative, first of all. But to assume that I'm not giving things to Mr. Grachek or that I am giving things or that I'm mixing up documents, I think is inappropriate.

But I also think it's irrelevant. It doesn't matter whether I gave, he looked at all seventy-seven hundred documents or not. He, he looked at what I gave him. So, the questions should be directed towards those documents. It literally does not matter whether Mr. Grachek looked at all eighty-five hundred or so documents or not, it doesn't matter.

ALJ: Well, okay. But through your objection, it's a speaking objection and you're directing an answer, you're, you're suggesting an answer as well. And so, he can ask the question and, and he can ask the question. This is cross examination. So he can ask, you know, all about it. It does have a Bate stamp at the bottom of it. We can all see the Bate stamp at the bottom. So, overruled.

MR. MCCANN: Just so I'm clear, I understand, (inaudible) --

ALJ: We don't need to have like a whole argument about it. We don't need to have a whole discussion about it. What, what, you're, you're making a speaking objection. So,

that the witness then understands, you know, that, that you don't, you don't believe it's important to, which is fine, it could be your position. You can follow-up in, in re-direct. But Mr. Mudd is able to ask, you know, the question in cross. So, let him ask the question.

MR. MCCANN: Yeah, I just think it's irrelevant, that's all. And I, I understand you're overruling the objection --

ALJ: You, you, I know, and Mr., Mr. Grachek hears you so I, but I have an issue with this, the whole speaking objection about it. So, you know, --

MR. MCCANN: Why would I be instructing Mr. Grachek not to speak about the, the relevance of this? I wouldn't be instructing him to do that. But --

ALJ: (inaudible) a lot of speaking objection. All right. So, overruled. Go ahead, Mr. Mudd.

MR. MUDD: Okay, thank you. On, so, regarding the, regarding the task that they undertook, we have the general assumptions. I want to go to, I want to go to the, I'm sorry, trying to find it here. This task 3.2. And I, I'd like you to explain what, what's the difference between calibration and verification.

MR. GRACHEK: I can't see 3.2. I can only see 3, the start of 3.1. If you can scroll down.

MR. MUDD: Oh, sorry. I think I'm there on my, on my

page. You're not, you're not seeing 3.2?

MR. GRACHEK: I see 3.1 at the bottom, model simulations. I don't see two.

MR. MUDD: Let me, let me, let me stop and reshare. So, I'm sorry, let, let me, just so you weren't, you weren't, I want you to know where we are in this document, so.

MR. GRACHEK: Okay.

MR. MUDD: I'm at the very first document, which you already described as being their scope of, of, of service.

MR. GRACHEK: Right.

MR. MUDD: And now I'm on page five of the pdf (inaudible) page four of the document, section 3.2. Can you just describe what the difference between calibration and, and verification are?

MR. GRACHEK: Sure. When you calibrate a model, a model is a mathematical representation of nature. And when you, when you do that, you relate the mathematical representation to real life data, empirical data that you get out in, in the world.

So, for this example, you would model the flows using the mathematics associated and the equations and, you know, things associated with developing the mathematical model. Then what you do is you go out and take real world flow and then you would adjust the model for what the real-world flow is and that's called a calibration.

A verification is when you take a completed model and then you relate that to either a different model or more real-world flow and then try and simulate that same model and then verify that that first model was accurate.

MR. MUDD: Okay.

MR. GRACHEK: And so, --

MR. MUDD: Okay and I think you concluded, and I think I heard this right, but I think you, you said that Hazen came to the conclusion that the RK&K model was validated.

MR. GRACHEK: That's correct.

MR. MUDD: Or verified, is that, is that the same as verified?

MR. GRACHEK: They, they did some recalibration of the model, but they stated in their report later on that, that the model was verified.

MR. MUDD: They did. Can you point me out to where that, point me to where that is?

MR. GRACHEK: That would be the next document, I believe.

MR. MUDD: Okay. So, let's go talk about --

MR. GRACHEK: Yeah, we're in the scope of services now. This would have to be past all the, past all the tables and graphs and everything.

MR. MUDD: Okay. I think this is the second document you're referring to.

MR. GRACHEK: (inaudible).

MR. MUDD: So, I'm sorry, I'm sorry. I didn't mean to cut you off. Go ahead.

MR. GRACHEK: Yeah, in the conclusion, in the conclusion of the memorandum.

MR. MUDD: Uh huh.

MR. GRACHEK: So, it would be toward the bottom. They indicated that it was validated.

MR. MUDD: Okay.

MR. MCCANN: Page 201 of the Bate stamp.

MR. GRACHEK: You have to go through lots of graphs here.

MR. MUDD: What are these graphs? I guess we'll just stop and look at one of them. What do these (inaudible) show?

MR. GRACHEK: They use a methodology that determined that the, that the data should be, should be reasonably accurate within a certain plus or minus percentage rate. And so, you can see when it's 00, the plus and minus is nothing. But when you get out to higher numbers, the plus and minus band gets wider. And then you're plotting the data to see if it reasonably fits that band. That's what those graphs are.

MR. MUDD: Okay and is this, is this based on field observed data or is this based on modeling?

MR. GRACHEK: Yeah, this is based on, based on the, does the model, does the model, the field observed data match

the model.

MR. MUDD: Okay.

MR. GRACHEK: Within a certain (inaudible).

MR. MUDD: Is this the conclusion section you were referring to?

MR. GRACHEK: Yes.

MR. MUDD: Okay and where would, where would it say in, in here?

MR. GRACHEK: Can you make that larger?

MR. MUDD: Sure, I'm sorry.

MR. GRACHEK: Okay. I have to look and see where. In the third paragraph it says, from the boundary model, and, and flow meters were initially identified as being slightly biased with respect to wet weather, but upon evaluation of the totality of events, JR, JWR29 are considered adequately calibrated validated meter and is, is still overpredicting volumes.

MR. MUDD: Okay and that's the only, that's the only place that it says it?

MR. GRACHEK: The last, it talks about the system model and wet weather systems, sewer (inaudible) calibration (inaudible) are considered as well. The errors generally fall within or close to the tolerance ranges. And that's, that's the, that's the most important one is they basically said that the errors fall generally within the tolerance ranges.

MR. MUDD: Okay. So, so, in other words, what they would observe in the field relative to the RK&K model is validated.

MR. GRACHEK: Yes, it was close enough within their band of error that they determined, based on their, I believe, (inaudible).

MR. MUDD: Okay, all right. Is there, is there another document here that you referred to or were there only two that were here?

MR. GRACHEK: It was just the two, I believe. It was the, this documents and the, another exhibit with the tables.

MR. MUDD: Okay. All right, thank you. I'm going to now take a look at Exhibit 108 and where, where did you get this document from?

MR. GRACHEK: It was from, could you bring that one up, please?

MR. MUDD: Sure. You mean, blow it up, you mean?

MR. GRACHEK: Yeah, just, yeah. I just need to see it before I, I respond (inaudible) --

MR. MUDD: And for the record, I'm sorry, this is Exhibit 108.

MR. GRACHEK: Yeah, I received this from, from Mr. McCann.

MR. MUDD: Okay and do you agree with me that there are no dates on this document?

MR. GRACHEK: I do not see, no, I do not see any dates --

MR. MUDD: Okay. So, --

MR. GRACHEK: -- what I'm looking at now, at the bottom of the page (inaudible).

MR. MUDD: So, I think, I think you're breaking up a little bit. Am I the only one he's breaking up for?

ALJ: Someone, someone keeps unmuting their microphone, there are several people and I'm muting them as I see them. So, I don't know why people keep unmuting themselves. But if you could, there's people calling in and unmuting themselves and so, when I see you unmuted, I'm muting you.

Other than Mr. Grachek and Mr. Mudd and Mr. McCann, they're the only people that are supposed to be talking. So, anyway, that's what that static was. So, why don't you, Mr. Mudd, ask that, I think you asked about there's no dates on the documents is what I have --

MR. MUDD: Yep, yeah, I'll repeat the question. So, are you aware if there are any dates on this document?

MR. GRACHEK: I, I don't recall any dates on the document.

MR. MUDD: Okay. But it's your, it's your testimony that the data, or the information that, that Hazen produced on this document is, is based on the model that they ran under

Exhibit 104, is that right?

MR. GRACHEK: Yes.

MR. MUDD: And how, how do you know that?

MR. GRACHEK: Because the, the model evaluation that's shown here is, is very close to representing what RK&K did. So, the only way that they could have these numbers and this, this, this, you know, type of data, would be as if they were validating RK&K's model.

MR. MUDD: You don't think that they're, that that's, that that's a speculative response? You, you know that to be sure?

MR. GRACHEK: Well, that, that's my rationale for, for believing that this is a result of that evaluation. The other thing too is that, is that this would be the result of the validation and recalibration that they did.

MR. MUDD: Okay.

MR. GRACHEK: (inaudible) normal, normal output for that.

MR. MUDD: Okay. But you're not a hundred percent sure, correct?

MR. GRACHEK: I, I don't have this as connected to a report, that previous report.

MR. MUDD: Okay. Let me go back, bear with me here. Let me pull up Exhibit 69. Sorry, I didn't have this one open. It's taken a little minute, a minute to open here. Okay. All

right. Can you see Exhibit 69 here?

MR. GRACHEK: Yes.

MR. MUDD: And you recall what this exhibit is?

MR. GRACHEK: Yeah, this is a summary that was, that was developed by one, one of the people on our team, I believe Mr. McCord, of the RK&K and Department of Public Works numbers for dry flow and the RK&K numbers for wet weather flow based on their model.

MR. MUDD: Okay and, I'm sorry, are, are you still seeing Exhibit 69?

MR. GRACHEK: Yes.

MR. MUDD: Okay, great. You, you say that the, this green column, that this is based on dry weather flow. How do you, what, what's your, your rationale for that being dry weather?

MR. GRACHEK: Because all the numbers are, for the most part, are below one hundred.

MR. MUDD: Say, I'm sorry, say that one more time?

MR. GRACHEK: Because all the, all the numbers are below one hundred as opposed to, and the way you would normally do a, a summary like this is you would, you would show the dry weather capacity and then you would then represent that against the wet weather capacities.

MR. MUDD: Are you talking about in this report?

MR. GRACHEK: I'm talking about in this, in this

document, that --

MR. MUDD: Right.

MR. GRACHEK: -- that where it came from. This was provided to me as a summary.

MR. MUDD: Understood. But, but you, you really don't know where the source of that information came from, correct?

MR. GRACHEK: All I know is it is from the Department of Public Works.

MR. MUDD: Right, or, and that, that's what was relayed to you, that this came from the Department of Public Works?

MR. GRACHEK: That's correct.

MR. MUDD: And it was also relayed to you that this was based on dry weather flow from the Department of Public Works, correct?

MR. GRACHEK: It was not relayed to me, I, I came to that conclusion based on what I saw, saw in the data. And it's just my --

MR. MUDD: And, and explain again why, why you, how this data concludes, or helps you conclude that that's dry weather flow?

MR. ZIMMERMAN: Objection. It's asked and answered.

ALJ: Overruled. Go ahead, sir.

MR. GRACHEK: Because all the numbers are a hundred

or below one hundred and they're different than the wet weather flows. And so, the presumption is that these would be the dry weather flows. These would be the flows that, that you would have if you did not have a storm going on and the pipes were flowing freely.

MR. MUDD: So, so that you just said it was a presumption. So, you're presuming, based on modeled wet weather flows that are also on this chart, that the green must be dry weather flows?

MR. GRACHEK: No, I'm basing that on the numbers themselves, that they're all less than a hundred.

MR. MUDD: So, there's no --

MR. GRACHEK: (inaudible) I do not have the source document.

MR. MUDD: Okay and the, you're saying then there's absolutely no circumstance where dry weather flows could be over a hundred?

MR. GRACHEK: No, I'm not, I'm not saying that, I'm not saying that. But what I'm saying is that in most cases that is the case. The dry weather flows, if you have a sewer system that has wet weather or dry weather flows over a hundred, that would be very atypical situation.

MR. MUDD: Okay and that, so you're, so you're then, it's based on your experience elsewhere and, and your analysis of this data, but not relative to source information.

MR. GRACHEK: Yes, I have read the source document for the other data. That's in the RK&K report.

MR. MUDD: Okay.

MR. GRACHEK: But the green data, I have not read the source (inaudible).

MR. MUDD: Okay. You know, when you were comparing Exhibit 69 to Exhibit 108.

MR. GRACHEK: Yes.

MR. MUDD: Do you recall going through that exercise?

MR. GRACHEK: Yes.

MR. MUDD: You, you said that the Hazen information was, was not exact, not, and, and you used terms like very close and relatively close. The numbers in 108 to what they are in, in Exhibit 69. Do you recall doing that, saying that?

MR. GRACHEK: Yes.

MR. MUDD: And you said that that's probably related to what Hazen did with the model. Do you recall saying that?

MR. GRACHEK: Yes.

MR. MUDD: Okay. That's a presumption as well, correct?

MR. GRACHEK: Yes.

MR. MUDD: Okay. Are you aware if Hazen or Baltimore County are monitoring actual capacities within pipes, sewer pipes, in, anywhere within this sewer shed?

MR. GRACHEK: I, I have read scopes of work and

documentation, scope of work that we had previously where they were, they were tasked to, to gather actual data, yes.

MR. MUDD: Okay. Are you aware of any measurements, have you reviewed that data?

MR. GRACHEK: No, I have not.

MR. MUDD: Okay. Are you aware of any measurements in the field that demonstrate overcapacity in any of these pipes?

MR. GRACHEK: I have not been provided actual, actual data, no.

MR. MUDD: Okay. All right. And then, last question, you, you mentioned in your discussions with Mr., your questioning with Mr. Zimmerman, about the Hazen newsletters. First you said that you undertook a cursory review, and then you said you've read it. How, how thorough, how thoroughly have you reviewed that document?

MR. ZIMMERMAN: Objection. That mischaracterizes his previous answer in my opinion.

ALJ: Okay, overruled. Go ahead, sir.

MR. GRACHEK: The newsletters take, the newsletters take very little time to read. I read through them. I read hundreds and hundreds of documents all the time. So, I don't recall every aspect of it. But my, my recollection, and it was confirmed by what I was reading on the screen when Mr. Zimmerman was questioning that those are, those are public

relations documents, and they don't have much technical information in them.

MR. MUDD: Okay. I think that's all the questions I have, Mr. Grachek. Thank you.

ALJ: Mr. McCann, any re-direct?

MR. MCCANN: I do, yeah, I do, real quick. Mr. Grachek, you were asked about Exhibit 69, and I'll pull it up real quick. The, the chart. And in, in particular, the green column. And you said you don't recall the, the source document for that information. Do you recall that testimony?

MR. GRACHEK: Yes.

MR. MCCANN: All right. Let me, I want to pull up Protestant's Exhibit 64, which is, do you see that document?

MR. GRACHEK: Yes.

MR. MCCANN: Yeah, and you've seen this before, correct?

MR. GRACHEK: Now that I see it, yes. I recall seeing this document.

MR. MCCANN: Okay and this, this is the document as intro, as introduced and accepted. It's got some highlighting here for these pipe segments, do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: Does that, looking at this now, does that refresh your recollection as to where the, the numbers in green on Exhibit 69 came from?

MR. GRACHEK: Yep, yes, it does. It does.

MR. MCCANN: Okay and then does, does this document, again, Exhibit 64, does it also refresh your recollection as to the source of your assumption that the, these numbers are based on dry weather flow?

MR. GRACHEK: Yes.

MR. MCCANN: Is there anything --

MR. MUDD: Objection, Judge. I, I probably should have done it sooner. But this is, this is teetering between refreshing a recollection and leading questions here.

ALJ: Yeah, it, it does sound like it's leading. But he is also refreshing his recollection. So, why don't you ask more open-ended questions, Mr. McCann, as opposed to directing him through the refreshing of recollection?

MR. MCCANN: How, how, if at all, does Exhibit 66, Protestant's Exhibit 66, refresh your recollection as to whether or not the DPW numbers in Exhibit, in this exhibit, the chart, are based on dry weather flow?

MR. GRACHEK: (inaudible) --

MR. ZIMMERMAN: (inaudible) sixty-four, not sixty-six? Sorry.

MR. MCCANN: Sixty-four is the chart that we're looking at right now. Does this, does this chart refresh, and I'll repeat the question. Does the chart refresh your recollection as to whether or not the DPW numbers in the

exhibit that you were just looking at, which is this chart, which the exhibit number I can't see for some reason, are based on dry weather --

ALJ: Sixty-nine.

MR. MCCANN: Sixty-nine, thank you. Are based on, on dry or wet weather flow?

MR. MUDD: Objection. I think asking the question whether or not is, is no different than asking a leading question and this --

MR. MCCANN: Well, I --

ALJ: Okay, I, well, I think he was on the path to asking the open-ended question, but then, then there was someone else interjecting. So, I, I think he was there so, so if, if, Mr. McCann, you could just rephrase it as an, as an open-ended, more open-ended question.

MR. MCCANN: How does this document, Exhibit 64, refresh your recollection?

MR. GRACHEK: This, this document is one that we reviewed as a document that was baseline for the system. And so, even though I do not recall that there was anything on this document that, that indicated that it was dry weather flow, it indicates to me that it's dry weather flow simply because you wouldn't produce a document like this with wet weather flow.

This is a baseline document. And so, my presumption is that this is dry weather flow. And it makes sense when you

look at the actual numbers compared to the commensurate wet weather flow that this would be dry weather flow.

MR. MCCANN: Okay. Thank you, Mr. Grachek. No other questions.

ALJ: Thank you, sir. I think we're finished.

MR. GRACHEK: Thank you, Your Honor.

ALJ: All right, appreciate it. Okay. So, Mr. McCann, that was all your witnesses, correct, just to make sure?

MR. MCCANN: Correct.

ALJ: So, you owe me 108, the Exhibit 108. I have 107. So, just that one. And then a revised exhibit list.

MR. MCCANN: Correct.

ALJ: Because you added, you know, you had, you had submitted it to us as you indicated, then you withdrew a bunch of them, so you want to make sure to have the most updated list.

MR. MCCANN: Will do.

ALJ: Okay, all right. So, you'll hand deliver that and also e-mail it. Okay. You're finished. Then we're back to the rebuttal case. Mr. Rosenblatt?

MR. ROSENBLATT: Yes, we do have another witness we can call. So, that, that is resting of the Protestant's case?

ALJ: He already rested before.

MR. ROSENBLATT: Okay, okay.

MR. MCCANN: I'll say it (inaudible) --

ALJ: (inaudible).

MR. MCCANN: -- three times, but not four.

ALJ: For the fourth time, yeah, (inaudible) --

MR. ROSENBLATT: All right. He cut me off at three, I'm okay with that.

ALJ: Right, right. (inaudible).

MR. ROSENBLATT: All right. Matt, Matt Bishop is the next witness.

ALJ: Everyone okay, need a break, anyone? Everyone good? Okay. All right. Mr. Bishop, you were here a while ago, but since you haven't been here for a while, if you could raise your right hand, please? Do you swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. BISHOP: I do.

ALJ: All right. And Mr. Bishop has been sworn as an expert in this case. He's a landscape architect and he's, you know, obviously been admitted in other cases. So, he's still the same expert.

MR. ROSENBLATT: Okay, great. Mr. Bishop, good afternoon.

MR. BISHOP: Good afternoon.

MR. ROSENBLATT: Have you sat through all of the days of testimony in this case?

MR. BISHOP: Yes, I have.

MR. ROSENBLATT: Have you heard the testimony of Mr. Rockle, Mr. Merritt, among others, about the master plan and potential ways in which this project arguably conflicts with the master plan?

MR. BISHOP: Yes, I have.

MR. ROSENBLATT: Did you review the master plan with their testimony in mind?

MR. BISHOP: Yes, I did.

MR. ZIMMERMAN: Objection. I don't think this witness is qualified to give legal interpretations on the master plan. It takes, it takes attorneys to argue that.

ALJ: I don't think so. So, we'll allow him, go ahead, Mr. Rosenblatt. Overruled.

MR. ROSENBLATT: Did you review the master plan with the testimony we just discussed in mind?

MR. BISHOP: Yes.

MR. ROSENBLATT: And did you prepare an exhibit to that effect?

MR. BISHOP: Yes, I did.

MR. ROSENBLATT: I'm going to show you what's been marked as Developer's Exhibit 35 and ask you, I'll flip through and can you tell the Judge what, what did you find in the master plan with respect to your theories of compliance?

MR. BISHOP: Yes, sure.

MR. MCCANN: Is that a leading question? I want to make, make sure we, we --

ALJ: Well, point well taken, Mr. McCann.

MR. MCCANN: (inaudible). That's --

ALJ: Point well taken. All right. Mr. Rosenblatt, you're going to need to do some open-ended questions of your expert here.

MR. ROSENBLATT: Okay. What, what did you find in the master plan, and I'll point you to page two of Exhibit 35, that addresses the testimony we've heard in this case from the Protestant's?

MR. BISHOP: Well, what we're looking at here I found is the, the several goals that are outlined by the 2020 master plan. And I've highlighted a few of the goals that show how our project meets those requirements. And I'll just read them real quick.

So, goal one is continue the success of growth management and direct the future growth within urban rural demarcation line, which our project obviously does. Develop compact, mixed use, transit-oriented, walkable neighborhoods.

So, we have, we can talk about this a little bit more. We've created a compact community that has a mix of residential types and it's a walkable neighborhood. There are sidewalks throughout, there are walking paths within the open space, there are pedestrian connections to adjacent

neighborhoods.

And also, we meet the requirement to provide a mixture of housing types for emerging diversity of residents. And that kind of goes to the argument that I've heard from other folks about how our project and our housing type and our, our lots don't meet or mesh well with the surrounding neighborhoods. Goal two --

MR. ZIMMERMAN: I would just like to have a standing objection, that this is just rehash, not really rebuttal. Just a second bite at the apple.

MR. ROSENBLATT: Mr., Mr. Zimmerman has each, after each hearing, he has submitted, without any testimony, just submitted sections of the master plan into evidence and we're entitled in addition to the direct testimony that was given at the hearings to rebut his case, which are the documents he put in.

ALJ: Understood and under Elm Street, that's exactly what it says. I think Elm Street, Mr. Zimmerman, you were actually in that case. That was your case, Elm Street. So, it says they have to rebut, right? So, --

MR. ZIMMERMAN: Well, I don't think this is truly rebuttal but --

ALJ: I understand.

MR. ZIMMERMAN: -- I'll just leave it at that.

ALJ: Okay.

MR. ZIMMERMAN: I understand you've overruled the objection. Thank you.

ALJ: Well, I, and I, I did explain I think earlier, you know, it is difficult to determine rebuttal versus whatever and I just want to make sure that everybody is getting their, obviously gets to put in, in the evidence they want to put in. And so, and so, we'll let them. Go ahead, sir.

MR. ROSENBLATT: All right. Mr. Bishop, just for the record, you're reading the second page of, of, of Exhibit 35, it's page, roman numeral I, or small I or 1, from the master plan and you were beginning to discuss goal two before Mr. Zimmerman interjected.

MR. BISHOP: You're correct. It's page I of the 2020 master plan and the title of the page is Goals of Master Plan 2020.

Goal two, I just wanted to highlight for everybody that provide adequate open space and recreational opportunities, increase, and increase connections to nature by linking open spaces and parks. Just wanted to reiterate that we are providing more open space than was required by the zoning regulations.

We are providing a large amount of connectivity for pedestrians throughout the community, bringing them close to nature, bringing them back out into the, the built environment as well.

Reduce pollutant loading of runoff with enhanced stormwater management. So, as discussed before, we are providing stormwater management to meet all the, the current criteria in that regard.

And then, goal three, strengthen resource conservation and protection. We are protecting the health and natural environment and maintaining a valuable biodiversity. So, we are providing the extra open space. We are providing additional environmental buffers. We're providing additional plantings and buffers around the existing natural resources than are currently there today.

MR. ROSENBLATT: Okay and you've included, starting with page twenty-seven, some analysis of the proposed land use map. And can you explain your findings with respect to that section?

MR. BISHOP: Sure. There was discussion in previous hearing days of thoughts that we may not meet the transect, the T-3 transect (inaudible), so I highlighted some sections of the master plan that I feel do a great job identifying how we do, in fact, meet those criteria of the T-3 transect.

So, the, the first one that you have highlighted here in yellow, just want to point out that this paragraph here basically states that the transects are a guide. They are conceptual and general in nature. And there are some things I wanted to emphasize to kind of prove that point.

It says right in the master plan here, the proposed land use map provides general recommendations for land use, based upon the policies provided in the master plan 2020. The map is conceptual and general and is intended to reflect land use patterns and support the land use objectives of the master plan 2020 rather than identify land use of individual properties or parcels.

The use of transects in T zones is designed to support compact mixed-use communities. I think there is quite a few points in that paragraph that support the goals that I just read before, and our project complies with the compact mixed-use community and the fact that this is more of a conceptual concept in planning these transects than more code and law.

MR. ROSENBLATT: Okay and why are you focusing on the section on the right about stating that the standards overlap?

MR. BISHOP: Right. So, there was other testimony I heard from other days to explain again how we don't fit the T-3 and I think that other folks are taking the T-3 definition too literal and the master plan is, does a good job here defining how there is a range of habitats, which is a line straight out of this paragraph, and that the, the transects are intended to overlap each other.

So, you go from one transect that's maybe more rural into the more urban and they're not intended to be a breaking

point in between each one. If you read this paragraph on the second half, there should be a, a natural transition from one transect in the more rural side to the more urban. There should be overlap in between.

So, if I can just read this here. The categories include standards that encourage diversity, the standards overlap, reflecting successional pattern of development and natural ecosystems. The transect thereby integrates environmental and zoning methodologies enabling the design of compact, mixed use, walkable communities that support the viability of natural ones.

So, that's a quote right out of the master plan, talking about how there should be a diversity of housing types and there should be transitions between each of the transects. So, they're not cut and dry.

MR. ROSENBLATT: And you've included page twenty-eight. Is, is this the map referenced on the previous page?

MR. BISHOP: It is, yes, that's the, the land use map from the master plan.

MR. ROSENBLATT: And page twenty-nine, you've highlighted one more paragraph on this transect subject and what, what are you showing here?

MR. BISHOP: This is just reenforcing what I said about the, the master plan's goal of having compact development and the idea of having an overlap between the transects.

MR. ROSENBLATT: Okay.

MR. BISHOP: So, I can read just a quick quote here. The T-zones provide the basis for real neighborhood structure, which relies upon compact, walkable streets, mixed use, transportation options and housing diversity. So, again, it keeps going back to those themes of compact neighborhood, walkable streets, mixed uses, transportation options and diversity of housing types.

MR. ROSENBLATT: Okay.

MR. BISHOP: And then one last sentence in here, just to reiterate. The uses may overlap between one T zone and another.

MR. ROSENBLATT: Okay and did you review the master plan for any reference to the interplay between that plan and the Baltimore County zoning regulations?

MR. BISHOP: I did. And if you, I think we have an exhibit I gave you, page one seventy-nine of the master plan.

MR. ROSENBLATT: Okay. So, this is page six of Exhibit 35.

MR. BISHOP: Yes.

MR. ROSENBLATT: And what did, what did you find?

MR. BISHOP: So, the highlighted sections there discuss, and I'll, I'll kind of put my summaries together here. But the, point one is that the Baltimore Code and the Baltimore County zoning regulations are intended to regulate development.

And that's stated right in the first two sentences, or two lines of the first paragraph. Baltimore County zoning regulations and Baltimore County Code are ordinances by which land use and development are implemented.

And then, the second point, if you read further into that paragraph, it explains how all these other manuals that have been implemented in Baltimore County for years support that, the zoning regulations and the County Code. We're talking about the CMDP, the Zoning Commissioner's policy manual, the local open space manual, the landscape manual, Public Works design manual and environmental standards. All those support the Baltimore County Code and the zoning regulations. And I argue that we meet and exceed the requirements in all those (inaudible) design manuals.

MR. ROSENBLATT: Okay and, and what did you find with explanation of the master plan's role in conjunction with the Baltimore County zoning regulations?

MR. BISHOP: So, the, the last paragraph here talks about how the master plan is more of a support document to the ones I just previously mentioned. The design manuals, the County Code and the zoning regulations. So, there are specific sentences I'll read out of here saying zoning classifications correspond to specific regulations within the Baltimore County zoning regulations that set uses, intensities, areas and setbacks. Lots of items that people were arguing we don't meet

by the master plan.

And then finally, the proposed land use map provides general recommendations for future land use within the context of the goals of the master plan and aids in rezoning considerations required by the various aforementioned zoning processes.

So, again, I'm just pointing out that the, the transects within the master plan are intended to be general, supporting guidelines to the design manuals, the Baltimore County Code and the zoning regulations, which, which dictate density, setbacks and uses.

MR. ROSENBLATT: Okay and for testimony throughout the case regarding lot sizes and complaint from a number of people, particularly in the Tallyho neighborhood, that the homes are too close together in this case. Do you remember hearing testimony to that effect?

MR. BISHOP: Yes, I did.

MR. ROSENBLATT: And can you, first explain as a, as a planner, discuss why you clustered the homes the way you did.

MR. BISHOP: Sure. So, the term clustering is a type of planning practice that's been around for close to a hundred years. And the idea is to cluster your development into the most developable areas of a piece of property.

And what that allows you to do is reserve the rest of the area for open space, for protection of natural resources,

for stormwater management, for replantings, things of that nature. And that's exactly what we've done here. We found the most developable areas of the site and we preserved the rest of it for those natural resources.

MR. ROSENBLATT: Okay and did you evaluate, based on the testimony you heard, what some of the setbacks between houses were throughout the Tallyho neighborhood?

MR. BISHOP: Yes, I did, and I prepared a few exhibits to communicate that.

MR. ROSENBLATT: Okay and I'm going to show you what's been marked as Developer's Exhibit 36. And ask you, let's start with the first sheet. What does the first sheet of Exhibit 36 show?

MR. BISHOP: This is a, an enlargement, it's a snip out of the green line, red line and green line development plan. It shows the first section of the homes on our, our road. And what I've highlighted here in red in the middle is showing our typical building to building setback of thirty feet.

MR. ROSENBLATT: Okay and, now let's turn to the second page of Exhibit 36. Where, where is this and what are you showing?

MR. BISHOP: So, on the next several slides, I took the Baltimore County My Neighborhood JIS mapping software and found other areas in the adjacent neighborhoods where we have

similar building to building setbacks.

MR. ROSENBLATT: Okay and --

MR. BISHOP: What you're seeing here is Trelawny Court. There are, I highlighted one, but there are several homes on this cul-de-sac that have the thirty-foot building to building setback similar to what we're proposing.

MR. ROSENBLATT: And does this show Mr. Wyatt's home?

MR. BISHOP: Yes, Mr. Wyatt's home is number four Trelawny Court, shown on the plan. So, there --

MR. ROSENBLATT: And where --

MR. BISHOP: -- are several houses directly across the street from Mr. Wyatt's home that have the similar building to building setback that we're proposing in our project.

MR. ROSENBLATT: Okay. Page three of Exhibit 36, where is this?

MR. BISHOP: This is another cul-de-sac within the same community. And again, showing the similar housing pattern with the thirty-foot building to building setbacks. There are several hear but I highlighted two, one on either side of the street.

MR. ROSENBLATT: So, this, this shows the road Scottsdale Court. What road does that connect to if you follow it up to the north?

MR. BISHOP: I believe that connects into Tallyho.

MR. ROSENBLATT: Okay and I'm sorry if I cut you off,

what does, what does this page show? Page three of Exhibit 36?

MR. BISHOP: I was just saying it shows the, the fact that there are several homes and areas within the adjacent communities that have the same building to building setback that we're proposing.

MR. ROSENBLATT: Okay.

MR. BISHOP: Thirty feet.

MR. ROSENBLATT: Page four of Exhibit 36?

MR. BISHOP: It's showing the same thing. It's just another example, but this time on Tallyho Road, again, which is directly adjacent to our project to the east.

MR. ROSENBLATT: Okay and finally, the last page, page five of Exhibit 36.

MR. BISHOP: Again, another area within the community that shows the typical thirty-foot building to building setback.

MR. ROSENBLATT: Okay. So, in, in fairness, if we go back to sheet two, Mr. Wyatt's property, for example, some of the homes in Tallyho are farther than thirty feet apart, do you agree?

MR. BISHOP: I would definitely agree. And that goes back to some of the excerpts from the master plan I read about having diversity of housing types within communities. So, there are some larger lots, there are some smaller lots, there are different types of homes all within the same neighborhood

and community.

MR. ROSENBLATT: Just a couple more questions, Mr. Bishop. I'm going to turn your attention back to the development plan, Exhibit 1-B, and ask you, there was some testimony from the Meadows and, and/or Boxwood community about the landscape berm that is proposed in the rear of the property.

MR. BISHOP: Yes.

MR. ROSENBLATT: And bear with me, I'm sorry. I'm jumping around, I'm trying to zoom in. And can you, can you explain the grade, berm, drainage and utility easement, what, what all is happening with respect to landscaping and drainage and this being the rear of the property towards the proposed gate that we've heard discussion about it?

MR. BISHOP: Sure, I'd be happy to. So, the adjacent homes to the north, or what you're showing as seven through ten, they are kind of on a high point. So, the fronts of their home are, the water is draining, the runoff is draining toward the road. The rear of their properties is draining back toward the Greenspring Manor project.

In the back of our lots, proposed up against the tract boundary, against those homes, we are proposing a berm of about four feet tall, with the intent of screening noise and visibility between the new homes and the existing homes.

And I heard some concern from the adjacent neighbors

that there might be some trapping of water in that area. So, I wanted to discuss the fact that the water on our side of the berm is going to continue to drain away from those neighbors and more toward Joppa Road.

Any of the water at the rear of our adjacent properties will go to that Berm area, but we'll have it designed to move the water around the berm via swales. And there is a ten-foot Baltimore County drainage utility easement proposed along that property line in order to make sure we can convey that water safely around the berm.

MR. ROSENBLATT: Okay, thank you. And just one final topic. My notes really from months ago reflect that there was maybe some confusion over the labeling of reforestation or certain easement areas. So, I'm hoping you can direct me to an area and explain the labeling on Exhibit 1-B so that everyone is clear what, what each of the symbols mean or indicate with respect to reforestation, easements and other labels?

MR. BISHOP: Sure. So, the, each of those areas are labeled with a note calling out the different type of environmental easement they are. The orange triangles are what is called the reforestation areas. So, those are areas that will be put into a forest conservation easement and planted with new trees, where they don't currently exist.

The areas with the plus signs are forest conservation areas. We're going to put in an easement that are existing

forest, that we're going to maintain as forest and keep it an easement. The areas that have the forty-five-degree angle cross hatch are forest buffer. So, again, that's going to be areas put in environmental easement and they'll maintain their, their vegetation. So, that's, for the most part, the three or four different environmental easement areas.

And to summarize all that, all those areas that are shown in those environmental hatches, or those easement hatches, will either be preserved forest or expanding forest, which will create a better, more expanded buffer around the environmental resource, which is the stream back there, and will provide better screening from the existing homes to our proposed homes.

MR. ROSENBLATT: Okay and my only other question is I think you referred to the triangles as orange triangles. And if we look to the front of the plan, towards Joppa Road, there's a whole bunch of orange or red triangles. But in the rear of the property there are just black or gray triangles. Is there any significance to that difference?

MR. BISHOP: They're doing the same thing, the orange or red ones were just added as a red line as we went through the development plan process. It was a, something we worked out with Environmental Impact Review, to provide a forestation or a new tree planting adjacent to Joppa Road.

MR. ROSENBLATT: Okay.

MR. BISHOP: Whereas before, we were just going to have it maintained as an existing field.

MR. ROSENBLATT: And then I have one more note about there being circles towards the front of the property, that may have been referring to the circles around the existing home?

MR. BISHOP: Sure. I, I believe, I'd have to zoom in on them a little bit, but I believe those are the critical root zone for the specimen trees that we're going to maintain on the existing property.

MR. ROSENBLATT: Okay. So, for the record, Exhibit 1-B, there are hatched red line circles that are just above what is labeled existing home. And did you just describe what those circles show?

MR. BISHOP: I did. Those are the critical root zone for specimen trees that we intend to keep on the property. And that would be better communicated probably on the (inaudible) forest conservation plans for the project.

MR. ROSENBLATT: Okay. And then, I apologize for jumping around, but are there hexagons somewhere that I have not mentioned?

MR. BISHOP: Yes, that is the open, the local open space areas.

MR. ROSENBLATT: Okay and where, where would that be?

MR. BISHOP: Up, right here, if you scroll down just a little bit. There you go. That whole area there is a private

HOA open space area.

MR. ROSENBLATT: Okay and what, what can be expected in the area with hexagons as opposed to the planting areas you previously discussed?

MR. BISHOP: We're not going to plant those area. They're intended to be open areas, nat, you know, somewhat natural, used for open space, for recreation, and we're proposing a walking path through that area, to provide more extensive pedestrian connectivity throughout the project.

MR. ROSENBLATT: Okay. Just a couple more. Looks to be diamonds. If you haven't already explained what the diamonds refers to?

MR. BISHOP: Those are the easement areas for the proposed stormwater management facilities.

MR. ROSENBLATT: Okay and finally this heavier X'd or hatched, I don't know how you'd describe, maybe you can describe the line towards the southern boundary of the property that we're zoomed in on in Exhibit 1-B.

MR. BISHOP: So, the, the inner one is the hundred-year flood plain easement. And the outer one is the forest buffer easement off of that hundred-year flood plain.

MR. ROSENBLATT: Okay and did I miss any of the --

MR. BISHOP: I don't think so, I --

MR. ROSENBLATT: -- (inaudible).

MR. BISHOP: If it was really, people are concerned

about, if you go to the top left corner of the plan, all of those easement dedications are a little more clearly shown in that inset there with the hatches and, and the extensive labeling. And we work with the real estate compliance department in the County to make sure these are all shown correctly and quantified correctly.

MR. ROSENBLATT: So, the various, do the various hatchings in the conveyance description in the, in the upper left-hand corner of Exhibit 1-B, where there's much less going on, do those different symbols correspond to what is shown on the larger plan view below?

MR. BISHOP: They do, yeah.

MR. ROSENBLATT: Okay and there's no triangle symbols here on this real estate compliance area, the upper left and why, why is that?

MR. BISHOP: Those are, they're within another easement. They're just, that was just to clarify the difference before (inaudible) plant new trees versus where we're going to maintain existing forest.

MR. ROSENBLATT: Okay. All right. I don't think I have any more questions. Thank you, Mr. Bishop.

ALJ: Mr. McCann, any cross?

MR. MCCANN: I do, just a little bit, thank you. Good afternoon, Mr. Bishop.

MR. BISHOP: Good afternoon.

MR. MCCANN: I was looking at your, your resume, Exhibit 2, it's been a while since I looked at it. But I don't, didn't see any reference, and I can pull, certainly pull it up if you want, any reference in Exhibit 2 to any particular experience in the master plan, or testifying in any cases about the master plan. Is, is that a fair characterization of your resume?

MR. BISHOP: I have in the past. I don't think I put anything in there specifically in regards to that.

MR. MCCANN: So, you have, you have opined in cases in Baltimore County on the applicability, or compliance rather, with the Baltimore County master plan?

MR. BISHOP: I have, yes.

MR. MCCANN: How often have you done that? How many times?

MR. BISHOP: How many times have I testified directly? I, I can think of at least one.

MR. MCCANN: Okay.

MR. BISHOP: If I thought harder I could probably come up with more.

MR. MCCANN: The master plan is, is, is mandatory, is it not, that is, it must be complied with?

MR. BISHOP: Yes.

MR. MCCANN: I know the exhibits haven't been moved in yet, but I do need to receive them, Adam, Chris, including a

highlighted thirty-five with, you know, that was highlighted in yellow, please.

MR. ROSENBLATT: I'm sorry?

MR. MCCANN: I, I haven't received any exhibits.

MR. ROSENBLATT: They were, they were all sent to you.

MR. MCCANN: Not Mr. Bishop's exhibits.

MR. ROSENBLATT: So, the link this morning had thirty-six and I separately e-mailed thirty-five. I'm happy to pull it up, I'm sorry, but the, I did e-mail it during your examination with Mr. Grachek.

MR. MCCANN: Yeah, you're right, I'm sorry. Thirty-six was part of that. But that's the exhibit that, with the setback exhibit?

MR. ROSENBLATT: Yep, yes, thirty-six I sent this morning with the traffic documents. And thirty-five I sent before Mr. Grachek concluded.

MR. MCCANN: Got it, okay. Thank you. Well, highlighted thirty-five would be good, please. (inaudible) I don't want to belabor this, but the exhibit I got, thirty-five, the master plan excerpts, is not, did not have any of the highlighting. Maybe that was a copying thing. So, --

MR. ROSENBLATT: Yeah, I'll, I'll send you the exact document, but you want me to pull it up now to make this easier?

MR. MCCANN: Well, no, no, that's fine, that's fine.

MR. ROSENBLATT: Okay.

MR. MCCANN: But with respect to that, the setback exhibit, you, you, you took four snapshots of side yard setbacks in the adjoining neighborhood, correct, Mr. Bishop?

MR. BISHOP: Yes, correct.

MR. MCCANN: And you referred, you called them typical setbacks but you measur, you measured them using My Neighborhood. And your, your point there was that they are compatible with the setbacks in the proposed development, right? Is that your point?

MR. BISHOP: I don't know if compatible is the right word, but yes, they're the same or very similar setbacks.

MR. MCCANN: Same, right.

MR. BISHOP: As what we're proposing.

MR. MCCANN: Did you, other than those four snapshots, and those were from what neighborhood again? Remind me?

MR. BISHOP: The neighborhood to the east of Tallyho side of the property, the project on the east side.

MR. MCCANN: Other, other than those four snapshots of those buildings shown in those snapshots, did you prepare any other exhibits from anywhere else in that community or any of the other surrounding communities with respect to the, the side yard setbacks in, in those areas?

MR. BISHOP: No, just those four for this exercise.

MR. MCCANN: Okay. What about the other setbacks of front and rear, I'm sorry, yeah, the front and rear setbacks in both the adjoining neighborhood to the east and the other neighborhoods? Did you prepare any exhibits showing setbacks in those communities?

MR. BISHOP: No, not for this exercise.

MR. MCCANN: Okay and then I think you pointed out that Mr. Wyatt's house does not have a thirty foot side yard setback and I, I assume your point there was that that supports the master plan because it, it shows, I think as you put it, variable setbacks, which is what the master plan calls for, is that what you were trying to say?

MR. BISHOP: That and the master plan also talks about having a diversity of housing types.

MR. MCCANN: Yeah, housing types. That's a reference to --

MR. BISHOP: (inaudible).

MR. MCCANN: I'm sorry, go ahead.

MR. BISHOP: And having a transition from the different types of transects so that there's, so it's not just cut and dry. This is exactly how it's got to be. There should be some overlap in transition as you go from different communities and different transects from one to the other.

MR. MCCANN: But housing types isn't a reference to

the setbacks, is it?

MR. BISHOP: Probably not. But I think you can use it as a term that talks about the size of the house, is it two stories, is it three stories, is it a rancher? I mean, there could be some, some diversity in that regard as well.

MR. MCCANN: Okay. But in terms of variability, you would agree with me that in this particular, within this particular proposed development, there is little, if any, variability in terms of side yard, front yard or rear yard setbacks, would you agree with that?

MR. BISHOP: Not really. There is, if you look at the development plan, there is a range. We have some homes that are setback, we have homes that have large, deeper rear yards than, than others. I would agree that the side, the building-to-building setbacks are pretty typical (inaudible) project, yes.

MR. MCCANN: Okay. Well, the plan speaks for itself. And then, it's been a while, but you recall, do you not, the Planning Office's concept, concept plan comments in this case? Do you recall those comments?

MR. BISHOP: I do.

MR. MCCANN: Is it, it's true, is it not, that the Planning Office, in its concept plan comments, found that the proposed development does not achieve the vision of the master plan, nor the CMDP, isn't that true?

MR. ROSENBLATT: Objection.

ALJ: Mr. Rosenblatt, what's your objection?

MR. ROSENBLATT: So, this is rebuttal testimony, and that discussion took place with the Department of Planning before Mr. Bishop testified the first time. There have been no discussion going back not just to the development plan, but prior to that, the concept plan and the comments that came out of that. I just think it's well outside the scope of rebuttal testimony, which was limited to these few documents.

ALJ: No, no, I mean, he's, he's talking about what the, you know, the variability and the, the setbacks as well. And so, I think it's fair and so, if he knows the answer, he can answer it. So, overruled.

MR. BISHOP: Would you mind repeating the question, so I answer correctly for you?

MR. MCCANN: Sure. And I, isn't it true that the Planning Office found in its concept plan comments, that the proposed development does not achieve the vision of the master plan?

MR. BISHOP: So, I'd want to see the exact wording, but to that general --

MR. MCCANN: Well, sure. Yeah, I'll, I'm happy to show it to you. I'm happy to. So, this again, is Protestant's Exhibit 4. I'll go to the top so you can see it.

MR. BISHOP: Yeah, I recognize the document.

MR. MCCANN: Okay, great. And with respect to the master plan, the discussion is on page three. And I'll just highlight or circle it, the area we're talking about, the paragraph, that is. And it says, about midway through the paragraph, it says, as designed, the proposed development has not achieved the vision of the master plan 2020. Do you see that?

MR. BISHOP: I do, yes.

MR. MCCANN: And the Planning Office also says, does it not, that the number of lots should be decreased to allow for larger lots and achieve a design that would accommodate future improvements in yard space without the need for relief, correct?

MR. BISHOP: I do see that, yes.

MR. MCCANN: Okay, all right.

MR. BISHOP: Now, that, however, that was not carried over to the development plan --

MR. MCCANN: Oh, I, I'm not suggesting it was. And I don't have any other questions. Thank you, Mr. Bishop.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: Yeah, thank you, Judge. Yes. So, Mr. Bishop, where did you go to law school?

ALJ: Mr. Zimmerman.

MR. BISHOP: You know I didn't go to law school.

ALJ: You know he didn't go to law school.

MR. ZIMMERMAN: Did you take any law courses in your landscape architecture bachelors at University of Connecticut or your Master of Plant Science there either did you?

MR. ROSENBLATT: Judge --

ALJ: Mr. Zimmerman, I, I, this, but these, this is, you know, --

MR. ZIMMERMAN: You know, actually I think it is relevant, but I'll move on, I'll move on.

ALJ: Mr. Zimmerman, Mr. Zimmerman. You know, it, it, but, there's a, you know, there's a line and, you know, he, you know Mr. Bishop, he comes in and testifies and he's a landscape architect, he didn't go to law school, so.

MR. ZIMMERMAN: All right, it's my, go ahead.

ALJ: Let's have a different question.

MR. ZIMMERMAN: I've said, I just want to put it on, on, I'm on record in many cases and this is not directed particularly at Mr. Bishop, okay? I'm on record in many cases that I don't think the surveyors, engineers, contractors, landscape architects, what have you, have the education to promote legal opinions.

ALJ: Yeah, understood --

MR. ZIMMERMAN: So, that's, so I'm on record, so it's not singled out but --

ALJ: But this --

MR. ZIMMERMAN: I, I gather you don't necessarily

agree, but --

ALJ: No, no, no, no, that's not, that's not necessarily the case, no, I --

MR. ZIMMERMAN: All right.

ALJ: -- ultimately the decision comes down to, if it's a legal one, it comes down to --

MR. ZIMMERMAN: Right.

ALJ: -- my making the decision, but, but you can always argue that in your brief.

MR. ZIMMERMAN: All right.

ALJ: You don't have to ask Mr. Bishop about law school classes.

MR. ZIMMERMAN: I'm moving on.

ALJ: Good.

MR. ZIMMERMAN: I'm moving on.

ALJ: That's great.

MR. ZIMMERMAN: So, Mr. Bishop, has the Maryland Court of Appeals, now Supreme Court, case of *H&S Development v. Baltimore County, v. People's Counsel*, I should say, come to your attention?

MR. ROSENBLATT: Objection.

ALJ: So, Mr. Zimmerman, remember I was in that case, so I know what it says. See, you're, you're asking questions that are supposed to help me.

MR. ZIMMERMAN: Right, well, --

ALJ: And so, I know H&S because I was in H&S, and I know what it says. I know what it says, so --

MR. ZIMMERMAN: It goes to his understanding and credibility --

ALJ: He's not, he's not a lawyer and he's not here to talk about cases. He didn't ask, he didn't talk about any case, I didn't hear him talk about it. And again, you can argue that in your brief and I already know what it says.

MR. ZIMMERMAN: Okay.

ALJ: You know?

MR. ZIMMERMAN: All right. And the same goes for Woodley Park and Davis Farms, does it not?

ALJ: Yeah, he didn't, I'm sure he didn't, wasn't involved in either, not that I remember. I, I think I, I may have written Woodley Park, if I recall.

MR. ZIMMERMAN: You were on, you were on the Board of Appeals, Judge.

ALJ: I think I may have written it. I may have written it.

MR. ZIMMERMAN: And, and Administrative Law Judge Mayhew was in the case, okay. All right. All right. We'll get to argue, okay, I'll, I'll just ask a few more questions then. Just a note, would, would it be correct that, other than Torch, the recent Torch Hill case, all of the residential developments in the area are twentieth century developments

which predate the master plan 2020?

MR. BISHOP: I believe we went over that before and I think you may be correct, as far as I know, yes.

MR. ZIMMERMAN: All right. I'll leave it there, Judge Murphy. Thank you.

ALJ: Thank you, Mr. Zimmerman. Mr. Wyatt, any questions?

MR. WYATT: Just a few, thank you, Your Honor.

ALJ: Sure.

MR. WYATT: Okay. Mr. Bishop, you were talking about Seminary Ridge. That's the same zoning, has the same zoning as the development you're proposing, correct?

MR. BISHOP: Our prop, our project is split by DR-1 and DR-2. I'd have to go back and look at the zoning map to see exactly what Seminary Ridge is. It's been a while since I've looked at the zoning map.

MR. WYATT: All right and you, in Developer's exhibit number thirty-six, you identified a couple properties which you claimed are thirty-foot building to building setbacks, correct?

MR. BISHOP: Correct.

MR. WYATT: All right. Did you do a survey of Seminary Ridge to glean from that the percentage of residences which are thirty-foot building to building setbacks?

MR. BISHOP: I did not.

MR. WYATT: All right. Would you agree with me that

not all residences in Seminary Ridge have a thirty-foot building to building setback?

MR. BISHOP: I would agree with you.

MR. WYATT: Would you, would you agree with me that there's plenty of properties in Seminary Ridge that enjoy much greater than thirty-foot building to building setback?

MR. BISHOP: There are other properties that have larger than thirty-foot building to building setbacks, yes.

MR. WYATT: All right and you didn't mention in your testimony today any of the properties in Heather Field, which is the neighborhood to the south of Seminary Ridge, none of those residences have a thirty-foot building to building setback, correct?

MR. BISHOP: I'd have to go back and look.

MR. WYATT: All right. So, unlike the development you're proposing, where nearly one hundred percent of all the dwellings are thirty-foot building to building setback, the neighborhoods you surveyed, and even the one you exemplified that had a sampling of thirty-foot building to building setbacks, none of them are a hundred percent like the proposed development? None of them, none of them are a hundred percent building to building setbacks of thirty feet, correct?

MR. BISHOP: That I can say yes to, correct.

MR. WYATT: And then, just looking at the properties across the street from where I live, I think you were

highlighting, it looked to me live number five and number seven Trelawny Court. And I just quickly went online. The lot sizes for those properties (inaudible) number seven are seventeen thousand square feet and then the lot size for Harris, which is 5 Trelawney Court, is twenty-three thousand square feet. Would you have any reason to dispute those calculations?

MR. BISHOP: I have no reason to. I didn't do my calculations on how large the lots are. I was looking at (inaudible) setbacks.

MR. WYATT: Understood, okay. But you, you would agree, and number nine, and I wasn't sure, it was flashed up so quickly, I wasn't sure if 9 Trelawney was included, but that's the (inaudible)'s residence. That's eighteen thousand square feet. It's either, it's two of those three that were used, but it's safe to say all of those lot sizes are substantially larger than what's being proposed in your development, correct?

MR. BISHOP: I wouldn't say all, and I wouldn't say substantial.

MR. WYATT: Okay. The only one I'm able to find that has, that's in excess of seventeen thousand square feet is lot twenty-nine. Are there more? Did I overlook something?

MR. BISHOP: I'd have to go back and look at the area table again to see. I don't have that memorized, but there is a range of lot sizes on the prop, on the proposed project.

MR. WYATT: Okay and if we go through, and we've done

this in prior testimony so no need to revisit all of it now, but if we look at some of the lot sizes and the lot area table on Developer's development plan, you don't think substantial is the, a correct word to use when an average, when a lot is eleven thousand square feet and we're talking about seventeen or eighteen thousand square feet? That's not a substantial difference?

MR. BISHOP: I'd say no. I work on projects that have much smaller lots, and I work on projects where I have four or five acres per lot. So, I think substantial is too broad a term.

MR. WYATT: Okay. Significant?

MR. BISHOP: No, I'm not going to say that either. I think --

MR. WYATT: You concede they're different, correct?

MR. BISHOP: I would agree that they're, there are some difference there, yes.

MR. WYATT: All right. All right and again, just for clarification, you didn't, you didn't go back and go through Seminary Ridge to find out how many residences are thirty-foot setback building to building, correct?

MR. BISHOP: Correct. My, my point was to show a range. That the communities all have a range.

MR. WYATT: Okay and you, the development you're proposing has a range of thirty feet to what number of feet

building to building? What is its range?

MR. BISHOP: I'd have to look. We have different lots that have different size lots, different front setbacks, different rear setbacks, different side yard setbacks. There is a range there.

MR. WYATT: It's plus or minus a few feet, isn't it? If it was shown at all, which it's not, it's only plus or minus a few feet when it comes to building to building setback, correct?

MR. BISHOP: There are some that are a bit more than that, but yeah, a few feet from side to side. But the rear yards are deeper in some and shallower in some, front yards are deeper and shallower in some. The lot areas are bigger in some.

MR. WYATT: All right. One of the, one of the concepts you mentioned when talking about the master plan and lot sizes was this concept of clustering, which I think you said had been part of planning for a hundred years, is that, do you remember saying that?

MR. BISHOP: Yes, true.

MR. WYATT: Can you tell us where in Seminary Ridge houses are clustered?

MR. BISHOP: I haven't looked, I haven't analyzed Seminary Ridge for clustering. I was talking about our project and how it's a good planning practice across the board. Maybe,

it would have been better maybe for your community to have been clustered and preserved more open space in environmental areas. I don't see many buffers around resources, I don't see stormwater management in your community. So, that was my point.

MR. WYATT: Did you do any, any survey as to the area of open space in Seminary Ridge?

MR. BISHOP: No. I haven't, I haven't --

MR. WYATT: Do you (inaudible) talking about it?

MR. BISHOP: I have analyzed it, but I haven't analyzed the per square footage. I've analyzed your neighborhood before. But not to that level of detail.

MR. WYATT: No further questions.

ALJ: Mr. Sachse?

MR. SACHSE: No, I don't have any.

ALJ: Okay, all right. Let's see. Back to Mr. Rosenblatt. Did you have any re-direct?

MR. ROSENBLATT: I do, just a couple. Mr. Bishop, you were asked about how many times you've testified about the master plan. Do you recall that?

MR. BISHOP: Yes.

MR. ROSENBLATT: How many master, how many development plans have you prepared and worked on in Baltimore County?

MR. BISHOP: More than I can keep track of, I'd say a

couple dozen.

MR. ROSENBLATT: Can you explain whenever you submit a development plan is there involvement with the master plan when it comes to the Department of Planning or any other County agency that reviews the plan?

MR. BISHOP: Yes, you're, you're correct. The Department of Planning looks at it in that regard. We have to put special notes on the plan discussing what transect we're in and there's some tables that talk about master plan compliance.

MR. ROSENBLATT: Okay and so, outside of testifying, have you personally performed any of that analysis in the other development plans you've worked on throughout your years of practice?

MR. BISHOP: Yes, on every one of them.

MR. ROSENBLATT: Okay and just finally, you were shown the concept plan comments from the Department of Planning. Did the Department of Planning issue a hearing officer's hearing final report in November of 2021 for this case?

MR. BISHOP: Yes.

MR. ROSENBLATT: And I'll turn your attention to the final recommendation, the final paragraph on page three. And what did the Department say with respect to the master plan in their final report to the Judge?

MR. BISHOP: You want me to read the whole

recommendation --

MR. ROSENBLATT: Sure.

MR. BISHOP: It might be easier.

MR. ROSENBLATT: Sorry, I'm, I'm moving it over. I just wanted to blow it up for you.

MR. BISHOP: Sure. Through a point-by-point response letter received on September 16, 2021, and attached to this report, the applicants have positively responded to the August 11, 2021, development plan conference comments made by the Department of Planning. The development plan is in conformance with the Baltimore County zoning regulations, the comprehensive manual of development policies, as well as the master plan 2020.

MR. ROSENBLATT: Okay. That, that's all. I have no further questions. Thank you.

ALJ: Thank you, Mr. Bishop. I think that is, that does it for you. All right. So, back to Mr. Rosenblatt. What else do you have planned?

MR. ROSENBLATT: We just, I believe we just have one more witness that's going to be a very long endeavor that we're not ready to proceed, but we'll be ready first thing when we do get that extra hearing and that should conclude the case.

ALJ: Okay. So, that will probably be, well, I guess Ms. Lewis is actually circulating dates, so I think you all were on the e-mail chain for that. And so, I think people were

already responding.

You know what I just realized, Mr. Zimmerman? I left your name off of it. Sorry about that. I was just flipping back to my e-mail, and it was not on purpose, you know it wasn't. So, what I'm going to do is, I'm actually going to forward to you, I'm going to hit forward on all these e-mails so you can, I don't know why that happened, but I was--

MR. ZIMMERMAN: Nice to know I wasn't excommunicated yet.

MR. ZIMMERMAN: I, no, you weren't excommunicated. Yeah, I really did for some reason I left your name off of it. I was doing that at lunch so, I will forward those to you. But I think she was trying to circulate a, a day or so. So, you think, Mr. Rosenblatt, it's the whole day? I mean, you said it's a long witness.

MR. ROSENBLATT: Yeah, I think it's, I think it's one day and that will ensure that with all the cross examination and everything that we finish.

ALJ: Okay.

MR. MCCANN: (inaudible) the witness, just so, Your Honor, I don't, I hate to end on a sour note, but I, I can't help but notice the irony of this. That it's 3:00, we got at least two hours to go, maybe finish today, I'm not sure. I don't understand why one witness is going to, are you saying it's going to take the whole day?

MR. ROSENBLATT: Yes, just like the last two hearings, you each had one witness that took the whole day, that's what's going to happen here. And we're not going to start, stop and have a month or however long where we can't communicate with our witness.

MR. MCCANN: I was just asking, I was just asking.

MR. ROSENBLATT: Okay.

MR. MCCANN: All right, thank you.

ALJ: So, yeah, we're just trying to give and take here, and we did have the issues with the, the Public Information Act documents. I'm glad we got all that squared away. And so, yeah, I mean, a lot of this stuff is, you know, we just try to, you know, give and take here for, with everyone. So, we'll find out what that next day is. And Mr. Rosenblatt, you're going to get us over the documents that you put in today and then a revised exhibit list as you always do?

MR. ROSENBLATT: Yes.

ALJ: I think that's it. Anyone else for anything?

MR. ZIMMERMAN: Will Mr. McCann have sur rebuttal? Is that conceivable?

ALJ: No, we're not, we're not, we're not addressing sur rebuttal. I, I just don't think it's necessary, Mr. Zimmerman.

MR. ZIMMERMAN: Okay. I was just, just asking.

ALJ: You're just creating more, more issues, Mr.

Zimmerman. So, I, all right, okay. I think we are finished for the day. I'm going to stop the recording.

MR. ROSENBLATT: Okay. Thank you all.

MR. MCCANN: Okay. Thank you, Judge. Thank you.

ALJ: Thank you.

MR. MCCANN: Bye-bye.

[OFF THE RECORD]

CERTIFICATE OF TRANSCRIBER

I hereby certify that the hearing in the matter of Greenspring Manor, 2310 W. Joppa Road, case numbers 08-0922 and 2021-0250-SPH, heard before the Office of Administrative Hearings for Baltimore County, April 11, 2023, were recorded by means of audiotape.

I further certify that, to the best of my knowledge and belief, page numbers 1 through 199 constitute a complete and accurate transcript of the proceedings as transcribed by me.

I further certify that I am neither a relative to nor an employee of any attorney or party herein, and that I have no interest in the outcome of this case.

In witness thereof, I have affixed my signature this 5th day of June 2023.

Christine R. Leary

Christine R. Leary

Transcriber

IN THE MATTER OF:

GREENSPRING MANOR
2310 W. Joppa Road

CASE NUMBERS: 08-0922 & 2021-0250-SPH

Hearing Date: March 27, 2023

Pursuant to Notice, the above-entitled hearing was held before the Office of Administrative Hearings for Baltimore County by remote access.

PRESIDING:

MAUREEN J. MURPHY, ADMINISTRATIVE LAW JUDGE

FOR THE PARTIES:

ADAM ROSENBLATT, ESQUIRE
CHRISTOPHER MUDD, ESQUIRE

MICHAEL MCCANN, ESQUIRE

PETER MAX ZIMMERMAN, PEOPLE'S COUNSEL
FOR BALTIMORE COUNTY

Christine R. Leary
crleary1@comcast.net

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[ON RECORD]

ALJ: Good morning, everyone. Calling case number 08-0922 and 2021-250-SA. Property address is 2310 West Joppa Road. And you're attending day eleven of the combined development plan and zoning case for the project known as Greenspring Manor. And let's have counsel introduce themselves for the record, beginning with the Developer.

MR. ROSENBLATT: Good morning, Judge Murphy. Adam Rosenblatt and Chris Mudd of Venable, LLP on behalf of the Developer.

ALJ: Okay.

MR. MCCANN: Good morning, Judge. Michael McCann on behalf of the Protestants.

MR. ZIMMERMAN: Good morning. People's Counsel for Baltimore County, Peter Zimmerman.

ALJ: Okay, looks like everyone. And so, again, this is day eleven. So, just to recap, folks. It looks like the same names are here that have been here throughout the, we're still in the Protestant's case. So, Mr. McCann, who represents five homeowners' associations, he's presented, by my count, twenty-eight witnesses and he has another, at least one or two or so today.

And then we've also had citizens testify who were not represented by Mr. McCann. Those, there were three of those. And People's Counsel also had two witnesses testify, so it

looks like we're in Mr. McCann's case, am I correct, Mr. McCann?

MR. MCCANN: That is correct.

ALJ: All right and just housekeeping, you did submit to us two copies, Mr. McCann, of your Exhibits 96 and 97, they're pretty thick.

MR. MCCANN: Yeah.

ALJ: And just so you know, so ninety-six is the one, the MDE September 2006 report. And then ninety-seven would be the Baltimore City Modified Consent Decree, January 18th, 2023. Two copies, so I'm not sure what I'm supposed to do with two copies.

MR. MCCANN: I think I, maybe I submitted them last time thinking I was going to get to them and then maybe forgot I did that. So, I apologize.

ALJ: No, that's fine. But what should I do with them? Just --

MR. MCCANN: You can throw them out, recycle them, yeah.

ALJ: Okay. Just want to make sure (inaudible) have two, two number ninety-sixes and ninety-sevens.

MR. MCCANN: Yeah.

ALJ: Okay, all right. So, we'll do that. Are we ready? Is there anything else that we need to do?

MR. SACHSE: One thing.

ALJ: Ah, Mr. Sachse.

MR. SACHSE: Yeah, well, I'm doing what I've done before, I'm checking in so that I can check out for a couple hours. So, I have something I have to do but I want to have a spot, that's all.

ALJ: Oh, yeah. Well, you always have a spot so, you know, just tune back in when you get here and when we see you, we'll see you.

MR. SACHSE: I will, I --

ALJ: If you're not here, then I won't ask you if you have cross and if --

MR. SACHSE: Yeah, I won't, I won't have any if I'm not here. But that's a good thing, I guess.

ALJ: If you're not here, I won't, I won't ask you. All right, no problem. No problem. So, I'm going to put, I'm just going to mute your microphone for now. Everyone else looks like they're muted, yeah. Ms. Hamidi, I can't mute yours, but you don't look like you're unmuted there, so only, the only person then that we, we would need to speak is Mr. McCann, who then has another witness.

MR. MCCANN: Yeah, thank you, Judge. There are two preliminary things. I, I don't know if you'd prefer to take either of them up now. But just to, just to remind you, during the course of, I guess, the last day of the hearing, there were a number of, five or six issues that I told you and Mr. Mudd

and Mr. Rosenblatt that I would follow up on in terms of, for instance, e-mail confirmations from the County and things of that nature. I can do that now, I can do that later, whatever you'd prefer.

And then, secondly, I do have just one witness today, Your Honor. I don't see him yet, but I'll get to that in a moment. But I did want to give you an idea, I have, I think you've heard me say a couple times during the course of this hearing, that I've submitted PIA requests to the County and the, that, the PIA requests are still outstanding. And for that reason, and I certain, I have all my e-mail exchanges with the County. And they, I just haven't gotten the documents yet, although the PIA requests were submitted some time ago.

So, I would like to reserve the right to call, once I get the documents, to recall either this witness or even Mr. Grachek because, I don't think there will be any issues, I think I know the universe of documents that exist. But it, it has been a long road getting these documents from the County. They obviously have a lot going on as well.

But, so, and I can, I guess I can give you more detail on that issue. But I, I do need to do that, just out of an abundance of caution.

ALJ: Okay. So, remind me again, e-mail confirmations, remind me what, what is that about?

MR. MCCANN: There were, I, I think maybe it was Mr.

Mudd had asked questions about did, maybe in a couple instances, the, the authenticity of the documents. For, for example, the, the DPW capacity chart. We want, I want, he asked for confirmation that that, in fact, did come from the County in response to my PIA request and I, I, with respect to each of these, I said basically, I don't have a problem doing it.

So, I spent some time and actually did each of the things I said I was going to do. And I could, I could go through that real quickly, if you want. Or I could do it at the end of the day, whenever you prefer.

ALJ: So, I had, the only thing I had was the Exhibit 86, which was marked for i.d. only. So, so did you, did you talk to Mr. Rosenblatt or Mr. Mudd about it? And have you guys all agreed that what you've submitted are part of the PIA request?

MR. MCCANN: No, I, it, it was sort of a thing that took me a lot longer than it, than I thought it would. And I didn't get it done until really the last couple days. So, I mean, I can do that. Maybe over a break I can send them to Mr. Mudd and Mr. Rosenblatt. Maybe that's an easier way to do it.

ALJ: Yeah.

MR. MCCANN: Yeah.

ALJ: I think that probably is better to proceed than take up time --

MR. MCCANN: Okay.

ALJ: -- you know, during the hearing to do that, yeah. So, then maybe Mr. Mudd or Mr. Rosenblatt wouldn't have any issue if, if they got what they needed, or they were satisfied, right?

MR. MCCANN: Got it.

ALJ: That makes sense. Okay. So, then you have other, so these other PIA requests, were they, when, when were they requested? During --

MR. MCCANN: I submitted, I think as I had mentioned last time, over the course of the last couple years, I've submitted eight PIA requests. The last PIA requests are dated November 8th and February 20th and, as I gave, I gave some background last time I think Your Honor is, you know, I submitted a PIA request to MDE.

Really didn't have any problems in getting the documents. I spent a couple days down there in the City looking through their files and got everything that they have. With the County, it's just been a little more cumbersome. So, the requests that I'm talking about, November 8th and February 20th of this year, really were just to make sure that there was nothing else.

And I think now that you sat through two of these cases, Your Honor, at least recently, you sort of, you know, have an understanding of who the consultants are, who the

reports are coming from.

And so, my PIA requests were to, to make sure that I had gotten everything and at one point, the documents were supposed to be, or some of them anyway, were, were to be produced on March 17th. That got pushed back to March 23rd, which is this past Friday and they still, as we sit here today, I still don't have them.

But I have, I have, in a single document that I can give to you and give to counsel, all my e-mail exchanges with the County since November of last year on these issues. And that doesn't include texts with the County Attorney, for instance. But I did print out all my e-mails.

So, I just don't want to close our case after this witness and then get documents whenever I get them, and there be something else that both either Mr. Grachek or Mr. Summers, who's our next witness, did not have the opportunity to review. I don't think there's anything else that I would, in terms of reports from the County.

I think everything that's evidence is in evidence is the, is the state of affairs in terms of reports that the County's consultants have issued on the sewer capacity issue.

ALJ: Okay and this is all from DPW (inaudible)?

MR. MCCANN: Correct, correct.

ALJ: So, that's the only --

MR. MCCANN: I've had, I've had two or three Zoom

conferences with DPW staff, with Mr. Benjamin, the County attorney on the line last week. I think we had a, we had a, a County's consultant, outside vendor, who handles all the documents under the Consent Decree participate in the Zoom call. But the bottom line at the end of the day, although I thought I was going to get some of the documents before this hearing, I haven't gotten, gotten them yet.

ALJ: Okay and the hold up though is the DPW&T or was it the County Attorney's office?

MR. MCCANN: Yeah, I, I don't want to characterize what specifically hold up, the hold up is, but the County, the documents are coming from DPW&T.

ALJ: Okay, okay. And I, and I would imagine I'm going to hear from Mr. Rosenblatt and Mr. Mudd, that they're going to say we don't want to start with our rebuttal case until we know your case is over.

MR. MCCANN: Yeah, well, --

ALJ: Right.

MR. MCCANN: -- I will know that, listen, the most recent e-mail I got was on Friday saying we're not going to be able to produce the documents on, today, and I'll pull that up right now. I think it, what, what was said was, we, we should be able to get documents to you today, meaning Monday, and that was the e-mail I got on Friday.

ALJ: Kind of hard to look at them in the middle of

the hearing.

MR. MCCANN: Yeah, yeah, I just, and as, I, you know, I can tell you this. That during my Zoom calls with the, that, that took place, I was told, and I don't think it's any secret, that the reports from the, the consultants you've heard, heard about so far, are the, are the last reports. There are no other reports.

And that's what I'm most interested in. There's not another RK&K report coming, there's not another RJN report coming, there's not another Hazen, well, actually Hazen, we have newsletters, we don't have a report yet. So, that's sort of the state of affairs.

ALJ: Okay. Yeah, the Hazen was eighty-six. I think, or maybe that's a different document, scope of services, that was i.d. only. That's what I recall from the last hearing.

MR. MCCANN: I got, well, you asked for a certification as, that's one of the other issues. You asked for certification, or maybe it was Mr. Mudd, but that is the scope of services and I've gotten that, so.

ALJ: Okay, right. Probably easier too, and that, that's what I recall when doing these PIA requests just, you know, I, I would send the letter out and say give me all these documents. And then I would send it attached with a certification, whether it was the government records

certification, you know, that listed all the, the, all the factors in the hearsay exception, or it was a business record exception.

Of course, you're always dealing with governments typically, so you're probably just going to use that. And then I just attach, would attach it and say give me all these documents and sign this form. So, I don't know if that helps like in future cases, I don't know, maybe it would because it--

MR. MCCANN: Yeah, on this case, this case, case it wasn't that easy --

ALJ: No, --

MR. MCCANN: -- but I understand it's something --

ALJ: Yeah, yeah.

MR. MCCANN: -- yeah.

ALJ: It wasn't something that easy. Well, Mr. Rosenblatt, Mr. Mudd, now you've heard Mr. McCann, just so we get a, kind of a sense of where we're going, what, what's your take? What's your position?

MR. MUDD: I think, I think you nailed it, Judge Murphy. I mean, we're, there's no way we can start our case before they're finished. I mean, that would be, I think, extremely prejudicial to us. I also want to note, I mean, we're, we're, you mentioned at the beginning of this, we're on day eleven and day ten was February 10th. And I think Mr. McCann said that he made a subsequent request on February 20th

and that's what we're waiting on.

MR. MCCANN: No.

MR. MUDD: I mean, I just, I think we're, we're entering dangerous territory here where we're going to hold up hearings for people who are requesting information during the hearing. I mean, this has been going on for months and months and months. And I understand he's frustrated with what they've given him, but it sounds to me like the latest request is, essentially, are you sure you've given me everything you have?

And I, at some point, we have to trust that the government's given what they have in the prior request. The prior eight requests. So, I mean, I think we, I would object first of all to waiting it out. And I think, you know, whatever it is that he has as of today I think is what he should be, you know, essentially, when he closes his case it should be closed.

ALJ: Right. Well, I mean, what he said is that he initially requested it, something, through a PIA request November the 8th. I, I don't know that I have all eight PIA requests. I may have parts and pieces of them perhaps that are in evidence, you know, and so, you know, he got some documents, but I think it's, it's one of those things where one kind of triggers the other, it, it seems to me, is what I heard.

You know, so, you, you asked for one, you know, you sent in a PIA request November the 8th, are, did you get

everything you're supposed to get, or did you get some documents. Well, you know some are missing and then you get some more and it's a, it's like a trickle-down thing where you're getting piecemeal documents from the County as opposed to one big batch with a certification saying here's everything we got. I agree, that would be the easier way to do it.

But I think what I hear Mr. McCann's dealing with is that it's just, I'm getting a little bit here, a little bit there and then you know there's another document and you're like where's this document? Oh, here's, here's another one, you know? So, so, you know, I'm, you know, and, and so he's waiting for them, and I think efforts have been made, particularly if he's in Zoom calls with Mr. Benjamin trying to get them the documents.

So, let's do this, let's, let's, I, I mean, I want the, I want the Protestants to be able to put on their case and I don't want to, you know, prejudice their case and they feel these documents, they just want to make sure they have everything that they need.

And so, what we're going to do is we're going to proceed with the first witness today and, you know, he may or may not get something in the middle of the hearing that may satisfy him. So, let's see where it goes. But let's let, let's let the Protestants complete their case first before you have to put your rebuttal case on, is what we're going to do.

So, make sense, everybody?

MR. ZIMMERMAN: Yeah, can I just remind that I, I've got some exhibits to put in at some point.

ALJ: Correct, and your, your case came after, even though you had those two witnesses that came out of order because we were trying to help them with their calendars, so your case comes after, in, in my mind, after Mr. McCann's.

And so, what I was hoping, after all these days of doing this, is that all of you at some, at some point would have a chance to look at Mr. Zimmerman's exhibits, a lot of which, and I'm not saying every one, but most are public records and some of them are law, which we don't really need as exhibits, but in any event, he puts them in, which is fine. So, at some, you know, if you, if you had a chance to look at –

VOICE: (inaudible).

ALJ: Someone is --

MR. ROSENBLATT: Mr. Driban?

ALJ: And Mr. (inaudible), I just muted you, thank you. So, you have exhibits, yes, Mr. Zimmerman. So, I was hoping that, you know, the, Mr. Rosenblatt, Mr. Mudd, you've had a chance or at some point you will have a chance to look at Mr. Zimmerman's documents? Anybody?

MR. ROSENBLATT: I, I do have to say, I was under the impression that his case was over, that he rested his case. I was almost certain that that was the case. I know he's

continued to submit exhibits. We've not so far objected to that. But he called his witnesses and was done with his case, as I understood it.

ALJ: Not as I understood it. So, he called them out of order because they, they couldn't come in, they, I think we were trying to accommodate Dr. Long and Mr. Rockel. Mr. Rockel comes in often and testifies in these cases. So, technically, his case is after, I think I said this --

MR. ZIMMERMAN: Right.

ALJ: -- I'm pretty sure I said this in the beginning --

MR. ZIMMERMAN: Yeah, --

ALJ: -- hold on, Mr. Zimmerman. Said this in the beginning, Mr. Rosenblatt, I know you're, head in the hand. So, in the beginning of the case, that would be Developer, Protestants, Mr. Zimmerman, and then we would take everyone else who is an interested citizen who didn't get a chance to testify.

We took people out of order because of the, just like we took Mr. Tanczyn out of order, right? So, he was really a citizen, an interested citizen. So, and, but we've had this ongoing kind of, you know, just every time Mr. Zimmerman, I guess his exhibits, you know, he, he has been adding to them.

But, you know, then I think we, I mentioned if, you know, some, at some point we could just make sure we all agree

or if you don't agree say what it is, what your objections are. So, he hasn't closed his case. Although, he's made clear he has no other witnesses. Mr. --

MR. ZIMMERMAN: Yeah, that was, that was for convenience that Mr. Rockel and, and Dr., I can't remember his full name, I'm sorry to say --

ALJ: (inaudible).

MR. ZIMMERMAN: Yeah.

ALJ: Dr. Lum (phonetic).

MR. ZIMMERMAN: That, that was for convenience. And, and most of the exhibits have been there for a long time, were submitted a long time ago. There were a few, there were a few additions, yes. But yeah, and I think we, in January, Judge, you, you asked me to, to send a letter indicating which exhibits I understood were admitted already and which ones were still to come and which ones would be withdrawn.

And I submitted a letter, I think in January, I'd have, I'd have to double check. January 12th I submitted a letter. You asked for an update on exhibits actually after the December 7th hearing. I don't remember if Eric Rockel testified already at that point.

But, you know, so it's just, it's just the exhibits and, other than I think four, three of which I think I'm going to submit that, that I submitted last week, out of the forty-three exhibits, I think thirty-nine have been around for a very

long time, so.

ALJ: Okay. Understood. So, Mr. Rosenblatt, that, so, I mean, the process that I had in mind was, you know, the one we usually go through. And usually Mr. Zimmerman is not here, so we usually have you, you know, the Protestants and then rebuttal.

But so, I, you know, in doing these cases all these years, usually Mr. Zimmerman usually comes after the Protestants, sometimes before, but, so, anyway. His case is not technically over. But in any event, have you looked at his exhibits?

MR. ROSENBLATT: To be honest, I am behind in looking at his exhibits, so it's --

ALJ: All right.

MR. ROSENBLATT: -- it's something we can do at a break or later.

ALJ: We can. We have another, we have more time. So, just, just again, I think we talked about this before, if at some point everyone could, and Mr. McCann, look at Mr. Zimmerman's exhibits, make sure that you agree and you don't have any objection.

MR. ZIMMERMAN: And, and Judge, may I say that some of the exhibits, as you pointed out, involve, you know, cases or legal materials. And part of that is to give everyone advance notice of what I'm going to refer to in my memorandum.

So, it's, it's to give them a heads up, rather than, you know, waiting till my memorandum when they won't get a chance to see them. So, I --

ALJ: Okay.

MR. ZIMMERMAN: -- it's partly out of fairness and, and I think in the past at the Board of Appeals and the ALJ, generally speaking, various parties have submitted Code provisions, zoning regulations and so on and so forth, yeah.

ALJ: I know, I know. I (inaudible) yes, I know you submitted, well, and, and Mr. McCann also submits law too. I was just, that's fine. Which is what I was kind of saying is, there's probably no objection to the law, what the law says. So, so we'll do that and, and so what we'll do is we'll proceed with Mr. McCann's case. And then, you know, we'll see what the day holds for Mr. McCann and whether he gets any answer to his PIA request. He's going, at some point, look at his e-mail confirmations that he has, maybe give them to, and give them to you, Mr. Rosenblatt and Mr. Mudd, to see whether or not that satisfies the issue you had last time.

MR. MCCANN: Yeah, I, I just sent them to Chris and Adam.

ALJ: Okay. I'm sure they're not going to look at them right now, so because we're (inaudible) all right. Is everybody ready --

MR. MUDD: Judge, could I just be heard on one more

thing?

ALJ: Yes.

MR. MUDD: And I, I, I understand what you said and I, and I, and I understand that you want to give him every opportunity to proceed. I just would ask, would you consider instructing Mr. McCann to keep us all informed of his efforts with the County. Because part of us, our frustration, and maybe most of it, is the fact that we're here on day eleven.

We were all expecting that it was going to conclude today and then we would start and that we would likely finish at our next hearing date on April 11th. And had we known that this request had gone in on February 20th, then, and that perhaps another date, date might be needed, we could have worked on that on February 20th.

MR. MCCANN: Well, --

MR. MUDD: But we might be stuck today or maybe even April 11th looking for yet another date. And that is the frustrating part for us, is that we have not been able to see the end of the tunnel for this project and get it finished and we'd very, very much like to do that, please.

ALJ: Understood. Mr. McCann, do you think that's (inaudible).

MR. MCCANN: No problem. I have no problem with that at all. I, you know, to, to be fair, I just got the e-mail on Friday, it was late in the day. Maybe I should have called

Adam or Chris and let them know that this was, heads up, but I had a lot going on and just didn't do that. But I, I did just look at the e-mail that I got on Friday, and it said that the documents would be sent to me via FTP today.

So, you know, I'll check my e-mail, let everybody know once I get a chance to, to skim them whether, maybe we can move on to other witnesses other than sewer today and try to get, use as much of today as we can.

ALJ: Right, and it could be that it's all, you know, everything you've received is everything that there is.

MR. MCCANN: Correct.

ALJ: It could be (inaudible).

MR. MCCANN: I am, I am --

ALJ: So, we may be worrying for nothing, all of us. So, let's see, see what happens. But if you could, Mr. McCann, in response to Mr. Mudd's request, just keep them informed. I mean, I'm not sure you need to copy them on your e-mails. You have your own, you're doing your own, you know, --

MR. MUDD: I, I'm not asking for that. Just --

ALJ: Yeah, yeah, yeah, just --

MR. MUDD: -- information on, about the progress would be helpful, please.

ALJ: Correct, understood. All right. And so, again, in some, in some respect, I do think it's, it goes beyond his control when you're waiting for the County to

respond to certain things, so, all right. All right. So, I think we got the preliminary issues out of the way. We have the next witness, did you say, Mr. McCann, who is the witness?

MR. MCCANN: Mr. Summers, Bob Summers.

ALJ: Is he a panelist, let's see.

MR. MCCANN: He should, I thought I saw him --

ALJ: Oh, there he is, he's an attendee. Here, I'll move him over.

MR. MCCANN: Great, thank you.

ALJ: Okay, there he is. Mr. Summers, let's see. All right. Mr. Summers, I see you have, do you have a camera?

MR. SUMMERS: Yes, I do.

ALJ: I don't see you yet. You're listening only. Oh, no, that's not it. Wait, let me see. There you are, sorry. I had the wrong screen. Okay. Raise your right hand, please. Do you swear and affirm under the penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. SUMMERS: Yes.

ALJ: Okay. Mr. McCann?

MR. MCCANN: Okay, thank you, Judge. Good morning, Mr. Summers.

MR. SUMMERS: Good morning.

MR. MCCANN: Can you hear me?

MR. SUMMERS: Yes.

MR. MCCANN: Okay, great. What do you do for a living presently that is?

MR. SUMMERS: I'm an environmental consultant and I teach a course at Johns Hopkins, The School of Engineering and I'm also retired from the State of Maryland.

MR. MCCANN: Okay. Who, who are you presently doing consulting work for?

MR. SUMMERS: It's a small company called Ecologics.

MR. MCCANN: And what does that company do and what do you do for that company?

MR. SUMMERS: Well, I have many years of experience in environmental issues, environmental regulation and I advise our clients regarding how to address various environmental issues. A lot of my work involves Maryland regulation and Maryland law and helping our clients, who are both private sector and government, to make the best work they can with respect to environmental protection.

MR. MCCANN: Okay and we'll get back to that in a moment. Blue Water Baltimore, do you do any work for that organization?

MR. SUMMERS: Yes. I joined the board of Blue Water Baltimore in 2020 as a volunteer. And have continued to serve on the board. Because of my long environmental experience, when their executive director departed at the end of 2020, the board asked me to be interim executive director. So, I served

in that capacity for a good portion of 2021.

MR. MCCANN: Okay and what is Blue Water Baltimore? The Judge may have heard of it, but what is, what is that organization?

MR. SUMMERS: Blue Water Baltimore is an environmental non-profit organization dedicated to the protection and restoration of water ways in the Baltimore metropolitan region, which includes the Herring Run, Jones Falls and Gwynns Falls and the drainage to Baltimore Harbor.

MR. MCCANN: Okay. In your work with Blue Water Baltimore, did you have, or have you had the opportunity to be involved in any matters related to the City, Baltimore City's public sewer system?

MR. SUMMERS: Yeah, Blue Water Baltimore is a party to the modified Consent Decree in Baltimore City, which requires them to address their sewer system overflows. It's not unlike Baltimore County's sewer Consent Decree.

MR. MCCANN: Okay and what, what is your been, what has your involvement been in that Consent Decree, or that litigation?

MR. SUMMERS: Well, as a member of the board and what the board terms the litigation and advocacy committee, I, and because of my experience, I've been asked to sit on meetings with the Baltimore Harbor Water Keeper, Alice Folpita (phonetic), and our attorneys from Chesapeake Legal Alliance in

meetings with MDE and the EPA to track progress on the City's modified Consent Decree.

MR. MCCANN: Okay. Backing up a little bit, I maybe lost the timeline for the Judge a little bit. You mentioned that you're currently employed by Ecologics post-retirement. When did you retire?

MR. SUMMERS: I retired from State service in January of 2015.

MR. MCCANN: Okay and how long have you been employed with Ecologics?

MR. SUMMERS: I believe pretty much since I retired. I, I think I took some time off. But my work with Ecologics is part-time.

MR. MCCANN: Okay. Okay and, and you mentioned just before, back, back again to Blue Water Baltimore. You mentioned, I think you said you were on the litigation and, and advocacy committee? Is that, that the name of the committee?

MR. SUMMERS: Yes.

MR. MCCANN: And it's, it's job --

MR. SUMMERS: That, that is a committee of board members --

MR. MCCANN: Yeah.

MR. SUMMERS: -- who advise the organization on its actions with respect to any environmental enforcement litigation that they are involved in. The Blue Water Baltimore

has an extensive monitoring program for water quality throughout the area.

They received information from various citizens who are concerned about water quality issues, and they have a monitoring team that can investigate sources of pollution. So, we participate in reviewing what they're doing and provide advice to the organization.

MR. MCCANN: Okay and with respect to, you said environmental enforcement, one, one of the enforcement actions ongoing is the City's Consent Decree, correct?

MR. SUMMERS: Yeah, the, when the City, the City had a Consent Decree, I believe, issued in 2002 and that, progress on that was slow so EPA and MDE entered into a modified Consent Decree with the City.

And at that point in time, Blue Water Baltimore petitioned, I don't know the exact legal term, but they petitioned to become a party to that. And so, they have been meeting since then, when the modified Consent Decree was put in place, I believe 2018, they have been participating in regular meetings. I did not joint until 2020.

MR. MCCANN: Okay. All right. Getting to your State employment, were you previously employed at the Maryland Department of the Environment?

MR. SUMMERS: Yes.

MR. MCCANN: When were you employed? Over what

period of time?

MR. SUMMERS: Well, actually, I joined the State's service prior to the creation of the Department of the Environment in 1983.

MR. MCCANN: Uh huh.

MR. SUMMERS: At that time, I was in the Office of Environmental Programs, and I was hired to work on non-point source pollution control, non-point source being rainfall, runoff type pollution control and monitoring work. And I got involved in the Chesapeake Bay restoration effort. The Department of the Environment, what was actually created in 1987, and at that point I became an employee of the Department of the Environment.

MR. MCCANN: Okay. Well, let's, maybe, maybe it would make more sense to go backwards in time, beginning in 2015 when you retired from MDE, tell us in reverse chronological order, the positions that you held at MDE.

MR. SUMMERS: Okay. From late 2010, December 2010, until I retired in 2015, I was Secretary of the Environment over the entire program that was during Governor O'Malley's second term.

MR. MCCANN: Okay.

MR. SUMMERS: Prior to 2010, I served as Deputy Secretary of MDE under Secretary Sherry Wilson, who was O'Malley's first appointee in 2007.

MR. MCCANN: Okay.

MR. SUMMERS: Prior to that, in about 2001, 2007, when I became Deputy, I was Director of the Water Management Administration, which is the regulatory water related arm of the Department.

And prior to that, I have served as Director of what was called Technical and Regulatory Services, which is an administration that provided scientific technical engineering support to the regulatory programs in the Department, which are organized roughly around water, air and land pollution.

MR. MCCANN: Okay. On that point, that, that is water, land and air pollution, the organization of MDE, you just said that you were the Director of the Water Management Administration, correct?

MR. SUMMERS: Yes, that --

MR. MCCANN: And just, I'm sorry, go ahead.

MR. SUMMERS: I was just going to elaborate but, on what that is but you --

MR. MCCANN: Yeah, go ahead, go ahead.

MR. SUMMERS: Well, the Water Management Administration does all of the Clean Water Act programs, so National Pollution Discharge (inaudible) System, NPDS. It's responsible for the Safe Drinking Water Act implementation, oversees sediment and erosion control wetlands and water ways and has a compliance program, which oversees the enforcement of

environmental laws related to water.

MR. MCCANN: And where, where, just on that particular job that you held for those several years under the Water Management Administration, is, does that include sewer, public sewer systems?

MR. SUMMERS: Yes, public sewer systems are regulated under the NPDS program. I, I left out one program, the Water Quality Financing Administration actually provides financial support for upgrading and dealing with treatment of water supply and sewage.

MR. MCCANN: Okay and we'll, we'll get to your resume in, in a minute, which I think describes your duties generally. But I want to ask you some questions about, during the per, period of time when you were Deputy Director and Director of MDE, as well as Director of the Water Management Administration, over that span of time, what specific duties did you have relating to regulatory enforcement or compliance?

MR. SUMMERS: Well, it, it evolved over the course of that period of time beginning in 2001, when I became Director of the Water Management Administration, I was responsible for overseeing and managing the enforcement programs related to water specifically.

Once I became Deputy Secretary, of course, I was serving under the Secretary and she designated me to take the lead in assisting her in overseeing the scientific aspects

that, at that time were done by technical and regulatory services and the water aspects of the Department.

But I also assisted her with land restoration, land contamination issues and air issues. So, as Deputy Secretary, I had a broader range of responsibilities. And as Secretary, I was the responsible person under State law for overseeing all of those activities in the Department. I don't know how much detail you want, but.

MR. MCCANN: (inaudible) referring to what you just said, would that include overseeing all regulatory enforcement --

MR. MUDD: Objection, objection. Objection.

ALJ: Mr. Mudd?

MR. MUDD: I think he needs to ask him what he oversaw and not --

ALJ: Yeah, if you could, just, if you don't lead him through his qualifications, so we're still on voir dire, if you could. If you could, Mr. McCann, --

MR. SUMMERS: I'm sorry.

MR. MCCANN: Yeah, --

ALJ: Hold on. Mr. McCann, go ahead, if you could just ask the question.

MR. MCCANN: I, my, my, my, my question simply is with respect to your oversight responsibilities as director, did that include regulatory enforcement or compliance?

MR. MUDD: Objection.

ALJ: So, you're, you're giving him the answer, what did it --

MR. MCCANN: It's a yes or no, that's not a leading question, Your Honor. I'm not going to get into this argument again. So, I'll, I'll move, try to, I mean, that's not a leading question.

ALJ: If you could just say what, in your, you're overseeing, you know, when you oversaw, what did it include.

MR. MCCANN: Okay.

ALJ: So, Mr. Summers, can you answer that?

MR. SUMMERS: So, --

MR. MCCANN: Go ahead.

MR. SUMMERS: -- I, I oversaw, as Secretary, everything in the Department, from personnel, to budget, to legislative action, to regulation development, to enforcement, the whole range of activities in the Department. When I was Deputy Secretary, I oversaw those things specifically in the areas of scientific support, engineering support, which would include water quality standards development, and the water related regulation and enforcement activities.

And prior to that, as Water Director, I oversaw all of the water programs, specifically the staff in our compliance program, that was responsible for enforcement, in our wetlands and waterways program, which was responsible for permits and

regulations related to streams and wetlands, in our stormwater administration, responsible for municipal separate storm sewer system permits and regulations, a water supply program, (inaudible) water permits, which deal with both ground water and surface water discharges.

And the Environmental Finance Administration, which is responsible for review of engineering designs for the development of water and sewer systems across the state.

MR. MCCANN: Okay.

MR. SUMMERS: So, I was involved in a lot of different things over that time period.

MR. MCCANN: Focusing in on your enforcement, regulatory enforcement and compliance duties, in your positions as Secretary, Deputy Secretary, Director of Water Management and Director of Technical and Regulatory Services, did your duties, in that regard, include not only --

MR. MUDD: Objection.

MR. MCCANN: Did your duties include x, --

MR. MUDD: Objection.

MR. MCCANN: -- it's not a leading question. Is the sky blue? That is not a leading question, Your Honor.

ALJ: I'm going to, I'm going to overrule it, go ahead.

MR. MCCANN: Yeah. In, in those capacities, in those positions, did your regulatory and enforcement responsibilities

include not only the regulations themselves, but also Consent Decrees, or other judgments, Court judgments?

MR. SUMMERS: Yes. In developing regulations, of course, any of those could be challenged so they were issues associated with negotiating and coming up with workable regulatory actions. When we get into violations of regulation, it's a matter of determining the nature of that violation and ensuring that an enforcement action is taken appropriately to address that.

The Department of the Environment has administrative regulatory enforcement capability, or responsibility, and that can often lead to a Consent Order, which is an administrative Order --

MR. MCCANN: Um hm.

MR. SUMMERS: -- to address an enforcement issue in the event that we need to use our civil authority, which we also had. We would go to Consent Decrees, which would be done in conjunction with a Judge. And so, the Department, and in my role in leadership, was to oversee those actions. I was, of course, dependent on the expertise of employees and different sections, engineers and environmental specialists, biologists, all types of different scientific expertise.

But as the Director, was my responsibility to make sure they did their jobs properly and I was the final decision maker for the Department, and I did sign Consent Decrees and

Consent Orders and made sure that enforcement was done properly by the Department.

MR. MCCANN: Did you ever participate in the negotiation of Consent Decrees or similar Court Orders?

MR. SUMMERS: I, I, I did participate in some of these, but for the most part, negotiations were handled by the compliance program staff and the Assistant Attorneys General, who worked for the Department. But I was, particularly in the bigger cases, briefed on what was being done and what was being proposed.

And when I was Water Director, I was under Secretary Ken Filbrick (phonetic), who actually signed the Consent Decree for Baltimore County. And I participated in briefings and advised him on that. But, of course, relying very heavily on the Assistant Attorneys General and the technical staff in the Department. So, I participated in that.

I also participated in similar discussions with Secretary Filbick, Filbrick on the Washington Suburban Sanitary Commission, Consent Decree on sanitary sewer overflows. As Secretary, I signed Consent Decrees with the City of Hagerstown on sewage overflow issues, and with Sparrows Point on the cleanup, modified Consent Decree, on the cleanup of the Sparrows Point site.

But for the most part, I served in an advisory and oversight capacity as opposed to a direct negotiating role.

MR. MCCANN: Okay and I think you may have covered this, but you, when, number one, you indicated you've signed Consent Decrees on behalf of MDE, correct?

MR. SUMMERS: Yes.

MR. MCCANN: Okay and again, I think you've mentioned this already, but did your experience in regulatory enforcement and compliance include, in particular, any public sewer systems?

MR. MUDD: Objection.

ALJ: Overruled. Go ahead.

MR. SUMMERS: Well, the Hagerstown Consent Decree had to do with their sewage plan and overflows that were occurring there. I signed Consent Orders, which are administrative, with Centerville Sewage Treatment Plant that was having excessive discharges in excess of its permitted authority. Those are a couple of examples.

But a lot of the work in my days as Director of Water Management involved sewage systems because at that time, former Governor Ehrlich has proposed, and we negotiated through the legislature, the Bay Restoration Fund, which provided funding at the State level for upgrading waste water treatment plans across the State, to meet what was called enhanced nutrient removal.

And this was part of the State's Bay restoration effort, and I was involved in developing that legislation and

getting it through the legislature. And people don't often hear about the Bay Restoration Fund, but they remember the catch phrase, which was used at the time, the so-called flush tax.

And that was used to provide funding for upgrading wastewater plants. So, I worked closely with our engineers in developing that legislation and in overseeing the implementation of hundreds of millions of dollars of investment in sewage treatment plan upgrades.

MR. MCCANN: Okay. You mentioned the Washington Suburban, I'm not sure I caught the entirety of that. But did that involve sewer systems, or sewer capacity issues?

MR. SUMMERS: WSSC, Washington Suburban Sanitary Commission, operates the sewage collection system for Prince George's and Montgomery County. They also operate several wastewater treatment plants. But a lot of the sewage from that area flows into Washington, D.C.'s Blue Plains Wastewater Treatment Plant, which is regulated by EPA.

MR. MCCANN: Okay. Are you familiar with the Consent Decree between Baltimore County and MDE?

MR. SUMMERS: Yes.

MR. MCCANN: Okay. I think you mentioned you were at MDE at the time that that was entered into?

MR. SUMMERS: Yes.

MR. MCCANN: Did you attend any meetings or briefings

on that Consent Decree while you were working at MDE?

MR. SUMMERS: I attended meetings and briefings with the Secretary and the Compliance Program. I did not attend any negotiating sessions --

MR. MCCANN: Okay.

MR. SUMMERS: -- on, on that Consent Decree.

MR. MCCANN: Okay. Have you reviewed and are you familiar with the work performed by the County and its consultants pursuant to the Consent Decree?

MR. SUMMERS: Yes, I have reviewed the reports.

MR. MCCANN: Okay and that was my next question, that you reviewed the reports and other work product of the County's consultants?

MR. SUMMERS: Yeah, and let me be clear. The, there is a huge volume of material that's been produced over the years. And I have not reviewed every report in detail. But I have looked at and reviewed specific reports, I would call them, you know, major milestone reports, like the SRRR plan, the sewer rehab, rehabilitation plan, and the performance assessment and other documents of that nature.

MR. MCCANN: Well, let me ask you specifically about what, what you've reviewed, some of the documents. Did, did you review, you mentioned the SRRR plan. Did you review the, and you just mentioned, I'm sorry, you just mentioned performance assessment. Is that the RJN performance

assessment?

MR. SUMMERS: Yeah, I, I, I reviewed the SRRR, the, and the RJN performance assessment.

MR. MCCANN: Okay and did, did you review the work product of Hazen and Sawyer in connection with --

MR. MUDD: Objection, Your Honor.

ALJ: Mr. Mudd, what's your objection?

MR. MUDD: I, so I --

(EVERYONE SPEAKING AT ONCE)

ALJ: Mr. Summers, hold on, hold on one second. So, because there's an objection. So, so, Mr. McCann asked a question, Mr. Mudd objected. When he objects, then I have to rule on it. So, Mr. Mudd, what was your objection?

MR. MUDD: I, I'm just objecting, he, he's identified the reports that he's, by name, that he looked at. And now we're asking him, and feeding him, specific names, I believe, in an attempt to refresh recollection. So, I'm objecting to leading questions.

ALJ: Okay, understood. Well, I'm going to overrule it. So, so, sir, did you review the Hazen and, Hazen or Hazen, and Sawyer report?

MR. SUMMERS: Well, the Hazen and Sawyer has produced a series of, basically, pamphlets summarizing their work. It's not really a report. But there's some very interesting information in there that I can, I can talk about at the

appropriate time. But when Mr. McCann asked me, I just gave some examples of reports I reviewed, not an exhaustive list. So, I've reviewed a lot of reports. So, forgive me for not remembering each one in order.

MR. MCCANN: Yeah, and I, I'm just, I just want to ask you about specific, specific reports that are in evidence and make sure that you reviewed them. Did you, the pamphlets that you just referred to, did you review those Hazen and Sawyer pamphlets?

MR. SUMMERS: Yes, I read through them. There's not a lot of information and the figures are difficult to read, but it is a very ambitious undertaking document by Hazen and Sawyer to look at the integrity and performance of the sewer system. Not only today, but into the foreseeable future.

MR. MCCANN: Yeah, well, we'll, we'll get to each of these specifically, but right now I just want to, before I offer you as an expert, I want to establish for the Judge what it is you did review. So, did you review the Ramble report that was introduced into evidence?

MR. SUMMERS: I, I reviewed the documents that were provided by Ramble, the information regarding the, the scope of their work and the report that summarized the work plan.

MR. MCCANN: I'm sorry, did I interrupt you?

MR. SUMMERS: No, go ahead.

MR. MCCANN: Did you review, well, you were here for

Mr. Grachek's testimony, correct?

MR. SUMMERS: That's correct.

MR. MCCANN: And did you, there were quite a number of exhibits that were introduced during his testimony, do you recall that?

MR. SUMMERS: Yes.

MR. MCCANN: Did you review many of those exhibits, without going through all of them?

MR. SUMMERS: Well, I think, you know, the, the big parts were, as I've already mentioned, the SRRR plan, the LPC document, the RJN report, and as we've already discussed, Hazen and Sawyer and Ramble.

MR. MCCANN: Have you, aside from sitting through Mr. Grachek's testimony, have you had the opportunity to speak and meet with Mr. Grachek about issues, sewer capacity issues relating to --

MR. SUMMERS: Yes. We met and toured the Jones Falls sewer shed together. He testified about his site visit. So, I, I participated in that site visit with him.

MR. MCCANN: Okay. Well, in addition to that site visit, just in terms of communications with Mr. Grachek, over--

MR. SUMMERS: Yeah, I've had a number of virtual meetings with him, not only on the Baltimore County case, but also he is an expert witness for Blue Water Baltimore on the Baltimore City modified Consent Decree work.

MR. MCCANN: Okay. Are you familiar with the area comprising the, the Jones Falls sewer shed?

MR. SUMMERS: Yes, I actually live in the sewer shed, in the, over near Towson University and I travel and recreate throughout the area.

MR. MCCANN: Okay and you, have you been to the site where this proposed development is to be?

MR. SUMMERS: Yes, just, can see it from the road, but I haven't actually been on the property.

MR. MCCANN: Did you visit the site and the area around the site during the, the site visit that you just described with Mr. Grachek?

MR. SUMMERS: Yes, among other times, I used to go to a physical therapist in an office immediately adjacent to that property when it was still being farmed.

MR. MCCANN: Okay. Describe your, your educational background, Mr. Summers.

MR. SUMMERS: I have a bachelor's degree in natural sciences from Johns Hopkins University and a Ph.D. in environmental engineering from Johns Hopkins. And as I've already talked about my work experience, basically, applying all that I learned in college.

MR. MCCANN: Okay. One area that I haven't asked you specifically about is water quality and water quality standards. What, and I think you touched upon it. What, what

is your, has been in your experience in that area?

MR. SUMMERS: Well, when I was hired to work for the State, it was to work on development of a water quality monitoring program for the Patuxent water shed, which is the water shed that runs in between Baltimore and Washington, D.C. It was the subject of legal action by the southern counties against the northern counties and the state over excessive sewer contamination.

I developed a monitoring program for the rivers and streams in conjunction with the U.S. Geological Survey. We operated that monitoring program for a number of years. When I was Director of the Technical and Regulatory Services, that group is responsible for water quality standards, development.

Under the Clean Water Act, the State is required to monitor water quality, identify areas where we're not meeting water quality standards and then develop what's called a total maximum daily load, which is a Clean Water Act document that demonstrates what needs to be done in order to reduce pollution to the extent required to develop water quality standards, to meet water quality standards.

MR. MCCANN: Okay.

MR. SUMMERS: The water quality standards for the State largely follow the Environmental Protection Agency guidelines and, as Director of Technical and Regulatory Services, I was responsible for making sure that as the EPA

modified its requirements and introducing increasing levels of, or more protective levels of contamination for standards, we would develop new standards for the State and put those into place through the regulatory process.

So, I worked on that. And then when I became Director of Water Management Administration, I was administering programs that were to protect water quality and make sure the State was meeting those standards. So, I continued to participate in water quality standards development there.

MR. MCCANN: Okay. Let me show you your resume, which has been pre-marked as Exhibit 98. Do you see that, Mr. Summers?

MR. SUMMERS: Yes.

MR. MCCANN: Okay. Nine page document, what is this, is this your resume?

MR. SUMMERS: Yes.

MR. MCCANN: Okay. Your Honor, I would intro, move to admit this exhibit into evidence, exhibit number ninety-eight.

MR. MUDD: No objection.

ALJ: Any objection to the resume?

MR. MCCANN: Okay.

ALJ: Any objection to the resume?

MR. ZIMMERMAN: No objection here.

ALJ: Mr. Rosenblatt, Mr. Mudd?

MR. MUDD: No, I'm sorry, no objection, Your Honor.

ALJ: Okay, thank you.

MR. MCCANN: Lastly, Mr. Summers, have you testified or been accepted as an expert on issues related to water quality standards, first of all?

MR. SUMMERS: Well, I, I have testified before the State legislature, the U.S. Congress, U.S. Senate on water quality regulatory issues. I have also been deposed in a number of different cases, but I have not had to testify in Court.

MR. MCCANN: Okay. You mentioned regulatory issues. How about just, have you been accepted or testified as an expert on, on issues related to regulatory enforcement or compliance, as opposed to water quality specifically?

MR. SUMMERS: Yes, so much of my testimony before the legislature, congress and senate, was with respect to regulatory aspects.

MR. MCCANN: Okay. Okay. Your Honor, I would move Mr. Summers in as an expert in, in three areas. Number one, environmental engineering, number two, water quality and water quality standards and number three, regulatory enforcement and compliance with environmental laws and regulations and, and Consent Decrees, including as they may relate to sewer systems. So, those three areas.

MR. MUDD: I'm sorry, Michael. Would you mind repeating those, please?

MR. MCCANN: All three?

MR. MUDD: Yes, please.

MR. MCCANN: Environmental engineering, water quality and water quality standards, number two, and number three, regulatory enforcement and compliance with environmental laws and regulations and Consent Decrees, including as they may relate to sewer systems.

ALJ: Any voir dire, Mr. Mudd?

MR. MUDD: Yes, please. All right. I got some notes. Good morning, sir. How are you doing today?

MR. SUMMERS: Doing well, thank you.

MR. MUDD: Good. So, you are currently, are you an employee of Johns Hopkins?

MR. SUMMERS: Yes.

MR. MUDD: Okay and are you here today on behalf of Johns Hopkins?

MR. SUMMERS: Not at all.

MR. MUDD: Okay. Have you had any communications with Johns Hopkins about this hearing?

MR. SUMMERS: No.

MR. MUDD: Have you used any Johns Hopkins resources for purposes of your preparation today?

MR. SUMMERS: No.

MR. MUDD: Okay and you, you've clearly been, had a lot of roles within MDE over the years, correct?

MR. SUMMERS: Yes.

MR. MUDD: And am I correct that you're not involved, or you're, you're not here on behalf of MDE today, correct?

MR. SUMMERS: No, I haven't worked there for, since 2015.

MR. MUDD: Okay. Have you had any communications with anyone from MDE in regards to this case?

MR. SUMMERS: No.

MR. ZIMMERMAN: I'm going to object. That has nothing to do with his qualifications. That --

MR. MUDD: Is this your witness, Mr. Zimmerman?

MR. ZIMMERMAN: No, I, but I can (inaudible). That has nothing to do, that question, that, if he wants to ask him that ultimately on cross, that's one thing. But this doesn't have to do with his qualifications.

ALJ: Overruled. Go ahead.

MR. MUDD: Have you had any communications with anyone from MDE for this case?

MR. SUMMERS: Not about this case.

MR. MUDD: Okay. I wrote down and it says on your resume that you have a bachelors in natural sciences. Can you describe what you studied in your undergrad relative to natural sciences?

MR. SUMMERS: Yeah, natural sciences, basically, is biology, chemistry, physics, environmental science, geology, geography, it's a wide range of disciplines that have to do with the natural world and the scientific understanding of the natural world. And it is a major, that it used to be at Hopkins, to provide just a broad understanding of all of those subjects that I just listed.

MR. MUDD: Okay and, and is it fair to say that your, your studies in that respect were likewise broad? In other words, you didn't specialize in any one of those areas necessarily?

MR. SUMMERS: That's, that's correct.

MR. MUDD: Okay and how about environmental engineering? What, what did you study at Hopkins for your Ph.D. in environmental engineering?

MR. SUMMERS: So, in environmental engineering, we bring together the environmental sciences with engineering principles to work to solve environmental problems. Specifically my work involved erosion and sediment issues, stream processes involving erosion and, and how land surface is modified by streams and erosion.

And I studied the engineering properties of sediments that were deposited into Chesapeake Bay looking at ways to do a better job of designing and sizing dredge material containment basins. So, we were looking at the characteristics of the

sediments, how they behaved under the conditions that were caused by hydrologic or clam shell dredging and how that influenced the amount of capacity for storage that was needed for dredge material containment.

MR. MUDD: How, how long, how many years did you study for your Ph.D.?

MR. SUMMERS: I studied, I think, most of four years, but I got my Ph.D. in my fifth year. Unfortunately missed a deadline and went to work as a post-doc at the State University of New York, at Stoneybrook, working on dredging issues. So, I think my bachelor's degree was '76 and my Ph.D. was '82.

MR. MUDD: Okay and your, I assume, did you do a dissertation at the conclusion of your Ph.D.?

MR. SUMMERS: Yes.

MR. MUDD: And that was relative to the dredge material issue?

MR. SUMMERS: Yes.

MR. MUDD: So, I didn't hear a single thing in any of that description on your environmental engineering that dealt with sewage, is that right? You didn't study sewerage in your Ph.D.?

MR. SUMMERS: No, I, I took course work in water quality chemistry, wastewater system design and actually during part of the time as a graduate student, I taught sections of the wastewater engineering course work there. So, while my

dissertation didn't involve sewage, my course work, my teaching and other activities definitely involved water and wastewater treatment.

MR. MUDD: Okay. Are you a professional engineer?

MR. SUMMERS: No.

MR. MUDD: Have you, have you ever designed a sewer system?

MR. SUMMERS: No, I, I have not designed sewer systems. My focus was on water quality conditions and water quality modeling.

MR. MUDD: Okay and can you describe a little bit about that? What do you mean by water quality conditions and water quality monitoring?

MR. SUMMERS: Well, the monitoring, I talked a little bit about monitoring river flow and the contaminants that flow in rivers. Sediment load is a big part of monitoring river flow. Monitoring the impacts of pollution solutions.

We designed monitoring programs to sample streams above and below, for example, sewer discharges to look at changes caused by what is discharged into the streams. So, the monitoring is more focused on the natural environment and how it is impacted by things like sewage plants and other industrial discharges.

The modeling, I mentioned, has to do with the fact that you cannot monitor everywhere all the time. And so, we

use models to interpolate between our monitoring data to give us a complete picture. And then models can also be used to project into the future and under different rainfall conditions.

So, you know, I'm very familiar with all the modeling techniques that are used in wastewater design, but I, I am not an expert and have not done that type of wastewater design. My focus has been on the water quality impacts and the regulatory requirements and meeting water quality standards.

MR. MUDD: And, and that, was that your focus when you were at MDE?

MR. SUMMERS: My, my focus at MDE is, as I've said before, was extremely broad, but I definitely worked on those aspects I just described. Mostly in the earlier part of my career at MDE beyond once I became Director, I was not directly involved in field monitoring activities like I described, or modeling. I was overseeing the scientific and technical staff who did that work.

MR. MUDD: Okay. So, that would have been from 2010 to 2015?

MR. SUMMERS: From 2010 to 2015, I was Secretary of the Environment, and I was overseeing everything at the Department. But because of the broad range of responsibilities, I depended upon staff and my directors in each of the administrations, in this case water, to make sure

things were being done properly. And I was obviously briefed and involved in decision making with them, but I was not directly hands on.

MR. MUDD: Okay and how about from 2007 to 2010 as Deputy Secretary? Were you hands on then?

MR. SUMMERS: I was as Deputy Secretary, a little bit more hands on because the Secretary asked me to focus on specific areas related to water and scientific and technical issues associated with water quality standards development.

At that time, we were working on the first total maximum daily load for the entire Chesapeake Bay watershed, and I was the lead on, for the Department, in developing that with our technical staff and also our counterparts in all of the other states in the Chesapeake Bay watershed from New York to Virginia. So, --

MR. MUDD: Okay.

MR. SUMMERS: -- that was during my Deputy Secretary time, I was doing that.

MR. MUDD: Okay and, and I'm sorry, just to be clear, that was again, more oversight than, than hands on work, correct?

MR. SUMMERS: Well, it, there was a lot of negotiation and meeting with the other states and the USEPA and developing (inaudible), so it definitely involved other staff, but you know, I was directly involved in those discussions.

MR. MUDD: Okay. How about from 2001 to 2007 as the Director of Water Management, were you doing any hands on modeling --

MR. SUMMERS: Then I was overseeing the program managers meeting regularly with them on whatever issue they were working on, from drinking water to wastewater and providing the benefit of my experience and, basically, gaining a direct understanding of what the issues were and being responsible for the final result. And, as I've already said, signing some Consent Orders and Consent Decrees.

MR. MUDD: Okay and, and then how about your time before then, were you performing any, any hands-on evaluation or modeling at that time, or testing?

MR. SUMMERS: In, before my becoming a director, I was in charge of monitoring programs, field work, I did work in field. I also worked on computer modeling, data analysis and also oversaw staff who were doing that work as well.

MR. MUDD: And what, what years would that have been?

MR. SUMMERS: So, pretty much from the time I joined the Department or the predecessor Office of Programs in 1983, until I would say until the end of my time as Director of Technical and Regulatory Services, which I think was 2001. After 2001, I became Director of Water Management Administration and was not as directly involved in monitoring modeling activities. My focus, as Director of Water, shifted

to regulations, regulations development and enforcement.

MR. MUDD: Okay. You said you were familiar with the Jones Falls sewer shed. Can you describe a little bit about the sewer shed, the boundaries? Let's start with the boundaries. Do you know what the boundaries are?

MR. SUMMERS: Yeah, it, it extends from pretty much, I think, my house is at the western edge of the sewer shed in Towson, right along the York Road corridor. It goes, you know, it's irregularly shaped, of course, but it goes up into the Greenspring area along Falls Road, up to the north, where the subject property is.

It extends over, excuse me, I, I said west, I meant east, I'm on the east side. And the west side goes over to, I guess, pretty close to the Reisterstown area. I, you know, and it, and it, of course, goes down to the City line. So, it pretty much follows the lower two-thirds, I guess, of the Jones Falls watershed.

MR. MUDD: Okay. So, you're familiar with the Jones Falls watershed as well?

MR. SUMMERS: Yes, that goes on up further. I know that, I've reviewed the total maximum daily load report for the Jones Falls again recently. And it goes up into Greenspring Valley, the watershed itself. So, I know that area is mostly served by septic systems and lower part of the basin is served by the sewer system.

MR. MUDD: Okay. You testified that you reviewed a number of the plans that Mr. Grachek, or that were introduced through Mr. Grachek, the SRRR plan was one of them. How many times did you review that?

MR. SUMMERS: Well, I have reviewed that report several times since meeting with Mr. Grachek and, you know, it, it is a very extensive report. But I think I'm pretty familiar with the aspects of it related to this situation we're discussing.

MR. MUDD: Okay. You also mentioned that you reviewed the LPC document. What is that document?

MR. SUMMERS: Yeah, the, there's a long, I forget what the, what the acronym stands for, but basically, it is a document that looks at the performance of the remediation measures that were recommended in the RRR plan.

MR. MUDD: Okay and did, am I right that you said LPC?

MR. SUMMERS: I believe LTC.

MR. MUDD: Okay, okay. And how about the RJN report and the Hazen report and the Ramble reports, how, how often, how many times have you reviewed those?

MR. SUMMERS: I, I've reviewed them several times as, as I reviewed them initially and learned more about the case, spoke with Mr. Grachek, went back and reviewed different pieces of them. So, I've read through them and highlighted different

sections in my looking at those reports.

MR. MUDD: Okay. I think you mentioned that the Ramble report was provided by Ramble. Have you ever had any communications with people from the Ramble company?

MR. SUMMERS: No, I'm, I'm sorry, no, when I said provided by Ramble, I just meant they, they developed the report. I --

MR. MUDD: Okay.

MR. SUMMERS: -- I got it through the County.

MR. MUDD: Okay and did you get it from, all these reports, did you get them, you say you got them from the County. But did you get them from, through somebody else?

MR. SUMMERS: Well, they, they, a lot of this information is online. But Mr. McCann has provided copies of, of reports. So, I, I don't recall exactly where I got each report the first time. But I have been assembling them as I have been reviewing this situation.

MR. MUDD: Okay and you mentioned when talking about the Hazen report and the Hazen newsletters that the figures are difficult to read. What do you mean by that?

MR. SUMMERS: Yeah, well, I'll give you a specific example. One that's of particular interest to me and I think to this case, is the one that shows the high rate of infiltration occurring in the sewer system in the area surrounding the proposed development and upstream of that

development.

And it's the winter high RD-2 areas within the Jones Falls sewer shed, figure three. And it's difficult to, to read because it's just in a brochure. When you blow it up, you can't really see the details. So, I was, I was referring to that. But pretty much any of the other figures in those brochures are difficult to read.

They look very good in the brochure, and I'm very interested in reviewing the results because I think the report will answer a lot of questions about how, about the integrity of the Jones Falls sewer shed and the ability of the system to handle future flows. And that, the RD-2 map I'm referring to is high rainfall dependent inflow and infiltration.

So, it's, it's basically showing an area of the sewer shed that is experiencing very high inflow and infiltration, which means wet weather flows are a problem in that area.

MR. MUDD: Okay and you, you said that there's a huge volume of material that's been produced, you'd agree with that? Mean, meaning reports?

MR. SUMMERS: When you, just saying the reports associated with Jones Falls, they're many, many pages. When I said that, I was referring to all of the Consent Decree documentation. A lot of it is online at Baltimore County, but not all of it, particularly the earlier years. So, that's what I was referring to.

MR. MUDD: Okay. Would you agree with me that there's hundreds of pages of materials when, starting from the Consent Decree forward to the Hazen reports, or the Hazen newsletters?

MR. SUMMERS: Yes, there are many pages.

MR. MUDD: Okay and have you looked at all, every single page of every single document and have you reviewed that?

MR. SUMMERS: Of the specific reports that I referenced, I have read every page. But of all of the Consent Decree documents, no.

MR. MUDD: Okay. So, you talked about the Consent Decree. You were at MDE at the time the Consent Decree was signed?

MR. SUMMERS: Yes.

MR. MUDD: And you said that you did not attend any of the negotiating sessions on that Consent Decree, correct?

MR. SUMMERS: That's correct.

MR. MUDD: And you just attended briefing sessions with the Secretary, correct?

MR. SUMMERS: That's correct. And, and the compliance staff who were directly involved in the negotiation and the Assistant Attorney General. So, at the Department, you know, the negotiating team would go. They would discuss whatever the issues were. They would identify things, they

would bring that back and discuss that with me and the Secretary and we would then determine the Department's position.

MR. MUDD: And, and you said when, now you said we would determine the Department's position, but when you were Secretary you said that you ultimately had the final say, is that right?

MR. SUMMERS: Right, but these Consent Decrees were not being negotiated while I was Secretary.

MR. MUDD: Understood. So, you did not have the final say on anything relative to the Consent Decree in this case?

MR. SUMMERS: Those, those were handled by Secretary Filbrick, but Secretary Filbrick definitely relied on my input on making the decisions.

MR. MUDD: Okay. Your input along with many other people, correct?

MR. SUMMERS: Correct, correct.

MR. MUDD: Okay and the Consent Decrees you did work on, one was in, with the City of Hagerstown. You said that did include sewerage, correct?

MR. SUMMERS: Yes.

MR. MUDD: Okay. How about the Sparrows Point Consent Decree? Did that involve --

MR. SUMMERS: That was not a sewerage issue, that was

a land contamination issue.

MR. MUDD: Okay.

MR. SUMMERS: I, I worked on a, a Consent Order with Centerville, which was sewage related.

MR. MUDD: Okay.

MR. SUMMERS: And also, with the City of Salisbury, which was sewage related. Those were Consent Orders --

MR. MUDD: Okay.

MR. SUMMERS: -- which are similar to Decrees.

MR. MUDD: And when you described your role as Secretary of the MDE, just in general, you said you oversaw a lot of things and that you ultimately had to rely on the experts to do their various jobs in the various arms of that Department, do you agree with that?

MR. SUMMERS: Definitely. The Department has over a thousand employees, very highly qualified, and any leader in a Department like that has to have good staff and be able to depend upon them.

MR. MUDD: Does that, and that even includes in working on Consent Decrees?

MR. SUMMERS: Definitely.

MR. MUDD: Okay, all right. Judge Murphy, I, I'm going to object to this witness being accepted as an expert. I think that, while he certainly has a lot of experience in government, I think that these are very broad issues that Mr.

McCann's offering him in, environmental engineering, water quality standards, regulatory enforcement and compliance with environmental laws and Consent Decrees, including that they may relate to sewer systems.

And this witness, the very last thing he said, is that he has relied on the experts in dealing with Consent Decrees. And I think that his, his testimony also demonstrates that he hasn't had any hands-on experience in performing an assessment or monitoring streams and things like that since before 2001. That's over twenty years ago.

So, I think that calling this witness as an expert on, on a Consent Decree that was, you know, is currently being implemented and enforced, is, is a far cry from, from whatever expertise he may have had, or whatever expertise he does have. But I don't think he qualifies as an expert to speak about water quality, quality and sewerage issues in this case.

MR. ZIMMERMAN: Judge, would you like, may I say something, Judge, briefly?

ALJ: Okay, Mr. Zimmerman.

MR. ZIMMERMAN: Yeah, I'm just going to be really brief. I think this is one of the best qualified experts in the conversation for being one of the best qualified experts that we've ever had in a land use case. So, I, I think it's a, an easy decision to allow him to testify and the rest of it has to do with the weight of what he says, and they'll have an

opportunity to cross examine. That's all I would like to say. Thank you.

ALJ: Okay, understood. So, I don't think the fact that the, Mr. Summers has not been qualified as an expert by a Court, you know, disqualifies him from being an expert. An expert is someone under the Maryland Rules who by education, experience, training can, can offer an opinion or assist me with issues in a case.

And, and so, his experience that's been outlined today, and also in his resume, which has been accepted as exhibit number ninety-eight, I believe qualifies him in the areas that Mr. McCann has offered him and, which is environmental engineering, water quality and water quality standards, and regulatory enforcement, enforcement laws, Consent Decrees as, as they relate to sewer systems is the three areas that he indicated.

So, there's certainly a first time for everyone to be qualified as an expert. And so, you know, the, so I think that he, he does qualify and certainly he can be cross examined on those areas that Mr. Mudd has highlighted. So, all right. Go ahead. He's accepted, Mr. McCann.

MR. MCCANN: Okay. Thank you, Judge. Mr. Summers, I think you've already indicated you were here for Mr. Grachek's testimony, correct?

MR. SUMMERS: Yes.

MR. MCCANN: And do you recall his testimony relating to the issue of Lake Roland and the E.coli levels in Lake Roland, do you recall that testimony?

MR. SUMMERS: Yes.

MR. MCCANN: Okay. Do you have an opinion regarding the extent to which the E.coli levels in Lake Roland may be, or maybe not, due to failures in the public sewer system?

MR. SUMMERS: Well, the TMDL document developed by the Department of the Environment looked at bacteria levels in Lake Roland and the tributaries feeding it. And they did use some methodology called bacterial source tracking, which is able to identify the source of a particular bacteria.

And using that bacterial source tracking methodology, they were able to identify the rough percentages of the bacterial load coming from different sources, domestic animals, human sources and wildlife, being several key areas. And based on that, they concluded that the human source was the dominant source of bacterial load. Not the only source, but the dominant source.

Bacteria is notoriously difficult to measure. It's highly variable due to variations in stream flow, the relative contribution of rainfall runoff and sewage sources, runoff from places like the dog park at the lake.

But it, it is largely, or often, associated with high runoff events and to that end, in, in making assessments of, of

the safety of water contact, particularly in beaches, the Department of the Environment and Health Departments recommend avoiding water contact within forty-eight hours after a rainfall event.

So, you get these high spikes of bacteria during rainfall events from, due to all those sources I mentioned. In the Jones Falls, the TMDL says that those sources are dominated by sewage.

So, again, it, it's, it's difficult to nail it down but there is definitely a bacterial contamination issue in the Jones Falls and the Department of Environment, in the TMDL mediation plan, focuses on the, meeting the requirements of the sewer Consent Decree and eliminating overflows as a major component of the restoration effort.

MR. MCCANN: Okay. Were you finished or did I cut you off? I want --

MR. SUMMERS: I was just going to say, since I have been working with Blue Water Baltimore, I have become familiar with their bacterial monitoring program.

MR. MCCANN: Um hm.

MR. SUMMERS: Which started back in about 2014 and they have been monitoring bacteria in the Jones Falls since and up to the present day. And you can see this high variability in their data. Much of the time, the system meets bacterial standards but there are definite spikes in contamination and a

lot of that is, as I've said, has to do with rainfall events. But it's not all rainfall driven. There can be situations, in particular a sewer spill, that can cause spikes as well.

MR. MCCANN: Okay. Let me follow-up on a couple points you just made. First, I'm going to show you, you mentioned the TMDL a couple times now. Let me show you this document, which is Protestant's Exhibit 96. Do you see that?

MR. SUMMERS: Yes.

MR. MCCANN: It is a long document, as I think the Judge indicated. What is this document?

MR. SUMMERS: This, this is an analysis of the sources of fecal bacterial contamination in the Non-Tidal Jones Falls Basin. And it looks at the available monitoring data, the information on the various possible sources. I've mentioned the bacterial source tracking analysis that was done, and it sets a limit on bacterial load into the Jones Falls and establishes recommendations for how to achieve those lengths.

MR. MCCANN: Okay. Let me refer you to page nineteen.

MR. ZIMMERMAN: Excuse me, can we get a date for the report?

MR. MCCANN: It is two thousand and, September 2006. Bear with me one second. Page nineteen, as I scroll down. This section in particular, 2.4 entitled source assessment. Do you see that?

MR. SUMMERS: Yes.

MR. MCCANN: Okay. So, my first question, does this report, this report, section in particular, does it provide us with any information regarding the number of households in the Jones Falls that are on public sewer rather than septic? Does it address that issue?

MR. SUMMERS: There, there is a discussion of that in the report. I don't know exactly what section it's in. But you see table 2.4.1.

MR. MCCANN: Yep.

MR. SUMMERS: Shows the septic systems and households per subwatershed. UQQ0005 is the upper part of the, above the lake, JON0184 discharges to the lake, and JON0082 is the outfall of the lake. SRU0005, I'd have to refer back to the map in the report, but I don't think that is actually part of the drainage area to the lake.

MR. MCCANN: First of all, what's a subwatershed station? What is that?

MR. SUMMERS: Those are monitoring sites on river that represent different subportions of the Jones Falls. And there's a map in the report --

MR. MCCANN: Yeah.

MR. SUMMERS: -- that shows where those are. There it is.

MR. MCCANN: Is this the map? This is on page

thirteen, figure 2., 2.1. Is this the map you were referring to?

MR. SUMMERS: Yes, and you see UQQ and JON0184 are at the upper end of the lake, where two of the tributaries come into the lake. JON is, 184, is the Jones Falls. And JON0082 is the outfall of the lake.

MR. MCCANN: Okay. So, the question, again, does, does this provide, does this report provide us any information about the number of households? I, I think we looked at some figures, let me get back down to the chart. Did, did you look at this data and figure out how many households --

MR. SUMMERS: Yeah, the --

MR. MUDD: Objection. Objection.

MR. SUMMERS: -- first column --

MR. MUDD: Objection. I'm sorry, I'm objecting, the question has been asked, but I just would ask that Mr. McCann, again, not lead the witness.

ALJ: Yeah, try, try not to, Mr. McCann, lead the witness. So the question, sir, is, you know, did you come to the conclusion as to the number of households that have septic systems?

MR. SUMMERS: Yes. Actually, I interpreted the results of this report that is shown here on this table. The first column of numbers is the total number of households per subwatershed. And the second column, is the number of

households that have septic systems.

And if you total those up, you can determine that about fourteen, or sixteen percent, of the households are on septic systems and eighty-four percent are on the sewer system. And there's a map on another page of this report that illustrates the sewer system and the septic systems.

MR. MCCANN: Okay. Is it this map here?

MR. SUMMERS: Yeah.

MR. MCCANN: This would be --

MR. SUMMERS: You can see --

MR. MCCANN: Yeah, go ahead. Page twenty-one, go ahead.

MR. SUMMERS: Yeah, the, the yellow shaded area is served by sewer and then each of those circles represents a septic system in other parts of the basin. And looking at just the area upstream of Lake Roland, eighty-four percent of the households are in that orange shaded area, which is obviously much more densely developed, and sixteen percent are in septic system areas.

MR. MCCANN: Okay. What, how do you account, if at all, for the fact that this report is dated 2006? What, yeah.

MR. SUMMERS: Well, it is, it is an old report. The Department of the Environment has not updated it because of, basically, capacity issues at the Department to deal with all of the new water quality impairments that are being discovered

across the state and developing TMDLs for those.

So, they have not gone back and redone this report. I think it, it's, its value in this case, just as giving a general picture, that the fact that the dominant number of households in the sewer shed, excuse me, in the watershed, are in the sewer system, as opposed to septic systems. Roughly, eighty-four percent of the sewage is coming through the sewage system, and sixteen percent is going, is being treated in the soil and going into the ground water.

MR. MCCANN: So, just, just to be clear, has, has MDE issued a TMD report subsequent to September 2006?

MR. SUMMERS: No, this is, this is the, the only, well, for the Jones Falls bacteria, this is the only report. They've issued many, many TMDL documents across the state.

MR. MCCANN: Okay.

MR. SUMMERS: But not, they haven't reissued this one.

MR. MCCANN: The, and, and again, does the age of the report effect your opinion in this regard?

MR. SUMMERS: Well, I, I think it would be much, it would be helpful to have current information on the distribution. I'm sure that the County or MDE could provide that. But having a lot of familiarity with this area, actually living in this area, and seeing the extent of growth and development in the sewer shed, Towson University has grown

tremendously, I would not expect the more current data to be a whole lot different than this in terms of percentages. That is, the bulk of the sewage is coming from homes on the sewer system, dominated by that, eighty-four percent.

MR. MCCANN: Okay. Next, what, if any, information, I think you've mentioned this already, but if you could tell us where in the report it is, what, if any, information is in this report regarding the potential source of bacteria?

MR. SUMMERS: I don't recall page numbers or anything, but there are tables in the report that show the results of the bacterial source tracking analysis and I think if you scroll down --

MR. MCCANN: Well, here's, here's a section --

MR. SUMMERS: -- there's a section that explains the bacterial source tracking process. And then, I think there are tables that, later that show the results. There it is. Scroll down a little more, 2.4.4. And you see the sources that they looked at, domestic animals, human, livestock, wildlife. So, human, it varies depending on flow, which basin you're in. But you see, if you look at the three sites I mentioned, which comprise the Jones Falls, excuse me, the Lake Roland drainage, JON82, human sewage ranges between fifty-six and forty-four percent, JON184, forty-six and forty-four percent and UQQ, between forty and sixty-seven percent. So, --

MR. MCCANN: Okay.

MR. SUMMERS: -- it's, I would characterize human sources being a dominant source. You can see domestic animals and livestock and wildlife are the other sources, the human sources are the largest. And would characterize as being the dominant source.

MR. MCCANN: Okay.

MR. SUMMERS: And given that the sewage systems serve eighty-four percent of the household, septic system fourteen percent, you know, I think it's fair to say that human sewage from the sewage system is, is a major source to this system. And MDE acknowledges that in the conclusion to the report, in the recommendation of using the Consent Decree work as a major part of the effort to meet standards. And that's in the conclusion section.

MR. MCCANN: I'll go to that in a second. I just had a couple other questions about this chart, 2.4.4 is the chart you're referring to, right? I mean, the table, rather?

MR. SUMMERS: Yeah.

MR. MCCANN: Okay and then there's a table right below that, table 2.4.5, which looks similar anyway. What, what's, what are these, what's the difference between these charts?

MR. SUMMERS: Well, I think this one is for the seasonal period. Basically, the water contact period made in September --

MR. MCCANN: Okay.

MR. SUMMERS: -- I think was the whole year. But it's the same, yeah, average annual. So, when the seasonal period just focuses in on when people would most likely be coming in contact with the water.

MR. MCCANN: Okay.

MR. SUMMERS: And you see the percentages vary a little bit. It looks like they're a little bit higher, the human contribution is a little bit higher during the seasonal period, May to September. And that's, it's probably due to more storm event activity in those time periods.

MR. MCCANN: The, did you review the, the water sampling, the County's water sampling results in Lake Roland that Mr. Grachek spoke about during this testimony?

MR. SUMMERS: Yes, I did look at those.

MR. MCCANN: Okay and I can certainly pull this up, tell me if you, if you, if you need me to, but how would you characterize those results?

MR. SUMMERS: Well, I think they were highly variables, I discussed before.

MR. MCCANN: Yeah.

MR. SUMMERS: With spikes in the data, which may or may not be associated with runoff events, but largely driven by rainfall runoff. You would see periodic spikes. And the rainfall would not only be carrying things from domestic

animals, wildlife, livestock, but also sewage spills and you, you see on this table of source tracking, they looked at both high flows and low flows and, to get, to get a picture of how much the rainfall affected.

So, you look at UQQ site and you see sixty-six percent human in low flow and forty-five percent at high flow. And then, coming down, high flow fifty-three percent at 184, forty-five percent at low flow and then 0082, sixty-six and fifty-two. And I think that clearly high flow events have an impact, but there is also definitely a sewage, or human signal, sewage being both septic and sewer systems (inaudible).

MR. MCCANN: And what are high flow and low flow, just for the record?

MR. SUMMERS: High, high flow would be when you've had a rain event and there is runoff that is causing the river levels to be higher. If you, if you look at the, the County's webpage that reports their data, they also look at flow conditions --

MR. MCCANN: Um hm.

MR. SUMMERS: -- in comparison to their sampling.

MR. MCCANN: Okay. So, the, the variability that you described in the County's sampling results, in, in your experience, is that, is that unusual?

MR. SUMMERS: No, bacteria monitoring results are highly variable, that's why the water quality standards are

based on geometric mean values and require multiple samples to get a handle on what bacteria levels are. And in the scientific community, they're known to be highly variable, difficult to track and predict, so it, it, this all gives you kind of a general picture of, of the sources and the issues and, and this is why bacteria is very difficult to control.

MR. MCCANN: Okay. You mentioned the conclusion. Let me get to that section of this report. What section were you referring to --

MR. SUMMERS: (inaudible) implementation --

MR. MCCANN: Yeah.

MR. SUMMERS: You see that second paragraph --

MR. MCCANN: Yeah.

MR. SUMMERS: -- the most significant planned implementation. And this is speaking of both the City and the County, because the whole watershed encompasses both. But the elimination of sanitary sewer overflows in Baltimore City and Baltimore County are the most, and combined sewer in Baltimore City, the most significant planned implementation. It talks about the Consent Decree and what's required.

MR. MCCANN: Well, without reading this entire paragraph, what is, what is, what do the words most significant planned implementation measures, what is that referring to? What is --

MR. SUMMERS: The, the, if you scroll back up, the

title of this section is assurance of implementation. The, one of the requirements the Clean Water Act is that the State has to provide reasonable assurance to the Environmental Protection Agency that water quality standards will be achieved by implementation of this TMDL.

MR. MCCANN: Okay.

MR. SUMMERS: And so, the Department is telling EPA in this section that the most significant planned implementation measures involve elimination of sanitary sewer overflows and leakage into the water, watershed.

MR. MCCANN: Okay. Your Honor, I would move this Exhibit 96 into evidence.

ALJ: Any objection?

MR. MUDD: No objection.

MR. ZIMMERMAN: No objection.

ALJ: Thank you.

MR. MCCANN: Thank you. Before we move on, well, actually, let's go ahead and move on. You, you indicated, I, I think you already said, you, you, you reviewed the Consent Decree, which is Exhibit 65 in this case?

MR. SUMMERS: Yes.

MR. MCCANN: And I'll ask you the same questions I asked Mr. Grachek. In, in your opinion, and based on your experience, does, does the Consent Decree require the County --

MR. MUDD: Objection.

MR. MCCANN: -- to evaluate --

MR. MUDD: Objection.

ALJ: Well, he hasn't finished his question yet.

MR. MUDD: Well, I'm, I'm afraid he's going to give him the answer before he asks the question.

ALJ: Well, the Consent Decree is like, it, it's pretty thick. I mean, he has to narrow it down, I would think some, right? So, overruled. Go ahead, Mr. McCann.

MR. MCCANN: Mr. Summers, does the Consent Decree require or not the County to evaluate the system, the sewer system, for future model predicted capacity issues?

MR. SUMMERS: Yeah, the Consent Decree has a whole sequence of activities that have to occur, starting with the evaluation of the sewer system, monitoring and modeling of that sewer system under a range of flow conditions, both dry and wet weather.

They have to identify what the problems are, identify what measures are needed to address those problems and account for in, in modeling, basically, project how well the identified measures can perform in terms of dealing with the sanitary sewer overflow situation.

MR. MCCANN: And in your experience, is the projections, or the, or the future capacity, using a model, is that consistent with industry standards?

MR. SUMMERS: Definitely the Consent Decree requires

looking at future conditions. It includes provisions that require them to use 2025 population projections. They also, it also is required to look at a range of different size storm events. So, definitely needs to deal with future conditions because the overall objective of the Consent Decree is to eliminate sanitary sewer overflows.

MR. MCCANN: Okay and that, the, is that consistent with industry standards, in your experience? That is, looking at future projections of capacity?

MR. SUMMERS: Yeah, every, every sanitary sewer overflow Consent Decree that I'm familiar with and, and I have participated in national meetings on this issue, they all must deal with the wet weather flows and future conditions. And it is definitely an EPA standard way of dealing with this, this problem. And it's necessary to meet the requirements of the Clean Water Act. So, it would be standard practice.

MR. MCCANN: Okay. The SRR plan, which you mentioned a couple times, which is, and I'll show it to you, just so I'm referring to a document you haven't identified yet. Bear with me one second. Okay. This, so this is, Protestants already introduced Exhibit 67. Let me show it to you. Is this document, see it on the screen, Mr. Summers?

MR. SUMMERS: Yes.

MR. MCCANN: Is this the document that you were referring to as the SRRR plan?

MR. SUMMERS: Yes.

MR. MCCANN: Okay and then Exhibit 68, which I, is on the screen now, do you see that?

MR. SUMMERS: Yeah, that was the LTC report that I referenced previously.

MR. MCCANN: Okay and do you know whether or not this Exhibit 68, the LTC report, is a part of Exhibit 67?

MR. SUMMERS: Yeah, I, I believe it's actually an appendix to --

MR. MCCANN: Okay.

MR. SUMMERS: -- the overall plan.

MR. MCCANN: Okay and you, I think you've indicated a couple times, have you reviewed this SRR plan?

MR. SUMMERS: Yes.

MR. MCCANN: And are familiar with it?

MR. SUMMERS: Yes.

MR. MCCANN: Does the SRR plan require Baltimore County to identify existing problems in the sewer system?

MR. MUDD: Objection. Same objection.

ALJ: Overruled. Go ahead.

MR. SUMMERS: The Consent Decree requires them to identify it. The SRRR plan is to implement that part of the Consent Decree to identify existing problems in the system and future model predicted capacity problems in the system.

MR. MCCANN: Okay and does the Consent Decree require

Baltimore County to undertake the model predicted corrective actions identified in the SRR plan, including the LTC report?

MR. MUDD: Objection. Judge Murphy, we're just, we're leading the witness again through what is and is not required.

ALJ: Yeah, understood. The, the problem is, these documents are super long. I mean, unless we, you know, he's going to read every page, it's, we need to have some focus for the questions. So, I'll overrule it.

MR. MCCANN: Go ahead, Mr. Summers.

MR. SUMMERS: So, the Consent Decree requires the, as I said, the evaluation of the system, it requires a development of a plan and it also requires the identified measures in the plan, both monitoring and modeling, resulting from both monitoring and modeling, that those be implemented in order to eliminate sanitary sewer overflows, which is the overall objective of the Consent Decree.

MR. MCCANN: Okay. You've mentioned as well the RJN performance assessment. Have you reviewed and are you familiar with that report?

MR. SUMMERS: Yes.

MR. MCCANN: Okay. I'm going to show you what's been marked and introduced as Protestant's Exhibit 78. Do you see that, Mr. Summers?

MR. SUMMERS: Yep.

MR. MCCANN: In your, in your opinion, Mr. Summers, based on your experience, does this report --

MR. MUDD: Objection.

ALJ: Is, is this the, this is not the right document, this is the (inaudible) letter.

MR. MCCANN: This is the --

ALJ: Oh, there you go.

MR. MCCANN: Yeah, just a cover page is part of the exhibit, Your Honor.

ALJ: Okay. Objection, Mr. Mudd, to this?

MR. MUDD: He, he, he was going to, he, he said in your opinion. He, if he's going to ask him an opinion question, he should ask him what his opinion is.

ALJ: Yeah, understood. And I, and I do agree with that. If you're asking for his opinion, could you please, you know, say do you have an opinion.

MR. MCCANN: Yeah.

ALJ: Don't lead him through the opinion.

MR. MCCANN: What, okay, thank you. What, if any, opinion do you have, Mr. Summers, regarding whether or not this RJN performance assessment supports or does not support whether the County has undertaken all of the corrective actions to address model predicted capacity problems?

MR. SUMMERS: So, in my opinion, this report shows both monitored and modeled projections of the performance of

this system and the measures that they have taken. In looking at Baltimore County's selective design storm of ten-year, six-hour storm, it is apparent that this report clearly shows, and in the map three, at the end of the report, that there is a section of the sewer shed, BC-22, down stream from the proposed development that is showing modeled overflows.

And so, this report is showing that the RJN assessment, while it does talk about the successful implementation of I&I work in the eastern part of the basin, does not show successful implementation in the portion of the basin where the sewage from the proposed development needs to flow through the system.

And specifically, if you look at what is recommended in the RRR assessment, there is a section of sewer pipe in BC-22 that needs to be upgraded to accommodate these flows. And if you look at the performance assessment report, RJN report, it shows based on updated monitoring and modeling that there are still problems in that section that have not been addressed. So, if you, if you, I believe there's a map three in this report or, or attachment to this report that shows that.

MR. MCCANN: Show you this, this is also part of the same exhibit, let me back out and back in. Is this the, the map that you're referring to?

MR. SUMMERS: Yeah, and you can see right in the

center, the screen there, those red circles are model predicted overflow under the two-year six-hour storm, which is smaller than the County's, the County's selected storm of ten years six-hour storm.

And the, the recommended improvements to the sewer system are cumulative. Everything that's recommended for the two-year six-hour storm, must be done in order to address the ten-year six-hour storm, which is clearly explained in the SRRR report.

MR. MCCANN: Okay and I think you mentioned the red markings. Could you just direct us, I think, I think the Judge is probably already familiar with what --

MR. SUMMERS: If you look at the center of the screen there, BC-22, --

MR. MCCANN: Right here?

MR. SUMMERS: -- it's surrounded by red circles, those are the, the proposed development is up in the unsewered area, BC-05, and the sewage comes down through those pipes where the red circles are. And then it goes on down to the Jones Falls through BC-18 and BC-31. You see the red --

MR. MCCANN: Yeah.

MR. SUMMERS: -- line arrows, that's the sewage drainage there. And you see an orange circle there right above BC-18, which is a ten-year six-hour storm overflow as well. So, based on the performance assessment, there are definitely

modeled overflows in this area.

MR. MCCANN: You mentioned, in describing the RJN performance assessment, first, monitored and then secondly, modeled. What, desc, can you explain what you meant by that?

MR. SUMMERS: Well, there's a, a table in the report that lists the different restoration measures that are needed.

MR. MCCANN: Um hm.

MR. SUMMERS: And it shows in, in some areas where there were actual activities, there was monitoring done to verify and that would be up in the upper, I guess, northeast corner of the sewer shed, if you scroll up a little bit, that BC-03, 02, 09, 04 area, was the subject of a major I&I upgrade that the County did. And, and so, there were measurements associated with that. The performance assessment used models for other modeling parts, including the area I'm showing, BC-22.

MR. MCCANN: Okay, okay. Your Honor, would it be okay to take a quick bathroom break. I don't have that much more but I would like to do that under unpressured conditions, so to speak.

ALJ: Absolutely. Yeah, why --

MR. MCCANN: Five, five minutes would be great.

ALJ: What'd you say?

MR. MCCANN: Five minutes would be great.

ALJ: Yeah, sure. Why don't we just take, why don't

we just take ten minutes so everyone can just take a breather and we'll come back because it's 12:19, so we'll just take ten minutes, okay?

MR. MCCANN: Thank you.

ALJ: All right. I'll pause the record.

(PAUSE)

ALJ: We're back on the record after a break. Mr. McCann, you were still in the middle of your witness.

MR. MCCANN: Yeah, thank you. Mr. Summers, are you there?

MR. SUMMERS: Yes.

MR. MCCANN: Okay, great. Let me show you real quick map three again, then I'll move on. How would you, I think you've already testified that you reviewed the, the SRR plan by RK&K, correct?

MR. SUMMERS: Yes.

MR. MCCANN: How, how would you compare the, the modeled capacity issues identified in this map three of the RJN performance assessment with the, the modeled capacity issues in the RK&K reporting?

MR. SUMMERS: Yeah, RJN updated the monitoring information as part of their performance assessment and reran the model. And if you look at the updated model results compared to the modeled results in the initial report, SRRR plan, and the LTC appendix to that, you did not see as many of

these overflows as you see in the updated report in this section of the sewer system. So, the performance assessment that RJN did actually shows worse conditions in this section of the system than the original modeling work.

MR. MCCANN: Okay. I'm going to go on to the Hazen newsletter, which is Exhibit 85. Do you see that, Mr. Summers?

MR. SUMMERS: Yes.

MR. MCCANN: Is this the pamphlet that you were referring to earlier?

MR. SUMMERS: Yes.

MR. MCCANN: Okay. What, if any, opinion do you have regarding this Hazen work product relative to the Consent Decree?

MR. SUMMERS: It, it is a very comprehensive assessment, which if you scroll down a little bit further, it actually carries the analyst out, not just to 2025 as the Consent Decree required, but it goes beyond that, twenty year and fifty-year planning horizon. So, this is an extension of the assessment that we just talked about, the RJN.

Of course, we don't have details, we just have what's in these brochures. But the thing that struck me, which I've already pointed to, in this case if you scroll down a little bit, you see this figure three?

MR. MCCANN: Yeah.

MR. SUMMERS: Which shows highlighted in red the area

upstream and surrounding the portion of the sewer shed that the proposed development would discharge to. And it's labeled Winter High RDII areas. If you scroll down a little further and over, I think, to the left, it explains what that is. There it is.

And this is a rainfall monitoring data analyst to assess current high rainfall dependent inflow and infiltration. And this is a very prominent red area of high I&I in the vicinity of the, in the vicinity of the proposed development. It is also upstream of the area that we looked at just previously in the RJN report.

MR. MCCANN: Um hm.

MR. SUMMERS: Where it showed overflows in the, in the sewer lines downstream of, of that area. So, this is of interest and concern to me to see the full report from Hazen and Sawyer, to see what's going on here. But that high I&I based on monitoring information would suggest that those overflows that are shown in the, the previous RJN report are a risk for this area for sure.

MR. MCCANN: Okay. A couple things. You referred us to the bottom of this page. I just want to make sure we're at the right paragraph. Is it this paragraph here, completed a flow level, this right here?

MR. SUMMERS: Yeah, that's, that's all the information we have about the specifics of this analysis, but

based on that, you know, and the, and the red area in that figure, I'm particularly interested in more detail. On this, I have looked at the most recent version of this. It's posted online, which is the winter 2022.

MR. MCCANN: Um hm.

MR. SUMMERS: And the same information is there, I'm not sure which one we're looking at here.

MR. MCCANN: This one says fall updates.

MR. SUMMERS: Fall, so this is quarter three. Quarter four has the same information.

MR. MCCANN: So, just to backup, just to explain, I think I may have said RD2, it's RDII, is that right?

MR. SUMMERS: Yeah, and it stands for rainfall dependent inflow and infiltration, RDII.

MR. MCCANN: And what is that in, in sort of laymen's terms? What, what does that mean? What is RDII?

MR. SUMMERS: That means in situations where you have high rainfall occurring, you see a surge in inflow and infiltration into the sewer system. Meaning, the sewage becomes augmented by inflow infiltration of rainwater or stream water, depending on the particular situation. But this is a, a new analysis that Hazen has done that suggests there may be an issue in this area.

MR. MCCANN: Okay and this area, just to be clear, going up to figure three on this Exhibit 85, you referred to

the red areas just, I know the Judge knows by now, but just tell us where in this --

MR. SUMMERS: Yeah, that, that, that's kind of the northwest point of the drainage, of the sewer service area and there's a, a white space in the red area at the lower --

MR. MCCANN: Right here, right here?

MR. SUMMERS: Yeah, that is, I believe, where the proposed development is located.

MR. MCCANN: Okay, okay. I think, in connection with the Consent Decree, I think you mentioned that, well, first off, let me just, I guess, restart. Do you have, do you have an opinion regarding whether the Consent Decree requires the County to evaluate capacity based on wet weather or dry weather flow?

MR. SUMMERS: It, it requires both wet weather and dry weather evaluation. The overall objective of the Consent Decree is to eliminate sanitary sewer overflows, particularly in the areas with high I&I. Wet weather is going to be a driving factor for overflows.

And the Consent Decree has a series of things that need to be done and the performance assessment is at the end of that series, to make sure that it works. And based on the results of the performance assessment, there may or may not need to be additional work done.

MR. MCCANN: Is there, well, in, in your experience,

is it consistent with industry standards to determine capacity based on wet weather?

MR. SUMMERS: Absolutely.

MR. MCCANN: Okay. Let me show you, this is Exhibit 100. You see that document, Mr. Summers?

MR. SUMMERS: Yeah, MDE wastewater design guidelines.

MR. MCCANN: Okay and just tell us what this is and what it tells us.

MR. SUMMERS: Well, this, this, this document, basically, goes hand in hand with something called the recommended standards for wastewater facilities, or the ten state standards. I believe Mr. Grachek referred to this in his testimony. But this document from MDE provides some additional information to supplement the requirements that are described in the ten state standards. So, you can see that in these bullets here --

MR. MCCANN: Yeah.

MR. SUMMERS: -- in the addenda, and in the event of any conflict between the two, MDE is saying these guidelines pertain.

MR. MCCANN: How, how, if at all, do these guidelines, design guidelines, relate to this issue of wet weather versus dry weather?

MR. SUMMERS: Well, if you scroll down in the guidelines, you'll see there's a section that, keep going down,

page three, I think it is. Peaking factor.

MR. MCCANN: Yeah.

MR. SUMMERS: This is a method of making sure that you can have a, a reasonable estimate of the maximum peaking flow for any proposed design. And you, if you scroll down a little further, basically, the peaking factor you see, go back up a little.

MR. MCCANN: Sorry, yeah.

MR. SUMMERS: Peak flow and, and in order to properly design, you need to look at hourly, daily and monthly flows. But the peaking factor gives you an estimate of how high flows would go in the event of a rain event, and you can see anywhere, just take the first row up to quarter million gallons a day, four times the average flow for an hourly peaking factor three times daily and two times for monthly.

And these peaking flows, peak flows are used in providing hydrologic information and capacity needed in the pipes. So, (inaudible) --

MR. MCCANN: So, is this for the design of the pipes or for the assessment of them, what is this for?

MR. SUMMERS: This is, this is design and sizing of the pipes. So you need to take peaking factors into account.

MR. MCCANN: Okay and what just, at least for the record, what is peak flow and what is peaking factor, what --

MR. SUMMERS: Well, --

MR. MUDD: Objection.

MR. MCCANN: What is peak flow, what is peak flow?

ALJ: Hold on. Go ahead, Mr. Mudd.

MR. MUDD: You, you may say this is more for cross examination, but this expert has admitted he's not an expert in sewer design. And we're putting up a document related to wastewater sewer design. I don't necessarily object to the introduction of the document, but to have this witness go through and to prevent, excuse me, present testimony as though he's an expert in these issues, I think, we're heading down a dangerous path here.

MR. MCCANN: Yeah, well, I'm not asking him about, about the design of sewer systems. I'm, I'm, I'm, that's not what I'm asking him and that's obviously not where he's headed with this. Maybe I should ask, number one, I should ask him what is peak flow. I think that's something he's qualified to answer.

ALJ: Well, I think that's where the objection was raised. But I'll overrule it because I'm, I'm not sure where it's going so I'll, I'll let you describe that. Go ahead, Mr. Summers.

MR. SUMMERS: Just peak flow is the highest flow that you might expect in that pipe, and it's intended to account for I&I, as that paragraph implies.

MR. MCCANN: Is, put simply, is peak flow wet

conditions or dry conditions?

MR. SUMMERS: Wet. Peak flow is going --

MR. MUDD: (inaudible).

MR. SUMMERS: -- (inaudible) second sentence.

ALJ: Hold on. (inaudible) and then you objected.

MR. MUDD: (inaudible) I was too slow. I, I have a continuing objection to the line of questioning, which I think is clearly related to design and capacity of sewerage systems, with which this witness is not an expert.

ALJ: Yeah, and I, and I hear you. But the document, of course, is designed guidelines for wastewater facilities. So, I, I'm trying to go, you know, obviously, follow where we're going here as well. But go ahead, I'll overrule it. Go ahead, sir.

MR. SUMMERS: Just, if you read the second sentence, the above average, the maximum peak flows are highly impacted by inflow, infiltration and wet weather event.

MR. MCCANN: Okay. Well, I'll move on, but why are we looking at this, Mr., what relevance, if any, does this have to your opinions, this document, the design guidelines?

MR. SUMMERS: Well, the wet, the wet weather is a critical part of the requirement in the Consent Decree, to consider wet weather conditions and peak flows within the sewer system.

MR. MCCANN: Okay, all right. Your Honor, I would

move this exhibit, which is one hundred, into evidence.

ALJ: And I don't think Mr. Mudd had any objection, correct, Mr. Mudd?

MR. MUDD: Well, I, I mean, I actually, I guess I'm going to object for the record. I understand you may let it in because it's a government document. But I think that this is an attempt to get in a document through a witness that really has no expertise in this issue and it's something that perhaps should have been brought in through a different expert who is a sewer design expert.

ALJ: Okay. You had indicated previously that you didn't have any problem with the document, so that's why I mentioned that --

MR. MUDD: I, I know, I'm sorry, I understand.

ALJ: That's all right. Got it. So, yeah, but I'm going to, I'm going to allow it to come in. So, it's going to be exhibit number one hundred. So, --

MR. MUDD: Thank you.

MR. MCCANN: And then, Exhibit 101, do you see that, Mr. Summers?

MR. SUMMERS: Yes.

MR. MCCANN: Tell us what this is and how, if at all, it relates to your opinions?

MR. SUMMERS: These are the ten states standards that Mr. Grachek referred to in his testimony and the only aspect of

this that I would point out is that it also requires looking at peak flow in order to deal with capacity, in order to properly assure that your sewer system can handle the, the wet weather flow capacity needs.

MR. MCCANN: Okay, all right. Your Honor, I would move Exhibit 101 into evidence.

ALJ: Mr. Mudd? You must be muted. Mr. Mudd is frozen.

MR. MUDD: Sorry, I, I was talking, I was (inaudible).

ALJ: You were frozen, your screen was frozen, you were frozen like this.

MR. MUDD: Can you hear me?

ALJ: I can hear you now.

MR. MUDD: Okay. I was making a really good argument too --

ALJ: Oh, well, we missed it.

MR. MUDD: No, I, I'm, I said I, I do object to this and I, I want to renew my objection to Exhibit 100. This is a hundred- and seventy-five-page document that the witness, we haven't even made it past the cover page. And the witness mentioned one aspect of this document and, and the same thing on Exhibit 100.

We were on, on one page of that and I'm, my concern is that it's an attempt to get these documents in with hundreds

of pages of information that Mr. McCann may later rely on in his memo for something he didn't even examine a witness on. And we're allowing them in just because they're government documents. And this one I'm not even sure the foundation has been laid from where it came from.

ALJ: Yeah, could, could we get some foundation, Mr. McCann, as to --

MR. MCCANN: Yeah, (inaudible) I'm sorry. Where does, --

ALJ: -- 101?

MR. MCCANN: -- where does this document come from, Exhibit 101, the recommended standards for wastewater facilities? What is its source?

MR. SUMMERS: Well, it is a document that is heavily referred to by states, including Maryland, in reviewing the design and approval of plans and specifications for wastewater collection and treatment facilities. And it is something that Mr. Grachek referenced in his testimony, and it's also attached to the Maryland Design Standards, which we just looked at.

MR. MCCANN: Yeah, so Exhibit 100 is the, the bullet here, the ten state standards, that reference in Exhibit 100, is that to this Exhibit 101?

MR. SUMMERS: Yes.

MR. MCCANN: And you said, is Exhibit 101 attached to 100, to the design manual?

MR. SUMMERS: No, it, it's referenced in 100.

MR. MCCANN: Okay. Yeah, in terms of, Your Honor, if I may, in terms of the, putting the entire document in, believe me, I had no interest in printing out three hundred pages from my printer and delivering you two copies of this stuff. The only reason I did it is because every time I tried to pull out excerpts I get complaints about not including an entire document, so. It, whether it's full or complete, the issue is, does it come in?

It doesn't matter whether I'll reference it in a memo or not, or whether, you know, the point is, is it admissible, is it an admissible document. And there clearly, this is a public record from MDE and, and, and is, is admissible.

MR. MUDD: May I be heard on that part about --

ALJ: Okay, Mr. Mudd --

MR. MUDD: Again, this, this expert is by admission not a design expert and he is saying these were documents that supposedly were referenced by another witness. And this witness himself I don't think has any familiarity with these documents enough to say whether these things, where they came from or whether they actually are the documents that, to which Mr. Grachek is referring.

And I think it's dangerous to allow something in that, that may very well be, I still don't know whether this document is a, quote unquote, government document just because

it's referenced, excuse me, Exhibit 101, just because it's referenced in Exhibit 100. So, I, I have very real concerns about the admission of these things through this witness.

MR. MCCANN: Yeah, well, --

ALJ: So, I, so, Mr. McCann, so exhibit number one hundred and, and one oh one, the witness has identified them as documents coming from MDE or used by MDE and he worked at MDE. So, whether or not he's a, you know, design guidelines expert or, or not, he's referenced them as government documents.

In fact, I mean, again, if it was a PIA request and there was a certification on top of the, on, on the document, which said that it was from MDE, would be sort of the same thing as having this witness come in and identify them, to me.

So, and there would be no one explaining what they are if you just submit them as a PIA request and submit them with a government certification, so it comes in to under an exception to the hearsay rule. I believe it comes in that way.

So, all the issues though that you're raising, Mr. Mudd, can be addressed on cross examination about, you know, his familiarity with it or whether, what it has to do with, you know, the, the issues here and all of that. So, I'll allow both of those documents and you can cross examine him. So, one hundred and one oh one, Mr. McCann are in evidence.

MR. MCCANN: Okay, thank you. Mr. Summers, are you familiar with the Baltimore City's sewer system?

MR. SUMMERS: Yes.

MR. MCCANN: Okay. You, have you described this morning, or today rather, your involvement in that system?

MR. SUMMERS: Yeah, I, I'm familiar with both having participated in briefings on both Consent Decrees and having worked on the upgrades of both the Back River and Patapsco work, I mean, having been involved in developing the Bay restoration fund requirements and grant agreements for upgrading those facilities. So, I am familiar with the City and the County sewer system, which really are one big system of pipes interconnected.

MR. MCCANN: Where does, where does the sewage in the Jones Falls sewer shed, at least as it exists in the County, where does it, where does it go?

MR. SUMMERS: It goes into the lower Jones Falls basin in the City, travels through pipes, down the Jones Falls and then, excuse me, across to the east, eventually to the Back River Wastewater Treatment Plant.

MR. MCCANN: Do you know how much of the, of the sewage in the Jones Falls sewer shed, as it sits in Baltimore County, goes to Back River, the Back River Treatment Facility?

MR. SUMMERS: Well, the Jones Falls sewer shed sewage from Baltimore County should all go to, through the City, to the Back River Sewage Treatment Plant. However, as we know from the Consent Decrees there are frequently spills and

overflows along that pathway. So, it doesn't all make it to Back River, but the design is for it to be transmitted to Back River a hundred percent of the County's Jones Falls sewage.

MR. MCCANN: Okay. Let me show you what's been marked as Protestant's Exhibit 97. Do you see that?

MR. SUMMERS: Yes.

MR. MCCANN: Okay and what is this document? Bear with me one second, I think I just, go ahead, I'm sorry.

MR. SUMMERS: Yeah, scroll down a little so you can see the title. Okay. This is the phase two plan, which is required under the City's modified Consent Decree. And this has been posted on the City's webpage and it's actually open for public question and comment at this point in time.

MR. MCCANN: Okay and the date of this report?

MR. SUMMERS: January 18, 2023.

MR. MCCANN: Okay and what, if any, significance does this report have to your opinions?

MR. SUMMERS: Well, there is a section, if you scroll down, I don't recall what page it's on, but there's a section about Balt, flows from Baltimore County. Keep going down.

MR. MCCANN: Okay. Is it in the executive summary?

MR. SUMMERS: I believe so. There it is, Baltimore County flow uncertainty.

MR. MCCANN: Okay.

MR. SUMMERS: So, in --

ALJ: What, what page is that?

MR. MCCANN: This is page ten of the report.

ALJ: Okay.

MR. SUMMERS: So, as you can read in the first sentence, --

MR. MUDD: Hold on. I'm going to object.

ALJ: Mr. Mudd, go ahead.

MR. MUDD: I, I'm going to object on the basis of, of relevance and applicability. I, I know that he mentioned that sewage is flowing into the City and this section pertains to Baltimore County, but I don't know that there's really any relevance to a, a document that is related, apparently, to a Consent Decree and a completely different jurisdiction over which Baltimore County has no influence or, you know, or involvement, per se. Other than sewerage flowing to it.

But I'm not sure how that really is relevant to your burden, to our burden of proof and to your review here of a development plan in Baltimore County.

ALJ: I, I was curious myself. I haven't heard it, I think he was about to get to that. So, he was referring to page ten, ES-4.1, Baltimore County flow uncertainty. And so, I'm just sort of waiting to hear what that was. So, let's listen to the witness. So, overruled for now at least.

MR. MCCANN: Go ahead, Mr. Summers.

MR. SUMMERS: Okay?

MR. MCCANN: Yeah.

MR. SUMMERS: So, in order for the City to address overflows in the lower Jones Falls properly, the City needs to know how much sewage Baltimore County is going to be sending to them. And the City here has, as they explain in this paragraph, has reached out to the County to get the information, timing, peak, volume and duration, of the flows the City will need to accommodate.

And the County has responded that they're in the process of figuring that out. And they can't provide the information to the City at, at the time that this report was published.

And that the, the section goes on to explain that in order for the City to address its Consent Decree requirements, it needs this information from the County and that if you scroll down even a little further, that the information is critical to ensure the City can meet its LOP, which is level of protection, mandates under their own modified Consent Decree.

So, I think the significance of this to the County is that at this point in time, neither the City nor we have a, a full report from the County on what flows they are sending down the Jones Falls, which is something that is required under their Consent Decree.

MR. MCCANN: Okay. The question I had, there's a map, bear with me one second (inaudible) on page nine. Do you

see this map, Mr. Summers?

MR. SUMMERS: Yes.

MR. MCCANN: I want to show you just that title, title first. I don't want to zoom out too much. Do you see the title?

MR. SUMMERS: Yes.

MR. MCCANN: Okay and then we can go up to the map itself --

MR. MUDD: May I have a continuing objection to this questioning?

ALJ: Sure, and I haven't ruled on the objection, the complete objection yet. So, yes, you can.

MR. MUDD: Thank you.

MR. MCCANN: What, if any, information on this map is relevant to, to your opinions in this case?

MR. SUMMERS: Well, those, those green areas are in the Jones Falls sewer shed, which as I've already testified, is transmitting sewage from Baltimore County and the Jones Falls basin. And these are all areas where the City needs to take additional I&I reduction work.

And I would just point out that there is a continuous hydraulic connection up into the County and the area in red on the Hazen report that shows excessive I&I in the County. The County has also, in its modeling assessment, said that they assume a free discharge assumption.

They use a free discharge assumption in their modeling which means that there would be no restriction in sending sewage down into the City. But we know that the City has, is struggling with its own overflow and I&I problems. So, the whole point of this is that the City and County systems are inextricably related and what you do in one can affect the other.

MR. MCCANN: Let me, let me ask you about this map in particular though. It's entitled location of proposed phase two plan I&I reduction projects. First of all, what is, what is phase two? Do you know what that's in reference to?

MR. SUMMERS: That is phase two of the City's modified Consent Decree, which was a title of this document. And basically, this is, once a modified Consent Decree was entered, because of delays in implementing the first part of their Consent Decree, the State and the EPA added additional requirements called phase two to address I&I and overflows in the City.

MR. MCCANN: Okay. So, as it relates to Jones Falls, do you see that's in green right there?

MR. SUMMERS: Yeah.

MR. MCCANN: In the legend? Up here where there are these green shapes, is, are any of these in close, which, which, if any, of these are in close proximity to, to Lake Roland and the sewage from the subject site?

MR. SUMMERS: Well, you can see Lake Roland on the map just above the City line, right under the word works in public works in the title.

MR. MCCANN: Right here?

MR. SUMMERS: That's Lake Roland.

MR. MCCANN: Okay. So, what, if any, significance is this green sort of blob here?

MR. SUMMERS: Well, that shows that the City is still, is proposing to reduce I&I into the Jones Falls system in order to prevent overflows further down in the system. And whatever the County is sending down is a critical part of what the City needs to be able to deal with. And that's why the City has asked for the information from the County. And the County has not, by their own, or by the City report indication, there's a letter that the County has not completed that work.

MR. MCCANN: Okay. You mentioned, and I'll get back to this in a moment, Your Honor, real quick, you mentioned free discharge assumption. Bear with me one second. I wanted to pull up the RJN performance assessment, which is, which, again, is page seventy-eight, I'm sorry, Exhibit 78. So, page thirteen, do you see this section, Mr. Summers?

MR. SUMMERS: Yes.

MR. MCCANN: In the RJN? I want to focus on this paragraph, which I'll highlight and this on page, again, page thirteen, uses that same term that you just used. Read this,

read, read this to us and tell us what that means.

MR. SUMMERS: Okay. All simulation runs were completed using a free discharge assumption at the City/County boundary. This would be that there's no restriction downstream that would cause a backup into the County. And they say, this is consistent with the approach used in the 2013 plan. And that the City has not completed phase two projects necessary to establish alternative future predicted boundary conditions at the jurisdictional boundary.

So, basically, the County is saying that the problem lies in the City and the City, in their phase two report, has indicated that they need the information from the County in order to do their work. So, you've got two parts of the same system, basically, pointing at each other over this issue.

MR. MCCANN: Okay. When you say the County is blaming the City, I don't know if that, those were your words or not, but just to be fair, what, first of all, what, what does this mean, free discharge assumption? Explain that. That's not obvious, explain that.

MR. SUMMERS: It, it just means that the flow from the sewer line coming out of the City into the County is not going to be prevented from discharging into the City system.

MR. MCCANN: What, what, that's an assumption, is that an assumption being made here?

MR. SUMMERS: It's, it's a free discharge assumption

of the modeling work. It isn't necessarily the truth. In fact, in other places, the County has said that it has not able to close all its structured overflows due to back up from the City.

MR. MCCANN: Okay.

MR. SUMMERS: There's a, a section that talks about, I believe it's overflow 113, Marnat Road. It's not in the Jones Falls, excuse me, the Lake Roland drainage, but it's another part of the Jones Falls where the sewage is not able to flow freely from the County into the City.

MR. MCCANN: Okay. Okay, yeah, I think it speaks for itself. Your Honor, I think that's all the questions I have for Mr. Summers. I would move, excuse me, I would move Exhibit 97 into evidence and --

ALJ: Okay. So, based on the objection, I, I do not believe ninety-seven should be admitted. So, I hear the testimony and I understand the, everybody understands that the City and County sewage systems work together, that it's global.

And I also appreciate Mr. McCann's interest in being complete. I think that's really what the, the reasoning behind putting this document in. But this is a, this is a modified Consent Decree that has to do with the City. That, you know, the map that you're, that you're showing on the screen, that you showed before, Baltimore County's, you know, sewage system is off of this map.

This, this document has to do with, as the witness indicated, really has to do with the City's interest in meeting their Consent Decree and whether or not they're waiting for information from, from the County that may be of interest this document to, you know, politicians or sort of the global, you know, kind of, making sure that, you know, the sewer system is working.

But as it relates to this particular property, this document doesn't help me at all in describing anything that has to do with this, with this, other than giving general information about, you know, who's waiting for information from who. So, so, for, for that reason, I do agree with Mr. Mudd on this point that ninety-seven should not be admitted into evidence. I don't think it assists me, again, in any issues related to, to this case.

The only other issue I have are, the only other document that we had I don't think that was admitted was ninety-nine.

MR. MCCANN: Yeah, we'll withdraw ninety-nine and at least for the record, Your Honor, I understand your ruling. I'm not asking you to change your mind. But I, I would like to state for the record the relevance of this Exhibit 97.

ALJ: Yeah, and, and you did, I think, through the witness, right? And you asked him what (inaudible) --

MR. MCCANN: No, I don't think the witness --

ALJ: You said how, but your question was, how is this relevant to your opinions. And so, it was clear what, how it was relevant. I don't think the document is uninteresting. It's very interesting to the witness in his field of work. It's just in regard to the issue here about this property, in this sewer system, whether or not the County, the City is complaining about what the County is doing, it, that just gets beyond the level of where we are, right?

MR. MCCANN: Yeah, but that's, that's not the point, Your Honor, and my --

ALJ: All right.

MR. MCCANN: -- he, he is not an attorney, Mr. Summers, so he doesn't understand the legal relevance.

ALJ: Sure.

MR. MCCANN: But the, here, here's the point. And, and I agree with you completely and I think this was the basis of Mr. Mudd's objection. And that is, this is the City's Consent Decree, and it has nothing to do with Baltimore County's Consent Decree, nor this project, which is, again, that's the objection I get all the time when we try and bring other cases in other developments. The point has nothing to do with that.

The point, and I think this is highly, highly probative, are the explicit statements made in here by Baltimore City, not about, about the, what the County told

them. These are admissions that, that the County told the City regarding the state of the County's assessment of its own problems.

Has nothing, per se, to do with the, the, the, the City's Consent Decree itself. I know that you have no jurisdiction over that. And obviously, even if this, the sewage in this development goes to the City, that's not the point.

The point here is that the City is char, and that, that is why I asked Mr. Summers to read the whole thing because I think unless you read it, you don't understand that point. They're saying here that the County is in the process of modeling and working on a new LTC report, Your Honor.

And yes, it's important for other reasons. It's affecting the City's ability, the City is saying it can't comply with its own Consent Decree because of this uncertainty. In fact, this is the most prominent challenge for the City.

So, I think it's, it's relevant, not for the reasons Mr. Mudd objected, nor for the reasons you are not letting it in, but for the reasons that I'm probably not artfully articulating. But I think if you read this, I think this is an important piece of evidence as any in this case, frankly.

ALJ: So, I, I mean, I don't agree that's the most important piece of evidence. I think it's sort of a transient issue here. And again, I'll stand by my, my ruling on it. All

the other one hundred and one documents have come in here and it's not about just having admitted those.

This hearing, this hearing is not about whether or not, you know, the County is not, essentially, on trial here, really. I mean, it's, it's a transient issue whether or not they're meeting their obligations under Consent Decree, or they need to provide information to the City is, is not, you know, what this hearing is about. So, for those reasons, I'm just not, we're not going to admit ninety-seven into evidence. You are withdrawing ninety-nine?

MR. MCCANN: I am, yep.

ALJ: Okay, all right. So, anything else?

MR. MCCANN: I'll look at my notes real quick, but I think that's it. Just give me thirty seconds, if you could. Yeah, nothing else, Your Honor. Thank you, Mr. Summers.

ALJ: Okay. Are we ready for cross --

MR. ZIMMERMAN: Just, do, do I go next, Judge? I, I have some questions.

ALJ: (inaudible) Mr. Zimmerman, I'm sorry, I did skip over you.

MR. ZIMMERMAN: Yeah.

ALJ: Mr. Mudd is frozen, hold on one second, he's frozen.

MR. MUDD: I, I'm here.

ALJ: Mr. Rosenblatt, are you frozen? Mr. Rosenblatt

is frozen too.

MR. MUDD: Can you hear me?

ALJ: Okay, now you're back. Mr. Mudd is frozen though.

MR. MUDD: Can, can you hear me?

ALJ: All right, you're back.

MR. MUDD: Okay. I don't know, I was just sitting very still.

ALJ: I know, well, no, I think it's the, you know, again, paying the bill over there for some reason with the cable.

MR. MUDD: You know, I, I'm definitely going to have cross examination. But I, as we've done in the past, I'd like for all of the attorneys on the other side to ask whatever questions they have and, and then I would actually request a break so I could just streamline it and we could have lunch at that time.

ALJ: Understood. So, Mr. Zimmerman, I guess I did skip over you because I was thinking this wasn't your issue in my head. I, but how is this your issue, Mr. Zimmerman? Are you there?

MR. ZIMMERMAN: Yeah, when we got into this at the end of Mr. Grachek's testimony last time and, and I --

ALJ: Okay.

MR. ZIMMERMAN: -- pointed out --

ALJ: Thank you for reminding me of that, yeah.

MR. ZIMMERMAN: -- that, that there are master plan 2020 provisions on sewer. There's also --

ALJ: Okay, right.

MR. ZIMMERMAN: -- master water and sewer plans. So, it, it is a --

ALJ: Thank you for reminding me, okay. I, my, my issue with, I always think you're on a different issue but thank you for reminding me. So, you do have questions for Mr. Summers?

MR. ZIMMERMAN: I, I, I do. And, of course, Mr. McCann didn't, you know, has emphasized the issue, but now that it's been brought up, it is of interest under, under the plan and I would like mostly to ask some background questions. But I have some questions of Mr. Summers.

ALJ: Okay. Why don't we do that? Why don't we take your questions and then I'll go to Mr. Sachse and to Mr. Wyatt, although I don't see Mr. Wyatt. Maybe he's here. Okay. Go ahead, Mr. Zimmerman.

MR. ZIMMERMAN: Okay, okay. Good afternoon. So, just a little background. The, the, can you tell, for the record, whether, whether the Clean Water Act is a Federal Law or a State law or a County law?

MR. SUMMERS: The Clean Water Act is a Federal law and enforcement and certain provisions of the Clean Water Act

have been delegated to Maryland by the EPA.

MR. ZIMMERMAN: And then Maryland has its own set of derivative laws to implement the Clean Water Act, is that correct?

MR. SUMMERS: Correct, correct.

MR. ZIMMERMAN: Okay.

MR. SUMMERS: And Maryland has other laws, State laws, that provide additional water quality protections over and above the Clean Water Act.

MR. ZIMMERMAN: Right, and what can you tell us as to whether MDE's lead agency to implement the Clean Water Act in Maryland?

MR. SUMMERS: And MDE is the leading agency to implement it in Maryland.

MR. ZIMMERMAN: Okay and what can you tell us as to what --

MR. MUDD: Object, objection. I, I just, I'm sorry, I was late on the objection. But I just would ask Mr. Zimmerman not to lead the witness, please.

MR. ZIMMERMAN: Excuse me, but that's not a leading question. If I said, isn't it true, obviously, that you're the lead agency, then that would be leading. He could, he could have answered yes, no or I don't know.

ALJ: So, the other thing is is it's an odd situation because it's Mr. McCann's witness. And so, it's technically

cross.

MR. MUDD: Okay.

ALJ: Even though People's Counsel is --

MR. MUDD: I understand.

ALJ: -- this, you know, it's anomaly, because it, because it's sort of neutral in a sense. So, it, it, there's no form for this, but I call it cross. So, I'm letting him cross and so we'll overrule it. Go ahead.

MR. ZIMMERMAN: Well, all right. Thank you, Judge. What can you tell us as to whether the Clean Water Act derives from the Federal Water Pollution Control Act from 1972, amend, the amendments?

MR. SUMMERS: Yeah, the, it, it became called the Clean Water Act when, when the Federal Water Pollution Control Act was amended in '72. And it, it added a number of provisions that we talked about today, including MPDS and TMDL.

MR. ZIMMERMAN: What, what can you tell us about the establishment of the NPDES in 1972, what it stands for and what its purpose was?

MR. SUMMERS: The National Pollutant Discharge Elimination System is a system of permits and self-monitoring and monitoring by the State, that is required for all point source discharges to waters of the U.S. Point source being sewage plants, industries, essentially any pipes that discharge to waters of the U.S.

MR. ZIMMERMAN: Okay and what can you tell us as to whether the law originally established deadlines for the elimination of such discharges and how, if at all, those deadlines were modified?

MR. SUMMERS: Yeah, I believe it originally set a deadline eliminating pollutant discharges by 1984 and that was incredibly ambitious, unrealistic and it hasn't happened even yet.

MR. ZIMMERMAN: Okay. What can you tell us as to whether the law originally dealt with point source discharges but later involved non-point source discharges?

MR. SUMMERS: Yeah, initially the focus was on point source discharges and then additional law and/or regulation addressed non-point source discharges. But and a, an aspect of it was municipal separate storm sewer system permits, which were classified as point source discharges because their pipes, but those pipes are to handle stormwater, so they are very similar to non-point source discharges in the sense that they're driven by stormwater.

MR. ZIMMERMAN: So, what can you say as to whether that's kind of a background for these Consent Decrees?

MR. SUMMERS: Well, the NPDES violations were the discharge of untreated sewage into the streams of, in this case, the Jones Falls, that came from the sewer system of Baltimore County and a lot of that discharge, because of I&I,

inflow and infiltration, into the sewer system, a portion of that discharge is a mixture of sewage and stormwater that are polluted and discharged to the streams in violation of the Clean Water Act.

MR. ZIMMERMAN: Yeah, and can you give us some background on what you talked about in your direct testimony of TMDLs and how they came into the program and what their function was?

MR. SUMMERS: Yeah, the TMDLs, total maximum density load, is a water quality, requires water qualify based affluent limitation. It basically looks at water quality standards, the available monitoring data, evaluates water waste, where water quality standards are not being met, that is they are impaired.

And for every impaired water, TMDL is required by the Clean Water Act to address how the impairment will be corrected by the implementation of storm water controls, sewage and industrial discharge controls and permits. And how the State will be able to achieve water quality standards.

MR. ZIMMERMAN: What can you tell us whether TMDL are relevant to the Consent Decree, if at all?

MR. SUMMERS: The TMDL was not the basis of the Consent Decree. The Consent Decree was due to NPDES permit violations and the TMDL just explained how the Consent Decree and other measures will be used to help the State meet water quality standards.

MR. ZIMMERMAN: Okay, okay. So, I have to ask you, what, what, based on your experience having been Deputy at the time of the 2005 Consent Decree, briefly, can you give us any background as to what the thought process was enforcing a Consent Decree rather than just informally working with the County?

MR. SUMMERS: Well, this was the Consent Decrees for sewage overflows were a Federal initiative of the Clean Water Act. It was an enforcement priority of the EPA. And when EPA brought this suit, it was similar to many others that they brought around the country.

And under the delegation agreement with the states, each state had the option of either joining with EPA in the suit or siding with, in this case, the County. And the State made the determination that it was a justified suit under the Clean Water Act and joined with EPA.

MR. ZIMMERMAN: Okay. At, at the time, if you can tell us what, were there any, can you say whether any parts of the County system were particularly problematic or was it the whole system?

MR. SUMMERS: Yeah, I, I, I don’t have that information at hand. I haven’t looked recently. But the Consent Decree identified a number of overflow areas in it. And the assessment was required to identify other areas of problems, and then obviously, as we’ve discussed, to develop

plans for how to address those.

MR. ZIMMERMAN: Do you recall whether or not there are any expectations as to a timeline as to when the Consent Decree revisions should have completely have been satisfied?

MR. SUMMERS: Yeah, there, there are timelines specified in the Consent Decree and I think many of those have not been met and still have not been yet.

MR. ZIMMERMAN: Yeah, okay. So, following up on the questions about the Consent Decree, some of which questions were objected to, all, albeit overruled, I wonder if Mr. McCann could share the Consent Decree and we could take a look at it?

MR. MCCANN: Yes, I can. Bear with me one sec.

MR. ZIMMERMAN: Could we go to page eight? And when I say eight, I mean at the bottom of the page.

MR. MCCANN: Yeah.

MR. ZIMMERMAN: Okay. So, in terms of section five, remedial measures, and, and Mr. McCann may scroll it a bit if, if it helps, what, what can you tell us as to the extent to which elimination of sanitary sewer overflows was, a priority under the Consent Decree?

MR. SUMMERS: Well, I mean, if you read, --

MR. MUDD: Objection, objection. I mean, the document speaks for itself, and this witness previously testified about his experience really, or lack of involvement with the preparation of this document and negotiation of it to

begin with. I think it calls for speculation.

MR. ZIMMERMAN: This is a follow-up to Mr., yeah, --

ALJ: (inaudible) and the witness' testimony with Mr. McCann was that the whole objective was to eliminate SSOs, that's really the whole point of it anyway. You're not going to take us through step by step because we've done this before, right, Mr. Zimmerman? Right? Are you going to take us through the whole --

MR. ZIMMERMAN: Not, not through every section. I was going to talk about a few sections, yes.

ALJ: Okay. So, I mean, I know this witness' testimony several times was, the whole objective was the elimination of SSOs, is that right, Mr. Summers?

MR. SUMMERS: That's correct.

ALJ: Okay, all right. Go ahead, Mr. Zimmerman.

MR. ZIMMERMAN: Let, let me go to page twelve. Are, are we on page twelve? Can, can we go to the bottom? Yeah, okay. What can you tell us as to whether the County has yet certified that all sanitary sewer overflows are, have been eliminated?

MR. MUDD: Objection.

ALJ: No, that's overruled. Go ahead.

MR. SUMMERS: I have not seen that certification.

MR. ZIMMERMAN: Okay. Let's go to page fourteen. Okay. Can we go to the top of fourteen? Okay, so, and that's,

page fourteen on certification of elimination, that's what would be relevant to the decree that you're referring to?

MR. SUMMERS: Yeah, I, I --

MR. ZIMMERMAN: Okay.

MR. SUMMERS: -- have not, I have not --

MR. ZIMMERMAN: Yeah.

MR. SUMMERS: -- seen documents certified that, that doesn't mean they aren't there, I just haven't seen them.

MR. ZIMMERMAN: Okay. Yeah, okay. Let me go to page twenty-two. Let's go down a little further. Okay. What's your observation as to whether this section of the Consent Decree on rain flow and flow monitoring relates to a lot of your testimony about the reports on that 2006 study by the State? Does, does this relate to that or is that some of the other reports?

MR. SUMMERS: Well, the, the rainfall and flow monitoring in this Consent Decree has to do with evaluating, as it says right there, I&I and the capacity to collect and convey peak flows. So, this is focused, obviously, on a Consent Decree. It's not related to the TMDL, --

MR. ZIMMERMAN: Yeah, okay.

MR. SUMMERS: -- except that the TMDL refers back to the Consent Decree as a primary means of implementing or helping to meet water quality standards as required by the Clean Water Act.

MR. ZIMMERMAN: And what does that tell us as to whether it corroborates your observations on wet weather and dry flows?

MR. SUMMERS: Well, wet weather and dry weather flows are very important, are both important in addressing contamination from SSOs.

MR. ZIMMERMAN: And do you see that mentioned on the bottom of page twenty-two in that paragraph?

MR. SUMMERS: The effectiveness of measures implemented by Baltimore County pursuant to this Consent Decree to reduce I&I and increase system capacities.

MR. ZIMMERMAN: Do you see the language dry weather and wet weather SSOs?

MR. SUMMERS: Yes.

MR. ZIMMERMAN: Yeah, okay. Okay.

MR. SUMMERS: (inaudible) both are important.

MR. ZIMMERMAN: All right. Let's go to page thirty-one. Okay and what can you tell us, whether that's the context for these SRRR plans that, that Mr. McCann has been asking you about?

MR. SUMMERS: Yeah, this, this is the requirement to use that inspection and rain flow monitoring data to prepare the SRRR plan as described here in paragraph A, general requirements.

MR. ZIMMERMAN: Okay and we're not going to go

through every subsection. What about page thirty-four, Mr. McCann? Okay and then, what can you tell us as far as the background of why or, or function of performance assessments?

MR. SUMMERS: Well, the SRRR is just a plan. Once you put the provisions of that plan in place, you need to do a performance assessment to see if it is actually going to achieve what you intend with the plan. And so that's what the performance assessment is required for.

MR. ZIMMERMAN: And what can you tell us whether that connects up with some of your direct testimony on performance assessment?

MR. SUMMERS: Yeah, the performance assessment is a critical part of meeting the requirements of the Consent Decree and you need to demonstrate that it's actually working as planned.

MR. ZIMMERMAN: Page fifty-four, Mr. McCann. Okay. And while he's doing that, by the way, Mr. Summers, you and I have never met, have we, or talked?

MR. SUMMERS: Not that I recall.

MR. ZIMMERMAN: And you have no idea what I'm going to ask you, okay.

MR. SUMMERS: I do not.

MR. ZIMMERMAN: Okay, okay. Fifty-four begins the modeling section, does it not?

MR. SUMMERS: Section B, modeling.

MR. ZIMMERMAN: Yeah. One thing I'm, I would like to ask you about, there's been some reference to different storms, and I don't remember all the details, it was like six-year storms, ten-year storms, different hours, if I'm mistaken about those numbers, let me know.

But what I'm wondering is, given that we're now eighteen years into the situation, what's your thought process as to whether the modeling needs to be for twenty-year storms, thirty-year storms, fifty-year storms? Is, is the ten- and six-year kind of outdated in a way? Or not, not up to snuff?

MR. MUDD: Objection. I, I think this is beyond this witness' area of expertise and beyond the direct, the scope of direct.

ALJ: Right. I mean, so, so, and my understanding is from, from reading this is that the County got to pick the storm and so, the County picked ten-year six-hour storm and so, that's why it became relevant. And so, whether or not it's outdated, why do we need to know that, Mr. Zimmerman?

MR. ZIMMERMAN: Well, it may indicate that the problems are even greater than, than, than the assumptions that, that are being made by the reporting entities. It, it looks like there was an expectation that everything would be resolved within, I don't know, fifteen years or so.

So, that, and the 2025, for example, was mentioned as a population estimate, I think. It's pretty obvious none of

that is being met. So, there's some indication that, as much as there are unresolved problems under the Consent Decree, the problems are based on the modeling, are even greater than the modeling would suggest. That's, that's my point.

ALJ: Yeah, I --

MR. MUDD: That sounds like a pretty good argument for a memo.

ALJ: Yeah, right. Or, well, even that, it's more like a, it's a good discussion for, you know, perhaps somebody who's going to change, I mean, we're, we're, we're stuck with what the Consent Order says. And so, whether or not, you know, --

MR. ZIMMERMAN: All right.

ALJ: -- in hindsight we like it, or we don't, I mean, these are more kind of political, theoretical kind of questions as opposed to something that has to do with this particular case, because we're stuck with the ten year six, so, --

MR. ZIMMERMAN: All right.

ALJ: -- if you could just, I'll sustain the objection.

MR. ZIMMERMAN: Okay, all right. So, so just a few more, without going through everything. So, page sixty-five, let's go to sixty-five, page sixty-five. So, beginning, the reporting requirements, I think, can, can you tell us in your

experience, when you were Secretary of MDE, whether the reporting requirements were regularly, regularly done?

MR. MUDD: Objection.

MR. SUMMERS: Scroll down a little more.

MR. ZIMMERMAN: Yeah, let's scroll down and, and, and by the way, before I, before you (inaudible) that question, let's go to page sixty-seven.

ALJ: Okay, hold on. I think, Mr. Mudd, did you object or no?

MR. MUDD: I did, I did.

ALJ: Okay. I thought he was objecting but --

MR. ZIMMERMAN: Okay.

ALJ: -- but I wasn't sure what the question was yet.

MR. MUDD: I was objecting to the relevance of the question and the answer.

ALJ: I wasn't sure what the, what the question was, yeah, reporting, oh, when he was Secretary at MDE, was the, was reporting done, is that what it was, Mr. Zimmerman?

MR. ZIMMERMAN: Yeah, and let me back up and say on page sixty-seven we see quarterly reporting with, what does that have to do with your observation that there are many, many documents that were generated under the Decree?

MR. SUMMERS: Well, --

ALJ: Okay, well, that's a different question. So,--

MR. ZIMMERMAN: Okay, that's a different question,

yeah.

ALJ: Different question, we'll sustain the other objection. Okay, go ahead. Go ahead, sir.

MR. SUMMERS: There were lots and lots of reports. You see the quarterly reporting here and I can't tell you offhand whether every report was met. But in general, implementation of the provisions of the Consent Decree have been delayed.

MR. ZIMMERMAN: So, in any event, if this, this provision were satisfied, there would be quarterly reports for the last three, four years that would disclose a lot of information, is that correct?

MR. SUMMERS: Yes.

MR. ZIMMERMAN: Okay and then, let's go to page seventy. So, so, same thing for annual reporting, just to make a long story short? Require, there's a, what can you comment as far as the requirement for annual reporting?

MR. SUMMERS: Yeah, similarly to the quarterly, annual reports were submitted.

MR. ZIMMERMAN: Okay. I think I just have a couple more questions. Yeah. What do you know, if anything, about whether there's any, anything going on in terms of potential modification of the Consent Decree? Is there anything going on?

MR. SUMMERS: I, I don't know of anything.

MR. ZIMMERMAN: Okay. What can you tell us as to whether there's a rule of thumb as to the amount of annual additional sewage, a, a dwelling, a single family detached dwelling with a family would likely generate each year?

MR. MUDD: Objection. The gentleman is not, not, not an expert on sewer design. I think it's an in, in appropriate question to ask him.

MR. ZIMMERMAN: This is well within his regulatory experience, I would think.

ALJ: If he can, if he can answer. Overruled. Go ahead, sir.

MR. SUMMERS: Yeah, in, in fact, I think with more modern plumbing fixtures, the discharge from newer homes is less because there is water conservation measures that are required there, if that's what you're talking about individual homes.

MR. ZIMMERMAN: Okay. But what about the amount, any, any rule of thumb as to the amount of sewage each year?

MR. SUMMERS: Well, there, there are numbers in the standards, but I don't, there's detailed lists of different types of facilities and how much flow would be expected but I, I'm not --

MR. ZIMMERMAN: Okay.

MR. SUMMERS: -- familiar with the details.

MR. ZIMMERMAN: Okay, so. Okay. Okay. That's all I

have, Madam, Madam Judge.

ALJ: Mr. Wyatt, any questions?

MR. WYATT: Yes, I do, Your Honor.

ALJ: Okay.

MR. WYATT: Mr. Summers, I wanted to follow-up on a point or some of the discussion you had with Mr. McCann relating to the now disallowed Baltimore City Consent Decree report. I just want to ask you this. What is your understanding of Baltimore County's completion of a long-term capacity report as it relates to the Baltimore City Consent Decree?

MR. SUMMERS: Well, --

MR. WYATT: Is it complete or is it incomplete as of today's date? What is your understanding?

MR. SUMMERS: As far as I know, it's incomplete as of today's date. I've not seen it.

MR. WYATT: And so, is it incomplete in such a way that your understanding is Baltimore City cannot now complete its analysis of its own Consent Decree?

MR. SUMMERS: That's what they said.

MR. WYATT: And what importance, if any, does this have on the opinions that you're giving us today?

MR. SUMMERS: Well, I believe it's important because it demonstrates that the County has not sufficiently completed its performance assessment and projections of flow. Otherwise,

why wouldn't they provide that information to the City? And if they don't know what their flow is, it makes me concerned about their understanding of whether or not they've actually achieved the goal of the Consent Decree to eliminate SSOs.

MR. WYATT: But if I've understood anything today from your testimony is that, is that there's a complete inter-relationship between the Federal, then the State and then the County and municipality as far as it goes, as far as compliance with wastewater and water management systems, is that accurate?

MR. SUMMERS: Yes.

MR. WYATT: All right and how, based on what you're saying, if Baltimore County has not completed its analysis, that incompletion has a, I guess, a ripple effect or a collateral effect on, on the integrated systems of surrounding counties, is that accurate?

MR. SUMMERS: Well, in this case, the hydraulic connection is between the County and the City. So, wouldn't, it wouldn't impact any other jurisdiction. But it is important that we look at the entire sewer system in dealing with these SSO issues.

MR. WYATT: Thank you, Mr. Summers. I have no further questions.

ALJ: Mr. Sachse, do you have any questions? No questions. And you're muted, but you said no, I can tell. Okay, all right. Mr. Mudd, we're back to you.

MR. MUDD: Yes, I, I'd like to take a break, if we could, get some lunch and --

ALJ: Sure. Let's, why don't we come back at 2:30?

MR. MUDD: That's great. Thank you.

ALJ: All right, thank you.

MR. MCCANN: Thank you.

(PAUSE)

ALJ: Is everyone back? Waiting for Mr. McCann. Mr. McCann, are you there?

MR. MCCANN: Yeah, I am, sorry about that.

ALJ: Oh, yeah, no problem.

MR. MCCANN: Okay.

ALJ: Okay, we're back after lunch. I already went back on the record. Mr. Mudd, it's your cross?

MR. MUDD: Okay. Thank you, Judge. Is Mr. Summers there? Oh, there he is. Hello. How you doing?

MR. SUMMERS: Okay.

MR. MUDD: All right. So, before we get started, just want to make sure, have you talked to, did you talk to anybody about this case during the break?

MR. SUMMERS: No.

MR. MUDD: Okay. When did you get involved in this case?

MR. SUMMERS: I don't recall the first contact, but I had met with Mr. Tom McCord on some issues over the last couple

of years and he was asking me questions about this and introduced me to Michael, but I don't recall exactly when I actually got involved in the case. It's been fairly recently, last year or so.

MR. MUDD: Okay. So, maybe 2022 you, you'd say, at some point?

MR. SUMMERS: Yeah, I'd have to go back and look at e-mails and so forth to verify but, --

MR. MUDD: Okay.

MR. SUMMERS: -- yeah, most of, yeah, 2022 at some point.

MR. MUDD: Okay and, and it, it sounds like you were first in touch with Mr. Tom McCord, is that right?

MR. SUMMERS: Yes.

MR. MUDD: Okay and then you've spoken to Mr. McCord then about this case, correct?

MR. SUMMERS: Yes, I have.

MR. MUDD: Okay and you've spoken to Mr. McCann about it?

MR. SUMMERS: Yes.

MR. MUDD: And you've spoken to Mr. Grachek about it?

MR. SUMMERS: Yes.

MR. MUDD: How many times have you spoken to Mr. Grachek?

MR. SUMMERS: I don't know exactly how many. We've

had a number of virtual calls and we spoke about it during our, the day of our site visit.

MR. MUDD: Okay and who else, who else was there on the day of the site visit?

MR. SUMMERS: Mr. McCord and Michael McCann.

MR. MUDD: And who else has participated in the, in the virtual meetings that you've had in preparation for the hearing?

MR. SUMMERS: I think it's just the four of us.

MR. MUDD: Okay. Aside from those four, had you had any other conversations with anyone else in preparation for your testimony today?

MR. SUMMERS: No.

MR. MUDD: Okay. You mentioned, both when I examined you and then obviously when Mr. McCann was asking you questions, that you reviewed a, a whole bunch of documents relative to this case, correct?

MR. SUMMERS: Yes.

MR. MUDD: How did you obtain all of those documents?

MR. SUMMERS: Either Mr. McCann or Mr. McCord sent them to me.

MR. MUDD: Okay.

MR. SUMMERS: And I also did some of my own online research to see, you know, exactly what the County was publishing about this.

MR. MUDD: Okay and what, what research did you do?

MR. SUMMERS: I just searched the web for documents related to Baltimore County's work in the sewer area. I looked at the County webpages for DPW and DEPS.

MR. MUDD: Okay. Did you use Google search?

MR. SUMMERS: Yeah, I believe so.

MR. MUDD: Okay and what, what types of things were you searching for when you performed that search?

MR. SUMMERS: Things related to the Consent Decree and sewage infrastructure studies that the County had. The Consent Decree documents, which we've already mentioned, that are voluminous. Looked at, to see if there was anything about updates on MDE's webpage, those kinds of things.

MR. MUDD: Okay and, if you recall, did you find anything in your research that you did not already receive from Mr. McCann or Mr. McCord or Mr. Grachek?

MR. SUMMERS: No, I believe everything I found, ultimately, I also got from them.

MR. MUDD: Okay and sort of similar question but asked in a different way, are there, are there things that they provided to you that you were not able to find in your own research?

MR. SUMMERS: Well, I got things from them which I did not find in any other source. But I didn't make an effort to search them out after they sent them to me.

MR. MUDD: Got it. So, in other words, there are things that they provided to you, and you just relied upon what they provided to you?

MR. SUMMERS: That's correct.

MR. MUDD: Okay. Can you give some examples of what those, that information might be?

MR. SUMMERS: Well, the first copies of the RJN report and the, I think I, I actually found the Hazen Sawyer brochures, but they sent me the information on the Ramble report. And it, a number of other exhibits that I saw in the testimony, or the, the review with, with Randy Grachek that, that Michael had that shared with the Court.

I would have to go back and look at my files to see if there's anything in particular, but for the most part, I think it either came from Michael, Tom or the web, the Baltimore County web.

MR. MUDD: Okay. During, during my initial questioning, we talked about the various documents that you reviewed, the SRRR, sorry, the SRR report and the RJN report and the Hazen documents and the Ramble report. Do you remember the discussion of those?

MR. SUMMERS: Yes.

MR. MUDD: And I think you had indicated that you reviewed each of those numerous times and you felt pretty familiar with those, is that right?

MR. SUMMERS: Yes.

MR. MUDD: And I think that you volunteered that with regard to the Consent Decree, you were actually less familiar with the Consent Decree, is that correct?

MR. SUMMERS: I don't recall saying that. If I said something like that, I would need to be refreshed on the context, because I have reviewed the Consent Decree in a similar way as reviewing those other documents.

MR. MUDD: Okay and, and then I think in Mr. Zimmerman's questioning of you, you indicated that, that some of the reports required under that Consent Decree, like the quarterly reports and the annual reports, you have not reviewed all those, correct?

MR. SUMMERS: No, I have not gone through every quarterly and annual report. In fact, the County only has the more recent ones up on the webpage.

MR. MUDD: Okay.

MR. SUMMERS: (inaudible) gone back prior to that.

MR. MUDD: Okay and do you know which, which ones are on the webpage, the County's webpage?

MR. SUMMERS: I think it goes back to 2018 or '16, I'm not sure.

MR. MUDD: Okay and have you --

MR. SUMMERS: It doesn't go, it doesn't go all the way back. I could, I could look.

MR. MUDD: That's okay. I just (inaudible), I didn't know. And have you reviewed the ones that are on the webpage?

MR. SUMMERS: Not everyone. I've reviewed the more recent ones, but just, you know, read them to see if there was anything of particular relevance to what we're working on.

MR. MUDD: Okay. You, I think Mr. McCann asked you a number of questions about the TMDL report.

MR. SUMMERS: Yeah.

MR. MUDD: That, and that report is in 2006, correct?

MR. SUMMERS: That's correct.

MR. MUDD: Okay and you talked about how there was information in that report relative to E.coli testing, correct?

MR. SUMMERS: Yes.

MR. MUDD: And you also mentioned, I think during that testimony, that Blue Water Baltimore also has a bacteria monitoring program that I think, was it from 2013 to present day? Did I get that right?

MR. SUMMERS: I don't recall exactly. I think it was 2014 is what I said. But they have an online report, and you can click on a site, and it will give you a plot of their date.

MR. MUDD: Okay and I think you described, I wrote it down, that, that a lot of this has to do with rain fall events, but not all rain fall driven. There could be situations in particular, a sewer spill, that can cause spikes, I think is one of the things you testified about, do you recall that, --

MR. SUMMERS: Yeah.

MR. MUDD: Okay.

MR. SUMMERS: And I was speaking in general terms about bacteria spikes. I was not, I have not identified a particular incident where those two things are related in the Jones Falls.

MR. MUDD: Okay. Do you know whether Blue Water Baltimore monitors for human E.coli versus other types of E.coli, like the TMDL did?

MR. SUMMERS: No, Blue Water Baltimore has not done bacteria source tracking. E.coli is a general indicator of fecal bacteria. And so, it can be contributed by any warm-blooded animal.

MR. MUDD: Okay. I'm going to show you, bear with me. Do you see Protestant's Exhibit 96 on the board here?

MR. SUMMERS: Yes.

MR. MUDD: Okay --

MR. SUMMERS: Which, which table is that? Can I see the --

MR. MUDD: Sure, sure. It's table 2.4.4.

MR. SUMMERS: Averaging annual, okay.

MR. MUDD: Yep, and I'm going to ask you a couple of general questions first and then we'll talk about this table. So, the report, you indicated, and it says here, is dated September 19th, 2006, is that right?

MR. SUMMERS: Yes.

MR. MUDD: Do you know, and, and the report, do you agree with me, it includes a, a host of, of data, a lot of data relative to sewage flows and E.coli readings and all sorts of things, you, you agree with that?

MR. SUMMERS: Yes, it, it has a fair amount of information. I wouldn't say it's, you know, totally comprehensive, but it is pretty, there's a fair amount of information there, yes.

MR. MUDD: Okay. Do you know where, when the timing of when all of this data was collected that's reported in 2006?

MR. SUMMERS: I, I don't recall offhand the timing of that data, but I would imagine it was several years before the publication of the report.

MR. MUDD: Okay and then, do you recall the, when the Consent Decree between Baltimore County and MDE and the EPA was entered into?

MR. SUMMERS: I believe that was signed in 2005.

MR. MUDD: Okay. So, this TMDL report then was, was sort of at the beginning stages of the County's implementation of the Consent Decree, do you agree with me on that?

MR. SUMMERS: Yes.

MR. MUDD: Okay. Now, you indicated that the Consent Decree has not been updated since 2006, do you agree, I'm sorry, not the Consent Decree, the TMDL report, there's been no

update that you're aware of since 2006, correct?

MR. SUMMERS: That's correct.

MR. MUDD: Okay and I think that you indicated, you, you mentioned the phrase capacity issues as being the reason why that has not occurred, is that right?

MR. SUMMERS: Yeah, I'm referring to staffing capacity.

MR. MUDD: Okay and what, what do you mean by that?

MR. SUMMERS: So, the Department, it has been well publicized in the last election campaign, is seriously short staffed. They have a lot of vacancies. They haven't been able to fill them. The TMDL program, not unlike the enforcement program, which was really highlighted in the shortage of staff, is similarly short staffed. EPA is constantly adding new and updating standards.

Every two years, the Department is required to review all of the available monitoring data and identify impairments and prioritize and develop TMDLs for each of those impairments. So, what I was referring to, is it a fact that the unit at MDE that's responsible for TMDL development doesn't have enough staff to update all of the TMDLs on a very frequent basis.

And some of those, like this one, have basically just been left alone while the staff is focused on other higher priority issues for the Department.

MR. MUDD: And when you give that opinion, is that

based on, on your experience when you were with the MDE as late as 2015?

MR. SUMMERS: Yes.

MR. MUDD: So, so you don't know that to be the case for any years between 2016 to today?

MR. SUMMERS: Well, I do know that it was an issue up until the time I left and I have kept in touch with my colleagues at the Department. And I know some of the struggles they have been facing. And I have read reports and heard the testimony about shortages in the compliance program for staffing. And also, in the Safe Drinking Water Act programs.

So, I don't have specific details on the staffing in the TMDL unit but given my experience with the Department and my knowledge of what's been reported since then, I don't think the situation has improved.

MR. MUDD: Okay. Are you aware of, that, whether or not Baltimore County does its own TMDL monitoring?

MR. SUMMERS: I know that Baltimore County does its own water quality monitoring and that they submit data to the Department of the Environment for the bi-annual water quality monitoring review. So, they collect data, they report it to MDE, but I do not believe the County actually does it for TMDL purposes, but they certainly do monitor and report to MDE.

MR. MUDD: Do, do other governments do that as well, do you know? Jurisdictions?

MR. SUMMERS: Yeah, under the Clean Water Act, MDE is required to collect data from anyone who has data that meets their standards. And so, that would include most counties, Baltimore City and also Blue Water Baltimore, as one example of a citizen monitoring program that is accepted by MDE.

MR. MUDD: And, and does MDE rely upon that data, or do they conduct their own or, or both?

MR. SUMMERS: Both. Under the Clean Water Act, MDE is required to consider all data that meets basic EPA standards, which the above would.

MR. MUDD: Okay and would there ever be a situation where MDE would exclusively rely on government data or, or, as you indicated, Blue Water Baltimore data, as opposed to conducting their own research?

MR. SUMMERS: No, not usually. Usually, MDE has at least some of its own monitoring data and I would include in that category, Department of Natural Resources monitoring data, because MDE and DNR work closely together on that. So, between MDE and DNR, they have some data in most places, and they augment that with County, City and NGO data as appropriate.

MR. MUDD: Okay. I, I've had up here on the screen for a little while this table 2.4.1, do you remember this table (inaudible) --

MR. SUMMERS: I believe that was in the TMDL report.

MR. MUDD: Okay and I'm going to, I just want to ask

you a few questions about this. So, first of all, as, as with everything else in this report, the data that supports this table came from 2006, and as you indicated, potentially even several years before that?

MR. SUMMERS: Yeah, I don't know, I don't recall, it may be in the report, but I don't recall the exact date that this data is from.

MR. MUDD: Okay and just so I understand, there are five, I'm sorry, yeah, five rows in this report that identify subwatersheds of the Jones Falls watershed, correct?

MR. SUMMERS: Yes.

MR. MUDD: So, it, is it, is it your understanding that the total number of households in this households per subwatershed column, if you added up all of those numbers, that would equal the total number of households within the Jones Falls watershed, is that right?

MR. SUMMERS: Yes.

MR. MUDD: Okay and, and then again, this third column shows septic systems and the, these were added up, this would add, this would equate to the total number of septic systems within the, the watershed, correct?

MR. SUMMERS: That's, that's correct.

MR. MUDD: Okay and you gave numbers, I think you ran these numbers and said that eighty-four percent of the homes were on sewer and sixteen percent were on septic, correct?

MR. SUMMERS: Yeah, but I just used the stations upstream of the dam at Lake Roland. I didn't do the math for the whole watershed, but that could certainly be done.

MR. MUDD: So, which --

MR. SUMMERS: (inaudible) for septic systems and sewage above Lake Roland, including Lake Roland.

MR. MUDD: Okay and, and how did, were those entire subsewersheds that you used?

MR. SUMMERS: Yeah, if you scroll back up to the map above --

MR. MUDD: This map?

MR. SUMMERS: No, the, the one that shows the monitoring sites.

MR. MUDD: Okay.

MR. SUMMERS: Okay. You see JON0082, that's the mouth of the reservoir, the dam. There are two sites above that. And those three watersheds delineated there make up the drainage to Lake Roland. I just looked at those. I did not include JON0039 or SRU0005, but you could do the same math for that.

MR. MUDD: Okay and, and to be clear though, I guess, this line here that I'm tracing, that's the City/County line, correct?

MR. SUMMERS: That's correct.

MR. MUDD: Okay. So, then back to the chart, which

I'll go in a second, but basically, you took the totals for these three subwatersheds and, and let me, let me, is, is that right? I'll ask you that question first.

MR. SUMMERS: Yeah, that's correct. I just used those three.

MR. MUDD: Okay and then, I guess, there's a small portion of JON0039 that extends into Baltimore County, correct?

MR. SUMMERS: Yes.

MR. MUDD: But, but generally speaking, these three watersheds that you mentioned, JON0082, JON0184 and UQQ0005, that represents the entirety of the, the Jones Falls watershed within Baltimore County, is that correct?

MR. SUMMERS: Well, except for that piece of JON0039 you see sticking up there.

MR. MUDD: Right, okay. And what is this number? What's the 01589440?

MR. SUMMERS: That's a USGS gauging station where they measure stream flow.

MR. MUDD: Okay. That doesn't have anything to do with this chart that we were looking at a second ago, chart 2.41?

MR. SUMMERS: No, it's not, that station is not on the chart. They don't do bacteria there. But that station is relevant to any estimation of stream flow.

MR. MUDD: Okay. So, I'm hoping this, I'm going to,

I'm actually, I've already forgotten these numbers. I'm going to go back up and look again. So, we have 184, 005 and 082. And those are 005, 184 and 082. So, it's, it's --

MR. SUMMERS: Yeah.

MR. MUDD: -- it's the fourth row, the third row and the first row, correct?

MR. SUMMERS: Yeah, I just added those up and did the math.

MR. MUDD: Okay and it looks like really the second row there's no septic, so that's within the, that's probably within Baltimore City, right?

MR. SUMMERS: Yeah.

MR. MUDD: Okay and then, JON0039, the hundred and thirty-four there might be some in the County, some in the City, potentially?

MR. SUMMERS: Yeah.

MR. MUDD: Okay and I know, I think you answered this before, but, but oh, never mind, I'll, strike that. So, I think you testified during, during direct, that you said it would be helpful to have current information on the distribution rather than relying on information from 2006 at the latest, do you agree with that?

MR. SUMMERS: Sure, new data is always more interesting for this purpose.

MR. MUDD: Okay and so, you would agree with me that

if you were to rerun these numbers today, that it may not be eighty-four percent and sixteen percent, correct?

MR. SUMMERS: Right, and I think I said that in testimony. I, I would not expect it to, the percentages to change a whole lot, but, you know, just being generally familiar with growth and development in the watershed, it's pretty much been growing everywhere. So, I would not be surprised if the percentages, eighty-four and sixteen, are still pretty close. Obviously, the number of households would be different.

MR. MUDD: Right, and you, I, but the point is, you can't say for sure, correct? Because you, you just don't have --

MR. SUMMERS: I, I don't know, that's correct.

MR. MUDD: Okay and then, so you have no idea how many new homes may have been constructed in the seventeen years since this report came out, or sixteen plus years?

MR. SUMMERS: Well, I certainly have an idea, I live there. I've seen a lot of growth in terms of households and particularly apartments in the Towson area.

MR. MUDD: Okay. But you don't know how many would, new ones on septic, in particular. You haven't counted that?

MR. SUMMERS: No, I, I don't know, but it's something that I'm sure the County could provide.

MR. MUDD: Okay, all right. Let's go back to table

2.4.4. Okay, again, you recognize this table?

MR. SUMMERS: Yep.

MR. MUDD: And I think that you testified that, I think you used the word, let me see, I think you had, well, I guess the numbers speak for themselves. But your opinion was that this, that this report shows that the percentage of human E.coli I think you said was the dominant percentage, or the dominant number in this chart, is that correct?

MR. SUMMERS: Correct.

MR. MUDD: Okay.

MR. SUMMERS: Yes, that's true.

MR. MUDD: Okay and, and again, we agree that this chart and the information in it was, was obtained at, at, at the latest in 2006, but again, you think it probably was information from years before, correct?

MR. SUMMERS: Yes.

MR. MUDD: All right and we agree that the Consent Decree was established in 2005, correct?

MR. SUMMERS: That's correct.

MR. MUDD: And that was the very beginning of, at least the County and MDE and the EPA starting to recognize the problems within this sewer shed or, or really, within Baltimore County, and then requiring actions to be taken to eliminate SSOs, sewerage overflows, correct?

MR. SUMMERS: Yeah, I think the TMDL report was

something that came after that problem was recognized as an issue. EPA, I don't know which year EPA started their, their enforcement initiative on SSOs, but I know, for example, that the State took its own action on SSOs in Western Maryland before anything happened with Baltimore County. So, the SSO issue is something that predates all this nationally.

MR. MUDD: Got it. And, and, and we agree that the Consent Decree, the stated purpose of the Consent Decree, is to eliminate SSOs, correct?

MR. SUMMERS: Correct.

MR. MUDD: And you agree with me that the County has at least started efforts to eliminate SSOs, correct?

MR. SUMMERS: Yes.

MR. MUDD: And would you agree with me, based on anything that you've read, that they have, in fact, eliminated and reduced SSOs within this Jones Falls sewer shed?

MR. SUMMERS: I think that it, it's hard to say whether they've reduced it or not. I have not reviewed a comprehensive evaluation, but I believe there were quite a few SSOs as recently as 2018. They were documented in the, I believe, it was the RJN report. So, they certainly have not been eliminated. They may have been reduced. I hope they have been reduced but I don't have specific analysis showing that. The City has reported a reduction in their SSOs. And I believe parts of the RJN report have said that there has been some

reduction.

MR. MUDD: Okay. So, so we agree that the RJN report does, does report a reduction in SSOs?

MR. SUMMERS: Yeah, I think for the couple of years, I'd, I'd have to go back and look again.

MR. MUDD: Okay. So, let, let's assume for a second, that, sorry, excuse me for one second. Let's assume for a second that the, the County's efforts in, in, in performing the work under the Consent Decree has been very successful. Again, this is an assumption. But very successful in eliminating SSOs within the Jones Falls sewer shed. Wouldn't, would you agree with me that that would have a material impact on the reporting that would occur on this chart if it were rerun today?

MR. SUMMERS: Well, MDE, in its conclusions in this report, said that that Consent Decree implementation was its, I forget the word that they used, if you scroll down, but basically, was the primary method of attacking this bacterial contamination problem. So, if, as you say, hypothetically, the County has been very successful, I would hope to see improvement in this data, for sure.

MR. MUDD: Okay and in particular, you would hope to see improvement in the, the amount of human E.coli, correct?

MR. SUMMERS: Yes, that, that would make sense.

MR. MUDD: Okay. So, then you, you cannot look at this report today from 2006 and assume that this level of

E.coli exists in this sewer shed, correct?

MR. SUMMERS: Not today.

MR. MUDD: Okay. The, regarding septic systems in, in the Jones Falls sewer shed, do you know how many, I'm sorry, do you know, did you do any investigation of the, of the condition of the septic systems?

MR. SUMMERS: No, nothing with respect to this case. I know that the County Environmental Health Directors do inspections of septic systems, and I don't know what their findings are in this area. When I was at the Department, in general, the majority of septic systems were functioning as designed. That is, the bacteria was being captured and treated by the soil.

So, I don't have a number, but I would expect the, you know, failure rate of septic systems to be not that high in the upper part of this basin. Septic systems typically fail in lower lying land. In areas like flood plains and areas where water collects.

MR. MUDD: Okay and do you agree that, that when you have a failed septic system, or leaky septic system, that could leak affluent and, and have, and cause water quality issues if, if near by a water body?

MR. SUMMERS: Yes.

MR. MUDD: Okay and when you were in, at MDE, and you were in the O'Malley administration, that administration and

your Department were involved in a number of legislative efforts regarding septic systems in, throughout the State of Maryland, correct?

MR. SUMMERS: That's correct.

MR. MUDD: And were you, you were in the Department, were you the Director when, when the State of Maryland introduced the legislation that required, or instituted growth tiers throughout the State of Maryland?

MR. SUMMERS: Yeah, I was, that was 2012, and I was Secretary in the Environment then.

MR. MUDD: Okay and were you the Secretary of the Environment when the legislature introduced, or I should say the administration introduced legislation in the legislature to require more stringent designs for new septic systems throughout the State?

MR. SUMMERS: Well, that, that came about as part of the Bay Restoration funding (inaudible) in 2004, and that required everyone who generated wastewater, including septic system owners, to pay into the fund and then septic system owners could apply for grants to pay for what we call best available technology.

And that best available technology was certified by the Department and, over the years, quite a few different so-called BAT systems have been approved and have been implemented around the state, including in Baltimore County.

MR. MUDD: When you say BAT, you're saying B-A-T, correct?

MR. SUMMERS: Best available technology, right?

MR. MUDD: Right. So, would you agree with me that some in the development community and home builders were concerned about the BAT systems, the BAT systems, because they were more expensive?

MR. SUMMERS: Yes, absolutely.

MR. MUDD: Okay and would you also agree with me that, that generally speaking, the concern that your Department and the administration had at that time was the impact of sewer systems on water, water bodies and water sheds?

MR. SUMMERS: Septic system impacts specifically on nitrogen levels in the ground water, because septic systems, other than best available technology, do not remove nitrogen. So, a typical septic system, without BAT, is producing something like thirty to forty milligrams per liter of nitrogen. Compared to an advanced wastewater treatment plant, which if being properly operated, can get three milligrams per liter.

MR. MUDD: Okay and --

MR. SUMMERS: So, it's quite significant reduction. Best available technology can't do what a sewage treatment plant does, but it can cut the nitrogen load in half and we're seeing growth in the number of septic systems across the State

and growth in nitrogen pollution of groundwater as a result.

MR. MUDD: Would, would you agree with me that, in all things considered, if, if available, it would be better to discharge affluent into a sanitary sewer system rather than into a septic system?

MR. SUMMERS: Well, there's a lot of debate about that because of the fact that our sewage collection systems, in many cases, are quite old and need to be rehabilitated before we can add additional sewage to them, hence the Consent Decrees that we've been talking about. A well operated septic system can be a very effective way of treating sewage.

But when you get into an area of very high concentration of septic systems, it makes sense to collect, to connect those to the sewage system, provided the sewage system has adequate capacity and the sewage treatment plant is actually working at (inaudible) nutrient removal levels.

MR. MUDD: Okay. I want to show you a news article from 2012. This might be a little bit of a memory test for you, but, this is an article from The Baltimore Sun. And it, and it, I'll actually let you read through it, if you'd like, and maybe you, maybe you'll remember it.

MR. MCCANN: Can you blow that up, Chris?

MR. MUDD: I'm sorry? Blow it up?

MR. MCCANN: Yeah, it's really tiny.

MR. MUDD: Sure.

MR. MCCANN: Thank you. I guess it's tough to with.

MR. SUMMERS: Okay. That must be something else.

MR. MUDD: Yeah, well, the picture is, but the text--

MR. SUMMERS: Oh, okay, it is. There's Ron Bowen from Anne Arundel County. Okay.

MR. MUDD: All right. I didn't mean to do that, sorry. Let me undo that. Okay. I'm going to go down to the next page and I, I, I'll, I'll, what I've, what I've highlighted here that I'd like you to read that, see if that rings a bell to you.

MR. SUMMERS: Did you want me to read it out loud or --

MR. MUDD: No, no, no, just, just want, I just want, what I really want to do is make sure that, there's a reference to Robert Summers, the Maryland Secretary of the Environment with a quote. And I wanted to just see if that, if that is, in fact, you.

MR. SUMMERS: Yes.

MR. MUDD: Okay and do you generally recall this article, the, the, the information --

MR. SUMMERS: I generally recall all the controversy around this. I can't say that I recall this specific and it's also a few quotes out of context. But bottom line is, if we want better water quality, we're going to have to treat our waste to a higher level.

MR. MUDD: Okay. So, I, I, Judge Murphy, I'm going to offer this as Exhibit, and it's a little bit out of order now, but we had started with a number of other exhibits, but this is Exhibit 64.

ALJ: Any objection, Mr. McCann?

MR. MCCANN: I don't think so. I haven't read the whole thing. But if, if he's quoted in it, then I don't have a problem with it.

ALJ: Okay. Mr. Zimmerman?

MR. ZIMMERMAN: The only thing I would say, let's see the whole article. Are, are we, is he offering the whole article or just a couple pages?

MR. MUDD: I am. I mean, it, it ends here. So, it's --

MR. ZIMMERMAN: I mean, I mean, is the art, do we have the beginning of the article as well?

MR. MUDD: Yes, that's where I started.

MR. ZIMMERMAN: Okay, okay. Yeah, I have no objection, yeah.

MR. MUDD: Okay.

ALJ: Okay. So, that's number --

MR. ZIMMERMAN: What's, what's the number, I'm sorry?

MR. MUDD: Sixty-four.

ALJ: Thank you.

MR. MUDD: Great, thank you. Okay. You, you

testified, Mr. McCann was asking you some questions about the County, County's water monitoring that, that, there, there was an exhibit regarding the County's water monitoring results that Mr. Grachek entered into evidence, which is Protestant's Exhibit 75. Do you recall that?

MR. SUMMERS: In general, yes.

MR. MUDD: Okay. I, I can pull it up for you. I'm not trying to trick you, I just, he, he asked whether you were familiar with it, and I guess I'm going to pull this up and show it to you, just to make sure that this is what you are familiar with. So, this was Protestant's Exhibit 75.

MR. SUMMERS: Okay.

MR. MUDD: Do you recall seeing these numbers?

MR. SUMMERS: Yes.

MR. MUDD: Okay and you testified that those numbers were highly variable with spikes, do you recall that?

MR. SUMMERS: Yes.

MR. MUDD: Okay and you also testified that that, that that comes from livestock and sewage spills, was your testimony.

MR. SUMMERS: Sewage spills, I think probably the complete statement was a combination of domestic animals, livestock, wildlife and sewage spills, those, those headings in the tables.

MR. MUDD: Okay. Do, do you agree with me that

Baltimore County does not, does not conduct E.coli sampling based on the source? In other words, unlike the TMDL report, the County does not break it down by human versus animal?

MR. SUMMERS: Yeah, I don't know whether the County has done any of their own bacterial source tracking. But I haven't seen it if they have.

MR. MUDD: Okay. So, when you say that it's based on a combination of livestock, domestic animals and sewage spills, you really don't have any information to back that up, correct?

MR. SUMMERS: I have the, the bacterial source tracking information that's been done in the Jones Falls and for another, a number of other TMDLs around the State. And those are always the sources that vary in percentage, but those are the big contributors, that's all I was saying.

MR. MUDD: Right, so when, so when you're referring to the bacteria tracking in the, that MDE has performed, you're talking about the tracing that they performed in 2006?

MR. SUMMERS: Yeah, the, that, that TMDL tracing, and I'm also aware of other bacterial source tracing that's been done in other areas around the State, which has identified those as the main areas that were sources of bacteria.

MR. MUDD: So, you're, you're relying on other information in other jurisdictions with completely different circumstances to, to justify your statement that this is coming from sewage overflows?

MR. ZIMMERMAN: Objection.

MR. SUMMERS: No, it --

MR. ZIMMERMAN: The question, the question assumes things not in evidence.

ALJ: Overruled. Go ahead, sir.

MR. SUMMERS: All, all I'm saying is, the particular testimony of mine that you were citing, I was just generally indicating the sources of that bacterial pollution. I was not attributing it to Baltimore County. The only in, information I have with respect to bacterial source tracking in the County, in the Jones Falls specifically, is that TMDL. All I'm saying is that is not unlike similar bacterial source tracking results all over the State.

MR. MUDD: Okay. The RJN report, you testified regarding the RJN report, and you, you indicated that it's apparent that the report clearly shows that there's a section of sewer shed downstream from the proposed development that's showing modeled overflows. Do you have any idea whether the models contained in the RJN report have been calibrated by Baltimore County?

MR. SUMMERS: They were calibrated by RJN at the time that report was developed and, I guess, published in, what was it, 2021, I think. I don't know whether the County has changed any of that, other than to say that the Hazen and Sawyer pamphlet indicate that they are in the process of

recalibrating.

MR. MUDD: Okay. Do you have any idea whether the County has verified the model in the RJN report?

MR. SUMMERS: I, I do not, and I don't believe MDE has reviewed and approved it either.

MR. MUDD: Okay. In, in looking at what is recommended in the SRR assessment, you noted that there was a section of sewer pipe in, in BC-22, that's meter, meter basin twenty-two, (inaudible) upgraded to accommodate the flows through that basin?

MR. SUMMERS: Yes.

MR. MUDD: And then you, you indicated and I, I, I think I quoted it that, that if you look at the performance assessment, it shows that based upon monitoring and modeling, that there are still problems in that section. You agree with me that this is all based on modeling, correct? And not monitoring?

MR. SUMMERS: Well, the --

MR. MCCANN: Objection. Hold on, objection. I'm sure Mr. Summers is capable of answering it but what is based on? You said this is all. I, I think the question is unclear.

MR. MUDD: The problems, the problems that he identified, I'll, I'll, I'll ask the question again. You, your, your testimony was that there were problems that were shown, that were based on monitoring and modeling. And my

question is, do you, do you wish to correct that? Do you believe the RJN report ref, relies on modeling, on modeling, just modeling or does it rely on modeling and monitoring?

MR. SUMMERS: I believe the RJN report says that it used updated monitoring information and updated the model with it. I don't know specifically where that monitoring data plugged in to the model. But the report says that they looked at monitoring information that had been collected and developed an updated version of the model.

MR. MUDD: Okay and do you know whether any County monitoring has shown actual sewerage capacity or overflow issues in that meter basin?

MR. SUMMERS: I have not seen any of that data if it exists.

MR. MUDD: Okay. Just want to switch, I'm almost getting there. I want to switch, switch to the Hazen newsletter, which is Protestant's Exhibit 85. Here we go. I'll share this. Can you see that?

MR. SUMMERS: Now I can, yes.

MR. MUDD: Okay and I can, I can zoom in a little bit. I know Mr. McCann did as well. By the way, this is one of the figures, I, I suppose in your, my original questioning of you that you said was difficult to see, is that right?

MR. SUMMERS: Yeah, if you zoom into that, I couldn't, I couldn't read the actual percentages --

MR. MUDD: Okay. So, so, --

MR. SUMMERS: -- in the legend.

MR. MUDD: So, are you, are you then assuming that red indicates a problem here?

MR. SUMMERS: I'm not assuming, that's what the report says if you, excuse me, the brochure says if you go over to the left and down a little bit, it tells you that the red areas are high I&I.

MR. MUDD: Okay, so that's in this area here?

MR. SUMMERS: The red areas respond more dramatically to rainfall. That's what I base that on.

MR. MUDD: Okay. Then, so what is your understanding then of specifically what the red areas show? Sorry, I --

MR. SUMMERS: Well, they, I mean, all I have is that paragraph that we just read to go on. But I believe that it is based on that areas with high rainfall dependent inflow and infiltration during the winter, which would be the worst time of year for inflow and infiltration because plants are not growing and absorbing and transpiring the moisture.

MR. MUDD: Okay. So, you're not testifying then that this demonstrates any capacity issue within the red areas that are highlighted on this report?

MR. SUMMERS: No, I'm not. However, they are looking at high rainfall dependent inflow and infiltration. We know that that is an issue that can cause and contribute to

overflows. We also know based on the RJN report, that the model shows the sections of sewer system downstream of that area, according to the model, would be susceptible to overflows.

So, I'm saying that this Hazen and Sawyer finding makes me additionally concerned about overflows in the lower, in the portion of the Jones Falls sewer system downstream of the proposed development.

MR. MUDD: Have you done any evaluation of any other reports that were prepared prior to this Hazen newsletter to know whether this area has previously been highlighted for rain dependent I&I concerns?

MR. SUMMERS: I have looked at the, the previously mentioned RRR report and the RJN report. I don't know of other reports that have looked at this. But if you go to the RRR report, there are a series of maps showing areas of concern in the watershed, or in the sewer shed, as you go to increasingly larger storm events.

And you see in those maps overflow and capacity issues showing up in the sewer shed from the proposed development down, all the way to the Lake Roland.

And that makes sense with respect to this RDII area map that we're looking at right now and it also, apparently the County has some concern about it because they seem to be retaining Ramble to look at these sewer lines from the Jones

Falls down underneath the, the Lake Roland. So, just, you know, based on, I would say sketchy available information, it gives me concern.

MR. MUDD: Okay. Do you know what data was used to determine this figure three map?

MR. SUMMERS: No. The County has not released anything other than these brochures. So, all I have is the information you see here.

MR. MUDD: Okay. So, so, for example, you don't know whether, do you know whether this is modeled, this figure?

MR. SUMMERS: I think if you read the description that we were just looking at, it, it mentions monitoring.

MR. MUDD: Okay. This, this description here you're referring to?

MR. SUMMERS: Yeah, completed a flow, level and rain flow monitoring data analysis to assess current high rainfall dependent inflow and infiltration.

MR. MUDD: Okay. Do you know what that means, what they would have used to do that?

MR. SUMMERS: Well, I presume the flow refers to the flow monitoring within the sewer system. The level has to do with the depth of the water in the pipes and the rainfall has to do, obviously, with rainfall events.

MR. MUDD: But that, again, --

MR. SUMMERS: Looking at, at high rainfall events and

seeing an increase in the flow and level in the pipes.

MR. MUDD: Okay. But you, you, again, you don't know whether those are observed flows, levels of rainfall or modeled?

MR. SUMMERS: All I know is what that sentence says and --

MR. MUDD: Got it.

MR. SUMMERS: -- it says flow, level and rainfall monitoring. I don't know exactly what it is that has not been made available.

MR. MUDD: Okay, great. Just a couple more. Protestant's Exhibits 100 and 101, which were the 2016 wastewater design guidelines and then the recommended standards, the ten-state document, do you recall those documents?

MR. SUMMERS: Yeah, I thought they were, or they weren't admitted but yes, I recall them.

MR. MUDD: Do you, do you know where you obtained those documents from?

MR. SUMMERS: Yeah, the MDE document came from the MDE webpage, and I think the link to the ten state standards was not accurate in the MDE webpage, so I searched for that and found it online.

MR. MUDD: Okay. How did you do that search?

MR. SUMMERS: Well, it is a very much cited document,

so I just put the title in and was able to get it.

MR. MUDD: Okay. Did you discuss those documents with Mr. Grachek?

MR. SUMMERS: We discussed the capacity design issues with Mr. Grachek and, and he testified about it. I was not thinking I, I would be superseding anything Mr. Grachek said. I was just focusing on that as an indication that in order to, to properly evaluate pipe capacities, you need both dry weather and wet weather flow.

MR. MUDD: Did you, do you know whether the documents that you obtained are the most recent version of, of the design guidelines that MDE (inaudible) --

MR. SUMMERS: (inaudible) the most recent version on the MDE webpage, I have not checked with MDE on that. But we can certainly do that.

MR. MUDD: Okay. You, you mentioned that when EPA, I'm moving now onto some questions that Mr. Zimmerman had asked you. When the EPA brought this lawsuit and, and ultimately entered into the Consent Decree with Baltimore County, again, you were, you were at the MDE at that point, but you were not the Director, or sorry, you were not the Secretary, correct?

MR. SUMMERS: Right.

MR. MUDD: But I, but I believe that you said that it was similar to many other actions that the EPA brought throughout the Country, is that right?

MR. SUMMERS: Yes, at the time we were all very focused on this because it was an EPA enforcement priority, and we were following what EPA and Department of Justice was doing in other states.

MR. MUDD: Do you know how many other Consent Decrees were going on around the country?

MR. SUMMERS: No, I, I don't know the total number. It is many, I've already mentioned, WSSC, I know Philadelphia, Chicago, Milwaukee, most large, older cities were the focus of these efforts by EPA.

MR. MUDD: How many Consent Decrees were entered into during your time at MDE? Not, not when you were in charge, but between 1983 and 2015, if you know, how many Consent Decrees did, did, did MDE enter into with Maryland jurisdictions?

MR. SUMMERS: Well, I, I don't know for sure the total numbers. But I can tell you the ones I recall, and that was Frostburg, Lavale, Cumberland area in Western Maryland. I already mentioned Hagerstown. WSSC, Baltimore City, Baltimore County, Salisbury and I mentioned Centerville. Now, some of these were handled using Consent Orders, the Department's administrative authority, others went civil, I'm not distinguishing between those. But these are all areas where we had combined sewer overflows or sanitary sewer overflows occurring and enforcement was taken. I don't think I mentioned Cambridge, Maryland and there are probably others, but quite a

few going on and, of course, we were well aware that Washington, DC, Richmond, Virginia, a number of places on the Susquehanna River, including Harrisburg and Wilkes-Barre, I know those by virtue of my work with the Chesapeake Bay program. So, it was a very widespread enforcement effort by EPA.

MR. MUDD: Okay and you agree the Consent Degree is a pretty normal process for enforcing these types of issues that arise in, in Maryland?

MR. SUMMERS: Consent Decrees in the more difficult cases, Consent Order typically would be the first avenue to pursue. But the Decree becomes necessary if there's any push back or if EPA gets involved, because they only do it through the Federal Courts.

MR. MUDD: Okay and when, when you were Secretary, did you ever have to get involved in any enforcement of a Consent Decree against a, a County? And I can be more specific if you don't understand what I mean by that.

MR. SUMMERS: Well, all of the Consent Decrees have stipulated penalties whereby if they do not meet certain aspects of a Consent Decree, enforcement action is taken, and a stipulated penalty is paid. If we needed to go back to the Court in, in this situation that occurred with Baltimore City, we wind up with a modified Consent Decree.

MR. MUDD: Okay and are you aware of any such

enforcement action for the Consent Decree that's in effect for this case?

MR. SUMMERS: For Baltimore County, I am not aware of any enforcement at this point.

MR. MUDD: Okay.

MR. SUMMERS: That's not to say they haven't had to pay stipulated penalties. I don't know specifically about that. But typically, if a deadline is missed, there can be a stipulated penalty unless the County was able to convince MDE there was something beyond their control.

MR. MUDD: Okay and lastly, Mr. Wyatt was asking you questions about your understanding of Baltimore County's providing, or maybe not having provided information, certain information to Baltimore City. Do you recall those questions?

MR. SUMMERS: Yes.

MR. MUDD: Okay and you said that you don't know if it, if it is complete or not because you have not seen it, correct? That is, that is the, the flow, the flow information.

MR. SUMMERS: No, I, I don't believe that's correct. Reading the Baltimore City phase two report, the City says that the County has not provided that information --

MR. MUDD: Understood, so, go ahead --

MR. SUMMERS: -- so, personally, I haven't seen the City's letter, which the County, excuse me, the County's letter, which the City cites in their report.

MR. MUDD: Okay, all right. I have, I have no further questions, Judge Murphy. Thank you very much, Mr. Summers.

MR. SUMMERS: Thank you.

ALJ: Mr. McCann, do you have any rebuttal?

MR. MCCANN: Very few, just a couple.

ALJ: (inaudible).

MR. MCCANN: Thank you. I'm sorry, I won't be long, I promise.

ALJ: Yeah.

MR. MCCANN: Mr. Summers, Mr. Mudd was asking you to assume that if the County was very successful in, in eliminating SSOs, then there would be expected improvement in some of the bacteria data for Lake Roland. Do you recall that testimony?

MR. SUMMERS: Yes.

MR. MCCANN: Have you seen anything, any evidence that would support that assumption? That is, that the County has been very successful in eliminating SSOs, at least as it relates to the Jones Falls interconnector as opposed to the Roland Run or Towson Run interconnector.

MR. SUMMERS: No, I, I have not seen any information that indicates they have been successful.

MR. MCCANN: Secondly, Mr. Mudd asked you about legislation regarding the growth tiers and General Assembly's

attempt to address septic systems. Does any of that effort change your opinions expressed today regarding the sources, or source rather, of bacteria in Lake Roland?

MR. SUMMERS: No, I don't see that that applies.

MR. MCCANN: And then lastly, regarding, you just testified about the number of Consent Decrees that may have been issued during your time, does, does the number of Consent Decrees in any way change your opinions that you've expressed today? In other words, does it --

MR. SUMMERS: No, I don't know why it would.

MR. MCCANN: All right. Does it lessen the importance of this Consent Decree in your opinion?

MR. SUMMERS: Not at all. I think the Consent Decrees, as I've testified, are the ones that are the most problematic situations and the big ones in Maryland are WSSC, Baltimore County and Baltimore City.

MR. MCCANN: Okay, all right. Thank you. Nothing else.

MR. ZIMMERMAN: I have just a few, Judge, if I may?

ALJ: No, Mr. Zimmerman, why? You already had your questions. No, we're not redoing it all over again. Based on what? It's Mr., it's Mr. McCann's witness. He does, he does re-direct. You already had questions you asked.

MR. ZIMMERMAN: I would follow-up a couple of Mr. Mudd's questions.

MR. MUDD: No.

ALJ: No, no, no, no. We're not, we're not going back and forth. We had, it was Mr. McCann's witness. You had your opportunities to ask him questions. And so, Mr. Summers is finished. All right. So, that's it for that witness. Mr. McCann, do you have another witness for today or is that all the witnesses?

MR. MCCANN: That's it for us, Your Honor, subject, of course, to the issue I mentioned at the beginning of the hearing. I will tell you that I did, have received an e-mail from DPW at 2:30-ish with a link, a TP link to the documents. So, that's good news. I'll review it as soon as possible and let everybody know where we are.

ALJ: Okay.

MR. MCCANN: Yeah.

ALJ: So, that may or may not answer the question, in other words, it could be that DPWT says you have everything we gave you, right? And --

MR. MCCANN: No, I think they're going to send me a bunch of stuff and I'm going to need to go through it and make sure that there's nothing new. That's the way it works.

ALJ: Oh, oh, okay.

MR. MCCANN: So, it's all right. It'll be a lot of documents but, I, I'll, I'll get through them quickly and let everybody know very soon.

ALJ: So, they gave you a link to the FTP website, which is, so you just go to the website, I mean, download it or see what documents (inaudible) --

MR. MCCANN: Download it, yeah. They don't take the time to pull out things that I've already been given. That would take too much time on their end, so.

ALJ: So, they just repeat it and --

MR. MCCANN: I, I'm assuming that, but that's based on past practice. I haven't looked at it yet, so.

ALJ: Okay and then, so that's that issue.

MR. MCCANN: Yep.

ALJ: The other one was the e-mail confirmations that Mr. Mudd was requesting from the last hearing. So, that had to do with like capacity chart and all. Did you guys have a chance, or, to look at all that or no?

MR. MCCANN: I've sent, I've sent it to Chris and Adam. I don't know if they have it.

MR. MUDD: I have not, sorry, I was preparing for the witness.

ALJ: That's right, you were preparing for the witness. So, yeah, so we still have to go through that. So, given that the Protestants don't have any other witnesses, he can't close his case because we still need to deal with the issue of the PIA request and making sure he has all the documents he needs to put in.

And then also, you all need to make sure you got those e-mails, I guess for the, his e-mails requesting the PIA documents and, and so you'll need to go through those as well before the next hearing, is that right? Does that make sense?

MR. MCCANN: Yeah, we can talk about it. If they have any questions, I'm happy to answer them. I think it's pretty straightforward, frankly, but.

ALJ: Okay and then you agree, Mr. McCann, you'll keep them informed of what it, of whatever it is you, you've learned?

MR. MCCANN: Yeah, I mean, I should, I have a hearing tomorrow, but I should know tonight or give it, have a good sense of things soon, yeah.

ALJ: Okay, all right. Anything else, Mr. Mudd, Mr. Rosenblatt?

MR. MUDD: I, I'd just say, I, I'd like to make a, a request just to Mr. McCann. We, we, you know, I think we would be prepared to go for the next hour, hour and a half, if we were able to do so today. So, I would just ask Mr. McCann to dig into that immediately. And spend the time today trying to figure out what he, whatever it is he's trying to figure out so we can know what we're preparing for in two weeks.

MR. MCCANN: Yeah, I, I can't promise you to get, I, I got a hearing tomorrow before the Board, it'll be all, you know, all day. So, I, I've got a lot of work to do tonight on

other stuff. I, I'll get to it as soon as I can. I've been waiting --

MR. MUDD: I guess what I'm saying is, the thing is, there's an hour and a half we're getting back right now, so I'm just asking you to do that.

ALJ: But you don't want us all to sit here (inaudible)?

MR. MUDD: No, no, no, not now, no. But I, but I'm asking him to spend some time this afternoon to look at it.

ALJ: Yeah, --

MR. MCCANN: Well, I can, I can't make any promises, I can't make that promise. I, I'm not sure, I would never make that request of you guys. I've already spent several hours getting these e-mails together when I really shouldn't have to do that in the first place, frankly. These are public records, Your Honor. I spent a lot of time just establishing because there's some, I guess, inherent disbelief that I actually got these documents from the County. So, I spent a lot of time already. I can't promise you I will get to the documents tonight. I'll do my very best.

MR. ROSENBLATT: It, it's just, it's impossible to proceed this way. We're, we're just totally in limbo if there's no structure to this. It's, it's been months and months of Protestant's case, we're just hearing about this request today. I'm sorry, it's a bit of venting, but it's

incredibly frustrating and there's just no structure to this whatsoever.

MR. MCCANN: Imagine my frustration on my end. Imagine my seventy-five e-mails in, over the past four months. So, it's, it's frustrating on my end too. So, yeah.

ALJ: Yeah. I, I agree. It's been frustrating trying to get the documents that he's been requesting to get too. So, I mean, I don't think there's been no structure to it. In fact, I think there's, there's been structure to this case in terms of trying to make sure we're, we're following, you know, the procedure in, you know, in the courtroom, trying to make sure everyone's heard, trying to make sure everyone's case is, is, you know, presented and make sure it's fair.

So, yeah, I mean, I understand the, the, everyone's got frustrations. There have been times when, you know, certain people needed to leave early, certain times other people needed to leave early and we do try and accommodate, we try to accommodate witnesses even.

The ones that came out of order, for example, you know, Dr. Lum had to get back to work, other, other witnesses had to get back to work and so we, we try and be accommodating to everyone so that everyone can come in and participate and testify.

So, you know, I just want to make sure that Protestant's have enough time to present their, their case and

they need to make sure they have all the documents. So, --

MR. MCCANN: I'm okay with proceeding with other witnesses today if they're non-sewer related, I don't see why we can't do that if we're trying to save time.

MR. ROSENBLATT: We're not going to put on any, any rebuttal case until he rests.

MR. MCCANN: Okay. Well, you can't, you want your cake and eat it too. You want all the documents, but you want to finish (inaudible) --

MR. ROSENBLATT: It's not, it's not wanting it and eating it too.

MR. MCCANN: That's exactly what it is. But it's okay. I'll be quiet, I can --

ALJ: All right, all right.

MR. MUDD: Judge Murphy --

(EVERYONE TALKING AT ONCE)

MR. ROSENBLATT: (inaudible) Your Honor, there is something I would propose to do today. I have had an opportunity to go through all of People's Counsel's exhibits and his letter. And there's only two documents that I'd like to discuss. And, and that's out of what, forty-three exhibits. There's only two and it should only take a few minutes to go through.

MR. ZIMMERMAN: Well, can we go through the ones that, to, I've, I've got, I think I can share them, and I would

like to, you know, on the record get them quickly admitted. And then we can discuss the, the couple that Mr. Rosenblatt is objecting to.

MR. ROSENBLATT: I, I don't even know if you need to. I have no objection to any of them except forty-one and forty-three. And you've e-mailed them to all parties, including the Court.

MR. ZIMMERMAN: Okay.

MR. ROSENBLATT: And I can explain why and maybe clarify --

ALJ: Well, some, some of them were withdrawn, so.

MR. ZIMMERMAN: Right. Can I say what, can I indicate the numbers other than forty-one, forty-three, can I indicate what numbers I would like to admit?

MR. ROSENBLATT: You can, and I can, if it helps, everything you said in your letter is fine. You, you were very clear about which ones you want in, which ones for i.d., which ones are withdrawn.

MR. ZIMMERMAN: I, I want to just briefly just give the numbers of the ones, there's one additional one I think I'm going to withdraw. But can I, can I just list, can I do (inaudible).

ALJ: Well, (inaudible) so Mr. Zimmerman is clear what exhibits he needs, has, which ones he's putting in and which ones he hasn't, because he's given me lots of lists, so.

MR. ZIMMERMAN: Right. First of all, and, and I'm assuming, and when we checked with your office, Judge, she said you have the actual records of what's been admitted. What I have as already admitted is one, three, six through nine, thirteen to fourteen, sixteen, eighteen, twenty-one, twenty-three, twenty-four, twenty-six, twenty-eight, thirty, thirty-one. That's what I have. Hope I didn't go too --

ALJ: Twenty-four, yep, twenty-six, twenty-eight, thirty, thirty-one, that's what I have.

MR. ZIMMERMAN: Okay, good. So, what we're admitting today, which is like virtually all public record, but, well, almost all, so the, number four is the Zoning Office concept plan conference comments. Number five, development plans review conference and development plan comments.

Number eleven is the Foxleigh case, which is on transportation. Number seventeen is Woodley Park, which is a previous decision the, I think you're familiar with from the Board of Appeals. Twenty is selected County and Charter Code provisions.

Twenty-three is a, a supplement to the Hunts, maybe that's been admitted, I'm not sure, Huntspring and Seminary Ridge plats. Twenty-five is just a close up of the development plan, zoning and setback sections. Twenty-seven, just a close up of the site plan notes, you know, part of the Exhibit 1-B of the Developer, I believe.

Twenty-nine, the Davis Farms site plan. And, of course, the opinion was already admitted. The Davis, thirty-two, the Davis Farms record lot table and statistics. Thirty-five, County Council Bills on residential performance standards.

Thirty-six, a little bit more complete excerpt of the development review policy on access points, part of which has already been introduced. Number thirty-seven is County Council Bills on basic services maps, which are list, the numbers are listed.

Thirty-eight is various Zoning Commission, or Administrative Law Judge's decisions on special variances relating to transportation, traffic, which we'll review in our memorandum. Thirty-nine is the master plan on stormwater management, master plan 2020 excerpts.

Forty, we're going to withdraw. We just, we just think it's unnecessary but that's Maryland law and master sewer plans. So, we'll, we'll withdraw forty. Forty-one includes some master plan 2020 excerpts on sewerage that Mr. Rosenblatt may be objecting to. I'm not sure.

Forty-two is just an updated letter from the Department of Public Works indicating what they're proposing for the F level intersections, which is, seems consistent with what we already have. Forty-three is a, some online articles, information, relating to Howard County having resolved its

Consent Decree issues and I, I thought that would be relevant to show that MD staff is working and, and there is some ability of some counties to resolve their Consent Decrees.

And so, I think forty, forty and, forty-one and, I'm sorry, forty-one and forty-three, Mr. Rosenblatt either is objecting to or wants to discuss.

ALJ: Mr. Rosenblatt, right?

MR. ROSENBLATT: Yes, everything you said aligns with the letter you, you gave us last week. So, I, again, everything is fine. I think there's one or two exhibits that I might offline just ask you to resend me because I just couldn't find them. But they're, they're (inaudible) public record, so I'm not objecting to them, I might need them again.

MR. ZIMMERMAN: Can I share, I, I thought we had sent them all but --

MR. ROSENBLATT: I, I think you did. I don't want to take any more time right now. I have no objection to any of it and if I just, if I can't find it, I'll e-mail you. Forty-one --

MR. ZIMMERMAN: I, I appreciate that, Mr. Rosenblatt, yeah.

MR. ROSENBLATT: Forty-one, I just want to share this. It's a master plan excerpt, no problem with this. I'm going to go fast because the first twenty pages are master plan, Baltimore County master plan. And that's all fine. But

then, it's not all master plan. When you get to page twenty-one of the pdf, it switches over to something that's not master plan. It switches to, and I'm just, I'm looking, watching the Court flip so I just want to make sure (inaudible) --

MR. ZIMMERMAN: Can, can I say something? That is, that is an appendix of the master plan. That, that is actually, it's referred to in the master plan. It is, it's on a CD. It is an appendix, whether it's A or B, I don't remember now. It, it is actually an appendix of the master plan.

MR. ROSENBLATT: There's, there's two sheets there, water source element, draft presented to Maryland Department of Planning dated June 14th, 2010. Then, I think, are you saying this is also, these are appendixes to the master plan?

MR. ZIMMERMAN: Everything, the whole water resources element, which begins with the correspondence and then includes the substance, and I think we had, probably had excerpts here. It's a very long, might be a hundred pages. I don't think we included all of them. But --

MR. ROSENBLATT: There's just, there's just a handful but what, the, the last page is an unsigned letter --

MR. ZIMMERMAN: What I'm saying is, we can, everyone can doublecheck me on this. I gave the executive summary. This, this is an appendix to master plan 2020. This is all part of, part of the appendix and I think there's some text in the master plan which refers to it, which I can go back. I

don't have it, those paragraphs so right in front of me now, but this is part of the master plan is what (inaudible) --

MR. ROSENBLATT: I just, if, if that is the case, I'll withdraw my objection. I have never seen that, so I need to go verify that.

MR. ZIMMERMAN: Okay and --

ALJ: Was it just that, that you just verify that? I mean, Mr. Zimmerman is a, you know, officer of the Court and, and if he says it's part of the master plan, it's part of the master plan. If he says it's an appendix, then it is. And if it's an appendix, then it's part of the master plan. So, it would be admitted but --

MR. ZIMMERMAN: Right, --

ALJ: But let's, let's --

MR. ZIMMERMAN: My staff, my staff, we'll send it to him. We can --

ALJ: Let's, hold on.

MR. ZIMMERMAN: I'm sorry.

ALJ: Mr. Rosenblatt can pull it up at another time. He can pull it up and he can look at it. He, he could easily look at it. Just pull up the 2020 master plan on the County website and see if it's part of it. And if it is then, you know, then it is, --

MR. ZIMMERMAN: Okay.

ALJ: -- so, --

MR. ZIMMERMAN: If, if it's not, I'll withdraw it, but I'm pretty sure it is, yeah.

ALJ: Okay, that's fine.

MR. ROSENBLATT: All right.

ALJ: And then forty-three.

MR. ROSENBLATT: Yeah, forty-three, so for, forty-three is a one, four pages, I guess, but this is an article with quotes from Howard County.

ALJ: Right.

MR. ROSENBLATT: We would object on the basis of relevance. That what's happening in Howard County, it, it sounds like a prejudicial argument is being made when there's been, there, it has no basis to this case what's going on in Howard County, what the extent of their obligations in their Consent Decree were versus Baltimore County's.

And I think it would be much more prejudicial for Mr. Zimmerman, or anyone else, to be able to argue that just because Howard, something has happened in Howard County, that it's showing deficiencies in Baltimore County. I don't, I don't think that should be allowed into evidence in this case.

ALJ: I don't think Mr. Zimmerman is going to be surprised by that objection. Mr. Zimmerman?

MR. ZIMMERMAN: Well, I think it, it shows that the MDE is working, and they do have some staff and that there is some possibility of resolving these Consent Decrees. And, of

course, Baltimore County has not. So, in, in the whole picture, and, and there was cross examination by Mr. Mudd about, with Mr. Summers about all these Consent Decrees and hey, this is the status on Howard County. So, now, and I think we can take judicial notice.

Now, if these articles are wrong, these are recent, these, these are quite recent, I think, I don't have, I think it was February of 2023. You know, if these articles are wrong, I'm sure that, I couldn't find anything on the MDE website on it, I tried to check that. So, I haven't had time to, you know, call down to MDE. But it, it seems likely that this is correct, so.

ALJ: Yeah, and so, my position on these newspaper articles, other than the one that was, Mr. Summers admitted and, and agreed and reviewed that he was quoted in there for cross examination purposes, you know, do not get admitted. This is, I mean, not only is it, it just, it, it just, I mean, it has multiple, you know, hearsay statements and it has to do with another jurisdiction. It's just like the, the Baltimore City document that really just doesn't have to do with this particular case.

MR. ZIMMERMAN: All right.

ALJ: And so, you know, we don't need it, it's not relevant and it's not, it's not important for the, for the issues here in terms of the, so. So, we're not going to admit

--

MR. ZIMMERMAN: All right.

ALJ: -- forty-three. But forty-one, Mr. Rosenblatt's going to go check on that one.

MR. ZIMMERMAN: All right. Well, overall, I would just thank you for all your learned rulings on the evidence. And I, I accept, I accept your ruling.

ALJ: I, I thank you. And thank you for, for your, for your kind words there. But so, for Mr. Zimmerman, it, because I know that your assistant is also on here, Rebecca. And if you could then please go through and just make another exhibit list, just a final one --

MR. ZIMMERMAN: Yeah.

ALJ: -- if you could, and then you can say, you know, next to it, you already did this on one other one, an earlier version, where you highlighted in yellow what you wanted to withdraw. If you could go through and do it like Mr. McCann does where he, he just writes in red, in capital letters, withdrawn on your exhibit list --

MR. ZIMMERMAN: Right.

ALJ: -- next to it, strike through it, and then write withdrawn and I know I'm saying because Rebecca is listening. And so, and that would be great. And Mr. Rosenblatt will let us know about the other, the other one. Other than that, Mr. Zimmerman, your, is this your case? Is

this --

MR. ZIMMERMAN: Yes, it is. And forty-three is excluded kind of. It's, wasn't withdrawn but it was --

ALJ: It's not, not admitted.

MR. ZIMMERMAN: Not admitted.

ALJ: Not, not admitted, so --

MR. ZIMMERMAN: We'll put a red through on that one and you'll, the record will be clear anyway.

ALJ: Thank you. And yeah, we just want to make sure we have a current list of everyone's exhibits to make sure we know what's in evidence. Yeah, so, okay. But Mr. Zimmerman, just so one more time, so your case is, your case is --

MR. ZIMMERMAN: Yes, that is --

ALJ: -- hold on --

MR. ZIMMERMAN: That is correct. That is correct.

ALJ: Your case is finished.

MR. ZIMMERMAN: Yes, it's finished.

ALJ: Okay. Just want to make sure, I just want to make sure that that's the case, so we, okay. So, now it's 4:00. So, we're going to come back another, I think we have April the 11th is the next day, the hearings, okay? Twelve, day twelve.

MR. MUDD: Judge Murphy?

ALJ: Yes, Mr. Mudd?

MR. MUDD: At, at, at the risk of scraping at an old

wound, I, I just wanted to say two more things about the, the, our frustration. First of all, I'm sorry that we're, that Adam and I are visibly frustrated. But I wanted to explain the source.

I'm not, I'm not at all suggesting or trying to deprive Mr. McCann of putting his case on. He certainly deserves the ability to do that. Our frustration is that we, we tend to resolve these issues on days that, that, leading up to that date.

We think that we're going to be, turning it over to us. And I think this is the second or third time we've come to a hearing with that expectation and now we're not able to do it. And so, we find ourselves on the date of the hearing, like I'm going to do now, suggesting that we get another date because sitting here today, we don't know what the next day holds.

And every day that goes by without an ability for us to get a date for our client means that we're into May and then maybe beyond May. So, that's really what's driving our frustration. But I think that in light of what we're hearing today, we'd ask you to ask Kristen for another date so that we don't wait until the 11th to figure it out.

ALJ: Understood. All right. I can certainly do that. I can send her an e-mail, copy everyone like I did before. Mr. McCann is going to let all, everyone know, not me,

but he's going to let everyone else know, you know, within the next week or so maybe, whether the documents are what he needs. And then he may say I'm completely finished, and he can open on April the 11th and say I, I close my case.

MR. MUDD: Great.

ALJ: And then, and then we're done and then you can just begin. So, it may just be that we don't need another day. And you'll finish your rebuttal in one day?

MR. ROSENBLATT: That is definitely the goal.

ALJ: The goal, is that the goal? Okay.

MR. MUDD: Yeah, I mean, I, I, sitting here today, I think we expected to at least put a couple of witnesses on, and we can't. And, and I think one of our witnesses, at the very least, is going to be quite a lengthy witness, particularly on, on cross. So, that's another reason that I think we need yet another day.

ALJ: Okay.

MR. MUDD: Because we also don't want to start a witness and then be, have them be sequestered for the entire time between the first and second day, we cannot do that.

ALJ: You mean, between the, if you have two days (inaudible) --

MR. MUDD: Between the twelfth and thirteenth day.

ALJ: Yeah, oh, twelfth and thirteenth day, okay. Understood. All right. So, that means I'll send an e-mail to

Kristen and copy everyone.

MR. MUDD: Thank you. I'm sorry. Sorry, (inaudible) --

ALJ: No, not at all. Everyone, everyone has their own frustrations and it's all understandable, trying to make it fair. So, all right.

MR. MUDD: Understood. Thank you.

MR. MCCANN: Thank you, Judge.

ALJ: Thank you, everyone. All right. We're going off the record.

VOICE: Thanks.

MR. MCCANN: Take care.

VOICE: Bye.

[OFF THE RECORD]

CERTIFICATE OF TRANSCRIBER

I hereby certify that the hearing in the matter of Greenspring Manor, 2310 W. Joppa Road, case numbers 08-0922 and 2021-0250-SPH, heard before the Office of Administrative Hearings for Baltimore County, March 27, 2023, were recorded by means of audiotape.

I further certify that, to the best of my knowledge and belief, page numbers 1 through 188 constitute a complete and accurate transcript of the proceedings as transcribed by me.

I further certify that I am neither a relative to nor an employee of any attorney or party herein, and that I have no interest in the outcome of this case.

In witness thereof, I have affixed my signature this 28th day of May 2023.

Christine R. Leary

Christine R. Leary

Transcriber

IN THE MATTER OF:

GREENSPRING MANOR
2310 W. Joppa Road

CASE NUMBERS: 08-0922 & 2021-0250-SPH

Hearing Date: February 10, 2023

Pursuant to Notice, the above-entitled hearing was held before the Office of Administrative Hearings for Baltimore County by remote access.

PRESIDING:

MAUREEN J. MURPHY, ADMINISTRATIVE LAW JUDGE

FOR THE PARTIES:

ADAM ROSENBLATT, ESQUIRE
CHRISTOPHER MUDD, ESQUIRE

MICHAEL MCCANN, ESQUIRE

PETER MAX ZIMMERMAN, PEOPLE'S COUNSEL
FOR BALTIMORE COUNTY

Christine R. Leary
crleary1@comcast.net

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(ON RECORD)

ALJ: Good morning, everyone. You're attending day ten for case numbers 08-0922 and 2021-250-SPH. Property address 2310 West Joppa Road. This is the combined development plan and zoning case for the project known as Greenspring Manor. And for the record, we'll have the counsel introduce themselves starting with the Developer.

MR. ROSENBLATT: Good morning, Judge Murphy. Adam Rosenblatt and Chris Mudd of Venable, LLP on behalf of the Developer/Petitioner.

ALJ: All right.

MR. MCCANN: Good morning, Judge. Michael McCann on behalf of the Protestants.

MR. ZIMMERMAN: Peter Max Zimmerman, People's Counsel.

ALJ: Okay, all right. So, we're in Mr. McCann's case today. We have some people joining us here, I see. I'm just muting people's microphones that don't need to be unmuted. Mr. McCann, I had two exhibit questions for you before you call your next witness.

MR. MCCANN: Sure.

ALJ: So, yeah, so after the last hearing on January 30th, I know you submitted a revised exhibit list, I appreciate that. But then you submitted the documents for fifty-two, fifty-four and fifty-five that were withdrawn. I'm just trying

to make sure that we have the documents so I'm not sure what I'm supposed to do with these.

MR. MCCANN: Are you asking me whether you, you, you have them, if I've sent them to you, is that what you're asking?

ALJ: You have, you did send them, so I have them, I have them right here.

MR. MCCANN: Yeah.

ALJ: You've marked them as withdrawn and on the last, in the last hearing, I remembered that they were withdrawn. But then you sent them to us, so I'm not sure.

MR. MCCANN: Yeah, yeah.

ALJ: Yeah.

MR. MCCANN: I don't know why I did that. So, I should not have sent them, but they are as my exhibit list says in, I think in red, they're withdrawn, so.

ALJ: Okay. So, do I put them in the trash?

MR. MCCANN: You can put them in the trash.

ALJ: Okay. Well, you see, you're watching me put them in the trash --

MR. MCCANN: I am.

ALJ: -- just so we can all, we're all together on the same page. Okay. So, second question was, then you submitted, so we have fifty-six and fifty-seven, then I have the list and I had these pages that were not like labeled or

stapled to anything. So, they're kind of just loose. And they say Kimley Horn on them so it definitely refers to fifty-six and fifty-seven. But I'm not sure which one is which. And, and they're not, it's not labeled, so.

MR. MCCANN: Yeah, so, I'll resend those to you --

ALJ: Well, you don't have to, you can just tell me, and I'll write it on here.

MR. MCCANN: Yeah, I can tell you right now. I think what I mistakenly did is I, I don't send them to Donna and Deb stapled, because I think they need to copy them or, so I should have just stapled them, but I did not. I just found out that I did not need to do that. So, I can tell you where each --

ALJ: Yeah.

MR. MCCANN: -- each starts. So, fifty-seven, let me just, fifty-six, fifty-six, and I can pull it up if you want, is, you want me to pull it up, Your Honor?

ALJ: Yeah, you might as well. I mean, just so I, this all, this all looks like one document, but.

MR. MCCANN: Yeah, it, so the first one is this, this is the first page and it's five pages.

ALJ: Oh, okay. So, three, four, five. And then, --

MR. MCCANN: Fifty-seven begins with this schematic.

ALJ: Got it. All right. I'm just going to mark them on here so you don't need to resend, no, no need to resend more copies of things.

MR. MCCANN: Okay, great.

ALJ: So, fifty-six and Protestant fifty-seven. Okay, that's what I needed to know. All right. So, Mr. McCann, we're still in your case and I understand you have two witnesses today.

MR. MCCANN: I do, yep.

ALJ: All right. Sounds good. So, who's –

MR. SACHSE: Hey, Judge. This is Doug Sachse. I just want to know if I could interrupt a second. I did this before, I'm going to be checking out for about two hours, so I just didn't want you to worry about finding me or calling on me.

ALJ: Thank you for letting us know and so, that does help actually, because when I call on you for cross, I know --

MR. SACHSE: Right.

ALJ: -- if I don't see you, I know you're not there.

MR. SACHSE: Gotcha, thank you.

ALJ: When you pop back in, then I'll, then I'll let you know, ask you if you --

MR. SACHSE: Appreciate it, take care.

ALJ: Yeah, okay, thank you.

MR. MCCANN: So, we would call Mr. Grachek, Randall Grachek first. I think I see him.

ALJ: Okay. Mr. Grachek, you can unmute your microphone. Can you hear me?

MR. GRACHEK: Yes, I can.

[MR. GRACHEK'S CONNECTION WAS NOT CLEAR]

ALJ: All right. I know you signed in twice, but this connection looks fine so I, you're in as an attendee as well, but we'll just leave you on here. All right. So, if you could raise your right hand, please? You swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. GRACHEK: I do.

ALJ: All right. And so, Mr. McCann, I know Mr. Grachek has been sworn in as an expert in other cases, at least two in front of the Office of Administrative Hearings that I know of. So, I know you have his resume here. What are you offering him as an expert in, just trying to move --

MR. MCCANN: I will offer him in the same areas he was offered in in both the Torch Hill case and the Blue Stone case, case, which is, which are, number one, wastewater engineering, generally speaking, and two, the evaluation of sewer systems and their capacities.

ALJ: Sewer system and capacity. Mr. Rosenblatt, did you need voir dire?

MR. MUDD: I'm actually going to be handling this witness, Judge Murphy.

ALJ: Oh, sorry.

MR. MUDD: And no, I don't, I don't necessarily

object to his expertise in those areas. Obviously, he was accepted in those areas before. I do have some questions, but I can just save them for cross examination that would go to, you know, experience and things like that.

ALJ: Correct, yep, that sounds good.

MR. ZIMMERMAN: Can I, can I ask some questions?

ALJ: Do you have, do you need voir dire of Mr. Grachek as an expert?

MR. ZIMMERMAN: Well, I'm not, I haven't been familiar with him, so I just would like to ask a few background questions, unless he has a c.v. that's being --

ALJ: He, he does. Mr. McCann, I didn't mean to short circuit you here, but he has been admitted before. Mr. McCann has an ex, fifty-eight is his resume.

MR. ZIMMERMAN: Okay, all right. I don't think I've seen it, once I, maybe once I see it, I won't have to ask any questions. But it --

ALJ: Do you want, do you want it on the screen, is that what you're asking for?

MR. ZIMMERMAN: Yeah, yeah, could we see it on the screen? Could everyone see it on the screen?

ALJ: Mr. McCann has control, so.

MR. MCCANN: And I can, I can send it to Mr. Zimmerman as we speak.

MR. ZIMMERMAN: All right. To save time, maybe it

would be nice for everyone in the audience to see his, you know, just run through, run through the pages quickly so all the citizens can see his experience as well.

ALJ: Right, well, it's on the screen and so we're just asking if you had voir dire based on what you're looking at here.

MR. ZIMMERMAN: Yeah, that, that, I, as long as, I mean, this is, I didn't see this before, so it's fine. So, to save time, I won't ask any questions. I would, by the way, ask Mr. McCann to send us an updated list of exhibits. We don't, we don't have an updated list of all his exhibits.

MR. MCCANN: Will do.

MR. ZIMMERMAN: Okay. That, that, that, so to save time, yeah, now that we have the, his c.v., I assume that's admitted?

ALJ: I was going to ask you if you had any objection.

MR. ZIMMERMAN: Yeah, no, no problems, no problems.

ALJ: And Mr. Mudd, any objection?

MR. MUDD: To the c.v.?

ALJ: Yes.

MR. MUDD: No.

ALJ: Okay. Fifty-eight is admitted. All right, Mr. McCann.

MR. MCCANN: Okay, great. Thank you, Judge. Good

morning, Mr. Grachek.

MR. GRACHEK: Good morning.

MR. MCCANN: Let me maybe ask you a couple background questions. Are you familiar with the sewer system in, in Baltimore County?

MR. GRACHEK: Yes.

MR. MCCANN: How so? How is it that you're familiar?

MR. GRACHEK: I reviewed a plethora of documents and I visited the site.

MR. MCCANN: Okay. When you say the site, you mean the site of this development, proposed development?

MR. GRACHEK: I visited the site of the development and the sewer system leading down to the County line from the development.

MR. MCCANN: Okay. What kind of, what kind of system would you call Baltimore County's system?

MR. GRACHEK: It's a, your normal, a normal gravity flow sewer system with individual laterals coming from, from the, the users to collection lines to then finally trunk lines. Very typical of a, of a municipal sanitary sewer system.

MR. MCCANN: Okay and you said lateral lines and trunk lines. Real quick, just explain what those are.

MR. GRACHEK: You have connector lines that connect to the houses or the businesses or whoever uses the system. You have laterals that collect from those areas and they feed

into what is called trunk lines, which are the main lines that end up going out, in this case, to the City, so that they can be conveyed to the treatment plans in the City.

MR. MCCANN: Okay. Mr. Grachek, you're, could you try to adjust your volume a little bit? At least to my end, and I know we've had this problem before, --

MR. GRACHEK: Yeah, I, I, I've got mine turned up all the way and, and I'm having a little trouble hearing you too, so. I'm not sure how --

MR. MCCANN: Yeah, I have mine, maybe we should turn it up all the way. Could you turn yours down a little bit, maybe just speak louder instead? I don't know if that's going to work or not.

MR. GRACHEK: Okay, all right.

MR. MCCANN: Well, Judge, can you hear him fine?

ALJ: I can. It, it has a little bit of a tinging sound, but I can hear him.

MR. MCCANN: Okay, maybe it's my ears. Okay. In terms of your experience with evaluating other sanitary sewer systems, is there anything unique or special about Baltimore County's system?

MR. GRACHEK: The only, the only thing that's unique about the system is most systems end up leading to a treatment plant that's run by the municipality. In this case, all the wastewater in the sewer shed we're talking about ends up being

conveyed to the City, so that it mixes with their system. Other than that, it's a normal gravity, gravity flow system.

MR. MCCANN: Okay. So, across jurisdictional lines, is that what you're saying?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Are you, also by way of background, are you presently working on any sewer system issues in Baltimore City?

MR. GRACHEK: Yes, I am, I am assisting the Chesapeake (inaudible) in evaluation of the Back River and Patapsco plants and their repairs and, and all the work that has to be done to get those plants up to, you know, up to operational efficiency.

MR. MCCANN: Okay. You mentioned the Back River plant. Is that, is that the plant that receives all of the sewage from the Jones Falls sewer shed?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and were, and we'll get to this in a moment, but this property and where most of us are sitting right now, is within the Jones Falls sewer shed, is that right?

MR. MUDD: Objection. Judge, I know that he's trying to move things along, but he cannot testify.

ALJ: Yeah. So, I do, I was actually going to jump in and say that. I know you, you tend to do it --

MR. MCCANN: Okay.

ALJ: It, it's just, if you could ask open end, and because he's an expert, ask open ended questions. Thanks.

MR. MCCANN: I will do that. I will do that. What sewer shed are, is the subject property located in?

MR. GRACHEK: The property is in the Jones Falls sewer shed and it's along the, the Jones Falls line on the west side of the, of the sewer shed.

MR. MCCANN: Okay. So, you said you visited the site. In addition to visiting the site, what else have you done to prepare for your testimony in this case since you've been first retained to do so?

MR. GRACHEK: I reviewed many documents, documents including the, the original RK&K report and (inaudible) model. I reviewed newsletters from (inaudible). I've reviewed an RJN report, performance evaluation, a (inaudible) report on the issues with the trunk line under Lake Roland and newsletters from (inaudible).

MR. MCCANN: Okay. So, have you reviewed a lot of documents from Baltimore County, is that fair to say?

MR. GRACHEK: Yes.

MR. MCCANN: And have you also reviewed documents from various consultants hired by Baltimore County?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and have you reviewed documents that are new or different than those that existed at the time

of the Blue Stem and Torch Hill decisions that we referred to earlier?

MR. GRACHEK: Yeah, the, the, the new documents I've looked at, the (inaudible) report is a new document, the (inaudible) documents are, are new also.

MR. MCCANN: Okay and are these new and different documents significant, in your opinion or are they, are they significant to the opinions you'll express today?

MR. GRACHEK: I --

MR. MUDD: Objection, objection.

ALJ: Mr. Mudd?

MR. MUDD: I mean, again, he's putting words into the mouth of his witness here, Your Honor.

ALJ: Yeah. So, just, yeah, Mr. McCann, just try not to do that. You can ask him to describe the reports and how he feels about them. But you heard the issues. So, if you could rephrase.

MR. MCCANN: The que, yeah, the question is simply are they significant to his opinions. Is that, is that a leading question, Your Honor?

ALJ: No, that's fine. I think that's a fine question.

MR. MCCANN: Yeah. Yes or no, Mr. Grachek, and we'll move on.

MR. GRACHEK: Yes, they are significant.

MR. MCCANN: Okay. I think you mentioned, is the system in Baltimore County is it what's called gravity fed?

MR. GRACHEK: Yes.

MR. MCCANN: And I think we all know what that probably means, but what does it mean? Explain that if you would.

MR. GRACHEK: A, could you repeat that again, Michael?

MR. MCCANN: What, yeah, what is gravity fed mean? A gravity system?

MR. GRACHEK: Okay. A gravity system is where there's, there's no pumping of the sewage that the, that the, you know, typically in a, a waste, a wastewater system, you'll have, the sewer lines will follow the normal topography to a collection to be collected and the, basically the wastewater will flow downhill.

There are occasions when you have pump stations that will try to pump over certain features, you know, that might be in the way. But, but in general, we're talking about a gravity flow system through the Jones Falls sewer shed.

MR. MCCANN: Okay. Let me show you Protestant's Exhibit 59, which consists of two pages. Can you see that, Mr. Grachek?

MR. GRACHEK: Yes.

MR. MCCANN: And what, what is this map?

MR. GRACHEK: This is a map of sewer sheds.

MR. MCCANN: Okay and is the Jones Falls sewer shed depicted in this map?

MR. GRACHEK: The Jones Falls sewer shed is the green one in the middle and the property that where the subject is, the, the polygon in the middle of, or the upper area of the, of the green area.

MR. MCCANN: Okay and I'll show you the next map in this same Exhibit 59. What is this map?

MR. GRACHEK: This is the, this is the blow up of the, of the same map showing the, showing the proximity of the site to Lake Roland and the streams to Lake Roland.

MR. MCCANN: Okay. I should ask you, what, what is a sewer shed? I think we've all heard the term water shed, but what is a sewer shed?

MR. GRACHEK: A sewer shed is a distinct area where, where, it's a capture zone with, for wastewater within an area where gravity flow from an extended area to a specific point.

MR. MCCANN: Okay. I'm going to show you the next exhibit. And if you don't mind, Your Honor, well, I guess I'll just move in fifty-nine, the two maps consisting of fifty-nine at this point, before I move on.

ALJ: Yeah, so we don't forget to move them in. So, any objection, Mr. Mudd?

MR. MUDD: No objection.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

ALJ: Thank you.

MR. MCCANN: Okay. Let me show you Protestant's Exhibit 60. Tell us what this map is, Mr. Grachek.

MR. GRACHEK: This shows, this shows in more detail all the streams that lead to Lake Roland. This gives you a general idea, although it's not a topographical map, it gives you a general idea of where the main sewer lines would be placed because, obviously, the, the, the streams are the low points of, of the area.

MR. MCCANN: Okay and is the subject property outlined on this map?

MR. GRACHEK: Yes, the subject property is in the, in the upper, upper middle portion.

MR. MCCANN: Okay.

MR. GRACHEK: Of the polygon.

MR. MCCANN: And what are, what are the, the major streams in the sewer shed or stream systems?

MR. GRACHEK: The Jones, Jones Falls, there's Towson, Towson Run and Roland Run. The Jones Falls is the west, the Towson Run is to the east and the, and the, the Roland Run is to the north.

MR. MCCANN: Okay. So, those three streams, I wanted to have you identify where they are in this map. This, this

sort of pronounced blue line to the right, right, or east side of the subject property, what stream is that?

MR. GRACHEK: That's Roland Run.

MR. MCCANN: Okay and then to the east, or to the right side of that, this pronounced blue line, what stream is that?

MR. GRACHEK: That is Towson Run.

MR. MCCANN: Okay and then to the left or the west, or below rather the subject site, what stream system is this?

MR. GRACHEK: That's Jones Falls.

MR. MCCANN: Okay and do all three of those streams flow to the same point?

MR. GRACHEK: Yes, they all flow, they all flow to Lake Roland.

MR. MCCANN: Okay and is Lake Roland depicted on this map right here?

MR. GRACHEK: Yeah, Lake Roland is the blue, where your cursor is, the blue area where the cursor is right now.

MR. MCCANN: Okay. Your Honor, I would move Exhibit 60 into evidence.

ALJ: Mr. Mudd?

MR. MUDD: No objection.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

ALJ: Thank you.

MR. MCCANN: Thank you, Judge. Okay. Let me show you Exhibit 61, and I'll scroll down, it's eleven pages. I'll have you see all them first, then I'll ask you to identify what this eleven page document is.

MR. GRACHEK: This document shows the pathway of sewage that would, would come from the new development, all the way to the County line.

MR. MCCANN: Okay. When you say the County --

ALJ: Sixty-three you said or sixty --

MR. MCCANN: This is sixty-one.

ALJ: Sixty-one I have as the RK&K Jones Falls study area.

MR. MCCANN: It is, I'm sorry, it is, it is sixty--

ALJ: It is sixty-three, right? Yeah, you just went ahead, okay. Well, we'll, well, this is sixty-three for the record.

MR. MCCANN: Yeah, thank you. Okay and these numbers on, on the map, on the eleven pages, what do those numbers represent?

MR. GRACHEK: Manholes.

MR. MCCANN: Okay and when you say this shows the sewer path, is, just to be clear, is, is, are you referring to the, the highlighted lines on here?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. The other green lines are what,

and numbers, what are they?

MR. GRACHEK: Those are other, other sewer lines for other (inaudible) sewer shed.

MR. MCCANN: Okay. Let me go back to, bear with me one second. Do you see that map?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. This is Protestant's Exhibit 61, Your Honor. And I'll get back to sixty-three in a moment. What is this map?

MR. GRACHEK: This is a map of all the sewers in the Jones Falls sewer shed. The small, or the lighter green lines are the smaller pipes that emanate from the different users.

MR. MCCANN: Um hm.

MR. GRACHEK: And as, as the pipes get more bold, that indicates they're, they're moving to bigger pipes, to (inaudible), you know, to (inaudible) trunk lines. So, the, the larger (inaudible) that everything feeds into.

MR. MCCANN: And I know it's diff, difficult with, with all these lines to direct, for the record anyway, where they are. But tell us where the, the main trunk lines are for the sys, are for the sewer system in the Jones Falls and what they're called.

MR. GRACHEK: Yeah, the, the, the main laterals are on the west side, it would be the Jones Falls interceptor, which is where your cursor is (inaudible) --

MR. MCCANN: Right here?

MR. GRACHEK: Right there.

MR. MCCANN: Okay.

MR. GRACHEK: And then, the Roland Run interceptor is to the north --

MR. MCCANN: Right here?

MR. GRACHEK: That area. And then, the Towson Run interceptor is to the east. It all feeds into a, a structure that then sends all the wastewater to Lake Roland, the Lake Roland interceptor that is under Lake Roland, which is --

MR. MCCANN: Okay. So, this point, this point that I have my cursor on right now, which is difficult to describe for the record, but it's where those three lines meet that you just described sort of in the, in the --

MR. GRACHEK: Um hm. Yes, there's a, there's a, you know, often times you'll, you know, you'll have, you'll have these pipes meet at manholes. This is actually a little bigger than a manhole. It's like a juncture box where major, major laterals meet to, to a main interceptor.

MR. MCCANN: Okay and at that point where my cursor is, that is where the three trunk lines that you just described, what, where is that in relationship to Lake Roland itself?

MR. GRACHEK: That's on the north side of Lake Roland.

MR. MCCANN: Okay.

MR. GRACHEK: And the, the sewage flows by gravity underneath Lake Roland, the pipe was installed underneath Lake Roland under the bottom of the, of the lake. And then flows out to what you see is TSJF01, which is the, the meter box that enters Baltimore City.

MR. MCCANN: Okay. This, I'm sorry, I'm blowing it up here. So, when you say, well, a couple things. Number one, from the point I just asked you to describe, there's a green line that is below that, that's sort of going straight up and down. What is that line?

MR. GRACHEK: That's the Roland, or that's the Lake Roland interceptor. That's the main trunk line that goes out of the Jones Falls sewer shed.

MR. MCCANN: Is that under water?

MR. GRACHEK: Yes, that's, it's under water, un, under Lake Roland. But then the remainder, as it turns to the left, it's no longer under water, it's underground but there's no water, under water.

MR. MCCANN: Okay. So, in this point you've identified as TSJF01, what does that blue dot indicate again?

MR. GRACHEK: That's the, the meter, meter box to meter the flow into the City.

MR. MCCANN: Okay. So, the, the three trunk lines that you identified, Jones Falls, the Roland Run and the Towson

Run, does, does all the sewage from those trunk lines go to Lake Roland and then to TSJF01?

MR. GRACHEK: Based on, based on the mapping that we have here, it looks like the large majority does. It's possible that there might be some ancillary lines, meter boxes, you see meter boxes on, to the, to the west, that may have some that enter other areas to the, to that, but I don't have the information for that. But it's safe to say the vast majority of the wastewater that flows from the center, from the sewer comes in from TSJF01.

MR. MCCANN: Okay and then does, in terms of, does, does all of the sewage from the Jones Falls go to the City?

MR. GRACHEK: Yes, it goes to the Back River plant at the City, through the City and to the Back River plant.

MR. MCCANN: Okay, all right. Your Honor, I would move this exhibit in, which is sixty-one.

ALJ: Mr. Mudd?

MR. MUDD: No objection.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

MR. MCCANN: I want to show you what has been pre-marked as Exhibit 62. And I'll blow it up a bit.

MR. MUDD: I'm sorry, that last exhibit was sixty--

MR. MCCANN: One.

MR. MUDD: One?

MR. MCCANN: One.

ALJ: Sixty-one. The last one was sixty-one.

MR. MUDD: I thought we said sixty-one was RK&K, am I wrong about that?

ALJ: Sixty-one, at the bottom of it, has RK&K Engineers on it, with the Jones Falls, I mean, there's like a little border at the bottom.

MR. MUDD: Oh, I got it. I see. I misunderstood. Okay, so that was sixty-one, okay. Sorry, go ahead.

ALJ: But same thing is true for sixty-two, it's another one.

MR. MUDD: I, I (inaudible).

ALJ: Okay.

MR. MCCANN: Tell us what sixty-two is, Mr. Grachek? Mr. Grachek?

MR. GRACHEK: Yes?

MR. MCCANN: Tell us what Exhibit 62 is.

MR. GRACHEK: This is, this is the same map as the previous, but this shows highlighted the pathway of sewage from the proposed development to the County/City line.

MR. MCCANN: Okay and, and where and how is the, the subject property depicted on this exhibit?

MR. GRACHEK: It's the high, it's the one that's highlighted in blue.

MR. MCCANN: No, the subject property, that is.

MR. GRACHEK: Yeah, the subject property is the, the yellow polygon.

MR. MCCANN: Right here?

MR. GRACHEK: Right there.

MR. MCCANN: Okay and then the, what is the blue highlighting?

MR. GRACHEK: The blue line is the pathway of sewage from, from that proposed development to the County line.

MR. MCCANN: Okay. So, which, which of those three interceptors does the sewage flow from the subject --

MR. GRACHEK: It's on the Jones Falls interceptor line.

MR. MCCANN: Okay, all right. I'm going to go back to, I would move this exhibit into evidence, which is Exhibit 62.

ALJ: Mr. Mudd?

MR. MUDD: No objection.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: And no, no objection here.

ALJ: Thanks.

MR. MCCANN: Okay. So, I'm going to go back to sixty-three, which I haven't moved in yet. But do you see that, Mr. Grachek?

MR. GRACHEK: Yes.

MR. MCCANN: So, does the highlighted portion in this

exhibit track the same highlighting that we just reviewed with respect to Exhibit 62?

MR. GRACHEK: Yes.

MR. MCCANN: Okay, all right. I would move Exhibit 63 into evidence.

ALJ: Mr. Mudd?

MR. MUDD: No objection. But I, I, and Michael, you can proffer this, are, are these, these exhibits, where did they come from?

MR. MCCANN: This, this is My Neighborhood and, as well as the prior two are, the prior exhibits are from My Neighborhood as well.

MR. MUDD: The RK&K exhibits are from My Neighborhood?

MR. MCCANN: Oh, I'm sorry. No, no, this one is from My Neighborhood and the R, the prior two exhibits, the, the sewer maps, both the highlighted and unhighlighted one, are from the R, RK&K reports.

MR. MUDD: Got it, okay. No objection to sixty-three.

MR. MCCANN: Yeah.

MR. MUDD: Thank you, Michael.

ALJ: Mr., Mr. Zimmerman?

MR. ZIMMERMAN: No objection. I assume RKK is Rummel, Klepper and Kahl?

MR. MCCANN: That's correct.

MR. ZIMMERMAN: All right.

MR. MCCANN: Okay, I'll move on. Exhibit 64, do you see that document, Mr. Grachek?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. What is this document?

MR. GRACHEK: It basically is a, is an analysis of, of flow through service areas for the, for the (inaudible) Jones Falls interceptor, with the Johns Hopkins existing use credits.

MR. MCCANN: Okay. Is this, is this, who, whose document is this? Who created this document?

MR. GRACHEK: My understanding is that the County did.

MR. MCCANN: Okay and let's just go through it. Maybe I'll use a little bit of highlighting to sort of, you mentioned, I guess, number one at the top it says Jones Hop, Johns Hopkins existing use credits. How is it you say that this is the, an analysis for the subject property?

MR. MUDD: Your Honor, I'm going to object to, I guess, (inaudible) line of questions and just ask you to make a ruling at this point. I'm not sure that sufficient foundation has been laid through this witness as to where this document came from. He, he indicated that it's his understanding that it came from the County, but I, I'm not sure that that's the

case.

ALJ: So, could you just ask some more questions on foundation with that --

MR. MCCANN: Well, it imparted, it, it gets, it's not complicated. But the, this is a document that I received in response to a Public, Public Information Act request, specifically directed to the County's capacity analysis for this development.

So, as most attorneys do in a lot of cases, I obtained this document and gave it to my client, so he didn't contact the County and find it. But this I can, I can introduce to you the e-mail exchange the constituted the PIA request and the County's response.

But I don't, there's no dispute at all in my mind that this is what, what the County told me it is and it's very similar, as you know, Your Honor, to the very same type of chart that was introduced in Torch Hill, that was likewise provided by the County based on my request.

ALJ: Right, I, I remember that. I remember this chart and I think you actually had the e-mail where you even said that it was a Public Information Act request. So, Mr. Mudd, do you not recall this document from Torch Hill (inaudible) --

MR. MUDD: I, I don't think, I, I recall a similar one, but Torch Hill ran a different, a different (inaudible).

ALJ: Right.

MR. MUDD: I guess what I'd like, I'd like for the record to comp, be complete here, Your Honor, and I'd like, if he doesn't mind, and he can continue the examination, but I'd like to have the backup e-mails would be helpful, I think.

MR. MCCANN: Absolutely. I can absolutely have those --

ALJ: And last time, Mr. McCann, I think it was, I want to say it was in a different exhibit and you actually had it. So, I'm not sure if it's here but if you don't, you can just provide it.

MR. MCCANN: Yeah, I don't have it as an exhibit, but I have it relatively handy, so it wouldn't take me long to find it.

MR. MUDD: And then, just one other question, if I may, and I guess this is really a question of Mr. McCann, but I just want to make sure that this exhibit is unaltered from what he received from the County in its entirety.

MR. MCCANN: It is, other than the fact that I have some highlighting for the, as we'll explain, for the (inaudible).

MR. MUDD: Okay.

MR. MCCANN: Yeah, that's it.

MR. MUDD: Okay.

ALJ: So, what we, what we can do is just attach,

when you send the e-mail over, we can make it 64-A, so that it's, it's stapled to it.

MR. MCCANN: Yep.

MR. MUDD: Great. Thank, thank you both. Thank you.

ALJ: Okay.

MR. MCCANN: Yep. Okay and I will do that when we get a break, Your Honor. Okay. May I go ahead, Judge?

ALJ: Absolutely, go ahead.

MR. MCCANN: Okay. So, I wanted to, as I said, sort of go through some of the sections of this on the first heading here on the lefthand side, it says area parameters. If we scroll down, it, then it says pipe schedule. This is on the second page of this Exhibit 64. And then, sort of the next subheading is system analysis.

And this is what, for present purposes, what I wanted to focus on, Mr. Grachek. So, if you could just describe, go across from left to right and describe what these columns are and what they mean on this fourth, this fourth page of this exhibit.

MR. GRACHEK: Okay. Basically, the, the sewer surface area is, is something that's defined in the system for, you know, for, for area. It tells you then what manhole to what manhole (inaudible). So, for example, at the top, it goes from manhole 52028 to manhole 52027.

MR. MCCANN: Okay.

MR. GRACHEK: It gives the pipe length, it gives the capacity of the pipe in million gallons per day, it gives the velocity of the pipe in feet per second, it gives the diameter of the pipe in inches and it gives the flow rate through in million gallons per day and, and then it gives the velocity in million gallons a day. That, those are actual flow numbers.

And it gives the depth of the pipe and then it gives a full percent, 2013 full percent, as of 2013, this is the typical percentage full. So, for example, it would be, it would be the rate in the 2013 divided by the full pipe rate. So, in, in, in the first case, in the top row, it would be .48 divided by 1.3, which would give you 37.4%.

MR. MCCANN: Have you, I'm sorry, give me those numbers again, that --

MR. GRACHEK: So, in the first row, it would be, it would be the, the, the rate, .48.

MR. MCCANN: Okay.

MR. GRACHEK: Divided by the capacity under full pipe, which is 1.3.

MR. MCCANN: Okay.

MR. GRACHEK: It gives you the 37.4%.

MR. MCCANN: Okay, okay. And then what about, so is percent full, is that --

MR. GRACHEK: Yeah, that's, that percent full (inaudible) is the reserve capacity is the capacity in MGD

minus the rate, so you have .81 in reserve.

MR. MCCANN: Okay.

MR. GRACHEK: And then it gives an evaluation of required relief and then the, and then an assessment of what year that relief is going to be required.

MR. MCCANN: Okay.

MR. GRACHEK: That's a County issue.

MR. MCCANN: Okay. Okay and the highlighted manholes that I, that are on this exhibit, I'll remove the highlighting that I just did, but the highlighted manhole numbers, are, are those, what are those, what sewer segments are those, that is?

MR. GRACHEK: Yeah, those are, those are segments directly south of the proposed development and those are sections that show that the, that the, the percent full, the capacity is anywhere from the mid ninety percent to over a hundred percent.

MR. MCCANN: Okay.

MR. GRACHEK: And as, as a result, those are pipes that (inaudible) so that that doesn't, that, that no longer occurs.

MR. MCCANN: Okay and I know you weren't here for some of the testimony, earlier testimony, but let me show you what's already been marked and introduced as Protestant's Exhibit 13. Do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Is, the sewer segments identified in this memo, which is Exhibit 13, are those eight sewer segments, are those the ones highlighted on --

MR. GRACHEK: Yes, those reflect the ones highlighted.

MR. MCCANN: Okay.

ALJ: And just for the record, the same chart is in the County exhibits, I want to say County 12-A, so just so you know, because that was part of a DPC comment from DPR, so.

MR. MCCANN: Okay, all right. And then, I want to go back to sixty-three, just to make it, I guess, this is what we've already introduced as Exhibit 3, Mr. Grachek. In terms of the location of those manholes that we just looked at in Exhibit 13 already introduced, does this first page of Exhibit 63, does it have the manholes, those same manhole numbers?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Okay, thank you. Your Honor, I would move Protestant's Exhibits 64 in and --

ALJ: Mr. Mudd?

MR. MUDD: No objection, with the understanding that 64-A will follow.

ALJ: Okay. Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

ALJ: Thank you.

MR. MCCANN: Okay. I'm going to show you

Protestant's Exhibit 65. Can you see that, Mr. Grachek?

MR. GRACHEK: Yes.

MR. MCCANN: And what is this exhibit?

MR. GRACHEK: That is the Consent Decree regarding the Jones Falls sewer shed.

MR. MCCANN: Is, have you reviewed this Consent Decree? It's a hundred and fifteen pages. Have you reviewed--

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Tell us generally speaking, it's a large document, but generally speaking, what it is and what it requires of Baltimore County, if anything?

MR. GRACHEK: This is an agreement that was, that was crafted between Baltimore County and the United States for the work to be done to eliminate SSOs from, from Baltimore County. And the, the intent of this Consent Decree was the elimination of sanitary sewer overflows via the construction of remedies to the sewer system that resolve maintenance age and over capacity issues in the, in the sewer shed.

MR. MCCANN: Okay. Sanitary sewer overflows, SSOs, I don't think we've mentioned those yet. Just describe for the record what, what is an SSO?

MR. GRACHEK: A sanitary sewer overflow is an overflow of wastewater from the sewer system that occurs when the amount of wastewater going in through the pipe is in excess of the capacity of the pipe. When that happens, the, the, the,

the pipe basically backs up, or the water in the pipe backs up, and depending on the elevation profile, (inaudible) wastewater (inaudible) escape through manholes, it can knock manhole covers off and escape into the environment.

In many other cases, it can actually backup wastewater into people's basements if the elevation of their basements or their, or their homes is below the, the line (inaudible) back up.

And so, that is sewer overflow. Overflows are caused by structural capacity. In other words, putting too much, too much, many users on one line where you have over capacity. But the more prevalent and, and the more typical overflows are those that involve rain derived infiltration inflow.

When you have a storm event, you have a lot of water leaking through a system, particularly old systems, and when that happens you have a structural over, over capacity that is, has nothing to do with what's being produced in wastewater but is the wastewater being produced plus all the water from the storm is infiltrating into the (inaudible).

MR. MCCANN: Okay. Inflow and infiltration are I&I. What is that?

MR. GRACHEK: I&I is the, is the water that during a storm event or even, even outside a storm event, that leaks into the sewer system and adds volume or flow to the sewer system. It can be from a storm event, through large structural

defects in the system. It can be from flooding, in, into the system. It can be from cracks in the system that are, that are, basically, you know, basically under the groundwater table, where you have leakage of groundwater into the system.

MR. MCCANN: Okay. Before we, I ask you a couple more questions about Exhibit 65, let me pull up Ex, Exhibit 66. Tell us what this document is.

MR. GRACHEK: That is the Complaint by the, the Federal government and the State of Maryland against Baltimore County with regard to SSOs.

MR. MCCANN: Okay. Is this the Complaint that led to the Consent Decree?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Real quick, on, on this exhibit. I want to direct your attention to page five, paragraph twenty-six of the Complaint and blow it up a little bit. Didn't do that very well. But this, does this paragraph set forth the State and the Federal government's allegation against the County --

MR. MUDD: Objection.

ALJ: Yeah, so you're testifying. Just ask him what it is.

MR. MCCANN: Okay. What is this paragraph?

MR. GRACHEK: This is the general complaint that Baltimore County discharged and continues to discharge

untreated wastewater containing raw sewage from the collection system through point sources, i.e., sources from individual points of waterways of the United, of the United States or the State and of the United States from these various areas.

MR. MCCANN: And amongst the, the various areas that are described in this paragraph, is Towson Run, Lake Roland and the Jones Falls included?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Paragraph thirty, what is this paragraph?

MR. GRACHEK: That's a synopsis that between July 1997 and the time of the Complaint, that Baltimore County discharged several million gallons of untreated wastewater from the collection system without permitted authority.

MR. MCCANN: Okay and then, paragraphs thirty-one and thirty-two mention, well, what are, what are paragraphs thirty-one and thirty-two? What are those allegations?

MR. GRACHEK: Thirty-one and thirty-two speak to the general affects of sanitary sewer overflows, which is the, the contribution of bacteria, viruses, organisms and other, other things that are, that are basically pollutants to, to natural water sources.

Talks about diseases, it talks about, you know, different, different levels of bacteria. It also talks about elevated levels of coliform bacteria in these waters.

Coliforms are an indicator constituent that is analyzed in wastewater to represent the, the likelihood that pathogenic organisms are being put in the wastewater (inaudible).

MR. MCCANN: Okay. Can you say that in simple English, that latter --

MR. MUDD: I, I'm going to, I'm going to object, Your Honor.

ALJ: Go ahead.

MR. MUDD: I mean, I, I, I, I think he's drawing conclusions from something that, frankly, contains a, a bunch of allegations and as though, as though it's fact. And I think that's what Mr. McCann is asking him to do.

MR. MCCANN: No, I'm asking, I'm sorry, go ahead, Judge.

MR. MUDD: Well, the document says what it says, I guess, is another way of --

ALJ: They say what they say. I mean, I think it's within his realm, of his credentials in terms of his expertise to discuss it. We, we certainly can read it. I think that was just kind of what it says is what the question was.

MR. ZIMMERMAN: May I say there was a Consent Decree, so I think we can infer that, that this is legitimate.

MR. MUDD: Is Mr. Zimmerman going to be allowed to make arguments on my objections --

ALJ: Right. Mr. Zimmerman, yeah, you just, this is

not your objection and Mr. Mudd made the objection here. So, I mean, Mr. McCann, we can read what it says and --

MR. MCCANN: Yeah, well, it's a, it's a process. But were these allegations, Mr. Grachek?

MR. GRACHEK: I'm sorry, could you repeat that, Michael?

MR. MCCANN: These are, these are allegations?

MR. GRACHEK: Yeah, these, these are allegations and they speak to the general effects of san, sanitary sewer overflows when they do occur.

MR. MCCANN: Okay and I guess, I hadn't asked you yet, but I was going to. Are these allegations, not as they relate to Baltimore County, but in general regarding untreated wastewater, are they consistent with your experience?

MR. GRACHEK: Yes, completely.

MR. MCCANN: All right. I would move Exhibit 66 into evidence, Your Honor.

ALJ: It should be sixty-five and sixty-six?

MR. MCCANN: Not yet, I'm going back to sixty-five.

ALJ: Okay. Sixty-six, any objection, Mr. Mudd?

MR. MUDD: No, no objection.

ALJ: Mr. --

MR. ZIMMERMAN: Yeah, clearly no objection.

ALJ: Okay.

MR. MCCANN: Okay. Going back to the Consent Decree,

sixty-five. Again, without going through or having you read various provisions, let me just ask you a couple of questions about the Consent Decree. Does the Consent Decree require the County to evaluate its sewer system for existing --

MR. MUDD: Objection.

ALJ: He hasn't finished the --

MR. MUDD: What does, what does the Consent Decree require? He's testifying. He's asking specific --

MR. MCCANN: Well, that, I'll let you, I'll let you rule, Your Honor, but I don't think that's a, a leading question at all. Does it require X, that's a yes or no question, it's not leading at all.

ALJ: Yeah, I would, yeah, I don't think that particular question is leading, so overruled. Go ahead.

MR. MCCANN: Does the Consent Decree require the County to evaluate its sewer systems for existing SSOs and capacity issues?

MR. GRACHEK: Yes.

MR. MCCANN: Does the Consent Decree require the County to evaluate its sewer system for future capacity problems?

MR. GRACHEK: Yes.

MR. MCCANN: What does the phrase, without directing you to the Consent Decree, but what is the phrase model predicted capacity mean to you? What does that mean?

MR. GRACHEK: Sewer systems can be modeled. There's, there are various modeling, modeling methodologies and softwares that can be used to, to predict what flow, what flow would be going through a system in the future. And that can be, that can be put into computer models that will, that will be able to simulate the effect on the sewer system for various (inaudible).

MR. MCCANN: Okay. Does the Consent Decree also require the County to evaluate future or model predicted capacities based on wet weather flows?

MR. GRACHEK: Yes.

MR. MCCANN: And, and, and what are wet weather flows? What are, explain what that means.

MR. GRACHEK: (inaudible).

MR. MCCANN: In, in the, I'm sorry, Mr. Grachek, just let me finish the question. What are wet weather flows in the context of model predicted capacity?

MR. GRACHEK: Yeah, in the, in the context of, wet weather flows are flows that occur during rainfall events, at, and at, after rainfall events. They're, they're an indication of leakage into the, into the system as opposed to dry weather flows, which are just the normal flows that come from the users.

MR. MCCANN: Okay. Does the Consent Decree require the County to identify corrective actions that are necessary to

correct the model predicted future capacity issues?

MR. GRACHEK: Yes.

MR. MCCANN: And, and does the Consent Decree require the County to actually perform the corrective actions that are necessary to address the model predicted capacity issues?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. In your opinion, can the County comply with the Consent Order without taking the corrective actions necessary to address model predicted capacity issues?

MR. GRACHEK: No, they, they cannot, they cannot comply with the Consent Decree's requirement to, to deal with the, the overall issues at the system without, without implementing the, the actions in the model.

MR. MCCANN: Okay. Can, does the Consent Decree require the County to determine future capacity based on projections of population?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and does the Consent Decree require the County to review future model predicted capacity based on certain storm events?

MR. GRACHEK: Yes.

MR. MUDD: (inaudible) I know we visited this before. I, I'm going to continue to object on, on the testimony being fed to the witness here. I mean, --

ALJ: I'm going to overrule it. I don't think these

questions are, you know, they're not asking about his opinion yet. They're just, he's just asking what the Consent Decree, what's his understanding of the Consent Decree says and we can all read it and we've seen it before so, overruled.

MR. MUDD: Well, I, I, and I understand your ruling, but I guess I would say he, he's not asking him what his opinion is, he's asking him if he agrees with what Mr. McCann's characterization is.

MR. MCCANN: It's, well, how am I supposed to ask a question, any question, without him agreeing to my characterization of a question?

ALJ: I just don't think this is, these, these questions are more innocuous, I mean, just go to the, you know, to the --

MR. MUDD: Okay.

ALJ: -- what's in the Consent Decree, so overrule.

MR. MUDD: Thank you, understood. May I have a continuing objection?

ALJ: Yes, thank you. You can have a continuing objection now.

MR. MUDD: Thank you.

MR. MCCANN: This is, this is the last one, but I'll repeat the question again, Mr. Grachek, just for your benefit. Does the, does the, does the Consent Decree require the County to review future capacity based on certain storm events?

MR. GRACHEK: Yes.

MR. MCCANN: And, and explain to us again, I know you mentioned it, but what are, what are storm events and what does the Consent Decree require in that regard?

MR. GRACHEK: Storm events are, are judged based on an intensity of storm and a duration of a storm. And they are, they are based on the statistical average of how often a storm would occur over a long period of time.

So, for example, if you have a, a two year, six hour event, that would be an event that's statistically, over a long, long period of time, would happen every two years or six hours. It's not saying that you couldn't have one three years in a row and then not have one for ten years, but statistically that's what it's saying.

So, so, for example, a two year, a two year, six hour event is a more common storm. A ten year, twenty-four hour storm would be something that would be uncommon, although it could happen more than, you know, it could happen two days in a row but then not happen for forty years.

MR. MCCANN: Okay. Did the County undertake the evaluation required by the Consent Decree?

MR. GRACHEK: According to the RK&K report they did the analysis according to the Consent Decree. They modeled the site, they modeled the system based on the storm events required and, and the like. So, yes, they did.

MR. MCCANN: So, you said, mentioned RK&K. Is, who is RK&K?

MR. GRACHEK: RK&K was the consultant that the City, or the County hired, excuse me, in, I believe, the late, like prior to 2010, which culminated in their, in, in the report that was submitted. Then the plan in, I believe, 2013.

MR. MCCANN: Okay. In terms of future capacity, model predicted capacity, how did, well, strike that. Have you reviewed RK&K's work product, Mr. Grachek?

MR. GRACHEK: Yes.

MR. MCCANN: How did RK&K, in terms of future model predicted capacity, go about determining what that was?

MR. GRACHEK: Well, in, in the model, they presumed certain capacitor, or certain population growth from the time they were working on the model through 2025. And they, they calibrated their model appropriate, or you know, accordingly, I should say, for that.

MR. MCCANN: Okay. So, they, did they use a model, you said?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and, and I think you mentioned this before but is, is modeling, is that a standard practice in, in your industry?

MR. GRACHEK: Yes.

MR. MCCANN: Do you agree generally with, you know,

sort of the method or approach taken by RK in terms of its modeling?

MR. GRACHEK: Yes, I do.

MR. MCCANN: Okay. All right. Your Honor, I would move sixty-five into evidence before we move on.

ALJ: Mr. Mudd?

MR. MUDD: No objection.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

ALJ: Thanks.

MR. MCCANN: I'm going to pull up another grouping of exhibits, Your Honor, to make it go a little quicker. Okay. Okay, this is, what's been pre-marked as Exhibit 67. It's a ninety-nine-page document. What is this document, Mr. Grachek?

MR. GRACHEK: This is the sewer shed repair, replacement and rehabilitation plan for the overall Jones Falls sewer shed.

MR. MCCANN: Okay.

MR. GRACHEK: From December 2012. This is the plan that was recommended to the County for, for remedying the issues in the sewer shed.

MR. MCCANN: Okay and then I'll show you, come back to sixty-seven, but let me show you, I'm sorry. Bear with me. This would be Exhibit 68. What is Exhibit 68, Mr. Grachek?

MR. GRACHEK: This is the evaluation report back from

November of 2012.

MR. MCCANN: Okay. Are these reports, that is sixty-seven and sixty-eight, were they prepared by RK&K?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Now, this Exhibit 68, is this a part, physically a part of sixty-seven that, the SRR plan?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Did you review both the SRR plan and this long term capacity report, Mr. Grachek?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. First, with respect to the SRR plan, I'll ask you sort of similar questions as I did with the con, with respect to the Consent Decree. Does this R, SRR plan, does this identify existing problems in the County sewer system?

MR. GRACHEK: Yeah, it identifies, it identifies problems in the sewer system --

MR. MCCANN: Okay.

MR. GRACHEK: -- for various storm events.

MR. MCCANN: Okay. Does this SRR plan identify future model predicted capacity issues in the system based on wet weather flows?

MR. GRACHEK: Yes, yes.

MR. MCCANN: Does the --

MR. MUDD: I'm sorry. Judge Murphy, may I just have

a continuing objection on the same line of questioning?

ALJ: Same, yeah, same as before with the Consent Decree, you have a continuing objection.

MR. MUDD: Thank you.

ALJ: Thanks.

MR. MCCANN: And does the SRRR plan lastly identify the corrective actions necessary to address those model predicted future capacity issues?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. I want to turn to first the long term capacity report, which is Exhibit 68. And I'm going to direct your attention to the executive summary, which is on page, roman numeral four. Do you see that, Mr. Grachek?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. I want to focus in on these couple paragraphs in the summary, I guess, the third, fourth and fifth paragraphs and I'll blow it up if you need me to a little bit more. Highlight the beginning just to direct you. What are these paragraphs in this executive summary? Just tell me generally speaking what they are.

MR. GRACHEK: These, these paragraphs provide in the opinion of the, you know, the writers of the report, what are the actions that are required to be taken, depending on the intensity and duration of the storm.

MR. MCCANN: Okay. So, for instance, for the two

year, twenty-four hour design storm, tell us what the, the recommended corrective actions were by RK&K?

MR. GRACHEK: For a two year, twenty-four storm, they, they recommend rehabilitation of sixteen service areas that exhibit excessive I&I.

MR. MCCANN: Okay.

MR. GRACHEK: They also recommend adding capacity for a certain amount of the sewer system by, by upsizing pipes and for five manholes to be sealed. And they gave a, a an approx, approximate (inaudible) cost --

MR. MCCANN: Okay.

MR. GRACHEK: -- for, in 2012 dollars, for achieving that, so that the system now is operating in a manner that, that can handle a two-year, twenty-four-hour storm event.

MR. MCCANN: Okay and for the ten year, six, just sort of summarize like what the recommended corrective actions were by RK&K.

MR. GRACHEK: Yeah, they, they, they recommended, as you see, this will cascade to more remedies that need to be done, but for the ten year, six hour event, in addition to the, what, what was stated above for the two year, twenty-four hour storm, they also recommend that another over two thousand linear feet of relief sewer be constructed, six manholes sealed and an additional, at an additional cost of $10.7 million.

MR. MCCANN: Okay. You said in addition to, is that

the language here you're referring to?

MR. GRACHEK: Yeah, in addition to. So, so this, this is, this is not, it's not all inclusive. You, you, for the two year, twenty-four hour storm you had a certain amount of work, additional work to get you to the ten year, six hour storm event it is, in the next paragraph, and so on, as you move down the process.

MR. MCCANN: Okay. Thank you for that. I just wanted to ask you for the two year, twenty-four hour storm it says, it mentions increasing the diameter of the pipe you mentioned. And then for, I just highlighted that in yellow. And for the ten year, six, it says, a relief sewer be constructed. Just and, and just in technical terms, I'm not asking you in any particular context, what are, what is the difference between, what do those terms mean, increasing diameter and relief sewer?

MR. GRACHEK: You can increase capacity in its segment of a sewer system by increasing the diameter of a pipe that, that is carrying the, the, the wastewater.

MR. MCCANN: Um hm.

MR. GRACHEK: And, you know, for example, a, a four-inch pipe conveys four times as much water as a two inch pipe and so on. So, you'll have not only additional ability to convey wastewater, but you also have storage, additional storage in the event.

Sometimes you're in a situation where you need additional storage on top of what normally conveys the water. And in that light, what happens on occasion is relief sewers will be installed, they'll be parallel to the conveyance sewers.

And they basically collect SSO, what would normally be an SSO, but they'll collect it in the relief sewer or it can be drained later when the storm is over and you have other flow. There are other options too, to build the storage tanks or underground storage facilities to manage the SSOs also.

MR. MCCANN: Okay. Bear with me one second. Okay. Does the, does the long-term capacity report contain maps for each of these storms, Mr. Grachek?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Share again. So, for these storms that are mentioned here, I want to show you in the same report, this is page thirty-six of forty. Is a map, I'll blow it out then blow it in. Do you see that map?

MR. GRACHEK: Yes.

MR. MCCANN: And I'll direct you to the legend. What is, what is this map, this first map I'm showing you?

MR. GRACHEK: Well, this map, if you can go to the legend, the map, this map shows you that for the two year, six hour event, the legend would be on the other side.

MR. MCCANN: Do you see it, I think it's on the

bottom right, you see it here?

MR. GRACHEK: Yeah, that, that's the header for the two year six hour event. Go to the legend on the other side.

MR. MCCANN: Oh, okay. Gotcha.

MR. GRACHEK: Yeah, that, that would show you relief sewers to be added, pipes to be upsized and, and then the possibility of engineered SSOs. You can see engineered SSOs and SSOs designed to overflow to a specific area. And you can see on this one that they're recommending that in one of these years SSOs be closed, number one thirteen. You can see that (inaudible).

MR. MCCANN: Okay.

MR. GRACHEK: And, and so, --

MR. MCCANN: So, you said, engineered SSOs. And what, what's, looking again at the legend on the bottom lefthand corner, it says manhole to be sealed.

MR. GRACHEK: Right.

MR. MCCANN: What --

MR. GRACHEK: Manholes to be sealed are typically, and in this case, and in this case, these are manholes that have overflowed over time. If you've ever seen an SSO, once you get enough pressure in a manhole, the elevation of the water in the system gets above a certain manholes it can, it can pop the manhole out of the, you know, out of its hole and the water will flow, will flow out.

One strategy is to, is to manage the SSOs with, you know, with additional capacity but at the same time seal manholes. In other words, bolt them down so they can't sur, they can't surcharge, they can't leak. Now, doing that makes, makes the SSO problem exacerbated in other areas. But if you, if you couple that with a --

MR. MCCANN: Okay.

MR. GRACHEK: -- another remedy then you're all right.

MR. MCCANN: Okay. I'm just, just sticking with the legend, keep it simple for now, I just want to ask you what these mean. It says manhole to be sealed and SSA to be rehabilitated. Are those, are those, those, are those things that have already been done or are those things that RK is recommending based on the --

MR. GRACHEK: These are things RK&K are recommending.

MR. MCCANN: Okay and then this SSO manhole, is that an existing condition or, where in this legend where it says with the yellow dot. Is that an existing condition or is that a recommended action of some sort?

MR. GRACHEK: When I read this map, I interpreted that as the existing SSO manhole.

MR. MCCANN: Okay, all right. So, let's look at the map itself. This is, for what storm again is this?

MR. GRACHEK: This is the two-year, six hour event.

MR. MCCANN: Okay. So, for, for the two year, six hour, are there any and maybe first focusing in on the sewer lines that would be served by the subject, from the subject property, are there any either existing SSOs or recommended corrective actions?

MR. GRACHEK: There are two, it looks like there are two structural SSOs, that, that are to be closed. But I don't see any of the red, or the yellow, which would be SSOs and manholes.

MR. MCCANN: Well, I'm just directing you to the sewer path to the subject site.

MR. GRACHEK: Yeah, in our pathway, no.

MR. MCCANN: Okay and just --

MR. GRACHEK: In our pathway, no.

MR. MCCANN: Okay and I don't want to belabor this, I think the Judge recognizes this. But where, where, where on this map is the subject property again?

MR. GRACHEK: The property is up in the, in the west, on the west side of BC-05, north west side of BC-05.

MR. MCCANN: Right here?

MR. GRACHEK: Yep.

MR. MCCANN: Okay, all right. Let's go to the next map in the same Exhibit 68, which is, I'll direct you to the legend on the right. And what, what map is this?

MR. GRACHEK: Yeah, this is as you ramp up to a two

year, not six hour but twenty-four hour event.

MR. MCCANN: Okay.

MR. GRACHEK: And as you can see, there's a, there's a few changes that come into play. You have, you have in certain areas, you'll have manholes that are overflowing, you can see that. Now, in our, on our line in particularly though, what you see is an upsizing of a sewer pipe (inaudible) BC-22.

MR. MCCANN: Okay. They're just, give me a second. Is this where you're talking about right here?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and that is, that is a pink line. What does the pink line represent according to the legend on the bottom left?

MR. GRACHEK: Yeah, the, the pink line is, is the need for a, a relief, well, the red line is a relief sewer but the, the pink line would be pipes to be upsized.

MR. MCCANN: Okay. To it says eighteen inches. Okay and then, and is that particular upsized pipe, is that in the, the flow path of sewage from the subject property?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and then just to zoom in a little bit more. This yellow dot sort of above that, it says 44219, do you see that?

MR. GRACHEK: That is a predicted manhole overflow.

MR. MCCANN: Okay.

MR. GRACHEK: Based on that storm event.

MR. MCCANN: Okay, all right. Aside from those two things, anything else in the, the path of sewage from the subject property?

MR. GRACHEK: No.

MR. MCCANN: Okay. What about this yellow area up in the upper righthand corner of the Jones Falls? I can go to the legend, but what is that yellow area?

MR. GRACHEK: This is a, this is an area that the County chose to rehab for --

MR. MCCANN: I'm just asking about the map for now. What is this map telling us?

MR. GRACHEK: Oh, that just this area, it says that, an area to be rehabbed.

MR. MCCANN: So, RK&K was recommending rehabilitation to that area?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. How does that area and the sewage from that area, how does it relate, if at all, to the Jones Falls interceptor?

MR. GRACHEK: The only way that it would relate would be if you had excess flows going from the Rolling Run interceptor that would cause a backup into the Towson Run interceptor. In these storm events, it looks like we don't have an issue for the storm event.

MR. MCCANN: Let me ask it this way. So, again, this, this green line here that comes out of the yellow area, what, what interceptor is that?

MR. GRACHEK: Roland Run.

MR. MCCANN: Okay. Does any of the sewage, based on this map, and based on your understanding, does any of the, the sewage from this yellow area up in the righthand corner, does any of that flow in the Jones Falls intersection, interceptor?

MR. GRACHEK: No.

MR. MCCANN: Okay, bear with me one sec. Just one more thing about this report and then we'll move on. I'm, I'm sorry. I wanted to go back to the next map. And this, again, is in the long term capacity report, which is Exhibit 68. And this would be page thirty-eight of that exhibit. This map, according to the legend on the right, what is, what is this map, what storm event is this map?

MR. GRACHEK: It's the same as the other maps except this is for a ten year, six hour event.

MR. MCCANN: Okay.

MR. GRACHEK: In other words, a storm that was just statistically happening every ten years for a six-hour duration.

MR. MCCANN: Okay and then with respect, as it relates to this development, and the sewage path from this development, were there any additional recommended corrective

actions by RK&K?

MR. GRACHEK: It's the same, generally the same upgrade, but you can see that there are a few orange circles that show, that show some overflows. I think that was the, the, if you go back to the legend.

MR. MCCANN: Yeah.

MR. GRACHEK: That would show manholes to be sealed.

MR. MCCANN: Okay. You're talking about the brown circles?

MR. GRACHEK: Yeah, the brown circles.

MR. MCCANN: Okay.

MR. GRACHEK: That are underneath of the rehabbed area.

MR. MCCANN: Okay and then lastly, one more map. This is the next page, page thirty-nine of Exhibit 68. What is, what is this map? What storm event is this map?

MR. GRACHEK: This is for the ten year, twenty-four hour event. In other words, the same as the last except instead of the duration being six hours, it's a twenty-four hour event.

MR. MCCANN: Okay and does this map show any additional, either sanitary sewer overflows, relief sewers or upsizing --

MR. GRACHEK: Yeah, (inaudible) --

MR. MCCANN: Yeah, go ahead, I'm sorry.

MR. GRACHEK: This shows a dramatic change in the Towson Run interceptor system as the line that goes, and, and a dramatic change in the, what happens at Lake Roland --

MR. MCCANN: Tow, you said Towson Run, did you mean to say Towson Run?

MR. GRACHEK: I, I'm sorry, not Towson Run, Jones Falls, excuse me. For the Jones Falls. It's a dramatic change in the Jones Falls area and for Lake Roland and south of Lake Roland.

MR. MCCANN: So, this is --

MR. GRACHEK: In other words, this is, this is kind of the breaking point to where you start having some really serious over capacity issues throughout the entire system. Not that the other ones weren't serious, but this is particularly serious.

MR. MCCANN: Okay, all right. Let me go back to the report itself. So, this is page sixteen of the exhibit. It's page ten of the report, again, Exhibit 68. And this, this section is entitled model predicted corrective action summary, two year, twenty-four hour design storm event, do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Just want to focus in on just one paragraph here. And, and I'll read it to you real quick and then you tell me what you think it means.

Except for the overflow at manhole 4429, the model

predicted overflows in BC02, BC03, BC07 and BC11 listed in Table 5.1 could be eliminated by simulating the rehabilitation of the wastewater collection system within four flow meter basins identified as existing, as exhibiting, I'm sorry, excessive I&I. The meter basins identified as exhibiting excessive I/I that have been simulated with rehabilitation are BC02, 03, 04 and 09. And then there's the last sentence about the cost.

Tell, tell me. Put that in plain English for us, if you would.

MR. GRACHEK: What they're, what they are, essentially, saying is they can, they can eliminate within certain meter basins, they can, they can eliminate SSOs within that area but it, it does not address the other areas. It simply is a reflection of what would happen in that area.

MR. MCCANN: Okay and those areas, BC02, 03, 04, 09, just getting back to this map on, in the same exhibit, is, that's the yellow areas in these maps?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and how does this paragraph, what, what, what does it say with respect to how those meter basins could be improved? What, what type of work?

MR. GRACHEK: It could be, it could be replacing pipes, it could be relief sewers, it could be other storage. More likely replacing, rehabbing old pipelines.

MR. MCCANN: Well, it says rehab, and I'm asking, that's what I'm, that's what I'm, I guess what I'm focusing in on, that says by simulating the rehabilitation. What does that word mean to you in the context of this report?

MR. GRACHEK: Typically, re, rehabilitation has to do with, with lining pipes that are leaking.

MR. MCCANN: Okay. This, this language at the beginning, except for the overflow at manhole 4429, what manhole is that? Is that reflected in, I'll go back to the appropriate map, which is the two twenty-four. Is, what manhole is 44219?

MR. GRACHEK: I, I, I do not recall which manhole that is.

MR. MCCANN: Okay. Is 44219 reflected on this map?

MR. GRACHEK: I can see it now, yes. It's, it's the one in the middle of BC-22, the yellow dot.

MR. MCCANN: Okay, all right. And let me just go to the next page of the same, very same report. I'll highlight this next paragraph and I'll just read it to you again.

To eliminate the model predicted overflow at MH 44219, it is recommended to increase the sewer size of five sewer segments in meter basin BC22 from ten inches to eight inches in diameter, totaling one thousand three hundred seventy-seven linear feet. Tell us what that means in plain English, if you could.

MR. GRACHEK: All right. It just means that you can eliminate, eliminate that problem with the, that manhole and with surcharging in that area if you upsize those pipes from ten inches to eighteen inches.

MR. MCCANN: Okay and the upsize pipes that that paragraph is referring to, is that reflected in this map, which --

MR. GRACHEK: Yeah, it's the, it's the line, it's the, I guess we'd call it purple line at BC-22.

MR. MCCANN: Right here?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Okay. Okay. With respect to that pipe that's the pink, what I think is a pink line actually on these maps, on the RK&K long term capacity report, was that, was that pipe, has the County upsized that pipe, to your knowledge?

MR. GRACHEK: Not to my knowledge.

MR. MCCANN: Okay and I want to turn back to Exhibit 64. This is Exhibit 64. Would this chart tell us whether or not that pipe had been upsized from a ten inch to an eighteen inch?

MR. GRACHEK: You'd have to go, go to the volume. You have the pipe schedule and then down to the volume, system analysis.

MR. MCCANN: Does this chart reflect the size of the

pipes?

MR. GRACHEK: I'd have to look --

MR. MCCANN: I'm just scrolling --

MR. GRACHEK: (inaudible).

MR. MCCANN: I, yeah, tell me if I'm going too fast.

MR. GRACHEK: Yeah, yeah, it's going pretty quick.

MR. MCCANN: Okay. Well, I'll move on.

MR. GRACHEK: I cannot see it on this, on this line by line.

ALJ: So, if you could just go past the yellow boxes, I'd like the (inaudible) 44219.

MR. GRACHEK: Yeah.

ALJ: It's right below it, the yellow box.

MR. GRACHEK: Yeah.

ALJ: If you could, right there. Stop right there.

MR. GRACHEK: Yeah.

ALJ: And see where it is, 44219?

MR. GRACHEK: Right.

ALJ: See, see where it is, Mr., Mr. McCann?

MR. MCCANN: Yes, right --

ALJ: 44219, is that what you're asking for?

MR. MCCANN: Yes, yeah.

MR. GRACHEK: Yeah.

ALJ: Okay. Is that what you're looking for?

MR. GRACHEK: Yeah, now I can see it.

ALJ: So, what was the question again about that? What was the answer to it? Does it tell you to, that the pipe was upgraded from ten inch to eighteen, does --

MR. GRACHEK: Yeah, --

MR. MCCANN: Referring, referring to this column that says d-i-a period, i-n period. Does, is that, what is that column?

MR. GRACHEK: That's the diameter pipe and if you go down and look at the pipe in those areas, it still says ten inches.

MR. MCCANN: Okay, okay.

MR. GRACHEK: I'm sorry (inaudible).

MR. MCCANN: I was scrolling too fast, I couldn't recall where it was, but thank you. Thank you, Judge. Okay. So, before I forget, I would move both the SRR plan, which is Exhibit 67, as well as the long term capacity report, which is separately marked as Exhibit 68 into evidence.

ALJ: Any objection --

MR. MUDD: No objection.

ALJ: Okay, thank you. Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

ALJ: Thank you.

MR. MCCANN: Okay. All right. Next exhibit, which is Exhibit 69, you see that, Mr. Grachek?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. It's entitled comparison of sewer capacities, sewer pipe capacities, Greenspring Manor site to City line, RKK versus DPW. Tell, tell us what that means and what this document is.

MR. GRACHEK: This is comparison of pipes from the, some from the RK&K report, some were not able to be determined because RK&K limited their, their evaluation pipes to twelve in, or ten inches or less.

And so, it, it gives the wet weather capacity of the pipe or the, the evaluation of wet weather capacity for a two year, six hour event, two year, twenty-four hour event, a ten year, six hour event, and then a ten year, twenty-four hour event, and then a twenty year, twenty-four hour event.

MR. MCCANN: Okay.

MR. GRACHEK: And basically, shows the, the percent of capacity utilized in every one of these storm events for the pipeline from the development property down to the, you know, the Lake Roland area of the County line. And as you, as you can see from this, even, even in the two year, six hour event, as you move down through the system, you start getting at capacities that are considerably over a hundred percent. And then it just, it gets worse as you have more intense storms.

MR. MCCANN: Okay, all right. Let me back up because there's a lot of information on here. Just left to right, tell us what the columns are.

MR. GRACHEK: Okay. It's the upstream manhole, downstream manhole, the pipe diameter in that segment between--

MR. MCCANN: Well, tell us as you, as you say that, just tell us what column it is, like column number one.

MR. GRACHEK: Okay. Column A is the upstream manhole.

MR. MCCANN: Yeah.

MR. GRACHEK: Column B is the downstream manhole. The pipe diameter is the diameter of the pipe, and that's the inner diameter of the pipe at the segment that, of question. And this is a, and then the next line is a system analysis of, of where we're at as far as percentage capacity. And as I said, this was done by DPW because RK&K didn't do pipes that small. And you can see that every one of them is from ninety-four to over a hundred percent capacity.

MR. MCCANN: Well, let me stop you there, let me stop you there. It says DPW system analysis for Greenspring Manor, this, this, so the green column, that what I'm talking about now, where, where are those, where are those numbers derived from?

MR. GRACHEK: They're, they are numbers that are, that are, were provided by the County.

MR. MCCANN: Okay. So, the previous exhibit we just looked at --

MR. GRACHEK: Yes.

MR. MCCANN: -- one second. Exhibit 64, this, this, this exhibit.

MR. GRACHEK: Right. (inaudible) pipe schedule and the sewer capacity. And you can see the, if you move to the right, the 94.3, all, all these are highlighted to a hundred, over a hundred in the percent full range --

MR. MCCANN: This column, okay.

MR. GRACHEK: Yeah, that's reflected on that other diagram.

MR. MCCANN: Okay. So, that's what that column is and what other Columns E, F, G, H, I, what are those, where, where are they from? Where are they from, the data?

MR. GRACHEK: Yeah, the, the green column is a dry weather assessment. The, the other columns are an evaluation of the, of the system under wet weather conditions that was predicated from the RK&K report.

MR. MCCANN: Okay.

MR. GRACHEK: And as you see the, you know, it's, it's, you know, (inaudible) as you move to higher system numbers that, you know, or higher storm numbers, you're going to end up with, with, you know, over capacities.

MR. MCCANN: Okay. So, the, for these columns, the RK&K columns is what I'll call them, --

MR. GRACHEK: Right.

MR. MCCANN: -- what does it mean when it says RK&K

did not determine, County says inadequate capacity? What does that, what does that mean?

MR. GRACHEK: Well, the County did their own evaluation because RK&K didn't do an evaluation on eight-inch pipes.

MR. MCCANN: Okay and when you say the County did an evaluation, what are you referring to?

MR. GRACHEK: That evaluation that, that, that resulted in the, what they provided us.

MR. MCCANN: Okay.

MR. GRACHEK: In that previous exhibit.

MR. MCCANN: Okay, --

ALJ: Is that Protestant's sixty-four?

MR. MCCANN: This one, Mr. Grachek?

MR. GRACHEK: Yes.

ALJ: Okay.

MR. MCCANN: Do these, the yellow highlighted areas on this Exhibit 64, do they correspond to, I lost it. Do they correspond to these pipes here, these first eight pipes, Mr. Grachek?

MR. GRACHEK: Yes, yes. I'm sorry.

MR. MCCANN: Okay.

MR. GRACHEK: I thought you were talking to the Judge, I apologize.

MR. MCCANN: Yeah, I'm going to, I got to move closer

to the speaker. Okay and then why, why the blue highlighting for the, in the RK&K columns?

MR. GRACHEK: Well, I mean, the, all those numbers show pipe capacities that are over a hundred percent and so they're highlighted in blue. As you see the, the, you see a little bit of, as I just explained, that the RK&K report did an analysis.

The City, or the County, excuse me, did an alternative analysis. Their numbers are all close. But they, but they didn't do it for wet weather flow. And so it shows (inaudible) the red numbers are the ones the pipes are supposed to be upsized.

MR. MCCANN: Okay.

MR. GRACHEK: And then anything in blue is what, is over a hundred percent capacity.

MR. MCCANN: Okay, a couple things. You said over a hundred. Here's a ninety-two that's in blue, here's a ninety-seven that's in blue.

MR. GRACHEK: I'm sorry, I will (inaudible). The sewer manual and general practice dictates that a, a main trunk line should never be over ninety percent full. And so, it's a, excuse me, it's not over a hundred percent, it's the ones over ninety percent.

MR. MCCANN: Okay. So, that's the blue. And what's the red highlight?

MR. GRACHEK: The red are just highlighted because those are the ones that are scheduled to be upsized but they're, they still, the RK&K report is evaluating them as if they were ten still. But they're shown to be upsized. So, they're over capacity. We don't have (inaudible) to determine whether that (inaudible) capacity issue.

MR. MCCANN: Okay. So, the red, is this red, are these red segments, where it says upsize, is that the, the, the upsize pipe that we just looked at in the, in the map?

MR. GRACHEK: Yep, that's the, the purple segment.

MR. MCCANN: Pink, pink or purple, whatever color that may be?

MR. GRACHEK: Yeah, whatever you want to call the color.

MR. MCCANN: Okay. Then you mentioned, I think in comparing the green DPW numbers to the RKK numbers, you, you said that the RK&K is wet weather and the County is dry weather, is that correct?

MR. GRACHEK: That's correct.

MR. MCCANN: Okay. Bear with me one second. In, in your opinion and, and based on your experience, Mr. Grachek, it is, is it appropriate or consistent with industry standards to determine capacity based on dry weather flow?

MR. GRACHEK: No.

MR. MCCANN: Why not?

MR. GRACHEK: Capacity needs to be determined by wet weather flow because it's wet weather flow that typically determines when you have over capacity in the system. And so, it has to be run based on wet weather flow. If you design all your treatment systems to be at either ninety percent capacity or, or in, in other lines, possibly eighty percent capacity, but if you designed everything to be ninety percent capacity, as the system ages, you would have SSOs happen everywhere.

MR. MCCANN: Okay. Have you ever been involved, ever, in the design or evaluation of a sewer system where dry weather flow is used to either design or determine capacity?

MR. GRACHEK: No.

MR. MCCANN: Okay. These RK&K numbers, I'm going to show you another exhibit, Exhibit 72, which is a hundred and fourteen page document. What are, what are these pages?

MR. GRACHEK: This shows for upstream and downstream manhole segments throughout the sewer shed. It gives the pipe diam, it gives the, the manhole numbers for the, defining the segment, pipe diameter, the capacity, the manhole depth, the simulated peak depth and the, the capacity, what percent capacity is used, the remaining capacity and the surcharge depth. That basically tells you the depth of surcharge.

MR. MCCANN: Okay.

MR. GRACHEK: And what you're seeing here is, is I would focus on capacity use, that a large number of pipes are

way over capacity.

MR. MCCANN: Yeah, so these, these charts, there's a hundred and fourteen pages, are these from the long term capacity report?

MR. GRACHEK: Yes.

MR. MCCANN: Okay, all right. Your Honor, I would move Exhibit 69 into evidence, which is the chart, the Excel chart that we just looked at.

ALJ: And just for the record, to be clear, sixty-nine, Mr. Grachek, you created that document, right?

MR. GRACHEK: No, I did not create that document.

ALJ: Well, where did it, where did it, I mean, you, we went through where some of the numbers came from, then where, where did the whole thing come from?

MR. MCCANN: What, go ahead, Mr. Grachek.

MR. GRACHEK: The document was created by one of the, one of the people that we work with in the, on the case, basically, but it was not by me personally.

ALJ: Okay, all right. So, but, but you used it in determining, you know, the information you just gave us?

MR. GRACHEK: Yes, ma'am. I used it to, I used it to determine, to, to basically pull a lot of data together, to the relevant data that we needed to do the evaluation for this, for this line.

ALJ: Okay. But you didn't actually input the

numbers, somebody else gave you the chart and you told them what you wanted, is that, is that how it worked?

MR. GRACHEK: That's correct.

ALJ: Okay, all right. So, any objection to sixty-nine? Is that the only exhibit you're putting in now, Mr. McCann?

MR. MCCANN: Sixty-nine and seventy-two, which were the tables, the hundred and some pages tables.

ALJ: Yeah. Any objection, Mr. Mudd?

MR. MUDD: I objection to sixty-nine for really, for the reasons you just explored, Your Honor. I'm not sure that we know, I mean, I know Mr. McCann explained where some of the numbers came from, but no one, this witness certainly did not input them and we're not sure the accuracy of them either.

ALJ: Well, he, he testified that he, he requested the numbers be inputted and, I guess, presented to him this way and that he used it in his evaluation. So, he went through some of them. And you can always go through them on cross if you, if you want to where the rest of the numbers came from.

So, I mean, he's allowed to put in, you know, charts and summaries, you know, in terms of the basis for his, I guess, ultimate opinion. So, sixty-nine will be admitted. And seventy-two, any objection? That's the, from the long term capacity report --

MR. MUDD: Yeah, no objection to seventy-two.

ALJ: And Mr. Zimmerman?

MR. ZIMMERMAN: (inaudible) I say I have no objection. Of course, experts are allowed to rely on staff and other sources, just as some of the Developer's experts had staff and other people working. So, no objection.

ALJ: Okay.

MR. MCCANN: Okay, let's move on. I guess one more question before we do that. This, just so we're clear, the exhibit that we were just talking about, Mr. Grachek, sixty-nine. Did the numbers from this exhibit come from anywhere other than the County capacity charts, sixty-four, and secondly, the RK&K future pipe capacities? Is that where, did they come from anywhere else or are those the only two?

MR. GRACHEK: My understanding is that those are the only two (inaudible).

MR. MCCANN: Okay.

MR. MUDD: I, I know I declared a second ago I had no objection to seventy-two. I, I'm trying to understand where seventy-two comes from.

ALJ: The long-term capacity report. I think it was an appendix or an exhibit to that.

MR. MUDD: It's, so it's from the long term capacity report?

MR. MCCANN: Yes.

MR. MUDD: Okay. Okay, no objection.

ALJ: Okay.

MR. MCCANN: Okay, moving on to, one second. Let me show you Exhibit 70, Mr. Grachek. Do you see that document?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. It is, again, a long document, seventy-three pages. I want to direct you to page, at the bottom, 6-27. To the section, well, what, first of all, I should ask you what is this document? I'll go up to the top. What is it?

MR. GRACHEK: This is the County's design manual for wastewater collection and pumping systems.

MR. MCCANN: Okay. Page 6-27, have you reviewed this manual and this section in particular, C, hydraulic --

MR. GRACHEK: Yes.

MR. MCCANN: Okay, let me just have, refer you to this language. And I'll, why don't you take a moment and read it if you're, are you familiar with it, first of all?

MR. GRACHEK: I'm familiar with it.

MR. MCCANN: Okay. Rather than me read it, why don't you just take a moment to refresh your memory of it and just tell us what, what it, what it says.

MR. GRACHEK: Yeah, I've read this in detail several times. This tells, it, it basically says that flows in a sewer pipe above ninety to ninety-five percent are unstable because they can cause sudden loss of carrying capacity and surcharging

events.

And that's because once you get above ninety, ninety, ninety-five percent, you start getting the, the, the amount (inaudible) or pressure loss throughout the pipe (inaudible) off the charts and (inaudible).

And so, as a result of that, and because of the need to (inaudible), these sewer pipes are, are, they convey materials that, that have constituents that, that are, that can (inaudible) for example, hydrogen sulfide is a common, a common material in, in wastewater, a common chemical in wastewater. Hydrogen sulfide degrades to sulfuric acid, it degrades pipes which causes pipes to eventually corrode and, and causes I&I.

So, the guidelines are, for trunk and interceptor sewers, they are designed to never flow at depths exceeding ninety percent. For laterals and sewer mains, eighty percent. And for the actual connections to buildings never more than seventy percent. And, and that's for all, all flow scenarios.

MR. MCCANN: Okay. Just a couple questions about some of the language here. First of all, it refers to sudden loss of carrying capacity. What is carrying capacity and what is surcharging?

MR. GRACHEK: Carrying capacity is the capacity of the, of the system to be able to carry the volume of water or convey the volume of water. And what happens is you'll have, you'll have a stable flow of water as, you know, all the way

from, from very little flow all the way up to anywhere depending on the size of the pipe, anywhere from seventy to ninety percent.

But when you get above ninety percent, you start losing, you start losing the ability for the water to flow because the, you end up with, with massive pressure losses because you filled up the pipe and now the pipe is, the pipe is, is basically being pushed back, or the flow is being pushed back through the system. And so, the only, the only thing that could happen is that (inaudible) surcharges or it basically flows out of the manholes.

MR. MCCANN: Okay. So, and then the language you just referred to, ninety percent for trunk and interceptor sewers, I think we've, we've already described what those are versus laterals and mains. The, the, the sewer lines that would receive sewage from the subject site, are they trunk lines, interceptors, laterals, main sewers, what are they?

MR. GRACHEK: It's a definition to be given depending on size and all that, but in, in this case, what would be considered a trunk line would be the main lines that accept, that accept water from the areas, basically, the Jones, the Jones Falls, the Rolling Run or the Towson Run.

Interceptors would be considered trunk lines. Certainly, the Lake Roland and downstream would be considered trunk line. Interceptors are pipe that come from, for example,

a subdivision or a business area that, that feed into the trunk lines.

MR. MCCANN: Okay.

MR. GRACHEK: And then, the, the building connections are the pipes that come directly from the buildings to the laterals.

MR. MCCANN: Okay. Next sentence says regardless of flow and depth, the minimum sizes to be used are six inch for building connections and eight inch for all other sewers.

MR. GRACHEK: What that means is, according to the County's, the County's manual, that, that they, they will not allow a, a four inch or, you know, a, or a two inch pipe for sewage.

MR. MCCANN: Okay. The ninety percent, is that consistent with your experience in the industry?

MR. GRACHEK: Yeah, that, that's consistent with industry. It's also consistent with (inaudible) standards.

MR. MCCANN: Okay and is the, is this ninety percent, based on your reading of this manual, is that dry weather or peak flow?

MR. GRACHEK: That is, that is to be considered for the most, it's more or less for peak flow, it's for peak flow dry weather but it's also for flow from various storm events. In other words, the pipe, no matter what the scenario, be it peak flow, average flow or peak flow and average flow augmented

by, by infiltration inflow from a storm event, you should never have above ninety percent in the trunk lines, or eight or seventy for the other lines appropriately.

MR. MCCANN: For wet weather conditions?

MR. GRACHEK: Yeah, for, for wet weather too.

MR. MCCANN: Okay and is that threshold, is that, in addition to being consistent with your experience in the industry, is that also consistent with sanitary, is it or is it not consistent with sanitary engineering principles?

MR. GRACHEK: Absolutely.

MR. MCCANN: Okay. Okay. I would move this Exhibit 70 into evidence.

ALJ: Mr. Mudd?

MR. MUDD: No objection.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No, no objection.

ALJ: Thank you.

MR. MCCANN: I'm going to grab a couple more exhibits here, Your Honor, and move on. Mr. Grachek, what, what do you know, based on your review of things, about the size of the interceptor that runs under Lake Roland? What do you know, and what do you know about the interceptor in terms of its condition?

MR. GRACHEK: I know that it, it's a forty-two inch pipe, reinforced concrete pipe. It was installed, I believe,

in the forties or fifties, but I can't, I, I, I don't quite recall then. And it was installed underneath Lake Roland. It's right down the middle of Lake Roland. And so, it's got soil over the top of it, the bottom of Lake Roland and then water over the top of it. It's basically built at the low point of the sewer shed.

MR. MCCANN: Okay. I'm pulling up some exhibits, bear with me one second. Okay. Let me show you, this would be Exhibit 71. Do you see that, Mr. Grachek?

MR. GRACHEK: Yes.

MR. MCCANN: What is that?

MR. GRACHEK: That is the, one of the manholes along the northwest side of Lake Roland, in the Lake Roland interceptor. And, as you can see, the, this picture was taken a number of years ago. I, I believe it was 2009, or '19 it was taken.

MR. MCCANN: Okay.

MR. GRACHEK: And, and it shows the, the, it shows the cover dislodged from the manhole indicating the likelihood that there was a sanitary sewer overflow that popped the lid off.

MR. MCCANN: Okay and do you recall, know what manhole number this is offhand?

MR. GRACHEK: (inaudible) 6888 but I'm not sure about that.

MR. MCCANN: Okay. If I showed you a map, would you be able to identify where, where it's located?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Bear with me one second. I'll just pull up this map which we've looked at already. This is Exhibit 62. Sorry, I should have had this handy. So, this is, again, the colored version of this map. But tell me where that manhole approximately is located?

MR. GRACHEK: If you, if you zoom in, zoom in the Lake Roland area.

MR. MCCANN: Yeah.

MR. GRACHEK: It's, it's at the juncture, junction of the, of the Jones Falls, the Towson Run and Roland Run interceptors.

MR. MCCANN: Okay. So, approximately to the left of where it's --

MR. GRACHEK: Approximately right where, where your cursor is.

MR. MCCANN: Okay.

MR. GRACHEK: Right there, right there.

MR. MCCANN: Right here, okay. And you said it was taken a couple years ago. What, what about the photograph, going back to it, strikes you as significant, if anything?

MR. GRACHEK: Well, the significant, the significant thing is other than its condition, it looks like it has been

maintained at that time. The, the manhole cover has popped off, which means that unless somebody decided to come up and pop the manhole cover off, that it most likely is a result of an SSO. So, you had, you had sewage backing up to an elevation throughout the system that was high enough to pop the manhole cover off a manhole that sits several feet above the water line of Lake Roland.

MR. MCCANN: Yeah, how high is this off the ground, do you know, approximately, do you recall?

MR. GRACHEK: Three feet, three to four feet.

MR. MCCANN: Okay. You, were you, did you take the picture or were you present when it was taken?

MR. GRACHEK: I was present when the picture was taken. I, I'm, I'm recalling maybe three to four feet.

MR. MCCANN: Okay, all right. And the next photographs in this exhibit also part, this is also, has a sticker from a prior case on it. But, have you looked at these photographs?

MR. GRACHEK: Yes, I have. This is, these are photos that were taken later on. But it looks like from the, if you go down to the, to the one where it shows the date.

MR. MCCANN: Yeah.

MR. GRACHEK: The next one down. That in 2020, in February of 2020, the County went out and put, this is what is called a sealed manhole.

MR. MCCANN: Okay.

MR. GRACHEK: So, it's bolted down so now it can't, it can't pop off.

MR. MCCANN: Okay and is this the same manhole that we just looked at in, in the photograph that you were present for?

MR. GRACHEK: I was not present for this one, but it does look like the same manhole, based on the background.

MR. MCCANN: Okay and what, what, if any, significance is there to, to the, this, the fact that the County sealed it? What, what do you make of that?

MR. GRACHEK: They, normally, you will seal a manhole so it doesn't, it doesn't surcharge anymore. But it has to be done with complimentary work done in the, normally, to complimentary work done to increase capacity so that, so that you don't just exacerbate the problem by forcing the problem upstream. And, you know, I, I, I can see that this is a sealed manhole. But I don't have anything to base whether they've done anything else to compensate for that.

MR. MCCANN: Okay, okay. I would move Exhibit 71 into evidence.

ALJ: Mr. Mudd?

MR. MUDD: No objection.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No, no objection. You said A and B?

ALJ: They were just stapled as seventy-one.

MR. MCCANN: Yeah, they're just, they're just seventy-one collectively. Seventy-two, which is on the screen now, tell us what this document is, Mr. Grachek.

MR. GRACHEK: Okay. This is the, this is a document that New Fields, our company prepared, one of my people prepared. And basically just documents for all these segments of the, the Jones Falls interceptor meeting up to Lake Roland.

And so, this is, this is on the line of, of the subject property. That from the RK&K report, these are the percent capacities of the system for every storm event. And this is taken from the data from the RK&K report. And we, we produced this one.

MR. MCCANN: Okay and --

MR. GRACHEK: And, and I looked at that, I, I compared it to the tables and verified that the data is accurate.

MR. MCCANN: Okay. So, this is, was this an exhibit introduced in the Blue Stone case that we referred to?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and this line that's referenced, is that the Jones Falls?

MR. GRACHEK: Yes.

MR. MCCANN: Where on this exhibit would be the, for, for instance, the manhole, 6888, that we just looked at in the

photographs, which were Exhibit 71?

MR. GRACHEK: It would be in the area of the, of the green dot that is directly, directly north of Lake Roland.

MR. MCCANN: So, where it turns, right here?

MR. GRACHEK: That one.

MR. MCCANN: Okay, all right. And does this, I think, I think you said this is the Jones Falls interceptor, correct?

MR. GRACHEK: Yes.

MR. MCCANN: And would sewage from the subject property go through this interceptor to, to get to Lake Roland?

MR. GRACHEK: Yes.

MR. MCCANN: Okay, all right. I would move this into evidence. This is Exhibit, again it's Exhibit --

ALJ: Seventy-three, actually.

MR. MCCANN: -- 73, yep.

ALJ: Yeah. Any objection, Mr. Mudd?

MR. MUDD: I, no, no objection, I think I can handle it on cross examination.

ALJ: Okay. Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

ALJ: Thanks.

MR. ZIMMERMAN: And this is seventy-three, yeah.

ALJ: Yes.

MR. ZIMMERMAN: Okay.

MR. MCCANN: Okay. Next exhibit would be seventy-seven. Do you see that, Mr. Grachek? Mr. Grachek, do you see this exhibit?

MR. GRACHEK: Yes, I see, I see that.

MR. MCCANN: Okay. I know it's very small. It's twenty-two pages and I'll blow it up a little bit. Tell us what this is and where it came from.

MR. GRACHEK: This is from the SRRR, this is an evaluation of defects at, in sewer segments for, throughout the, throughout the sewer shed.

MR. MCCANN: Okay. I'm going to refer you to the manhole that we were just discussing. It's not coming up. There it is, okay. So, this is on page, the last page of this exhibit, where it says sewer i.d. 6888 to 6887, upstream MH 6888, do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and just, what does this information tell us?

MR. GRACHEK: It tells us there is a large number of sewer defects. And if you move over to the table, or to, move over on the other side of the table, it defines what those sewer defects are. It was, it was mostly defective by (inaudible) lining of the pipe. In other words, in other words, the pipe needs to be relined.

MR. MCCANN: Okay. You're referring to this column

here where it says defective pipe?

MR. GRACHEK: Yeah, yeah.

MR. MCCANN: Okay.

MR. GRACHEK: Basically, it shows that many defects in a fairly short segment of pipe.

MR. MCCANN: Okay and this, this, we talked about the manhole 6888. What, 6888 to 6887, what is, is that the segment --

MR. GRACHEK: That's the segment.

MR. MCCANN: Okay and how many total, total defects are there in that segment according to this report?

MR. GRACHEK: Yeah, it says five hundred and forty-one total defects.

MR. MCCANN: Okay and then, okay. I would move this exhibit into evidence. Again, this is Exhibit 77.

ALJ: Mr. Mudd?

MR. MUDD: No objection.

MR. ZIMMERMAN: No objection.

ALJ: Thank you.

MR. MCCANN: Okay. Mr. Grachek, can SSOs pose a health risk?

MR. GRACHEK: Yes.

MR. MCCANN: Explain what you mean, how it can, how that can happen?

MR. GRACHEK: They, when, when SSOs occur, it's

basically pouring, pouring raw wastewater or diluted wastewater with I&I over the ground. It can contaminate soil, it can contaminate receiving streams with pathogens and the like. And it can cause situations where, where receiving streams and areas are not usable because of dangers of pathogenic contamination.

MR. MCCANN: Okay. Bear with me one second. I'm going to show you what's been marked as Protestant's Exhibit 75. Do you see that document?

MR. GRACHEK: Yes.

MR. MCCANN: What is Exhibit 75? It's thirty pages, for the record.

MR. GRACHEK: This, this document is sampling results for e. coli plate counts and for results from the e. coli analysis showing the geometric mean of the samples in the area. And I believe the standard, standard for the area is a hundred and twenty-six and, for the geometric mean of chloroform, or e. coli counts.

MR. MCCANN: Okay. So, I guess maybe for the record, just describe how this exhibit is organized or --

MR. GRACHEK: Yeah, it, it shows for various sampling events what the, what the numbers are. There, there are certain cases where the geometric mean of the chloroform, or the e. coli exceeded the one twenty-six. You can see in July and other --

MR. MCCANN: Okay.

MR. GRACHEK: -- a couple cases where it was considerably higher.

MR. MCCANN: Yeah, and I know the Judge has seen a similar exhibit before. But just how is it broken down, what, tell me what all these columns mean and what the date means and what your understanding of all that is.

MR. GRACHEK: Yeah, the, the date is the date it was sampled.

MR. MCCANN: Right.

MR. GRACHEK: And the, and the results are, these are the, these are the results using (inaudible) plate count numbers for e. coli. And the one through five are the different samples that were taken. And you can see the results are twelve, six, nineteen, nineteen, eighteen.

MR. MCCANN: Okay.

MR. GRACHEK: The 13.615 is a geometric mean, you know, which is a, a different way of averaging the, that doesn't, that doesn't favor a, it, it's a way of averaging numbers that doesn't favor an outlier. And so, it provides a better indication of what you, you would expect to see. (inaudible) temperature, specific (inaudible), pH, it looks like those are parameters they are sampling for. Gives the wind and just, just other data.

MR. MCCANN: Okay and their most recent date is

August 18th, it goes a ways back. But some of these numbers, you mentioned the, the, the, this threshold of a hundred twenty-six. Some of these numbers are, the geometric mean is below that, is that fair?

MR. GRACHEK: Yes.

MR. MCCANN: And in some cases, do the, is the geometric mean greater than a hundred twenty-six?

MR. GRACHEK: Right. And as you can see, and some are, some are higher. I, my understanding is, these are, what you do normally when you, when you test the, are receiving (inaudible) like this, is that you sample after storm events.

And so, these were samplings that were done after various storm events. And it looks like on May 23rd, for example, there was a significant release of SSOs, because that's reflected by the, that the, the plate count numbers are, are even above the, what is capable of even being.

MR. MCCANN: Yeah, what do you make, what do you make of the carrot, two thousand four hundred twenty, what is your understanding of what that means?

MR. GRACHEK: Yeah, May 23rd is, May 23rd, 2022 is representative of a very large SSO release and probably, you know, a sampling in an area that just had a major, surface water that just had a major release.

MR. MCCANN: Okay. But the carrot in particular, what is the greater than carrot, what is, what is your

understanding of what that means?

MR. GRACHEK: Say that again, I'm sorry?

MR. MCCANN: The carrot, when it says, there's a carrot, c-a --

MR. GRACHEK: Oh, that just means that, that the result was higher than the analytical method can, can measure. These are done by, by doing plate counts, (inaudible) plate counts where you, you basically count the number of qualities that you generate by, by inoculating and incubating something. It looks like in that case, the numbers were so high that it's beyond the, the analytical limit.

MR. MCCANN: Okay.

MR. GRACHEK: So, so, --

MR. MCCANN: Is there --

MR. GRACHEK: In other words, it was really high.

MR. MCCANN: Yeah. Would you agree with me that the geometric mean varies considerably over time? Would you agree with that?

MR. GRACHEK: Yes, absolutely. I mean, water is continually flowing through the lake. And so, you know, it's, it, it is reflective of specific storm events and SSO events that occur based on the magnitude of the storm events.

MR. MCCANN: Okay, all right. Let me show you this exhibit, which is Exhibit, well, let me move the prior exhibit into evidence, Exhibit 75.

ALJ: Mr. Mudd?

MR. MUDD: No objection.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

ALJ: Thank you.

MR. MCCANN: Exhibit 74, an eight-page document that has a COMAR section in it. Have you reviewed this section?

MR. GRACHEK: Yes.

MR. MCCANN: And, what, what, essentially, does it say, tell us?

MR. GRACHEK: This is where I reference the number of a hundred and twenty-six as the allowable geometric mean.

MR. MCCANN: Okay.

MR. GRACHEK: And the statistical threshold value is a, you know, it's just like a, a, a standard (inaudible) but the one twenty-six is the relevant number.

MR. MCCANN: Okay and is that one twenty-six geometric mean is that standard consistent with your experience with similar standards in other areas of the country?

MR. GRACHEK: I've seen it, I've seen it considerably lower. This is actually one of the higher levels that I've seen.

MR. MCCANN: Okay.

MR. GRACHEK: Which means that, that the, it's not regulated as stringently as some other places I've seen.

MR. MCCANN: Okay, all right. Let me show you --

ALJ: Any objection to seventy-four, which is COMAR, Mr. Mudd?

MR. MUDD: Nope, no objection.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

ALJ: Thank you.

MR. MCCANN: Okay. Exhibit 76 consists of three photographs. Let me show you 76-C first. What is this photograph, Mr. Grachek?

MR. GRACHEK: This is a stream sense warning. And it basically says that, that the, the use of Lake Roland is impeded by bacterial risks. And that it's a warning to the public in the use of Lake Roland.

MR. MCCANN: Okay.

MR. GRACHEK: (inaudible) no swim --

MR. MCCANN: Okay --

MR. GRACHEK: -- warning, no drinking (inaudible) of the water.

MR. MCCANN: Where, where was this photograph taken and when?

MR. GRACHEK: This photograph was taken on the 20th of January, I believe.

MR. MCCANN: Of this year?

MR. GRACHEK: And it was taken, it was taken near the

dock.

MR. MCCANN: In where?

MR. GRACHEK: At Lake Roland.

MR. MCCANN: Okay.

ALJ: What was the year it, what was the year?

MR. GRACHEK: I, I --

ALJ: What was the year that you said?

MR. GRACHEK: Oh, this was taken, this was taken two and a half weeks ago.

ALJ: Okay, twenty, 2023.

MR. GRACHEK: Yes (inaudible) --

ALJ: So, the first picture, is it also for the second and third picture?

MR. GRACHEK: Yes.

MR. MCCANN: The same date, okay. So, this is --

ALJ: They're all, all three were taken on January the 20th, 2023?

MR. GRACHEK: Yes.

ALJ: Okay.

MR. MCCANN: Okay. So, the second photograph I'll show you is this one. Is that, is that also, yeah, I think you've indicated it was taken on the same date, is that also taken at Lake Roland?

MR. GRACHEK: Yes.

MR. MCCANN: Were all these photographs taken during

your, your site visit you described earlier?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and this is, this is obviously a different sign, is that right?

MR. GRACHEK: Repeat that, Michael, please.

MR. MCCANN: Is this, is this a different sign?

MR. GRACHEK: No, it's the same sign.

MR. MCCANN: No, then the one we just looked at.

MR. GRACHEK: Oh, the one we just looked at, yes. Yes, it is. It's posted at a different location.

MR. MCCANN: Okay and then lastly, this last photograph, I think you're better able to see the language, but anything in there that you'd like to point out other than what you've already said?

MR. GRACHEK: It states clearly that this is recurring SSOs and because of that there are risks associated with use of the water and they basically advise you to avoid, minimize contact with the waters, don't drink it, no hand to mouth contact if you touch it and minimize contact with open wounds. So, basically, stay out of the water.

MR. MCCANN: Okay. Your Honor, I would move Exhibit 76 into evidence, the three photographs.

ALJ: Mr. Mudd?

MR. MUDD: I guess my only question is did he take these photos? I'm not sure that that was --

MR. GRACHEK: I did not take these photos.

MR. MUDD: And was he present when they were taken?

MR. GRACHEK: I was present when they were taken, yes.

MR. MUDD: Okay. No objection.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

ALJ: Thanks.

MR. MUDD: And, and Michael, I didn't intend to ask him questions, I hope you know that (inaudible).

MR. MCCANN: That's fine, that's fine.

MR. MUDD: I could have handled it on cross, but I didn't want it to come in if it was a problem. Thanks for shaking your head, Mr. Zimmerman. Let the record reflect that too.

MR. MCCANN: Okay. I want to pull up a couple more exhibits.

ALJ: Everyone doing okay? Anyone need a break? Everyone looks okay, all right.

MR. GRACHEK: I'm okay.

MR. MCCANN: Okay, all right. Next exhibit is Exhibit 78. Do you see that, Mr. Grachek?

MR. GRACHEK: Yes.

MR. MCCANN: Actually, (inaudible) page as well. It's twenty-five pages. What is this document?

MR. GRACHEK: This is a document prepared by a, another consultant, the RJN Group. And this is a performance assessment of the work that has been performed since the SRRR on the sewer shed.

MR. MCCANN: Okay. Is this performance assessment, is this something that's required by the Consent Decree?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. I'm going to pull that up real quick. Which is Exhibit 65. Bear with me one sec. Okay. This is on, again, Exhibit 65 at the bottom of page thirty-four, it crosses over to page thirty-five. Is this the section of the Consent Decree that addresses the performance assessment?

MR. GRACHEK: Yes.

MR. MCCANN: Okay.

MR. GRACHEK: Yes.

MR. MCCANN: I just want to, I guess, read this to you. It says, Baltimore County shall conduct a performance assessment of the work performed in each sewer shed as required under paragraph seven, ten and thirteen to determine the effectiveness of the evaluation and corrective action work performed. Did I read that correctly?

MR. GRACHEK: Yes.

MR. MCCANN: And I think that, that's consistent, I think you said it's a, you said the same thing, essentially,

right? It's work that's been performed.

MR. GRACHEK: Yes.

MR. MCCANN: Okay.

MR. GRACHEK: Of the actual work performed.

MR. MCCANN: Yeah, all right. So, getting back to the report, which is seventy-eight, what, what is, for lack of a better term, what's the scope of the report? What does it address?

MR. GRACHEK: This report does not address a performance assessment of the overall corrective actions in the sewer shed, but rather it reflects the, the actions taken in four-meter basins on the northwest or, excuse me, the northeast side of the sewer shed.

MR. MCCANN: Okay. Let me show you, also part of the same exhibit, it's map one in that. Do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Does this map, which again, is part of this, the RJN report labeled map one, does this map show the area where the area where the, or the, reflect the scope of the report? The area where the work was performed?

MR. GRACHEK: Yes, it's for the four meter basins that are in yellow.

MR. MCCANN: I'm sorry, where? In yellow, you said?

MR. GRACHEK: The four meter basins that are in yellow.

MR. MCCANN: Okay. Okay. I think I asked you something like this earlier, but do the, do the four water meter basins in yellow that's reflected in this map, do they flow to the Jones Falls interceptor?

MR. GRACHEK: No.

MR. MCCANN: Okay. Let me show you, can someone remind me how to move this, I need to get to an exhibit that's under here.

ALJ: The, is it the drop down bar?

MR. MCCANN: Yeah, it's in the way.

ALJ: Yeah, if you hit, you have to hold down control, shift, Q at the same time and it'll, it'll go up. And then if you need it back, just hit escape.

MR. MCCANN: Got it, excellent.

ALJ: Did it work? Okay.

MR. MCCANN: Thank you, Judge.

ALJ: Um hm.

MR. ROSENBLATT: Learned something new today.

MR. MCCANN: Yeah, I did. I always have a problem with that. All right. So, here's, in the same exhibit, same RJN report, which is Exhibit 78, I want to show you map two. And I'll point, direct you to the legend in this map. It says map two on the bottom right, do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: And then, the title of the report is

Jones Falls sewer shed repair, replacement and rehabilitation plan, rehabilitation completed. What, what is your understanding of what this map is?

MR. GRACHEK: This map shows the, the limited amount of work that's been done with, primarily in those four meter basins in the northwest. And then the repair on several manholes throughout the basin.

MR. MCCANN: Okay and focusing in on the Jones Falls interceptor and the sewage as it would flow from the subject site, well, first, I guess, let me have you tell us where the, the site is, the subject site, I think --

MR. GRACHEK: Yeah, the site, the site is in the BC-05 area.

MR. MCCANN: Okay.

MR. GRACHEK: Up to the, in the northwest, or the north portion of the, of the area.

MR. MCCANN: Okay.

MR. GRACHEK: Above the interstate sign --

MR. MCCANN: Is it this area, this area right here?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and we've already described the flow from the site. Does, does, in this area, the flow from the site, that is, the, you know, as the flow leaves the site and goes to the Jones interceptor, in, in this map too, is there any work reflected at all in that path?

MR. GRACHEK: This map shows that no work has been, or very little, there's a couple, you know, manhole, manhole things but for a preponderance of the, of the Jones Falls, no work has been done in the, in the (inaudible).

MR. MCCANN: Okay. Well, and if I could highlight, I would do the flow path. But let me just zoom in close to the site. There are some markings right here and I wanted to ask you about those. Do you see those two squares?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Do you know offhand, I can go to the key, do you know offhand what those squares represent?

MR. GRACHEK: I'd have to look at the legend, but they look like they are adjustments to manholes.

MR. MCCANN: Yeah, let me go to the legend --

MR. GRACHEK: Some lining for manholes, lining and internal frame seals, --

MR. MCCANN: Well, hold on one sec, hold on one second because there's a lot of --

MR. GRACHEK: Okay.

MR. MCCANN: -- a lot of similar markings. I just want to make sure, they appear to be, so green square and a pink square.

ALJ: Where, where are you exactly? You can highlight that with your cursor.

MR. MCCANN: I shall. So, right here, Your Honor.

ALJ: Okay.

MR. MCCANN: Yeah, right below the site.

ALJ: Um hm.

MR. MCCANN: I think as he already described them, just blowing it up so we can see what those markings are. There's so many. So, a green square and a pink square, I'll just go down to the legend and ask you what, are these --

MR. GRACHEK: And that's a repair to a manhole, are insert and replace cover, insert grout bench and riser. Those are minor repairs to a manhole.

MR. MCCANN: Okay. So, do you recall your testimony earlier about the SSO 44219 and, and the recommended upsizing? You remember that testimony?

MR. GRACHEK: Are you talking, are you talking about the, ten inch line to be upgraded to the eighteen inch line?

MR. MCCANN: Correct.

MR. GRACHEK: Yes, I recall that.

MR. MCCANN: Okay and, and is that work, that is the upsizing of the pipe, is that reflected on this map too?

MR. GRACHEK: No, it is not.

MR. MCCANN: Okay. Okay. Okay, let's go back to the plan itself, which is Exhibit 70. I'm going to refer you to page seventeen, I'm sorry, fourteen. Blow that up. And I'll highlight this paragraph. Can you see where I am right now?

MR. GRACHEK: Yes.

MR. MCCANN: Okay, just wanted to make sure you could still see my screen. So, this paragraph on page twenty of the exhibit, page fourteen of the report, I'll blow it up. I'll just read it to you.

It says, Table 4-1B shows the predicted number of overflow, overflows in each meter basin under the post-rehabilitation condition. According to the results, the rehabilitation projects have decreased the occurrence as well as volume of SSOs in the meter basins where rehabilitation work was performed. The model predicts no overflow for the two year, six, three SSOs for the two year, twenty-four, four SSOs for the ten year, six storm, eleven, etcetera. Do you see that paragraph?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. What, a couple questions. Well, first of all, what do you make of that paragraph in the context of this report?

MR. GRACHEK: My, My, the first, the first item is that it's limited to just those meter basins where rehabilitation work was completed. Second is that --

MR. MCCANN: Well, hold on, hold on, hold on. When you say that, is, it says here, where rehabilitation work was completed, is that what you mean?

MR. GRACHEK: Yes, that's what I'm talking about.

MR. MCCANN: Okay, go ahead.

MR. GRACHEK: And it also tells me that even though they eliminated modeled overflows for the two year, six hour events, that the repairs failed to manage overflows for the other storm events. So, I, my assessment would be that the, or if they did, it did not, did not succeed.

MR. MCCANN: Okay. To your, to your knowledge, Mr. Grachek, was RJN's performance assessment ever approved by MDE, or did they ever comment on it even?

MR. GRACHEK: No.

MR. MCCANN: Okay. Your Honor, on that issue, this is, I would just, this is Exhibit 80. This is an e-mail that I sent to MDE regarding the performance assessment and the response I got. This isn't something that Mr. Grachek did, so and I can certainly blow it up so you can, and counsel can take a look at it. But, essentially, it asks whether the performance assessment has been approved.

MR. GRACHEK: And it basically says the Department has provided no formal response.

MR. MCCANN: You, okay, you're referring to the response?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. All right. Your Honor, I would move Exhibit 78 into evidence, which is the performance assessment itself, the map --

ALJ: Any objection, Mr. Mudd?

MR. MUDD: No objection to seventy-eight.

MR. ZIMMERMAN: No objection also, Judge.

ALJ: Thank you.

MR. MCCANN: The maps were part of it. And then I would move eighty into evidence, which is the e-mail that I received from MDE.

ALJ: So, Mr. Mudd?

MR. MUDD: I do object to this, because MDE is not here, number one. Number two, the e-mail chain refers to a February 1st, 2022 e-mail communications that were not included on, among this document. So, we have no idea what the full extent of the conversation was or was not.

ALJ: Yeah, --

MR. MCCANN: I'm happy, I'm happy to include that as well, if that's --

MR. MUDD: But I, I object fir, primarily on the basis of hearsay, without the ability to cross examine Mr. Herpel.

ALJ: Yeah, Mr. or Ms. Herpel, Jess Herpel.

MR. MUDD: Sorry.

ALJ: We don't, we don't know which one it is, but, oh, Jessica Herpel is what it says at the top, Maryland. Yeah, I mean, it's a State, it's an e-mail presumably from the State as opposed to, I mean, if this was the County, we would say, you know, that it could come in.

It, the problem is, it's, it's with the State. Although we let SHA, we let SHA documents in. And we did have someone from SHA here. And so, you know, given that it appears to be someone from the MDE that signed it, I mean, I, you know, Mr., Mr. McCann requested it, he's an officer of the Court, he's indicated that this was the response it appears to be.

I mean, there's a signature block and this is what it indicates. And so, I mean, I realize it's hearsay but in this situation, it's, you know, it is an administrative hearing and so because we allow SHA documents to come in, they come in as a matter of course, they come in in zoning cases all the time without the presence of, of MDE or not, SHA documents is what I was talking about, SHA people coming in, this is MDE actually. So, we'll allow it. It's, it's Exhibit 80, 78 and 80.

MR. MUDD: I, I would ask Your Honor if you would require that he, as he offered to do, to produce the remainder of the e-mail chain.

ALJ: Okay.

MR. MCCANN: Yeah, it's not a chain, it's just a separate e-mail that had other stuff in it, so I have no problem with, obviously with providing that.

MR. MUDD: And --

ALJ: And you'll make that 80-A?

MR. MCCANN: Sure.

ALJ: Okay.

MR. MUDD: So, I, I suppose there are at least two e-mails, one from you, you know, back and forth on February 1st, is that right?

MR. MCCANN: It's an e-mail from me and a response from her.

MR. MUDD: Okay.

MR. MCCANN: Yep.

MR. MUDD: Great. As long as we can see that, thank you.

MR. MCCANN: Actually, I have one more thing to discuss about the RJN. During the course of its work, Mr. Grachek, did, did, based on your review of the report, did RJN update the model that was used by RK&K to predict future capacity issues?

MR. GRACHEK: Yes, they did.

MR. MCCANN: And is, without looking at the report, is explicit reference to that fact in the report?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. So, let me show you map three to the report. We looked at two, here's map three. You see that?

MR. GRACHEK: Yes.

MR. MCCANN: And this map, I'll blow it up, is labeled map three, but it's entitled model predicted SSO and flow restriction locations. What does this map tell us, Mr. Grachek?

MR. GRACHEK: It, it shows that in the, in the flow path that, that we're, the subject flow path from the development to the Lake Roland Interceptor, is that there's, there's a considerable number of problems with capacity, with manholes under their model projections along that line.

MR. MCCANN: Okay and explain this map to us, how it's, how it's prepared based on the legend.

MR. GRACHEK: Basically, for the, for the area that we're looking at it shows model predicted SSOs for, in many manholes, for the lowest storm is two-year, six hour --

MR. MCCANN: Well, hold on, before you get to that, before you get to that. I'm just asking how is the map maybe in contrast to the five RK&K maps, this is a single map, explain --

MR. GRACHEK: This is a, this is a single map that shows all the different, all the different areas on one map and it's a little, it's a little cumbersome because you, you end up having, for example, anywhere where you have a, a red dot, then it has to be implicit on this map that for any higher storm that you would have the same type of situation.

MR. MCCANN: All right. So, let's just, let's just focus on that for a second. So, I'm looking at the legend. You're referring to, refer to a red dot. It says model predicted overflow under two year, six hour storm, do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: And then below it for a storm code, it says model predicted hydraulic restriction under two year, six hour storm. Is, do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: Are those the two, just those two storms in particular, are they the lesser, for lack of a better term, of all the storms?

MR. GRACHEK: Yeah, that's the most, that's the most moderate storm scenario.

MR. MCCANN: And then, are the storms listed here increasing in intensity?

MR. GRACHEK: Yes. Well, increasing in intensity and duration.

MR. MCCANN: Okay. So, and I think you were headed there, is, is the map cumulative? Is that a best, a good way to describe it?

MR. GRACHEK: The way the, the way the map looks right now is basically, in my view, it underestimates the impact because it basically, you have to make the assumption that if you, if you have overflows for the most moderate storm event, that it's going to be far worse under, under the other storm events.

MR. MCCANN: So, yeah, but and I think you're saying the same thing, --

MR. GRACHEK: Yeah.

MR. MCCANN: Is, I mean, you say, you call it an assumption. Is, is, does this, so let's give an example. Okay? I'll give a specific example. For, concentrating on the sewage flow from, from the subject site, I'll zoom in on that area and I think I'll have you identify it, is this this area right here where my cursor is?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. So, these red dots and the red lines are what, what are they?

MR. GRACHEK: They represent, the red dots represent overflows at manholes under a two-year, six-hour event.

MR. MCCANN: Okay.

MR. GRACHEK: The red lines represent restrictions on a two year, six hour event.

MR. MCCANN: Okay. So, here's the, here's my question. If, if, as in this case, a, a red dot or a red line is shown for the two year, six hour storm, does that mean that those same models --

MR. MUDD: Objection, objection.

ALJ: So, you're, you sound like you're going to ask him, I mean, it is sort of an opinion question. So, if you could not lead him through the question. You need to ask more of an open ended question, you know, what do the red dots mean or (inaudible) --

MR. MCCANN: All right. Based, based on this map, will there be, based on the map and your review of it, will there be sanitary sewer overflows and hydraulic restrictions for all of the more intense storms, then the two years --

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Does this map show --

MR. MUDD: I'm going to object, I move to strike that question. I mean, he, he did the same thing, question and answer.

MR. MCCANN: That's --

ALJ: And I, but I think before that he's already indicated be, that because there are red dots, what I understood, in the, in the two hours, the two year, six hour storm event, that, that by, you know, therefore, you could extrapolate and say that for the more intense storms, you know, that it would be worse, is what he said. So, he sort of just repeated the same testimony already. So, but, Mr. McCann, if you could not lead him through just, you know, ask an open ended --

MR. MCCANN: Okay, yeah. I think, I think you're right. I think he's, he's made the point. I think the map speaks for itself. So, I'll, I'll just move on. And so, getting back to your point about what the map shows for this particular sewer path and, and maybe at this point what I'll do, bear with me one second. You said escape, Your Honor?

There we go. How about that? Bear with me one second. Okay. I want to, I pulled up Exhibit 62, which is the map that's already been introduced. Do you see that, Mr. Grachek?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. I think this just highlights it better. So, comparing, taking this into consideration, what can you tell us about the results of this map to, for the sewer path from the subject site?

MR. GRACHEK: In my opinion, based on --

MR. MUDD: Objection, objection. That's not map two.

ALJ: That's not --

MR. MCCANN: I'm sorry, map three. Map three, I'm sorry.

ALJ: Yeah, it is map three.

MR. MCCANN: Yep.

ALJ: Okay.

MR. MCCANN: Go ahead, Mr. Grachek.

MR. GRACHEK: In my opinion, based on, based solely on the evaluations from these two maps, the RJN report reflects a much worse situation in the, the Jones Falls or that, the, the run from the development to, to Lake Roland than the RK&K report.

MR. MCCANN: Okay. Control alt H? Control shift Q? What is it, Judge?

ALJ: Yeah, control, control shift Q, it should be.

MR. MCCANN: Thanks.

ALJ: Did that work?

MR. MCCANN: Yep, it did. So, I, if I haven't already, I would move seventy-eight into evidence, which is the RJN performance assessment and the maps. I think I have.

ALJ: You did that already. I have it checked.

MR. MCCANN: Got it. Then next exhibit will be, this is Exhibit 81. Do you see that, Mr. Grachek?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. It's entitled comparison of sewer pipe capacities greater than ninety percent GS Manor site to City line, RGN pre-rehab versus RJN post-rehab. Did I read that correctly?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Tell us what this document is.

MR. GRACHEK: Okay. This gives a synopsis, if you look at the various columns, you have the upstream and downstream manholes for all the segments from the development to, through the Lake Roland side.

MR. MCCANN: Okay.

MR. GRACHEK: It gives the pipe, it gives the pipe diameters, it gives, according to the RJN post-rehabilitation from there performance assessment. It gives a full pipe capacity remaining in these pipes. It gives a peak flow and then it gives a calculated percent of capacity --

MR. MCCANN: Okay, let me stop you there, okay? Because again, we're not identifying the columns. But that's okay, I followed you. The, the, you just described the first six columns, is that correct?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and the, the last column is this column, calculated percentage of capacity, is that what you were just referring to?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and --

MR. GRACHEK: That's the, that's the, the peak flow divided by the full pipe.

MR. MCCANN: So, in other words, to do that, yeah, tell me how, what math you did to reach the one twenty.

MR. GRACHEK: It'd be point, .83 divided by .69, times a hundred, which would give you the percent of, so, so the first segment is flowing at a hundred and twenty percent capacity.

MR. MCCANN: Okay. So, these, these are, in dark and bold in column six?

MR. GRACHEK: Yes.

MR. MCCANN: Okay.

MR. GRACHEK: And according to the RJN post run, every, almost every pipe is running at well above a hundred percent --

MR. MCCANN: Okay and when you say in that, and this is the yellow, are you, when it says post-rehab, what does that mean?

MR. GRACHEK: That means after the, the work that is subject to the performance evaluation is completed.

MR. MCCANN: And what work was that, just remind us.

MR. GRACHEK: That was the work in the four sewer, or the four meter basins, plus the manhole work that was done (inaudible) in the previous exhibit.

MR. MCCANN: Okay, all right. So, if you could continue across. And beginning with, I guess, column G, where, where it turns green.

MR. GRACHEK: Yeah, --

MR. MCCANN: (inaudible) columns.

MR. GRACHEK: -- G, G through I is what RJN assessed prior to the rehab.

MR. MCCANN: Okay.

MR. GRACHEK: And that was compared, that was compared to what, in columns J and K, what RK&K had assessed. And you can see that within rounding (inaudible), those numbers are essentially the same. But what it shows here, and, and for, for reasons that I would have to know the model, is that based on the evaluation that's been done that the, the rehabilitation, according to this model, has in many of the segments made things worse.

MR. MCCANN: Okay. Now, when you say, when you say worse, well, let me backup before we get to --

MR. GRACHEK: We're, we're more over capacity than we were before and that could be for a lot of reasons. That, but it's showing, showing right here that, for example, from 44225, or 44224, prior to the time they did their rehab and calculating a hundred and seven percent capacity. Now they're at a hundred and twenty.

MR. MCCANN: Okay. So, you're, these two numbers here --

MR. GRACHEK: Yes.

MR. MCCANN: -- I've highlighted, okay.

MR. GRACHEK: And that cascades down. There are a few that are the other way. There are a few that are similar. But many, many of them are, are exacerbated.

MR. MCCANN: Okay. When you're talking about that, just which column are you talking about now, the difference.

MR. GRACHEK: Yeah, I'm, I'm talking about the comparison of all the numbers in Column I compared to the corresponding numbers in Column F.

MR. MCCANN: Okay. But where are the numbers, where's the comparison? What column is the comparison in?

MR. GRACHEK: No, that would be, that would be, obviously, Column K.

MR. MCCANN: Okay. Yeah, I can't ask leading

questions, as you've learned --

MR. GRACHEK: I'm sorry. I'm (inaudible).

MR. MCCANN: I'm trying to, --

MR. GRACHEK: I'm sorry.

MR. MCCANN: That's Column K?

MR. GRACHEK: Yeah, and as you can see they are close in segments. The situation is worse now than it was before.

MR. MCCANN: And when you say worse again, one more time?

MR. GRACHEK: And I define worse by meaning that your, your over capacity issue is of greater magnitude than it was prior.

MR. MCCANN: Okay and then this blue column, Column J, it says RK&K. Where are these numbers from?

MR. GRACHEK: Those are from the RK&K report.

MR. MCCANN: Okay. Okay and then lastly, it says in the title, it says greater than ninety percent up here. What, what does that mean?

MR. GRACHEK: That means that the, that means that every, that means the, basically, the capacity is greater, that the over capacity is greater than the ninety percent required by the, by the manual and by standards.

MR. MCCANN: So, does this, does this map, does this particular exhibit, does it include only the, the pipe capacities that are over ninety percent?

MR. GRACHEK: I, I'm sorry, I can't understand you, Michael?

MR. MCCANN: Does this, does this exhibit, Exhibit 81, include the pipe capacities, only those that are over ninety percent?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. So, there are, if we were to compare this chart to one of our earlier charts, we would see what, if any, --

MR. GRACHEK: Yeah, yeah, you'd see some that are, are good but you see the, the number of pipe segments in the length is fairly extensive.

MR. MCCANN: Okay, okay. You, and I think you touched upon this, but you said the rehab, rehabilitation in the four-meter basins in yellow, I think you said that they, that sewer from there didn't run to the Jones Falls interceptor.

MR. GRACHEK: Right.

MR. MCCANN: Are you able, are you able to say to a reasonable degree of certainty why then are the numbers, are the numbers decreasing? I mean, increasing, the capacity increasing? Do you follow me?

MR. GRACHEK: My, my professional opinion would be based not on an anal, a direct analysis is that --

MR. MUDD: I'm going to, I'm going to object before

he answers.

ALJ: Based on what?

MR. MUDD: I think he testified that he hadn't seen the model and he, and he could not ascertain why these numbers change without looking at the model. And now he's being asked to give his own opinion on a model that he doesn't even understand.

ALJ: Well, yeah, you can cross examine on, him on that.

MR. MUDD: Okay.

ALJ: Okay. Overruled. Go ahead, sir.

MR. GRACHEK: I, I, I would, my, my opinion would be is that the, that the model did put parameters (inaudible) since the RK&K model. And that, and, and also there's, and based on the fact that the sewer is ten years older than it is, than it was back then. So, a lot of things have happened.

MR. MCCANN: Okay.

MR. GRACHEK: But it's not, it's not because of any, and it may also be because of differences in, in, in parameters as opposed to the RK&K report. But it's curious to me that the RK&K and the, the pre-rehab numbers are fairly close. So, it's, it really, it's something that's kind of a mystery to me.

MR. MCCANN: You're comparing Column I and J?

MR. GRACHEK: Column I and J.

MR. MCCANN: Okay, okay. One more thing, does this

particular exhibit, I think you've already testified that RK&K didn't look at sewer lines smaller than ten inches, but does this, but does this particular exhibit include the pipes that are just across the street from the site, what I'll call the Johns Hopkins segments. Does it include those?

MR. GRACHEK: I believe, I believe so, yes.

MR. MCCANN: Well, let me, let me just show you another exhibit that will refresh your recollection.

MR. GRACHEK: Yeah, there's been a lot of numbers thrown around, I'd like to be able to take a look at it.

MR. MCCANN: Yeah. Okay. So, this is, this is Exhibit 63, if you recall. Do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and I'll direct you to the sewer--

MR. GRACHEK: Yeah, so it's 437 (inaudible), 43819 to, you know, to 44225.

MR. MCCANN: Yeah.

MR. GRACHEK: This (inaudible) back to the other exhibit.

MR. MCCANN: I will. Back to Exhibit 81, do you see those --

MR. GRACHEK: Yes, yes.

MR. MCCANN: -- those segments in here?

MR. GRACHEK: Yes.

MR. MCCANN: You do?

MR. GRACHEK: No, I'm, I'm sorry. Go back, 43819 to --

MR. MCCANN: Well, let me do this, hold on. Hold on, hold on. Let me just so we're clear about, and I don't want to belabor this, but we'll go back, just to be safe, go back to Exhibit 13, already in evidence, which is a Hopkins, I mean, I'm sorry, the memo from Mr. Bayer with these segments.

MR. GRACHEK: Yeah. Oh, no, I, I apologize. The answer is no. No, the, it starts at 44, at the 44 level. So, no, they are not included.

MR. MCCANN: Okay.

MR. GRACHEK: I'm sorry.

MR. MCCANN: That's okay, that's fine. I'm looking as we speak. So, let me show you --

MR. GRACHEK: Yes, this starts at the 44225, so, --

MR. MCCANN: Yeah.

MR. GRACHEK: -- they would not be included.

MR. MCCANN: Okay. Let me show you the next exhibit, which is eighty-two. This is a, to the Judge's chagrin, this is a two hundred ninety-eight page document. Do you see this?

MR. GRACHEK: Yes.

MR. MCCANN: Do you recognize this document?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. What is it?

MR. GRACHEK: It basically gives the, for, for the

different nodes, pipe diameters, pipe gradient, it gives a, an assessment for a ten-year, six hour storm of full pipe capacity compared to what the peak flow in the area --

MR. MCCANN: Right.

MR. GRACHEK: -- and it provides a surcharge state.

MR. MCCANN: Right.

MR. GRACHEK: (inaudible) used in some methodology for determining surcharge.

MR. MCCANN: Okay and is this part of the RJN report?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. So, and I'll scroll up just so, for instance, at the top page, it says two year, six hour storm post, and then if we go to the later, we have, for example, the two year, six hour storm pre. Do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: Are those, are those references to the pre and post rehab condition?

MR. GRACHEK: This would be, yes. The pre-rehab condition on this one, yes.

MR. MCCANN: So, if, if we were to take a look at these, and this is, I'm going to go back to Exhibit 81, if we were to look at the RJN post-rehab capacities for the segments right across the street from the site, we could look at this chart and find that, right?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and let me just make, give an example. So, I'm going to, what storm event am I looking for?

MR. GRACHEK: It's a two year --

MR. MCCANN: No, am I looking for, what, what storm event did you use for this exhibit, Exhibit 81?

MR. GRACHEK: This would be the ten year, six hour.

MR. MCCANN: Okay. Let me just go to the ten year, six. I know it's a lot. In fact, let me do this, what I could do is quicker, if you don't mind, is type in 43793. Okay. I think I'm at the right page. Do you see this page? It's seventy-seven of the exhibit.

MR. GRACHEK: Yes.

MR. MCCANN: It says wet weather capacity analysis, ten year, six hour storm post, do you see that?

MR. GRACHEK: Right, yes.

MR. MCCANN: And here are 43793, do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: Is that one of the, excuse me, one of the segments that's in the, I lost it already.

MR. GRACHEK: Go back to the --

MR. MCCANN: Yep. Is that, is 43793 to 43792, do you see that?

MR. GRACHEK: Yes, that is, that is the site that you're pointing at now.

MR. MCCANN: Okay. So, if we go back to this Exhibit

82 on page seventy-seven, I just highlighted, is that the same segment?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and how would we look, using this chart, how would we figure out the percentage for that particular segment according to RJN post-rehab?

MR. GRACHEK: Well, the, the peak flow --

MR. MCCANN: Right.

MR. GRACHEK: -- that's .52, so it would be the full pipe capacity, it would be the peak flow divided by the full pipe, pipe capacity. So, .52 divided by the .37.

MR. MCCANN: Okay. We could do the math for all of these, correct?

MR. GRACHEK: Correct.

MR. MCCANN: Okay, all right. Sorry about that. Then I would move, oh, one more question about, getting back to eighty-one. Similar to the prior chart, was this, were the numbers inputted by someone else on your behalf?

MR. GRACHEK: Yes.

MR. MCCANN: And did, did the numbers come from RJN and RK&K data?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. All right. Your Honor, I would move Exhibit 81 into evidence, as well as 82, which were the tables.

ALJ: Any objection, Mr. Mudd?

MR. MUDD: None to eighty-two and on eighty-one, I just would like the record to reflect who prepared it.

ALJ: So, Mr. Grachek, who prepared the document for you?

MR. GRACHEK: It was prepared by, my understanding, it was prepared by Tom Cord.

ALJ: I'm sorry, who?

MR. GRACHEK: Tom Cord.

ALJ: Who, who is that?

MR. GRACHEK: He's, he's one of the people involved as, as far as the case goes. He doesn't work for my company.

ALJ: Okay. The last name was Court, C-O-U-R-T?

MR. GRACHEK: C-O-O-R-D, I believe.

ALJ: O-O-R-D.

MR. GRACHEK: Or C-O-R-D.

ALJ: C-O-R-D, so, but he prepared this under your supervision, you asked him to put these numbers in?

MR. GRACHEK: It was provided to me after it was prepared.

ALJ: Okay.

MR. GRACHEK: And I, I verified numbers from reports from it.

ALJ: Okay. All right, Mr. Mudd, --

MR. MUDD: I think I objected to Exhibit 69 for the

same reason I object to this, which is it was not prepared by this expert and I understand that you may rule against that, but that's my objection.

ALJ: Understood. So, we're going to overrule the objection. Mr. Zimmerman, you don't have any objection?

MR. ZIMMERMAN: No objection, right. No objection.

ALJ: It's an administrative hearing and also, he prepared, or he, he reviewed it after it was prepared with, with numbers he sort of asked to be put in here and then re, you know, verified the numbers once they were put into the chart. So, I mean, he doesn't have to prepare it himself as long as he's reviewed it and it's accurate as far as he's concerned, so. All right. So, that is eighty-one and eighty-two, right, Mr. McCann?

MR. MCCANN: That's correct.

ALJ: Okay.

MR. MCCANN: All right. Your Honor, can we take a short break, you know, just say five or ten minutes?

ALJ: Sure and do you, you have some more though for him, right?

MR. MCCANN: Yeah, not a whole lot more. I think I'm three-quarters done, maybe more.

ALJ: Right, understood. Okay. So, yeah, let's take, why don't we just take ten minutes and then come back and we will, we'll just finish with him, all right? And I'll pause

the record.

MR. MCCANN: Okay, thank you.

(PAUSE)

ALJ: Okay. Mr. McCann, after a break I think you had some more questions for your witness.

MR. MCCANN: Yes, thank you. Mr. Grachek, I'm going to show you what's been pre-marked as Exhibit 90, which is an e-mail exchange between Jeff Peluso and Dave Bayer. Have you seen this e-mail before?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. The e-mail from Jeff Peluso, which is dated March 22nd, 2021, I just want to ask you about items number three and items number four. I'm just going to read to you what item number three is. If Hopkins didn't do the improvements, what are the ramifications of their connection?

And then number four. If Greenspring Manor were to continue through development, is there another way to provide capacity? Is there a breaking point for Greenspring Manor, paren, number of units? Did I read that correctly?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and then, in Mr. Bayer's response, number three, in response to the question if Hopkins didn't do the improvements, what are the ramifications of their new connection? Mr., what was Mr. Bayer's response?

MR. GRACHEK: You're going to have SSOs.

MR. MCCANN: Okay and then in response to Mr. Peluso's question, if Greenspring Manor were to continue through development, is there another way to provide capacity? Is there a breaking point for Greenspring Manor number of units? What was Mr. Bayer's response?

MR. GRACHEK: He said zero.

MR. MCCANN: Well, just read it just for the record.

MR. GRACHEK: Okay. Storage, and DPW has been opposed to that option, would be one option, finding another location that avoids the capacity deficient areas would be another option, however, we believe that option would be unfeasible. Zero is the break point of number of units that could be built without causing an SSO.

MR. MCCANN: Okay and do, do you agree with that latter assessment? That is that in terms of the number of units that could be built at this site, that zero is the breaking point?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and remind us, Mr. Grachek, what, what were the County's capacity numbers for the, the sewer segments that we're talking about in this e-mail, the range?

MR. GRACHEK: The range was from ninety-four to over a hundred.

MR. MCCANN: And was that wet weather or dry weather

capacities?

MR. GRACHEK: Dry weather.

MR. MCCANN: And if you can recall, what were the, how did those numbers, dry weather numbers, compare, how do they compare with the capacities found by RK&K and RJN for those same segments?

MR. GRACHEK: I'm, I'm not sure what you're asking (inaudible) please rephrase that.

MR. MCCANN: Yeah, I'm, I think you just indicated that County's capacity numbers dry weather were between ninety and a hundred percent, right?

MR. GRACHEK: Right.

MR. MCCANN: I'm asking you how those numbers, the County's numbers, compare with the numbers found by RK&K and RJN for those same segments.

MR. GRACHEK: Okay. They are, from my recollection, that they are actually favorable. That they're probably worse with the RK&K and, and RJN numbers.

MR. MCCANN: Okay and using the RK&K and RJN numbers, are there other sewer segments below, that is below the site, and beyond the Hopkins segments, that are higher than the range ninety to a hundred percent?

MR. GRACHEK: Yes.

MR. MCCANN: Are there numerous such segments --

MR. MUDD: Objection.

ALJ: Well, you're interjecting the word numerous to his, to, to the question. So, make sure you don't lead him through it. Can you just rephrase, please?

MR. GRACHEK: The, the, the previous exhibits show that there are --

ALJ: Wait a minute, one second. Mr. McCann, can you rephrase the question, please? Because you said are there numerous segments.

MR. MCCANN: Is that, is that a leading question?

ALJ: Well, it just, yeah, because you asked him if, how many sewer segments were below the site were greater than, I think you had said greater than ninety.

MR. MCCANN: Okay, all right.

ALJ: And then, --

MR. MCCANN: That's fine. I, they are what they are. I think numerous is sort of an objective thing. But --

ALJ: You could ask him how many, I mean, --

MR. MCCANN: Yeah. It's okay. I'll move on, Your Honor, but thank you. All right. So, I would move, before I forget, Exhibit 90 into evidence, the e-mail exchange.

ALJ: So, is this part of an information act request also?

MR. MCCANN: Yeah, it's Bate stamped 9, County 935, as you can see.

ALJ: And so, do you have, I guess, Mr. Mudd, do you

need the cover letter that asks for it or – -

MR. MUDD: I know (inaudible) inconsistent. I'm okay on the County piece. I know how Mr. McCann has been getting that information, so.

ALJ: Okay.

MR. MUDD: I have no objection --

ALJ: Yeah.

MR. MUDD: -- to this e-mail.

ALJ: Okay, good. (inaudible) same thing. Mr. Zimmerman, no objection?

MR. ZIMMERMAN: No objection.

ALJ: All right. Ninety is in.

MR. MCCANN: Okay. Mr. Grachek, does the, does the Consent Decree require the County in determining model predicted future capacity to rely upon growth projections?

MR. GRACHEK: Yes.

MR. MCCANN: And is that, in your experience, is that standard, for lack of a better word?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Let me direct you to, back to the Consent Decree, which is Exhibit 65. This is page twenty-eight of the Consent Decree, thirty-two of the exhibit. And just give you some context, this is in the section entitled long term capacity. Do you see that evaluation?

MR. GRACHEK: Yes.

MR. MCCANN: Subsection B under that. Do you see that section?

MR. GRACHEK: Yes.

MR. MCCANN: I'm just going to highlight, read one section of that section and it says quote, future conditions shall be based on reasonable population projections for the year 2025, corr, end quote, do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: Do you agree, I guess maybe more specifically, that when predicting model predicted future capacity it's, it's important to rely upon reasonable population projections?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Do you recall offhand, I can certainly show you in the SRRR plan, what baseline conditions are, I'm sorry, what, what the County, or RK&K rather, assumed would be the population projections? Do you remember from the SRRR plan?

MR. GRACHEK: My recollection was that they used the baseline conditions that existed in 2008.

MR. MCCANN: Okay. Let me just show you, so this is Exhibit 67, the SRR plan, page 5-9. I'll just read this to you. Population and employment will increase from baseline conditions, year 2008, to the future conditions, year 2025. Is that what you were referring to?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and so, this was back in two thou, what was the date of the SRR plan, do you recall?

MR. GRACHEK: The, the, the date for, say it again, Michael?

MR. MCCANN: The SRR plan, roughly, when was it, when was that?

MR. GRACHEK: The SRR plan was in 2012, or late 2012 or early 2013.

MR. MCCANN: Okay and did, did RJN rely upon the, the same projections, baseline conditions being 2008?

MR. GRACHEK: That is my understanding.

MR. MCCANN: Okay. Let me show you the RJN report, which is Protestant's Exhibit 78. This is page, roman numeral little i, little v, the executive summary. And highlight this sentence.

Quote, the model was then used to simulate pre and post-rehabilitation hydraulic conditions, respectively, under projected 2025 population and employment conditions as obtained from the hydraulic model used for the 2013 SRRR plan, end quote. Do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: And is that what you were referring to?

MR. GRACHEK: Yes.

MR. MCCANN: All right. Exhibit 83, do you see this

document?

MR. GRACHEK: Yes.

MR. MCCANN: What is it?

MR. GRACHEK: It just shows the population projections for the Jones Falls area based on, you know, based on different years.

MR. MCCANN: And what is the date of the projections, does it say?

MR. GRACHEK: It, for the date of the projections are, are April of 2008 and it shows projections backtracking to 2005, 10, 15, 20, 25 and 30.

MR. MCCANN: Okay. To, to your understanding, are these the, the projections that were used by RK&K and RJN?

MR. GRACHEK: Yes, that's my understanding.

MR. MCCANN: Okay. Do you believe it was reasonable for RK&K and RJN to use projections from 2008 in their modeling and updated modeling?

MR. GRACHEK: No, I think you should use projections from the time that you are preparing your analysis over a, my opinion would be over a twenty year period.

MR. MCCANN: Okay.

MR. GRACHEK: And so, if I, if I were doing it, I would run it from 2013 to 2033.

MR. MCCANN: Okay. I know you don't, you don't live in this area, do you?

MR. GRACHEK: No.

MR. MCCANN: But are you, or have you become rather, familiar with the growth that has occurred, for example, in Towson Proper since RK&K's reporting?

MR. GRACHEK: I, I have heard that and read that the population growth of that area has, has been relatively (inaudible) over the last several years but --

MR. MUDD: Objection, objection.

MR. GRACHEK: (inaudible) --

MR. MUDD: Objection.

ALJ: Sorry, you're objecting though while he was already answering the question so that's why he was, what's your objection, Mr. Mudd?

MR. MUDD: Hearsay. I, he was answering the question and said it was based on what he heard, that's not --

ALJ: I know, I heard him say that, what he heard and also, oh, I see why you objected then. And, but he also said, also what he read. So, Mr. Grachek, what is it that you read that tells you that, about the growth population in the Towson Proper?

MR. GRACHEK: In, in a previous case, I took a look at population projections, just Google population projections in the area, just so that I would know what we were talking about, and I can't recall the actual source of it. But I got an idea of the type of projections. And from what I gleaned,

the population growth in that area is probably a little bit above average.

ALJ: Okay, you --

MR. GRACHEK: But I can't, I can't recall the exact document.

ALJ: Okay. Mr., Mr. McCann can, I mean, excuse me, Mr. Mudd, you can cross examine him on that.

MR. MCCANN: Yeah, I mean, he's a, he's an expert, he can rely on hearsay. I hope we all remember that.

ALJ: That's correct, yep.

MR. MCCANN: Yeah, so, but let me show you, and I know you've looked at a lot of documents today, Mr. Grachek. Let me show you, this has been pre, previously marked in this case as Protestant's Exhibit 31. Do you recall looking at this document?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and just, we all know what it is, but just identify what it is and what, what it means to you.

MR. GRACHEK: This is just basically a report showing the, all the different projected, projected developments in the area. And it's a fairly extensive list, about the impacts and the, the number of units and the, you know, projections of square feet and, and, you know, the, giving an indication of growth.

MR. MCCANN: Does it also show the existing

developments?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and remind us, where does all the sewer from Towson Proper go?

MR. GRACHEK: I, I did not hear that, Michael.

MR. MCCANN: Where does all the sewer, sewage from Towson Proper go?

MR. GRACHEK: Well, from the downtown city of Towson it goes on the Towson Run interceptor.

MR. MCCANN: To Lake Roland?

MR. GRACHEK: Um hm.

ALJ: So, try not to testify, Mr. McCann, because you just gave him the answer, you said, to Lake Roland. So, I mean, you know, I think we all knew where it was going but just, you know, --

MR. MCCANN: Does it, does it, --

ALJ: -- where does it go from Towson Run interceptor then.

MR. MCCANN: Does it go, does it go to Lake Roland?

MR. GRACHEK: Yes.

MR. MCCANN: Other than RK&K and then RJN, has the County hired another consultant to evaluate its sewer, sewer capacity?

MR. GRACHEK: My understanding is they've hired another firm, (inaudible) Sawyer.

MR. MCCANN: Okay. Bear with me one second.

ALJ: Were you moving eighty-three and eighty-four into evidence, the population projections?

MR. MCCANN: Yep, I was just going to do that.

ALJ: Okay.

MR. MCCANN: Thank you.

ALJ: Okay, you are. So, Mr. Mudd, any objection to eighty-three and eighty-four?

MR. MUDD: Yes.

ALJ: Okay.

MR. MUDD: I object to eighty-three. I don't think there's been any foundation laid for where that came from.

ALJ: Yeah, I, I do agree with that, where, where did this come from?

MR. MCCANN: That was, actually the same exhibit introduced in Torch Hill. And it was proffered in that case, and I'll proffer it again through, I can do so through an e-mail. That this was produced to me in response to the, a, a query about the population and employment objections used, used by RK&K.

ALJ: So, it's part of your information request?

MR. MCCANN: Correct. My eight PIA requests, to be clear.

ALJ: Your eight PIA requests?

MR. MCCANN: Yeah.

ALJ: Okay, all right. So, Mr. Mudd, do you need the, you know, the document that shows that he requested it through an information act request?

MR. MUDD: I, I honestly don't recall this from Torch Hill.

ALJ: I've seen it.

MR. MUDD: Yeah? Okay.

ALJ: I've seen it, I recall it.

MR. MUDD: I see it, I see it there now. Okay. Yeah, and it was part of that, all right, I, I, I, I, that's fine with me then. I don't object to that and I do need to look at the other one though, bear with me. I'm sorry.

ALJ: The other one being what, eighty-four?

MR. MUDD: Eighty-four. Did we, did he even discuss eighty-four?

MR. MCCANN: No, and I think, it, it's really the same proffer. It's two separate, the same document, frankly, was produced in response to two separate PIA requests. For a, you know, so I guess, to be fair to Mr. Mudd, I'll, I'll, I don't have a problem with sending the PIA requests to establish this both, for both those exhibits, Your Honor.

ALJ: It, they're the same exact document.

MR. MUDD: I, well, I, they're, they are the same, but there's, the point being that I asked again for any updated projections that were used in connection with further reporting

and that was what was sent to me once again.

ALJ: Okay. So, we probably do need those e-mails, just, just to show why there's two of them of the same thing, you know?

MR. MCCANN: Yeah, I have no problem with that.

ALJ: It's no, it's not clear that one is in answer to (inaudible) --

MR. MCCANN: I thought there was, when I submitted them, I thought there was a separate, something different about them, but they're not.

ALJ: No.

MR. MCCANN: When I say separate, I mean, something in the, the, the title, but there's not.

ALJ: And so, Mr. Mudd, with the e-mail request for those two, are you satisfied?

MR. MUDD: Yes, except I'm not, you know, I'm a little concerned about what, I, I don't know if there's really been any testimony about the difference between them here. And what, what significance it has.

ALJ: There's been no, there's been no, I don't think he even talked about eighty-four. Mr. McCann, do you want to ask some foundation questions about it?

MR. MCCANN: Well, he doesn't have any knowledge of the PIA requests. I mean, he knows --

ALJ: Okay.

MR. MCCANN: -- (inaudible) I don't think it's going to be helpful to me to ask him about my PIA requests --

ALJ: Okay, I see.

MR. MUDD: If it's not going to come in through a witness, I object to eighty-four. I understand eighty-three and do not object to that. But I do object to eighty-four.

MR. MCCANN: Okay. I'll, then I, then I can ask him did I provide this to you, and did I tell you it came from the County. I can tell, I can ask --

ALJ: Well, I mean, so, as I understand it, eighty-three was the original request for Torch Hill and then eighty-four is the updated that he asked for under the PIA. So, I mean, if it's, that's all you need is the e-mails showing that was, or the document that it was attached to this, right? That shows it wasn't the update, right?

MR. MCCANN: Yeah, there was, yeah, there is no document (inaudible), this is literally what the County used. So, yes, I have, again, I have no problem submitting those e-mails.

ALJ: So, I'm just saying to Mr. Mudd, right --

MR. MUDD: I'm sorry, I, I guess I don't, when he says update, there was a separate request for this case? Is that what we're understanding?

MR. MCCANN: There was, there was a subsequent request that produced the second copy of the same chart, which

is a separate exhibit.

ALJ: Eighty-four.

MR. MCCANN: Correct.

MR. MUDD: And I'm sorry I'm being, I hope I'm not being difficult, Judge, I don't mean to be.

ALJ: No.

MR. MUDD: But what I, what I'm trying to avoid is the introduction of some evidence in the form of questions asked by Mr. McCann to the County and a response to that, without any other context of why the question was asked or anything like that.

So, if those e-mails I'm going to get are, are, that, that we're going to get at some point later, might, might cause me to ask different questions of this witness, or the appropriate witness that they should be targeted towards. I just don't want, I don't want to agree to have e-mails come in that might add some, something new that I don't have an ability to cross examine.

MR. MCCANN: It's not that complicated. I asked for the, I asked for the projections used and they were provided. So, --

ALJ: Yeah, and, and so, would, and the witness testified that, that, is it, you know, is it reasonable to use projections and his opinion was, you should have used projections from 2013 to 2030, 2030, excuse me. As opposed to

these ones from 2008.

So, so, I mean, he had already asked the witness about it and these come in as, you know, the information that, obviously, someone provided under, by the Coun, someone, someone in the County provided through the PIA request. So, I mean, I don't, I don't think it's, yeah, I don't think it's that complicated, is it?

MR. MUDD: Well, I, I guess I'm trying to figure out what the second request, I don't even know what needed to be updated. That's what I don't understand --

ALJ: Well, because, because in Torch Hill, he asked for the projections, as I understand it. That's eighty-three. And then for this case, he said, are there any updates, right, Mr. McCann? No, did I get that right? You're shaking your head.

MR. MCCANN: Yeah, that's, yes.

ALJ: Okay. So, in this case, he asked for the projections and it just turns out that they're the same.

MR. MUDD: Got it. So, it was the same exact request, it wasn't projections for a different purpose, you were asking for the projections used for their underlying --

MR. MCCANN: (inaudible) I don't, I don't think the purpose is, my purpose in asking for them isn't relevant. But the question was the same, yes, that's the answer. The, the question of the County, the specific request, was the same for

both.

MR. MUDD: Okay. I, I guess I'm still going to, I understand you're going to overrule, but I still have the same objection that I, that I'd like to understand what the content of the second request was.

ALJ: Okay. Well, he's --

MR. MCCANN: It was a PIA request, it was a PIA request.

ALJ: It was a PIA request for the update to make sure it's the same.

MR. MCCANN: (inaudible) by the way, just so that you're aware and I know you've heard me complain about this before, that is, that is how I have to get documents from the County now and --

ALJ: Yeah, understood.

MR. MCCANN: And it's been a fight. It has been an absolute fight to get things.

ALJ: Okay.

MR. MCCANN: Eight requests, so, --

ALJ: Well, what we're going to do is we'll mark 83-A is going to be the, the PIA request for that one, for eighty-three. And then eighty-three, 84-A is going to be that PIA request, which would be the update for this case, okay?

MR. ROSENBLATT: I just, really quick, I just want you to know, Mr. McCann, that is the same for us as well. I, I

(inaudible) --

MR. MCCANN: Oh, I don't believe that for a second. I don't believe that for a second.

MR. ROSENBLATT: I'm filing PIA requests for the first time (inaudible) --

MR. MCCANN: I know you are, I know you are. But it's, it's different.

MR. ROSENBLATT: We're having the same issues. It is not one sided.

MR. MCCANN: Okay.

ALJ: Okay. So, eighty-three and eighty-four and then so where were we, Mr. McCann? We got sidetracked there.

MR. MCCANN: Yep. I just asked him about another consultant, I think he mentioned Hazen & Sawyer. And my follow-up to that is, is have you, Mr. Grachek, have you reviewed documents relating to work that has been performed by Hazen?

MR. GRACHEK: I reviewed their newsletters.

MR. MCCANN: Okay and to your understanding, is that, is that work complete, completed?

MR. GRACHEK: No.

MR. MCCANN: Have they issued a formal report yet?

MR. GRACHEK: Not to my knowledge.

MR. MCCANN: Okay. Let me just show you what eighty, Exhibit 85. Excuse me. Do you see this exhibit?

MR. GRACHEK: Yes.

MR. MCCANN: And, and what is this, Mr. Grachek?

MR. GRACHEK: This is the newsletter that they send out quarterly showing their progress on the work.

MR. MCCANN: Okay. It certainly speaks for itself. But tell us, you know, what it is, based on your review of this newsletter, that Hazen is doing.

MR. GRACHEK: Yeah, in, in general, the general assessment is that Hazen & Sawyer are in the process of redoing all of the modeling and all of the work associated with the Consent Decree to modernize the, the entire operation. And they're doing modeling, they're looking at all the different, all the different segments. And basically a 2023 version of what RK&K was doing with probably more, obviously, better technology ten years later.

MR. MCCANN: Okay. So, just directing your attention to a couple things. And I don't, in this introduction, talking about the Jones Falls sewer shed comprehensive evaluation. It says, quote, the following are currently being evaluated with future projects vetted for long term capacity. Do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and then there's some bullet points here. I think you said something about modeling. But is it your understanding, based on your review of this newsletter,

that Hazen is, is looking at, once again, model --

MR. MUDD: Objection.

ALJ: Yeah, you're testifying so, what, what is your understanding, having read this document, Mr. Grachek?

MR. MCCANN: Regarding, regarding the issue of future capacity.

MR. GRACHEK: How the, my, my understanding is Hazen is doing a comprehensive evaluation of capacity throughout the sewer shed.

MR. MCCANN: Okay. Is there, is it, is it your understanding, what, if any, understanding do you have about what Hazen is doing regarding population growth?

MR. GRACHEK: I, I don't have that information.

MR. MCCANN: Okay. Let me just direct you to page three, to the section entitled population estimates. Just take a moment and read that, if you would.

MR. GRACHEK: Okay. Develop future population estimates, both residential and employment, which will contribute to future flows within the sewer shed. All sewer assets must be capable of conveying future flows to protect residents, businesses and environment from overflows and backups. I, I did read this. I, I was, I thought your question had to do with specific population projections. But they are, they are obviously incorporating population projections based on those --

MR. MCCANN: Okay. Okay. This one sentence that you just read in particular, all sewer assets must be capable of conveying future flows to protect residents, businesses and the environment from overflows and backups. Did I read that correctly?

MR. GRACHEK: Yes.

MR. MCCANN: Do you agree with that, number one?

MR. GRACHEK: Absolutely.

MR. MCCANN: And do you agree, and in your opinion, is that consistent with what the Consent Decree requires?

MR. GRACHEK: Yes.

MR. MCCANN: And, and, and by the way, is there any mention in this newsletter of the Consent Decree?

MR. GRACHEK: I do not recall.

MR. MCCANN: Okay. All right. Your Honor, I would move Exhibit 85 into evidence.

ALJ: Mr. Mudd?

MR. MUDD: I think I'm, I, I'm going to object on the basis of hearsay on this, and I understand what your ruling may be.

ALJ: Yeah, I mean, the expert can rely upon hearsay and he's reviewed the document and uses it for his analysis and opinions in this case. So, overruled. All right. So, Mr. Zimmerman, no objection?

MR. ZIMMERMAN: No, no objection.

ALJ: All right. So, we'll admit eighty-five.

MR. MCCANN: Thank you. Okay. Let me show you what's been marked as Protestant's Exhibit 87. Titled data evaluation report on-call sanitary sewer rehabilitation design services – task fourteen, Lake Roland sewer rehabilitation. Do you see that?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Have you, have you reviewed this document, Mr. Grachek?

MR. GRACHEK: Yes, I have.

MR. MCCANN: Okay. Tell us, tell us what it is, if you would. And I'll ask you some specific questions about it.

MR. GRACHEK: This is a, a, this is an analysis of the Lake Roland interceptor and, and areas around Lake Roland interceptor. It includes the lining of forty-three segments, forty-four manhole repairs in nine different locations around Lake Roland.

MR. MCCANN: Okay. I'll stop you there and maybe ask you about a couple sections in this report. The introduction section on page four of the exhibit. Just want to, this one sentence in the second paragraph, actually the second sentence in that paragraphs says quote, the primary focus of this project is to minimize the inflow and infiltration into the interceptors to reduce the likelihood of sanitary sewer overflows, end quote. Did I read that correctly?

MR. GRACHEK: Yes.

MR. MCCANN: Is, is that primary focus, as, as, as it's put, is that, in your opinion, consistent with the purpose of the Consent Decree?

MR. GRACHEK: Yes.

MR. MCCANN: Okay and then what is this figure one on the same page, what is this map?

MR. GRACHEK: This shows the project map of the manholes surrounding Lake Roland. It's, it's similar to maps we've seen before with the Jones Falls, the Roland Run and Towson Run interceptors meeting at the junction box on the north side of Lake Roland. And then the pipe going under Lake Roland and then the subsequent pipelines to the boundary of the County.

MR. MCCANN: Okay. So, just, it's entitled project map, but what are the, what are the red lines and the circles? What are they --

MR. GRACHEK: In this report, the red lines are those, are the, are the lines subject to rehabilitation and rehab.

MR. MCCANN: Okay and what about the circles in this report?

MR. GRACHEK: I, I'm sorry, I didn't --

MR. MCCANN: What is, what are the circles in the context of the --

MR. GRACHEK: Oh, those are the man, those are the manholes and the junction boxes that are to be rehabbed.

MR. MCCANN: Okay, all right. Next page, which is page two of the report. I think there's a reference, yeah. It says, in total, the project consists of approximately nineteen thousand five hundred fifty linear feet of pipe, forty-three segments. Is that, is that a substantial amount of pipe? I mean, what's your opinion on the scope of that?

MR. GRACHEK: That's, that's, that's an extremely substantial amount of pipe. It's a, it's a considerable lining project because to line a pipe like that, you have to take the pipe, the pipelines out of service, which means you have to acquire real estate and have bypass lines to operate during the time that that, that that work is being done. And, which you would with any other segment, but for a situation like this, particularly for the portion that's running under Lake Roland, it's, it's a large, large project.

MR. MCCANN: Okay. You said you, you said out of line, I think, what'd, what'd you mean by that? The existing lines, explain that, how that's done.

MR. GRACHEK: Slip lining is a common technology used to take old pipes and you basically apply a, a liner to the inside pipe that adheres to the pipe. It, it's a, it's a, a good way to get a longer use life from an old pipe, one that's not completely structurally defunct. The, the problem with

slip lining though is that you do, it, it, it can't be three-quarters of an inch to an inch thick lining, which means that you reduce your effective diameter of the pipe by doing that.

MR. MCCANN: Yeah, I'm not, thank you for that, my question as a little different. What, what happens when this work is being done, based on your experience, to the, to the existing segments? You said something about they had to take, be taken offline, is that right?

MR. GRACHEK: Yeah, they, they have to --

MR. MUDD: Objection.

MR. GRACHEK: -- (inaudible) segments have to be taken offline so they have to be bypassed --

ALJ: Hold on, there's a, hold on. Mr. Mudd had an objection. Mr. Mudd?

MR. MUDD: Mr. McCann asked a proper question and then slipped in a little answer before he turned it over to the witness.

ALJ: Yeah, so, --

MR. MCCANN: I was repeating what he said.

ALJ: Yeah, I know. But I, I thought you were repeating what, what he said. I mean, that, that's what I took it as, so (inaudible) --

MR. MCCANN: I'll rephrase, I'll rephrase (inaudible).

ALJ: -- so can you rephrase, yeah, rephrase the

question and then we'll have the, the answer again.

MR. MCCANN: In your experience, based on your experience, for work to be done like this, the relining that's called for, what, what happens to the existing segments while all that work is ongoing?

MR. GRACHEK: The, the existing segments have to be systematically bypassed. So, you rehab a segment, you have to have a bypass pipe to run while you're rehabbing that pipe. And then when you're done rehabbing that pipe, you put it back online and then bypass the next segment.

And that requires putting pipes of, temporary pipes of similar capacity and moving them constantly down, you know, downstream until you've, until you've fixed the system, relined, or you've completely relined the system. And it's, it's daunting. And it's a lot of work.

MR. MCCANN: Okay. You mentioned, based on your review of this report and based on your experience, what type of, you know, what area is going to be needed to undertake all this work, if you follow what I'm saying.

MR. GRACHEK: It's, you're, you're going to need a right of way most likely of at least twenty-five feet to put the temporary line in to do your work throughout the process. That's been my experience. It could be more, it could be less.

It's going to be particularly daunting, the lining system underneath the lake, simply because of the, the issues

where you're going to have to bypass, you can't really put a bypass pipe in the lake, so you're going to have to bypass around the lake and try to figure out how you, how you get flow temporarily down while you're lining it.

Aside from the significant health and safety issues, then you're going to have to take precautions for, for lining pipe that's underneath the lake.

MR. MCCANN: Okay and does, without getting into all the details, does the report set forth all of that about right of ways and so forth?

MR. GRACHEK: Yes.

MR. MCCANN: Okay.

MR. GRACHEK: Yes.

MR. MCCANN: And does, do you recall if the report, well, strike that, I'll move on. I wanted to show you page, the bottom of page three. This particular, this is in a section entitled pipeline data review and recommendations. It says, since the goal of the Lake Roland sewer rehabilitation project is to minimize the amount of I/I in the system and prevent overflows, all lines have been identified for rehabilitation, even if structural damage was not identified.

And then it says this. And this is what my question was about. The, the review of the CCTV inspections showed twenty-four segments with active infiltration at pipe joints, fourteen of which also included some level of structural

defects. Of the remaining nineteen segment inspections available, eleven segments had structural defects alone and eight segments either showed no structural defects or infiltration.

Explain what that means in terms of what, I guess, number one, what's active infiltration and what defects are we speaking about here.

MR. GRACHEK: I, I can't, I mean, there's a lot of ways to interpret these things, but I, I, active infiltration had to do with, it looks like, they actually saw infiltration happening at the time they did the inspection.

You know infiltration can be from storm water events, but eventually, it ends up being ground water, or water that's (inaudible) the soil, weakening the system. So, they had twenty-four segments where they saw active infiltration where they did their camera inspections.

And when you say structural defects, that's a structural, that's structural integrity problems that just come with a pipe that's seventy years old and, and you have degradation of these pipes. They don't last forever. And so, they can actually, you know, degrade and become thin enough to where they collapse on their own weight. You end up getting holes and prob, and other problems.

And based on this report, what they've done is to be, in full candor, looks like they've thrown up their hands and

said we're going to line the whole system no matter what.

MR. MCCANN: Okay. Twenty-four segments, how many segments are there in total, that are a part of this project?

MR. GRACHEK: I think it was forty-three segments.

MR. MCCANN: Okay and then going down to 2.4, manhole and junction chamber data review and recommendations. This sentence says, upon completion, completing the review, it was determined that all forty-four manholes within the system will need rehabilitation. Of the forty-three manholes, thirty-one assets show evidence of infiltration.

MR. GRACHEK: Yes.

MR. MCCANN: Infil, what is infiltration refer to? The same thing?

MR. GRACHEK: Well, that's most likely groundwater leaking through the joints in (inaudible) the manhole.

MR. MCCANN: Okay and then, there's also reference in this report to junc, the junction chambers. What's, what do you recall about the report that's called for as far as those are concerned?

MR. GRACHEK: I, I think when they're referring to junction chambers, I think they're talking about where you have major lines connecting pipe, where the three interceptors collect to one, that's a junction box.

MR. MCCANN: Okay.

MR. GRACHEK: It's, it's a more elaborate manhole.

MR. MCCANN: Okay. Will this project involve requiring, acquiring easements from private property owners?

MR. GRACHEK: Most likely, although I, I haven't done an assessment of the real estate area. They usually, they usually do.

MR. MCCANN: Will it involve environmental permitting?

MR. GRACHEK: Yes.

MR. MCCANN: For wetlands included?

MR. GRACHEK: It will be wetlands, it'll be, they'll, they'll, they'll have to look at stream setbacks and all those variances you get, you know, when you're doing work along a stream.

MR. MCCANN: Okay. I want to show you, at the end here, so, this is Appendix A, project asset map and I think we saw the same thing in the other one. But are the, are there any, any of the segments identified in this map, are they amongst the segments that would receive sewage from the subject property?

MR. GRACHEK: Yeah, all the way from 2763 to the County line.

MR. MCCANN: Okay. 2763 being over here?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Okay. I'm almost there. I would move that exhibit into evidence, Your Honor, which --

ALJ: Mr. Mudd, eighty-seven?

MR. MUDD: I, I have a hearsay objection on that as well, but I, maybe, I'm not sure if this, this foundation was laid, but where, where it actually came from.

ALJ: Where the document came from?

MR. MUDD: Yeah.

ALJ: Mr. McCann, is this a, a PIA request?

MR. MCCANN: No, this is not a PIA request. This was posted on, on a website of the Ruxton Riderwood Association. They received it from the County.

ALJ: I mean, it has the County name on it.

MR. MCCANN: Yep.

ALJ: (inaudible) but the expert can use hearsay in forming his opinions about things.

MR. MUDD: I guess it goes beyond that now that we know where it came from, is whether or not this has even been adopted, official, whether the County is going to implement this, whether they need to, who, who, who commissioned it.

ALJ: So, yeah, so then, just ask that on cross examination --

MR. MUDD: Okay.

ALJ: -- of the witness. Okay, Mr. Zimmerman, any objection?

MR. ZIMMERMAN: No.

ALJ: Okay.

MR. ZIMMERMAN: No, no objection.

MR. MCCANN: Okay. Bear with me one second. Can you see this exhibit, Mr. Grachek? Am I still sharing?

ALJ: Nothing is on the screen.

MR. MCCANN: Oh, nothing is on the screen? Okay. I'm going to show you the Consent Decree once again. This is Exhibit 65, page 103 of the Consent Decree. It's entitled termination. Paragraph eighty-one, I'll just read it to you real quick. The Consent Decree shall terminate when all of the following events have occurred. Subsection A, Baltimore County certifies that it has completed obligations under section five and section eight. Do you see that?

MR. GRACHEK: Yes, yes.

MR. MCCANN: To your knowledge, Mr. Grachek, has Baltimore County certified, or submitted the certification that, at least that's called for in this section of the Consent Decree?

MR. GRACHEK: No.

MR. MCCANN: Okay. I'll stop sharing. Okay. Just some, some wrap up questions, Mr. Grachek. In your opinion, based on your experience, has Baltimore County undertaken all of the correct, corrective actions necessary to address the model predicted capacity problems in the sewer system that would receive sewage from the subject property?

MR. GRACHEK: No, they have not.

MR. MCCANN: In your opinion, based on your experience, can the County comply with the Consent Order, without undertaking the corrective actions necessary to address model predicted capacity problems in this portion of the sewage system that would be served by the subject property?

MR. GRACHEK: No, they cannot.

MR. MCCANN: In your opinion, does the RJN assessment support that the County has not undertaken all corrective actions necessary to address model predicted capacity problems?

MR. GRACHEK: Yes, it does.

MR. MCCANN: In your opinion, does the Hazen study support that the County has not undertaken all corrective actions necessary to address model predicted capacity problems?

MR. GRACHEK: Yes, it does.

MR. MCCANN: And finally, in your opinion, does the Ramble report support that the County has not undertaken all corrective actions necessary to address model predicted capacity problems?

MR. GRACHEK: Yes, it does.

MR. MCCANN: That is all the questions I have of Mr. Grachek.

ALJ: For the record, so, Mr. McCann, I don’t have seventy-nine in evidence or eighty-six and I don’t know if eighty-eight and eighty-nine is, are, are documents that he was --

MR. MCCANN: Yeah, seventy-nine, you said seventy-nine and what other number?

ALJ: Seventy-nine, I have eighty-six, eighty-eight and eighty-nine.

MR. MCCANN: Yep. Let's take them one at a time. Seventy-nine is just a document that I obtained from MDE that is a matter of public record in response to a PIA request of MDE. It's not something that Mr. Grachek has any independent knowledge about. So, I was going to sort of address these all when we wrapped up. But I can, I can certainly introduce them now. I guess that would probably make more sense, Your Honor.

ALJ: Okay. So, the first one, seventy-nine, is MDE letter. And you say this is from a PIA request?

MR. MCCANN: It is. And I'll just put it on my screen. This is an MDE letter, obviously, pertaining to sewer shed performance assessments for other sewer sheds, other than the Jones Falls.

ALJ: And so, why, why do we need this if it's not for the Jones Falls?

MR. MCCANN: Well, Mr. Grachek testified that there is, that the County, I'm sorry, that MDE has not approved or commented on the, on the performance assessment submitted by RJN. And I recognize I already have an e-mail to this effect in there, but this is just an example of what MDE does with respect to performance assessments and what it hasn't done in

this case. Does that make sense?

ALJ: I mean, it's like we don't have this in our case, so, this is what it looks like?

MR. MCCANN: Yep, exactly.

ALJ: That's a little odd.

MR. MCCANN: Well, --

ALJ: I mean, I mean, he testified, he, he already testified that, that there was no, there, that, that MDE --

MR. MCCANN: Yeah.

ALJ: -- I mean, he testified about it without having this document, right? I mean, --

MR. MCCANN: Yeah. I'll withdraw it, that's fine, Your Honor. I withdraw it, I understand.

ALJ: It's like, it's like, you know, this is, we don't have this is an absent something, you know, --

MR. MCCANN: Yeah, yes, I understand.

ALJ: (inaudible) say you're going to withdraw that one?

MR. MCCANN: I will.

ALJ: Okay and then we've this Hazen, this Hazen scope.

MR. MCCANN: Correct. And this is, this is, again, not something that Mr. Grachek has independent knowledge of, because I got it from the County. But this, it speaks for itself. This is the scope of services that the County, that

Hazen submitted in connection with its work. So, it, it, you know, as it, as scopes of services do, it describes the, what Hazen is doing.

ALJ: From a PIA request.

MR. MCCANN: Correct.

ALJ: And you've got that PIA request?

MR. MCCANN: In fact, in fact, no, I, to be honest, this was not produced in response to a PIA request. This was given to me and twenty-three other community organizations that met with the County Executive and his Deputy back in, right before COVID, when we first heard about Hazen. It was, we had meetings about this.

So, this was provided directly to me and others from the, from, and it was the topic of discussion at those meetings. So, it's a public record. I don't think there's any dispute about that. It has a project number on it and everything. So, I don't, I don't think I got this in response to a PIA. I should have, but I didn't.

ALJ: Right, and you, you probably asked for it, --

MR. MCCANN: I've asked for everything (inaudible) got the newsletters. Didn't get this --

ALJ: From the PIA request you got the newsletters? I thought that came from a --

MR. MCCANN: It did, it did. But I got them, they're available on the website, as everyone can see, but that's all I

got.

ALJ: Okay.

MR. MCCANN: So, this I think it just comes in as a public record and it's, it's, I think it's relevant as to the scope of the work that's being proposed and relevant to Mr. Grachek's testimony.

ALJ: So, Mr. Mudd, any objection to this?

MR. MUDD: I do object. I think this is hearsay and I think it is hearsay that, by admission, Mr. McCann, McCann, and the fact that we didn't talk to Mr. Grachek about it wasn't, wasn't anything he relied on. He wasn't being asked to rely on hearsay. This is something that is a multi-page document that we're asked to just come in and refer to for, you know, whatever purpose Mr. McCann may want, without my ability to cross examine anyone on it.

ALJ: I mean, if it was a PIA request and, and he attached it, I mean, you know, we could, I just think it comes in if, if that's the case and that's what he, he indicated, right? No, you got this from the County Executive's office.

MR. MCCANN: Um hm.

ALJ: But, I mean, I would ask that we could mark it for identification, Mr. McCann, and then get something, show it to Public Works, from Public Works, and ask for just a certification. I mean, things come in if you have a certification on the, on the front of it, that just says that

this is a government record. And this, yes, this is, you know, whatever, how many pages and this is from our --

MR. MCCANN: Yeah, fine. Listen, I, I'm not, I'll do whatever Your Honor tells me to do. The problem I have is we introduce documents day in and day out in these hearings --

ALJ: Um hm.

MR. MCCANN: -- from the County, without question. And hearsay, put aside the hearsay nature, that doesn't matter. We're, hearsay is allowed in all the time and particularly on these types of documents. So, I don't understand why, when it, and I'm not trying to be cynical, but why when it comes from me, there's some question about --

ALJ: No, not at all. It's not from you. My only thing was that when you have it marked as Hazen scope of services and it's got Haden's, Hazen's name on the bottom of it, so it does have Baltimore County Department of Public Works at the top of it, with a project number.

But, it, it doesn't, it's not clear whether the Department of Public Works (inaudible) this document or whether Hazen created it. And so, if you just showed it to Department of Public Works, couldn't you get, get a certification that says --

MR. MCCANN: Your Honor, I will, I will never, ever get that answer. I, I'll subpoena them, if we want to have them come back another day and do that. But they will not --

ALJ: It's not a certification?

MR. MCCANN: -- they will not, I'm telling you, they will not. And I base that on three years of dealing with PIA requests and trying to get documents, documents that I found and MDE documents that the County clearly should have produced.

But I'll say right here and off the bat, page one says Hazen is pleased to submit this scope of services, number one. Number two, listen I think that the presumption should be that this comes in based on the face of it.

If Mr., Mr. Mudd and Mr. Rosenblatt find reason to, to contest it, then they can, you know, they can call the witness or make a phone call and say, is this for real? That can be done in thirty seconds. So, I think the presumption should be based on the long history of your office that it comes in. It's a public record.

ALJ: So, so, I mean, a public record, but see, again, this was created by Hazen though, right? It's a private company.

MR. MCCANN: No, well, it's, it doesn't matter who it's created by, it is a public record because it's in its, it's the County's record. It doesn't matter what the letterhead says, it doesn't matter who --

ALJ: Sure, but, and that's why it was, and that's why it's not clear. So, (inaudible) saying if it was me, I would say okay, do you have just a, can you just walk over to

DPW, show them it and say can you certify this, that this is, can you do that? I mean, I guess it's just because of this particular document.

In other words, like, some of these, you're, you're right. Some of these have like Department of Public Works, you know, and you know that it's their letter or it comes from them, you know, if it's comments or something. But this one was created by Hazen, a private company, for them and so --

MR. MCCANN: So, what am I certifying? What am I certifying, that it's in their records?

ALJ: Yeah, well, yeah, I mean, now, now I, maybe it's just me. But yeah, so there's a whole, like a certification. You could just, this is a government document, it's just a certification --

MR. MCCANN: Okay, all right. I'll go do it, Your Honor, because you're asking. I will do that. I'll try to do that anyway.

ALJ: You, but do you think you'll be successful?

MR. MCCANN: No. I, I will, I'll say something like, Judge asked, Judge Murphy asked me to do and I think that may, that may get me there, but --

ALJ: Yeah.

MR. MCCANN: -- I have no confidence at all that, that --

ALJ: If you stood there in front of them and said

here's my, and you prepared it, you prepared the certification to the front of it and said here, look at this. Is this in your documents?

MR. MCCANN: No way in, no way in heck, excuse my language. So, not that I'm persona non gratis over there, I just, I have a good relationship with all those folks. They just don't, they don't give information. You could get all this stuff on the City's website. It takes some time. Everything going on in the City, you can see everything. It's, it's overkill with the City. But I, I will try because you asked, Your Honor. And I'll let you know if I can't. I'll let everybody know.

ALJ: Go ahead, Mr. Mudd, what?

MR. MUDD: Yeah, I just want to give an example of why I'm concerned about just letting something like this in. And, and it's really that this, you've pinpointed the fact that this is from Hazen and if Hazen is presenting a proposal to Baltimore County in 2020, what we don't know is whether this proposal was accepted in this form. So, I would be concerned about Mr. McCann pointing to this potentially, I'm not saying it's going to happen, but potentially allowing this in. He points to it and, and he says Hazen was, was ret, was, was retained to perform all this work, when we don't know whether that's the case, whether they were or not. We don't know what portion of this they've been obtained, retained to do, if any.

That's my concern.

ALJ: Yeah, --

MR. MUDD: So, even a certification of whether this is from the County's records without any other background or, or, or, or substance --

MR. MCCANN: Yeah, I understand --

(ALL TALKING AT ONE TIME)

ALJ: Hold on, Mr. McCann.

MR. MCCANN: Okay.

ALJ: So, so, so, Mr. Mudd, so yeah, so, no, I get, I mean, but, but, you know, does it come in? I mean, he can make arguments about it and maybe you'll make different arguments about it. Or maybe, you know, but, but, but does it come into evidence? If it's a government record, it comes into evidence as an exception to a hearsay and it comes in.

I, my only thing was just to have it verified that, even if it's a Hazen document, it's in, it may not, yeah, it may say all the things that you say it says or it may say what Mr. McCann says it says, or maybe it was never used. But, you know, but the fact that it would come in just as a government document, right, for the, under the hearsay rules, like business record, government record, --

MR. MUDD: I understand, I understand what you're saying. And so, maybe, maybe the arguments I just made are save for, for, you know, briefing, or what have you. But I, I

do agree with you that I think it would be best to understand how this came from the government and I, I understand what Mr. McCann is saying. If we could get it certified, I would ask that we do that.

MR. MCCANN: The certification I'll ask for, Your Honor, just address that situation is I'll ask the, that it be confirmed that this is a public record, business record, you know, --

ALJ: It's a government record.

MR. MCCANN: -- number one, and number two, --

ALJ: Yeah, --

MR. MCCANN: -- number two, number two, is, that this was the scope of services upon which Hazen was hired. If I'll get an answer to one, I'll get an answer hopefully to two.

ALJ: Yeah, that --

MR. MCCANN: So, so, --

ALJ: -- would be even better if you could get that. I was just trying to get it that it was in their files, that they have this, this, as a government document. That, you know, it's part of their files.

MR. MCCANN: But I don't have a problem with doing that.

ALJ: Yeah. Okay. So, we'll just, we'll hold that one. So, that's eighty-six. And we'll just mark it for i.d. only.

MR. MCCANN: Yep.

ALJ: What else did I say? I said eighty, eighty-eight (inaudible) My Neighborhood sewer maps?

MR. MCCANN: Yeah, this is, these are just, these are just blowups of the segments across the street. So, I, I would like to keep those. I'll show them to, I'll show them real quick but they're just blowups and I think there's no reason to withdraw them. They're the same My Neighborhood maps that, they're just closer. So, this is, this is eighty, eighty-eight. There's two of them, one a little bit closer. That's all they are.

ALJ: Yeah, I thought we already looked at these, both of these.

MR. MCCANN: We looked at larger ones. This is just a --

ALJ: Larger.

MR. MCCANN: -- focused, you can see these, in other words, that's all.

ALJ: Yeah, that's all right. And then, and so, yeah, okay. So, yeah, Mr. Mudd, any, any issue with these?

MR. MUDD: No, Your Honor.

ALJ: My Neighborhood? All right, so these are in. So, eighty-eight. And then, eighty-nine --

MR. MCCANN: Eighty-nine --

ALJ: -- so this is a different e-mail.

MR. MCCANN: It is.

ALJ: So, the other e-mail came in.

MR. MCCANN: Yeah, I'm not sure --

ALJ: (inaudible) use this later or, so I didn't, you know, --

MR. MCCANN: No, this was just another e-mail amongst the, those that were produced to me and it deals with the Johns Hopkins sewer segments and I think, in short, it explains sort of what happened, which, so it's not something Mr., again, Mr. Grachek would be privy to. But it's a, it's an exchange between County officials, including the head of DPW and the head of PAI. And it's a public record.

ALJ: Right. So, Mr. McCann, any, Mr. McCann, Mr. Mudd, any, any objection?

MR. MUDD: No, no objection.

ALJ: Okay. Yep. So, Mr. Zimmerman, no objection?

MR. ZIMMERMAN: No, no objection.

ALJ: Okay. So, that comes in, so eighty-nine is in. So, just that one, eighty-six for i.d. only. And that, I just wanted to make sure you weren't missing anything else. Is there any other one?

MR. MCCANN: You said eighty-six is i.d. only? Oh, the scope of services, right, okay.

ALJ: Yeah, the Hazen scope of services.

MR. MCCANN: No, I mean, I have, there's ninety-one

that we haven't discussed, which is another similar type of document from MDE, similar to, this is the one we just looked at, seventy-nine, about the performance assessments. Ninety-one is, are letters from the County constituting certificates of completion with respect to other sewer sheds.

ALJ: Okay. So, it's the same thing, it's like we have, this is what we don't have.

MR. MCCANN: Right. But this is, yeah, this is, you know, not just a, an approval of an RJN performance assessment with, with, for which we have another exhibit, the e-mail that supports it. This is, this is an example of a County certification from the County itself about other sewer sheds, in this, in this case, Deep Run and tributary sewer sheds right there labeled. So, there is no such document for the Jones Falls.

ALJ: Yeah, so it's the same, I think it's the same argument as the other one, as seventy-nine. I mean, it's like we didn't have this in our case, but, but Mr. Grachek testified about that. He said there was no certification. He's re, you know, what he's reviewed. So, that, that's enough evidence as it is, that there's no certification. This, this gets confusing having something from another, you know, another project. And it's not needed. I mean, I mean, it's interesting --

MR. MCCANN: Okay.

ALJ: -- but (inaudible) --

MR. MCCANN: I got it. I'll withdraw ninety-one then, that's fine.

ALJ: Ninety-one, okay. So, that was it, right? I, I know you have another witness. I wasn't trying to, you know, didn't know if these --

MR. MCCANN: Yeah, no, the, I mean, I have, I've got, I want to put the basic services maps in, but that can be done either before or after the next witness or at some future time.

ALJ: So, now, we're on it now, so ninety-two is basic services map.

MR. MCCANN: Yep.

ALJ: Twenty-one, basic services map, twenty-two, basic services map.

MR. MCCANN: And ninety-four, I'll bring it up. Ninety-four, that, that is last year's basic services map. For some reason, and I, I don't think this should be a surprise to anybody, but for some reason, it did not, this is 93-A, Your Honor. Did not show the subject property as a deficient area, even though the other maps that are in, that I, so the, you'll see there, there is no deficient area for the subject site.

And so I, in, so I have an e-mail, I asked about that and there's an e-mail from the County explaining that it was a printing error, which is Exhibit 94. And it has (inaudible), it still, if you go to the County's website, the 2022 map

doesn't show the subject property as a sewer deficient area, but, so this is an explanation of why that map does not show that. I think it's important.

ALJ: Yeah, well, so, okay. Mr. Mudd, any objection to these, basic services map or to the County e-mail?

MR. MUDD: They're all public records. I, I, I don't, I generally don't like just the document dump, but I understand you're going to let them in.

ALJ: Yeah, well, I mean, it, you know, these are documents that they obtained and they're clearly County documents, administrative hearing, --

MR. MUDD: I understand.

ALJ: -- so they'll come in. Ninety-five is the draft with the memo, basic services map, for twenty-three?

MR. MCCANN: Correct.

ALJ: So, what, why do we need, is --

MR. MCCANN: Well, --

ALJ: It's not adopted yet.

MR. MCCANN: -- DPW has proposed a, now, despite last year's passing of a map that didn't show it, but DPW is, is proposing a map that does show it.

ALJ: But it hasn't been adopted yet.

MR. MCCANN: No, but it's a, it's a, it's in a concession, it's an admission, it's, it's significant that of all agencies, DPW was, is, is proposing that map. So, the

purpose isn't that it's official or not yet, it's, it's that DPW has represented that it is a deficient area. DPW --

ALJ: Well, it's a, it's a document that they created.

MR. MCCANN: Right.

ALJ: It's still a government document, even though it's not adopted yet. Okay. So, Mr. McCann, Mr. McCann, I keep saying that. Mr. Mudd, any objection to ninety-five?

MR. MUDD: I, I mean, I have the same concerns you do, but I understand that you're going to let it in.

ALJ: Yeah, well, I mean, we, we know that it's not adopted, so.

MR. MUDD: Yeah.

ALJ: It is what it is, they created it.

MR. ZIMMERMAN: Is it ninety-five or ninety-four, where are we?

ALJ: Ninety-five.

MR. ZIMMERMAN: Can, can I see ninety-five?

MR. MCCANN: Yes.

MR. ZIMMERMAN: Okay. That is the, what it, it is the proposed --

MR. MCCANN: Yes.

MR. ZIMMERMAN: -- proposed, potential or proposed 2023 map?

MR. MCCANN: Yes.

MR. ZIMMERMAN: Okay. No, I have no objection. I just hadn't seen it, that's all.

ALJ: Okay. All right. Anything else, Mr. McCann?

MR. MCCANN: No.

ALJ: So, any of the rest of the documents are for the other witness?

MR. MCCANN: Correct.

ALJ: Okay, okay. So, we're going to need to do cross. It is 2:11, does anyone want a lunch break? I, I think we should probably take, you know, a half hour.

MR. MUDD: Yes, please.

ALJ: Even though time is short, does, does a half hour work or does, do you all need forty-five minutes?

MR. MUDD: A half hour is fine for me.

ALJ: Mr. McCann?

MR. MCCANN: That's fine, yes. Thank you.

MR. ZIMMERMAN: It's fine. Let me just, let me just mention in advance that I do have several questions for the witness.

ALJ: Yeah, yeah, I would assume that and you can see how we're all going. We're not going to get through, probably the other witness today, I would imagine. But, you know, you can just tell. So, (inaudible) everyone else. Let's just come back at 2:45, all right? So, let's just take a lunch break and regroup.

MR. MCCANN: Okay, thank you.

ALJ: Thank you.

MR. ZIMMERMAN: Thank you, guys, thank you.

(PAUSE)

ALJ: All right. Back after lunch. Mr. McCann, just to make sure, you didn't have any other questions of your witness, you said, right?

MR. MCCANN: I do not, thank you.

ALJ: All right. Mr. Zimmerman, cross?

MR. ZIMMERMAN: Thank you. I'll try to be compact.

MR. MUDD: Ms. Murphy, if I may, just before Mr. Zimmerman goes, I, I'm not necessarily objecting here, but I would like Mr. Zimmerman to state for the record why, why People's Counsel has the authority to ask questions relative to sewer issues which are not related to the master plan or to, to the zoning regulations.

MR. ZIMMERMAN: Well, fir, first of all, I'm a party to the case on various issues already. And as a party, I think I'm entitled to ask questions.

But, meanwhile, I've gone through the master plan 2020 and I'm prepared to take ten or fifteen minutes to go through master plan 2020 and des, describe and read a series of provisions in master plan 2020 on water quality and sewer issues, along with the appendix to the master plan, the water resources element. I can take ten or fifteen minutes and do

that now or I can connect it up with a letter to save time. And, you know, the Judge could reserve on that.

ALJ: It was my, it was my understanding that, that, you know, this was part of his scope. That, you know, he, he's here for the master plan conflict and, and sewer was part of that, so Mr. Mudd --

MR. MUDD: Okay.

ALJ: Yeah, so --

MR. ZIMMERMAN: And, I will, I will just to comp, for sake of completeness, I will supply various parts of the master plan which I think are relevant, and guess what? There is a master water and sewer plan, part of the purpose of which is to protect water quality. Okay, all right. I'm going to try to be compact, nevertheless, and try to be fair in my questioning. All right, Mr. Grachek. First of all, can you tell us whether you and I have ever met or interacted or talked?

MR. GRACHEK: No, I don't think so.

MR. ZIMMERMAN: Okay, okay. So, let me first ask you, to the extent that there's been evidence presented by Mr. McCann in this case of any area citizens right next to the subject property who have suffered sewer backups, what can you tell us as to whether that would be relevant to your overall evaluation of the situation?

MR. MUDD: Objection. I think that's beyond the scope of direct. There were no discussions about anything

nearby the site with backups.

ALJ: Well, I don't, I don't think it is. I mean, he, he talked about in his area of expertise that part of the problem with SSOs are that they cause backups. In fact, he gave, you know, a, he described one of them and said that if you, the basement is below the, the sewer line, then backup is going to go into the basement. So, it's a hypothetical of this expert so he can answer that. So, overruled. Go ahead, Mr. Grachek.

MR. GRACHEK: Okay. Well, I guess I would ask you to be a little more specific. Are you asking me about generally how backups cause overflows or --

MR. ZIMMERMAN: No, I'm simply asking, assuming that I'm correct, that there has been evidence presented by at least one of Mr. McCann's witnesses of, who lives, I believe in Heatherfield, right next door to this property, of suffering a sewer back, severe sewer backup. You know, what does that fact reflect as to whether it's consistent or not consistent with the concerns that you've described of the overall situation.

MR. GRACHEK: Okay. Well, I (inaudible) thank you, I appreciate that (inaudible). My evaluation, what I've done on the system, is to evaluate the entire system. I really cannot talk about any specific sewer backup that may have occurred.

I know they, they do happen and they happen for the reasons that we've talked about, from an engineering and a

science standpoint. The, the backup, a backup could be (inaudible) in the pipe. It could be caused by a systemic problem that, you know, that could cause a backup all the way up, you know, from, from a place miles down the road.

And so, any specific backup may have been, may have been identified, you identify what the problem is, then you, you try to fix the problem per se.

MR. ZIMMERMAN: Okay.

MR. GRACHEK: And so, so, any specific backup, you know, I'd have to look at each individual situation.

MR. ZIMMERMAN: All right, fair enough. Could I see your ex, your c.v. for a moment? Could Mr. McCann put that up on the screen? Protestant's fifty-eight. Because I don't have, I don't have a copy actually.

MR. MCCANN: See that?

MR. ZIMMERMAN: Okay. Could, could you, could Mr. McCann scroll down slowly, just slowly. Okay. Keep on going, please. You can go a little faster, that's fine. Okay. Okay. You can go a little faster and we'll get through this. I just wanted to, okay. All right, all right. I think that's enough. Thanks. All right. So, Mr. Grachek, you've had experience both in Maryland and nationally, correct?

MR. GRACHEK: Yes.

MR. ZIMMERMAN: Okay and what can you tell us as to whether you've interacted with state agencies and the EPA from

time to time?

MR. GRACHEK: I've had a lot of interaction with EPA on numerous projects from water, wastewater, all the way to hazardous waste work, (inaudible) work and the like. So, I've, I've dealt with federal agencies and I, I also, if you scan my c.v., I spent five years working with the Army Corps of Engineers. I worked as a partner supporting the EPA on projects prior to the time I went back into private consulting, back in 1993. And so, I have a lot of experience with regulators.

MR. ZIMMERMAN: Okay. All right and if Mr. McCann could, could put up the Complaint for a moment. I don't remember if that's sixty-five or, lets see. The Complaint that led to the Consent Decree. Could we see the first page? All right. So, so the United States of America and the State of Maryland are the Plaintiffs, are they not?

MR. GRACHEK: Yes.

MR. ZIMMERMAN: So, who would be the lead agencies for those two parties that would be involved, do you know?

MR. GRACHEK: Well, in environmental issues involving Consent Decrees and Permit, my experience has been the United States of America is, is represented by the agency associated with environmental, which would be EPA.

MR. ZIMMERMAN: Okay and that's actually, not to be leading, but to save time, that's actually reflected in the

first paragraph of the Complaint, correct?

MR. GRACHEK: Right.

MR. ZIMMERMAN: And then, and to, to get through this, and then you have Maryland Department of Environment, also known as MDE, right?

MR. GRACHEK: That's correct.

MR. ZIMMERMAN: Okay.

MR. GRACHEK: Although, although I have worked on environmental projects that Department of Interior, other agencies, Department of Interior, represent United States of America, but --

MR. ZIMMERMAN: Okay.

MR. GRACHEK: -- but it's usually EPA.

MR. ZIMMERMAN: Okay. Based on your experience evaluating this case, what can you tell us as to whether the EPA region, relevant region and, and/or the Maryland Department of Environment, have been involved in kind of monitoring the progress under the Consent Decree.

MR. GRACHEK: I haven't, I haven't been involved with, as, as much with the actual monitoring by the agencies of the Consent Decree. My focus has been primarily on the technical aspects of it. My understanding though with any Consent Decree is that there's a lot of detailed interaction between both technical and (inaudible) team associated with compliance with, with these Consent Decrees.

And that goes all the way from when I sat on one side with EPA, with helping them technically, to the other side, where I was helping DOD (inaudible) on the other side of these Consent Decrees, so.

MR. ZIMMERMAN: Okay. Before, before I get to the next question about those agencies, there's, there was reference on one of the pages that Mr. McCann put on the screen in the Complaint to the NPDES, do, do you remember that?

MR. GRACHEK: Yes.

MR. ZIMMERMAN: Can you tell everybody, or tell the Judge, what is the NPDES?

MR. GRACHEK: The NPDES, National Pollution Discharge Elimination System and it is a program for regulating (inaudible) sources of wastewater to receiving streams. The NPDES program is typically delegated to the states for them to administer. I have one instance where I, I'm a professional engineer in Puerto Rico and EPA provides that in Puerto Rico, so.

MR. ZIMMERMAN: Okay. So, so, can you tell us whether one of the dimensions of the Consent Decree is that the County has not been in compliance with the NPDES or any permits issued under the NPDES?

MR. GRACHEK: Well, my, my understanding is and, and I haven't seen an NPDES permit for Baltimore County because Baltimore County feeds into the, into the system for Baltimore

City, which then goes to Patapsco and Back River plants.

MR. ZIMMERMAN: Okay.

MR. GRACHEK: And so, they would be regulated, they would be permitted under NPDES for their discharge. The NPDES regulates, regulates wastewater at its discharge point.

MR. ZIMMERMAN: Okay, okay. But in any, so what would you say as to whether MDE would be the lead agency for reviewing or assessing the situation under the Consent Decree?

MR. GRACHEK: I, I would say that the, there are options associated with that. The Attorney General of Maryland could decide that it looks like for this Consent Decree that, that MDE has been assigned that role.

MR. ZIMMERMAN: Okay. What can you tell us, if anything, as to whether you've seen any official documents from MDE or the Attorney General of Maryland assessing the performance of Baltimore County from time to time under the Consent Decree?

MR. GRACHEK: I have not (inaudible) that.

MR. ZIMMERMAN: Okay, okay. Okay. I wanted to ask you about the, just a couple of questions about the stream, well, the storm types. The storm types and to save time which referred, referred in the Complaint and then in the various, RK&K reports, namely the two year, ten year, twenty year. Can you tell the Judge, or everybody, what's, what's the basis is or was for choosing those types of storms to study?

MR. GRACHEK: I, I would not know the basis. That was something negotiated in the Consent Decree that they chose those, those various storm events. All I can tell you is that those are the, those are within the range of normal parameters that I've seen in Consent Decrees for SSO projects that I've looked at in the northeast and Atlanta and other places where I've looked at SSOs.

MR. ZIMMERMAN: Okay. So, that may be a Federal or State policies or practice?

MR. GRACHEK: It, it may be a policy. It, it may also be a, it may be a situation where you look at specific weather in a certain area and make a determination based on that.

MR. ZIMMERMAN: Let me ask you this. Based on what you've seen of the RKA and the other studies with reference to the, those specific storms, spanning from two year to ten to twenty with various hours, what can you tell us about an educational observation about the situation if they were a thirty year storm, a forty year storm or more?

MR. GRACHEK: Probably that the, the storms (inaudible) remember, a storm, a storm event is rated by its, its propensity to happen, you know, that's what a twenty year storm is. But it's also by its duration. So, so a ten year, twenty-four hour storm might actually accumulate as much water as a twenty year, six hour storm.

You know, so, but if you are looking at storms that have, you know, that have much more, much higher, you know, numbers as far as like a forty year or fifty year storm, you're probably talking about volumes that are double what the highest value is. I, I grew up, part of the time I grew up was in South Dakota, and we had a five hundred year storm in Rapid City, South Dakota and it caused a massive flood in the city. And that was a, that was eleven inches in twenty-seven minutes.

MR. ZIMMERMAN: Okay.

MR. GRACHEK: So, it does happen.

MR. ZIMMERMAN: Okay. All right. Based on your overall review, what can you tell us, if anything, as to whether or not the Baltimore County Public Works Department or other agencies has issued any official document or assessments, agreeing or disagreeing, or addressing in any way, various of the issues that you identified in your direct testimony?

MR. GRACHEK: Well, I mean, Baltimore, Baltimore County is responding to the Consent Decree with the production of the engineering and management documents that they're producing. I have not reviewed any documents where there's any type of direct review (inaudible) any of the items in the Consent Decree. I'm sure they do exist, but that's kind of out of my scope.

MR. ZIMMERMAN: Yeah. If you can answer this question, what can you tell us as to why it has taken so long,

or is taking so long to get recommendations for improvements and do significant improvements, assuming that the Ramdel, is it Ramdel or Ram --

MR. GRACHEK: Rommel.

MR. ZIMMERMAN: Sorry, assuming that, you know, some of the things they're describing end up being necessary, you know, why has it taken so long? Do, do you have any idea?

MR. GRACHEK: I, I cannot testify directly as to the exact reasons why, but I suspect that a lot of the reasons why it has taken so long have to do with a lot of the reasons it takes long everywhere.

MR. ZIMMERMAN: Um hm.

MR. GRACHEK: First of all, it takes a considerable amount of time, you're talking about tens of thousands of feet of sewer pipe that has to be evaluated. And it then, and then it has to be modeled.

And that practice of gathering that data, doing a model and then getting that model calibrated, get approved, get assessed can take three to four years to do, even if you're (inaudible) large municipality like the Baltimore Metro area. It can take a really long time. Longer in larger areas. That, that's one reason why.

That, that's if all things go well. And then the other reason has to do with what is the obvious, with money. These sewer improvements cost a lot of money and there has to

be bond issues or (inaudible) or things to, to raise money to do these things.

Then the last item is that, and you can see that with the system that we have here, fixing sewer pipes is incredibly disruptive. Sewers are under (inaudible), they're along stream beds, they're under roads, they're in the right of way, they're, they're all over the place and to, to do sewer repairs or replacement or even new, even slip lining of sewers or fixing, it's incredibly disruptive.

And, and you know, so with all those things combined, and, and then also, the other thing to is that you're dealing with a dynamic environment. Where it isn't like the, the amount of flow you have this year could be the same you have five years from now.

So, all those things combined result in a, a system where if a municipality has been neglected for a long period of time, you're probably talking realistically, you know, fifteen to twenty-five years, if you do everything you can to fix it.

MR. ZIMMERMAN: And let me ask you, if the, what you described from the Ram, is it Rambaugh? I want, am I getting the pronunciation right?

MR. GRACHEK: I, I think so.

MR. ZIMMERMAN: Rambaugh report. If, if the things you were describing and discussing there, turn out to be, you know, what's both recommended and approved, what, what would

you reasonably foresee as the timeframe for accomplishing all that work?

MR. GRACHEK: Just as, just as a pull it out of the air, based on experience, you're probably talking ten years.

MR. ZIMMERMAN: Okay.

MR. GRACHEK: Depending on how you, what you decide to do. I mean, one of the things that will have to be decided in that, in that system is whether to go ahead and line the, the pipes or whether doing the, you know, concrete sewer pipes don't last forever, like nothing lasts forever.

And the other option would be, is to drain the, drain the lake, as lakes get drained periodically for sediment, and you build a, a new sewer line next to the, while it's operating, and then refill the lake.

MR. ZIMMERMAN: Okay.

MR. GRACHEK: That, that could be an option to.

MR. ZIMMERMAN: All right. Well, if you can answer this next question. Based on your experience, when there are such serious, I guess, sewage problems and, such as in the Consent Decree, and let me, let me preface that. Have you been involved in other situations with Consent Decrees around the country similar to this?

MR. GRACHEK: Oh, yeah, yeah.

MR. ZIMMERMAN: So, based on your experience, when there's still a lot of work to do, what has been the general

approach, if you can tell us, as to, you know, what should be done with proposed new developments in those areas?

MR. GRACHEK: Well, I can tell you from experience, it, it, it's not for me to say, to judge what you, what, what they ought to do or what, what, what they have. But what I have seen done, in the city of Atlanta, I sat on a, a steering committee, where we built our, our giant sewage tunnels.

Many miles of sixteen foot diameter sewage tunnels to control SSOs and CSOs and we had a moratorium on development in, in the city until we got that project done. And often times, a moratorium on development is what pushes action past the political realm. That's just (inaudible).

MR. ZIMMERMAN: Yeah, do you know whether that, would, would, would it be done legislatively or by order of the executive branch?

MR. GRACHEK: I, I think it was done, my, my assessment is that when the city of Atlanta got the right mayor and she took charge and decided to make infrastructure a priority and, you know, without the political, political aspect taking care of it, then they were able to make it happen.

MR. ZIMMERMAN: Okay, all right. Just a couple more questions. I, I take it it's, it's not part of the scope of your testimony to review where the whole situation fits or doesn't fit under the County's zoning growth management law? That, that's not part of your scope?

MR. GRACHEK: No, no, it's not.

MR. ZIMMERMAN: I didn't think so.

MR. GRACHEK: I'm not a zoning expert.

MR. ZIMMERMAN: All right. I got to ask you this. There was, and this is kind of the last general subject area of my questioning. There's been mention in the direct testimony of the Torch Hill case, right?

MR. GRACHEK: Yes.

MR. ZIMMERMAN: Okay and you were a witness in that case, were you not?

MR. GRACHEK: Yes, I was.

MR. ZIMMERMAN: Okay and have you read Judge Murphy's decision in that case?

MR. GRACHEK: Yes, I did.

MR. ZIMMERMAN: Okay. If we assume, graciously, that Judge Murphy's decision with reference to the sewer issue is correct and did sustain on appeal, then what can you tell us as to whether the situation here is materially different, whether in terms of the scope of the project, the location of the project, or anything else you think relevant, if you can answer, that, that would lead to a different conclusion than the approval in Torch Hill?

MR. GRACHEK: It is, I think that's out of the scope of my expertise, frankly.

MR. ZIMMERMAN: Okay.

MR. GRACHEK: I, I'm, I'm an expert on the, the merits of (inaudible) cases.

MR. ZIMMERMAN: Okay.

MR. GRACHEK: And I stand by my testimony in the other case --

MR. ZIMMERMAN: Okay.

MR. GRACHEK: -- regardless of the decision. So, that's not my place to --

MR. ZIMMERMAN: Okay, all right, --

MR. GRACHEK: -- (inaudible) --

MR. ZIMMERMAN: -- that'll be up to Mr. McCann or anyone else looking at the case. Okay, all right. I appreciate your very fair and, you know, honest testimony. And Judge Murphy, that's all I have.

ALJ: Okay. Mr. Wyatt?

MR. WYATT: No questions.

ALJ: Thank you. Mr. Sachse?

MR. SACHSE: No questions.

ALJ: Mr. Mudd?

MR. MUDD: Yes, I have some questions. Thank you. Good afternoon, Mr. Grachek. How you doing?

MR. GRACHEK: Hello, I'm doing well. Yourself?

MR. MUDD: Can you hear, I'm doing well, thank you. Can you hear me okay?

MR. GRACHEK: Yes.

MR. MUDD: Okay, good. How, how long have you been involved in this case?

MR. GRACHEK: In this particular case, I have been involved for oh, probably less than a year. But I've been involved in all the sewer cases since 2019.

MR. MUDD: Okay.

MR. GRACHEK: Actually, late 2018.

MR. MUDD: So, you, you think it was about a year ago that you were first contacted about this one?

MR. GRACHEK: I, I think so. I, I, I can't recall. We, I have an ongoing relationship, you know, with, with the people that, on these projects, so, I can't recall. I can find out, but.

MR. MUDD: No, that's okay. That, that's fine. And who, who first contacted you?

MR. GRACHEK: Michael McCann contacted me.

MR. MUDD: Okay and have you engaged with others in addition to Mr. McCann?

MR. GRACHEK: I, I have conversations with some of the other people that are involved in the case. Tom McCord, mainly.

MR. MUDD: Tom McCord?

MR. GRACHEK: Yeah.

MR. MUDD: Okay and anyone else?

MR. GRACHEK: Not particularly (inaudible) but not

particularly, no.

MR. MUDD: Nobody else that you can recall?

MR. GRACHEK: Not that I can recall, no.

MR. MUDD: Okay and, and if, have you engaged with Mr. McCord over the course of the, of the year as well?

MR. GRACHEK: Yes.

MR. MUDD: Okay and all of the various documents and things that you've reviewed in this case, they've come directly either from Mr. McCord or from Mr. McCann?

MR. GRACHEK: Everything I have received, I have received through Mr. McCann.

MR. MUDD: Okay and, and, well, we'll talk about it in general, but do you know if there are things that, that are not from the County, documents not from the County, do you know where he was getting them from?

MR. GRACHEK: I, I, you need to be specific as to what --

MR. MUDD: I'm sorry, we'll wait till we get to them, to, to the extent it matters.

MR. GRACHEK: (inaudible).

MR. MUDD: How many, how many projects have you worked on in the State of Maryland before?

MR. GRACHEK: I would say as far as environmental projects, probably three major ones and then several SSOs, CSO type projects.

MR. MUDD: Okay and I'm going to ask you a few questions about projects in general but, but when I ask you that, is it safe for me to assume that when I ask you about a project, that, that your expertise, and really everything you do, relates to sewerage and sewer design?

MR. GRACHEK: No, not everything, no. I, I, I have multiple, multiple things I do in my profession as a civil and environmental engineer.

MR. MUDD: Okay. So, in Maryland then, relative to sewer design, how many projects have you worked on?

MR. GRACHEK: If you're looking at individual cases, four.

MR. MUDD: Okay and how many in Baltimore County?

MR. GRACHEK: Three.

MR. MUDD: And then the other one I think you mentioned was in Baltimore City?

MR. GRACHEK: Yep, yes.

MR. MUDD: Okay and you're not a licensed engineer in Maryland, correct?

MR. GRACHEK: No.

MR. MUDD: Have you ever sealed an engineer, or plan in Maryland? I guess you can't, correct?

MR. GRACHEK: No, I am not, I'm not a licensed engineer in Maryland.

MR. MUDD: Okay. In, in any of your, any of your

projects in other jurisdictions, do you ever perform the design work where you would be sealing plans?

MR. GRACHEK: Yes, yes. And if I, I, for example, if, I'm building a treatment plant right now in Puerto Rico and I'm the engineer of record.

MR. MUDD: Okay.

MR. GRACHEK: And I, I, I'm, I'm a P.E. in five states and in Puerto Rico. And, and just as an aside, I could get a, I could get a license in Maryland. We have, we have a multi-disciplinary company where we have lots of engineers with lots of P.E.s in different places. So, we don't feel like every engineer has to be licensed in every state.

MR. MUDD: Sure.

MR. GRACHEK: But it would be a matter of filing paperwork to get all, to get my reciprocity license in Maryland.

MR. MUDD: Okay and the, let's talk for a second about the project in Puerto Rico. Is that sort of a ground up development, meaning, a brand new treatment plant?

MR. GRACHEK: Yes.

MR. MUDD: Okay and so you do some work where you're, where you're being tasked to design things that are, that are brand new? They never thought about doing it before and they say we need a treatment plan, we're going to hire you to do it?

MR. GRACHEK: That's correct.

MR. MUDD: And then, and then, I guess another facet of your work is like in this case, where you're being asked to analyze deficiencies in a system?

MR. GRACHEK: Correct.

MR. MUDD: Okay and what, what's the breakdown in your, in your business of those two things?

MR. GRACHEK: Probably, I spend probably about twenty percent of my time doing evaluations and support for cases like this. And the rest of it is doing design, implementation and environment (inaudible) on other, other, other activities and, and, and not, not on (inaudible) cases.

MR. MUDD: Okay. How did you first get involved with the contingent in Maryland relative to sewer design and, and evaluating sewer deficiencies?

MR. GRACHEK: I was ref, it's, it's a, it's a pretty tight community of, of experts that are available nationwide for this type of work. And I was referred to an organization called Blue Water Baltimore, and I worked with the lawyer there, who is now with the Chesapeake Alliance. And I believe, I'm not for sure, but I believe Michael got a referral from the person there for, for me.

MR. MUDD: Okay and Blue Water Baltimore, is that for your Baltimore City project?

MR. GRACHEK: Yeah, Blue Water Baltimore is now Chesapeake Legal Alliance that I work with.

MR. MUDD: Okay. So, you don't, you don't have like any friends or anything in this community that you're doing this work for?

MR. GRACHEK: No, I haven't --

MR. MUDD: Okay.

MR. GRACHEK: I --

MR. MUDD: Okay.

MR. GRACHEK: -- was just saying, I, I don't, I don't have any relatives or, or family or old friends in, in Baltimore or in Baltimore County.

MR. MUDD: Okay. How much, how much of the, and I, I think you may have answered this a little bit but how often are you, are you performing a role in other jurisdictions like you are in this case, where you're trying to demonstrate deficiencies in a system?

MR. GRACHEK: It ebbs and flows in different years. There's some years where I do more of this. Like, for example, I've done a lot of work with NGOs involved in, in CCA work, cold combustion work. I've done a number of cases that involve water and sewer SSOs, CFOs, for different things. I would venture to guess in any one year, I'm probably at, you know, anywhere from ten to twenty percent doing this kind of work.

MR. MUDD: Okay and does that include expert testimony in hearings like this where you might be advocating in a particular way relative to, to a sewer design?

MR. GRACHEK: Correct, yes.

MR. MUDD: Okay. So, how many hours of testimony do you think you give a year on, on cases like this?

MR. GRACHEK: Oh, gosh, probably, actual testimony, you mean, like we're doing today. I would venture to guess probably twice a year I'll be on the stand.

MR. MUDD: Okay and I think you mentioned, what types of organizations do you typically do this work for?

MR. GRACHEK: I, I, my, my work I do for, for organizations are, a lot of them are for private environmental attorneys. But I also work, I've worked for organizations like Chesapeake or Blue Water Baltimore. I've worked for the, the River Keepers in several states. I've worked for the (inaudible) on several cases involving wastewater.

MR. MUDD: What's that stand for?

MR. GRACHEK: Southern Environmental (inaudible) Commissioner, I can't remember exactly. But they're, they're an organization that does environmental advocacy in the south.

MR. MUDD: Okay. So, that, and I was going to use that term myself. So, so, is, is your work exclusively with environmental activists on this type of work?

MR. GRACHEK: On, on the, on work, on work involving NGOs and SSOs, yes. I, to answer your question directly, I usually work on the Plaintiff's side of these things. I, I typically do not work for the municipalities.

MR. MUDD: And, and what is MGO, by the way, when you --

MR. GRACHEK: Non-government organization.

MR. MUDD: Okay. So, so, like Blue Water Baltimore is, that (inaudible) --

MR. GRACHEK: (inaudible) -- Sierra Club, those types of things.

MR. MUDD: Got it, okay. And, and how many different jurisdictions have you testified in over the years in, in that type of capacity, on behalf of an environmental advocate?

MR. GRACHEK: I would have to go back and count, but probably, as far as jurisdictions go, probably at least five or six different jurisdictions where I've actually testified. A lot of the work that I do never goes to trial. So, --

MR. MUDD: I'm sorry, could you repeat that, I'm sorry?

MR. GRACHEK: A, a lot of the work that I do never goes to trial or (inaudible) --

MR. MUDD: Oh.

MR. GRACHEK: -- we end up settling --

MR. MUDD: Got it.

MR. GRACHEK: -- (inaudible) the majority of the projects I work on for these organizations never go to trial.

MR. MUDD: Okay and, and are you involved ever in formulating Consent Decrees, for example?

MR. GRACHEK: Not Consent Decrees. I'm involved in providing technical input that leads lawyers to do the Consent Decree, but I am never asked and I studiously avoid being asked to opine on and develop Consent Decree language because it causes conflict of interest in my business.

MR. MUDD: What do you mean by that?

MR. GRACHEK: I can find myself, if I, if I'm working on a Consent Decree for an NGO, I might find myself out of work on a big client that we have, a big industrial client. So, I don't do that. I, I am careful not to work against clients that I, other clients that I have, industrial clients. So, I, I, I stay out of legal, I try to stay as an engineer and not as an attorney.

MR. MUDD: Okay, okay. Let's see. When, when you began your testimony and Mr. McCann asked you what you had, had reviewed, you said you viewed a plethora of documents. Can you give, and I know you went through some, but can you just describe for me off the top of your head all the various documents that you reviewed for your testimony today?

MR. GRACHEK: Yeah, the, the main documents are the RK&K report, the RJN report, the Rambaugh (phonetic) report, the Hazen newsletters and then a number of ancillary documents that are currently exhibits so.

MR. MUDD: Gotcha. And have you reviewed any of the, the annual or quarterly reports that are required under the

Consent Decree for Baltimore County?

MR. GRACHEK: No.

MR. MUDD: Okay. You testified that you visited the site, and I know that you did when you testified in the Torch Hill case, you had visited, I think, in 2019. You have visited since then, is that right?

MR. GRACHEK: Yeah, I visited January of this year.

MR. MUDD: Okay and who did you take that visit with?

MR. GRACHEK: With Michael McCann and Tom McCord.

MR. MUDD: Okay and is that the only other visit that you've taken?

MR. GRACHEK: Yes.

MR. MUDD: So, you've been to the site twice?

MR. GRACHEK: I've been to the, the, I've been to Lake Roland a few times, but I've only been to the Greenspring Manor site once.

MR. MUDD: Oh, I'm sorry, right. And so, you've been a couple times to, to Lake Roland. So, --

MR. GRACHEK: Yeah.

MR. MUDD: -- in talking about your Lake Roland, actually, let me stop, let me talk about Greenspring Manor. What, what did you, what, what did you on your site visit at Greenspring Manor?

MR. GRACHEK: It was a rainy day and we were preparing for lots of other work, and so it was a drive by. I

got to see the, the property. I got to see the, the, some of the sewers coming from the property and how it affected (inaudible), you know, where the sewer would be running through some of the developed areas on the opposite side of the development. And, and so, that's what I saw. I saw a big open field where the development is slated for.

MR. MUDD: Okay. When you say you saw the sewers, does that mean you saw manholes or what did --

MR. GRACHEK: I saw manholes.

MR. MUDD: Okay.

MR. GRACHEK: Yeah.

MR. MUDD: And did you, did you get out of your car at all?

MR. GRACHEK: Yes.

MR. MUDD: Okay and did you walk the sewer line at all or how --

MR. GRACHEK: No, I, I did not walk the whole sewer line. It was raining that day.

MR. MUDD: Okay. So, where, what did you do when you got out of the car?

MR. GRACHEK: I just got out of the car to take a look at some markings on a, on a manhole.

MR. MUDD: Okay.

MR. GRACHEK: Near the site. We got out, we also went to Lake Roland, and we got out of the car, take a look at

the signs and, and some of the areas in Lake Roland.

MR. MUDD: Yeah, what, what, tell me a little bit more about your Lake Roland site visit.

MR. GRACHEK: We, we visited the site like we had visited before. We took a look at, at the, the conditions of the lake and what is, it look, you know, basically, you know, there are very few people out there because it was a rainy day and we drove, we drove out. We looked at the signs, we noticed all the, you know, all the signage for, you know, caution signage and, and all that. Just took a look at the general area and refresh, refreshed myself on the, that.

MR. MUDD: Okay. What, what else can you tell me about the park? What, what, can you describe the park for me, based on your understanding of it?

MR. GRACHEK: I'm sorry, could you repeat that?

MR. MUDD: Can you describe Lake Roland park area for me? Just, just based on your understanding of it.

MR. GRACHEK: Yeah, Lake Roland Park is a, it, it's an area that looks like it's good for like walks and it's got a boat dock and, and it's, it's wooded, and it looks like a fairly nice place to go have a picnic and walk around the site. I do recall on the, on the westside, I walked (inaudible) rail line at one time in that area and it's, it's where the sewer pipe is too.

MR. MUDD: Did you ever walk on any trails there?

MR. GRACHEK: When, when, back in, I think it was 2019, we walked on the trail on the westside to get to manhole 6888.

MR. MUDD: Okay and that, that was the manhole that you showed pictures of earlier?

MR. GRACHEK: Yes.

MR. MUDD: Okay. You described, can you tell me a little bit about, and I know I'm going backwards here, can you tell me a little bit about the work you're doing in Baltimore City?

MR. GRACHEK: To the extent I can, I am supporting Chesapeake Alliance in the evaluation of the ongoing work under, between, you know, with the City of Baltimore and working with MDE on the upgrades to the Patapsco and the Back River plant. I'm also taking a look at the, at some of the documentation associated with a lot of work they've done on the SSOs over the last ten, fifteen years.

MR. MUDD: And you're doing that work for Blue Water Baltimore?

MR. GRACHEK: I'm doing it for Chesapeake Legal Alliance.

MR. MUDD: Okay and are they, I, I'm going to use this term, and I'm not, I don't mean anything by it other than trying to describe it this way, but are they sort of a watchdog in this process? Are they --

MR. GRACHEK: They're, they're an advocacy group that advocates, advocates for the environment.

MR. MUDD: Okay and so they're --

MR. GRACHEK: (inaudible).

MR. MUDD: I'm sorry, go ahead.

MR. GRACHEK: Like many others.

MR. MUDD: Yeah, sure. And are, are you helping them form input they might be giving into the process?

MR. GRACHEK: Yes.

MR. MUDD: Okay. So, again, that's not an example of where you're working on anything legally. You're, correct?

MR. GRACHEK: Correct. I, like I said before, I studiously avoid making legal opinions.

MR. MUDD: Okay. Have you ever, whenever you've been contacted by any of these groups, have you ever declined to do work on a project?

MR. GRACHEK: Absolutely.

MR. MUDD: Okay. What would, what would be an example of that?

MR. GRACHEK: It would be where we run a conflict of interest checking and determine the people that, or the project they want me to work on is in conflict with one of our existing clients. Or it ends up being a situation where it's something that, that I, I don't, I, I will not provide them, you know, the, they want an opinion that I'm not willing to provide.

We have several cases where we have people (inaudible) contact us and would like us to generate opinions that aren't, aren't technically sound and we won't, we won't do anything that isn't, that, to our best judgment, technically correct.

MR. MUDD: Okay.

MR. GRACHEK: Just, just, just to justify a case.

MR. MUDD: Okay. You described this, this Jones Falls sewer shed system as a gravity system?

MR. GRACHEK: Yes.

MR. MUDD: You know if there are any pump stations within the sewer shed?

MR. GRACHEK: No, I don't. I, I don't. I haven't seen any maps that have shown pump stations in the area. I, I would have to believe though that there are because of the topography in the area. But no, I haven't done any evaluation of any of the pump stations --

MR. MUDD: Do you recall any of the extensive discussion of the pump stations in the Consent Decree?

MR. GRACHEK: No.

MR. MUDD: Or in the SRRR report?

MR. GRACHEK: No.

MR. MUDD: Okay. You, you, you testified about the, the general size and we looked at a map of the, of the Jones Falls sewer shed. You, you would agree with me that there is a

water shed associated with the sewer shed?

MR. GRACHEK: There always is.

MR. MUDD: Okay and the sewer shed overlaps with water shed, would you agree with me on that?

MR. GRACHEK: Yes.

MR. MUDD: And the water shed, the water shed, in this case, is larger than the sewer shed, would you also agree with me on that?

MR. GRACHEK: I haven't seen a map of, of the water shed. And I, I would venture to guess that probably the water shed is regulated under a, a much larger area of land than the individual sewer sheds because the sewer sheds are dictated by where the sewers are. The water shed is dictated by all the land that (inaudible) have sewers too, so.

MR. MUDD: Okay.

MR. GRACHEK: So, this may be a subset of a larger water shed.

MR. MUDD: Okay and I just want to show you, bear with me here. Show you Petitioner's Exhibit, I'm sorry, Protestant's Exhibit 60. Can you see that?

MR. GRACHEK: (inaudible) I can see it now, yes.

MR. MUDD: Okay and, and do you remember going over this map with Mr. McCann?

MR. GRACHEK: Yes.

MR. MUDD: And you, you test, you were referring to

these various streams, correct?

MR. GRACHEK: Yes.

MR. MUDD: And would you agree with me, and if you know, do these streams reach beyond the limits of this, this map that we're looking at?

MR. GRACHEK: I haven't evaluated that, but most likely, yes.

MR. MUDD: Okay and do you know, looking at this map, where the extent of the sewer shed ends.

MR. GRACHEK: Well, the sewer shed ends at the County line.

MR. MUDD: How, how about to the north?

MR. GRACHEK: To the north, there are several other sewer sheds in the area.

MR. MUDD: Okay.

MR. GRACHEK: I haven't evaluated those sewer sheds.

MR. MUDD: All right and I, and I, and I don't mean it to be a trick. Let me, bear with me here. I'm going to, I'm going to switch, I'm going to stop, and I'm going to switch to a different exhibit. Sorry. How many windows. Do you recall this exhibit?

MR. GRACHEK: Yes.

MR. MUDD: Okay and this, this, as far as you know, shows the Jones Falls sewer shed?

MR. GRACHEK: Yes.

MR. MUDD: Okay and can you direct me, well, actually, I'll just, I'll just offer it, but the, this, this area right here, where my, where my mouse is, that's about where the property is, correct?

MR. GRACHEK: It's close, yes.

MR. MUDD: Okay and if, if you can recall looking at the last map, you would agree with me that the streams that's, that run through this sewer shed, extend beyond the sewer shed boundaries, right?

MR. GRACHEK: Yes.

MR. MUDD: Okay. So, things that might be in the streams, not only would be coming from, within the sewer shed, but from outside the sewer shed?

MR. GRACHEK: I guess, depends what you mean by things.

MR. MUDD: Well, any, any water that's in that stream would come from beyond the sewer shed and make it's way through the --

MR. GRACHEK: Yeah.

MR. MUDD: -- sewer shed into Lake Roland, right?

MR. GRACHEK: Yes, yes. The water that would come into Lake Roland, probably emanates from areas beyond the sewer shed.

MR. MUDD: Got it, okay. Okay. You also, I'm sorry, I'm going to put that exhibit back up. You testified about,

Mr. McCann was asking you questions about where all this sewerage was coming from and then where it was going to. And you were referring to this, I guess into meter at TSJF01 at the bottom, the blue dot that I'm referring to now?

MR. GRACHEK: Yes.

MR. MUDD: And I think you said that some, but not all, of the sewerage that makes its way under Lake Roland makes its way through that meter, is that right?

MR. GRACHEK: I, no, I clarified, all the water that makes its way under Lake Roland goes through that meter. What I was saying was that if you look to the, to the west, there are several other meter boxes on the boundary where small amounts of, of sewage likely, and I haven't evaluated this, but likely enter Baltimore City from those areas. They don't necessarily go to the, to the Towson or the, excuse me, the Jones Falls interceptor.

MR. MUDD: You're, you're referring to JFWR15 here where my mouse is?

MR. GRACHEK: Yes.

MR. MUDD: And JF0320S?

MR. GRACHEK: Yes.

ALJ: Could, could you zoom in, because --

MR. MUDD: Sure.

ALJ: -- it's really small and I can't see the numbers at all.

MR. GRACHEK: Yeah, and that's the only conclusion I can reach because there wouldn't be meter, meter stations there if there wasn't flow being metered out of the area. But I haven't looked at what, what that actually looks like. But it looks, it looks to me, on this map, that some of the water in the sewer shed doesn't necessarily go through the Lake Roland interceptor based on that.

MR. MUDD: Got it. But you don't know and, and you used the term small amount, but you really don't know the amount that's going through those areas, right?

MR. GRACHEK: If you look at, if you look at the connection of that southwest corner to the, to the Jones Falls interceptor, you see two very distinct points where sewer goes into that interceptor so, it would almost certainly be a small subset of that entire area.

And probably an area that feeds into sewer lines so that, so that you don't have to have pump stations pumping it over the hill to that other area. But that, that's speculation on my part based on what I'm looking at here.

MR. MUDD: Okay, understood. Thank you. Sorry, I'm just kind of, Mr. McCann covered a lot of ground, so bear with me. There may be times where I'm catching my, seeing where I am in my notes here. Okay. So, I'm going to pull up Exhibit, sorry, 64. You recognize this exhibit, you recall --

MR. GRACHEK: Yes.

MR. MUDD: And, sorry, I'm going to move this. Can you still see it?

MR. GRACHEK: Yes.

MR. MUDD: All right, good. I'm sorry. I'm dealing with two screens here, I just want to make sure I'm showing the right thing. Okay. So, you said that it was your understanding that the County created this document, is that right?

MR. GRACHEK: Yes.

MR. MUDD: But did you have any engagement with the County on this at all?

MR. GRACHEK: No, I did not.

MR. MUDD: And you didn't make, did you make any inquiries of the County about this document?

MR. GRACHEK: No, I, I have made no inquiries or had any contact with County personnel.

MR. MUDD: Okay and, you know, when, when, when all, all the data and information here, within these columns, how is it that you were able to determine, you know, what, what was, what was actually contained from a number's perspective based on these, these columns? Let me, let me rephrase that. Strike that. How, how do you know what each column shows, if you did not interact with the County on this document?

MR. GRACHEK: Because it's, it's a fairly typical way that the data is represented and the, the more relevant thing

on this document is if you page down, page down to the, to where they do the analysis is, the, the point of this, all the way down at the bottom is where you, stop right there, is when you're talking about the system analysis.

And that was the point of this document, where you see the full pipe capacity in, these are the areas that the County is required, you know, rehab of the sewer system, you know, already because the existing sewer pipes are at 94.32 to over a hundred percent capacity already. (inaudible) three different aspects (inaudible) data, but the system analysis is what is germane to this, to this exhibit.

MR. MUDD: Okay and what, what do you make of, how, how would the County have determined the, the flow, do you know?

MR. GRACHEK: I, I don't know how they did it particularly, but it's usually through flow metering.

MR. MUDD: Okay. Did you review any separate flow metering data?

MR. GRACHEK: No.

MR. MUDD: Do you have any idea how the County utilized the flow metering?

MR. GRACHEK: No.

MR. MUDD: Or implemented the flow metering?

MR. GRACHEK: No, I, I reviewed the data, presuming that the County data is accurate.

MR. MUDD: Okay and what do you make of the relief, required relief column? What does that mean to you?

MR. GRACHEK: That, that means, what that means is that the, do you need relief sewers or storage from what I see there and you don't need a relief sewer, you just need to upgrade their, they've been asked to upgrade those pipes from, you know, from eight inch pipes, I believe eight inch to eighteen inches.

MR. MUDD: Okay. Do, do you know for certain that that's what, that's what that section means or --

MR. GRACHEK: No, no, but it, it didn't seem relevant to the analysis because it, the County made an analysis that there's no actual relief sewers required. Relief sewers are basically sewers that store sewage. And what we're looking at is a, is an overall choke in the line for this capacity (inaudible).

MR. MUDD: Okay. I'm going to move on to the Consent Decree. So, you, you testified, I think Mr. McCann first mentioned the term SSO and then he asked you to define it. And I, I took notes on it and I think your, your definition loosely was that it's an overflow of wastewater from the sewer system that occurs with the amount of wastewater going through the pipe in excess of the capacity of that pipe. Is that a fair assessment for what you think an SSO is?

MR. GRACHEK: Yes.

MR. MUDD: Okay. Did you review how the Consent Decree defines what an SSO is?

MR. GRACHEK: No, I did not compare to what the SSO says. Or, excuse me, what the Consent Decree says.

MR. MUDD: Okay. I'm going to direct your attention to, bear with me, the definition section, I'm sorry. I'll show you that we're in the definition section. We're in section four, scrolling down to Z. Can you read what the definition of SSO is under this document?

MR. GRACHEK: Sanitary sewer overflow, or SSO, shall mean any spill, release or discharge from the collection system, including all building backups.

MR. MUDD: Okay. So, it's not necessarily, from this document's perspective, an SSO is not characterized as being related to capacity, do you agree with me on that?

MR. GRACHEK: This, this definition, when I said capacity, is an add on to what it is. This is, this is a definition as to what and my definition added a why.

MR. MUDD: I'm sorry?

MR. GRACHEK: My definition added a why to the what. In other words, I explained why you have an SSO backup in my, my response.

MR. MUDD: So, so you're saying --

MR. GRACHEK: It, it doesn't cover that here.

MR. MUDD: -- despite the definition here, you're

saying the only way that you can have an SSO in your opinion is if there's a capacity issue?

MR. GRACHEK: Yes.

MR. MUDD: You don't read this, this agreement, or this document as any spill or any release, even if it's a crack in the system, that's not, that's, that's, that may not be related to capacity? You don't think that's what's contemplated here?

MR. GRACHEK: No, because a sanitary sewer, a sanitary sewer water does not leak out through cracks.

MR. MUDD: Okay.

MR. GRACHEK: You, the pressure on the inside of the pipe is so much lower than the pressure on the outside that water only leaks in. So, no, you could have a, if you have a crack in the pipe, it's not going to, it has to do with capacity. You have pipes that are flowing at appropriate capacity, you're not going to have anything, anything substantial leaking out of them. They're not pressure pipes.

MR. MUDD: Okay and so, just to be clear. In, in your, in your opinion, when you read this document, anytime there's a reference to an SSO under the Consent Decree and, and, and then under agreements that have been adopted pursuant to the Consent Decree, it's your opinion that those all relate to capacity?

MR. GRACHEK: Yes.

MR. MUDD: Okay. Move on to sixty-six for now. Oops, I don't have sixty-six, that was the Complaint. I, I, I, actually, I hope this question makes sense because I know it's been a while and you've been asked a lot. But Mr. McCann asked you, he asked you to review the Complaint and to read a few, a few sections from it. And then he asked you if what was described in the Complaint is consistent with your experience and you answered yes. What did you mean when you were answering that question?

MR. GRACHEK: The Complaint, in general terms, I don't have the Complaint in front of me, but in general terms the Complaint is associated with release of sanitary sewage through overflows. And that Complaint is consistent with a lot of the municipalities that I've worked with. Is that the Complaint is that they have during storm events particularly they have overflow of sanitary sewage. That's what, that's what I meant.

MR. MUDD: Okay, thank you. Going to share now sixty-seven, which is the SRRR Plan. You agree with me that the SRRR Plan includes the long term capacity analysis as an appendix to this document, right?

MR. GRACHEK: Yes.

MR. MUDD: And you agree that the long term capacity report ran models based upon certain design storms, right?

MR. GRACHEK: Yes.

MR. MUDD: And that was required to run those models and to do that analysis was required under the Consent Decree, right?

MR. GRACHEK: Yes.

MR. MUDD: And you testified in a prior case that you thought that the County was obligated under the Consent Decree to complete improvements in line with those larger design storms, correct?

MR. GRACHEK: Yes.

MR. MUDD: But you also understand that that argument was rejected and that the Consent Decree permits the County to design the sewer consistent with an alternative rainfall distribution?

MR. GRACHEK: That may be the case, but that doesn't change my engineering opinion.

MR. MUDD: Okay.

MR. GRACHEK: And, and the reason I say that is because the Consent Decree specifically says that the intent of the Consent Decree or the, the demand of the Consent Decree, is to eliminate SSOs. And if you only, if you only, you know, upgrade your system to a certain storm event that is very, very likely, you're going to have SSOs for every other storm event, which is not consistent with this Consent Decree. That's my rationale.

MR. MUDD: Okay, I understand. So, you, you, you,

but you agree with me, generally, that, that the County's approach in the SRRR Plan was to use the alternative rainfall distribution?

MR. GRACHEK: I, I believe so, I believe that's what they did. They, the used alternative rainfall evaluations in some sense, and they also limited their work to certain, certain (inaudible).

MR. MUDD: Okay and you agree with me that MDE and EPA have approved the SRRR Plan, correct?

MR. GRACHEK: I, I know of, I am aware of some correspondence to that effect, but I'm not sure that they approved the entire SRR, SRRR Plan --

MR. MUDD: Do, so you don't know whether they approved it or not? I'm sorry, I didn't mean to cut you off.

MR. GRACHEK: -- they approved (inaudible), in my opinion, they approved the elements that they're going to do, but it is not a, it is not a blanket statement that no, the other things have to be done because we approved this plan.

MR. MUDD: Okay. So, ultimately, it's your opinion that the County should still be making improvements consistent with the large, consistent with the larger design storms, is that right?

MR. GRACHEK: Yes.

MR. MUDD: Okay. All right, let me move on to the, now, now I'm on long term capacity and peak flow report, which

is Protestant's Exhibit 68. I'm going to go to page thirty-six. This is something that Mr. McCann explored with you. You, you testified, Mr. McCann was talking to you about the, the key. I should say the, the, yeah, I guess the key here in the bottom lefthand corner.

MR. GRACHEK: Yeah, the, the legend.

MR. MUDD: Yeah, and you said that the brown manhole to be sealed would be a manhole that has overflowed at a certain time. Do you recall that testimony?

MR. GRACHEK: Yes.

MR. MUDD: Where do you get that information from?

MR. GRACHEK: It's a supposition that you only seal manholes because you either had overflows or other things you're doing that you suspect you're going to have overflows. That would be the only reason to seal a manhole.

MR. MUDD: But would you agree with me that there's nothing necessarily in these reports that demonstrates that every manhole that says to be sealed has had a, an overflow?

MR. GRACHEK: I agree with that.

MR. MUDD: Okay. So, so that, so you can't be for certain that, strike that. And, I guess, further on, on this particular issue, this map, and I may remind you, this map is based upon a, a model, correct?

MR. GRACHEK: Yes.

MR. MUDD: So, this particular map is based upon the

two year, six hour event model, correct?

MR. GRACHEK: Correct.

MR. MUDD: And so, that's, that's, in order to perform a model, certain assumptions and information are placed into a computer, right?

MR. GRACHEK: Yes.

MR. MUDD: And then the computer generates something that, that, I guess, results that would dictate the work that's, that's recommended on this plan, correct?

MR. GRACHEK: What the model does is it generates areas where there are concerns. And then the engineers are supposed to make judgments as to how they remedy those concerns.

MR. MUDD: Okay. So, --

MR. GRACHEK: So, it doesn't, it doesn't tell you that you got to put a pipe here or a storage basin here. It basically says, you're going to have SSOs here or there.

MR. MUDD: Gotcha.

MR. GRACHEK: And then, and then you make judgments as to how, how you're going to remedy that. Then you model those, those assumptions to see if you, if you satisfy the requirements.

MR. MUDD: Okay. So, then in, and in, taking that a step further, when you're using a model for this purpose, it's, it's actually not based upon reality, right? It's based upon

assumptions that are being made.

MR. GRACHEK: It's based partially on assumptions, but it's also based on a lot of data that you collect for existing flows. And so, a really good model will have a lot of really, really good historic flow data to be able to, to model along with not just flow data, but also the condition of the system.

MR. MUDD: Okay.

MR. GRACHEK: And the, and the, the better models have a lot more flow data. They have a lot better analysis of the system. Poor models don't.

MR. MUDD: Is it your opinion that this, so we're looking at yellow dots now, SSO manholes, is it your opinion that, that wherever one of those yellow dots appears is a location where there has, in fact, been an SSO?

MR. GRACHEK: No, that's a place where they have modeled an SSO in a manhole.

MR. MUDD: Okay.

MR. GRACHEK: And it may very well be that you have SSOs there but that's, this is, this is based on the model output.

MR. MUDD: Okay. I'm going to go to page sixteen, this way. I think it was actually real page sixteen, bear with me. Nope, I think it was that sixteen. So, I think you were referring to, on this page, manhole 44219, is that right?

MR. GRACHEK: I'd have to see it on the (inaudible).

MR. MUDD: Yeah, I know. Sorry, you've been bombarded with a lot of questions. So, let me go back to, whoops, sorry. Let me go back to, to thirty-six. Should then sorry, I'll go to thirty-seven. Can you see that now?

MR. GRACHEK: Yes.

MR. MUDD: Manhole 44219?

MR. GRACHEK: Yes.

MR. MUDD: Okay and then, going back to that page, I think this was the language that you and Mr. McCann were talking about. That, I think you testified that, under, under the predictive, under the model analysis, that this manhole requires an upsizing from ten inches to eighteen inches. Do you remember that testimony and that information?

MR. GRACHEK: Not the manhole, the sewer line.

MR. MUDD: I'm sorry, the, yeah, the sewer line.

MR. GRACHEK: Yes.

MR. MUDD: And it was a segment that was shown on thirty-seven, on map thirty-seven, page thirty-seven?

MR. GRACHEK: Right.

MR. MUDD: Okay. But you would agree with me that all these recommended changes again are based on the, the larger storms that are modeled, correct?

MR. GRACHEK: Depending on (inaudible) I believe that was, well, you'd have to look back at (inaudible) --

MR. MUDD: Yeah, I'll go back, I'll go back.

MR. GRACHEK: I think it might have been based on the, the ten year, six hour and ten year, twenty-four.

MR. MUDD: So, we're on map thirty-seven, this is the two year, twenty-four hour.

MR. GRACHEK: Right.

MR. MUDD: And that's showing water, showing sewer line improvements, correct?

MR. GRACHEK: If you go down to the, go down to the legend.

MR. MUDD: Um hm.

MR. GRACHEK: There, right there, and move to the right a little bit, no, the other way, I'm sorry. Go the other way.

MR. MUDD: Yep, pipes upsized to eighteen inches.

MR. GRACHEK: Right.

MR. MUDD: Okay.

MR. GRACHEK: (inaudible) go to the right, to the, to the label or the, the, the title.

MR. MUDD: Yep.

MR. GRACHEK: And that's for the two year, twenty-four hour event. So, in other words, that's the one that's one upgrade in the models they use. So, the first was a two year, six hour event, this is a twenty-four hour event and it shows, it shows that you need upgrade of the sewer pipe.

MR. MUDD: Right, again, but that's on that larger modeled storm, right?

MR. GRACHEK: Right, that, that --

MR. MCCANN: Objection, objection, hold on, hold on.

MR. GRACHEK: -- the same intensity storm --

MR. MCCANN: Objection. Hold on, Mr. Grachek.

ALJ: Hold on. Yeah, Mr. McCann?

MR. MCCANN: I'm sorry to interrupt. I, I think there's some confusion. Mr. Mudd keeps saying the larger storm and I don't know what, I don't know what that is in reference to. So, I would ask for, you know, the objection is, is that the, the question, I guess, lacks foundation or is confusing. And I think, frankly, I think Mr. Mudd is putting words in his mouth.

ALJ: Well, Mr. Mudd, could you just explain and just rephrase the question?

MR. MUDD: Sure. That's based, the, the, this recommendation, Mr. Grachek, is based upon the two-year, twenty-four-hour event that is modeled by RK&K, correct?

MR. GRACHEK: Right.

MR. MUDD: Okay and then --

MR. GRACHEK: That would be, let me, let me explain just, just for context --

MR. MUDD: I think you've, I think you've answered my question.

MR. GRACHEK: Okay.

MR. MCCANN: Let, let him, let him say, let him answer.

ALJ: Yeah, he's just going to come back on re-direct, so go ahead, Mr. Grachek.

MR. GRACHEK: No, I was just going to say that a two hour storm is a two hour storm. It's just that there, there's more flow because you're looking at a twenty-four hour duration. You know, these storms are rated by intensity and duration. So, it's the same intensity for them, just a longer duration.

MR. MUDD: Okay and, and again, you, you refer, referring to the next map on page thirty-eight on the key on the right, this is a ten year, six hour event, correct?

MR. GRACHEK: Correct.

MR. MUDD: And that's a modeled situation, correct?

MR. GRACHEK: Correct.

MR. MUDD: Okay and then on thirty-nine, where this shows more improvements as well, this is based upon the ten year, twenty-four hour event, correct?

MR. GRACHEK: Correct.

MR. MUDD: Okay. But you would also agree with me that these were not required under the SRRR Plan, correct?

MR. MCCANN: Objection. What's these?

ALJ: I was, I was going to say the same thing.

MR. MUDD: All right. That the improvements that are depicted on the ten year, twenty-four hour event on page thirty-nine and the ten year, six hour event on page thirty-eight and the two year, twenty-four hour event on page thirty-seven were not required under the SRRR Plan to be performed.

MR. MCCANN: Objection --

MR. GRACHEK: My, my take is that they were not selected --

ALJ: I mean, it's overruled. Go ahead.

MR. GRACHEK: No, my, my assessment is that it wasn't, they weren't required because the Consent Decree requires elimination of SSOs. They weren't selected.

MR. MUDD: Okay. Thank you. Excuse me. Oh, I need to stop sharing for a second, switch applications. I'm going to move to Exhibit 69, which is a chart, bear with me again, sorry. I'm shuffling around here. Okay. Do you remember this exhibit?

MR. GRACHEK: (inaudible), now, now I do, yes.

MR. MUDD: Okay and so, I'm sorry, I'll give you time to identify it. Do you remember this one?

MR. GRACHEK: Yes, I do, yes, I do.

MR. MUDD: Okay. This, this, is this an example of an exhibit that Mr. McCord prepared and gave to you?

MR. GRACHEK: Yes.

MR. MUDD: Okay. Did, did you verify any of the data

contained on it?

MR. GRACHEK: I didn't verify every number, but I verified enough numbers to give me confidence that it was inputted accurately.

MR. MUDD: Okay and am I correct, is, is, is the green number here based upon actual flow meter data?

MR. GRACHEK: I would, I would assume so, but that was an assessment that was done by DPW, and I don't have all the, as I stated before, I don't have all the methodology behind how they do their assessments. But I presume it had to be based on that --

MR. MUDD: So, this case, this came from the chart that we talked about earlier?

MR. GRACHEK: Yes, yes.

MR. MUDD: Okay.

MR. ZIMMERMAN: Excuse me, excuse me. Can we get an exhibit number on this?

MR. MUDD: On this?

ALJ: What was the --

MR. MUDD: This is Exhibit 69.

MR. ZIMMERMAN: Okay.

ALJ: What was the chart though, the earlier chart --

MR. MUDD: Oh, the chart was I think exhibit --

MR. MCCANN: Sixty-four.

MR. MUDD: Thank you, Michael. Yes.

MR. GRACHEK: Yes.

MR. MUDD: Sixty-four.

ALJ: Okay.

MR. MUDD: And I think you testified, Mr. Grachek, so you, you testified just now you don't really know exactly how this is monitored, correct? Meters (inaudible)?

MR. GRACHEK: That's correct.

MR. MUDD: And I think you said that before. But you did testify that you were relying on this as being dry weather numbers, correct?

MR. GRACHEK: Yes.

MR. MUDD: So, if you don't know how they've metered it or where the numbers came from, how can you testify that you're certain this is from dry weather analysis?

MR. GRACHEK: It is my understanding, based on, based on correspondence that this is dry weather analysis.

MR. MUDD: Correspondence with whom?

MR. GRACHEK: It was correspondence that I read that I can't recall at the time (inaudible) go back and find it.

MR. MUDD: Okay. I mean, is it some, is it someone on your, on your team or is it someone from the County?

MR. GRACHEK: My understanding is from the County but I have, I don't recall exactly. But it, it is consistent because, it's consistent because dry weather flow, you look at the numbers and it's totally different than wet weather flow.

MR. MUDD: Well, that would be the case in any scenario, right?

MR. GRACHEK: It should be, yes.

MR. MUDD: Yeah. But, but, but you're, you're assuming that modeled wet weather flows, because they're so far out above this, that, I'm sorry, the, the columns to the right are wet weather flows, correct?

MR. GRACHEK: Right.

MR. MUDD: And, and you don't know whether the green column is wet weather or dry weather, for sure, sitting here right now, correct?

MR. MCCANN: Objection. That's not, he didn't say he wasn't sure.

ALJ: Overruled --

MR. MCCANN: He said he didn't know where he got it from --

ALJ: All right, overruled. Go ahead, sir.

MR. MCCANN: I'm not sure what the question --

MR. MUDD: Do you want me to repeat the question, Mr. Grachek?

MR. GRACHEK: Yes, please. I, I, I, I'm, (inaudible).

MR. MUDD: That's okay, sure. So, you, you, you can't say for certain that the green column is based upon wet or dry weather flows, correct?

MR. GRACHEK: For certain, no.

MR. MUDD: Okay and you, you're assuming that they're dry weather flows because they are so different than the wet weather flows to the, to the right, correct?

MR. GRACHEK: That's one assumption, yes.

MR. MUDD: Okay. And you'd also agree with me that the flows that are predict, you agree with me that the green flows are, are actual metered flows, and that's what you've been informed, right?

MR. GRACHEK: That is my understanding.

MR. MUDD: But all the flows to the right are modeled flows, correct?

MR. GRACHEK: Yes.

MR. MUDD: And they are modeled flows where there is an assumption that no improvements have been made to the system, correct?

MR. GRACHEK: Well, it's an assumption using the, whatever meter data you have as the baseline.

MR. MUDD: Right. But I guess what I'm asking is when these numbers to the right in each of these columns, the two year, six hour in column E, and the two year, twenty-four hour in column F and the two, and the ten year, six hour in column G, and so on, all of those numbers were run on the basis of the existing conditions of the existing system, correct?

MR. GRACHEK: Yes.

MR. MUDD: So, there's, there, it is assumed, when looking at these, that no improvements have been made to the system whatsoever?

MR. GRACHEK: At, at the time those analysis were run back, back in 2012, yes.

MR. MUDD: Okay and you agree with me that since that time improvements have been made to the system, correct?

MR. GRACHEK: I'm not aware of improvements along this line that have been made.

MR. MUDD: But you are aware of improvements elsewhere within the system that have been made, correct?

MR. GRACHEK: Yes, in the, in those three, or those four basins in the northeast portion, because I don't have a performance evaluation for any other improvements in the, in the area.

MR. MUDD: Okay.

MR. GRACHEK: And, and --

MR. MUDD: You don't know, for example, whether any improvements that were required under the SRRR Plan say, let's say, south of Lake Roland, were made? You don't know if those were made, correct?

MR. GRACHEK: No.

MR. MUDD: Okay. But you would agree with me, let's assume for a second that improvements were made, either along this line or along, you know, in the area south of Lake Roland,

okay? Let's make that assumption.

MR. GRACHEK: Yes.

MR. MUDD: You would agree with me that these numbers would change, correct? The numbers in columns E, F, G, H and I would change?

MR. MCCANN: Objection.

MR. GRACHEK: Whenever you make significant improvements in model --

ALJ: Mr., Mr. Grachek, your counsel objected. Mr. McCann?

MR. MCCANN: Yeah, I, I think that's highly speculative. That improvements made would change those numbers and again, south of Lake Roland. I don't know why we're talking about south of Lake Roland. But would change those numbers. That is, that is about as hypothetical question as you can get. Depends on what they are and where they are --

ALJ: Yeah, well, --

MR. MUDD: He's an expert.

ALJ: Yeah, it's a hypothetical one and he can answer the hypothetical question. Okay. Go ahead, sir. Overruled.

MR. MCCANN: (inaudible) not hypothetical was my point.

MR. GRACHEK: No, I guess I'd like to make a point with that question though is that the documented work that was done in those four meter basins in the northeast showed that

three of them improved the situation and two of them made it worse, or excuse me, one of them made it worse.

So, it is conceivable that you could actually, I mean, the, the honest truth is that, that when you, when you fix a certain area and you let the flow come freely, it can cause overflows in other areas that haven't been fixed yet. More so than if they were, than if it hadn't been fixed because you're not stopping the water in that area. You're clearing that out, you're causing more water to get to the, to the other areas.

MR. MUDD: Okay. But those would still demonstrate changes, right? Changes from what we're seeing here in the numbers? Even if they increase?

MR. GRACHEK: This is a model, so there could be changes, there could be actual changes, and if someone else ran the model, there could be some variations.

MR. MUDD: Okay.

MR. GRACHEK: But, but I think looking at this data, the general trend is that under even the most reasonable, low end storm levels, you do have overflows, significant overflows.

MR. MUDD: Okay. Is it fair to say, when you're talking about capacity on this document, that you're basing your entire opinion of capacity issues based on the assumptions that were made in these models, is that right?

MR. GRACHEK: In the models and in the data provided

by the County.

MR. MUDD: Okay. I'm going to move on from this. Go back to Adobe. Okay. I'm showing you Protestant's Exhibit 71, I think it was shown 71-A, but it's, do you recognize this document, this picture?

MR. GRACHEK: Yes.

MR. MUDD: Okay and you, you agree with me that this photograph was taken in, around 2019, I think you said?

MR. GRACHEK: Yes.

MR. MUDD: Okay and you testified this, that, that this picture shows the cover dislodged from the manhole indicating that there was an SSO that popped the lid off, that was your testimony, do you recall that?

MR. GRACHEK: I said, I said that was the most likely reason that that, that lid was popped off.

MR. MUDD: Okay. But it's also possible, you would agree, that it could have been kids doing it, causing some mischief in the woods, right?

MR. GRACHEK: Yeah, yeah, I, some, some kid could have gotten a hankering to take the, you know, a hundred and fifty pound manhole cover off and leave it dislodged like that.

MR. MUDD: Okay and also an employee from Baltimore County could have done an inspection and not placed it back in, in, in place, correct?

MR. GRACHEK: I find it highly unlikely that they

would do an inspection like that and not put the manhole cover back on.

MR. MUDD: Okay. But you don't have any hard proof that an SSO occurred at this particular location, personally?

MR. GRACHEK: I mean, the way it is, that it is, it is generally dislodged with a small opening on one side, just enough for water to gush out of it, would indicate to me that the, the high likely hood is that this was an SSO.

MR. MUDD: Okay. I'm now moving on to Protestant's Exhibit 73. Do you recognize this document?

MR. GRACHEK: Yes.

MR. MUDD: Okay and I think you testified that the information, so, first of all, you prepared this document for the Blue Stone case, correct?

MR. GRACHEK: That's correct.

MR. MUDD: And you testified that, I think, that you base, the, that the numbers on this document were based upon the RK&K report?

MR. GRACHEK: That is correct.

MR. MUDD: Where in the report did these numbers come from?

MR. GRACHEK: I, it's been a while since I've looked at this, but I believe it's in one of the appendices.

MR. MUDD: So, this would, would it be from the long-term capacity analysis?

MR. GRACHEK: Most likely, yes.

MR. MUDD: Okay and again, those numbers are based on modeled impacts, correct?

MR. GRACHEK: That's correct.

MR. MUDD: Okay. Move on to Protestant's Exhibit 77. And I think you used this document, I'm going to do what Mr. McCann does here and search. I think you highlighted, yeah, this was it. You highlighted this particular line, which was a run of the sewer between manholes 6888, sorry, 6888 and 6887, correct?

MR. GRACHEK: Yes.

MR. MUDD: Do you remember the testimony here?

MR. GRACHEK: Yes.

MR. MUDD: And where, where was this, where is this particular location?

MR. GRACHEK: That's the line under Lake Roland.

MR. MUDD: Okay and, and you were making, were making note of the fact that there are five hundred and forty-one total defects in the sewer system here, correct?

MR. GRACHEK: That's what it says.

MR. MUDD: Do you know whether this document defines what a defect is?

MR. GRACHEK: If you move to the, move to the right, it shows that, I mean, there's a definition of all types of things. Basically, the camera analysis took a look and found

that the, there are pipe surface and lining defects. In other words, there's cracks in the lining through the camera. That's what that, that's what that means.

MR. MUDD: Okay and --

MR. GRACHEK: There's cracks on the inside of the pipes.

MR. MUDD: And do you, sorry, say, say that, never mind. Okay. I, I think I understand what you're saying. So, so you think that, that, that the defective pipe surface lining, that that means that there's five hundred thirty-six cracks, that's your opinion?

MR. GRACHEK: Well, cracks or, or defect, defective pipe surfaces. In other words, pipes that have been, have eroded over time. There's a separate category for fractures and cracks. But those are major fractures and cracks, like a big hole in the thing. We're talking about, we're talking about degrading of the pipeline. That pipeline is seventy something years old, at least.

MR. MUDD: Okay.

MR. GRACHEK: And so, it's going, it's going to be defective, it's going to be eroded over time.

MR. MUDD: Okay. I'll move on to Protestant's exhibit number seventy-five. These are the e. coli readings from Baltimore County?

MR. GRACHEK: Yes.

MR. MUDD: Do you know where this, these numbers here, one, two, three, four, five, those are five different sampling sites, is that right?

MR. GRACHEK: Yes.

MR. MUDD: Do you know where they're located?

MR. GRACHEK: No, I don't, I don't, I've never seen the samp, the actual sample cases.

MR. MUDD: Okay. But you, you just know they're at Lake Roland based on this document?

MR. GRACHEK: Well, yeah, that's the document provided to us by the County.

MR. MUDD: Okay and, and, and I can't recall which one, but Mr. McCann had scrolled through these and found an example of a higher reading or a reading at a location that was higher, a higher geometric mean than, let's say, another particular day. And you said, you said that, that that, that that sample came following a storm event, with a significant release of SSOs, I think was your testimony. Do you recall that?

MR. GRACHEK: Right. Yes, I recall that.

MR. MUDD: How, how, how do you know that from this document?

MR. GRACHEK: Because, because when you do the, the typical process (inaudible) verified with people doing the sampling, but typically, when you do, you sample a lake or a

river or a water course, you only do it during and after storm events. You don't do it during dry weather. So, in, in my view, every one of these represented a time where there was a rainfall event. Some probably more than others.

And I would imagine that the, then that the one that's shown the really high detection was most likely during a, a very large rainfall event during and after. And (inaudible) you have one that's a geometric mean of twenty-four twenty, then you have another one with a geometric mean, there's a twenty-three hundred. Then there's one that has all the data is off the charts basically.

MR. MUDD: Okay.

MR. GRACHEK: It's, it's above the, the analytical limit.

MR. MUDD: But that's based on your assumption. You, you did not verify that any of these days, any of them, there was rain before this happened?

MR. GRACHEK: No. You only take, you only take these type of datas during rainfall events. It would be, it would be, except for maybe one control sample, it would not be useful to take during non-rainfall events, because you're not, you're looking, you're looking at the effects of, during rainfall events and there's SSOs.

MR. MUDD: Okay. So, you're, when you're saying you would do that, what do you mean by that? Who, who would do

that?

MR. GRACHEK: Well, I mean, that's the standard practice for doing this work.

MR. MUDD: So, that, is that a standard practice for when you're evaluating impacts from SSOs?

MR. GRACHEK: Yes.

MR. MUDD: Okay. What, what about --

MR. GRACHEK: SSOs to receiving streams, yes.

MR. MUDD: What, what if, what if you just have a program in a jurisdiction like Baltimore County where you're just monitoring recreational waters for the health and safety of the community? Do, do you know whether those readings would only come after rain events?

MR. GRACHEK: Most likely, yes.

MR. MUDD: Okay. So, you think that --

MR. GRACHEK: I don't know that for sure.

MR. MUDD: Okay.

MR. GRACHEK: But it involves, it involves control samples, but you're, the only, the only source, the, the only significant source of any type of bacterial contamination is sanitary sewer overflows.

MR. MUDD: Okay.

MR. GRACHEK: You're going to, always going to have a (inaudible) bacteria in the water because animals live in the water. But, but seeing this above the baseline, that's why

your baseline is one twenty-six.

MR. MUDD: Okay.

MR. GRACHEK: And (inaudible) the water is cleaner than one twenty-six as far as bacteria goes.

MR. MUDD: All right. Do, do you, did you look closely enough at, at this document, at the various, the various columns that exist for each reading?

MR. GRACHEK: It looks like they're not taking, they're not collecting data for a lot of these parameters. They're, they're basically focusing in on the e. coli. They, they don't really need to have for, at least for this application, it doesn't appear to be, (inaudible) salt water area and the, the DO readings and the specific (inaudible) would only be relevant if you're concerned about, you know, DO in the ground water or, or in the surface water, kind of how it effects any type of aquatic life. But this, this isn't, this analysis isn't done for, for eco-risk, it's done for risks to swimmers.

MR. MUDD: Okay and how about this column about rain? This says rain, twenty-four hours, no, for May 3rd. And then the one before it, May 17th, has rain, twenty-four hours, yes. What do you make of that.

MR. GRACHEK: Well, like I said before, there are certain times when they take baseline data.

MR. MUDD: Okay. So, your, your assumption is that

May 3rd would be a baseline day?

MR. GRACHEK: I would assume so, or, or what it meant was that they couldn't get out during the rain event in twenty-four hours, but they sampled the next day.

MR. MUDD: Okay.

MR. GRACHEK: Because, because just of logistics of getting out and sampling. That, that happens sometimes too.

MR. MUDD: And, and you're also assuming that Baltimore County's monitoring program is only be performed to monitor for SSOs? That's your own, that's your assumption?

MR. GRACHEK: I didn't make that assumption. I just said that this is an indication of SSOs.

MR. MUDD: I thought you said that, that if the County had monitoring elsewhere, it would only be for SSOs. That's, that's not what you're saying? I'm, did I misunderstand?

MR. GRACHEK: I, I, I don't really understand your question.

MR. MUDD: If, if, if Baltimore County has monitoring for all recreational waters in the County, is it your opinion that they're only doing that to monitor for SSOs?

MR. GRACHEK: From an e. coli standpoint, likely, yes.

MR. MUDD: Okay and it's also your opinion that the only source of a hiring, a higher geometric mean in any of

these readings here would be from an SSO?

MR. GRACHEK: That is my opinion, yes.

MR. MUDD: Okay.

MR. GRACHEK: And some, some people may disagree with that, but that is my opinion and I'd be interested to see somebody give me another source.

MR. MUDD: Okay and have you, have you evaluated or sought to, any information from Baltimore County to confirm whether there have been any SSOs within this sewer shed during, let's say, the past three years?

MR. GRACHEK: I, I haven't looked at the SSO data beyond what you're showing me.

MR. MUDD: Okay.

MR. GRACHEK: And might I add, there are other sources, but I don't know if there are any cattle feed lots anywhere near where we're talking about.

MR. MUDD: And I'm sorry, any what?

MR. GRACHEK: I don't think there are any cattle feed lots anywhere close to where we're talking about. And if you did that, you'd be analyzing for e. coli and probably nitrogen also, so --

MR. MUDD: I think you broke up a little. Did you say cattle feeding lots?

MR. GRACHEK: Yeah, I mean, if you had a big feed lot for cattle, that could contribute e. coli too.

MR. MUDD: Okay.

MR. GRACHEK: But I don't think we have anything like that. That's an example of, one of the examples, of something that can contribute e. coli.

MR. MUDD: How about a failing septic system, could that contribute to e. coli?

MR. GRACHEK: Likely not, because that's not a surface water source, that's a ground water source.

MR. MUDD: And if the septic system is located close to the water source, is it, is it possible it could leech into the water?

MR. GRACHEK: It's possible, but at those concentrations unlikely that it would affect the concentration at the surface water body. You might find e. coli in ground water high concentrations, but because of the gradual input to that, probably not.

MR. MUDD: Okay and would that --

MR. GRACHEK: My opinion.

MR. MUDD: -- would it, would it change your opinion if there were numerous that were close to the water, numerous septic systems?

MR. GRACHEK: Not really, no.

MR. MUDD: Okay. You, you mentioned also when you were talking about these readings, that, that water is continually flowing through the lake.

MR. GRACHEK: Yes.

MR. MUDD: And you agree that there are a number of large water bodies that are discharging into this lake, right?

MR. GRACHEK: Yes, there are several streams that discharge into the lake.

MR. MUDD: Okay and if there's a storm event, that you would have, you would expect large flushes of water to come from these tributaries down into the lake, correct?

MR. GRACHEK: Correct.

MR. MUDD: Okay and you also agree with me that the lake is damned, did you see the damn?

MR. GRACHEK: Yes.

MR. MUDD: Okay. So, so the dam would actually stop the flow, or at least slow it, from its velocity coming out of a stream once it makes its way into a lake, do you agree with that?

MR. GRACHEK: My observation of the dam is that the dam usually keeps, keeps the, the lake at a certain elevation and when you have excessive flow, it overflows, because it's a, it's a complete spill (inaudible) dam and it overflows (inaudible) big storm event it'll flow faster. When you have a drought event, you may have (inaudible) so it might be a little lower. But on average, it's overflowing and that, that dam basically regulates the elevation and, and the like.

MR. MUDD: Okay. I'm going to show you Protestant's

Exhibit 76-B, which is the stream sense sign.

MR. GRACHEK: Yes.

MR. MUDD: And you testified that this sign notifies people and I, I quoted it, that there have been SSOs in this area. Is that, do you agree with that testimony?

MR. GRACHEK: Yes.

MR. MUDD: Can you read the sign for me?

MR. GRACHEK: I can. It is my opinion, and basically, it doesn't specifically say that, if you want me to read the whole thing, I will. But it doesn't specifically say that there are, you know, there are recurring things. But it does say, it does say (inaudible) potential for having sanitary sewer overflows during and following heavy rainfall.

MR. MUDD: Okay and how about the next paragraph?

MR. GRACHEK: Stormwater runoff from trees, parking lots, fields and lawns, as well as occasional leaks or overflows from the sanitary sewer system, may carry pollutants that negatively affect stream water quality, causing a potential health risk.

MR. MUDD: Okay. Do, do you, do you recall or do you know whether these signs exist in other locations in the County?

MR. GRACHEK: I haven't seen them in other locations in the County.

MR. MUDD: Okay. But you agree that this sign

recognizes that there are other contaminants that they're warning people about? Do you agree with me on that?

MR. GRACHEK: Yes. And but, stormwater from streets, parking lots, fields and lawns, as well as occasional leaks (inaudible) lawns don't, don't contain large quantities of e. coli.

MR. MUDD: Okay --

MR. GRACHEK: (inaudible) comes from sewage.

MR. MUDD: But they would contain some, you're saying, at least, right?

MR. GRACHEK: It's possible they could, but, by the time they got to the stream, it probably wouldn't be really measurable. The problem you have from, from streets and parking lots and that, is, is basically debris and if it's asphalt parking lots, you might have some PAHs. Fields and lawns, if you have fields and lawns that have been treated with pesticides or herbicides, you might have something like that coming into the system.

MR. MUDD: Okay.

MR. GRACHEK: But, but not e. coli.

MR. MUDD: Okay. Let's move on to Protestant's Exhibit 78. This is the RJN report and you discussed this report in the maps, correct?

MR. GRACHEK: Yes.

MR. MUDD: And I think you testified, you testified

that it was your opinion that this report showed that the work they did did not succeed. Do you recall that?

MR. GRACHEK: The, the work did not what, I'm sorry?

MR. MUDD: The work that the County performed did not succeed. Was that your opinion?

MR. GRACHEK: I, I'm still having a hard time understanding --

MR. MUDD: All right. Strike that, strike that. I'll move on.

MR. GRACHEK: Yeah.

MR. MUDD: Okay. You testified quite a bit on the RJN maps that they, that they produced when generating this report. Do you remember those maps?

MR. GRACHEK: Yes, I did.

MR. MUDD: And I think you testified that, that in your opinion, the work that was performed in meter basins two and three and four and nine, made, made conditions worse based on RJN's modeling, is that right? Worse, I'm sorry, worse within the Jones Falls interceptor.

MR. GRACHEK: What, what I said was that according to their assessment that three of the, three of the four made the situation better in those meter basins and that a fourth one made, meter basin, or the situation in the meter basin worse. That's, that's their words.

MR. MUDD: Okay.

MR. GRACHEK: And my assessment is that there's potential if you just fix the pipes upstream and don't fix the pipes downstream, you're adding more flow, more free flow. And so, it could have a deleterious affect on the part of the system that is, that is not fixed. Because you're sending all the flow right away.

MR. MUDD: Okay and again, the RJ, the RJN report was based on modeling, correct?

MR. GRACHEK: The, the RJ, the RJN assessment was based on pre-modeling and then modeling after the fact, yes.

MR. MUDD: Okay and do you know whether it was their own independent modeling or whether it was modeling, the same modeling that RK&K used?

MR. GRACHEK: My, my understanding is that RJN did their own, their own baseline modeling and their own final modeling.

MR. MUDD: Do you know what, what inputs they used?

MR. GRACHEK: I don't have their inputs, no.

MR. MUDD: You know what assumptions or underlying conditions that they've placed into their model?

MR. GRACHEK: I, the, the assessment report didn't provide that, but what I do have is a, is documentation that the, within rounding error, that a lot of the, many of the, or most of the, the assessments they did was fairly consistent with the RK&K analysis. I did not, I did not review their

model inputs.

MR. MUDD: Okay. What do you base that last statement on when you said you have information --

MR. GRACHEK: Oh, one of our, one of our exhibits showed them being, I can't remember which one it was, but one of our exhibits showed them side by side.

MR. MUDD: I think, I think we're going to get to that in a minute. Do know whether Baltimore County or anyone else certified RJN's model?

MR. GRACHEK: No.

MR. MUDD: Do you know if the modeling has been verified by flow monitoring to determine if its accurate?

MR. GRACHEK: The, the modeling was verified based on flow monitoring, for sure based on the, the basins that they did work on, because they did before and after. As far as the assessment of the remainder of the system, I don't have that direct information. But I, what I will say is that based on their modeling of the storms, it looks like in, looks like these different input data because the, the assessment was things, things were a lot more (inaudible) than what was in the RK&K report based on the storm events.

MR. MUDD: Do you agree with me that there's nothing in the Consent Decree or the SRRR Plan that requires the County to make any improvements that are depicted in the RJN report?

MR. GRACHEK: No, the Consent Decree predates the RJN

report, so it doesn't mention it.

MR. MUDD: Okay.

MR. GRACHEK: And the RJN report is a performance assessment, it's not a plan.

MR. MUDD: Okay. Oh, I know where I need to go, sorry. I'm getting there, guys. I know it's been a while. Sorry, I need to get, that's the wrong one. I'm going to show you Exhibit 81, I think is the, there we go. Are you seeing Exhibit, Protestant's eighty-one?

MR. GRACHEK: I do not see it yet. Okay.

MR. MUDD: Okay.

MR. GRACHEK: Yes.

MR. MUDD: Was this the document you were referring to a second ago when you said that things were fairly consistent?

MR. GRACHEK: Yes, RJN versus the, versus the other data.

MR. MUDD: Okay.

MR. GRACHEK: Yes.

MR. MUDD: And that, that's under the, well, why do you say that? I guess what, what causes you to say that?

MR. GRACHEK: If you look at columns I and J, the numbers are all very close. Column, column I is the RJN calculated baseline capacity for that, for that event. And the column J is the baseline capacities for the same event from

RK&K.

MR. MUDD: Uh huh.

MR. GRACHEK: And as you can see, within rounding error, they're all very close.

MR. MUDD: And that, but that's on the pre-rehab, correct?

MR. GRACHEK: That's on the pre-rehab, yes.

MR. MUDD: Okay and on that basis, do you think that post-rehab should be considered reliable?

MR. GRACHEK: I, I have no reason to believe it's not.

MR. MUDD: Okay. Where, where did the numbers from the RJN columns here come from, do you know?

MR. GRACHEK: The come from the, from the actual report appendixes and this is another one of those, one of the exhibits that was put together by our colleague.

MR. MUDD: Okay and you testified that the RJN report shows that the Jones Falls sewer line is more over capacity than it was before in this post-rehab, is that, is that your testimony?

MR. GRACHEK: That's what it shows.

MR. MUDD: Okay. But you also said that that could be for a lot of reasons, do you recall that testimony?

MR. GRACHEK: Yes.

MR. MUDD: And I think you said that you cannot

enter, ascertain exactly why without seeing or running the model, is that correct?

MR. GRACHEK: That would be correct.

MR. MUDD: Okay. So, and I think you also testified that the model did put parameters and, and changed, there were parameters that changed since the RK&K report and sewer is ten years older than it, ten years older than it was back then. So, a lot of things could happen. Do you remember that testimony as well?

MR. GRACHEK: Yes.

MR. MUDD: But, but, but it's fair to say that you really just don't know exactly what's behind these numbers, correct?

MR. GRACHEK: No, there's a lot of things that could change. The software is a lot better now than it was ten years ago too.

MR. MUDD: Okay and would you also agree with me that the RJN report does not take into consideration any work that may or may not have been done with the Jones Falls interceptor?

MR. GRACHEK: Well, the RJN report takes into account the work that was done on those three meter basins.

MR. MUDD: Right.

MR. GRACHEK: And, and, and the manholes that were approved, you know, the, you know, that were shown on that but it doesn't take into account anything else as being done.

MR. MUDD: Okay. So, to the extent that the SRRR Plan required work within the Jones Falls interceptor, or in other areas outside of those meter basins, this RJN report, and all the assumptions, do not take that into account, as far as you know, correct?

MR. GRACHEK: As far as I know.

MR. MUDD: Okay and when it reports the capacity issues that you've highlighted, again, these, these capacity issues in, in Section F, those numbers are based upon the assumption that no other work, other than the work in the four meter basins to the northeast, has been performed, right?

MR. GRACHEK: My, from reading the document, I presume that the, I presume (inaudible) say presume, but that, that when RJN did a performance assessment, they did an evaluation and the effects on the performance, that they were then required by the City to look at any, any new data in developing their model.

MR. MUDD: But you don't know if they've done that?

MR. GRACHEK: I, I don't know --

MR. MUDD: For sure?

MR. GRACHEK: -- if they've done that, but it sure looks like they did.

MR. MUDD: Why do you say that?

MR. GRACHEK: Because the numbers are so different.

MR. MUDD: Okay. Do you think that they took into

account any of the work that is required to be performed by Johns Hopkins, or by this applicant closer to Joppa Road that you talked about?

MR. GRACHEK: I wouldn't know.

MR. MUDD: Okay. I'm going to, I'm getting there, everybody. Move back to Adobe and I'm going to show you Exhibit 90, Protestant's Exhibit 90. Do you recognize this e-mail exchange? Sorry, it's coming up. Do you see that?

MR. GRACHEK: Yes.

MR. MUDD: Do you remember the discussion on this?

MR. GRACHEK: Yes.

MR. MUDD: You, you agree with me and you're aware that the County is requiring improvements to be made to the sewerage system by this applicant and by Johns Hopkins prior to connection of these new homes, is that, do you agree with that?

MR. GRACHEK: Yes.

MR. MUDD: And you agree with me that these e-mails refer to the completion of those improvements or the non-completion of those improvements, correct?

MR. GRACHEK: I, I can't, I can't say that for sure. All I can say is that based on this e-mail exchange asking questions, is that if we build (inaudible) it's going to cause overflows and if there's no, there's no breaking point for a number of units, but they do require the, the, the upgrading of those pipes near the development.

MR. MUDD: Right.

MR. GRACHEK: Now, does that, does that solve the whole problem? I, I can't say based on, I can't say from just this, but based on all the, all the other information, it, it might have a localized benefit, but not something that, throughout the sewer shed.

MR. MUDD: Okay and if you want me to, to let you review these a little bit more closely before you answer the next question you can. But do you agree with me that these e-mails make no reference to the RK&K report, nor to the RJN report, or any improvements recommended in those reports?

MR. GRACHEK: I, I don't see any to that effect.

MR. MUDD: Okay. Talk for a minute about population projections. I think, I think we talked about this before, but you, you agree with me, these population projections, it's your understanding that these were the ones that were used in the formulation of the RK&K report?

MR. GRACHEK: Yes.

MR. MUDD: Okay and I think you agreed with me earlier that MDE and the EPA reviewed and approved the RK&K report?

MR. GRACHEK: I, I've seen, like I said before, I've seen a document, approving a report doesn't necessarily approve the, I saw an app, an approval document, I believe, that had to do with the SRRR.

MR. MUDD: Okay.

MR. GRACHEK: But, but at the same time, at the same time, if I can respond to this, I can't be the judge on whether MDE or the EPA or anybody else approved a report, therefore, these population projections are good. All I can testify to is that you would need to continually upgrade your sewer system so that your sewer system is working twenty years out, in my opinion.

MR. MUDD: Okay. So, you can't be the judge on that. Do you also agree with me that you can't necessarily be the judge on whether these population trends are accurate or not?

MR. GRACHEK: Oh, no, I can't judge that either. All, all I can do is base that on the notion that they, they researched it, so.

MR. MUDD: Okay.

MR. GRACHEK: They may be higher, they may be lower.

MR. MUDD: Okay. You talked a little about the Hazen reports.

MR. GRACHEK: Yes.

MR. MUDD: Which were at Protestant's Exhibit 85. I'm not showing those to you, but I just have a couple questions about them. Do you know if Hazen's work is directly related to the Consent Decree?

MR. GRACHEK: I, I don't know that from a documentation, but I presume since they're redoing everything,

most likely it has to do with, with compliance with the Consent Decree.

MR. MUDD: Okay. So, do, do you know whether they're performing any official study that's required as part of the Consent Decree?

MR. GRACHEK: I haven't seen anything that, I haven't read anything that, that directly says that we are doing this as a result of section xxx of the Consent Decree. But what they're doing is consistent with what the Consent Decree requires. According to their, according to their newsletters, which are, you know, not, not really in depth.

MR. MUDD: Okay. I'm now going to go on to Exhibit 87, which we have now in front of you, this data and evaluation report. Do, do you know, strike that. Do you know what the purpose for this project is, that they've identified in here?

MR. GRACHEK: It hasn't been stated to me what their purpose is. That can be a lot of things. But to me, the purpose of this is, is, in my view, a rec, a recognition that this is a serious issue that needs a separate analysis and a separate plan because of the age and, and the SSO issues and also because of how this all relates to sewage flow going into Baltimore City.

MR. MUDD: Okay. Do you know if this is part of the RK&K report requirements, or the SRRR Plan requirements?

MR. GRACHEK: I can take a, it's not part of the RK&K

report. It, RK&K did identify problems in, you know, Lake Roland and, and that entire area that we looked at the, at the, at the interceptors, you know, moving up from Lake Roland. So, there is some, there is some consistency between the two. But I don't think this would be gapped by the RK&K, but I don't know that for sure.

MR. MUDD: Okay and would you agree with me that this would be an example of the County performing, at least in part, preventative maintenance on their sewer system?

MR. GRACHEK: Yes.

MR. MUDD: Okay and you, you think, you agree with me, that's a good thing, right?

MR. GRACHEK: Yes.

MR. MUDD: Okay. It's what municipalities and governments should be doing, they should be keeping their sewer system up to, up to, up to (inaudible).

MR. GRACHEK: Yes.

MR. MUDD: Got it, okay. You mentioned that, I think you said in passing, there was discussion about rights of way and things like that. And you said where it usually requires private land acquisition. But you don't know that for sure in this case, is that right?

MR. GRACHEK: Well, I mean, it's either land acquisition or easements or, you know, temporary easements so you can build, you can't, you can't bring heavy equipment out

and not have a, an easement to, to do that (inaudible) get on people's private property, so.

MR. MUDD: Okay --

MR. GRACHEK: That's, that's with any construction project.

MR. MUDD: Okay. I think the last question I have for you is, near the end of your testimony, you gave a lot of opinions, Mr. McCann gave a lot of opinions and you agreed with him, about the term model predicted capacity problems. What, what is --

MR. ZIMMERMAN: I, I object to the form of that question, that Mr. McCann gave a lot of opinions. I'd just object to that.

MR. ROSENBLATT: It's not his witness.

MR. ZIMMERMAN: So, I --

ALJ: Well, I mean, Mr. McCann can say that, but I just, I don't know why, how do you have the, why you're responding to it, but anyway, it's overruled. Go ahead.

MR. MUDD: Would you like me to repeat the question, Mr. Grachek?

MR. GRACHEK: Sure.

MR. MUDD: I said that Mr. McCann described to you, and you agreed, that, that there were model predicted capacity problems. Do you remember that term?

MR. GRACHEK: Yes.

MR. MUDD: What do you mean, or what does he mean or what do you both mean, by that term?

MR. GRACHEK: There are, we have, we have a, a system for water, for, for water treatment, sewage treatment and, and water sewage conveyance where we can't, we can't measure every single inch of the sewer system.

So, we have to rely on models to, not only to evaluate our current system but also to do predictive analysis to determine whether we need to upgrade now or upgrade to whatever lengths, otherwise we would be, we would be out in the dark simply just putting sewer pipes down and we might put down pipes that are too small and have to do it again. We might put down pipes that are too big and cost the taxpayers more money.

So, we, we use models and the models have gotten, like anything else technological, the models have gotten very good, so that we can now go in and predict what we're going to see based on usage and population growth and we can plan accordingly. But the model is critical. And it's not, it's not just a representation, it's critical to the decision process. If we didn't have that, the system would be completely inefficient and hard to deal with.

MR. MUDD: So, specifically, in this case, what are the model predicted capacity problems? Are those, are you referring to the models in, that were performed by RK&K and RJN?

MR. GRACHEK: You, normally, in a, in a really sound system, you would perform your modeling and you would, and you would make revisions based on that modeling and then model in your, your corrective actions. But then you would update your model at minimum every five years to add and push out your projections and keep up with it.

But what you can't do is you can't let the system, you know, degrade over a certain period of time then expect that, okay, we're going to do a model and we're going to fix anything all at once because there's not enough money in the world to do that. And so, the modeling is critical.

The modeling is not a, it's not a fad, it's not a, it's not something that is, you know, that's just a luxury to have. It's, it's absolutely critical to have a good sound system. And there are representations all around the country of municipalities, some smaller but, and even much bigger than Baltimore, that keep up with things in this vein and because they do that, they don't have to have these kinds of situations.

MR. MUDD: You, you, you've said before, you've had no interaction whatsoever with Baltimore County officials on this, correct? Personally?

MR. GRACHEK: No, --

MR. MUDD: Right.

MR. GRACHEK: -- no, I did an independent analysis

based on the documents that they produced.

MR. MUDD: So, do you, do you have no idea then whether they're performing any of their own modeling, like you suggest they should be?

MR. GRACHEK: Oh, I, I do. They're having Hazen Will, they're having Hazen do it.

MR. MUDD: Do, do you know whether they're having anyone else do it?

MR. GRACHEK: No, I don't.

MR. MUDD: You don't know whether they're doing anything internally?

MR. GRACHEK: No.

MR. MUDD: You don't know how any of their internal modeling works when someone asks whether there's capacity in the system for a new development?

MR. GRACHEK: I'm not aware of their, of internal modeling. And, you know, because they had RK&K do it and they had RJN do it. Now they've hire a really reputable firm, Hazen, to do it too. So, I, I, I'm not aware that they're actually updating their models internally.

MR. MUDD: So, so, do you think that then when a developer asks whether there's capacity in the system and they ask Public Works, that Public Works is going to RJN or RK&K or Hazen and asking them to, to tell them whether there's capacity in the system?

MR. ZIMMERMAN: I, I, I'm going to object to the question.

MR. MUDD: It's not your witness.

MR. ZIMMERMAN: That doesn't matter. Petitioner hasn't produced any information from the County of any modeling. There's no evidence of any County modeling.

ALJ: Okay. Overruled.

MR. GRACHEK: Most --

MR. MUDD: I have to repeat the question again, Mr. Grachek?

MR. GRACHEK: No, I'm, I can answer it. Most large municipalities rely on a combination of inhouse staff and consultants. And so, the answer to your question is yes. They, there's a significant question regarding a development, they would probably go back to their, their consultants and say run this.

MR. MUDD: But that's an assumption, you don't know if they're doing that or not.

MR. GRACHEK: I don't know if they're doing that or not, I don't.

MR. MUDD: Okay. So, what, so when you gave your opinions about model predicted capacity problems, are you referring directly to the models that we know about in this case, that is the --

MR. GRACHEK: Yes.

MR. MUDD: -- RK&K model and the RJN model?

MR. GRACHEK: Yes.

MR. MUDD: And those are the models that are based on the, the design storms that are required under the, the Consent Decree, correct?

MR. GRACHEK: That's correct.

MR. MUDD: Okay. I have no further questions. Thank you.

ALJ: Mr. McCann, re-direct?

MR. MCCANN: Yeah, I do. Thank you. We're almost there, Mr. Grachek. On that point, just once again, does the Consent Decree require Baltimore County to undertake models for the purpose of predicting future incapacity problems?

MR. GRACHEK: Yes.

MR. MCCANN: Did Baltimore County hire RJN, I'm sorry, RK&K to come up with a model?

MR. GRACHEK: Yes.

MR. MCCANN: Did Baltimore County hire RJN to come up with a model?

MR. GRACHEK: Yes.

MR. MCCANN: Did Baltimore County hire Hazen to come up with a model?

MR. GRACHEK: I hadn't seen the model, but it sounds like they have, yes, from what they're saying (inaudible).

MR. MCCANN: Okay and what we've seen of the results

of the modeling of RK&K and RJN, would you agree or disagree that the results of that modeling reflect an abundance of model --

MR. MUDD: Objection.

MR. MCCANN: -- a model predicted --

MR. MUDD: Objection. It's leading.

MR. MCCANN: No, it's not. It's an adjective. It's not misleading at all. Just like enormous, it's not, it's not, it's not a leading question. I'll still rephrase it, because I don't think it's leading at all. But I'll rephrase it.

ALJ: Okay.

MR. MCCANN: How would you, how would you characterize the model predicted capacity problems that the County's own consultants, RK&K and RJN, found? How would you characterize those?

MR. GRACHEK: I would say based on, based on information that I have from those models and based on other information that there are significant capacity issues using storm events that are realistic for the area.

And that if they do not fix these areas, that they're going to continue to have, or if they don't fix the areas and they continue to add a lot more development and a lot more users to the system, they're going to continue to have SSOs in violation of the Consent Decree.

MR. MCCANN: Is, in your, in your experience and in

your industry, are, is modeling a standard, everyday part of business?

MR. GRACHEK: It is, it is for any, any system that's, you know, of any, any substantial size.

MR. MCCANN: In your experience, specific experience, have, do, do municipalities spend billions of dollars on models, no, I'm sorry, spend billions of dollars on sewer systems based on modeling?

MR. MCCANN: Objection. It calls for speculation.

ALJ: It, it, does municipalities --

MR. MCCANN: In this experience --

ALJ: -- spend billions of dollars, do you really mean billions, billions of dollars?

MR. MCCANN: How would you characterize the amount of money that, in your experience, municipalities pay for some --

MR. GRACHEK: I --

ALJ: Hold on, Mr. Grachek, what, wait a minute. So, one more time, Mr. McCann.

MR. MCCANN: Yeah. How would you characterize the, strike that. In your experience, do municipalities regularly rely upon modeling before they spend any money --

MR. GRACHEK: Yes.

MR. MCCANN: -- on sewer systems?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Mr. Mudd asked you about Ramboll

report and whether that is preventive maintenance. I just want to remind you, because I think you, you said, you spoke to this point, this is, again, the Ramboll report. This is the introduction section. And I just want to read this section again to you.

The County engaged Ramboll Americas Engineering Solutions for the development of design documents for the repair and rehabilitation of the interceptors, manholes and junction chambers located within Lake Roland Park. The primary focus of this project is to minimize the inflow and infiltration into the interceptors to reduce the likelihood of sanitary sewer overflows. Did you, do you see that?

MR. GRACHEK: Yes, I --

MR. MCCANN: Okay. In your, in, in your opinion, in your opinion, based on your experience and your review of this document, is, is the, the County, is the purpose of this --

MR. MUDD: Objection.

MR. MCCANN: I didn't ask a question --

ALJ: Mr. Mudd, Mr. Mudd?

MR. MUDD: What is his opinion, that should be the question. Not is his opinion consistent with Mr. McCann's opinion.

ALJ: Yeah, it needs to be open ended --

MR. MCCANN: What is, what is your, what is your --

ALJ: (inaudible) --

MR. MCCANN: I got it, I got it. I got it. What is your opinion with respect to whether or not the purpose of this evaluation is to do preventive --

MR. MUDD: Objection, objection.

MR. MCCANN: Is the purpose of this report to do preventative --

MR. MUDD: Objection.

MR. MCCANN: That's not objectionable. It is not (inaudible) --

ALJ: Okay, everybody, all right, everybody.

MR. MCCANN: You need to go back to law school, first day.

MR. ZIMMERMAN: This is a lot of cross talk with a lot of interruptions. Let Mr. McCann finish his questions.

ALJ: Yeah, okay, I understand but he, he's, what he, Mr. McCann, you are, in a sense, testifying by putting in those adjectives. But why can't you just say, so is, is your, is your opinion still the same, that, that, what you testified to earlier, sir, or does it, is it preventative maintenance.

MR. MCCANN: No, Mr., those are Mr. Mudd's words, preventative maintenance. So, I'll ask him plainly. Given, given that sense, and given your --

ALJ: I mean, has his opinion changed, right?

MR. MCCANN: No, I'm asking, is this, is the purpose of this report preventative maintenance?

ALJ: Okay.

MR. MUDD: Yeah, so, so objection --

MR. MCCANN: That's not a leading question, not even close. Not even close.

ALJ: Hold on. Mr. Mudd, what'd you say?

MR. MUDD: Is it my turn?

ALJ: Yeah, what'd you say, Mr. Mudd?

MR. MUDD: Now I'm going to object on the basis of asked and answered. I asked him if it was for preventative maintenance and he said yes. And now Mr. McCann is trying to change his opinion.

MR. MCCANN: I am. What I'm trying to do --

ALJ: Well, it's, it's re, it's re-direct. But I, I know what the witness said, so, go ahead, sir.

MR. MCCANN: To be fair, to be fair, Mr. Mudd asked, used the word in part, preventative maintenance, that, I wrote it down. So, I'll re, I'll rephrase the question. Since your testimony with Mr. Mudd just a short time ago, do, do you have anything to add to your opinion regarding the purpose of this evaluation, of this work?

MR. GRACHEK: Okay. Can I go now?

MR. MCCANN: Yeah, go ahead.

MR. GRACHEK: In my opinion, this paragraph sum, summarizes precisely the reason that we do this kind of work and while, as I indicated before, the, the work in this report

is, in fact, maintenance and it can be construed as preventative maintenance. A lot of the work, since the system has been not maintained for a long time, is remedial.

MR. MCCANN: Okay, thank you.

MR. GRACHEK: And it needs, it needs to be, it should have been done twenty-five years ago --

MR. MCCANN: So, like, I'm sorry, go ahead.

MR. GRACHEK: No, that's it.

MR. MCCANN: Likewise, since we're talking about Lake Roland, the fact that this evaluation pertains to Lake Roland, does that change your opinion or amend your testimony in response to Mr. Mudd's questions about SSOs or the non-existence of SSOs contributing to Lake Roland? Does it change your testimony in that regard?

MR. GRACHEK: No, no.

MR. MCCANN: Okay.

MR. GRACHEK: It does not.

MR. MCCANN: Do you, do you actually need to see the model, the modeling, whatever that may look like, for RJ, RKK and RJN in order to express the opinions you've expressed today?

MR. GRACHEK: No, no more, no more so than I need to see, you know, watch the guy (inaudible) my car. These are reputable companies that are doing this modeling and they're doing it, there's people, there's people involved in the IT

world that are involved in this.

I could review the input parameters and I could review, you know, take a look at whether they're using, you know, a modern version of InfoWorks and, you know, which is modeling software, and all that. But at the end of the day, what, I have no reason to believe that anything that they're doing right now has some type of bias toward, toward one thing or the other. And trust me, I've seen it in other places where things have been biased in certain directions.

MR. MCCANN: Okay. You're assuming that the modeling is correct, is that fair?

MR. GRACHEK: Yes.

MR. MCCANN: Another thing struck me about your testimony on cross, you, you talked about modeling and then you mentioned that the engineers need to take the model and exercise some judgment.

MR. GRACHEK: Yes.

MR. MCCANN: Okay. Any reason, well, number one, as far as you know, are the, the folks that exercise that judgment on behalf of RK&K, were they engineers as far as you know?

MR. GRACHEK: I, I do not know, but I presume so since RK&K is an engineering company, that they, that they're involved in the process.

MR. MCCANN: And with respect to RJ&N, any reason to doubt that the folks that exercise that --

MR. GRACHEK: No.

MR. MCCANN: -- degree of judgment (inaudible).

MR. GRACHEK: Right.

MR. MCCANN: Is it fair to say that you're not only relying on the, the modeling, but also the exercise of engineering judgment by RK&K and RJN?

MR. MUDD: Objection, objection.

MR. MCCANN: Are you relying upon the exercise of engineering judgment by RK&K --

MR. MUDD: Objection.

ALJ: It's, it's --

MR. MCCANN: Can I finish the question?

ALJ: Oh, I'm sorry.

MR. MCCANN: Judge Murphy is not going to be prejudiced by the, by the scope of, by the questions. She's going to understand them.

ALJ: Yeah, I, I, I know the, I know the question, just, but, you know, so it should be, the question should be, was there something else you relied on, period. Like it's, that should be the question, instead of is there something else you rely upon and then give what the answer is. So, so, I'll, I'll sustain the objection. But, so, Mr. Grachek, was there something else you relied upon?

MR. GRACHEK: No. With regard to the modeling, I rely on the people that did the modeling and, and that's all I

really can do. If I were to call into question the modeling without knowing otherwise, (inaudible) it would be inaccurate.

MR. MCCANN: Mr. Mudd was asking you, and I'm just directing your testimony, was asking you about larger storm events. First of all, just as a fundamental matter, could you tell us in order of intensity, what the five storm events are that, that are relevant to this, you know, all of this?

MR. GRACHEK: I hope I can remember all of them.

MR. MCCANN: Go ahead.

ALJ: I know them, so, I don't, do you want him to repeat them or --

MR. GRACHEK: Yeah, there's obviously the two, there's the two year, six hour event, the two year, twenty-four hour event, the ten year six hour event, the ten year, twenty-four hour event and I believe there's a twenty year, six hour event, is that correct?

MR. MCCANN: If you say so, sir.

ALJ: So, you can't ask Mr. McCann questions. You, you have to answer the questions. So, but I know what the five storms are.

MR. MCCANN: Okay.

ALJ: (inaudible).

MR. MCCANN: You, excuse me, you, you mentioned, excuse me. You mentioned that, an opinion regarding whether the County should address larger events, whatever term that

meant. Do you recall that testimony?

MR. GRACHEK: Yes.

MR. MCCANN: So, let's just, number one, first and foremost, is it not true that the County, is, is it or is it not true that the County selected one of those storm events?

MR. GRACHEK: It, it appears that way from their SRR.

MR. MCCANN: And which storm event did they select?

MR. GRACHEK: I believe they picked the, the two year, I think it's a two year, six hour event.

MR. MCCANN: Okay. Let's look at, this is the SRRR Plan, Mr. --

MR. GRACHEK: I can't, I can't, I can't recall exactly which one it was.

MR. MCCANN: Okay. This is the SRR Plan, page six twelve and six thirteen. Mr. Mudd made some reference to the, to this, but let me just, I want to direct you to this paragraph here, beginning based on a review, and just read that for me, if you would. Or read it to yourself and --

MR. GRACHEK: Okay. Based on reviews, the County recognizes that deficiencies exist and they felt that the two and ten year, six hour storm design storms are more representative.

MR. MCCANN: Okay. So, does that refresh your recollection about what (inaudible) --

MR. GRACHEK: Yeah, yeah, it does, it does. I, I,

there have been a lot of numbers thrown by today and so, --

MR. MCCANN: Okay. That's okay, that's fine. So, just to be clear, amongst the five storm events you identified, well, of, of, well, strike it. Of those two storm events that are identified in this paragraph, which of those two is the, is the, the more intense?

MR. GRACHEK: The higher rainfall amount would be the ten year, six hour.

MR. MCCANN: Okay. So, and I know you testified about, gave your testimony about larger events. Just focus on the ten year, six hour. The opinions you've expressed all day today about, does that still apply with respect to the ten year, six hour storm? You follow me?

MR. GRACHEK: Yes.

MR. MCCANN: Okay. So, in other words, I'll, I'll ask you to assume, as a hypothetical, that the ten year, six hour storm is the appropriate storm, in the County, based on the County's selection --

MR. GRACHEK: (inaudible) County's selection, it's what they felt was the appropriate storm.

MR. MCCANN: Okay and assuming that, does that change any of the opinions you were, you expressed today regarding the County's addressing model predicted future capacity problems?

MR. GRACHEK: Basically, I'm trying, make sure I know how to phrase --

MR. MCCANN: Let me phrase, let me rephrase the question. Basically, --

MR. GRACHEK: Yeah.

MR. MCCANN: -- based on your testimony today, just based on the, the ten year, six storm, are there significant model predicted capacity problems according to (inaudible) --

MR. MUDD: Objection, objection --

MR. MCCANN: -- RK&K and RJN?

MR. MUDD: Objection. Your Honor, oh, my goodness.

ALJ: Wait, --

MR. MUDD: I just want to address one thing, because Mr. McCann's suggested that you're the one who would be prejudiced. That's not my concern. My concern is, as I think you understand, is that he gives the answer to the witness and then asks the witness to agree with him. So, that's why I object in the beginning of the asking of the question.

ALJ: Right. Yeah, --

MR. MCCANN: I'll rephrase it, I'll rephrase it.

ALJ: -- it just needs to be, just open, just --

MR. MCCANN: I got it, I got it. How would you --

ALJ: -- open ended. We've been doing this all day, but it has to be open ended.

MR. MCCANN: Yeah. How, how would you characterize the model predicted future capacity problems based on the ten year, six hour storm event? That's, if we assume that to be

the correct storm.

MR. GRACHEK: I, based on the ten year, six hour storm events, the model predicted capacity problems are considerably lower than they would be under the, obviously under the, the higher (inaudible). Now, remember, a, a, a two year, twenty-four storm and a ten year, six hour storm end up with about the same amount of rainfall.

So, you know, it's, and in my opinion, just overall my opinion, is that you should, you should model your, your sewer shed for the storm that happens during the duration of your analysis, which would be a twenty-year storm. You can't, you can't predict everything. You can't predict a five hundred year storm, but you should, you should use a twenty year storm in your analysis.

MR. MCCANN: I'm not asking you what storm they should use, I'm asking you to assume the ten year, six storm is appropriate. And I'm asking you to characterize, let me find the exhibit while I can, --

MR. GRACHEK: Yeah, I, I, I think a ten, a, a ten year, six hour storm is not sufficient.

MR. MCCANN: I'm not asking you which storm is sufficient, Mr. Grachek. And I'm sorry if I'm, if --

MR. GRACHEK: I'm getting confused now --

MR. MCCANN: Let me, let me finish, let me finish. I'm not asking you what storm is sufficient. I'm asking you to

assume the ten, six is okay. And let me ask you this first. Am I correct or not that this exhibit that we're looking at right now is based on ten, ten year, six hour storm?

MR. GRACHEK: Yes.

MR. MCCANN: Okay.

MR. GRACHEK: Yes.

MR. MCCANN: So, so, let's assume that's okay.

MR. GRACHEK: Okay.

MR. MCCANN: Regardless of how you feel about larger storms, how would you characterize the model predicted future capacity, that the County, that both RK&K and RJN have come up with?

MR. MUDD: Objection. This has been asked and answered. But the answer wasn't, never mind. Asked and answered.

ALJ: Okay. I don't think it was because I wrote it down a while ago and I still don't think he answered it. He went onto something else, saying he thought a different storm was better. So, I'll, I'll let him answer it. Go ahead. Overruled.

MR. GRACHEK: Based, based on the, the ten year, six hour storm event, assuming that was the accurate one, it shows significant problems in the system, under the RJN post, RJN pre and the RK&K report.

MR. MCCANN: Okay and with respect to Exhibit 64,

which is the, the County's capacity chart that we looked at, Mr. Mudd was questioning whether this was based on dry weather or wet weather, let's just assume, for argument's sake, that these capacity numbers between ninety-four and a hundred are, are based on wet weather flow. Assume that for me. Do you believe that those weather, wet weather capacity numbers are excessive --

MR. MUDD: Objection.

ALJ: Mr. Mudd, you're objecting?

MR. MUDD: Yeah. I think the question is how would he characterize those --

MR. MCCANN: How would you characterize those, those capacity numbers between ninety-four and a hundred, that range?

MR. GRACHEK: If you assume that this was under wet weather flow, they'd still be out, out of line with what you need.

MR. MCCANN: Yeah. By the way, do you recall a chart just like this in the Torch Hill case?

MR. GRACHEK: I don't recall that, Michael.

MR. MCCANN: Okay. All right. Bear with me one second. Mr. Mudd asked you a couple times about whether or not you've ever inquired, anyone in the County about any of this. And to be fair, have you ever tried to call anybody in the County?

MR. GRACHEK: Yeah, I, I have not called anyone in

the County.

MR. MCCANN: Are you certain about that, Mr. Grachek? Have you tried to? Let me ask, put it that way.

MR. GRACHEK: Have I tried to? Yes, I, I, one time did try to call someone in the County, but I haven't had conversations with people in the County.

MR. MCCANN: And who, who did you try to call?

MR. GRACHEK: I, I, I do not remember, it was a while back.

MR. MCCANN: Do you remember, did you try more than once?

MR. GRACHEK: I, I don't recall.

MR. MCCANN: Did you leave a message --

MR. GRACHEK: That would be something from back in, in previous cases.

MR. MUDD: Objection.

MR. MCCANN: Did you leave a message --

MR. MUDD: Objection.

ALJ: Well, he, he, I don't think he recalls at all. He doesn't recall --

MR. GRACHEK: No, I, I, I don't --

ALJ: He, he wouldn't, he won't be able to answer the question if he left a message because he --

MR. MCCANN: Okay. I gotcha, I gotcha.

MR. GRACHEK: I have a (inaudible) --

ALJ: Okay, that's enough. Mr. Grachek, that's enough.

MR. GRACHEK: I was going to say, I have a vague memory of --

ALJ: Mr. Grachek, Mr. Grachek --

MR. MUDD: Objection.

ALJ: -- wait for a question, please. Thank you.

MR. MCCANN: What do you have a vague memory of, Mr. Grachek?

MR. MUDD: Objection.

MR. GRACHEK: Of trying to contact, but I, but I don't, I, I don't recall --

MR. MUDD: Objection, objection.

ALJ: I, it, --

MR. MUDD: Your Honor, now they're (inaudible) your ruling here.

ALJ: Yeah, this is, you're just trying to get around it. So, let's just, you know, whether or not he tried to call someone, I don't think it, it's going anywhere anyway, but just, we can move on from this question.

MR. MCCANN: I don't know who's trying to get around what, Judge. I missed that, I'm sorry but.

ALJ: No, I, I just think we can move on from this question, whether he called someone or didn't and hung up or there was a message or not, it's just not, you know, I don't

think in the scheme of things it's --

MR. MCCANN: (inaudible) important, okay.

ALJ: It's not something earth shattering, so.

MR. MCCANN: Okay.

ALJ: Yeah.

MR. MCCANN: Okay. That's all I have, Mr. Grachek. Thank you, Mr. Grachek.

ALJ: All right, Mr. Grachek. I think it's been seven hours you --

MR. GRACHEK: Yes, yes (inaudible) --

ALJ: -- endured us all. So, yeah, that's a long one. So, yeah, you're finished. We don't have any other questions for you. It is 5:00. So, you don't have another witness, do you, today, Mr. McCann?

MR. MCCANN: No, I, not, I mean, --

ALJ: Right.

MR. MCCANN: -- it'll be a while, it would take a while, but.

ALJ: Right, yeah. I would think so. And I think seven hours is probably, seven and a half hours, is probably enough. So, we have the next day is March the 27th and so, we'll start with Mr. McCann's witness. How long do you think, do you have any estimate at all, (inaudible) should ask you this, but, I was, you were thinking that this was going to be done in two hours. But I had a feeling it wasn't.

MR. MCCANN: Yeah, this, this, this witness would not be as long as Mr. Grachek, that I can say.

ALJ: Okay, all right. Well, I mean, so, we'll do your witness first and then, but is that the only witness or you're not sure yet?

MR. MCCANN: Right now it is, yes.

ALJ: Right now, okay. So, whenever we finish, then next time we'll have to do, you know, the rebuttal case and so, so I would just be prepared to go if, you know, the witness is finished on March the 27th, okay?

MR. MCCANN: Sounds good.

ALJ: Not you, but the Developers obviously. All right, everyone. I think we're finished for today.

MR. MCCANN: Okay, thank you.

ALJ: All right.

MR. ROSENBLATT: Thank you, Judge.

MR. SACHSE: Have a good weekend.

MR. MUDD: Thank you.

MR. MCCANN: Bye.

VOICE: Thank you.

(OFF THE RECORD0

CERTIFICATE OF TRANSCRIBER

I hereby certify that the hearing in the matter of Greenspring Manor, 2310 W. Joppa Road, case numbers 08-0922 and 2021-0250-SPH, heard before the Office of Administrative Hearings for Baltimore County, February 10, 2023, were recorded by means of audiotape.

I further certify that, to the best of my knowledge and belief, page numbers 1 through 287 constitute a complete and accurate transcript of the proceedings as transcribed by me.

I further certify that I am neither a relative to nor an employee of any attorney or party herein, and that I have no interest in the outcome of this case.

In witness thereof, I have affixed my signature this 15th day of March 2023.

Christine R. Leary

Christine R. Leary

Transcriber

IN THE MATTER OF:

GREENSPRING MANOR
2310 W. Joppa Road

CASE NUMBERS: 08-0922 & 2021-0250-SPH

Hearing Date: January 30, 2023

Pursuant to Notice, the above-entitled hearing was held before the Office of Administrative Hearings for Baltimore County by remote access.

PRESIDING:

MAUREEN J. MURPHY, ADMINISTRATIVE LAW JUDGE

FOR THE PARTIES:

ADAM ROSENBLATT, ESQUIRE
CHRISTOPHER MUDD, ESQUIRE

MICHAEL MCCANN, ESQUIRE

PETER MAX ZIMMERMAN, PEOPLE'S COUNSEL
FOR BALTIMORE COUNTY

Christine R. Leary
crleary1@comcast.net

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(ON RECORD)

ALJ: Good morning, everyone. You're attending day nine for case number 08-0922 and 2021-250-SPH. Property address 2310 West Joppa Road. This is the combined development plan and zoning case for the project known as Greenspring Manor. Let's get counsel for the record, identify themselves beginning with the Developer.

MR. ROSENBLATT: Good morning, Judge Murphy. Adam Rosenblatt and Chris Mudd of Venable, LLP on behalf of the Developer.

MR. MCCANN: And good morning, Judge. Michael McCann on behalf of the Protestants.

MR. ZIMMERMAN: And Peter Max Zimmerman, People's Counsel for Baltimore County.

ALJ: All right. Looks like everyone is here. We left off last in December. And the, we're still in the Protestant's case, right? As I recall? And Mr. McCann, he's presented twenty witnesses so far. I know we had two from People's Counsel in the, in the middle there. And so, we're still hearing from the Protestant's, right, Mr. McCann? So, who do we have, what's, what's our, where are we going today?

MR. MCCANN: Today we have Dan O'Leary, stormwater management expert will go first. Then we'll have probably five or so short witnesses, maybe six, I think.

ALJ: Okay.

MR. MCCANN: So, we'll move pretty fast. I think we'll be, have no problem getting that all in today.

ALJ: Okay. Who do you want to call first?

MR. MCCANN: Dan O'Leary.

MR. SACHSE: Judge, can I interrupt for a second?

ALJ: Mr. Sachse, sure.

MR. SACHSE: Yeah, yeah. I, I just, I actually have to go, and I was going to turn off my video. I did want to check in to be in as a panelist then I will be, but I'll be gone for about two hours.

ALJ: Well, that's fine.

MR. SACHSE: Okay. I just wanted to --

ALJ: Check back in if you need to but I don't need, then I don't need to call on you for cross.

MR. SACHSE: Not, not till I get back in here and, and say hi again.

ALJ: Okay, got it. I'll keep an eye out for you.

MR. SACHSE: Thanks, I, I appreciate that.

ALJ: Yep, no problem. Okay. I just moved Mr. O'Leary over to the panelist.

MR. MUDD: Judge Murphy? It's Mr. Mudd.

ALJ: Oh, okay, yes.

MR. MUDD: I, I just wanted to know, I, is Mr. McCann resting today? I think that was our anticipation given that we have two, two days --

MR. MCCANN: No, no, we have one or two folks, probably two, that could not be here today so.

MR. MUDD: Judge Murphy, I think when we concluded at the last hearing there was one more witness that couldn't make it in December, which is why we scheduled these hearing dates.

MR. MCCANN: No, I never said that at all. I would never say that. That would be false. I just wouldn't say that because I know that not to be true, so I definitely didn't say that. And even, and even when we scheduled the two days it was, you know, I never said that we'd be done the first day, so.

MR. MUDD: Okay.

ALJ: Okay, well, I'm, yeah, I'm not sure how many more, I mean, he indicated there's probably five or six short witnesses, plus Mr. O'Leary. You know, I don't recall whether you said you were resting. I actually, I think I thought last time that the Protestants were finished but that was my error.

Because then Mr. McCann corrected me and said, no, no, no, people can't be here today. So, you all have probably had conversations that I'm not privy to. So, we'll see how it goes here. So, it doesn't sound like they're going to rest today but we'll see. So, anybody have any hard stops today? Okay, I don't either.

MR. MCCANN: Okay.

ALJ: All right. And so, we'll, we'll have Mr.

O'Leary first. Let's see. Hm. Oh, there he is. Mr. O'Leary, do you have a camera? I unmuted your microphone. Can you hear me?

MR. O'LEARY: Yes.

ALJ: All right. There you are. All right, great. Are we ready, Mr. McCann?

MR. MCCANN: We are, thank you.

ALJ: All right. Would you raise your right hand, please? Do you solemnly swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. O'LEARY: I do.

ALJ: All right. Go ahead, Mr. McCann.

MR. MCCANN: Okay, thank you. Mr. O'Leary, what do you do for a living?

MR. O'LEARY: I'm a civil/water resources engineer.

MR. MCCANN: Okay. Who do you work for?

MR. O'LEARY: ESD Associates in Baltimore.

MR. MCCANN: And what, what does that company do?

MR. O'LEARY: Civil/water resources and electrical engineering.

MR. MCCANN: Okay. For what types of clients do you guys serve?

MR. O'LEARY: Private clients, public clients. We do, some of our clients would be like Maryland Transit

Administration, State Highway Administration, homeowners' associations, it varies.

MR. MCCANN: Okay. So, it sounds like you do work for both developers and on occasion community organizations as well, is that fair?

MR. O'LEARY: Yes, yes.

MR. MCCANN: Okay and are you a principal in that entity?

MR. O'LEARY: Yes.

MR. MCCANN: Okay and how long have you worked with ESD Associates?

MR. O'LEARY: I guess it's eight years.

MR. MCCANN: Okay and what'd you do before that?

MR. O'LEARY: Before that, I was with another firm, MMP Engineering, and I was there for twelve years.

MR. MCCANN: Doing what kind of --

MR. O'LEARY: (inaudible) how far you want me to go back.

MR. MCCANN: What's that, Dan?

MR. O'LEARY: How far do you want me to go back?

MR. MCCANN: Well, just describe briefly what you do, what you did at NMP.

MR. O'LEARY: Largely the same things I'm doing now. It was review of projects for permits, design of project for permits, expert services for clients.

MR. MCCANN: Okay. Did you, did you at one time work for the Maryland Department of the Environment?

MR. O'LEARY: Yes, I did.

MR. MCCANN: And what did you do for them, for that Department?

MR. O'LEARY: I was the sediment and stormwater planner (inaudible). So, I was in charge of reviewing all state and federal projects in Maryland that were required to obtain stormwater management and sediment control permits.

MR. MCCANN: Okay. Over the years, have you had occasion to do work in Baltimore County?

MR. O'LEARY: Yes.

MR. MCCANN: Okay and, in fact, have you been accepted as an expert by the Office of Administrative Hearings on prior occasions?

MR. O'LEARY: I have.

MR. MCCANN: And also, by the Board of Appeals?

MR. O'LEARY: Yes, that's correct.

MR. MCCANN: And what about the Circuit Court for Baltimore County? Have you been accepted as an expert by the Circuit Court as well?

MR. O'LEARY: Yes, I have.

MR. MCCANN: Okay. What, what's your educational background?

MR. O'LEARY: I have a Bachelor of Science in Civil

Engineering from the University of (inaudible) in 1984.

MR. MCCANN: Okay. Are you, are you a licensed engineer?

MR. O'LEARY: I am.

MR. MCCANN: Okay and are you familiar with the Maryland stormwater management design manual?

MR. O'LEARY: Yes.

MR. MCCANN: And what is that manual?

MR. O'LEARY: It's the basis for stormwater management design throughout Maryland. It's the minimum standards for design.

MR. MCCANN: Okay and it applies in Baltimore County?

MR. O'LEARY: Yes.

MR. MCCANN: Okay and were you involved in any way in the drafting of that manual?

MR. O'LEARY: Yes.

MR. MCCANN: What, in what fashion?

MR. O'LEARY: I was on the committee that reviewed the manual and provided feedback to the Center for Watershed Protection, who was writing the manual at the time.

MR. MCCANN: Okay. Your Honor, I, I think you're familiar with Mr. O'Leary. But I, I would move him in as an expert in the stormwater management and the stormwater management requires under the, requirements, I'm sorry, under the design manual and county law.

ALJ: And I now recognize Mr. O'Leary as an expert who's been accepted, yeah, in cases that I've had. So, he was reminding me as he went through it, I can't tell you which case it was, but I know he was accepted as an expert. Was there any voir dire that you needed, Mr. Rosenblatt? I think you've maybe used him as an expert is what I want to say.

MR. ROSENBLATT: I have not but he has, he has appeared with Mr. McCann in cases I'm involved a number of times and been accepted in the areas he's proffered this morning.

ALJ: So, no objection?

MR. ROSENBLATT: No objection.

ALJ: Okay. Mr. Zimmerman?

MR. ZIMMERMAN: Yeah, no objection and no questions.

ALJ: Okay and so he'll be admitted as an expert in Mr. McCann's stormwater management and, in particular, the, the Maryland design manual, as well as the Baltimore County regulations that control stormwater management.

MR. MCCANN: Correct.

ALJ: Okay.

MR. MCCANN: Thank you, Judge. Mr. O'Leary, are you familiar with the development plan that is the subject of this case?

MR. O'LEARY: Yes.

MR. MCCANN: You've been to the site?

MR. O'LEARY: Yes.

MR. MCCANN: Okay and did you review the, the stormwater management submittals made by the Developer to the County in connection with the development plan?

MR. O'LEARY: Some of the, at least the ones I was given, yes.

MR. MCCANN: Okay. Did that include the, the, the Developer's stormwater management report?

MR. O'LEARY: Yes, dated May 2021 and some, and a recent filing, I'm not sure what the date of the recent one was.

MR. MCCANN: Okay, okay. Let me show you an excerpt. Judge, if I could share? Looks like I can. This would be Protestant's Exhibit 51. Okay. You see that, Mr. O'Leary?

MR. O'LEARY: Yes.

MR. MCCANN: Is the, the first page, anyway of the, the May 2021 report that you mentioned just previously?

MR. O'LEARY: That, that's the one that I referred to, yes.

MR. MCCANN: Okay and I'll just scroll down. This is an excerpt, as it's only four pages. But I wanted to go down to the, the conclusion section of this excerpt. Well, first of all, what portion of the, the report is this? Do you know?

MR. O'LEARY: It's the stormwater management narrative.

MR. MCCANN: The narrative? Okay. So, okay. So, the conclusion on page four, and I'll just read a portion of it. In particular the last sentence. The project meets the requirements for both ESD to the MEP and water quantity, 100-year management, through the implementation of four submerged gravel wetlands. Do you see, do you see that?

MR. O'LEARY: I do see that.

MR. MCCANN: Okay. Water quantity, one-hundred-year management, just before I ask about that conclusion, what, what does water quantity refer to in your business?

MR. O'LEARY: It's the requirement to manage after development flow back to pre-development as established by MDE, pre-development land use conditions.

MR. MCCANN: Okay and what, more specifically, are the requirements for quality, I'm sorry, quantity control as they relate to this, this, the subject site?

MR. O'LEARY: So, there are two designed storms that MDE requires this management. The ten-year storm, which is approximately five inches of runoff, I'm sorry, five inches of rainfall. And in this case, the one-hundred-year storm, which is in the MDE manual about seven inches of rainfall. But when you use the latest NOA, that's National Oceanographic Atmospheric Administration, use their latest tables, it's more like eight and a half inches of rainfall.

MR. MCCANN: Okay and when you say in this case a

hundred-year storm event is required, what, what do you mean by that? Is that something (inaudible)?

MR. O'LEARY: In the state stormwater regulations, there's a reference to what they call inter-jurisdictional flood hazard waterways. And those are waterways that may have had waters in one county and discharged in another county or jurisdiction.

So, in this case, the Jones Falls is the watershed wherein the head water areas and it drains into Baltimore City. So, the Jones Falls is considered an inter-jurisdictional flood hazard waterway. And therefore, the hundred-year storm management requirement applies.

MR. MCCANN: So, in other words, does the one hundred year management requirement, one hundred year storm event management requirement, does that apply in all parts of Baltimore County?

MR. O'LEARY: No, not unless the County enacts, so enacted something specific. But in this case, it's a state level requirement because it's the Jones Falls.

MR. MCCANN: Okay. So, getting back to the conclusion that I just read to you, do you agree that, in terms of this, the Developer's stormwater management submittals that the project meets the requirements for water quantity?

MR. O'LEARY: I, I do not.

MR. MCCANN: Okay and why, why do you not agree with

that conclusion?

MR. O'LEARY: Because the analysis wasn't performed following the Maryland stormwater design manual minimum requirements.

MR. MCCANN: Okay. Can you be a little more specific before we move on to the, you know, some subsequent exhibits? Just generally speaking what, what do you mean by that? In what way does it not comply?

MR. O'LEARY: So, the, the manual is specific about what land uses are to be assumed for existing conditions. Especially in the case of agricultural (inaudible) crops. And from the information that I've reviewed, the engineer that designed this used agricultural (inaudible) crops as, as a pre-development land use condition, which is contrary to the requirements of the manual.

MR. MCCANN: Okay. Is there, in, in determining water quantity, or quantity control rather, is there, is, I think you suggested already, is there a comparison made between pre-existing conditions and post-development conditions?

MR. O'LEARY: Well, not pre-existing, but existing conditions in post-development, yes. And the, so the purpose of comparing the rate of discharge after development to the rate, rate of discharge before development and if there's an increase in flow, then you need to manage the post-development flow back to existing levels by using ponds or other means to

reduce the runoff.

MR. MCCANN: Okay and you mentioned these, an, an assumption by the Developer regarding the pre, or existing conditions, correct?

MR. O'LEARY: Well, they, they appear to use what they consider the existing conditions. But the manual is specific about what to use for existing conditions.

MR. MCCANN: Okay, got it. All right. Let me move, let me show you Protestant's Exhibit 50. And this is a two-page document, I'll scroll down. What is this document, Mr. O'Leary?

MR. O'LEARY: This is two pages from chapter two of the Maryland stormwater design manual.

MR. MCCANN: Okay.

MR. O'LEARY: The sections pertain to overbank flood protection, called QP, which is the, related to the ten-year storm. And then, the next page is QF, which is the one-hundred-year storm, extreme flood volumes.

MR. MCCANN: Okay. So, these two pages, both the, the QP and the QF, are, set forth requirements that are applicable to this project, is that correct?

MR. O'LEARY: All projects except those on the Eastern Shore in Maryland, yes.

MR. MCCANN: Okay. So, I'm going to, on the first page of this Exhibit 50, there's some red boxed material. Did

you box that, Mr. O'Leary?

MR. O'LEARY: Yes, I did.

MR. MCCANN: Okay. So, why don't, why don't you explain what this provision says and why it is that you boxed that for our attention.

MR. O'LEARY: Well, the provision says, the standard for characterizing pre-development hydrologic land use for non-forested vegetation areas, and then there's another box that I added, that specifically says including agriculture, shall be meadow in good hydrologic condition.

And the reason for that, and this dates back to when I worked at MDE, there were developers of farmland that would come in and say well, we're going to develop these (inaudible) crops into houses and reduce the amount of runoff because it's a, it's a bit of a bait and switch in the methodology. So, in the storm water design manual, MDE concluded this language to sort of close that loophole.

MR. MCCANN: Okay. These are pre-development conditions, correct?

MR. O'LEARY: Yes.

MR. MCCANN: Okay. Is meadow in good hydro, hydrologic conditions, is that sort of a term of art? Is that one of those conditions?

MR. O'LEARY: (inaudible) specifically referenced in the design manual, the TR-55 manual that is the, you know, it's

also referenced in the MDE design manual. But TR-55 is a, a U.S. Department of Agriculture publication that is the hydrology standard used in Maryland.

MR. MCCANN: Okay. At the beginning of this section it says, when addressing the overbank flood, flooding design criteria, the following represent the minimum basis for design. Do you see that?

MR. O'LEARY: I do.

MR. MCCANN: And what, what does that mean to you in terms of whether or not this pre-development condition is required or not?

MR. O'LEARY: I think it's pretty clear that if, if you have non-forested land use, you're supposed to use meadow for everything, whether it's impervious area, open space, lawns, anything like that. And the reason is to conservatively address quantity control problems that are prevalent in the state.

MR. MCCANN: Okay. So, let's go to the next page, which I think you indicated was the QR, I'm sorry, the QF, or the hundred-year storm event. You have also a red box on this page. Explain what this provision provides for and why you boxed this section.

MR. O'LEARY: So, when the one-hundred-year storm management is required, the bullets at the bottom of that page are the basis for determining the criteria. And the second

bullet, the one in the box, says the same hydrologic and hydrologic methods used for overbank flood control, which is the ten-year storm event, shall be used to analyze QF, which is the extreme flood criteria.

MR. MCCANN: Okay and what does that mean for us lay folks?

MR. O'LEARY: It means all non-forested land use and existing conditions is to be considered meadow in (inaudible) condition.

MR. MCCANN: Okay. For both storm events?

MR. O'LEARY: Yeah, for the ten and one hundred year.

MR. MCCANN: Okay, all right. Anything else you wanted to highlight in these pages before we move on, Dan?

MR. O'LEARY: If you go back up one page.

MR. MCCANN: Yep.

MR. O'LEARY: The first bullet talks about using the models TR-55 and TR-20. Those are the U.S. Department of Agriculture hydrology methodology booklets. And TR-55 is the input. The TR-20 is one output method for, is a computerized method of calculating discharges based on TR-55. So, we'll be really focused on TR-55 when we talk about pre-development land.

MR. MCCANN: Okay, all right. Let me move on to Protestant's Exhibit 53. This is sixteen pages and I'll scroll down so you can see it and then we'll talk about it. Is this

also an excerpt from the Developer's stormwater management report?

MR. O'LEARY: Yes.

MR. MCCANN: Okay and the, the red boxing are yours?

MR. O'LEARY: Yes.

MR. MCCANN: Okay, all right. Let me start on page, page that's numbered anyway, as twenty-three, which is the ninth page of this exhibit, blow it up a little bit. Tell us what this is and why, again, why you've boxed out this material. And it looks like you've added material in red, is that, is that true?

MR. O'LEARY: Yes.

MR. MCCANN: Okay. Why don't you go ahead and explain that?

MR. O'LEARY: So, this is part of the calculations required to develop a pre-development discharge as required in the, in the MDE manual. And the way the TR-55 is assembled, the methodology is based on a runoff curve number, which is a numerical representation of runoff from a, from certain land uses and soil types. The second element is the time of concentration, and I'll get into that, I guess, in a minute. And the third element is the rainfall amount.

So, this page here is focused on the development of the runoff curve number. And the higher the runoff curve number, the higher the amount of runoff.

So, for instance, in this case you'll see a row called paved parking lots, roof, driveways. And the curve number column for that row is ninety-eight because it's a, one hundred would be the most amount of runoff that you could get from a storm, roughly one hundred percent. Whereas on a paved surface, you'd get almost a hundred percent runoff.

And then for like the row crops and the woods, you can see the numbers are much lower because for those land uses you get less runoff for a given storm event.

And in the MDE manual that I referenced a moment ago, it says that for all of the land uses except the woods that are shown at the bottom, designers are supposed to use meadow in good condition.

So, for, if you were to replace all the B soil entries with meadow, they would be assigned a runoff curve number of fifty-eight as shown in the smaller red box to the right.

MR. MCCANN: Okay.

MR. O'LEARY: And for C soils, they would get a seventy-one. And for D soils, a seventy-eight.

MR. MCCANN: Okay.

MR. O'LEARY: That would give you a much lower curve number than when you use row crops, which have higher runoff curve numbers, paved parking lots, which have much higher numbers and in some cases open space grass has higher curve

numbers.

So, what I did in the red box for comparison purposes, was I recalculated the curve number if we were only to change the row crops into meadow. And got a runoff curve number of sixty-three for existing conditions compared to the weighted runoff curve number of seventy-seven that was shown in the stormwater report. And what that does, the sixty-three compared to seventy-seven, sixty-three is going to give you a much lower existing conditions discharge.

MR. MCCANN: And that'll, could affect the delta between pre-existing, or existing and post-development --

MR. O'LEARY: That's correct.

MR. MCCANN: -- (inaudible)? Okay. So, the sixty-three you just mentioned is on the righthand column. These are your calculations in this box over here on the lower right?

MR. O'LEARY: Yes.

MR. MCCANN: Okay and the curve numbers you just mentioned are in this sort of vertical box right here, correct?

MR. O'LEARY: Yes, and I used the same sub-area acreage numbers that the designer provided. I did not recalculate those areas.

MR. MCCANN: So, you assumed that the, the acreage of these sub-areas, all these different sub-areas, was accurate?

MR. O'LEARY: That's correct.

MR. MCCANN: Okay and why did you box just the row

crop? I mean, do you, the three sub-areas for row crops, do you --

MR. O'LEARY: Well, those, the reason I did that is that specifically called out from the design manual, although the design manual does say all non-porous and land use shall be meadow in good condition, this was just demonstrative to show that if you only change the row crops in this case to the meadow land use, you get a significantly lower curve number.

MR. MCCANN: Okay. Are these --

MR. O'LEARY: Notice that the row crops represent the predominance of the land use, that twenty, almost twenty-nine acres.

MR. MCCANN: These numbers right here?

MR. O'LEARY: Yes.

MR. MCCANN: Okay.

MR. O'LEARY: If you add those up, they're almost twenty-nine of the thirty-nine acres total. And then you have another six acres of woods. So, the open space and existing paved parking lots, roofs and driveways don't account for a significant portion of this site.

MR. MCCANN: Okay. But technically speaking, those open space and paved parking lot areas, which amount to I guess roughly three or four acres, those should also be considered meadows in, in good hydro, hydrologic condition?

MR. O'LEARY: That's correct.

MR. MCCANN: Okay and when you say that row crops are called out specifically in the manual, let me just go back to the manual, is that by virtue of the, the phrase including agriculture, is that what you mean by that?

MR. O'LEARY: Yes.

MR. MCCANN: Okay.

ALJ: Which exhibit is that, Mr. McCann?

MR. MCCANN: I'm sorry, this is Exhibit 50, page, page one of fifty.

ALJ: Okay.

MR. MCCANN: So, you, you read the phrase including agriculture to mean row crop, essentially, is that --

MR. O'LEARY: Yes, that's correct.

MR. MCCANN: Okay, okay. Back to fifty-three, and the calculation, just for the record, on the righthand side, it says meadow good, what are all these calculations on the righthand side in red?

MR. O'LEARY: So, the way that, the way that you determine a weighted runoff curve number is you multiply the sub-area and acres times the curve number and you get a product. You sum those products and then divide it by the total area in acres. So, the sum of those products is two thousand four hundred and eighty-seven divided by the 39.47 gives you a weighted runoff curve number of sixty-three for the pre-development conditions.

MR. MCCANN: Okay. Is, in your experience, is the, is the difference between the runoff number of sixty-three and, and seventy-seven, is that significant?

MR. O'LEARY: Yes.

MR. MCCANN: All right. Let's go to --

ALJ: So, can you just finish that thought? Why is it significant? Give me the, the conclusion, or unless you're getting there.

MR. MCCANN: Nope, that's a good question actually.

ALJ: Sixty-three versus seventy-seven, Mr. O'Leary, you said it was significant. Why?

MR. O'LEARY: Because with, with a lower curve number you get less runoff. So, when you, so a hundred, almost a hundred percent runoff comes from parking lots. Seventy, you know, if, if you have a runoff curve number of seventy-seven, you're going to get less runoff than you would with a parking lot. But then with the meadow at sixty-three, you get even less. And in my opinion it's significantly less.

MR. MCCANN: But maybe the, maybe the question is why is it significant in terms of your broader conclusion? How, or if it is and if it is, how?

MR. O'LEARY: Well, I guess we'll, we'll get to that. I, when --

MR. MCCANN: Okay.

MR. O'LEARY: -- we show the results of the

independent study that I did.

MR. MCCANN: Okay, all right. So, let's move to the prior page. So, this is numerical page twenty-two and its excerpt, and it's page eight of the exhibit. Tell us what this shows us, Mr. O'Leary.

MR. O'LEARY: So, as I stated, there are three elements to determining discharge from a property. One is runoff curve number. Second is the time of concentration. And that's defined as the time that it takes a drop of water to travel across the property in question from the most remote point to its study point.

So, in this case, and there are some limitations, and I can go into those if you want. But the different types of flow are shown in the left column. Sheet flow is at the very upper reaches of the sub-watershed. Once you hit the maximum sheet flow length allowed of one hundred feet, then the flow would change from sheet flow to a concentrated flow.

In this case, shallow concentrated was used for two different reaches at two different slopes. And then channel flow with an assumed velocity was the, the last one.

MR. MCCANN: Okay.

MR. O'LEARY: And I used sheet flow associated with dense grass to go with the meadow land use condition as opposed to sheet flow through row crops. So, I got a, a higher, or a longer time of concentration than the designer did. And what

that affects is it affects the shape of the hydro (inaudible). So, if you have a longer time of concentration, the runoff is spread out over a longer period of time, so the peak of that runoff is lower. And then my opinion for existing conditions on an approximately forty-acre sub-watershed that's meadow, you would get a higher time of concentration than .233 hours and I calculated .39 hours.

MR. MCCANN: Okay. You said a lot there. Getting back to this sub-area identifier on the left-hand side. These are, again, these are existing pre-development conditions, correct?

MR. O'LEARY: Yes.

MR. MCCANN: Okay. Did you, do you agree, disagree, did you assume that these flow lengths and slopes were accurate?

MR. O'LEARY: I assumed that the flow lengths and slopes were accurate, yes.

MR. MCCANN: Okay.

MR. O'LEARY: And, and I looked at them on the plan as well (inaudible).

MR. MCCANN: Okay. So, you assumed those are okay?

MR. O'LEARY: Yes.

MR. MCCANN: Okay and then you said you used dense grass for the travel time. Why dense grass? We haven't talked about dense grass yet. What is that? What is that and why did

you use it?

MR. O'LEARY: Dense grass would go with the meadow land use that's required in the runoff for (inaudible).

MR. MCCANN: Okay. As opposed, and what was used by the Developer in, in this, in these calculations per travel time? What --

MR. O'LEARY: That was the row crops land use.

MR. MCCANN: Okay and then how, how did you get your number? I guess your math isn't shown here, but how did you get your .235?

MR. O'LEARY: There's a formula in TR-55.

MR. MCCANN: Okay.

MR. O'LEARY: And it's, it's based on different land uses. And you have the, the roughness of the land use factors into the time that it takes that drop of water to, to traverse a hundred feet of that land use at that (inaudible).

MR. MCCANN: Okay and the manning, this fourth column we have boxed, the .060 number under mannings, what, what is that number? What is --

MR. O'LEARY: That's a roughness coefficient that's assigned based on what the land use is. And that, the higher the manning's n value, the slower the flow would be through the land use. So, if you can imagine a, if it were sheet flow across pavement, it would move very quickly, the manning's n value would be very low. And their travel time in the right

column would be, would be low or short.

MR. MCCANN: Right.

MR. O'LEARY: As the roughness increases, the travel time increases. And what I'm saying in this graphic is that with dense grass the travel time could be much higher than .078 hours.

MR. MCCANN: Okay. Did you assume that the, the roughness or the manning's coefficient was what the Developer has here or did you, do you disagree with that?

MR. O'LEARY: No, I, I used the, the coefficient for dense grass.

MR. MCCANN: Okay. So, you did not use .060?

MR. O'LEARY: No, I did not.

MR. MCCANN: What did you, what was the number that you did use?

MR. O'LEARY: I'd have to look it up.

MR. MCCANN: Okay.

MR. O'LEARY: If you want me to, I can.

MR. MCCANN: If you can do so quickly.

MR. O'LEARY: I'll look in the TR-55 manual.

MR. MCCANN: And while you're doing that, Mr. O'Leary, so these calculations that you came up with, that you have in red here, are these calculations that you did by running your own TR-55 or did you hand do them or how did you come, go about --

MR. O'LEARY: I ran my own TR-55.

MR. MCCANN: Okay.

ALJ: What, what was that last answer?

MR. O'LEARY: I, I ran my own numbers.

ALJ: Ran my own numbers, okay, thanks.

MR. MCCANN: Using, using TR-55?

MR. O'LEARY: Yes.

MR. MCCANN: Which is an industry standard --

MR. O'LEARY: Right. U.S. Department of Agriculture publication.

ALJ: Yeah, Mr. McCann, just try not to testify since he is an expert. I know you're trying to move along and that's, it's not intentional. Just try not to, just ask him questions.

MR. MCCANN: Okay.

MR. O'LEARY: So, the, I'm sorry. Should I keep, keep going or do you need to ask me a question?

MR. MCCANN: The question was, what, what manning coefficient did you use for your TR-55.

MR. O'LEARY: Okay. In, in TR-55, 0.06, which is shown here, represents cultivated soils with residue cover less than twenty percent. So, basically, cultivated cropland. I used 0.24, which represents dense grass.

MR. MCCANN: And again, why, why did you use dense grass instead of the coefficient that you just described?

MR. O'LEARY: Because dense grass goes with the meadow land use that I discussed. The manual requires you to (inaudible).

MR. MCCANN: Okay. Anything else on this page of Exhibit53 before we move on, Mr. O'Leary?

MR. O'LEARY: No, no.

MR. MCCANN: Okay. All right. Let's go to the prior page, which is page twenty-one of the report itself, page seven of the exhibit, you see that?

MR. O'LEARY: Yes.

MR. MCCANN: And what is this?

MR. O'LEARY: This is a summary of the input into TR-55. So, using the same drainage area but assuming meadow, the numbers are in red. So, the designer, using row crops for the time of concentration, .2333 hours, using meadow, I got 0.39 hours.

For the runoff curve number, the designer got a runoff curve number of seventy-seven. Through independent calculation and using meadow, I got a runoff curve number of sixty-three. And again, that was only turning the row crops into meadow. It was not turning the open space or any of the off site land uses into row crop, I mean, sorry, into meadow.

MR. MCCANN: Okay. In terms of time of concentration, which we just spoke about, is the difference between .233 and .39, which you calculated, is that significant

in your opinion?

MR. O'LEARY: So, as I said, that governs the shape of the runoff hydrograph.

MR. MCCANN: Right.

MR. O'LEARY: And the hydrograph is a, is a plot of runoff over time, or runoff versus time. So, this would make the pre-development hydrograph spread out more. So, it's, it, I guess what I'm trying to say is if we only change the time of concentration and left the curve number the same, it would be less significant than both of those changes occurring.

MR. MCCANN: Okay, all right. Let's go to page seventeen of the report, page four of the exhibit. This is entitled, make sure it's the right one. Rainfall depth. I think you indicated that the third criteria is rainfall, is that correct?

MR. O'LEARY: That, that's correct.

MR. MCCANN: Okay. So, tell us --

MR. O'LEARY: -- (inaudible) concentration and rainfall.

MR. MCCANN: Okay. So, tell us what this page shows us.

MR. O'LEARY: In, in the black text.

MR. MCCANN: Yep.

MR. O'LEARY: In the top, or the middle table there, that says two-year, five-year, ten-year, twenty-five year,

etcetera, in that area.

MR. MCCANN: Uh huh.

MR. O'LEARY: Those are the rainfall depths associated with the storms that were input by the Developer. And as you can see underneath that it says storm data source, there's a row that says storm data source.

MR. MCCANN: Right here, yeah.

MR. O'LEARY: And it says user provided custom storm data. So, I'm not sure where the data came from because it was a user provided data. If you look in red down at the bottom, those rows, NOAA Atlas 14 is an acceptable data source. And those are the rainfalls that come from NOAA Atlas 14 in the horizontal row there.

MR. MCCANN: Okay.

MR. O'LEARY: And then there are TR-55 preset rain, rainfall amounts for Baltimore County in the stormwater design manual. And they are a little bit different than what the designer used as well. So, I'm not sure where their numbers came from.

MR. MCCANN: Um hm.

MR. O'LEARY: But in my opinion, they were close enough that I didn't change the numbers. And their numbers and my numbers are essentially the same.

MR. MCCANN: Okay. So, as you, you say here, acceptable in rainfall depth data that was used by the

Developers. Is, was it acceptable, in your opinion?

MR. O'LEARY: Yes. I'm not sure where it came from, but I think it was acceptable, within the acceptable range.

MR. MCCANN: Okay, all right. Let's go back down, I think this is where we want to head next. And this is page twenty. Or page nineteen. Page nineteen, so, page five of the exhibit. What is this, Mr. O'Leary? Including what is the red indicated here?

MR. O'LEARY: This is the summary output from TR-55 that shows your discharges. So, it takes the time of concentration, the runoff curve number and the rainfall amount and through equations in TR-55, it sort of cranks out these numbers for the rate of discharge.

MR. MCCANN: Just so we're clear, what is rate of discharge? What does that mean in --

MR. O'LEARY: That's the ten-year storm flow, the hundred-year storm flow that is regulated by MDE.

MR. MCCANN: But these are, it's in CFS. What, is that cubic feet per second? That's cubic feet per second, yes. So, the runoff is in inches, of course time of concentration is in hours and the TR-55, and, and the rainfall amount is in inches. So, TR-55 takes that information and through methodology divided by, developed by USDA, you come up with a cubic feet per second discharge, or rate of discharge for each of those storm events.

MR. MCCANN: Okay and what did you determine?

MR. O'LEARY: So, I, I put slash lines through the two year and one year because they are not relevant to MDE's requirement for quantity control. We, they're only focused on the ten year and one hundred year.

MR. MCCANN: Okay. So, what this says is using the Developer's input, the sub-areas for existing conditions, they came up with 132.07 cubic feet per second for the ten-year storm and 290.06 cubic feet per second for the one-hundred-year storm.

Boxed in red below were the results from my independent calculation using meadow land use instead of row crops and I had came up with 56.78 cfs for existing and 167.69 for, I'm sorry, 56.78 for the ten year and 167.69 for the one hundred year.

MR. MCCANN: Okay. This is, it's, it's entitled peak flow right above here, do you see that?

MR. O'LEARY: Yes.

MR. MCCANN: Now, is this, are the, the, the flow that you just identified, are those existing conditions, post-development conditions or is that a comparison?

MR. O'LEARY: These are existing conditions. This is a comparison between my independent calculations and the Developer's calculations for existing conditions.

MR. MCCANN: Okay, all right. Before we move to

post-development, is there anything else in these initial pages that we need to review, Mr. O'Leary? Did you pretty much cover everything?

MR. O'LEARY: I think that's all.

MR. MCCANN: Okay. So, let's go down, back down, sorry to move around so much. Page twenty-four of the report. This is page ten of Exhibit 53. And I think this, am I correct, subsequent pages you put together here, this is all post-development calculations?

MR. O'LEARY: That's post-development, yes.

MR. MCCANN: Okay, okay. Beginning with page twenty-four, anything you want to point out here before we move down to your conclusions?

MR. O'LEARY: Well, the, the rainfall amounts are the same as for existing. Of course, that doesn't change.

MR. MCCANN: Okay.

MR. O'LEARY: If you would scroll down a little bit to the runoff (inaudible) number? Next one. I think (inaudible), one more page.

MR. MCCANN: So, this is page, just, twenty-nine.

MR. O'LEARY: Keep scrolling down, I'm sorry.

MR. MCCANN: One more? I'm sorry, okay. Here?

MR. O'LEARY: Yeah, right in here. If you want to maybe zoom out a little so you can see.

MR. MCCANN: Yeah, yeah, I'm sorry. So, this is page

thirty of the report, sixteen of the exhibit.

MR. O'LEARY: Yes.

MR. MCCANN: Okay.

MR. O'LEARY: So, the way the designer calculated the post-development runoff (inaudible) number --

MR. MCCANN: Um hm.

MR. O'LEARY: -- is they separated paved surfaces and open space, which is one way to do it. And they gave them a, excuse me, gave them a runoff curve number, a weighted runoff curve number of eighty. However, in the TR-55 manual --

MR. MCCANN: Um hm.

MR. O'LEARY: -- there is a residential land use quarter acre lots that gives you a slightly higher runoff per number than the developing, the Developer used. So, I think the Developer's post-development runoff curve number might be a little less conservative.

MR. MCCANN: Okay.

MR. O'LEARY: So, I did not, I did not rerun all these numbers for post-development with this curve number, assuming, I mean, how conservative you make your post-development calculations as long as it's accurate is up to the designer. But I think if I were the designer on this, I would have used the more conservative curve numbers for (inaudible) condition.

MR. MCCANN: Okay. Before you move on, let's just

sort of blow it up so we can tell what you were just referring to. You have eighty boxed, curve number eighty boxed here, is that what you are referring to as the Developer's curve number?

MR. O'LEARY: Yeah, that's the Developer's post-development runoff curve number.

MR. MCCANN: Okay and then this table 2-2a, you, you, this is your sort of insert onto this page, is that accurate?

MR. O'LEARY: Yes, it is. And that, that table comes directly from the TR-55 manual.

MR. MCCANN: Okay and then you have underlined and boxed, curve numbers for residential districts down here, right?

MR. O'LEARY: For quarter acre lots. And you'll see those are both higher than the weighted curve number of eighty.

MR. MCCANN: Okay and why did you box eighty-three and eighty-seven, in particular?

MR. O'LEARY: Because those are the, if you scroll up, the Developer used C and D soils.

MR. MCCANN: Okay.

MR. O'LEARY: If you scroll up, you'll see in their calculations they used C and D soils for their post, post-development curve numbers.

MR. MCCANN: Okay.

MR. O'LEARY: So, it's just for comparison.

MR. MCCANN: Okay.

MR. O'LEARY: Again, I didn't rerun these numbers, I'm just pointing out that this is a little less conservative than I would have prepared.

MR. MCCANN: Okay and where should I head next? Up, back up?

MR. O'LEARY: Yes. Now, the time of concentration for post-development, they just put in the minimum, which is .1 hours, and that's acceptable to me.

MR. MCCANN: Okay and then.

MR. O'LEARY: That there is just a summary of their input and output --

MR. MCCANN: That's on page --

MR. O'LEARY: -- (inaudible) their number of eighty.

MR. MCCANN: Okay, yeah. Page twenty-seven of the report, anything you want to point out on this page?

MR. O'LEARY: If you stop here, these are their post-development discharges. I think if you go up one more page, the summary is a little less confusing.

MR. MCCANN: Okay. Page twenty-six of the report, this?

MR. O'LEARY: Yes, yes. So, this shows what the ten, ten year and one-hundred-year outlet discharges are. A hundred and seventy-six for the ten year and is that, your cursor is right on top of it, is that, I think it's my cursor, 370.10 by the proposed, this chart's rate. So, those are the rates that

need to be managed back to existing assuming meadow and good condition.

MR. MCCANN: Okay and did you do in this exhibit, did you do a comparison of your post-development to the Developer's post-development?

MR. O'LEARY: No, I did not. I, as I said, I just wanted to point out that these numbers arguably could be a little bit higher if you wanted to be more conservative in your calculation.

MR. MCCANN: Proposed development, that is?

MR. O'LEARY: That's correct.

MR. MCCANN: Okay.

MR. O'LEARY: So, these are negotiable, but I think the pre-development, because MDE's manual does not say post-development curve number shall be this and this. Post-development runoff curve numbers are what the designer chooses them to be as agreed to by the County. So, I can't really argue that the numbers are wrong. I can argue that my numbers would have been a little higher, maybe more conservative in this case.

MR. MCCANN: Okay.

MR. O'LEARY: For post-development --

MR. MCCANN: So, getting back to the existing, go ahead, I'm sorry.

MR. O'LEARY: I was going to say, the pre-development

is really not negotiable because it's stated in the MDE manual what you're supposed to do. But post-development is more subjective.

MR. MCCANN: Okay and given your testimony about pre-development, what, what conclusions can you draw from the differences between your TR-55 calculations and the Developer's?

MR. O'LEARY: That the, the ponds that are used in this design are not adequately sized and they're too small in their current configuration.

MR. MCCANN: Okay and explain, make that connection for us, if you would? What, how do you reach that conclusion based on the numbers that you found? It may be obvious to you, but it may not be obvious to everybody else.

MR. O'LEARY: So, the post, post-development flows are the flow into the pond. In these pre-development flows, are the rate of flow that's allowed out of the pond. And the pond itself has to be designed to store the difference. So, if the pre-development for the outflow of the pond is lower by sixty percent, as it is in the comparison you see on the screen now.

MR. MCCANN: Yeah.

MR. O'LEARY: Which means your pond is going to have to be much larger to store the difference. So, I don't think the ponds are adequately sized as currently designed.

MR. MCCANN: Okay and when you say the ponds, let's, let's take a moment and go back to the development plan. Bear with me one second. Okay. This is, I'll scroll out. This is Developer's Exhibit 1-B, the green line development plan. Have you seen this plan before, Mr. O'Leary?

MR. O'LEARY: Yes.

MR. MCCANN: Okay and just remind us, if you would, again with reference to Developer's Exhibit 1-B, what stormwater management is proposed and where it is.

MR. O'LEARY: They're proposing, they're proposing three combination submerged gravel wetlands and detention pond.

MR. MCCANN: And tell us where they're located, or point me to where they are.

MR. O'LEARY: There's one on the north, just above the entrance drive at Joppa Road.

MR. MCCANN: Right here?

MR. O'LEARY: Yeah, that's actually one pond.

MR. MCCANN: Okay.

MR. O'LEARY: (inaudible) what appears to be two. And then there's one at lot, zoom in a little so I can see the lot numbers. At lot eight.

MR. MCCANN: Okay.

MR. O'LEARY: Just sought of lot, lot eight.

MR. MCCANN: Okay.

MR. O'LEARY: And then just south of lot eleven. So,

they have three --

MR. MCCANN: Right here?

MR. O'LEARY: -- three ponds. They're for the purpose of meeting water quality requirements and quantity requirements by any waiting discharge.

MR. MCCANN: Okay and your opinion again with respect to the submerged gravel wetland facilities that are shown on the development plan, what is your opinion with respect to those three?

MR. O'LEARY: Well, the, the, the May stormwater management report that I had to review actually included four ponds and the development plan only shows three. So, I'm assuming that the designer made a change at some point after posting the, the May stormwater report and plans with the County that allowed them to eliminate one of the ponds. I haven't had an opportunity to review a revised stormwater report because I was just forwarded excerpts of that this morning.

So, I can't really comment on whether the water quality design is adequate. The quantity design that they forwarded this morning appears like they've met the, they've met the requirements based on their existing condition assumptions of row crops. However, they would not be meeting the requirements of pre-development meadow land use.

MR. MCCANN: Okay. Well, you said a lot there.

First of all, the, the, the documents you received this morning was not a new stormwater management report, correct?

MR. O'LEARY: It, it was different than the May report, the May 2021 report that I reviewed.

MR. MCCANN: Was the May 2021 report that you received and reviewed, was that a full blown, for lack of a better term, a stormwater management report?

MR. O'LEARY: Yes, that was a complete report.

MR. MCCANN: Okay and to your knowledge, has, is, has there been any new, amended, revised, full blown or complete stormwater management report since May of 2021?

MR. O'LEARY: I haven't seen one, a complete report.

MR. MCCANN: You, you said you got documents this morning. Did you ask for a new, any new or amended report? You ask for that?

MR. O'LEARY: Yes, I contacted the County numerous times, and they got back to me at 4:00 p.m. on Friday, this past Friday, saying that there was a more recent submittal, and they would forward it to me. And then I received them actually at 8:00, 8:30 this morning. But it was only excerpts, it wasn't a full report.

MR. MCCANN: Okay. Well, regardless of, did, did it, did the new submittals that you received this morning, does that, did that change your opinion in any way, regardless of the, the four versus three facilities, do they change your

opinion in any way regarding the, the existing pre-development conditions that you spoke about?

MR. O'LEARY: No, because their existing condition for lot curve number in the data that I received this morning is the same and should be the same as it was back in, back in May of 2021 when the previous report was received by the County.

MR. MCCANN: So, again, I, I think I may have asked you, maybe give it another shot, the, the, the development plan that we're looking at right now and the three proposed submerged gravel wetlands, what is your opinion regarding those facilities as it relates to quantity control?

MR. O'LEARY: They're insufficient.

MR. MCCANN: And in what way and to what degree?

MR. O'LEARY: They'll, they'll need to be made larger or an additional pond may be required to manage the flows back to the pre-development meadow land use (inaudible).

MR. MCCANN: Okay. But the first part of that, to, in what way are they insufficient?

MR. O'LEARY: They don't provide enough storage volume because the discharge is, the outflow discharge is, that were provided to me this morning are very close to the designer's pre-development land use condition discharges that I think are calculated incorrectly.

MR. MCCANN: Okay and in terms of, when you say the

facilities have to be larger, can you give us a sense, a, a general sense of to, to what degree the facilities need to be larger?

MR. O'LEARY: Well, that's, that's hard to do without actually doing a, you know, full blown proposed conditions design.

MR. MCCANN: Um hm.

MR. O'LEARY: But the existing condition discharges that I got are about forty percent of the existing conditions discharges that the designer came up with. So, the ponds may have to be thirty to fifty percent larger, if I had to guess.

MR. MCCANN: Okay.

MR. O'LEARY: Again, I can't say that with engineering certainty because it's not a linear, it's not a linear guess.

MR. MCCANN: Right. But to, to a reasonable degree of certainty, given, in, in your profession, are the discrepancies between what's shown on this development plan exhibit, Developer's Exhibit 1-B, and the calculations that you did that we've talked about earlier in terms of pre-development conditions are, are those discrepancies significant?

MR. O'LEARY: From a stormwater management standpoint, I would say yes. The ponds shown on this development plan would have to be considerably larger or there would have to be additional measures to reduce runoff.

MR. MCCANN: Okay. Are you familiar with the, the flood plain onsite and the Developer's efforts in that regard?

MR. O'LEARY: I'm, I, again, this morning I was sent, or I guess that was Friday, I was given a copy of the flood plain report and I read that. So, I, I understand that Joppa Road currently floods for the one hundred year storm and that the designer is claiming that they don't make any change to that with this development.

MR. MCCANN: Okay. What's, what's overtopping?

MR. O'LEARY: It means on the one-hundred-year storm flow, not all the flow can fit in the culvert underneath Joppa Road. It will overtop and run across the road surface for the one-hundred-year storm.

MR. MCCANN: Okay and prior to receiving what you received on Friday, you, had you reviewed prior, previously, other documents relating to the flood plain and the Developer's request for a waiver and, and things of that sort?

MR. O'LEARY: I had just seen some maps and mark, I think they were called mark ups of the flood plain profile that indicated there was overtopping.

MR. MCCANN: Okay. Given, given the overtopping, what, if any, impact does that have on the, the opinions you expressed before about the discrepancies in the TR-55 calculations and the sizing of the facilities? Are those two related in any way in your opinion?

MR. O'LEARY: Well, the, the flood plain report is based on a little bit different hydrology. It's based on ultimate development of existing zoning, land use conditions. So, in theory, the, the two things aren't related. The stormwater management design and the flood plain analysis.

However, as a designer, I would be concerned about being conservative on the design to protect against future liability because you already know there's an overtopping problem at Joppa Road. And if you don't take conservative steps to design the stormwater management it could be argued in the future that you contributed to it.

MR. MCCANN: Okay. Bear with me one second. Okay. Your Honor, I would move Exhibits 51, 50 and 53 into evidence and that's, I have no other questions for Mr. O'Leary.

ALJ: Fifty, fifty-one, fifty-three and fifty-four, right?

MR. MCCANN: Fifty-four being, one second.

ALJ: Report of concept stormwater management. That was the first, no, actually, did you, no, you didn't do fifty-four.

MR. MCCANN: No, I, fifty-two and fifty-four and actually fifty-five, I'll withdraw those. So, again --

ALJ: Okay, withdrawing those.

MR. MCCANN: Yeah, fifty-two, fifty-four and fifty-five are withdrawn.

ALJ: Okay, fifty-four and fifty-five. Just do a new, you know, at some point.

MR. MCCANN: I will.

ALJ: And then, just red, you know, strike it out, as you did on the other one, twenty-seven you withdrew, you can just, you know, write withdrawn, so.

MR. MCCANN: Okay, will do.

ALJ: Okay. Any objection, Mr. Rosenblatt?

MR. ROSENBLATT: No objection.

ALJ: Okay. Mr. Zimmerman?

MR. ZIMMERMAN: No, no objection.

ALJ: And Mr. Zimmerman, you're not going to have questions about this, right? Because this doesn't apply to the, right?

MR. ZIMMERMAN: Actually, there is, there are master plan provisions on stormwater management, so actually I do have a few questions and I'm in the case and --

ALJ: Okay, I stand corrected.

MR. ZIMMERMAN: The, page one fifty-six to, and one fifty-eight of the master plan, but in any event, I'm in the case. I do have a few questions.

ALJ: Okay.

MR. ZIMMERMAN: I don't expect it to be extended.

ALJ: All right. No, I, you, I stand corrected. I was not thinking stormwater management was your issue so --

MR. ZIMMERMAN: Well, I, I wouldn't say it's my highest priority, but I just would like to get a few points of clarification with Mr. O'Leary.

ALJ: Sure.

MR. ZIMMERMAN: If, if I may.

ALJ: Go ahead, yep.

MR. ZIMMERMAN: Okay, thank you. So, Mr. O'Leary, first of all, you and I have never spoken about this case have we?

MR. O'LEARY: No, we have not.

MR. ZIMMERMAN: You have no idea what I'm going to ask you, do you?

MR. O'LEARY: I do not.

MR. ZIMMERMAN: Okay. Do you happen to know whether the master plan 2020 does have some pages on stormwater management?

MR. O'LEARY: I'm not aware of that.

MR. ZIMMERMAN: Okay. So, you may want to check pages one fifty-six and one fifty-eight. All right. So, if I understood your testimony generally, your view is that the report of the Developer understates pre-development conditions based on the incorrect use of row crop versus meadow and overstates, where is it, overstates post-development, or understates based on the question of conservative eighty versus eighty-seven. Can you, can you just summarize what's

understated, what's overstated conceptually?

MR. O'LEARY: Sure, I, I, I'll back you up a little bit. I think that pre-development discharge is overstated and then --

MR. ZIMMERMAN: Yeah.

MR. O'LEARY: -- post-development is understated.

MR. ZIMMERMAN: Okay, all right. That's what I thought. Could we go, just go back for a moment to the page, I think it was page twenty-three, where you were showing the row crop versus meadow numbers in red line?

ALJ: You don't have those exhibits, Mr. Zimmerman?

MR. ZIMMERMAN: I don't have it. Mr. McCann, is it fifty-three, Protestant's fifty-three or fifty-two? Page twenty-three? That was the one where you had, had the calculations and then your --

MR. MCCANN: Yeah.

MR. ZIMMERMAN: -- comparison.

MR. MCCANN: Which page?

MR. ZIMMERMAN: Yeah, the, the one that showed the row crop versus meadow. It had the seventy-seven versus sixty-three. Yes. Okay.

ALJ: Explain one more time for the record. Which exhibit was this?

MR. MCCANN: This is Exhibit 53 that I just pulled up.

ALJ: Fifty-three, right. Thanks.

MR. ZIMMERMAN: All right. Is that in or, that's not withdrawn, is it?

ALJ: No, no, no. This is in, I just --

MR. ZIMMERMAN: Okay.

ALJ: -- needed to know the number, that's all.

MR. ZIMMERMAN: Okay. I guess what I, I just, I'm just curious if you, if you ran the row crop for the rest of them, the open space, the paved parking lot and so on, I mean, is that normally required or not? In other words, should, does the row crop have to be used for all these other elements?

MR. O'LEARY: So, all non-forested land uses on the property in question are assumed to be meadow in good condition.

MR. ZIMMERMAN: Okay.

MR. O'LEARY: If it's off-site drainage area, you use what are the existing conditions. I know that this site is primarily row crop so that I only, I, I didn't go back and measure all of these open spaces and paved parking lots, etcetera, to determine whether they were onsite or offsite. But I know there's no row crops off site. So, I just used, I just changed row crops to meadow for comparison purposes.

MR. ZIMMERMAN: Okay. You have no idea how much of the open space and parking lot is onsite or offsite?

MR. O'LEARY: That's correct.

MR. ZIMMERMAN: Do you have any reasonable estimate as to what the numbers would look like if you used row crop for, excuse me, if you used meadow for a, a, a reasonable estimate for, for part of that, those other elements of open space and parking lots?

MR. O'LEARY: Well, as I, as I stated earlier, the row crop represents about twenty-nine acres of the total of thirty-nine. And then, if you look at the woods land uses below that's about another six or seven, six acres. So, between row crop and woods, you're at close to thirty, I don't know, thirty-four acres or something like that.

MR. ZIMMERMAN: Okay.

MR. O'LEARY: So, the rest of it is relatively inconsequential because they're small amounts.

MR. ZIMMERMAN: All right. They wouldn't apply to woods anyway, right?

MR. O'LEARY: That's correct.

MR. ZIMMERMAN: Okay. So, you're, you, you're dealing with another five acres or so, which might affect your number to some extent.

MR. O'LEARY: That's correct. But I wouldn't expect it to be significant.

MR. ZIMMERMAN: But your number is actually conservative, is it not? In terms of, it's not going to get any better?

MR. O'LEARY: My number, the numbers I --
MR. ZIMMERMAN: Yeah.
MR. O'LEARY: -- used, in my opinion, are mandatory.
MR. ZIMMERMAN: Right.
MR. O'LEARY: Not, not --
MR. ZIMMERMAN: And then you indicated --
MR. O'LEARY: -- (inaudible) up to MDE.
MR. ZIMMERMAN: Okay and then you indicated your post-development discussion, that's quote unquote, negotiable, is that correct?
MR. O'LEARY: To some extent it is, correct. The County has to agree with it (inaudible) --
MR. ZIMMERMAN: Yeah. Where do you get the idea that it's negotiable?
MR. O'LEARY: It's not prescribed in the stormwater design manual like this is.
MR. ZIMMERMAN: Okay. But you did use, you did indicate what you thought were the best, the best numbers to use and they differed from the numbers used by the Developer's consultant.
MR. O'LEARY: I simply said that there's a more conservative way to do it.
MR. ZIMMERMAN: Okay.
MR. O'LEARY: That would have been my choice under the circumstances of the known existing flooding.

MR. ZIMMERMAN: Okay. When it comes to row crop versus meadow, is there any provision in the manual that allows a Developer to ask for a variance, an exception, a waiver, you know, any deviation to, to give them a, some relief from going along with the meadow?

MR. O'LEARY: There's, there's not in the manual.

MR. ZIMMERMAN: Okay. Now just a couple more questions. Did, do you often have interaction with County staff on stormwater management issues?

MR. O'LEARY: I, I wouldn't say often, I would say occasional.

MR. ZIMMERMAN: And who would be the main person that you deal with on stormwater management, either generally or in this particular case?

MR. O'LEARY: In this case, I reached out to (inaudible), and I actually spoke with Ella Kaplan and Ella is the one who e-mailed me this morning the updates.

MR. ZIMMERMAN: So, has it, did it happen in your interaction that there was any mention of this discrepancy between the row crop and the, the meadow elements in the, in the report?

MR. O'LEARY: I had a brief discussion with Ella on Friday, where I asked about the use of a, use of a meadow land use.

MR. ZIMMERMAN: And what was the outcome of that?

MR. O'LEARY: She said sometimes they require it, sometimes they don't.

MR. ZIMMERMAN: Well, what would be the basis for not requiring it? Did she explain?

MR. O'LEARY: No.

MR. ZIMMERMAN: As far as you know, is there any documentary basis in the manual for not requiring it?

MR. O'LEARY: No.

MR. ZIMMERMAN: Is, is there any, did it, has the County, to the best of your knowledge, has the County staff written anything one way or the other to address this subject?

MR. O'LEARY: To my knowledge, no.

MR. ZIMMERMAN: With reference to the usage of row crop vers, and not using meadow, as you've described, assuming that you're correct, if we assume that you're correct, what is the possible explanation for this kind of basic mistake?

MR. ROSENBLATT: Objection.

ALJ: Over, overruled. I mean, in, in his experience, if he, if he's seen this before, is there a possible explanation for the use of row crop?

MR. O'LEARY: Could be unfamiliarity with the manual requirements.

MR. ZIMMERMAN: So, so, and this is my last question. So, to the best of your knowledge there's, there's no conceivable counterargument or rationalization or explanation

for using row crop versus meadow.

MR. ROSENBLATT: Same objection.

ALJ: Overrule. You can handle it on cross.

MR. O'LEARY: I think it's pretty black and white in the manual.

MR. ZIMMERMAN: All right. Thank, Judge, thank you. That's all I had. I tried to keep it relatively short.

ALJ: Thank you. Mr. Wyatt, do you have any questions?

MR. WYATT: Good morning, Your Honor. No, I do not have any questions. Thank you.

ALJ: Okay, all right. And for the record, Mr. Sachse is not back yet. I don't see him. So, Mr. Rosenblatt?

MR. ROSENBLATT: Judge, can we please take a short break and then --

ALJ: Sure.

MR. ROSENBLATT: -- come back with questions?

ALJ: Sure. Five minutes, is that good, or ten? Ten?

MR. ROSENBLATT: (inaudible), thank you.

ALJ: You need what, twenty?

MR. ROSENBLATT: No, ten would be great, thank you.

ALJ: Ten, all right, ten minutes. I'm going to pause the record.

MR. ZIMMERMAN: Eleven thirty? Yeah.

(PAUSE)

ALJ: Okay. Mr. Rosenblatt, cross?

MR. ROSENBLATT: Thank you, Judge Murphy. Good morning, Mr. O'Leary. I think you may be muted, I didn't hear your answer. Yep.

MR. O'LEARY: Good morning, sir. Sorry about that.

MR. ROSENBLATT: All right, there we go. So, Mr. O'Leary, I, I was thinking the last time that these same parties appeared together, and did you testify in the Red Maple case for Mr. McCann's clients?

MR. O'LEARY: Yes.

MR. ROSENBLATT: Okay and that was Mr. Mudd and I, Mr. McCann, Judge Murphy and, and you were a witness for Mr. McCann in that case, right?

MR. O'LEARY: Yes.

MR. ROSENBLATT: And, and like this case, in that case you pointed to the MDE manual, that there was some provision that mandated certain types of devices be used and disagreed with the design proposed by the developer, right?

MR. O'LEARY: That was a little more subjective, but yes.

MR. ROSENBLATT: Okay. But the, the result was not in, in alignment with your opinion in that case, right? The case was not designed for stormwater management failures?

MR. MCCANN: Objection. Relevance.

ALJ: Overruled. It's cross.

MR. O'LEARY: I'm not sure I understand your question.

MR. ROSENBLATT: Did your opinion in that case get accepted? In other words, was the development plan designed because of your opinion about the devices you used?

MR. O'LEARY: That had to do with the definition of maximum extent practicable. And I have a different opinion than the County on that matter. So, yes, I think you're correct.

MR. ROSENBLATT: So, the, the ultimate result was not in alignment with your opinion, right?

MR. O'LEARY: That's my understanding, yes.

MR. ROSENBLATT: Okay.

MR. MCCANN: Well, objection. It's on appeal. To be fair, Your Honor. This is why Mr. Rosenblatt always objects when I bring up any other case. I, I understand this is cross, but if we're going to ask him questions about another case, let's be fair about what we're asking. This, that case is on appeal. So, to say it's done with, and it's being developed as we speak, or to suggest that, I think is --

ALJ: Okay. But you'll, but you're going to have re-direct, so. Yeah, overruled.

MR. ROSENBLATT: Mr. O'Leary, you were pretty honest this morning. You reviewed a series of documents, you said,

that you reviewed what was presented to you, right?

MR. O'LEARY: That's correct.

MR. ROSENBLATT: And you just, I guess, Friday or this morning were given some more recent documents from the exhibits, the, the documents you made exhibits this morning, right?

MR. O'LEARY: The documents I received this morning were not exhibits.

MR. ROSENBLATT: You did not choose to make them exhibits in the case today?

MR. O'LEARY: I don't think time allowed.

MR. ROSENBLATT: Okay. The, the report that you did testify to is nearly two years ago, right? It's from May 2021?

MR. O'LEARY: Yes.

MR. ROSENBLATT: And over the last two years is, was your first involvement in dealing with the County and its reviewers with the case, is that just in the last week or so asking for more documents?

MR. O'LEARY: No, I've been asking for more documents since November --

MR. ROSENBLATT: Okay.

MR. O'LEARY: -- when I was first asked to look into this.

MR. ROSENBLATT: And you're saying just Friday or, or this morning you were presented with those documents?

MR. O'LEARY: That's correct. And only part of them.

MR. ROSENBLATT: Only part of them, is that what you said?

MR. O'LEARY: Only part of the documents, yeah. I didn't get a complete report, I just got a couple pages of calculation.

MR. ROSENBLATT: Okay and because of that, your opinion today is based on the numbers presented in that 2021 report, right?

MR. O'LEARY: And a brief comparison of those numbers to the ones I was given this morning, yes.

MR. ROSENBLATT: Okay and have you, I, I couldn't tell whether you said, did you speak to the actual reviewer of the stormwater management plan in this case or just to Kritty Udhin, who is the supervisor of stormwater management?

MR. O'LEARY: I, I had reached out to Kritty, and he never responded. And then two weeks ago he told me he was going to have someone else respond to me, a woman by the name of Ella. I contacted her early last week when I found out about her response to me. And she responded to me on Friday afternoon.

MR. ROSENBLATT: Okay. Did you have any in depth discussions with the reviewer about the type of design here or did you just ask for documents?

MR. O'LEARY: I asked for documents, and I asked her

in general about the, about the use of meadow land use in existing condition.

MR. MCCANN: Okay and what, what was the response on that issue?

MR. O'LEARY: I, I already answered that today but I, she said sometimes we require it, sometimes we don't.

MR. ROSENBLATT: Okay and are you aware of any conversations between, or documents sent back and forth between the, the developer's engineer and the stormwater management reviewers, other than the documents you spoke about that you received this morning?

MR. O'LEARY: I saw some County comments but no other stormwater related documents, except the comments on stormwater.

MR. ROSENBLATT: Okay. With respect to the documents, you did testify to this morning, I'm going to share my screen so Protestant's Exhibit 53. There's a report cover page. Then it jumps to page fifteen, sixteen, seventeen, then nineteen, twenty, twenty-one, twenty-two, twenty-three, twenty-four, twenty-five, twenty-six, twenty-seven, twenty-eight, twenty-nine, thirty.

So, is there a reason that the first fourteen pages are not included and that there's another page or two missing? Were they just not helpful to your analysis or did you receive a complete copy to review?

MR. O'LEARY: I received a complete copy. I think we, there's a separate exhibit that had the narrative, which was the first few pages because Mr. McCann and myself went over that this morning in this hearing. And then we tried to focus the exhibit on what I was going to testify about, and that's why there are certain pages missing.

MR. ROSENBLATT: Okay. So, you, you did review the whole document, these are just the pages admitted, or just the pages you wanted to testify to?

MR. O'LEARY: Yeah, the document itself was, I don't know, maybe a hundred pages long. So, we pared it down to what I was going to talk about.

MR. ROSENBLATT: Okay. So, and you combined, so, Exhibit 51, excuse me, is the table of contents and then page one and page two, so then pages three through, three through fourteen were just things that weren't important for your testimony, so you just selected these pages as an exhibit?

MR. O'LEARY: Well, there was actually more we were going to talk about until I get the report this morning because the report that I reviewed had four ponds on it and the current development plan only showed three. So, that was something that we were going to talk about, but decided this morning when I received the new calculations, that there were only three ponds in the calculations and three on the development plan. So, that removed part of the expected testimony.

MR. ROSENBLATT: Okay, understood. And changes like that over time will, you're, you're familiar with the development process in Baltimore County, right?

MR. O'LEARY: Yes.

MR. ROSENBLATT: And what's required at the development plan approval stage of the process, is not final stormwater management approval but concept storm, stormwater management approval, right?

MR. O'LEARY: That's correct.

MR. ROSENBLATT: And do you believe that the Developer has received that from Baltimore County in this case?

MR. O'LEARY: That's my understanding they have received concept approval.

MR. ROSENBLATT: Okay and that is all that is required by the Baltimore County Code for a development plan to be approved and the final design comes later in the process, right?

MR. MCCANN: Objection, objection. It's a compound question. Certainly, the first part is highly objectionable. It's a legal question, whether or not approval of a concept plan is all that's required under the regulations.

ALJ: Mr. Rosenblatt, could you just break it down. We'll just do the first part, do the development regulations require just the concept stormwater management plan first and then go to the second one. So, overruled.

MR. ROSENBLATT: Okay. Could you answer the, that Judge's question or do you need me to rephrase it, Mr. O'Leary?

MR. O'LEARY: Please, please rephrase.

MR. ROSENBLATT: Sure. So, through the development plan stage, the concept stormwater management approval is what is required by the Baltimore County Code, right?

MR. O'LEARY: That's correct.

MR. MCCANN: Objection.

ALJ: Overruled. Go ahead, sir, what did you say? What was your answer?

MR. O'LEARY: I understand that to be correct.

ALJ: Okay.

MR. ROSENBLATT: Okay and then after the development plan stage, the County reviewers continue to review a stormwater management plan until a final stormwater management plan is approved, right?

MR. O'LEARY: That's my understanding, yes.

MR. ROSENBLATT: And you, I mean, you, you have, have you proposed stormwater management for projects in Baltimore County?

MR. O'LEARY: I haven't worked on a design project in Baltimore County for a few years, but that's my understanding of the process.

MR. ROSENBLATT: Okay. Have you ever worked on a project that was a former existing farm and designed stormwater

management for a property like that?

MR. O'LEARY: I don't recall.

MR. ROSENBLATT: Okay and just back to the, the County development process, so, and you've been a reviewer for MDE, is that right?

MR. O'LEARY: Yes.

MR. ROSENBLATT: And you, in your experience, let's just start with MDE review, there's more than one reviewer for MDE stormwater management, right?

MR. O'LEARY: Yes.

MR. ROSENBLATT: And in, in your experience, you as a reviewer could have one opinion about a design and one of your colleagues, a different reviewer, could have another opinion, right?

MR. O'LEARY: To some extent, yes.

MR. ROSENBLATT: There's some subjectivity in review and approval of, of engineered stormwater management plans, right?

MR. O'LEARY: Some, yes.

MR. ROSENBLATT: And in, in the sake of Baltimore County, it's the same, right? There's multiple reviewers. One reviewer could be in favor of a certain design and one reviewer could not, right?

MR. O'LEARY: I suppose.

MR. ROSENBLATT: And ultimately, Baltimore County is

the entity that approves the stormwater management plan for a project like this, right?

MR. O'LEARY: Under the delegation from MDE, that's correct.

MR. ROSENBLATT: Right. So, what you think as an engineer for the people you're representing or what the Developer's engineer thinks is appropriate, that's well and good. But Baltimore County has the ultimate decision, they decide whether the plan is appropriate and should be approved, right?

MR. MCCANN: Objection, objection. That's a legal question and it's, you, you have the ultimate authority, Your Honor, the regs provide the, so objection.

ALJ: All right.

MR. MCCANN: It's a legal, it's a legal question and it's, it's, it's, lacks foundation. It's just not simply, it's not true.

MR. ZIMMERMAN: Yeah, I concur with the objection --

ALJ: Mr. Zimmerman, what? What?

MR. ZIMMERMAN: I was just concurring with the objection, that's all.

ALJ: Oh, okay, all right. Well, overruled.

MR. ROSENBLATT: You can answer.

MR. O'LEARY: So, the, the basis of the requirements is the manual, the minimum requirements statewide. And so,

yes, I think there's some latitude when it comes to, like we discussed proposed conditions that are not specifically prescribed in the manual. But anything that's contrary to what's prescribed in the manual would be incorrect.

MR. ROSENBLATT: Okay and for this case, I'm going to share an exhibit. So, this was Protestant's Exhibit 50 and the boxed, the boxed phrase on the first page of Protestant's Exhibit 50 where it says including agriculture. This is the sentence on which you base your theory that the pre-development condition must be meadow in good hydrologic condition, right?

MR. O'LEARY: Yes.

MR. ROSENBLATT: And this one sentence, this is, this is the only phrase that you, you have based that opinion on, right?

MR. O'LEARY: That and my experience working on the manual and my experience as a plan reviewer, yes.

MR. ROSENBLATT: But, in other words, this, this phrase on page 2.12, this is the, the area of the, of the MDE manual that you believes mandates that all pre-existing conditions should be meadow in good hydrologic condition. There's not another sentence or another section pointing that out, this is the section?

MR. O'LEARY: That's correct.

MR. ROSENBLATT: Okay. Court's indulgence. Okay. I don't have any further questions. Thank you.

ALJ: Mr. McCann, re-direct?

MR. MCCANN: I do. Mr. O'Leary, less there be any doubt about what you have and have not reviewed in this case, is it, is it true or not that I sent you a substantial amount of documents relating to stormwater management and the flood plain issue in August of 2022? Does that sound about right to you?

MR. O'LEARY: Yes, that's correct.

MR. MCCANN: And is it also fair that you and I have discussed my efforts over the past couple months to get all of the documents from the County, including the stormwater management section? We've had those --

MR. ROSENBLATT: Objection.

MR. MCCANN: -- we've had those conversations, have we not?

MR. ROSENBLATT: Objection.

ALJ: Mr. Rosenblatt, you have an objection?

MR. ROSENBLATT: Yes, it's, it's leading, it's his witness. And he's, he's leading, he's basically testifying to what he wants --

ALJ: Yeah, you have to just, it is re-direct, but you do have to, you have to just tone down the testifying and so if you could ask that in the form of a question, please? Sustained.

MR. MCCANN: Have you and I talked about my efforts

to obtain documents from the stormwater management section in Baltimore County?

MR. O'LEARY: Yes.

MR. MCCANN: Okay and you yourself, it sounds like you've had your own communications with the County to try to get the documents?

MR. O'LEARY: Yes.

MR. MCCANN: Okay. Now, you, the, the documents you received this morning, I'm going to show them again, lest there be any doubt about what you have and have not seen. This would be Protestant's Exhibit 56. Is that, is that what you received this morning? A five-page report on Kimley Horn's letterhead?

MR. O'LEARY: That is correct.

MR. MCCANN: Okay. Dated November 2021, correct?

MR. O'LEARY: Yes.

MR. MCCANN: Okay and then Protestant's Exhibit 57 is a fifty-page document that you also received this morning, correct?

MR. O'LEARY: Yes.

MR. MCCANN: Okay and I, I think you've testified but I'll ask you again. Did either of these documents have anything to do or change your opinion in any way regarding the Developer's calculations of pre-development conditions?

MR. O'LEARY: No.

MR. MCCANN: And I think you suggested that when you

received these, that these were partial in some, in some way. And I, I wanted to ask you about that. Did, when, when you received these documents, what was your, what was your request of the --

MR. O'LEARY: For a complete stormwater management report.

MR. MCCANN: Okay.

MR. O'LEARY: If there had been any report updates.

MR. MCCANN: All right. So, as far as you understood this is, in addition to everything else I've sent you, this is the universe of documents that the County has on stormwater management issue?

MR. O'LEARY: That's my understanding.

MR. MCCANN: When they were sent to you this morning, was, was it indicated in any way that the documents were not, were partial or incomplete?

MR. O'LEARY: It wasn't indicated, but there are, I mean, the original report was like, I don't know, ninety-six pages and this is only a handful of pages. So, it's not a complete report. I don't know if there are complete calculations because I don't have the full context of the report.

MR. MCCANN: Right. But why are you assuming that it's part of a larger report? I, I guess that's my question.

MR. O'LEARY: Well, these, these hydro flow output

pages, like we see right now, --

MR. MCCANN: Yep.

MR. O'LEARY: Are in the report that I reviewed. I assume these are different. And this one only shows three of the submerged gravel wetlands, when the one I reviewed showed four.

MR. MCCANN: Okay. So, these two documents, which we've marked as Protestant's Exhibit 56 and 57, that you received this morning, are, are different in that respect from what you reviewed earlier. That is, there are now three facilities rather than four?

MR. O'LEARY: Yes.

MR. MCCANN: And does that, again, does that change your opinion in any way that you've expressed this morning?

MR. O'LEARY: No, it just tells me the stormwater concept that was approved by the County was approved prematurely because of a, removal of a stormwater facility is a substantial departure from the concept which --

MR. MCCANN: Okay.

MR. O'LEARY: -- should maybe be withdrawn or it should be required to restart the process.

MR. MCCANN: Okay. Mr. Rosenblatt was asking you about subjectivity. Is there, in your opinion, is there any subjectivity to your testimony this morning?

MR. O'LEARY: Not to the part about what's written in

the design manual. It's very prescriptive.

MR. MCCANN: And then, with respect to the stormwater management report itself, this is the complete report, I don't want to make that as an exhibit. But it's ninety-six pages. Is there anything in here that you did not include in your excerpts that we marked as exhibits, that relate to your opinions or change your opinions in any way that you've expressed this morning?

MR. O'LEARY: So, I, I noted the discrepancy between this report and the redline development plan. And that this report talked about four stormwater management facilities. The redline development plan only had three. So, I didn't spend a lot of time going through every calculation in this report because I knew there were differences that weren't accounted for.

I did, however, spend time going through the model input to make sure it conformed to the MDE requirements and that's when I became aware that they weren't using the correct pre-development land use condition.

MR. MCCANN: Okay. Thank you, Mr. O'Leary. No other questions.

ALJ: Mr. McCann, are you admitting fifty-six and fifty-seven?

MR. MCCANN: Yes, I am. Yes, I, I, I want to --

ALJ: Fifty-six you identified as a five-page

document from Kimley Horn dated November 2021. Fifty-seven was a fifty-page document but I'm not sure what it was.

MR. MCCANN: I believe it's also dated 11/10/2021, Your Honor. It has that date on a number of the pages. And I'm not sure, I guess maybe I could ask Mr. O'Leary what we would call this Exhibit 57, if that helps.

ALJ: Yeah, I just don't know how to identify it. All I have is fifty-page document.

MR. MCCANN: Yeah. Mr. O'Leary, what would you call this Exhibit 57?

MR. O'LEARY: The hydrology model.

MR. MCCANN: Okay.

ALJ: Okay. Hydrology model report. Mr. Rosenblatt, any objections?

MR. ROSENBLATT: No, but could you please send them to me? I understand that admitting them came up on the fly, but if you could just e-mail them to me so I have them.

MR. MCCANN: I will.

ALJ: All right. Mr. Zimmerman, no objection?

MR. ZIMMERMAN: No, no objection, yeah.

ALJ: All right. They're admitted. All right. So, are we finished, we're finished with Mr. O'Leary?

MR. MCCANN: Yes.

ALJ: All right. Who do we have next?

MR. MCCANN: We have Beth Miller, Your Honor, who I

believe is ready and available. Hopefully she is.

ALJ: (inaudible) going slow here, let's see. If she's in, she's not a panelist. All right, let's see. I think she may be in the attendee's room, and I'll move her over.

MR. MCCANN: Yeah, there she is. I see her.

ALJ: Let me just get down here to the, ten attendees today. Let's see, Ms. Miller. Okay, make you a panelist. Okay. You can unmute yourself and put your screen on, please. Oh, there you are. Do you have a microphone on?

MS. MILLER: Yes, just turned it on.

ALJ: Okay. Would you raise your right hand, please? Do you swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MS. MILLER: Yes, I do.

MR. MCCANN: Okay. Thank you, Judge. Ms. Miller, can you hear me?

MS. MILLER: Yes.

MR. MCCANN: Okay. I think the Judge is familiar with you but tell, tell us what you do.

ALJ: Actually, I am, that's right, here's another person that's testified before. Is she going to be an expert? Sometimes she testifies as an expert and sometimes she testifies as a, you know, in her own capacity.

MR. MCCANN: Yeah, I don't think she's going to, I

don't think it qualifies as expert testimony. I think she's going to, I will ask a little bit about her background, but I don't think she --

ALJ: That's fine. Yeah, okay, (inaudible).

MR. MCCANN: Go ahead, Ms. Miller. What do you do?

MS. MILLER: Okay. So, I am a registered architect in the State of Maryland. I work for an all-volunteer organization called the Green Towson Alliance. And we advocate for, we're, we're an alliance of community members that advocate for protection of air and water quality, preserving open spaces, mitigating the causes of climate change and educating the public about environmental issues. And we advocate for the protection and effective application of Baltimore County's environmental regulations and adequate public facilities.

MR. MCCANN: Okay and what projects, well, before I ask you that, what, do you have any leadership position with GTA, Green Towson Alliance?

MS. MILLER: Yes, I'm on the executive committee.

MR. MCCANN: Okay and what projects have you worked on that we might be familiar with in, in this area, Towson and thereabouts?

MS. MILLER: Yeah, so one of my roles is, is to monitor development projects and I have been involved in Towson Station, Towson Row, Avalon Bay, the 706 Washington Avenue

dorms, I think they were named studios at one point. The Red Maple Place project, Villas at Woodbrook and most recently, 502 to 506 Baltimore Avenue, the, got a very strange name, WHRLLC Holdings, or something like that. That's the ones that I can remember.

MR. MCCANN: Okay. So, it sounds like you're familiar with the development review process in Baltimore County?

MS. MILLER: Yes.

MR. MCCANN: And more specifically, are, are you familiar with the ways in which someone in your position could, as you put it, keep track of ongoing proposed and approved projects in Baltimore County?

MS. MILLER: Yeah, we are, about two years ago, we started the process of getting listed as an association with the Development Review, the Development Review process, so we are supposed to be notified about all development in our geographic area that we consider part of our group. It's hit and miss. But I am also a delegate to the, in terms of hit and miss, I mean, in terms of us actually being notified, we've had, run into some problems with that.

But I'm also a member, I'm a delegate for the Towson's Community Alliance organization, which is a group of community associations, like an umbrella group, and they are also listed. So, sometimes if I don't get notified through

the, the Permits, Application and Inspection process for review, I will find out about it through TCA. Or just by listening to news articles and other, you know, media that's available that is talking about new projects.

MR. MCCANN: Okay and whether you receive notice from the County or not, if there is a miss, as you put it, you're familiar with the sources of information that the County has available to the public to determine information about projects and the status of projects as they go through the process, is that correct?

MS. MILLER: Yeah, yeah. There's a, there's a number of different search devices. There's a development review search on the Baltimore County website. There's a My Neighborhood site that connects us. Tax records. There's a, there's also a My Neighborhood device where it connects us permit information.

MR. MCCANN: Okay and do you know physically where to go if you were to go to the, the County's offices to investigate?

MS. MILLER: Yeah.

MR. MCCANN: Yeah.

MS. MILLER: Yeah, there's, there's a, one building on, I have to think about which street, Ches, there's two buildings on Chesapeake Avenue, one that has the majority of the plan review offices. And then there's a second one that

has the Department of Planning offices.

MR. MCCANN: Okay and you've testified, have you testified before, other than before Judge Murphy, have you testified in other cases before the Office of Administrative Hearings?

MS. MILLER: Yes, a couple other ones, yeah.

MR. MCCANN: Okay. Have you testified, or participated, in DRC meetings?

MS. MILLER: Yes.

MR. MCCANN: Planning Board meetings?

MR. MUDD: Objection.

ALJ: What's the objection?

MR. MUDD: This has been going on for a little bit, but he's, he's again, he's testifying here. He should ask her what she's done.

ALJ: Okay, correct. That's true, Mr., and he's trying to go through it fast. Mr. McCann, if you could just --

MR. MUDD: I understand.

ALJ: Yeah, if you could just, he doesn't, we don't have a resume here --

MR. MCCANN: I don't know how to ask her if she's attended a Planning Board meeting unless I ask her have you attended a Planning Board meeting.

MR. MUDD: I think you can ask her what she's, what, what she has done to pull the information together. I mean,

that's pretty simple, Michael.

MR. MCCANN: Well, I'm not asking her about, yet about what she's done in this case. I'm just asking whether she attends meetings.

ALJ: Okay and I don't find that particular statement to be leading, just, make sure you just ask questions if you could, so. Thanks.

MR. MCCANN: All right. Have you attended Design Review Panel meetings?

MR. MUDD: Objection.

ALJ: Overruled.

MS. MILLER: Yes, I have.

MR. MCCANN: Okay. Okay. Let me show you what has been pre-marked as Protestant's Exhibit 31. Do you see that, Ms. Miller?

MS. MILLER: Yes. I, I have it on a second computer screen here much larger, because I would have to wear my little glasses and squint into the screen. So, if you see me looking to my left, that is because I'm looking at it on a different screen.

MR. MCCANN: Okay. Yeah, it is small.

MS. MILLER: It's the same document.

MR. MCCANN: Okay. Just tell us, it's a single page, tell us in general what this is.

MS. MILLER: So, this is a spreadsheet that shows

development in the Jones Falls watershed since a 2012 engineering study that was done in connection with the sanitary sewer Consent Decree.

MR. MCCANN: Okay and did you prepare this chart?

MS. MILLER: I did.

MR. MCCANN: And just generally, why, why did you prepare it?

MS. MILLER: We were, our, our organization was concerned about capacity in the sewer shed, sanitary sewer capacity, and we wanted to understand how much development had occurred since this re, that report was done. So, we prepared a chart that shows developments that are already, have already been constructed, some that are under construction currently and some that are proposed and have either been approved or are in the development process.

MR. MCCANN: Okay. You just described three categories, and I think I'll just scroll down, because I think you started in these green high, well, just explain how the, rather than me --

MS. MILLER: Right.

MR. MCCANN: -- asking leading questions, ex, explain how it's broken down. Maybe by, maybe by colors, might be helpful.

MS. MILLER: Okay. So, there's a, the green color is, each of those, there are three of those. Each one is a

different category. So, the first one is proposed or forecast developments.

MR. MCCANN: Okay.

MS. MILLER: And then under that, there are a number of developments. There's a column that says the year and that indicates either when it began in the development process or sort of where it is currently in the development process, or the admin, when, when an opinion was given approving the project. And then the next green column is projects that are under construction currently.

MR. MCCANN: Um hm.

MS. MILLER: And then the final one is existing developments that have already been constructed and are, I, I can't testify that they're all, all occupied. But they're all, they all exist, they've all been constructed.

MR. MCCANN: Okay and in terms of the existing development portion that you just described, the dates, what are, what are the dates, the column for year, what do those, what do those dates signify?

MS. MILLER: Right. So, there's also a column for information source.

MR. MCCANN: Uh huh.

MS. MILLER: So, they, those dates relate to different categories. The MDAT structure-built date, that's the Maryland Department of Assessment and Taxation record --

MR. MCCANN: Okay.

MS. MILLER: -- that, that indicates when the structure was built. So, that date is on the date column. And then there's a few I could not get a tax record, either because it was a, a public university, like Towson University, they don't pay taxes. So, in those cases, I would search a website, either, you know, a, a designer or the institution itself.

MR. MCCANN: Um hm.

MS. MILLER: To find out what those dates were.

MR. MCCANN: Okay and then in terms of the square footage and the number of, there's a couple other columns we haven't mentioned yet. The type, where did you obtain that information from?

MS. MILLER: Yeah, the square footage often came from the Baltimore County Development website. I believe it's also included on the MDAT records --

MR. MCCANN: Okay.

MS. MILLER: -- in many cases. Generally, I think the source column applies to that information also, the square footage information also.

MR. MCCANN: As well as the number of units and the type?

MS. MILLER: No, the unit number, that would come from the development, Baltimore County Development website. Or the, the beds, units, those, those types of things, would come

from the development website or an, an article, a news article.

MR. MCCANN: Okay and then you have a notes column here at the end. Just anything particular about those, that column?

MS. MILLER: Yeah, that's just indicating what the abbreviation means, SFSD is single family semi-detached, for instance. That applies mainly to the type column. And then MDAT, explained that that's Maryland Department of Assessment and Taxation.

MR. MCCANN: Okay. Did you also conduct an investigation or, as to whether or not the, at least the ones that are under construction and that are existing, I know those two headings, that those, these developments have, in fact, proceeded?

MS. MILLER: I did, I did go to quite a few of these project sites, these development sites, and photograph them. Not all of them, but the ones that are in the, closer into Towson and one out at Greenspring Station. I, I went out and took photos of them.

MR. MCCANN: Okay. Yeah, those are the column that says photo key, does that refer to?

MS. MILLER: Right, right.

MR. MCCANN: Okay. Let me show you Protestant's --

MS. MILLER: I'm sorry, I just noticed the notes column you were talking about. I apologize. I was, I thought

you were talking about the notes at the bottom of the chart. You're talking about the notes on the far right when you asked me?

MR. MCCANN: Yes, thank you. I, I should have thought (inaudible) --

MS. MILLER: Yeah, in some cases where I couldn't use the MDAT site, I, I put in the, the link to the article that I looked at and just some other notes about, up in the proposed, whether, I noted that a few of these, one of these developments was a material amendment to a major subdivision. So, it wasn't a completely new structure, it was a, an addition.

MR. MCCANN: Okay.

MS. MILLER: Yeah, yeah.

MR. MCCANN: All right.

MS. MILLER: Just some, some additional information that, in that column.

MR. MCCANN: Okay and the notes section, these are the notes at the bottom that you were talking about, right here?

MS. MILLER: Yes, yeah.

MR. MCCANN: Okay and you totaled up square footage and the number of units as well at the bottom here in green?

MS. MILLER: Right, right, yeah. So, it's almost 2.5 million additional square feet in the sewer shed constructed since 2012.

MR. MCCANN: Okay and how did you know all of these proposed, under construction and existing developments are in the Jones Falls sewer shed?

MS. MILLER: The My Neighborhood mapping tool shows the, the limit, you can, there's, there's different layers in the, in the tool and you can click on the, the watershed tool so you can see it as a, as a map, delineation on the map. And then also when you look at it, when you input an individual property address, there is information that comes up and it will tell you what the water, what the watershed is. And generally, a watershed and a sewer shed are the same.

MR. MCCANN: Yeah.

MS. MILLER: They, because the sewer lines follow the, the, the streams.

MR. MCCANN: Right. And the, and you said and that's in My Neighborhood website?

MS. MILLER: Yes.

MR. MCCANN: So, you, did you actually look at the My Neighborhood website to look at a map of the Jones Falls sewer shed?

MS. MILLER: Yes, I did.

MR. MCCANN: To confirm that these --

MS. MILLER: Yes, so, each, each address I input into that mapping tool and was able to confirm that they were in the Jones Falls sewer shed, both by the notes that are provided

when you search a property and also in the, in the map itself.

MR. MCCANN: Right, okay. So, the --

MS. MILLER: The physical map.

MR. MCCANN: -- getting back to the photo key, some of these, there's letters in that column, some of these are in red and some are in black. Why the red?

MS. MILLER: I just used that as a kind of a visual tool. The red are used for proposed developments.

MR. MCCANN: Um hm.

MS. MILLER: And then, oh, well, I apologize. I meant to use more color coding and I did not. I meant to have the under construction coded in a different color and the existing in a, in a third color, but I didn't do that.

MR. MCCANN: Okay. Well, obviously, we, we don't have photos of the proposed or forecasted developments, correct?

MS. MILLER: No, we don't.

MR. MCCANN: Okay, all right. Let me show you Protestant's Exhibit 31 at the top here. Do you see that?

MS. MILLER: Yes.

MR. MCCANN: Okay. So, this is an eight-page document, and I'll just scroll through and there's letters on each of these photographs and a description. Do those letters correspond to the photo key that we just looked at?

MS. MILLER: Yes, they do.

MR. MCCANN: Okay. So, let's, so, for example, the first photograph in Exhibit 31 is labeled G. Is that, it says Towson Hotel under construction. Is that --

MS. MILLER: Right.

MR. MCCANN: What, excuse me, does that correspond to back at Exhibit 31 --

MS. MILLER: Yes.

MR. MCCANN: -- right here?

MS. MILLER: Right, that's correct.

MR. MCCANN: Okay and you took these photographs?

MS. MILLER: I did.

MR. MCCANN: Okay.

MS. MILLER: I took them all on one day. I could tell you the date if you want --

MR. MCCANN: Yeah, sure, if you could.

MS. MILLER: Bear with me just a moment. I took them all on January 24th.

MR. MCCANN: Of this year?

MS. MILLER: Of this year. Yes, 2023.

MR. MCCANN: Okay. I'm just looking through them to make sure that they don't capture any other buildings. This, for instance, page four of this exhibit, which is photograph O.

MS. MILLER: Um hm.

MR. MCCANN: Altus student housing and retail. Is there any portion of what's seen in this photograph, just so

we're clear, that is not actually that building? For instance, this one on the lefthand side?

MS. MILLER: Yes, the one on the left is not that building. And then I think you can see a portion of The York on the right.

MR. MCCANN: Right here?

MS. MILLER: No, further down.

MR. MCCANN: Right here?

MS. MILLER: Yeah, that, I think is a portion of The York, which is also on the chart.

MR. MCCANN: Okay, so --

MS. MILLER: And then yes, the, on the far right that is not part of the, that building, that just --

MR. MCCANN: Okay and likewise, photograph P, you were trying to get the bulk of the building, I, I take it, but this building on the right-hand side of the photograph looks to be partially, that's not the Whole Fields, Whole Foods and the retail building that you were identifying in the chart, correct?

MS. MILLER: So, in the foreground is --

MR. MCCANN: Yes.

MS. MILLER: -- yes, in the foreground is Whole Foods. And then going up north, to the right on York Road, that's The York. And then yes, beyond that is Towson Commons, which is not part of the, not part of the photo, that building.

MR. MCCANN: Okay.

MS. MILLER: And then this is 101 York, and the lower left is a Starbuck's and that's not, obviously, part of that development.

MR. MCCANN: This photo, Q?

MS. MILLER: Yes, in photo Q.

MR. MCCANN: Okay.

MS. MILLER: This --

MR. MCCANN: Photo T?

MS. MILLER: Photo T, this is Towson Square, and you can see part of another development, the, the big thing that says Towson on it in the background that's not part of that development.

MR. MCCANN: Okay. But all the other buildings, the lower rising buildings are the --

MS. MILLER: Yeah, the cinema and the restaurants on the right and, and, and at the end of that driveway, yeah.

MR. MCCANN: Okay, all right. And this, with respect to photograph AA, the Towson University Startup, is, is that, which building is the main building shown here?

MS. MILLER: It's that, it's that limestone building in the foreground, yeah.

MR. MCCANN: Okay, okay. Your Honor, I would move Exhibits 31 and 31-A.

ALJ: Okay. So, thirty-one, I have the, the newest

document that you submitted, which is one page. But I also have this very larger one that you originally submitted, which is ledger, printed as a ledger. It, it, it looks like it's the same one. And then I have a second one that says revised Exhibit 31. So, what do I do with those?

MR. MCCANN: Those were superseded by the, the, what we've looked at this morning.

ALJ: Okay. So, do I just throw them out?

MR. MCCANN: Yeah, yeah, you can throw them out.

ALJ: Literally, throw them out. Okay, I just wanted to make sure. Okay, so, (inaudible) --

MR. MCCANN: Yeah, and 31-A through H are new.

ALJ: Yes.

MR. MCCANN: I don't think I submitted those before and I, they're not labeled A through H, but I, they don't really correspond to the photo key, but they're A through H because there's some, however many of photos. So, maybe what I should do is resubmit it with an A, B, C, D through H.

ALJ: You did submit it that way.

MR. MCCANN: Oh, I did? Okay.

ALJ: You did, so my copy says 31-A through 31-H.

MR. MCCANN: Okay.

ALJ: Yeah, so we have those. Okay, Mr. Mudd, any objection?

MR. MUDD: Nothing I can't handle on cross, thank

you.

ALJ: Okay. Mr. Zimmerman, any objection?

MR. ZIMMERMAN: No objection.

ALJ: Thank you. They're admitted.

MR. MCCANN: And no other questions, thank you. Thank you, Ms. Miller.

ALJ: Mr. Zimmerman, any questions?

MR. ZIMMERMAN: No questions.

ALJ: Mr. Wyatt?

MR. WYATT: No questions.

ALJ: Mr. Sachse?

MR. SACHSE: No questions.

ALJ: All right. We're back to Mr. Mudd probably, right, Mr. Mudd? I'm going to guess?

MR. MUDD: Yes, I do have a couple.

ALJ: Okay.

MR. MUDD: Hello, Ms. Miller, how are you?

MS. MILLER: I'm good.

MR. MUDD: You, you gave some very similar testimony in another case recently, right?

MS. MILLER: That's correct.

MR. MUDD: Okay and your, your, your exhibit has changed a little bit since that case, am I correct about that as well?

MS. MILLER: Yes.

MR. MUDD: Okay and you, I think in the other case, you tried to compute sewer flows, essentially, with each of the developments, or at least some of the developments, correct?

MS. MILLER: That's correct.

MR. MUDD: Okay. But you, you've eliminated that this time?

MS. MILLER: That's correct.

MR. MUDD: Any, any particular reason?

MS. MILLER: The, well, we also had information provided by the County in the previous exhibit and I, it just wasn't complete, so I didn't feel comfortable submitting it.

MR. MUDD: Okay. Are you able to see what I'm sharing here?

MS. MILLER: Yeah, let me zoom it in a little bit. Yep.

MR. MUDD: This, this is the, the exhibit Mr. McCann just showed you?

MS. MILLER: Yeah.

MR. MUDD: Okay. I just have, I just want to run through a couple of the, the, or some of the information that you provided. So, generally speaking, when you're, when you've computed number of units and number of beds, did you do any evaluation as to how many plumbing fixtures are in any of these facilities?

MS. MILLER: No.

MR. MUDD: Okay and so you don't know, for example, with student housing if it shows four hundred and eighty-two beds, you don't know if that means that there's four hundred and eighty-two bathrooms or whether there's, there's a hundred and twelve bathrooms or any number, you, you don't know, correct?

MS. MILLER: I don't.

MR. MUDD: Okay.

MS. MILLER: Well, let me take that back. I know that there are bathroom fixtures in that building.

MR. MUDD: Okay, of course.

MS. MILLER: I don't know how many.

MR. MUDD: Understood. How about on this WRH Property Holding, LLC at 502 to 506 Baltimore Avenue, --

MS. MILLER: Um hm.

MR. MUDD: -- do you know if that is in the Baltimore County development review process, do you know where in that process that is?

MS. MILLER: They just had their hearing last week, I believe. Yeah, just last week.

MR. MUDD: Before, before the Administrative Law Judge?

MS. MILLER: Yes.

MR. MUDD: Did you participate in that?

MS. MILLER: I attended. I didn't, I didn't par, I

didn't speak, but I, I attended.

MR. MUDD: Okay and you have participated in some of these other cases, correct? You, you, the Studious Apartments, in fact, you were, you participated in that case?

MS. MILLER: Yeah.

MR. MUDD: And that was on behalf of Green Towson Alliance?

MS. MILLER: Yes.

MR. MUDD: And you opposed that project?

MS. MILLER: I would say we had concerns, we weren't, we weren't a Protestant in that case, no. But there were things that I wanted the Judge to consider, so I testified about it.

MR. MUDD: Okay and you testified in Torch Hill as well?

MS. MILLER: Yes.

MR. MUDD: In that, you gave similar, similar testimony to that, the testimony that you're giving today, right?

MS. MILLER: Yes, yes.

MR. MUDD: And Red Maple Place, you participated in that and opposed that project?

MS. MILLER: I was a witness for the Protestant.

MR. MUDD: Okay. But you, you, you were there and indicated your, your representation of Green Towson Alliance as

well, correct?

MS. MILLER: Yes, yes.

MR. MUDD: Okay and I think we talked about this in the last case, but you even, I think it was before Green Towson Alliance, but you participated in the Towson Row case, correct?

MS. MILLER: I did not, I, the Towson Row case, I attended DRP hearings for.

MR. MUDD: Okay.

MS. MILLER: And spoke at those, but I did not attend the Administrative Law Judge hearings.

MR. MUDD: And, and in fairness, that was, Green Towson Alliance didn't exist at that point, right?

MS. MILLER: At the time of the, I, I honestly don't know when that hearing was.

MR. MUDD: Okay. How about when the Green Towson Alliance was formed, when was that?

MS. MILLER: Two thousand fifteen, May of 2015.

MR. MUDD: Okay. Have, have you been involved in anything related to these Towson University projects?

MS. MILLER: No.

MR. MUDD: Okay. How about the Towson Flats?

MS. MILLER: No.

MR. MUDD: How about 101 York Road?

MS. MILLER: Nope. We attended one hearing for that that was like a stormwater management hearing. But we just

attended, we didn't, we didn't testify at that.

MR. MUDD: Okay. Up here at Lutherville Station, you, you indicate here that a transit-oriented development application has been submitted. Does that, that's as far along as you are aware of that project is?

MS. MILLER: Yeah, I believe it's being talked about as being submitted as a PUD, but I don't think that that has happened yet.

MR. MUDD: Okay and, and this, this number, two hundred and twenty-one thousand three hundred square feet, where did you get that information from?

MS. MILLER: That came from the application, I believe.

MR. MUDD: Okay and you note here that --

MS. MILLER: Yeah, it did come, yeah, that definitely came from the application.

MR. MUDD: -- from the TOD application?

MS. MILLER: Yeah.

MR. MUDD: And the same with the four hundred apartment units?

MS. MILLER: Yes.

MR. MUDD: Okay and you indicate on, on the note's column here that major portions of existing two hundred sixty-nine thousand square feet have been vacant.

MS. MILLER: Um hm.

MR. MUDD: The Caldor's was there in 1999 and Loehmann's and so forth. But there, there have been other uses there since. Circuit City was there for a time, you remember that?

MS. MILLER: Right.

MR. MUDD: Yeah?

MS. MILLER: Yeah, Old Navy is curr, currently opened. I don't know that any of the rest of them might be some offices being used there currently.

MR. MUDD: Okay. But the, the point is that that project is an example of redevelopment, correct?

MS. MILLER: Yes.

MR. MUDD: So, there, there's, there are things there and whether or not they may be currently active, in years past, there have been plumbing fixtures that have been hooked up there and water usage and so forth, correct?

MS. MILLER: Right, although I would say residential use is a more intense use in terms of sewage.

MR. MUDD: What, what do you base that opinion on?

MS. MILLER: I'm not a sewer expert, so I, I, I, I, I, I just think there's more fixtures.

MR. MUDD: But you don't know how many fixtures, you said before you don't know how many fixtures are in any of these facilities, right? Just that there are some?

MS. MILLER: I don't know a specific number, no.

MR. MUDD: Okay.

MS. MILLER: I, I could probably figure it out if I had the plans, I could easily figure it out. And on some of these projects, I have like studios and some of these other projects. I've seen the number of fixtures, but not in every project.

MR. MUDD: Okay. Do you know about whether fixtures were installed in the eighties or nineties, whether newer fixtures may be better with regard to waterflow?

MS. MILLER: Yes, they are.

MR. MUDD: Okay. How about this 502 to 506 Baltimore Avenue project? That's a redevelopment site as well, correct?

MS. MILLER: Yes, yeah, it is.

MR. MUDD: Okay and how about Towson Row, that's another redevelopment site, correct?

MS. MILLER: Yes, it is and it's a much greater density than the former use.

MR. MUDD: Okay. What do you mean by that?

MS. MILLER: I think the former uses were maybe one and two, three story buildings at the most, and these are twelve story buildings, I believe.

MR. MUDD: Okay. But again, you don't know how many fixtures were in the, in the prior development, right?

MS. MILLER: No, I don't, no.

MR. MUDD: Moving on to under construction, the

College of Health Professions TU camps, the two hundred and forty thousand --

MS. MILLER: Um hm.

MR. MUDD: -- that number came from the TU website?

MS. MILLER: Yeah, that may have also been on the permit. I'm not sure if it was only on the website or if it's also on the permit.

MR. MUDD: Okay. So, you're not, you're not exactly sure where that came from?

MS. MILLER: If you give me a, hold on just a minute. No, I'm not sure about that.

MR. MUDD: Okay. Moving down into the existing, Towson Mews. Do you know when Towson, what, what, what are these dates here? The 3/17/16, 4/29/16 and 2017? What do those dates reflect?

MS. MILLER: I believe the 2017 is the structure built date from the MDAT records. And the others are Baltimore County website, when you do a development search there are entries on different dates, so those are some of the other dates that were listed when it was --

MR. MUDD: So, you, I'm sorry --

MS. MILLER: -- under development.

MR. MUDD: Okay. So, you, but do you know what occurred on those dates? Are those approval dates or are those construction dates or what are those?

MS. MILLER: Those are probably submission, either a concept plan or a development plan submission dates.

MR. MUDD: Probably or, or you don't, --

MS. MILLER: Yes, probably. I can't tell you for certain.

MR. MUDD: Okay.

MS. MILLER: But the MDAT structure-built date is for certain.

MR. MUDD: Okay and there's thirty, thirty-four, what's that number refer to?

MS. MILLER: That is the number of, sorry, I'd have to scroll up. Number of units, that's the number of units.

MR. MUDD: Okay and this TH, what does that mean?

MS. MILLER: Townhome.

MR. MUDD: So, there's thirty-four townhomes here?

MS. MILLER: Yes.

MR. MUDD: And you think, or you're not sure, that all, all thirty-four of those were built in 2017?

MS. MILLER: I don't know if the MDAT records indicate for, for a development like that, if that's the entire development build out. But those, that project has been built out at this point.

MR. MUDD: Okay. But you just don't know when it happened?

MS. MILLER: It's definitely within the timeframe of

this chart, since 2012, it is, it has been constructed after 2012.

MR. MUDD: And how, how do you verify that?

MS. MILLER: Well, I believe I had a photograph of that project and I've seen it.

MR. MUDD: Okay. But based on --

MS. MILLER: (inaudible) --

MR. MUDD: -- based on a photograph you took in 2023, you're confident they were built after 2012?

MS. MILLER: No, I'm confident it was built after 2012 because it was not in development in 2016, as indicated by those earlier dates. And the MDAT records indicate that the structure was built in 2017.

MR. MUDD: Okay and you think there's, there's one structure here?

MS. MILLER: No, it's townhomes.

MR. MUDD: Okay.

MS. MILLER: So, it's, it's a collection of maybe four or five different groups of townhomes.

MR. MUDD: Okay. Let's move on to Barnes and Marshall Halls, Towson University, West Village.

MS. MILLER: Um hm.

MR. MUDD: Where, what's this seven hundred referred to?

MS. MILLER: That is the number of beds.

MR. MUDD: Okay and the three hundred twenty-seven thousand?

MS. MILLER: That's the square footage.

MR. MUDD: Okay and 2016?

MS. MILLER: That's the date it was completed and construct, the construction was completed, excuse me.

MR. MUDD: Okay and where did you verify that?

MS. MILLER: On the Ayres Saint Gross Architect's website.

MR. MUDD: Okay. So, all this information is based on information, based on information you saw on the project architect's website?

MS. MILLER: I can't, I, I, yes, yes, that is.

MR. MUDD: Okay. So, you didn't pull any permits or look at MDAT or anything here to verify that?

MS. MILLER: Towson University rec, doesn't have records on MDAT and I wasn't able to find a permit on it either, probably for the same reason.

MR. MUDD: Okay.

MS. MILLER: Because it's state property.

MR. MUDD: Okay, okay. Towson Flats, what do these, what do the 2014 and '17 dates?

MS. MILLER: Again, they were, you know, submission dates in 2014 and then the MDAT records indicate 2017, that there was a structure there.

MR. MUDD: Okay.
MS. MILLER: Structure built at that time.
MR. MUDD: And these are apartments?
MS. MILLER: Yes.
MR. MUDD: And a hundred and five total apartments?
MS. MILLER: Number of units, yes.
MR. MUDD: Okay and where, where did you get that information from?
MS. MILLER: That was from the development search.
MR. MUDD: Okay. Do you have any idea how many are, are one bedroom versus two bedroom versus three bedroom?
MS. MILLER: I don't.
MR. MUDD: Okay. How about, how about Brightview?
MS. MILLER: What's your question about Brightview?
MR. MUDD: I'm sorry, good, right. What is the ninety-two on the Brightview one?
MS. MILLER: I believe that's beds.
MR. MUDD: Okay.
MS. MILLER: Yeah, that's the number of beds.
MR. MUDD: Okay and 2012, what's that?
MS. MILLER: That's when the MDAT records show that that structure was constructed or built.
MR. MUDD: And MDAT records show the number of beds? I've never seen that before.
MS. MILLER: No, I bel, yeah, no, I think the beds

came from a development search.

MR. MUDD: Okay, but that's not indicated here, right?

MS. MILLER: Right.

MR. MUDD: Okay. Where, these two are new for me. Where, where is Spencer's Crossing located? I, I understand the address, but can you tell me geographically?

MS. MILLER: Hold on just a minute, please. What's that? Spencer Crossing. Are you asking about, okay, so that's M. That is just, whoops, sorry. I'm having trouble managing. It's east, I'm sorry, west of Interstate 83 and north of Timonium Avenue, I believe.

MR. MUDD: Okay and there's seven homes there?

MS. MILLER: Yes.

MR. MUDD: Okay and what, what do the 2012 through 2014 dates come from? What does that mean?

MS. MILLER: Again, that, I believe, the two thousand, it's, the development process began in 2012 and then the MDAT or, I wouldn't say began, it was occurring between 2012, 2014 and then the structure, structures were built from the MDAT records in 2014.

MR. MUDD: Okay and you have a note over here, five-bathroom homes. Did you review the floor plans for each of these homes?

MS. MILLER: No, I think that was in the development

search information.

MR. MUDD: So, in the development search, you, you saw that all seven homes each have five bathrooms?

MS. MILLER: I can't say for certain. It's been a while since I looked at that particular development.

MR. MUDD: Okay. How about Meadowvale, where's that?

MS. MILLER: That's a little bit further north, but also east of Interstate 83, just east of it.

MR. MUDD: Just east of 83?

MS. MILLER: I'm sorry, west of 83.

MR. MUDD: Okay and it's, and it's in like the Timonium area?

MS. MILLER: Yes.

MR. MUDD: Okay and there's forty-one units in there, forty-one homes?

MS. MILLER: Yes.

MR. MUDD: Okay.

MS. MILLER: Single family homes, yeah.

MR. MUDD: And where, where did you verify that information?

MS. MILLER: Again, I looked at the MDAT records and the Baltimore County development website for that, that information.

MR. MUDD: Okay and the 2012 to 2014, what, what does that refer to?

MS. MILLER: That could have, and I'm sorry, now I'm remembering. I think this applies also to Spencer Crossing. That those, those homes had different dates for the structures being built. So, it, they ranged between 2012 and 2014.

MR. MUDD: Okay. So, then --

MS. MILLER: It's multiple, multiple homes that were built in different, on different dates.

MR. MUDD: So, do you have any idea when those, when the development plans were actually approved for those projects?

MS. MILLER: Again, I haven't looked at this for a little while, so I don't, I didn't have a permit for each one of these, this was just looking at the MDAT structure build dates.

MR. MUDD: Okay and so it's possible that the approvals obtained, were obtained before 2012?

MS. MILLER: I doubt that because I searched, no, that, that is not, because my search was for anything built after, 2012 or later.

MR. MUDD: Right, built 2012 or later, so you --

MS. MILLER: No, it, I'm sorry, initiated in the design development process or later.

MR. MUDD: And how did you limit your results in that way?

MS. MILLER: Just by going through the, they're

listed in chronological order on the website.

MR. MUDD: Okay, so --

MS. MILLER: So, if it, if it was in development, in the development process before 2012, I didn't consider that as a project --

MR. MUDD: All right. Well, I'm going to skip down to the Quarry Lake at Greenspring. Do you have any idea when those approvals were obtained?

MS. MILLER: I don't, I think --

MR. MUDD: Does 2004 sound right?

MS. MILLER: I don't know. There's, there's quite a bit of different development in there, so there's a whole section of buildings on this Travertine Road that were built in 2012. So, yeah, they could have been approved sooner.

MR. MUDD: Okay.

MS. MILLER: That's, that is possible for those.

MR. MUDD: Okay. But you're positive that Spencer's Crossing and Meadowvale were not, were not approved any sooner than 2012?

MS. MILLER: Well, Mr. Mudd, you may have caught me in a, in a contradiction here. Yeah, I would have to look at that again.

MR. MUDD: Okay.

MS. MILLER: I can't, I can't say for certain.

MR. MUDD: Okay and the Altus student housing

building here, it says that it was approved on, in 2005, is that correct?

MS. MILLER: I'm sorry, I don't know where you are now.

MR. MUDD: I'm sorry, I'm, I'm under Towson Row.

MS. MILLER: Oh, that's a mistake. That should be 2015.

MR. MUDD: Okay. Do, are there any other mistakes on this report?

MS. MILLER: Well, I already told you that I meant to use different colors on these photo keys so, yes, there are other mistakes on this chart.

MR. MUDD: Okay.

MS. MILLER: I think you know that Altus student housing was not approved in 2005.

MR. MUDD: Okay. How about 101 York Road? Is that part of the Towson Row development?

MS. MILLER: No, it is not.

MR. MUDD: Okay, but it's listed under Towson Row, correct?

MS. MILLER: No, it is not. It's just the Towson Row was bolded. It's not, it's not meant to indicate that it's under Towson Row.

MR. MUDD: Okay. I'm, I'm sorry, I skipped over this too. Back here, just above Towson Row, you have SFSD and the

number sixty-two, but there's no other information on this row. Is, is that, is that something --

MS. MILLER: I'm sorry, let me get, I'm looking at the wrong, are you pointing to that now? Okay, thank you.

MR. MUDD: Sure.

MS. MILLER: That might be, I'm not sure what that is there for, that might be a mistake, sir.

MR. MUDD: Okay. Bear with me. Tell me a little bit about, so Tow, Towson Square, that was another redevelopment site, correct?

MS. MILLER: Yes.

MR. MUDD: Okay and Bare Hills Business Park, do you know what this, what this construction was?

MS. MILLER: It's a, it's, I believe it's sort of an office building.

MR. MUDD: Okay. You don't, do you know whether they have bathrooms in there?

MS. MILLER: I assume that there would be a bathroom in an office building.

MR. MUDD: Okay. Down here for all the Towson University, TU Union addition, Towson Armory, TU Startup, these are all things that you've, again, pulled from the Towson University website, correct?

MS. MILLER: Right.

MR. MUDD: And similarly, going down for Loyola

Blakefield, you pulled from the Catholic Review website, correct?

MS. MILLER: Right, correct.

MR. MUDD: So, not, not, not official records, these are just reports that someone --

MS. MILLER: Yeah, again, the Towson Blakefield is not listed on the MDAT records, so I wasn't able to get that. But I, I would assume that Loyola Blakefield wouldn't announce that a new building is open on their campus unless they were being truthful.

MR. MUDD: Okay.

MS. MILLER: I think that would be very odd for them to announce something that wasn't actually open.

MR. MUDD: Okay. How about the Baltimore Fishbowl website, is that an official website?

MS. MILLER: It's a new source.

MR. MUDD: Okay. So, you based that information on a new source, okay.

MS. MILLER: Yeah, I've seen, you know, I've been over there, I've seen that, that new restaurant, it's, it's there.

MR. MUDD: Okay, all right. I think that's all the questions I have. Thank you very much.

ALJ: Mr. McCann, re-direct?

MR. MCCANN: Yeah, just, just a couple quick follow-

up. I, I think you've recognized already, Ms. Miller, that you're not a sewer expert. But Mr. Mudd was asking you about fixtures and do you know, based on your experience, whether or not wastewater estimations are based on the number of fixtures or on something else, do you know?

MS. MILLER: I, I think it depends on the structure, the kind of use of the building. I think there's different formulas for each, for different categories, --

MR. MCCANN: Right.

MS. MILLER: -- yeah, it's --

MR. MCCANN: Do you know any of the categories that identify fixtures as the basis for estimating wastewater?

MS. MILLER: I do not know. I don't know the answer to that.

MR. MCCANN: Okay, fair enough. Fair enough. Mr. Mudd was asking you about approval dates. And I don't need to pull it back up, but under the existing portion of your chart are you confident, based on your investigation and your personal familiarity, that all of those developments were constructed, maybe not necessarily approved, but constructed after 2012?

MS. MILLER: Yes.

MR. MCCANN: Okay.

MS. MILLER: I am confident of that.

MR. MCCANN: And the title of your report was not

development approved since 2012, it's just developments since 2012, is that --

MS. MILLER: Right.

MR. MCCANN: Okay, all right.

MS. MILLER: Right.

MR. MCCANN: Thank you, Ms. Miller, appreciate it.

MS. MILLER: Okay.

ALJ: Ms. Miller, I have one question on this exhibit.

MS. MILLER: Um hm.

ALJ: Under existing, you have Johns Hopkins University Greenspring Station Pavilion III --

MS. MILLER: Um hm.

ALJ: -- address 10751 Falls Road. And it looks like, using my magnifying glass, a hundred and ten thousand square feet. And I know you were here in a prior hearing. Do you know if that development is the one we were talking about in terms of the sewer and, were you here for that at all?

MS. MILLER: I, I'm, I don't think I was, I don't think I heard that testimony.

ALJ: Okay. Do you know, have any information about this Johns Hopkins University Greenspring Station Pavilion III, you actually took a picture of it, one of them.

MS. MILLER: Yeah, yeah. I, I mean, the only purpose that this chart was for was to document the, the dates of when

buildings were constructed, so that's the information I have available.

ALJ: So, it was 2019 to '21?

MS. MILLER: That, I think the 2019, I think the structure build date is the 2021, and the 2019 was when there were development submissions on it.

ALJ: Okay. Any other information you have about that one?

MS. MILLER: Nope.

ALJ: Okay, all right. That's all I have. Those are admitted. So, that is our second witness for today, Mr. McCann. Is it a good time to take a lunch break?

MR. MCCANN: I was actually going to ask Your Honor if we could take one more really quick person.

ALJ: Sure.

MR. MCCANN: It'll be a very, very short, because he has a stop break, a stop at 1:15, a hard stop.

ALJ: Yeah, absolutely. Let's do that. And so, who is that person?

MR. MCCANN: And that is Peter George. Hopefully he is available. And I should, before I put him on, I should, I'm sure you do remember, Judge, that he testified earlier --

ALJ: That's what I was going to say.

MR. MCCANN: Yeah. I, I am calling him back, not to ask him about any of the things I asked him about before, but

he observed something since our last hearing date and has a couple photographs and will limit my questioning. I know it's somewhat unusual, but I'll limit my questioning, no one else, there is no other witness I could do this through. So, that's my purpose for calling him, although he's already testified.

ALJ: Yeah, I'm trying to remember. Was he the photographer?

MR. MCCANN: No, no, no. Peter George was just a neighbor who lives over on, he lives over on I think White Manor. He testified about his concerns about the project.

ALJ: Okay, right, right, right, okay.

MR. MCCANN: I'm not going to ask him about any of that, traffic or anything. He's just, he has some photographs to show --

ALJ: Okay.

MR. MCCANN: -- that (inaudible) --

ALJ: Okay. Well, I was looking for him in the panelists, so maybe he's in the attendee's room.

MR. MCCANN: Okay.

ALJ: Let's see. Eleven attendees. Yep, there he is.

MR. MCCANN: Yes.

ALJ: Okay. He's coming over. All right. Mr. George, unmuted you, can you hear me?

MR. GEORGE: Yes, Your Honor, I can hear you, thank

you.

ALJ: And you have a camera, right?

MR. GEORGE: I do not, I don't think so, I apologize.

ALJ: Oh, okay.

MR. GEORGE: Yeah, I went through this the first time with you.

ALJ: The first time, right. Well, raise your right hand, please. Do you swear and affirm under penalties of perjury, that the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. GEORGE: I do.

ALJ: Okay.

MR. MCCANN: Thank you, Judge. Mr. George, are you able to see the screen?

MR. GEORGE: Yes.

MR. MCCANN: Okay, good. I'm going to --

ALJ: Did he say yes?

MR. GEORGE: I see, I see you, Your Honor and I see Michael and I see Mr. Rosenblatt and one other person and the names.

ALJ: Okay, that's all right, you can see the screen. Okay, good. Now you can see this, right?

MR. GEORGE: Yes.

ALJ: Okay.

MR. MCCANN: Okay. I'm going to show you three

photographs. These are Protestant's Exhibit 47-A, B and C. You said you saw that, you see that, Mr. George?

MR. GEORGE: Yes.

MR. MCCANN: Tell us, tell us what this is, well, first of all, did you take this, these photographs?

MR. GEORGE: Yes.

MR. MCCANN: Tell us what this first photograph is and where it is.

MR. GEORGE: I, I think it's at manhole cover, I hope I'm using the right, you know, definition, but manhole 43819, which is just, probably twenty yards due west of the stream, you know, that is just past Tallyho. Right, right at the base of Dorothea Langford's property, which is now the development property, so.

MR. MCCANN: Okay. So, from this perspective where is the subject property? On the right, the left?

MR. GEORGE: Yeah, on the right, on the right, on the right is Dorothea Langford's.

MR. MCCANN: Right, the existing stone house?

MR. GEORGE: Yes.

MR. MCCANN: Okay and when did you take this photograph, these, these photographs?

MR. GEORGE: I, I don't have the exact date, Mr. McCann, but I, you know, in the last two months, so.

MR. MCCANN: Okay. Was it since the last hearing

date?

MR. GEORGE: Yes, yes, definitely. Yes, yeah, what, what happened is I, driving out of my road and I saw the activity and I had stopped before to talk to them and this time they were very, you know, helpful, as they were the first time in explaining what they were doing.

MR. MCCANN: And who did you speak with?

MR. GEORGE: I spoke with two of the operators. I did, they didn't identify, really ask them, but obviously, it's either a contractor for the County or it's the County. But I'm oblivious to which, which, which of those two representations the, the employees were, were with.

MR. MCCANN: Okay and what did, what did they tell you?

MR. MUDD: Objection.

ALJ: Yeah, see, that one's a little tougher to, to find out what they told because, one, we don't know if they were County employees. Number two, and number two, we don't know whether they were just contractors and then, they're not here to be cross examined.

So, even though it's an administrative hearing, and the pictures can come in because he took them and he can testify about their authenticity, but, but having conversations about what a contractor said on the side of the road when, when there's, it's just prejudicial to the other side. Same would

be true for you, Mr. McCann. You know, if the other side --

MR. MCCANN: Yeah, well, --

MR. GEORGE: I think, I think, I think next --

ALJ: Mr. George, --

MR. MCCANN: Hold on, Mr. George. Hold on, hold on. I think, I think this witness can be able to say, if he hasn't said it already, that the contractors were, were, were there on behalf of Baltimore County, hopefully --

ALJ: He just said, I wasn't sure if they were, they were third parties or if they were County employees. But even if they were, either way, it's hard, I, I mean, we can't have testimony about what they said. That, I mean, that's just, it gets to the, really just the, the prejudice of it for the, the other side. And that wouldn't be fair to you either.

MR. MCCANN: No, I understand. We have testimony all the time about what people, about conversations developers have with the County. I mean, we have, I could --

ALJ: Yeah, right, right. I mean, but not, not in the same, it's not, it's not the same, I mean, quite honestly. I mean, you're talking about representatives of County agencies are here testifying all the time, did you speak with the reviewer and who was the reviewer.

That, you know, there's a different level. This is a contractor. I mean, you can put the pictures in though, I mean, or he can testify about what he saw. I mean, I'm not,

you know, can, can he look, can he just tell us what he saw or what's in the photograph?

MR. MCCANN: Yeah, I mean, that's fine. But I, what I'm, the point I'm making is a little different. I'm not going to argue with Your Honor. But I'm talking, I'm talking --

ALJ: (inaudible) to the other side, I mean, that's not (inaudible) --

MR. MCCANN: (inaudible) talking, but just so the record is clear, I'm talking about developer's consultant's conversations with County employees out of the hearing and telling, telling Your Honor and, and Judge Mayhew, about their conversations with County folks that aren't there to testify. So, that happens all the time.

ALJ: I know, but they're, but again, they're a representative of agencies and reviewing plans and things and they're people who come in and testify. We, this is just a different level, in my view. So, I have to sustain that objection.

MR. MCCANN: Okay, all right. I'll just ask, have him confirm what he observed in connection with the three photographs that I'll show him. Go ahead, Mr. George, what did you observe?

MR. GEORGE: Well, I observed, I asked them what they were doing, and they said that they --

MR. MUDD: Objection.

MR. MCCANN: Don't say --

MR. MUDD: Objection.

MR. MCCANN: Don't say what they said.

ALJ: Mr. George, you can't, you can't, I just ruled --

MR. GEORGE: Okay.

ALJ: -- you can't say what they say, because that's hearsay. Those people aren't here to testify so it becomes prejudicial to the other side. So, just, go ahead and just answer what you observed.

MR. GEORGE: All right. I observed a truck with a manhole cover open and they were filming the process, if you could show the other pictures, Mr. McCann --

MR. MCCANN: Sure.

MR. GEORGE: -- it would be helpful.

MR. MCCANN: So, this would be 47-B, the second photograph.

MR. GEORGE: And that's on Tallyho Road, right at the entrance of Tallyho and West Joppa.

MR. MCCANN: Um hm.

MR. GEORGE: And they were, I'm not allowed to say, am I allowed to say, Your Honor, what they said to me when I asked them --

ALJ: No, no, so that's, those are hearsay statements.

MR. GEORGE: Okay.

ALJ: So, just tell us what you observed.

MR. GEORGE: Okay. So, I observed this big truck with a big hose attached to the, to the fire hydrant, and they, and I observed that they were flushing the water through because it, because that's what they were doing.

MR. MCCANN: Okay. Well, let's, I think, let me show the third photograph as well. Is that a different view of 47-B? This is 47-C.

MR. GEORGE: Yeah, it's the same, yes, that's just looking north at the very entrance of Tallyho from Joppa --

MR. MCCANN: Okay.

MR. GEORGE: -- Joppa, West Joppa is on your left and the manhole covers are a hundred yards to the left and the ones that flow down into the city.

MR. MCCANN: Okay. Let's, let's go back to 47-A. This manhole cover that we see here, is, can you confirm for us that that was a sewer manhole as opposed to a, a water supply valve or something else?

MR. GEORGE: Yes, yes.

MR. MCCANN: Okay and how do you know that?

MR. GEORGE: I, I guess, I mean, I haven't smelled it, but they --

MR. MCCANN: Okay.

MR. GEORGE: -- showed me the computer on, the first

time I observed this last summer and, but I'm not allowed to say what they, these were County employees last summer and they were, you know, they were, they were sending numbers back to Towson on the, on the actual percentage of flow.

MR. MCCANN: That happened last summer?

MR. GEORGE: Yes, sir.

MR. MCCANN: You saw them doing that?

MR. GEORGE: Yes.

MR. MCCANN: In the same location?

MR. GEORGE: Yes, the same manhole cover. Yes, the same manhole cover, yes.

MR. MCCANN: Okay.

MR. GEORGE: (inaudible) number if you want, yeah, of the manhole cover, so.

MR. MCCANN: Before, before I move on to the other photos, anything else you recall observing with respect to this photograph, other than what you've already described? Or anything else you recall from last summer in the same location?

MR. GEORGE: No, just that it was the same manhole, it's 43819, I believe, and it's, it seems to be a preponderance of activity that, that is being awarded to this particular manhole, which is closest to the, to the stream bed that flows down from, that flows south of Dorothea Langford or APCO's property.

MR. MCCANN: Okay. Can you tell us what's going on

here? What, what it appeared in your layman's view of what this line is and what was being done? What did you observe?

MR. GEORGE: They were trying to unclog the sludge.

MR. MCCANN: Okay, okay. And the exhibit, the photographs in Exhibit 47-B and C, the same, same day, same incident, so to speak?

MR. GEORGE: Yes, same five minutes. Yes, yes.

MR. MCCANN: Okay and what, I think you already described, you said they were pumping water of some sort. How, how, if at all, do you, did you, do you believe what's depicted in Exhibits 47-B and C was connected with the, the manhole, your manhole observations in the prior photograph? Can you tell?

MR. GEORGE: Yeah, I, I, only through the, commonsense that when you open a fire hydrant in the middle of the day and you would, then the manhole, and you walk to the fire hydrant, and then you turned on a big pump and the hose filled up, that you're pumping through something to unclog what I've been, what I observed moments before in manhole cover 43819.

MR. MCCANN: Okay. So, all three photographs were taken on the same day, is that correct?

MR. GEORGE: Yes, within the same five minutes, yep.

MR. MCCANN: Okay. Let me show you one more --

MR. GEORGE: Michael, if I could, Mr. McCann, I

could, it might be ten minutes because it was the same truck, I think, that moved --

MR. MCCANN: Okay.

MR. GEORGE: -- (inaudible) yards, so.

MR. MCCANN: Okay. Let me share 47-D with you. Do you see that?

MR. GEORGE: Yes.

MR. MCCANN: Okay. Do you recognize the area depicted in this map?

MR. GEORGE: Yes.

MR. MCCANN: Okay and I'm going to zoom in a little bit. And given where you said the manhole in 47-A was located, which, can you tell us which, if any, of the manholes depicted in this exhibit was the manhole that you observed and took a photograph of that day?

MR. GEORGE: Yes, Mr. McCann, it's 43819, which is on the, on the triangular, you know, definition of those manholes. It's the one that's west and just, just west of, of Tallyho Road, so.

MR. MCCANN: Okay. Does, do you believe it's this one, 43819 rather than 43715?

MR. GEORGE: Yes, I know it is, yes.

MR. MCCANN: And how do you know that?

MR. GEORGE: Well, I observed it, I observed the truck at 43, let me, let me explain this very clearly.

MR. MCCANN: Okay.

MR. GEORGE: At 43819, was the first picture and that's where they were doing the, that's where the tube, the line was out of the truck. (inaudible) working on 43795 and 43794 (inaudible) and the sludge that I, I believe existed, was in 43795. Again, there's a triangle, obviously, you have two that flow into one headed towards Baltimore and they, they were working on, I do not know which one was clogged because I'm not an expert, but they were working on that triangle and that, that's what I know for a fact.

MR. MCCANN: Okay and that's based on your observations, I mean, did you, let me, let me, well, strike that. Let me ask you this. You're, you're speaking about these other manholes, but, but to be fair, you did not see anyone working on those manholes when you were there on those occasions, correct?

MR. MUDD: Objection.

MR. MCCANN: Did you or did you not.

ALJ: Yeah, so sustained, so just, hold on, hold on, just so the record is clear. Sustained. He just rephrased it so it's a question. So, did you see anyone working on 43795 or 43794-A?

MR. GEORGE: Yes, yes, I did.

ALJ: You did.

MR. GEORGE: Yes.

ALJ: Are they in the photos?

MR. GEORGE: No.

MR. MCCANN: Okay.

ALJ: Okay, --

MR. MCCANN: The photograph, that's where I, I, the photograph that we looked at, you believe, based on location, strike that. You, I think you --

MR. GEORGE: Yeah, I'm not allowed to say what they told me, but (inaudible) --

MR. MCCANN: Okay.

MR. GEORGE: -- where the fire hydrant was, above 43796 (inaudible) and the flow was down 43795 where the sludge (inaudible).

MR. MCCANN: Mr. George, you're breaking up, you have to say that one more time and then we'll wrap up here.

MR. GEORGE: Yeah, just the truck and the pump and the fire hydrant were on Tallyho above 43796 to the bottom right of the illustration.

MR. MCCANN: Okay.

MR. GEORGE: And they're pumping to try to remove the sludge from 43795 and 43794A and they were (inaudible) 43819.

MR. MCCANN: Okay, all right. No more questions of Mr. George. Thank you --

ALJ: Well, Mr. George, first of all, where is this map from that I'm looking at? Where'd you get this?

MR. GEORGE: I (inaudible) that's not my map, Your Honor.

MR. MCCANN: I provided (inaudible).

ALJ: Oh, okay.

MR. MCCANN: It, it's from, it's GIS portal for the County, Your Honor.

ALJ: Got it, okay.

MR. MCCANN: I (inaudible), I provided it to him.

ALJ: Understood. Okay. So, it's GI, My Neighborhood. And so, the, the photographs, just to be clear, Mr. George, the photographs that you took, the three photographs, fairly and accurately reflect what you observed on the day you took them?

MR. GEORGE: Yes, yes, Your Honor.

ALJ: Okay, all right. And so, all right, no more questions. So, you're offering these three exhibits. Any objection, either Mr. Rosenblatt or Mr. Mudd?

MR. MUDD: No objection to the photos.

ALJ: No objection to the photos or the map?

MR. MUDD: Well, the, the map was not prepared by the witness --

ALJ: Right, but it's a GIS map.

MR. MUDD: -- (inaudible) Mr. McCann saying it's a County document, then so be it but it really wasn't any foundation laid for that.

ALJ: So, so it is a County document. That's what he just said, it was a GIS from the County website.

MR. MCCANN: It is, GIS open portal data is where it's available to anyone.

MR. MUDD: Okay, that's fine.

ALJ: All right, no objection. Mr. Zimmerman, any objection to the documents?

MR. ZIMMERMAN: No objection.

ALJ: Okay and how about, Mr. Zimmerman, do you have questions?

MR. ZIMMERMAN: No questions.

ALJ: And Mr. Wyatt? Mr. Wyatt?

MR. WYATT: Yeah, my apologies. No questions, Your Honor.

ALJ: Okay, no problem. Mr. Sachse?

MR. SACHSE: No questions.

ALJ: And back to either Mr., is it Mr. Mudd or Mr. Rosenblatt? (inaudible) --

MR. MUDD: (inaudible) no questions, thank you.

ALJ: Okay, no questions. All right, okay. Thank you, sir. So, it's 1:00, we met your 1:15 deadline.

MR. GEORGE: Thank you very much, Your Honor. Thank you.

ALJ: Okay, appreciate it. All right. So, how about now, Mr. McCann? Is it a good time for a lunch break?

MR. MCCANN: I think so. Yeah, if it's okay.

ALJ: Let's do 1:45.

MR. MCCANN: Sounds good.

ALJ: And then you have three witnesses, so you have two more witnesses?

MR. MCCANN: I have one, two, three, yep, short ones.

ALJ: Oh, three, okay. All right.

MR. MCCANN: Okay.

ALJ: All right. I'll pause the record.

MR. MCCANN: Thank you.

(PAUSE)

ALJ: Back on the record after lunch and we have another witness in Mr. McCann's case.

MR. MCCANN: Yes, thank you, Judge. And just, just so you know, we have, I have four witnesses, not three. Sorry, it's a bit of a moving target on my end sometimes. But they're all, they will all be short.

ALJ: Okay.

MR. MCCANN: So, the first one is Larry Bruder, B-R-U-D-E-R.

ALJ: I think he was in the attendees' room, here we go. Okay, he's a panelist.

MR. BRUDER: Hello?

ALJ: Hi. All right. You unmuted your microphone and there you are --

MR. BRUDER: Can you see me?

ALJ: -- is your camera on? I can.

MR. BRUDER: Can you hear me?

ALJ: Yes.

MR. BRUDER: Great.

ALJ: All right. Raise your right hand, please. Do you swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. BRUDER: I do.

ALJ: Thank you.

MR. MCCANN: Thank you, Judge. Good afternoon, Mr. Bruder. Can you hear me?

MR. BRUDER: I can hear you.

MR. MCCANN: Okay, great. Tell the Judge where it is that you live.

MR. BRUDER: I live at 74 Seminary Farm Road in the Meadows.

MR. MCCANN: Okay. I'm going to show you a, a map and ask you to help me locate where your house is. This is Protestant's Exhibit 24-B. I'm going to highlight in green the house right here. Do you see that?

MR. BRUDER: Yeah, that's me.

MR. MCCANN: Okay and how long have you lived there, Mr. Bruder?

MR. BRUDER: About, I've lived in the Meadows, I guess, almost, a little over two years now.

MR. MCCANN: Okay. Did you live elsewhere --

MR. BRUDER: I did, --

MR. MCCANN: -- before?

MR. BRUDER: -- I did. I lived, when I moved into the development, I lived at 6 Deep Run Road, and that one is on the other side of the development (inaudible) --

MR. MCCANN: Okay and what was the address again? What was that address again?

MR. BRUDER: Six Deep Run Road.

MR. MCCANN: Deep Run, okay. Okay and you said you lived at the current address for two years. Who do you live with?

MR. BRUDER: My wife, Ann. I lived at the current, I've lived at the current address since April of last year.

MR. MCCANN: Of 2022?

MR. BRUDER: (inaudible) the Meadows since November of 2019.

MR. MCCANN: Okay. I'm, I'm confused now. You, you lived, you've lived at the current address for, just since April of 2022?

MR. BRUDER: That's right.

MR. MCCANN: And before that, you lived in Deep End, --

MR. BRUDER: Deep Run Road.

MR. MCCANN: -- Deep Run, I'm sorry, --

MR. BRUDER: Deep Run Road.

MR. MCCANN: -- since 2019?

MR. BRUDER: That's right.

MR. MCCANN: Got it, okay. And are you familiar with the development plan that's proposed for this site?

MR. BRUDER: I am.

MR. MCCANN: You've seen it?

MR. BRUDER: I have.

MR. MCCANN: Okay. What, if any, concerns do you have, Mr. Bruder, that you would like to express to the Judge?

MR. BRUDER: Well, I have a number of concerns that really are on two different levels, I guess. The first has to do with the, the concerns about the groups of homes that are adjacent to the new development. My neighbors on my left and my right. And then the other set of, of concerns I have really have to do with the community as a whole. So, I, I, I'll start that way. And just jump right into this.

In regard to my particular property, and the other properties on the left and the right of me, they would be from 76 Seminary Farms Road to, I think, 66 Seminary Farms Road. My, my first concern is about drainage. And my property as, is set, the backyard is set in such a way that all the water drains to the back.

And when it really rains, we get an awful lot of water going down there. And the Meadows in general tends to be really very wet all over and so all that water in my property, and also in my neighbors' property, I'm sure, drains back towards the, where the new development is going to be.

And when I saw the development plan, one of my concerns was that there are, there are going to be two houses that are going to be directly behind my house and I'm concerned about the amount of, of drainage that will be coming off those homes, off their rooves, they're going to be directed to the back of their property.

And so, I'm worried what's going to happen along that whole stretch of our neighborhood, our direct neighborhood, the ones that are adjacent to the new development, I'm just worried that, and I think my neighbors are worried too, about the, the, the fact that we might have somewhat of a canal there unless there's some kind of drainage put in. And so, so that's one area that we're concerned about and wanted to express to all of you.

The other is that the, the property behind us now, has, used to be a cornfield and now it's turned into, really turned into a, a meadow, a wildlife area. And, you know, as you get any open space, all of us know this is that we've got a lot of, a lot of wildlife.

We've got a lot of deer. We've got a lot of fox.

We've got a lot of rabbits. We got hawks that are hunting. You know, I, my, my sense is is that these types of, this type of an issue was kind of a lesser thing when you're thinking about development, but I am concerned, and we are concerned that these, these animals are all the, once the, once the land is churned up, they're all going to be coming into our development.

And, and we'll be having lots of fox under our decks and the deer already have been running through the property at night when I walk the dog. We've, we've had some close calls with deer running through the property. So, I'm worried we're going to be seeing a lot more of that because those animals won't, will no longer be in the meadow area.

The other area that I wanted just to bring up is that the development, the development really is a closed loop. And I, I apologize if you've heard this before, I, I'm sure that, Judge, I hope I'm not repeating things. But I just, this is all affecting me personally and I, I wanted to make sure I shared my thoughts on this directly.

But, it's a closed loop, and what that does is it makes it really a special area and a unique area for people to socialize, they walk around, they exercise. We have a number of different types of people in the development that are walking around.

We have people with strollers, we have people with,

we actually have a, one woman, Eddy, she's over ninety and she was in her walker the other day walking around the neighborhood, because it's easy to walk around, it's not a lot of traffic and it makes for a, a really nice way to meet people and, and have a community. And so that's something that we have continued to do.

And my concern is that if, if the development goes in, which I'm against, and if the thought of a pass through happens, which I'm also against, that, that we will become a thoroughfare for traffic that's heading from Seminary Avenue to Johns Hopkins or to Joppa and try to get to that intersection of Joppa and, and Falls Road.

And so, it becomes, like for example, in the mornings when I go out, Seminary Avenue can be, if you head out at about 7:30 in the morning, you, sometimes you can't make the left turn on Seminary Avenue because it's backed up all the way to our development, with cars waiting to go and make the left turn at Falls Road to head for the, head for the beltway.

Other times, if you go a little later, the, the traffic subsides but then you've got the fifty mile an hour cars, cars that are just shooting over the hill at a very fast rate.

And my concern is what'll happen in the mornings in particular will be that a lot of those cars that are blocked up and they can't get all the way down to Falls Road, will just

decide to just bypass Falls Road completely and make a left turn onto the Meadows, shoot down Mays Chapel and go right through the new development, hang a right onto Joppa Road and then hang another quick right and they're right into Johns Hopkins medical facility, which is a significant amount of, or there's a significant amount of traffic going back and forth there in the mornings, and in the evenings. So, that's my big concern.

One thing that I have noticed that even with, with no pass through, right now we don't have that issue, there are cars that will make that left turn and they don't see the, the sign that says no outlet and they'll make a left turn and they'll come, they'll come down Mays Chapel pretty darn fast. And then they go all the way down to where it says dead end and then they stop in their tracks, and they have to turn around and go back.

So, it is a concern. I think it's a natural thing that people would do, and I think it would damage the community. I think it would disrupt the, the lifestyle that we have there. You know, my concern would, would include the, the idea that we don't have a, or we're walking, we're walking in the road because we don't have sidewalks.

And we don't have, at this point, we don't have any speed bumps. And we also, we have fire hydrants along that Mays Chapel straight away and it is a straight away. So, it

does get, the concern really is that people would get pretty good speeds along there.

So, I'm concerned that the County would have to put a lot of money into actually putting some revisions into the area to be able to make it safe. And it is a safe, right now at this point, it is safe to walk around there.

Also, because the closed loop, it, it's also safe in regard to the fact that we don't get an awful amount of traffic other than the folks that are coming into the development. We do get the Amazon trucks and the FedEx trucks, which can be a problem, but the, as far as, you know, kind of they're driving around.

But the, in general, I, we've been told and, and you'd have to check the numbers, I guess, we don't have a lot of crime. It's, it's a relatively safe area because I think the fact that it's a closed loop development makes it a little bit of a, acts as kind of a safety buffer and helps us in that regard. So, so that's a concern.

I, I think that the, the one thing, I have had a chance to look at the, the aerial photograph that, of the revision that's planned for the intersection of Seminary, I'm sorry, the intersection of Joppa and Falls Road. And, in fact, I was, I was through that development last Friday.

I go through, or that, that intersection. I'll go through that intersection twice a day on the way to work, on

the way back from work. And there was an accident that particular day. And I'm, I'm not really clear on how the, widening that, that, that intersection a little bit and allowing a left turn really, really helps the situation a whole lot.

I mean, it, in this case, I was kind of, I was heading down south on Falls Road towards the beltway and there was an accident at that intersection. And it was an accident where it looked, it appeared that a car, what I observed, was that a car had tried to make a left turn from Joppa onto Falls Road and a Falls Road car, coming down, straight down south had hit it.

And, and the thing about that intersection is that you have three intersections in a row. You've got, you've got Seminary and Falls, then you have Greenspring and Falls and then you have the Joppa Road and Falls. And what's happening is that, okay, you got the cars turning left from Joppa Road down to the beltway.

That's, that's, you know, that's fine. That doesn't really appear to be very backed up in regard to getting those cars around. But the issue, the real issue is that the cars coming down Falls Road are going very fast. And what they try to do when the, when the traffic is heavy, what they're trying to do is avoid having to stop at several lights.

So, they kind of get a break and they start going

very quickly through the Greenspring, the Greenspring/Falls Road light and then keep going as fast as they can to see if they can clear that other light. I think that that's, that's part of the problem there.

But as far as the development is concerned, Your Honor, it doesn't seem to me that it, that that intersection is, would be a, what, what I really observe when I, when I drive around the neighborhood in the morning and the evenings and things, is that there's a much worse back up on the, going left towards Towson.

And a lot of times, if I go down Thornton, for example, I go to the dentist that way sometime or, or to St. Joe's, and so, when I head down in that direction and look to make a left turn, you can't really make a left turn, it's a blocked box right at where the, Thornton crosses Joppa Road, where the Royal Farms is. And so, I see that as kind of a problem.

It doesn't seem to me that working on that one development is going to really, I'm sorry, working on that one intersection of the Joppa and Falls is really going to help out the, the issue that we have going in the other direction towards Towson.

I think Johns Hopkins has a big impact on that, and obviously, you guys have talked about that quite a bit I would think.

So, so, my concern is that the, that the traffic patterns that would be created if, in the event that this, this development goes in and that pass through goes through, would really, you know, not only, you know, kind of, I think, impact the, the, the value of living in that community and the value of living in that area, which I think is, is exceedingly high. And, and so, so, that's why I'm against it. It's a very stable area and I think that, from my point of view, it would be a mistake to go through.

And I, and I haven't even gotten into the questions about sewers or, you know, kind of, or the storm drains. And I would say that the only thing there is that the community, as I talk to people in my community, they're not scared, but people feel pretty threatened and, and, and worried because, you know, we're hearing about the sewer system and I, I was listening to the testimony a little earlier that maybe there's a back up and we've heard that Johns Hopkins was supposed to be able to put in a, was, was supposed to do some revisions to the sewer system. We really would, what would be worse, I guess, to the, having the traffic problem, would be is if we have a sewer backup.

So, anyway, that's, that's what I wanted to say. I hope, Judge, that, first of all, I appreciate you listening to me. I'm sure you've heard a lot of this before. But, as I say, you know, my wife and I are significantly impacted by this

and appreciate it. And hope that you would have the opportunity at some point, if you haven't already, to stop and see the Meadows and to take a look at the, at the, at the neighborhood before you make a judgment.

MR. MCCANN: Thank you. Mr. Bruder, the accident that you mentioned at Joppa and Falls, when was that?

MR. BRUDER: It was Friday of last week.

MR. MCCANN: This, this past Friday, just a couple days ago or a week, okay.

MR. BRUDER: No, last Friday.

MR. MCCANN: Okay. Okay and it sounds like you travel the roads regularly. You said in the evening and in the morning?

MR. BRUDER: I do. I, I, I work, I work at a medical device company near the, near the airport. And so, I go through that, those intersections in the morning and in the evening.

MR. MCCANN: Okay, great. Thank you, Mr. Bruder. No other questions.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No questions. Thank you, Judge.

ALJ: Sure. Mr. Wyatt?

MR. WYATT: Yeah, good afternoon, Mr. Bruder. A question about the accident that you saw, this is Friday morning about 8:30?

MR. BRUDER: That's, yeah, that's right.

MR. WYATT: Yeah, I think I saw the same accident. The intersection was closed for some period of time, was it not?

MR. BRUDER: It was, but when I went through, it was, it was still open, they were letting us through on the left side.

MR. WYATT: Right. And it, with, with what frequency would you say you've seen accidents at that intersection at the time you've lived at the Meadows?

MR. BRUDER: I would say, I, I, well, I haven't witnessed them everyone, so it's not something that I see a lot, I'm only going down at particular times. But I've seen, I, I'm, I've seen certainly three different accidents.

MR. WYATT: And, and --

MR. BRUDER: This one was the most recent, to my mem, and obviously the freshest.

MR. WYATT: Right, okay. Thank you, Mr. Bruder. I have no further questions.

MR. BRUDER: Okay, thank you.

ALJ: Mr. Sachse?

MR. SACHSE: Mr. Bruder, I just wanted to make sure you are against the development. You are protesting the development itself?

MR. BRUDER: I am against the development, sir. And,

and if in a disappointing situation where the development is approved, I am absolutely against the, the pass through, which I think would be just --

MR. SACHSE: I, I understood that. I just, I wanted to make sure that I knew if you were for or against the development.

MR. BRUDER: I am against the development.

MR. SACHSE: That's, that's what I wanted to know. Thank you very much.

MR. BRUDER: Thank you.

ALJ: Mr. Rosenblatt or Mr. Mudd?

MR. ROSENBLATT: Just a couple questions. Good afternoon, Mr. Bruder. This is Mr. --

MR. BRUDER: Hi, how are you?

MR. ROSENBLATT: Good. This is Mr. Rosenblatt. Just a couple questions for you. You just answered really my biggest question with Mr. Sachse. But the first thing you talked about was water flow. Have you taken a look at the development plan? Do you know if the grades are proposed to go away from your property or towards your property?

MR. BRUDER: I don't know. I know there's been talk about a berm in the back of the property that they would put up, which, to help, I guess, with screening of looking at these houses. But no, I don't know.

MR. ROSENBLATT: Okay.

MR. BRUDER: But I, it is a concern.

MR. ROSENBLATT: Would it alleviate your concern if the grades were proposed, basically, at their highest towards your property line and got progressively lower towards the center of this development?

MR. BRUDER: You know, Mr. Rosenblatt, I, I'm not, I'm not an expert on any of this, so I can't, I don't think I can comment on that.

MR. ROSENBLATT: Okay.

MR. BRUDER: I just know right now it's a worry of mine. What would be, what would be great is if there was a, is if there would be no, no canal going back through my property when this development is put in. And I'm assuming that there is a lot of thought being put into, to having that done correctly. And I would hope that would be the case.

MR. ROSENBLATT: Sure. Just one, one other question. You talked about how you go to St. Joe's and I, I just didn't quite understand the (inaudible) --

MR. BRUDER: Oh, yeah.

MR. ROSENBLATT: -- intersection you were talking about? So, --

MR. BRUDER: Yeah, I'm sorry. So, (inaudible) --

MR. ROSENBLATT: -- (inaudible) let me ask a specific question and then you'll, I'll give you --

MR. BRUDER: Okay.

MR. ROSENBLATT: -- all the time to answer it. So, when you are leaving your house to go to St. Joe's, you say you go down Thornton Road to Joppa?

MR. BRUDER: I will go Thornton Road to Joppa, make a left on Joppa.

MR. ROSENBLATT: Right.

MR. BRUDER: And then I go to that really bad intersection at Bellona and Joppa and then I make a left turn--

MR. ROSENBLATT: So, is that --

MR. BRUDER: -- that drops me out onto Charles Street, then I make a right turn.

MR. ROSENBLATT: Is that the left, the left turn you were talking about, was at Joppa and Bellona that is difficult?

MR. BRUDER: The left turn is, the first, the left turn I'm trying to make is from Thornton to Joppa, and that's backed up. So, because it gets backed up over that bridge. And, and then that intersection of Bellona and, and Joppa.

MR. ROSENBLATT: Okay.

MR. BRUDER: It's a very bad intersection and --

MR. ROSENBLATT: Okay. That, those are the two you were talking about, okay.

MR. BRUDER: Those are, yes, sir, that's the one I'm taking about.

MR. ROSENBLATT: Go it, no further questions. Thank you for your time.

ALJ: Any re-direct, Mr. McCann?

MR. MCCANN: No, but thank you.

ALJ: All right. Thank you, sir.

MR. BRUDER: Thank you very much. Appreciate the opportunity to talk about it.

ALJ: Thank you. And, Mr. McCann?

MR. MCCANN: Yeah, Brooke Yearly, Y-E-A-R-L-Y.

ALJ: Another attendee. So, just a second. Yep, there we go. All right. Ms. Yearly?

MS. YEARLEY: Yes, good afternoon.

ALJ: Hi. I'm looking for you. There you go.

MS. YEARLEY: (inaudible). I'm on an I-Phone, so I'm not sure if this is going to work, but.

ALJ: Sure. Do you have a camera or no?

MS. YEARLEY: I'm not seeing anything that will allow me to click on a camera.

ALJ: Okay.

MS. YEARLEY: I can share, let's see.

ALJ: Can you see the screen?

MS. YEARLEY: I can see the screen.

ALJ: Okay. Would you just raise your right hand, please? Do you swear and affirm under penalties of perjury, that the testimony you are about to give is true and correct to the best of your knowledge and belief?

MS. YEARLEY: Yes.

ALJ: Okay.

MR. MCCANN: Okay. Thank you, Judge. Yeah, we were trying to work out the video earlier, it wasn't working, so. Can you hear me, Ms. Yearley?

MS. YEARLEY: I can.

MR. MCCANN: Okay and where do you live?

MS. YEARLEY: I live at 66 Seminary Farm Road and --

MR. MCCANN: Okay.

MS. YEARLEY: -- I have lived here since 2012.

MR. MCCANN: Okay and you live, you are neighbors with Mr. Bruder?

MS. YEARLEY: Yes.

MR. MCCANN: How many houses down are you from Mr. Bruder?

MS. YEARLEY: I am three houses down from Mr. Bruder. I am the last house along the farm, before it reaches the forest area that is the backside of Johns Hopkins complex.

MR. MCCANN: Okay. Can you see the green highlighting that I just did?

MS. YEARLEY: Yes.

MR. MCCANN: Okay. That's, is that correct?

MS. YEARLEY: If the house to, or if the lot to the right is the vacant lot, yes.

MR. MCCANN: Did I highlight the right house right here?

MS. YEARLEY: The green one, it should be, yes.
MR. MCCANN: Okay, great.
MS. YEARLEY: Yep.
MR. MCCANN: And how long have you lived there?
MS. YEARLEY: I've lived here since 2012.
MR. MCCANN: Okay and who do you live with?
MS. YEARLEY: I live with my husband, Chuck Yearley.
MR. MCCANN: Okay and without repeating, I know you haven't attended all the days of the hearing, but without repeating too much of Mr. Bruder's testimony, what, if any, concerns do you have to express about this development?
MS. YEARLEY: Okay. I am opposed to the development for a number of reasons. I'm going to second the reason for the wildlife. The other day, we had thirty deer in our backyard. We've had hawks, foxes, etcetera. I'm not going to belabor the point. But they would certainly be impacted.
I also have water in the back of my yard. On a heavier rain, there are numerous springs in the back of our yard. We do have a basement. We need to run a dehumidifier when we have heavy rains so that it doesn't penetrate. I too am concerned about the flow of water, and I believe that the berm would create an unnatural setting for water disbursement.
MR. MCCANN: Okay.
MS. YEARLEY: I am also extremely concerned about the lack of improvements for the third building of Johns Hopkins,

their third pavilion. That it is public knowledge that they did not make those improvements when they had the opportunity, therefore, any development in this area would put further impact on sewer, water and utilities.

I am exceptionally concerned for the known three failed intersections of which I travel as a pre-school teacher frequently. And would like to describe what happens when St. Paul's School, both going and coming, 8:00 a.m. and 5:00 p.m., to pick up carpool.

Seminary Avenue backs up, cars who do not want to wait for the multiple turns in the traffic pattern will make a U-turn unsafely in the middle of Seminary Avenue, sometimes turning into the Meadows, and go the other way, presumably down Tallyho or Thornton.

I've also seen this happen on Joppa Road, both at Tallyho and I believe the name of that other road is Whitehurst, White something, White something.

MR. MCCANN: Um hm.

MS. YEARLEY: I, I too have been unable to get out of my development and make a left turn for this reason. I invite the Judge to please come and drive when you're able to drive these roads, to come into the Meadows and see that it is a close community to drive at 5:00 if your time allows, to drive at 8:00 if your time allows.

I think it doesn't do it justice to see statistics.

You have to witness it and I think we are terrified of the impact. We successfully were able, as a community, to dissuade the Grace Fellowship Church from being developed on Seminary, Seminary Avenue.

This development is quite large. This development is also not in keeping with the lot sizes of the individual single-family homes that are on the backside of the Meadows, also along Tallyho and the offshoots of Tallyho whereby our house is on a half an acre, some are three-quarters of an acre, and these would be exceptionally close. I am extremely opposed to, to that.

I believe that, just to repeat, there are young children. We have someone who comes to our neighborhood, who is recovering from a horrific car accident, an adult who walks on a three wheeled walker because his attendant knows that he's safe and is not in harms way for cars as he learns to rehabilitate his legs.

We do have older people, we have younger people. We have people who ride bikes. We have a two-year-old learning how to ride a scooter. We do not have sidewalks. I'm repeating, but just to re-emphasize, we do not have sidewalks. That's the appeal of a, a close-knit community where we feel safe.

My secondary concern is that I am very much opposed to the development and hope that that issue will stand alone.

With that being said, the pass through would create an enormous traffic nightmare, security issues, cut throughs that people would develop as they develop when 695 backs up and 83 backs up, they come out like ants out of a wet ant hill and they go through all the communities, Bellona Avenue, Joppa Road, Seminary.

I too have witnessed an accident that I believe was two years ago at that intersection of Greenspring and Falls where a motorcyclist was tragically killed because of that intersection.

So, I, I just, I invite you to come and, and see the impact, the irreversible impact, not to mention schools. I do not see any improvement in the, the two schematics for a slighter turn lane on Joppa Road. I see no improvement to the flow of traffic, the congestion and adding more volume seems unsafe.

MR. MCCANN: Yeah. You, were you referring just now to the proposed improvements at Joppa? Is that what you were referring to?

MS. YEARLEY: Yes, the, the map that I have been sent.

MR. MCCANN: The aerial photograph?

MS. YEARLEY: Yes, sir.

MR. MCCANN: Okay. You also mentioned, and I'll share again this map with you that I showed you earlier, where

cars turn around on Joppa. And I know the Judge is familiar with the roads by now. But the, you said it happens at, on Joppa at Tallyho. And then you said the other road, was, is it this road right here, White Manor, is that where it was?

MS. YEARLEY: White Manor, yes. White Manor and Tallyho, when people are backed up on Joppa Road and they will do a U-turn.

MR. MCCANN: Um hm.

MS. YEARLEY: And then have to come across traffic and turn to go to the opposite way, extremely dangerous. They do the same on Seminary Avenue when it backs up going towards Falls Road, a U-turn, exceptionally dangerous. Yes, sir.

MR. MCCANN: You mean, they're heading westbound towards, towards the light and apparently they see traffic and turn around?

MS. YEARLEY: Yes, and they do a U-turn, sometimes they are positioned to do a U-turn at the beginning of Mays Chapel, the entrance to the Meadows. But sometimes not. They'll just whip around.

MR. MCCANN: So, obviously, you're not seeing that sort of thing from your house, that's when you're in, you're in your own car, it sounds like, right?

MS. YEARLEY: Yes, yes.

MR. MCCANN: Okay.

MS. YEARLEY: We also have the new Torch Hill across

the street, which will also impact the traffic on Seminary Avenue or even more traffic.

MR. MCCANN: So, you, do you drive these roads regularly?

MS. YEARLEY: I do.

MR. MCCANN: Yeah. Where's the school that you work at?

MS. YEARLEY: It is called Woodbrook Early Education.

MR. MCCANN: Um hm.

MS. YEARLEY: And it is on Stevenson and Charles and sometimes that traffic area is so bad, that I will go down 83 and get off and come up on Charles. It, various ways to get to the school, so I have to plan my route carefully.

MR. MCCANN: So, you're heading westbound from your house?

MS. YEARLEY: Yes, sometimes, yes. Um hm.

MR. MCCANN: Okay, great. Unless there's anything else you want to add, thank you for your time.

MS. YEARLEY: All right, thank you.

ALJ: Mr. Zimmerman, any questions?

MR. ZIMMERMAN: No questions, Judge.

ALJ: Mr. Wyatt?

MR. WYATT: No questions.

ALJ: Mr. Sachse?

MR. SACHSE: I don't have any questions.

ALJ: Mr. Rosenblatt?

MR. ROSENBLATT: Just one. I, I just want to make sure I wrote this down correctly. You, you had mentioned an accident that was fatal. Can you just tell me what intersection that was and how long ago that was?

MS. YEARLEY: I was at the bank, the M&T Bank, which is in the little strip shopping center, and I believe that it was a southbound on Falls and the light at Greenspring, that it involved multiple cars and a motorcyclist that was hit and, what do you call it, he was airborne because of the accident and died at the scene.

MR. ROSENBLATT: How long ago was that?

MS. YEARLEY: I believe it was two years ago, but my memory is not specific to the length of time that was.

MR. ROSENBLATT: Okay. Thank you. No further questions.

ALJ: Any re-direct, Mr. McCann?

MR. MCCANN: Just to be clear, when you say Greenspring, you mean Greenspring Valley?

MS. YEARLEY: Yes, Greenspring Valley, yes.

MR. MCCANN: Okay, great. Nothing else. Thank you.

MS. YEARLEY: Thank you, Judge.

ALJ: Thank you, ma'am. All right, Mr. McCann.

MR. MCCANN: Michael Singer.

ALJ: All right, Mr. Singer.

MR. SINGER: I'm here, I can hear you.

ALJ: There we go, okay. Let's see. There we go. Oh, there you are. All right. Raise your right hand, please. Do you swear and affirm under the penalties of perjury, the testimony you are about to give is true and correct to the best of your knowledge and belief?

MR. SINGER: Yes.

ALJ: Okay, great.

MR. MCCANN: Thank you, Judge. Mr. Singer, tell the Judge where you live.

MR. SINGER: 10937 Mays Chapel Road.

MR. MCCANN: Okay. Is that, is that also in the Meadows?

MR. SINGER: Yes, we're the second house on the left when you turn into the development.

MR. MCCANN: Okay. I'll pull up the map. Bear with me one second. Okay. You see that map, sir?

MR. SINGER: Yes.

MR. MCCANN: Okay. So, you're on Mays Chapel Road. I'm going to highlight in green in the Meadows. Is it this property right here?

MR. SINGER: Yes.

MR. MCCANN: Right here, is that right?

MR. SINGER: Correct.

MR. MCCANN: And you said that the second house from

Seminary?

MR. SINGER: Correct. You, you got the right house. It's green, it's triangular.

MR. MCCANN: Got it, got it. How long have you lived there?

MR. SINGER: Since November of 2013.

MR. MCCANN: And who do you live with?

MR. SINGER: My wife, Mary, my three kids, Owen, Gavin and Josephine, and my two dogs, Lulu and Coco.

MR. MCCANN: And how old are the kids?

MR. SINGER: Thirteen, eleven and seven.

MR. MCCANN: Okay and you're familiar with the development plan for this site behind you?

MR. SINGER: Yes.

MR. MCCANN: You've seen it?

MR. SINGER: Um hm.

MR. MCCANN: Okay. What if, what, if any, concerns do you have?

MR. SINGER: So, similar to what Larry and Brook were talking about, I'm very concerned about traffic. We moved to this neighborhood because of the low traffic, of the, it not being, I mean, we love our house and everything. But one of the big reasons we moved there was there wasn't a lot of traffic.

We planned on growing our, our family. We walk in

the neighborhood, we bike in the neighborhood, we play in the side yard regularly, we just love it here. And I'm concerned that with any, you know, increased traffic, and it being a cut through, it's going to make it more dangerous for, for my family.

I'm also concerned about everybody that walks in the neighborhood. There's a lot of elderly here, there's some younger families as well. And so, I, I, I'm very opposed to the cut through from the new proposed neighborhood.

MR. MCCANN: Okay and are you also opposed to the development itself? That is --

MR. SINGER: You know, I, I am just based on traffic, what everybody's mentioned about Seminary Avenue, Falls Road, the failing intersections going into Greenspring Station. We drive, one of our children is at St. Paul's everyday and pick, pick him up every day.

And if we don't leave before 7:30 in the morning, it's, it's about a thirty-to-forty-minute ordeal to go about three hundred yards and back. We, we frequently, if, if you leave after 7:30, you can't make a left. It's just backed up all the way down to Tally, Tallyho, so.

MR. MCCANN: Um hm.

MR. SINGER: For there to be more traffic in the area, would negatively impact us. We would, it, it would really have a material negative impact on us.

MR. MCCANN: Okay. Anything else, Mr. Singer, that you want to add?

MR. SINGER: That's it.

MR. MCCANN: Okay. Thank you, sir. No other questions.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: Yeah, no questions.

ALJ: Mr. Wyatt?

MR. WYATT: No questions.

ALJ: Mr. Sachse? I'll unmute you again. Mr. Sachse?

MR. SACHSE: Oh, I'm sorry, I'm sorry. (inaudible).

ALJ: All right. You said no questions, right?

MR. SACHSE: No, no, no. I said I had one question.

ALJ: Oh, I'm sorry. Go right ahead.

MR. SACHSE: No, no problem. I, I probably (inaudible) mine. But just how, how often or how many school buses come into the, the closed loop neighborhood at the Meadows?

MR. SINGER: I don't, I don't know that. My kids, two of my kids take a bus to Riderwood. So, I know there's at least one. But I don't track how many come in and out. I'm sure you could find that.

MR. SACHSE: I just didn't know if you had elementary, middle and high school buses coming in and out on a

regular basis. I'm sure you would notice that.

MR. SINGER: Two of my children are in elementary school and ride the bus to Riderwood.

MR. SACHSE: So, you do have one bus maybe that comes in the morning and the afternoon?

MR. SINGER: I would say a minimum of one bus.

MR. SACHSE: But you don't know of any other?

MR. SINGER: I've seen other buses, but I don't know the count. I don't, I don't count them.

MR. SACHSE: Okay, okay. And your, your basic objection is to the increase flow of traffic, not on, possibly in your neighborhood, but all the way around, Seminary, Joppa, Falls, Thornton, Tallyho, etcetera, is that right?

MR. SINGER: Yes. I'm, I'm concerned for the safety of my children, concerned for the safety of my neighbors. There's no sidewalks in the neighborhood. Everybody walks on the street, and they walk frequently, we walk frequently. And then further out, you know, there's just a lot of traffic once you get out of the neighborhood as well. In, in all directions.

MR. SACHSE: I, I, I, I understood that. I was asking though whether you objected to the, the building or the development being built at all because the, not, not only Joppa, Seminary and Falls, but every neighborhood in the area would be affected by the increased traffic.

MR. ROSENBLATT: Objection.

MR. SINGER: That's not my primary reason, but I --

ALJ: Hold on one second. Mr. Rosenblatt objected. I think as to the complex nature of the question? And the testimony?

MR. ROSENBLATT: I, it's just really like over the top testifying but --

ALJ: Yeah.

MR. ROSENBLATT: -- it is what it is. It's --

ALJ: I, I know. So, Mr. Sachse, yeah, you are just kind of testifying as you, you, you formulate the question. We just, what it sounds like, you know, you're giving him a statement and you want him to agree. You could probably just shorten it and just make a, you know, raise a question, I mean, you know, ask him what is --

MR. SACHSE: Actually, Your Honor, I'm not (inaudible).

ALJ: (inaudible).

MR. SACHSE: I'm trying to make it very easy by making it a cross examination question that he could say yes or no to.

ALJ: Yeah.

MR. SACHSE: And he's already testified that there is so much traffic on Seminary, Joppa, etcetera, he's concerned about that neighborhood being built and increasing the traffic.

His main concern --

MR. ROSENBLATT: This is now all testimony --

ALJ: I know. This is the, you're testifying now, Mr. Sachse. So, so, let's just, let me do it this way. So, Mr. Bruder, so, I'm sorry, it wasn't Mr. Bruder. Mr. Singer, sorry, wrong name. Mr. Singer, so, are you, is, is it your concern that traffic will increase not only in the, in the Meadowood community, but also in the surrounding communities or no?

MR. SINGER: Yes.

ALJ: Okay, there you go.

MR. SACHSE: Thank you for that. That was about it, yes.

ALJ: That was it, are you sure? I don't want to cut you off.

MR. SACHSE: No, no, I, I, I agree. I mean, I was just trying to lay the foundation for it, that's all.

ALJ: Understood, okay. All right, let's see. Mr. Rosenblatt?

MR. ROSENBLATT: No questions. Thank you.

ALJ: Okay. Any re-direct, Mr. McCann?

MR. MCCANN: No, thank you, Judge. Thank you, Mr. Singer.

ALJ: Thank you, Mr. Singer.

MR. MCCANN: Okay. Lastly, Your Honor, Mike, Mike

Volley, V-O-L-L-E-Y.

ALJ: Okay, let's see. All right. He's a panelist. Where are you? Hm, there you are. Here, I'll unmute you. Can you hear me?

MR. VOLLEY: I can.

ALJ: All right. Do you have a camera?

MR. VOLLEY: Yes, it, it's trying to work and there it goes.

ALJ: Oh, there you are. All right. Raise your right hand, please. Do you swear and affirm under the penalties of perjury, that the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. VOLLEY: Yes.

ALJ: Okay.

MR. MCCANN: Okay, thank you, Judge. Good afternoon, Mr. Volley.

MR. VOLLEY: Good afternoon.

MR. MCCANN: Tell the Judge where you live, please.

MR. VOLLEY: I live at 8 Trelawney Court in the Seminary Ridge development.

MR. MCCANN: Okay. I believe you live next door to Mr. Wyatt, is that right?

MR. VOLLEY: Two houses down.

MR. MCCANN: Two houses down. Good thing. Let me show you the map we've been sharing with everybody. One

second. Okay. Trelawney Court is right here, correct, do you see that?

MR. VOLLEY: Yep.

MR. MCCANN: Okay and are you right where my cursor is, right here, is that your property?

MR. VOLLEY: I'm to the left of that. I'm just next to the, the green highlighted.

MR. MCCANN: Okay. Yeah, I'm sorry, I thought you were there. So, I'm going to highlight you, if I can, in pink. That's your property there, correct?

MR. VOLLEY: Correct.

MR. MCCANN: Sort of a triangular shape at the end of the Court?

MR. VOLLEY: You got it.

MR. MCCANN: Okay. Great. How long have you lived there?

MR. VOLLEY: Eighteen years.

MR. MCCANN: Okay and who do you live with?

MR. VOLLEY: I live with my wife, I had five children, three are still living here, two are off at college, and we just got a dog recently.

MR. MCCANN: Okay. I'm going to show you a couple photographs to start off. These are Exhibits 48-A and, and B, beginning with 48-A, do you see that?

MR. VOLLEY: Yep.

MR. MCCANN: Did you take this photograph?
MR. VOLLEY: I did.
MR. MCCANN: When did you take it, Mr. Volley?
MR. VOLLEY: About a month ago.
MR. MCCANN: Okay and is this Trelawney Court that we're looking at?
MR. VOLLEY: Correct.
MR. MCCANN: And is your house on the left or the right?
MR. VOLLEY: It's on the left.
MR. MCCANN: Okay and then, before I ask you a little more about this, let me show you the next exhibit, which is 48-B. Is this also Trelawney Court?
MR. VOLLEY: Yes.
MR. MCCANN: And is this you, is one of the, is this your house here?
MR. VOLLEY: Correct.
MR. MCCANN: Okay. Why did, why did you take these photographs?
MR. VOLLEY: I took them because you asked me to take them.
MR. MCCANN: Okay. Well, let me ask you, well, did you more specifically, did you have, have any sewer issues before you took these photographs that prompted you, or prompted me to ask you to take the photographs?

MR. VOLLEY: Unfortunately, we did.

MR. MCCANN: Okay and explain what happened, if you would.

MR. VOLLEY: On November the 11th of this past year, Friday night, I just happened to walk down into my basement and noticed some water. I was able to figure out that it was coming from a toilet in our basement bathroom. I, you want the whole story?

MR. MCCANN: You're breaking up a bit, Mr. Volley.

MR. VOLLEY: Okay, can you hear me?

MR. MCCANN: No, it's broken up. But --

MR. VOLLEY: Can you hear me now?

MR. MCCANN: That's much better. Yeah, can you start over again?

MR. VOLLEY: Sure. On the evening of November 11th of the past year, I was in my basement and noticed water was on the, the floor.

MR. MCCANN: Um hm.

MR. VOLLEY: I was about to figure out that it was coming from the toilet, which is in our basement bathroom. I was able to take the toilet off and shoved towels into the little hole, or the big hole the toilet connects to the sewer line.

We are able to get a plumber out the next day, who came out and, you know, upon pulling the towels that were, were

stopping the sewage from coming up, sewage started, started coming in, the plumbers, you know, were able to ascertain after an hour or two, let's say, that the stoppage or --

MR. MUDD: Objection, objection.

ALJ: Mr. Mudd?

MR. MUDD: I think we're, we're, we're going with hearsay again here. I don't have a plumber to cross examine here.

ALJ: Yeah, well, that's true. What, what, Mr., I'm sorry, Mr. Volley, just limit your testimony to what your understanding of the issue was, as opposed to saying it as what the, the plumbers told you or something like that. Does that make sense?

MR. VOLLEY: Yes. I'll do my best.

ALJ: Okay. Do it that way, do it that way, yeah.

MR. VOLLEY: We, it's my understanding that the issue that was causing the backup and the sewage coming into our basement was a blockage on the County sewer line.

MR. MCCANN: Do, and do you know where that was?

MR. VOLLEY: Yes, it, it was between the two manhole covers of the two pictures that you showed me earlier.

MR. MCCANN: Okay. So, just for reference, those are manholes shown in 48-B, that's the one closest to your house, correct?

MR. VOLLEY: If that's the picture that's on there

now, yes.

MR. MCCANN: Okay. Can you see the picture?

MR. VOLLEY: Yes.

MR. MCCANN: Okay and then 48-A, that's the manhole that's farther away from your house?

MR. VOLLEY: Correct, yes.

MR. MCCANN: So, your understanding was what with respect to those two manholes?

MR. VOLLEY: That the blockage that was causing the sewer to come into our basement was between those two.

MR. MCCANN: Okay and, and was the issue resolved?

MR. VOLLEY: Yes, I mean, we called the, the County. They were quite responsive. They came out within an hour. They identified what needed to be done. They sent a very large vehicle to come out. They took the manhole cover off the one you're showing. They hooked a line up to the fire hydrant. They put a gigantic snake down that manhole cover.

MR. MCCANN: Um hm.

MR. VOLLEY: The snake did what the snake does. It released the blockage. The water from the other manhole cover receded and that caused the sewage from stopping to come into my basement.

MR. MCCANN: Okay and how long were the County folks there, do you recall?

MR. VOLLEY: They were pretty quick, you know. We

called, they came out within an hour. Those guys called the big truck. That truck came within an hour and, you know, they were gone within an hour. You know, once the, the big truck came and the, they started working, it was over within fifteen minutes, I'd say.

MR. MCCANN: Okay. Let me show you another exhibit, if I could. And this is, do you see that map?

MR. VOLLEY: Yes, I do.

MR. MCCANN: This would be, I believe it's 48-C, Your Honor. And do you recognize, and I'll blow it up a little bit, Mr. Volley. Do you recognize where it is on this map that your house is?

MR. VOLLEY: Yes.

MR. MCCANN: And am I, am I circling the correct property right here?

MR. VOLLEY: Yes.

MR. MCCANN: Okay and to the best, your, your familiarity, I take it you're familiar with these manholes because you see them a lot, correct?

MR. VOLLEY: I do.

MR. MCCANN: Are, are the manholes that we just saw photographs of, are, are, are they 45745 and 45744, these two?

MR. VOLLEY: Yes.

MR. MCCANN: Okay, all right. Okay, thank you. How about, what, what are your feelings about the development at

large, Mr. Volley, in general, putting aside this issue? Moving on.

MR. VOLLEY: I mean, I'm opposed to the development primarily for the, the concerns that the folks prior to me have expressed. Primarily the current infrastructure being overburdened as it is and with the new development, which has taxed the infrastructure even more from a traffic, sewage and, and other issues.

MR. MCCANN: Okay, great. Your Honor, I'd move Exhibits 48-A, B and C in, and I have no other --

ALJ: 48-C is this, where's this map come from again?

MR. MCCANN: Same, Baltimore County's GIS open data portal.

ALJ: Okay, all right. Any objection to 48-A through C?

MR. MUDD: No.

ALJ: Okay. Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

ALJ: Okay. Those are in. Let's see. Mr. Zimmerman, any, I'm sorry, Mr. McCann, were you finished?

MR. MCCANN: Yes, I was, thank you.

ALJ: Okay, sorry. Mr. Zimmerman, any questions?

MR. ZIMMERMAN: Actually, one or two.

ALJ: Okay.

MR. ZIMMERMAN: I have to ask you, Mr. Volley, with

reference to this blockage incident and the sewer that you describe, what, if anything, do you think that has to do with whether or not this development plan should be approved?

MR. VOLLEY: Well, it's my understanding that additional stress on the sewer system would be bad. It would have led to more sewage, potential sewage blockages and/or more sewage coming up in my basement.

MR. ZIMMERMAN: Okay. If that's it then, thank you. That's, you've answered my question. Thank you very much.

MR. VOLLEY: You're welcome.

MR. ZIMMERMAN: That's all, yeah.

ALJ: Mr. Wyatt, any questions for your neighbor?

MR. WYATT: I do. I just have a few. Good afternoon, Mike. I want to, you talked about this sewer problem on our Court being resolved pretty quickly. But let me, let me ask a few questions. My observation was your situation wasn't resolved quickly. How much, how much work, or how much damage did this sewer backup cause in your home and in your basement?

MR. VOLLEY: Well, I can say, it, there was significant damage. The, literally the plumber just left about a half an hour ago to do the final repairs to the basement. It was less than it could have been because me and my wife had a shop vac and were, took about twenty-five large shop vacs of sewage and dumped it into our backyard as the plumbers were

working. But it, we've been without a basement since, you know, November 11th.

MR. WYATT: All right and so when you were talking about water coming up out of the toilet, we're really talking about effluent sewage, raw sewage materials, just so we're not confusing drinking water with what you experienced as a family?

MR. VOLLEY: No, it's the worst that you could ever imagine.

MR. WYATT: All right. And I, I, you, whether you may or may not have had insurance, are you able to quantify in terms of dollars the, the, the amount of damage that this sewer backup caused to your home and your loss? Are you able to quantify that?

MR. VOLLEY: Well, luckily we did have insurance for this sort of accident. It's a, it's a rider that needs to be added and by the grace of God for some reason I did it. And it's, I believe, it's in the neighborhood of $60,000. A portion of that also has to do with, you know, once they cleaned up the initial, you know, once we, the, the plumber or the County fixed the issue, the water receded, they came out and they ripped out all of the carpeting.

They also ripped out a bunch of the tile that was underneath of the carpeting and it turns out that that was asbestos tiling. So, we ended up having to take all of that out as well. So, over, over, you know, adding everything up, I

believe it was about $60,000.

MR. WYATT: All right and this, all, the extensive refurbishment or repairs took place over the course of weeks, if not months?

MR. VOLLEY: Well, today the plumber just left, so it's over two and a half months.

MR. WYATT: All right, thank you. I have no further questions, Your Honor.

ALJ: Mr. Sachse?

MR. SACHSE: I don't have any questions, thank you though.

ALJ: Okay. Back to Mr. Rosenblatt or Mr. Mudd, which one?

MR. MUDD: It would be me. Just a couple.

ALJ: Okay.

MR. MUDD: Good afternoon, Mr. Volley.

MR. VOLLEY: Hello.

MR. MUDD: The, do you know where the sewer connection is occurring for the subject property? Where, where it's connecting to the public sewer system?

MR. VOLLEY: Nope.

MR. MUDD: Okay. So, you don't know whether or not the sewage that would be generated from the subject property would actually come through your street?

MR. VOLLEY: Correct.

MR. MUDD: Okay and is there a, is there a stream or a flood plain behind your house?

MR. VOLLEY: Yes.

MR. MUDD: When you dumped your sewerage, did you dump it near that?

MR. VOLLEY: Nope.

MR. MUDD: Okay, all right. I have no further questions.

ALJ: Any re-direct, Mr. McCann?

MR. MCCANN: No, thank you, Mr. Volley.

MR. VOLLEY: Thank you.

ALJ: Okay. Thank you, Mr. Volley. All right. Mr. McCann?

MR. MCCANN: That's it, Your Honor.

ALJ: Oh, that was it, that was the total. Okay. Well, it's only 2:40.

MR. MCCANN: Yep.

ALJ: So, you don't have anyone else who can testify today?

MR. MCCANN: Well, I made an effort to make sure that we covered everybody, so I don't think we've missed anybody. We have two witnesses coming on the 10th.

ALJ: Okay. So, two, two more witnesses on the 10th of February.

MR. MCCANN: Yep.

ALJ: By the way, that's supposed to be like, that's supposed to be the last day but are we going to be able to finish?

MR. MUDD: No.

ALJ: Because we have rebuttal, I mean, the, yeah, rebuttal.

MR. MCCANN: Well, that's the first I've heard that we're not going to be able to finish but.

ALJ: I don't know, I was asking Mr. Mudd, Mr. Rosenblatt?

MR. MUDD: I think today's the first that we heard that Mr. McCann was going on to the next day and not going to use up an extra hour and twenty minutes that we had before 4:00.

MR. MCCANN: We agreed to two days, Your Honor. I mean, I said nothing to these gentlemen to the contrary, so, there shouldn't be any --

MR. MUDD: Your Honor, --

MR. MCCANN: -- there shouldn't be any complaints.

MR. MUDD: I'm not, and I'm not, the, the complaint that we have, Your Honor, and I'm sorry if this is going to sound frustrated but we've been at this for nine days. And I think the expectation of the other side is that they get to put on seven plus days of witnesses and testimony and stop in the middle of a day and then expect us to finish our entire

rebuttal on the rest of that day.

And we'll certainly do our best, but I don't think we can be expected to even know what's going to be testified to next time. And we need time to, to prepare a response. That, that's the frustrating part for us.

MR. MCCANN: Yeah, I won't, I won't speak to that. I'll let that stand.

ALJ: Well, in, in --

MR. MCCANN: It doesn't matter. It doesn't matter.

ALJ: So, so, and just to, and just, in response to that, you, the, the Developer gets a chance to rebuttal, and you get, you get to respond. And so, if, if there's not enough time on the next day, then there's going to be another day. There's going to be day eleven.

So, I mean, you know, I know that's not ideal but we're not going to cut it off either for the rebuttal testimony. So, I mean, that's the way, you know, I want these cases to, I want everyone to be able to testify and to put in whatever evidence you need to put in. And so, I was just trying to see if there's anyone else that we could call.

Mr. McCann, would you look at the attendees real quick? Most of the names I already recognize have already testified. Is there anyone, or in the panelists as well, is there anyone you don't represent that I could, I don't want to go through these names. If, if you recognize them all.

MR. MCCANN: To be honest with you our folks, I don't recognize, but they may be Developer folks. There's no one that I'm aware, looking at this list of participants that has expressed an interest to me to testify. Either I represent or I don't represent.

ALJ: Okay.

MR. MCCANN: So.

ALJ: Right, right. I just don't want to call on someone if it's one of your clients. So, obviously Mr. Bruder, Mrs. Bruder, they are together. We had Ms. McGraw already. We had, I don't think we had Mr. Coggins, right?

MR. MCCANN: I do not recognize that name, yeah.

ALJ: Okay.

MR. MCCANN: But yeah, there are other folks, Richard Compton I think you said, --

ALJ: Yeah, yes, he's testified already. And so, Ms. Tinanoff, I think, did as well. Is that, was she one of yours, Mr. McCann?

MR. MCCANN: I do not recall that. Dean Merritt has testified.

ALJ: Dean was obviously, yes. I saw him.

MR. MCCANN: Erick Rockel, of course.

ALJ: Yep, he testified. Ms. Townsley?

MR. MCCANN: I can't remember, Your Honor, to be honest with you.

ALJ: Okay. Okay. Well, you're not --

MR. MCCANN: It'd be easier, I think it'd be easier just for you to go down --

ALJ: Yeah, I was going to, try to just go (inaudible). So, here's what I'm going to do just because we have more time here. I'm just going to see if we can get someone in to testify. So, just going through the list here. You're in the attendee's room. All right. So, Mr. Coggins, can you hear me?

MR. COGGINS: Yes.

ALJ: Did you have any interest in testifying or were you just listening?

MR. COGGINS: No, I'm with the Developer. I'm just listening.

ALJ: Oh, you're with the Developer, that's right. Okay, thank you.

MR. COGGINS: Yep.

ALJ: All right and Ms., Ms., Ms. Bruder, I'm unmuting you. Your husband just testified. Did you need to testify as well? No answer, okay. All right. I have a phone number 410-302, can you hear me?

VOICE: Yep, I'm just listening.

ALJ: You're just listening, okay, thank you. 410, the phone number is 410-296, can you hear me and did you want to testify?

MS. GREENBERG: Yes, this is Lauren Greenberg, I, I did get a chance to testify --

ALJ: You did.

MS. GREENBERG: -- at, for a few minutes at another hearing.

ALJ: You did. I remember you. I just, I have a number and I don't have a name.

MS. GREENBERG: Yes.

ALJ: So, that's why I --

MS. GREENBERG: Right, of course.

ALJ: Just checking. Thank you, ma'am. Okay.

MS. GREENBERG: Thanks. There was one thing about traffic that I, I feel like I'm the only one that's really mentioned it. It's just the feeling trapped to get in and out of the, I think it's four different intersections with, right within our neighborhood.

ALJ: So, you did testify about that last time. I'm, I'm --

MS. GREENBERG: Yeah.

ALJ: Yeah, and we have, so I have the notes from last time. I, you don't need to do it, you don't have to say it --

MS. GREENBERG: Oh, great.

ALJ: Yeah.

MS. GREENBERG: That's terrific. Thank you so much.

ALJ: All right, thank you. All right. Mr. Weiss, can you hear me? James Weiss? Weiss? James Weiss? Nope, no answer. Okay, and Ms. Frankonovich is with the law office. Okay. So, that's the attendees' room. And let me just see one more person on here was, (inaudible) just see if there's anybody we can listen to.

MS. WEISS: Hi, can you hear me? I'm Susan Weiss. I'm James' wife.

ALJ: Yes, I was getting to you next.

MS. WEISS: Oh, okay.

ALJ: You're here on the list. Did you want to testify?

MS. WEISS: Well, you know, I had written a letter that I sent to people in my community, but I hadn't been asked to testify. I'd be happy to, you know, say a few things based on that --

ALJ: Are you, are you Mr. McCann's, are you with any of the community associations that Mr. McCann represents?

MS. WEISS: I, I, I'm Seminary Ridge. I live on Tallyho Road right adjacent to where this development is going to be built. I'm at 8302.

ALJ: Okay and so, you had something you wanted to testify about?

MS. WEISS: Well, much of what I wrote in the letter has been covered. One of the things that hadn't been covered

when I wrote the letter (inaudible) --

ALJ: Hold, hold on one sec. Yeah, can you hold on one second? So, I just want to say, if you could please, I don't see you on, do I see you on the screen? Where are you?

MS. WEISS: I'm, I'm here. I can start a video, I guess.

ALJ: Yeah, if you could?

MS. WEISS: Let's see, how do you, can you see me?

ALJ: There you are. All right. First thing I need, just raise your right hand. Do you swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MS. WEISS: Yes, I do.

ALJ: And one more time, give me your address.

MS. WEISS: It's 8302 Tallyho Road.

ALJ: Tallyho Road. Okay, go right ahead.

MS. WEISS: So, we've lived here since 1978 actually in this house. We've put on several additions, but we've raised our children here and our grandchildren, in fact, some of them live around the corner, five of them, on White Manor Drive. My, my daughter and her husband live in the old manor house on Manor, so, so Mr. George is their neighbor, actually.

And it's a very close-knit community. There's a lot of rebuilding going on on Tallyho now. Several of our friends have added to their homes and, and there's been also some

migration, as well, naturally. But, you know, we're, we've been very happy here.

And we've gone through a whole lot of, you know, change in terms of building up the community, the Johns Hopkins Center. There was, you know, a long time ago, we had that wonderful little ice cream place that now is, I guess, developed into some, another food emporium.

But it, the traffic has, as everyone has said, has just mushroomed in the forty some odd years that we've lived here. And it's very concerning. Especially, you know, when you think that there are no sidewalks on Joppa Road. And our children, you know, used to walk from Roland Run, where they were, where we were members at one point, to, to get ice cream or to go over and into the area where there, there was a, the, these food emporia.

And I, it, it was dangerous enough then. And I can only imagine what it would be like to add sixty-one more families to this community, that's already, I think, overtaxed in terms of, of the sewage, of the traffic, of the animals, of all the things that people have mentioned.

And I've been not able to come to all these meetings, but I've attended some of them. My husband actually has as well, James. And so, as we see this, you know, and we listen to some of the, of the testimony that's heartbreaking.

I, when I listen to Sister, was it Kathy McNamee from

the, from the Monastery, the Benedictine Sisters, you know, I realized that Johns Hopkins, where my husband and I have both been employed for the last fifty years, more or less, we just both retired on July 1st, is part of the problem in that, you know, they, they've skirted some issues with, with the zoning and so forth.

I, I just don't know what to say. I remember when, when Mr. Langford was alive, he told my husband that as long as he was alive, that cornfield was never going to be changed. It was always going to remain that way.

ALJ: So, we can't, we can't have testimony of someone who's not here because it's hearsay.

MS. WEISS: Oh, I know, --

ALJ: So, they can't cross examine the gentleman (inaudible) --

MS. WEISS: (inaudible).

ALJ: I know you didn't mean it, go ahead.

MS. WEISS: Yeah, as a matter of fact, I, I know, well, so anyway. I, I did call my lawyer, who happens to be at Venable, and he checked into it, and he said yes, the zoning was and, again, I, I, I don't want to go outside the, the parameters of what you want me to say.

I just, I can't, I guess I can't say enough about the concerns that everybody has, that people in the Meadows, Seminary Ridge people, especially those of us who are going to

abut, and our house actually does abut the development.

And, and you know, White Manor, Brookland, the whole Brooklandville area here is begging for this not to happen. And I don't know how I can say that more forcefully. That this is just a, just an error in planning, in urban planning and I don't know how it happened. But I'm just hoping that you, as, as a, you know, Judge of the Court, Your Honor, will look at all of this testimony and, and, and take it into consideration. That, that's all I have to say.

ALJ: And when you say you work at Johns Hopkins, is that the one, the buildings in Greenspring Station or is that downtown?

MS. WEISS: So, I work both at the Peabody and at Homewood. I, I am a professor in Romance Languages, now called Modern Languages and Musicology at the Peabody. My husband is a cardiologist and worked both at the downtown East Baltimore hospital and also at Greenspring.

ALJ: Okay.

MS. WEISS: He also --

ALJ: Greenspring, Greenspring, he works actually in those buildings. There's three, three Hopkins buildings, is that right, in Greenspring Station?

MS. WEISS: He was in Pavilion One, yes.

ALJ: Okay.

MS. WEISS: The Cardiology Division is in Pavilion

One.

ALJ: Okay and do you know when they were built, those buildings?

MS. WEISS: Hold on, he's here. Jimmy, when were they built?

ALJ: Oh, no, no, no, ma'am, I'm sorry. Sorry. He would have to testify. So, you're on the stand (inaudible) --

MS. WEISS: (inaudible) I would say, I would say they were built in the eighties. That would be my guess.

ALJ: Just, you have been here forty-seven years, I was just curious, if you had the dates --

MS. WEISS: Yes, I don't have it at the tip of my fingers. I'm sorry.

ALJ: Okay, that's no problem.

MS. WEISS: (inaudible).

ALJ: All right, understood.

MS. WEISS: Yeah, now he's asking me what the question was. So, I --

ALJ: I actually unclicked him and he was in the attendees' room, I unclicked him, but he didn't answer.

MS. WEISS: He's in the house, he just didn't hear it.

ALJ: Well, just pretend you're, you're on the stand right now in the courtroom so.

MS. WEISS: (inaudible).

ALJ: You are sworn in. So, I'm going to ask Mr. McCann, do you have any questions?

MR. MCCANN: No, other than I wanted to ask Ms. Weiss what her street address was, is, I, I may have missed that.

MS. WEISS: 8302, 8302.

ALJ: 8302.

MS. WEISS: Yes.

ALJ: Tallyho.

MS. WEISS: Yeah, we're the last house before the Brooklandville, we were next to Mr. Petty when he lived there and now the (inaudible) live there.

MR. MCCANN: Yep, and you mentioned Roland Run. I, I think there has been some reference to the, to that club during the course of the hearing. But where, describe where that is in relationship to Tallyho and Joppa, for instance.

MS. WEISS: Right, it's at the end of Tallyho and the intersection of Joppa, if you make a left, go right next to the Monastery, the entrance is on the right. So, that would be on the south side of, of, I, I'm not very good with directions, but the south side of Joppa Road.

MR. MCCANN: Okay. If you take a left out of Tallyho and head east on --

MS. WEISS: And a right into Roland Run and, and we're not members there anymore. We're, we're at a different country club, but we were there for many years when our kids

were little. And were on swim teams and so forth.

MR. MCCANN: Okay. Well, thank you. Nothing else.

MS. WEISS: Sure.

ALJ: Mr. Zimmerman, any questions? Mr. Zimmerman?

MR. ZIMMERMAN: Can you hear me?

ALJ: Yeah, I just unmuted you, go ahead.

MR. ZIMMERMAN: Oh, sorry. Yeah, so, Ms. Weiss, when you were talking about the 1980's, you were talking about for the Pavilions One and Two, correct?

MS. WEISS: That's right.

MR. ZIMMERMAN: Pavilion Three much more recent?

MS. WEISS: Yes, I think Pavilion One was the first and, and that was there for a while before they built Pavilion Two. And then there was a, you know, the, there was a tennis barn, I think it was part of Brick Bodies and --

MR. ZIMMERMAN: Greenspring Racquet Club.

MS. WEISS: Thank you, Greenspring Racquet Club. And then they also had a little, you know, part of Brick Bodies owned there, and then that became another club, I think, that's on, in Timonium now. But those were torn down when Hopkins bought it to build the surgical pavilion.

MR. ZIMMERMAN: All right and like others, you would have no objection if the Judge took a ride around the neighborhood?

MS. WEISS: She's more than welcome and I will, you

know, show her my, my clogged stream in the back, which I'm always calling the County to tell them to --

MR. ZIMMERMAN: Okay.

MS. WEISS: -- fish out the garbage.

ALJ: So, Mr. Zimmerman, I think you know I can't, I can't make visits to properties (inaudible) --

MR. ZIMMERMAN: Well, if all the, if all the attorneys would agree, I think that's possible.

ALJ: Well, let me just say I'm familiar with the whole area, so I know all the streets.

MR. ZIMMERMAN: All right.

ALJ: And so, there's no (inaudible) --

MR. ZIMMERMAN: Okay. So, considering --

ALJ: I know that I'm not allowed to do that actually, so, it's not as if --

MR. ZIMMERMAN: Well, if, I think attorneys can stipulate to something. But anyway, --

ALJ: All right.

MR. ZIMMERMAN: -- let me move on. The, Ms. Weiss, have you listened to most of the days of testimony in this case or much, some of it or what?

MS. WEISS: Some, I would say some. I don't know how many days it's been going on but --

MR. ZIMMERMAN: Okay.

MS. WEISS: -- we were in and out of town, yes, but I

have heard, you know, I've mentioned the ones that I've, that I've heard and I, you know, really feel for the people at the Meadows.

I know those of us in Seminary Ridge, of course, even with the speed bumps would prefer to have another access so that we're not the ones who have to pick up the, the, the slack or the, you know, the increased amount of traffic. But I think at the end of the day what we're all, what we're all saying is that we really don't want this to happen.

MR. ZIMMERMAN: Yeah. So, let me, having con, thought, given this a whole lot of thought, what would your reaction be if the Developer downsized to twenty or thirty units? How, how would you feel about that?

MS. WEISS: I, I don't, I, I'm not really at liberty to, I, or I, I don't know what I --

MR. ZIMMERMAN: All right.

MS. WEISS: Yeah.

MR. ZIMMERMAN: Okay.

MS. WEISS: Yeah, I mean, you're talking about one acre lots instead of these, these cluster homes, is that what you're asking me?

MR. ZIMMERMAN: Yeah, something like that, yeah. I mean, I know it's hard in the abstract. I don't mean to ask you an unfair question.

MS. WEISS: No, I know. I mean, look, I, I, I feel

for everybody in this case, on both sides. But when you, when you realize that we're already congested, as we are here, even two homes are going to make for more activity and more difficulty.

MR. ZIMMERMAN: Okay.

MS. WEISS: I'm just really worried about the environment, the environment as well, you know. We've talked about the sewage, we've talked about the animals, all of that, is going to be compromised by any additional building that goes on here.

MR. ZIMMERMAN: Okay. Well, thank you very much for your, your testimony. Thank you.

MS. WEISS: I wish I could have been prepared but.

MR. ZIMMERMAN: All right.

ALJ: Mr. Wyatt?

MR. WYATT: No questions.

ALJ: Mr. Sachse? You're muted again. You're still muted.

MR. SACHSE: (inaudible) same time. Can you hear me now?

ALJ: Yes, sir. Yep.

MR. SACHSE: Thank you. Ms. Weiss, if, you've been there since 1978?

MS. WEISS: Yes.

MR. SACHSE: And you were a member of Roland Run for

a while?

MS. WEISS: Yes. We were at Valley Country Club, then at Roland Run and now we're at Greenspring. So, we've --

MR. SACHSE: Okay. If you walked down Tallyho to Joppa Road.

MS. WEISS: Um hm.

MR. SACHSE: And took a right?

MS. WEISS: Yes.

MR. SACHSE: I'm just wondering if you can remember, and I'll ask you, as you go down right and you're walking west, --

MS. WEISS: Yes.

MR. SACHSE: State roads is on the other side of the street, is that correct?

MS. WEISS: That's correct.

MR. SACHSE: And on the north side of the street would be the fields that are to be developed if this development is allowed to go through, correct?

MS. WEISS: That is correct, (inaudible) --

MR. SACHSE: There are no --

MS. WEISS: -- yes.

MR. SACHSE: Sorry. There are no, no sidewalks there, right?

MS. WEISS: No, and I've fallen a few times walking.

MR. SACHSE: I understand. After you go past those

cornfields, there is an off, little office area --

MS. WEISS: Joppa Green, it's called Joppa Green.

MR. SACHSE: Right, I was going to say Joppa Green.

MS. WEISS: Um hm.

MR. SACHSE: Was that there when you first moved in in '78?

MS. WEISS: No, no.

MR. SACHSE: Then the next would be the entrance into Greenspring Station, the office buildings and everything for Hopkins, is that correct?

MS. WEISS: Yes, but none of that was there when I moved in.

MR. SACHSE: So, none of that was there. And I think you were talking about you could walk to Windy Valley, which is where the ice cream, soft ice cream was?

MS. WEISS: Yes, yes. Windy Valley, yeah.

MR. SACHSE: And, and that was, essentially, a straight shot with no development whatsoever back in nineteen seventy --

MS. WEISS: There was, there was a golfing range. I think it was and, and a greenhouse, a greenhouse --

MR. SACHSE: I was going to ask you if the golf range was there at the time.

MS. WEISS: The golf range was there. Yes, it was. And, and Bowers Greenhouse, I believe it was called. It was a,

greenhouses, yeah, um hm.

MR. SACHSE: So, in that period of time, everything that has been developed on the north side, including Joppa Green, Hopkins, Greenspring Station, the Wachovia building that's there, none of that was there, is that correct?

MS. WEISS: None of that was there. The only thing that was there on Falls Road was what is now Joey Choo's Restaurant in the back. It was called the Greenspring Inn, it was a restaurant.

MR. SACHSE: Right, right.

MS. WEISS: Okay.

MR. SACHSE: The Bar Association used to have its --

MS. WEISS: Yes.

MR. SACHSE: -- annual, what do they have, what are they called, the, doesn't, doesn't matter, there before they moved it. Okay, that, that's, have, have you walked that distance recently? In other words, from Tallyho down to where Windy Valley used to be?

MS. WEISS: Yes, I have. I'm actually a member of the Johns Hopkins women's walking group. And so, we do, but we can't walk there so we walk at Meadowood now.

MR. SACHSE: Well, I was going to ask, how do you walk because there's no sidewalks and --

MS. WEISS: It's very difficult and very dangerous and I have hurt myself a few times jumping into the, there's a

little gulch in front of the, the property where the Langfords live. In fact, there was a beaver once staring right at me. It, it is, it's not, it's treacherous to walk there and the kids still do it, I see them, and I worry about it all the time.

MR. SACHSE: Do you ever, you said that the walk club you're in goes over to Meadowood?

MS. WEISS: We're at Meadowood now, yes.

MR. SACHSE: Do you ever try to walk --

MS. WEISS: Oh, no.

MR. SACHSE: -- across the road at that point?

MS. WEISS: No, no, no, absolutely, no, no.

MR. SACHSE: Why not?

MS. WEISS: I mean, I, look, I, I'm not very bold. When I was in China a few years ago, I took a cab to cross the street because I couldn't (inaudible), yeah.

MR. SACHSE: That's all the questions I have.

MS. WEISS: Okay.

MR. SACHSE: Thank you very much, I appreciate it.

MS. WEISS: Sure.

ALJ: Mr. Rosenblatt, Mr. Mudd?

MR. ROSENBLATT: No questions, thank you.

ALJ: Okay. Thank you, Ms. Weiss.

MS. WEISS: Thanks very much.

ALJ: I appreciate it. All right. And let me just

make sure there's no one else here that we can call on. Let me just see and I see if, Ms. Tinanoff, can you hear me?

MS. TINANOFF: Yes.

ALJ: Did you want to testify?

MS. TINANOFF: No, I already testified at the previous hearing.

ALJ: That's what I thought. I did, but I have a list of people so I'm just making sure. Thank you, ma'am.

MS. TINANOFF: Thank you, bye-bye.

ALJ: Okay. I don't see anyone else on the list who hasn't already testified. I've gone through the attendee's room. So, I guess we don't have any more witnesses. I got to 3:00, which is, you know, okay, but probably is best that we use all the time. So, February 10 --

MR. MUDD: Judge Murphy, I'm sorry.

ALJ: Yes?

MR. MUDD: May, may I just be heard for one more minute?

ALJ: Okay. Sure.

MR. MUDD: I, I just feel like I need to do this for the record. And I know that I've expressed my frustration already. And I suggested at the beginning of the hearing that Mr. McCann had said that he only had one more witness and I, I do stand corrected, because that's not what he said.

But just so you understand our frustration, I, I have

an e-mail with Mr. McCann after our December 5th hearing, where he indicates to us that he thinks a half day would be sufficient. And then later in December, when we were picking days, he says that his witnesses are available today and tomorrow.

And, you know, when we here that we're, that things are going to be a half day and we talk to our client about it and we're budgeting time, we would have pushed in December to try and get three days if we had known this is what was going to happen.

And here we are on January 30th, likely in need of another day after next time, and, and we know that when we go to Kristin that February is going to be booked up, so we're going to be into, into March already.

ALJ: Yeah, February is, February is already finished. Actually, today the final calendar was done. I mean, I know you have the 10th. I'm not sure if there are other days that could, you could fit in there, but yeah, I hear what you're saying.

MR. MUDD: This is what really drives us nuts. So, I'm, I'm, I apologize because I know I'm a little bit heated here, but I just wanted you to know I'm not making this stuff up. And we're trying to do this as ex, expeditiously as possible and it's just frustrating for us. Thank you.

ALJ: Yeah, yeah. So, Mr. McCann, you know, I know,

and you're, and I understand your position is probably going to be that, you know, you're hearing from people who are telling you --

MR. MCCANN: No, well, it's not just that.

ALJ: -- (inaudible) to testify.

MR. MCCANN: It's not just that, Your Honor. It's not just that. An e-mail in November about the status of this hearing is as speculative, I mean, I don't think anybody on this call, attorneys included, would have expected we're going this long. And I don't have, it's unfair to put this all on me.

We have a number of attorneys on here. We have had a lot of cross and a lot of direct by other attorneys by me, so I have very, I tell my people all the time, I have very little control over, of the timing of this. So, for me to say in November, you know, whatever it was I said, I think it's unfair to go back that far.

Number two, yeah, I was available today and tomorrow, that doesn't, I also said I was, we needed a, a second day and, and, and asked for the 10th as well. So, I just don't have any, I have a lot less control than Mr. Mudd suspects I do about all of this.

And, and contrary to the suggestion, there's no games being played here with witnesses. So, I'll leave it at that, but we're all, we're all trying to get this done so, I just

don't think it's fair to, you know, accuse me of, of delay, purposeful or otherwise. That's not where we are.

ALJ: Sure, and, and so, I mean, I do think --

MR. WYATT: Your Honor, if I may, Your Honor?

ALJ: Okay, Mr. Wyatt?

MR. WYATT: The suggestion that just because I'm on the opposition side that I might be also involved in gamesmanship with the scheduling and putting all this on McCann, I think, is not fair at all.

ALJ: Um hm, um hm.

MR. WYATT: I have every interest in concluding this most expeditiously. I'm taking days out of working for other clients and on other matters. So, you know, I just, there's this open-ended suggestion that we prefer to have as many days as possible. That couldn't be further from the truth. And I think that's --

MR. MCCANN: Yeah, and that's, (inaudible) here.

MR. WYATT: -- (inaudible).

ALJ: Hold on, Mr. McCann. Mr. Wyatt wasn't finished. Go ahead, Mr. Wyatt.

MR. WYATT: So, I'm just saying, I, I feel compelled to bring it to your attention that --

ALJ: Yes.

MR. WYATT: -- while I am in opposition of this development, I, I'm not playing games with a calendar or am I,

or is there some collusion among those in the opposition, to make, stretch this out as many days as possible, which I think is what Mr. Rosenblatt and Mr. Mudd are suggesting.

It's not the case at all. I'm, I'm on the e-mails. Some people just are not available, and we can't convene these hearing dates at the pleasure of the Developer and, and if we could stay till midnight on some of these days, I would be happy to do it. But that's just not feasible.

MR. MCCANN: And, and I should be more specific. My two witnesses, we'll be done, we're not going to be all day on the 10th. So, the suggestion that, I mean, the real benefit here is the Developer, I don't know when this started, Your Honor, but the Developer is going to get weeks to prepare their rebuttal, weeks apparently. So, that's, that's where we're headed in this, but, and that's a great advantage, a great advantage.

So, and we can't respond to it, of course. So, I, we will be done, and I'm not going to, Mr. Mudd will try to hold me to how long, I've got two witnesses on the 10th, and we will be done, I anticipate, we will be done before lunch, or soon thereafter, so. I'll start early if we want to try, if the interest is getting done on the 10th, let's start at 8:00 a.m. Let's start, let's start at 7:00 a.m.

ALJ: I don't, I don't mind, 7:00 a.m. is a little rough, I think we, you know, we certainly could do like a 9:00

a.m. But the, the only thing is, you have to post the property, you know, so that you tell people ahead of time. It has to be posted because I can't, unlike the Board of Appeals, I can't just change the timing because of the notice issue. Unless you all, but I think you already, it's actually already on the County website at 10:00.

So, I'm going to get myself in trouble with the people who schedule because it's there already. So, anybody looking ahead is going to think, oh, it's at 10:00. So, to change it now is probably too late. But maybe if there's another day you could make, so that's the way that has to work, yeah.

MR. ROSENBLATT: We, we will jointly try and get another February day. If that's impossible, we're going to get one more day as close to February 10th as possible. And we will hope that that is more than enough to be done.

MR. ZIMMERMAN: Judge, can I add one thing? Our office is certainly not interested in seeing the case go for twenty days or whatever, and we've been cooperative. But I think it, it's sort of inevitable when you have no pre-trial discovery and witnesses come in who nobody has seen or know, known exactly what they're going to say, that that tends to lengthen things on, on all sides. And when you have a controversial case like this.

And I don't think Mr. McCann has been unfair from

everything I've seen. And, you know, whatever is, I, I don't know that that much gets accomplished with rebuttal or sur rebuttal or whatever. But whatever it takes and, I think, Judge, I just want to say so far, under the circumstances, I appreciate the fair way that you've handled the case. That's all I have to say.

ALJ: Well, I appreciate that, Mr. Zimmerman. So, one of the things we could do right now, you have exhibits. Has, have the rest of you had a chance to look at People's Counsel's exhibit? I know it's not his turn and technically he would come after the Protestants, but, you know, the exhibits he had, the, the most recent version of exhibits, he did have two witnesses, by the way, Mr. Rockel --

MR. ZIMMERMAN: Yeah.

ALJ: -- and Dr. Blum or, so that could be something at least --

MR. ZIMMERMAN: Right.

ALJ: -- has anyone had a chance? I guess Mr. Rosenblatt, Mr. Mudd, to look at --

MR. ZIMMERMAN: Yeah.

ALJ: -- Mr. Zimmerman's exhibits. Anything you object to or am I pushing that?

MR. ROSENBLATT: I honestly have not looked.

MR. ZIMMERMAN: All right.

MR. ROSENBLATT: One was a lot of legislation --

MR. ZIMMERMAN: Well, may, may I suggest, first of all, I'm confirming I have no more witnesses, okay? That's number one.

ALJ: Okay.

MR. ZIMMERMAN: Number two, I did send the letter January 12th, in which I indicated what my understanding is, what additional exhibits remain. I believe they're actually all public records, but I, maybe that could be handled in an expedited way next time.

ALJ: Sure. Just give everybody a heads up to look at those and, and, you know, --

MR. ZIMMERMAN: And if anyone in, in the next either before February 10th or after, can indicate which ones they want to object to, then, then that would limit the ones we need to discuss, so.

ALJ: Right. So, I'm just, that would take up, you know, less time the next time when you all need it for, for rebuttal. So, did you want to say something, Mr. Rosenblatt?

MR. ROSENBLATT: Yeah, if the, if I look and there's an issue, maybe I can call you, Mr. Zimmerman, before the 10th and we can talk through or come to some agreement.

MR. ZIMMERMAN: Yeah.

MR. ROSENBLATT: Just so we don't take up everyone's time.

MR. ZIMMERMAN: Right. We always, we always are here

to pick up the phone, yeah.

ALJ: And, and he also withdrew a bunch of exhibits too, so (inaudible) –

MR. ZIMMERMAN: We withdrew a few, yes.

MR. ROSENBLATT: We have no objection to you withdrawing exhibits, Mr. Zimmerman.

MR. ZIMMERMAN: Yeah, one we asked to remain as i.d., but that's, that is what it is.

ALJ: Yeah, well, that's in the file actually anyway, but.

MR. ZIMMERMAN: Right.

ALJ: So, so anyway, but and so, having said all that, I don't, I don't think anybody is to blame. We're all trying to get through this. And I do agree, it's just, you don't know who's going to, sometimes you don't know who's going to testify and who's not.

We also have people who are not represented by Mr. McCann, like today was an example. Other days have been an example where we've had people come in and testify. And I am trying to make sure that everyone here, you know, giving respect to the attorneys, who are also, you know, Protestant's in the case, to have them participate in the hearing as well.

And so, it, you know, it's the nature of it and so, this isn't the first, as, as the three of you know, I'd say Mr. McCann, Mr. Mudd and Mr. Rosenblatt, not the first ten or

eleven day hearing I've had with the three of you.

For some reason, whenever I have the three of you, it always seems to be, as my recollection, ten days, ten days long. And then when you add Mr. Zimmerman, well, that's, you know, Mr. Zimmerman, it's usually a couple more days when you add Mr. Zimmerman in it.

So, you know, over the years, I think we've all had these ten-day hearings. So, anyway, I would just see how you, you know, whether you, if you have another day, you can ask Kristin. I would just do that today because, you know, they'll probably be gone if not.

And you know they fill in with other cases that come up. We have certain ones that have deadlines when they, these are not zoning type cases, but they come up and they, as soon as they, we get them in the office, they have to be heard within ten days. So, you know, sometimes they're, things are filled in. That's what the deal is, so. All right?

MR. ROSENBLATT: Thank you.

ALJ: Okay, all right.

MR. MCCANN: Thank you, Judge.

ALJ: Thank you.

MR. MUDD: Yep, thank you.

ALJ: Thank you everyone. All right, appreciate it. So, I'm going to stop the record. We're off the record.

(OFF THE RECORD)

CERTIFICATE OF TRANSCRIBER

I hereby certify that the hearing in the matter of Greenspring Manor, 2310 W. Joppa Road, case numbers 08-0922 and 2021-0250-SPH, heard before the Office of Administrative Hearings for Baltimore County, January 30, 2023, were recorded by means of audiotape.

I further certify that, to the best of my knowledge and belief, page numbers 1 through 204 constitute a complete and accurate transcript of the proceedings as transcribed by me.

I further certify that I am neither a relative to nor an employee of any attorney or party herein, and that I have no interest in the outcome of this case.

In witness thereof, I have affixed my signature this 30th day of June 2023.

Christine R. Leary

Christine R. Leary

Transcriber

IN THE MATTER OF:

GREENSPRING MANOR
2310 W. Joppa Road

CASE NUMBERS: 08-0922 & 2021-0250-SPH

Hearing Date: December 7, 2022

Pursuant to Notice, the above-entitled hearing was held before the Office of Administrative Hearings for Baltimore County by remote access.

PRESIDING:

MAUREEN J. MURPHY, ADMINISTRATIVE LAW JUDGE

FOR THE PARTIES:

ADAM ROSENBLATT, ESQUIRE
CHRISTOPHER MUDD, ESQUIRE

MICHAEL MCCANN, ESQUIRE

PETER MAX ZIMMERMAN, PEOPLE'S COUNSEL
FOR BALTIMORE COUNTY

Christine R. Leary
crleary1@comcast.net

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(ON RECORD)

ALJ: Good morning, everyone. You're attending day eight, case number 08-0922 and 2021-250-SPH. Property address 2310 West Joppa Road. And this is the combined development plan and zoning case for the project known as Greenspring Manor. Let's have counsel for the record, identify themselves beginning with the Developer.

MR. ROSENBLATT: Good morning, Judge. Adam Rosenblatt and Chris Mudd of Venable, LLP on behalf of the Developer/Petitioner.

MR. MCCANN: And good morning, Judge. Michael McCann on behalf of the Protestants.

MR. ZIMMERMAN: Peter Max Zimmerman, People's Counsel for Baltimore County.

ALJ: All right. And we are in the Protestant's case. Mr. McCann, we left off yesterday and I think you had maybe another witness?

MR. MCCANN: Two more, including Mr. Wyatt.

ALJ: Oh, that's right.

MR. MCCANN: Yeah.

ALJ: Okay, all right.

MR. MCCANN: The first one, the first one would be Mr. Merritt, M-E-R-R-I-T-T.

MR. MERRITT: Good morning.

ALJ: Good morning, Mr. Merritt. All right. You

look familiar for some reason.

MR. MERRITT: Yes, I'm an, I'm an attorney. Long time ago I clerked for Judge Murdoch, that's probably where we ran into each other.

ALJ: Oh, okay, all right. Yep, all right. I didn't know, all right. That's great. Raise your right hand, please. Do you swear and affirm under the penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. MERRITT: I do.

ALJ: All right. Mr. McCann?

MR. MCCANN: Thank you, Judge. Good morning, Mr. Merritt.

MR. MERRITT: Good morning.

MR. MCCANN: Where do you live, sir?

MR. MERRITT: 3 Horseshoe Circle in the Heather Field community, right off of White Manor and I back up to Joppa Road.

MR. MCCANN: Okay. I'm sorry, one second. Sorry about that.

MR. MERRITT: That's all right.

MR. MCCANN: Let me pull up the map, which again, is Protestant's Exhibit 24-B, can show everybody where you live. Do you see that, Mr. Merritt?

MR. MERRITT: Yep.

MR. MCCANN: Okay. I want to direct your attention to where I believe you live and that is you said in Heather Field, correct?

MR. MERRITT: Correct.

MR. MCCANN: So, it was this --

MR. MERRITT: Just left an area, whoop, yep, right there.

MR. MCCANN: Okay. So, you're and I'm, what I'm going to do is I'm going to highlight that property in the record purple. And as you said, you, you back up to Joppa, is that correct?

MR. MERRITT: Correct.

MR. MCCANN: Describe the orientation of your house, where the driveway is and, and things of that nature.

MR. MERRITT: Sure. The driveway is right off of the circle and comes down the right side of the property from the top, yep. And then the house, you can, you can, it's, the way you see it there is facing that dir, that north direction and to the south, my backyard is, backs up to Joppa Road and then across the street the Roland Run Swim Club.

MR. MCCANN: Okay, great. How long have you lived there?

MR. MERRITT: Eight years.

MR. MCCANN: And who do you live with?

MR. MERRITT: My wife and three boys.

MR. MCCANN: Okay.

MR. MERRITT: A high schooler, a middle schooler and an elementary schooler.

MR. MCCANN: And you said you're an attorney?

MR. MERRITT: I work for, I actually work for a technology company, but I am an attorney and I also have a broker's license, been involved in both residential and commercial real estate transactions.

MR. MCCANN: Okay. The Heather Field community, we've mentioned it a couple times, but could you describe for the Judge what, what homes that, you know, comprises what area?

MR. MERRITT: Yeah, forty-seven, eight homes there, up to the, all of White Manor, all of Fox Hunt and Tallyho up until that sort of, the (inaudible) property, the pink at the top, purple/pink --

MR. MCCANN: Okay. So, this is Fox Hunt Lane right here?

MR. MERRITT: Correct.

MR. MCCANN: And this is White Manor Drive?

MR. MERRITT: Correct.

MR. MCCANN: And your court is not labeled on this exhibit?

MR. MERRITT: No, it is not, that's Horseshoe Circle, it's called, but it's a court.

MR. MCCANN: Okay, great. Prior to your eight years

at this property, did you live or work in the area of Greenspring Station?

MR. MERRITT: Yep, pretty much my whole life. I lived in the, another part of the Lutherville-Timonium zip code prior to this, before, and in Towson, grew up in Cockeysville and Hunt Valley and only, only time was a few years in college that I was away from the area.

MR. MCCANN: Okay. Have you sat, Mr. Merritt, through all or any portion of the hearing?

MR. MERRITT: Yep, almost all of it. But I do have a job, but I've been able to listen to almost, almost all of it.

MR. MCCANN: Okay. You feel comfortable talking about the proposed development plan?

MR. MERRITT: Yes.

MR. MCCANN: You're familiar with it, obviously.

MR. MERRITT: Yes, very.

MR. MCCANN: Okay and are you here on behalf of the Heather Field Association?

MR. MERRITT: Yes, I am. I'm, I am the President of the Heather Field Association and we have met and agreed to allow me to speak on behalf of them as well. So, both on behalf of that and myself.

MR. MCCANN: Okay and the formal name of Heather Field Association is?

MR. MERRITT: Is the Heather Field Association,

Incorporated.

MR. MCCANN: And how many members?

MR. MERRITT: We are not a mandatory homeowners' association. I believe it's forty-seven.

MR. MCCANN: Okay. Forty-seven, forty-seven members, I think you said there were forty-seven homes in Heather Field as well, right?

MR. MERRITT: Yes, yes. Oh, the, I'm sorry, I don't have it handy, the, our treasurer would have the exact number who've, who have paid or are up on their dues and official members.

MR. MCCANN: Okay. I'm going to show you an exhibit which we've marked as --

MR. MERRITT: I would, I would estimate about half but it, it varies wildly from who pays their dues year to year.

MR. MCCANN: Okay. It's voluntary as you said, right?

MR. MERRITT: Right, and only $15, $20.

MR. MCCANN: Okay, all right. Let me show you what has been marked as Protestant's Exhibit 45. Do you see that?

MR. MERRITT: Yes.

MR. MCCANN: Okay. Tell, tell us what this is.

MR. MERRITT: This is a, a Board letter that was approved by the Heatherfield Association Board that's elected by the members at our annual meeting. We gathered and met on

November, if you scroll back, November 15th.

MR. MCCANN: Uh huh.

MR. MERRITT: And discussed the, the primary issues, being sewer, traffic, density and it is signed there by, just electronically, by the, and approved by all of the members of the Board.

MR. MCCANN: So, this is an official written statement of the Association's position?

MR. MERRITT: Yes.

MR. MCCANN: Is that fair? Okay. Okay, great. As, as you just indicated, there are concerns or issues mentioned in this letter. And no need to, to repeat things, but I did want to give you an opportunity to, to express what the Association's concerns are. So, if you could, could do that, please?

MR. MERRITT: Yep. We, well, we are the, the Association that abuts the proposed development the most. We have the most homes along the line directly next to it. Most of our homes are close to an acre. I live on over an acre, just over an acre myself.

There are many other properties in the area that are over an acre. And we feel the density of, around eleven thousand, eleven thousand four hundred some square feet for a, a home is not consistent with the, the County's plan or the neighborhood or, or the surrounding areas.

MR. MCCANN: Okay.

MR. MERRITT: Our other concern, our other concerns are around, I'll try to be quick because I don't want to repeat, but our other concerns are around traffic. We, we've all seen how bad it is at, at Joppa and Seminary and the failed intersections.

But I also wanted to bring up, and I did, I did submit a map to you in case you want to pull it up, the other direction. I have, as, as I mentioned, I have three children in three different schools. And my wife and I are constantly going in and out of the neighborhood. I would, I would estimate probably fifteen plus times a day we're, we're coming in and out, between pick up, drop off, school activities, sports, all of that and we go --

MR. MCCANN: Two of you, two of you collectively, Mr. Merritt, you mean?

MR. MERRITT: Collectively, yeah, my wife and I.

MR. MCCANN: Okay. Go ahead, I'm sorry.

MR. MERRITT: So, we go both directions. Of course, you get on the highway you go, you go towards the west, northwest there. But also, we, I don't think it's been discussed in, in what I've seen on these hearings, is towards the southeast.

The Joppa Road and Thornton and Bellona intersections are absolutely horrible. And have been backing up consistently

since post-COVID. They would, so, if you see there the Royal Farms, --

MR. MCCANN: Yeah, just for the record, just for the record, I'm showing what has been marked as Protestant's Exhibit 46. It's an aerial photograph. Did you obtain this aerial from Google, it looks like?

MR. MERRITT: Yes, it's a, it's a Google map, screenshot.

MR. MCCANN: Okay. Go ahead. I'm sorry.

MR. MERRITT: Sure, so I just wanted to direct you to the Royal Farms there.

MR. MCCANN: Right here, yeah.

MR. MERRITT: Yeah. So, the, it, it will back up from that intersection and the Bellona intersection just to the right there, it will back up all the way past Old Court, probably up towards W. Joppa Road, West Joppa Road. Those, it will consistently back up all the way to there, especially if there is any sort of backup on the highway. Everyone uses these roads to, to bypass 695 or 83 and get around.

So, it, it can take me, it, sometimes it takes, I have a son at the Loyola and a son at Calvert Hall and one at Riderwood. And just to get to any of those schools, it could be, Riderwood could be five minutes away, or it could be thirty minutes away. And same thing with Loyola and, you know, it's more like ten or fifteen and Calvert Hall fifteen, twenty. But

they can easily double due to the backups at these, those intersections.

MR. MCCANN: And when you say backup, you mean cars heading eastbound or south eastbound on Joppa?

MR. MERRITT: Yes.

MR. MCCANN: Okay.

MR. MERRITT: Yeah.

MR. MCCANN: Okay, go ahead.

MR. MERRITT: (inaudible) ways, particularly eastbound.

MR. MCCANN: And what time of day is this, Mr. Merritt?

MR. MERRITT: That backup is more so in the 3:00, 4:00, 5:00 rush hour. On the other direction, I often see it, I can look out my backyard and see it backup toward from the Falls intersection. That, that has been discussed quite a bit.

MR. MCCANN: Okay. Say that again, from your backyard, which is where, approximately?

MR. MERRITT: My backyard, my home is marked on here with a little blue home upper, up higher there.

MR. MCCANN: Oh, I'm sorry, I'm way off.

MR. MERRITT: Yep.

MR. MCCANN: Yeah, let me, I'll move down. Right here, right?

MR. MERRITT: There we go, yep.

MR. MCCANN: Okay.

MR. MERRITT: (inaudible) you've introduced in other exhibits.

MR. MCCANN: Yep.

MR. MERRITT: So, I can see, it'll often back up and, if anything happens at that intersection, it'll just, it'll start coming all the way back to my house. I can see them out my backyard.

MR. MCCANN: You mean the intersection of Falls and Joppa?

MR. MERRITT: Correct.

MR. MCCANN: Cars heading west, west or westbound?

MR. MERRITT: Yes, heading into it. Heading northwest bound.

MR. MCCANN: Okay.

MR. MERRITT: There's also been an increased number of events happening on the Meadowood property. There was a lacrosse tournament where cars were parked everywhere, all over the grass. There were people running around on the intersection trying to cross it with not, I don't think there's crosswalks, there's definitely no crosswalk sign. So, I, I think that's, that's become dangerous.

Also, the property that's been discussed, the state, someone called it the State Highway's property or whoever is controlling it now with the state, that has become activated

recently, not only as a parking lot for trucks and BGE and tree trimming, but it is now a motorcycle training facility, apparently. They're using the parking lot to do motorcycle trainings or testing.

MR. MCCANN: When do you see that and how often?

MR. MERRITT: You can see it right now if anybody wants to go, they're doing it literally right now.

MR. MCCANN: Okay.

MR. MERRITT: I don't know if it's been going on for the past few weeks.

MR. MCCANN: And that we, Meadowood is, is labeled here on this Exhibit 46 --

MR. MERRITT: Meadowood is labeled, and the parking lot is just to the right of that. Yeah, you're, you're basically right on it. They're using all of that parking, those parking lots there. They have cones set up and motorcycles riding around, police motorcycle training, I think.

MR. MCCANN: So, just, just south, southeast of the intersection, right here?

MR. MERRITT: Correct.

MR. MCCANN: Okay, okay.

MR. MERRITT: So, these, these roads were originally not designed to cut through. Tallyho is a straightaway. It has become a drag strip. We have no sidewalks. We have a lot of elderly and young families of all ages, as I've, as we've

noted in the letter here.

And they use it as a, as a drag strip because it was not intended ever to cut through and it, well, maybe it wasn't intended but then it did cut through. So, the neighborhood believes that if anything is built, any sort of road is built over here, it should pass through as, as the County's master plan has (inaudible) as well.

MR. MCCANN: Okay. Anything else that you wanted to add that's perhaps not covered in your official statement?

MR. MERRITT: (inaudible) there's, there's nothing else, I believe, it's, sewer and drainage are a major concern. I actually don't, I live in one of the, there's a number of homes that have no basement, just a crawl space. I'm told that's because of a high-water table or, or water, possible water issues. There were water issues before I built the home that, that were remedied as I was buying it. Because there is no, and there's no basement, I believe, for that reason.

MR. MCCANN: Is that the case, is that the case for other neighbors, other neighbors of yours?

MR. MERRITT: Some, not, I couldn't tell you which ones have crawl spaces or, or slabs or, or basements. I can tell you I do not, I have just a crawl space.

MR. MCCANN: Okay.

MR. MERRITT: And then there, there was concern amongst the community about, you know, general health of the

Jones Falls, Chesapeake Bay, Roland Run, that's, that's noted here as well. So, not just their own personal homes, but the, the sewage seems to be at a capacity, and it's not been updated to handle even the current situation so that we believe no homes should be built for that reason as well.

MR. MCCANN: Okay, great. Thank you, Mr. Merritt. I'm going to, before I let you, I'll let you answer questions from the other attorneys, I'm going to move into evidence Exhibits 45 and 46, Judge.

ALJ: Any objection, Mr. Rosenblatt?

MR. ROSENBLATT: No objection, thank you.

ALJ: Mr. Zimmerman, any objection?

MR. ZIMMERMAN: No, no objection.

ALJ: All right. Mr. Zimmerman, do you have cross?

MR. ZIMMERMAN: I do, I do, I do. I guess the first thing is could Mr. McCann share Exhibit 45? And scroll to the second page?

MR. MCCANN: It's slow today.

MR. ZIMMERMAN: Well, while, while he's doing, okay. I was going to say, I can ask a question or two while that's being put up. Okay, here we go. So, yeah, let's go to the second page, or third, yeah, yeah that, right. Are these pages numbered?

MR. MERRITT: It's just two.

MR. MCCANN: Just two.

MR. ZIMMERMAN: Okay. So, the second page. All right. Before I ask a question about a specific sentence or two, what would you say as to whether you often work remotely so that you're, you're at home from time to time during the day?

MR. MERRITT: Yep, quite regularly.

MR. ZIMMERMAN: And, as you said, you're, you're in and out to different schools and doing other things during the day, is that, do I understand that, --

MR. MERRITT: Yeah, schools, appointments, coffee, meetings at Greenspring Station, yep, --

MR. ZIMMERMAN: Yeah, so what, what level of opportunity does that give you to observe the traffic on Tallyho Road?

MR. MERRITT: Every hour and minute of the day, either my wife or I are in and out so. Like I said, fifteen, that might even be a low estimate on some days.

MR. ZIMMERMAN: Okay. So, the first sentence on page two about, I'm paraphrasing, the traffic using Tallyho Road as a cut through, --

MR. MERRITT: Um hm.

MR. ZIMMERMAN: What, you know, what is that observation? What's the basis for your saying that, --

MR. MERRITT: We believe, we believe it should be made fair amongst the neighborhoods. There's, there's a number

of different ways to cut, to get through from Seminary to Joppa and they're used, utilized on various basis, basis. If there's traffic backups on any of them, some people use Thornton, some people use Tallyho and then Mays Chapel Road is clearly marked to, to go through and exists and is ready, is ready to be put through (inaudible) --

MR. ZIMMERMAN: And what's your ob, yeah, I'm sorry, did you finish your answer?

MR. MERRITT: (inaudible).

MR. ZIMMERMAN: So, what's your observation, observation, if any, about cut through traffic in or around rush hours for commuters, commuters?

MR. MERRITT: Oh, yeah, it can, it, it, it, it is a lot. It's a lot more than just the people who live in the neighborhood. I'm familiar with most peop, a lot of the people in both Seminary Ridge and Heatherfield and there are a lot of cars and trucks that come through that are not part of it. They will even use our, I don't see it as much directly from my, from my front of my house.

But every once in a while it gets so bad that they use White Manor because they're just getting lost or trying to cut through any way and to make a turn, it can take mult, numerous minutes or more to turn out of the neighborhood on, on any given day, without an unusual backup. But when an unusual backup occurs, traffic can back up Tallyho and up White Manor.

MR. ZIMMERMAN: So, what, what are you saying as to whether you have, you're pretty familiar with the vehicles that are owned by the people in Heatherfield and even Seminary Ridge?

MR. MERRITT: Yes, yes, I think so.

MR. ZIMMERMAN: Okay. Okay and what's your observation or concern, if any, as to whether it's likely that the proposed development will cause some increase in traffic on Tallyho Road among other things?

MR. MERRITT: Yeah, it absolutely would, especially if it was only allowed to come out one direction. They would immediately come out of their neighborhood and turn up into Tallyho --

MR. ZIMMERMAN: Okay.

MR. MERRITT: -- to, to get somewhere.

MR. ZIMMERMAN: Okay.

MR. MERRITT: And that would, it would definitely increase. And if, if it's fam, if they're marketing this to families, as I believe they are, they're going to be just like me, you know, two, three, two and a half kids and traveling to sports and things, ten, fifteen, twenty times a day.

MR. ZIMMERMAN: Okay and with you, with you, what is your real estate background and to what extent do you use it?

MR. MERRITT: I own my own boutique brokerage. We do commercial and residential. The commercial side does some

restaurants and, and things, and retail. The residential side, I have a few people who hold their license under mine and do residential real estate transactions. It is not my full-time job, but something I keep up with and the people under the real estate agents that are within the brokerage do do, do it regularly.

MR. ZIMMERMAN: Okay. Do you have a separate real estate office, or do you work that from your home?

MR. MERRITT: Since COVID, mostly home.

MR. ZIMMERMAN: Okay.

MR. MERRITT: We're required to have an office, but yeah.

MR. ZIMMERMAN: And did you take some courses or get some licenses for all that?

MR. MERRITT: Yes, part of my, I'm a licensed attorney in good standing with the Bar Association and a while back, a long time ago, about twelve, thirteen years ago, that allowed me to take the broker's license and I keep up with the continuing education as well.

MR. ZIMMERMAN: Okay and does that include some familiarity with traffic issues to be a broker?

MR. MERRITT: Yes, I would say you have to know the neighborhoods and, and the, the layouts of areas and people are usually interested in that sort of information. So, you have to have some working knowledge and the ability to research and,

and find more information about that.

MR. ZIMMERMAN: Okay, all right. So, turning to another point. You, you mentioned that the Heatherfield Association met on November 15th, 2022, is that correct?

MR. MERRITT: Correct.

MR. ZIMMERMAN: And was that a virtual meeting or how, how did that happen?

MR. MERRITT: That was actually, the, the Board met in person.

MR. ZIMMERMAN: Okay. But can you tell --

MR. MERRITT: Well, no --

MR. ZIMMERMAN: Go ahead, go ahead.

MR. MERRITT: No, go ahead.

MR. ZIMMERMAN: Can you tell me, however, whether you've been following this project since at least early 2021?

MR. MERRITT: Yeah, I don't know about early '21, but yeah, at some point in 2021 I was made aware of it.

MR. ZIMMERMAN: Yeah, Judge, I'd like to share one exhibit, namely the community input meeting. If I can, let's see. Let's see if I can, okay. I think I, part of it is on the screen. Let me see if I can scroll.

ALJ: It's not on the screen yet.

MR. ZIMMERMAN: Oh, it's not on the screen? Okay. I'm going to get some staff help here to make sure I've got it correctly done. Okay, got to click on WebEx, sorry. Okay.

Are we on the screen?

ALJ: Yes, it's small.

MR. ZIMMERMAN: Okay. This is, this is People's Counsel's seven. I'm, I'm just going to, okay, so here's the first page of the community input meeting minutes.

ALJ: It's really, really, it's really small (inaudible).

MR. ZIMMERMAN: Oh, okay. Let me see if I can, yeah. I mean, --

ALJ: That's good.

MR. MERRITT: That's good enough.

MR. ZIMMERMAN: We'll, yeah, we'll scroll when we want to look at something particular. So, so, we've got, just by way of background, we've got the eight pages of minutes, Jerry Chen managing, then let's, then we begin a bunch of e-mails and --

MR. MERRITT: (inaudible).

MR. ZIMMERMAN: -- and we can, we can spend five minutes and, and do a count, but let's assume I'm right that there are between fifty and sixty e-mails. So, I'm going to briefly scroll down to your e-mail. So, the first e-mail from Seminary Ridge. And starts out, I am extremely concerned about the density of the development and so on and so forth, I'm paraphrasing, right?

MR. MERRITT: Yes.

MR. ZIMMERMAN: That first one from Matthew Miller, Seminary Ridge --

MR. ROSENBLATT: Judge, objection. Are we just going to read the document into the record?

MR. ZIMMERMAN: No, this was background. I'm going to ask some questions.

ALJ: (inaudible) Mr. Merritt's e-mail, is that what you were looking for?

MR. ZIMMERMAN: Well, I know where it is and we're getting to it.

ALJ: Okay, all right. Go ahead and find that so we'll sustain the objection just because you're going to find it.

MR. ZIMMERMAN: So, here we go. I, by my count, it's the sixteenth e-mail, but you know, somebody will correct me if my count is wrong. So, this is dated, this is, I mean, Judge, everyone can read it. This is your e-mail April 26th, 2021, correct?

MR. MERRITT: Correct.

ALJ: Do you just, you just want to blow it up a little bit though so (inaudible) --

MR. ZIMMERMAN: Yeah, let, let's blow it up, let's blow it up.

ALJ: Just so we can read it.

MR. MERRITT: I recall it, yes.

MR. ZIMMERMAN: Yeah, so, by that time, you were already expressing some concerns, right?

MR. MERRITT: Correct, I mean, as soon as we heard about this.

MR. ZIMMERMAN: Yeah, and how, how did you learn about the project and what did you do to study or review it to come up with your concerns?

MR. MERRITT: We actually learned from it, from the Seminary Ridge Homeowners' Association. And then eventually, from, from the Developer.

MR. ZIMMERMAN: So, --

MR. MERRITT: We, we reached out to the County and (inaudible) believe the Developer then reached out to us.

MR. ZIMMERMAN: Okay. So, what can you tell us about the Developer's reaching out to you or you reaching out, any communications, meetings with the Developer?

MR. MERRITT: Initially, very little. I'm not sure they knew what Heatherfield was or that it existed. I think there was some confusion, as I, as I witnessed at the beginning of this, this, these hearings, the very first ones, when no one seemed to understand where Heatherfield was or that it existed. They just knew Seminary Ridge and, and the Meadows. Yet, we, we have the close, we are the closest ones.

MR. ZIMMERMAN: Right, and yet, correct me if I'm wrong, but did you say there was some sort of meeting or

communication between you or your people and, and any of the Developer's representatives?

MR. MERRITT: Eventually. Seminary Ridge brought us into a meeting, I believe. I, I, I don't remember very well. That was a while ago.

MR. ZIMMERMAN: Maybe one meeting?

MR. MERRITT: Yeah.

MR. ZIMMERMAN: Okay and what, what do you remember from that meeting?

MR. MERRITT: I remember seeing the map, the pic, the pictures.

MR. ZIMMERMAN: Okay.

MR. MERRITT: That's what I remember of, and seeing a lot of homes crammed into a very small area that (inaudible) --

MR. ZIMMERMAN: Do you remem, remember, I'm sorry, I didn't, did I interrupt you?

MR. MERRITT: I said very, very, a large number of homes crammed into a very small area that do not look like the homes around here.

MR. ZIMMERMAN: Yeah. So, do you remember if that meeting was before or after the community input meeting of April 27th, 2021?

MR. MERRITT: I don't. I'd be guessing if I, if I did. I don't recall.

MR. ZIMMERMAN: Okay. What I, one thing I'd like to

ask you about, we could spend time and scroll through, but if I'm, if I'm correct that many of the e-mails, if not all of them, begin with that same sentence, okay?

Paraphrasing, I'm extremely concerned about the density, I mean, we can spend a minute or two and just, you know, scroll through a whole bunch and, you know. So, how, how did it come to pass, how did it come to pass, if you know, that there's this, to some extent at least, a pattern of some similar concerns expressed in the e-mails?

MR. MERRITT: Either, yeah, I believe the community association circulated some information and, and, and suggested language to help people --

MR. ZIMMERMAN: Yeah.

MR. MERRITT: -- I, I believe, I'm not sure. That may have been Seminary Ridge that did that, I'm not sure.

MR. ZIMMERMAN: And do you recall whether or not all or almost all of the e-mails, well, let me, let me withdraw that for a moment. Do, do you remember ever seeing these, these various e-mails --

MR. MERRITT: Yes, yes, I remember --

MR. ZIMMERMAN: -- at some point?

MR. MERRITT: -- seeing these e-mails.

MR. ZIMMERMAN: And do you remember whether or not either every single e-mail or almost everyone comes from Heatherfield or Seminary Ridge.

MR. MERRITT: I think they come from both.
MR. ZIMMERMAN: Yeah --
MR. MERRITT: (inaudible).
MR. ZIMMERMAN: -- do you recall whether even one e-mail came from Meadows of Greenspring or Boxwood?
MR. MERRITT: Maybe one.
MR. ZIMMERMAN: Yeah.
MR. MERRITT: But I, I don't, I don't recall even, I don't remember it, so.
MR. ZIMMERMAN: Okay.
MR. MERRITT: No, I don't, I don't think there were, there were many, if any.
MR. ZIMMERMAN: And do you have any idea why that might be?
MR. ROSENBLATT: Objection.
MR. MERRITT: No.
MR. ZIMMERMAN: All right. Let me scroll up --
ALJ: Hold on, hold on, Mr. Zimmerman, hold on. Overruled.
MR. ZIMMERMAN: Okay.
ALJ: He did say no already. But he is --
MR. ZIMMERMAN: Right.
ALJ: -- the President of Heatherfield so --
MR. ZIMMERMAN: Yeah.
ALJ: -- I mean, --

MR. ZIMMERMAN: Yeah.

ALJ: -- to the extent he's the President of Heatherfield, he said he's familiar with the e-mails.

MR. ZIMMERMAN: Right.

ALJ: And he said that he recalled that he did not, there was maybe one e-mail from Meadows or Boxwood in there. So, I mean, and to his, you know, his position --

MR. ZIMMERMAN: All right.

ALJ: -- I mean, he has familiarity with e-mails, so overruled.

MR. ZIMMERMAN: Yeah, Judge, that is a learned ruling, thank you. Go ahead, Mr. Merritt.

ALJ: Oh, because I agreed with you.

MR. ZIMMERMAN: No, it's not --

ALJ: I'm kidding, Mr. Zimmerman.

MR. ZIMMERMAN: The, the depth and the articulation. So, Mr. Merritt, yeah, so, so before, before we get into a little more detail, what, what do you think explains the absence of opposing e-mails from Heather, from Meadows of Greenspring or Boxwood?

MR. ROSENBLATT: Objection.

ALJ: Yeah, overruled. Again, overruled. No, he's the, he's the President of Heatherfield. He's in a position that he, he may know, he may not know but (inaudible). So, overruled. Go ahead.

MR. MERRITT: Thank you, Judge. I believe that our neighborhood was, was not involved as I mentioned earlier. And that somehow the other neighborhoods were involved with the Developer and had been speaking to them and thought that, that their concerns were going to be addressed. And no, but no one ever reached out to us, so we felt like we, we needed to be heard.

MR. ZIMMERMAN: Okay. Let me show you something and see whether you might want to add some observations. So, I'm going into the minutes now. Okay. Let's look at page two of the minutes and I'm going to scroll up. I, I don't know if the entire page shows or there's pictures blocking part of it. On mine, there's some pictures blocking the --

MR. MERRITT: Just a bit, I can read it though.

MR. ZIMMERMAN: Okay. So, and part of mine is blocked, but there, there's, I'm paraphrasing, there's the --

ALJ: You have, you have to move the --

MR. ZIMMERMAN: Hm?

ALJ: You have to move the document over. If you move the document over --

MR. ZIMMERMAN: Oh.

ALJ: -- then kind of go up.

MR. MERRITT: You scroll bar on the bottom.

MR. ZIMMERMAN: Oh, on the bottom or --

MR. MERRITT: There you go, that works.

ALJ: There you go, now you've expanded it. Now go up with the arrow bar. If you go up to the top, you'll have the top of the page down.

MR. ZIMMERMAN: Well, my, my (inaudible).

ALJ: Right underneath of enable all features --

MR. ZIMMERMAN: Okay, here we go.

ALJ: (inaudible) that's it.

MR. ZIMMERMAN: Okay. So, so, we're talking about Mr., I'm referring to the section of the minutes where Mr. Rosenblatt is using a Power Point presentation, beginning at that paragraph.

And at that point, among other things, toward the middle of the paragraph, and I'm pointing to it, if connection of Mays Chapel Road will be emergency use only with bollards installed. Developer to have continued discussions with Department of Public Works to keep this access as emergency use only, unquote. So, does that indicate, what, what would you say to whether that indicates that the Developer had already reached out with Meadows of Greenspring and made a deal on --

MR. ROSENBLATT: Objection. That's, objection.

ALJ: Over, overruled. Go ahead, sir.

MR. ZIMMERMAN: -- made it, you know, made an arrangement, okay?

MR. MERRITT: Yes, --

MR. ZIMMERMAN: On, on the emergency gate?

MR. MERRITT: Yes, it is our belief that some arrangement was made with that neighborhood --

MR. ZIMMERMAN: Yeah. So, then you --

ALJ: So, wait a minute. Mr. Zimmerman, because you kind of testify again.

MR. ZIMMERMAN: All right.

ALJ: But Mr., but, but Mr. Merritt, why, why do you believe that? What information do you know as the President of Heatherfield that will lead you to that, other than reading it? Yeah, --

MR. MERRITT: Two factors. One, that we were not consulted or contacted and that they knew about this prior to us. And that there would be such a, such a suggestion of not connecting the road and making it just for emergencies. Why wouldn't it go through? The County's master plan says it should go through. Why, why in the world wouldn't it go through?

MR. ZIMMERMAN: Yeah, okay. All right. Let me ask you about a little different subject.

MR. MERRITT: Yeah. It also says lot sizes are consistent with surrounding communities and I believe that to be false.

MR. ZIMMERMAN: Yeah, okay. Thank you, thank you for, thank you for that. Okay. Anything else you want to say about Mr. Rosenblatt's Power, oh, let me, did you actually

attend the community input meeting or, or --

MR. MERRITT: I did. There may have even been a question from me on there somewhere or maybe they just read my letter. But I, I was on it, yes.

MR. ZIMMERMAN: Yeah, and was that virtual, that meeting?

MR. MERRITT: Yes, it was.

MR. ZIMMERMAN: Yes, it was. Okay. So, can, in, the entire time, so after that meeting, community input meeting, given all the e-mails and so on, including the references to concerns about density, did anyone from the development team ever reach out to you to offer to negotiate on the density and compromise on the density in any way?

MR. MERRITT: No.

MR. ZIMMERMAN: Okay. Let me show you, go ahead, Mr. Merritt, I didn't --

MR. MERRITT: No, no, nothing was offered, like no sort of negotiation or anything was offered.

MR. ZIMMERMAN: Okay. Let me go to page six, see if we can do this. Okay. I'm going to blow it up a little bit if I can.

MR. MERRITT: So, you're, you're testing my eyesight, Mr. Zimmerman.

MR. ZIMMERMAN: Yeah, I know, that's, we're going to try to do better. Let's see if I can, okay. Is this better?

Can you read it now?

MR. MERRITT: Um hm, yep.

MR. ZIMMERMAN: Okay. So, I'm putting the arrow, there's a question, quote, why not build the highly needed downsize on, downsize community on this site, question mark. Less actual density, exclamation mark. Do you happen to know who asked that question?

MR. MERRITT: No.

MR. ZIMMERMAN: No? Anyway, do you see Mr. Rosenblatt's answer? This is the development's proposal?

MR. MERRITT: (inaudible) I vaguely recall it may have been (inaudible).

MR. ZIMMERMAN: So, so anyway, you see the answer, quote, assuming the minutes are accurate, this is the Developer's proposal.

MR. MERRITT: Correct.

MR. ZIMMERMAN: Okay and that --

MR. MERRITT: There is, again, there is no alternative proposals, no, no, there was no ability to suggest something different. No, this was, this was it, take it or leave it. Or take it.

MR. ZIMMERMAN: Okay and there was never any, you know, different position in the year and a half after that or, you know, since April 27th --

MR. MERRITT: Correct. I've seen no other proposals,

--

MR. ZIMMERMAN: Yeah.

MR. MERRITT: -- thoughts, ideas, anything.

MR. ZIMMERMAN: So, what's your assessment of the quality of reaching out in reference to density?

MR. MERRITT: There's been none.

MR. ZIMMERMAN: Yeah, okay.

MR. MERRITT: It's been, yeah, as you can see, it's been a concern the entire time here. It's been a concern brought up immediately and no, no, no suggestions were made otherwise.

MR. ZIMMERMAN: Yeah, okay. All right. I don't think I need to share this anymore, Judge. So, I can --

ALJ: You just hit stop sharing.

MR. ZIMMERMAN: Yeah, right. Where is, where is, where is the stop sharing? I'm trying, I'm trying to find it.

ALJ: It should be right there on your screen.

MR. ZIMMERMAN: I'm getting some, I apologize for sometimes my technical --

ALJ: That's all right (inaudible) --

MR. ZIMMERMAN: -- well, wait a minute. Before we stop sharing, we have a, the former president of Heatherfield was Pat McGee. Can you see this, while we have it up?

MR. MERRITT: Yes, that was just an up, we were trying to update the, some things that were mentioned during

the hearing.

MR. ZIMMERMAN: And then, and then it says you said, quote, you may contact me as I am on the Board, Dean Merritt, Esquire, and you gave your e-mail address, right?

MR. MERRITT: Correct, because we had not been contacted very much so we wanted, I wanted to make sure that everyone had my contact, my information.

MR. ZIMMERMAN: And who asked the question, the, the last question, quote, what would it take for the Developer not to move forward with this project, unquote? Do, do you happen to know who asked that question?

MR. MERRITT: No, I don't.

MR. ZIMMERMAN: Anyway, then there's the repeat answer, this is the project that's being proposed, that's Mr. Rosenblatt.

MR. ROSENBLATT: Objection.

MR. ZIMMERMAN: Yeah.

MR. ROSENBLATT: He's just reading and testifying.

ALJ: Yes, you're testifying --

MR. ZIMMERMAN: All right, all right. I, I can stop sharing, where's, let me, where's the stop --

ALJ: I sustain that objection, the last one.

MR. ZIMMERMAN: Okay, all right.

ALJ: So, just hit the stop share button.

MR. ZIMMERMAN: Oh, wait a minute, wait a minute,

wait a minute. I got it, I think I got it now.

ALJ: Yep, you did.

MR. ZIMMERMAN: Okay. It, it was, you know, rather small up at the. Okay, so, with, I, I can't help asking you this. With reference to the proposed emergency gate, do I understand that your association is, is in favor of a connection rather than an emergency gate. Is that --

MR. MERRITT: If any sort of road is built, yes. It should, it should be a full connection.

MR. ZIMMERMAN: Okay and what would your reaction be if it turns out that the proposed gate and the lack of connection conflicts with the residential performance standards and all of the Developer's arguments to try and get around that are without merit?

MR. ROSENBLATT: Objection.

ALJ: Yeah, sustained.

MR. ROSENBLATT: That is a ridiculous question.

ALJ: Mr. Zimmerman, --

MR. ZIMMERMAN: All right.

ALJ: -- I mean, you're asking him, --

MR. ZIMMERMAN: All right.

ALJ: -- first of all, I mean, he is an attorney. So, he may --

MR. ZIMMERMAN: All right.

ALJ: -- he may know about the residential, but you

can ask him whether he knows about the residential performance standards first --

MR. ZIMMERMAN: Okay.

ALJ: -- (inaudible) regulations. If he does, then, then maybe you can ask --

MR. ZIMMERMAN: Okay.

ALJ: -- the questions, but so you want to go (inaudible) --

MR. ZIMMERMAN: All right. All right. Thank you, thank you so much, Judge. Yeah, so, having listened to this hearing and being an attorney, to what extent, if any, have you familiarized yourself --

MR. MERRITT: I, I am familiar --

MR. ZIMMERMAN: -- with the residential performance standards?

MR. MERRITT: I, I am familiar, yes.

MR. ZIMMERMAN: And --

MR. MERRITT: I wouldn't say I am an expert, but I am familiar.

MR. ZIMMERMAN: But the street standard, the street connection standard?

MR. MERRITT: Yes.

MR. ZIMMERMAN: And would that be one of your, your concerns that the --

MR. MERRITT: Yes, yes, that's certainly one of our

concerns.

MR. ZIMMERMAN: (inaudible), yeah.

MR. MERRITT: It is one of our concerns, and, and, and we, we agree, yes.

MR. ZIMMERMAN: And that, and what would you say is to, if I suggested that would be a legal issue that the Judge will have to resolve --

MR. ROSENBLATT: Objection.

MR. ZIMMERMAN: Yeah.

ALJ: Yeah, but Mr. Zimmerman, I mean, --

MR. ZIMMERMAN: All right. All right.

ALJ: -- I don't even (inaudible), I don't know what Mr. Merritt is supposed to tell you about that (inaudible).

MR. ZIMMERMAN: All right.

ALJ: I'll sustain that one, yep.

MR. ZIMMERMAN: All right. We'll, we'll, we'll deal with it in our post-hearing memo.

ALJ: Yeah, that's right, that's right.

MR. ZIMMERMAN: Yeah, okay. So, Mr. Merritt, yeah, unless you have anything else, I think I'm, I'm happy to have you here today and thank you for your testimony.

MR. MERRITT: Thank you.

ALJ: Okay. Thank you, Mr. Zimmerman. How about Mr. Wyatt, do you have any questions?

MR. WYATT: No, Your Honor, I do not have questions.

ALJ: Okay. Mr. Sachse?

MR. SACHSE: No, Your Honor. Dean, thank you. I have no questions, no.

MR. MERRITT: Okay.

ALJ: All right. Mr. Rosenblatt?

MR. ROSENBLATT: Yes. Good morning, Mr. Merritt.

MR. MERRITT: Good morning. How's your hip?

MR. ROSENBLATT: Hanging in there, thank you for asking. I'm going to show you, you've probably seen me do this with other witnesses, Developer's Exhibit 33. I'm going to zoom in on what I believe your property is down on the corner of Joppa Road. I've drawn an X and the initials DM. Can you just confirm I've correctly identified your property?

MR. MERRITT: Correct. The X is my property.

MR. ROSENBLATT: Okay. Thank you very much. You talked a little bit, mainly with Mr. Zimmerman, about your dealings with the Developer throughout the last couple years. I want to show you what has been marked as, sorry, Developer's Exhibit 31. It's a string of e-mails.

MR. MERRITT: Um hm.

MR. ROSENBLATT: And I'm going to scroll down to the bottom and just kind of go through some of this to talk about your recollection of dealings with myself and the development team.

MR. MERRITT: Yeah.

MR. ROSENBLATT: So, beginning on, on June 16th, 2021, e-mail from me, is this your e-mail address, dean@merrittinc.net?

MR. MERRITT: Yes.

MR. ROSENBLATT: Is it big enough that you can read it? I saw you kind of leaning forward.

MR. MERRITT: Yes.

MR. ROSENBLATT: Okay.

MR. MERRITT: That's correct.

MR. ROSENBLATT: And so, on June 16th, I e-mailed to your e-mail address, I am attaching the site plan and presentation we just discussed. Please keep in touch and let us know about landscaping or any other questions or comments. Thank you very much. You remember receiving this e-mail?

MR. MERRITT: Yeah, it was a long time ago, but I, yes.

MR. ROSENBLATT: Okay and then a couple weeks later, June 28th, e-mailed again, just checking to see if you have any comments or requested changes regarding landscaping or buffering for Tallyho. Please e-mail or call any time. Did you receive that e-mail?

MR. MERRITT: Yep.

MR. ROSENBLATT: Ms. Becker, who is the president of the neighboring association, she, she wrote back what, first on June 28th, 2021. She states that she went on vacation and sent

something to the neighbors, and this again is your e-mail address, Dean@merrittinc.net, right?

MR. MERRITT: Yes, yes.

MR. ROSENBLATT: Did you ever write back to any of the e-mails I sent you, if you recall?

MR. MERRITT: I'd have to check my e-mail records. If you want to give me a moment, I can do that.

MR. ROSENBLATT: You can. Here, let's, in the interest of time, let's, let's just keep going.

MR. MERRITT: But I believe we discussed it on the, on the call.

MR. ROSENBLATT: Right, okay. Aug, August 4th, 2021, another e-mail from me saying the Environmental Department asked us to eliminate the existing driveway. And I, I sent you a, a redline version of the plan that showed the new driveway layout. Do, do you recall receiving this from me?

MR. MERRITT: If I'm on it, I'm, I'm sure I did.

MR. ROSENBLATT: Okay and again, Ms. Becker wrote back on August 4th, 2021, do, do you recall if you ever wrote back to this e-mail?

MR. MERRITT: I don't recall.

MR. ROSENBLATT: And we continue on to November 4th, 2021, e-mail from me again to, including the dean@merrittinc.net e-mail address, with the hearing now approaching, I wanted to follow-up to see if you'd like to meet

one more time virtually, or have any questions or comments about the plan, we'd like to get on your calendars next week. And I offered to meet and again, do you, do you recall ever writing back to this e-mail from me?

MR. MERRITT: No, but I had previously written an e-mail in April that was shared, so, that, that you, you would have received as well.

MR. ROSENBLATT: Okay.

MR. MERRITT: That, that Mr. Zimmerman shared with our objections to the density.

MR. ROSENBLATT: Sure, you wrote that to the, to the County in regard to the community input meeting?

MR. MERRITT: Right. So, you had, you had our concerns on that.

MR. ROSENBLATT: Sure, but these, these offers that I e-mailed to you throughout 2021, Ms. Becker wrote back a couple times. You don't, you don't recall ever writing back as to the --

MR. MERRITT: Right, and they only offered regarding buffer, specifically buffer.

MR. ROSENBLATT: Your, your neighborhood, as you said, has a number of homes that do back to the development, right?

MR. MERRITT: That's correct.

MR. ROSENBLATT: Did you ever ask for any additional

landscaping or buffering for those homes?

MR. MERRITT: They, they may have, I, I don't know.

MR. ROSENBLATT: You're president, right, of the HOA?

MR. MERRITT: Correct. As I said, it's a, it's not a mandatory one. So, they would, they would be certainly able to do that on their own as well.

MR. ROSENBLATT: Okay and so you're, this is your e-mail address.

MR. MERRITT: Yes.

MR. ROSENBLATT: Do you know pmc, or pmcgee5@verizon.net is Pat McGee part of your Board as well?

MR. MERRITT: He's the past president before me.

MR. ROSENBLATT: Okay. So, these e-mails that went to your e-mail address and Pat McGee, that's two members of Heatherfield that received all these e-mails?

MR. MERRITT: Um hm.

MR. ROSENBLATT: Okay, all right. And in 2022, I just want to forward or, or show you what's been marked as Developer's Exhibit 32. And again, on August 5th of this year, e-mail from me talking about the hearing coming up on September 21st, stating it's been a long time since we talked, offering to meet. You never wrote back to this asking to meet again --

MR. MERRITT: At, at that point, we had, we had engaged counsel, so we had Mr. McCann, I believe reaching out to you.

MR. ROSENBLATT: Okay, got it. All right. You talked a few times about your concerns about sewer. And I think you stated that, something to do with the master plan and sewer. Can you explain your understanding of, of the sewer issues?

MR. MERRITT: My understanding primarily comes from watching these hearings and some of the, the studies. And also, being somewhat knowledgeable of the Hopkins development that took place. There were supposed to be sewer upgrades made for that, that were not fully completed.

The, the neighborhoods around here and, and the whole area have had sewage issues for, for many years. The infrastructure is very dated, in and around all of Baltimore. So, we, that's why we are concerned about it.

MR. ROSENBLATT: Now, you said you, your neighborhood has had sewer issues for many years. Have you ever had a backup into your house?

MR. MERRITT: I had one backup into my crawl space area..

MR. ROSENBLATT: When was that?

MR. MERRITT: Two thou, when did I move in, probably around, around 2018.

MR. ROSENBLATT: Okay. What was, what was the, how did you deal with that? Did you call Baltimore County, a plumber, what did you do?

MR. MERRITT: Yes, they, Baltimore County would come out and, and try to, I have a very long run in the back of my home. They would come out and, and try to pipe, pipe it, and then, if I needed to, a plumber would do it from in the house as well, which I had, I had done once.

MR. ROSENBLATT: Was it something that happened to every street on your, on your court or just your house?

MR. MERRITT: I don't know.

MR. ROSENBLATT: Okay. Any other knowledge of other backups (inaudible) --

MR. MERRITT: Mine feeds out the back to Joppa Road. So, I, whether it happened to my street, probably wouldn't, and I don't actually, I don't even know where my other, my neighbors feed out to.

MR. ROSENBLATT: Do you, do you know where the sewage from, from Heatherfield, from your neighborhood, goes in relation to --

MR. MERRITT: I know, I know where mine goes.

MR. ROSENBLATT: Okay. Do, do you know, let me just ask this question. Do you know where the sewage from your neighborhood goes, and if it's the same path that the sewage from the proposed development will travel through the County sewer system?

MR. MERRITT: Eventually it would, I believe it would.

MR. ROSENBLATT: Do you think it's the same right away or do you know or is this just (inaudible) --

MR. MERRITT: Well, define right away, I, you know, eventually they do, they do come together.

MR. ROSENBLATT: Okay. So, you, your understanding of the sewage system, you said you've, you've been listening to the hearings, right?

MR. MERRITT: Yes.

MR. ROSENBLATT: In this case, and you've read some of the documents. Are, have you talked to any expert on the subject? Either with Baltimore County or, or some kind of sewer expert?

MR. MERRITT: No, I, I've only read what, what's been made available here.

MR. ROSENBLATT: Okay. Well, let's talk a little bit about, about traffic. You said, I believe you said you leave your house, you and your wife, an average of fifteen times a day. And then you said ten --

MR. MERRITT: Yep.

MR. ROSENBLATT: -- to fifteen, maybe twenty times, is that right?

MR. MERRITT: That's right.

MR. ROSENBLATT: If you're leaving your house twenty times a day, how, what, what times of day is that? How, how would that even work?

MR. MERRITT: Sure, we'll, we'll go through today. I left this morning to take my son to Loyola, came back, went to the dentist, had dental work done already this morning. My wife left to take my son to Riderwood and returned.

She left, she works, she is a therapist in Towson and had two appointments today, so we're at five. We've got to go pick up all three of my sons. Two of them have, one of them has sports today, one of them is going to Copper Mine for a, I don't know what he's doing there, rock climbing or something.

I will probably go out and get some lunch today. She will probably go to the grocery store later. And, and tonight I have an event as well downtown. So, we're at, I think I'm at fourteen or fifteen right there just today.

MR. ROSENBLATT: And all that stuff, that's a typical day for you?

MR. MERRITT: That's a typical day.

MR. ROSENBLATT: Okay. When you go to, let's start with Riderwood, how do you drive from your house to Riderwood?

MR. MERRITT: I leave the neighborhood via White Manor, turning left onto Joppa.

MR. ROSENBLATT: Okay and from Joppa, travel --

MR. MERRITT: Then Joppa down to Thornton, left on Thornton and then left into the Riderwood neighborhood.

MR. ROSENBLATT: Is that the same if you're going, basically to, anywhere in Timonium? If you're going to Giant

or Shop Rite or any restaurants?

MR. MERRITT: No, sometimes we'll turn right or left, basically, we, we go out and check traffic before we leave, so, sometimes we'll go right, sometimes we'll go left.

MR. ROSENBLATT: What do you mean by that? On, on what road?

MR. MERRITT: On Joppa, whether we turn right or left on Joppa, or whether we turn right or left out of the, out of the neighborhood, you know, --

MR. ROSENBLATT: Okay.

MR. MERRITT: -- to head north or south and then head east or west.

MR. ROSENBLATT: Gotcha. And then would you take, I guess is Thornton Road the road you take over, if you're heading, what is that, east on Joppa, take Thornton up to (inaudible) --

MR. MERRITT: We might, or might go all the way to Bellona or we might go Falls if it's, if we know the traffic is not bad.

MR. ROSENBLATT: Okay.

MR. MERRITT: Thankfully our cars have GPSs and traffic so we're, we're constantly monitoring this.

MR. ROSENBLATT: Right. You talked a little bit about, I think it's police training going on across the street from you?

MR. MERRITT: Motorcycle, police motorcycle, I don't know, the training, testing, yep.

MR. ROSENBLATT: That, that was my question. How, how do you know what it is? Did, have you talked to anyone or?

MR. MERRITT: You can see giant trucks that say a number of different police associations, State police, Anne Arundel County police, they're all in police uniforms, they have police motorcycles with lights on them and there are about two thousand cones set up in the parking lot right now.

MR. ROSENBLATT: Okay (inaudible) --

MR. MERRITT: I can go get you a picture and have it, have it by the end of the hearing.

MR. ROSENBLATT: I don't need a picture. I was just wondering. It sounded more interesting than anything else. I was wondering how you knew it was training.

MR. MERRITT: It is. I didn't, I didn't go over and ask if I could, I could participate.

MR. ROSENBLATT: Okay. You mentioned the master plan several times and --

MR. MERRITT: Um hm.

MR. ROSENBLATT: -- you, in one respect you mentioned it when talking about the connection of Mays Chapel Road from Seminary to Joppa.

MR. MERRITT: Yes.

MR. ROSENBLATT: Have you reviewed the master plan,

the County's master plan 2020?

MR. MERRITT: Yes, it was shared with us by either the attorneys or, or maybe one of the area representatives, County Council representatives.

MR. ROSENBLATT: And, and, and you believe in the master plan it talks about connecting Mays Chapel Road from Seminary to Joppa?

MR. MERRITT: That the, the road was, was put there and designed to be connected if a road was ever built.

MR. ROSENBLATT: And that's again, that's part of, that's part of what you believe is in Baltimore County master plan 2020?

MR. MERRITT: I don't know the year, but yes.

MR. ROSENBLATT: Okay. Did you say there's drag racing that goes on in Tallyho?

MR. MERRITT: I said it's become like a drag strip.

MR. ROSENBLATT: Okay.

MR. MERRITT: Where people will step on their gas as hard as they can and, and people have fast cars and go straight up that road as fast as they can. And ignore the stop sign that's at the end.

MR. ROSENBLATT: So, where you live, which is not directly on Tallyho, right?

MR. MERRITT: Yes.

MR. ROSENBLATT: Do you still feel the impact of, of

traffic along Tallyho, whether it's cut through or just cars from your neighborhood along Tallyho?

MR. MERRITT: Yes, we, we walk that area a lot and we, we also drive it, we walk it and also, as I said, every once in a while they'll even come over to White Manor where I, where I can see them.

MR. ROSENBLATT: Okay. I want to talk to you a little bit more about, because you spent some time on this cut through situation, and but it's, correct me if I'm wrong, but I believe you, you said that one of your issues is you feel like it was decided that the gate would be part of this proposal for Mays Chapel Road and that it would be gated and your neighborhood would much prefer to see a full, open access, right?

MR. MERRITT: Um hm.

MR. ROSENBLATT: And that's something you, you have expressed as far back as the community input meeting that (inaudible) --

MR. MERRITT: Yes, and you, yes, and you assured us that this would be a decision for the Judge and that you would not be discussing it.

MR. ROSENBLATT: Okay and I guess my question for you, I'm, I'm showing you a copy of, of Developer's Exhibit 28. And asking you, you see how Mays Chapel Road, the, the path that would be from Seminary to Joppa Road is highlighted in

red, can you see that?

MR. MERRITT: Um hm.

MR. ROSENBLATT: And then the path, the existing path on Tallyho --

MR. MERRITT: Yes.

MR. ROSENBLATT: -- from Joppa up to Seminary is also highlighted in red? See that?

MR. MERRITT: Yes, I see that.

MR. ROSENBLATT: Okay and I guess my question for you is who do you think it would impact more if Mays Chapel Road is opened, full access from Seminary to Joppa? The people that live along Mays Chapel Road and in Seminary Ridge and Boxwood or the people on Tallyho?

MR. MERRITT: If it were opened, it would impact those four or so homes. If it were, if, if it were not opened, it would impact the fifty, sixty, seventy homes, I'd have to double check the count there, that are along Tallyho.

MR. ROSENBLATT: Well, you just said, you don't live on Tallyho, and you're still affected by the traffic along Tallyho, right?

MR. MERRITT: Yes, I, I, because I am, I walk there, and I use it all the time.

MR. ROSENBLATT: And you've heard the same thing, you've been listening to these hearings. You have heard that same exact statement that people walk in Seminary Ridge and

Boxwood, right?

MR. MERRITT: Correct.

MR. ROSENBLATT: And if this road is opened, it's going to have a pretty big impact on the people that live on, in Seminary Ridge and Boxwood, right?

MR. MERRITT: How many are right along the road there? That are directly impact, I would say they're impacted and there's direct impact or highly impacted and minorly impacted. I'm minorly impacted --

MR. ROSENBLATT: Are you minorly impacted? I'm sorry, I didn't mean to cut you off. Are you minorly impacted --

MR. MERRITT: Yeah.

MR. ROSENBLATT: -- is that --

MR. MERRITT: Yeah, I would, I'm, I'm less impacted than, less impacted than someone who lives directly on Tallyho.

MR. ROSENBLATT: Okay. So, is it your statement, you do not agree that there would be more of an impact to Seminary and, and Boxwood communities then to Tallyho if this gate is open and it's full access?

MR. ZIMMERMAN: Objection. I think Mr. Rosenblatt meant Meadows of Greenspring, just to clarify, just to help him out.

ALJ: Seminary Ridge would be above Heatherfield, Mr. Rosenblatt.

MR. ROSENBLATT: I, I'm, he's actually right. I, I'm talking about the two communities to the north of, of the project, so.

ALJ: Right, which is Meadow, Meadow, not Meadowood.

MR. ROSENBLATT: Meadows of Greenspring.

ALJ: Meadows of Greenspring and Boxwood.

MR. ROSENBLATT: Yep.

ALJ: Yep.

MR. ROSENBLATT: Thank you, Mr. Zimmerman. So, I'm going to ask the question again with the correct name. The Meadows neighborhood and the Boxwood neighborhoods along Mays Chapel Road, would you agree that they would face more of an impact than the homes throughout the Tallyho, Heatherfield, Seminary Ridge neighborhoods if this gate is open and the road is full access?

MR. MERRITT: They would both be impacted in different ways.

MR. ROSENBLATT: Okay.

MR. MERRITT: Positively, negatively, I don't know how you're, you didn't say.

MR. ROSENBLATT: Okay. You are, in part, a real estate broker, right?

MR. MERRITT: Correct.

MR. ROSENBLATT: Are you, is there a relation to the Merritt family, the Merritt properties?

MR. MERRITT: No, no.

MR. ROSENBLATT: Okay. How about, can you tell me in, in Heatherfield, is that a generally desirable area to live, neighborhood to live in Timonium?

MR. MERRITT: Yes, I think so.

MR. ROSENBLATT: Do houses sell pretty quickly if they go on the market in Heatherfield?

MR. MERRITT: As of, as of late, everywhere, everywhere does, even the worst neighborhoods.

MR. ROSENBLATT: Okay. Court's indulgence. Okay. I, I have no further questions. Thank you very much.

MR. MERRITT: Thanks, Adam.

ALJ: Mr. McCann, any re-direct?

MR. MCCANN: Just, just some quick follow-up, Your Honor.

ALJ: Um hm.

MR. MCCANN: Mr. Merritt, good morning again. With respect to the e-mails, I think they were Developer's Exhibits 31 and 32, do you recall that testimony?

MR. MERRITT: Yes.

MR. MCCANN: It sounds like you don't recall, sitting here today, whether or not you personal responded to Mr. Rosenblatt's e-mails, is that fair?

MR. MERRITT: That's correct.

MR. MCCANN: But was, Blandy Becker, was she, she was

on those e-mails as well, correct?

MR. MERRITT: Um hm, yes.

MR. MCCANN: Was she in any way serving as some sort of a spokesperson for that --

MR. MERRITT: Yes, we, we, we've worked together on this, so yes.

MR. MCCANN: And she responded to Mr. Rosenblatt, correct?

MR. MERRITT: Yes.

MR. MCCANN: And whether you did or did not personally respond to Mr. Rosenblatt's e-mails, is that any indication on your part of, of any unwillingness to at least listen to what the Developer had to say?

MR. MERRITT: Yeah, absolutely, we'd be happy to listen to anything that they had to say. It was pretty clearly stated that this was the plan and the only thing he asked was buffer, I think.

MR. MCCANN: Yeah, and you pointed that out that the e-mails were --

MR. MERRITT: I'm not a buffer expert or, so.

MR. MCCANN: Yeah. Well, yeah, you pointed out that the e-mails related to landscaping and buffer. Why, if you did not respond, why, why, well, why did you or why, why didn't you or anyone else respond to Mr. Rosenblatt's inquiries about what you wanted for proposed landscaping and buffer? Is there a

reason for that?

MR. MERRITT: Because our concern as with density and, and lot size, not with landscaping or buffer. And we had also eventually engaged attorneys and others to help us with this.

MR. MCCANN: Okay, great. With respect to this, this sewer problem that you had, the backup.

MR. MERRITT: Um hm.

MR. MCCANN: Do you recall, you said it was 2018 or so?

MR. MERRITT: Yeah, ballpark. It was before, we did some remodeling, I know it was before that, so, before 2020, I know that.

MR. MCCANN: When it was eventually resolved or temporarily or permanently, is that accurate?

MR. MERRITT: Um hm.

MR. MCCANN: Was the, was the, was the fix a, in your, in your bathroom in your house or was it a fix in the, the public sewer, do you know?

MR. MERRITT: No, I, I, they never were able to determine. They cleaned everything out and eventually things got flowing.

MR. MCCANN: Okay. When you say they, you mean the County?

MR. MERRITT: Both the County and the, and, and a

personally hired plumber.

MR. MCCANN: And do you know what exactly it was that the County cleaned out? Was that the public portion of the sewer?

MR. MERRITT: Yes, because they started from my furthest out, clean out, way at the end of my and, and went out from there because they --

MR. MCCANN: Where is that --

MR. MERRITT: -- they refused to work on anything in, on the other side.

MR. MCCANN: Okay and when you say the farthest clean out, what, what are you referring to?

MR. MERRITT: There's a cleanout that's almost to Joppa Road, out the back of my house. If you want to pull up the map and if you really, really zoom in I can point that out.

MR. MCCANN: Excuse my e-mails. Bear with me a second.

MR. MERRITT: And, and I think, and I also, I may be one of the more unique homes in the neighborhood that feeds directly out to Joppa Road.

MR. MCCANN: Okay. This again is Exhibit 24-B. I know it's not a very --

MR. MERRITT: Yeah.

MR. MCCANN: -- detailed map but it --

MR. MERRITT: And I know that too based, because I

have gas heat and a lot of the neighbors do not have gas, so natural gas service.

MR. MCCANN: Okay. What is it that you know, I'm sorry?

MR. MERRITT: I have natural gas service and I know many of the neighborhood, neighbors do not, they have oil.

MR. MCCANN: Okay and, and using this exhibit, you're highlighted here in pink.

MR. MERRITT: Yeah, so on the --

MR. MCCANN: Describe, yeah --

MR. MERRITT: -- if you can see the, the vague outline of my home, on the left, bottom left corner of the home is where it comes out of my house.

MR. MCCANN: Okay.

MR. MERRITT: And then heads south towards, yep, right there. And there's a clean out right, right there.

MR. MCCANN: In the corner of your property, the south --

MR. MERRITT: Yeah.

MR. MCCANN: -- west, southwest corner?

MR. MERRITT: Correct, correct.

MR. MCCANN: And that's where they did the work, the County?

MR. MERRITT: Correct, yes.

MR. MCCANN: Okay. Okay, that's it. Thank you, Mr.

Merritt, appreciate it.

MR. MERRITT: Sure, thank you.

ALJ: All right. Thank you, sir. Appreciate it. We'll mute you. All right. Mr. McCann, other witnesses?

MR. MCCANN: Just Mr. Wyatt.

ALJ: Oh, that's right. All right. Mr. Wyatt. Raise your right hand, please. Do you swear and affirm under penalties of perjury, that the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. WYATT: I do.

ALJ: All right.

MR. MCCANN: Okay. Thank you, Judge. Good morning, Mr. Wyatt. I know you've mentioned a couple times where it is that you live, but just please remind us.

MR. WYATT: Yeah, good morning. My family lives at 4 Trelawney Court. We've, my wife and I moved there about twenty years ago.

MR. MCCANN: Okay. Any kids?

MR. WYATT: We, we raised two sons there. One is college age and still intermittently lives with us. But more or less they're, one is out, and one is on his way out.

MR. MCCANN: So, your children grew up in that, in that house at 4 Trelawney?

MR. WYATT: Yes, they did.

MR. MCCANN: Okay. Real quick I'll show you the map

again, Protestant's Exhibit 24-B, share. And we talked about Trelawney Court quite a bit. I think Mr. Gray is highlighted here in green. Where is it that you live on Trelawney?

MR. WYATT: So, we are just, we are just to the, just below the green Gary lot.

MR. MCCANN: Okay.

MR. WYATT: That triangular lot.

MR. MCCANN: Right here in red, I'm highlighting it in red?

MR. WYATT: Yes, that's where we live. That's 4 Trelawney.

MR. MCCANN: Okay.

MR. WYATT: And just of note, I don't think we are listed as an adjoining property owner on the development plan.

MR. MCCANN: Right.

MR. WYATT: Because between us and the, the Langford or development parcel is a triangular piece of open space that's owned by Seminary Ridge Homeowners' Association. But, but basically, if you're, and we'll get to some of the photographs later, it looks like one continuous piece of property. You walk out our backyard and you'll find yourself right in the cornfield.

MR. MCCANN: So, it sort of looks like you and Mr. Gray have a big backyard, I guess, bigger than it --

MR. WYATT: Right, perhaps a little bit bigger than

we actually own. We, our, our property is a little under an acre.

MR. MCCANN: Okay and that, I think we've talked about the size of the lots already, but that, your lot is same, maybe a little bit bigger than some of the other ones on Trelawney?

MR. WYATT: Correct. Across the street, they're probably a, maybe a, in the half acre range. But then you'll, you'll see on the, the west side of Trelawney --

MR. MCCANN: Um hm.

MR. WYATT: -- most of the lots are in the acre range. I think that's just the way the developer laid it out at the time, I'm not sure exactly why.

MR. MCCANN: Okay, great. Aside from being in that, in your home for twenty years, did you also grow up in the community, Mr. Wyatt?

MR. WYATT: I, I did. My family grew up, I, I lived, I've lived in 21093 pretty much my entire life, all but maybe college, law school and a few years when we lived out in Sparks. But I grew up on 12, at 1218 Clearfield Circle. My mother lived there until about 2015 and then she moved over to the Boxwood community, which is adjoining, we've heard of that in this hearing. And she still lives there.

So, but I'm, yes, I grew up. I was even in our neighborhood before the area where I now live was even

developed. So, we, we were original residents in Seminary Ridge growing up. I've been, been there my entire life.

MR. MCCANN: So, Clearfield Circle, just to, remind us where that is?

MR. WYATT: Clearfield Circle is more on the Seminary Avenue side of Seminary Ridge. So, if you, if you take, head in from Seminary Avenue on Tallyho.

MR. MCCANN: Right.

MR. WYATT: There's a, there's two of the first three intersections are Clearfield Circle.

MR. MCCANN: Okay. South of Seminary, right?

MR. WYATT: South of Seminary. Blandy Becker lives on Clearfield Circle to give you an example.

MR. MCCANN: Yeah, and I'm looking at the map now. Okay. How about your familiarity with the, the office and retail at Greenspring Station?

MR. WYATT: I would say uniquely familiar and very familiar, because I grew up in the area, I, I'm, Greenspring Station wasn't even developed when I was growing up. I, you know, my friends and I would, would be in the, on the Langford property collecting golf balls from the driving range that was there, the (inaudible) driving range. And then getting ice cream at Windy Valley.

None of the other developments had, had been in place at that time. So, yeah, definitely very familiar with, I've

watched it grow and I've watched the development over the years.

MR. MCCANN: Okay and you, we've all seen you, but you, you've sat through just about every minute of this hearing, correct?

MR. WYATT: I think I missed about a half hour total, but yes, I have.

MR. MCCANN: Okay and is it fair to say you're very familiar with what's being proposed by the Developer?

MR. WYATT: I would say that I am, yes.

MR. MCCANN: Okay and you also, just for the record, I know Judge Murphy knows this, but you also, part of your legal practice is, involves land use, development, zoning issues of some sort, correct?

MR. WYATT: I do a modest amount of that kind of work, but I do a substantial amount of work in real estate, either real estate transaction or real estate controversy is probably more than fifty percent of my practice.

MR. MCCANN: Okay and how long have you been practicing?

MR. WYATT: Thirty, I was admitted to the Bar in 1989, thirty-two, three years.

MR. MCCANN: Okay and where's your office? I think everybody may know that as well.

MR. WYATT: We're in, we're in Towson, in the

Campbell Building, at 100 West Pennsylvania Avenue.

MR. MCCANN: Okay. Tell us, Mr. Wyatt, if you would, what your concerns are about the proposed development.

MR. WYATT: Well, yes, I'll do so and I'll, I'm going to echo a lot of the concerns that have been expressed previously, but I'll try to amplify and maybe add to the discussion, if I, if I can.

But, you know, so my concerns are traffic, sewer and density. I'll start first with traffic. Because of where we're located in our neighborhood, we're usually going down Tallyho to Joppa Road, either going west into the intersection of Falls at Joppa and the Jones Falls Expressway or we're going to head to the east, the Tow, the Riderwood area or into Towson.

One of the things that struck me throughout this hearing thus far is that the Developer has really not addressed traffic safety issues. The sole focus appears to be on trip generation, theoretical trip generation, and congestion mitigation. And to me, these are completely separate issues. Let me break it down by intersection.

MR. MCCANN: Okay.

MR. WYATT: Falls and Joppa Road, there's a lot going on there. And I don't think very much of it has been discussed in this hearing so far. If you consider what that intersection actually is, it is Interstate 83, the Jones Falls Expressway,

coming to a, coming to a halt. So, the speed limit goes from fifty-five miles an hour to forty miles an hour when you approach the Greenspring Station area.

You also have Falls Road heading south, where people are anticipating being able to go fifty-five. They don't wait until they're on 83. They, they start accelerating right around Wine Merchant, which is a few hundred yards up the road before the intersection when you're heading south.

MR. MCCANN: Right.

MR. WYATT: So, to, to me, I think that's fairly significant about this, it's unique about this intersection. I can't, there's very few intersections where you have the end of an, of an interstate highway that, in, into, feeding into an F rated intersection.

The other thing I don't, it's certainly borne out by the photographs and the drawings, but this is a very irregularly shaped intersection. And by that, I mean, Falls Road literally is heading north before it turns at an extreme angle to intersect with Falls and 83.

Joppa Road does the same thing. It's heading north, it's heading north by northwest before it makes a severe turn so that it can be straight for less than a hundred yards so that it can be an intersection. But beyond that, it's not a, it's not a real type of plus sign intersection like was shown on all of the traffic engineering reports that we saw earlier

during Developer's case.

It's actually, and again, yeah, thank you. This is, I think (inaudible) exhibit but --

MR. MCCANN: This is Protestant's Exhibit 25. I just wanted to, I think we all talked about Falls Road a lot. But the Falls Road that you're speaking to now and the extreme turn is this, this portion of Falls Road here, right?

MR. WYATT: Correct.

MR. MCCANN: Yeah.

MR. WYATT: Yeah, so running basically north/south, it shows a little bit to, at, at an angle on this photograph. But Falls Road is actually running parallel with Interstate 83 or what we know is the Jones Falls Expressway. So, it's not Falls Road there. I mean, you have a multitude of different roads connecting and Falls Road is running parallel. It takes that sharp turn --

MR. MCCANN: Um hm.

MR. WYATT: -- so that it can intersect. Same thing with Joppa across to the right of the photograph. That's Joppa Road running alongside Greenspring Station and the, and the Greenspring Pavilions and offices and then it takes a, a sharp lefthand turn so that it can, there can be an intersection. So, I, I, again, I, I can't think of any, any intersections that are actually like this.

I believe, from having lived in the area and my own

observations, it makes this intersection way less safe than most other intersections. I, I think Jim Gary said he, he believes there's been accidents at that intersection on a daily or weekly basis. I would say weekly to monthly that intersection is either closed or partially closed because there's been a, some type of crash.

MR. MCCANN: This is Joppa and Falls, correct?

MR. WYATT: This is the Joppa, Joppa and Falls. And one, you know, one of the things and, and I think Ying Lom (phonetic) mentioned it yesterday, I didn't hear any mention of it during the Developer's case. What the Developer is proposing to do is very, it's, it's very diminimus as far as adding a lane to this intersection.

But it's also, they're taking away a median strip that exists. You can see it sort of on this photograph. There's a median strip between, it's, it's at the eastbound Joppa Road inter, westbound Joppa intersection as, as you approach its intersection with 83, there's, yeah, there's a good picture of it.

MR. MCCANN: This is, it's been marked as Wyatt Exhibit 2, it's been provided to your office, Your Honor. Is this, is this a photograph depicting that area you just described?

MR. WYATT: Yes, it is. And that's a median that's been there as long as I can remember and having been sitting in

that intersection probably hours of my life, I think it does provide a little bit of a buffer and some safety and space, space being preoperative here, from oncoming traffic and, and traffic that's taking, that's turning from the various turn movements that intersect, at that, at that particular part of the intersection. So, that's going to be removed.

There's been no mention about what happens to it. I guess we're going to, we're going to jam more lanes into the same amount of space, or maybe a little bit more space, but I'm not sure where those signs would go either.

They're pretty important signs because they, they alert that there's a separation and then they alert also you can't take a lefthand turn into the driveway into the gas station. So, that, that's one issue. If it was addressed, I, I didn't hear it addressed very adequately.

One other thing, and Ying Lom brought this up, and maybe one, one or two other witnesses have brought this up, but there, there are, there are, at this intersection, two, I would call them sub intersections. And these are the two entrances from Greenspring Station onto Joppa Road. One is at the snow, it's the snowball stand entrance --

MR. MCCANN: Um hm.

MR. WYATT: -- where there's a gas station. And then further to the east is the intersection into Greenspring Station. One of the, I guess, selling points that the traffic

study was promoting, is that by addition of a, by additional lanes for the east and westbound turning movements, that it would provide more green time for north/south traffic.

Well, it doesn't, you know, by my simple deduction, that, more green time north/south is going to create more red time east/west. What that's going to do is create stacking along those two, along the two sub-intersections that I'm talking about.

I think Ying, I think Ying Lom yesterday mentioned and I, I totally agree with what he's saying. When you're trying to pull out of that first sub-intersection, which is at the snowball stand, and you're trying to --

MR. MCCANN: Is that right here, Mr. Wyatt?

MR. WYATT: Yeah, correct, where you have your cursor.

MR. MCCANN: Okay.

MR. WYATT: If you're pulling out of there in any kind of traffic and trying to go left, it's nearly impossible to do so. And now we're going to be adding more traffic and more stacking and a longer light signal that's going to prevent, that will prevent people from making that lefthand turn.

I would tell you a lot of times, if I'm going to the gas station or to the bank or one of the area restaurants, instead of taking a left there, I end up taking a right and

looping all the way back around to Seminary to Tallyho to get, to get home, because you can't, you just can't make a left now. It's going to be worse at that intersection when you're stacking traffic because of a longer light signal to allow more green time north/south, well, it's more red time east/west. So, that's one thing.

And I think the same problem will, the problem gets replicated. Even to the east at the Greenspring Station entrance, --

MR. MCCANN: Just right here where my cursor is?

MR. WYATT: -- it's the same thing.

MR. MCCANN: Yeah.

MR. WYATT: And it's, it's magnified further up closer to the intersection because we'll have another lane there also that we have to compete with trying to take a lefthand turn. That's an extra lane of oncoming traffic that you're going to have to now account for in trying to make a lefthand turn. It's, I think it's going to create a more hazardous situation than it already is.

Meadowood Park. I heard Dean Merritt say it and I, I, all of us that live in the area know it, you know, it's been, been a recreational park since it was put up, put into the system probably fifteen years ago. But it, it creates a lot of unique challenges.

It's hosting recreational events and tournaments

throughout the year, and it usually involves overflow parking onto Falls Road, which creates a little bit more of a hazard if you're going north or south on Falls Road approaching or coming from that intersection.

MR. MCCANN: So, you're saying, where do cars park? You're saying cars park along Falls for overflow of the parking lot?

MR. WYATT: Yes, they, they'll park both on the, on the southbound shoulder and on the northbound shoulder right out from the entrances of Meadowood all the way until it, up into the intersection and I think there may be a no parking sign. You can't, you can't park past a certain point.

MR. MCCANN: On both sides of Falls, like here and here, where my cursor is?

MR. WYATT: I think it's a, even further to the north is where you're able to park.

MR. MCCANN: Okay.

MR. WYATT: On, on the shoulders on Falls Road. When, that parking lot fills up if there's a tournament. And then, you know, from, from that, you have to understand, there's no sidewalks at all in, in this area, anywhere in this area, until you get to, there's a small sidewalk in front of one of the, the offices further east on Joppa. But there's just no sidewalks. People are trying to cross this intersection. It's just very, it's a dangerous situation.

Further to the east, I don't know if it's going to be on this exhibit, but just sort of moving along out of that intersection, right, yeah, that's, right, right along near the Langford property, the Developer parcel on Joppa, there's a, there's a weird kink.

It's not really shown here but if you're heading east and you're following a car, you, you have to wait for that car to clear before you know if there's oncoming traffic. I, I don't know how it's been allowed to exist for so long, but it's a, it's a really strange, weird turn and a lot of it has to do with the topography in the area.

That, there's been, there was a fatal accident into the Langford stone gate, probably eight or ten years ago. A car, I believe, was traveling westbound and because of this kink or whatever situation the driver encountered, he slammed head, head long into the wall of the stone gate that is the entrance way into the Langford property.

I know there's a remembrance that's etched in the gate itself, that I think was put by the family, it was there the last time I looked, which is a, a month or two ago. I know it's still there. There's, a lot of times family members will come by and put flowers there. So, the sight lines are very bad --

MR. MCCANN: When you say kink, can you, when we're looking at eastbound Joppa here in this area which is

Protestant's Exhibit 25, that looks to be straight. Is that, is that outside this aerial or describe a little better, if you would.

MR. WYATT: It, it's outside of that area. It's going to be a little bit further to the east. I think people that travel Tallyho frequently like I do would understand that you can't anticipate oncoming traffic just because you can't see it until the vehicles in front of you clear.

MR. MCCANN: Okay.

MR. WYATT: That's just not going to be addressed. I'm surprised it hasn't been addressed already, but again, you know, I'm just trying to highlight some of the concerns that haven't already been discussed in this case. And that's, and that's one of them.

If you go into the Greenspring/Falls, that situation, you know, further north of, of the Joppa/Falls intersection, the situation is pretty bad. I don't know what improvements, if any, are going to be made here but it seems like it's going to just continue to get, to get worse.

I know over the last couple of, probably in the last ten years, we've noticed a great, a, a big increase in commuter traffic utilizing Greenspring Valley that probably they weren't using before. And that's probably as a result of, again, I'm speculating a little bit here, but 695 now eastbound from Reisterstown to Towson is, is pretty jammed up in the morning.

So, a lot of people have cleverly, you know, discovered that they can go through Greenspring Valley and they're now doing it. So, they'll, they'll come eastbound Greenspring, take a short jog down Falls Road and then a left on Joppa and that's, that's in the a.m.

And then in the p.m., you've heard others talk about where it backs up getting into St. Paul's School and that's basically backed up right through that intersection in, I think, I think that's a.m. and p.m., if I'm not mistaken.

Seminary, let's talk about Seminary and Falls Road intersection. Here, you know, it's very important, I don't know, we're, for some reason this development is not located in the traffic shed, I think somebody's mentioned earlier.

To me, it's still part of this integrated and synchronized corridor. It needs to be accounted for in this case, not in, just in Torch Hill, but as part of this case, I don't know how we're overlooking it but. There's, the traffic there is horrendous.

I mean, it, it backs up on to the St. Paul's School property, but then backs up eastbound all the way to Mays Chapel with regularity. I have a, there's one photograph I took that shows in the afternoon, which is not when people are dropping their children off at St. Paul's, but this was in the afternoon.

I had to be in that area, it was the afternoon, it

was day five of the hearing, so this is around 6:00. It's in my earlier packet, which we can get to early, later, but it's backed up to Mays Chapel on Seminary Avenue.

The other thing, you know, Tallyho, I, there's a lot of concern. You know, traff, traffic for me, in trying, trying to leave Tallyho and take a left on Joppa Road can be particularly difficult in the morning because there's a lot of eastbound traffic. Again, a lot of that is commuter traffic.

And I know a lot of our neighbors are very concerned about the cut through issue. We have a lot of families and small children that live along Tallyho. Many of us run, walk or bike, or skateboard on Tallyho all the time. And, you know, an increase in traffic there would just be unacceptable due to this development.

So, and I, I recognize sitting through this hearing, this, this whole issue of connectivity or a cut through, it is, in a way, it's created this false narrative in this case. It's, it's a, like al, to me it's almost like a, an illusory choice.

We don't really have to get to any of those issues if there is no development and that's sort of the, the, the approach that I, I would take. That the resolution of that issue doesn't need to happen. It's, it's very secondary, if, if it's even that.

I think even Blandy Becker said it's not a primary

concern of any of us. It's, it's a very remote concern in the event there is some kind of development. I just don't think that's been, been expressed in, in that sense. But I think it's important to say it.

On traffic. One of the other things that, to me, stood out in this hearing was Mr. Nebre, the Baltimore County traffic witness, clearly stated the district standard, which is how Baltimore County rates level of service, is based on the loaded cycle methodology. He was pretty unequivocal when questioned about that. That the district standard is loaded cycle methodology that Baltimore County uses for the basic service map.

So, based on that, even Develop, Developer's traffic engineer would concede there's going to be no change from the intersection, the three intersections, that are, that are rated F, they're failing intersections. Nothing is going to be changed, they'll still be failing.

I, there was some e-mails that were introduced earlier in the case from, I think it's Department of Public Works, or Highways, but it was interesting that the original responses from his department were probably the, the most accurate where they're telling the Developer that this, this is a non-starter development. That it's DOA. Why are, why would the Developer even move forward with it?

So, how do you go from, you know, I just have to

question. How do you go from there to now handing it to Judge Murphy to make a decision on this, with this tepid, you know, we're not really sure type of response? I, I have to agree with Gil Shellis (phonetic) who, who said that, that's really disappointing from a County agency employee.

And I know he's well intentioned and everything, but there needs to be more safeguarding here for the people that live in this area. And I just don't think it's being done in this case.

A lot of, and we know this and I'm, I'm sure the attorneys can argue it but, a lot of, a lot of the traffic issues here, they're based on theoretical trip calculations. But I think these, these theoretical trip calculations that we're hearing about are at, at odds with the reality of living in this area.

And take Mr., take Dean Merritt, for example. Dean Merritt is the Wyatt family ten years ago. We're in and out of our driveway with two boys, they went, they both went to Riderwood, then they went to Loyola. They were active in sports. Both of them became drivers. We were in and out of our driveway seven to ten times on an average day.

And, you know, now they're, they're out of our house and, you know, one of them is still there, but even now, we're still in and out of our, we're, we're in and out of our neighborhood five or six times, four to six times a day, not

one or two.

And we have three vehicles. When our one son is home and I didn't hear anybody talk about Amazon trucks or Federal Express deliveries, which everyone has noticed in the last couple of years, during COVID, have exponentially increased. So, those are more vehicles that don't seem to be accounted for anywhere here. And I think it needs to be considered.

Dean Merritt's experience, the Wyatt family's experience, it's shared by virtually every family in this neighborhood. And I think would be no different than families moving into the theoretical neighborhood we're talking about.

You're, I think Mr. Powell said these are going to be million-dollar homes for young families, young families with children that go to area schools and will no doubt be involved in a lot of extracurricular activities. In and out of their driveway, in and out of the development, multiple times a day.

I now see it on our own court, we've had some, some turnover in terms of, we're now one of the older families on the court, unlike when we moved in. And I see a lot of the younger families and they're, they're doing exactly what we were doing. There's two or three kids, they're, they're loading up the family rec, you know, R, SUV and heading out all the time.

And we, you know, we all go through, we all went through it and we're now witnessing the next generation doing

it. So, I just, almost have to, the theoretical trip calculations, they're nowhere near the reality that most of us in the area are familiar with.

Also, they don't account, one of the other points I want to make, those calculations don't account for trips out of a development, like our neighborhood, where you're making multiple stops and still traveling around the intersections of Falls and Joppa, Greenspring/Falls, Seminary and Falls, before returning to the development.

And those trips are multiple stop trips. You would go get gas, you might go to the bank, you might have a doctor's appointment, you might stop off at the restaurant, you might go shopping in Greenspring Station, you might have to go to the post office. There's a lot of things you can do before you're returning. All of that is going to require people going in and out of the parking lots, getting back on the roadways, going through those intersections. That's not picked up on a trip generation study that's, again, all, all theoretical.

So, these, these margins for errors, when we're, when we're talking about seconds, seconds here based on a theoretical traffic study, I, I don't, I don't think they're going to hold up to the practical reality that, that most of us have experienced in the area. That's, that's basically kind of it for, for traffic.

I have concerns about the sewer system. I'm not an

expert on sewer capacity or sewer flow or anything like that, but I do know that there's been other cases and, and studies, and now we're talking about adding several hundred more users onto a failing sewer line.

That doesn't seem like a great idea to me. I'm, I'm not qualified to speak to sanitation engineer issues, and I think I would leave that for others to do. Not qualified as, because we don't really see it. It, it's underground and it's not a problem until it's really a problem.

But we do know and, and I think there's evidence of this and there was evidence of this in another case recently that sewer, sewer capacity and sewer flow is an issue for development in this area. And I believe that is maybe the reason why there's been so little development in the area, other than the traffic issue.

Density. Developer wants to put houses on let's call it ten to twelve thousand square foot lots, basically. Sixty homes to be located on really the only developable part of this six, this forty-acre tract. Pretty tightly packed in there. I'm not a master plan expert but I do know in the T-3 transect that there should be low density housing. This doesn't strike me as low-density housing with relatively deep setbacks.

I think the Developer, and again, maybe these are the requirements of the development plan. But the setbacks are rare, are, are barely shown on the development plan. There's,

there's an illustration of, I think, it's three typical setbacks, but from even just a cursory review of the development plan, all of these homes are going to be more or less, right on, just off of the sidewalk. They're going to be right next to one another, I mean, with thirty, ten, ten yards of separation in most, in, in most cases.

And from where our property is, and where a lot of the neighbors, they're per, they, their vantage point, these homes are going to be located on the highest part of the development parcel, most visible to all of us that live in the, in the area.

We're going to, we're going to have a visual impact, not like most other developments and, you know, it's interesting, you know, we're even, we're discussing in the context of $1 million homes, whether or not a prospective purchaser would need a variance to build a deck. I mean, that's how, that's how small these lots are. And it's important not to lose sight of that.

That shouldn't even be a discussion in a townhome community let alone a $1 million comm, $1 million home community. So, I'm just concerned about the negative impact of the density where the other, other communities have far less density or, or were developed prior to the master plan.

I think from, and I, we'll get to the photographs that I took off of our back deck over the years, but I think, I

think we will be looking at, it, it's going to be like a stadium of townhomes basically.

Will be immediately viewable from our backyard because of the way this Developer has sought to configure this development onto a very small fif, about fifty or sixty percent of the property. It's like an amphitheater of, of McMansions. I know everybody uses that term these days, but they're very tiny lots.

So, there's not supposed to be any screening or a berm that I'm aware of on, on that part of the property. The, you know, it's going to be our property, my, and my neighbor's and then a sixty-home subdivision. So, you know, that, that's just a real concern for density. Environmental is, is --

MR. MCCANN: Mr. Wyatt, sorry to interrupt.

MR. WYATT: Yeah.

MR. MCCANN: I have these photographs and we mentioned the photographs. It may be a good time to show them now do you want to do that, or you want to wait?

MR. WYATT: Yeah, that, I think that's fine, sure.

MR. MCCANN: Okay. So, let me pull up, this is Wyatt Exhibit 1-A through H. One second. So, this is --

MR. WYATT: All right. So, this is, I guess this is A or, --

MR. MCCANN: This is A, yeah.

MR. WYATT: Okay. So, this is a photograph I took.

This is the afternoon of, I think, day five. It was a Friday afternoon. I had to be at, at two of the three intersections that afternoon running errands.

But that's looking north onto Falls Road where I'm turning from Falls Road heading across the intersection. So, that's southbound traffic on Falls Road at, at a little bit before 6:00 p.m. on a Friday afternoon. That, that's not even the direction of commuter traffic. That's what I intended to convey with that photograph.

MR. MCCANN: Okay. You're sitting in your car here travelling --

MR. WYATT: I'm, yes, I'm in my car.

MR. MCCANN: Okay. 1-B?

MR. WYATT: All right. So, this is, I believe it's a little bit earlier, because I, I'm, I'm heading southbound on Mays Chapel. I had to go where I just took the photograph and realized there's no way I, there's no way I'm going to be sitting in a line of traffic from Mays Chapel to Falls Road. That, that sign there is the intersection of Mays Chapel Road and, and Seminary Avenue. Traffic --

MR. MCCANN: So, you're, you're, you're actually north of Seminary right now, looking westward towards the intersection, well, towards --

MR. WYATT: Yeah.

MR. MCCANN: -- cars that are heading towards the

intersection of Falls and Seminary?

MR. WYATT: Yes, that's correct. I'm, I'm looking westbound, heading south where original Mays Chapel stops and then it picks up into the Meadows and Boxwood further to the east. But yes, I'm looking westbound. That is Seminary Avenue, traffic is backed up from Falls Road to Mays Chapel.

This is, this is in the afternoon. This is not when people are dropping off children at St. Paul's in the morning, this is the afternoon. And this is before we have Torch Hill subdivision or before we have this theoretical subdivision, adding traffic to the problem.

MR. MCCANN: 1-C?

MR. WYATT: All right. So, this is, this is just a random photograph I took from our back deck looking at our backyard. That shed is on our property. Beyond it is a tree line and then there's, there's the Langford, the Developer parcel in the background. That high, you can, you can see the high point in the development parcel. That's where the homes are to be built.

MR. MCCANN: Beyond the tree line?

MR. WYATT: Beyond the tree line. Yes, correct.

MR. MCCANN: And that tree line that we're seeing there, which, roughly how thick is that or how many trees are in the, width wise, would you estimate?

MR. WYATT: A single line of trees.

MR. MCCANN: Okay and is that --

MR. WYATT: We've had, we've had several of them fall over the last couple of years in windstorms. They're, they're pretty, they're pretty old trees.

MR. MCCANN: Yeah, and is that consistent with how that tree line runs along the border of what, what would be, I guess, the eastern border of the subject property --

MR. WYATT: That's about right. It's, it's, it's five to fifteen yards wide, depending on where it is.

MR. MCCANN: Okay.

MR. WYATT: It may be wider at one other point further to the south but right where that is, it's, it's not that wide.

MR. MCCANN: Okay, all right. 1-D?

MR. WYATT: Basically same, same picture.

MR. MCCANN: Okay. 1-E?

MR. WYATT: Same picture taken a few years earlier when Dad was a little more mobile playing with his kids in the backyard. But yeah, that's, that's showing it really in, in the wintertime. And again, that, that, that other shed is the Gary's property.

MR. MCCANN: To the right, yeah.

MR. WYATT: And the, behind it. And then if you, through the woods, you actually can see Mays Chapel. And I think that's probably Mr. Hallahan's home, I'm not sure.

MR. MCCANN: You mean the Meadows?

MR. WYATT: Yeah, yes, correct, it's Meadows. And I think that's where, where, approximately, where Mays Chapel Road dead ends.

MR. MCCANN: This photograph, which is the fifth page, photograph E, this was, was this taken during the fall or winter?

MR. WYATT: That, that looks like it's dead of winter.

MR. MCCANN: Okay and you're the old guy in the gray, I mean, in the white top?

MR. WYATT: I was thinking, thinking people would confuse me with Joe Flacco, but yes, correct.

MR. ZIMMERMAN: Excuse me, are these all Wyatt exhibits? All these numbers now?

MR. MCCANN: These are Wyatt 1-A through H. Okay. The sixth, or 1-F, what's this?

MR. WYATT: Okay. So, this is, I'm, I'm going to work one morning, probably late summer, early fall, and this is heading south on Tallyho. That's Fox Hunt, which connects to White Manor, off of which, where Mr. Merritt lives, Peter George lives down there to the left. But that's Tallyho. That, that's a stop sign at Fox Hunt, and I don't know, we're three or four cars deep there in the morning. Just at any, at a random time.

MR. MCCANN: Okay. So, this is facing towards Joppa Road, and you said there's a stop sign right here?

MR. WYATT: Correct.

MR. MCCANN: Okay.

MR. WYATT: And that, that van, that driveway right there to the right is Lynn Manthy's (phonetic) house.

MR. MCCANN: Okay. Was traffic beyond the, the stop sign, is it backed up all the way to Joppa here or?

MR. WYATT: No, it's not. No, I'm just saying, at that stop sign, we were three or four deep.

MR. MCCANN: Okay, all right. And you said, what time of year was this or, and what time of day, excuse me?

MR. WYATT: I'm going to guess 8:00 or 8:15.

MR. MCCANN: In the morning?

MR. WYATT: In the morning.

MR. MCCANN: Okay, all right. Next photograph?

MR. WYATT: This is Tallyho and the intersection of Joppa Road. It's, it's typical in the morning, two or three cars backed up, trying to take a lefthand turn and there's usually plenty of traffic east and westbound on Joppa Road, preventing us from doing so. Usually it's, it's a little bit of a wait.

MR. MCCANN: Yeah. This doesn't look like there's a whole bunch of cars on Joppa heading east or westbound, but is that, you've described that situation already.

MR. WYATT: Yeah, that, that's, that's what that shows.

MR. MCCANN: Okay, all right. And then the last photograph?

MR. WYATT: Same thing. I think I took, I think I took the photograph moments later, just showing --

MR. MCCANN: Okay.

MR. WYATT: -- we were there still.

MR. MCCANN: Okay.

MR. WYATT: And yeah, actually, one of the things, this reminds me because Dean Merritt mentioned something that's part of my reality every day. And it was when I, when I dropped our boys off at Loyola or took, was taking them to Riderwood. But it's, I would say generally Joppa is pretty free flowing right there in the mornings. There's traffic, but it's moving. But when you get up further to the east --

MR. MCCANN: Um hm.

MR. ZIMMERMAN: -- by Hunt's Church and then as you get down into the intersections near Thornton Road, where the farm store is, it, it's usually in the mornings, it's, you're, you're waiting several light cycles to clear through there. Then, depending on the time, and then in, in the p.m. rush hour, same thing if you're, if you're heading eastbound or westbound. It just gets very jammed up there. People again --

MR. MCCANN: Does it--

MR. WYATT: -- it's sort of, people have discovered it's a good commuter route in and out of Towson and in and out of some of the, some of the work and school environments that people need to get to.

MR. MCCANN: Where's our, where on Joppa eastward is there a, is the first light that you would come to if you were heading as you, as you just were, from Tallyho towards Towson, for instance?

MR. WYATT: Are you pulling up an exhibit?

MR. MCCANN: Yeah, I was going to ask you though and try to find an exhibit while I asked you. Do you, do you know where that, the first light you would hit as you head eastbound? Where is that?

MR. WYATT: It's going to be at Thornton Road.

MR. MCCANN: Okay.

MR. WYATT: Where the farm store is.

MR. MCCANN: So, there's no light at Joppa and Old Court?

MR. WYATT: Correct.

MR. MCCANN: Okay. Let me just pull it up real quick so I'm not confusing everybody. I think it was Mr., Mr. Merritt's Exhibit 6, the aerial, the large aerial. Okay. So, do you see that?

MR. WYATT: I do.

MR. MCCANN: Okay. So, east or southeast of the

beltway at Old Court Road, there's no light right here where my cursor is?

MR. WYATT: That's, that looks like that's Hunt's Church. So, there's no light there at Old Court and Joppa. And then a little bit further true east is where Joppa intersects with Thornton Avenue --

MR. MCCANN: Um hm.

MR. WYATT: -- or Thornton Road and, and there is a light there.

MR. MCCANN: Yeah. And there's, what's the situation like at Joppa and Old Court? Is there folks on Old Court heading eastbound as well?

MR. WYATT: Correct. It can sometimes back up past Old Court, past Hunt's Church toward our neighborhood in the mornings. But it's definitely pretty sketchy at that intersection if you're, especially if you're, find yourself on Old Court trying to make a left. It's probably not going to happen for you.

So, you're going to end up taking a right and maybe looping back around or, or you'll go through Ruxton, through Ellingham, but yeah, it's, it's not a great situation, especially if you're Old Court, if you're from Old Court direction. And then you get down into Thornton. By then it's, it's pretty jammed up and it, it continues to be jammed up through the next intersection heading to the east, which is at

Bellona.

MR. MCCANN: Okay.

MR. WYATT: And then after that, it actually then loosens up till you get into Towson.

MR. MCCANN: Yep, okay. Great.

MR. WYATT: It's a real choke point.

MR. MCCANN: Okay. Before I forget, I, I wanted to move in Wyatt Exhibit 1 and 2.

ALJ: Any objection, Mr. Rosenblatt?

MR. ROSENBLATT: No objection.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

ALJ: Thank you.

MR. MCCANN: Your Honor, I know Mr. Wyatt isn't finished yet. Would it be possible to take a five-minute break, bathroom break?

ALJ: Yes, it's almost ten of twelve, I should have done that before. Thank you, Mr. McCann. So, yeah, sure, five minutes.

MR. MCCANN: Great, thanks.

(PAUSE)

ALJ: All right. Back on the record.

MR. MCCANN: Okay. Mr. Wyatt, I interrupted you with photographs. Was there more that you wanted to add?

MR. ROSENBLATT: I'm sorry, I just, Mr. Zimmerman

doesn't appear to be back, I don't know if we --

MR. MCCANN: Okay.

MR. ROSENBLATT: -- want to wait one minute for him. I certainly don't, but I thought I'd point out that he's not back.

MR. MCCANN: That was very nice of you.

ALJ: Ms. Wheatley is here, she's logged in. Maybe she can see if he's, is he there?

MR. MCCANN: Maybe he's under his desk.

ALJ: He, I'm sorry, you said he's in the restroom?

MS. WHEATLEY: Yeah, he'll be right back. I'm going to go look for him.

ALJ: Okay. Okay, no prob, well, don't go look for him.

MR. ROSENBLATT: Sorry. The last thing I want to do is make it take longer, I just didn't want him to --

ALJ: No, not at all. I saw that he wasn't, but I thought maybe he was just kind of in the room there. So, let's just wait a second. All right. Well, there he is. Okay, all right. Mr. McCann, go right ahead.

MR. MCCANN: Okay. Mr. Wyatt, anything to add to what you already told us about?

MR. WYATT: Just a few thoughts. But before I go into those, the exhibits, are they all of the photo, you said one and two, but are they all of the photographs I submitted?

MR. MCCANN: I believe so, let me check.

MR. WYATT: Okay.

MR. MCCANN: Let me check real quick.

MR. WYATT: I think I submitted these as lettered exhibits, probably and confused everyone, but just as long as they're all getting into evidence because we've --

ALJ: They, they are, because there's one that's labeled as number one and that's the median strip between the Exxon and the right turn on Joppa. And then the other ones were labeled as 1-A through H.

MR. WYATT: Yeah, Exhibit 1 is actually supposed to be Exhibit I. I guess we didn't do a very good job of labeling it, but.

ALJ: Oh, I, okay. So, let's do that. Mr. McCann, let's, let's, let's, I'll just relabel them, so that should be 1-I.

MR. MCCANN: Yeah, sorry about that. I didn't --

ALJ: That's okay. So, we have one, one, you know, so it's 1-A through 1-I, is, are all your photos.

MR. MCCANN: Is that everything, Mr. Wyatt?

ALJ: Yeah.

MR. WYATT: As far as the exhibits. So, --

MR. MCCANN: Okay.

MR. WYATT: -- yeah, I mean, a couple, a couple other points that I don't think are, are repetitious from other

points made. Environmental. And I think this really goes to the overall parcel or tract, but one of the things the Developer sort of tried to claim, you know, that it was doing everyone a service by pushing back all of the homes to the rear, to the rear, rear of the property, you know, was creating this, this great buffer or, or some type of, you know, positive viewshed along Joppa Road.

I mean, I, it, if you look at, you know, my, look, looking at the development plan, you can't put any homes on the front of that property along Joppa Road. That's the reason why they're putting them to the rear.

It's not because they're trying to benefit the community in any, in any meaningful sense. It just happens to be you can't develop in, in that low lying area, which is very marshy and, and floods quite frequently. So, that, that's why it's getting pushed back. I just want to underscore that point.

The next, just sort of struck me about process and it, they're, they're worth, I think, noting. I, like a lot of my neighbors, when, when this development was being proposed in early 2021, we signed up for and attended a virtual community input meeting that Jerry Chen hosted.

And prior to the meeting, a lot of us sent, I think Mr. Zimmerman was scrolling through it earlier today, we sent comments and questions because it would help inform us about

this development. I, I was one of those e-mails. My e-mail is at page sixty-nine of the community input meeting minutes. And I asked a very specific question about what variance were, what variances were being sought by the Developer in this case.

Now, remember, this is in the spring of 2021, when the Developer clearly would have known what it was, what it needed, what variances or administrative approvals it needed to move forward with the development. And the quote, the response from the Developer on page four of the minutes, no variances are being requested. So, that, that was a, that was the starting point of dealing with this particular Developer.

We later learned, of course, this is not true. There, there are a myriad of discretionary approvals being sought by the Developer in this case. Some of which, I believe, were underway at the time of the community input meeting. I, I just note that, that community input meeting was attended by dozens of people, all had very serious, earnest questions of the Developer.

And to me, it's almost like the Developer was making a mockery of, of our questions. You saw Mr. Zimmerman scroll through some of the responses that the Developer gave. They were the, the same response to the same, to different questions.

Mr., Mr. Powell, in this hearing talking about, I think he said more community, I think, if I quoted him

correctly, he did, they did more community outreach here than any other project, any other project that he's been involved in. I don't know if that's forever or at TABCO.

But I, I, I'm sure Mr. Rosenblatt intends to get into this with me, but I did on one occasion speak with Mr. Rosenblatt, Mr. Powell about this, about this project at their invitation. And, you know, from my, I won't get into all of the details of the discussion, but I will simply say that I believe the outreach is designed to make it look like they're engaged in outreach without any meaningful willingness to engage on the issues and the concerns.

By that I mean, it, it was very clear, direct, direct questioning, you know, did the Developer have any interest in reducing the number of lots and the answer was, was a resounding no. And they were moving forward with this project and that's sort of how all that concluded.

So, I have to question now, you know, we're, you know, we're years down the road with all this outreach. Other than the two outlier people who have testified, I think it's Mr. Tanczyn and Mr. Hallahan, how is, how is, has there been outreach when every single neighbor and neighboring community opposes this development? You, you'd have to wonder what were they seeking to accomplish with this outreach.

I, you know, I can go into some of the evidence, but I'll, I'll just say like some of, some of the Developer's

evidence in this case, they just tend to marginalize or sidestep pretty important issues.

You know, let's talk about the development plan. It shows these lot layouts without really reference to, to setbacks. There's three typical lots that only show minimum side, front and rear yard setbacks. There's, there's no schematics at all that show, or at least I didn't see any in this hearing, that show what all these large homes on tiny lots are going to look like in the aggregate.

All we saw, all we saw during the, the presentation by Developer were these pleasing schematics of the various styles of homes that were going to be built. And they, they looked like they were sitting on about an acre or two acres of, of land.

But no one has shown us what this is really going to look like when you're on the street and you're looking at five or six homes within your purview. Again, that, that, that's important that we all know what this is going to look like when it's built.

You know, again, I mentioned the, you know, utilizing industry theoretical traffic counts that don't really account for what's going on. There's just margins of error and, you know, minimal growth rates. Again, I, I think they're going to be proven incorrect over time and these intersections will continue to get worse, not better, in the coming years.

So, you know, the suggestion that the minimal improvements being made, proposed by the Developers to the intersection presents some sort of great opportunity for us, it, it's not a great opportunity or else Baltimore County or State Highway would have done this years ago. They're, they're only doing it because they were requested by the Developer to approve this development.

So, again, I understand advocacy. I, I do this for a living. But to me, these things go a little bit beyond advocacy when, you know, we're, we're, there's missing parts to what the Developer is proposing and I'm concerned that if this is approved, there's going to be no accountability from this Developer in the future and by then, it'll be too late for any of us to do anything about it. So, that, that's sort of, you know, non-substantive, but just process related from my perspective.

MR. MCCANN: Okay. Thank you, Mr. Wyatt. Anything else before I let you go?

MR. WYATT: No, no, thank you.

ALJ: Mr. Zimmerman, do you have questions?

MR. ZIMMERMAN: I do, thank you. So, Mr. Wyatt, with reference to the community input meeting, you've heard Mr. Merritt's observations. What, if anything, would you say about whether you agree with his observations or have anything to add beyond what you've already said as well?

MR. WYATT: Well, again, a lot, a lot of us, I don't know if this is directly answering your question, but a, a lot of us submitted concerns. There were some of the, you know, identical concerns raised by many of my neighbors and, and from what we observed, we didn't get, we didn't get really direct responses or any meaningful engagement by the Developer. I think that's what Dean Merritt meant to say.

MR. ZIMMERMAN: Yeah. By the way, did the Planning Department ever interact with you all or make the slightest move to address any of your concerns?

MR. WYATT: No, it did not.

MR. ZIMMERMAN: No. All right. Now, you, you were here, were you not, this morning when Mr. Rosenblatt went through a bunch of e-mails relating to some, call it offer of potential landscaping, maybe buffer and, of course, Mr. Merritt answered those questions. Were you directly or indirectly familiar with these offers of landscaping?

MR. WYATT: I, I would say tangentially. I, there's probably, I'd have to go look. There's probably the similar language in an e-mail or two between Adam Rosenblatt and myself.

MR. ZIMMERMAN: Yeah. So, what's your assessment of whether those offers of landscaping should warrant you to give your total support to this development?

MR. WYATT: Well, I mean, my, my response would be,

it's sort of like being asked out on a date, I've already, I've already said no, because the, the conditions of the date are totally unacceptable, so why do you continue to e-mail me asking what car you need to pick me up in? I mean, it, to me it's, what's the point of further discussion? We're not interested in landscaping when the development is a non-starter due to these other very serious concerns.

MR. ZIMMERMAN: Yeah, does, are you familiar at all with John McEnroe, the tennis great?

MR. WYATT: I, I am, yeah.

MR. ZIMMERMAN: Does this, does this bring to mind what he always used to say when there was a problem like you cannot be serious? Yeah.

MR. ROSENBLATT: Objection, Judge. This is --

MR. ZIMMERMAN: All right.

ALJ: Sustained, Mr. Zimmerman.

MR. ZIMMERMAN: All right.

ALJ: But we get the point.

MR. ZIMMERMAN: Okay. So, in general, what's your, following up on your direct testimony, what are you saying, if at all, that in total, the reaching out is a promotional exercise to help them get to their $61 million that they think they're going to get from selling these houses?

MR. ROSENBLATT: Objection.

ALJ: Yeah, so, Mr. Zimmerman, come on. I mean,

you're, you're testifying again and Mr. Wyatt, he's, he's indicated, he's an attorney, I mean, you can just ask him a question he, he's --

MR. ZIMMERMAN: Well, I --

ALJ: -- capable of answering it, you know.

MR. ZIMMERMAN: -- that wasn't testifying. All right. Do you have anything --

ALJ: (inaudible) testifying, come on, Mr. Zimmerman, come on. Let's, let's --

MR. ZIMMERMAN: All right. Mr. Wyatt, --

ALJ: -- (inaudible), yeah.

MR. ZIMMERMAN: Okay. Thank you, Judge. I, I --

ALJ: Yep.

MR. ZIMMERMAN: -- will accept your instruction, okay. So, Mr. Wyatt, do you have anything to add to kind of summarize or recapitulate the gist of how you would characterize the, the reaching out efforts?

MR. ROSENBLATT: Objection. Asked and answered. It's not his witness. He's just asking the same question over and over that he already testified at length about.

ALJ: Okay. Mr. Wyatt, do you have anything add, further, to add in regard to the offer of landscaping or buffering that you haven't already mentioned?

MR. WYATT: Only sort of what has already been said by Dean Merritt. All those efforts were designed to appease a

concern relating to a development predicated upon what the Developer clearly understood would be non-opposition to the development. So, we weren't interested then, and we aren't interested now in, in talking about what, you know, to me is lipstick on a corpse. We're not interested.

MR. ZIMMERMAN: Okay, all right. Let me move on to another subject. Following up on your direct testimony about the concerns about the theoretical nature of the traffic projections, okay? So, I would like to share an exhibit, Judge. Okay. Okay. Let's see. Okay. This is actually Protestant's Exhibit 35. This is from the ITE manual.

ALJ: We don't see it, we don't see it.

MR. ZIMMERMAN: You can't see it? Wait a minute.

ALJ: Not yet.

MR. ZIMMERMAN: How about now?

ALJ: Yes.

MR. ZIMMERMAN: Okay, great. Great, great. Okay. So, I'm going to scroll down. You, you've seen this before, haven't you, Mr. Wyatt, the ITE manual land use section that Mr. McCann introduced?

MR. WYATT: I remember looking at it, yes.

MR. ZIMMERMAN: All right. I just, okay. So, so --

ALJ: Which, which number is this, Mr. Zimmerman?

MR. ZIMMERMAN: I believe it's Protestant's thirty-five. Mr. McCann will correct me if I'm wrong.

ALJ: Oh, Mr. McCann's exhibits?

MR. ZIMMERMAN: Yes.

ALJ: Oh, not yours.

MR. ZIMMERMAN: Yeah, that's not my exhibit, right this is --

ALJ: Okay.

MR. ZIMMERMAN: Yeah.

MR. MCCANN: It is thirty-five, yes.

MR. ZIMMERMAN: Yeah. So, well, first of all, do you remember whether or not Mr. Driban indicated the studies that were used by the ITE are not published, but rather were held internally by the, the ITE?

MR. ROSENBLATT: Objection. He's leading and testifying.

ALJ: Okay. Well, I mean, do you, you know, he actually asked him do you recall the testimony, so overruled. You, Mr. Wyatt, do you remember Mr. Driban saying that or not?

MR. WYATT: Not at this particular moment. I, he, he, I, it's likely he said something like that, I just don't remember it exactly.

MR. ZIMMERMAN: All right. Do you know whether there are any exhibits which show any of the studies that the ITE used to come up with their projections or estimates?

MR. WYATT: Not at this --

MR. ZIMMERMAN: Yeah.

MR. WYATT: -- it all, a little bit blends together--

MR. ZIMMERMAN: Yeah.

MR. WYATT: -- as far as the source of the data.

MR. ZIMMERMAN: Right. So, let's, let's assume for the sake of argument, at least at this point, that we don't have all the studies, or any of the studies, as exhibits or any details, okay? Assuming that I'm right about that, and that the studies have not been shown, how is it possible for anyone to compare the subdivision study with the proposed development here?

MR. ROSENBLATT: Objection. This is not an expert witness. He's proposing hypotheticals and speculation. Again, this is, this is an issue for Mr. Zimmerman to argue in his memo. We're getting nothing out of this for him to ask Mr. Wyatt.

ALJ: I mean, I have to agree. Sustained. I mean, Mr., Mr. Wyatt, I mean, he, he, he's an experienced attorney, he, he, but he's not a traffic expert. And you're, you're, again, you are, you're asking him hypothetical questions. He isn't being offered or qualified as a traffic expert. And, and he already said he doesn't know about the study so now you're, you're running over that and running right to where you want to be so.

MR. ZIMMERMAN: Well, may, may I just say something? This is not a question that requires an expert. It's a simple

question that anyone should be able to answer and is capable to answer in the absence of the studies, how can one make a comparison? That doesn't require any expertise.

ALJ: (inaudible) but it's an argument that you can make.

MR. ZIMMERMAN: All right.

ALJ: You can just make this argument, you can just use this document and make the argument, right? Why, why do you need him to agree with you?

MR. ZIMMERMAN: Well, all right.

ALJ: I mean, yeah, --

MR. ZIMMERMAN: Well, I mean, just about everybody in this case has been allowed to testify to various concerns and the issues and --

ALJ: And, and he, and Mr. Wyatt can, and he has. But, but to try to extract from him information that's in this document, you could just make the argument in your brief.

MR. ZIMMERMAN: Well, --

ALJ: Right?

MR. ZIMMERMAN: All right. Let me ask one more question and whether or not you'll feel this is the same type of question. Mr. Wyatt, you see the paragraphs, the three paragraphs under additional data? How would you say the, the averages of 1.5 vehicles per dwelling unit and the use of some studies from the 1980s, '90s and 2000s affect, one way or the

other, a comparison with the proposed development plan?

MR. ROSENBLATT: Objection.

ALJ: Just, you're asking him expert testimony, the issues on the IT manual.

MR. ZIMMERMAN: No, this is not really, my, in my view, it's not an expert question, it's simply how does 1.5 vehicles per dwelling unit compare with, to --

ALJ: You're, but you're not, now you're testifying, now you're testifying about what you want to say --

MR. ZIMMERMAN: Well, I was explaining, I'm explaining the reasoning for my question.

ALJ: I'll tell, I'll tell you what. If Mr. McCann feels that he needs to go into this area with Mr. Wyatt, he, he can on --

MR. ZIMMERMAN: All right.

ALJ: -- on, you know, re-direct in terms of traffic or something he missed, but --

MR. ZIMMERMAN: Yeah, I thought this, I thought this supplemented, this was really connected with his direct testimony, but I will, of course, respect your ruling and I will go to something else, okay?

ALJ: Okay.

MR. ZIMMERMAN: So, okay. So, I guess we can stop, stop sharing that. Okay. What I want to ask you is, in terms of the difficulties with the traffic safety, Mr. Wyatt, do you

recall Sister Kathleen McEnaney's testimony about the difficulties of making the turns from, you know, I-83 onto Joppa Road and, you know, having to have eyes in the back of your head and so on?

MR. ROSENBLATT: Objection. It's like he's never been to a hearing before. I, these are not legitimate questions.

ALJ: Yeah, I, Mr. Wyatt, were, were you here for Sister McAney's testimony?

MR. WYATT: I, I was. I do remember --

ALJ: You remember that testimony?

MR. WYATT: I do.

ALJ: Okay, all right. Overruled. Go ahead.

MR. ZIMMERMAN: Yeah, what, what, what would, what would you say as to whether you concur with that or have any additional observations one way or the other?

MR. WYATT: Well, I, I, I know it's clearly her reality and, and, and where they come out of their monastery is almost directly across from Tallyho. And, and I do know it's probably a little bit more dicey for them, coming in and out of that intersection than the, the much wider Tallyho.

MR. ZIMMERMAN: Yeah. But in terms of the observations about trying to make the turnout of I-83 north and then making that turn into Joppa Road before you get to, get to her property.

MR. WYATT: So, actually yes, now I, I remember exactly what she was talking about. Well, again, like I was saying. It's a very irregularly shaped intersection. So, this isn't a mere ninety-degree turn you're making. Basically you're, you're almost making a hundred and twenty or a hundred-and thirty-degree turn.

So, it really forces you, when you're merging from 83 onto eastbound Joppa, to not look, you're, your side view or rearview mirror are not going to pick up traffic that are take, that's taking a, that's heading eastbound before the merge.

And you really have to crank your head pretty far around to be at a, make sure you're clear or, or you just comp, completely wait it out. I've seen people have to open their doors to, to look behind them to make sure they're clear. That's what I think the sister meant by eyes in the back of, of her head.

MR. ZIMMERMAN: Okay, all right. Separately, what can you tell us as to whether the Greenspring Station parking lots and the Johns Hopkins parking lots are such that they're virtually full just about all day?

MR. ROSENBLATT: Objection. Leading, testifying.

ALJ: Yeah, you're testifying --

MR. ZIMMERMAN: Right.

ALJ: -- again. Just ask him a question. He's been here since the, before Greenspring was built.

MR. ZIMMERMAN: Yeah.

ALJ: I mean, he can answer.

MR. ROSENBLATT: The problem is, when he does this, the damage is done.

ALJ: I know, I know.

MR. ROSENBLATT: Then they just repeat, yeah --

ALJ: I, I know, I know. It's an administrative hearing so and Mr. Wyatt's an attorney, he's actually done these hearings and I've, I've had him as counsel so, so, Mr. Wyatt, do you have any observations about the Greenspring parking lot or the Hopkins parking lot?

MR. WYATT: I do. I, I live right around the corner so I'm, I'm there with pretty great frequency. Yeah, they're typically very full and at capacity. I noticed in the, you know, it's interesting. In the last couple of years, they've restriped the parking spaces and I've noticed they've gotten a little narrower and I think that's to accommodate more, more vehicles, but it's, it's pretty congested, it's pretty full there for most of the time.

MR. ZIMMERMAN: Okay and try to ask a not leading question. For the making left turns out of Greenspring Station, what, if anything, can you tell us about how that, how that goes?

MR. WYATT: Well, again, it's, it's one of these, you know, you, you're, you have to look. It's at, it's at a weird

angle because it comes in sort of, you know, where again, you're turning your head the, the other direction a hundred and ten degrees or, or something like that, to make sure you're clear.

Then you're, then you have to cut across three lanes of traffic at the first sub-intersection, which is the one from the snowball stand or this time of year Christmas tree sales, pavilion. It, it's, it's just extremely dangerous, you know, the experience that, you have to get it, the, the times you can do it are like the middle of a Saturday afternoon or Sunday when there's no traffic.

MR. ZIMMERMAN: Okay.

MR. WYATT: I mean, during the middle of the day it's just, you can't do it.

MR. ZIMMERMAN: And what about left turns into the Greenspring Station at that location?

MR. WYATT: I think there's a pro, restriction. The sign, there's a sign there and I think it's, I think it's during the afternoon that you're not supposed to be taking a left-hand turn into that first one. I don't know about --

MR. ZIMMERMAN: I'm not talking, I'm not talking about the Exxon one. But, are you talking about the Exxon one now?

MR. WYATT: Yeah, the Exxon one.

MR. ZIMMERMAN: Yeah.

MR. WYATT: I'm not sure too many people definitely coming off of 83 onto Joppa Road can see that sign. If they're trying to go left.

MR. ZIMMERMAN: Yeah.

MR. WYATT: It's, it's almost impossible to do that though, so very few people would be doing it. I think you can take a left into Greenspring Station at any time. I think the lefthand turn is unrestricted.

MR. ZIMMERMAN: Yeah, right. What observation, if any, would you add or make one way or another about how this all works when it's after dark?

MR. WYATT: Only that, I think there then becomes a, a diminishment in terms of visual, people's vision is impaired, --

MR. ZIMMERMAN: Okay.

MR. WYATT: -- things are less visible.

MR. ZIMMERMAN: Okay. All right. Just a, I'm sorry, I didn't mean to interrupt.

MR. WYATT: Yeah, I mean, I think that's really all I would be able to add. I, I, you know, because depending on the time of year, it could be dark when it's light other times of the year. I don't think it's impacting the, the traffic itself though. The, the numbers are pretty constant.

MR. ZIMMERMAN: Okay. Just a few more questions. Did, did you happen to mention the size of your lot and type of

house you have?

MR. WYATT: I did, I didn't mention the type of house, but we're, yeah, we're on a, it's just under one acre and it's a house, it's a col, you know, it's a center hall colonial type of house built in the mid or late 1970s. So, unlike today's homes, it's probably pretty broken up into a lot of small rooms where now people have them, you know, one bigger room, but.

MR. ZIMMERMAN: Okay. It's not a rancher?

MR. WYATT: No, it's not a rancher.

MR. ZIMMERMAN: Okay and what's your observation also as to the predominance of ranchers in Heatherfield?

MR. WYATT: I believe most of the homes there were originally ranchers or ranch style at one point. Now, that neighborhood has turned over a lot in the last ten or fifteen years. So, people are, like the Shellis', they're, you know, they're adding a second floor with dormers.

Like the Radebaugh's, they're, you know, basically, you know, building in the footprint and that's all they're doing. So, there's a, there's a lot of variety in that neighborhood now. But they, they were, they were ranchers originally.

MR. ZIMMERMAN: And what would you say as to whether there are in the variety still some ranchers?

MR. WYATT: It's, it's probably still predominantly

ranchers, but a lot of them have been modified to, to one degree or another.

MR. ZIMMERMAN: Okay and with reference to the models of the proposed dwellings that are shown in the pattern book, do you, have you seen those models?

MR. WYATT: I re, I remember them when they were shown on the screen during the hearing, yes.

MR. ZIMMERMAN: Okay and what would you say as to the extent to which, combined with the lots that they're proposed, to what extent are they similar to the pattern in Heatherfield and Seminary Ridge?

MR. WYATT: They're not similar at all. The, the homes that were shown on the schematics were, were very, were very narrow and tall to be able to be placed onto the smaller lots in the, in the proposed development.

MR. ZIMMERMAN: Okay. Thank you very much. Judge, that's, that's all my questions.

ALJ: Okay. Mr. Sachse, do you have questions of Mr. Wyatt?

MR. SACHSE: I do not.

ALJ: Okay. Mr. Rosenblatt?

MR. ROSENBLATT: Yes, thank you. Good afternoon, Mr. Wyatt.

MR. WYATT: Good afternoon.

MR. ROSENBLATT: Same question I've asked a number of

people. Developer's Exhibit 33, I tried to put an X and the initials MW on your property. Did I correctly identify your lot?

MR. WYATT: You're correct, as usual, yes.

MR. ROSENBLATT: Thank you. All right. Let's move to Developer's Exhibit 6, the rendered development plan, and I think as you said, that your lot is sort of behind or farther away from the subject property than a triangular piece of property owned by the Seminary Ridge Owners' Association, right?

MR. WYATT: That's correct.

MR. ROSENBLATT: So, on, so, on Developer's Exhibit 6, to, just to, so the record is clear, your lot is below the triangular piece of property owned by that association and also below what is marked as 6 Trelawney Court. Sorry, I'll zoom in, it's hard to see, 6 Trelawney Court owned by James and Mary Jo Gary, right?

MR. WYATT: Well, we're next-door neighbors to the Gary's on Trelawney. They have a smaller part of that triangular open space behind their property. It's, it's a little bit wider behind our property.

MR. ROSENBLATT: Okay. So, you're, just for the record, on this Develop, Developer's Exhibit 6, your property is, if you were to draw a line down from the six in 6 Trelawney Court, you'd, the adjacent property is yours, right?

MR. WYATT: Correct.

MR. ROSENBLATT: Okay, all right. To zoom out a little bit, so from your property there's the homeowners' association triangular piece, then there's a strip owned by Baltimore County and then there's the subject property, right?

MR. WYATT: Correct.

MR. ROSENBLATT: And on the subject property, as is shown in this exhibit, what's proposed is forest buffer, forest conservation area, which is highlighted in green, and then the closest part of the development to you is lots eighteen and nineteen, right? If you can see that? I'll zoom in.

MR. WYATT: I'm going to have to take your word for it. It's kind of small. Okay, yes, correct.

MR. ROSENBLATT: Okay and your exhibit, this is your 1-C, this shows sort of the view from, from your house, backyard, into the subject site, right?

MR. WYATT: Yes.

MR. ROSENBLATT: All right. So, your, your property, does it end where your shed is located or just behind that shed?

MR. WYATT: Yes, just behind it.

MR. ROSENBLATT: Gotcha. And then, do you and your neighbors, do you continue mowing that, the additional grassy area before you get to the trees?

MR. WYATT: Actually, our association pays a

contractor to do it.

MR. ROSENBLATT: Okay. So, they come in and mow during the months that require mowing?

MR. WYATT: Yeah, we have, in our neighborhood, we have probably a little over twenty acres of open space that our, our meager dues of $100 or $200 a year cover for maintenance. So, that's one of them.

MR. ROSENBLATT: Gotcha.

MR. WYATT: That's one of the areas. They're, they're interspersed throughout our neighborhood.

MR. ROSENBLATT: Okay and from, from this photo, I mean, this, this photo is really what your position is all about, right? You're, you're going to see homes where now there's this grassy area behind the trees, you're going to see these homes if they're built, right?

MR. WYATT: Well, I think it would be marginalizing my testimony to say that's what it's all about. That's not what it's all about at all. I mean, I think it's about the issues I talked about earlier this morning. But, you know, to your point, is that what I would see? That's what I see now and I, I did mention I would be seeing, basically, some type of amphitheater of, of large homes on small lots.

MR. ROSENBLATT: Isn't that the most important thing to you? You talked about the visual impact. You're one of the properties that basically abuts this. You're going to see

homes where now you don't, isn't that --

MR. MCCANN: Object, objection, asked and answered. He's already answered that question.

ALJ: That's all right, overruled. It's cross examination. I mean, Mr. Wyatt is an attorney, so go ahead.

MR. WYATT: No.

MR. ROSENBLATT: Okay and you, you did say we, we met, you met with me and members of, of the Developer in the months leading up to these hearings, right?

MR. WYATT: Yes.

MR. ROSENBLATT: And you were offered landscaping, but you said there's no reason to reach out about landscaping, you don't care about landscaping. The development is a non-starter. You don't want the development, right?

MR. WYATT: I, I don't think I responded one way or another with regard to landscaping.

MR. ROSENBLATT: Okay. You, you said today though you're not interested in landscaping when the development itself is a non-starter, right?

MR. WYATT: If, if the Developer wants to put in landscaping without a developer, maybe that is a discussion, I don't know. But, I didn't, you're, you're, you're mischaracterizing my testimony.

MR. ROSENBLATT: I, I thought I said it exactly. You said the development is a non-starter, right? You don't want

the development. Yes, I, I do not want the development, correct?

MR. ROSENBLATT: You want this property to remain undeveloped?

MR. WYATT: I oppose the present development that's being proposed.

MR. ROSENBLATT: Okay and no, no amount of landscaping behind your property to block views is going to change that, right?

MR. WYATT: You're asking me, you're asking me to speculate on, based on something that's not being proposed and, yeah, I don't, I don't, yeah, I can't answer your question.

MR. ROSENBLATT: Okay. So, you, you don't know and we're here today with a Judge who can impose conditions if she chooses to approve this plan, right?

MR. WYATT: Correct.

MR. ROSENBLATT: You know this from your practice that often times conditions are imposed as part of zoning cases and development cases, right?

MR. WYATT: Yes.

MR. ROSENBLATT: But you, you have not, to date, asked for additional landscaping, nor are you prepared today to say if the project is approved, you'd like to see more landscaping to protect this view?

MR. WYATT: Correct.

MR. ROSENBLATT: Okay, all right. Let's talk a little bit about traffic. You testified that, to many, many of the issues that we've heard about throughout these hearings. But then you, you sort of focused on traffic safety, right?

MR. WYATT: Well, I mentioned that as one thing that I thought had been overlooked during this case.

MR. ROSENBLATT: And you're, you're aware that Falls Road and Joppa Road intersection is owned and maintained by SHA?

MR. WYATT: Correct.

MR. ROSENBLATT: And that the improvements that are proposed to that intersection, have to be reviewed and approved by SHA in order to be constructed, right?

MR. WYATT: Correct.

MR. ROSENBLATT: Don't, SHA is going to be reviewing for safety and design, are they not?

MR. WYATT: I don't know, I don't know what their level of review is.

MR. ROSENBLATT: Okay. You've never had to do that as part of your real estate or development practice?

MR. WYATT: I don't think I've been involved at that level, no.

MR. ROSENBLATT: Okay. You were here for the testimony of the SHA witness?

MR. WYATT: I was.

MR. ROSENBLATT: And you heard her testify about improvements that would occur to the entire corridor from Falls and Joppa through to Seminary and Falls, right?

MR. WYATT: I heard --

MR. ZIMMERMAN: Object, objection, excuse me, objection. You know, Mr. Rosenblatt was --

MR. ROSENBLATT: It's not his witness. I don't see how he can object.

MR. ZIMMERMAN: I can object.

ALJ: Mr., Mr. Zimmerman, what were you going to say?

MR. ZIMMERMAN: Mr. Rosenblatt was constantly objecting anytime I asked a question with reference to someone else's testimony. So, I think what's, you know, good for the goose is good for the gander. If, if he gets to make those objections then he shouldn't be, you know, asking these questions about so and so's testimony, which may or may not be exact, so, that's my objection.

ALJ: So, what, what he asked, differently than what you asked. Is he asked Mr. Wyatt were you present during Ms. (inaudible)'s testimony and Mr. Wyatt said yes. And then, he asked another follow-up question. What you do is you, you insert your, your (inaudible) and then the person says were you here, do you remember that, and they say no, and then you proceed to ask a question. So, it's a little different. But, but let me --

MR. ZIMMERMAN: I think he was starting to, yeah, --

ALJ: -- let me say for the record that Mr. Wyatt was not only here, but he asked questions of Ms. Koon and cross examined her. So, so he was here, he does know what her testimony is. So, overruled. If you can answer the question, Mr. Wyatt, go ahead.

MR. WYATT: What was the question again?

MR. ROSENBLATT: Did you hear her, the SHA witness, testify that there would be improvements to the timing from the Falls and Joppa Road intersection, all the way through to Seminary and Falls Road?

MR. WYATT: Based, based, it was, I remember her saying that north/south traffic along Falls Road would have greater green time.

MR. ROSENBLATT: Okay. You don't remember her talking about the amount of time it would take to get from one of the intersections through the Falls Road corridor to the third intersection?

MR. WYATT: I, I think, yes, I remember her mentioning something about timing. It's, if this had been yesterday or day before, I might remember it a little bit better. We've been pretty broken up in this hearing so.

MR. ROSENBLATT: That is completely understandable. All right. So, we talked a little bit about that corridor and then your, your concern about safety also is, relates to Joppa

Road and near the entrance to both Tallyho and to this project, right?

MR. WYATT: Correct.

MR. ROSENBLATT: And I believe, was it you that testified about an accident that took place at the, at the entrance to this property?

MR. WYATT: I did.

MR. ROSENBLATT: Okay and you've seen the development plan in this case, right? It was presented to you before the hearing and obviously you've seen it throughout these hearings?

MR. WYATT: Correct. Yes, I've seen it.

MR. ROSENBLATT: And you know that part of the plan is to widen Joppa Road and create a new entrance into the project?

MR. WYATT: I, I'm aware of that.

MR. ROSENBLATT: And through, through your practice, having done some land use, are you aware if Baltimore County reviews proposed entrances, proposed accesses onto County roads?

MR. WYATT: I am aware.

MR. ROSENBLATT: And won't they be reviewing for safety and sight lines and all those requirements?

MR. WYATT: I mean no disrespect to Mr. Nebre and his Department, but having heard him in this case, I, I, I don't know.

MR. ROSENBLATT: Okay. So, it's not that you don't know whether they'll review, you don't trust the, the County reviewers, is that what you're saying?

MR. WYATT: No, I'm not saying that at all, no. And, and that's what I mean by I'm not, I, I don't know what level of review that Department gives certain elements of development plans. It's not clear to me now. I, before this, I thought it was clear. I thought they were there as a, as a gatekeeper, as it were. But I think we've all been very, we've learned maybe the hard way that that's not the case.

MR. ROSENBLATT: Okay and so, you are aware though that the property will be dedicating a right of way to widen Joppa Road along this property's frontage, right?

MR. WYATT: I understand that's part of the proposal, yes.

MR. ROSENBLATT: Okay. You talked about the methodology that Baltimore County uses the loaded cycle methodology, and you stressed that Mr. Nebre said that is the, that is the methodology that is used when developing the maps that show what intersections are failing, those basic services maps, right?

MR. MCCANN: Objection. That's not what he said. I guess he can speak for himself, but that's not what he said.

ALJ: Let him, I'll let him speak for himself. Again, he's an attorney, so overruled. Go ahead, sir.

MR. WYATT: Well, I mean, I, that's not exactly what I said. What I said was that Mr. Nebre was very clear in his testimony that the district standard, which I think, at least the attorneys and, and, and Judge Murphy would understand in the context of the variance ordinance, is the standard rated by Baltimore County using loaded cycle methodology.

MR. ROSENBLATT: Do you understand, either through testimony in this case or through your, your legal practice, how you conduct a test under the loaded cycle methodology?

MR. WYATT: I think, I think people used to actually go out and do hand counts. Now, I understand they use cameras.

MR. ROSENBLATT: Do you, do you know if it would be possible to calculate the proposed improvements to Falls and Joppa Road under the loaded cycle methodology before those improvements are constructed?

MR. WYATT: I don't know.

MR. ROSENBLATT: Okay. You talked about the trip calculations as being estimates and, and your experience seeing, first of all, living in this area and hearing Mr. Merritt's testimony about taking multiple trips throughout the day in and out of homes off Tallyho, right?

MR. WYATT: Well, Dean Merritt and also Gil Shellis. I think, I think everyone has mentioned, you know, how, how busy we are when you're raising kids in this area.

MR. ROSENBLATT: And are you familiar with the

concept of peak hour of peak travel hours in traffic studies?

MR. WYATT: Only, not in my practice or in my background, but I heard, I've heard it mentioned throughout this hearing, yes.

MR. ROSENBLATT: And your own experience, I mean, you said similar to Mr. Merritt's, there are trips that are taken throughout the day in and out of developments that occur all hours of the day when you have young children, right? They're not all during rush hour in the morning or rush hour in the afternoon.

MR. WYATT: I don't, well, unlike Mr., unlike Dean Merritt, I, I'm, I'm in the office every day, you know, just that's what I've elected to do. So, I don't, I don't go out of my home during the day during the week.

I, I would, no, I would say a lot of the trips we're talking about here with, with children and sports or other activities, you know, from my observation and my experience, they are concentrated during the peak hours. They're usually in the morning, they're in the morning and a lot of the stuff happens in the evenings as well, because most children are in school during the day.

MR. ROSENBLATT: You, you think it would even be possible to leave the home ten, fifteen, twenty times a day during two peak hour time periods in one day?

MR. WYATT: Sure, of course. Why wouldn't it be?

MR. ROSENBLATT: Okay. You talked about a, a sentence from the community input meeting minutes that said no variances are being sought in this case. Do you remember that testimony?

MR. WYATT: I do.

MR. ROSENBLATT: No zoning variances are being sought in this case, right?

MR. WYATT: I think the wording was no variances are being requested.

MR. ROSENBLATT: Okay and you, you've done enough of this work to know you can ask for variances from setbacks or rear yard requirements, things like that, right? When you're, when you're proposing development?

MR. WYATT: Yes, that, yes.

MR. ROSENBLATT: And, and there are none in this case, right? You're, you're aware the Developer is not asking for any, any variances to any bulk or area regulations?

MR. ZIMMERMAN: I object to the question because whoever buys these houses could, could still be asking for variances.

MR. ROSENBLATT: Judge, again, it's not his witness.

ALJ: I know, it's not your witness, Mr. Zimmerman. Go ahead. Overruled.

MR. WYATT: Well, look, I, you know, I, my, my question in my e-mail, so I don't really have to, anybody can

look at it, it's part of the public record. Was clearly designed to pick up any kinds of var, any kind of variance or administrative approval that happens outside of the development process.

We all know those take place and I was specifically inquiring about those. So, you know, not only were we told no variances were taking place, nobody even mentioned the traffic variance that's at issue in this case. That's a variance.

MR. ROSENBLATT: Mr. Wyatt, you --

MR. WYATT: We weren't talking about minor, side and rear and front setback, that's not what we're talking about at all.

MR. ROSENBLATT: So, those would not be important to you?

MR. WYATT: I, important or not important, they're not part of this case.

MR. ROSENBLATT: I'm not sure I understand, but I'll move on. Are you familiar with the, whether zoning requires an owner/developer to put a typical setback on development plans?

MR. WYATT: I'm not familiar with it, all of the technical requirements that go into a development plan. I've never drawn one up.

MR. ROSENBLATT: Okay. Have you, have you ever represented someone presenting a development plan?

MR. WYATT: Yes.

MR. ROSENBLATT: Okay and just don't recall whether it showed typical setbacks or whether that was a requirement?

MR. WYATT: I, I can't say for sure. I, I, it's my understanding they're normally shown but.

MR. ROSENBLATT: Okay.

MR. WYATT: (inaudible) different understanding and I'll just have to accept that for now.

MR. ROSENBLATT: You, you are aware that the development plan in this case shows the typical setbacks and I think you even testified about that this morning?

MR. WYATT: I think there were three, I think there were three lots shown as typical setbacks.

MR. ROSENBLATT: Okay and you, you testified about your belief about those setbacks and Baltimore County's master plan and then compared those setbacks to your, your own neighborhood where you live, right?

MR. WYATT: Yes.

MR. ROSENBLATT: Do you think your neighborhood is, is a good model for how properties should be designed? How lots should be laid out, how developments should be laid out in this area?

MR. WYATT: Well, I know, I know it was a good design at the time. There's been a lot of changes since that development. It was started, I think, in the late sixties and completed in the late seventies, so, you know, for example,

master, master plan didn't exist then. There's no stormwater management requirements back then. There's a lot of differences.

So, yeah, I love our neighborhood. I mean, I've lived there my whole life. But is that how you would lay it out now? Probably not. Most developers now would never do lots larger than required or, or dedicate the kind of open space we have in our neighborhood.

MR. ROSENBLATT: Do you know how much open space is being proposed as part of this project?

MR. WYATT: Not offhand, the calculation, no. I know a lot of the property is not usable and I, I, I sort of just use that gross acreage so I'm not sure specifically how much open space.

MR. ROSENBLATT: Okay. You talked about the, the actual homes, like the renderings of the homes that you saw in the, in the pattern book, remember that?

MR. WYATT: I did, yes.

MR. ROSENBLATT: And I think you were asked do those, are those reflective of the type of homes in your neighborhood and you said they're, they're not, right?

MR. WYATT: Correct.

MR. ROSENBLATT: You, you've, you've lived, worked in this area for a long time. Are you familiar with some of the other neighborhoods in, in the Timonium area?

MR. WYATT: I am.

MR. ROSENBLATT: Are you familiar with Seminary Overlook?

MR. WYATT: I am.

MR. ROSENBLATT: How about Jennifer Ridge?

MR. WYATT: Yes.

MR. ROSENBLATT: How about the Oaks and Mayfair?

MR. WYATT: Yes.

MR. ROSENBLATT: Are, are those homes, from what you can tell from the pattern book, are the homes proposed similar to the homes in those neighborhoods?

MR. WYATT: No, because the, the homes being proposed here are going to be in a subdivision with much smaller lots than any of those that you've just mentioned.

MR. ROSENBLATT: I'm not talking about the lots. I'm talking about the homes that you saw rendered in the pattern book. Are they similar to the homes in those neighborhoods?

MR. WYATT: Architecturally, I don't know that they're all that distinguishable, architecturally.

MR. ROSENBLATT: Okay. Court's indulgence. I may be done. I guess, just a couple more questions, sorry, about, about traffic. So, how, how long have you lived in this area? And I apologize, I know you answered that, but I have a lot of notes.

MR. WYATT: Well, I'm, I'm fifty-eight. I grew up in

Seminary Ridge. Other than undergraduate and law school and a few years when, when my wife and I didn't have children, I, I'm going to say I've lived forty-seven or eight years in the area.

MR. ROSENBLATT: And did you testify or, or mention on an earlier day that one of your parents also lives in Boxwood or, or the Meadows?

MR. WYATT: Yes, my mother lives on Old Boxwood, which is in Boxwood.

MR. ROSENBLATT: Okay and have, have, has your mother lived in the Timonium area for a long time as well?

MR. WYATT: Yes, she's lived in 21093 pretty much her entire life.

MR. ROSENBLATT: Okay and you, you've shown pictures and you testified really in detail about the traffic and, and other congestion issues in, in the area, right?

MR. WYATT: Yes.

MR. ROSENBLATT: Have you ever moved out or considered moving out of Timonium because of these issues?

MR. WYATT: I don't think so.

MR. ROSENBLATT: All right. I don't have anything further. Thank you.

ALJ: Mr. McCann, any re-direct?

MR. MCCANN: Yeah, I do, thank you. Mr. Wyatt, we're almost done here. Let me show you the Baltimore County Code, specifically, development regulations Mr. Rosenblatt was asking

you about, the typical lot depictions on the development plan. And just, are you familiar with the development regulations?

MR. WYATT: I am.

MR. MCCANN: Okay.

MR. WYATT: In a general sense, not, I don't have them memorized by rote, but.

MR. MCCANN: Okay. I'm going to show you, can you see that Section 32-4-224?

MR. WYATT: I can.

MR. MCCANN: Okay. Let me try to blow it up a little bit. Okay. I think I just lost where I was, give me a second. Okay. 32-4-224, it says, and I'll just read it in part, required development plan information, the development plan shall contain the following development information. Proposed lot or building lot with parking and loading areas. Do you see that?

MR. WYATT: I do.

MR. MCCANN: All right. Keep that in mind. And then I'll go a little farther down to additional requirements. Again, the heading is required development plan information, a little farther down in Subsection C. It says permissible alternative information. A development plan may show the location of a precise building envelope instead of the precise location of the building. Do you see that?

MR. WYATT: I do.

MR. MCCANN: Okay. Given that, and let me go back now if I could, to the Developer's green line development plan, which is 1-B, we have, I think this is what you were referring to, when you said typical lot layouts, correct?

MR. WYATT: That's correct.

MR. MCCANN: Okay and I think you pointed out in your, I believe your direct testimony, correct me if I'm wrong, that these typical lot layouts show the minimum setbacks for the rear, side and front yard setbacks, correct?

MR. WYATT: That's my recollection.

MR. MCCANN: Okay. Given the requirements of the Code we just looked at, given what's shown on this development plan, would you expect, as both an attorney and as a, as a reasonable per, layperson, expect these typical lot layouts to be the actual, or near actual situation with the houses as constructed?

MR. WYATT: It doesn't sound like they will be from the testimony so far and it's really difficult to discern from the development plan itself, you know, exactly where things will be situated on each particular lot.

MR. MCCANN: Yeah.

MR. WYATT: Like, well, we spent a lot of time on the, on the calculations that Mr. Bishop put in about adjoining properties and developments and the, and the calculations. But like a lot, this is all, to me, sort of slanted in favor of

making it look like it's something that it's not.

MR. MCCANN: Yeah.

MR. WYATT: So, --

MR. MCCANN: Well, this, if the --

MR. WYATT: -- I can't tell, that's the, my answer is I can't tell, it's, I don't know that anyone can tell unless you're part of the development team.

MR. MCCANN: Well, let's, let's give the development team the benefit of the doubt and assume typical means what, I think, we all believe it to mean. And that the sixty home, new homes on this development plan each are, each of them have one of these so-called typical lot layouts, let's assume that. Do you have con, the con, the concerns you've expressed about density, are they still the same?

MR. WYATT: Yeah, they are, they would be the same. Even, even if this ends up being typical, which it may, let's leave room for that, it, I still have, my current concern level about density does not change.

MR. MCCANN: Okay. Getting to this point about the community input meeting, I think, it was and your request or someone's question of the developer team about whether there would be any variances. Number one, and I, I think the Judge knows this, but perhaps for everybody else's benefit, the special variance that we're talking about, or the traffic situation, is that in the zoning regulations?

MR. WYATT: It is.

MR. MCCANN: Okay.

MR. WYATT: It's, it's considered a special variance.

MR. MCCANN: Okay and again, as a, as a, an attorney or as a reasonable layperson, in response to the question posed to the Developer's team, whether or not there are any variances, would you have expected that if, that if there was a special traffic variance being sought, would you have expected that to have been disclosed in response to that question as phrased?

MR. WYATT: Yes, it was, it was a catchall. I mean, anybody can go back and read it and, and it was, I didn't construct the question to be hyper-technical, but it was a, a catchall, not non-lawyer type of question, because we weren't allowed, remember, these community, ever, the community input meeting was conducted WebEx and may have been one of the, you know, one of the early ones conducted. But it's all very stilted, there's no interaction like you would have in a, in an auditorium at a public school. I mean, that was it.

MR. MCCANN: Okay.

MR. WYATT: You had the chance to ask written questions. There's these sort of canned responses and then every, and then, you know, they check the box. They're, then there's been a community input meeting. So, I would have expected Developer then to tell us all of the variances that

were being sought.

And there's no, there's numerous variances. I think some of them were pending either at, in, in the Office of Administrative Hearings or before the County Board of Appeals around that same time.

MR. MCCANN: Yeah, well, I don't want to belabor this anymore, but, and the, and the community input minutes will speak for themselves. But other than that question that you've identified that was asked, are there any variances being sought, was, was there any mention at all, either in response to a question or during the Developer's demonstration, that, presentation rather, that there was a special variance, or some traffic relief sought of some sort? Was there any even mention of that?

MR. WYATT: Not that I recall now. I'd have to go back and look at all of the minutes to be sure but I, I don't recall very much time being devoted to that as a response from Developer. There was a lot of concern raised by neighbors about traffic.

MR. MCCANN: Okay, all right. Moving on from that. Mr. Rosenblatt asked you about peak hours, peak traffic hours. Mr. Merritt, I'm not so sure he was characterizing his fifteen trips per day or thereabouts as being just during peak hours. But, I don't think he made that distinction.

But in your experience, are there a lot of trips made

by folks like you and your neighbors, in non-peak hours? For instance, either to Meadowood or to St. Paul's or to Greenspring Station? Is there, are there a lot of non-peak hour trips in your experience?

MR. WYATT: I would say so, yes.

MR. MCCANN: And for instance, based on your experience, are athletic events at St. Paul's, whether it's lacrosse, soccer, football, whatever it is that's occurring at those fields, are those necessarily during peak hours? That is, during --

MR. WYATT: They're not. Usually it's when schools let out, so we're talking mid-afternoon typically is when sporting events are scheduled.

MR. MCCANN: Okay.

MR. WYATT: And, and, and not just sporting events. All after-school or extra-curricular activities typically take place after school hours. So, if, if a, if a student is involved in a club, usually, usually those club activities take place after school hours, which, you know, generally, 3:00 to 4:00 range, depending on the school.

MR. MCCANN: Okay and then when, a more obvious question with respect to Greenspring Station and the various retail, medical and restaurant uses at Greenspring Station, are those, to your knowledge, based on your experience anyway, are those establishments open during, and busy during non-peak

hours as well as peak hours?

MR. WYATT: Yes, they are.

MR. MCCANN: I want to go to this rendering that Mr. Rosenblatt showed you. And again, I know the Judge knows this full well, perhaps everybody on the call does not. But this, this, this green area, this beautiful green area that we're looking at, which is just, as you've indicated, just behind your house, when it says forest buffer and it says forest conservation on this, is, is, from a technical sense anyway, does that mean that all of this green area will be, will be entirely forested?

MR. WYATT: No, not at all. In fact, I'm not seeing that any of it is from this schematic. It just means that it's going to be, you know, there's two sets of requirements. I don't want to get into the technical aspects of it, but it's, it's protected area, that's all that it means.

MR. MCCANN: And then, but to be fair, there are, and I'll zoom in so you can see it, reforestation area indicated. It says 1.01 acres. Do you see that?

MR. WYATT: I do.

MR. MCCANN: And then over here, it says, also says reforestation acres, .29 acres. Do you see that?

MR. WYATT: I do.

MR. MCCANN: Both of which, or have been reduced apparently. But let's assume, if you can picture in your

mind's eye, what that reforestation of .29 acres and 1.01 acres looks like, if you can do that, will, does, does that make a difference to, to any of the, any of your testimony this afternoon regarding the visual impacts and the other things that you're concerned about with respect to this development?

MR. WYATT: No, it, it wouldn't, it wouldn't allay any of my concerns in terms of visual impact and the density concerns.

MR. MCCANN: Do you anticipate looking behind your house when, if, if this development is approved, and seeing all this green, this beautiful green?

MR. WYATT: I, I don't. I, I'm not sure what I'll be seeing, but no, I'm not expecting, it's, it's going to show the way it's presented on this plan.

MR. MCCANN: Okay, that's it. That's all I have. Thank you, Mr. Wyatt, appreciate it.

ALJ: Thank you, Mr. Wyatt. All right. So, it's 1:00. Should we take a lunch break? Probably a good time.

MR. MCCANN: Yeah, that sounds good, that sounds good, Your Honor.

MR. ZIMMERMAN: I thought we're done, Judge.

MR. MCCANN: I, I, I'm done --

ALJ: Done with who, Mr. Zimmerman?

MR. ZIMMERMAN: With Mr. Wyatt.

ALJ: Yes, Mr. Wyatt is finished.

MR. MCCANN: And I don't have any more witnesses today, Your Honor.

ALJ: Okay, all right.

MR. MCCANN: So, --

ALJ: And we have Mr. Sachse, you don't have any more witnesses. And we're going to go through and make sure there's no one else here. There are other people who are here who may want to testify. As of now, we have six people in the attendee's room. There's two call in numbers. There may be some people who want to testify. And so, Mr. McCann, you probably want to just look through the panelists and also the attendees just to see who, maybe some of these are your people.

MR. MCCANN: Okay.

ALJ: And you, you know, when we get back from lunch, but I know Mr. Sachse had an exhibit and he, he wants to testify.

MR. MCCANN: Okay.

ALJ: And, and we'll, we'll go through the list here first and we'll, then we'll see where we are.

MR. MCCANN: Sounds good.

ALJ: All right. Forty-five minutes, at 1:45.

MR. MCCANN: Thank you.

ALJ: Thank you.

(PAUSE)

ALJ: Mr. Zimmerman, are you there? All right, there

you are. Okay. Back on the record after a lunch break. Mr. McCann concluded his case. Before I get to Mr. Sachse, Mr. McCann, I just want to make sure, for the record, I have all your exhibits except for two. And just making sure my list is right. Exhibit 27 was a chart of front setbacks?

MR. MCCANN: Withdrawn. And just to be clear, we haven't finished our case, we just finished our witnesses for today, Your Honor. We're looking at new dates in January.

ALJ: Oh, you're not finished your case?

MR. MCCANN: No, no, no, just, I had no other witnesses today because of --

ALJ: Oh, oh, oh, I misunderstood. I'm glad you said that. Okay. So, so you're actually, you, you have more, okay. You have more witnesses.

MR. MCCANN: Not a lot more, not a lot more, but we do.

ALJ: Sure.

MR. MCCANN: Before I forget, twenty-seven was withdrawn. I think I put on my most recent --

ALJ: Okay. Then, go ahead. Twenty-eight you're resubmitting. That was through Ms. Hamidi yesterday.

MR. MCCANN: I did, oh, that one, I'll get that one to you today.

ALJ: Yeah, that's fine. I mean, it's no rush. And then thirty-one was Beth Miller. So, maybe she's coming back

to testify?

MR. MCCANN: Yes.

ALJ: Oh, okay. Then, then I misunderstood what you said.

MR. MCCANN: Yeah.

ALJ: I thought you were finished your, your case. So, that means, all right, you have no more witnesses. Is that because no one else could come today, was that, was that the problem?

MR. MCCANN: Yeah, we, we were looking at the 13th or 14th or something like that and it didn't work for one or more of us. So, --

ALJ: Oh.

MR. MCCANN: Adam and I are providing Kristin with our unavailability in January.

ALJ: Okay. Yeah, she did ask us for those dates a little bit ago. So, she should have ours, so.

MR. ZIMMERMAN: Yeah, it'd be nice if somebody kept me in the loop on that as well, so.

ALJ: Well, you, I think you're always on all the e-mails. I saw you were --

MR. ZIMMERMAN: Oh, okay. Good.

ALJ: -- (inaudible). Yeah, you were on most e-mails that I saw from, from --

MR. ZIMMERMAN: No, I mean, as far as the January,

I'm not, I don't know what's going on for January, that's all.

ALJ: Okay, got it. All right and then for your, for your exhibits, Mr. Zimmerman, since we're on the topic, and, and we don't have to do it today since now that I understand we are coming back --

MR. ZIMMERMAN: Right.

ALJ: -- for Mr. McCann's case, but if, if Mr. Rosenblatt and Mr. McCann could go through, you know, his exhibits. I have multiple ones that are in evidence.

MR. ZIMMERMAN: Right.

ALJ: But then the rest of them appear to be, you know, either public records, I mean, --

MR. ZIMMERMAN: Right.

ALJ: -- you can object, hold on, Mr. Zimmerman. Hold on, Mr. Zimmerman. I was asking Mr. Rosenblatt and Mr. McCann, maybe Mr. McCann has no objection, but a lot of these are public records, so I wasn't sure, if you could at some point, look through those and let me know whether, you know, you have any objection to any of those.

MR. MCCANN: Yeah, we can do that.

MR. ZIMMERMAN: Yeah, there, there were a few that I, actually, are no longer necessary. But maybe I can just send, and I may have one more exhibit to add, but maybe I can send an e-mail out to everybody indicating which exhibits, you know, I, I would want to, to complete the group.

ALJ: Sure. And so, and so, if you go through your list and you take anything out, just redact it, just, you know, have a, you know, I know Rebecca is going to handle this for you probably. If she could just redline through what the number that you have --

MR. ZIMMERMAN: Yeah.

ALJ: -- and just leave the number on there, don't renumber, obviously, because they're already numbered. And then just redline and say—

MR. ZIMMERMAN: Redline, yeah.

ALJ: -- (inaudible) yeah.

MR. ZIMMERMAN: Okay, good idea, thank you, thank you.

ALJ: Okay. I just wanted to make sure that we, we weren't missing anything. And then, okay. So, having said that, that was just a little housekeeping. Mr. Sachse, you're here to testify. And so, we'll do that next. All right. Mr. Sachse, raise your right --

MR. SACHSE: Your Honor, could I just interject for a second? You, you said --

ALJ: Yeah.

MR. SACHSE: -- I, I had an exhibit. I think there may have been one submitted, but I don't really have one with all the other exhibits that have come in, so.

ALJ: Well, let me show them to you just to make

sure, because I want to make sure that they're in if you want them in. So, if you don't want them in --

MR. SACHSE: If you don't mind, if you don't mind, yeah. I, I --

ALJ: No, no, but let me swear you in first before you say anything.

MR. SACHSE: Okay.

ALJ: Do you swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. SACHSE: I do.

ALJ: Okay, all right. And so, we'll just put them up there. Here, let me just show you. Here's the first one, you had submitted this. And we had initially labeled this as Heatherfield/Seminary Ridge exhibit, which is Mr. McCann's client, because on the e-mail, that was the subject matter and so it was just labeled that way.

MR. SACHSE: Right.

ALJ: I can relabel this as Doug Sachse exhibit. But did you want this in?

MR. SACHSE: No, I don't think it's necessary.

ALJ: Okay, all right. All right. Well, we'll withdraw that and the only other one was this photo of the, of the, you know, --

MR. SACHSE: The gate.

ALJ: The gate.

MR. SACHSE: The Mays Chapel gate. And I think that's been covered in prior testimony and exhibits.

ALJ: Okay.

MR. SACHSE: So, I, I don't think it's necessary.

ALJ: Okay, all right. Well, then I, I'll stop sharing those. All right. Well, and so, it is your turn to testify. So, Mr. Sachse, what did you want to tell us?

MR. SACHSE: Well, essentially, I think you've heard just about everything. I have been a resident in Seminary Ridge, excuse my cough, since 1984.

ALJ: And what was your address, I forgot?

MR. SACHSE: It's still the same, 9 Sedgefield Court.

ALJ: Sedge, Sedgefield.

MR. SACHSE: S-E-D-G-E-F-I-E-L-D.

ALJ: Okay, Sedgefield Court. That's in the Seminary Ridge area?

MR. SACHSE: Seminary Ridge, that's correct.

ALJ: Okay, all right.

MR. SACHSE: I have lived here since 1984, raised six kids, who thankfully have moved on, but come back quite a bit. Have four grandchildren that I have here quite often.

And I think I'm along the lines of Mr. Compton, maybe Mr. Hallahan, I, all of us in, including all the witnesses really that I've heard, feel that it's, the area has been

overdeveloped and there's very little, it just, something is going to break the camel's back, and this seems to be, it's got to stop.

I mean, there, we've gone through all of Hopkins and Greenspring Station and the like, and the traffic at the intersections, the three intersections involved, I'm not, not even going to go through them because you've heard so much about them. And how dangerous they are.

There are no sidewalks coming up Joppa Road towards Falls Road, or actually in either direction, east or west on Joppa. So, walking along Joppa has become more and more treacherous.

Again, I think that my biggest concern, and I'll talk for about one minute and then that'll be it, is on the, on safety. As I said, I have had six kids living in the house, put them on buses, know where the bus stops are along Tallyho Road.

I've seen the increase in traffic over the years on Tallyho Road. I see the kids accumulate at the various bus stops at Clearfield Circle, at the top of Lochmore, at Sedgefield and down all the way towards Joppa Road. And the number of kids, it, it varies from year to year, because kids grow up, etcetera.

But there are a lot of children in this neighborhood that take the bus, that congregate on the bus stops, and you

can see even with the, the bus stops with the buses coming to a stop and sometimes with the flashing lights on that people, especially cut throughs, who are just trying to get from one end, from Seminary to Joppa, or Joppa to Seminary, don't always pay a lot of attention. And I think it's, it's a tragedy waiting to happen.

One of my big concerns is, especially, even now, I like to walk a lot and I, of course, I have some problems with that right now, but that's another matter. But walking out onto Tallyho Road gets, the more, you can just see more and more traffic.

What I also notice though, there are more and more kids out riding bikes, on skateboards, on the different hover boards and the like, and you can't necessarily stay on the sidewalk to do a lot of that. Especially when there are other people walking.

The increase in traffic is, has been such, that you've been told that we have calming bumps, but first we had stop signs, then the calming bumps and it still is a problem and yet another development is being proposed, which, no matter what, will increase the traffic flow on Tallyho.

I think even the people in Boxwood and the Meadows understand that. They just don't want any more flow onto their street, which I understand. And as far as any possible pass through, they want to, essentially, eliminate any possible

traffic on there.

A lot of the reasoning was because of the gatherings and the older people that live there and property values. Along Tallyho Road, the same issues apply, except that you have a lot more children. And like I said, a lot more children that are going out into the roadway on bikes and different vehicles, coming out from bus stops and it's really very concerning.

One of my (volume goes very low) kids were growing up and now my grandchildren, I like to have them walk with me over to Meadowood. Meadowood wasn't there at the very beginning. But I like to take them over to the playground. And I can tell you, as you get down going south on Tallyho and get to Joppa, you would go west on Joppa towards Meadowood.

It's, it's a scary place. And I could probably be criticized for wanting to take my, the walk there, I'll accept that. The cutout that's proposed to widen Joppa for the new development, will simply make it that much more dangerous and that much worse and will give another area where cars may pull out as you're trying to walk down the road.

When you get to the intersection at Falls and Joppa, if I have three of them with me, I have to have a hand on each one of them. There are, there's left turn signals, there's a cutoff into Valley Road.

And I know you know all this already, so I apologize for being redundant but there's almost no, it's almost

virtually, almost virtually is not something I meant to say, it's virtually impossible to walk along Joppa Road and cross Falls Road from the north side because, not only is there not a walkway, there's like a gutter or cul, or, I can't remember the name is, that goes under.

So, you have to be very careful. You have to get out in the roadway, and you have to cross over the right turning lane to get to the little triangle of grass. Then try to make sure you wait for the lights appropriately coming each direction, because there's left hand turn going Falls Road north and left hand turn on Falls Road going south.

So, you have to worry about those. And then the traffic that comes through that's going straight on Falls Road one way or the other. Then when you survive to the other side, you have traffic that yields off of Falls Road to, is actually staying on Falls Road at the intersection of Falls and Joppa, where the intersection is actually coming to an end, meaning the, not the intersection, the expressway, 83 is coming to an end.

So, I, I, I, the only thing I wanted to add is that I think, and I think Mike Wyatt touched on this pretty well. But that, it really is the large safety issue adding any more development in the area. And truly, I haven't heard any proposals that touch on it to make the area, to even keep it as safe as it is now. But certainly, it'll be less safe and it's

very, very dangerous now. And that's all I really had to add.

ALJ: Okay. Well, thank you for that, Mr. Sachse. Let's, Mr. McCann, did you have any follow-up questions?

MR. MCCANN: I do not, thank you.

ALJ: Okay, all right. Mr. Zimmerman?

MR. ZIMMERMAN: Just one or two, yeah. So, let me play devil's advocate, Mr. Sachse. What if it's suggested that the Developer is entitled to do something with their property, what do you have to say about that?

MR. SACHSE: I have to live with whatever decision is made.

MR. ZIMMERMAN: Okay, all right. Thank you. That's all I have.

ALJ: Mr. Wyatt, did you have questions of Mr. Sachse?

MR. WYATT: I do not, Your Honor. Thank you.

ALJ: All right. Mr. Rosenblatt?

MR. ROSENBLATT: Just, Mr. Sachse, to make sure I understand where you live, Developer's Exhibit 33 is on the screen. At the top of Sedgefield Court, there's sort of a, I don't know what shape to call it, trapezoid property. I put an X and the initials DS, --

MR. SACHSE: That looks like it. To the extent I can see it, that looks like it.

MR. ROSENBLATT: Okay, thank you. I don't have any

further questions.

ALJ: Okay. Mr. Sachse, that looks like you, you don't have any more cross, so, thank you very much.

MR. SACHSE: I appreciate it.

ALJ: All right. Yep, I appreciate it as well. So, we'll just go through the people are here, Mr. McCann, did you have a chance just to look at the panelist list? I don't want to call on your people to the extent you have anybody here.

MR. MCCANN: Yes, before we started I did, and I didn't see anybody that I recognize as being within the community associations that I represent.

ALJ: Okay.

MR. MCCANN: Other, other than the folks who have already testified.

ALJ: Right, yeah, got it. Okay. So, let me just go down the list here, just, just to see if there's anyone here who we can take some testimony from. So, I'm, I'm unmuting Beth Winter. Ms. Winter, are you here to testify?

MS. WINTER: I, I was not, but I could.

ALJ: It, it's up to you. I'm just making sure everyone gets a chance to testify who wants to. So, if you don't want to, you don't have to. But if you want to, say something, then we're, we're happy to take your testimony.

MS. WINTER: Okay. I'll, I'll say something.

ALJ: All right. So, let me do this. Let me, let me

swear you in. Do you swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MS. WINTER: Yes, I do.

ALJ: Okay and then give me your address.

MS. WINTER: 10934, excuse me, Mays Chapel Road.

ALJ: Mays Chapel, okay. And that's in, is that right next to the dev, property we're developing or is, is that across --

MS. WINTER: I am on the, the, the road that is being proposed to be the, where the traffic goes through.

ALJ: Okay, all right. Okay. Well, then, go right ahead.

MS. WINTER: And we've lived in this community actually for a long time. We just recently bought this house and moved into it in the hopes that this will not go through in terms of the, the road.

I do think there are, would be a lot of problems with people getting out of the community, not just exiting off of Mays Chapel onto Falls Road, or going on Mays Chapel through to Joppa. But the, the Seminary Farm and the other roads that enter onto Mays Chapel, I think, would get very backed up, especially at certain times, the rush hour times of the day. With people unable to turn either left or right. And certainly, that would affect us coming out of our driveway as

well.

I do also think the road is quite narrow. I know people along here often have multiple, you know, let's say they're having a party or, or some other gathering at their house and lots of people are parked on the street. I think when that occurs, there's not going to be room for two-way traffic, so I think the, the road would have to be widened.

You'd have to put in speed bumps. You'd also, there's no sidewalks and you have heard that people walk quite a bit, and they really do. It's a very active, walking neighborhood. So, there would be additional expenses that would be associated with, with making the, the road a through road, because it's just not set up to accommodate through traffic at this point.

And I guess those are, those are some of my key thoughts.

ALJ: Okay, great. So, let me just ask the attorneys, you probably sat here and listened, if they have questions of your testimony. Mr. McCann?

MR. MCCANN: Yeah, I just wanted to identify Ms. Winter's property location for the record. So, I could, if I could show the exhibit, Your Honor, and do that real quick and I was looking for it as she was speaking. Again, it's 24-B. Okay, great. Ms. Winter, can you, do you have video capabilities?

MS. WINTER: I do.

MR. MCCANN: Okay, great. How are you?

MS. WINTER: Oops, but, I'm trying to, --

MR. MCCANN: I'm finding the --

MS. WINTER: There I am.

MR. MCCANN: Okay. So, Mays Chapel Road, we, it's on this Exhibit 24-B. Where along the road do you live exactly?

MS. WINTER: It looks like you're pretty close to where it is. That should be it, I think. It's right behind the cluster homes. I mean, right, yeah. That should be it.

MR. MCCANN: All right. I'm going to highlight it in yellow, right here, is that right?

MS. WINTER: Yes, um hm.

MR. MCCANN: Okay. Other than that, I didn't have any questions. Thank you, Your Honor.

MS. WINTER: Okay.

ALJ: Okay. Mr. Zimmerman?

MR. ZIMMERMAN: No questions, thanks.

ALJ: All right. Mr. Wyatt?

MR. WYATT: No questions.

ALJ: Mr. Sachse?

MR. SACHSE: No questions.

ALJ: And then, Mr. Rosenblatt?

MR. ROSENBLATT: No questions, thank you.

ALJ: And with that, Ms. Winter, you didn't get too

many questions. Surprising. All right, we appreciate your testimony.

MS. WINTER: Thank you.

ALJ: Thank you.

MS. WINTER: You're welcome. Bye-bye.

ALJ: Okay, all right. And let's see who's next up here. Bruce Oakley is with you, Mr. Rosenblatt, right? Isn't he?

MR. ROSENBLATT: Yeah, it's Oxley, sorry.

ALJ: Oh, I'm so sorry.

MR. ROSENBLATT: I froze for a second thinking of the name Oakley, and I couldn't think of it. Bruce Oxley is definitely with the TABCO. Thank you.

ALJ: With you, okay. And then we have, the next one is Mr. Consroe. Mr. Consroe, do you have any testimony today?

MR. CONSROE: I, I have an opinion, yeah, yeah. I do, yes.

ALJ: All right. Well, then, let's do this. Let's, let's, let's see, where are you? Do you have video camera?

MR. CONSROE: I do. Okay?

ALJ: All right, sir. Would you raise your right hand, please? Do you swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. CONSROE: Yes.

ALJ: And where do you live?

MR. CONSROE: 71 Seminary Farm Road.

ALJ: Seminary Farm Road. Okay, so that's right above the property we were talking about. Okay. I know where that is, all right. Go right ahead.

MR. CONSROE: Sure. As I said, I, I had not planned to, to say anything, but, but feel as though, and I'll restrict my comments to one area. But feel as though I, I need to. The one area that I want to comment on is this connection on Mays Chapel Road. And just to reiterate what was in the first sentence of the Petition that I did sign, I am opposed to a vehicular connection on Mays Chapel. I, I was before and I still am.

The reason for that and I, I certainly understand that the attorneys on the call have people to represent. But I'm a little disappointed that on many occasions, there has been reference to the fact that there are only four homes on Mays Chapel. There are actually five. But that doesn't represent the situation.

The Meadows of Greenspring have ninety-nine homes, approximately two hundred people that live here. If we add children and grandchildren, it's many more than that. There is a single way out for all of those ninety-nine homes. I won't speak for the Boxwood community, but it's true of them as well.

And that one way is Mays Chapel Road. So, any

vehicular connection to Mays Chapel would impact not just the five residents that live directly on Mays Chapel, but all of the residents and their guests and their children and grandchildren, whether that's in cars or pedestrian traffic.

And so, that is the reason that I supported the Petition against any vehicular connection, and I guess I would just ask, Judge, from what I understand from my own research, I, I hope it's accurate, is that you can provide conditions in your opinion.

I, I would hope that those conditions would include not a vehicular connection, but if you decided, if you decided for an emergency only access, that somehow you condition that to be true and hold the County to that condition going forward.

I think it is by far a significant safety issue, predominantly and secondarily, just a congestion quality of life issue. And that was my only comment.

ALJ: Okay, thank you. Mr. McCann?

MR. MCCANN: Yes, real quick. Good afternoon, sir.

MR. CONSROE: Good afternoon.

MR. MCCANN: You talked about the pass-through issue. Am I correct though that you also, well, for instance, you signed the Petition, which is our Exhibit 33, which opposes the development outright, as opposed to just opposed, being opposed to the pass through, is that correct?

MR. CONSROE: That, that's correct. I opposed the

development.

MR. MCCANN: Okay. So, your testimony this after, afternoon, I take it, is just couched in terms of if the Judge decides to approve this plan, you would ask her to impose the conditions you suggested, correct?

MR. CONSROE: Correct.

MR. MCCANN: Okay. Then real quick, I want to show you, as I have the other witnesses, the exhibit that shows the map, I'm sorry, the map, 24-B. As I understand it, you're the fourth, fourth house in from Mays Chapel Road, which is this one right here that I'll highlight in yellow?

MR. CONSROE: I am the, yes, that's, that's correct. That's mine.

MR. MCCANN: Okay, great. No other questions. Thank you, sir.

MR. CONSROE: Um hm.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No questions. Thanks, Judge.

ALJ: Mr. Wyatt?

MR. WYATT: No questions, thank you.

ALJ: Mr. Sachse?

MR. SACHSE: No, no questions.

ALJ: Mr. Rosenblatt?

MR. ROSENBLATT: No questions, thanks.

ALJ: Thank you. All right. Well, thank you, Mr.

Consroe.

MR. CONSROE: Okay, thank you.

ALJ: All right and let's see. We did the rest of the gentlemen that are on here, the people that are listed are the Developer's witnesses, other people who have testified except for this last one. Ms. Tinanoff?

MS. TINANOFF: Yes.

ALJ: Did you have testimony today?

MS. TINANOFF: I have to unmute myself.

ALJ: You're unmuted. I can hear, I can hear you.

MS. TINANOFF: (inaudible) okay. I hadn't expected to testify, but I, I could add a little bit to what Beth and Ed said.

ALJ: Okay. Then let me do this. Do you have a video camera?

MS. TINANOFF: Yes.

ALJ: Do you --

MS. TINANOFF: Did that do it?

ALJ: No.

MS. TINANOFF: So, it's on --

ALJ: It's usually at the bottom of the screen. It'll say start video and just hit the start video button.

MS. TINANOFF: Yeah, I did, I did press start video, but.

ALJ: Okay.

MS. TINANOFF: I, oh, there it is.

ALJ: Oh, there you, it's working. That's, all right. So, if you don't mind, raise your right hand, please? Do you swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MS. TINANOFF: I do.

ALJ: All right. Where do you live?

MS. TINANOFF: I live at 10939 Mays Chapel Road.

ALJ: Mays Chapel.

MS. TINANOFF: It's the first house as you enter the Meadows from Seminary Avenue.

ALJ: Okay.

MS. TINANOFF: And it's across the street from Beth Winters and up a little bit.

ALJ: Got it, okay. Thank you. Go right ahead.

MS. TINANOFF: Well, I'd just like to echo everything that, that both Ed and Beth said. I, we've lived in the Meadows for twenty, twenty-four years now. We used to live on Seminary Farm Road, but we moved to this house about six years ago.

And we have, I'm also one of the, the walkers who walks daily, almost daily in the, in the Meadows. And it's been especially wonderful during the pandemic when we were able to walk and be out together, even though we couldn't get

together in people's houses.

And it, it's a wonderful place for walking. We don't have sidewalks but it's very easy to walk on the road. Most people do loops around the neighborhood and we, it's a, the only way we can, can walk because there are no sidewalks, there are no walking trails or anything else in, in the meadows.

And it would be a real problem, we are opposed to the development, in general. But if it were approved, we are very much opposed to having Mays Chapel opened up to vehicular traffic. It, there's enough traffic just with people in the community coming and going every day that even when we're walking we have to be careful that, you know, we're out of the way of the, the cars.

And a lot, many people have dogs also, that walk their dogs, and there's no other place to go. So, it would be a real problem to have additional traffic on the narrow roads with no sidewalks. And it, two-way traffic would be a problem.

Also, there's been some testimony that it would only affect those of us on Mays Chapel Road, and it would affect us more because we couldn't back out of our driveways if there was a lot of traffic.

But it, it, as Ed mentioned, everybody in the Meadows, whether they're in Seminary Farm or the cul-de-sacs, or on Mays Chapel, still have to make the left turn or the right turn if, if it were cut through to get out of the

Meadows.

And so, anyone who lives in the Meadows would still have to go on to Mays Chapel Road to get out of the community. So, it's not only affecting those of us who live on Mays Chapel Road.

Also, I was curious, there have been a lot of testimony from people on the Tallyho Road area about how much they have trouble with traffic on Tallyho and people cutting through between Joppa and Seminary Avenue. And they've had to put up speed bumps and stop signs and they're concerned about safety.

And so, I'm surprised that many of them want to have the same, us to have the same problems. To impose that on another neighborhood, knowing the difficulties they have, why would they want us to have the same difficulties?

And it wouldn't help them that much because people still have other alternatives. They can go to Thornton. They, and they can go to Falls Road. But to having another community having the same problems they have, I mean, that seems like a reason not to have the road cut through because of the problems they already have.

And we know that that's a problem for them and I, I feel sorry for them. But I don't think that cutting through Mays Chapel will help them much and it will certainly hurt us. So, I'm very much opposed to the possibility of the cut

through, and I would love to have some assurance that that won't happen, because it would be very difficult for the lifestyle of this community and the safety of this community.

ALJ: Okay. Thank you, ma'am. So, let me ask Mr. McCann. Do you want to go first? Do you have any questions.

MR. MCCANN: Sure, real quick again basically --

ALJ: Yeah.

MR. MCCANN: -- the same questions. Ma'am, can you just confirm for me where your address is? I'll blow up the map again, once again, and you're on Mays Chapel Road --

MS. TINANOFF: Yes.

MR. MCCANN: -- so I think this is your house right here where I highlighted, closest to Seminary you said, right there --

MS. TINANOFF: Yes, it's right across, our driveway is right across from Seminary Farm Road.

MR. MCCANN: Okay.

MS. TINANOFF: So, if we were backing out of our driveway, we'd have to look in three directions, behind us, to the right and to the left.

MR. MCCANN: Okay and did I highlight it correctly right here in yellow?

MS. TINANOFF: Yes, that's right.

MR. MCCANN: Okay and without going through all the, the details that some of the other witnesses have test, have

testified about, the, the traffic situation on, on Seminary and on Joppa, do you concur with some of the concerns that other people have expressed in this, during the course of this hearing?

MS. TINANOFF: Oh, yes, absolutely.

MR. MCCANN: Have you, have you been here for the hearing?

MS. TINANOFF: Yes, I've been here for most of them. I missed the first one or two, but I've been listening to most of them.

MR. MCCANN: Okay and you, like Mr. Consroe, you signed the Petition opposing this development for instance, correct?

MS. TINANOFF: Yes, yes, I did.

MR. MCCANN: Okay. Thank you, Judge. Nothing else.

ALJ: Thank you. Mr. Zimmerman?

MR. ZIMMERMAN: Just one or two. In your own words, why are you opposed to the development?

MS. TINANOFF: Well, for the reasons that, that many others have said and, and also the, the, the organizations. That the, the overdevelopment and the failed traffic intersections, I mean, they're bad now. Many times, I can't get out of our neighborhood to get on to Seminary Avenue, to make a left turn on Seminary Avenue to go to Falls Road because the traffic is so backed up, at, at rush hour times

particularly.

And so, the, the traffic is definitely a problem now and adding to that would be, make matters worse and, and the, there's been so much development already. And if Torch Hill is approved, that's right across Seminary Avenue from us. So, we already are going to have a new development north of us. And then, to have another sixty homes south of our development, you know, we're in the middle of these two. It would just, I just think it's, it's way too much.

MR. ZIMMERMAN: Okay. Thank you, Ms. Tinanoff. Judge, that's, that's all I have. Thank you.

ALJ: Thank you. Mr. Wyatt?

MR. WYATT: Nothing, Your Honor. Thank you.

ALJ: Mr. Sachse?

MR. SACHSE: I don't have anything, thank you.

ALJ: Mr. Rosenblatt?

MR. ROSENBLATT: No questions.

ALJ: Thank you. All right. Well, thank you, Ms. Tinanoff.

MS. TINANOFF: Thank you.

ALJ: There are four people in the attendees' room, one is Ms. Becker, she testified already. One is Ms. Francovich, she's just, she's from (inaudible). Ms. Francovich, you're not here for, to testify are you?

VOICE: I don't have any questions at this time.

Thank you though. I really appreciate that.

ALJ: Oh, okay. You don't sound like Jennifer Francovich. Jennifer Francovich works in the Office of Law.

VOICES: (inaudible).

ALJ: Okay. I guess they have no questions. Okay and then the next one, person is, let's see. The next person, whoops. Phone number is 410-296. Can you hear me?

VOICE: Hello?

ALJ: 410-296? Hi, yes. Hello.

VOICE: I'm not sure --

ALJ: Can you hear me?

VOICE: Yes, are you talking to me?

ALJ: Yes, I just see your number is listed in the hearing. I didn't know if you wanted to testify, so I was just double checking.

VOICE: 410-296-2225?

ALJ: It just shows me the first six numbers.

VOICE: Oh, okay. I was, I've been listening in on my telephone. I don't have the access to the video and --

ALJ: That, that's fine. Did, did you want to testify?

VOICE: I, I'd like to add a few words to what my neighbors just said. I also live in the Meadows of Greenspring.

ALJ: Okay. Let me do this. Let me get your name

first. What's your name?

MS. GREENBERG: Lauren Greenberg.

ALJ: Okay and Ms. Greenberg, your address?

MS. GREENBERG: 51 Seminary Farm Road.

ALJ: Seminary Farm Road, okay. And would you do this, would you raise your right hand, please? Do you swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MS. GREENBERG: I do.

ALJ: All right. Go right ahead, Ms. Greenberg.

MS. GREENBERG: Thank you so much. Thanks for your patience, Judge Murphy.

ALJ: Yeah, that's right, Mr. Zimmerman, did you hear that? Patience. Thank you, Ms. Greenberg, for pointing that out to Mr. Zimmerman.

MS. GREENBERG: I'd like to add to, especially the last two neighbors that, who are concerned along with me, especially about, you know, if the, if Greenspring Manor is approved and if Mays Chapel were to become a through road.

That not, I'm, I'm more concerned, most concerned about traffic and hazards and safety for even a bigger group. And the way I see it is this. Everyone who lives in the Meadows has to get out, we're at a stop sign trying to turn to get onto a road. Then we have to stop and turn again to get

out.

But Old Boxwood has the same exact problem. They only have one way out. Someone a few hearings back had testified that there was another way out of Old Boxwood but no, they don't have any other access aside from Mays Chapel.

And then, the, even the Developer, I believe, it's my understanding that the Developer opposes Mays Chapel being a through road as well, because I think part of what their reasoning would be, I'm imagining, is that they're speaking for the people who would be buying these homes who aren't here yet to speak for themselves. They would also have to get on to Mays Chapel.

If it becomes a through road, you now have three neighborhoods, plus the five houses on Mays Chapel, well, they're part of our neighborhood. You have many more people than I think has been, you know, really added up and spoken for altogether.

There's three neighborhoods, not just one at a time, all trying to get on to Mays Chapel. Two of them, at least, I know right now, where Seminary Farm Road is, and where Old Boxwood comes out, it's not that, those, those road, intersections are close to each other.

And I'm also concerned about the general public. Whoever decides to use it as a through road, those people are trying to drive through, right? Well, they're seeing three

different, it's actually, Seminary Farm loops around. So, there's actually, it forms two intersections. So, there's actually four in total.

These people are driving through a, probably a short road and they're seeing four places of stop signs of people lined up trying to get out. These people are looking back and forth and waiting. They have to use their judgment, when can I pull out to get out into traffic?

They, there could be mistakes made, misjudgments. You pull out and it causes an accident. That affects the people on the through road as well. What if someone is the type of person that sees a line of cars waiting and wants to stop to let someone through? Do they do that one time? Do they do that four times? Does that cause, what kinds of problems does that cause?

Another thing is I, so, yeah, I think, I think even though all the other points that have been made are very important to us, the walking and the property value and the character of the neighborhood and I mean all that, and the setting, of course, it's extremely important.

But I think even more important is the hazards and the safety and the access for, for all of us and for the general public. And if, if speed bumps were to have to be put in, so I have chronic neck pain along with many other ailments, and I've been injured by speed bumps, going over them.

And one time I was doing, some years ago, I was doing some reading, and they've done research in England, that they actually cause neck pain and I think, I think I had read that in England or parts of England, they're not even allowed to put in speed bumps because they can give people neck pain. I thought that was interesting. I had never heard that spoken of here.

And then again, like someone just said, which I think was a really good point, is we don't even know if this would really make a difference for the general public, or make a difference for Tallyho. So, we, we would be hurt the most.

And then someone else had mentioned, I think one of the lawyers in a question had mentioned that balancing, who does this really affect the most would be the three neighborhoods along Mays, trying to access Mays Chapel. Our relative harm would be so much greater than any slight benefit to other surrounding neighborhoods or people cutting through.

I think that's my main points. And again, thank you so much. Thanks for the time.

ALJ: Yeah, absolutely. Thanks, Ms. Greenberg. So, so just a second. Let me make sure that Mr. McCann has no questions first, Mr. McCann?

MR. MCCANN: Yes, thank you, Ms. Greenberg, for your testimony. Let me show you the map real quick and just confirm your address as I understand it.

ALJ: She's on, she's in a, she's in a, she's a phone caller, so she doesn't see it.

MR. MCCANN: Oh, I'm sorry.

ALJ: Yeah.

MR. MCCANN: I missed that.

ALJ: Still, I don't know, (inaudible) --

MS. GREENBERG: (inaudible).

MR. MCCANN: Okay.

MS. GREENBERG: I back up to Quail Hollow and I look out onto Yearling.

MR. MCCANN: Okay. That's fine, Your Honor. No questions. Thank you.

ALJ: Oh, okay. All right. Mr. Zimmerman? Mr. Zimmerman?

MR. ZIMMERMAN: Oh, I'm on mute. Okay, can you hear me?

ALJ: I can.

MR. ZIMMERMAN: In the, I had, I was, I was muted, but. So, I was just going to say, consistent with the spirit of patience, I have no questions.

ALJ: Thank you, Mr. Zimmerman. He's amusing Ms. Greenberg at this point. Okay, thank you. Mr. Wyatt?

MR. WYATT: No questions.

ALJ: Mr. Sachse?

MR. SACHSE: No questions.

ALJ: Mr. Rosenblatt?

MR. ROSENBLATT: No questions.

ALJ: All right. Well, thank you, ma'am.

MS. GREENBERG: Thank you so much.

ALJ: All right and then there's just one more, I'm going to mute her. One more that, person or someone signed in as U24745? Can you hear me? Anyone there? All right. I'm not sure what, who that is. It's obviously not a phone number, but they have been here the whole time. They were here yesterday. All right. So, we don't have anyone else today that I can ask questions of or ask to testify. So, so that's it for the day?

MR. MCCANN: For us, yes, Your Honor.

ALJ: All right. No one else that we can ask, that needs to be called, right, Mr. Rosenblatt? You're going to wait until Mr. McCann is finished?

MR. ROSENBLATT: Yeah, we have to wait until they're done --

ALJ: Right.

MR. ROSENBLATT: -- to determine rebuttal. I --

ALJ: Rebuttal, yeah.

MR. ROSENBLATT: -- wish we could be done today obviously.

ALJ: Yeah. All right, understood. Well, we try to, try to work with everyone's schedules to make sure, you know,

we get everyone in so I guess we'll go back to scheduling and then find out in January when you all can come back. Do we just need one day?

MR. MCCANN: Adam and I were talking about that. Yeah, I, I think so. Yeah, but if, if --

ALJ: Uh oh.

MR. MCCANN: -- things change, we'll, we'll let Kristin know that. But yeah, we were talking, I, I was suggesting, I don't know if Adam chimed in on that yet, but I was suggesting just one day.

ALJ: Okay. What do you think, Mr. Rosenblatt?

MR. ROSENBLATT: I --

ALJ: Put you on --

MR. ROSENBLATT: -- sorry, making, making me --

ALJ: I'm holding your feet to the fire here.

MR. ROSENBLATT: No, I mean, maybe we can talk offline. I thought, I just don't want to do this again. I don't want to have to get dates and get dates, I'm sure no one wants to have to do that. So, --

ALJ: Yeah.

MR. ROSENBLATT: -- maybe we can talk a little bit offline and see would just having a second date that's right near the first date make sure this doesn't happen again. And if so, I would say get two. If not, get one.

ALJ: Well, so, the problem with just kind of getting

it just to be, you know, safe is that it, the problem is that it takes away hearing dates from other people who are waiting.

That, that's the reasoning and so, they want to know, of course this is, you know how when you go to Court they always say well, how long is your case going to be and you always say twenty minutes in your District Court, you say, you know, two hours if you're in Circuit Court, you know. So, it's kind of the same idea. Then they give you a day, then the day's gone and so.

MR. ROSENBLATT: Then I would say we need two days because I, I just can't imagine with the way, with how many lawyers are involved, it --

ALJ: Yeah, that's the thing.

MR. ROSENBLATT: -- and there's more, at least half a day or more of continued Mr. McCann's case. We're definitely going to have rebuttal evidence.

ALJ: Yeah.

MR. ROSENBLATT: And we don't want to run out of time.

ALJ: Okay, all right. Well, should I send an e-mail then to Kristin just --

(RECORDING STOPS)

CERTIFICATE OF TRANSCRIBER

I hereby certify that the hearing in the matter of Greenspring Manor, 2310 W. Joppa Road, case numbers 08-0922 and 2021-0250-SPH, heard before the Office of Administrative Hearings for Baltimore County, December 7, 2022, were recorded by means of audiotape.

I further certify that, to the best of my knowledge and belief, page numbers 1 through 176 constitute a complete and accurate transcript of the proceedings as transcribed by me.

I further certify that I am neither a relative to nor an employee of any attorney or party herein, and that I have no interest in the outcome of this case.

In witness thereof, I have affixed my signature this 5th day of July 2023.

Christine R. Leary

Christine R. Leary

Transcriber

IN THE MATTER OF:

GREENSPRING MANOR
2310 W. Joppa Road

CASE NUMBERS: 08-0922 & 2021-0250-SPH

Hearing Date: October 28, 2022

Pursuant to Notice, the above-entitled hearing was held before the Office of Administrative Hearings for Baltimore County by remote access.

PRESIDING:

MAUREEN J. MURPHY, ADMINISTRATIVE LAW JUDGE

FOR THE PARTIES:

ADAM ROSENBLATT, ESQUIRE
CHRISTOPHER MUDD, ESQUIRE

MICHAEL MCCANN, ESQUIRE

PETER MAX ZIMMERMAN, PEOPLE'S COUNSEL
FOR BALTIMORE COUNTY

Christine R. Leary
crleary1@comcast.net

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(ON RECORD)

ALJ: Good morning, everyone. You're attending day five, case number 08-0922 and 2021-250-SPH. Property address 2310 West Joppa Road, combined development plan and zoning case for the project known as Greenspring Manor. For the record, Mr. Rosenblatt, we'll start with you. If you could just introduce yourself for the record?

MR. ROSENBLATT: Good morning, Adam Rosenblatt and Chris Mudd of Venable, LLP on behalf of the Developer/Petitioner.

ALJ: Mr. McCann?

MR. MCCANN: Good morning, yeah, good morning, everyone. Michael McCann on behalf of the Protestants.

MR. ZIMMERMAN: Peter Max Zimmerman, People's Counsel for Baltimore County.

ALJ: All right. We're continuing here, day five. We were in the middle of cross examination of Mr. McCann. But preliminarily, just so we have the exhibits straight. Mr. McCann introduced yesterday exhibit number thirty-five, which was the land, land use ITE manual. Is there any objection, Mr. Rosenblatt to that?

MR. ROSENBLATT: No objection.

ALJ: Okay. Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

ALJ: All right and I did get Mr. Zimmerman's

corrected exhibit yesterday with the, in regard to the math issue. But we did not receive the e-mail for the Developer, e-mail is for exhibit number thirty. This was an e-mail from Mr. Filsinger dated January of 2021. So, I just wanted to --

MR. ROSENBLATT: Judge, I, sorry, Judge.

ALJ: Yep.

MR. ROSENBLATT: I think I still need to talk, excuse me, with Mr. McCann. I forwarded what I had, which is a pdf by my engineer, of the actual e-mail that was read into the record. But Mr. McCann had said that he wanted the chain that preceded that to be part of the exhibit. I, I just had asked if you could just forward that to me, I'll look at it right away and we'll, you know, we'll see.

MR. MCCANN: I have, I should have done that already. I will do that, that's okay.

MR. ROSENBLATT: No problem.

ALJ: That's fine.

MR. ROSENBLATT: So, it, it will be Exhibit 30, we just need to agree on what the extent of it is.

MR. MCCANN: And maybe we can talk about it during the break. I'll send it to Adam --

MR. ROSENBLATT: Sounds good.

MR. MCCANN: Yeah.

ALJ: Yeah, that's fine. I just wanted to make sure we were all onboard with what exhibits were sort of lingering

out there.

MR. MCCANN: Yep.

ALJ: Okay. So, we are back. Mr. Driban.

MR. MCCANN: Yes.

ALJ: He's here. You're still under oath, we swore you in yesterday and so, Mr. McCann was in the middle of his cross and we'll let you continue. And I'll give you the presenter token in case you need it.

MR. MCCANN: Okay, great. Okay. Good morning, again, Mr. Driban.

MR. DRIBAN: Good morning, Mr. McCann.

MR. MCCANN: Okay. So, where we left off, just to refresh your recollection, everybody's recollection was with the levels of service for, under the CLV and HCM methodologies as reflected in Developer's Exhibit 25. And just to recap that really quickly.

There were, for the a.m. peak hour, levels of service under the CLV methodology, the only improvement in level of service was for the a.m. peak hour, that is, it went from E to under existing conditions to D, under post-development conditions with the road improvements, correct?

MR. DRIBAN: That's the only change in the letter grade, yes.

MR. MCCANN: Okay and I know you're, would much rather talk about the mitigation rather than levels of service,

but we'll get there. And then, so in other words, for the evening peak hour under the CLV methodology, and Ill blow it up again, the level of service under existing conditions was D, under post-development conditions with the road improvements, the level of service remains a D, correct?

MR. DRIBAN: Yes.

MR. MCCANN: And then, under the HCM methodology, the level of service for both the a.m. and peak hour existing conditions was D, under post-development conditions with the road improvements, the level of service remains a D, correct?

MR. DRIBAN: Correct.

MR. MCCANN: Okay and the level of service also doesn't change under either methodology for Falls Road and Greenspring Valley, correct?

MR. DRIBAN: That is correct.

MR. MCCANN: And then, you don't have on here Falls Road and Seminary, which is the other failing intersection. But I assume the level of service under either the CLV or the HCM does not change for that intersection as well, is that correct?

MR. DRIBAN: That was not part of the scope of our study, so I can't speak to that.

MR. MCCANN: Okay. So, let's talk about, I know what you want to talk about, and that is the mitigation, which is this last column. And you kept on using the term, I, I jotted

it down, substantially improving. That is the road improvements are substantially improving the traffic conditions and you, you mentioned these percentages.

Hopefully this is large enough that everybody can see them. This is in the righthand column on page sixteen for the CLV methodology, where we talk about mitigation as a result of proposed improvements. Do you recall that testimony on direct, Mr. Driban?

MR. DRIBAN: Yes.

MR. MCCANN: Okay. So, this, this nine hundred and thirty-one percent, which certainly sounds like a, a, you know, a staggering number, I just want to make clear what that is. But that is actually, is really a comparison of, I know I wasn't doing a good job of highlighting yesterday. Really a comparison of post-development conditions with post-development conditions with the road improvements, right? In other words, these two numbers, fifteen forty-nine and fourteen twenty-eight. That's the, that's what this nine hundred thirty-one percent is, correct?

MR. DRIBAN: The nine hundred thirty-one is, percent, is the comparison of the site's impact, which is the increase in CLV from background to total. So, fifteen thirty-six, to fifteen forty-nine. So, we add thirteen critical lane volumes, trips to the intersection versus one hundred twenty-one CLVs that are mitigated, that, which is the --

MR. MCCANN: Well, --

MR. DRIBAN: -- change from fifteen forty-nine to fourteen twenty-eight.

MR. MCCANN: Right, what I just highlighted --

MR. DRIBAN: Well, the --

MR. MCCANN: -- the fifteen forty-nine --

MR. DRIBAN: It also includes the fifteen thirty-six.

MR. MCCANN: Well, yeah, by definition, total inclusive background.

MR. DRIBAN: The, what is being measured, so that, if you look to the column to the right of the fifteen forty-nine, that number is thirteen --

MR. MCCANN: I know that. Mr. Driban, can you just answer my question. I know where we're headed --

MR. ROSENBLATT: No, no, no. He, these are not yes and no questions. He's answering it in his own words. He does not have to agree with --

MR. MCCANN: Well, I --

ALJ: Okay, understood. Let, let me get him, let me get him to answer the, go ahead, Mr. Driban. What were you going to say? Thirteen something?

MR. DRIBAN: Well, he's asking, the question as I understood it is, is, is this a direct, specifically a comparison of the number, the total number that he's highlighted, which is fifteen forty-nine and the fourteen

twenty-eight, and the answer is no. There's more to it than that. It's a comparison of the change from background. So, if you highlight fifteen thirty-six --

MR. MCCANN: I, I, okay, I'm sorry, go ahead.

MR. DRIBAN: -- if you highlight that number, the comparison, the nine hundred and thirty-one percent is the change from background to total, which is thirteen CLVs. And then, the change from total to total with improvements. So, you, so there's a number that, that is part of the comparison that you haven't, that you're not including.

MR. MCCANN: I, I, I skipped over that step and I shouldn't have highlighted those two numbers. What I, what I, what this is really is, is a comparison of these two numbers. That is, the CLV impact under total post-development conditions without the road improvements and total post-development conditions with the road improvements.

MR. DRIBAN: Yes.

MR. MCCANN: Okay. That, I skipped over, and I thank you for that. So, in other words, what, what you did here is, essentially, you took the hundred, this is a, a percentage of how much of the impact, of the impact you're mitigating, right? In other words, you divided a hundred twenty-one by thirteen and got nine thirty-one?

MR. DRIBAN: Correct.

MR. MCCANN: Okay. So, you're not, it's not a

comparison of existing, or even background, and post-development conditions, it's just a, the nine hundred thirty-one percent is just a, is, is a reflection of how much of the impact post-development you are mitigating with these road improvements.

MR. DRIBAN: Correct.

MR. MCCANN: Okay. So, you know, on that point, the numbers aren't as big, but your, your charts certainly seem to acknowledge that for the other intersections, the CLV impact is a positive number.

Meaning, regardless of the, the size of the number, the situation post-development is, even though there's no road improvements, for instance, at Greenspring Valley, this number three is a positive number. So, that actually the situation in technical, I'm sorry for doing that, the situation in technical terms at Greenspring Valley, is going to get worse, correct?

MR. DRIBAN: Part of the CLV methodology with, with the study, the impact is three from the development.

MR. MCCANN: Right, worse. The number is, okay, and the same with respect to the --

ALJ: Hold on, Mr., Mr. Driban, is it worse? Did you say yes?

MR. DRIBAN: Per the CLV methodology it is.

ALJ: Okay. Go ahead.

MR. DRIBAN: The, the CLV is one of the methodologies

that was evaluated.

ALJ: Right.

MR. MCCANN: And then, likewise, for the p.m. peak hour, the situation at Greenspring Valley is worse. In other words, it hasn't been mitigated, but rather, is worse, correct?

MR. DRIBAN: Per CLV, yes.

MR. MCCANN: Okay and going to HCM, which we'll get into in more detail about, the, we have these same percentages, but the, the post-condition situation at Greenspring Valley is technically worse, correct?

MR. DRIBAN: For HCM, yes.

MR. MCCANN: And then, for the p.m., it's not worse apparently, correct?

MR. DRIBAN: That's correct.

MR. MCCANN: Okay, all right. One thing I noticed about this, the HCM methodology, I mean, assuming, all this assumes that the CLV and the HCM are relevant to this entire discussion, but let's, we can speak hypothetically, I guess.

If we apply the HCM methodology, what I noticed about these levels of service D, is these are, this does not account for the individual turning movements, correct? This is a, an overall level of service for the intersection for all of its turning movements, correct?

MR. DRIBAN: Yes, that's how the, the intersection level of service is quantified as an overall level of service.

MR. MCCANN: Okay. So, if we were to go to the details for this chart, which you didn't discuss during direct examination, so this would be, for the HCM methodology, we go to page forty-nine of the report, which again, is Developer's Exhibit 25. This particular page reflects the details by turning movement for Maryland, I'm sorry, Falls Road and Joppa under a.m. peak hour existing conditions, correct?

MR. DRIBAN: Correct, yes.

MR. MCCANN: And then, if we go to page fifty-five of Exhibit 25, we can see the HCM methodology for Falls and Joppa a.m. peak hour total with proposed new improvements, correct?

MR. DRIBAN: Correct.

MR. MCCANN: Okay, all right. So, I prepared a separate exhibit with those two pages. And this will be, Your Honor, this will be Exhibit 36. So, again, this, the first, it's two pages, this Exhibit 36 is the two pages I just referenced, pages forty-nine and fifty-five of Developer's twenty-five.

And what this reflects for all the movements, does it not, and I'll blow it up, Mr. Driban, it, it reflects levels of service, as you can see my pointer, I got a brand new big blue pointer for everybody's benefit. I was probably driving people crazy yesterday. But the, the level of service this is a.m. existing conditions. The level of service for each turning movement is identified across the board here, correct?

MR. DRIBAN: That is correct, yep.

MR. MCCANN: And then, the average of those individual turning movements, which, by the way, include F turning movements, correct?

MR. DRIBAN: It does, yep.

MR. MCCANN: Under the HCM methodology, right?

MR. DRIBAN: Yes.

MR. MCCANN: The average of those turning movements is D, that's the number down here on the bottom of the page, first page of this exhibit, where it says HCM 2000 level of service. That's where we get the D from in the document, in the pages we just looked at, correct?

MR. DRIBAN: Yes.

MR. MCCANN: And then, so the line I just asked you about, level of service, with the individual levels of service for the turning movements, below that is a, an approach LOS, what does that line indicate?

MR. DRIBAN: So, that's --

MR. MCCANN: Is that part, is that part of the averaging or not?

MR. DRIBAN: So, that's the average of the individual approaches at the, on that, the individual movements on that approach. So, if you think about it, if you think about the, the top line that you showed me, sorry, --

MR. MCCANN: Yeah.

MR. DRIBAN: -- first line you have highlights on, the blue circle that says level of service.

MR. MCCANN: Yeah.

MR. DRIBAN: Those are the individual movements. So, for westbound, you might have right turn through movement, left turn. Those average out into the approach level of service for that approach.

MR. MCCANN: Got it. Got it. So, for, in the case of, and I'll just circle it and maybe leave this as part of the exhibit, if I circle those two rows, the level of service for two of those turning movements is F and one's an E, but it averages out to an E, correct?

MR. DRIBAN: That's right.

MR. MCCANN: Okay, all right. And then likewise, on the p.m., I'm sorry, the a.m. total with proposed new improvements, that's page two of this Exhibit 36, we again have, and this is post-development with new improvements, we have levels of service, right? This line I'm circling, correct?

MR. DRIBAN: Correct, yep.

MR. MCCANN: And they're along this, this row here. So, post-development for, with the improved conditions for two of the turning movements, we have levels of service F, correct?

MR. DRIBAN: That is correct, yeah.

MR. MCCANN: In fact, we also have levels of service

E, you know, several of them, which under the HCM methodology would also be unacceptable, correct?

MR. DRIBAN: That is correct.

MR. MCCANN: Okay. But the average of all those, as you've pointed out on, or as this reflects, under HCM 2000 level of service is D, correct?

MR. DRIBAN: Correct.

MR. MCCANN: Okay, all right. The other thing I wanted to look at was, there's another column, I'll go to the first page of this Exhibit 36. There is, there is a row, just above level of service which says delay.

MR. DRIBAN: Um hm.

MR. MCCANN: (inaudible) these numbers here, for instance, 79.0, which I'll circle in red, that is the delay in seconds at that turning movement, correct?

MR. DRIBAN: Average delay per vehicle in seconds at that turning movement, yes.

MR. MCCANN: Yeah, and this is under existing conditions, correct?

MR. DRIBAN: Yes.

MR. MCCANN: Okay and I'll just circle another one, which is 62.6 seconds delay per vehicle for a.m. existing conditions and that's the westbound right hand turn, right?

MR. DRIBAN: Correct.

MR. MCCANN: Okay. So, I just wanted to compare

those two numbers in particular with post-development conditions with the road improvements. And if we go down to those, that very same row, I already have it circled. Actually, let me go back up, I'm sorry. On the first page of this Exhibit 36 under A, existing conditions, I also wanted to circle for the record in red 29.8 in the delay row for the southbound through lane on Falls, correct?

MR. DRIBAN: Correct.

MR. MCCANN: Okay. So, the, if we take those three numbers and look at what they are post-conditions with the proposed improvements, would you agree with me that the delay for those turning movements actually increases. So, in other words, under post-conditions with road improvements, the delay for this, for the eastbound lane goes from 79.0 seconds to 92.1 for each vehicle, correct?

MR. DRIBAN: For that movement, yes.

MR. MCCANN: Okay and then for the westbound right hand turn lane under A, existing conditions, the delay per vehicle goes from 62.6 to 67.3 seconds, correct?

MR. DRIBAN: That is correct.

MR. MCCANN: Okay and I'll circle that in red as well. And then, for the southbound through lane on Falls Road goes from, a.m. existing conditions, goes from 29.8 seconds per vehicle delay to 33.5 seconds delay per vehicle under post-conditions with road improvements, correct?

MR. DRIBAN: Yes.

MR. MCCANN: Okay. Okay and let's look, the same thing for the, for the p.m. and I won't go through, excuse that marking, I won't go through all of the same questions. But I did want to point out in terms of delay, blow it up a little bit. So, the first page in this exhibit, which would be thirty-seven, this would be p.m. existing conditions for Falls and Joppa, correct?

MR. DRIBAN: Correct.

MR. MCCANN: And the --

ALJ: Wait a minute, which, which page of Developer's twenty-five are you now on?

MR. MCCANN: Now I'm on page fifty-seven, I'm sorry, I should have --

ALJ: Fifty-seven, yep. And I just want to make sure we're, we got the right page numbers. All right. So, you're on page fifty-seven of Developer's twenty-five, but this is going to become thirty-seven of your exhibits, Protestant's exhibits.

MR. MCCANN: Yeah, in fact, it's, it's two pages, Your Honor, it's page fifty-seven and page sixty-three of Developer's twenty-five.

ALJ: Okay, yep. And you're going to print these with the colored highlighting, right, when you submit it?

MR. MCCANN: Yes.

ALJ: Okay. Yeah, that actually, yeah, if you could please. Thank you.

MR. MCCANN: And, yeah, and I can reprint this without this circle and x. I, now that I have a copy from the Developer it'll be, of the traffic study, I don't have, you know, I didn't have it before so.

ALJ: Yeah, well, that's fine. No, I just wanted to make sure you submitted it with the color copy, okay.

MR. MCCANN: Yeah. So, I just wanted to compare the delay under those two conditions, the existing versus post-development with road improvements and, just in a couple respects. And that is, let's see, westbound right hand turn lane, if I could draw in red the delay according to this chart is 59.9 seconds per vehicle under existing conditions. And under post-development with road improvement conditions that number is 63.8 seconds per vehicle, correct, Mr. Driban?

MR. DRIBAN: That's correct.

MR. MCCANN: And then, going back up to the first page under a.m. existing conditions, the delay per vehicle on the, bear with me one second. On the northbound lane of Falls is 23.2 seconds, correct?

MR. DRIBAN: Northbound left turns, yes.

MR. MCCANN: Oh, yes, thank you. And then, under post-development with road improvements, that number is 45.8 seconds per vehicle, correct?

MR. DRIBAN: That is correct.

MR. MCCANN: Okay and like the, the a.m. peak hour levels of service that we looked at, there are, there are individual turning movements, both under the existing conditions and the post-development conditions with road improvements that are either an F or an E, correct?

MR. DRIBAN: Yes.

MR. MCCANN: Okay and I'm circling those on the first page of this exhibit. On the second page of this exhibit, post-development and I'm also circling the Fs and Es, which are levels of service for those individual turning movements, correct?

MR. DRIBAN: Yes.

MR. MCCANN: Okay. I'm sure this is driving everybody crazy. All right. With that, Your Honor, I will move these to exhibits, thirty-six and thirty-seven, into evidence.

ALJ: Any objection, Mr. Rosenblatt?

MR. ROSENBLATT: Yeah, I, I just question, are, are the exhibits going to have these markings on them --

ALJ: Yes.

MR. MCCANN: (inaudible).

MR. ROSENBLATT: Okay and then (inaudible) no objection.

ALJ: All right. Mr. Zimmerman?

MR. ZIMMERMAN: No objection. Can I ask is thirty-six a.m. and thirty-seven p.m.? I, I just was trying to follow it.

MR. MCCANN: Yes.

MR. ZIMMERMAN: Okay. Yeah, yeah. I'm fine with these exhibits.

ALJ: Okay, thank you.

MR. MCCANN: Okay. You talked about the, the road improvements, and as I understand it, Mr. Driban, the, the design for those road improvements has not yet been approved by SHA as we sit here today, correct?

MR. DRIBAN: The --

MR. MCCANN: Final design.

MR. DRIBAN: -- the, the design, the final design plans have not been approved. The, the, what will be constructed there has been approved.

MR. MCCANN: What's the difference between what's--

MR. DRIBAN: So, there's two, there's two stages to the SHA process. The first step is they have to review and approve what you're proposing and confirm that they agree with that. We have agreement on what's going to be built. Then there's the, the details of getting final design that conforms to SHA standards in order to obtain an access permit.

So, it is in the final design process. They've already agreed that it can be constructed, it's just a matter

of, you know, getting plans that a contractor can, can construct and conform to SHA standards.

MR. MCCANN: So, you said you anticipate approval, correct, final approval?

MR. DRIBAN: On the second half of that, yes.

MR. MCCANN: Okay.

MR. DRIBAN: The final design piece.

MR. MCCANN: You also said that developers, in your experience, typically wait until the development approval process is completed, but this developer is, in your words, proceeding at its own risk, is that correct?

MR. DRIBAN: Yes.

MR. MCCANN: Okay. So, you know, it's theoretically possible or not impossible that the design of these road improvements, which are reflected in, in Developer's Exhibit, bear with me one second. I forget what number it is, but one of the Developer's exhibits, could, could change to some extent.

MR. DRIBAN: No, SHA has already agreed with, with the configuration and the final design and the, and the detailed concept of what lanes will be there. What could change is whether, you know, a curb is here or six inches this way or the drainage structures, if any of those, those details that are part of SHA's standards and requirements of the, of the actual design of the, for, for contract construction,

that's what could change. The improvement itself is, is approved and that's what will be ultimately constructed there in terms of the lanes.

MR. MCCANN: Well, yeah, when you say improvements itself, do you mean just the, just the, not the physical, but the, the concept of having x number of lanes through, through, that's been proposed.

MR. DRIBAN: The addition, yes, the additional lanes that, that are, that have been proposed are approved by SHA.

MR. MCCANN: Well, I, I'm just not certain how you're able to say that it couldn't change. How do you know that for certain? That is, that the, either not, not, not the concept, well, I'll move on, that's fine. So, along those same lines, you talked about maybe some of the details maybe change. Let me just pull up that exhibit, the road improvements. Excuse me. And this is Developer's Exhibit 16. Do you see that, Mr. Driban?

MR. DRIBAN: Yes.

MR. MCCANN: Okay and I know this is a concept plan but it, it certainly looks to me, just based on this and, and particularly in addition to what you just suggested, is that there are going to be, there's going to need to be some physical expansion of the road out there. In other words, you're not just taking the existing roadway and putting some striping on it, is that right?

MR. DRIBAN: Right, I believe there are some, some pavement widening and some curbs. You can see, for instance, in the, next to where it says West Joppa Road, yep, where your arrow is, you know, --

MR. MCCANN: Yeah.

MR. DRIBAN: -- there will be some, there will be some impacts to that channelized island, yes.

MR. MCCANN: Okay and then, are you also familiar with changes that are going to be made, or proposed anyway, at the entrance to the site, in terms of installing acceleration, deceleration lanes and widening Joppa Road at that location?

MR. DRIBAN: Yes.

MR. MCCANN: Okay. Did you, did you conduct any analysis or investigation into the delay, we just talked about delay with the, in connection with the HCM methodology, that will occur while all of this work is being done?

MR. DRIBAN: No.

MR. MCCANN: Okay. Would you agree with me, given the current state of the, the intersection, and its, the nearby intersections, that the improvements that are proposed in this exhibit, that will be proposed in the final design and those that will be proposed at the entrance, will have a significant effect on traffic for however long that takes. I know you may not know how long that takes. But would you agree with that?

MR. DRIBAN: I don’t know how significant or

insignificant it might be. I mean, any construction, any improvement project has, has impacts during construction, that's, that's the nature of, of, of roadway improvements.

MR. MCCANN: But, but sitting here today you don't know how long that, that it'll take? All those improvements?

MR. DRIBAN: I haven't, we haven't looked into that. I, that's not my area of expertise. I mean, it's just not something we've looked into on this project.

MR. MCCANN: Okay, all right. Let's, let's move on to the, I think what you called corridor study, where you looked at the, the travel speeds through the intersections. Do you recall that testimony?

MR. DRIBAN: Yes.

MR. MCCANN: Okay and I, as I understood it, you were able to perform that study because you obtained from SHA, and I forget the name of the program, simulations, Simfast, or what's the name of it again, Mr. Driban?

MR. DRIBAN: Yeah, the, the program that we use is called Synchro and there's a, a kind of secondary piece of it that does those simulations called Simtraffic (phonetic). They, they go together.

MR. MCCANN: Okay.

MR. DRIBAN: Synchro is S-Y-N-C-H-R-O, I don't know if that matters, but.

MR. MCCANN: Yep. And Simtraffic is one word, right?

MR. DRIBAN: You got it, yep.

MR. MCCANN: Okay. So, those are literally, for non-computer literate people like me, those are just programs that State Highway has and that you, you had access to that, where you just input data and, I guess, I assume, traffic volumes, etcetera, and what you can actually visualize and see are, is a video of how traffic is moving through these intersections. Is that part of, what can be accomplished with these programs?

MR. DRIBAN: I think that's a, a bit of simplification. I mean, the, the video is based on a detailed traffic simulation model that's, that's built into the program. And, and these programs are the industry standard for this type of analysis. There, there are certainly others, but Synchro and Simtraffic are the most commonly utilized.

MR. MCCANN: Okay. But the concept I just described, is that, that is, you can actually see cars at the intersection, moving through in real time?

MR. DRIBAN: It is an output from it, yes. That's, that's not, I mean, the video is, is not necessarily the primary goal of doing that analysis. But it is, it is one of the outputs.

MR. MCCANN: Well, you say it's not primary, but I, I mean, I think everybody on this, in this hearing would, would love to see those videos. Why, why haven't they been produced and why aren't they, why weren't they shown?

MR. DRIBAN: It, it --

MR. ROSENBLATT: Objection, objection. We can make our case. I don't think that's an appropriate question.

MR. MCCANN: All right.

ALJ: Okay. Well, so, I mean, just for the record --

MR. MCCANN: Let me ask it this way, I'll (inaudible).

ALJ: Hold on. Yeah, okay. Just rephrase the question, thank you.

MR. MCCANN: Is there, is there a reason why you did not, during your testimony, present a video simulation of the results of that analysis?

MR. DRIBAN: We, we conducted the Synchro and Simtraffic analysis at the request of SHA to look at the corridor operations. The outputs from the Simtraffic model are what SHA and the agencies are what, you know, really the data that is important.

It's, it's the actual, again, it's based on car following parameters, it's based on the volumes of traffic, the traffic control devices. It considers, you know, the whole gamut of, of, of traffic operations. And so, when we, when we submitted our, our study that was the information that was provided to them.

The videos, again, they're, you know, they're, they're sort of a secondary thing that, you know, the public

may, may want to look at. But it's not, the actual data is in the, is in the outputs and the information that we conveyed to SHA.

MR. MCCANN: Okay and you mentioned outputs, but I think you also just mentioned some inputs. Car following parameter, what is that?

MR. DRIBAN: So, I mean, the, the, when I talk about Simtraffic, so there's, let me kind of step back, right? So, Synchro is the, is the HCM piece of the modelings, of the software. So, the HCM is a set of equations. We've just gone into great detail on some of the outputs and the numbers from that.

And, you know, the inputs to the HCM and to the Synchro piece are lane configurations, traffic volumes, you know, traffic controls, whether there's a roundabout, a stop sign, a traffic signal, the timing of that signal, the area type, you know, whether it's a central business district or, or not.

You know, some of the, those are some of the out, the inputs that go in. The Simtraffic piece takes those inputs and it runs them through a, a, a research based model, traffic model, that has default, you know, car following parameters, it has, you know, spacing between typical vehicles traveling at a given speed, you know, it's, it's, it's based on research that's been conducted, you know, and used to develop this, this

car, this vehicular simulation model.

MR. MCCANN: Yeah. No, I appreciate that, that's, that's helpful. But what I gather from everything you just said is that these inputs, or strike that. There is, given the type of information you just described, there are margins of error in that program, correct?

MR. DRIBAN: It's a model. There are parameters that SHA prescribes for running the model wherein we, we run what's, what's called five runs. So, we don't just do one simulation and say, you know, this is, this is the result of the simulation.

We run the same simulation multiple times and, you know, to, and then average those, those runs to make sure that we have, you know, given that it's a model and to your point, that, that we've done our best to sort of minimize the, the margin of error of any, you know, one run.

MR. MCCANN: Yeah, yeah, I understand that. But at the end of the day, it's a model. It's, it's a projection, correct?

MR. DRIBAN: Sure, yep.

MR. MCCANN: For instance, you know, you said the inputs are land configuration, traffic volume. Well, first of all, traffic volume itself is a projection. You're, you're, I assume the traffic volume that's inputted into this program are the trip generation numbers from, that we looked at yesterday,

correct?

MR. DRIBAN: Yep.

MR. MCCANN: And that, and you, and you said timing, I assume by that you meant the timing of the lights, correct?

MR. DRIBAN: That's correct.

MR. MCCANN: Okay. Did you, you talked earlier about the timing of the lights perhaps changing if SHA, it's up to SHA. But what, what timing, the timing that was inputted into the program, was that the current, the way in which the lights are currently timed or is that some hypothetical timing that SHA may approve?

MR. DRIBAN: Yeah, so, for existing, we obtain the files from SHA, so it's their existing timing out there. And then, for the total with improvements, Synchro, again, this is the industry standard program that's utilized, Synchro has the ability to optimize timing based on changes in lane configurations or volumes or things that might occur.

And so, and that's what SHA typically uses to, to, to develop their new timings. And so, we, the timings were optimized under the, the total with improvements condition to reflect the fact that there are substantial changes being proposed to the lane configurations.

MR. MCCANN: Okay and I think you, you said something about the area, there's an input for area, where you could, I guess you could put in the type of locality, whether it's a

business district or a rural area, that type of thing?

MR. DRIBAN: That's one of the inputs, yep.

MR. MCCANN: Okay. But getting back to lane configuration, the, does, am I correct that, do you mean by that specifically here, in this case, the, the Falls Road corridor, the East and West Joppa corridor and the Greenspring Valley and Station Road, are those the, the, is that the lane configuration that was used?

MR. DRIBAN: The lane configuration refers to the specific number and type of lanes on each approach. So, Synchro uses a, a link and node, a link and node model --

MR. MCCANN: Yeah.

MR. MCCANN: The node would be the intersection, right? So, kind of the, the striped area and, you know, the center of it, and the links are incoming roads. So, you know, Falls Road, northbound and southbound, Joppa Road and then the other, the other side of Maryland 25. And the lane configuration, just using, you know, the, the eastbound, which is the bottom sort of page, page down on this.

MR. MCCANN: Yeah.

MR. DRIBAN: The lane configuration would be one left turn lane and one shared left through right turn lane. So, it's, it's accounting for the, the specific individual lanes on each approach.

MR. MCCANN: All right and when you say approach, I

know that's a technical term, that's a, that's a, a lighted intersection, correct?

MR. DRIBAN: Approach just means a leg, a leg of the intersection, coming into the intersection. So, most typical intersection has, is, is a four leg intersection, would have four approaches. In this case, there's a southbound Falls Road approach, northbound Falls Road approach, westbound Joppa Road approach and then the eastbound approach.

You know, you can have other configurations, but an approach just means a, a road approaching an intersection, coming, coming into an intersection.

MR. MCCANN: All right. So, I assume then that the, the program, I keep calling it a program, I don't know if that's the right word or not. But program doesn't account for any other public accesses, you know, along the corridor, correct?

MR. DRIBAN: I mean, they're not analyzed with level of service.

MR. MCCANN: Yeah, that's why they're not. They're not part of the program because there's, they're not part of the level of service analysis, right?

MR. DRIBAN: Right.

MR. MCCANN: Okay. So, for instance, let me show you this exhibit, which will be thirty-eight. This is an aerial photograph of the area and I have, I'll print this as it is.

But can you see at the bottom, do you recognize West Joppa Road here, and Falls Road, do you recognize what this is of?

MR. DRIBAN: Yes.

MR. MCCANN: So, I, I was counting the number of accesses onto Falls Road and Joppa along this corridor that are not at the intersections of Falls and Joppa or Falls and Greenspring or Falls and Seminary and you see there's one, I'll start at the bottom. Do you see there's one right here on Joppa as you approach the intersection?

MR. DRIBAN: Yes.

MR. MCCANN: You see that?

ALJ: Can, can you direct, oh, there's your cursor.

MR. MCCANN: Yeah, I've got my, my blue cursor.

ALJ: I see it. Okay, so (inaudible) wanted to mark it, but.

MR. MCCANN: Yeah.

ALJ: I see the cursor now.

MR. MCCANN: Yeah. That I don't know how to do, Judge. (inaudible) describing it maybe.

ALJ: Actually, you're right. I don't know how you can do it on this. You're right, you can't. I guess, unless you made this a pdf. This is actually your screen, isn't it?

MR. MCCANN: Yeah, let me, I actually have a pdf, so let me use that instead.

ALJ: It's fine, you can use what you were using. I,

I wasn't trying to make it difficult. I just didn't know if you wanted to, I could see your cursor after you did it. But I didn't know if you wanted to mark the photo.

MR. MCCANN: I'll just do a better job describing it. But so the, and then, if we get onto Falls Road, just north of the intersection with Joppa, there's an entrance right here where my cursor is and that's to a convenience store and gas station, correct, Mr. Driban?

MR. DRIBAN: I'm not seeing your screen share.

MR. MCCANN: Ah, okay. I guess that helps.

MR. ZIMMERMAN: Is this an exhibit?

MR. MCCANN: It is, yeah. This will be thirty-eight.

ALJ: It will be an exhibit.

MR. MCCANN: Yes. So, getting back to where I, what I was just describing, just north of the intersection with Joppa on the east side of Falls Road there is an entrance and actually an exit to a convenience store and gas station, correct, where my cursor is?

MR. DRIBAN: Correct.

MR. MCCANN: And then, past those two entrances, the entrance and the exit, just to the north, just to the north of that, there is an entrance on the east side of Falls Road that would take you, for instance, to a liquor store, his name is escaping me, as well as to Greenspring Station itself, correct?

MR. DRIBAN: Correct.

MR. MCCANN: Okay and if you go farther up, you get to the intersection with Greenspring Valley. There is, of course, Station Drive there. Just past Station Drive on the east side of Falls Road there is an access point to, to retail shops, correct, as well as the Greenspring Station?

MR. DRIBAN: Correct.

MR. MCCANN: And then, just past that there's an access point on the east side of Falls Road north of that to, to medical and other offices?

MR. DRIBAN: Correct.

MR. MCCANN: Okay and then, I guess the rest of the exhibit, you know, speaks for itself. But, okay and I'll, I'll mark that as Exhibit 38 and move that into evidence.

ALJ: Mr. Rosenblatt, any objection?

MR. ROSENBLATT: No objection.

ALJ: Thank you. Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

ALJ: Thank you.

MR. MCCANN: So, you, in addition to the program you just spoke about and the fact that it doesn't actually account for these public accesses to, to those retail, etcetera, am I correct that the HCM methodology and the CLV methodologies that we spoke about, have spoken about, also do not account for these multiple access points mainly as I think you indicated they, because they, they, they're not in, part of the level of

service analysis, is that correct?

MR. DRIBAN: Yeah, they, they don't account for them, I mean, it's, it's, it has to do with not being part of the level of service analysis, but also, you know, the net effect of most driveways is, is, you know, is negligible. So, it's not, you know, the, the main thing, looking at these traffic models is the intersections.

MR. MCCANN: Yeah.

MR. DRIBAN: And that's, that's what those models CLV, HCM are designed to do.

MR. MCCANN: Yeah, but here, have you spent any time in this area, Mr. Driban?

MR. DRIBAN: I have, yes.

MR. MCCANN: Do you live in this area?

MR. DRIBAN: I don't live in this area.

MR. MCCANN: Where do you live?

MR. DRIBAN: I live in Baltimore City.

MR. MCCANN: Okay. Do you, when I ask whether you spend any time in this area, do you, do you have kids that go to school nearby, near this intersection?

MR. DRIBAN: I don't.

MR. MCCANN: Do you ever shop or visit any of the retail, medical or business offices at Greenspring Station?

MR. DRIBAN: I have on occasion.

MR. MCCANN: Yeah. So, these, these aren't, these

accesses that I just described, and there's others reflected in this exhibit, they're not, they're not negligible. Those are significant acc, those, those are access points with a significant amount of traffic, --

ALJ: Is that a question?

MR. MCCANN: -- isn't that true?

ALJ: Are you asking him --

MR. MCCANN: Question mark, question mark.

ALJ: Question mark. Mr. Driban, that was a question.

MR. DRIBAN: They are, I mean, so we, when I say I spent time here, there's, the time I spent in my personal life, but also as part of this analysis, we spent a lot of time, you know, the origin and destination study, collecting data, driving the corridor, you know, understanding the, the, the roadway network and there's certainly traffic in and out of those driveways, you know, especially at different, you know, different times of the day.

You see traffic coming in and out of the medical park, the gas station. But in terms of the net effect of that traffic on the roadways, you know, you've got thousands of vehicles on Falls Road and, you know, at most, you know, tens or maybe a hundred vehicles from, from any of those driveways. I would not call that substantial, but.

MR. MCCANN: Do you see all the parking lots in this

exhibit, Mr. Driban?

MR. DRIBAN: I do.

MR. MCCANN: Do you know how many, do you have any idea of how many either restaurants, retail shops, business offices or medical offices there are at Greenspring Valley on this right-hand side or east side of Falls Road alone? Do you know how many establishments there are roughly?

MR. DRIBAN: I don't have specific numbers of that.

MR. MCCANN: Do you know how many parking spaces there are at Greenspring Station for all of those establishments that I just described?

MR. DRIBAN: I'm not aware of that.

MR. MCCANN: So, for, so getting back to trip generation, when we looked at those trip generation numbers, which are the numbers that are used in your modeling, those are vehicles that are leaving the proposed, leaving or coming to the proposed development, correct?

MR. DRIBAN: The trip generation piece is specific to the development, yes.

MR. MCCANN: So, in other words, that, that trip generation, those trip generation numbers upon which, you know, you're modeling and even the Synchro and Simtraffic is, is based, does not account for a person who leaves their home at the proposed development in the morning and then spends time going in and out of, on one or more occasions, what, the

establishments at Greenspring Station are, at St. Paul's School, for instance, it doesn't account for all those new, well, I'll call them new trips, does it?

MR. DRIBAN: It does. It, I mean, it accounts for, it accounts for the, the movements that those vehicles make, you know, within that, within that peak hour. And, and the, and the other movements, I mean, the existing traffic from these developments is, is absolutely accounted for in the, in the, in the model by the existing counts that we take, you know, --

MR. MCCANN: (inaudible) I'm sorry, go ahead. I'm sorry.

MR. DRIBAN: It's okay.

MR. MCCANN: Yeah, so, I understand the traffic counts, those are actual counts, I'm talking about the trip generation numbers. You're telling me that if a person leaving one of the sixty homes in the proposed development were to leave, were to get gas at this gas station that we just described, so in and out of that entrance, go down and drop their child off at St. Paul's, in and out of that entrance, come back down south, go in and get some coffee at one of the retail establishments at Greenspring Station, you're telling me that the model, the trip generation numbers for those sixty homes, takes into consideration those four extra trips that I just described?

MR. DRIBAN: It doesn't account for the driveway trips, but it does account for the, the person leaving their home, making a, assuming in this case they're going to St. Paul's School, making a right onto Joppa, making a right onto Falls Road and going up to St. Paul's School.

If they do that and then come back for, you know, get, for coffee and come back southbound and make another trip through the area, then, within that one hour that we're looking at, then no, that would not be accounted for. But the, the initial movement of right turn onto Joppa, right turn onto Falls Road northbound through the intersections is accounted for.

MR. MCCANN: Yeah, well, you just mentioned peak hour, that's another thing. You know, the basis of your methodologies and the basis of the trip generation numbers are peak hours, correct?

MR. DRIBAN: That is the industry standard, yes.

MR. MCCANN: I, yeah, I understand the standard, but, so that wouldn't account for, I know it's projections anyway, but that wouldn't account for a mom or, mother or father, or a relative, attending a lacrosse game at St. Paul's at 3:00, right?

MR. DRIBAN: The idea behind capturing the peak hours is that you're getting the worst times on the road. And so, if you can, you know, review the impacts during those times and

mitigate those, then you've, you've captured it. And that's, again, that's the standard. No, it doesn't account for off peak, I mean, we don't specifically analyze off peak, off peak operations.

MR. MCCANN: Yeah, well, that's my point. You're, you're, and I understand you're looking at the worst hour. But you're not mitigating for traffic on, in any other hour of the day, even if it may be --

MR. DRIBAN: Well, the idea is that if the, if the improvements will mitigate the traffic during the worst hour, then they certainly mitigate the traffic during, during the better hours, so the off peak hours. That's, that's the point of looking at the, at the peak hours. That's why, that's why it's done that way.

MR. MCCANN: I understand, I understand. So, I'm sorry, I got distracted from the corridor study. But, as I understand it, what you used, or what was used for the simulations was average overall travel speed, right? That's a technical term?

MR. DRIBAN: That's one of the things we look at. I think the actual exhibit that was presented was the travel time, average travel time through the corridor.

MR. MCCANN: So, again, we're, we're, we're talking about averages, right?

MR. DRIBAN: Yeah, per, per vehicle average travel

time through the corridor.

MR. MCCANN: So, the, obviously by the, virtue of the fact it's an average, and by virtue of the fact it's a simulation, we're talking about, once again, projections, right? Right?

MR. DRIBAN: Modeled, yeah, modeled, modeled data.

MR. MCCANN: Yep, okay. And as, as I understand the averaging that's done for the corridor study, it's an averaging of vehicle speeds over the length of the highway for all vehicles acting as a group sort of, as, as opposed to individual vehicles, does that make sense?

MR. DRIBAN: Can you repeat the question?

MR. MCCANN: Yeah, let me, I'm not sure I can. So, maybe I'm, I should move on. So, when you use average speed for this simulation, well, strike that. Let me ask it this way. You didn't conduct a speed study, correct?

MR. DRIBAN: We did not.

MR. MCCANN: And what, what is a speed study?

MR. DRIBAN: A speed study would be driving from, you know, in this case, the corridor from one, one end of the corridor to the other end of the corridor and determining how long that takes over a number of, of runs, which would be a, a projection of the average, the average speed.

MR. MCCANN: So, in other words, and that's, that's a common thing in your industry, correct, speed studies?

MR. DRIBAN: It's, it's a tool that's used. I wouldn't say that it's, it's one of the more common ones. But certainly, there are, you know, there are, there are studies where it's conducted.

MR. MCCANN: So, it's just like a traffic count, that is, you have somebody sit in and observe and take measurements of travel speeds through the corridor, correct?

MR. DRIBAN: Sort of, yeah, I mean, it's, it's not just like a traffic count. A traffic count is conducted at a single intersection and someone is sitting there and, and just watching and counting the volumes. Those are conducted for every single traffic impact study in every, really every traffic study that's done.

A speed study involves somebody actually getting in their car and driving up and down the corridor. It's sort of a more interactive type of study. And it's, and it's not commonly conducted.

MR. MCCANN: Well, speed studies, my experience with speed studies is they're, they're often used when, in determining sight distance issues --

MR. DRIBAN: So, we're talking about two different kinds of speed studies. You're, you're right, Mr. McCann. So, so the speed study that you're talking about is, for sight distance, is going out and shooting radar and looking at, and looking at the, the speeds of the car, you know, like a police

officer would, looking at the speeds of the cars in that location --

MR. MCCANN: Yeah.

MR. DRIBAN: -- when, when we're talking about doing a corridor analysis and a speed study that would be conducted in conjunction with a corridor analysis, it is, is actually, is what's called a floating car speed study.

MR. MCCANN: Yeah.

MR. DRIBAN: So, you're, you're actually, you, you're driving up, because again, in this case, we're, the metric that we used was travel time, which is related to speeds, but really what you want to know is, you know, how long does it take to get through the corridor and what is the, sort of average speed, based on that. So, you know, it's a, it's a different type of speed study that we would use for this type of analysis, where you're actually in a car driving down the corridor in order to look at travel times.

MR. MCCANN: Okay. But you didn't do that here. You, you did, you took some industry average of some sort or?

MR. DRIBAN: We used the model.

MR. MCCANN: Okay.

MR. DRIBAN: We relied on the model.

MR. MCCANN: Bear with me one second. So, let's, let's talk about the special variance. I guess first, you would agree with me, would you not, that the issue of the

special variance under the zoning regulations is a distinct issue from whether the traffic impact study should or should not be improved, approved under the development regulations, would you agree with that?

MR. DRIBAN: I think they're, I think they're part and parcel. I mean, yeah, they're, they're governed by distinct regulations. But the traffic impact study is sort of a, is certainly a piece of the, the special variance requirements. I mean, it gets into the trip generation and some of the other, the other issues, under the special variance.

MR. MCCANN: I know you've combined the two, but I'm asking, my question is, well, let me ask it this way. Your conclusion, apparently, with respect to the special variance standards is that, based on the CLV and the HCM methodologies and on your corridor study, that the impact would be less than, than the district standard, correct? That's your test, that's your conclusion, essentially, is it not?

MR. DRIBAN: That was our, I mean, the CLV and HCM, if you're reading the conclusion from the traffic impact study, that was the conclusion at the time. There, there was a lot of work that happened beyond that, where we, you know, we coordinated with the County to make sure that we had met the special variance standard. And there were some other, you know, pieces of, of data that were included in that.

MR. MCCANN: Yeah, when you said --

MR. DRIBAN: Like, like the corridor, like the corridor analysis and coordination with SHA for, for signal timing.

MR. MCCANN: You just said you coordinated with the County to meet the district standard. We, you were here for Mr. Nebre's testimony yesterday, correct?

MR. DRIBAN: I was.

MR. MCCANN: And you heard Mr. Nebre testify, I take it, that the district standard under the special variance standard is not the C, the CLV or the HCM or the, the corridor study that you undertook, but rather is the level of service under the loaded cycle methodology. He said that, did he not?

MR. ROSENBLATT: Objection.

ALJ: Mr. Rosenblatt?

MR. ROSENBLATT: That's a mischaracterization of, he testified (breaks up) not his testimony.

MR. MCCANN: He exactly said those very words.

ALJ: Yeah, overruled. Go ahead, sir.

MR. DRIBAN: I, Mr. Nebre testified over the course of multiple days, as you're aware, and I, I believe, you know, his response to that question was answered in, in several ways over the course of that testimony. So, I'm not, I don't have his transcript in front of me, I couldn't tell you whether that's exactly what he said or not.

MR. MCCANN: Well, you were here, I'm just talking about yesterday. The question was asked of him by Mr. Wyatt, what was the district standard and Mr. Nebre answered, without equivocation, do you agree, that the district standard is the level of service under the loaded cycle methodology.

MR. DRIBAN: My rec, I don't have his transcript in front of me. My recollection is that he also spoke to trip generation and, and needing to mitigate the trips. But again, I don't have his transcript in front of me so I, I can't say for certain whether that's --

MR. MCCANN: Well, let's --

MR. DRIBAN: -- (inaudible).

MR. MCCANN: Let's just go with your recollection then. When Mr. Nebre was speaking about trip generation and mitigation, he was referring to the traffic impact study, was he not?

MR. DRIBAN: I, I'm not, I'm not certain.

MR. MCCANN: Okay. Well, would you agree with me that under the loaded cycle methodology, the level of service for this intersection at Falls and Joppa Road would still be an F after the development is built, if built, even with the proposed road improvements?

MR. DRIBAN: As I explained yesterday, there's, the loaded cycle methodology is based on direct observations. So, there's no way to know that until, until the improvements are

in place.

MR. MCCANN: Well, let me ask it this way. Is, well, let me, let me go onto something else right now and get back to that. But you, you mentioned coordination with the County and I think you even talked about some correspondence you had with the County. Did, in fact, let me do this. Let me show you Developer's Exhibit 29. Bear with me one second. Okay. Do you see that, Mr. Driban?

MR. DRIBAN: I do, yes.

MR. MCCANN: Okay. So, this, I think this was described, and correct me if I'm wrong, but this was described, this, Developer's twenty-nine, was described as the approval e-mail or letter from the County, correct?

MR. DRIBAN: Yes.

MR. MCCANN: And, and have you read this before?

MR. DRIBAN: I have.

MR. MCCANN: It's addressed to you obviously, you've read it, right?

MR. DRIBAN: I have.

MR. MCCANN: Okay and would you agree with me, we can certainly all read it, I'm sure the Judge will read it, that the, the approval that is actually granted in this letter, is the approval of the traffic impact study and not any approval of your argument regarding the special variance standard.

MR. DRIBAN: I think this e-mail very clearly gets

into details of the special variance standards. The mitigation from the, the last line from the first paragraph, the mitigation from the improvements results in a net zero impact along the corridor. That's part of the mitigation. That's part, excuse me, that's part of the special variance standard.

We agree that, and then from the second sentence of the second paragraph, we agree that the proposed development along with the improvements to the intersection would not have a net negative impact on the intersection.

MR. MCCANN: Okay. So, I just highlighted, did I highlight the right sentence? Is that what you just read?

MR. DRIBAN: As well as the last sentence in the first paragraph, yes.

MR. MCCANN: Well, the last, let's be specific about that. The, the last sentence in the first paragraph doesn't render an opinion. It just describes the letter that, what you state in your letter, correct?

MR. DRIBAN: That's right. And then the second paragraph goes on to state that they agree --

MR. MCCANN: Okay. Well, this, you're not suggesting that that sentence, beginning with the letter from Lennart is actually a, a, a, an approval in and of itself, do you?

MR. DRIBAN: No, but --

MR. MCCANN: Yeah, I understand what you're saying. So, really, the, the only approval, or let's just call it an

agreement, by the County in this entire e-mail, which is one sentence that I just highlighted, correct? We agree that the proposed development along with the improvements to the intersection would not have a net negative impact on the intersection, correct?

MR. DRIBAN: That appears to be correct.

MR. MCCANN: Okay. In fact, Mr. Nebre goes on to say that we don't have any additional comments to offer. He mentions the special variance standard in the zoning regulations and explicitly says that, that we, meaning the County, defer, defer the findings to, to Judge Murphy, correct?

MR. DRIBAN: That is what he says, yes.

MR. MCCANN: Okay. Your point before, I wanted to get back to it, about the loaded cycle methodology being based on personal observations. You've said that a couple times. You, when we were discussing, for example, the Synchro program and the Simtraffic, it sounds, you know, as you described it, those are programs where you can input various parameters, correct? We talked about that before, right?

MR. DRIBAN: That's correct.

MR. MCCANN: And including traffic counts or trip generation counts, correct?

MR. DRIBAN: That's correct.

MR. MCCANN: Okay. Would you agree with me that it's entire, it's entirely possible for whether or not such a

program exists to your knowledge or not, for loaded cycle, cycle methodology to, to do the very same thing with the loaded cycle methodology? That is, that is, you could, I mean, --

MR. DRIBAN: I, I don't (inaudible) –

MR. MCCANN: (inaudible) --

MR. DRIBAN: The loaded cycle specifically is, is based on, is calculated based on field data. So, there's no, can't project a loaded cycle, future loaded cycle, finding. You can't, Synchro --

MR. MCCANN: Why --

MR. DRIBAN: -- and Simtraffic is also based on data, but the, the purpose of those tools and the reason the methodology has changed since the 1965 manual is to make it so that future, you know, these, these tools exist where you can take existing data and you can project future, future conditions.

MR. MCCANN: Well, you say that and I, I, and, why couldn't you take the number of vehicles, the timing of the light, put them in the intersection and given the timing of the light and the traffic counts and all the parameters that you can put in, that you described for other programs, and determine how many, what percentage of loaded cycles there are? That can be done, can it not?

MR. DRIBAN: I don't know that there's a tool for it and I know that the way that the, the County does it, it's all,

it's entirely based on actually having a person physically there and that that's the methodology that, you know, that the loaded cycle uses.

MR. MCCANN: No, I --

MR. DRIBAN: It's, it's based on watching actual cars in the field and whether those cars get through the intersection or not.

MR. MCCANN: I know that's how the County does it. And, but that's also how the County conducts traffic counts. That's also how speed studies are done and based on, you know, physical presence and personal observation. But I'm asking you, you know, you can model anything, it's possible, would you agree, to sort of have a model that would tell you what percentage of loaded cycles would occur under certain conditions?

MR. ROSENBLATT: Objection. This has been asked and answered.

ALJ: Overruled. Go ahead.

MR. DRIBAN: I'm, I'm not aware. I mean, the, the current methodologies in HCM and CLV, have, have software that's developed to, to do those, those calculations. I'm not aware, to do calculations under those methodologies. I'm not aware of a model for the loaded cycle, for the loaded cycle methodology --

MR. MCCANN: I understand, yeah. That wasn't my

question but I'll, I'll move on. During any of the communications you've had with anyone in the County, including Mr. Nebre, did anyone ever tell you that the critical lane volume, the HCM methodology or the corridor study you did is, or are, the district standard under the zoning regulation? Did anyone ever tell you that?

MR. DRIBAN: The CLV or the HCM specifically?

MR. MCCANN: Or, or the corridor study? Any of those things. Did anyone ever tell you explicitly that those are the district standard?

MR. DRIBAN: District standard per Section 4-A-02 of the zoning regulations?

MR. MCCANN: Yes, under the zoning regulations.

MR. DRIBAN: I, I don't believe that I was told that those specific items are the district standard.

MR. MCCANN: Okay.

MR. DRIBAN: But they certainly relate to it.

MR. MCCANN: Okay. We talked, actually, a number of times about projections and margins of error. Let me just ask you, we've already covered it. Okay. So, lastly, I know you talked also separately about the issue of the pass through or the cut through. Do you recall that testimony?

MR. DRIBAN: Yes.

MR. MCCANN: Okay and, you know, assuming this, this development is approved, of course, that becomes an issue. But

I have a report that you prepared on that issue, and I wanted to show it to you. I think you prepared it. Bear with me one second. Okay. So, this is a report, it appears to be dated July 8, 2021. And I would mark this as, I think, Exhibit 40.

ALJ: Thirty-nine?

MR. MCCANN: Thirty-nine. Okay.

ALJ: Yep.

MR. MCCANN: And I'll scroll down, it's a hundred and twenty-seven pages. Do you recognize this, Mr. Driban?

MR. DRIBAN: I do, yes.

MR. MCCANN: Yeah, and I, as I understand it, this is what's called a sensitivity study?

MR. DRIBAN: A sensitivity study, sensitivity analysis, yes.

MR. MCCANN: Yeah. For the purpose of, for what purpose did you prepare this?

MR. DRIBAN: We prepared this based on a request at a meeting with Greg Karski and Mike Filsinger for more information about this, the Mays Chapel connection.

MR. MCCANN: Okay. Yeah, you referred to that meeting yesterday, right?

MR. DRIBAN: I did, yes.

MR. MCCANN: Okay and I don't need to go through the report in any detail, but could you just sort of summarize what the result, what the conclusion and the findings of the report

are?

MR. DRIBAN: Yes. So, we looked at the, the volumes of traffic at the intersection of, along the corridor, and particular attention to the, to the volumes of traffic along Seminary and Falls and Joppa that might be likely to use Mays Chapel as a cut through connection if it were to be connected between Joppa and Seminary.

MR. MCCANN: Right.

MR. DRIBAN: We ran a sensitivity analysis using our traffic models to look at what percentage of that traffic might be incentivized to cut through May Chapel based on, based on faster travel times than, than the Falls Road corridor, given that it's a fairly direct connection and just, you know, essentially, just east of Joppa Road, excuse me, of Falls Road with no signals on it, with no, with no traffic lights on it.

And we, we determined that a fairly substantial percentage of traffic would be incent, would be incentivized, I don't have the specific numbers, I'm trying to find them, but it was several hundred vehicles during the morning peak hours, several hundred vehicles during, during the evening peak hour that would be likely to use that connection, based on our analysis, if it, if it were opened.

MR. MCCANN: Okay. Okay, great. I would move that exhibit into evidence and that's all the questions I have.

ALJ: Any, any, any objection, Mr. Rosenblatt?

MR. ROSENBLATT: No objection.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

ALJ: Okay. So, that's an exhibit that's a hundred and twenty-seven pages, July the 8th, '21. So, that'll be thirty-nine, Protestant's thirty-nine.

MR. MCCANN: Right, and I have no other questions. Thank you, Mr. Driban.

MR. DRIBAN: Thank you, Mr. McCann.

ALJ: Okay --

MR. ROSENBLATT: Mr. McCann, if it's possible, could you e-mail me thirty-six and thirty-seven?

MR. MCCANN: Yes.

MR. ROSENBLATT: Because I may, I may need to use them while Mr. Zimmerman is asking questions. If you can, thank you.

MR. MCCANN: I'll do that now.

ALJ: Okay. Mr. Zimmerman, cross?

MR. ZIMMERMAN: Yeah, I'm ready. Okay. Good morning, Mr. Driban, and welcome to Baltimore County.

MR. DRIBAN: Good morning.

MR. ZIMMERMAN: Have you been working on this project for a couple of years now?

MR. DRIBAN: Yes.

MR. ZIMMERMAN: Okay and would that include meetings,

phone calls, e-mails, other interactions?

MR. DRIBAN: Sure, yes.

MR. ZIMMERMAN: Okay. To what extent were other members of the development team in the loop or participating with you in your interactions with County staff?

MR. DRIBAN: I mean, at various points, there were certainly meetings that occurred with Mr. Rosenblatt, with the civil engineer, excuse me, the land, the land planner, Matt Bishop, James Malako (phonetic) was another person from his team, other people from my office, Mike Lenhart has been involved at various times, Brian Biddle.

So, I would say that, you know, over the course of two years, there's been back and forth with both SHA and Baltimore County and certainly a number of people have been involved with that.

MR. ZIMMERMAN: Okay. So, you tried to keep everybody posted as to what was going on --

MR. DRIBAN: For the most part, sure, yeah.

MR. ZIMMERMAN: Yeah. And you were the main person working from your firm, but Mr. Lenhart was also involved?

MR. DRIBAN: That's correct.

MR. ZIMMERMAN: Okay.

MR. DRIBAN: And also, Brian Biddle from our office. He's our design lead, so he's been involved with the direct improvements at Joppa and coordinating that piece of it, with

SHA.

MR. ZIMMERMAN: Okay, all right. I'd like to share an exhibit, Judge, if I may. Let's see. Okay, good. So, let's take a look at the growth management law that you were discussing with Mr. McCann a few minutes ago. Okay. Okay. Let's see. I'm, I'm looking for the part which discusses the 1965 manual. Here we go. So, page 4A:10 begins the transportation, the main transportation provision, does it not? Is this (inaudible), do we need to zoom up?

MR. DRIBAN: I, I can read it. I'm just trying to find that on my screen. So, yes, I, I have it.

MR. ZIMMERMAN: Okay. Can everybody else see it? All right.

ALJ: Yes.

MR. ZIMMERMAN: So, this is 4A:2.4, capital D. So, what I, I simply want to ask you, in this paragraph where they talk about the level of service, E or F standards, established by highway capacity manual 1965, is, is that what you've been referring to as the loaded cycle methodology? Is that where that comes from?

MR. DRIBAN: That is how the County has, has explained it to me and I've gone into the 1965 manual as well. And that is, the output of that, that, that manual, 1965 methodology, is the loaded cycle methodology that they use as, as it's, yeah.

MR. ZIMMERMAN: But not what you normally use?

MR. DRIBAN: It's not what anybody is using except Baltimore County.

MR. ZIMMERMAN: So, correct, I want to say this, ask this as politely as I can, but consistently in your testimony, you've basically criticized, virtually destroyed the value of the, the loaded cycle methodology, or how would you describe it?

MR. DRIBAN: I absolutely don't think that's fair. I've said it's, the methodology is not used anymore --

MR. ZIMMERMAN: Okay.

MR. DRIBAN: -- because it's an outdated methodology. I think there are better, you know, the highway capacity manual comes from a lot of research. The Transportation Research Board publishes the highway capacity manual, and they are consistently doing research. A lot has changed in the --

MR. ZIMMERMAN: Okay.

MR. DRIBAN: -- field of transportation over the course of the last sixty-seven years --

MR. ZIMMERMAN: Okay.

MR. DRIBAN: -- since that manual was published. And so, I think the standard that, there are standards today that are commonly use that represent more modern standards. But the, the County standard is what the County standard is --

MR. ZIMMERMAN: Okay.

MR. DRIBAN: -- and I don't think I've, all I've said is it's outdated, which is (inaudible) --

MR. ZIMMERMAN: Well, in, so summarizing, is it fair to say that you think the County standard is obsolete?

MR. DRIBAN: It's an outdated standard. The, I mean, this is, I couldn't tell you exactly which edition of the highway capacity manual this comes from. I think it might have been the second or third, but we're up to, I believe, the sixth or seventh --

MR. ZIMMERMAN: Okay.

MR. DRIBAN: -- now, so there are fifty-seven years' worth of research on traffic methodologies that are, that are incorporated into more modern methodologies.

MR. ZIMMERMAN: Okay.

MR. DRIBAN: It's, I mean, factually, it's an outdated methodology. It's not used anywhere else in the State of Maryland and, yeah.

MR. ZIMMERMAN: Did it cross your mind to suggest that the Petition for Special Variance include a request to declare the County's standard invalid, arbitrary, capricious and should not be applied, but rather --

ALJ: Mr. Rosenblatt, are you objecting?

MR. ROSENBLATT: Yes.

ALJ: Okay. I wasn't sure if you, if you did object. Go ahead.

MR. ZIMMERMAN: I hadn't finished my question actually but.

MR. ROSENBLATT: I apologize. I thought the question was finished. (inaudible).

ALJ: I, I apologize, Mr. Zimmerman.

MR. ZIMMERMAN: All right. Well, we can, we can leave it at that point. All right.

MR. DRIBAN: So, so the, --

ALJ: Hold on, wait a minute.

MR. ZIMMERMAN: No, the Judge, the Judge can rule. You see where I was going.

MR. DRIBAN: (inaudible).

MR. ROSENBLATT: My issue, Judge, is he's asking him --

ALJ: Okay, hold on.

MR. ROSENBLATT: -- (inaudible) Petition and I don't think that's an appropriate question for a, for our traffic engineer.

ALJ: Right, yeah. I was going to say, that, that's a legal question. I mean, --

MR. ZIMMERMAN: All right.

ALJ: -- (inaudible) that objection yesterday in terms of, you know, a legal conclusion and that really is a legal, I mean, that's, that's for the counsel to decide whether or not the Petition includes, you know, --

MR. ZIMMERMAN: Okay.

ALJ: -- (inaudible) I'm not sure I could even rule on that --

MR. ZIMMERMAN: All right. Okay. So, anyway, the Petition for Special, you, you have discussed some aspects of this Petition for Special Variance in your direct testimony, have you not?

MR. DRIBAN: Yes.

MR. ZIMMERMAN: Yeah, and you would agree that under the special variance, whatever you may think of the loaded cycle methodology standard, that's the standard you have to deal with, under this law.

MR. DRIBAN: The loaded cycle methodology sets, sets the, how the basic services map, levels of service, are calculated. And then, the special variance is a, is, is a separate component from that that's --

MR. ZIMMERMAN: Right.

MR. DRIBAN: -- documented in Section 4-A-0-2.

MR. ZIMMERMAN: So, what I have to ask you is, that given the loaded cycle methodology approach is the standard in this law, isn't it irrelevant to discuss all this information about CLV and HCM?

MR. DRIBAN: So, we've, I mean, when I say we had a lot of coordination and I think, you know, the, the coordination has been to, to try to understand from the

County's traffic engineers, who are responsible for, you know, helping to make a determination under, under this for the special variance, you know, how exactly it gets applied, given, you know, the, the some of the limitations of the loaded cycle methodology.

And so, you know, I, I worked long and hard to try and understand how that, how that applies. And my understanding from the County is basically that, you know, the loaded cycle methodology sets the basic services map level of service in areas of level of service F, as identified under that methodology. Development is not allowed.

There's talks, the, actually on your screen right now, under 2-A, it talks about the critical vehicle trip number. So, trip generation and, and it further goes in, if you, you know, if you go down through the, the section, it goes into, essentially, not allowing any additional trips from the development, or from a development, in level of service F areas, except under the conditions of the special variance, which, you know, which is what, what we're discussing here.

And there are conditions for that special variance that, if the demand or impact of the development proposed would be less than that assumed by the district standard. And so, district standard is, is documented here, then there's, then the special variance is, is possible.

MR. ZIMMERMAN: Okay. Well, I'm not asking you in

this question about your interactions with County staff. I'm simply asking you as a matter of law, given that the loaded cycle methodology is the 1965 standard that's been described, isn't it totally irrelevant as a matter of law, whatever County staff may say or not say, that the CLV and HCM are simply irrelevant?

MR. ROSENBLATT: Objection.

MR. DRIBAN: My understanding, my understanding is --

MR. ROSENBLATT: Objection.

ALJ: Hold on, Mr. Rosenblatt objected. Go ahead, Mr. Rosenblatt.

MR. ROSENBLATT: He's asking the witness as a matter of law.

ALJ: Right. It's, again, it's a legal, it's a legal question again. Mr. Zimmerman, I mean, you can ask him about, you know, how he sees it, but yeah, never use (inaudible) issue for me.

MR. ZIMMERMAN: All right. I'll move on, but the only thing I would say is that over my objection, Mr. Driban was allowed to answer all sorts of legal questions from Mr. Rosenblatt. But I think, I think the point is made. I think the Judge, you get it and we'll argue it in our post-hearing brief. Okay. So, I'm going to move on.

Let's go to one other aspect. Let's take a look at the special variance standard, if I can find, wait a minute.

Yeah, I think it's at the end, isn't it?

MR. DRIBAN: It's G-1, I think you just passed it.

MR. ZIMMERMAN: I'm sorry, I'm going, I've gone, oh, okay.

MR. DRIBAN: There you go.

MR. ZIMMERMAN: Okay, here we go. Sorry. Thank you, Mr. Driban.

MR. DRIBAN: Yep.

MR. ZIMMERMAN: So, so I want to ask you, I'm sorry I don't have a pointer, but I think we can all see 40, 40, 4A-02.4.G.2. The Department of Planning shall give a report, I'm quoting it, the Department of Planning shall give a report on the petition to the Zoning Commissioner prior to his consideration of the Petition, unquote.

And, of course, we know the Zoning Commissioner is now the Administrative Law Judge, right? Right. So, where's the report from the Department of Planning, Mr. Driban?

MR. DRIBAN: I'm not certain.

MR. ZIMMERMAN: Okay and report, just so we, you and I have a good understanding, if I quote one of the definitions in Webster's Dictionary (inaudible) and there are a number of definitions that any, anyone can look at, number of sections. Something that gives information, usually detailed account or statement, weather report, intelligence report, news report, stock market report. I, you know, is there any such report

from the Department of Planning in the, in the record?

MR. ROSENBLATT: Objection, to, to --

ALJ: Yeah, (inaudible) --

MR. ROSENBLATT: -- (inaudible).

MR. ZIMMERMAN: All right.

ALJ: Well, he already answered it because he --

MR. ZIMMERMAN: Okay.

ALJ: -- said he wasn't sure about it.

MR. ZIMMERMAN: All right.

ALJ: So, --

MR. ZIMMERMAN: All right.

ALJ: Yeah.

MR. ZIMMERMAN: Okay, all right. I think that's all I need to do to share this exhibit. However, let's go to the Planning Department comments. And by the way, growth, the exhibit we were just looking at, Judge, was People's Counsel Exhibit 14. So, it might be good to admit it.

ALJ: Any, any objection to fourteen, which is the growth management act?

MR. ROSENBLATT: No objection.

ALJ: Thank you. Mr. McCann, assuming no objection?

MR. MCCANN: No objection, thank you.

ALJ: Thank you.

MR. ZIMMERMAN: Okay, all right. So, now we're, People's Counsel three, and although this may have been

discussed, I'm not sure this has been admitted. This is a combination of the con, concept plan conference comment from Planning Department and the, followed by the development plan conference comments.

So, I'm going to scroll down so that we have full, full information, so to speak. And I think this is page three we're going to go to. Here we go. So, the top of page three has a discussion of, a paragraph on the special variance request, does it not, Mr. Driban?

MR. DRIBAN: It appears to, I'm reading it now.

MR. ZIMMERMAN: Yeah, have you happened to have looked at this before, or is this, this something not within the scope of your work?

MR. DRIBAN: I believe I've seen it before, but it would have been a while ago. I'm just refamiliarizing myself.

MR. ZIMMERMAN: All right. So, clearly, this is not a report as contemplated by the law, is it?

MR. ROSENBLATT: Objection.

ALJ: Yeah, Mr., Mr. Zimmerman, --

MR. ZIMMERMAN: All right.

ALJ: That's not, again, that's not –

MR. ZIMMERMAN: All right.

ALJ: (inaudible) --

MR. ZIMMERMAN: All right.

ALJ: -- really for me to answer, so.

MR. ZIMMERMAN: Okay.

ALJ: I'll, I'll sustain the objection.

MR. ZIMMERMAN: All right. Well, let's look at the--

MR. ROSENBLATT: And Judge, just to preempt the next maybe ten minutes of this, I have no objection to the comments coming into evidence. They're not, this is not something this witness can assist the Court or anyone listening in any way. He, Mr. Zimmerman did this yesterday. He's just going to ask him to read the document. They say what they say. I don't object to them coming in, if we could move on.

MR. ZIMMERMAN: All right. Is Mr. Rosenblatt finished? Okay.

MR. ROSENBLATT: I'm sorry, Judge, I think you're muted.

MR. ZIMMERMAN: Okay.

ALJ: Sorry, I was muted. Mr. Zimmerman, and so, if it, we could, we could just admit these, I think --

MR. ZIMMERMAN: Yeah.

ALJ: -- I think --

MR. ZIMMERMAN: Well, it would just be a couple questions, you know, (inaudible) --

ALJ: Hold on, I'm still talking.

MR. ZIMMERMAN: All right.

ALJ: Mr. Zimmerman, I'm still talking. Okay. So, I think this is also, the Protestants have a, one of these

exhibits as well. They have the concept plan comments, that's Protestant's four. So, yeah, there's no reason to go through in detail and have him read this. You can put this in though, right?

MR. ZIMMERMAN: All right. Let's put that in and I have maybe one or two questions. It's not going to be ten minutes.

ALJ: Okay, all right. So, any objection, Mr. McCann? You have the same document --

MR. MCCANN: No, thank you.

MR. ZIMMERMAN: Okay. So, let me ask you this, Mr. Driban. Do you know whether the Planning Department was in the loop in all your discussions with the traffic staff, traff, County traffic engineering staff?

MR. DRIBAN: I'm not certain what correspondence Mr. Nebre had with them or didn't have.

MR. ZIMMERMAN: Okay. But you didn't directly deal with the Planning Department, did you?

MR. DRIBAN: I mean, we certainly had interactions with them throughout the course of the, of the, trying, you know, trying to work through everything, but ultimately, it was Mr. Nebre that I was coordinating with.

MR. ZIMMERMAN: Okay. Well, I guess the last question on this is that, and I hope it's not repetitive, is that, you know, are you aware of any other written

communication from the Planning Department, which even mentions the special variance issue?

MR. DRIBAN: I'm not certain.

MR. ZIMMERMAN: Okay. Okay. I can stop sharing for the moment. Okay. Well, all right. So, let me ask you about the Department of Public Works and Transportation correspondence. And I guess I will share again. So, let's see, trying to, trying to find the sharing. Okay, here we go. Okay. So, Mr. Driban, I'm showing you part of People's Counsel Exhibit 6 --

ALJ: There's nothing on the screen right now. It's just a black screen.

MR. ZIMMERMAN: Nothing on the screen?

ALJ: Yeah. We're using, we're looking at your desktop that's just --

MR. ZIMMERMAN: All right. We're getting some help on this. All right, here we go. Is it visible?

MR. DRIBAN: Yes.

ALJ: It is, thank you. Yep.

MR. ZIMMERMAN: Thanks. Okay. So, Mr. Driban, I think you, you've probably seen this before in the course of the hearing and, and maybe earlier in your work, correct? This is the August 12th, 2021, development review comment from the Department of Public Works.

MR. DRIBAN: Would you mind just scrolling through

the --

MR. ZIMMERMAN: Yeah (inaudible) scroll through the whole thing, yes.

MR. DRIBAN: Thank you.

MR. ZIMMERMAN: Two pages and the text is really on the second page. You want to take a quick look at it?

MR. DRIBAN: Yes, I'm familiar with this document.

MR. ZIMMERMAN: Okay and this, and this overlaps the, just so, we, we included in this exhibit, the, the later, September 20, 2021 e-mail from Terry Curtis, which you mentioned, did you not, in your direct testimony?

MR. DRIBAN: I don't know that I mentioned the Terry Curtis e-mail. I'm not certain whether I did or not. I was referring to the memo that you're, on pages one and two.

MR. ZIMMERMAN: Okay. You were referring to the August 12th, 2021.

MR. DRIBAN: That was, that was my intent to reference, (inaudible) --

MR. ZIMMERMAN: Right, that's fine. That, but they, you know, they show what they show. If there's an overlap, there's an overlap. Okay. So, this was a comment that, can you describe again your reaction to this comment?

MR. DRIBAN: Yeah, so I, I think if you read through the comment, it pretty clearly is in relation to the Mays Chapel connection analysis that we did. It talks about, talks

about, first of all, I think if you scroll up a little bit, it talks about the supplemental analysis or it sort of, can, can you scroll up a little bit, Mr. Zimmerman?

MR. ZIMMERMAN: Absolutely, yes.

MR. DRIBAN: And yeah, so right here in the first, the first section. Greenspring Station development supplemental traffic impact study, that was in reference to the Mays Chapel analysis that we did. I don't know, in fact, give me, if you would give me just one second to pull up my copy of that study.

Yeah, see, what we call that doc, what we called, if you'll remember in my testimony yesterday, the County asked us, Greg Karski and Mike Filsinger asked us to conduct a specific analysis of the Mays Chapel Road connection. And that was published in July, so just before these comments came out, and it was entitled Greenspring Station development – Mays Chapel Road connection analysis.

It was not intended to be a supplemental traffic impact study. It, nowhere in our document say it was a traffic impact study. And if you, if you read through these comments, they're very clearly related to that supplemental analysis that we did, which was intended to be a sensitivity, in fact, it says, it should be a traffic impact study, not a sensitivity analysis.

We had an actual traffic impact study. This was a

sensit, sensitivity analysis. So, the comments are being made, my read of it, and given the timing of things, is the comments are made on a supplemental analysis that we were requested to do by Greg Karski and Mike Filsinger to look at Mays Chapel. But they're being made as though that study was our traffic impact study for the project, which it, it was not.

MR. ZIMMERMAN: Okay. So, in your view, this, this comment, basically, targets the Mays Chapel Road connection issue.

MR. DRIBAN: I, I mean, not only is it targeting the Mays Chapel connection issue, but it's reviewing that study as though it were a traffic impact study, which is problematic for another, a number of reasons, you know, but, and, and I say problematic because that study does not, I mean, their sensitivity analysis does not meet the standards of a traffic impact study.

MR. ZIMMERMAN: Okay.

MR. DRIBAN: It wasn't intended to be one. So, so, yes, I mean, it's, it's targeting that document, not the actual traffic impact study we did.

MR. ZIMMERMAN: Okay, okay. So, let me just scroll up for a moment so, I think you would agree that this document does have, at least the printed name of the acting director of the Department of Public Works, D'Andrea Walker, correct?

MR. DRIBAN: Sure.

MR. ZIMMERMAN: Okay. Is there any subsequent official document from the Public Works Department signed by D'Andrea Walker or with her name on the letterhead?

MR. DRIBAN: I'm not certain.

MR. ZIMMERMAN: Okay, okay. Okay. I'm going to stop sharing. Okay. I'm going to move on to the, no, actually. Yeah, let me move on briefly to the Kris Nebre e-mails, so I guess I do have to, well, I don't think I need to share. Do you agree that Kris Nebre, whether in his e-mail or in his testimony, was not purporting to represent an official position of the Department, but rather simply the work that he was asked to do and did?

MR. ROSENBLATT: Objection.

MR. ZIMMERMAN: Isn't that an accurate description of his position?

ALJ: Hold on, there's an objection. Mr. Rosenblatt?

MR. ROSENBLATT: How is he supposed to know? I mean, that's not a question for this witness. It was a question he, I guess, failed to get the answer he was looking for from Mr. Nebre.

ALJ: Okay, well, --

MR. ZIMMERMAN: No, actually, Mr. Nebre --

ALJ: Hold on. Over, overruled, to the extent that (inaudible) --

MR. ZIMMERMAN: All right.

ALJ: -- you have an answer. Do you know?

MR. DRIBAN: Sorry, can you repeat the question?

MR. ZIMMERMAN: Okay. Is it an accurate description of Mr. Nebre's position that he's a staff member who, of Public Works Department, who was asked to do some review and did it, but he was not purporting to speak as the director of the Department, communicating a, a formal position?

MR. ROSENBLATT: Objection.

ALJ: Overruled. Go ahead, sir. If you know.

MR. DRIBAN: I believe, I believe Mr. Nebre, to, to my knowledge, Mr. Nebre is the, either the acting or I think maybe at, at this point, the formal person in charge of the Traffic Division in Baltimore County. And that is the person that we typically coordinate these studies with and so, you know, the position that I received from him, I understood to be the, the Department's position.

MR. ZIMMERMAN: Okay, okay. So, so, you regard any personal e-mails from County staff as official departmental reports or positions.

MR. DRIBAN: I believe when someone is acting as the, as the director or head of their department, that, you know, and they grant approval and that would represent, and this is, I don't know, this is my opinion or legally binding but, you know, the, I believe that that would represent the approval of that department.

MR. ZIMMERMAN: Yeah. Did Mr. Nebre indicate that he is not the division head, that there is somebody else who is the division head?

MR. ROSENBLATT: Objection.

ALJ: Mr. Zimmerman, are you asking during Mr. Nebre's testimony?

MR. ZIMMERMAN: Yes, during Mr. Nebre's testimony, didn't he indicate that there's another person who is the division head?

ALJ: There's the bureau chief, I believe he indicated that he is now the division chief.

MR. ZIMMERMAN: All right. Well, the record is what it is. I don't think he did, but I may --

MR. DRIBAN: I can confirm with respect to traffic that he is the person, he is the highest position within the Traffic Division.

MR. ZIMMERMAN: Okay, okay. And other than his e-mail to you, is there any other document from him following that?

MR. DRIBAN: Not that I'm aware of.

MR. ZIMMERMAN: Okay, all right. Let me go to the timing of the traffic counts. Did you indicate that the Falls Road/Joppa traffic counts, which you used, were County counts done February 19th, 2020?

MR. DRIBAN: I believe that's correct, yes.

MR. ZIMMERMAN: Okay. Would you agree that the COVID crisis was emerging in February of 2020?

MR. DRIBAN: No.

MR. ZIMMERMAN: No?

MR. DRIBAN: I mean, emerging globally, but in terms of impact locally, I don't believe the traffic was impacted any, to any extent whatsoever at that time.

MR. ZIMMERMAN: Yeah. How do you know that?

MR. DRIBAN: We conduct traffic counts throughout the State of Maryland on a, you know, week to week, every single week basis and, you know, we're aware of the trends in traffic and, and how things change. And certainly, you know, post-March of 2020 things, things changed fairly dramatically for, for quite some time.

But I don't believe that the state of emergency in the state, I don't have a date, but I know it was sometime in March and I don't believe that there were any modifications to school schedules or anything else locally that would have affected a February count.

MR. ZIMMERMAN: Okay, all right. In any event, would it have made sense to update those traffic counts within the last two years, rather than simply assuming a growth rate?

MR. DRIBAN: Well, so, the growth rate isn't instead of updating the counts. The growth rate is a standard part of a traffic impact study to account for the fact that, you know,

a development may not be constructed right away. It typically takes a couple years.

We, in this case, applied three years of growth to account for just regional changes, regional, regional growth. I think the counts we have in this study are actually the best possible counts because they are before COVID was impacting things and, you know, as, as we all know now, I think there's a lot more work from home and if you look at traffic volumes, you know, in some places they've rebounded fully to pre-pandemic volumes and some places they haven't.

And but, but I think having data from the month before the pandemic is actually, probably the best quality data you could, you could have for this project.

MR. ZIMMERMAN: Okay. Well, in any event, let me share for a moment. Okay. So, let's go to People's Counsel nine. So, we're going to look at the, can, can you see this? We're going to scroll down.

MR. DRIBAN: Yes.

MR. ZIMMERMAN: So, 2021, I'm going to go to 2022, but we've got both of them. So, you see the, do you recognize the County's basic service map description?

MR. DRIBAN: I do, yes.

MR. ZIMMERMAN: Let me, so, there's no dispute, is there, that still as of 2022, that all three of the relevant intersections were considered F intersections by Baltimore

County.

MR. DRIBAN: You're saying there are three relevant intersections, I'm not sure I agree with that characterization.

MR. ZIMMERMAN: Well, Falls Road, I'm looking at page one, Falls Road and Semin, Seminary Avenue at the bottom of page one.

ALJ: Can you blow it up, Mr. Zimmerman?

MR. ZIMMERMAN: Yeah.

ALJ: Just hit the expanded and then shift it over to the center to people can see it. You're going to the right now.

MR. DRIBAN: There are three intersections along Falls Road that are identified as level of service F.

MR. ZIMMERMAN: Right. Yeah, I just wanted to confirm that. And, and that's the current situation until the next evaluation in 20, for 2023, right?

MR. DRIBAN: Those three intersection being level of service F, yes.

MR. ZIMMERMAN: Okay and would you agree that this is the most concentrated group of F level intersections in the entire County?

MR. ROSENBLATT: Objection.

ALJ: What's your, what's your objection, Mr. Rosenblatt?

MR. ROSENBLATT: Relevance.

ALJ: Overruled. Go ahead.

MR. DRIBAN: I haven't done a detailed analysis of that, but I would, I would, I would guess that they are, I would presume they are.

MR. ZIMMERMAN: Okay. Well, well, it looks like three out of twelve. All right. I'll move on. So, okay. I'm going to stop sharing. Okay, all right. Thank you for that, Mr. Driban.

ALJ: Any objection, any objection to People's Counsel nine?

MR. ZIMMERMAN: Right, thank you, Judge.

MR. ROSENBLATT: No objection.

MR. MCCANN: No objection.

ALJ: Actually, that was already in.

MR. MCCANN: No objection, thank you.

MR. ZIMMERMAN: Oh, was it? Okay, thanks.

ALJ: (inaudible).

MR. ZIMMERMAN: So, let's talk, I want to talk a little bit about trip generation also, kind of following on the footsteps of Mr. McCann. Is it correct that the, well, let me ask you this. Who produces the ITE manual?

MR. DRIBAN: So, ITE is an industry association, Institute for Transportation Engineers. They're, they, they produce it.

MR. ZIMMERMAN: And what proportion of the engineers

would be like you, associated with companies that work for, you know, developers and constituents such as that?

MR. DRIBAN: I mean, ITE is broadly, (inaudible) industry. So, I've been a member of ITE since I was in college at Penn State, which was sixteen years ago. It, it extends down to college students who are interested in the transportation field. It's, you know, it, when --

MR. ZIMMERMAN: Yeah.

MR. DRIBAN: -- I was at STV, and we were doing work primarily for State and Counties, public agencies, I was a member of ITE.

MR. ZIMMERMAN: Okay.

MR. DRIBAN: It's open to the broad industry of people that, that do traffic analysis.

MR. ZIMMERMAN: Okay and is, is there some particular committee that produces the manuals or up, or updates them?

MR. DRIBAN: I'm not certain.

MR. ZIMMERMAN: Yeah. In any event, it's not a government organization, is it?

MR. DRIBAN: It's not, it's an industry association.

MR. ZIMMERMAN: Okay. The manual is not a government produced manual?

MR. DRIBAN: No, it's not.

MR. ZIMMERMAN: Okay.

MR. DRIBAN: But it is, it is used and referenced by

--

MR. ZIMMERMAN: Yeah.

MR. DRIBAN: -- government agencies.

MR. ZIMMERMAN: Right.

MR. DRIBAN: I mean, it's the standard manual.

MR. ZIMMERMAN: Is there anything in the manual itself which acknowledges that these are projections that may not work out exactly in, in real life and that there may be margins of error?

MR. DRIBAN: I'm not certain whether the manual says that or not.

MR. ZIMMERMAN: Is there anything in the literature, or in the industry, a rule of thumb, that people discuss what the likely margins of error would be?

MR. DRIBAN: Not that I'm aware of. I mean, the ITE trip generation manual is, is, is what's used for studies. It's the best thing we have. We have to have some way of projecting these numbers and, and that's the basis for the manual --

MR. ZIMMERMAN: All right.

MR. DRIBAN: -- existing in the first place.

MR. ZIMMERMAN: Okay. So, I want to follow-up on your answers to Mr. McCann, if I heard them correctly, when he asked you about the situation where you have proposed two to three garage homes primarily in the Greenspring Manor

development. And correct me if I'm wrong, did you say you thought some of the studies used in the ITE manual probably had two to three garage homes?

MR. DRIBAN: I would believe, based on the number of studies for this particular use, which is more than two hundred, it's about two hundred fifty studies, that, you know, this certainly isn't the only development in the world that's going to have, you know, two to three car garages. So, I would have to assume that some of those studies had, had that condition.

MR. ZIMMERMAN: Okay. Now, once again, how many studies were used for the, you know, detached home category? And I think Mr. McCann introduced his Exhibit 35 with the so called land use (inaudible) or, do you happen to know approximately how many studies?

MR. DRIBAN: It's roughly, I'm trying to get you an exact number right now. But it's, it's roughly two hundred fifty studies during the a.m. peak hour and approximately the same, maybe a little bit more during the p.m. peak hour.

MR. ZIMMERMAN: Okay.

MR. DRIBAN: So, those are all different, different sites.

MR. ZIMMERMAN: And how, what were the years in which those studies were conducted?

MR. DRIBAN: I don't, I know Mr. McCann's exhibit had

that data. I don't have it in front of me and --

MR. ZIMMERMAN: Okay.

MR. DRIBAN: -- I know it extends back some years and actually --

MR. ZIMMERMAN: Okay.

MR. DRIBAN: -- studies are still being added, so probably covers the last thirty to forty years, up through, --

MR. ZIMMERMAN: Yeah.

MR. DRIBAN: -- you know, today.

MR. ZIMMERMAN: So, so, is it plausible that as time goes by the, the older studies would be just as obsolete as you're, you're saying the County traffic standards are?

MR. DRIBAN: I think the idea is to have, so, the idea is to have the, you know, an aggregation of data that covers a range of conditions. And the ITE manual is continually updated.

So, these, the, the rates that we used were from the most recent edition available at the time and the, I mean, if you're comparing it to the 1965 standard, there are, there are, you know, again, four, five editions of that that have come out since 1965 that don't include that methodology. So, it's, it's not an apples to apples comparison between the two.

MR. ZIMMERMAN: Okay. But what are the year, in the current manual, what are the years of the studies that we're dealing with? What is the range?

MR. DRIBAN: I, I, I don't have that information in front of me. I know Mr. McCann's exhibit had it. I believe it's, I believe, if I'm recalling correctly from yesterday, that it was 1970 through 2010, but they're still adding data to that now so it would really be 1970 through 2022, I would say.

MR. ZIMMERMAN: So, somebody would have to dive in and do a real detailed statistical study to, to, to see the array of years. Obviously you have, it wasn't within the scope of your work to produce a list of all the studies. Is that in the appendix of the ITE, all the years?

MR. DRIBAN: Individual studies are not, you know, ITE maintains those.

MR. ZIMMERMAN: Okay and you don't know how many of the studies involve developments with two to three car garages, do you?

MR. ROSENBLATT: Objection. Asked and answered multiple times.

MR. ZIMMERMAN: No, it hasn't been actually.

ALJ: So, I mean, no, yeah, you didn't say how many studies, he said that, his testimony was that he assumes that there's, --

MR. ZIMMERMAN: Right.

ALJ: -- of the two hundred fifty studies, they, they probably had two or three car garages, but he didn't say how many. Sir, do you know how many?

MR. ZIMMERMAN: Right.

MR. DRIBAN: I don't know how many.

MR. ZIMMERMAN: Okay. So, in terms of projections, let me ask you this. If say, one-third of, even one-third of the developments' land uses in the study had two to three car garages, that would be less than the array in this proposed development, wouldn't it?

MR. DRIBAN: I don't, I'm not aware of how many studies within ITE had two to three car garages or didn't. I mean, it's possible, --

MR. ZIMMERMAN: Yeah.

MR. DRIBAN: -- not knowing, it's possible that a hundred percent of those studies had two to three car garages.

MR. ZIMMERMAN: Yeah.

MR. DRIBAN: So, I can't, I can't answer that question.

MR. ZIMMERMAN: But if ten percent had two to three car garages, then the trip generation would be way low for what we're going to see from this development, wouldn't --

MR. ROSENBLATT: Objection.

MR. DRIBAN: I don't, I don't --

MR. ROSENBLATT: Objection.

ALJ: Hold on, hold on, there was an objection. Mr. Rosenblatt?

MR. ROSENBLATT: I mean, there's, there's such a lack

of (inaudible) to this question and it calls for complete speculation. The witness has already said he doesn't know how many studies are there that have this level of garages. And there's been absolutely no testimony about number of garages versus (inaudible) or anything else. He's just making all kinds of assumptions. I think he's --

ALJ: It's cross examination and he, and he's allowed to ask hypotheticals, you're, you're allowed to, you know, assume facts and so he's an expert witness and so, sir, overruled. Go ahead.

MR. DRIBAN: Okay. So, let me, let me go into a little bit of a deep dive on this. So, ITE, when they're, when, you know, there's an independent variable we look at. We talked yesterday with Mr. McCann about units versus residents and why we use units as opposed to residents in this case.

ITE is constantly re-evaluating their data and publishing new manuals. In fact, I think the duration between their tenth edition and their eleventh edition was something on the order of magnitude of two to three years.

When there are confounding variables that are directly influential to the, to the independent variable being analyzed, those are included in ITE. So, for instance, with a gas station, when you look at like a Wawa or 7-11, convenience store with gas station, the independent variable that's used is the size, the square footage of the gas station. Is it four

thousand square feet, five thousand square feet.

The ITE includes a separate adjustment factor for the number of fuel, fueling positions, or fuel pumps at those, at those types of uses. So, where they've identified, based on their data and their statistical calculations that there is a significant factor that changes the trip generation, that is accounted for.

There is no such adjustment factor for the number or size of garages on a residential, single family residential use under ITE 210. So, --

MR. ZIMMERMAN: So, wouldn't you agree that there is a degree of speculation associated with the ITE numbers because there is no such specific evaluation relating to the number of garages.

MR. DRIBAN: No, I disagree with that. I think where, where there's a need to publish that, as I referenced the convenience store use with gas station, they, they do include those variables. They have not for this, so I, I don't think it's speculative whatsoever.

MR. ZIMMERMAN: Okay. Well, let me ask you this from a kind of crow's nest point of view. Given that the Developer projects, you know, selling these homes for a million dollars each and is it reasonable to infer that we're going to have two adults, plausibly, two adults working, potentially a teenager with a car, you know, three trips from many of these dwellings

coming out in the morning, in the rush hour?

MR. ROSENBLATT: Objection.

MR. ZIMMERMAN: For many of these homes?

ALJ: What, what's, what's the objection, Mr. Rosenblatt?

MR. ROSENBLATT: Again, he's, he's calling for complete speculation.

ALJ: Okay. Again, it's a, it's a hypothetical and he wants to know whether or not there will be at least three trips in the morning. So, go ahead, sir, overruled.

MR. DRIBAN: I'm not a demographics expert, so I'm not sure, couldn't tell you exactly, you know, what type of family might move into that, that home, or, or specifics. What I can tell you is that the ITE trip generation manual is the standard used by local agencies, by SHA, nationally as well, and that it is the best predictor available for the number of trips.

MR. ZIMMERMAN: Okay. But clearly not perfect or not guaranteed to be exact, as a, as a projection, would you agree with that?

MR. ROSENBLATT: Judge, I, I (breaking up) ask the same question. Objection.

ALJ: All right. Sustained. He did answer, he did answer that.

MR. ZIMMERMAN: All right.

ALJ: And I think he's confident, he's comfortable with the ITE manual.

MR. ZIMMERMAN: Okay. Now, I have to ask, is there on street parking and driveways proposed for these homes, by the way?

MR. DRIBAN: There is, I mean, there are driveways, yes.

MR. ZIMMERMAN: Okay and on street, does there happen to be on street parking?

MR. DRIBAN: I would have to go back and look at the plans.

MR. ZIMMERMAN: Okay, okay. Now, your firm is quite capable, is it not, of conducting traffic counts?

MR. DRIBAN: Yes.

MR. ZIMMERMAN: Okay and are those difficult to do? Or could you explain briefly how, how a traffic count is done for an intersection? Like if you wanted to do one, for example, for Tallyho Road and Joppa Road, how would you do it?

MR. DRIBAN: Yeah, so, you'd, traffic count is exactly as it sounds. It's, it's looking at the number of, it's, it's technically a turning movement count. So, it's the number of vehicles that make each movement at an intersection.

So, you, you'd look at northbound Falls Road during the course we typically look at the peak period, which is from, it varies by jurisdiction, but in this area, we're typically

looking at three hours of data between 6:00 and 9:00, 9:00 a.m., 4:00 and 7:00 p.m.

So, trying to capture the, the heaviest volumes out there and, and you go out, and you would count in fifteen minute increments how many cars make each movement. So, how many go through, how many go right, how many go left, from each of the four approaches to the intersection. And then, you would, you would look at, for the overall intersection, what the highest hour, the highest hour is within that time frame.

MR. ZIMMERMAN: Okay and this is done by a human being or do you have a, a mechanical device that does this?

MR. DRIBAN: We typ, when we do it, we typically set video, video cameras that capture the video, and then someone brings it back into the office and, and counts it in the office. And this, there's a program that we use where you can speed up the, speed up the video or slow it down, you know, to, to make it easier to count. If it's a busy intersection or if it's a, you know, light intersection in terms of traffic volumes, you can speed it up a little bit.

MR. ZIMMERMAN: Okay and how many days of counts would you normally take to, to feel comfortable that you have accurate information?

MR. DRIBAN: Yeah, the, the standard for counts is one count, one day of counts. And, but the day that is counted is required to be while schools are in session, not immediately

following a holiday, national holiday, of any sort where, you know, where schools might have been closed and it's, it's a Tuesday, Wednesday or Thursday.

It can't be a Monday or Friday because there are different traffic patterns on Mondays and Fridays somewhat, and those, you know, those patterns can be low for then, you know, what you see on a Tuesday, Wednesday or Thursday. So, the idea is to get typ, a typical day of traffic and then, you know, look at the worse part of a, you know, the heaviest volume of that typical day. And that's --

MR. ZIMMERMAN: And --

MR. DRIBAN: -- sorry, those are SHA --

MR. ZIMMERMAN: Okay.

MR. DRIBAN: -- SHA guidelines.

MR. ZIMMERMAN: And were counts involved in your so-called origin destination study for Tallyho Road?

MR. DRIBAN: So, the origin destination study is a little bit of a different study, different than the turning movement counts. What you do for an origin destination study is you actually post somebody at a point and then somebody else at the other point and you, you look at the matching vehicles coming through from one end to the other. And, and then determine how many, how many matches you have between the two points.

MR. ZIMMERMAN: Okay, all right. In any event, what

I have to ask you is wouldn't it have been either helpful or relevant to do traffic trip generation counts at the intersection of Tallyho and Joppa Roads to get some additional data that might help with the trip generation estimates?

MR. DRIBAN: So, no, I mean, the ITE trip generation manual is the, is the guiding document for, for trip generation. It's what's accepted by SHA. I will say that as part of our, as I mentioned yesterday, we had some traffic calming back and forth with, with the County, you know, related to Tallyho.

And at one point, I did count all of the units in Tallyho and run the trip generation numbers for that to see, to see whether we could determine, the, the purpose at the time, before we did this, the more detailed origin destination study was, you know, if you, if you run the ITE trip generation numbers for Tallyho based on how many units are there, and you then go out and count the intersections and, and the volumes in the count are much higher than the number of units would lead you to believe they should be, based on the ITE trip generation manual, you might infer that the difference is cut through traffic.

So, at one point I did run the ITE trip generation numbers for all of Tallyho. And I can tell you that the numbers were almost spot on to, to count data that the County had there at that, at the Tallyho community exit points.

MR. ZIMMERMAN: But, I mean, do you have any written traffic generation data for actual counts at Tallyho and Joppa in the record?

MR. DRIBAN: I don't believe there's any in the record, but there's certainly correspondence that, with Keith Lank from Baltimore County that if anyone is, that, that exists where we sort of discussed some of these items. And I can, and I can tell you that I, I mean, I'm telling you that I did con, I did conduct that analysis on my own, as part of the discussions with them.

MR. ZIMMERMAN: I mean, did you, you had these cameras out counting, counting the cars on a certain, on one day at Tallyho and Joppa, is that, or, is that what you're saying?

MR. DRIBAN: We used the count that the County provided to us for, for Tallyho.

MR. ZIMMERMAN: And when, when was that done? Okay. Okay.

MR. DRIBAN: Their data at the time was from 2015, it looks like.

MR. ZIMMERMAN: So, wouldn't you want to do a current count for Tallyho and Joppa?

MR. DRIBAN: So, we, we ultimately did when we did the origin destination study, as part of the origin destination study.

MR. ZIMMERMAN: A complete trip generation count?

MR. DRIBAN: You're sort of mixing terms. Trip generation is a, is the, is from the ITE trip generation manual and it's based on the number of units. And I conduct, I did run the numbers for all Tallyho to determine what ITE would say the number of trips from there is.

MR. ZIMMERMAN: Okay.

MR. DRIBAN: Separately, we went out and we, we conducted a count there as part of our origin destination study, which is a separate thing, and that was an actual, an actual count that we conducted.

MR. ZIMMERMAN: So, so what are the rush hour, what are the peak hour counts coming out of Tallyho? What, what's the exact number of trips coming out of Tallyho peak hour?

MR. DRIBAN: On the, I'm just looking at one day of data, we had, sorry. Let me go to the County's counts. Okay. So, one end of Tallyho, they had the a.m. peak volume as twenty-eight in one direction and sixty-one in the other direction.

MR. ZIMMERMAN: Sixty-one toward Joppa Road? Towards Falls Road, excuse me?

MR. DRIBAN: This is coming out of the Tallyho, coming out of Tallyho onto, onto --

MR. ZIMMERMAN: Right.

MR. DRIBAN: I'm not sure if this is the Joppa or the

Seminary end. Yeah, twenty-eight and sixty-one. And then, during the p.m., they had sixty-four and thirty-nine.

MR. ZIMMERMAN: On Joppa?

MR. DRIBAN: On Tallyho, coming out, coming out of Tallyho.

MR. ZIMMERMAN: To Joppa, to, to Joppa, not to Seminary?

MR. DRIBAN: I'm not, I'm doing this on the fly, so I'm actually not --

MR. ZIMMERMAN: All right.

MR. DRIBAN: -- a hundred percent certain which is which. But this, but it's --

MR. ZIMMERMAN: All right.

MR. DRIBAN: -- one or the other.

MR. ZIMMERMAN: What, what year was that?

MR. DRIBAN: That's dated 2015.

MR. ZIMMERMAN: All right. So, we don't have any current data?

MR. DRIBAN: We do have current data. I have data that we conducted --

MR. ZIMMERMAN: All right.

MR. DRIBAN: -- in September of 2021.

MR. ZIMMERMAN: All right and, and does that have also sixty-one and twenty-eight or whatever?

MR. DRIBAN: We had sixty-one and forty-four during

the a.m., sixty and sixty-five during the p.m.

MR. ZIMMERMAN: All right. All right. Anyway, so I'm going to move on from that. But, with reference to modeling, you would agree that, you know, models are used in, in many fields, are they not?

MR. DRIBAN: Sure.

MR. ZIMMERMAN: And generally speaking, the models may be either erroneous or may not reflect what actually ends up happening in the real world, whether it be economic models, hurricane models, political polling models because circumstances can't always be completely foreseen --

MR. ROSENBLATT: Objection.

MR. ZIMMERMAN: Do you agree with that?

ALJ: Mr. Rosenblatt?

MR. ROSENBLATT: We're asking the traffic engineer in this case about hurricane and economic models.

ALJ: I think he was just, by way of example. I mean, I think, Mr. Zimmerman, it, you know, model is what it is, right? By definition, it's going to be --

MR. ZIMMERMAN: Okay.

ALJ: -- projection and inputting data.

MR. ZIMMERMAN: Okay.

ALJ: But I think he did cover that a couple times.

MR. ZIMMERMAN: All right. All right.

ALJ: So, sustained.

MR. ZIMMERMAN: All right. Well, one of the aspects, a specific aspect from, from kind of a, a citizen point of view, or a non-expert point of view, it's, it's sometimes thought that if an additional lane is added to a road, whether it be a beltway or some other, that people who would not have otherwise used that road will now go ahead and use it because there's an additional lane. In kind of an, if you build it, they will come.

Is it plausible that more people will actually come to this intersection, who previously did not, because they know there's this additional lane that's being proposed and is that taken into account in your projections?

MR. DRIBAN: We take in, we take that into account by adding the, the growth rate, the general growth rate that accounts for traffic that could come from regional sources, things that we're not specifically accounting for. So, there is, yeah, I mean, we accounted for an increase in traffic at the intersection above and beyond what's out there today.

MR. ZIMMERMAN: Yeah. But what about people who are already there but are making a decision not to use that intersection because they know how bad it is, but once you add your lane, well, okay, those same people will now use that intersection, so it just fills up as much or more than it ever was.

MR. DRIBAN: I, I don't have any specific knowledge

about that.

MR. ZIMMERMAN: Okay. Okay. Are you, I think I asked you this before, that you're not a specialist in risk assessment and risk management, correct?

MR. DRIBAN: I'm not.

MR. ZIMMERMAN: But are you aware that there is a field of study and of practice called risk assessment and risk management?

MR. DRIBAN: I'm not specifically aware, but I'll take your word for it.

MR. ZIMMERMAN: Okay. Well, what I have to ask you is this. Given that there is some level of uncertainty in any model or projection, if, if, if you agree with that, you, if you don't agree with that, you can tell us. Doesn't it make sense for there to be a margin of safety that, that you have to assume that the projection is going to be low to some extent? That that is a potential outcome?

MR. DRIBAN: Well, I think --

MR. ROSENBLATT: Objection.

ALJ: Mr. Rosenblatt?

MR. ROSENBLATT: Yeah, the question merged like three things into one and is, again, asking for speculation.

ALJ: I mean, the question was whether, because they're using a model, it makes sense to factor in a margin of safety because the projection will be low. Let's break, can,

can we break it down, Mr. Zimmerman?

MR. ZIMMERMAN: Yeah.

ALJ: Into parts? I mean, is, is --

MR. ZIMMERMAN: Yeah, yeah. Is it, is it plausible that there is a risk, some risk, that the models and trip generation assumptions will be low, to some degree? That that may happen?

MR. DRIBAN: Yeah, I think it's just as likely that the models could be low as it is that, that they could be high. And the, and in this case, the, the Coun, the, the State has very specific standards. So, traffic engineering, obviously, is something that's near and dear to most people. Everybody drives, so everybody has a sense of traffic.

So, these conversations come up very regularly where we're talking about, well, how do you know this? How did you get this information? And so, the State, and not just the State but, you know, Federal agencies, you know, local agencies, have developed guidelines for traffic impact studies that get at the root of this.

And they have very specific dates and times that you need to conduct your counts. They have very specific methodologies for conducting the trip generation. They have very specific methodologies for, you know, your, your volume projections.

And, and so, you know, the best we can do is to, is

to use those projections. It's possible that they could be low. It's also possible that they could be, they could be, could be high. But in this case, the, the mitigation, what we're really looking at is, have we, have we mitigated the impact.

And, and there is a margin of safety, to use your words, built into that because we haven't just slightly mitigated our impact, we've mitigated, mitigated it, you know, eight to ten times over. So, I think that's the margin of safety in, in, in my opinion.

MR. ZIMMERMAN: Okay. So, so what I have to ask you is that given these intersections already F rated by the County, if, if the modeling and all your assumptions do turn out to be too low, then there really is no margin of safety here, is there?

MR. DRIBAN: The margin of safety, you heard Kris Nebre testify early on that the, that the district standard is related to the trip generation. And the margin of safety is the fact that we've mitigated our trip generation ten times over, eight to ten times over. So, yes, I think there's a very, very high margin of safety built in to, to what we're proposing to do.

MR. ZIMMERMAN: Well, isn't it true that all Kris Nebre said in his e-mail was that they could say that there was no net negative impact that was there, he said in his e-mail?

That's all he said?

MR. DRIBAN: That is what he said in his, in his e-mail, yes.

MR. ZIMMERMAN: Yeah. So, if, if his observation is all we have, then if all these projections are too low, then the F intersection could end up much worse, couldn't it?

MR. DRIBAN: His obser, his observation isn't all we have because we went through the details of the study and provided specifics on how much --

MR. ZIMMERMAN: Yeah.

MR. DRIBAN: -- how much we're mitigating, so --

MR. ZIMMERMAN: Okay.

MR. DRIBAN: -- you know, he's, he's, he said I think what was necessary as the baseline for the special variance, but if you look at the, the factual data that exists --

MR. ZIMMERMAN: Um hm.

MR. DRIBAN: -- you know, we've clearly not just (inaudible), not just zero net negative impact, but a substantial positive impact overall.

MR. ZIMMERMAN: Okay, okay. Let me ask you this kind of academic question. When the County rates the intersection as F, are they looking at all four turning movements and if any particular movement is F, then it's an F intersection or, you know, how do they do that? Do you know?

MR. DRIBAN: Yes, they look at all of the approaches

and if any one of those approaches is, is an F, then the intersection is considered to be an F under the loaded cycle methodology.

MR. ZIMMERMAN: Okay. Actually, that's what I thought. So, what I don't understand, and please explain it, I'm sure, is that, why is it that in some of your exhibits or your study, you ended up doing some averages when Mr. McCann was asking you some questions. You had certain turning movements ended up as F or E or whatever. But then you did an average, what's the relevance of the average since if any turning movement is F, it's F.

MR. DRIBAN: Yeah, so, again, we're mixing methodologies. The level of service under, under the loaded cycle methodology is predicated on the specific movement, the specific approach. Whereas, the level of service under, excuse me, CLV and, and the highway capacity manual, is predicated on the entire, on the intersection as a whole. So, you know, that overall level of service that we report, is, is what's standard reporting in --

MR. ZIMMERMAN: All right.

MR. DRIBAN: -- in the studies. You know, there certainly are some failing movements, but, you know, for every movement you circled that gets worse, you know, from, from existing to total and, by the way, the, the real comparison should be background to total, because that is what, that is,

background is everything up into our site, without our site's impact.

So, really, you know, when SHA looks at it or any of the counties look at it, they're comparing the background condition to the total condition. And so, yeah, there are some movements that fail today. There are more movements that fail under the background condition when you look at the regional growth that we've added.

But ultimate, they, the improvements, there's still some movements that fail. But there are movements that get a lot better than, than they are today as well. And those movements tend to be the movements that are carrying the highest volumes of traffic.

So, you know, to answer your question specifically, at Joppa and Falls, the, the County's loaded cycle methodology has the northbound movement on Falls as the failing movement. And that movement, I believe, gets substantially better as a result of the, the improvements that are being proposed.

MR. ZIMMERMAN: All right. Okay. Meanwhile, it was not within the scope of your work to eval, evaluate any safety issues that would relate to the addition of lanes, was there?

MR. DRIBAN: The County asked us to look at the, the turning, the truck turning template and the vehicular turning templates, to make sure that, that those movements can occur without having overlap between them and there's no sort of new,

new challenges as a result, new safety challenges as a result of that.

MR. ZIMMERMAN: Did that include movements from all the other access points, or just the movements at the inter, the signalized intersections?

MR. DRIBAN: It was the movements at the signalized intersections.

MR. ZIMMERMAN: Okay. How far back do the, the new lanes, the additional lanes go?

MR. DRIBAN: Give me one second.

MR. ZIMMERMAN: Is there any exhibit that shows that? Exhibit 16 does not seem to show the entire length of the, the additional lanes. At least, at least near Greenspring Station.

MR. DRIBAN: I'm not, which, which exhibit, Exhibit 16?

MR. ZIMMERMAN: Sixteen. Let's see, I, I think I may have that. Let's see. Okay. So, this was actually a Developer's exhibit, right, sixteen?

MR. DRIBAN: Yep. Yeah, so page two actually does show the extent of, of the modifications.

MR. ZIMMERMAN: Oh, there's a second page?

MR. DRIBAN: Yep. So, this, this shows --

MR. ZIMMERMAN: I'm having, I'm having trouble getting to your second page.

MR. DRIBAN: You've got it, this is it. What you're

showing is page two.

MR. ZIMMERMAN: Okay. So, what I want to know, at the top of this exhibit, so to speak, there's still that additional lane, correct?

MR. DRIBAN: Can you clarify?

MR. ZIMMERMAN: Well, --

MR. DRIBAN: You're saying, --

MR. ZIMMERMAN: It looks like the, well, your additional lane goes back further on Joppa Road than is shown in this picture, is what I'm asking.

MR. DRIBAN: No, so, do you see where the pavement changes, the, excuse me, the, the, the coloring changes from, it's sort of a, I don't want to say lighter, yeah, right there. That's, that's the boundary of where the improvement would extend. That's where we've, where we would be able to tie back into the existing pavement markings.

MR. ZIMMERMAN: It looks you have, okay, at that point, there are three lanes?

MR. DRIBAN: Three westbound lanes.

MR. ZIMMERMAN: Three westbound lanes.

MR. DRIBAN: Yep.

MR. ZIMMERMAN: And how far back do you, you're saying that that, --

MR. DRIBAN: That is, that is --

MR. ZIMMERMAN: -- that the, the yellow is the extent

of a new lane? That that other, back of that, that's already there?

MR. DRIBAN: That's correct. That's, those existing westbound, those are, there's an existing three lanes today that remains three lanes up to the intersection. What we've done is widen sort of right at the intersection --

MR. ZIMMERMAN: Okay.

MR. DRIBAN: -- into, to get this additional left turn lane. You can see where the marking, where sort of coloring of the, on the image changes. That's the extent of our additional improvement.

MR. ZIMMERMAN: Okay. But for anyone coming out of the Exxon cut through, if we can call it that, and they want to make a left turn, they have one additional lane to try to cross, is that correct?

MR. DRIBAN: No, no. I mean, it's, that lane, the extra lane, you can see, I wish I, I could point to it, but a little bit, sort of up and to the right of where your cursor is.

MR. ZIMMERMAN: Yeah, it's --

MR. DRIBAN: Anyway, the, the point is, that lane, yeah, sort of right in there, that lane is starting to tie back in to --

MR. ZIMMERMAN: Yeah.

MR. DRIBAN: -- the existing conditions. So, really,

somebody coming out and wanting to make a left there is not, I mean, you're crossing sort of part of a lane. But functionally, if they're looking to the left to see what traffic is coming at them, they're still looking at the same three lanes of traffic and, you know, they're crossing is, is increased maybe by, I don't know, six to eight feet, just roughly, just roughing off the, off the drawing here. But it's not an entire, it's not a full additional lane that they would have to get across there.

MR. ZIMMERMAN: Okay. Have you tried to make a left turn out of that street?

MR. DRIBAN: Yes, I have.

MR. ZIMMERMAN: You have, all right. Okay. Thank you, Mr. Driban, that's all I have.

MR. DRIBAN: Thank you.

ALJ: Okay. How are we doing, everyone? I know we have, we have to ask some more people if they have questions. Does anyone need a break? Trying to see, Mr. Zimmerman, can you stop sharing so I can just put everybody on the screen.

MR. ZIMMERMAN: Sorry.

ALJ: That's good, no, you're good.

MR. ROSENBLATT: I could use --

ALJ: Everyone doing okay?

MR. ROSENBLATT: I could use a two-minute break, Judge.

ALJ: Yep.

MR. ROSENBLATT: Or, or we could, I, if (breaking up) anyone else is going to ask questions, that's fine too. (inaudible).

MR. DRIBAN: I could, I could use two minutes if possible.

ALJ: Yeah, absolutely. Let's do that. Take a five-minute break and then we'll come back, okay? I'll pause --

MR. ROSENBLATT: Thank you.

MR. DRIBAN: Thank you.

(PAUSE)

ALJ: -- record. Okay. Back on the record after a break. Mr. Wyatt, did you have questions?

MR. WYATT: Yes, Your Honor, I just have a few questions of this witness if I may.

ALJ: Sure. Absolutely, go ahead.

MR. WYATT: Mr. Driban, good afternoon.

MR. DRIBAN: Good afternoon.

MR. WYATT: I'm Michael Wyatt. You may have heard me say earlier that my family and I live on Trelawny Court, which is off of Tallyho. I take it you're familiar with that area?

MR. DRIBAN: Yes.

MR. WYATT: All right. Please don't take offense to the questions I have to ask you. But a lot of my neighbors may not understand your role in this proceeding. So, I want to ask

you a few questions about, just for clarity, you, you work for the Developer in this case, correct?

MR. DRIBAN: We are the traffic engineer for Tabco, yes.

MR. WYATT: Okay and you're being paid as, for that work?

MR. DRIBAN: Yes, we are.

MR. WYATT: Okay. Do you have an idea, or understanding how much your firm has been paid by the Developer through today's date?

MR. ROSENBLATT: Objection. I know in Circuit Court this stuff is allowed. We admit he's a paid consultant. I don't know if it matters how much money he's making.

ALJ: I understand, but they can ask it, it's cross examination. Overruled. Go ahead.

MR. DRIBAN: I'm not, I'm not certain. I don't handle the accounting.

MR. WYATT: Well, based on your familiarity with other projects in which you've been involved, can you give us a ballpark of about approximately how much some, something like this through today's date would cost a Developer for having your firm involved?

MR. ROSENBLATT: Objection.

MR. DRIBAN: I, I would have to look that up.

ALJ: Overruled.

MR. WYATT: Can you tell us, okay, so your answer is you, you don't know how much Lenhart Engineering, the firm by whom you're employed, has been paid?

MR. DRIBAN: I'm not certain on this project. I can tell you that for, you know, a typical traffic impact study, we, it cost around, between $7,500 and $12,500 for the traffic impact study. And then, additional studies, you know, would cost, would, would be additional. We've certainly done additional studies, but I'm not certain what the total cost would be at this point.

MR. WYATT: All right. Can you give us a sense of, does your firm do any work for community groups or Protestants of developments?

MR. DRIBAN: We do work for public agencies throughout the state, but we don't, we don't do Protestant work typically.

MR. WYATT: Okay. So, other than the agency work to which you alluded, and I'm not sure quite what that means, but we can come back to it, a hundred percent of the work of Lenhart Engineering is done on behalf of developers?

MR. DRIBAN: Other than the agency work, but there is agency work that we're doing.

MR. WYATT: I understand. Other than the agency work.

MR. DRIBAN: I mean, those are kind of the only two

things that, I mean, those are really the two types of work that exists in, in traffic. I mean, there's, there's public work and there's private work.

MR. WYATT: No, I understand. But one hundred percent of the private work --

MR. DRIBAN: So, yes, of the non, of the, of the non-public work, all of our private work is developer. I mean, we may have worked for some non-profits at different points, but, but.

MR. WYATT: Thank you. A hundred percent of the work is on behalf of developers that work, which is private?

MR. DRIBAN: A hundred percent of the non-public work, which is not a hundred percent of our work, is, is, is for developers.

MR. WYATT: Okay, thank you. And, and how many projects have you or your firm been involved in where there are three class F intersections in Baltimore County?

MR. DRIBAN: We've, I think to, to Mr. Zimmerman's point earlier, the Falls Road corridor is really the only location where there are three class F intersections in, in proximity. So, this is, we've certainly done work in the County, but this is the first, as I testified to earlier, my first time doing a special variance for, for this.

MR. WYATT: All right. Have you, have you ever heard of a case in, in your experience, where there are three failing

intersections involved in one development?

MR. DRIBAN: Yeah, I mean, I don't think it's that uncommon. There are certainly congested areas in other counties that, that have failing intersections. In Baltimore County, it's, it's certainly not a, not common place. But, you know, some of that has to do with the way the intersections are rated here.

MR. WYATT: Yeah, let's talk about the ratings for a second. You agree with me that the variance being sought by the Developer in this case is not something that's granted at the State of Maryland level, correct?

MR. DRIBAN: It's governed by the County's zoning regulation.

MR. WYATT: All right and this, in other words, this, this is not something the State Highway Administration or Maryland State government or Department of Transportation has any jurisdiction over?

MR. DRIBAN: They don't have jurisdiction over the special variance, but as I testified earlier, the State does control, you know, any modifications or changes that would occur to Falls Road have to be approved by the State.

MR. WYATT: I, I remember your testimony quite well, sir. I'm only asking you as it relates to the granting or denial of the special variance being sought in this case, the State of Maryland has nothing to do with it.

MR. DRIBAN: That's correct.

MR. WYATT: Okay and the State of Maryland, you would also agree with me, doesn't have any role whatsoever, in the level of service designations that are made as part of Baltimore County's basic service map.

MR. DRIBAN: That's correct.

MR. WYATT: Okay, all right. You testified earlier that it was your understanding in this project that the Developer was good to go, or basically, that approvals relating to the traffic issues had been provided by, I think it was Pilsinger and Karski in early 2021. Do you remember that testimony?

MR. DRIBAN: I do.

MR. WYATT: All right. And then, it turns out that additional work was requested by Baltimore County. I think you told us there was some personnel changes that may have brought that about and as a result of that, you did some additional work, corr, is that accurate?

MR. DRIBAN: That's accurate, yeah.

MR. WYATT: Okay and one of the things that you've done now in the, in, strike that. Some of the additional work you did was relating to my neighborhood and Tallyho Road. Didn't you testify to that?

MR. DRIBAN: I did, yeah.

MR. WYATT: All right and you also alluded to traffic

calming measures that you seem to suggest you were part of, I want to, I want to get clarification from you. Your firm had no involvement at all with Seminary Ridge's obtaining traffic calming measures through Baltimore County, correct?

MR. DRIBAN: I think I was very clear on my testimony that we, the timing of when we started to engage with the County, you know, the speed humps, we were in corr, we were in correspondence with, with Keith Lank, who manages the County's traffic calming, as well as Greg Karski and others.

And, you know, we did provide some information to them and, and it was, and it was immediately following that back and forth that they were installed. But I was very clear that, you know, I can't say whether we had any influence over that or not, other than the fact that we were in communication with them at, on a project that had been shelved, in my understanding, for at least five years, I think longer than that.

They had, there were design plans that were provided to me by the County showing those speed humps from, you know, I don't have an exact date. But it was more than five years ago and they hadn't, you know, they hadn't moved at all to that point and they were installed during the course of our correspondence. So, I never testified that we, that we influenced that or, or didn't. But the timing was around the time we were corresponding with the County.

MR. WYATT: I mean, would you agree with me it's completely coincidental, but from your testimony yesterday, you would, someone could be led to believe that Lenhart was involved on, on a nearly gratuitous basis in obtaining something that was sought by my neighborhood, my neighbors and I, for quite some time? I just want to make sure it's clear, you were not directly involved in any of that.

MR. DRIBAN: I think if you re-read my testimony from yesterday, I don't, I don't think I purported to be directly involved in that. I, again, we had conversations with them at the time and that's all, you know, that's all I testified to.

MR. DRIBAN: Sir, you brought it up. No one asked you about it, you gratuitously brought it up as part of your testimony that the timing was such that you may have had some influence over the implementation of traffic calming measures. I'm suggesting to you that that was your testimony and that was the impression you intended to create when you testified/

MR. ROSENBLATT: Judge, objection. Asked and answered, I think very clearly, what his testimony was. And to my recollection is consistent with his testimony. This is like the fourth time (breaking up) some sort of admission that I don't think exists.

ALJ: Okay. I, I recall his testimony yesterday and I, and I believe he said he wasn't sure whether they played a part in it, but then it was sort of a coincidence, as Mr.

Wyatt's alluded to. So, I'll sustain the objection. Go ahead, Mr. Wyatt.

MR. WYATT: All right. Thank you, Your Honor. Mr. Driban, as part of your work, do you read, read literature on traffic analysis, traff, traffic analysis, traffic study, try to keep up with publications?

MR. DRIBAN: Sure, yeah.

MR. WYATT: Both past and present?

MR. DRIBAN: I'm not sure what you mean by that.

MR. WYATT: Well, have you, let me ask you specifically, are you familiar with the work of Doctors Chang and Joseph of University of Maryland that are somewhat critical of critical lane, no pun intended, critical lane volume analysis?

MR. DRIBAN: I'm not familiar with the specific information that you're discussing.

MR. WYATT: I mean, have you ever come across in, in, as part of your work, criticism of other experts to the critical lane volume method because it, it lacks a basis of, or it's not empirical, it's not based on first, firsthand, hard data. But it's all more theoretical, or hypothetical, in a sense. Have you ever heard that (inaudible)?

MR. DRIBAN: I, I've not seen that. I, and it actually is based on hard data. I mean, the turning movement counts that are physically collected are what, are what make up

that CLV, the CLV numbers. So, I don't, I'm not familiar with the literature you're discussing. But I don't, I don't think it's fair to characterize it, as, as not being based on empirical data.

MR. WYATT: All right. Let me, let me ask you when you, sometime just prior to a hearing that was scheduled in this case, I think last August, that's August of 2021, were you asked to conduct additional work by Baltimore County, which resulted in the postponement of the hearing?

MR. DRIBAN: The request for the additional work was in June of, of 2021 and was completed in the very beginning of July of 2021.

MR. WYATT: All right. Do you remember this matter being scheduled for a hearing subsequent to that, I think it's August, I'd have to go back and look, but sometime in August of 2021, and then being postponed again as a result of additional requests from Baltimore County relating to traffic?

MR. DRIBAN: My recollection is that the original, the original hearing was from November of, what was supposed to be November of last year. I'm not certain on that date.

But, but yes, it was postponed and I think a part of the reason for that was, I mean, certainly, it was traffic and I think would have been the e-mail that we've discussed, or the comments that we discussed that Mr., can't remember at this point whether it was Mr. McCann or Mr. Zimmerman put up, I

think it was Mr. Zimmerman, where there was County, very critical remark from the County that where, in their, in their opinion, related to a traffic impact study. But actually were related to a sensitivity analysis that was requested by others at the County who subsequently left.

MR. WYATT: That timeframe could be accurate, I, I don't, it was sometime last, late summer, early fall. There was a hearing that was scheduled, it's been postponed until we resumed this in September of 2022. So, almost a, a year or ten- or eleven-month delay, would you agree with that?

MR. DRIBAN: I believe that's correct.

MR. WYATT: All right and during that time, I think you testified you've had interactions with State Highway Administration in terms of getting approval for the proposed improvement, roadway improvements, correct?

MR. DRIBAN: We certainly have had interactions with State Highway. The, the improvement at Joppa was, was approved well before that. I mean, there's a letter from January of 2021, stating their, their agreement with the traffic impact study, which would, which included that improvement. Subsequent to that, there were other discussions with SHA as a result of kind of ongoing work, but that improvement has been, has been approved by them for, you know, since January of 2021.

MR. WYATT: All right. Well, that's actually, actually, yeah, thank you for that clarification. So, what I'm

hearing from you is that basic, basically, the Developer went ahead and was trying to get SHA approval of the roadway improvements before even Baltimore County had given indication that a special variance would be given in this case, correct?

MR. DRIBAN: The, the project followed the typical course of a project. So, when we submit a traffic impact study, the traffic impact study does not just go to the County agency or to the State. It goes to both at the same time, almost across the board, that's, that's the way it works.

And sometimes, the County agency will approve the study before the State agency does, sometimes the State will, will approve it beforehand. But, but, you know, that traffic impact study that was submitted to both agencies included the improvement to Joppa, to the Joppa Road intersection and it was approved by SHA in January of 2021. It's, it's not, I mean, the process was the same as, same as any other development, you know, that we would work on.

MR. WYATT: I, I realize there's always some degree of push/pull in development work. But what I thought I heard you say yesterday and confirmed Mr. McCann's question earlier today, was that the Developer actually did, did this a little bit out of sequence, was proceeding at Developer's own risk in getting the SHA approvals in place before having the confidence of a, of a grant or denial of a special variance in this case.

MR. DRIBAN: Right, so there's two, there's two, when

we talk about SHA approvals, there's two pieces to it. The first is, approval of the study and any mitigation or improvements that are required as part of the study. That's what was approved in January of 2021 by SHA.

What the, where the Developer elected to move forward, kind of how, ahead of how they typically go is, although it's not, you know, it happens, but what, what, where they elected to move forward was to pay someone to do detail design of, of the plans, to work through SHA's process in order to obtain, before you can actually construct within SHA's right of way, you have to have step one done, approval of the study and concept plan and then you have to have step two, which is approval of detailed design plans that are fit to be bid by a contractor and, and actually constructed.

So, they elected to move forward with step two, the detailed design plans, and that's what's in process with SHA now so that if this, this project is, you know, ultimately, receives approval from Baltimore County to move forward, they are ready to build that improvement as soon as possible in order to, to help mitigate their traffic.

You know, other, I, I said it's uncommon, but other develop, other developments have done that. It's not, it's certainly not out of the question and, you know, yeah. So, when I said that they, that they kind of moved forward, they didn't do anything that was untoward or improper. They

actually were trying to move forward with something at their own risk for the benefit of, you know, the public.

MR. WYATT: Okay and then, when you talked earlier about Baltimore County requesting that you use its numbers, those were the LCM numbers that they were requesting you to use, correct?

MR. DRIBAN: Traffic, it was traffic counts. The turning movement counts (inaudible) intersection.

MR. WYATT: All right and that's from their, their own LCM data, is that your understanding?

MR. DRIBAN: When you say LCM data --

MR. WYATT: The, the data, the data that Baltimore County collects as part of its rating for the level of service of intersections.

MR. DRIBAN: I'm not certain whether that count was from that data or whether it was a separate count that they, that they conducted. Agencies do, from time to time, go out and conduct counts at various intersections and I don't know whether, I, I can look it up, but I'm not certain whether that was the --

MR. WYATT: Well, you used it as part of your analysis in your report. You're not sure, it, it's loaded cycle methodology counts, you would agree there, right?

MR. DRIBAN: It was a count, it was a count that the County, so loaded cycle methodology is a methodology for

analyzing an intersection and the, and the degree of adequacy at that intersection. A turning movement count is separate, is separate from that. So, what we were given was a turning movement count.

MR. WYATT: All right and is it your understanding what you were given in turning moving counts was based on observation or based on some other methodology?

MR. DRIBAN: It was a count that they conducted, so it would have been based on somebody out there looking at traffic volumes and counting the actual number of vehicles, as I explained the process earlier.

MR. WYATT: There, there was, I think Mr. McCann had a, had an aerial in Exhibit 38, Your Honor, if I could impose and just ask you to pull up, I think it's Protestant's Exhibit 38. It's an aerial photograph.

ALJ: Mr. McCann had that on his screen. He just high, he pulled up Google Map and put it on. Mr. McCann, would you --

MR. WYATT: Oh, he did? Okay.

MR. MCCANN: I, I actually took a screenshot of it and sent it to Adam, so I can pull it up if you want me to.

ALJ: If you could. And, and let me, yes, let me do this. Let me just give, hold on one second. Let me give Mr. McCann the presenter token and then he'll put it up on the screen for you.

MR. MCCANN: Actually, I say that and I'm having this issue with my computer again. I can't --

MR. ROSENBLATT: Judge, if you send it to me, Mr. McCann did e-mail it to me, and I can pull it up.

ALJ: Okay. Let me, let me move over to Mr. Rosenblatt then. Okay, Mr. Rosenblatt, you now have the presenter token. I didn't have it, Mr. Wyatt, I don't have the exhibit so I --

MR. WYATT: I understand.

ALJ: Yeah, so, could you zoom in maybe some? Yeah. Thank you. It's small on your screen. There, it's better. Okay. There you go.

MR. WYATT: All right. So, I just, Mr. Driban, in looking at this and then based on your familiarity with, with being out in that area, there's substantial parking lot coverage and, and buildings that are not even on this, would you agree with that?

MR. DRIBAN: There are parking lots, sure.

MR. WYATT: Okay. Yeah, like for example, Meadow Wood Recreational Park has a pretty big parking lot. That's not included in this aerial, right?

MR. DRIBAN: I'm not familiar with specifically what, whether it is or is not in this aerial.

MR. WYATT: Well, do you know where it is?

MR. DRIBAN: Yes.

MR. WYATT: Okay. It's west of Falls Road.

MR. DRIBAN: Yeah, --

MR. WYATT: Right at the intersection of Joppa, the one we're talking about in this case?

MR. DRIBAN: Yes.

MR. WYATT: Meadow Wood Park?

MR. DRIBAN: Yep.

MR. WYATT: Okay. You see they have a parking lot there that's not depicted on this aerial photograph?

MR. DRIBAN: Yes.

MR. WYATT: All right. There's also some office buildings and a new Johns Hopkins testing facility and physician's building to the, to the top of the photograph and, and further up to the left, to the, I guess the, the north part of, across from Greenspring Valley Road, heading north, that's not shown on this. Do you remember those areas when you were out there?

MR. DRIBAN: That appears to be the case.

MR. WYATT: Yeah, but you, your, you testified earlier that a lot of the side streets that come out onto Joppa and Falls Road are, are not accounted for or they're accounted for not directly, but you said more or less indirectly as part of your work, right?

MR. DRIBAN: I don't recall specifically saying those words but they're not, they're not in the CLV or the HCM

outputs.

MR. WYATT: Did you do any studies or have there been any studies of, of this area, not, not at peak p.m. rush hour, but during peak, let's say school pickup and drop off hours, 2:00 to 3:00 to 4:00?

MR. DRIBAN: I have been out there during those times, but we didn't study that because that's not what is required under traffic impact study guidelines.

MR. WYATT: Right, I understand it's not required. But do, do you remember, you, you understand St. Paul's School is further up the road on Falls Road, right?

MR. DRIBAN: Um hm.

MR. WYATT: All right and have you ever been at, at St. Paul's School when it's exiting or when, when school is letting out or when there's an athletic event up at St. Paul's School, Falls and, at Falls and Seminary?

MR. DRIBAN: I have.

MR. WYATT: Okay and did you notice any congestion or extra traffic on the road at that time that would be unusual for that time of day?

MR. DRIBAN: There are short peaks that occur when, when any school, whether it's St. Paul's School or any other school is letting out. You know, you can have a rush of traffic for, you know, five, ten, fifteen, maybe twenty minutes that's, that's a higher volume than, you know, when there's,

when there's not school letting out. And I think that St. Paul's School is, is similar.

MR. WYATT: And then you also have athletic events taking place at Meadow Wood Park throughout the day that I don't think anybody's talked about in this case. Are you familiar with that use?

MR. DRIBAN: I know there's a park there, I'm not familiar with the specific events that may occur or not.

MR. WYATT: Do you know what kind of park it is?

MR. DRIBAN: It looks like soccer, athletic fields.

MR. WYATT: All right and if I told you it was a large recreational park for Baltimore County and used both by public and private schools, would you, would you have any reason to dispute that?

MR. DRIBAN: I, I believe that.

MR. WYATT: And then one other thing, I think you said in response to Mr. McCann's testimony, that you couldn't say for sure what the level of service would be for any of these intersections after the roadway improvements, is that accurate? Am I, did I hear it correctly?

MR. DRIBAN: Well, we can say from the highway capacity manual and CLV methodologies, but the loaded cycle methodology doesn't offer a predictive way to determine that.

MR. WYATT: All right. So, today, based on the way the County makes designations under level of service, there's

no way to know that it's going to be anything other than where it is now, if, based on the roadway improvements, correct?

MR. DRIBAN: Based on the loaded cycle methodology, there's, there's not a way to look at that.

MR. WYATT: All right. And I think that's all I have. Thank you, Mr. Nebre.

MR. DRIBAN: Mr. Driban, yep. You're welcome.

ALJ: He's Driban, he's not Mr. Nebre. He's Mr. Driban.

MR. WYATT: Driban, excuse me.

ALJ: That's okay.

MR. DRIBAN: Yep.

ALJ: No problem. All right. Mr. Sachse, do you have any questions at all?

MR. SACHSE: Yeah, a couple if it's okay.

ALJ: Absolutely, go ahead.

MR. SACHSE: We probably should bring that, the exhibit back, I don't, I don't think I really need to. I just have a question and that is are, Mr. Driban, are you aware that as you travel north on Falls Road, you go through the intersection at Joppa and then you go to the light at Greenspring Valley, and there's some office buildings on the righthand side, Maryland Pediatric, I believe. And then the roadway goes into one lane. Are you aware of that?

MR. DRIBAN: Yes.

MR. SACHSE: And I know you've said you've, you're aware of St. Paul's. Have you ever noticed, or been there in the morning when the traffic actually backs up to where it goes from one lane at Seminary to two lanes on Falls Road? In other words, people traveling north on Falls Road will be backed up because of the traffic at St. Paul's and the reduction of lanes from two to one, backed up all the way to Maryland Pediatric and beyond, from Seminary.

MR. DRIBAN: I'm not, I've not personally seen that, but I, I'll take your word for it.

MR. SACHSE: Oh, you'd have to, because I've been in it. On Seminary, as you approach the light at Falls Road in the morning, going from Seminary to Falls Road, have you ever personally been there and seen the traffic back up that can go as far back as Tallyho?

MR. DRIBAN: I can't speak specifically as to whether it goes as far back as Tallyho, but I have seen, I have seen traffic on that approach.

MR. SACHSE: Okay. I, I, I can assure you it does, because I can speak to that. But the, the inter, is any work being done at the intersection of Falls and Seminary to help rectify the long, long, long delays that are caused by these backups?

MR. DRIBAN: We're not part of that, that failing traffic shed, so, you know, we're not proposing anything

specific at that intersection other than signal timing changes, which would facilitate movement of traffic throughout the entire corridor in conjunction with the improvement we're doing at Joppa.

MR. SACHSE: When you say you're not part of the traffic shed, you mean, Greenspring Manor development would not be part, considered part of that traffic --

MR. DRIBAN: If you look at the County's GIS maps --

MR. SACHSE: -- shed?

MR. DRIBAN: -- (inaudible) --

MR. SACHSE: (inaudible).

MR. DRIBAN: I'm sorry, you broke up right in the middle of that, can you repeat?

MR. SACHSE: I'm not sure.

MR. DRIBAN: I think, I mean, the, what I was saying is that the County's GIS map shows that the Greenspring Manor development is not in the Seminary at Falls traffic shed, for, for basic services map.

MR. SACHSE: Okay and, and I, I apologize, because basic services maps and the manuals and stuff, I'm not really that familiar with. I do live in Seminary Ridge. Now, do you know, I think you may have testified to it, but do you know how many houses are on Tallyho Road between Seminary and Joppa Roads? So, both in the Seminary Ridge and Heather Field developments.

MR. DRIBAN: I don't have that number handy, but at some point we did count those houses and --

MR. SACHSE: If I told you it was seventy-seven, would that sound about correct?

MR. DRIBAN: Sounds, sounds right.

MR. SACHSE: Pretty close, right? And from your knowledge, the speed humps and the prior stop signs that were at every intersection were because of the significant number of cars that were passing from Joppa to Seminary and at pretty high speeds. Did you understand that to be a fact?

MR. DRIBAN: I understood that that was a community concern and that, you know, traffic calming devices were installed based on community concerns. I don't know specifically why, what the County's, you know, whether it was speed related or something else. But, but I, I mean, that would be a reason to install those types of, of (inaudible).

MR. SACHSE: Makes sense. Do you know how many houses are on Mays Chapel to where the gate from Seminary, where the gate is right now?

MR. DRIBAN: In, in the neighborhood, you mean?

MR. SACHSE: Right, just from, you, you know where the gate is?

MR. DRIBAN: Yes. I, I'm asking if you're talking about just on Mays Chapel Road specifically or within the, or within the development?

MR. SACHSE: Oh, no. Just on Mays Chapel Road.

MR. DRIBAN: Just on Mays Chapel Road, I don't know the specific number. It looks like ten-ish, plus or minus, that are on Mays Chapel. I think there are ninety-nine total in the neighborhood west of Mays Chapel and something like twenty-seven, that might not be the exact number, east of Mays Chapel.

MR. SACHSE: Right, but this, this is what I'm getting at and, and maybe it's pretty obvious, but this question has to do with the cut through from Joppa to Seminary, which will be blocked by a gate, correct?

MR. DRIBAN: That's --

MR. SACHSE: That's the proposal.

MR. DRIBAN: That's the proposal.

MR. SACHSE: Right, and the number of houses on Mays Chapel from the gate to Seminary that would be affected by pass through traffic, if I told you it was four, would you, would you find that to be pretty close or correct?

MR. DRIBAN: If you told me there were four houses along Mays Chapel Road, I --

MR. SACHSE: (inaudible) and I don't mean to interrupt you, but I, I don't, from, from the gate to Seminary on Mays Chapel.

MR. DRIBAN: Yeah, if, if you're telling me there are four houses along Mays Chapel, I think I count five, but

regardless, it's not just those houses that would be impacted. It's, it's every --

MR. SACHSE: That's not my question. But my, my, my question (inaudible) --

MR. ROSENBLATT: Wait, wait, wait. Mr. Sachse, he's answering your question. He has to have a chance to finish (breaking up).

ALJ: One second, yeah. One more thought. He said, I think he said --

MR. SACHSE: I'm sorry.

ALJ: -- (inaudible) those houses impacted so what other houses, Mr. Driban?

MR. DRIBAN: Yeah, you were, you were talking about the im, you asked how many houses would be impacted. I agree that there are, I think, I count five, but again, four or five along May Chapel. But the impact is not just to the people that live right along Mays Chapel.

It would be to, you know, any, anybody in that neighborhood who might be out walking their dog or riding their bike or, you know, using that street. The people that use, you know, that should be using that street and that are using that street are not just the four houses that live along there.

MR. SACHSE: Do you know the section that I'm talking about, the short section between Seminary and the gate, in relationship to the rest of the Mays Chapel houses? And where

the sidewalks are and where the walking would be and where the pedestrians would be in the Mays Chapel development?

MR. DRIBAN: I don't believe there are sidewalks in that, along that section of Mays Chapel Road.

MR. SACHSE: Yeah, yeah, there are none along the section where, from the gate to Seminary. I mean, I think we agree on that.

MR. DRIBAN: Yeah, so I'm not sure what you're, so what's your question?

MR. SACHSE: Well, you talk about the effect being on more than just the four houses that go from the gate to seminary, that there could be people walking or riding their bike or the like. But the entire bulk of the neighborhood is to the west of the Mays Chapel gate.

MR. DRIBAN: Okay. I mean, --

MR. SACHSE: So, what, what I'm looking at, truly, is the impact for traffic on the pass through would be, essentially, to those four houses and I'm, I understand you're saying there are other people that may be taking walk out there, although there are no sidewalks, that's not part of major, part of a development, but it could affect those people too. I think that's what you're saying. It's not just the four houses.

MR. DRIBAN: Yeah, I'm saying if, if the gate is closed, then there are, you know, ninety-nine houses west of

Mays Chapel and twenty-seven east of it. The twenty-seven might not be the exact number. But whatever the number, whatever the number is, you know, those people have the ability to walk around, I mean, their neighborhood is in a loop, so they have the ability to walk around that loop, or bike, or kids are out playing, you know, they can be out there.

If you open that road up, it becomes a major thoroughfare and, you know, and it's, so it's impacting the community's usability of that, of that road.

MR. SACHSE: Well, you, you did say something, and I, I, I may not have picked this up correctly. But you said that there would be, several hundred vehicles would be incentivized to use that pass through --

MR. DRIBAN: (inaudible) --

MR. SACHSE: -- did I say that correctly?

MR. DRIBAN: That's, yeah, that's what our analysis showed.

MR. SACHSE: Well, what was the analysis based upon?

MR. DRIBAN: So, the analysis was based upon, I mean, some of the things that you just raised. Seminary today, you know, there are, I, if you want exact volumes, I can try to pull them up. But there --

MR. SACHSE: No, I, I, I understand the volumes are tremendous.

MR. DRIBAN: Yeah, there, there are hundreds of

vehicles today that go westbound on Seminary, so towards St. Paul's School, and make a left onto Falls Road, right? And when they turn left onto Falls Road, there's a signal at Seminary, there's a signal at Greenspring Valley and there's a signal at the Joppa intersection.

MR. SACHSE: Right.

MR. DRIBAN: If you open up a connection that has no signals, and so, now somebody can make, can travel westbound on Seminary, they can turn left into Mays Chapel Road, it's a very direct connection through a neighborhood, no signals.

MR. SACHSE: Um hm.

MR. DRIBAN: They can turn right out onto Joppa Road and then make a left at, at Falls Road, there is a travel time savings of not having to stop at the lights there. Because the connection is, is, essentially, equally direct to the connection along Falls Road, but doesn't have any traffic control devices. So, we looked at, --

MR. SACHSE: So, --

MR. DRIBAN: -- we looked at the total volume of traffic today that does the, the first movement I said, which is westbound Seminary to southbound Falls. And then we looked at the corresponding movement, which is northbound Falls to eastbound Seminary. So, a northbound right turn at that intersection.

And we ran that through the travel time model,

Simtraffic model, and looked at where there would be a travel time savings, you know, how, what percentage, what percentage of those existing movements would be able to make it through Joppa, from Joppa, through the Mays Chapel cut through, up to Seminary in a faster time with, then, then staying on Falls Road.

And the result was, something on the order of magnitude of two hundred fifty vehicles during the morning and something like three hundred vehicles during the evening.

MR. SACHSE: Does that take into account that those vehicles would have then making the turn on Tallyho, so would that reduce the traffic on Tallyho that would go to Mays Chapel? Or you don't know, it's not part of the analysis?

MR. DRIBAN: I, I'm not certain on that. I mean, I, what I can tell you is that Tallyho, when we conducted the analysis, it's a much longer route, and there are speed humps, a number of speed humps, as you're aware, within the neighborhood and, and the volume of cut through traffic, or the traffic that is incentivized to do that is reduced by those speed humps and by those longer --

MR. SACHSE: I'm sorry, (inaudible) --

MR. DRIBAN: -- and by, the volume of traffic that's incentivized to cut through Tallyho, you know, so when we're talking about traffic and the route, the route choice, it's, it's all about incentives, it's all about what's the fastest

way I can get from point A to point B, or the safest way or, you know, some combination of the two.

But Tallyho has, has a number of speed humps and the route is much longer than, you know, than the cut through route that would be created along Mays Chapel. So, frankly, again, you know, the data shows that there's not an existing cut through problem in Tallyho. There is some traffic that does it, but it doesn't rise nearly to the level, you know, that jurisdictions consider, consider it to be an issue.

And Mays Chapel, being a much more direct route and closer to Falls Road, you know, the, the analysis that we did shows that that would be a much more utilized route and, and would actually be problematic in terms of, you know, cut through traffic volumes.

ALJ: I think Mr. Sachse's computer may be having problems. I think he was cutting out. Mr. Sachse? I could still hear everything. Could everyone else hear? I think we could all hear, yeah. It was fine, your testimony was fine, it was just that I think his computer cut out. Or his internet, or something.

Let's see. See if he comes back here. Let's just give it a minute. Looks like we lost him. He probably will come back, I would imagine, if he logs back in. Is everyone else doing okay though in terms of, I guess, just, we just took a, a break. I don't know if it makes sense, Mr. Rosenblatt,

before I get to your re-direct, because I want to make sure Mr. Sachse is finished. Does it make sense for everyone just to take a break for lunch and then we can come back?

MR. ROSENBLATT: We can, yes. I'm going to be very quick with re-direct barring some big change in the rest of Mr. Sachse's questioning. Yeah, I think it makes, makes sense, yeah, because I can't really ask the questions until he's done.

ALJ: Until he's finished, yeah.

MR. ROSENBLATT: And then, while, for good use of time, there's, there's one witness we have, it's really a citizen witness that I have promised to call and, as part of the case now (breaks up) after Mr. Driban is done, just for planning purposes for everyone.

ALJ: Okay.

MR. ROSENBLATT: And I don't think that'll take long.

ALJ: Okay. So, what we're going to do is, then let's just take, let's just take a lunch break now in case, you know, and then I think maybe Mr. Sachse will come back in hopefully. Maybe if someone's on here, they can tell him that we're just taking a lunch break waiting for him. How long, so, half hour, does that work? The same as yesterday, everyone?

MR. MCCANN: Yeah, so is --

MR. ROSENBLATT: Absolutely.

MR. MCCANN: I'm sorry, didn't mean to interrupt.

ALJ: Go ahead. Go ahead, Mr. McCann.

MR. MCCANN: It sounds like, so, when you, Adam's got one more witness. So, I, I've got folks lined up, obviously. So, I'll be ready for that. The only thing I did want to mention before we come back on is I have a hard break today.

ALJ: Okay.

MR. MCCANN: I've got something at 5:30. I'd rather, I don't want to wait till 5:00 to leave, I really should get out of here by 4:30.

ALJ: Okay.

MR. MCCANN: So, I just wanted to mention that. But a half, half hour is okay.

ALJ: (inaudible).

MR. MCCANN: What's that?

ALJ: I didn't ask, sorry, I didn't ask. I should have asked, but, didn't ask whether, who, if anybody had a hard stop today, so. Yeah, that's no problem, 4:30.

MR. MCCANN: Okay and, but a half hour is okay.

ALJ: Okay. Let's take the lunch break now, half hour. I'll pause the record. Let's see, it's 1:10, so let's just say 1:45 again. Okay.

MR. MCCANN: Great, thank you.

ALJ: Thank you.

MR. MCCANN: Bye-bye.

(PAUSE)

ALJ: We're back on the record after a break. And we

were, Mr. Sachse, you were in the middle of your cross examination and your internet cut out. So, I, I know you were in the middle of a question.

MR. SACHSE: (inaudible)?

ALJ: I can. You have a little delay, there's some delay with your internet, but. So, I can hear you. I mean, are you next to a router?

MR. SACHSE: It must be holiday --

ALJ: Holiday?

MR. SACHSE: (inaudible) well, that's the internet I'm on.

ALJ: I, I think so. I think your internet, yeah. Did you have more questions? I know you were in the middle of a question.

MR. SACHSE: I will, I will try just, and if I lose it, then fine, go on without me.

ALJ: Okay, no problem. All right.

MR. SACHSE: I don't want to hold things up because it took so long to come back, so if, if --

ALJ: Did it? Okay, yeah, I saw you were in the attendees room and I moved you over to the panelist. So, I saw you there, okay.

MR. SACHSE: Yeah, I appreciate it.

ALJ: You go right ahead. Let's, let's keep our fingers crossed.

MR. SACHSE: Mr. Driban, where are you?

ALJ: If you just hit the grid panel, you'll see everybody. I don't know if you see that grid panel button. You can just hit that and then you'll see, you should see everybody's picture.

MR. DRIBAN: Yeah, I think if I speak, I move to the middle.

MR. SACHSE: Yeah, that's what I thought. I had you, and then --

ALJ: There's different layouts you can look at, a grid view --

MR. SACHSE: Right.

ALJ: Yeah. And if you hit the one view, you'll have one big picture or you'll have (inaudible) --

MR. SACHSE: Yeah, no, I, I, I see it, I gotcha.

ALJ: Okay. Okay.

MR. DRIBAN: Yep, I'm here.

ALJ: Go right ahead.

MR. SACHSE: (inaudible). I, I did want to tell you I saw your dog walk by, I think, and very well behaved.

MR. DRIBAN: Okay.

MR. SACHSE: Wasn't there a dog?

MR. DRIBAN: Oh, earlier, yeah, yeah, --

MR. SACHSE: Yeah, yeah. Sorry, I just figured I'd, okay. I won't waste any more of your time. I, what I was

trying to get at is in making an analysis of incentivizing to turn onto Mays Chapel, if it's opened up, if, let's say the calming bumps were put along Mays Chapel. That would make that pretty similar to Tallyho, is that correct?

MR. DRIBAN: Well, I think the difference is the, the length of the two routes. I mean, (inaudible) --

MR. SACHSE: (inaudible) it's not, I, I, again, I, I happen to be right there. I know Seminary to Joppa is, is almost exactly one mile and --

MR. ROSENBLATT: Mr. Sachse, he was answering your question and you cut him off. I'd appreciate if you'd let him finish answering your question.

ALJ: Yeah, I don't think he did that intentionally. But yeah, so, just try to wait for each other to finish --

MR. SACHSE: Yeah, okay, I apologize.

ALJ: I don't think it's on purpose. I understand it's not on purpose. So, so, I think Mr. Driban had said the difference of the length of these two roads, Mays Chapel being shorter, and, and Tallyho being like long and winding was the difference, I guess.

MR. DRIBAN: Right.

ALJ: In his, in his view, yeah.

MR. DRIBAN: Yeah, the difference between the two is, you know, the, between Joppa and Seminary on Mays Chapel is something on the order of ninety-two to thirty-five hundred

feet. That might not be exact but just a quick measurement. And between Joppa and Seminary on Tallyho is almost sixty-two hundred feet. So, it's, you know, not quite twice as long but it's substantially, substantially longer.

MR. SACHSE: I, the, the traffic that would, let's say, Mays Chapel was opened up, would the, and, and the calming bumps were also, calming whatever you call them, were put in there, would the analysis remain the same? And if so, would the vehicles that you project going down Mays Chapel are ones that would have gone down Tallyho but are now going down Mays Chapel or do you not know?

MR. DRIBAN: I, the, so bumps anywhere will have a calming effect to some extent. However, you know, in terms of whether it would make Mays Chapel and Tallyho the same, I don't believe it would because Mays Chapel is much more direct route than Tallyho is.

As far as the second part of your question, you know, whether some of the small volume of traffic that today cuts through Tallyho would potentially cut through Mays Chapel instead, I, I think it's likely, given that if Mays Chapel were to be open, that, you know, it's a shorter route, I think, you know, that that likely would be the case.

MR. SACHSE: Okay and if the gate is up, I, I know you explained the different ways that it might be opened by emergency personnel, but --

MR. DRIBAN: Yes, --

MR. SACHSE: If you were going to say something, go ahead. I didn't --

MR. DRIBAN: Sorry, I was just going to say there, there are, there are a number of different ways that it can be opened by emergency personnel. I gave, I think, a couple of examples, but that's (inaudible) --

MR. SACHSE: Right.

MR. DRIBAN: -- not a comprehensive list.

MR. SACHSE: Right. But, let's say, for example, as you, as you were exiting Greenspring Manor, if it were, if it were built, now you're up, right there at the gate is very close to Seminary. But you don't have a choice, you can't go that way. So, you have to go down to Joppa. But you talked about what if a tree fell. What if a tree fell down by lot one and you were in Greenspring Manor and wanted to get our or wanted to get in, you, you couldn't, could you?

MR. DRIBAN: You would need to have the, the emergency gate opened, one way or another.

MR. SACHSE: So, everybody in the neighborhood would have to have the ability to do that and, and at that point, to keep it open so you could go in and out?

MR. DRIBAN: Well, no, I mean, it's no different than what's up north on, on Mays Chapel Road as it connects to Seminary today. I mean, if, if a tree were to fall across that

entrance, you know, there, there would need to be some way, some way in and out of there. Somebody would have to come and cut the tree down. In this case, there's a gate, and you would have to call, you know, 911 and have somebody come and open the gate in order to, to get out.

MR. SACHSE: To let anybody get in or out of either neighborhood.

MR. DRIBAN: Well, the tree presumably would --

MR. SACHSE: (breaking up) I'm talking about if there's, if, if a tree fell, say, on Mays Chapel up by Seminary, then everybody in Mays Chapel would have to get through the cut through to be able to get down to Joppa. So, they could circuitously try to get (breaks up)?

MR. DRIBAN: If a tree, yeah, I mean, with or without a gate --

MR. SACHSE: Make sense to you?

MR. DRIBAN: With or without a gate, if a tree fell across the top of Mays Chapel at Seminary either way traffic would have to get down and out onto Joppa (inaudible) --

MR. SACHSE: Right and if it (inaudible) --

MR. DRIBAN: Right, that doesn't change --

MR. SACHSE: The, the reason I'm hesitating is --

ALJ: Hold on, Mr. Driban. Go ahead, (inaudible).

MR. SACHSE: I think the internet (inaudible) --

ALJ: Hold on, Mr. Driban. Go ahead. I think

there's just a delay in his internet, so that's why it's --

MR. DRIBAN: Yeah, I was trying to --

ALJ: Go ahead, Mr. Driban.

MR. DRIBAN: I was trying to delay my response. So, so, yeah, I mean, that the, it's no different with or without the gate whether, you know, if a tree falls across Mays Chapel, then they have to find, to go up to the southern end. Assume, you know, with the development in place. With that connection in place.

MR. DRIBAN: With the, with the gate there, I think we're agreeing, so --

MR. DRIBAN: Yeah, --

MR. SACHSE: -- with the, with the gate there, there's going to be a problem if a tree falls either up at the Seminary end or down at the Joppa Road end?

MR. DRIBAN: No, I don't think it's a problem --

MR. SACHSE: Well, you, you, let me say, if you were living in the neighborhood and you needed to get out and a tree fell and you couldn't because your access was cut off, would, would that seem like a little bit of a problem?

MR. DRIBAN: That's the case today though. I mean, there's no connection south of Mays Chapel today. So, if a tree fell across Mays Chapel at, at the Seminary Road intersection, all those people would have that same issue, whether this development is in place or not.

MR. SACHSE: Those people would. The people in the new development would be completely locked in if the development was built and the gate was kept, right?

MR. DRIBAN: I'm not, I'm not following, I apologize.

MR. SACHSE: No, that's okay. I'm, I'm not always easy to follow. But what I'm saying is, you buy a million dollar house on, in this lot, in Greenspring Manor. And there's a gate giving you, cutting off your access to Seminary, which is really right there next to you, fine.

So, you have to go down to Joppa. Now, a tree falls down by lot one near Joppa. You're in the new development and you need to get out, you have to have some sort of an arrangement by which you can go up and open the gate.

MR. DRIBAN: You would likely have to, the gate would have to be opened one way or another, and that's likely via, you know, a 911 intervention, which is the same thing, if the, let's say there was no development to the north whatsoever.

That that, that Mays Chapel, the piece that's there today didn't exist and there was no development. If they built this property, and this is the case for the, for the portion of Mays Chapel that does exist, if they, if they built this property with nothing there, if a tree fell down, those, those people would be, those people would need to either have the tree chopped up or they would have to have somebody, you know, if the connection is there, they'd have to have somebody come

and unlock the gate. But it's not, I mean, if a tree falls across the road, it's going to inconvenience people, sure.

MR. SACHSE: I know, and I understand that. And I think we're going to go round and round, so I'll, I'll, I'll try to have the last word and then go on. But if there was a, since there is a, a cut through there, there's the road there, it's an easy access, but we're gating it. So, that cuts off that access between Seminary and Joppa, which would cause inconvenience to anybody and everyone living in either neighborhood if the road was blocked on either end. Because there's a gate.

ALJ: Is that a question or is that (inaudible) –

MR. SACHSE: (inaudible) --

ALJ: Well, I know since you're an attorney, you know that it's not time to testify.

MR. SACHSE: I know.

ALJ: I was just, so, but is that a question to Mr. Driban?

MR. SACHSE: I could, I could do like Mr. Zimmerman said question mark after that.

ALJ: Question mark, question mark at the end, but --

MR. SACHSE: Question mark at the end.

ALJ: Question mark, Mr. Driban. Anything additional that you hadn't already said?

MR. DRIBAN: I think I've, I think I've covered it.

MR. SACHSE: Yeah, and, and I appreciate it. I, I appreciate your time.

ALJ: Yep, absolutely, yeah. Absolutely. Any other questions, Mr. Sachse?

MR. SACHSE: I, I, yeah, I did have a question about the, the turns coming out of Tallyho and coming out of, on Seminary and on Joppa. The numbers that you gave, I didn't really understand, but you indicated that I think in, if I can read my own writing, September of 2021, there, it was sixty-one, forty-four, sixty-six, sixty-five, I think that's a.m. and p.m. But you weren't sure whether they were on Tallyho or on Seminary, which, which are attributable to either.

MR. DRIBAN: Well, so no, so the first, the first set of numbers I gave were from data that Baltimore County provided. And so, it was either they, they were volumes along Tallyho Road, either at, like approaching Seminary, pulling up to Seminary from Tallyho Road, or pulling up to Joppa from Tallyho Road.

I don't, just, in the, in the moment, trying to go through them, I don't know, I, I'm not sure whether it was Seminary, those were approaching Seminary or approaching Joppa. But they are the volumes specifically coming into or leaving the neighborhood along Tallyho Road.

MR. SACHSE: May I ask you a question? And I'm being serious. You did give 2015 numbers that were from the County,

correct?

MR. DRIBAN: Those were 2015 volumes from the County, yes.

MR. SACHSE: Weren't there 2021 numbers that either you, your company, somebody else had come up with?

MR. DRIBAN: We collected, we did an origin destination study, and part of the origin destination study involved us determining the number of vehicles, again, for those same two approaches. So, leaving the neighborhood or coming into the neighborhood along Tallyho Road along Seminary, and then the same thing, coming into and leaving the neighborhood along Tallyho Road along Joppa Road.

MR. SACHSE: And they, that was some time in 2021?

MR. DRIBAN: Yes, we conducted those counts over a couple days in 2021.

MR. SACHSE: And that's where I think I had the numbers sixty-one, forty-four, sixty-six, sixty-five.

MR. DRIBAN: That matches what I have, yes.

MR. SACHSE: Okay and do you know the sixty-one, sixty-four, was that at Seminary or you don't, you don't know?

MR. DRIBAN: That is at, that's at Seminary.

MR. SACHSE: And so, the sixty-six, sixty-five were at Tallyho?

MR. DRIBAN: No, those are the p.m. volumes at, at Seminary.

MR. SACHSE: Okay. So, when, when, and I'm not going to belabor it, I'm just, it's more for my curiosity because I didn't understand. So, it's at Seminary that there are, there's, a.m. is how many vehicles turning at, off of Tallyho, or into Tallyho, at Seminary and Tallyho?

MR. DRIBAN: Yeah, so, leaving Sem, leaving Tallyho onto Seminary, there's a total of sixty-one vehicles during the highest volume, in the highest hour in the morning.

MR. SACHSE: Right.

MR. DRIBAN: There are forty-four vehicles that make the, the opposite movement of that, which is coming into Tallyho Road from Seminary in the morning.

MR. SACHSE: Okay, okay. So, I, I think I understand now. So, those, those are basically in and out numbers.

MR. DRIBAN: It's in and out of Tally, yeah, exactly. So, those are the morning, and then the evening is sixty leaving Tallyho and sixty-five coming into Tallyho --

MR. SACHSE: You --

MR. DRIBAN: -- from --

MR. SACHSE: No, I understand, and you helped me on that. When, I mean, do, do you know the distance between Tallyho and, or Tallyho intersects Seminary and where Mays Chapel intersects Seminary?

MR. DRIBAN: I can measure it quickly. Looks like it's approximately twenty-four hundred feet.

MR. SACHSE: Was that anything that was taken into the calculations as to the incentivizing of vehicles to turn in, into Mays Chapel?

MR. DRIBAN: Yes. Yeah, I mean, we looked at the, the distance of, of Mays Chapel, you know, from, from a common point. So, we, we started at a common point on the south side and a common point on the, the north side and, and we looked at the travel time to, to and from that common point, either using Falls Road or using Mays Chapel Road, if Mays Chapel Road were to be connected.

MR. SACHSE: Okay. I, I, I think that's all the questions I have, and I appreciate your time.

MR. DRIBAN: Yeah, thank you.

ALJ: Thank you, Mr. Sachse. All right. Mr. Rosenblatt, any re-direct?

MR. ROSENBLATT: Yes, a few questions. Could I have permission to share, please? Okay, Mr. Driban.

MR. DRIBAN: Yes.

MR. ROSENBLATT: Mr. McCann asked you some questions this morning about sixteen and seventeen of your traffic report and the numbers that I've highlighted with respect to the intersection of Falls Road and what we've been calling Greenspring Valley Road, or what you have as Station Drive on, on these two sheets. You see the highlighted numbers?

MR. DRIBAN: Yes, yes.

MR. ROSENBLATT: And I believe you were asked whether the, whether the total (breaks up) in other words, whether if this project is built with the proposed improvements under these methodologies you're showing (breaks up) to the intersection of Greenspring Valley and Falls Road. Do you remember those questions?

MR. DRIBAN: I do.

MR. ROSENBLATT: So, my question is, do these two pages, this, these charts, do these account for any retiming of signals that will take place as part of the physical improvements that are made to Joppa Road?

MR. DRIBAN: They don't.

MR. ROSENBLATT: Okay. Do these (breaks up) anticipated to be once signals (breaks up).

MR. DRIBAN: No.

MR. MCCANN: Objection, objection.

MR. DRIBAN: No.

MR. MCCANN: I'm sorry to interrupt.

ALJ: So, go ahead, Mr. McCann. What's your objection?

MR. MCCANN: Well, the first question was whether they account for any retiming of signals that will take place. And I think the assumption is, and the second question that, the last question that just followed was along those same lines, I don't recall the exact wording of it.

But the, the assumption, it's, it's, it's based on assumption that retiming will, in fact, take place. This is State Highway. We, there's been no testimony that State High will, in fact, State Highway will, will, in fact, retime these lights to whatever it is that the Developer thinks it should be retimed to. There's been no evidence of that whatsoever.

So, it's, it's a, there's no foundation for that question. It's a hypothetical. He can ask, he can ask a hypothetical question, if the light is, is retimed. But I don't, I'm not, that's a fair question. But to suggest that the, can I finish?

MR. ROSENBLATT: I apologize, I thought you were done. Isn't that exactly what (inaudible) testified on, on the first or second hearing date? That signals will be retimed?

MR. MCCANN: I don't recall her saying that with, with any certainty, no. I don't.

ALJ: (inaudible) I recall her talking about it, but why don't you rephrase the question, Mr. Rosenblatt, that if, if, if the signals are retimed.

MR. ROSENBLATT: I'm sorry?

ALJ: Did you hear what I said?

MR. ROSENBLATT: No, I think it actually cut out for one second. I'm sorry, if you --

ALJ: So, I said I do recall Ms. Kuhns (phonetic) saying that, talking about the signals being retimed. I'm not

sure if it was more certain or less certain. But they would do it, if they were going to do it after the improvement was done. Would you just rephrase your question in terms of, you know, if, if it's going to get retimed?

MR. ROSENBLATT: Okay. Mr. Driban, if, if the signals are retimed, will, do these charts represent (inaudible) delay would be to that, that intersection under CLV and HCM?

MR. DRIBAN: These charts do not reflect what retiming would have, how retiming would affect it.

MR. ROSENBLATT: Did, did you study how much signal retiming, in terms of seconds, how much time retiming would be necessary to turn the CLV impacts (inaudible) and the HCM delay impact of (inaudible) at that intersection that you show on pages sixteen and seventeen of your study. Did you study how much signal retiming would be necessary to accommodate those delays (inaudible)?

MR. DRIBAN: Yes, we --

MR. MCCANN: Are we talking about Station Drive, I'm sorry, Station Drive?

MR. ROSENBLATT: Yes.

MR. DRIBAN: Yes, we, we did, we did conduct that analysis. It was reviewed by the State and County and the finding was that we would need to shift one second, so out of the entire cycle length, you know, which is several minutes

long, we would need to shift one second in order to mitigate this impact.

And SHA routinely times their, retimes their traffic signals as part of improvement projects, especially within coordinated signal systems and, you know, coordination that I had with them, understand that they will do that, you know, as part of this project, as is typical.

MR. ROSENBLATT: Okay and just to turn your attention to a prior exhibit, Developer's Exhibit 22, did you engage in meetings and/or correspondence back and forth with, with SHA (inaudible) signal timing?

MR. DRIBAN: Yes.

MR. ROSENBLATT: And showing you this Developer's twenty-two, letter dated June 10th, 2022, I highlighted a portion of the first full paragraph and ask you to explain what SHA told you in writing about whether retiming would (inaudible).

MR. DRIBAN: Yeah, so, they, what, what the highlighted portion says is it is standard procedure for the Maryland Department of Transportation, State Highway Administration, to retime traffic signals when geometric improvements are made.

In this case, since the signal and Maryland 25 and Joppa Road functions in a coordinated system with the signals along Maryland 25 at Maryland 130 and at Maryland 131, the

entire system will be retimed to reduce the wait at the intersections and maximize throughput along Maryland 25. Signal time will be reviewed and updated when the geometric improvements are complete.

MR. ROSENBLATT: Okay and I think that (inaudible) with what either the Judge or Mr. McCann just said in terms of (inaudible) timing would take place.

MR. MCCANN: What was the question again, I'm sorry, Adam? What was the question?

MR. ROSENBLATT: No, I didn't ask, I didn't, there's no pending question. Now, just one or two more questions. Mr. McCann asked you, actually I think several people now have asked you, about whether your CLV and HCM analysis takes into account these sort of side streets in and out of (inaudible) office buildings, etcetera. Do you remember those questions?

MR. DRIBAN: Yes.

MR. ROSENBLATT: My question is, when you had existing (inaudible) information that (inaudible) analysis, what, what effect does, does these existing access points have on the gate that you have for existing traffic?

MR. DRIBAN: The volume of traffic that's coming in and out of these existing access points is captured as part of our existing turning movement counts. So, that, you know, the volumes of vehicles from any of these parking lots or buildings is part of the study we conducted.

MR. ROSENBLATT: And finally, Mr., Mr. McCann, we can talk about supplementing this, but I, I marked, just because I don't (inaudible) have to stay on the stand any longer, or, or to have to call you back, Mr. Driban. When you are reading an e-mail from Mr. Filsinger, I believe it was yesterday in your testimony, I, I've marked as Developer's Exhibit 30, can you take a look at this e-mail and verify that this is, in fact, what you were reading?

MR. DRIBAN: It is, yes.

MR. ROSENBLATT: Okay and again, Mr. McCann, we, we can talk offline about whether other e-mails (inaudible) exhibit or what, but just for the sake of time and I don't, don't have any further questions and to get Mr. Driban on his way, I'd ask that this be admitted as Developer's Exhibit 30.

ALJ: Any objection, Mr. McCann, to this document on the screen, this thirty, the Developer's thirty?

MR. MCCANN: No objection. But I would like to ask just a couple more questions of the witness, Your Honor. In light of what's just been brought up, possibly, but both about this exhibit and about the, the two, the prior (inaudible).

ALJ: So, we go down that road, --

MR. MCCANN: I know.

MR. ROSENBLATT: I am strongly against that. I mean, I, I, with the burden of proof (inaudible) should be given the last word here. He had hours and hours and I've asked two

minutes of re-direct. I, I don't think it's appropriate to give people more chances to ask questions now.

MR. MCCANN: Well, --

ALJ: That, that's sort of a, the issue here. I mean, it, it, you know, I mean, yeah, I mean, it's, it, you know, we did have hours of, of testimony and, and then to allow you to do it, then Mr. Zimmerman goes, then every, everyone else goes as well and, you know, I think you, your, you went through an extensive, you know, cross examination of him, Mr. McCann.

This would be really out of the ordinary to ping pong back and forth here, you know, especially since the questions that were just asked in re-direct were in response to the questions that you asked. So, I mean, it's not new topics.

MR. MCCANN: No, I understand that. But let me just, if I could just --

ALJ: Yes.

MR. MCCANN: -- and I understand the ruling, but just, just two points. I'm not, you know, I, you've been very fair throughout this hearing, Your Honor. I'm always troubled by objections based on the amount of time things will take. You know, because we have a lot of, we happen to have a lot of parties in this case, we happen to have a lot of attorneys, time should never be the basis of an objection, number one. And, and I'm not saying that's what you're saying.

But number two, I just think, I know, in, in, in Court there may not be further cross, but here, we're here to educate you and if it's helpful to you and I think it will be, particularly if it only takes a minute, then I think that's, that's the standard by which this type of objection should be allowed, I mean, ruled upon. But with that, I understand your ruling. I just think it would be helpful.

MR. ZIMMERMAN: Judge, may I say something quickly? I don't anticipate asking any more questions anyway, but there is something called re-cross, okay? After there's re-direct, there's normally re-cross. I thought that was normal, but, that's all I want to say.

ALJ: I know, in your world, I remember that there is. Yeah, re-cross. You know what, I mean, given that, as Mr. Zimmerman indicated, he won't have any other questions and I really hesitate to go down this road.

My balancing of this is really the appellate decisions that have come down that really have kind of indicated that administrative hearings should just be open to allowing as much evidence as possible. And really, like I say, that just is out of general terms. And so, what I'm going to do is let Mr. McCann ask his questions. Go ahead, Mr. McCann.

MR. MCCANN: (inaudible) --

MR. ROSENBLATT: I have to, I have to object to, for the record.

ALJ: I know, I know.

MR. ROSENBLATT: Just, I, we're the party with the burden, we should be given the last word.

ALJ: I know, I know.

MR. ROSENBLATT: I do not think this is fair at all.

ALJ: I know, understand. And you're going to have, you're going to have the last word as soon as he's finished. So, hold on. Let Mr. McCann, go ahead, Mr. McCann.

MR. MCCANN: Thank you, Judge Murphy. Just on this one point about your study, Mr. Driban, being based on actual traffic counts as, I'm, I'm sorry. I think what Mr. Rosenblatt was asking you about is the various access points along the corridor and whether or not your studies accounted for traffic coming out and going into those access points. And I think your response to that was that you used traffic counts as, as the, as the basis of your evaluation. Did I hear that right?

MR. DRIBAN: I believe what I stated was that the traffic counts that we have would include any and all volume from parking lots and buildings that have been referenced in various cross examinations.

MR. MCCANN: Right, it would include the volume, but it wouldn't, it wouldn't be, those, those traffic counts aren't, and they're not in your report, unfortunately, those, the actual traffic counts. The traffic counts aren't specific enough to identify how many cars are going in and out of each

of those access points, how many?

MR. DRIBAN: The total, the total volume from all those access points is included in our study and the study was conducted in accordance with all, all relevant standards.

MR. MCCANN: Right, just the total volume, not individual volumes per access point, correct?

MR. DRIBAN: Individual access points are not studied as --

MR. MCCANN: Okay.

MR. DRIBAN: -- part of, as part of (inaudible) traffic impact study.

MR. MCCANN: And I just want to be careful about when you, when you, how you use, how you're using those counts. You're using those counts in order to project future volume, correct? That's how, that's how you were using those counts? I'm sorry, you're not, let me rephrase that question. You're using those counts really only to identify the distribution of the traffic as opposed to the volume of traffic at, at, at, of the various turning movements, is that fair?

MR. DRIBAN: No, turning movement counts are the basis of the whole study. Existing conditions is a review of, of, of the, of the turning movement counts at each intersection. I mean, that's, that's standard for any traffic study you're going to see. You have to start with existing count data and, and go from there.

MR. MCCANN: I know you start with that, it's a question of how you use it and for what purpose when you're projecting and that's what I'm trying to get at. Okay. I may or may not be able to, to ask the question appropriately, so. And the e-mail speaks for itself so, that's it. Thank you, Mr. Driban. Thank you, Judge, I appreciate it. I'm not sure how helpful that was at all after that but thank you for that.

ALJ: Mr. Rosenblatt, anything further?

MR. ROSENBLATT: No further questions, thank you.

ALJ: Okay, all right. All right, thank you. And Mr. Zimmerman, you don't have any other questions, right?

MR. ZIMMERMAN: I promised no further questions.

ALJ: You promised. And I'm just going to check real quick with Mr. Wyatt. That didn't generate further questions for you, did it?

MR. WYATT: None, Your Honor. But thank you for asking.

ALJ: Thank you. Mr. Sachse, no further questions, right, of that, based on that (inaudible)?

MR. SACHSE: Right.

ALJ: Okay, thank you. All right. So, I think we're finished with Mr. Driban. All right. So, who do we have next, Mr. Rosenblatt?

MR. ROSENBLATT: The only other person we have is, I, I promised to call him in our case is Mike Tanczyn. I see, he

just popped up as a participant, so.

ALJ: Oh, there he is. Mr. Tanczyn, nice to see you. It's been a long time.

MR. TANCZYN: Yes, Your Honor. Good, good afternoon.

ALJ: Good afternoon. All right. Mr. Tanczyn is an attorney and he used to come in and try cases and is probably smarter having retired, perhaps. And still, still doing zoning cases. Mr. Tanczyn, all right, you got your hand raised there. Do you swear and affirm under the penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. TANCZYN: I do.

ALJ: All right. Go ahead, Mr. Rosenblatt.

MR. ROSENBLATT: Good afternoon, Mr. Tanczyn.

MR. TANCZYN: Good afternoon.

MR. ROSENBLATT: Throughout your career, did you ever have a case where four lawyers were beating up on you at once?

MR. TANCZYN: I'm looking forward to it.

MR. ROSENBLATT: Can you, can you tell the Judge, basically, why you're here to testify, where do you live and what, what are the topics you intend to convey to the Court? And I, I, you've given me some exhibits that I'll share at your request. But just, if you could, explain to the Judge what, why you're here and where you live.

MR. TANCZYN: Certainly. I live at 9 Old Boxwood

Lane in Boxwood. We have lived here since January of 2009 and as the Judge has mentioned, I am a lawyer and have been a lawyer in Baltimore County now in my forty-sixth year. And I represented, on quadrennial maps, many clients and I participated in administrative land use law, both for communities who were concerned about a project, as well as businesses and the development side.

What I'd, what I'd like to do today and, and I've been watching the last two days so, I mean, I try to do some things to economize time. And by that I mean, my participation so far in this project has been as follows. When, when the first notices came out, I looked, look at what was submitted before the CIM, which, which I listened to remotely.

I checked out Tabco on ways that are available on the internet and listened to the CIM, my wife and I together, and she's here today making sure I don't misspeak, across the table from me. You can't see her. And so, what, we put our names in so, so we got the comments from the CIM.

We then wrote a letter, and I would ask Mr. Rosenblatt, if he could please put up, so what I'm going to try to do is economize by giving you everything I did up to this point in communications with Baltimore County. People can ask me questions about them, I don't want to read them into the record. I'm trying to save some time.

And then, the bulk of what I hope to do today is to

say what I've done since then to answer some questions that I had about what is proposed, what is objected to and I'll go through that fairly quickly and I have a total of eight exhibits and I'll talk as fast as I can.

So, what, what is on the screen now is after the CIM comments were received, we were invited to send our positions back, if you will, as of that time. And what you're looking at is the letter of, dated June, or actually it's e-mailed June 2nd of 2021 back to Jerry Chen at the County, who was sort of like the person guiding the CIM. So, I, I can represent to you that I wrote it, I sent it and I would ask that it be admitted. For the --

ALJ: Is there an objection --

MR. WYATT: Your Honor, if I may, could this witness be asked questions --

ALJ: Yes.

MR. WYATT: -- rather than this monologue and him trying to introduce exhibits? I think this is highly irregular, the way this is being handled. I don't, I think unless he's being asked questions, we're being deprived of the ability to object to the questions.

ALJ: Okay, understood. Mr. Rosenblatt, do you have questions for Mr. Tanczyn?

MR. ROSENBLATT: Well, he's really, he, he is a citizen testifying. I, I, I'm trying to do it in our case, but

these are his exhibits, one through (inaudible) Mr. Wyatt or anyone else would be (inaudible) say what they want about the case. That's what he's doing. He's, he's not doing it as like my expert witness, he's doing it as a person who lives here, so.

ALJ: Except it's in your case right now and it, it, if he was putting this on, you know, in the Protestants' case, then, then I would say yes. But because he's your witness in your case, and Mr. Wyatt has asked, you know, for questions, so if you could direct just questions to him so he can respond.

MR. ROSENBLATT: I mean, I'll, I'll try. To be honest, Your Honor, I, I did not anticipate having to do that because citizens are regularly given an opportunity to explain their positions on matters, so. I know he's done a lot of work. I'll ask general questions for his exhibits, but he's definitely more up to speed on what he intends to show from each one than I am. So, I'll do the best I can.

You, Mr. Tanczyn, you started to explain what your Exhibit 1 was in terms of a letter back to Mr. Chen following the CIM. Are there any specific points in this letter that you, you'd like to reference?

MR. TANCZYN: No. What I, what I would request is that we withdraw the exhibit. It'll take longer, but I will, if, if I could proceed --

MR. WYATT: Objection. Your Honor, he's not

answering the question. He is handling exhibits on behalf of the Developer. This is unreal.

ALJ: He, he's, he, I'm sorry, he's handling exhibits on behalf of the Developer? These are Mr. Tanczyn's exhibits and --

MR. ROSENBLATT: Correct.

MR. WYATT: I understand. But he, he is referencing them and now withdrawing them. I mean, these need to be offered through the proposing party, not through a witness --

ALJ: (inaudible).

MR. ROSENBLATT: I find it pretty outrageous that Mr. Wyatt is doing this, when there will clearly be people from his neighborhood and if he regularly attended these hearings, he would see that citizens are just (inaudible) their opinions are about a case.

I'm trying to do this out of courtesy for a citizen that's been involved since the CIM to now and (inaudible) not know what he's going to testify. These are his exhibits, these are not Developer exhibits.

If you'd like to inconvenience him, Mr. Wyatt, and tell him to come back at the end of the case to do this all over again, we can do that. But I thought it would be nice for a citizen that lives in the near, in the immediate adjacent neighborhood to accommodate him and let him testify to the work he's done on this project.

MR. WYATT: I think counsel should direct comments through Your Honor, not directly to me during this hearing.

ALJ: All right. So, let's, here's what we're going to do. Mr. Tanczyn, you've got on the screen exhibit number one. This is your exhibit, is that right?

MR. TANCZYN: Yes, yes, Your Honor.

ALJ: Okay and you drafted this exhibit, you typed it, is it an e-mail that you typed?

MR. TANCZYN: Yes.

ALJ: Okay, just --

MR. TANCZYN: But that's the letter that's e-mailed.

ALJ: It's, it's a letter that you wrote to Mr. Chen, Mr. Jerry Chen, who's the project manager for this project?

MR. TANCZYN: Correct.

ALJ: Okay and so, without reading the whole document, what, what in here is, is your point? What, what were you trying to convey to Mr. Chen?

MR. TANCZYN: Well, on the first page, Your Honor, and I, the, the, the following exhibits will explicate what is mentioned in this letter. So, on the first page, if you go to the third paragraph, my concern has to do with sight distance at Seminary Avenue where Mays Chapel South goes south.

ALJ: Okay and what about the sight distance at Seminary? Are, are you talking about when you come out of Mays Chapel, you, the sight distance either way on Seminary, what,

what --

MR. TANCZYN: Yes, yeah, that's exactly it, Your Honor. And --

ALJ: Okay.

MR. TANCZYN: -- it, it, I've measured it, I have taken pictures that, they're part of the exhibits, that show what I'm telling you. And, and, and the reason, the reason for telling you this about that sight distance issue, is it doesn't exist at all at, I'm sorry? Yeah, my wife's trying, trying to calm me down.

ALJ: All right.

MR. TANCZYN: At, at Tallyho, or at Joppa, at the end of Tallyho.

ALJ: So, there's a sight distance problem when you're coming out of Tallyho or out of Mays Chapel and you're trying to turn on Seminary, there's a site distance problem?

MR. TANCZYN: Not at Tallyho, up at Mays Chapel South.

ALJ: Up at Mays Chapel, okay. And so, so what, what does that have to do with this? And I don't mean to say it that way.

MR. TANCZYN: It goes, it goes to the question of whether there should be a gate as proposed by the Petitioner, which I favor.

ALJ: Okay. So, does that mean that you believe

there should be a gate closed at all times or that it should be open?

MR. TANCZYN: A gate that can be opened in emergencies and I, I have reasons for that.

ALJ: Okay. What are, what are your reasons?

MR. TANCZYN: Okay. My, my principal reason is my personal safety. When I'm stopped for traffic to make a turn into the community from Seminary. And the pictures that are a further exhibit, Your Honor, just so we can address it, it may, it may be easier to understand if, if the pictures, I'll tell you the reason and then the pictures will demonstrate my concerns and the conditions in front of Tallyho Road from Seminary as well.

ALJ: Sure. Now, which, the photos are in, it looks like they're in number four. Mr. Rosenblatt, could you scroll to four, please?

MR. TANCZYN: Yeah, it's four, 4-A, Your Honor.

ALJ: Okay.

MR. TANCZYN: Because there's a four, there's a 4-B that does something else.

ALJ: Sure, and, and we just need to, if you could, thank you, Mr. Rosenblatt. If you could some up so we could see the photos. Now, you, now, I know this, this property because this was the Torch Hill property. So, what are you trying to show with number one, photo one?

MR. TANCZYN: Okay and what I'm going to ask Mr. Rosenblatt to do is to go to the next picture. Because the next picture is a blowup of the first page. So, it's easier to see. I only did this because my wife's pictures were from her I-Phone. And so, number one just shows the I-Phone pictures. We made them bigger, but I didn't want anybody to question whether they looked the same from the smaller picture.

ALJ: Understood, okay. So, we got picture number two that's the expanded view. So, what, I know that I'm looking at, you know, facing, this is on Seminary --

MR. TANCZYN: Torch Hill.

ALJ: -- coming out.

MR. TANCZYN: Right. So, --

ALJ: Okay.

MR. TANCZYN: -- so, between the other side of the road and where I am, I'm, I'm at the stop sign to leave Boxwood. And, and what, what I want to show you in this picture is that there are no shoulders on the north side of Seminary in this region from that lane that you're looking at to the west going down almost to Mays Chapel North, which is a distance from here of point two-tenths of a mile.

ALJ: Okay, understood. Did you want to go to the next picture?

MR. TANCZYN: These pictures were all taken on 8/19/2022 in my presence by my wife. They fairly and

accurately represent the areas shown with no changes made to the pictures.

ALJ: Okay. I appreciate that foundation. That's, that's exactly what I was going to ask you next. Okay. So, this is picture number two.

MR. TANCZYN: Mr., okay, picture number two, good. Well, what I'm going to ask us to do is to, these again are the small pictures. If, if Mr. Rosenblatt could go to 4-A-3. Okay, good. That's, that's fine.

Now, you can still see the gatehouse, Your Honor, on the left side of the picture and what I'm going to ask you to note is there's also, in add, on the far side, on the north side of Seminary, there is not only no shoulder in that area, but the grassy area is hilly.

Now, we'll have a series of pictures that will demonstrate that from both directions. And so, I'm going to ask, before we go to the next picture, that you imagine a car like mine with me driving it, that is waiting to turn into Boxwood, and there's traffic coming in the example that we will get to after we look through this, these pictures, which will come back up the other, the other way from Thornton Road and will show you what's on both sides of the street in between.

But I ask you to remember this picture, or we could go back to it, because at the end of this, when I show you that, I'm going to tell you about something that happened to

me.

ALJ: Okay. What's the next picture?

MR. TANCZYN: Can you, can you raise, there you go. Keep going, keep going, Adam. Okay. Now, if, if we could, if we could stop, let's see where we are. Okay. Adam, can you move that to the left side please, just a bit, so that the writing, I can't see the writing. Okay.

So, Your Honor, where we are here is, we are now, well, actually, let me see. Okay. So, where we are now is, my wife and I are in the car, we are heading westbound on Falls, on Sem, or, or pardon me, on Seminary Avenue towards Falls. And this area shows you, because up ahead on the left is the entrance to the near communities, which we will talk about later, and they are not relevant to my testimony.

But you, as you look beyond the telephone poles towards the west, you, you can see from just past the red light at Thornton to the next indentation, which would be the entrance to Tallyho.

Beyond that, and we have another picture closer coming up. Beyond that, you can see in the distance the rise, as you go west of Seminary Ridge, you go up the hill and you can see clearly from the traffic light, traffic in both directions, if you're coming out of Tallyho. There's also many lanes.

Tallyho has, at its entrance, or just before its

entrance from the east, its own turn lane with an arrow saying it's a turn lane to get into Tally, Tallyho. You can, you can see that there's a small shoulder on the right.

There's, for all intents and purposes, the lane closest on the, on the south side of Seminary at that point, coming towards my car, there is something that will become, it's like a decel lane, but it's for traffic that's going to turn and go, go south on Thornton, down towards Joppa. That's what I want to show you in this picture, if we could go to the next one, please?

Now, this, this is actually taken when we, before, before, or after, pardon me. Before the previous picture, when we were at the red light at Thornton and Seminary. To show you that on the south side, where you see the, looks like an SUV or type car like that, getting ready to turn, that there's no, there's no curbs on that side of the street.

And on the, for, next to the car dead ahead on the other side of the light, you can see a small area, which is less than a shoulder in width. It's more like a walking path, even though there's a sidewalk next door in width. And so, that's the point that I wanted to make with that picture. Just to show what you can see and how far.

ALJ: All right, yep. And I'm familiar with Seminary, you know, the road. But, all right, let's go to the next picture, four.

MR. TANCZYN: All right, okay. This one shows entrances to different communities, first one is from Thornton on each side, which are facing, and you can see better on the right side of the picture how narrow the area is between the curb and the stripe.

Beyond that, it's a little, we're a little closer to the Tallyho Road entrance into Seminary Ridge on the left. But you're also closer to the hill and up towards the crest, right beyond, and we're going to have further pictures that walk us along, or drive us along.

But you can, you can see the, the, the cars in the distance, which had almost reached the crest right where the next development is on the right.

And on the left, across, almost directly across the street from the top of the hill at Hillside at Seminary is the entrance to a property which is, golly. A, it's, I think it's 1031 West Seminary. And, and that, that property, or the, that, that property is, lies down that small lane in between Seminary Springs and Seminary Ridge. And ends up backing up to our pen space in, in Boxwood, which I will get to when we go further, for another issue. So, that would be that picture.

Now, Your Honor, picture five and, and these say see enlarged photo, so I'm going to ask, okay. That's a better one. So, this is picture five, thank you, right there.

Which shows Seminary Avenue west of the entrance to

Hillside at Seminary entrance, which would be to the right and showing the accel, accelerating right land, no shoulder on the left side of the road from here all the way to the entrance of Seminary Springs. Because the only thing we're going to see next, well, we'll see that.

Now, the other thing that I wanted to point out because this is key to the sight distance issue, is you can notice that, that the road is, is elevating as we go west. There's a gradual rise in elevation.

Now, what I would like to bring to your attention is in the far distance, and, and it'll be shown closer in the next picture, but at the end of this, I'm ahead of myself. Can we just go to the next picture, please, Mr. Rosenblatt?

MR. ROSENBLATT: Yes.

MR. TANCZYN: Number six probably. Okay. We're, great. So, on the immediate left, ahead of us, is the entrance to Seminary Springs, which is directly across Seminary from the Hunt Spring development. As, as you can see, there is the, the lane on the left side to help traffic when it comes out of Seminary, out of Safeway to build up speed before it goes forward. Ditto with the Hunt Spring on, on either side of their entrance.

Now, what I'd, what I'd like to focus on, if there's a, is it possible, Adam, to, that's beautiful. So, if we focus beyond the Hunt Spring entrance on the right, and you focus on

that shoulder at a distance, which I guess could be an accelerating, an accel lane to head west from Hunt Spring and pick up some speed.

But the point I want to make is, if we look straight along that paved path, and you'll see where it looks like the trees are sticking out onto that shoulder, at that point, that's the common line where Hunt Spring, going to the north, where Hunt Spring development ends and what we're calling, what I called Cronguard on this, but it's Torch Hill.

That's where they have an access road or lane that travels on the perimeter of their property to go inward and ultimately that property, as I understand it, goes all the way up and meets on Mays Chapel North, where the main house is of the property currently.

And the reason for mentioning that is, I, I want to highlight what looks like that mass of green has no shoulder and it doesn't, it doesn't encroach on existing westbound Seminary Avenue lane.

It's going to be important going forward because that green mass of, of vegetation goes a short distance and then hooks up, or it stops quite close to picture number two, where I asked you to remember that I was, imagine my car awaiting to turn into Boxwood. And we can proceed to the next picture.

MR. ROSENBLATT: Okay. I think that's going to be your Exhibit 4-B.

MR. TANCZYN: Yes, it is. And I would, same, these were taken on 10/20 of this year, by my wife, in my presence in my car. They, this is a blowup so, so you can see it better. Not that one, Adam. We can, that's the next exhibit. That's 4-B.

So, if you could hold those pictures right now, because what I'd like to do, if we could go back to number two. And, and then I would like to tell you my story of what happened to me. The blowup of two, Adam, please. Yeah, okay.

So, this happened in 2013. I know that because I had retired from Medifast as their legal counsel and I thought I was going to retire but turned out I started practicing law again. Or kept practicing.

So, my car is parked or, or stopped to turn into Mays Chapel South on, on a particular morning of, I believe it to be April 13th of 2013. If it turns out it was the 14th or the 12th, I can't say for sure because I've taken an oath. What I can tell you is everything else that I'm about to tell you, I will never forget.

So, while I'm sitting there, and you have to imagine because it's not shown, that this, my car is parked or, or, pardon me. It's awaiting the ability to turn into Boxwood. There's traffic coming from Falls Road up Seminary, preventing me from doing that in a line.

There's no way to squeak through or squeeze through

and that, that, what happened was, because the sight distance is so poor that cars one-tenth of a mile, so there's two-tenths of a mile between the, I've measured this, between the Seminary Springs entrance and the Mays Chapel South entrance that we're looking at.

And the, the, the high point of the elevation of Seminary before it goes back down and it lies about a tenth to the east of what you're looking at, tenth of a mile. Now, that's the crest.

There's a sign right there in the, beyond, on, on this side of the crest, that shows a yellow sign that shows that Mays Chapel South goes left and then there's two-tenths, or not two-tenths, but it's two-tenths away, so they show the spread, that they're not connected to where Mays Chapel North will be.

Now, I mention that for this reason. And I, I've driven this every day that I've been at Boxwood that I wasn't on a trip somewhere else. In my experience, when I'm coming past the Seminary Springs entrance into Seminary, I'm still going uphill.

And so, the only part of that sign that you can see is the part above the pole that it's hanging on. It sits up high. And that means that that's what shows, to me, as I come up on the crest, heading, heading to the west. That's all I can see.

And so, once you get past that point, you're going downhill towards the Mays Chapel South entrance. So, while I'm sitting there on the day stated, a car, and I'm focused on the traffic ahead of me, but I'm keeping my eye in the rearview mirror.

And all of a sudden, while I looked in the rearview mirror, this SUV came very, it came so fast towards the back of my car over the hill, right past those bushes that I told you are a little further down, they're just out a, that were coming the other way, and the driver was driving very, very fast.

It was springtime, I had my windows down. It turns out this driver had her windows down. The driver of the vehicle first tried to slam on her brakes. She then estimated that she couldn't stop in time, and she pulled off onto the grassy hilly area coming at a great rate of speed.

When I saw that in my rearview mirror, here's how I felt. I felt like people who are fearful to the degree that the hair goes up on your neck, you get a metallic taste in your mouth. And as fast as she was coming, I feared for my life. So, she pulled very fast onto the grassy area.

Now, it's, it's a little level at the edge of the road, then it goes up to a hill. She was coming so fast and, and she, her next option was to try to pull around, and that's what she did.

She was going so fast that when she tried to go over

that fast and hit the hilly part, she just missed the back of my car and was over on the grass and pulling as hard as she could on her steering wheel to get back and she pulled so hard that both driver side wheels were up in the air, because of her efforts to get back to the road and return.

As she, and this happened faster than a sentence that I have said to you. It was that fast. As she went by me, because the pressure on the car that she, or the SUV that she was driving, when she pulled to come back on the road, she was, she was putting all her weight, all her classmates from the school that she attends at the end of Seminary, and I know that because of the uniforms they were wearing and the stickers on the, on the car.

So, her, it turned out, her head was actually out of the window on the driver's side as she leaned like a skier to put her weight against what was happening with the wheels off the ground. And once, I surmised this. Here's what happened next instead of a surmise.

The next thing that she did before they headed on down to the light at Falls Road, is she stuck the middle finger up at me and yelled at me. I never heard what she said because she was going so fast. That, I consider, a sight distance issue.

ALJ: Okay. So, and if you could just then, how does this tie into, again, the, the Greenspring Manor property

that's on Joppa? How, how does this --

MR. TANCZYN: Okay.

ALJ: -- relate to that?

MR. TANCZYN: Okay. I relate, I relate it this way, Your Honor.

ALJ: Um hm.

MR. TANCZYN: If, if you're, in your decision in this case, first, you'd have to agree to approve it. The next decision would be will the gate be there or not. Now, I don't know how much traffic is going to come. Seminary Ridge thinks this will help them out. Based on what I heard from the, the Petitioner's traffic person, it, it doesn't sound like that.

But any traffic that has a choice without the gate, we'll call it a cut through, I listened to all the testimony yesterday, I'm not going to, you know, whatever Mr. Driban said about reasons to have the gate, local road, all that, those makes sense to me. But so, so that's how I would relate it. Any traffic which thought it could cut through.

Now, now as far as Seminary Ridge is concerned, they're east of us. There's another concern that I have if it were to be a cut through. And that is, if you consider the amount of traffic that the, that all of the residents knows comes to Seminary from Sem, Mays Chapel North, that traffic could make a left and then a right into Mays Chapel South. If, if you follow me.

Now, I will tell you, as long as we're doing this in the same, in the same breath, that what, what I've heard other questioners talk about who are residents of Seminary Ridge, about traffic backups to the distances that they said, they do happen. They're, they're going to continue to happen.

I, I have a later exhibit and, and we can, (inaudible) get done with this part of it, I can have that put up and we can talk about it. But what, what this, what this caused me to do was to do what I call an area study, a study area. And the boundaries of that if, if, I'm thinking, I'm trying to think out loud in light of what, what we're doing.

Let me do it this way. Let me say my personal observations, when those backups occur which have been mentioned by Doug Sachse and by I, I believe, the attorney Mr. Wyatt, to the traffic witness. Seminary ends at Falls. At Falls, and I want to talk back from that exact point, I want to talk back to where we are at Mays Chapel South entrance. I want to talk to that to you and tell you this.

So, if we, if we were standing together at Falls at Seminary and you wanted to look from there to the east. What you have at that point are three traffic lanes. You have two headed westbound. The one to the center line as a, a left, a left turn lane. And the one to the right is, in essence, an additional lane from which you can either go directly into St. Paul's School proper south entrance. Or if you're going north

on Falls, you can make the right turn.

Now, that obtains with no shoulder on either side coming back east on Seminary to the Deep Run bridge. The Deep Run runs under Seminary, just before you get to, right where the power, the overhead power lines are. And it's, it's very narrow, only those two lanes, from Falls Road all the way up closer beyond that, to the Korean church, where the County made them put in shoulders in front of their property for turning traffic from the Mays Chapel North who, which is going --

ALJ: And I'm familiar, I'm familiar with that direction and that, I, I just handled the Torch Hill case so I, I, do know that, that road and what it looks like.

MR. TANCZYN: Okay.

ALJ: So, if you're going eastbound and then what is, and so again, if you could relate it to this case.

MR. TANCZYN: Yes, I can.

ALJ: Yeah, okay.

MR. TANCZYN: So, what I'm, what I'm talking about is part of traffic safety is the ability for the police department to set up radar points if they're not following somebody and measuring their distance from their car.

And so, there is virtually no radar points that the, say, that the County police use that are on or adjacent to Seminary Avenue because it's unsafe. The only point, since I've lived there in 2009 to the present, where the County

police set up radar points to Mays Chapel North, they park in the Korean church parking lot and they catch the traffic usually coming westbound.

The, the next, and, and if we, and if we follow the traffic safety backwards towards Thornton, they sometimes, but not always, on that downhill, on the Seminary Ridge side, will set up traffic. What's the point? How does it affect anything?

Everybody who travels that road regularly knows what I just told you. What do they do? They drive faster. And so, the speeds that they come up from Falls to Seminary, forty miles an hour doesn't cut it, what they're doing.

And so, they come up fast and they affect not only Mays Chapel South but on the other, on the other side of the crest, there's one private citizen between Seminary Springs and the Mays Chapel South entrance that 1046 or 1049 Seminary Avenue.

It's a doctor and he, his property shows where cars have run into things because he's downhill from the road and came on his property and smashed up things.

So, how I relate that to this issue is, to answer your question, is that I will represent to you and will have an exhibit and I'll explain my work in detail, but the bottom line, the cliff notes of my conclusion, is in the study area that I told you, the only developments which connect from

Seminary to Joppa are Seminary Ridge and Heatherfield.

And I, I'll, I'll talk in a bit on it when we get to Exhibit 5 about my research that drew that conclusion. And, and, and my testimony about that will also be applicable to the properties on the north side of Seminary, which also, of course, do not have direct access to Joppa. But we have an exhibit that will show that they are one way in and out communities as well.

So, the issue of one way in and out, such as the ones down on Mays Chapel South, which includes the Meadows at Greenspring and Boxwood and any, and any individual owners, is that the County, I'll give you the cliff notes on the study.

My study will show in exhibit, which we haven't seen yet, which is number five, that and, and what I, essentially, did was used the Land Records, so on and so forth, and the information gleaned as is follows. When each subdivision plat was approved, who signed off for it as to Planning and/or Traffic, and the plat number on which that is found.

And I'm going to represent to you in a cliff note, that the, most, most of the remaining developments, are after Seminary Ridge and Heatherfield were approved. Heatherfield appears, we're going to put in the exhibit in a minute, but that, that covers the traffic safety. And, and I'm prepared to go to 4-B because that covers something different in the same area.

ALJ: So, but I mean, I guess, just trying to get down to the, the point here. Are you, is it that you're saying that you would only want the gate to be opened or would you want the gate to be closed, is that, is that your, is that what you're trying to get, get at?

MR. TANCZYN: I, I favor the gate being closed.

ALJ: Being closed, okay. Being closed and you, and you live in that, you live in that community you said.

MR. TANCZYN: I, I'm at 9 Boxwood and we are the northern property adjacent.

ALJ: Right. Okay, and so that it would be, it would be closed so that you would still be accessing from your community onto Seminary, right?

MR. TANCZYN: That's, that's correct. Getting out isn't the problem.

ALJ: Okay, yeah. It's just pulling in, pulling in, as you said is the problem.

MR. TANCZYN: It's a sight distance problem for anybody who turns there.

ALJ: But, but with this development, how, whether or not it's approved, how, how is that going to change your turning in to, to Mays Chapel South?

MR. TANCZYN: It won't. It won't change my way of turning in at all. I'm just telling, I'm illus, I'm using my example, and I used one example. That's the only one that I

feared for my life.

ALJ: Sure, no, I, I appreciate that and that, it was a, you know, I, I can feel for your, you know, your position at the time. It's just that with, with regard to this issue and this development, since you're, you're favoring that it be closed, your, your access in and out of, of your community is not going to change, right? I mean, it wouldn't --

MR. TANCZYN: It would not.

ALJ: -- (inaudible) go in and out.

MR. TANCZYN: It would not, Your Honor.

ALJ: Yeah.

MR. TANCZYN: That, that, so the remedy, which the County has not seen important enough to do, is to do something about what our issue is regardless of what happens to this development.

ALJ: Oh, yeah, but I mean, I'm, I mean, I can only focus on this development, right? Because if you had issues that you think the County should address, of course, you'd have to address that with the County, as you know.

MR. TANCZYN: I understand and I understand --

ALJ: Yeah.

MR. TANCZYN: -- that they haven't done much with the failed intersections.

ALJ: Oh, right. And we've, we've learned that, you know, that they're, because they're owned by the state, the

County isn't, isn't going to spend money --

MR. TANCZYN: Yes, Your Honor.

ALJ: -- on, on the, on the state, you know, state roads and intersections and, and you know, so, that, that's something that, you know, has come out of, of these proceedings. But okay. So, so but, the rest of your exhibits, are they all in regard to what you think the County should be doing to make it safe --

MR. TANCZYN: No, no, no, they're not, Your Honor.

ALJ: Okay.

MR. TANCZYN: And four, we haven't done 4-B --

ALJ: Okay.

MR. TANCZYN: And I'll represent to you --

ALJ: Uh huh.

MR. TANCZYN: -- it's something new and different. It is the road, it is the approach from Mays Chapel South from Seminary going to the gate.

ALJ: Oh, okay, great. Mr. Rosenblatt, do you mind putting 4-B up?

MR. TANCZYN: There's a series of pictures, just like before.

ALJ: Yes, and --

MR. TANCZYN: My wife took them, my wife took them on the 20th in my presence --

ALJ: Yes. Right, and, and these fairly and

accurately reflect what you saw on that day, on (inaudible) --

MR. TANCZYN: Yes, Your Honor. We have not, we have not changed it one iota and we have the small pictures.

ALJ: I understand, okay.

MR. TANCZYN: So, picture, I think this is the first one, 4-B. And where we are is we're standing close to, but just in from Seminary on the right side of Mays Chapel South. What you can see in that picture is the downhill drop of the road.

You can also see the twenty-five mile an hour speed limit, which is the same as the speed limit in Seminary Ridge. All of the developments up and down Seminary, because I drove my car through every one of them, so they all go to twenty-five miles an hour.

You can see, of course, throughout, I'm going to represent to you, there's no sidewalks on either side of Seminary, Mays Chapel South, nor in the communities of Seminary Ridge or Boxwood, or the Meadows at Boxwood, pardon me.

ALJ: Okay. So, just, just to be clear, your, your wife was not sworn in so, we just have to make sure you're the one testifying since you're the one --

MR. TANCZYN: Yes, Your Honor.

ALJ: Yep, thank you.

MR. TANCZYN: I'm sorry.

ALJ: All right.

MR. TANCZYN: So, what, what you're looking at is Mays Chapel South heading down, and it, you can see that it makes a little, it's not a straight line. It wiggles to the left and that approach would take you down to the Boxwood entrance.

Now, what, what it, it, what appears small in this picture, is this the enlarged one, Adam? I, I guess that's the one. Okay. Yeah, they were all enlarged. Okay. So, before, past the twenty-five mile per hour speed limit, you'll see on the right a road sign that, if you were up close and you were reading it, it would say Seminary Farm Road.

That is the first exit to the right into the Meadows at Greenspring. And, and then you can, you can see the character of the community going down. Is this the second picture? Okay, thank you. So, in this picture, we go to the other side of the street to, across from where we were.

You can see the same twenty-five mile per hour speed limit and this shows you how the road runs, looking towards what's on the side of the Meadows. And you can go to the next picture. But it's the same thing. You have, you have that angled macadam, no curbs, no gutters, or drains.

So, I guess, we're at picture three, Adam? There's, yeah, okay. So, this picture three, we're standing at the first resident's driveway across, it's individual residence, not part of either development. And we're looking to the west,

down Seminary Farm Road. Just so you can see the character of, of what they have, that there are no sidewalks, etcetera.

Adam, if you could show the next picture, please? Okay. Now, we are standing at the second residence, private residence, looking down Mays Chapel South to the gate, or where the, where the fence is now for what we have called this farmer's field.

You will see on the right side, one of those individual homes on, on your right, past that big bush and tree. There's another individual house beyond that, or next door to that. And that house is across from the entrance into Boxwood, which is called Arbor Way.

To the next, there's one more house on that side, actually two more, which are part of the Meadows. One of them faces on to Mays Chapel South. And then the other side of that one, is the other end of Seminary Farm Road if you imagine the letter V or a horseshoe between the entrance and this entrance. It, it goes in at the top and goes back out there.

And there's one more house on the right side before you get to the farmer's field, which is the Meadows. Now, that house, were the gate not to be placed, would have a big problem because the part of its improvements, which face Mays Chapel South right at the farmer's field, right before the farmer's field, is a triple car garage and a paved with drive, like a driveway coming out of the garage, where they have, literally

right now, they just back out because the farmer's field doesn't cut through. They're going to have to rethink their world if it cuts through because they can't pick the garage up and go some other way.

ALJ: Understood, but they're, but you're not representing them, right?

MR. TANCZYN: I'm just pointing out things and they may care about it or not. I'm sure you're going to hear from them.

ALJ: Okay, all right.

MR. TANCZYN: And my, I'm telling you what my picture, goes down the farmer's field and --

ALJ: Yes, understood.

MR. TANCZYN: Okay. Next one, please, Adam?

MR. ZIMMERMAN: Excuse me. Could we identify these exhibits somehow? And are these Tanczyn exhibits?

ALJ: Yes, he has, he's, he's identified them as he's gone along, the picture numbers. And these are his own exhibits.

MR. ZIMMERMAN: Okay, okay.

ALJ: Community member exhibits and they're also in their own like binder that, that were given (inaudible) --

MR. ZIMMERMAN: Okay. So, we're calling them community member exhibits?

ALJ: They are community member exhibits.

MR. ZIMMERMAN: Okay, I just (inaudible) --

ALJ: Mr. Zimmerman, did you get an e-mail of these exhibits?

MR. ZIMMERMAN: You know, I'm, I'm watching the hearing so, I, you know, so I'm not reading, I can't do, read e-mails and watch at the same time, so.

ALJ: I understand, I understand. But you probably would have gotten these, I would think, (inaudible) --

MR. ZIMMERMAN: We probably did but, you know, I'm just following along. I just, so they're community member exhibits?

ALJ: Correct.

MR. ZIMMERMAN: Okay. That's all, sorry, I didn't, I couldn't --

ALJ: Mr. Rosenblatt, did you give those to Mr. McCann and Mr. Zimmerman?

MR. ROSENBLATT: I did, yes. By e-mail.

MR. MCCANN: I've got them.

MR. ZIMMERMAN: We probably got the e-mail but I'm busy watching, that all, sorry.

ALJ: Understood, thank you. Okay, all right. There's no other picture, I don't think, Mr. Tanczyn, just this one is the last one I think we had, right?

MR. ROSENBLATT: I think that's, that's right.

ALJ: That's it.

MR. ROSENBLATT: Yes.

ALJ: Okay.

MR. ROSENBLATT: Mr. Tanczyn, maybe, maybe I can direct you. Based on, I did not even realize how much work you had put into this, but you obviously have. And maybe if I could just direct you to a few questions (inaudible) work and all the photographs you've taken, is that okay?

MR. TANCZYN: Yes, sir.

MR. ROSENBLATT: Okay. So, I saw you, your Exhibit 7, which I think is already in evidence as one of the Developer's exhibits, is the illustrative plan. And can you, you, using Exhibit 7, can you point out to the Judge where on this exhibit Boxwood is located?

MR. TANCZYN: Okay. Your Honor, Boxwood is located immediately, as you look at it, where, where the words Mays Chapel Road are shown, Boxwood is to the right of that. Its property runs to the common line with this development.

And Boxwood is reached, as you can see, right where the road is, that's where Arbor Way cuts through the vegetation and it meets Old Boxwood Lane. Old Boxwood Lane is what used to be called a dog bone cul-de-sac. There's a, there's a cul-de-sac, it, at the top and the bottom. And there are twenty-seven homes within Boxwood. I'm speaking, as I told you, just for myself.

MR. ROSENBLATT: So, Mr. Tanczyn, you live in one of

the twenty-seven homes in the Boxwood community where the words Mays Chapel Road (inaudible)?

MR. TANCZYN: Yes, I live at 9 Old Boxwood Lane, since two thousand, since 2009 with my wife.

MR. ROSENBLATT: Okay and, and you're aware on this exhibit where the emergency only access gate would be? In other words, at the rear of the Greenspring Manor property before you get to the words Mays Chapel Road on your Exhibit 7?

MR. TANCZYN: Yes.

MR. ROSENBLATT: My question is, let's, let's get directly to your point. If there is no emergency only access gate there, and this project is approved with no gate, what is your fear will happen as someone who lives in Boxwood, in terms of traffic and safety and anything else you want the Judge to know?

MR. TANCZYN: If, if the gate is present?

MR. ROSENBLATT: If there's no (inaudible) and this is a full access --

MR. TANCZYN: If there's no gate --

MR. ROSENBLATT: -- (inaudible) yes.

MR. TANCZYN: Okay.

MR. ROSENBLATT: If there was no gate, what is your concern? Please, please tell everyone listening.

MR. TANCZYN: Well, I can tell you what I, what I do and what I observe neighbors either from Boxwood, either from

the individual homes or from Seminary Ridge do is because we have no sidewalks, etcetera, I'm not going to beat a dead horse, it's used for recreational purposes.

There are groups of people who walk together every day. I'm a runner. It's eight-tenths from Arbor Way all the way around Seminary Farm, back to Arbor Way, so I try to get multiples of eight-tenths when I run there.

I'm concerned for, I'm, I'm concerned about traffic coming into the community, which presents, as this does, when the development of every other community on Exhibit 5, that we haven't gotten to yet, which is bounded by Thornton, Seminary, Joppa, Falls Road, the County, after it approved Seminary Ridge and Heatherfield and said they shall have access via this public road network. None of these other developments, including ours, were ever designed to have cut throughs.

MR. ROSENBLATT: Talk, talk about specific impacts. What, what do you fear will happen if there's no gate as a resident of Boxwood?

MR. TANCZYN: I'm, I'm concerned about safety. I'm concerned about more traffic as a percentage. There, there are likely to be more accidents because we have so little way in and out, if there were more accidents, we don't have, in my experience, any accidents that close off our exit to Seminary in the time I've lived here.

We have had trees come down. They have been cut up

so emergency equipment can come in there. I, I, I would say it this way. I see no reason for the County not to be followed in its wisdom by the Planning Department approving no cut throughs in our case or in any of the other cases, where all these other subdivisions were made.

And, and I will point out to you when we get to Exhibit 5 and to our Exhibit 6, which is an aerial Google map, I will point out to you answers to some of my questions about why Mays Chapel Road was not continued on the other side of Seminary Ridge before the time Seminary Ridge, or at the time Seminary Ridge was developed in the year that it was developed.

MR. ROSENBLATT: I'm not going to cut you off Mr. Tanczyn, but I know you could talk for hours about the other exhibits, but I think the most important thing and use of everyone's time is, as --

MR. TANCZYN: Okay.

MR. ROSENBLATT: -- you've just done, you've expressed what some of your concerns are. So, I'm just going to ask you a couple more questions without getting into the complexity of the other, the other exhibits, if I can.

MR. TANCZYN: Yes, sir.

MR. ROSENBLATT: So, you've explained some of your concerns, if the, if Judge Murphy approves, assume she approves the project. If she approves an emergency only access gate at the rear of this property, before the words Mays Chapel Road on

your Exhibit 7, does that (inaudible) your concerns that you just mentioned?

MR. TANCZYN: A hundred percent.

MR. ROSENBLATT: Okay and did you, before, before coming to this case, do, write an e-mail to, I believe, County Councilman Patoka and various County officials expressing your position about this project in general?

MR. TANCZYN: Yes, and, and we were invited to do that.

MR. ROSENBLATT: Okay. I'm going to, I'm going to show you what's been marked as your Exhibit 2 and just ask you, is this an e-mail that you wrote that succinctly outlines your position about the project, the traffic, the, the emergency access issues?

MR. TANCZYN: I don't see it yet. I still see the previous exhibit.

MR. ROSENBLATT: Well, it might be on, does everyone else see the e-mail?

ALJ: No, not yet. It's still the exhibit number seven.

MR. ROSENBLATT: Oh.

ALJ: Yeah.

MR. ROSENBLATT: Still?

MR. TANCZYN: I'm sorry, it isn't.

ALJ: Still, yep.

MR. ROSENBLATT: Is this changing?

ALJ: Nope.

MR. ROSENBLATT: What? Come on, I'm trying to speed it up. How about now?

ALJ: Let's see.

MR. ROSENBLATT: Is that working?

ALJ: Kind of delayed. It just says it's starting to share, but it's not coming through yet. Yeah, it's just, must be stuck.

MR. ROSENBLATT: All right, I'm going to stop --

MR. MCCANN: I can pull it up. You want me to pull it up, Adam? What is it?

MR. ROSENBLATT: I'm sorry, I have not had this yet.

ALJ: He's trying now, he's trying again. Nope, it's stuck. Don't know why it's stuck.

MR. MCCANN: What number is it?

MR. ROSENBLATT: Two, Tanczyn two or community two.

ALJ: Let me give you the presenter, Mr. McCann. It's coming over.

MR. MCCANN: Okay. Is that it?

MR. ROSENBLATT: Yes. So, I was asking Mr. Tanczyn, is this an e-mail you wrote to, looks like the County Council, Public Works, Planning, etcetera, expressing your opinion about, about this project?

MR. TANCZYN: On November 8th, 2021.

MR. ROSENBLATT: Okay and --

MR. TANCZYN: Pardon me, June 2nd, 2021.

MR. ROSENBLATT: Right, okay. And if we were to scroll down the exhibit, two pages, I believe it may repeat itself. I believe the text may be the same on page two as, as page one. But --

MR. TANCZYN: I did that, I, I did that only because on that third page I didn't have a date, the date is shown on the e-mail, on the previous two pages.

MR. ROSENBLATT: And Mr. Tanczyn, I understand you're here on your own behalf, you're not representing anyone, but does this e-mail that you wrote to the various agencies, does this, does this express your opinion about the Greenspring Manor project and (inaudible) here?

MR. TANCZYN: Yes.

MR. ROSENBLATT: Okay. Just a couple more background questions, Mr. Tanczyn. You, you used to practice land use law?

MR. TANCZYN: I did.

MR. ROSENBLATT: Did you represent both developers and community groups in your practice?

MR. TANCZYN: I did. I started out with the community groups, some of them thirty year clients, and, and then I did both, because you can make more money that way.

MR. ROSENBLATT: Okay and do you have any relation

with Tabco or Greenspring Manor project? Do you benefit financially or any other way from the project?

MR. TANCZYN: I do not. I haven't asked for anything and I don't expect anything.

MR. ROSENBLATT: Okay. That e-mail that was just shown, were you asked by anyone to write that?

MR. TANCZYN: To, to send it?

MR. ROSENBLATT: To send that e-mail to Councilman Patoka or anyone else?

MR. TANCZYN: No.

MR. ROSENBLATT: Okay, all right. I know some of your other exhibits you hinted illustrate the, the lack of connection between Seminary and Joppa Roads through other developments. If, if we were to boil down what (inaudible), is it simply that the only cut through, if you will, between Falls Road and Thornton Road is through Tallyho and none of the other neighborhoods have a cut through?

MR. TANCZYN: They do not.

MR. ROSENBLATT: Okay and is that the purpose of all, all the work you did in, in analyzing different projects and, and putting together what I think are your exhibits five or six?

MR. TANCZYN: Well, we haven't talked about five yet and its importance, if I could represent what it does and if you could put it up, I don't have to talk through it. The

dates are on, when all the developments were, first plat was approved, who approved it for Planning.

I will point out, in some cases there will be a name for approval of the plat from another County agency. But in those cases, they were approved for both departments, such as Public Works and Planning. Sometimes Planning signs for Public Works as well.

And the significance, I would point out, is and I've, and I've already talked about when the Seminary Ridge and Heatherfields were approved, and that shows the plat number and the date and the book number. Is that most of the other developments are, are later.

Three of them in particular were done in close proximity and time. Those being Seminary Springs, Boxwood and before that, the Meadows at Greenspring. All is shown with the plat number, date of approval and, and, and they will say, in the most part, for those three for sure, Norman Gerber was doing it.

And Norman Gerber was there earlier and approved, as well, he'll sign at Seminary and there's another couple, wait a minute. I got to see the one on the bottom. Oh, of course he did those three and I'm looking for the condominium called Thornton Wood to see who did that one. Anyhow, the point, my point is this.

The significance of Norman Gerber approving all of

those and I knew him and held him in high esteem in his position, worked with him on some projects for clients of mine after he had retired from the County. A top notch guy. No one will disagree.

But you have continuity. You have somebody who is approving a number of them with a common idea of what should be there. And the only other exhibit that, that if, if anybody wanted to double check me instead of looking at individual plats, our Exhibit 6 I'll just represent, is a study area and I told the boundaries to the Judge earlier.

If you look at that, for the properties up, on the north side that, that enter, that, that abut Seminary, West Seminary, on, on their entrance, you will see every one of them that I have noted as a plat, they are in and out one way entrances and exits. And so, they are affected by traffic on Seminary.

Now, one other point, if I can make it, I've listened to Mr. Sachse when he was talking about the backups and what does everybody do. There was some talk yesterday and I want to address or, or throw my two cents in if allowed, based on my time here, experience here.

Is there going to be what traffic going through Seminary Ridge? That's a question. I can tell you what I have done and what I've seen many other people do when those horrible backups, there's a lot of stuff at St. Paul's with

activities, as stated, which causes a backup.

And so, if my wife and I had a dinner reservation in Baltimore City, we were going to go down the Jones Falls, we come out and say oh, heck because it's backed up almost to the Mays Chapel South from, South entrance from Falls Road, what do we do?

One time I went through Seminary Ridge. Never again. Forty miles an hour and you go to Thornton Road. You go down Thornton Road at thirty miles. You go west on Joppa and before you get to Heatherfields, you, you make a turn on Old Court Road. That's what I always did since I had a law office in Towson when I was going to Court in the City.

And Old Court Road takes you below all of this and dumps you onto the Jones Falls Road. I, I respectfully suggest, that you can get, that you can get from the Mays Chapel South entrance quicker doing what I just said than going through Seminary Ridge. I ran through Seminary Ridge because there was so little traffic, when I was doing my ten mile runs. That's all I have to say.

ALJ: All right, thank you. Thank you, Mr. Tanczyn. And so, for the record, Mr. McCann, you didn't have any objection to these exhibits?

MR. MCCANN: No, Your Honor. I would only ask that they be marked as Tanczyn exhibits. I don't want --

MR. TANCZYN: They're MPT with a number.

ALJ: Hold on, hold on. Mr. McCann, you did not want them marked as community member?

MR. MCCANN: Correct.

ALJ: I think we should change that as well. It, it, you know, just because it is confusing because you're representing those community associations.

MR. MCCANN: Correct.

ALJ: So, we'll, we'll mark these as Michael Tanczyn Exhibits, and I'll just change it on the, on the exhibit list. So, there were eight of those. Mr. Zimmerman, you don't have any objection, do you?

MR. ZIMMERMAN: No. I will note, I haven't seen them before today, but I have no objection.

ALJ: And, but they were sent to you, I think Mr. Rosenblatt said by e-mail.

MR. ZIMMERMAN: Well, half an hour, an hour ago, I don't know.

ALJ: Right, understood. Yeah, I know. I just, but you, you'll, you'll have them --

MR. ZIMMERMAN: Right, yeah, yeah, yeah. No objection. No objection.

ALJ: Okay, all right. Thank you. And then, Mr. McCann, did you have any cross?

MR. MCCANN: I do not. No, thank you.

ALJ: Okay. Mr. Zimmerman, any cross?

MR. ZIMMERMAN: I do, actually, yes, yes.

ALJ: Okay.

MR. ZIMMERMAN: First of all, Mr. Tanczyn, could, could somebody share your Exhibit 5? And by the way, I have to say, great to see you.

MR. TANCZYN: Always good to see you.

MR. ZIMMERMAN: Regards to Patty and we'll have to talk sometime on the phone, yeah.

MR. TANCZYN: I would, you, you would have the exhibit. It has the --

MR. ZIMMERMAN: Right.

MR. TANCZYN: -- information on it that I testified to.

MR. ZIMMERMAN: Right.

MR. TANCZYN: If there's no objection, that could be an exhibit. Looks like it is.

MR. ZIMMERMAN: Exhibit 5, right? You're Tanczyn Exhibit 5, yeah. And before we say that, by the way, in 2009, following up on your commentary representing community associations, you were representing the Dulaney Valley Improvement Association, were you not?

MR. TANCZYN: Thirty years.

MR. ZIMMERMAN: And we went to the Court of Special Appeals in the Seminary --

MR. TANCZYN: No, that's Seminary Galleria.

MR. ZIMMERMAN: Seminary Galleria versus Dulaney Valley Improvement Association (inaudible) --

ALJ: Hold on one second, hold on one second. Mr. McCann, your e-mails are on the screen.

MR. MCCANN: Oh, I'm sorry.

MR. ZIMMERMAN: Okay.

ALJ: I don't want a bunch of people to read your e-mails.

MR. MCCANN: I appreciate that.

ALJ: Yep. You, you had the exhibit up there for a second. You, did you need number five?

MR. MCCANN: Yeah, I'll go back to it.

ALJ: I'm sorry, you seem to be the clerk at the moment doing (inaudible) --

MR. MCCANN: That's okay, no problem. Let me --

ALJ: Mr. Zimmerman needed that. Mr. Zimmerman, can we get to the exhibit instead of talking about Seminary Galleria? I know that was a big case of yours and you bring it up often and you were successful. You remind me of that often. But I'll let you (inaudible) because it is 3:37. Mr. McCann --

MR. ZIMMERMAN: Okay, well, okay. So, I just want to say, Mr. Tanczyn, of course, Norman Gerber was Planning Director, was he not?

MR. TANCZYN: Yes, yes.

MR. ZIMMERMAN: And do, do these names, does that

reflect the fact that he was the Planning Director when these subdivisions were approved in the 1980's and even earlier?

MR. TANCZYN: If his name is on it, he signed for Planning as Director.

MR. ZIMMERMAN: Okay and we had a few dates yesterday with Mr. Bishop's cross examination. But I see we have a few more that we didn't get to. So, Boxwood was 1986, the plat? I'm looking at it, I'm just, yeah. Was that, was that a 1986 plat for Boxwood?

MR. TANCZYN: Eighty-five.

MR. ZIMMERMAN: Eighty-five, okay.

MR. TANCZYN: Yeah, they built it out in '85 and '86.

MR. ZIMMERMAN: All right and Seminary Springs, 1985?

MR. TANCZYN: June, July 23rd, '85.

MR. ZIMMERMAN: Seminary Ridge, 1967?

MR. TANCZYN: That's the first one I got.

MR. ZIMMERMAN: Okay. There were several sections on that one?

MR. TANCZYN: There were sections, correct.

MR. ZIMMERMAN: Okay and then I see, is there a Thornton Ridge subdivision?

MR. TANCZYN: Yeah, well, it's a condominium.

MR. ZIMMERMAN: All right.

MR. TANCZYN: And there's a plat, there's a plat there for that. So, in that case, because it's approved as a

condominium, all of the individual units, they're unit one, unit two, --

MR. ZIMMERMAN: Okay.

MR. TANCZYN: -- unit three, like that.

MR. ZIMMERMAN: That's 1964?

MR. TANCZYN: I'm sorry, if somebody could, oh, wait, I can look at it. Seventy-four.

MR. ZIMMERMAN: Seventy-four and then there's --

MR. TANCZYN: (inaudible) it's in, it's in, it's plat three, '74 in the condominiums.

MR. ZIMMERMAN: Okay. There's one on the right, kind of toward the, a little bit towards the bottom. It seems to say 4/21/64. Am I missing something? Oh, I see the '74 now. There's also a '64, isn't there, above that?

MR. TANCZYN: Okay. Now, the one, the one above the line on Landrake Road, which is the common entrance for those different sections, has, the, the house right there at the corner, has the community sign called Village Green. And, and that includes, and that one troubled me, and then I finally figured it out. It's actually approved as a Thornleigh --

MR. ZIMMERMAN: Okay.

MR. TANCZYN: -- extension or something.

MR. ZIMMERMAN: All right.

MR. TANCZYN: On, and it's in plat book 29, 131 --

MR. ZIMMERMAN: Okay.

MR. TANCZYN: -- of Thornleigh and, okay. And then the one below is another Thornleigh --

MR. ZIMMERMAN: Um hm.

MR. TANCZYN: -- for the land going to the south towards --

MR. ZIMMERMAN: Right.

MR. TANCZYN: -- Joppa.

MR. ZIMMERMAN: Okay and these go all the ways to Thornton Road, correct?

MR. TANCZYN: Yeah, yeah.

MR. ZIMMERMAN: And what's the distance, if, if, maybe you said it, Mays Chapel Road to Thornton Road, is that about what, how, how long is that?

MR. TANCZYN: Peter, I haven't measured the exact distance.

MR. ZIMMERMAN: All right, all right.

MR. TANCZYN: I heard, I heard Mr., the traffic expert, Mr. (inaudible), measure it for Doug Sachse. He actually measured the, the entrance distance from --

MR. ZIMMERMAN: Okay.

MR. TANCZYN: -- Mays Chapel South as a thousand feet. And so, I'd say another six hundred feet, more or less. I can measure it but anybody can measure it.

MR. ZIMMERMAN: All right. So, maybe if, a third of a mile or, I mean, I don't want to hold you to it.

MR. TANCZYN: I, I, I would rather not guess.

MR. ZIMMERMAN: All right. Anyway, the north side of Seminary from Hunt Spring 1990, we, we saw yesterday anyway. But the others are all 1980's vintage, correct?

MR. TANCZYN: Well, the '88 one down on the corner is the Fields of Seminary II. And the Fields of Seminary original is on the other side of the street. So, one of them, plat was approved on the south side --

MR. ZIMMERMAN: Yeah.

MR. TANCZYN: -- for that development, in '87, and a year later, about, Fields of Seminary II was approved.

MR. ZIMMERMAN: Okay. So, the only recent development would be Torch Hill, is that correct?

MR. TANCZYN: Yes.

MR. ZIMMERMAN: Okay and did you oppose Torch Hill?

MR. TANCZYN: I, I did not participate because I understood, I'm not going to waste your time. For reasons that we don't have to go into --

MR. ZIMMERMAN: Okay, all right.

MR. TANCZYN: -- this was pre-approved because a reservation granted by agreement with others years ago.

MR. ZIMMERMAN: All right, fine.

MR. TANCZYN: That he had to wait a period of time before he could develop it.

MR. ZIMMERMAN: Okay, okay. All right. Let me, let

me share one of my exhibits, so thank you for that, Mr. Tan, Michael, can I call you, so --

MR. TANCZYN: Call me whatever you want, call me for dinner.

MR. ZIMMERMAN: So, yeah, let me share an exhibit, if I can find my (inaudible). Okay. I'm trying to find my twenty-one, there we go. Okay. I'm going to try to reduce this one actually. All right. So, so this is an ADC map, actually, is there anything you want to say with reference to the, the road system? Anything you want to add?

MR. TANCZYN: Well, the, the road, the road system as established, as I read it, as I understand it, having tried to understand what the traffic guys say when all the cases we ever had, seems --

MR. ZIMMERMAN: I'm going to, I'm going to zoom up.

MR. TANCZYN: Okay. The concept, the concept in summary is this. When they decided not to have these one way, one way, one way in, one way out communities that we talked about, what would be the effect of that in traffic? It sort of channels it onto Seminary, either way, on to Joppa either way and it, it sort of prevents other cut throughs to, for a reason.

MR. ZIMMERMAN: Okay. Is there, where Boxwood, the main access for Boxwood is which street?

MR. TANCZYN: It's called Arbor Way.

MR. ZIMMERMAN: Okay.

MR. TANCZYN: And it's, it's right across --

MR. ZIMMERMAN: I'm putting my arrow on it. Can, can you see that? Can you --

MR. TANCZYN: Yeah, I do see it.

MR. ZIMMERMAN: Okay. So, does Arbor Way go through to Mays Chapel Road?

MR. TANCZYN: It does not.

MR. ZIMMERMAN: Okay.

MR. TANCZYN: We are, we are an enclosed community. Arbor Way ends at the dog bone --

MR. ZIMMERMAN: Okay.

MR. TANCZYN: -- cul-de-sac, which is called Old Boxwood Lane.

MR. ZIMMERMAN: So, I'm pointing an arrow to a, a short road that goes up to Seminary Avenue.

MR. TANCZYN: Right.

MR. ZIMMERMAN: Is that, is that the way you get in?

MR. TANCZYN: No.

MR. ZIMMERMAN: How do you get in?

MR. TANCZYN: What, what, what that is Peter, is an access for, it's either 1041 or 1031 West Seminary, which is a large, over two-acre, mansion, property with swimming pool and everything else, that abuts our rear common area at Boxwood.

MR. ZIMMERMAN: I just, I don't want to belabor this.

But I mean, how do you get into your development? Is there another road that we're missing?

MR. TANCZYN: No, there's no other way in.

MR. ZIMMERMAN: All right, all right. So, I want to just briefly, the speed limits that you mentioned, Seminary Avenue is --

MR. TANCZYN: Forty, forty miles an hour for the study area.

MR. ZIMMERMAN: All right. Tallyho, what's the speed limit?

MR. TANCZYN: Twenty-five.

MR. ZIMMERMAN: What about Joppa Road?

MR. TANCZYN: Joppa is, I believe, a little higher, maybe thirty.

MR. ZIMMERMAN: Okay and Falls Road varies?

MR. TANCZYN: Yeah, well, the speed limit is only applicable when there's a traffic jam, but it's, it's, I think it's, in that, in that area for the three intersections, I believe it to be forty miles an hour.

MR. ZIMMERMAN: Okay.

MR. TANCZYN: Actually, when you, when you come off the Jones Falls it says the speed limit is going to be forty. And then it stays that way all the way up beyond this project area, past the St. Paul's entrance on the north side.

MR. ZIMMERMAN: Okay.

MR. TANCZYN: It just goes and goes.

MR. ZIMMERMAN: If I understood the gist of your testimony about Seminary Avenue and the first part of your testimony is there are quite a few traffic hazards based on topography, the narrowness of the road, the number of the curb cuts and excessive speed. Am I, is that, am I correct in having that impression?

MR. TANCZYN: It's a good summar, it's a good summary of what I said.

MR. ZIMMERMAN: Okay. So, what I have to ask you is wouldn't it be better if this development were reduced to about thirty lots, the same more or less proportionately as Torch Hill? So, that would be, people are eventually going to get out to Seminary one way or another.

MR. TANCZYN: I, I wouldn't favor that. Can, may I explain why?

MR. ZIMMERMAN: Of course.

MR. TANCZYN: And here's, and this goes back, what I'm referring to is the previous battle involving these neighborhoods, which was across Seminary and west of Mays Chapel North, past the Korean church. And it was for Grace Fellowship Church.

They wanted to put a mega church between, or on, on the north side of Seminary and adjacent to Deep Run on the east and the Korean church and to Falls, not quite, I think they did

go to, almost to Falls Road on the, on the western boundary. And that was a, a huge fight. Traffic was an issue.

It turned out that the developers, or the church elders, withdrew, withdrew it. But that was, that, I can't imagine what the traffic would be with a mega church there. Which doesn't just, doesn't just, it's active all week.

MR. ZIMMERMAN: Are you finished?

ALJ: Mr. Tanczyn, the question though was --

MR. ZIMMERMAN: That's fine.

ALJ: -- do you agree that it should be a thirty-lot subdivision as opposed to sixty? And then you were talking about the church, but how do you --

MR. TANCZYN: I'm sorry.

ALJ: -- (inaudible) back to the question.

MR. TANCZYN: I'm sorry.

ALJ: Yep, no problem. Go ahead.

MR. TANCZYN: So, to address it directly, I don't think that anybody, I, I see this project as what I call infill. It's not going to be a farm anymore, it's going to be something else. Now, in one of my letters, which I think is in evidence, I, I talked about the elephant next door, which is, I would call it generically, Johns Hopkins --

MR. MCCANN: Yeah, I would, I would object to these questions, this testimony. I'm sorry to interrupt, Mr. Tanczyn. Sorry to do this, but --

MR. TANCZYN: I was (inaudible) answer to his previous question --

ALJ: Hold on, hold on. Mr. Tanczyn, Mr. Tanczyn, yeah, hold on, please. Mr. McCann, go ahead.

MR. TANCZYN: I'm sorry.

MR. MCCANN: I was slow to push the unmute button, I apologize. When Pete asked the question, what, would you be okay with the thirty-lot subdivision, or something to that effect. I think that, that question is objectionable. It's irrelevant. We're here for a sixty lot subdivision. It doesn't matter and I think it's entirely irrelevant so I'll object.

MR. ZIMMERMAN: I'll withdraw the question.

MR. MCCANN: Thank you.

MR. ZIMMERMAN: I'll withdraw the question. Okay, that's all, that, that's all I have, Judge. Thank you.

ALJ: Okay, thank you, Mr. Zimmerman. Mr. Wyatt, did you have any questions for Mr. Tanczyn? Looking for Mr. Wyatt.

MR. MCCANN: Actually, Mr. Wyatt texted me. I think he had to leave at 3:30, Judge.

ALJ: Oh, okay. All right.

MR. MCCANN: Yeah, he didn't want to interrupt.

ALJ: Oh, okay. I didn't know that. All right. Well, how about Mr. Sachse. Did you have any questions for Mr. Tanczyn? You're muted.

MR. SACHSE: I'm, I'm muted.

ALJ: Oh, there you go. Now you're unmuted, go ahead.

MR. SACHSE: Okay. Michael, the --

MR. TANCZYN: I can't hear him.

MR. SACHSE: You can't hear me?

MR. TANCZYN: I'm sorry, I can't.

ALJ: Yeah, speak, just make sure you speak up, Mr. Sachse.

MR. SACHSE: Now, that, that should be unmute. I'm, can you hear me?

ALJ: You are, you're unmuted. I can hear you. Mr. Tanczyn, can you hear him?

MR. TANCZYN: What he just said I heard.

ALJ: Okay. Mr. Sachse, just speak up. Did you have questions or no?

MR. SACHSE: I, I was, I was just going to ask the one question is, if you call it a question, is the traffic is, you talked about Seminary Avenue and sight lines and speed and, I forget what else, but one of the real issues is the density of traffic on Seminary Avenue, is that fair to say?

MR. TANCZYN: I, I've already testified to that point and I agree with you.

MR. SACHSE: Okay. I love being in agreement, thank you. I don't, I don't have any other questions.

ALJ: Okay and Mr. Zimmerman had talked about his exhibit number twenty-one, which is an ADC map. Is there any objection to that, Mr. Rosenblatt?

MR. ROSENBLATT: No objection.

ALJ: Okay. Mr. McCann?

MR. MCCANN: No objection. All right. So, thank you, Mr. Tanczyn. And we have your exhibits.

MR. TANCZYN: Thank you.

ALJ: Okay. We appreciate it. It's now ten of four. Mr. McCann, I wasn't sure what, what your plan was. I know you had witnesses lined up, oh, actually, I'm sorry. I should actually do this first, back up. Mr. Rosenblatt, did you have any other witnesses?

MR. ROSENBLATT: No, thank you. Although in hindsight, maybe I would rest our case (inaudible) calling Mr. Tanczyn, but however you want to consider it, we, at this point, that's all the evidence we intend to present in our direct.

ALJ: All right. That's the Developer's case. That's what I, I knew you were going to go there. I at least assumed that from what you said before. And now I'm turning to Mr. McCann. Mr. McCann, it's now ten of four, what is your plan or preference here? I, I didn't think you anticipated probably that we would be this hour starting with your witnesses.

MR. MCCANN: No, I, I did have folks lined up. I guess the question now, I told some of them they could testify yesterday (inaudible) and then told others they were going to testify today. So, as long as, I mean, I could, we could use the time if we have a half hour left, I could probably see if one or more folks is available. These are community folks.

ALJ: Yeah, sure, no, that's fine. I just didn't know if you, you could still have them available today so --

MR. MCCANN: Yeah, I, I see at least one or two there. So, is Blandy Becker available?

ALJ: All right. Ms. Blecker, I do see you. Can you turn your camera on or do you have one?

MS. BECKER: I think I do, am I on yet? Hi.

ALJ: Hi, there you are. All right. And could you raise your right hand, please? Do you swear and affirm under penalties of perjury, that the testimony you're about to give is true and correct to the best of your knowledge and belief?

MS. BECKER: I do.

ALJ: All right. Mr. McCann?

MR. MCCANN: Okay, thank you. Good afternoon, Ms. Becker.

MS. BECKER: Hello.

MR. MCCANN: Thanks for your patience. So, switching gears here. Tell the Judge, if you would, where it is that you live?

MS. BECKER: 1205 Clearfield Circle, which is right off of Tallyho Road.

MR. MCCANN: Okay. Judge, can I share? Just wanted to show her a map that would reflect where she is. Great, thank you. Okay. Do you see that, Ms. Becker?

MS. BECKER: Um hm.

MR. MCCANN: Okay. I, maybe to speed things along here, if you don't mind, I'm going to sort of point out where it is that I believe that you live and if you could just confirm that. So, you live, first of all, in what, what community do you live? What's the name of the community?

MS. BECKER: Seminary Ridge.

MR. MCCANN: Seminary Ridge, okay. And that community accesses off of Seminary Avenue?

MS. BECKER: Yes.

MR. MCCANN: Okay and you are, if I'm correct, you are roughly right, right --

MS. BECKER: Exactly.

MR. MCCANN: Okay.

MS. BECKER: Yep.

MR. MCCANN: Can you see that, Judge? In fact, I'll go ahead and highlight it in yellow. Okay, great. And how long have you lived there, Ms. Becker?

MS. BECKER: Since 2015.

MR. MCCANN: Okay and who do you live with?

MS. BECKER: My husband, three kids and my dog.

MR. MCCANN: Okay. What do you do for a living, by the way?

MS. BECKER: I'm a real estate agent.

MR. MCCANN: Okay. And are you, do you hold any position with your community association?

MS. BECKER: Yeah, I'm the president of the HOA.

MR. MCCANN: Okay and what's the name of the HOA, for the record?

MS. BECKER: Seminary Ridge Homeowners Association.

MR. MCCANN: Okay and are you testifying this afternoon both on behalf of the association and individ, and in your individual capacity?

MS. BECKER: Yes.

MR. MCCANN: Okay. So, have you had the pleasure of sitting through these proceedings? Some or all of them?

MS. BECKER: Yes, for the most part. I had to step out between 11:00 and 11:45 today, but otherwise I've been listening.

MR. ROSENBLATT: (inaudible) is there any documentation or (inaudible) that shows that that is the case.

ALJ: So, let me just ask then, we, there's no rule eight here.

MR. MCCANN: No.

MR. ROSENBLATT: But, --

ALJ: So, I mean, there's no --

MS. BECKER: We took a vote as a board --

ALJ: Hold on, hold on, no, no, no.

MS. BECKER: I'm sorry.

ALJ: One second.

MS. BECKER: I'm sorry.

ALJ: So, Mr. Rosenblatt, there's no rule eight so, so, so.

MR. ROSENBLATT: (inaudible) move on.

ALJ: Well, I mean, isn't that typical for these proceedings? I mean, I would, that's what I understood that, that, I mean, yeah, I mean, --

MR. MCCANN: Yeah, I typically don't get the rule eight papers for, for these proceedings.

ALJ: Well, there's, yeah, there's no rule eight in, for the HOA, for the Office of Administrative Hearings, just for the Board.

MR. MCCANN: Yeah.

ALJ: I had to get used to that myself.

MR. MCCANN: Yeah. But I'll ask her some questions about that and, obviously, Mr. Rosenblatt can cross her on that issue.

ALJ: Okay. Go ahead, all right.

MR. MCCANN: So, Ms. Becker, you were just about to explain that, how it is that you're testifying on behalf of the

association. Could you explain that a little more?

MS. BECKER: We did have a meeting, an HOA meeting, and we did take a vote that we could testify and, and what we kind of were for and against in terms of this development.

MR. MCCANN: Okay.

MS. BECKER: Should say against.

MR. MCCANN: Okay and was that meeting at the association, at the board or both?

MS. BECKER: So, if I look back to since this development has come to our attention, we have been very open with our neighborhood.

MR. MCCANN: Yeah.

MS. BECKER: So, we talked to our whole entire neighborhood, in Zoom meetings a couple times.

MR. MCCANN: Uh huh.

MS. BECKER: We actually had Patak (phonetic) come in with us a couple times, and then individually as a board, we decided that yes, I can represent the Board and the neighborhood and get information and, and what we stand for. If, if I'm answering that correctly.

MR. MCCANN: And how many folks roughly live in the association, in the, in the neighborhood rather?

MS. BECKER: There's a hundred and sixty-seven houses, I don't know how many live in each one.

MR. MCCANN: Okay and I was just asking you

previously if you had the pleasure of sitting through the proceedings and I think you indicated that you had. So, are you, are you familiar then with what's being proposed?

MS. BECKER: Yes.

MR. MCCANN: And you've heard some of the testimony, or it sounds like most of the testimony during the course of the hearing?

MS. BECKER: Yes.

ALJ: Hold on one second. I'm going to mute, Mr. Tanczyn, I'm going to mute your microphone because you're still speaking. Sorry, go ahead, Mr. McCann. Say that again.

MR. MCCANN: Okay. I believe the question was whether or not she's heard some or all of the testimony and evidence during the course of this case.

MS. BECKER: Yes.

MR. MCCANN: Okay and, and on your own behalf and on behalf of the association, please tell the Judge what, if any, concerns you have about the proposed development.

MS. BECKER: As the association, our main concerns of the development is when we hear about the Falls Road traffic and that failing traffic shed and adding more into it. When we've learned about the sewer capacity issues with the County and adding more houses in. And we really, everybody in here, I will say, is anti the density, the, the size of the lots and the number of homes that are being built in there.

MR. MCCANN: Okay. Can you either, maybe it would be appropriate to ask about your own personal opinion about the traffic. You mentioned traffic. What, what, could you provide us with a little more detail about how you feel about that issue? That aspect of the development?

MS. BECKER: When, when speaking of traffic, this would be specifically up at Falls Road, I guess, in that failing traffic shed. I'll leave Tallyho for another issue, but up at Falls Road, I mean, just as a neighbor, it's a nightmare up there.

I was up there twice today, watching from my phone, but coming out last week around 4:00, two weeks ago about 4:00 in the afternoon, I was leaving Greenspring Station between the Mackenzie building and the gas station exit. I don't know what that little, there's like three entrances there.

I was leaving and turning left onto Joppa to go back to Tallyho. It took close to five minutes to make that lefthand turn and I did it with a Hail Mary. I won't', you know, the hairs were standing up on the back of my neck as well.

But it's hard because cars are flying off of 83 and whipping around that corner to come onto Joppa Road because they're going fast anyhow. Sadly, we all know when we get off of a highway, we, you kind of go faster because you've been driving fast. So, they are whipping right there.

And it's, it's next to impossible to go left. I almost think like you'd have to say everybody has to go right, which puts more traffic up on Falls Road because I think someone is going to get hurt, in my opinion, turning left.

MR. MCCANN: Okay. I, I wanted you, if you could, I'm going to show you a, an aerial photograph. This would be Protestant's Exhibit 38. It may not be the best exhibit to use, but I'll blow it up so it's more, can you describe where it is that you were just talking about. I think everybody somewhat knows, but what, what --

MS. BECKER: Okay. So, go, you see where the gas station is? Your cursor is kind of near it.

MR. MCCANN: Right here?

MS. BECKER: Yes, the road that takes you to Joppa.

MR. MCCANN: Yep.

MS. BECKER: If you keep kind of coming, am I looking at it right? Yeah, yeah, right there.

MR. MCCANN: Uh huh.

MS. BECKER: So, I wasn't there. If you go farther east on Joppa, which I don't know if your picture goes to it, but that's a dangerous turn there. I just don't ever do it there. It's a cluster. But if you go farther east on Joppa, there's a, the next entrance, it's kind of across from O'Connor and (inaudible).

MR. MCCANN: Uh huh.

MS. BECKER: Yeah, right there.
MR. MCCANN: So, this is Exhibit 25 now, I switched.
MS. BECKER: Yes, right. Yes, so, --
MR. MCCANN: Right here?
MS. BECKER: That, yes. I was leaving there and --
MR. MCCANN: Wait, before you proceed, hold on one second, Ms. Becker. Hold on, slow down. Let me just describe or have you describe where it is that you're talking about. So, this is a, if you were headed eastbound on Joppa and you were to make a turn, make a left into Greenspring Station, is that where you're talking about right here?
MS. BECKER: Well, I was actually exiting Greenspring Station and --
MR. MCCANN: Oh, I'm sorry.
MS. BECKER: -- trying to make a left onto Joppa Road.
MR. MCCANN: Okay, got it.
MS. BECKER: And that backs up right there from people trying to get out. So, once you get up there, you kind of have that pressure that you better get going. And there's a way so that you can take a left and somebody can take a right, if that makes sense. So, you're not bottle necking the right people. But going left, going east onto Joppa from there, which a lot of people do, is pretty scary.
MR. MCCANN: Okay and, and the traffic that you were

concerned about is traffic on Joppa heading east or westbound, which traffic are we talking about?

MS. BECKER: Heading eastbound.

MR. MCCANN: Eastbound, okay.

MS. BECKER: But if you, Michael, if you look at, so see where the Jones Falls Expressway is?

MR. MCCANN: Uh huh.

MS. BECKER: And if cars are, what happens is cars are flying off of that and they're going onto that exit ramp--

MR. MCCANN: Right.

MS. BECKER: -- that takes you onto Joppa Road, they whip around.

MR. MCCANN: Right.

MS. BECKER: So, they're whipping so fast and see how close it is from there to the --

MR. MCCANN: Yep, okay.

MS. BECKER: That's, that's who, that's who you're kind of dodging. You're playing Frogger.

MR. MCCANN: Okay. So, that was one example you said a couple weeks ago?

MS. BECKER: Yeah, in that, yeah, that happens, I, I bet you if you talk to some employees in there or anybody shopping that that's pretty frequent.

MR. MCCANN: Okay and then you said you were at Greenspring Station twice today you said?

MS. BECKER: No, I was at Greenspring Station at 9:00 a.m. this morning and then I was actually down on Falls Road at Falls and Lake, so I kind of went up to that intersection at two different times.

MR. MCCANN: As somebody that lives close by, obviously, is that, you mentioned two trips on this corridor in a, in a single day. Is that something that's common for you?

MS. BECKER: Um hm.

MR. MCCANN: What kind of trips do you typically make in this corridor?

MS. BECKER: They were both just errands that I was running.

MR. MCCANN: Okay.

MS. BECKER: But my kids are now getting a little bit older. But I, I would go multiple times a day over to that Meadow Wood Park.

MR. MCCANN: Um hm.

MS. BECKER: Especially at rush hour traffic. And then, I, my daughter is, went to Maryvale, which is, nobody has considered that with the St. Paul's traffic, I think that was probably just a forgotten thing. But Maryvale is right up next to St. Paul's. So, I would go out onto Seminary, which Mr. Tanczyn was saying how bad Seminary gets. And hit that traffic up there to pick her up a lot.

MR. MCCANN: Okay. So, Maryvale, you're right. I

don't think we mentioned it during the course of this hearing. Is Maryvale on Greenspring Valley Road?

MS. BECKER: You would, you can't enter, enter Maryvale from Greenspring Valley, you have to enter it from Falls. It's their only way in and out. So, because their driveway is actually crumbling, so they could never open that back access again.

MR. MCCANN: Okay.

MS. BECKER: So, you do get the traffic at Falls and Seminary because of Maryvale and St. Paul's traffic. I think that, yeah, they're, it's, it's not fun there.

MR. MCCANN: Okay and Maryvale, go ahead, I'm sorry.

MS. BECKER: We've had days where you turn left onto Seminary from Tallyho and the traffic to get up to Falls backs sometimes all the way up to Tallyho. So, my other daughter went to NDP, I was glad to go right on Seminary to get the hell away from that, excuse my language.

MR. MCCANN: Yeah. Well, let me get back to Exhibit 24, if you don't mind, which shows that. So, Tallyho and we've talked a lot about Tallyho but the, this is right here where I'm circling, that's where Tallyho meets Seminary Avenue?

MS. BECKER: Um hm.

MR. MCCANN: And then, so you're saying traffic at Falls and Seminary backs all the way up to Tallyho?

MS. BECKER: Not every day, I will say that. But it,

it has, especially in the beginning of the school year, it's always more of a nightmare. But I would say most days, you're stopping about, the traffic is backing up to about Mays Chapel, before Mays Chapel. The, the Mays Chapel Road that's in question, not the one that takes you up to BCC.

MR. MCCANN: Okay and that's the area that you just described where the Mays Chapel Road in question meets Seminary, that's right here?

MS. BECKER: Yep. There's, there's usually traffic starting there in the morning to get to St. Paul's and Maryvale.

MR. MCCANN: Okay and describe, I think we may have some photographs on this, but describe this section of road where that traffic that you just described is and from, so in other words, from over here, where Falls and Seminary is, to where Mays Chapel meets Seminary. What, what's that road like? Is it four lane, two lane?

MS. BECKER: Two lane.

MR. MCCANN: Is it, so one way each way?

MS. BECKER: Um hm, yes.

MR. MCCANN: Is there any shoulder to speak of on either side that you could pass somebody on?

MS. BECKER: I can't remember. I don't think, I would never do that. I, no, there's, actually I know there's not a shoulder because I watch the St. Paul's cross country

team run on it and I want to call the school to be like please stop letting those kids run down there because it's, it's so congested right there. But I haven't done that.

MR. MCCANN: Okay, all right. Any other examples of traffic? You've talked about Seminary Ave and its intersection with Falls. You've talked about Green Station, Greenspring Station a little bit. Any other concerns as far as traffic is concerned?

MS. BECKER: In terms of the failing traffic shed?

MR. MCCANN: Yeah.

MS. BECKER: No, not --

MR. MCCANN: Okay.

MS. BECKER: -- in terms of the failing traffic shed, no.

MR. MCCANN: Okay.

MS. BECKER: But I --

MR. MCCANN: You mentioned another concern being the size of the lots. What did you mean by that?

MS. BECKER: Well, when I look at it and, again, I know, to me it looks like most of those lots that, if I was going to take a buyer to buy one, they're probably getting like .18 size lot with a thirty-five hundred square foot house on it. When I look at the lots in Seminary Ridge and Heatherfield, Heatherfield is usually about an acre. The houses around that area in Seminary Ridge, which are on

Trelawny, are about an acre. Even the houses in Boxwood, maybe it's not Boxwood, it's the Meadows (inaudible).

MR. MCCANN: Yeah.

MS. BECKER: They're a half-acre. And even the ones at Boxwood, because they're kind of the bigger ones that fan out, they're about a half-acre. In my world, you don't compare attached homes to detached homes, but I'm learning that you guys do. So, when I, like these are detached homes on .1 acre lot being compared to attached homes is, you know, that's just my layman's side of it. But it, it seems very, very congested. It looks like a lot of building on not a lot of land, but.

MR. MCCANN: Okay and I think you mentioned, did you mention sewer or did I imagine that?

MS. BECKER: Well, that's the three concerns that as a neighborhood we have decided that we, why we are against this neighborhood.

MR. MCCANN: Yeah.

MS. BECKER: There are major concerns in why we don't want it. It's not that we, we do see something, they're eventually, but you know, when we hear the traffic up there, that, that impacts our lives every day. And then when you hear about the failing sewer shed, yeah, that concerns every single neighbor because stuff's got to flow out of your house.

MR. MCCANN: Yeah.

MS. BECKER: And if it's failing right now, if

someone could explain to us, you know, how does it get fixed? You know, like is that going to impact, is that just a burden we all have to take on to, I guess, give somebody a profit.

MR. MCCANN: Yeah. The, as a member of the board of your association, have you, or does anyone else on the board, have you guys been approached at all by a representative of the Developer about --

MS. BECKER: Yeah, um hm.

MR. MCCANN: Okay.

MS. BECKER: And we, we, we did have meetings with them in the beginning, where they pretty much told us that we, they didn't care about our concerns because our concerns were more, because we were kind of blown away, issues with, you know, the opening and closing of the road, which I know you're not focusing on.

MR. MCCANN: Um hm.

MS. BECKER: And the number of homes. And we were told that that stuff is not going to change, it's already set in stone. And that's when we all kind of showed up in force at the community input meeting because it didn't feel fair that we had no say on the number of homes and anything like that. And it, it, granted, we didn't know how the process worked so, yes.

MR. MCCANN: Yeah. And that's, that's before your association retained me, is that correct? That was a while ago?

MS. BECKER: Yeah, it was a while ago. That's pretty much why we did retain you.

MR. MCCANN: And then, so, was there, you said a meeting or meetings with Developer's representatives?

MS. BECKER: Can't, you know what? I, I can't remember. I think it was one or two Zooms. I, I could be wrong on that.

MR. MCCANN: Okay and those were both before the community input meeting you said? That there were two?

MS. BECKER: Yes, I believe so.

MR. MCCANN: Okay and --

MS. BECKER: I believe so.

MR. MCCANN: -- during that, those one or two meetings by Zoom, you said that the community, including yourself, expressed your concerns about the development?

MS. BECKER: Um hm.

MR. MCCANN: Did, in response to, to your expressing, expressing your concerns, did the Developer's representatives propose any, any adjustments to the plan that you were shown?

MS. BECKER: They did offer landscaping --

MR. MCCANN: Yeah.

MS. BECKER: -- to the back so, you know, for the people who it was going to butt up to. I don't think they ever called, contacted any house or notified them individually, you know what I mean? They didn't receive anything from the County

or anybody. But I think they did offer some landscaping.

MR. MCCANN: Okay. Anything else that you want to add about your concerns, Ms. Becker? Does that cover everything?

MS. BECKER: Yeah, as the, as the neighbor, I mean, I think so far. Hopefully that's it. Kind of --

MR. MCCANN: Maybe I should ask this. Other than the volume of traffic, which I think you described pretty well. And I think you gave one example of a safety concern you had. Is, is safety a concern for you along this corridor of Falls Road and along these failing intersections as well?

MS. BECKER: Yeah, a hundred percent, a hundred percent.

MR. MCCANN: And describe --

MS. BECKER: I, I, I, I think the traffic up at Falls Road and I know the traffic engineer had studied and all that, but it, and I, I don't want to, and I know that stuff is all the science, or the facts, but it's, it's dangerous up there. There, there, you know, it is.

MR. MCCANN: Do you think the, and you, have you seen the aerial photograph of the proposed road improvements?

MS. BECKER: They're not, I don't think they'll do anything.

MR. MCCANN: Okay.

MS. BECKER: That, that's my opinion. I, it, and it

actually seems to me it'll almost be harder to go left onto Joppa from there. That I, I almost feel like they're going to, someone will have an accident, they'll say everybody has to go right to Falls Road, which will just put more traffic up at Falls Road.

MR. MCCANN: Okay.

MS. BECKER: And, and if I can speak to what Mr. Tanczyn, whatever his name, sorry, I apologize, Tanczyn. When he was --

MR. MCCANN: Yeah, one second. Before, Ms. Becker, before you go on.

MS. BECKER: Okay.

MR. MCCANN: I think, I was just going to ask you about that. It's my understanding that your, your community, if this development is approved, you, you've already stated your opposition to it. But if it's approved your, your community is not in favor of just a, everybody's been calling it gated, I don't think it's a, but is not in favor of that, of a gated access but rather you would prefer an open access between the development and the Meadows community, is that correct?

MR. ROSENBLATT: Objection.

MS. BECKER: Yes.

MR. ROSENBLATT: I've tried to be lenient, but this is really leading.

MR. MCCANN: It's --

ALJ: So, it is, it is leading (inaudible) --

MR. MCCANN: Okay. I'll, I'll rephrase.

ALJ: Okay. If you could just rephrase that question (inaudible) --

MR. MCCANN: Yeah, I'll rephrase it, that's fine. Tell us what your, what, what, if any, position your community has regarding the pass through and I'll leave it, leave you (inaudible).

MS. BECKER: Okay. So, for the pass through for us, that was probably one of the main things that did upset us to start the process of researching the neighborhood in more in depth. So, when we heard that Mays Chapel Road was not going to be opened by the Developer and that decision was done, we were, you know, obviously upset.

So, we really started digging more into the neighborhood. And that's when we learned of concerns that became even greater, such as the density, the sewer line. And then, really once, it kind of highlighted Falls Road and what a nightmare it is.

I know the traffic engineer had said that, you know, I guess it was the same time, we started working with the County at the end of 2019. We had an annual board meeting and a few elderly I will say neighbors expressed concerns about the speed on Tallyho and how we can stop that. At that point,

scared backing out of their driveway.

And then, other people had brought up concern on West Seminary and Tallyho, where you talk about where the gentleman from Boxwood, Old Boxwood, had talked about the blind sights. We have a major one coming eastbound on West Seminary, there's a hill.

When you're coming from Mays Chapel, where we're talking, towards Tallyho, he had a photo of it. You're seeing a hill. We have had, I kid you not, probably seven or eight near head on collisions because people are flying eastbound on Seminary, someone makes a right.

We don't have a deceleration lane to turn right onto Tallyho Road. And so, they're flying. They go into a middle lane where another car is coming westbound and takes a right onto Tallyho. I don't know if I've made any, but basically, the cars go like this and you watch them go like that.

We have, actually, we're very active in our neighborhood. So, we had worked with Keith Lank on Tallyho with the speed humps. He told us he cannot help us with Seminary because it's a state highway. We filled out the forms on the State Highway website. I did not do it, someone in our neighborhood did it, and it was kind of left that, well, we have no proof that that's a dangerous area.

Our proof is we see it and I've got a house right there that's a rancher at Seminary and Tallyho, that watches

it. He's got two kids right there. If you go I not why we have the speed humps, we did have stop signs that were put in, I believe, in the late eighties. And the County had recommended the speed humps instead of the stop signs. And we have all the research on that.

We did a very thorough testing of all our neighbors on what they wanted. We did surveys. We surveyed mainly Tallyho because they were the only people that had the vote. But we also surveyed the entire neighborhood, just because we wanted to be neighborly.

And at the very end of that, when we all decided that they were going to get approved, the people on Briarfield started fighting for an island and we kind of got in another battle. Why do we want an island right here? And they were saying, they were terrified of their kids cut, you know, with, with that, with that intersection. And I will say, this is all traffic coming from Falls Road, that is flying down Seminary.

And you may just get some neighbors turning into Tallyho, with cars flying around it. So, we now have an island there. We have a blind child that lives on Briarfield, we have a blind sign there, we put there. We think, I think Heatherfield has a blind child where they are off of Tallyho.

And then we have a severely disabled child that's right on Tallyho that can't walk on the sidewalk because his wheelchair is too big, because we actually put in wheelchair

ramps for him and for other people. But the mother was like, the wheelchair is too big, it has to be on the road. I think with the, you know, you get a little bump in that.

So, so, when I was listening to him speak about that, I thought, God, his problem would be solved if he could go out to Joppa Road and go right or left and not have to make a lefthand turn onto Seminary Avenue. The connection would actually solve his problem. Because Seminary is a mess in the morning. I, you know, that's, that's just the way I feel.

We do, I know that I was surprised to hear Keith Lank had, I think the traffic engineer had said Keith Lank ordered the, the study. Because I had asked him, do you know who's doing the study? We saw the guy. He was sleeping half the time. But Keith was, said he didn't. So, anyhow, it is what it is. It doesn't matter.

But when, I walk twice a day with my husband and the dog, I see a lot of the neighbors. I'm not impacted by Tallyho. You can see where I live. But cars fly on Tallyho. The speed bumps have a hundred percent slowed them down. We have a spot where we'd like another speed hump because the cars will fly in between.

They are not our neighbors. I'm not saying people shouldn't be able to cut through but they, you know, it, you know, it would, it would, it would, it would lessen up some of the traffic that we're seeing at Falls Road there, I think.

MR. MCCANN: Okay. Thank you, Ms. Becker. I don't have any other questions. I have, well, Mr. Rosenblatt may have some so (inaudible).

ALJ: So, just, just so I understood that last thing you just said. The community's position, community association's position on the pass through is that it should be opened?

MS. BECKER: A hundred percent. And, and we, the more we've researched, we see the, the master plan and we saw County notes where County people were saying yes, it should be open due to the master, the master plan says it. And all of a sudden we're seeing that they agree it should be closed. We're kind of like what, why, we don't know why we were never approached for any of this.

We do have a lot of houses between, I think, Heatherfield and I think you'll meet with the Heatherfield president. We work well together. For some reason, it's just, we're, we just, we're just over here on the side. A hundred percent, we do want the connection.

I think it would actually help both neighborhoods. I did a map search and I just clicked the Boxwood house to the, to the original house on Joppa and it's five minutes right now to get from that original house on Joppa in question to, I think it was number five Boxwood.

I just threw it into my Google Maps. It's five to

six minutes. If you do Tallyho, it's five minutes. If, or Falls Road it's five minutes. Tallyho it's five minutes and Thornton it's six minutes. I guess if you have a gate that opens with a siren blowing, what if the gate blow, breaks or whatever.

Some, I guess a firetruck is just going to go five min, I, I don't know. To, to me it doesn't make any sense. The connection should be there for those neighbors as well.

ALJ: Okay.

MS. BECKER: Even, that's just what I think.

ALJ: (inaudible) --

MS. BECKER: But I will say in all, we would prefer the sewer line fixed, the Falls Road fixed and the density does not make sense to us at all.

ALJ: Understood, okay. Yep. And that's the position of the community, those three things specifically. And I know you made some of the references were yours personally. But the community's, that's their --

MS. BECKER: Yep.

ALJ: Okay.

MS. BECKER: And the community, if it is approved, wants the road to be open. The, the connection to happen.

ALJ: Okay, understood. All right. Mr. Rosenblatt, cross?

MR. ROSENBLATT: Are there any questions from, I

guess, Mr. Zimmerman or, or --

MR. ZIMMERMAN: Yes, can I go before --

MR. ROSENBLATT: (inaudible) --

MR. ZIMMERMAN: I'm sorry.

ALJ: You're right, I apologize, Mr. Zimmerman, I'm sorry. Mr. Zimmerman first.

MR. ZIMMERMAN: Okay.

ALJ: Thank you.

MR. ZIMMERMAN: Yeah, I did have a few. So, let me, let me once again put the ADC map up on, it might help. If I can find it. All right, coming right up.

ALJ: It's on the screen.

MR. ZIMMERMAN: Right.

ALJ: And just, just so everyone knows, it's 4:23. Mr. McCann did need to leave at 4:30. Just try to highlight that that's the time.

MR. MCCANN: Thank you, Judge. Thank you.

MR. ZIMMERMAN: Well, all right.

ALJ: And we're back on Tuesday anyway.

MR. ZIMMERMAN: Yeah, I don't know if I can finish in seven minutes. But maybe, you know. So, --

MR. MCCANN: Ms. Becker may, well, I --

MR. ZIMMERMAN: Yeah, I don't know, maybe I should start on Tuesday.

MR. ROSENBLATT: I have (inaudible) too, it's no way

it's five minutes.

ALJ: Okay. I mean, Mr. McCann, is your client coming back?

MR. MCCANN: I'll let her answer that if she can.

MS. BECKER: Oh, Tuesday, yeah, I'm coming back.

ALJ: Okay.

MR. ZIMMERMAN: So, Tuesday, yeah, that would be, I think, less stress on everybody. So, --

ALJ: I don't want it to be rushed so that you all feel that you can't ask the questions that you need to ask, you know? And then we have Mr. Sachse and, of course, Mr. Wyatt is also not here. So, Ms. Becker, if you could come back on Tuesday? You're sworn in and so, you don't want to speak with anyone about your testimony between now and Tuesday.

MS. BECKER: Okay.

ALJ: When we come back at 10:00 and you should, everybody should have their own links, as we know. Of course, this is day five, so you all know what the drill is by now, that everyone has their own links to come back on Tuesday. That probably makes sense. Anything else?

MR. ZIMMERMAN: May I say, I think I at least have a couple of citizen witnesses. I don't know what Mr. McCann has, but there might be a third, but at this moment, I know of at least two citizens who indicated they'd like to testify, either through me or on their own.

ALJ: Yeah, absolutely. Yeah, and I did hear that as well and so, when Mr. McCann gets finished with his case, you know, then we can turn to those citizens and anybody else who's here who wants to testify. And that's the time for Mr. Sachse and Mr. Wyatt also to testify as well.

MR. MCCANN: Judge, could we, I know I e-mailed you guys about this. Would it be possible, there's, we're obviously not going to finish on Tuesday. Is it possible we could start working on dates, Adam and I, on, obviously not today, but on Monday, could we start that process?

ALJ: Yeah, I think that is a good idea. We were, now you had asked before --

MR. MCCANN: Yeah.

ALJ: -- because scheduling really wanted to, really see if --

MR. MCCANN: Yeah.

ALJ: -- you know, they had to because, again, if it did finish then, then the date gets wasted, somebody else (inaudible).

MR. MCCANN: Yeah, I know, I understand. Listen, I understand completely. It's not your --

ALJ: No, but you're right. You're right, let's do that. Let, yeah, if you guys don't mind working on dates. And I can even let them know. I'll, in fact, I'll send them an e-mail today to let them know that you're going to be contacting

them that you need other dates. And what do you think timing wise? Do you think two more days after Tuesday or one day after Tuesday? (inaudible) --

MR. MCCANN: I think, I think given how we've gone so far, I think two more days would be, would be best and hopefully close together.

ALJ: Two more days in addition to Tuesday?

MR. MCCANN: In addition to Tuesday, yeah.

ALJ: So, three total? Right. How do you, Mr. Rosenblatt, are you in agreement?

MR. ROSENBLATT: (inaudible) so it's really up to them how much they're going to do.

ALJ: Right, but then you also have rebuttal if you choose to.

MR. ROSENBLATT: Sure. So, yeah, it sounds crazy but maybe that's (inaudible).

ALJ: Okay. (inaudible) finish November's calendar, so you're looking at December.

MR. MCCANN: Okay.

ALJ: Did you know that? I don't know, well, they might be able to find dates. They may not have, you know, closed everything off, but I know that they had finished the November calendar because they were asking us December dates, but.

MR. MCCANN: Okay.

MR. ZIMMERMAN: Yeah, I'm out December 1st, 2nd, 3rd but any, anything after that, other than 15th to 19th, you know, is open.

MR. MCCANN: Thank you, Judge.

ALJ: Okay. All right, everyone. I think we're finished for today. And we'll be back on Tuesday.

MR. MCCANN: Have a nice weekend.

ALJ: Thank you, you too. Thank you.

(OFF THE RECORD

CERTIFICATE OF TRANSCRIBER

I hereby certify that the hearing in the matter of Greenspring Manor, 2310 W. Joppa Road, case numbers 08-0922 and 2021-0250-SPH, heard before the Office of Administrative Hearings of Baltimore County, October 28, 2022, were recorded by means of audiotape.

I further certify that, to the best of my knowledge and belief, page numbers 1 through 251 constitute a complete and accurate transcript of the proceedings as transcribed by me.

I further certify that I am neither a relative to nor an employee of any attorney or party herein, and that I have no interest in the outcome of this case.

In witness thereof, I have affixed my signature this 31st day of March 2023.

Christine R. Leary

Christine R. Leary

Transcriber

IN THE MATTER OF:

GREENSPRING MANOR
2310 W. Joppa Road

CASE NUMBERS: 08-0922 & 2021-0250-SPH

Hearing Date: October 27, 2022

Pursuant to Notice, the above-entitled hearing was held before the Office of Administrative Hearings for Baltimore County by remote access.

PRESIDING:

MAUREEN J. MURPHY, ADMINISTRATIVE LAW JUDGE

FOR THE PARTIES:

ADAM ROSENBLATT, ESQUIRE
CHRISTOPHER MUDD, ESQUIRE

MICHAEL MCCANN, ESQUIRE

PETER MAX ZIMMERMAN, PEOPLE'S COUNSEL
FOR BALTIMORE COUNTY

Christine R. Leary
crleary1@comcast.net

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(ON RECORD)

ALJ: Good morning, everyone. You're attending for case number 08-0922-2021-250-SPH. Property address 2310 West Joppa Road. And this is the combined development plan, zoning case for Greenspring Manor. For the record, I'll have counsel introduce themselves beginning with Mr. Rosenblatt.

MR. ROSENBLATT: Good morning, Judge Murphy. Adam Rosenblatt and Chris Mudd of Venable, LLP on behalf of the Developer/Petitioner.

MR. MCCANN: Good morning, Judge. Michael McCann on behalf of the Protestants.

ALJ: Good morning.

MR. MCCANN: Good morning.

MR. ZIMMERMAN: Peter Max Zimmerman, People's Counsel for Baltimore County, Towson.

ALJ: All right. Anything before we get started? No one can think of anything? All right. So, folks, if you're attending for the first time, it looks like we have the same people here in the attendees room who have been here all along, so you know the rules.

Just keep your microphones muted. We can't have everyone talking or unmuting your microphone because it is being recorded. It is a hearing and not a meeting. Just keep that in mind if you can and we are going to start then, Mr. Nebre is joining us again.

So, let me find him. I know you're here, I saw you. There you are. Thank you, Mr. Nebre, for coming by again. Let me do this. Let me swear you in again. Do you swear and affirm under penalties of perjury the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. NEBRE: I do.

ALJ: All right and what we're going to do is we're going to start with Mr. Wyatt. You did not get a chance to ask questions. Mr. Nebre had to leave the last time and so, I am going to let you start.

MR. WYATT: Thank you. Good morning, Your Honor.

ALJ: Good morning.

MR. WYATT: Mr. Nebre, good morning.

MR. NEBRE: Good morning.

MR. WYATT: I'm Michael Wyatt. My family lives on 4 Trelawny Court in pretty close proximity to the proposed development. Do you know where Trelawny Court is?

MR. NEBRE: No, I don't, not off the top of my head.

MR. WYATT: All right. It's off of Tallyho, do you know where it is?

MR. NEBRE: Tallyho is, I believe, off Seminary.

MR. WYATT: Okay. Yeah, you previously testified in this probably about a month ago and you had to leave early so I appreciate your coming back because I had some questions and

some other people may also have additional questions, based on your earlier testimony and perhaps what you say today in response to my questioning. Since you last testified, have you discussed this matter with any of the parties or their attorneys?

MR. NEBRE: No, I have not.

MR. WYATT: Okay. Baltimore County has a website for your Bureau, correct?

MR. NEBRE: Yes.

MR. WYATT: And it talks about the responsibility of the Baltimore County Bureau of Traffic Engineering and Transportation Planning, that's your Bureau, right?

MR. NEBRE: That's our, that's the Bureau, yes.

MR. WYATT: All right and, and for purposes of this hearing, you're authorized to speak on behalf of the Bureau?

MR. NEBRE: I believe I'm, for this hearing, I was under the impression I was just going off the, what I was, what I reviewed, the traffic impact study.

MR. WYATT: All right. But you're, but you're here, not here, virtually you're here, authorized to speak in this matter on behalf of the Bureau?

MR. ROSENBLATT: Objection. Asked and answered.

ALJ: Overruled. Go ahead, Mr. Nebre.

MR. NEBRE: Yeah, that's what I was brought under the impression that I was just, I was here to be questioned

regarding the traffic impact study.

MR. WYATT: Okay, thank you. One of the things that your Bureau is responsible for doing is the rating of intersections in Baltimore County, correct?

MR. NEBRE: That's the, one of the responsibilities of the Bureau, yes.

MR. WYATT: All right and this is done with a, a, let's call it, a level of service rating or an LOS?

MR. NEBRE: LOS rating, yes.

MR. WYATT: All right. And that's, that's done as part of the basic services map?

MR. NEBRE: Yes.

MR. WYATT: Okay and that, is that basic services map published, published on what, with what frequency? On an annual basis, basically?

MR. NEBRE: Annual basis.

MR. WYATT: All right and Baltimore, and Baltimore County, you're in fact, Department of Public Works and your Bureau, you would agree with me that you're singularly responsible for developing and maintaining the LOS ratings for Baltimore County intersections, regardless --

MR. NEBRE: That is, yes, --

MR. WYATT: -- regardless of by whom owned. Meaning, whether it's a State or County road, it's your Bureau that's issuing the LOS ratings, is that correct?

MR. NEBRE: For the basic service map, yes.

MR. WYATT: Okay and Baltimore County uses what's called a loaded cycle methodology in making its LOS determinations for the basic services map?

MR. NEBRE: That's for the basic services map, yes.

MR. WYATT: Okay. But there are other methodologies, you would agree, for rating traffic congestion other than loaded cycle methodology?

MR. NEBRE: There are other methodologies, yes.

MR. WYATT: All right and --

MR. NEBRE: But the one pertaining to the basic services map is the loaded cycle analysis.

MR. WYATT: Yeah, they're, it, well, that's what I was getting at. There's, there's no other methodologies authorized by, for Baltimore County in making LOS determinations as part of the basic services map.

MR. NEBRE: As part of the basic services map, yes.

MR. WYATT: All right and the, I'm going to call it the LCM, loaded cycle methodology, is for the LOS rated intersections, they're, they're done on a near annual basis?

MR. NEBRE: Okay. The, the ones that are on the basic service maps are done on a, yeah, on an annual basis because that's the one we're updating every year. There's other, yeah, if that's all you need to get answered. But yeah, there are other, other intersections in the County because we

have to, you know, we're trying to evaluate all intersections, but the other ones are less frequent because they're not on the map.

MR. WYATT: Okay. What about with rated F intersections? With what frequency are those looked at by your Bureau?

MR. NEBRE: Because those are on the map currently, anything currently on the map would be rated annually.

MR. WYATT: Okay, all right. Let me ask you this. Who determines whether a particular property is within a particular traffic shed?

MR. NEBRE: You're talking about the boundaries of the shed?

MR. WYATT: Well, that's, would be one way. I mean, I'm trying to understand, what's the standard by which Baltimore County determines whether prop, a particular property is located within or outside of a particular traffic shed?

MR. NEBRE: Okay, yeah, so the sheds have been defined. And I think I've been, I've answered this question in a previous trial. I have not, I have not had the experience on how the, the sheds have been determined. I don't really have experience on that part, on the methodology on how those sheds are determined, so I'm not the best to answer that question on how the sheds have been determined.

From our research, there are, have been memos

explaining it, however, I've, my, me, myself have not determined a shed on how the, how far a shed goes out from an intersection.

MR. WYATT: Fair enough. I'm putting you on the spot. You don't know offhand as we, as we are here today how the proposed development is within two traffic sheds of Joppa and Falls Road and Greenspring and Falls Road. You don't know how that determination is made?

MR. NEBRE: Not how, the shape of the boundary, but we, we see where the boundaries are and the, that boundary is on the map.

MR. WYATT: All right. But you would agree, and you probably know this to be true, the proposed development property is located within the two traffic sheds I just mentioned?

MR. NEBRE: The, I've answered this in another question, in another thing where the, the property is located in a shed and the shed has separate, because I think there was a question regarding if they overlap. And my, we, I inquired with our Mapping Department and they have, per their record, is two, are two, the sheds are separate sheds.

MR. WYATT: Is Greenspring Manor, the proposed development, the, the property where it is located, is it within the traffic shed of Falls and Joppa?

MR. NEBRE: Yes, it, that's the Falls and Joppa shed.

MR. WYATT: Okay. Is, is the same property located in Falls and Greenspring traffic shed?

MR. NEBRE: It, it is, it's not in that traffic shed, it's a separate shed.

MR. WYATT: Okay. Is there, is this printed, is it published somewhere? How, how could we know whether a particular property is located within a particular traffic shed?

MR. NEBRE: That would be on the basic service map. It's faint, the, the boundary, there is like a boundary, maybe that's what, something we could suggest in the future to make it like more bold. But there's a, there's a line within the traffic shed, if I'm looking at the map right now.

MR. WYATT: All right. So, you, you, you think right now that Greenspring Manor is not located within the traffic shed of Falls and Greenspring Avenue?

MR. NEBRE: Oh, that, that, I was, I was thinking about the other intersection, sorry. Those two are actually in the same shed, yes.

MR. WYATT: Okay.

MR. NEBRE: I was, sorry, I was, I misunderstood. I thought you, the, the question was Seminary. So, --

MR. WYATT: Sorry if I wasn't clear.

MR. NEBRE: Yeah, so it was Greenspring Manor, yeah, the one directly to the north of Joppa, that intersection is in

the same shed as the one in, as Falls.

MR. WYATT: Okay, very well. And there's another proposed development, Torch Hill, or also known as the Croneguard (phonetic) property. Are you familiar with that case?

MR. NEBRE: I am, I've sat in for Torch Hill.

MR. WYATT: Okay and, and that, that matter has already been through a hearing, and you testified as part of that hearing?

MR. NEBRE: I was part of that hearing.

MR. WYATT: And do you recall, as part of that hearing, that that proposed development is, is located within an F rated traffic shed along Falls Road at Seminary Avenue?

MR. ROSENBLATT: Objection.

ALJ: Mr. Rosenblatt, what's your objection?

MR. ROSENBLATT: Objection to any relevance of the other project. We're not here to talk about Torch Hill.

ALJ: I understand, but the traffic impact study included all three intersections and I'll let Mr. Wyatt ask the question. Overruled.

MR. WYATT: Thank you, Your Honor. Mr. Nebre, do you, you remember the question?

MR. NEBRE: What is that question?

MR. WYATT: So, I, there's another proposed development, Torch Hill, it's already been through a hearing,

you testified at that hearing, correct?

MR. NEBRE: Yes, I did.

MR. WYATT: All right and one of the issues in that case is that it is in close proximity, or within the traffic shed of another F rated intersection at Seminary Avenue and Falls Road, correct?

MR. NEBRE: It is a, it was close to the Seminary and Falls, yes.

MR. WYATT: Okay and that particular F rated intersection, Falls and Seminary, you would agree is within a few hundred yards of Falls and Greenspring Avenue intersection?

MR. NEBRE: It is, it is within the same corridor, yeah. I mean, I don't have the distance off the top of my head, but it's close enough where, yeah, that, that we, it, it's close.

MR. WYATT: And then, from that intersection, which is Greenspring, Greenspring Valley Road, I, I've been referring to it as Greenspring Avenue, I get confused myself, and, and Falls, is, is visually within distance of Falls and Joppa Road intersection?

MR. NEBRE: Greenspring to Falls, from Greenspring Valley to Falls is pretty, yeah, it's, you could see both signals probably from each other.

MR. WYATT: All right. Let me ask you this. How many, about approximately how many variance requests for

building permits within an F rated traffic shed are processed through Baltimore County on an annual basis?

MR. NEBRE: It varies. I mean, this is probably the heaviest I've seen. It, it's not too often.

MR. WYATT: When you say this is probably the heaviest, what, what is the this in your sentence?

MR. NEBRE: This year, this year where we've seen variances request to try to develop in, in F traffic sheds.

MR. WYATT: And do you know how many approximately you've seen in this particular year?

MR. NEBRE: Including those two, this is probably four or five.

MR. WYATT: All right and, and to your knowledge of those, how many have gone to a hearing and were approved?

MR. NEBRE: I don't know. I don't know what has been approved.

MR. WYATT: Your Bureau reviews these though, correct?

MR. NEBRE: The traffic impact studies, yes. And, and any developments submittals.

MR. WYATT: All right and, and just so I'm clear, your Bureau is reviewing these because it's been requested to do so by the Department of Planning?

MR. NEBRE: It's part of the development process.

MR. WYATT: Did, did your Bureau prepare a written

report in this case for the hearing?

MR. NEBRE: No.

MR. WYATT: Did it do so in the Torch Hill case?

MR. NEBRE: Not a written report.

MR. WYATT: Do you know if Department of Planning provided a written report with regard to the variance request in this case?

MR. NEBRE: Not that I know.

MR. WYATT: Do you recall if it did so in the Torch Hill case?

MR. NEBRE: Not that I know.

MR. WYATT: Do you know how it came to be that the Department of Planning requested your Bureau report to the ALJ in this case?

MR. NEBRE: I don't know the specifics, but I, I would just guess because it's, because I, I deferred to the Judge.

MR. WYATT: Well, I'm just, let me ask you, let me put it in simpler terms. Why are you the one that's here talking about traffic in this hearing? Do you know how that came to be?

MR. NEBRE: I was called.

MR. WYATT: Did, did your, did your Bureau undertake any independent traffic studies or analysis in connection with the Developer's variance request in this case?

MR. NEBRE: No, we did not make any independent studies to, to analyze it. We, you know, we do our, we do our traffic counts to make the, the F, to determine the traffic sheds. But however, just to, to supplement their studies, no. They, they were the ones that provided studies.

MR. WYATT: All right. So, you, you review the Developer's traffic study or studies, plural, in this case?

MR. NEBRE: Yes.

MR. WYATT: All right and did not undertake any independent studies on behalf of the Bureau or Baltimore County?

MR. NEBRE: No, we did not.

MR. WYATT: All right and Lenhart (phonetic), I think is the traffic engineer that the Developer hired in this case?

MR. NEBRE: For, for, for Greenspring Manor.

MR. WYATT: For Greenspring Manor, correct. It, it's true that during the review of the Developer's traffic studies that were submitted to your Bureau over the course of time from when this project was first, was first in concept to where we are now, that there were several in your Bureau who expressed concern about a proposed development because of its proximity to F rated intersections, is that accurate?

MR. NEBRE: Yes, because it is in an F rated intersection and we're developing and there's going to be a net generating traffic into the shed. So, that's where the concern

comes first.

MR. WYATT: Okay and let me ask you this, and I think had another witness confirm all this, but I just want to check. In, in terms of the classifications for intersections, they, they come by way of a letter designation, correct?

MR. NEBRE: The, the, the level of services is graded with a letter designation.

MR. WYATT: So, there's, there's A, B, C, D and F?

MR. NEBRE: Yes.

MR. WYATT: All right and, and there's, and that's for the level of service designations under the basic services map, correct?

MR. NEBRE: Yes.

MR. WYATT: All right and these are important from a traffic perspective because there's a, there's a moratorium on building permits for structures located within an LOS designated F traffic intersection, correct?

MR. NEBRE: Yes.

MR. WYATT: All right and Baltimore County actually has some information on its website. Have you ever reviewed it for your Bureau? Are you familiar with your own, your own website?

MR. NEBRE: I've, I've skimmed through it, yeah, that's why, that's where it actually conveys the moratorium is on there, there's information on the website saying that level

service of F has a moratorium.

MR. WYATT: It actually says, I'll, I mean, I'll quote it and you can tell me if you, if it sounds accurate, but areas around a level of service F intersection would have a moratorium on building permits for non-industrial development with some very limited exceptions. Does that sound like language from the website of your Bureau?

MR. NEBRE: More or less.

MR. WYATT: All right. In fact, would you agree with me that there are not many other provisions in the Baltimore County Code or Baltimore County zoning regulations where building permits for non-resid, for non-industrial development are tied to traffic in such a meaningful or important way?

MR. ROSENBLATT: Objection.

ALJ: Mr. Rosenblatt, what's your objection?

MR. ROSENBLATT: Form of the question. He's asking words like meaningful and many.

ALJ: Understood. Overruled. Go ahead, Mr. Nebre.

MR. NEBRE: Yeah, that, that's why, I mean, it's my familiarity with the, how development is tied into traffic. We have a moratorium in place, but however, you know, they are proposing improvements, but that's what I had trouble finding, therefore, on how much improvement needed to be done and that's why it was our Bureau suggested it be up for arbitration or review.

MR. WYATT: Okay. I'm just, based on your, your work within the Bureau, can you think of any other connections that could be drawn to building more, to traffic and the issuance of building permits? Are you familiar with any other instances where the two are connected?

MR. NEBRE: I mean, we got the basic service map and there are zoning, and we got a zoning manual. There probably is some provision also in, in the development manual. But there's, there's language there too regarding traffic impact studies.

MR. WYATT: All right and, and just confirm if you would, there's, there's no other grading systems, other than the letter grades or designations we just spoke about, in Baltimore County for traffic intersections, correct?

MR. NEBRE: For, for our, for our rating for the basic services map, yeah.

MR. WYATT: What about otherwise?

MR. NEBRE: When we review the traffic impact study, we, we, we look at the, the critical lane volumes, the effect of the critical lane volumes.

MR. WYATT: And where, where does it say in the Baltimore County, is that a designation that's published? Is that somewhere we could look that up?

MR. NEBRE: No, unfortunately not. It's more so something in practice. It is something that is practiced by

the State and we at least hold ground with State standards on that, because that is something that, that is frequently, jointly reviewed, therefore, we would at least point to a State standard. In practice, like you said, not written.

MR. WYATT: All right. What is your Bureau's interpretation of the, are you familiar with the variance regulation that's applicable in this case?

MR. NEBRE: Dealt with a few variances, but there, for different purposes too, so for this case, I guess it was for the, for the traffic.

MR. WYATT: Yeah, for the traffic variance that's sought by the developer in this case, are you familiar with the, the language in the, in the regulation by which such a variance request is reviewed?

MR. NEBRE: No, I'm not.

MR. WYATT: Have you ever heard the term district standard?

MR. NEBRE: In, in past, in past trials it was brought up.

MR. WYATT: Do you know what that, to what that refers?

MR. NEBRE: I, I, only in practice. We would just say what, how we practice it.

MR. WYATT: And, and how do you, what is the term dist, what, what does district mean? What is the practice of

the Bureau with regard to the district?

MR. NEBRE: Yeah, the jurisdiction itself.

MR. WYATT: All right. What, what is the standard? What is your Bureau's practice with regard to the word standard that's used in that regulation?

MR. NEBRE: The standard for the basic service map would be the, the loaded cycle methodology.

MR. WYATT: The, the LOS designation about which we've spoke previously, correct?

MR. NEBRE: Yeah, that's the, that's the one we can, we find like grounding on.

MR. WYATT: All right. Is this interpretation or how you apply the regulation, is it written down anywhere in your Bureau? Is it some, something we could look up?

MR. NEBRE: The 1965 manual of, of, of the highway capacity manual, it was the methodology used and it was written in the zoning manual.

MR. WYATT: Okay. When the, when the variance regulation refers to the district standard that would otherwise restrict or prohibit the development, isn't that referring to the LOS standard that we've spent some time talking about today?

MR. NEBRE: That's the best that we could see it.

MR. WYATT: All right and get, you know, just given that there's no other grading systems related to traffic

intersections done by Baltimore County, at least, doesn't the various, variance regulation require that whatever the demand or impact is created be proposed by the proposed development, be something less than its present designation, i.e., the district standard?

MR. NEBRE: And that's where, that's why I brought it up to arbitration because you could see the mitigation that impacts with one methodology but not, it's pretty, it cannot be done with the loaded cycle methodology because it's, the loaded cycle methodology is not really predictive, it is something that is observed.

MR. WYATT: How many times, do you recall, that you've visited these, these intersections in connection with the proposed developments of Torch Hill and Greenspring Manor?

MR. NEBRE: Visited, like drive by it because, I live in Owings Mills, so it's, it's every now and then I would cut through Greenspring Valley. So, I am, I am familiar with the intersections. However, in terms of observing it for a prolonged amount of time, I have not seen in my, with my own eyes for a while.

MR. WYATT: And the Developer's traffic engineer in this case, Lenhart, they used a different methodology in their reporting, would you agree with that?

MR. NEBRE: They were using critical lane volume.

MR. WYATT: They were not using LCM or what you use

for the LOS designations, correct?

MR. NEBRE: Observed loaded cycles, they were not using that but yeah, they were using other, other methods.

MR. WYATT: Do you know from the reports that were submitted by the Developer's traffic experts how many times they visited any of these intersections?

MR. NEBRE: No, I don't know the, the frequency of their visit. I know they visited for, for their, for their, for their own data collection.

MR. WYATT: All right. Do you know if, you would agree with me that there are margins of error that are contained in the Developer's traffic reports?

MR. NEBRE: I don't know how to answer that one. I mean, traffic is, you know, it varies, I mean, no one could say it's consistent. Therefore, you know, what you've observed is what you've observed.

MR. WYATT: So, there would, there would need to be some sort of margin of error built into the report because it's not based on actual observations or, or the LCM methodology?

MR. NEBRE: It could be.

MR. WYATT: All right and, and there's also, are you familiar with the term growth rate assumptions that are used in, in traffic engineering reports, generally?

MR. NEBRE: Yes, yes, we, we, we have, there's growth rate assumptions.

MR. WYATT: All right and there, there would be, would there not, some type of margin of error associated with a growth rate assumption?

MR. NEBRE: I mean, yeah, it's, there would be something that actually happened but, we, we always just go with the, or we use a reasonable assumption.

MR. WYATT: All right. Let me ask you this. Do you, are you aware of any cross reference in the Greenspring Manor traffic study submitted by this Developer between its development and any traffic report submitted in Torch Hill?

MR. NEBRE: No, not, not off the top of my head.

MR. WYATT: All right. Are, are you, are you aware of any cross reference in the Greenspring Manor traffic studies that have been submitted by the Developer to the adjoining F rated intersection at Falls and Seminary?

MR. NEBRE: Not that I recall.

MR. WYATT: I remember one thing that you said when you testified earlier, that sometimes an intersection can be improved from a, from a class F to class D or C intersection. Do you remember talking about that?

MR. NEBRE: There, there, I don't, was it, I just mentioned it earlier, that the improvements could be done, but I don't know to what extent I made that statement, but.

MR. WYATT: I think you used the example of an, of an apartment building being turned into a florist. That's almost

it's self-explanatory it's going to generate less traffic and, therefore, it could improve the intersection from an F to an acceptable letter grade where there wouldn't be a building moratorium. Do you remember that?

MR. NEBRE: Something of the sort. Yeah, or, I didn't say improvement to the intersection, maybe the performance of the intersection would be less, there'd be, there's no net impact to the intersection.

MR. WYATT: But here, I'm talking about the possibility of actually improving the classification under LOS from a, from an F rated intersection to something where there wouldn't be a building moratorium. That's possible, you would agree?

MR. NEBRE: It's hard to make that determination. That's why I put it up for arbitration. What I was testifying to was yes, there will be, one, there will be impacts. But two, there will be improvements to the corridor, which is proposed by the Developer and there will not be net impacts to the, to the intersection. Whether it will stay an F or D, I cannot make that determination because of the current methodology.

MR. WYATT: Well, what I'm saying to you because you brought it up in your initial testimony is there, there could be, or there are examples, where the, where the change of the use or the proposed development, would actually change the

letter grading under LOS.

MR. NEBRE: I would not say change the letter grade, but not make an impact. I mean, yeah. I don't know someone could make an impact that much by, you know, just changing a land use.

MR. WYATT: All right and --

MR. NEBRE: But it could, but I'm not saying, not making, I would not make that strong of a statement where the change of a land use would change the LOS.

MR. WYATT: Well, along with certain improvements made to a, to an intersection such as curbs and gutter and, you know, signaling, you, it, it could, based on your review, correct?

MR. NEBRE: Yes, it could.

MR. WYATT: All right. Is, let me ask you this. Is there any, is there any mechanism in Baltimore County for to call back a variance if the assumptions that are made in granting it are proven incorrect?

MR. NEBRE: That, no, I don't know that one.

MR. WYATT: Let me ask you one other question. Would, would the approval of two variance requests located within the same combination of three F rated intersections be, and I'm going to use the words very limited, as that term is used in the Baltimore County website, based on your experience?

MR. NEBRE: That, that would be very limited. I

mean, like I said, if we don't see too many F, attempts at development at F intersections.

MR. WYATT: Thank you, Mr. Nebre. I don't have any further questions.

ALJ: Okay. Let's see if we can go to, I just want to make sure there was no one else. Mr. Wyatt, did you know of anyone else who, who needed to ask questions? Just by virtue of you being here. You had mentioned when you started talking that someone else might have questions.

MR. WYATT: Well, I was, I was thinking other people that have, have been asking questions may have questions based on my questions.

ALJ: Okay, understood. Hold on. Mr. Rosenblatt, we're going to go next to you because you did not ask questions the last time and I know you also had questions when Mr. Nebre had to leave, so I'll turn it over to you.

MR. ROSENBLATT: Thank you, Judge. I may have no questions, just, Court's indulgence for one, one second. We appreciate Mr. Nebre's time. I'm not going to ask any questions. Thank you. I think you're muted, Judge.

ALJ: Sorry, thank you. I'm going to ask Mr., I'm looking for Mr. Sachse. I want to make sure Mr. Sachse didn't have anything. Where are you? I saw you earlier. Hm. Hm. Okay. I don't see Mr. Sachse. Just, he was here a minute ago. I do want to just make sure he didn't have any, because he also

is an attorney who lives nearby. Okay.

What we're going to do is limited, I'm going to ask Mr. McCann, do you have any questions based on Mr. Wyatt's questions? Please don't repeat questions that you asked in the previous hearing, we're going to try to be conscious of Mr. Nebre's time here and we don't want to spend another, you know, hours here repeating the same questions. But based on Mr. Wyatt's questions, did you have any questions, Mr. McCann?

MR. MCCANN: I do not, thank you.

ALJ: Okay, all right. Mr. Zimmerman, same thing to you.

MR. ZIMMERMAN: Yeah, same answer. No further questions at this time. Thank you.

ALJ: Okay, understood. All right. Thank you. I, Mr. Nebre, I, I think we're finished.

MR. NEBRE: Okay. Thank you so much.

ALJ: I appreciate your coming back. Thank you.

MR. NEBRE: All right.

ALJ: All right. Okay. When we last left off before bringing Mr. Nebre back in, we were in the middle of Mr. Bishop's cross examination by, and we were going to have Mr. Zimmerman, is what I remember. Am I right, Mr. Zimmerman?

MR. ZIMMERMAN: That's correct.

ALJ: Okay. So, you're ready to go?

MR. ZIMMERMAN: I'm ready.

ALJ: Okay, all right. Let me see if I can find Mr. Bishop here.

MR. BISHOP: I'm here, does that pop up when I talk?

ALJ: Oh, there you are. There you are, right there. All right. Let me re-swear you. It's been a little while. Do you swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. BISHOP: I do.

ALJ: All right, thank you. All right, Mr. Zimmerman?

[MR. ZIMMERMAN TALKS OVER THE WITNESS AND ALJ THROUGHOUT THIS WHOLE CROSS EXAMINATION – VERY DIFFICULT TO TRANSCRIBE ACCURATELY]

MR. ZIMMERMAN: Right. Thank you very much. Before we get into, I, I think Doug Sachse is on his way to Virginia in a car, and that may explain why he might be in and out. I could be wrong.

ALJ: Okay, understood.

MR. SACHSE: I, I just got a new connection, so whether I'll stay or not, I don't know. But I'm back.

MR. ZIMMERMAN: Okay. So, I --

ALJ: I just want to make sure, we just let Mr. Nebre go. I sure hope you didn't have any questions.

MR. SACHSE: I, I think Michael did a great job, I do

not.

MR. ZIMMERMAN: Okay.

ALJ: Okay, understood. And Mr. McCann you're talking about?

MR. SACHSE: Wyatt.

ALJ: Oh, Mr. Wyatt, I'm sorry. Yeah, you're both Michaels, understood. Okay, thank you, Mr. Sachse. All right. I'm going to put you back on mute. All right. Mr. Zimmerman?

MR. ZIMMERMAN: All right, thank you. Thank everyone who is attending. Thank you, Judge. And I noticed Mike Tanczyn's name there, so shout out to him. So, Mr. Bishop, good to see you this morning.

MR. BISHOP: Good morning.

MR. ZIMMERMAN: Just, as a matter of fact, did you happen to grow up in Balt, in the Baltimore region?

MR. BISHOP: No, I grew up in Connecticut.

MR. ZIMMERMAN: Okay and how long have you been in this region?

MR. BISHOP: Since 2006.

MR. ZIMMERMAN: Okay and your training is in the field of landscape architecture, is it not?

MR. BISHOP: Yes, but that's a broad profession. Most of my work is planning based.

MR. ZIMMERMAN: All right. So, you're not a registered engineer, are you?

MR. BISHOP: I'm not.

MR. ZIMMERMAN: You're not an environmental scientist.

MR. ROSENBLATT: Objection, Judge. There was an opportunity to voir dire Mr. Bishop on his qualifications and no questions were asked and we, I believe, even proffered and all agreed to his areas of expertise.

ALJ: Understood. Yeah, it's fine. It's just background information. Overruled. Go ahead.

MR. ZIMMERMAN: Okay. You're not an environmental scientist, are you?

MR. BISHOP: I'm not.

MR. ZIMMERMAN: Okay. You're not a traffic engineer, for the record?

MR. BISHOP: Correct.

MR. ZIMMERMAN: Okay. But as a manager, however, you do work with specialists, do you not?

MR. BISHOP: I do.

MR. ZIMMERMAN: So, as part of your managerial role, you have some familiarity in a general way as to what's being proposed in these various fields, is that correct?

MR. BISHOP: Yes, that's correct.

MR. ZIMMERMAN: Okay and for the record, do you happen to have a Masters or other degree in Management or Business Administration?

MR. BISHOP: No, I have a Masters degree in Landscape Architecture and Land Planning.

MR. ZIMMERMAN: Okay. Okay and the pattern book lists the various specialists on your team, does it not?

MR. BISHOP: It does.

MR. ZIMMERMAN: Okay and that also includes a landscape architecture company, does it not, a separate company?

MR. BISHOP: That's correct, yes.

MR. ZIMMERMAN: How, I'm just curious. How is it that you have a separate landscape architecture company working on the project when you yourself are a landscape architect?

MR. BISHOP: A lot of our clients have relationships with different consultants. So, our client prefers to work with that landscape architect for design of the landscaping, the amenities (inaudible).

MR. ZIMMERMAN: Okay. So, your main role here is as a manager, is that a fair inference?

MR. BISHOP: No, my main role is the land planner for the project and management of the civil side of things.

MR. ZIMMERMAN: Okay and do you have people on your team at Kimley-Horn?

MR. BISHOP: Yes.

MR. ZIMMERMAN: Okay. How many people work with you on the project?

MR. BISHOP: On this project?

MR. ZIMMERMAN: This project, yeah.

MR. BISHOP: Several.

MR. ZIMMERMAN: And what are, what are their roles, if I may ask?

MR. ROSENBLATT: Objection, Judge. This is getting far afield from just background. This is the fourth, third or fourth attorney to ask questions of Mr. Bishop. He, he testified for hours last time and we haven't asked one question about the plan.

ALJ: Mr. Zimmerman, are you getting there?

MR. ZIMMERMAN: Yeah, we're getting there. But, you know, it's good to know that the, the framework of who works on the plan, who prepares it.

ALJ: Well, well, why don't you do that, why don't you ask if you have issues about the plan, ask specifics about who --

MR. ZIMMERMAN: All right, --

ALJ: -- I mean, I understand but it's Mr., can we move on (inaudible) --

MR. ZIMMERMAN: Right.

ALJ: -- and Mr. Bishop has been here many times.

MR. ZIMMERMAN: All right. I've got a few more background questions and we'll get to the plan. Okay. Just for the record, Mr. Bishop, you generally work for developers

rather than the opposite, you know, constituents who are opposed to projects, is that correct?

MR. BISHOP: That's correct.

MR. ZIMMERMAN: Okay and you do not have a legal education, do you?

MR. BISHOP: No, I do not.

MR. ZIMMERMAN: Okay. Did you take any law courses at the University of Connecticut?

MR. BISHOP: So, yes, we, we had some fundamentals of practice and as part of my licensure testing, there were sections in there as well that had a little bit of, you know, practice, so contract writing, LLCs, corporations, that type of thing.

MR. ZIMMERMAN: Okay, okay. You're not presenting yourself, are you, as an expert in constitutional law, statutory construction, common law, that sort of thing?

MR. BISHOP: No.

ALJ: He was already accepted as an expert in the fields that they proffered originally, yes, so, he's not an expert in constitutional law, I feel confident about that.

MR. ZIMMERMAN: Or statutory construction.

ALJ: Or statutory construction, I think that's (inaudible).

MR. ZIMMERMAN: All right. I think it's my job, yeah.

MR. ZIMMERMAN: We're moving, right, absolutely, yes, absolutely. So, let's move on to the master plan 2020. Do you happen to know which institution in Baltimore County approves the master plan?

MR. BISHOP: Approves the master plan?

MR. ZIMMERMAN: Right.

MR. BISHOP: I believe it's the Planning Commission and County Council.

MR. ZIMMERMAN: Okay. Do you happen to know whether any County Charter provisions apply to the master plan?

MR. BISHOP: I don't.

MR. ZIMMERMAN: Okay. Do you know how often the master plan is supposed to be approved, a new master plan?

MR. BISHOP: So, every ten years there's an overhaul and I think there are intermediate revisions and amendments annually.

MR. ZIMMERMAN: Okay. So, they, do you know, happen to know when the 2020 master plan was approved?

MR. BISHOP: I don't know, it was probably around 2010, usually ten years before the, the date on the document.

MR. ZIMMERMAN: Okay. Okay. Let's share, Judge, let me share briefly if I can. Oh, here we go. Go to Adobe. Okay. Okay. Just, just to confirm, Mr. Bishop, the, we're not playing Jeopardy, but, here it is, Resolution 94-10, 2010, did you happen ever to have reviewed this resolution?

MR. BISHOP: No, sir.

MR. ZIMMERMAN: Okay. Anyway, 2010, we agree. So, I'm going to stop sharing for a moment, Judge. I'll come back to the sharing in a few minutes but can, can we eliminate the sharing for a moment?

ALJ: You have to stop sharing, just hit the stop sharing.

MR. ZIMMERMAN: Stop sharing. Where is this --

ALJ: Yep.

MR. ZIMMERMAN: Yeah, my, where's my stop sharing. Sorry, let me --

ALJ: It's right down the bottom of the screen. If you just, you should just see a stop share.

MR. ZIMMERMAN: Stop share. Oh, okay. It's actually on top of mine. Okay, thank you, Judge. All right. So, Mr. Bishop, would you agree with me that the existing subdivisions which predate the 2010 adoption of the master plan, would not necessarily have to comply with the provisions of the 2020 master plan and would, would not have been required?

MR. BISHOP: I would agree that document wasn't in place when they were going through the process, so how could they?

MR. ZIMMERMAN: Right, I, so there may well be many subdivisions which do not conform, existing subdivisions prior to 2010 which do not conform to the 2020 master plan and the

transect scheme, do you agree with that?

MR. BISHOP: I guess that could be the case.

MR. ZIMMERMAN: Yeah, okay. Do you happen to know what Baltimore County, now, well, let me, let me move back a little. You, you did quote some parts of the master plan 2020, did you not, in your direct testimony?

MR. BISHOP: I believe so.

MR. ZIMMERMAN: Yeah, so, do you happen to know what Baltimore County Code provisions pertain to the master plan in development cases?

MR. BISHOP: No.

MR. ZIMMERMAN: All right. Do you happen to know whether the master plan is advisory or mandatory in development cases?

MR. BISHOP: So, I think it's a, a bit of a tricky subject. If the document says one thing, but I think the, the reality is that the document is a binding document.

MR. ZIMMERMAN: Okay. Okay. You're not, I know you're not presenting yourself as a legal expert, but has, has any of the case law, such as the (inaudible) Development case, been brought to your attention, the Court of Appeals case --

MR. BISHOP: No.

MR. ZIMMERMAN: -- by your team?

MR. BISHOP: No, sir.

MR. ZIMMERMAN: Okay. Okay and do you know what the

process is if Judge Murphy should find the, there's a serious issue of master plan conflict? Do you know how that works?

MR. BISHOP: Limitedly, yes. I believe it gets sent over to the Planning Commission for a determination of whether or not it's a master plan issue.

MR. ZIMMERMAN: All right and then the County Council, do you happen to know?

MR. BISHOP: I believe, yes, if there's still an issue with the Planning Commission, then the County Council gets involved.

MR. ZIMMERMAN: Okay. Do you happen to know whether the, the transects that you discussed in your direct testimony, do you happen to know whether the transects are, in fact, types of zones?

MR. BISHOP: I would, I think that's a tricky question as well. Are you, I mean, are we talking about zoning regulations, zones? Are you talking about, the term zone can mean many things.

MR. ZIMMERMAN: Right. Let me share again, Judge, so.

ALJ: You, you still have it.

MR. ZIMMERMAN: Oh, I still have it, sharing?

ALJ: You just --

MR. ZIMMERMAN: Here we go, thanks, yeah. Thank you, got it. Let's see. Okay and by the way, the County Council

Resolution was People's Counsel Exhibit 28. Now, we're going to our Exhibit 8. I know that was also a Developer's exhibit.

ALJ: Let me ask, is any, does anyone have an objection to twenty-eight? Mr. Rosenblatt, it's the Resolution 94-10.

MR. ROSENBLATT: No objection.

ALJ: Anything, Mr. McCann?

MR. MCCANN: No objection, thank you.

ALJ: Okay, thank you.

MR. ZIMMERMAN: Okay. So, let's see. So, I'm going to page twenty-seven, which, part of which, Mr. Bishop, you, you quoted in your direct testimony. Do you recall that?

MR. BISHOP: Yes, I do.

MR. ZIMMERMAN: Okay. So, let's look at the righthand side of the page, at the end of the first paragraph there, could, could you possibly read the last sentence?

MR. BISHOP: Starting with these degrees of urbanism?

MR. ZIMMERMAN: Yes, yes.

MR. BISHOP: These degrees of urbanism are represented in a rural to urban transect has been developed which provides six transect zones, t-zones, for application on the proposed land use map.

MR. ZIMMERMAN: Okay and to speed it up, the second sentence in the next paragraph, could you read that? Its continuum?

MR. BISHOP: Its continuum when subdivided lends itself to the creation of zoning categories.

MR. ZIMMERMAN: So, I want to just, I just want to ask you, the fact that these are types of zoning categories, do you have any comment on the significant of that one way or the other?

MR. BISHOP: I don't believe I do.

MR. ZIMMERMAN: Okay. Okay. Now, I'm going to move over to some of your comments in the community input meeting relating to the plan. And this is People's Counsel's seven. I don't know if anyone else put this in as an exhibit. So, you were at the meeting, obviously, right?

MR. BISHOP: I was.

MR. ZIMMERMAN: April 27th, 2021. So, your comments are shown in the third paragraph on page one, are they not?

ALJ: You want to blow it up a little?

MR. ZIMMERMAN: Let me, let me see if I can zoom up, okay?

ALJ: Yes. Yeah, if you don't mind, just hit the plus.

MR. ZIMMERMAN: Yeah, absolutely.

ALJ: Thank you. Keep going.

MR. ZIMMERMAN: Let me see. Now I've got to move the thing and something is blocking my arrows here. Let me see, okay, here we go. Let's see if we can zoom, zoom, Judge, is

this (inaudible)?

ALJ: That's better. I'm not sure, it is, I'm not sure he can read it, but.

MR. ZIMMERMAN: Yeah, Mr. Bishop, can you see it?

MR. BISHOP: I can see it but --

MR. ZIMMERMAN: I can, wait, let me see if I can zoom better. Now, I'm, is that better?

MR. BISHOP: I can see that, yes.

MR. ZIMMERMAN: Okay. So, in the third paragraph, you give your introduction and a description of the site, correct?

MR. BISHOP: Correct.

MR. ZIMMERMAN: And is that, is that description still accurate, in your opinion?

MR. BISHOP: Generally, that was a community input meeting after a concept plan but, you know, the plan has been further developed since then.

MR. ZIMMERMAN: Right. Well, as far as the 39.4 acres in size of the site, the zoning of, the split zoning, the sixty-one single family homes on quarter acre lots, the topography at least, the background, the background information, all of that is still correct, is it not?

MR. BISHOP: Generally, yes.

MR. ZIMMERMAN: Okay and the quarter acre lots, that, as a, as a general matter, that's still basically correct, is

it not, more or less?

MR. BISHOP: Well, I think that's a generalization and an average.

MR. ZIMMERMAN: Yeah.

MR. BISHOP: But yes.

MR. ZIMMERMAN: And just to, to be clear, the, there are sixty new buildings, lots proposed, but the existing dwelling is being retained, is it not?

MR. BISHOP: That's correct, yes.

MR. ZIMMERMAN: That's on a much larger lot, about four acres, am I correct?

MR. BISHOP: Yes, you are correct.

MR. ZIMMERMAN: So, the quarter acre lots obviously does not refer to lot one.

MR. BISHOP: Correct.

MR. ZIMMERMAN: Yeah. Can you tell us anything about that existing house? Is it historic, is it a mansion or, you know, what's, what's really good about that house or distinct, distinctive?

MR. BISHOP: It's an existing house, it's in decent condition. It's been there for quite a while, but it's not historic. It's not a mansion. It's a decent size house.

MR. ZIMMERMAN: Okay. Okay. I'd like to, there were quite a few comments on the CIM, were there not? And ques, a lot of e-mails from the citizens, do you recall that?

MR. BISHOP: I do recall that.

MR. ZIMMERMAN: I mean, the CIM goes on for, I don't know, sixty, seventy, eighty pages, something like that, is, do you remember that?

MR. BISHOP: I think your document says forty-three.

MR. ZIMMERMAN: Oh, is it forty, well, these are two to a page, two to a page, so. So, maybe eighty-six, but whatever it shows. So, do you, do you know whether or not you or anybody on the collective development team, provided further written responses to all the e-mails and questions in addition to the, the answers given by either Mr. Rosenblatt or you?

MR. BISHOP: You mean, responses directly to all the people that were in the community input meeting?

MR. ZIMMERMAN: Right, or filed, you know, filed with the County a series of written responses to the different e-mails.

MR. BISHOP: I think there were some direct communications with community groups and there were other things that we addressed with revisions to the concept plan and our development plan filing.

MR. ZIMMERMAN: All right. So, some verbal meetings, I mean, some meetings in person or by Zoom?

MR. BISHOP: Correct.

MR. ZIMMERMAN: Okay. Okay. Okay. All right. So, I'm going to stop sharing for a moment and then, then resume

sharing. So, with reference to your eventual site plan, the green line, Developer's Exhibit 1-B, you sealed the plan, did you not, personally?

MR. BISHOP: I did.

MR. ZIMMERMAN: And, and were there various members of the team who worked on that plan?

MR. BISHOP: Yes.

MR. ZIMMERMAN: Yeah, okay. All right. Let's go to the next sharing, if I can. All right, here we go. Developer's Exhibit 4. Now, you introduced that, did you not--

MR. BISHOP: Yes, I did.

MR. ZIMMERMAN: -- in your direct testimony?

MR. BISHOP: Yes.

MR. ZIMMERMAN: Okay. Did you personally prepare that, or did the team do it or, you know, how, who was involved in preparing that?

MR. BISHOP: I personally prepared this.

MR. ZIMMERMAN: Okay and what documents did you use as background or, you know, basis, to, to come up with your color-coded descriptions?

MR. BISHOP: I used available Baltimore County JIS data.

MR. ZIMMERMAN: Did you review the subdivision plans for each of the area subdivisions that are shown on this exhibit?

MR. BISHOP: No, but the GIS is very similar to those plats, it's very accurate.

MR. ZIMMERMAN: Do you happen to know the names of the adjacent subdivisions?

MR. BISHOP: I know generally they're referred to as Boxwood and Seminary, I don't know if --

MR. ZIMMERMAN: Seminary Ridge.

MR. BISHOP: Seminary Ridge. I'm not sure exactly what they're called on the plats themselves.

MR. ZIMMERMAN: All right. Meadow, you've heard of Meadows of Greenspring?

MR. BISHOP: Meadows, yes.

MR. ZIMMERMAN: Okay. How about Hunt Spring, have you heard of that one?

MR. BISHOP: That sounds familiar.

MR. ZIMMERMAN: Okay. Heather Field?

MR. BISHOP: Yes.

MR. ZIMMERMAN: Do you know which ones are where on this exhibit?

MR. BISHOP: Generally. I know that Boxwood is due north and east and so is Seminary Ridge.

MR. ZIMMERMAN: Okay.

MR. BISHOP: The other ones I'm not sure.

MR. ZIMMERMAN: Okay. Do you happen to know the dates of each of these adjacent areas, the subdivisions, plats

that were approved?

MR. BISHOP: Not off the top of my head, no.

MR. ZIMMERMAN: If I suggest to you that they were, with the exception of, I don't know if we called it a color, with the exception of white, north of Seminary, well, which Mr. Wyatt mentioned, Torch Hill. They're all twentieth century subdivisions, would that, would you be aware of that?

MR. BISHOP: I'm not sure, I'd have to look at the documents.

MR. ZIMMERMAN: All right. Let's, let's move for a moment to, let's see, so, here's Meadows of Greenspring and you see that that's --

ALJ: Hold on. Mr. Zimmerman, what exhibit number are you on? Is this --

MR. ZIMMERMAN: I'm sorry, People's Counsel's sixteen.

ALJ: Sixteen, okay, thank you.

MR. ZIMMERMAN: Sorry, thank you. And I'll try to, I'll try to zoom up on this one too. Let's see. I'm having trouble, trying to zoom up so we can see the date better and, and my, my computer is getting a little bit blocked here. Wait a minute. Ah, now, now I'm sorry, that's, all right. Can, can you happen to read to the righthand corner at the bottom, December 1st, 1982? Can you read that?

MR. BISHOP: I can't see that. I'll take your word

for it, but I can't --

MR. ZIMMERMAN: Excuse me?

MR. BISHOP: -- I can't see that.

MR. ZIMMERMAN: You can't see it?

ALJ: Mr. Zimmerman, just zoom in on the, on the --

MR. ZIMMERMAN: I'm try, I'm really trying. The problem is, if I start zooming in, it takes me to the top of the exhibit, wait a minute, here we go. Let's see.

MR. BISHOP: I generally see it. It says 1983, one of the signatures says 1983.

MR. ZIMMERMAN: Right and Norman Gerber was the Director of Planning. Did, did you happen to know Norman Gerber?

MR. BISHOP: No, I was five in 1983, Mr. Zimmerman.

MR. ZIMMERMAN: All right, yeah. Okay. So, anyway, so that, obviously that's a twentieth century subdivision, right?

MR. BISHOP: Yes.

MR. ZIMMERMAN: And that would not, would not have to conform to the T-3 transect, do you agree with that?

MR. BISHOP: I believe that back then, the T-3s were not adopted in the master plan yet.

MR. ZIMMERMAN: Yeah, okay. Let's keep going. Let's see. Heatherfield, 1953, can you see that?

MR. BISHOP: Yes.

MR. ZIMMERMAN: Okay and Heatherfield is, you know, right adjacent to, to your project, property, and it goes up from Joppa Road, does it not? Joppa and Tallyho?

MR. BISHOP: I'm not sure where Heatherfield starts.

MR. ZIMMERMAN: Okay. Well, you see Joppa Road on the left of this plan? Let's, let's, let's zoom down a bit if we can. Okay. You can see it, right? Joppa?

MR. BISHOP: Yes.

MR. ZIMMERMAN: Okay and then it, the borderline on what's actually, I guess, the westside, but the top of the exhibit is, would be your property, your Greenspring Manor property, right?

MR. BISHOP: Generally, yes.

MR. ZIMMERMAN: Okay and by the way, this is pretty much at least half acre lots, is it not, single family detached?

MR. BISHOP: These are single family detached. I don't know what the lot areas are.

MR. ZIMMERMAN: Okay. You've driven through the area, haven't you?

MR. BISHOP: Several times, yes.

MR. ZIMMERMAN: Tallyho Road, yeah, okay. All right. Let's see if we can, have anything more here. Seminary Ridge, it's, trying to go up on, wait a minute. All of a sudden my pluses has gone, hold on one second. Rebecca? I've got to get

my chief of staff here to --

ALJ: You can just right click on the mouse. If you right click it, you should be able to zoom.

MR. ZIMMERMAN: It's not, I'm getting blocked by something. So, I've got, --

ALJ: You can hit control, shift, Q, and then that'll raise the drop-down bar up.

MR. ZIMMERMAN: All right. Now, we got it, okay. Sorry.

ALJ: Nope, that's fine.

MR. ZIMMERMAN: So, Seminary Ridge, do I have to go, can you see the 1967 or do we have to zoom up some more?

MR. BISHOP: No, I, I can see it, 1967.

MR. ZIMMERMAN: Okay and this part of Seminary Ridge looks like it has pretty substantial single family dwellings, lots, more in the, more in the range of half an acre.

MR. BISHOP: Okay, I can't see that.

MR. ZIMMERMAN: You can't see that. All right. You haven't, you haven't, you haven't put together a lot table for Seminary Ridge, Heatherfield or any of these other subdivisions similar to the lot table that you've got for Greenspring Manor?

MR. BISHOP: No, but I do know, while you're asking me that question, that I've measured them, I don't have a table. And I know that several of the lots in the adjacent communities are smaller than ours. (inaudible) --

MR. ZIMMERMAN: All right, Meadows of Greenspring, I, I get, Meadows of Greenspring has some attached dwellings, no doubt, right? We, we know that.

MR. BISHOP: So, so does, and so does Boxwood.

MR. ZIMMERMAN: Okay, okay. But you haven't put together lot tables for every single one of those subdivisions for us to look at?

MR. BISHOP: No.

MR. ZIMMERMAN: Have you?

MR. BISHOP: No.

MR. ZIMMERMAN: Okay, all right. Let's see if we've got anymore here. Okay. This looks like Hunt Spring, does it not?

MR. BISHOP: Yes, it's an interesting design, yes.

MR. ZIMMERMAN: Yeah, I, yeah. And it is interesting, yeah. So, this looks like 1990. Do I have to zoom up? Can you, can you see that?

MR. BISHOP: Can't quite see it. I think I can see ninety something.

MR. ZIMMERMAN: Can we see it now, 1990?

MR. BISHOP: Nineteen ninety, yes.

MR. ZIMMERMAN: Okay. Okay. I'm going to stop sharing for a moment. Actually, okay. So, the point is, all, all of those, if not all of those, most of the adjacent subdivisions, are they not, that are on your color coded

exhibit?

MR. BISHOP: I think they are --

MR. ZIMMERMAN: Are there any others, are there any other subdivisions that you remember? I'm not trying to trick you.

MR. BISHOP: Not off the top of my head --

MR. ZIMMERMAN: Let's put it back up.

MR. BISHOP: It's been a few years since I put that exhibit together, so I don't know the names of all the communities we analyzed.

MR. ZIMMERMAN: Trying to share now, let's see. Okay, here we go. Okay, okay. So, we know Heatherfield is in the tan, right?

MR. BISHOP: Right.

MR. ZIMMERMAN: Next, right next to the, your property, is that, we agree on that?

MR. BISHOP: Yeah, it's just south on this plan, yes.

MR. ZIMMERMAN: Yeah, east as, east as the crow flies.

MR. BISHOP: Correct.

MR. ZIMMERMAN: All right and then you've got, of course, your, your property is in purple. And then you've got, is that Seminary Ridge in purple, that's next to Heatherfield?

MR. BISHOP: Yes, to the right.

MR. ZIMMERMAN: Okay and in tan on the, we just

looked at Hunt Spring, that's to the north of Seminary on the tan, I kind of have a little, a little marker that I'm --

MR. BISHOP: yes.

MR. ZIMMERMAN: -- I don't know if it, if it, you can see that I'm moving around.

MR. BISHOP: I see that.

MR. ZIMMERMAN: North, north of Seminary in the purple, I don't know the name of that subdivision. Do you happen to know the name of that one?

MR. BISHOP: I don't.

MR. ZIMMERMAN: Okay. Meadows of Greenspring is in the red. That's a mix of attached houses, I'd say major, majority of attached houses. And then you've got in the blue the single family detached, right?

MR. BISHOP: Yes.

MR. ZIMMERMAN: Okay. Okay and, by the way, it's, I don't know if we call it color white or, but you, you do have the Torch Hill that Mr. Wyatt referred to earlier this morning. That's in white, or blank and --

MR. BISHOP: Well, yeah, we didn't analyze that because it wasn't an approved development at the time.

MR. ZIMMERMAN: Right, and I'm not criticizing you at all for that, but it has been approved, has it not, subject to any appeals anybody may take? Is that, is (inaudible) --

MR. BISHOP: (inaudible) --

MR. ZIMMERMAN: -- Judge Murphy just approved it, right? We know that.

MR. BISHOP: I did see that, yes.

MR. ZIMMERMAN: Yeah. And, by the way, we're not in that case, for the record. So, I'm sure the Judge knows it but not everybody attending knows that, so.

MR. BISHOP: Should we mention the yellow areas in this analysis as well?

MR. ZIMMERMAN: Okay. Sure, you got some yellow areas. You got some mixed use. Greenspring Station, you've got the office building that most of us know about and maybe a lot of us have gone to.

MR. BISHOP: Um hm, (inaudible) --

MR. ZIMMERMAN: That's on the north side of Joppa, closer to Falls Road, I've got my arrow on that.

MR. BISHOP: Right.

MR. ZIMMERMAN: And one of my favorite cafes is there, Stone Mill Café, right? Have you been to Stone Mill Café?

MR. BISHOP: I have, actually. (inaudible) --

MR. ZIMMERMAN: All right.

ALJ: So, Mr., Mr. Zimmerman, we just, I appreciate that, --

MR. ZIMMERMAN: All right.

ALJ: -- I know, I'm sure you --

MR. ZIMMERMAN: Well, he asked me, he asked me to get into the commercial, so, I (inaudible) --

ALJ: Yeah, we know it's Greenspring Station, yep.

MR. ZIMMERMAN: Okay.

ALJ: Okay.

MR. ZIMMERMAN: And then you've got kind of a State Highway Administration property on the southside of Joppa Road?

MR. BISHOP: Correct.

MR. ZIMMERMAN: I'm not clear what's happening with that, is, do we know?

MR. BISHOP: I don't know.

MR. ZIMMERMAN: Okay and, actually, there's a religious, what's that all about?

MR. BISHOP: There's a church there and there's a tennis club across the street --

MR. ZIMMERMAN: (inaudible) --

MR. BISHOP: -- (inaudible) to show there's a mix of uses in the area and densities.

MR. ZIMMERMAN: Yeah. The tennis, the Rolling Tennis Club, that's near the bridge, right? That's, that's --

MR. BISHOP: Correct.

MR. ZIMMERMAN: Right, okay. All right. Well, let's, let's see if we can really look at Greenspring Manor. Now, you've got that in the purple. You've got that at ten thousand to thirty thousand square feet, with an average of

thirteen thousand five hundred square feet, is that correct?

MR. BISHOP: That's what it says, yes.

MR. ZIMMERMAN: Yeah. So, how did you come up with, is it, is that supposed to apply to Greenspring Manor specifically or is that, or did you take all the purple and, you know, somehow average out all of the purple at once or, or can we just look at Greenspring Manor and say that, hey, that, that's, that really is supposed to be accurate?

MR. BISHOP: It's a general average for the areas in purple --

MR. ZIMMERMAN: Okay. So, it's not, yeah, sorry. I didn't mean to interrupt you.

MR. BISHOP: (inaudible) the idea was just to show the general idea that we have our use, our proposed use, in that range of ten thousand to thirty thousand square foot. And that's similar to the other areas in purple.

MR. ZIMMERMAN: Okay.

MR. BISHOP: We have some higher density red, lower density in orange and commercial and mixed use in yellow --

MR. ZIMMERMAN: Okay. So, I'm not, so, I'm sorry. Again, I thought you were finished. You're finished now, right?

MR. BISHOP: Yeah, I'm just saying, it's not intended to be an exact representation. It is an average, it's a general planning document, to show you the mix of uses and

densities in the area.

MR. ZIMMERMAN: Okay. So, just to be clear, you're not saying that Greenspring Manor has a range from ten thousand to thirty thousand square feet. You're not telling us that?

MR. BISHOP: Greenspring Manor, as we know, has some smaller lots, some larger lots. The general average is in the, you know, eleven, twelve, thirteen thousand square foot range.

MR. ZIMMERMAN: Okay.

MR. BISHOP: Which is --

MR. ZIMMERMAN: So, yeah, anything else you want to say on, on that end, on that question?

MR. BISHOP: Well, it's just very different from the blue area characteristics and very different from the tan, --

MR. ZIMMERMAN: Okay.

MR. BISHOP: -- very different from the red, --

MR. ZIMMERMAN: Let me ask, yeah. Somebody reading your exhibit might assume that Greenspring Manor is in the ten thousand to thirty thousand square foot range, is that correct? I mean, am I wrong in assuming that that's what you may have meant, even though that's not what you meant?

MR. BISHOP: Well, I think I just said what I meant. Is that it's an average and it's a generalization to show you roughly what our density is in relation to the other densities in the area.

MR. ZIMMERMAN: Okay, all right. Let's look at the

lot table. In full disclosure, this is, I want to make sure I show the whole exhibit because I did the little colored, my own little bit of commentary or some numbers at the bottom, which are red, blue and green. And we'll get to that in a minute or two, but this is the lot table, is it not, the main, the black and white, the lots one to sixty-one?

MR. BISHOP: That's correct, yes.

MR. ZIMMERMAN: I, I, Judge, I zoomed this in, so we didn't have to mess around with, you know, zooming. This is on your Developer's Exhibit 1-B, correct?

MR. BISHOP: That's correct.

MR. ZIMMERMAN: All right. Let's see if I can make it a little, okay, is this legible? It shows the whole --

ALJ: It's really small to read, if you want him to read it.

MR. ZIMMERMAN: All right. Let's zoom, let's zoom back up, sorry. Okay. So, now, lot one is kind of all by itself, right? I mean, it's different, that's the existing house?

MR. BISHOP: It is.

MR. ZIMMERMAN: And I have to ask you, I, you've, you've got a hundred thirty thousand ninety-nine square feet for 3.9 acres, 3.9 acres, essentially four acres, right? For, for lot one, the existing house?

MR. BISHOP: Close to it, yes.

MR. ZIMMERMAN: Yeah, I mean, we know that an acre is forty-three thousand five hundred sixty square feet, right?

MR. BISHOP: Yes.

MR. ZIMMERMAN: So, I mean, in fairness to you, if, if, if your four, if your four-acre number is correct, then the one thirty thousand number is not correct, right? I mean, one of those numbers is not correct.

MR. BISHOP: It could be. We can fix that.

MR. ZIMMERMAN: Do you know which one is correct?

MR. BISHOP: I'd have to pull up our CAD file and figure out which one is correct.

MR. ZIMMERMAN: Because, I mean, four acres would be at least a hundred, probably about a hundred and seventy-four thousand square feet or close to it.

MR. BISHOP: It's a typo, it should be 2.98 acres instead of 3.98.

MR. ZIMMERMAN: Ah, okay, good. To, how did, how did that happen?

MR. BISHOP: I don't know, sir. It's a, --

MR. ZIMMERMAN: All right.

MR. BISHOP: -- somebody typed in the wrong --

MR. ZIMMERMAN: So, all right, we'll, okay, I mean, it seems like I'm the only one who noticed that, sorry. So, it's 2.9 acres, but anyway, whether it's 2.9 or 3.9, it's quite different from all the other, the newer building lots, which

you pointed out when, when you were talking about quarter acre lots, you were talking about lots two to sixty-one, on the average?

MR. BISHOP: I would, I guess so, I mean, I don't know if we --

MR. ZIMMERMAN: All right, well, --

MR. BISHOP: -- you know, in my testimony, what I was saying at the community input meeting, yes. It was --

MR. ZIMMERMAN: And guess what? I'm not challenging that, okay? I, I wasn't asking about that to challenge you.

MR. BISHOP: Now, there are larger lots and smaller lots within the community. There's a range.

MR. ZIMMERMAN: Right. Absolutely. So, to be fair and balance, so to speak, which doesn't mean we're interested in Fox News, in answer to Michael McCann's questioning, he asked you about the smallest and the largest lots. And if I, my memory is correct, somehow or other, lot nine was identified as the smallest at seventy-five hundred seven square feet, or .17 acres. And I would suggest that that is correct. Do you agree with that? I mean, you can (inaudible) --

MR. BISHOP: (inaudible) table that looks correct (inaudible).

MR. ZIMMERMAN: Okay and at the, yeah, at the time, I think the statement was made that lot nineteen was the largest lot of .43 acres, at, at the time. Is, is that consistent with

your recollection?

MR. BISHOP: I don't recall. I mean, I can see on here that lot thirty is larger than that.

MR. ZIMMERMAN: Right. I wanted to get to that. Lot thirty is actually the largest lot, okay. Now, we'll get through this kind of quickly, but you, you, I think you acknowledge that there are lots that are lower than the ten thousand square feet implied on your Exhibit 4.

MR. BISHOP: There are, yes.

MR. ZIMMERMAN: Okay and do you happen to know how many? I've counted them up, okay? And you can correct me or your team can take a quick look at this. But I would suggest there are twenty-four of the sixty, between lots two and sixty-one. Those sixty lots, twenty-four of them are below ten thousand square feet.

MR. BISHOP: Okay.

MR. ZIMMERMAN: Okay. Well, if, you know, you can check me later. If anyone wants to screenshot this and, you know, it, it only takes a minute or two to count them up. Anyway, so twenty-four of them are ten thousand, below ten thousand square feet. And the largest, as you just pointed out, is lot thirty, which comes in at twenty-one thousand five hundred seventy-one square feet.

So, the, the ten thousand to thirty thousand square feet maybe from some perspective you felt it was helpful. And

maybe it is, I don't know. But it really doesn't represent this, Greenspring Manor, does it?

MR. BISHOP: I still think that it does if you, I mean, I guess I could have broken it down into more categories. But it was supposed to be a general indication that we meet the T-3 where we're adjacent to higher density, mixed use and other, you know, similar size properties. So, I still think it serves that function --

MR. ZIMMERMAN: Well, I get what you're trying to do, but the actual numbers for this are seven thousand to twenty-one thousand, you know, with the, the fractional twenty-one thousand five hundred seventy-one. Not counting lot one, which I would assume you would agree is a different category.

I mean, we're talking seven thousand to twenty-one thousand, not ten thousand to thirty thousand, the actual numbers, do you, whatever, you know, whatever your Developer's four was supposed to represent.

MR. BISHOP: Well, I would argue that the smallest lot you said was, I think, nine and that the largest is one, at 2.98 acres, which you said had a typo. So, I think there's that range --

MR. ZIMMERMAN: Okay. Well, you can rely on, it's kind of an outlier, isn't it? I mean, that doesn't really make much sense to use that as a representative lot, does it?

MR. BISHOP: I think it's part of the community. We

(inaudible) keeping it --

MR. ZIMMERMAN: All right, okay. All right. The Judge will figure that one out.

MR. BISHOP: (inaudible) I would disagree with that.

MR. ZIMMERMAN: All right, that's fine. Okay. Well, let's, I kind of dived a little bit more into the numbers and I don't know if you've studied this to this degree. But I added up lots two to thirty with a, with actually a pencil and paper, a pen and paper and we got six, I got 6.965 acres and then 7.416 acres for lots thirty-one to sixty-one. Did you ever do that addition, any --

MR. BISHOP: No.

MR. ZIMMERMAN: -- anyone on your team?

MR. BISHOP: No.

MR. ZIMMERMAN: Okay. Does that look about right to you?

MR. BISHOP: I'd have to do the math.

MR. ZIMMERMAN: Okay. Well, let's assume I'm right and, of course, anyone on your team or anyone out there can screenshot this and --

ALJ: Can, can you, can you zoom in, can you zoom in, Mr. Zimmerman?

MR. ZIMMERMAN: Excuse me?

ALJ: Can you zoom in, please, --

MR. ZIMMERMAN: Yeah, absolutely.

ALJ: And then, so, so, is this an exhibit of yours?

MR. ZIMMERMAN: Yeah, this is my exhibit, sorry, thirty-one. Sorry.

ALJ: Oh, thirty-one.

MR. ZIMMERMAN: Thirty-one.

ALJ: Oh, okay.

MR. ZIMMERMAN: Okay. Can every, is it legible now?

ALJ: I don't have this as thirty-one. I have something else as thirty-one. It was delivered yesterday and--

MR. ZIMMERMAN: Oh, you're right, you're right. You're right, this is not, this is twenty-four. My mistake.

ALJ: Okay.

MR. ZIMMERMAN: My mistake. My mistake.

ALJ: I see it. No, I see it.

MR. ZIMMERMAN: Twenty-four. Yeah, thirty-one we're going to get to in a minute. Sorry.

ALJ: Okay and so, and you said, and you said that lots two through thirty-one, or what was, what was the number?

MR. ZIMMERMAN: It's right there in red, is that visible?

ALJ: Yes. Okay, two through thirty, 6.965 acres and then the other one you said, thirty, oh, here it is. Thirty-one to sixty-one, seven --

MR. ZIMMERMAN: 7.416 and --

ALJ: -- point four one six.

MR. ZIMMERMAN: -- like I say, everyone can screenshot it, it takes about two minutes or three minutes to add them all up and I'm, you know, if I made a mistake, you know, somebody can figure it out.

ALJ: So, Mr. Bishop, Mr. Bishop, did you have a chance to do the calculations or, I guess, that's a question to you Mr. Zimmerman is asking.

MR. ZIMMERMAN: Well, --

MR. BISHOP: I did not, but I'm curious why he didn't include lot one. It seems like (inaudible) --

ALJ: Well, --

MR. ZIMMERMAN: Yeah, we can debate that. Of course, if we include lot one, we'll, we'll, we'll come up with a little different number, I acknowledge that. And, you know, the relevance of lot one, you know, we can argue about. And we'll, we'll get to that in a second. But if we just take two to sixty-one, because every, obviously you had a certain perspective on your Exhibit 4. And now, I have, given a little different point of view, right? So, --

MR. ROSENBLATT: Judge, before questions are asked about this, I, I certainly, I have no objection to the lot table. But I think we need some foundation as to how these, how this exhibit was prepared. I, Mr. Zimmerman, did you, these are your numbers and did you --

MR. ZIMMERMAN: Yeah, I just said that. I basically

did some third grade math, okay? I added up, I added up, --

MR. ROSENBLATT: And you, you created a pdf --

MR. ZIMMERMAN: I added up the numbers --

ALJ: You're both talking, you're both talking over each other. So, Mr. Zimmerman said that he calculated these calculations, Mr. Bishop said he hasn't done the calculations. And then questioned why lot one wasn't included. So, that, that was sort of, this is his, Mr. Zimmerman's summary of what his --

MR. ZIMMERMAN: Yeah.

ALJ: -- yeah.

MR. ROSENBLATT: And Mr. --

MR. ZIMMERMAN: (inaudible).

ALJ: Okay, hold on --

MR. ZIMMERMAN: Go ahead, I'm sorry. I thought, I didn't mean to interrupt anybody.

ALJ: Yeah, hold on, Mr. Zimmerman. Go ahead, Mr. Rosenblatt.

MR. ROSENBLATT: Mr. Zimmerman created this color coded pdf, like edited pdf, with these notes on top of the lot chart? You did that yourself?

MR. ZIMMERMAN: I said, I, I did the, the math, basically, third grade elementary school math, or maybe fifth grade, I don't know. Yes, those are my calculations.

MR. ROSENBLATT: And how did they get onto this

exhibit, I guess, is my question?

MR. ZIMMERMAN: I, because I created, I made it a demonstrative exhibit with the lot table, instead of putting them on separate pieces of paper for convenience, I placed them at the bottom of the lot table. I could have put them on a separate page. I, I've made quite clear that this is not part of the original exhibit. These are some number that, that I have calculated.

MR. ROSENBLATT: And you personally did that? You typed in your numbers into this exhibit?

MR. ZIMMERMAN: Yes, I did. Yes, we did, our office did, yes.

ALJ: Any objection to twenty-four, Mr. Rosenblatt?

MR. ROSENBLATT: I, just the questions I had, but I understand he's, he's laid some foundation, so.

ALJ: All right. It was demonstrative. Mr. McCann, did you have any objection to twenty-four?

MR. MCCANN: No, thank you.

ALJ: All right, thank you. Go ahead, Mr. Zimmerman.

MR. ZIMMERMAN: Right, okay. So, this is just some basic arithmetic to give a little different perspective. If my numbers are right and every, as I say, everyone can screenshot it, everyone can add up the lots, it takes two or three minutes to do.

I, I ended up with, for the area where lots two to

sixty-one are, not counting lot one for a moment, not counting the flood plains and the wetlands and the open space and so on. We get basically 14.38 or 14.4 acres. At least if my numbers are correct, right, Mr. Bishop?

MR. BISHOP: Yes, assuming your numbers are correct.

MR. ZIMMERMAN: And if my numbers are correct, we end up with an average of 2.4 acres per lot, right, just the math? Just the math, just the math. And that happens to be consistent with what you said at the community input meeting, which was quarter acre. It's just, you know, one-tenth of an acre difference. So, I'm not challenging your number, really.

MR. BISHOP: I'm --

MR. ZIMMERMAN: Just, just illustrating a little more --

ALJ: Mr., Mr. Zimmerman, but Mr. Zimmerman, remember, you need to ask a question.

MR. ZIMMERMAN: Okay. Isn't this consistent --

ALJ: Hold on, hold on. Mr. Zimmerman, hold on. I just want to make the record clear. You just need to ask questions, as you know.

MR. ZIMMERMAN: Right.

ALJ: And not testify. So, are you asking --

MR. ZIMMERMAN: All right.

ALJ: -- him a question, are you asking him whether that, those numbers are right, the 14.38 and the average is 2.4

acres per lot. Are you asking --

MR. ZIMMERMAN: Yes, if those numbers are right, we come down to 2.4 acres per lot for that area --

ALJ: Okay. Mr. Bishop, what was your answer to that?

MR. BISHOP: I'm, I'm kind of confused about the math. What are we doing, 14.38 divided by sixty?

MR. ZIMMERMAN: Right. Oh, it should be point, I'm sorry. You know, it should be .24, my mistake, .24 acres per lot. Now I made a mistake.

MR. BISHOP: That makes more sense.

MR. ZIMMERMAN: Yeah. I'm sorry, my apologies. That, that exhibit needs to be corrected, Judge. It should be (inaudible) --

MR. BISHOP: (inaudible), you moved the decimal point, I (inaudible).

MR. ZIMMERMAN: Yeah, move the decimal point, my apologies.

ALJ: Okay, --

MR. ZIMMERMAN: (inaudible) acres per lot and that, Mr. Bishop, that would be consistent with your quarter acre description.

MR. BISHOP: Correct.

MR. ZIMMERMAN: Okay and Judge, we'll, if it's all right, we'll correct that exhibit --

ALJ: Yeah, you're going to need to resubmit that.

MR. ZIMMERMAN: Yeah, we'll resubmit. We'll, we'll resubmit that as corrected. Sorry about that.

ALJ: And you want to submit it in color, okay?

MR. ZIMMERMAN: In color, absolutely, in color.

ALJ: All right, okay.

MR. ZIMMERMAN: I thought we did, I don't --

ALJ: I, no, you did and I just want to make sure when you resubmit it it's in color --

MR. ZIMMERMAN: Yeah, we'll, we'll resubmit it later today. We'll, we'll resubmit it.

ALJ: Okay, that's fine.

MR. ZIMMERMAN: Yeah.

ALJ: We just, we have --

MR. ZIMMERMAN: Okay.

ALJ: -- a black and white copier so --

MR. ZIMMERMAN: We all, we all can make mistakes and I'm not criticizing the, you know, the mistake on lot one, okay. So, then we get the average lot size for at least this area of Greenspring Manor, not counting lot one, would be ten thousand four hundred fifty-four square feet. Does that, and that makes, that's about .24 acres. You can check, does that sound right, Mr., Mr. Bishop?

MR. BISHOP: (inaudible).

MR. ZIMMERMAN: Okay.

MR. ROSENBLATT: At this point, Judge, Mr. Zimmerman is basically just testifying to this exhibit. We, we can agree it says what it says.

MR. ZIMMERMAN: I'm asking Mr. Bishop whether it looks correct. I mean, you can do the multiplication in ten seconds on a smart phone.

ALJ: Sir, understood. Mr. Bishop, do you, does this look correct to you?

MR. BISHOP: I, I just did the math on my calculator and ten thousand four hundred fifty-four square feet is .239 acres.

MR. ZIMMERMAN: Okay. Thank you so much. Okay. Now, to be perfectly fair, if we added in lot one, and you can do the math later, I think we would prob, and I haven't, I haven't done it myself, but I, just doing it in my head, I think we would come close to your thirteen thousand five hundred square feet average.

If we, if we added in the three acres or maybe, I'm not sure, thirteen thousand, I don't know what we'd come up with exactly. But obviously we'd come up with a, a larger, a larger number, maybe twelve thousand to thirteen thousand. You can, you can let me know if you'd like.

ALJ: All right, are you asking a question?

MR. ZIMMERMAN: Is that corr, you know, if you add in the lot one, you're going to get a somewhat larger average,

maybe closer to your thirteen thousand five hundred, if not up to that.

MR. BISHOP: Correct. It would be larger.

MR. ZIMMERMAN: Yeah, okay. And, all right, when I first did this exhibit, I had one seven and four three as your low and high. That's obvious, that has to be corrected also. It's, we saw it's .495. But anyway, the effective lot density I have at the bottom.

If my numbers are correct, sixty lots, two to sixty-one on fourteen and four acres, you get 4.2 lots per acre, at least for that particular point of view, that area. Those numbers are obviously correct, are they not, Mr. Bishop?

MR. BISHOP: I, they may be, but I --

MR. ZIMMERMAN: Okay.

MR. BISHOP: -- take issue with your approach that, I mean, how do you not include the entire tract in that overall density?

MR. ZIMMERMAN: Okay. Well, if we take sixty-one, we'll, you know what? We'll get to that in a moment. But if we take sixty-one lots on thirty-nine acres, we're going to get pretty close to 1.6 lots per acre. Does that sound right?

MR. BISHOP: You would get something close to the mix of DR-1 and DR-2, which is (inaudible) zoning.

MR. ZIMMERMAN: Okay and question of course is the master plan. Okay. Now, this is People's Counsel thirty-one

and yes, these are my statistics. I put them together and some of it is a repeat. The top is my average lot size calculation for lots two to sixty-one. I have an asterisk at the top, this does not include lot one. You know, we can, we can do another exhibit where we include lot one and see how much the average goes.

Now, the median I corrected on this one. It's, it's not, it's not .43 as previously assumed, it's .495. So, do you, do you agree that right in the middle is .3325 acres? And you can check me on, do you agree with that?

MR. BISHOP: In the middle of (inaudible) --

MR. ZIMMERMAN: Halfway between .17 and .495 is .3325. You take the --

ALJ: Mr. Zimmerman, first, can you zoom in?

MR. ZIMMERMAN: Yeah.

ALJ: And then second, can you just ask one question at a time so that --

MR. ZIMMERMAN: All right.

ALJ: -- he can respond so the record is clear that he's responding --

MR. ZIMMERMAN: Right.

ALJ: -- to whatever question you're asking.

MR. ZIMMERMAN: Okay.

ALJ: Instead of testifying. Remember, ask him a question.

MR. ZIMMERMAN: All right.

ALJ: Please.

MR. ZIMMERMAN: Mr. Bishop, take a look at my statistics under the median lot size calculations and then, you know, tell me what you think as to whether they're accurate, not accurate, you know, assuming that I'm right that the median, do, do you agree the median, generally speaking, is the midpoint in statistical approach?

MR. BISHOP: Correct. I would agree, agree with that. I still don't think I agree with your, your approach to how you handle the land area but your calculations here, I mean, I can do the math and I'm sure that they're correct.

MR. ZIMMERMAN: Okay, okay. Yeah, we can ar, people can argue about the relevance, right, of it. But we do end up with, it, to be expected, since the, the median is a larger number than the average, so you would expect that more of the lots would be below the median than above the median, correct?

MR. BISHOP: (inaudible) statistics, you want to get into statistics about average versus median.

MR. ZIMMERMAN: Okay. Well, all right. Well, it is what it is. But fif, fifty-three, you can check me on this, let me know later if you want to if, if this, this is incorrect. But I've got fifty-three of the sixty new lots are below the median. Does that sound logical to you, based on your understanding of the lots?

MR. BISHOP: Probably somewhere (inaudible) but again, me answering that without you including lot one and --

MR. ZIMMERMAN: Okay.

MR. BISHOP: -- some other areas in the analysis, I think would be disingenuous for me to give you an answer on that.

MR. ZIMMERMAN: Okay. Well, for the median at least, if we add in lot one, we end up eight above that median. I guess the median would slightly, the med, obviously, the median would be hugely different. The median would be way different if, if we started with three acres instead of .495. And we can ar, we can all argue about the relevance of that. Yes, so I --

MR. BISHOP: And then, and then (inaudible) --

MR. ZIMMERMAN: (inaudible) comments further? You want to comment --

ALJ: Mr. Zimmerman. Mr. Zimmerman, you have to ask questions.

MR. ZIMMERMAN: All right. Okay. So, you, you --

ALJ: Hold on, Mr. Zimmerman. You keep making statements, I need you to ask questions so that he can answer them.

MR. ZIMMERMAN: All right.

ALJ: Please? Okay.

MR. ZIMMERMAN: Sorry. Mr. Bishop, would you like to make any further comment on what we've seen with the median,

those numbers?

MR. BISHOP: No, no.

MR. ZIMMERMAN: Okay. Now, the mode, do you know the mode, do you know that the mode is a statistical term meaning the value appearing most often?

MR. BISHOP: I'd prefer not to get into statistics and the difference between an average mien and mode.

MR. ZIMMERMAN: All right. Well, anyway, do the segments of, the thousand square foot segments that I've listed under mode, do those look accurate to you?

MR. ROSENBLATT: Judge, objection. At this point, this is an incredibly poor use of time. If Mr. Zimmerman is proffering that he created, these are his numbers, he created this, then we can have this as an exhibit and he can argue to relevance.

MR. ZIMMERMAN: Okay.

MR. ROSENBLATT: Mr. Bishop has never seen this before and he's just asking him does this document say what it says. It's, it is what it is. If we're going to let this in, we don't need to ask him questions about it. He has nothing to offer on this.

ALJ: Mr., Mr. Zimmerman, did you want to just offer this as an exhibit and --

MR. ZIMMERMAN: I, I would and I was almost finished, to be honest. But yeah, I would like this, I would like this

to be a demonstrative exhibit --

ALJ: Yes.

MR. ZIMMERMAN: -- and if, you know, if anyone can find that there's any inaccuracy on the math, you know, I'm open to that --

ALJ: Okay, hold on --

MR. ZIMMERMAN: -- and it does say, I'm sorry, Judge.

ALJ: -- Mr. Zimmerman, hold on, Mr. Zimmerman. Mr. Rosenblatt, I assume you have no objection to thirty-one?

MR. ROSENBLATT: No, just --

ALJ: And Mr. McCann?

MR. MCCANN: No objection.

ALJ: Okay. So, Mr. Zimmerman, it's, if you want to ask questions of Mr. Bishop in terms of, you know, what you're doing, in other words, if we were in a courtroom and you were standing at a chalkboard and you wanted to write this out and make a demonstrative, you know, just make it --

MR. ZIMMERMAN: All right.

ALJ: -- you know, a point to it and ask him questions, you can ask him questions about that. I'm not saying you can't.

MR. ZIMMERMAN: Okay.

ALJ: I just need a question, I just need a question --

MR. ZIMMERMAN: I get it. I get it. And I'm almost,

I get it, Judge, sorry.

ALJ: I just, but, you know, and, and, but, and then on the other hand, if, if you don't really need him to, ask questions of him, you could argue this in your, you know, at the end.

MR. ZIMMERMAN: Right.

ALJ: Yeah, --

MR. ZIMMERMAN: Well, I'm just about done, just about done.

ALJ: Okay, that's fine. I'm not trying to rush you.

MR. ZIMMERMAN: All right.

ALJ: You can also ask him questions about it, because you have a right to cross examine him.

MR. ZIMMERMAN: Yeah.

ALJ: Yep.

MR. ZIMMERMAN: So, well, I'll just ask a couple. Does, based on what you know of your plan, does it surprise you that the largest number of lots by thousand square foot segments is in the eight thousand to nine thousand square foot range at thirteen of the lots, the numbers of which are identified on this exhibit? Does, does that sound, you know, like based on all the work you've done, that, that would be correct?

MR. BISHOP: I'd have to do my own math. I'm not going to tell you that (inaudible) --

MR. ZIMMERMAN: Okay, all right. And just to, since you asked about adding lot one, we did do that for, on this exhibit at the very bottom to get you the lots per acre for the entire site, sixty-one lots on thirty-nine acres, 1.56 lots per acre. Let me know, you know, does that math look right or do you want to check it at some point?

MR. BISHOP: No, I think, I can check it but that sounds better.

MR. ZIMMERMAN: Okay.

MR. BISHOP: That sounds closer to what I would expect (inaudible) --

MR. ZIMMERMAN: Okay. Yeah, for the, for the whole site. Yeah, obviously you disagree with my point of view on the, you know, the 14.4 acres for the lots two to sixty-one, I get that. Okay. I think that does it for this exhibit. Okay, give me one moment and we'll go to the next one. Okay. All right. That brings us to, let me, let me stop sharing for a moment. That brings us to, to the, well, actually go back to, back to Exhibit 4. Let's go back to Torch Hill. Do you happen to know the lots, lot and, and area, property size situation on Torch Hill?

MR. BISHOP: I don't, that's not one of my projects.

MR. ZIMMERMAN: Not one of your projects. Okay. All right. I'm going to show you, this is People's Counsel Exhibit 23. And we could have put in Judge Murphy's opinion, I

suppose. But I'm going to show you, this is Planning Department concept plan conference comment.

MR. ROSENBLATT: Objection.

MR. ZIMMERMAN: Okay.

ALJ: Mr. Rosenblatt?

MR. ROSENBLATT: The concept plan, not even the development plan, the concept plan conference comment from a different case has no relevance and should not be admitted in this case. We're not here to talk about this project.

ALJ: It's hard to see. Are you, is this for Torch Hill?

MR. ZIMMERMAN: It's, yes. I'm only showing it for the, to get this, the property size and the lots and the number of lots and the property size. That's the only thing I'm interested in.

ALJ: Well, he, again, he just said that he's not familiar with the lot sizes because he didn't work on Torch Hill. So, how --

MR. ZIMMERMAN: Okay.

ALJ: -- I mean, I don't know how --

MR. ZIMMERMAN: All right.

ALJ: -- again, this could be something you could argue and it's a County record. But how is, I mean, just to get him to acknowledge what's written here, it doesn't really--

MR. ZIMMERMAN: All right.

ALJ: Yeah.

MR. ZIMMERMAN: All right. I'm going to stop sharing for a moment. Actually, let me, let me go back to four. Now, so, Mr. Bishop, you included in your color coded exhibit at least four, maybe more, twentieth century subdivisions, correct?

MR. BISHOP: I think based on what you showed me before that would be correct.

MR. ZIMMERMAN: Yeah, and yet you omitted the most current subdivision. Why did you omit Torch Hill?

MR. BISHOP: I think I told you that before, that Torch Hill wasn't even a project when we put this together, or hadn't been before the County, so why would I include that? How would I know if it was approved or not? I mean, or how would I know if it was going to be approved in the form it was presented originally? So, it, it didn't make sense to put that in the analysis.

MR. ZIMMERMAN: It, it was already just about to go to hearing and actually hearing completed prior to today and, I mean, by September 20th, it was about to go to hearing, I don't have the dates. It was, and it was proposed, it was a pending project, which might be approved. Isn't that something you would want to examine as much more relevant than ancient history subdivisions?

MR. BISHOP: No. In my opinion, no.

MR. ZIMMERMAN: Okay. So, --

MR. BISHOP: (inaudible) --

MR. ZIMMERMAN: -- you don't think Torch Hill has any relevance to this case?

MR. BISHOP: It may now that it's been approved, but at the time, I said that wasn't, you know, information that was available at the time we did this analysis.

MR. ZIMMERMAN: All right. Well, --

MR. BISHOP: (inaudible).

MR. ZIMMERMAN: -- let's assume that you're right, that you, you didn't need to bother with it when, when did you do this? Two years ago? This, this exhibit? When, when was this prepared?

MR. BISHOP: This exhibit was done as part of our initial development plan submittal.

MR. ZIMMERMAN: Well, how many years ago was that?

MR. BISHOP: Two thousand twenty-one.

MR. ZIMMERMAN: Okay. Well, wouldn't it make sense to update it now that Torch Hill has been approved?

MR. ROSENBLATT: Objection. This witness has been on the witness stand since before the project was approved. I haven't been able to talk to him for a month because Mr. Zimmerman wasn't ready to ask him questions at the last hearing. And now we're questioning him on something that took place in the interim.

ALJ: Well, I mean, my understanding is this exhibit was prepared in 2021.

MR. ZIMMERMAN: Okay.

ALJ: His testimony is he didn't include Torch Hill, but the question is whether or not, do you think that that is relevant or should be included or should be updated. So, overruled. Go ahead, Mr. Bishop.

MR. BISHOP: I don't see why we couldn't update this exhibit to include the Torch Hill case.

MR. ZIMMERMAN: Okay and are you aware, by now, that it's thirty-two lots on forty-two acres?

MR. BISHOP: I'll take your word for it.

MR. ZIMMERMAN: All right. And I assume Mr. Rosenblatt is not going to disagree with that, but all right.

ALJ: All right, Mr. Zimmerman. Just try to keep the comments out of it.

MR. ZIMMERMAN: All right. All right.

ALJ: Thank you.

MR. ZIMMERMAN: Okay. Now, we're ready to go to Developer's Exhibit 9. If I can find it. Okay. What, you, you prepared this smart coded exhibit, which runs several pages, did you not?

MR. BISHOP: I did, yes.

MR. ZIMMERMAN: Okay and you personally prepared this, I assume?

MR. BISHOP: I did.

MR. ZIMMERMAN: Okay and when did you prepare this one?

MR. BISHOP: Same time frame as Exhibit 4.

MR. ZIMMERMAN: Okay. Sometime in 2021?

MR. BISHOP: Correct.

MR. ZIMMERMAN: Okay, all right. So, you've got five, is it five? How many, let me just, I've got to move down a little bit. I thought you had five different items for this. Let's see. Am I correct? Can you tell me how many other T-3 areas that you were looking at?

MR. BISHOP: That we analyzed? I'd, I would have to look through the document you have here.

MR. ZIMMERMAN: All right. Well, let's, and these were, you prepared this, did you not, to show some other T-3 transect areas and, and --

MR. BISHOP: Correct.

MR. ZIMMERMAN: -- you had some photographs, correct?

MR. BISHOP: Correct.

MR. ZIMMERMAN: So, we got one on, and I'm going to go through this one at a time. You got one on Mayfair Field Drive, I, you know, I'm just, the arrow, obviously, there are other streets in the area, but --

MR. BISHOP: Right.

MR. ZIMMERMAN: -- your arrow points to Mayfair Field

Drive, does it not?

MR. BISHOP: Yes.

MR. ZIMMERMAN: Okay, all right. We're going to go back and forth, so. Let's go to People's Counsel thirty. So, the first one I, let's look at a, a sample lot on Mayfair Field Drive. And is this legible or do I have to zoom up on this?

MR. BISHOP: I can see it.

ALJ: It has, yeah, you can see it, but if you want him to read it, you're going to have to zoom in.

MR. ZIMMERMAN: Is that better?

ALJ: Better.

MR. ZIMMERMAN: Okay. I just happened to take a sample lot, what did I, okay, 11705 (inaudible), all right. That's, that's the, that's how we got this, do you see that here's 11705, just a sample.

MR. BISHOP: Sure.

MR. ZIMMERMAN: Okay. So, now, you know from your expertise, that if you, you get the SDAT, which I'm, you see the SDAT, and you're very familiar with that kind of data, are you not?

MR. BISHOP: I am, yes.

MR. ZIMMERMAN: Okay. So, each one of the SDATs refers to the subdivision plat, correct?

MR. BISHOP: Correct.

MR. ZIMMERMAN: You see the plat reference? Do you

see the plat reference, 0064?

MR. BISHOP: I do.

MR. ZIMMERMAN: 0103? Do, I'm sorry, I'm making sure it's a question. Do you see that?

MR. BISHOP: I do.

MR. ZIMMERMAN: Okay.

ALJ: Mr. Zimmerman, what's, what exhibit number are you on?

MR. ZIMMERMAN: Thirty, People's Counsel. Do I have the right number? Yes, thirty. I'm pausing so that the Judge can have thirty at her fingertips.

ALJ: Okay, (inaudible).

MR. ZIMMERMAN: Are we ready?

ALJ: I am, I'm on thirty now, right. The exhibit that I have, the hard copy is not in color, just so you're aware.

MR. ZIMMERMAN: Oh.

ALJ: That what's on the screen is in color but what's here is not in color.

MR. ZIMMERMAN: All right. Well, I don't know how--

ALJ: Go ahead.

MR. ZIMMERMAN: -- we certainly meant to have it in color, but.

ALJ: Sure.

MR. ZIMMERMAN: Okay. So, this is a, turns out that

this is a subdivision circa 1992.

MR. ROSENBLATT: Again, not a question.

MR. ZIMMERMAN: Is this, is this a 1992 subdivision Mayfair second amendment of Mayfair 1992?

MR. BISHOP: Yes.

MR. ZIMMERMAN: Okay. So, again, pre, this predates the 2020 master plan, does it not?

MR. BISHOP: It does.

MR. ZIMMERMAN: Okay. Now, I, okay, let's, now, the next one, without going back to your exhibit, do you recognize that number two is Valleywood? You've got, and we can go back and get the, the street, but you've got the Valleywood subdivision as your second item, 1979?

MR. BISHOP: Yes, I see that.

MR. ZIMMERMAN: Okay and then, I mean, is that, rather than spending a few minutes, you know, going back and showing you the street and so on, do, do you recognize that you used the area where the Valleywood subdivision is?

MR. BISHOP: I, I didn't look at them based on subdivision name. I'd have to see the map and tell you.

MR. ZIMMERMAN: Okay, we can do that. If I can, see, a second. All right. So, is this Thornton Road and --

ALJ: You're going to need to zoom in and if you can say which page you're on.

MR. ZIMMERMAN: I think we're talking the third page

of the exhibit that shows the area of Thornton Road, near Thornton Road.

MR. BISHOP: Is that, you're asking me if that's the subdivision plan we were just looking at? I'm not sure (inaudible) but --

MR. ZIMMERMAN: Yeah, let's, well, let's go, try to zoom in on it.

MR. BISHOP: I'm not sure how, if it's really that relevant, I think I trust that you'd hold up the right subdivision plats based on my exhibits, but.

MR. ZIMMERMAN: Well, let's, --

MR. BISHOP: Valleywood seems to be a different shape on the corner there then what you showed me before on Thornton.

MR. ZIMMERMAN: Well, where's this, okay. All right. Well, all right. Do you recognize that, and whether it's the (inaudible) at least we've got the one on Five Farms Lane. Do you recognize that one of your exhibits is in the Five Farms subdivision area, Valleywood?

MR. BISHOP: You'd have to go back and show me that piece of my exhibit. I believe it is, but I'd have to see it again.

MR. ZIMMERMAN: Let's go back up. Okay, here we go. Five Farms Lane area?

MR. BISHOP: Yes. That one looks correct. That one matches.

MR. ZIMMERMAN: Valleywood? Okay, that's 1979, isn't it? I mean, should I go, do we have to go back to the subdivision plat or --

MR. BISHOP: No, I saw the subdivision plat.

MR. ZIMMERMAN: Yeah.

MR. BISHOP: It said '79, yes.

MR. ZIMMERMAN: And that's been there a long, long time, anyone, right, off Timonium Road --

MR. BISHOP: Nineteen seventy-nine, correct.

MR. ZIMMERMAN: I mean, that, you know, do you, do you know that that's, that that subdivision has been there a very long time?

ALJ: Well, he, he said 1979.

MR. ZIMMERMAN: All right, all right.

ALJ: But wait, he saw your Valleywood plat, your Valleywood plat said --

MR. ZIMMERMAN: Okay.

ALJ: -- 1979, and then he acknowledged that that was near the Five Farms --

MR. ZIMMERMAN: Okay.

ALJ: -- you know, (inaudible).

MR. ZIMMERMAN: All right. Then we've got, sorry, thanks, Judge.

ALJ: Yep.

MR. ZIMMERMAN: The, the, the next one is near

Thornton Road, on a, on a little, kind of a local street near Thornton Road. This would be north of Joppa Road, would it not, Mr. Bishop?

MR. BISHOP: Yes.

MR. ZIMMERMAN: Okay, yeah. Not, not far from where the Royal Farms is and the bridge and all that, right?

MR. BISHOP: (inaudible)

MR. ZIMMERMAN: You have to cross the bridge and --

MR. BISHOP: (inaudible).

MR. ZIMMERMAN: -- yeah. Okay. So, so, let's see if we can go to the next one. Chelsea Bridge Way near Thornton Road, okay? Does that look like your third --

MR. BISHOP: That's right.

MR. ZIMMERMAN: Okay. So, we got, got a sample, do you see the SDAT on the particular lot on Chelsea Bridge Way?

MR. BISHOP: I do.

MR. ZIMMERMAN: Okay. Then we end up with 1984. Our good friend David Thaler did this one. I can zoom in, you see, you see the date, right?

MR. BISHOP: I can read 1984, the signature date, yes.

MR. ZIMMERMAN: And just so we get a little better shot of this, okay. There's, you know, there we see that well known area. Okay. Okay and, I mean, I could spend a few more minutes going through the last two but, let's see. Well, we

might as well let everybody who's watching see what this is all about. All right. This may be your fifth one in Pikesville. Where's your arrow on this one? There we go. Stone, this is the Stevenson Crossing area, do you recognize that?

MR. BISHOP: I do, yes.

MR. ZIMMERMAN: Yeah. So, I think this may have been actually your last one. So, does this look like the area --

MR. BISHOP: It does, yes.

MR. ZIMMERMAN: It does, yeah. Another David Thaler job way back from 1979. Do I need to zoom up on this one?

MR. BISHOP: No, I can see it, 1979.

MR. ZIMMERMAN: Okay, 1979. There's only one other one left. Would, and this is Valley Green from 1956. Do you recognize this as, you know, not far from the Valley Country Club, Jeffers Lane, Yarborough. Do we have to go back to your exhibit?

MR. BISHOP: No.

MR. ZIMMERMAN: No? Okay.

MR. BISHOP: No.

MR. ZIMMERMAN: So, the, just a, you know, whether or not you agree, let me ask it in a question form. It so happens that each one of the areas that you chose for Exhibit 9 is a twentieth century subdivision, you know, going back, some of them going back as far as like six, I don't know, like seventy, fifty, sixty, seventy years.

MR. BISHOP: So, you're arguing that we shouldn't include any previous precedent for housing and development in Baltimore County?

MR. ZIMMERMAN: Well, (inaudible) the Judge is instructing me to ask questions, --

MR. BISHOP: (inaudible) --

MR. ZIMMERMAN: -- I'm simply asking you to confirm, I'm not arguing the case at the moment, we'll, be time for that. I'm just asking you to confirm the areas that you did choose are twentieth century subdivisions, some of them going back, you know, fifty years or more.

MR. BISHOP: Yes, you showed the dates on the plats of the areas that we used.

MR. ZIMMERMAN: And you did not choose Torch Hill as an update, for example, did you?

MR. BISHOP: And I explained because it didn't exist at the time of our analysis, correct.

MR. ZIMMERMAN: But, but it was well into the process, was it not? It was --

MR. ROSENBLATT: Objection. Asked and answered.

ALJ: Yeah, the, that one was --

MR. ZIMMERMAN: All right.

ALJ: -- asked and answered, Mr. Zimmerman --

MR. ZIMMERMAN: All right.

ALJ: -- so I did, I did, I got, I got your point on

it, thank you.

MR. ZIMMERMAN: Okay --

ALJ: (inaudible) --

MR. ZIMMERMAN: -- and for the record, you did not choose Woodleigh Park, did you?

MR. BISHOP: I'm not familiar with Woodleigh Park.

MR. ZIMMERMAN: Okay. You did not choose Davis Farms did you?

MR. BISHOP: I did not use Davis Farms.

MR. ZIMMERMAN: Okay, okay. That's all on this exhibit.

ALJ: Any objection to People's Counsel Exhibit 30, Mr. Rosenblatt?

MR. ROSENBLATT: It's hard to see because we jumped around a bit, but assuming it's all plats and SDAT sheets I have no objection.

MR. ZIMMERMAN: Okay.

ALJ: Well, do you have a copy of it? Have you seen it? Mr. Rosenblatt? Did you --

MR. ROSENBLATT: Yeah, I, I was, I was e-mailed a, a link to a series of exhibits this morning. So, I, I did glance at it and I'll, I'll pull it up, but I, I don't have an objection. I didn't see anything that's not a record plat or an SDAT sheet.

ALJ: And Mr. McCann, any objection?

MR. MCCANN: No objection, thank you.

ALJ: Thank you.

MR. ZIMMERMAN: Okay. That's all for that exhibit, Mr. Bishop. So, just to kind of maybe follow-up on your last answer, I, I assume, or let me know, have you read Judge Paul Mayhew's decision in the Davis Farms case?

ALJ: Now, why, why does he need to talk about that right now? Has he read it? I mean, he's not, again, he's not an attorney.

MR. ZIMMERMAN: All right, okay. Well, the --

ALJ: Is there --

MR. ZIMMERMAN: -- the reason I asked the question is because he brought up all these other areas for comparison.

ALJ: Okay.

MR. ZIMMERMAN: So, that's all --

ALJ: But you went through all those.

MR. ZIMMERMAN: All right, all right. Well, I was asking what he didn't look at, okay? So, all right, I --

ALJ: Correct. You did and he said he did not use them.

MR. ZIMMERMAN: I'll move, I'll move on.

ALJ: Okay.

MR. ZIMMERMAN: So, that's all for that subject matter. But now we're going to move into the setbacks, okay. So, --

ALJ: Is everyone doing okay? Does anyone need a break? I, just let me know because, you know, I'll just, I'll go on and on and I won't stop, so if anyone needs to break, just let me know. No, I see no hands, okay. Keep going.

MR. ZIMMERMAN: Okay. So, now we're going to, we're going to do a little sharing again. And we're moving on, if I can, okay. Let me locate, all right. You recognize, this is a close-up, Mr. Bishop. Do you recognize this as a close-up of the unit layouts --

MR. BISHOP: I do.

MR. ZIMMERMAN: -- on the Developer's Exhibit 1-B?

MR. BISHOP: I do, yes.

MR. ZIMMERMAN: Okay. Is this fairly readable or do we need to, do we need to upgrade this, Judge, to make it more legible?

ALJ: You, you, it would be better if you zoomed in, just, if you could click it a couple times. Yep, all right. Go ahead.

MR. ZIMMERMAN: Okay. Now, Mr. --

ALJ: Now, this is, for the record, People's Counsel twenty-six.

MR. ZIMMERMAN: Yeah, thank you, thank you for that. Mr. Bishop, you remember that Mr. McCann asked you about this?

MR. BISHOP: I do.

MR. ZIMMERMAN: The setbacks. And correct me if I'm

wrong but did you say that this is not meant to be definitive, the setbacks here, which are shown to be actually the minimum?

MR. BISHOP: Right, these are represent, representative of typical layouts for the zoning office.

MR. ZIMMERMAN: Okay. So, the question then is, well, did you particularly prepare these layouts or was that part of your team under your supervision?

MR. BISHOP: I prepared these.

MR. ZIMMERMAN: Okay. So, why did you choose the minimum rather than some other number or, yeah, why did you choose those numbers?

MR. BISHOP: This is something we do on every project. They're typical lot layouts and it's used by the zoning office when they get building permits in to check to make sure that the building permits meet the minimum setback requirements. So, that's what they asked us to do, was to show the minimum setback requirements.

MR. ZIMMERMAN: Okay, all right. Is there anything in writing, or is that just a verbal custom that, that they ask you to do that?

MR. BISHOP: That's just something they've always asked me in my sixteen years of doing this in Baltimore County.

MR. ZIMMERMAN: Okay, okay. Now, can, is there anything on the site plan that allows us to know exactly what the setbacks are on every single lot?

MR. BISHOP: We add labels, setback labels, on a lot of the lots, but there's no requirement to label every single lot.

MR. ZIMMERMAN: Well, the question is, have, whe, whether or not there's a, quote unquote, requirement, and we could go back to Developer's 1-B, but does, does each of the lots have a number for the setbacks?

MR. BISHOP: Each of the lots meets the setback requirements. I'm not, I can't tell you if, without looking at the plan, every single front, side and rear yard is labeled.

MR. ZIMMERMAN: Does, is there a single lot, is there any lot on Developer's, do you have Developer's 1-B at your fingertips, or you know, --

MR. BISHOP: I do.

MR. ZIMMERMAN: Okay. Do any of the lots show the specific setbacks?

MR. BISHOP: They do. There's a dashed line that shows the front, side and rear setback lines that we're not crossing over.

MR. ZIMMERMAN: All right. Well, what are the set, what is the setbacks on lot two?

MR. BISHOP: What are the setbacks on lot two? Twenty-five foot front yard, thirty foot rear yard, thirty foot building to building.

MR. ZIMMERMAN: Okay. Fifteen foot side yard, in

other words, yes? Is, is it, when you have thirty foot building to building, does that mean fifteen feet side yard?

MR. BISHOP: I don't, I don't want to get technical, but it's a total of thirty. It doesn't necessarily mean to be fifteen, but basically, yes.

MR. ZIMMERMAN: I mean, building to building is one lot to another lot, is that correct, I mean, --

MR. BISHOP: Correct. But you could move that center lot line around and have twenty on one side and ten on the other.

MR. ZIMMERMAN: Okay. Well, ten you'd need a variance, wouldn't you?

MR. BISHOP: Not if it's thirty foot building to building.

MR. ZIMMERMAN: There's no side yard setback requirement then, is that what you're telling us?

MR. BISHOP: I'm pretty sure in this, in this zone that it, it is a building to building setback requirement and not --

MR. ZIMMERMAN: Okay.

MR. BISHOP: -- interior side yard --

MR. ZIMMERMAN: Okay. So, thirty feet would be the minimum?

MR. BISHOP: Correct.

MR. ZIMMERMAN: Okay. So, my, to my, to the best of

my recollection, correct me if I'm wrong, when you answered Mr. McCann's questions on setbacks and I'm going to stop sharing for a moment. You said there are plenty of lots, quote unquote, plenty with larger setbacks, did you not?

MR. BISHOP: I don't recall if that was my exact testimony.

MR. ZIMMERMAN: Well, --

MR. BISHOP: There are several lots that are, have larger setbacks.

MR. ZIMMERMAN: All right. Can you please identify which lots have larger setbacks, which setbacks they are and how much larger?

MR. BISHOP: You want me to go through all sixty-one lots?

MR. ZIMMERMAN: Yeah, I mean, I mean, yes. I mean, or do, you know, do you know of the sixty, of the sixty, obviously, lot one has larger, we know that. But do, do you have any idea how many --

MR. BISHOP: I haven't done that analysis. I could spend time and do that analysis. But right now, --

MR. ZIMMERMAN: Yeah.

MR. BISHOP: -- I'd have to sit here and spend time identifying for you which ones. But I know, just looking here, that several of these have much larger rear yard setbacks than the minimum thirty feet.

MR. ZIMMERMAN: And what does several mean? Is it two of them, five of them, I mean, what are we talking, and which setbacks? I mean, how do we get a better understanding of precisely what the setbacks are on every single lot?

MR. BISHOP: You look at the development plan and you look at the front, side and rear yard setback lines and you can see that we're within them.

MR. ZIMMERMAN: Would a, is there even a scale on your development plan that will allow me to use a ruler --

MR. BISHOP: Yes, it is a scale drawing.

MR. ZIMMERMAN: And what is the scale? And where is it, and where is it stated?

MR. BISHOP: Right underneath the drawing, it says site plan and there is a scale written there --

MR. ZIMMERMAN: Well, what is the scale for the, for the rather small looking, you know, the lots are, are not very big on the plan, the, the way they're drawn.

MR. ROSENBLATT: Objection.

MR. ZIMMERMAN: What is, okay, what is the scale exactly? One inch to how many feet?

ALJ: All right, that's the question. All right. It's overruled. Go ahead.

MR. BISHOP: One inch equals sixty feet.

MR. ZIMMERMAN: One inch is sixty feet. So, what is the largest, putting aside lot one, what is your, can you give

us an estimate, a number, or do you feel comfortable giving us a number of how many lots have larger than thirty feet building to building setbacks?

MR. BISHOP: I, --

MR. ZIMMERMAN: And how much larger, and how much larger?

MR. BISHOP: I don't feel comfortable doing that analysis unless I had the, was given the time to go through each one and measure that for you.

MR. ZIMMERMAN: I guess the question is, why didn't you do that since it's --

MR. BISHOP: (inaudible) something that's required. It's not required for us to show what's more than the minimum. We only have to prove that we meet the minimum requirement.

MR. ZIMMERMAN: Well, would it have been reasonable to have done that in light of the transect criterion of deep setbacks?

MR. ROSENBLATT: Objection.

ALJ: Well, it's a fair question because it's in light of the transects, so go ahead. Overrule.

MR. BISHOP: The front setback is shown graphically on every plan or on every lot on this plan. And the deep setback is related to the front setback and that's very easy to determine.

MR. ZIMMERMAN: All right. Would, would you be

willing, before this hearing ends or, to provide us with an illustration or a listing of the precise setbacks, front, rear and building to building for every single lot so that we can see it?

MR. ROSENBLATT: Objection.

ALJ: Yeah, I'm not, Mr. Zimmerman, see, I mean, he's not your, he's not your --

MR. ZIMMERMAN: All right.

ALJ: -- witness. I mean, you're, you're giving instruction to someone who's not your witness to, to --

MR. ZIMMERMAN: All right.

ALJ: -- calculate. But I think, but I think that, you know, but you've, your, I mean, your point is taken.

MR. ZIMMERMAN: All right.

ALJ: So, I'll sustain that objection.

MR. ZIMMERMAN: Okay. With reference back to your, come back for a moment to my, this is my Exhibit 26 and, again, it's a rep, an excerpt from your plan, is there any footnote or explanation to say that, that when we use the word typical, the word typical, that you're not really meaning typical, okay? It's, could be anything? I mean, is, is there any explanation that we're not to really take this seriously, as a typical, as typical layouts?

ALJ: Still, I mean, I, Mr. Zimmerman, his --

MR. ZIMMERMAN: All right.

ALJ: -- testimony was that these were for the zoning office, that they want to see these layouts and they probably told them to say typical layout. I mean, I'm not, I, you know, but you already made your point --

MR. ZIMMERMAN: All right.

ALJ: -- that, you know, that we don't really know where the individual setbacks are on each lot, so.

MR. ZIMMERMAN: All right.

ALJ: I mean, I think we're kind of parsing this here to the point of, you know what, you get --

MR. ZIMMERMAN: All right.

ALJ: -- it's the, we, the zoning office is making them do this, I guess.

MR. ZIMMERMAN: All right. Well, --

ALJ: So, --

MR. ZIMMERMAN: -- I got one more question on it. Did they, did anyone instruct you to use the word typical or was that your choice of words?

MR. BISHOP: As I mentioned before, I've been doing development plans like this for sixteen years. I've used that terminology that whole time for dozens of residential developments.

MR. ZIMMERMAN: But would you agree that it, if that's true, then the use of the word typical is not an accurate choice of words?

MR. BISHOP: It is the, it's a term that the zoning office makes us use. You could confirm that with them if you'd like.

MR. ZIMMERMAN: All right. Well, I'm not, I'm not challenging your, that they may like that. Okay. All right. You worked on the pattern book, did you not?

ALJ: Let me do this first. Any objection to twenty-six, People's Counsel twenty-six --

MR. ZIMMERMAN: Yeah.

ALJ: -- Mr. Rosenblatt?

MR. ROSENBLATT: No objection.

ALJ: Thank you. Mr. McCann --

MR. ZIMMERMAN: All right. I'm going to, I'm going to stop sharing.

ALJ: -- hold on. Mr. McCann?

MR. MCCANN: No objection, thank you.

ALJ: Thank you.

MR. ZIMMERMAN: Okay. Is there anything in the pattern book that shows the setbacks?

MR. BISHOP: I'd have to look at the pattern book again, but I believe it has those typical lot layouts as well.

MR. ZIMMERMAN: But not anything more than that?

MR. BISHOP: No.

MR. ZIMMERMAN: Okay, all right. Now, it's time to go for the secondary, I'll call it secondary, well, I won't

characterize it, let's take a look at the residential performance standards. And let's find People's Counsel Exhibit 13. Now, I think, correct me if I'm wrong, but did you testify that the Planning Department made findings that approved your residential performance standards compliance?

MR. BISHOP: I'd have to look at their comments again, but yes, I believe at the end of their development plan comments it has a paragraph to that effect.

MR. ZIMMERMAN: Okay. So, now, during your testimony, you did produce, or you narrated verbally, an item-by-item description of how your plan complies with the, I'll call them RPS, is that, is that correct?

MR. BISHOP: That is correct.

MR. ZIMMERMAN: All right.

MR. BISHOP: We also gave a detailed, point by point, to the Planning Department during the review process.

MR. ZIMMERMAN: Right.

MR. BISHOP: And showing how we meet all of --

MR. ZIMMERMAN: Okay.

MR. BISHOP: -- two sixty.

MR. ZIMMERMAN: Is there anything in writing, which you provided the Planning Department or, or anywhere comparable to the narrative you gave? In other words, did, did you produce something in writing in the file or so far that goes through every single RPS and stated how you thought you met

them?

MR. BISHOP: That's what I just stated, yes. During our, between the concept plan and development plan, we submitted a point by point on how we met all of the residential performance standards requirements.

MR. ZIMMERMAN: And where is that written? Did you, have you produced that written description for, in your direct testimony?

MR. BISHOP: I did not.

MR. ZIMMERMAN: Okay.

ALJ: And so, for the record, Mr. Zimmerman, that is Baltimore County Exhibit 9. So, that was a County exhibit.

MR. ZIMMERMAN: Are we talking about the Planning Department comments?

ALJ: Correct, yeah.

MR. ZIMMERMAN: Okay.

ALJ: Planning Department comments (inaudible) --

MR. ZIMMERMAN: Thank you so much, Judge. And actually, we have a --

ALJ: Yeah, just, the point by point is nine, specific.

MR. ZIMMERMAN: Yeah.

ALJ: Okay?

MR. ZIMMERMAN: The point, can, I don't have that at my fingertips. Could, could you possibly share that exhibit

with us, is, is that possible?

ALJ: Do, do you want to share that right now?

MR. ZIMMERMAN: Yes, but I'm, I, I --

ALJ: Okay.

MR. ZIMMERMAN: -- I can't do it. I don't know how to do it. I don't have it, I mean.

ALJ: Okay. Hold on a second.

MR. ZIMMERMAN: Are we talking about the Planning Department development plan conference comment or something else?

ALJ: Hold on, I was muted. It, you, you wanted the point by point, right?

MR. ZIMMERMAN: Well, that, but I actually, I, I did want, and which I don't have for sharing, the Planning Department comments.

ALJ: This is exhibit number, County exhibit number nine, which is the point by point he just mentioned. For, in response to the development plan comments --

MR. ZIMMERMAN: Okay. Let's take a, let's take a, yeah, I didn't have this available. So, let, let's see, Mr. Bishop, did this document include an RPS itemization?

MR. BISHOP: Yes.

MR. ZIMMERMAN: Okay and can you tell us where it is?

MR. BISHOP: It's an eleven page document, I believe if you --

MR. ZIMMERMAN: Okay.

MR. BISHOP: -- scroll through, there it is. Section two sixty compliance.

MR. ZIMMERMAN: Okay, okay. All right. Thank you for that. And, Judge, I don't have it convenient at my fingertips, but could we, could you, could you share with us the Planning Department comments?

ALJ: Did you want the --

MR. ZIMMERMAN: Both the concept plan and development plan conference comments? I have them in my Exhibit 3, but, unfortunately, didn't upload them for sharing. I --

ALJ: So, do you want the concept plan comments first?

MR. ZIMMERMAN: Yes, and then the development plan conference.

ALJ: Okay. Hold on just a second.

MR. ZIMMERMAN: Thank you for that. That's the only exhibit that I don't have uploaded.

MR. ROSENBLATT: Judge, was the, the Planning Department final report also an exhibit? I'm sorry --

ALJ: Yep, you're good. I'm muted. Yes, it was. I was just trying to find the, actually, yeah, so for whatever reason, it was the hearing officer's hearing report and the development, the hearing officer's hearing report is the one actually. So, let me pull that one up, okay?

MR. ZIMMERMAN: Okay.

ALJ: Okay. Here you go. So, Mr. Zimmerman, this is County exhibit, for the record, number seven. And so, this was the memo that Mr. Williams --

MR. ZIMMERMAN: Okay.

ALJ: -- (inaudible) he submitted, but then attached to it is the actual hearing officer's --

MR. ZIMMERMAN: Right, okay.

ALJ: -- hearing report dated --

MR. ZIMMERMAN: Yep.

ALJ: -- November the 8th of 2021.

MR. ZIMMERMAN: Okay. In fairness, for whatever reason, I hadn't seen the first page, but that's fine. But yeah, the November 8th, 20, yeah, that, that's kind of a cover sheet, is it not, Mr. Bishop, of the August 24th --

MR. BISHOP: Yes.

MR. ZIMMERMAN: -- and by the way, the, your, your own report, or itemization, that was shown by the Judge a few minutes ago, I think it was County Exhibit 9, so that, that, that wasn't the County file, was it not, or was it?

ALJ: It, it was in the file, yes.

MR. ZIMMERMAN: (inaudible) okay, all right.

ALJ: And that's why I made it an exhibit, because it was in response to --

MR. ZIMMERMAN: Okay, okay.

ALJ: -- it was in response to comments, and it's also listed in here, I believe.

MR. ZIMMERMAN: All right, that's fine. All right. Let's look at the November 8th, thank you, Judge, for --

ALJ: Sure.

MR. ZIMMERMAN: -- going to the page which, which is titled, where there's a paragraph titled residential performance standards, which is, is it page three or two, what, whatever page it is. So, --

ALJ: It's on the screen.

MR. ZIMMERMAN: Yeah, it's on the screen. And there are two sentences, are there not, Mr. Bishop? First indicating there's a requirement, the first indicates simply, and I'm paraphrasing, there's a requirement that there be compliance with residential performance standards, correct?

MR. BISHOP: Correct.

MR. ZIMMERMAN: Okay. The only finding, unless there's something else, well, let me know if there's anything else you're aware of, but the, I would ask you, the, the only finding is one sentence. The quote, and I'm quoting, the Department of Planning has reviewed the pattern book submitted on August 30, 2021 and recommends approval, unquote. Okay. Is there anything else, is there any other finding, the Department of Planning has actually made to elaborate or itemize, their findings?

MR. BISHOP: You want to scroll to the next paragraph, please?

MR. ZIMMERMAN: Sure.

MR. BISHOP: Can we read this one?

MR. ZIMMERMAN: Read whatever you'd like. Okay.

MR. BISHOP: And I think this is their finding, these two paragraphs, in their report.

MR. ZIMMERMAN: So, in, is there any explicit, is there anything else besides that --

MR. BISHOP: Not that I'm aware of.

MR. ZIMMERMAN: -- sentence, which, which indicates that they, to paraphrase, they received your point by point letter.

MR. BISHOP: I mean, that's what it says right there. Through a --

MR. ZIMMERMAN: Yeah.

MR. BISHOP: -- point by point response letter received on September 16th, 2021.

MR. ZIMMERMAN: Okay. I mean, there's no specific written description by the Planning Department of why they think each of your points is correct?

MR. BISHOP: Not that I'm aware of.

MR. ZIMMERMAN: They just agreed with you and that's the end of it, okay. Okay. All right. Now, let's, Judge, I think that, that's the only, those are all the questions I have

on this particular document. Let me ask you just about a few of the specific residential performance standards, Mr. Bishop. And let's go to the RPS. And I'm, I'm not going to go through every single one.

Okay. So, let's, let's go to the somewhat controversial issue of the Mays Chapel Road connection, or not, or not having connection. So, 260.4.A.1, correct me if I'm wrong, but was your explanation for compliance that basic, and I'm paraphrasing, that basically, you were satisfying at least one or two of the community associations?

MR. BISHOP: Excuse me, you mean --

MR. ZIMMERMAN: The reason for not having a street connection to the adjoining neighborhood --

MR. BISHOP: No, we do have a connection --

MR. ZIMMERMAN: -- (inaudible) was your explanation, well, do you think street, well, all right. I'm sorry. I didn't mean to interrupt you. But --

MR. BISHOP: (inaudible) --

ALJ: Ask him, ask him a question --

MR. ZIMMERMAN: Wasn't your, correct me if I'm wrong, wasn't your explanation for not having a, a traffic, a road connection that cars can go on, vehicles can go on, that you were satisfying one or two of the adjacent community associations? Was that your reasoning?

MR. BISHOP: No, I think that's partially what I

said. We are providing a connection but we are making it emergency only.

MR. ZIMMERMAN: Okay. Is it your interpretation that that RPS standard is satisfied by an emergency connection?

MR. BISHOP: Yes.

MR. ZIMMERMAN: And what is, what, what language is there to support that conclusion?

MR. BISHOP: My professional opinion is that we are providing a vehicular connection and a pedestrian connection to the adjacent communities. But because of traffic issues, because of community interest and other reasons, we think that having it be emergency access only is the best solution.

MR. ZIMMERMAN: Um hm, okay. And by the way, I have to ask you this. How is the fire department supposed to get through when there's a fire? What, what's the method?

MR. BISHOP: We haven't determined that exactly, but I've done that in the past with them where we have a movable (inaudible) or we have a (inaudible) box for emergency responders or squelch alarms. There are ways to have those opened by emergency responders.

MR. ZIMMERMAN: So, what's the plan here?

MR. BISHOP: I just mentioned, we don't have that fine detail yet. (inaudible) we haven't gotten to the point where we're pulling permits and doing construction yet.

MR. ZIMMERMAN: Have you communicated with the Luth,

is it Lutherville Volunteer Fire Department the closest fire department?

MR. BISHOP: I don't know. I'd have to look. I have not communicated with them specifically about this. I have on other projects.

MR. ZIMMERMAN: Well, are the firemen supposed to get out of their trucks and do something to get this gate open?

MR. BISHOP: Not necessarily. We can work with them on that. There's ways to do it where you do have to physically get out. There's other ways where you just blow your horn and the thing will open. Or you have a key card or --

MR. ZIMMERMAN: And how are the fire people supposed to know what they're supposed to do, all of them?

MR. BISHOP: This is not uncommon. This happens in several other communities where they'll be informed and they'll know what to do. This happens often in multi-family communities, apartment building communities.

MR. ZIMMERMAN: And the firemen never make a mistake, okay. All right.

MR. ROSENBLATT: Is that a question?

MR. ZIMMERMAN: All right. Let me ask you this --

ALJ: No comments. Mr. Zimmerman, try to keep the comments out of (inaudible) --

MR. ZIMMERMAN: All right, sorry. With reference to the diff, the, the points of view of the different communities,

I have to ask you, how did you decide to choose between the communities that don't want the normal, you know, the, the normal motor vehicle connection and the ones that didn't? You know, how, how did you make that choice?

MR. BISHOP: I'm not going to be the one to testify on that. We will have others who, who can talk traffic more than I can.

MR. ZIMMERMAN: Okay, all right.

MR. BISHOP: Yeah.

MR. ZIMMERMAN: All right. And did the Planning Department make a specific finding as to the reasonableness of having an emergency connection?

MR. BISHOP: Not that I'm aware of.

MR. ZIMMERMAN: Other than saying they reviewed your pattern book?

MR. BISHOP: Not that I'm aware of.

MR. ZIMMERMAN: Yeah. By the way, there's nothing in your pattern book, is there, that discusses the RPS, correct me if I'm wrong, please.

MR. BISHOP: I don't recall. I'd have to go through the pattern book and see it.

MR. ZIMMERMAN: All right.

MR. BISHOP: (inaudible) is in there but I don't --

MR. ZIMMERMAN: Okay.

MR. BISHOP: -- I don't recall.

MR. ZIMMERMAN: But in fairness, they said they reviewed your point by point response, or didn't they, okay. All right. While maybe not the biggest issue in the case, take a look at 260.3.A.1 and 2. The open space. Is there, does it require the open space be creating focal points along streets and in view of the development entrance? I mean, I'm, is that what it, basically it says?

MR. BISHOP: It says creating focal points along streets, which we do. I testified that we do.

MR. ZIMMERMAN: But isn't your open space, you know, around, is it eighty yards? I forget the number you gave. It's, it's at some, they're at some distance from Joppa Road, aren't they?

MR. BISHOP: Integrate open space areas into the proposed development by creating focal points along streets, which we have several different open space areas. And I would argue that they all have great focal points --

MR. ZIMMERMAN: But in view of the development and, I'm sorry. In view of the, number two, in view of the development entrance or adjoining public street?

MR. BISHOP: Yes, you can see --

MR. ZIMMERMAN: Doesn't that mean Joppa Road, or am I wrong? Does it, does it mean Joppa Road?

ALJ: Let, let him answer the questions.

MR. ZIMMERMAN: I'm sorry.

ALJ: When he's trying to answer, you're cutting him off, you're talking --

MR. ZIMMERMAN: All right.

ALJ: -- so, so, the question was, does it meet A.2, is that the question?

MR. ZIMMERMAN: Yes.

ALJ: Okay. Does it meet A.2, Mr. Bishop?

MR. BISHOP: Yes, we have open spaces adjacent to Joppa Road. And as I testified before, we intentionally set our new buildings back five hundred fifty feet away from Joppa Road so we could maintain the existing feel of Joppa Road and--

MR. ZIMMERMAN: All right.

MR. BISHOP: -- for maintaining the existing home so that, that it meets that criteria.

MR. ZIMMERMAN: Okay, all right. Let's move on to one more item, which I'm actually, 260.4.B. How does it meet the cul-de-sac requirement, the cul-de-sac that you have, when the property is easily developable without a cul-de-sac?

MR. BISHOP: Well, --

MR. ROSENBLATT: Objection to the form of that question.

ALJ: Overruled. Go ahead.

MR. BISHOP: I mean, if you read further into Section B here, cul-de-sacs are deemed appropriate if you have sensitive environmental features, serious natural grade. We

have an adjacent forest buffer, hundred-year flood plain. So, it seems to me that it's appropriate to have a cul-de-sac.

MR. ZIMMERMAN: Okay, all right. That's all on the residential performance standards.

ALJ: And that was People's Counsel thirteen --

MR. ZIMMERMAN: Thirteen.

ALJ: -- I'm assuming no object --

MR. ZIMMERMAN: Yes, thank you --

ALJ: -- no objection, Mr. Rosenblatt?

MR. ROSENBLATT: No objection.

MR. ZIMMERMAN: Thank you, Judge.

ALJ: And Mr. McCann?

MR. ZIMMERMAN: Thank you, Judge.

MR. MCCANN: No, no objection.

ALJ: Thank you.

MR. ZIMMERMAN: Okay, all right. I, I want to ask, I'm moving to a different subject now. So, as a manager, not as a traffic engineer, but as a manager familiar generally with what's being proposed, well, let me ask you, you're generally aware of what's being proposed with traffic improvements, are you not?

MR. BISHOP: I am, yes.

MR. ZIMMERMAN: You're generally aware of Lenhart's concepts and their proposal --

MR. BISHOP: Yes.

MR. ZIMMERMAN: -- are you not? Yeah. So, are you familiar with the, I guess, either management or administration concept of risk assessment and risk management?

MR. BISHOP: No.

MR. ZIMMERMAN: No, okay. Well, whether or not you're familiar with that, as a manager, do you recognize that whenever there are projections, predictions, in any, virtually any field, there are risks that the assessments could be wrong, that the projections could be wrong for a variety of reasons?

MR. ROSENBLATT: Objection.

ALJ: Yeah, I, sustained.

MR. ZIMMERMAN: All right.

ALJ: That's just, first of all, it's general. Second of all, I mean, he's the manager sort of of the plan in that he manages the team to prepare the plan.

MR. ZIMMERMAN: All right.

ALJ: And I hear you're trying to get into traffic issues, which he's not a traffic engineer. They do have a traffic engineer, you know, generally asking him about predict, predictions and projections, yeah. I mean, what's --

MR. ZIMMERMAN: All right.

ALJ: -- it's you're trying to ask him?

MR. ZIMMERMAN: All right. I'm going to limit my, I'm going to shorten my questioning on this subject then. Kind of following up on a question from Mr. Wyatt earlier this

morning, what accountability any, what accountability, if any, is there, Mr. Bishop? And I'm going to stop sharing.

What, what accountability is there and who, if anyone, is accountable if, putting aside all the other issues, this development gets approved, goes in and the F intersections get much worse, or just worse, you know, where's the accountability?

MR. ROSENBLATT: Objection.

ALJ: Mr., Mr. Zimmerman, I don't know how he could ever answer that. I mean, you could ask that question of, perhaps of a politician, you know. I just, that, that's sustained.

MR. ZIMMERMAN: All right.

ALJ: (inaudible) more specific question you want to ask.

MR. ZIMMERMAN: All right. The more specific question, which, you know, you know, is the Developer willing to put up any kind of guarantee, whether financial or otherwise, that if this development were approved, the, the F intersection would improve?

MR. ROSENBLATT: Objection.

ALJ: So, so he's not a traffic engineer. He --

MR. ZIMMERMAN: It's not, it's not a traffic engineering question. It's, it's a management, it's a, it's an accountability question, you know.

ALJ: Yeah, again, just, sustained. It's just not an appropriate question to ask him. He's a landscape architect and, and so, it's just not appropriate. You might want to ask that question of, of the traffic engineer.

MR. ZIMMERMAN: All right. All right, we'll see.

ALJ: I mean, there's someone else for that.

MR. ZIMMERMAN: All right. We're getting toward the end. I have to ask you, you, correct me if I'm wrong, but did you discuss in your direct testimony about how the, you or the development team reached out to various community associations?

MR. BISHOP: That was not my testimony, no.

MR. ZIMMERMAN: Okay. Well, Judge, I don't know if a lot of people are ready for lunch, but that's, and, and I could go on, but I'm not. So, that's, that's all my questions. I want to thank Mr. Bishop for his patience.

ALJ: Okay.

MR. ZIMMERMAN: And, and thank you, Judge, for all your rulings.

ALJ: Yeah, and so, I just want to make sure you know for the record what I have in evidence for People's Counsel's Exhibits 6, 9, 13, 24, 26, 28, 30 and 31. Just so you have a list, okay? So far, unless I missed one.

MR. ZIMMERMAN: Yeah, I, I, yeah, I don't, I don't know. It, it sounds find and we'll get to the others.

ALJ: Okay. Understood. Let me ask then, Mr. Wyatt,

are you going to have questions?

MR. WYATT: I may have a few, Your Honor.

ALJ: Yeah.

MR. WYATT: I mean, I'm happy to wait until, if we're inclined to take a break. I don't know what your preference is.

ALJ: It, I don't, I don't really have a preference, but I just wanted to make sure we kind of included everyone. We need to go back to Mr. Rosenblatt as well. And so, is everyone, does everyone need a break? I think at this point, maybe they do.

MR. ROSENBLATT: Judge, I would not object to a few minutes break, but I would really like to finish this witness if we could before we take any, if and before we take any kind of lunch break.

ALJ: Okay, understood. All right. And let's just take ten minutes. I want to pause the record so everybody can just stretch their legs and then we'll come right back, ten minutes, with Mr. Wyatt.

MR. MCCANN: Okay, thank you.

ALJ: Thank you.

(PAUSE)

ALJ: All right, everyone. Back on the record after a break and we're still in the cross examination of Mr. Bishop. Mr. Wyatt, you may have had questions, you said.

MR. WYATT: Correct, yes. Thank you, Your Honor.

ALJ: Um hm.

MR. WYATT: Good afternoon, Mr. Bishop. I'm Michael Wyatt. I think you probably heard me speak before in this hearing. But my family and I live on Trelawny Court. You know where that is?

MR. BISHOP: I do.

MR. WYATT: Okay. Just have a couple of questions for you. You and Mr. Zimmerman had considerable back and forth on whether lot one should be included in calculations or not included. I just need you to confirm for us, lot one is, is not developable, correct?

MR. BISHOP: Lot one, I'm not sure if I understand in, in what context you mean.

MR. WYATT: Well, in the sense that you wish to have it included, Mr. Zimmerman doesn't wish to have it included. But the, but the bottom line is, that's an exist, that's an existing home and it's not part of the new development.

MR. BISHOP: It is. I mean, the overall tract, the house sits on one lot of records. So, we are subdividing that lot and just keeping the existing home on it (inaudible) new lot, if that makes sense.

MR. WYATT: Fair enough. Even if you were to have razed that house, there's issues that would restrict development on that land. You agree with that?

MR. BISHOP: Some of the land.

MR. WYATT: Okay. But, but the point here is, there's nothing new taking place with that structure or its surrounding curtilage or acreage.

MR. BISHOP: Correct.

MR. WYATT: So, I want to ask you a question or two about the development plan. Your Honor, if I may impose upon you to pull up Developer's Exhibit 1-B?

ALJ: All right, just give me a minute.

MR. WYATT: That's what, that's what I remember is the development plan as revised. I don't have all the exhibits. I, I'm not counsel of record.

ALJ: That's fine.

MR. WYATT: I'm at a little bit of a disadvantage.

ALJ: Sure, let me, just give me one minute and I'm going to pull that up. And this is Exhibit 1-B, which is the green line plan.

MR. WYATT: Thank you, Your Honor.

ALJ: Yep.

MR. WYATT: Mr. Bishop, and I'm going to ask you, throughout the development plan, in the front and in the back of all of the building envelopes on each lot, there's a dotted line. Can you see that? It's probably not blown up enough to see it, at least on my screen, but I know it, I know it exists. You must know it exists, you prepared this.

MR. BISHOP: Right, those dash lines, is what you mean?

MR. WYATT: Yeah, they're, those are, those dash lines that appear to, in the front and, and in the rear of each lot --

MR. BISHOP: Correct.

MR. WYATT: -- the inside of which there appears to be the building, or the building envelope is shown, right?

MR. BISHOP: That's correct.

MR. WYATT: Can you, could you please confirm for us are those the building, or is that line the building setback line for front and back --

MR. BISHOP: Correct.

MR. WYATT: -- for each lot?

MR. BISHOP: Yes, that's correct.

MR. WYATT: Okay, all right. Thank you, Your Honor. That, that's all I had on that. I just wanted that confirmation. So, Mr. Bishop, not today but last time you testified, there were some schematic drawings that you showed to everyone to be representative of the kind of homes that would be constructed on the, on the, on these lots. Do you remember that?

MR. BISHOP: I do, yes.

MR. WYATT: I think some of them actually had names as I remember. I wrote a couple of them down, one was called

a, a Tyler, is that a name that rings familiar with you?

MR. BISHOP: It does. I mean, those are in the pattern book.

MR. WYATT: Correct.

MR. BISHOP: (inaudible).

MR. WYATT: What is, when one looks at, at the Tyler or any of the other schematic drawings of the homes that are going to be constructed or would be constructed on the development if it's approved, it does not show any neighboring homes or adjoining, adjacent homes, does it?

MR. BISHOP: No, they show the individual options.

MR. WYATT: Okay, all right.

MR. BISHOP: Yes.

MR. WYATT: In other words, you're looking at one particular model, but you're not seeing it in the context of the development, correct?

MR. BISHOP: Correct, they're just elevations of the building.

MR. WYATT: Are there any drawings somewhere that would show us what a street view would look like of this proposed development if it ever gets constructed?

MR. BISHOP: No, I don't think we put any (inaudible) together showing that vantage point.

MR. WYATT: Then you were, Mr. Russell Powell testified last month that one, I don't know if it was day one

or two of the hearing, but you know who he is, right? He works for Tabco?

MR. BISHOP: I do.

MR. WYATT: And you probably work in close connection with him in this project?

MR. BISHOP: I do, yes.

MR. WYATT: All right. Now, I, I, I just remember, and you probably do too, Mr. Powell talking about all of the community outreach that's been done in connection with this proposed project. Do you remember that testimony?

MR. BISHOP: I do.

MR. WYATT: And, in fact, you've been part of some of that outreach, have you not?

MR. BISHOP: Actually, no, I can't really say that I have. That's been something that the Developer and others have taken care of. I did participate in the community input meeting.

MR. WYATT: Did you participate in any meetings, or Zoom meetings or phone calls for any of the neighborhoods adjoining the proposed development?

MR. BISHOP: It's been a few years, but I don't believe that I did.

MR. WYATT: Well, what is, what, what is your under, what is your understanding of that outreach? I mean, is it something that you've considered as part of your management of

this project?

MR. BISHOP: It's something that the Developer took upon themselves to have the relationships with the comm, adjacent communities. I know that they did have those. I was on many coordination calls with the rest of our design team and Developer, and when those happened, when they were going to happen, I provided exhibits and background information for them to share with the communities. But I was not in those meetings. Sometimes you don't want to have too many people involved in a meeting. Sometimes it gets a little out of control, so, that, that was my involvement --

MR. WYATT: Sorry. But you are, you are familiar because you need to be familiar as the manager of this proposed development, that these kinds of meetings were taking place. In fact, you were here, like all of us, when Mr. Powell talked about it, right?

MR. BISHOP: I, I'm fully aware of them and, as I mentioned, I provided background information for them to use at those meetings. And I was --

MR. WYATT: And --

MR. BISHOP: -- Yeah.

MR. WYATT: -- let me just, you know, as a follow-up, are you familiar with any adjoining neighborhood being in support of the proposed development that you're managing?

MR. BISHOP: I don't have the answer for that, no.

MR. WYATT: Would you agree with me when I, if I told you that every single adjoining neighborhood to the proposed development is in opposition to the development project you're managing?

MR. BISHOP: That's not what I understood. I think if certain things happened, I thought that some of the communities would be supportive.

MR. WYATT: Well, tell us which ones so we can anticipate that they might step forward as part of your case.

MR. BISHOP: Well, it had to do with the connection of the road. Not sure which community groups it would be.

MR. WYATT: You don't, as the manager of this project, you're not familiar with which neighborhoods would, are supporting it?

MR. BISHOP: At this point, I think support has changed both ways during the course of this project. And at this point in time, I don't know who's in support or not.

MR. WYATT: All right. So, you're, you're, you're giving us the impression that there may be neighborhoods out there, whose identities of which you are not presently aware, who will step forward and support this project?

MR. ROSENBLATT: Objection.

ALJ: Mr. Rosenblatt?

MR. ROSENBLATT: Multiple reasons. One is relevance. As, as an attorney, Mr. Wyatt knows that case law states that

these development plans are not popularity contests. That's an exact case law quote. And second of all, this witness has said he has not been at any of these meetings and I don't know why he's the one being questioned about stuff he didn't participate in and doesn't know.

ALJ: Yeah, understood. Well, he, he, he did say he does not know who's, who is supporting the Developer's position at this point, but the question is still fair. So, overruled, go ahead, Mr. Wyatt.

MR. WYATT: Mr. Bishop, do you need me to repeat the question?

MR. BISHOP: Would you, please?

MR. WYATT: All right. So, your, your, based on your testimony today, you presently are unaware of the identity or identities of any of the adjoining communities that might step forward as part of this case in support of the proposed development that you're, that you're in charge of managing?

MR. BISHOP: That is correct.

MR. WYATT: Do you, today, do you know of any, the identities of any communities that are in support of the proposed development that you're in charge of managing?

MR. BISHOP: I am not aware --

MR. ROSENBLATT: Objection.

ALJ: Okay. Overruled. You've already answered, he's not aware of any.

MR. WYATT: Thank you. I, thank you, Mr. Bishop. I, I have no further questions.

ALJ: All right. Thank you, Mr. Wyatt. Mr. Sachse, did you have any questions? You're muted. You can unmute yourself.

MR. SACHSE: Yes, if I'm able, I'd like to ask a few questions.

ALJ: Absolutely, go ahead. And then, just tell us where you live. I know you're an attorney but, what, what's your house?

MR. SACHSE: I live on Sedgefield Court, 9 Sedgefield Court, which is within the Seminary Ridge community.

ALJ: Okay, sure. Go right ahead.

MR. SACHSE: Mr. Bishop, and I'm, I'm sorry if I'm not so familiar with development and development plans. But from what I understand, and I think Mr. Wyatt just cleared this up for me, lot one is the existing large house that, that fronts on Joppa Road, is that right?

MR. BISHOP: That's correct.

MR. SACHSE: And the other sixty lots are the ones that will be placed five hundred and fifty feet, I think, is, is how far back you said from Joppa Road.

MR. BISHOP: That's correct.

MR. SACHSE: Towards, towards Seminary. They will be put in, those sixty lots will be put in that area, is that

correct?

MR. BISHOP: That's correct.

MR. SACHSE: And those sixty lots, and, and I'm sure it's been provided, but I don't know, they'll be on how many acres?

MR. BISHOP: That, I don't have that number for you. We do our developments based on the overall tract --

MR. SACHSE: And I understand that --

MR. BISHOP: -- yeah.

MR. SACHSE: -- but in listening, I, it seems to me that if I were coming to, I know you're not selling these lots, but if I was coming in to buy one, I'm going to be buying on a quarter acre lot?

MR. BISHOP: Roughly.

MR. SACHSE: I can't buy, I can't buy lot one, right? That's not --

MR. BISHOP: Well, lot one, I, I'd have to ask the Developer. I think lot one will be for sale.

MR. SACHSE: Lot one may be for sale, but if I'm coming in to buy one of the properties that is being developed --

MR. BISHOP: Correct.

MR. SACHSE: -- it's going to be a quarter acre lot, give or take a little bit?

MR. BISHOP: Yes, some of them are close to half an

acre, some of them are, are a quarter acre.

MR. SACHSE: But they average out, I mean, I, just listening to it, it, it's pretty, it's a little bit under a quarter of an acre that they'll average out to.

MR. BISHOP: Generally.

MR. SACHSE: And those lots are all up, I guess that would be the, I don't want to get my directions wrong, but the northern sector, section of the development up towards Seminary Avenue?

MR. BISHOP: Correct.

MR. SACHSE: And yet, there's a gate being placed so that there's no pass through out to Seminary Avenue, is that correct?

MR. BISHOP: That's our proposal, yes.

MR. SACHSE: Right. And so, all traffic from the new development, will have to go down and enter to Joppa Road?

MR. BISHOP: Correct.

MR. SACHSE: I mean, they could, if they, if, if the people bought in there and wanted to go out to Seminary Avenue, which would be very close to them, they'd actually have to drive all the way down to Joppa Road, either turn right and go over to a failing intersection, Falls Road, and then go right up to Seminary, or go left and come, probably, nobody knows, but up Tallyho Road, which has, I believe, seventy-seven of the homes in Heatherfield and Seminary Ridge on it? I may have

made that too long. If you want to leave, you, you, I'll let you answer. Go ahead.

MR. BISHOP: Well, just, I take issue with the failing intersection, because we are proposing improvements to the Falls and Joppa corridor.

MR. SACHSE: And, and, --

MR. BISHOP: You come out and you go right towards Falls and Joppa or you would go left on Joppa Road and wherever you're going from there, I don't know.

MR. SACHSE: Well, what I was saying is, if you wanted to get to Seminary Avenue and you are, you bought in this new development, instead of going straight out to Seminary, that's being blocked off by a gate, correct?

MR. BISHOP: Correct.

MR. SACHSE: And most of the houses are actually closer to Seminary from where they are than they are to Joppa, because there's, they're being set back five hundred and fifty feet for the first house.

MR. BISHOP: Okay.

MR. SACHSE: Does that, that sounds correct, doesn't it?

MR. BISHOP: The location does.

MR. SACHSE: Okay. So, I buy a house in the new development and I want to go to Seminary, my only choice is to go all the way down to Joppa, pass by the existing large lot

one that has a big house on it, hit Joppa and then either go right to Falls and I understand, right now it's a failing intersection and I, I'm not trying to get on you on that, because I know you're not a traffic expert.

But you can either go right to Falls, take a right on Falls and go up to, through Greenspring Valley, up to Seminary, which are all not very good intersections. And then, take the right on Seminary. That would be one option.

Or your second option is to go out to Joppa from your new home, go down to Joppa and take a left. And if you need to get to Seminary, the first road you run into is Tallyho Road, are you aware of that?

MR. BISHOP: Correct.

MR. SACHSE: The next road would be White Manor, but that kind of winds you around. You could go through White Manor, or you could go over the bridge and go out to Thornton, right? Which is a, another mile away. So, a lot of the traffic would be directed --

ALJ: What was the answer to, what was the answer to that last question where you said he's going over to Thornton and over the bridge, Mr. Bishop, what did you say?

MR. BISHOP: That's correct.

ALJ: Okay.

MR. BISHOP: Those are all options for connecting to Seminary.

MR. SACHSE: Seminary.

ALJ: I just wanted to make sure he responded for the record. Okay. Go ahead, Mr. Sachse.

MR. SACHSE: Yeah, I'm, I'm sorry. So, going right and taking Falls or going left and taking Tallyho would be the two quickest ways to get directly out to Seminary from where the development is being located?

MR. ROSENBLATT: Objection.

ALJ: Mr. Rosenblatt?

MR. ROSENBLATT: There's been no establishment that those are the quickest ways.

ALJ: Well, that's what the question was, and Mr. Bishop said it was. All right.

MR. ROSENBLATT: I didn't think, I didn't think he, he could or he --

ALJ: He just said, he just said yes, it was. I mean, yeah, that would be the, the quickest way to go if you're trying to go to Seminary, you make a right on Joppa and up Falls and then, otherwise you'd go left and go up to Tallyho to Seminary.

MR. SACHSE: All right.

MR. BISHOP: Can I clear up for a minute?

ALJ: He did --

MR. BISHOP: I think I was saying yes to there's three different options to connect from Joppa up to Seminary,

not indicating which one was the fastest. Let me make that clear.

ALJ: Okay. So, there are three routes, but you didn't say it was the fastest.

MR. BISHOP: Correct.

ALJ: Okay, all right. Did you have another question, Mr. Sachse?

MR. SACHSE: Then let me rephrase the question. If you're coming out of the new development and making a left on Joppa Road, the first road that connect to Seminary is Tallyho.

MR. BISHOP: Correct.

MR. SACHSE: Second one is White Manor but that doesn't, doesn't go directly to Seminary, correct?

MR. BISHOP: Correct.

MR. SACHSE: And then you can go out, you can go over the bridge over the beltway and go out to Thornton and that does connect to Seminary. But that's another mile or so away.

MR. BISHOP: That's correct.

MR. SACHSE: So, whether, whether it's the quickest, the easiest, whatever, the first way for you to get from Joppa to Seminary, if you're taking a left out of the neighborhood, is to travel along Tallyho Road.

MR. BISHOP: Yes.

MR. SACHSE: Okay and those would be the only choices as long as there's not a pass through through Mays Chapel for

anyone in the new development to take?

MR. BISHOP: Generally, yes.

MR. SACHSE: Okay. Thank you. That's, that's all the questions I have.

ALJ: Thank you, Mr. Sachse. All right. Coming back to you, Mr. Rosenblatt. Any re-direct?

MR. ROSENBLATT: Yes, please, Your Honor. Could I have permission to share? Okay. Mr. Bishop, it's nice to talk to you. It's been a month.

MR. BISHOP: Good afternoon.

MR. ROSENBLATT: I'm going to show you Developer's Exhibit 9, scroll down to page, let's start with page three of Developer's Exhibit 9, where you identified townhomes within the T-3 transect. Do you, do you see that page of the exhibit?

MR. BISHOP: I do, yes.

MR. ROSENBLATT: And you were asked by Mr. Zimmerman, you were asked a series of questions and shown some old subdivision plats showing that the properties in your Exhibit 9 were developed before master plan 2020 was in place. Do you recall that?

MR. BISHOP: I do, yes.

MR. ROSENBLATT: Okay and, to your knowledge, was the transect system, did it exist before master plan 2020 or did it come into, basically, come into existence during master plan 2020?

MR. BISHOP: My understanding is it came into existence in master plan 2020.

MR. ROSENBLATT: Okay. So, these, these existing subdivisions did, did Baltimore County, in establishing master plan 2020 and the transect map, did Baltimore County place these transects on the existing subdivisions for the first time as part of master plan 2020?

MR. BISHOP: Yes.

MR. ROSENBLATT: And if the County agencies that are responsible for developing master plan 2020 thought that these townhomes you found, or some of the other smaller lots that you found, were a conflict with transect three, T-3, could they have placed other transects on these properties when developing master plan 2020?

MR. MCCANN: Objection.

MR. ZIMMERMAN: Object, objection.

ALJ: There's two objections. Go ahead. Mr. McCann, what's your objection?

MR. MCCANN: It's just speculation, Your Honor.

ALJ: Yeah, right. Yeah, I agree, it is. And Mr. Zimmerman, same?

MR. ZIMMERMAN: Yeah, it calls for a legal conclusion and, yeah, speculative, yeah.

ALJ: Right, whether, what, what the County would do or not do, again, that's a point you could argue, but not a

question for Mr. Bishop to decide what the Department of Planning would have done or what the County agencies, in fact, would have done. So, sustained.

MR. ROSENBLATT: Okay. I'll, I'll rephrase the question. Did Baltimore County place the tre, the T-3 transect on the properties you've identified here showing townhomes and some smaller lots, as part of master plan 2020?

MR. ZIMMERMAN: Objection. Asked and answered.

ALJ: He, he did answer, he actually did answer that. He did say, you asked that question and he said T-3 was placed on the existing subdivisions for the first time in master plan 2020.

MR. ROSENBLATT: Okay.

MR. ZIMMERMAN: Yeah.

ALJ: He said that. Yep, okay.

MR. ZIMMERMAN: Yeah, right.

ALJ: Sustained. Understood, Mr. Zimmerman.

MR. ROSENBLATT: Mr. Bishop, you've, you've testified at length about the development plan. Does, do all of the lots in the plan comply with any applicable book and area regulations in the County Code and, and any other regulations?

MR. ZIMMERMAN: Objection. This is rep, repetition, I mean, he says (inaudible) --

MR. ROSENBLATT: You asked the same question forty-five times in a row, I'm not allowed to rehabilitate?

ALJ: Okay. Mr., so, Mr. Zimmerman's questions really went to his issue of whether or not there's a master plan conflict. That's, I think, what he was getting to with all of that. So, but you did ask him that. In fact, he did say, in fact, he said that the development complies with all the regulations and, and recommended that it should be approved, right? I mean, that, you asked him that question, I think it was the last one. So, sustained. He did ask that, he answered that, excuse me.

MR. ROSENBLATT: I'm going to re-show you Developer's Exhibit 4. Mr. Bishop, you were asked some questions about the Torch Hill project that is identified at, in white, and sort of the upper righthand corner of Developer's Exhibit 4?

MR. BISHOP: That's correct, yes.

MR. ROSENBLATT: So, assume, for the purpose of this questioning, assume the lots in Torch Hill are the biggest lots shown on, on this exhibit. In other words, they're in the brown and the tan area, that shows the, the highest square footage of any of the lots in the surrounding area, okay?

MR. BISHOP: Okay.

MR. ROSENBLATT: Does that change your opinion as to analyzing the master plan compliance for Greenspring Manor?

MR. BISHOP: None whatsoever.

MR. ROSENBLATT: Okay. Do you know if there's a restrictive covenant agreement limiting density on the Torch

Hill property?

MR. ZIMMERMAN: Objection.

ALJ: What's your objection, Mr. Zimmerman?

MR. ZIMMERMAN: Yeah, I mean, whether there's a restrictive covenant or not is irrelevant. The, the thirty, the density, you know, for Torch Hill is what it is, it's thirty-two lots on forty-two acres, you know.

ALJ: I'm not sure either what the relevance would be, Mr., Mr. Rosenblatt, whether he knows there's a restrictive covenant or not.

MR. ROSENBLATT: I would like to know how Mr. Zimmerman, in his statutory role as People's Counsel, gets to make these certain objections. It, it is beyond me how he has this obligation under the charter to represent the general public and is getting to make these objections. How --

ALJ: Oh, well, he's, his, you know, his issue is is there a master plan conflict. And so, he, that's, that's why he was asking questions about Torch Hill so, I mean, he's, he's, he can ask questions and, and ask, you know, raise objections to some of the questions in, in his role as, you know, in, in terms of what his job is. So, yeah, no, he's, he's able to ask those questions. So, so, yeah, restrictive covenant, though, why is that relevant to this?

MR. ROSENBLATT: I'll move on.

ALJ: Okay, okay, thanks.

MR. ROSENBLATT: We have to go back to the last hearing, Mr. Bishop, but do you remember being asked questions by Mr. McCann about the, the concept plan? You were shown the concept plan?

MR. BISHOP: Yes.

MR. ROSENBLATT: Okay. Can, can you explain the difference between the level of detail that was shown on the concept plan in this case and what studies, in particular with respect to the, to the buffer that was shown on the concept plan and how that relates to the information that's now shown on the development plan.

MR. BISHOP: I think --

MR. MCCANN: Objection. Your Honor, this is beyond the scope of, of Mr. Wyatt's cross and Mr. Zimmerman's cross. I don't want to belabor --

ALJ: This is, this is re-direct of all of it. Remember, you were here last time. You crossed Mr. Bishop and then Mr. Zimmerman didn't have time to put his, to do his cross. And so, this is a continuation and so this is re-direct of your cross. He just --

MR. MCCANN: Oh, I thought this was Adam's second re-direct. He's, he's already re-directed, I thought he already re-directed Mr. Bishop in response to my questions.

MR. ROSENBLATT: No, I didn't.

ALJ: What's that?

MR. ROSENBLATT: I did not.

MR. MCCANN: Okay, I apologize.

ALJ: I didn't think so.

MR. MCCANN: I apologized.

ALJ: Are you, I mean, if you're correct, Mr. McCann, then I'm not remembering. I checked my notes just to make sure. It was, you ended and, and Mr. Zimmerman couldn't do his.

MR. MCCANN: Got it.

ALJ: Yeah, okay, good.

MR. MCCANN: I'm sorry, I'm sorry.

ALJ: So, so, just for the record, there's been no re-direct yet, it's today. So, the question was, Mr. Rosenblatt, it was a question that Mr. McCann had asked about the concept plan comments and about how it is different from the development plan. Is that what you, is that what you asked? Repeat your question, Mr., Mr. Rosenblatt.

MR. ROSENBLATT: Yes. You, you were shown the concept plan and asked questions in particular about the buffer shown on the concept plan. So, my question is can you explain what work was done between concept plan and development plan and how the information contained on the development plan relates back to, or if it does?

MR. BISHOP: Sure. So, the concept plan is just that. It's a concept. It has a much lower threshold or

requirement for detail. And, in fact, the checklist says, you know, it's recommended that you have the wetland delineated and the forest buffer established but not required.

So, we did our first assessment of all the buffers and our layout and our grading and all those other things that are required. And then, as we move past concept plan, we add a whole nother level of detail based on the use of the checklist items from the County and we establish a more defined set of plans, which would include a more defined buffer, more defined flood plain, more defined grading, more defined horizontal layout of the plan.

MR. ROSENBLATT: Okay and just one more question and, again, I'm, I got to go back a month or however many weeks ago, but I just wanted to clarify a, a point that you testified and were asked questions about regarding the boundary of the flood plain before and after the project is constructed and my, my one question is, I'm zooming in on the entrance road on Developer's Exhibit 1-B.

And above, plan up, above the entrance road is a stormwater management facility and HOA private open space area. My question is, if the project is constructed, will that stormwater management area C and private HOA space, will that be located in the boundaries of the flood plain?

MR. BISHOP: It will not.

MR. ROSENBLATT: Okay. Thank you, Mr. Bishop. I

don't think I have any further questions.

MR. BISHOP: Thank you.

ALJ: Okay. It looks like we're finished with Mr. Bishop. And Mr. Rosenblatt, I would imagine you have other witnesses?

MR. ROSENBLATT: Yes, we do. Would, would love to keep moving. We have, we, we have one long witness and there's a third witness that's probably in between, but towards the shorter side.

ALJ: Okay.

MR. ROSENBLATT: So, --

ALJ: So, I, we just took a ten-minute break. I think it'd probably be a good idea just to take a lunch break for everyone. Does anyone want to do that or just want to keep going. No?

MR. MCCANN: I, I would prefer a lunch break if most --

ALJ: Yeah.

MR. MCCANN: -- most people are agreeable to that.

ALJ: I, I would think so.

MR. ZIMMERMAN: Madam Chair, I wonder, just to take ten seconds, if we could admit a couple of the other exhibits that I shared earlier, just to, as housekeeping.

ALJ: So, I went through those, the ones that you had put in --

MR. ZIMMERMAN: There were a few others, actually.

ALJ: Okay, all right. Well, let's, all right. So, let me, let's, let's do that then before we just take a lunch break. Which ones, Mr. Zimmerman?

MR. ZIMMERMAN: Number seven were the CIM minutes.

ALJ: Okay. Any objection to the community input meeting minutes?

MR. ROSENBLATT: No objection.

ALJ: Any objection?

MR. MCCANN: No, no objection.

MR. ZIMMERMAN: Number eight was the master plan excerpts, which I think are similar to one of the Developer's exhibits actually.

MR. ROSENBLATT: No objection.

MR. MCCANN: No objection.

ALJ: Thank you.

MR. ZIMMERMAN: I did, I don't know if I shared it was number eighteen is the rec, the record of Davis Farms.

MR. ROSENBLATT: I object to that being an exhibit in this case. He can, he can argue, but it should not be an exhibit in this case.

ALJ: It, you know, the, the, this is, I mean, something that's, I guess, is tradition. I, I never like having law as exhibits, but I've gotten used to it over the years that everybody likes to put in their exhibits, and

traditionally, we allow it. I mean, if, just so that it can be clear, it's been marked. I don't have any problem putting in Administrative Judge's decision in evidence for, for eighteen. Mr. McCann, you don't have any objection, do you?

MR. MCCANN: No, I do not, thank you.

ALJ: Okay.

MR. ZIMMERMAN: I mean, I could have waited till the post-hearing memo but it's giving everybody, you know, notice, so anyway. I think number sixteen I, I referred to the, some of those neighborhood sub, subdivisions, number sixteen.

ALJ: You did, you did talk about those. Any objection to sixteen? These are the plats that referenced the exhibit that's, exhibit number nine, that Mr. Bishop had created, the, the T-3 transect. Any objection to sixteen?

MR. ROSENBLATT: No, I thought that was already in.

ALJ: Okay.

MR. ZIMMERMAN: And while it was objected to maybe, I did show number twenty-three was the planning comments to Torch Hill.

MR. ROSENBLATT: Again, objection.

ALJ: Yeah, so, they're public record. So, you know, from that perspective, I don't think they, they can come in. Certainly if, you know, you can argue that it, it's not relevant, you know, in the sense of that, it doesn't apply to this, to this development, but it's still a public record. So,

it can come in because it's a public record. I mean, it's a County record. So, twenty-three comes in.

MR. ZIMMERMAN: It's just to show the number of lots and, and the size of the property, basically.

ALJ: All right. Well, again, no editorializing. You can make argument --

MR. ZIMMERMAN: Okay.

ALJ: All right. What else?

MR. ZIMMERMAN: I think that's, I think that covers it. Thank you.

ALJ: Okay, all right. So, any preference on time? Half hour, twenty minutes? Half hour? I know whenever I say that you always say forty-five minutes, but.

MR. ROSENBLATT: Twenty to thirty is fine with me.

MR. MCCANN: Yeah, a half hour is good, if that's okay.

ALJ: Half hour. All right. We'll do thirty minutes, we'll come back at 1:45.

MR. MCCANN: Okay, thank you.

ALJ: Thanks.

(PAUSE)

ALJ: We are back on the record after a lunch break. And the Developer had another witness. Mr. Rosenblatt?

MR. ROSENBLATT: Yes. Next will be John Canoles and actually, Mr. Mudd will be asking the questions.

ALJ: All right. Mr. Canoles, you were here a minute ago.

MR. MUDD: Can you hear me, Mr. Canoles?

ALJ: His camera --

MR. CANOLES: I can, can you see me?

ALJ: No, just turn your camera on. Hit the --

MR. CANOLES: I gotcha.

ALJ: There you are. Okay. Raise your right hand, please. Do you swear and affirm under penalties of perjury, that the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. CANOLES: I do.

ALJ: All right and Mr. Canoles has been admitted as an expert many times, many cases. Mr. Mudd, what are you going to offer him, and what areas of expertise?

MR. MUDD: I'm going to offer him as an expert in environmental consultant with particular knowledge and experience with County and State environmental regulations related to the specimen trees and specimen tree variances.

ALJ: County and State regulations with regard to specimen trees?

MR. MUDD: Yes, (inaudible).

ALJ: Oh, and special variance, wait a minute, sorry. Specimen trees and special variances. Okay. So, any objection, Mr. McCann, to having, accepting Mr. Canoles as an

expert?

MR. MCCANN: No, no, Your Honor.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No, Your Honor. That's probably not my issue, specimen trees anyway, so.

ALJ: Oh, that's right. So, you probably won't have questions.

MR. ZIMMERMAN: Probably not.

ALJ: Right, I would think not. All right. Okay. He will be admitted as an expert environmental consultant with specialty knowledge in the County and State regulations in regard to specimen trees and special variances. Did I say that correctly, Mr. Mudd?

MR. MUDD: You did. Thank you very much.

ALJ: Okay, thank you. And he has a, a resume probably, right?

MR. MUDD: He does. May, may I share? It's Exhibit 10.

ALJ: Okay. I was just going to grab that, yep. Let me just see. Here you are.

MR. MUDD: Thank you. Do you see that, Mr. Canoles?

MR. CANOLES: Yes, I can, thank you.

MR. MUDD: Okay. Is that a copy, a copy of your c.v.?

MR. CANOLES: It is.

MR. MUDD: Okay. I know that, that you've been accepted as an expert, but just for purposes of the record, would you mind just giving a brief explanation to everyone who's listening about your experience in the areas that I, that I proffered you as an expert in?

MR. CANOLES: Sure. I am a principal at Eco Science Professionals. I, were, our mailing address is P.O. Box 5006, Glen Arm, Maryland. I'm an environmental consultant. We've been in business for thirty years. I've had additional experience before that. In relation to the specimen tree issues, I'm a Maryland qualified forest conservation, Maryland Department of Natural Resources qualified professional to provide Forest Conservation Act services.

MR. MUDD: Okay and you've worked on specimen tree variances in the past?

MR. CANOLES: Yes, many.

MR. MUDD: How many would you say, if you had to guess?

MR. CANOLES: Hundreds, probably, at least.

MR. MUDD: Okay and can you describe what you were asked to, to do in this case?

MR. CANOLES: Yeah, we, we performed the original assessment of all the natural resources on the property, wetland delineation, forest land delineation and including the specimen tree flagging and, and prepare the, the finding

reports to support those, the forest land delineation, etcetera.

MR. MUDD: Okay and does this proposed development propose any impacts to any specimen trees?

MR. CANOLES: There is impacts proposed to one specimen tree, yes.

MR. MUDD: Okay. I'm going to share with you, again, what's been marked as, and previously admitted, as Exhibit 1-B. Do you recognize this document?

MR. CANOLES: Yes, sir.

MR. MUDD: This is the development plan for the property, is that correct?

MR. CANOLES: Yep.

MR. MUDD: Okay. Can you just orient me and the Judge and you can, you can tell me where to move to to just show where the single specimen tree is that will be impacted.

MR. CANOLES: Well, it's not on the screen now. Bottom left corner, you keep going up now, down in the far left corner you see a red TPR, excuse me, --

MR. MUDD: Okay. Here?

MR. CANOLES: Yeah, --

MR. MUDD: I'll, I'll zoom in. And just for, for benefit, I mean, I know that we're looking at video here but can you just describe in your words where this tree is located?

MR. CANOLES: Oh, yeah, sure. On the, from the, on

the site prospective it's adjacent to Joppa Road in, I guess, the southwestern corner of the site, in the, in the portion of the property that's in front of the existing home.

MR. MUDD: So, bear, so you said southwestern, but bear, bear in mind the orientation of this plan.

MR. CANOLES: Oh.

MR. MUDD: It's all right.

MR. CANOLES: That's all right. Is it, this plan is, is, it's not southwest?

MR. MUDD: Well, I think, I'll show you the north arrow, let me back out.

MR. CANOLES: If Falls Road is running north, then it's southwest, but --

MR. MUDD: Right, so, so do you know what road is here on the lefthand side of this plan?

MR. CANOLES: Yeah, that's Joppa Road.

MR. MUDD: Okay and the --

MR. CANOLES: All right.

MR. MUDD: Yep, Joppa, Joppa runs and meets Falls. Do you know where that, where that occurs?

MR. CANOLES: Yes, --

MR. MUDD: (inaudible) --

MR. CANOLES: -- and that would be up at the top of this site, yep.

MR. MUDD: Okay. Sorry, it's not meant to be a

difficult question but I (inaudible).

MR. CANOLES: It's kind of in the southern corner.

MR. MUDD: Got it.

MR. CANOLES: Based on that north arrow.

MR. MUDD: Okay. So, the north --

MR. CANOLES: It's in the, it's in the, it's in the right of way of, of Joppa Road.

MR. MUDD: Okay, all right. And I'm going to zoom back in. So, we'll just, just pinpoint it again on this, on this plan.

MR. CANOLES: Yep. Sorry about that.

MR. MUDD: That's okay. Keep going down. And you said it's marked with TBR, is that right?

MR. CANOLES: Yes, on that plan, yes.

MR. MUDD: Sorry, it's going a little slowly. There we go. Do you see it in the screen now?

MR. CANOLES: Yep.

MR. MUDD: Okay and what, why, why is that being proposed for removal?

MR. CANOLES: Well, that, and you can see a little closer, it says ST 12, just to the left where the TBR is, as, is written in that is, indicates that it is specimen tree twelve on the FSD. And that tree is a Norway spruce and it's being removed to accommodate the road widening of Joppa Road.

MR. MUDD: Okay and will, what are these lines that

are next to, to the tree?

MR. CANOLES: Well, the grading lines, is that what you're referring to?

MR. MUDD: Yes, and the, the, the dark dashed lines here as well.

MR. CANOLES: Well, there's property line and a road right of way. The, the road right of way extends into what would be considered the subject property. And that includes where the tree is located.

MR. MUDD: Okay. So, so, are you saying that after, if the right of way is dedicated, this tree would be in that right of way?

MR. CANOLES: Correct.

MR. MUDD: Okay, all right. I'm going to show you what's marked as Petitioner's Exhibit 11. Do you recognize that?

MR. CANOLES: Yes, that is the specimen tree in question. And you can see how the, on the righthand side of the photo, you can kind of discern some powerlines. And you can see how the tree has been trimmed by BG&E to accommodate those powerlines.

MR. MUDD: Okay, all right. So, let's, I'm going to, I'm going to stop sharing again for a second. Let's talk a little bit more about the site. You said this is one specimen to be removed. How many specimen trees exist on the site in

total?

MR. CANOLES: Well, currently, there's only twenty-six. When we did the original FSD for the site, there were twenty-seven. But between when we did our field work and when Mike Kolus, the, the reviewer for Environmental Protection, went out to the site to review it, one of the trees had been taken out by a storm. So, there is, are now currently twenty-six specimen trees.

MR. MUDD: Okay and is there any forest clearing proposed with this development?

MR. CANOLES: There's no forest clearing proposed, and no other specimen tree removal proposed.

MR. MUDD: Okay and are you familiar with Baltimore County Code, Section 36-116 pertaining to special variances?

MR. CANOLES: Yes, I am.

MR. MUDD: How have you become familiar with that?

MR. CANOLES: Through preparing specimen tree variances and forest conservation variances for other purposes.

MR. MUDD: Okay and did you analyze that section for purposes of completing a special variance application here?

MR. CANOLES: Yes, sir.

MR. MUDD: Okay and I'd like to, I'm going to share again. Show you what's been marked as ex, I'll, I'll move Exhibits 10 and 11 into evidence as well.

ALJ: Any objection, Mr. McCann?

MR. MCCANN: No objection, thank you.

ALJ: All right. Mr. Zimmerman, I'm sure you have no objection, right, because this is not your area?

MR. ZIMMERMAN: No objection probably to any of these exhibits.

ALJ: Okay, all right.

MR. MUDD: Okay and I'm going to show you what's now been marked as Exhibit 12. Do you recognize this document, Mr. Canoles?

MR. CANOLES: Yes, that's the, the forest conservation variance application that was submitted for the project.

MR. MUDD: And who did you submit it to?

MR. CANOLES: To Baltimore County, Department of Environmental Protection.

MR. MUDD: Okay. I'm going to stop sharing again. I'll move that into, into evidence as well, Exhibit 12.

ALJ: Mr. McCann?

MR. MCCANN: No objection.

MR. MUDD: Thank you. Okay. So, in that application, did, did you, did, did you analyze the special variance requests in accordance with Section 33-116?

MR. CANOLES: Yes.

MR. MUDD: Okay. So, let's go through that standard here now in your testimony as well. There, you agree that, are

there, well, let's talk first about Section 33-116-D. There are three prongs in that section, do you agree with me on that?

MR. CANOLES: Yes, there are three standards that are offered to be met, yes.

MR. MUDD: Okay and, and must the Developer, must the Applicant, satisfy all three in that section?

MR. CANOLES: No. In this section, you're only required to meet one of those.

MR. MUDD: Okay. So, let's go through each of the three anyway. So, Section D-1, must demonstrate that the land in question cannot yield a reasonable return if the requirement from which this special variance is requested is imposed and will deprive the Applicant of all beneficial use of the Applicant's property. Does this request to remove this single specimen tree satisfy that standard?

MR. CANOLES: Well, we, we didn't, we didn't make the application on the basis of that standard, because the deprivation of all beneficial uses is a very high standard. And we didn't feel that we could meet that.

Although, because the, the tree is within the road right of way and because any road improvements that would be required to accommodate any new development on the site would require that the tree be removed, it's possible that you could argue that it does meet that standard. But that wasn't part of our application.

MR. MUDD: Okay. How about Subsection D-2, you must demonstrate that the plight of the Applicant is due to unique circumstances and not the general conditions in the neighborhood? Do we meet that standard?

MR. CANOLES: We do. We argued in the variance application and the County agreed that the, the, the general conditions of the, of the neighborhood had no bearing or, or no input into, as to why this specimen tree was being removed. It's simply, they agreed that because the specimen tree is within the road right of way, that was the factor that was unique to this project and unrelated to the, the surrounding property.

MR. MUDD: Okay. Subsection D-3, would demonstrate that the special variance request will not alter the essential character of the neighborhood. Did we meet that standard?

MR. CANOLES: Yes, we argued again that we met that standard and the County agreed. In fact, you know, our position was the, the current situation on the subject property is not in keeping with the surrounding properties because they are primarily developed for residential uses. So, allowing them to remove the one specimen tree is not going to adversely or significantly impact the condition of the surrounding neighborhood.

MR. MUDD: Okay. Next section that we, that we must satisfy is 33-6-116, I think it's D-3. You know that section?

MR. CANOLES: Yes.

MR. MUDD: Okay and there are three prongs in his section as well, correct?

MR. CANOLES: Yes, there are.

MR. MUDD: And are we obligated to satisfy all three in this section?

MR. CANOLES: We are.

MR. MUDD: Okay and, so let's go through those. I'm sorry, I think it's 33, let, let me get the section right, 33-6-116-E, sorry, not three. So, let's talk about E-1. That the, the granting of the special variance will not adversely affect water quality. How does this request satisfy that standard?

MR. CANOLES: Well, in this case, there's a couple factors that we considered. Typically, while some trees and specimen trees do provide some water quality benefit, the removal of this specific tree has a, a limited function, partly because a lot of its critical root zone is impacted by the existing road, paving for Joppa Road. In which case, it reduces its, any function that it, its root zone would have relative to providing water quality benefit.

Secondly, the location of the tree, it's not within a wetland or it's, or, and it's not adjacent to a stream or on a stream bank where it's providing stability to the stream bank, so its removal won't affect negatively those resources.

Thirdly, we also considered the fact that as part of the overall development of the property, we will be providing five acres of reforestation on land that is currently, or has historically been in agricultural use. And converting from an agricultural use to a forest situation will certainly improve water quality.

So, in considering all those things, we felt that we met this standard.

MR. MUDD: Okay. How about Section E-2, that the special variance request does not arise from a condition or circumstance which is the result of actions taken by the Applicant. Did we satisfy that standard?

MR. CANOLES: We do. This standard really is created to ensure that someone that illegally removes a specimen tree prior to getting, or applying for a variance, can't be issued a variance through, in that process because the tree is still in place and we haven't done anything to cause its removal. We meet that standard.

I would note that because the tree is within the right of way of the road, and within the BG&E powerline, you know, BG&E could come out there today and remove that tree with, without any authority needed from the County.

MR. MUDD: Okay and then lastly, E-3, that the special variances granted would be consistent with the spirit and intent of this title. How do we satisfy that standard?

MR. CANOLES: Well, the proposed project, the goal of the Forest Conservation Act is not to stop development, but to guide it, to be sensitive to forest resources primarily, because the proposed development will be allowed to retain all the existing forest on the site, we feel that the project as, in general, meets the most important part of the Forest Conservation Act.

Removing this single tree from within the road right of way where it, it is already impacted by the road, impacted by the powerlines, it's certainly not, or it certainly is consistent with the, the goals of the Forest Conservation Act.

MR. MUDD: Okay and I think you mentioned that the County agreed throughout this process. I'm going to share one more time what's been marked as Developer's Exhibit 13. Do you recognize this document?

MR. CANOLES: Yes, that's the variance approval letter.

MR. MUDD: Okay and this is, I guess, four pages, including a signature by Mr. Powell, is that right?

MR. CANOLES: Yes, yes.

MR. MUDD: Okay and so, what, what, I guess in the shortest terms, what is this letter convey, what does it say?

MR. CANOLES: Well, the letter basically goes through what we just went through in the process and, and presents the justification from the County standpoint as to how all these

standards have been met and approves the removal of the specimen tree, the variance request.

MR. MUDD: Okay. With that, Judge Murphy, I have no further questions of this witness.

ALJ: All right. Any objection to thirteen, Mr. McCann?

MR. MCCANN: No objection.

ALJ: This is also County exhibit number six, just for the record. So, we have coordinating exhibit numbers. Mr. McCann, any questions?

MR. MCCANN: I do, I do have, not a whole lot, but some questions. Could I share, Your Honor, before I move on? Good afternoon, Mr. Canoles, how are you?

MR. CANOLES: Fine, fine, good afternoon.

MR. MCCANN: Thank you. Thank you, Judge. Okay. So, you've identified the location of the tree. Can you see my copy of Developer's Exhibit 1-B of the green line development plan, sir?

MR. CANOLES: Yes, I can.

MR. MCCANN: Okay and you've indicated that the tree needs to be removed because, to accommodate an ex, I guess, a decel, deceleration lane, correct?

MR. CANOLES: Well, the, the proposed grading for the road improvements will impact more than thirty percent of its critical root zone, so the County consider, considers it to be,

to have to be removed, yes.

MR. MCCANN: No, I understand that. But what are the proposed road improvements that we're talking about specifically, do you know?

MR. CANOLES: My understanding is that there are, that it is for either an accel, well, I guess a decel lane on that side of the road. And, and grading. I'm not exactly sure where the paving and the grading are, but, exactly, but it, it's within the critical root zone of the tree.

MR. MCCANN: Okay. Is that the extent of your knowledge as to what the road improvements are?

MR. CANOLES: Yes.

MR. MCCANN: Okay. So, in other words, based on the understanding that you just expressed, for cars traveling towards the intersection of Falls Road and, and Joppa, towards that traffic light, traveling in this direction, the County is requiring a deceleration lane, to widen the road to accommodate a deceleration lane for cars entering into the proposed development, is that your understanding?

MR. MUDD: Objection. I mean, I think he's asked and answered the extent of his understanding, what this is about.

ALJ: Understood. Over, overruled. Go ahead.

MR. CANOLES: My understanding is that there is road widening along the side of Joppa Road. The, whether it's, the amount of it and how much of it is needed for a deceleration

lane, I don't know specifically.

MR. MCCANN: But you don't think you need to know that in order to testify to the, to the standards you've talked about this afternoon? That is, the extent of the road improvements? Or any, any specificity as to them?

MR. CANOLES: Well, in this case, I just need to know what the proposed limits of disturbance are associated with the road improvements. I trust that the road improvements that the engineer puts on the plan are what is being required by the County. But I'm not involved in those negotiations or the design of the road improvements.

MR. MCCANN: Okay how do you know what the proposed limits of disturbance are? How did you learn that?

MR. CANOLES: There was a plan we had at some point that showed limits of disturbance and you can see on here, the, I believe, the expanded road right of way and, ultimate, paving widths are shown on there.

MR. MCCANN: Okay. Well, then I guess, you know, given your understanding, or the limits of your understanding, is it, is it fair to say that if a deceleration lane was not required by the County, then this tree could remain, is that a fair statement?

MR. CANOLES: If the limits of disturbance were less impactful on its root zone, it could be retained for, but I don't know all the specifics, specifics of why the road

widening is required as it is required.

MR. MCCANN: Well, you know it's a deceleration lane, you've indicated that, right? That's the purpose of it?

MR. CANOLES: That's my understanding, yeah.

MR. MCCANN: So, if we didn't have to --

MR. CANOLES: A turn lane --

MR. MCCANN: -- if we didn't have to do, kept the road the way it is and didn't have to do any improvements along that side of the road, is it a fair statement that the specimen tree would not need to be removed, need to be removed, that is?

MR. MUDD: Objection. Asked and answered.

ALJ: Overruled. Go ahead.

MR. CANOLES: If, can you, I'm sorry, can you ask me that again?

MR. MCCANN: Yeah, absolutely. The question simply is if the County did not require the road improvements that you've mentioned, specifically the installation of a deceleration lane, and the road would have remained the way it is, would you agree with me that there's, there's no requirement that that, that this specimen tree be removed?

MR. MUDD: Same objection.

ALJ: Overruled. Go ahead.

MR. CANOLES: Still overruled. If there was no proposed disturbance within the critical root zone, the tree could be retained. It actually may be retainable, the actual

trunk of the tree, even with the proposed site improvements. But, but it's potentially, could be removed tomorrow by BG&E.

MR. MCCANN: Well, yeah, you said that and let me ask you about that. I mean, BG&E is not a governmental entity, is it?

MR. CANOLES: I don't, I don't, no, I assume it's a private entity --

MR. MCCANN: (inaudible) BGE is subject to the forest conservation regs just like any developer is, is it not?

MR. CANOLES: They have agreements in place with different agencies as to what they can do for hazard tree removal. Some of that, my understanding is, is not regulated by the Forest Conservation Act, by the County or the State.

MR. MCCANN: But fair enough, you seem to suggest that BG, if it wanted to, just, it could go ahead and take that tree down today, if it wanted to. And I'm, I'm getting at that testimony. What, what basis do you say, I mean, for instance, do you have any knowledge about what this agreement is that BG&E has with the County in that regard?

MR. CANOLES: No, but we've had projects where BG&E has done road clearing and has removed trees from under, under and around their powerlines.

MR. MCCANN: No, I, I think we all have seen that. My question is, in this case, under these circumstances, are you aware of any reason why BG&E would need to take this tree

down if the road improvements that are proposed would, are not necessary --

MR. CANOLES: Well, BG&E --

MR. MCCANN: (inaudible) --

MR. CANOLES: -- BG&E's authority, or involvement with the tree is irrespective of the development project. It's, theirs is relative to the protection of their powerlines. So, I, the two things really aren't linked.

MR. MCCANN: Well, you linked them. You said that BG&E could take down the tree if it wanted, if it wanted to. And I'm just trying to get to the basis of that statement, that's all and then I'll move on. I just want to make sure --

MR. CANOLES: As I said, when they deem a tree to be a hazard to their powerlines, they have the authority, in my understanding, to remove a tree. This tree --

MR. MCCANN: I understand that. I understand that.

MR. CANOLES: Well, as you can see from the photo, they, they have maintained the tree already by trimming a lot of the branches off of it.

MR. MCCANN: I understand (inaudible) --

MR. CANOLES: If the tree, if the tree is deemed to become more of a hazard the trimming can't simply alleviate the hazard, then they could remove the tree.

MR. MCCANN: Okay. I understand all of that. My question simply is, as a matter of fact, sitting here today, do

you know of any circumstances under which or, or why BG&E would take down, take down this tree if the road improvements were not made and, and the road were to remain the way it is?

MR. MUDD: Objection. Asked and answered, I think twice now.

ALJ: So, so, yeah, I think you're, I mean, you're, there's a mix here of what the development, whether if the development goes through then the road widening goes through. But I think, I understood his testimony to say that separate from that, BG&E could take it down just because it interferes with the powerlines. Now, whether they can do that or not, but I don't think it's linked to the development, so (inaudible).

MR. MCCANN: Yeah, I think it is linked. He --

ALJ: Okay.

MR. MCCANN: My, my question is as a matter of fact. I, I understand BG&E has authority.

ALJ: Yeah.

MR. MCCANN: I think everybody on this call knows that BG&E takes down trees to protect powerlines.

ALJ: Yeah.

MR. MCCANN: I'm just asking as a, what facts does this gentleman have, maybe I should have asked it that way, does this gentleman have that would support that today, sitting here today, if the development proceeds forward, but the road isn't improved at all, it's kept the way it is, does he have

any facts to support that BG&E would need to take this tree down? Not trim it but take it down.

MR. MUDD: Objection.

ALJ: So, I mean, I still think there's a mix here of, of why BG, if there's no roadway improvements, isn't just the question what, what you asked before, which was does it have to be taken down at all? Whether or not BG&E is involved, right, Mr. McCann? I mean, do we, do we care --

MR. MCCANN: I'm asking him, I'm asking him, he's, he keeps on suggesting that the tree would come down anyway --

MR. CANOLES: No, that's not --

MR. MCCANN: -- and I'm asking him what facts he has to, or could come down anyway, what facts does he have sitting here today that it would come down anyway.

ALJ: If, if it interfered with the powerlines, is what I understood, right? I mean, --

MR. MCCANN: (inaudible).

ALJ: If, that's, that's the, for the BG --

MR. MCCANN: I understand. That's an if. I'm asking for facts, not for hypothetical circumstances in the future that might occur. I'm asking what he knows sitting here today about any facts or circumstances that would give BG&E the right to take down this tree if this road was not improved and it was kept the same.

MR. MUDD: Same objection.

ALJ: Okay, understood. Overruled. Go ahead, Mr. Canoles.

MR. CANOLES: Well, it's the same answer. If the tree in the future becomes what, a hazard to the lines per BG&E's definition of that, they, in my understanding, would have the right to remove the tree. Irrespective of whether the site is developed or not.

MR. MCCANN: All right. Well, you're not answering the question, but I understand. I understand, I'll move on.

MR. CANOLES: I'm sorry. I think I am but --

MR. MCCANN: That's okay. You keep on saying if. I'm not asking about hypotheticals, I'm asking what you know about, have you talked to BG&E for instance about this issue?

MR. CANOLES: No.

MR. MCCANN: Okay. I'll move on.

MR. CANOLES: I didn't, sorry.

MR. MCCANN: Are you, are you familiar at all with any, with the, the requirement in Baltimore County of when and under what circumstances an accel or decel lane is required --

MR. CANOLES: No.

MR. MCCANN: -- under County, no. Okay. Real quick, just a couple quick questions about the standard that Mr. Mudd asked you about. I don't have a lot of questions, but I have a copy of it here so everybody can see it and I'll, this is,

again, it's 33-6-116, and I'll just enlarge it a little bit. Do you see that well?

MR. CANOLES: Yes.

MR. MCCANN: Okay, great. So, first, Subsection D, the, D-2, which you spoke about. I think you said with respect to that section, I'll just read it real quick. It says, quote, that the plight of the applicant is due to unique circumstances and not the general conditions in the neighborhood, end quote.

With respect to that standard, I think you, what you said is that the, what, what I gathered from what you said, is that what is unique about these circumstances is that there is a tree in the right of way?

MR. CANOLES: Well, that is the unique circum --

MR. MCCANN: The tree, the tree is in the right of way.

MR. CANOLES: That's a unique circumstance. Most of the time, you don't have specimen trees that close to the road because their root zones have been previously impacted by the road development, salt problems, whatever the other issues that come with being adjacent to a road.

MR. MCCANN: Okay. But this tree doesn't have those problems, right? It's there, it's in good shape, right?

MR. CANOLES: It has survived, yes.

MR. MCCANN: Okay. So, my question again, is simply other than the fact that this specimen tree is physically

located in the right of way, are there any other unique circumstances that you, you would identify in response, or in connection with this provision under D-2 of 33-6-116? Other than that?

MR. CANOLES: That is the primary unique circumstance --

MR. MCCANN: Okay.

MR. CANOLES: -- and the fact that removal of the tree and, and the, the associated plate, is not related to the general conditions in the neighborhood.

MR. MCCANN: Yeah, well, that's a separate standard. I was just asking you about the first part of that. So, no other unique circumstances, other than what you've described already, correct?

MR. CANOLES: Well, it's a non-native tree and it's also been trimmed along the powerlines. So, those are also unique that impact its quality and its functional value.

MR. MCCANN: Okay. Well, you didn't say that before. You said its non-native nature and the fact that it's close to the powerlines?

MR. CANOLES: Yes, it's been trimmed, yes.

MR. MCCANN: So, those are, in your opinion, those are two additional circumstances that render this situation, or render the plight of the applicant unique, correct?

MR. CANOLES: Yes, yes.

MR. MCCANN: Okay, all right. And then Subsection E finally, each of these have to be met, correct? Because this is stated in the conjunctive?

MR. CANOLES: Correct.

MR. MCCANN: Okay and with respect to E-2, which says quote, that the special variance request does not arise from a condition or circumstance which is the result of actions taken by the applicant, end quote.

As I understand your testimony in response to Mr. Mudd's questions, the, the reason why this requirement in D-2 is met, is that this is not, this was not a situation where the tree was already taken down and then post that, this special variance request has been submitted, that's not the situation here, right?

MR. CANOLES: Yes, that's my understanding of that standard is, is to keep people from applying for a variance after the fact.

MR. MCCANN: Okay. So, no, other than that, no other basis for your opinion under E-2, that's the extent of it, correct?

MR. CANOLES: Correct.

MR. MCCANN: Okay. Bear with me, I think that's all I have. And maybe I missed it. I was looking for it in my notes, Mr. Canoles. I, I apologize. But could you state again what, under D-3, going back up to D-3. The provision that says

for an unwarranted hardship, the applicant must show that the special variance requested will not alter the essential character of the neighborhood. Explain to me, again, if you don't mind, why that element is met, has been met.

MR. CANOLES: Well, we argued, and the County agreed, that the removal of one tree along the side of the road was, was not something that would have, would alter the essential character of the neighborhood. We, we, in an attempt to justify that standard, we defined the essential neighborhood, or the charact, or the essential character of the neighborhood was more defined by the adjacent high density residential and commercial uses then would be a single tree along the road.

MR. MCCANN: So, the high, the essential character of the neighborhood is, is high density residential housing?

MR. CANOLES: Yes.

MR. MCCANN: Okay and when you say neighborhood, what do you, what are you including in that characterization?

MR. CANOLES: The adjacent properties.

MR. MCCANN: You mean, immediately adjacent or nearby or what do you mean by that?

MR. CANOLES: I mean, in my opinion, the, the prop, adjoining properties that contribute to the character of the neighborhood when I drive along Joppa Road.

MR. MCCANN: Yeah, but I'm asking what they are, that's my question.

MR. CANOLES: Well, as all the, the developments along Tallyho Road and then the commercial development at Windy Valley.

MR. MCCANN: Okay, okay. And the tree, for everyone's benefit, before I let you go, just explain what a specimen tree is, Mr. Canoles.

MR. CANOLES: What a, a specimen tree is?

MR. MCCANN: Generally, generally speaking, yes.

MR. CANOLES: In the, in the terms of this, it's, it's a tree that's greater than thirty inches in diameter at breast height.

MR. MCCANN: Okay.

MR. CANOLES: That's, that's how this tree was determined to be a specimen tree.

MR. MCCANN: (inaudible) know the diameter of this tree at breast height?

MR. CANOLES: It's a forty-three-inch Norway spruce.

MR. MCCANN: Okay.

MR. CANOLES: And Norway spruce --

MR. MCCANN: (inaudible) approximately?

MR. CANOLES: Excuse me?

MR. MCCANN: Do you know how old the tree is approximately?

MR. CANOLES: That's really hard to tell. Generally, there are some age growth rate factors that you can ascribe to

a tree. They're very general and typically are used more so in a forestry standpoint than in a, in an individual tree standpoint. But it could be a hundred and thirty years old, plus or minus.

MR. MCCANN: Okay, all right.

MR. CANOLES: It could be a lot less than that if, but it's hard to tell without doing an increment bore.

MR. MCCANN: Got it. Okay. Thank you, sir. No further questions, Judge. Thank you.

ALJ: Okay. Mr. Zimmerman, I'm skipping you, right? Did you say yes? You're, okay. You're talking but you're, you're not coming through for some reason. Yeah, no, I mean, your microphone is unmuted but I can't hear you. I don't know why. Are you there?

MR. ZIMMERMAN: Let me --

ALJ: There you are. Maybe it's your headset, maybe the headset isn't plugged in? Okay. We can sort of hear you. If, you, you don't have any questions though, right?

MR. CANOLES: I think he has a question.

ALJ: He, I don't think he has, I think he's saying no, but I just want to make sure. Are you saying yes or no?

MR. ZIMMERMAN: Oh, sorry. I had to unmute myself. No questions (inaudible) hear me.

ALJ: Thank you. Yes, we can hear you now. All right. Thank you. Mr. Wyatt, do you have any questions?

MR. WYATT: No questions, Your Honor.

ALJ: Thank you. Mr. Sachse, any questions?

MR. SACHSE: No, no questions, Your Honor. Thank you.

ALJ: Any, any questions in re-direct, Mr. Rosenblatt?

MR. MUDD: No, Your Honor.

ALJ: I'm sorry. Mr. Mudd?

MR. MUDD: It's okay.

ALJ: I looked at him and, you know.

MR. MUDD: Mr. Rosenblatt is getting a well-deserved rest (inaudible).

ALJ: Okay. Well, Mr. Mudd, you don't have any questions?

MR. MUDD: No, I do not. Thank you very much.

ALJ: Okay. I think we're finished with Mr. Canoles.

MR. CANOLES: Thank you very much, Your Honor.

ALJ: Thank you. All right, who's the next, who's, who's up next?

MR. ROSENBLATT: Next witness is Nick Driban. And Judge, I, I should have said this earlier. I hate to, to do this but I have a hard stop for parenting duties at 4:30 today. I just, I should have said it first thing. I can go all hours of the night the next two hearings, but today I'm very sorry. I just, I just forgot to say that, so I wanted to say that.

ALJ: That's fine, no problem. So, 4:30, well, it's 2:30, so we have two hours, you know, we should --

MR. ROSENBLATT: I'll get as far as I can.

ALJ: Okay, all right. So, we have Mr., is it Driban, right, Driban? Driban. Okay, I can't hear you, can you hear me? Nope. You, are you connected to the computer when it, for the sound audio?

MR. DRIBAN: Yes, can you hear me now?

ALJ: All right. Now, you're good.

MR. DRIBAN: All right.

ALJ: Okay, thank you. Raise your right hand, please? Do you swear and affirm under penalties of perjury, the testimony you're about to give is true and correct to the best of your knowledge and belief?

MR. DRIBAN: I do.

ALJ: Okay, all right. Mr. Rosenblatt?

MR. ROSENBLATT: Thank you, Judge. Permission to share, please?

ALJ: Yep.

MR. ROSENBLATT: And while that's happening, Mr., it is Driban, right?

MR. DRIBAN: Lieutenant Driban, yeah. No, it's, I pronounce it Driban, yes.

MR. ROSENBLATT: Driban, okay. I've been saying it wrong for a year. Sorry about that. I'm going to share a copy

of what's been marked as Developer's Exhibit 24, ask you, is this your resume?

MR. DRIBAN: It is.

MR. ROSENBLATT: Can you explain with who you're employed, what's your position, what you do for a living?

MR. DRIBAN: Yes, I am an Associate Vice President with Lenhart Traffic Consulting. Our office is at 645 Baltimore Annapolis Boulevard, Suite 214, in Severna Park, Maryland. We are a traffic engineering firm and I've been with Lenhart Traffic for about five years now, which is a portion of my total of fifteen, actually sixteen years now, of experience in total.

Prior to Lenhart Traffic, I spent about ten years with, excuse me, about eight years with STV Incorporated, where I was a traffic engineer, and then ultimately, at the time I left, was a traffic operations manager for that department, where I oversaw a staff of five.

And also had a two-year stint with the Maryland State Highway Administration in their Access Management Division, where I was responsible for viewing traffic impact studies for sites throughout the state, including district four, which is Baltimore County and Harford County, as well as other, other areas of the state.

MR. ROSENBLATT: Okay. You explained your work history, can you talk a little bit about your education?

MR. DRIBAN: Sure, yes. I have a bachelor's in science in Civil Engineering from Penn State University, yeah.

MR. ROSENBLATT: Are you a traffic operations engineer?

MR. DRIBAN: Yes, I'm both a professional engineer in the State of Maryland, as well as a professional traffic operations engineer, which is a certification through the Institution of Transportation Engineers, which is sort of a, the, the industry association for, for traffic and transportation engineers (inaudible) --

MR. ROSENBLATT: Okay. I'm sorry. Are you registered in Maryland?

MR. DRIBAN: Registered P.E. in Maryland, PTOE is a national certification.

MR. ROSENBLATT: Okay and have you testified before in other cases, other jurisdictions?

MR. DRIBAN: Yes, I have.

MR. ROSENBLATT: Been accepted as an expert?

MR. DRIBAN: Yes.

MR. ROSENBLATT: Did you prepare certain reports and exhibits related to traffic for the Greenspring Manor project?

MR. DRIBAN: Yes.

MR. ROSENBLATT: In preparing those documents, did you review the Baltimore County development and zoning regulations?

MR. DRIBAN: Yes, I did.

MR. ROSENBLATT: And in addition to the regulations applicable to development plans, did you review the regulations applicable to requests for special variances from the traffic sheds in the basic services maps?

MR. DRIBAN: I did.

MR. ROSENBLATT: And are you familiar with the standard for approval of both development plans and Petitions for special variance?

MR. DRIBAN: Yes.

MR. ROSENBLATT: Have you been to the property?

MR. DRIBAN: I have.

MR. ROSENBLATT: Drive, have you driven the roads in the surrounding area?

MR. DRIBAN: Yes, I have.

MR. ROSENBLATT: And as said, have you conducted studies related to this proposed development?

MR. DRIBAN: Yes.

MR. ROSENBLATT: At, at this time, I'd ask that Mr. Driban be admitted as a professional traffic operations engineer with particular knowledge of the requirements for zoning and development in Baltimore County.

ALJ: Mr. McCann, any voir dire?

MR. MCCANN: No, I think I can handle it on cross examination, anything, I would, I would assume, Your Honor,

that despite the fact that he hasn't testified in Baltimore County, that you will nevertheless accept him as an expert. So, with that, I'll, I'll save anything on, in that regard for, for cross.

ALJ: Okay. Mr. Zimmerman?

MR. ZIMMERMAN: I do have a few questions.

ALJ: Voir dire questions, Mr. Zimmerman?

MR. ZIMMERMAN: Yes.

ALJ: Okay.

MR. ZIMMERMAN: Yes. So, Mr. Driban, do you have any legal education?

MR. DRIBAN: No, I do not.

MR. ZIMMERMAN: Okay. Is, as part of your traffic engineering expertise inclusive of the field of risk assessment and risk management?

MR. DRIBAN: Not formally.

MR. ZIMMERMAN: Okay. Okay, that's all the questions I have. My, my observation or view is that Mr. Driban is surely a qualified traffic engineer. But I don't think he, I think the scope does not include any legal conclusions or interpretation as to the meaning of the growth management standards relating to transportation. That's, that's a legal conclusion for the Judge to make after argument, but not for traffic engineers to interpret. That's my view.

ALJ: Okay, understood. And so, he'll be admitted as

an expert professional traffic operations engineer, with specialty knowledge in the Baltimore County zoning regulations, Mr., Mr. Rosenblatt, is that what --

MR. ROSENBLATT: Zoning and development regulations.

ALJ: Zoning, Baltimore County zoning and development regulations. Okay, all right. And we'll, we'll admit his c.v. as --

MR. ROSENBLATT: Okay, thank you.

ALJ: -- which number is it? Let me see. Oh, it's twenty-four.

MR. ROSENBLATT: That is twenty-four.

ALJ: All right, thank you.

MR. ROSENBLATT: All right. So, Mr. Driban, you said you've been to the property. Are you familiar with the area surrounding the property?

MR. DRIBAN: Yes, I am.

MR. ROSENBLATT: And did you perform a traffic impact analysis for this project?

MR. DRIBAN: Yes, we did.

MR. ROSENBLATT: Did you perform an analysis of the proposed offsite improvements and whether they will impact traffic at the intersections along Falls Road, Joppa, Greenspring Valley?

MR. DRIBAN: Yes, we did.

MR. ROSENBLATT: And did you perform an analysis of

this potential emergency only access gate that is proposed at the Mays Chapel Road corner of the property?

MR. DRIBAN: Yes.

MR. ROSENBLATT: All right. Let's start with the traffic study. So, I'm going to show you what's been marked as Developer's Exhibit 5, a study dated December 7th, 2020. Is this the report you prepared?

MR. DRIBAN: Yes, it, it appears to be.

MR. DRIBAN: And were you here for the prior testimony in this case from Kris Nebre and Aaron Kuhn (phonetic) from SHA?

MR. DRIBAN: Yes, I was.

MR. ROSENBLATT: Is this the study submitted to those agencies, that the agencies reviewed and approved?

MR. DRIBAN: It is, yes.

MR. ROSENBLATT: Okay. Can you explain the interplay between Baltimore County and SHA in reviewing this study?

MR. DRIBAN: Yeah, so, obviously with the development being in Baltimore County, we are going through the Baltimore County development process, which means that their traffic department and other departments are responsible for, for review and oversight of, of traffic requirements within the Baltimore County zoning regulations and other guiding documents.

In this case, SHA is the owner of Maryland 25, which

is Falls Road, which is just west of the site. And so, they have oversight for actual review and approval of any potential improvements or mitigation that would be constructed to be along Falls Road, or any of the, the intersections along Falls Road.

Even Maryland 30, Maryland 130 and Maryland 131, which are Seminary and Greenspring Valley Road, which are both also state roads. And then additionally, we have Joppa Road, which is a County road, but within typically five hundred feet or, or more depending on the influence area of the intersection, SHA still has jurisdiction over, over that road as well. That, that section of that road.

MR. ROSENBLATT: Okay. Let's go over the report. First, there's, there's an initial date, excuse me, of September 14th and revised December 7th. Could you please explain what, what the difference is? Like what happened between the two that caused a revision?

MR. DRIBAN: Yeah, so we submitted our initial study in September of 2020. And as is typical with pretty much any study that goes into State Highway, they've got seven divisions with, internally, that review it. And so, we typically get comments from one or all of those divisions on the study.

Again, with Baltimore County as well, you know, it's typical to get comments, at least one round of comments or questions or just sort of clarifications on the study. So, we

received comments from both the County and State on our first draft of the study and it was revised with the, with the second date in red, which I believe is December 7th and resubmitted to both the County and the State.

MR. ROSENBLATT: What, what's the scope of the study that you performed?

MR. DRIBAN: The scope of the study included the site access point, as well as Maryland 25, which is Falls Road, at Joppa intersection and Maryland 25 at Greenspring Valley/Station Drive.

MR. ROSENBLATT: And if we look, look at page five of your traffic study, is this a location of the intersection study?

MR. DRIBAN: Yes.

MR. ROSENBLATT: Okay. Let's, before we talk about the proposed project, let's talk a little bit about the existing conditions. Where did the traffic counts come from that you used as, as part of your analysis to this case?

MR. DRIBAN: The, the traffic counts were actually conducted primarily by SHA. So, initially, the first draft of the study was, was actually counts that we received from SHA directly.

And then, one of the comments we received as part of the first round of review was from the County saying that they had a more recent count and that they would like us to use a

more recent count at the intersection of Falls Road and Joppa, which they provided to us and was, and was used as part of the, the revised and final version of the traffic impact study.

MR. ROSENBLATT: And when you were first performing the analysis for this case, was it during COVID times?

MR. DRIBAN: Yeah, it was. And there was, you know, various counties in the state had different ways of handling, of handling that. And it sort of evolved over the time that, you know, COVID was, you know, was raging.

Initially, you know, many, that both the State and County had moratoriums entirely on conducting traffic counts when things were really shut down in March and April of 2020. But, you know, as, as time went on, those, those moratoriums kind of loosened up.

But in this case, we initiated the study during the early part of COVID in early 2020 and we were actually very lucky to have access to SHA and County counts that occurred just before COVID really shut things down.

MR. ROSENBLATT: Okay. Let's talk about background traffic so, explain what, what background traffic is and what was considered as part of this report.

MR. DRIBAN: Yeah, so when we look at a traffic impact study, we typically look at three conditions. There's existing conditions, which we just discussed, which is what's out there today. So, one configuration is traffic volumes, you

know, intersection, intersection traffic controls.

So, whether it's stop controlled, signalized, roundabout, etcetera. And when we move from there, we look at background conditions. Background conditions are anything that's approved prior to, to the study being conducted that, that would come online before the site, so those are approved developments, specific developments.

And, and then generally, we'll, we'll include a growth rate that kind of accounts for regional, regional growth and traffic along roadways or, you know, developments that may occur that were not, you know, that, that we're not aware of at the time that come online later.

So, in this case, there were no, we coordinated with the State and County, there were no approved background developments at the time of the study. But we did include a one and a half percent growth rate over the course of three years to account for just general regional growth that may occur and anything else that could come online.

MR. ROSENBLATT: Where does that 1.5% number come from?

MR. DRIBAN: The 1.5% comes from a look back at SHA's, they keep historical traffic volume data. And in this case, they had data along Maryland 25, Falls Road, in the vicinity of the site.

And so, we look at ten years of that data and

determine the average growth rate, which I believe in this case, was a little bit less than, than one and a half percent. We, we used one and a half percent based on correspondence with SHA and, you know, based on the historical growth rate.

MR. ROSENBLATT: All right. Let's talk about total conditions. And how did you calculate, first, the trips that are projected for this project?

MR. DRIBAN: Yeah, so, we have existing conditions, background conditions and then total, background is everything up to the point where the site gets constructed, gets constructed and total then is everything that was included back, in existing, plus everything in background and then the site traffic itself.

And the way these studies are conducted, that I probably should have said earlier, you know, there's a very rigorous methodology that, that SHA uses, you know, that's fairly standard if you go to different jurisdictions throughout the country or throughout the state.

You know, this, this methodology that I'm describing is, is fairly standard between them. And so, specific to the site traffic conditions, the first piece is conducting what's called a trip generation analysis. Trip generation is conduct, is conducted using the ITE, Institute for Transportation Engineers Trip Generation Manual.

That is a three-part document. Each part is, you

know, five hundred to a thousand pages. And, and basically, what's contained in there is, for any land use you could think of, whether it's a single family detached units like this or a hotel or a shopping center or a park. You know, really, anything that you could think of.

It's a compilation of studies that have been done throughout the country that looks at how many trips. So, a trip is a vehicle entering or exiting a site. So, it looks at how many trips on average occur for a given type of development based on the size of that development.

So, in the case of single family detached units, the, the, the unit count, or the, the independent variable is units and when you input the number of units to the ITE trip generation manual equations, you can get the number of trips in and out during the a.m. peak hour and the p.m. peak hour for a site of that nature.

And, and this is, this is the standard document that's used industry wide. I mean, it, it is, it's, it's used in Maryland, it's used in Florida, it's, it's the document, you know, it's, it is the way that trip generation is conducted.

MR. ROSENBLATT: Okay and can you explain your calculation of how many trips will be generated from this project?

MR. DRIBAN: Yes. So, in this case, again, the independent variable for the ITE trip generation manual is, is

units. We have sixty-two units and so you can see at the top of the exhibit that's on screen now, there are equations. The morning equation is a little simpler. It's 0.7 times the number of units, plus 9.74.

And so, and then there's a split in and out, you know, as you would sort of anticipate, or sort of intuitive, more, more traffic from a single family development leaves, leaves in the morning. So, seventy-five percent is leaving, twenty-five percent is coming in.

And so, when you plug in sixty-two units in that equation, you get eleven trips inbound and thirty-five trips outbound in the morning. And that is the total during what we call, and I should have probably explained this earlier, but the a.m. peak hour, we look at the, the a.m. peak hour and the p.m. peak hour. So, those are the highest volume of traffic for both the site and adjacent roadways, you know, throughout the day.

And the, the purpose of looking at that, again, this is part of the, the standard methodology that State Highway uses that, you know, that most agencies use. The purpose of looking at the highest hours to make sure you're capturing sort of the worse traffic that you have a conservative analysis that you're conducting.

So, when I say there are sixty-two units generating forty-six trips, eleven in and thirty-five out, that's during

the heaviest volume of traffic from that, from that site during the, during the morning.

And then, just kind of finishing through the exhibit, during the evening, the equation is a little bit more complicated. It's, there's an LN involved and natural (inaudible), etcetera. But we had thirty-eight trips inbound, twenty-three outbound and a total of sixty-one trips that would come, that would be to and from the, the development during the highest volume of traffic during the p.m. period.

MR. ROSENBLATT: And to turn back to total conditions for a minute. Did, did you analyze the projected level of service for the studied intersections under the, what we refer to, as the CLV and HCM methodologies?

MR. DRIBAN: Yes, we did. In this case, we, we did both methodologies. They're sort of, I guess, complimentary methodologies in a lot of ways. The CLV methodology is really, is the state standard and really what the County primarily uses. CLV stands for critical lane volume.

And the critical lane volume methodology is, is basically a way of evaluating how much traffic for different movements of the intersection needs to pass through the intersection at the same time and sort of conflicts with each other.

And so, out of that evaluation comes a letter grade. It's called level of service. It runs A, B, C, D, E or F.

Generally, for State Highway, level service E and F are considered to be unacceptable under the CLV methodology. So, we did do that methodology because that's the baseline.

In situations where there are coordinated signal systems, so where the traffic lights are timed to each other, such as along Falls Road, we sometimes would utilize the highway capacity manual, or HCM, methodology as well. And that methodology is again, letter grades as well, so A, B, C, D, E or F. E is considered, E and F are considered to be typically unacceptable by SHA.

And that methodology is a little bit more equations based and looks at the average delay per vehicle that would be incurred of an intersection based on the, the traffic control devices, the lane configurations and the volumes at that location.

MR. ROSENBLATT: And before you go into your, the results of your study under those methodologies, did you prepare a breakdown, you've explained how many trips are projected from this project. Did you prepare a breakdown of where the trips will go?

MR. DRIBAN: Yes. So, in order to, in order to, sort of apply the, the trip generations, we have a number of trips that I discussed that was on previous page or the, yeah, the previous page that you showed on Exhibit, excuse me, page thirteen of the report.

Those trips have to be actually assigned to the road network. And so, you know, we know the number that comes in and goes out of the site driveway. We need to know where those are coming from and going to. And in this case, based on the roadway network in the vicinity of the site, you know, the majority of, of these trips are going to be to and from the south, along Joppa Road. The, excuse me, to and from the south along Falls Road via Joppa Road.

Falls Road to the south provides, provides access to 695, both inner loop and outer loop, as well as northbound and southbound 83. And so, the vast majority of trips is, you know, projected to go, to go that way. There will be, you know, some trips that will head eastbound along Joppa Road.

You can see the percentages on the screen. We had, there are twenty percent that would go eastbound on Joppa Road, you know, that may be some trips that go into Towson or to the schools that are over in that direction. And then there's a small amount of traffic that would go, that would go west on, on Falls Road, west on Greenspring Valley Road, five percent to each of those.

And then ten percent northbound on Falls Road, passing out of study area, in that direction. And, and really, if you look at the regional origins, origins and destinations in this area, you know, it's primarily rural to the north and west of here. You know, you've got the busy Maryland 45

corridor to the east, Towson also to the east, which would be primarily accessed via, again, Falls Road to the south, as well as Baltimore City and, you know, many of the surrounding areas.

MR. ROSENBLATT: And I'll try and do a better job for this, but for the record, you're, we're referring to page fourteen of your traffic study for the trip assignment data?

MR. DRIBAN: Yes.

MR. ROSENBLATT: Okay. Let's talk about the level of service under each methodology. So, I'll turn your attention first to page sixteen and ask you, what are the results for the studied intersection under the critical land volume methodology?

MR. DRIBAN: Yeah, so, under the critical lane methodology, again, we have the, the studied intersections, the three that I noted initially. And you can see that the intersection of Maryland 25 and, and 130, which is, which is Greenspring Valley, operates at what SHA would consider an acceptable level of service B. Under all three conditions that I noted, existing, background and total.

The intersection of Maryland 25 and Joppa Road, Falls Road and Joppa Road, operates at a level of service E under, under existing and background and total during the a.m. peak hour. And I should, I should clarify for those looking at the screen, the top half of this is the, is the morning peak hour. There's three columns, existing, background, total and then the

bottom half has the same three columns for the, for evening peak hour.

So, as I, as I was saying, the level of service is E during the morning peak hour under existing conditions today, background conditions and total conditions at Joppa Road and Falls Road. And then, for the site access, that would be projected to operate at level of service B. Obviously, that intersection doesn't exist under existing and background, but it would be a level of service B under the total conditions. For the p.m. peak hour, evening peak hour, again, Maryland 130 operates at level service B.

Falls and Joppa is shown to be a level service D, based on the critical lane volume methodology, so it is considered acceptable. And, and the site access point would be a level of service A as well.

MR. ROSENBLATT: Okay. You, you've spoken about existing, background and total. Can you please explain there's, there's also information on this chart for proposed improvements and different grades and numbers?

MR. DRIBAN: So, yes, when we identify a failing, an intersection that doesn't meet the state, the State's requirement or the County's requirement, in this case, Maryland 25 at Joppa Road is, is a level of service E during the a.m. peak hour.

That's an existing condition. You can see it's an E

under existing, it's an E under background without our site. And our site adds only thirteen trips, which in the scheme of, you know, the, the total volume there, the total critical lane volume, is a, is a negligible impact to begin with.

But we did improve, we did propose a substantial improvement to that intersection in order to mitigate our impact. And so, that's the line just below where it says number two, Maryland 25 and Falls Road/West Joppa Road. There's a line below that says proposed new improvements.

And with the proposed improvement, the intersection would operate at a level of service D during the a.m. peak hour and actually, so it's actually better than what's out there today. And then you can see in the column to the right, the percentage of mitigations or how much CLV impact we mitigated, again, our impact was thirteen. We mitigated a hundred and twenty-one CLVs, or nine hundred and thirty-one percent of our impact.

So, substantially improving the intersect, intersection to beyond even what's out there today. And that's with our, that's with our site traffic included in the, in the calculation.

During the evening peak hour, the intersection was already at a level of service D. With the improvement, you can see it goes from a D, fourteen thirty-eight, to a D, thirteen oh seven. So, it's the same letter grade, still level of

service D, but the, but the CLV, the critical lane volume, is improved by a hundred and thirty-one CLVs. Relative to our sixteen CLV impact, which is an eight hundred and nineteen percent mitigation of our, of our impact.

So, again, the intersection would be substantially better during the p.m. peak hours with our site and, and the improvements we're proposing than it is even under existing conditions today.

MR. ROSENBLATT: And did you perform an analysis of the results under the highway capacity manual?

MR. DRIBAN: We did, yes. So, the highway capacity manual results are somewhat similar. It's, it's not uncommon for CLV and HCM to be, you know, a letter grade different, just because they have, it's different equations, they consider slightly different factors. But --

MR. ROSENBLATT: Let me just quickly say, is this page seventeen of your report?

MR. DRIBAN: It is, yes.

MR. ROSENBLATT: Okay. Continue, sorry.

MR. DRIBAN: Yeah, so, the, the highway capacity results show that Falls at Greenspring Valley, intersection one, is a level of service C during the a.m. peak hour under existing, background and total. Falls and Joppa is a level of service D under existing and background.

And it just happens that the threshold for a level of

service D versus a level of service E is 55.0 seconds. So, under background, which is everything up to the point that we build our site, it's at a 54.8 second. We add 1.1 seconds to that, which pushes it across the threshold from a D to an E.

So, it's, it's a negligible impact that just happens to push it across that letter, that letter grade. But you can see that on a line below that with the proposed improvements at the Falls Road and Joppa Road intersection, we actually reduced the delay to 40.9 seconds, which is well below the existing 49.7 seconds under existing conditions at that intersection.

It's a fifteen second improvement in delay for every single vehicle that passes through there. This is the average delay per vehicle, which mitigates thirteen hundred and sixty-four, one thousand three hundred and sixty-four, percent of our impact at that intersection.

And again, leaves it better than we found it. Even with our site traffic, substantially better than we found it, even with our, our site traffic. And when I say when, when we found it, I mean, better than what's out there if you were to drive through it today.

Under the evening peak hour, again, the intersection, intersection one at Falls Road at, at Greenspring Valley operates at level of service C under existing, background and total. That is, you know, for both a.m. and p.m. at the intersection, it's within State Highway Administration's

adequacy thresholds. It's, it's better than, you know, than what's required based on this methodology.

And intersection two, Maryland 25, Falls Road at Joppa Road, is a B under existing, D under background, D under total. We add one second of delay to that. With the proposed improvement, we mitigate 7.8. We reduce the average delay for every vehicle that passes through that intersection by 7.8 seconds, which mitigates seven hundred and eighty percent of our impact.

And again, leaves the intersection better than it is if you would drive through it today, even inclusive of background development, you know, background growth that's happening and, as well as our site traffic.

Lastly, the site access points under both a.m. and p.m. peak hours are shown to operate at a level of service A, which is the best possible level of service.

MR. ROSENBLATT: Okay. Did, did you confirm with Baltimore County what the F failing movements are at, at Joppa/Falls and at Greenspring Valley/Falls under, under loaded cycle methodology?

MR. DRIBAN: We did, yes. So, so Baltimore County uses a, a slightly different, a very different methodology known as the loaded cycle methodology. It's out of the 1965 highway capacity manual and it relies on observations of the, of the intersections, field observations.

So, actually, sending someone out and looking at whether vehicles can pass through the intersection. If you go out and you look at a cue, can the last vehicle in that cue get through the intersection before, once, once the light turns green, can it get through the intersection before the light turns red again. If they do not, that would be considered a cycle failure.

And the loaded cycle methodology looks at the percentage of cycle failures by approach during, during the peak periods. And if it, if it exceeds a certain threshold for any approach, that would be considered a level of service F, failing intersection under the loaded cycle methodology.

So, in this case, Joppa and Falls, northbound on Falls during the a.m. peak hour is a level of service F. And at Greenspring Valley and Falls, northbound on Falls during the p.m. peak hour is a level of service F. Based on, and that's based on the County's, County's own data and sheets for the loaded cycle methodology review.

MR. ROSENBLATT: Now, I want to ask you about each of these methodologies, but under the critical lane volume and highway capacity manual methodologies, if this project is constructed and the proposed improvements to the intersection of Joppa Road and Falls Road are made, do the intersections show as failing under these methodologies?

MR. DRIBAN: Under the, the modern, current

methodologies, they would not show as failing based on the improvements that are being proposed.

MR. ROSENBLATT: How about under the methodology you just explained that Baltimore County uses for basic services maps, the loaded cycle methodology?

MR. DRIBAN: Yeah, so, the, the loaded cycle methodology, as I explained, requires field observations. It has to actually be conducted, you know, based on going out and looking at traffic as it stands. And so, it's, it really can't be reviewed until, until the improvements are in place, and someone goes out and does that, does that evaluation. There's, there's no way to project it.

MR. ROSENBLATT: We've heard a lot about the, quote unquote, improvements to Joppa and Falls. You have sort of an after picture on page twenty of your study. But I'm going to, I'm going to turn your attention to Developer's Exhibit 16. It's a two-sheet exhibit that has that same image, but it also has a before and after to contrast. And just ask you, again, we've heard a lot about this. Can you explain what exactly the proposal is to improve the intersection at Joppa and Falls?

MR. DRIBAN: Yes. So, you can see if you kind of flip back and forth between pages one and two of what you've got on the screen. What we're proposing to do is to add a lane to both the eastbound and westbound approaches. So, the Joppa Road is the, Joppa Road is the westbound approach. This, this

exhibit, north is facing to, to the left of the exhibit.

So, Falls Road runs north and south. The westbound Joppa, Joppa Road approach, we're proposing to add a lane, which would provide for two exclusive left turn lanes. And whereas today, there is a, a left and a shared through left.

The improvement would, would change that to separate the left turning traffic, which is a substantial volume, out from the through movement and provide additional capacity for, for that approach. On the eastbound, and we would maintain the existing right turn, channelized right turn, for the right turn lane on that approach.

In the, in the eastbound direction, it's a similar, similar type of improvement, where we're looking at adding an additional lane to that approach. The additional lane would, would modify the, the movements that are today a left and a shared lane that accommodates the left through and right to again separate out the left turn volumes from that and, and provide for a separate, shared through and right turn movement.

So, what that does, what those improvements do, is they, you know, first of all, widening to add a second lane, or an additional lane, is a, you know, it's a substantial improvement to capacity.

And the reason for that is when you have additional lanes on an approach, particularly a high volume approach like Joppa Road, where you've got, you know, a lot of left turning

traffic coming out of there, going, wanting to go southbound on Falls Road, when you have additional capacity for that traffic, you can shorten, so there's a fixed amount, I'm going to get kind of technical here.

There's a fixed amount of, of time available within a traffic signal cycle. And so, you know, when you have fewer lanes, you have to, on a side street, you have to devote more of that, this fixed amount of signal cycle to that side street approach.

As you widen those side street approaches and add lanes and add capacity, you're able to reduce the amount of time that it takes that traffic to get through the intersection and, therefore, that, that signal time, the fixed time within that signal, can be allocated to the main line, in this case, Falls Road.

And in doing so, you know, the mainline has, has a much higher volume and so, in doing so, you have a really substantial benefit to the progression of traffic through that intersection, as well as to, you know, the progression of traffic along the corridor by moving additional through traffic, more quickly through the intersection.

MR. ROSENBLATT: Where does this proposed improvement stand with SHA?

MR. DRIBAN: Yeah, so, SHA kind of has a, they have a two, what I would call like a two-stage process for approving,

for approving design plans. And so, the first stage is they have to do, they have to review a traffic study, traffic impact study, or other traffic study. And approve that, right?

And so, we have, this, this improvement was included in our traffic impact study, which was approved by SHA. So, we have step one entirely complete. And then, step two of the process, and you can't move on to step two until you've, until you've completed that first stage and having, having an improved traffic impact study.

But step two of the process is to get approved design plans, detailed design plans. And so, we have concurrence on the improvement. And we've actually been moving forward with SHA to, to work through their process to get, to get approval of the, of the final design plans for this intersection.

And that process, I sort of briefly explained with the traffic impact studies earlier, you know. With the traffic impact study we submitted, we had comments back, we addressed the comments, you know, we meet, meet with them if we need to, you know. There's coordination to figure out how to, how to meet all of SHA's requirements and confirm that what's being done is in line with, you know, what they, what they want to see and what's required by them.

And so, it's the same process with the design plan. We've had several rounds at this point for this intersection, where we're submitted design plans, they've reviewed them.

We've received a few comments and I believe the most recent, the most recent submittal that we have has either gone in or will be going in later this week or early next week.

And we anticipate, based on sort of typical trajectory of these, that that will be, that we'll get final approval to move forward and construct these improvements at such time as appropriate in the overall development process with this, with this incoming submittal.

So, we're actually, we're actually really far, you know, typically, the design, the detailed design and the sort of second half of that process to get SHA's approval doesn't happen until, until after you have your development approvals from the County and any variances and things like that, like what we're doing here.

The developer would typically move forward after those are completed and sort of all the entitlements are in hand. In this case, you know, the, the, the developer has elected to move forward, you know, at their own risk, to, to really be ready to make improvements. I mean, this is a major improvement and, and they want to be ready to make it, you know, as soon as, as soon as they can.

So, SHA has been engaged and I think we're, we're close to having their approval on this piece.

MR. ROSENBLATT: Okay. You talked about major improvements and we, we have talked a lot about this particular

intersection of Joppa and Falls. But did, did you perform a corridor analysis to analyze the impact that these improvements and the proposed development would have on the Falls Road corridor from this intersection up through Seminary Avenue?

MR. DRIBAN: Yes, we did. We did.

MR. ROSENBLATT: I'm going to show you what's been marked as Developer's Exhibit 26. Ask you, I mean, this, this is probably what people listening care about. What, what will this mean in terms of travel time through the Falls Road corridor if this improvement is made?

MR. DRIBAN: Yeah, so, one of the comments that we got when we submitted our initial study in September of 2020 to SHA, was that the Falls Road corridor, the three signals, Joppa Road, Greenspring Valley Road and Seminary Avenue, operate as part of what's called a coordinated signal system. So, the timing of those three intersections is connected.

And so, SHA requested, actually required, that we conduct a corridor analysis to review those three, those three intersections. And we did, so we conducted those, that analysis. This is the kind of output of that analysis, which is a corridor analysis of Falls Road, between Joppa, up to Seminary. So, obviously including Greenspring Valley.

In order to conduct that analysis, we actually obtained Synchro (phonetic) files from SHA, these are all, these are SHA's own analysis files. Synchro is the program we

use, Synchro Syntraffic (phonetic) traffic kind of go hand in hand. So, we got their Synco Syntraffic files.

And, and the only modification to those files was to account for the improvement at Joppa Road, as well as, you know, signal timing changes that would, that would, they would like to implement at the intersections of Greenspring Valley and, and Seminary, in conjunction with that improvement.

SHA routinely retimes signals, you know, when, when major improvements are made along a coordinated signal system. And so, in this case, the, the final result of this, just kind of walking through it, so the top half of the table is the morning peak hour, the a.m. peak hour, and we've got a comparison of the, of the travel times based on the model, of background conditions versus the total conditions.

So, background is everything up until we have the site, total is everything, including the site. And, and so the second column there is total conditions with dev, with developments, with the site traffic and the proposed improvements.

And so, we look at northbound travel time through those three intersections, southbound through those three intersections. You can see that northbound, under background conditions, so without the improvement, without the site, is a hundred and eighty-six seconds.

With the improvement and the site, it's a hundred and

forty-one seconds. So, that's a forty-five second savings for, on average, for every vehicle passing through this corridor. Every single vehicle. That's the average delay per vehicle. Which is a twenty-four percent improvement in the overall corridor travel time.

For southbound, background is two hundred sixteen seconds, total is two hundred eight seconds. That's a four percent improvement, again. That's eight seconds better for every vehicle that passes through, on average. And so, the average a.m. corridor improvement is fourteen percent.

For the evening peak hour, again, the setup is the same. For the northbound travel time, without the site, without the improvements, two hundred ninety-one seconds, under background. With the site, with the improvements, under total conditions, it's two hundred sixty seconds, which is a thirty-one second improvement for every single vehicle, on average, that passes through the corridor, or a ten percent improvement.

And then, the southbound is a hundred and thirty-three in both background and total. But, you know, the average improvement there is five percent.

So, the bottom line is, you know, we're talking about very substantial improvements for all traffic passing through this corridor as a result of the improvements being proposed.

MR. ROSENBLATT: Okay. Let's, let's break it down, sort of individually. What, what impacts would the development

improvements have on, on the Joppa/Falls Road intersection?

MR. DRIBAN: On the Joppa and Falls Road intersection, you know, we're enhancing the operations by adding, by adding lanes and making the side streets more efficient. I explained the allocation of time within the signal system. So, this would be a major, you know, a major positive impact in terms of moving traffic and, you know, the Falls, the operations overall at Falls Road and Joppa Road intersection.

MR. ROSENBLATT: Okay and how, how about, so, there, there's no physical improvement being proposed to the intersection at Falls and Greenspring Valley. What impact does the project and the proposed improvement at, at Joppa have on that intersection?

MR. DRIBAN: Yeah, so, again, as I, as I explained, the corridor, the corridor signals would get retimed routinely by SHA as a result of a major improvement. Because we'll be able to synchronize those signals and move traffic through more effectively on the entire corridor, that intersection would benefit as well, which is, you know, captured by the overall corridor improvement in this, in this exhibit.

And, and I guess just to kind of highlight, you know, that, that point, when we looked at the improvement on average at the Falls and Joppa intersection on, on one of the previous exhibits, my, my highway capacity manual exhibit, which also

uses delay per, average delay per vehicle, you know, the time savings I think in the a.m. was, I don't have it in front of me, but I believe, I believe it was on the order of, magnitude of fifteen seconds, if I'm remembering correctly.

You know, you can see that throughout the whole corridor, again, it's forty-five seconds during the a.m. peak, peak period. So, there's additional benefit that's occurring at intersections other than, than just where the, where the physical improvement is taking place. And you can see that, you know, through this exhibit and how much, and how much improvement there is to the overall corridor.

MR. ROSENBLATT: Okay. How about, I, I know it's not part of your initial study, but can you explain whether there's any positive impact to Falls and Seminary?

MR. DRIBAN: Yeah, I mean, similar answer to, to the, to the Greenspring Valley intersection. I mean, you look at the overall corridor, you know, improvement here and there's certainly improvements, you know, again, beyond just what was occurring at Joppa, so, you know, some of that is at Greenspring Valley. I think you would infer that some of it is also at, at Seminary.

And this, again, this analysis that we're looking at on the screen, does specifically include those two intersections and the entire Falls Road corridor, inclusive of those two. So, I think, you know, it stands to reason that

Seminary would also see some improvement. Certainly, the corridor sees a major improvement.

MR. ROSENBLATT: Okay and just to circle back to your report, your conclusions, do you have an opinion as to the state of the Joppa/Falls, Greenspring Valley/Falls, intersection if the project is constructed and the, the physical improvements are made?

MR. DRIBAN: Yeah, I mean, I think the analysis kind of speaks for itself. On the previous, previous pages we were looking at, you know, we, we mitigate far more than our impact, which is a small impact to begin with, we mitigate far more. And actually, the intersections, the intersections will be better after our site traffic, with our improvement, than they are today, if the project is approved.

MR. ROSENBLATT: All right. Let's, let's talk for a minute about the, the Petition for Special Variance. So, how, how does this evaluation relate to the, to the standard for special variances in 4-A-02.4.G.1?

MR. ZIMMERMAN: Objection.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: Yeah, I don't, I don't think it's up to this witness to interpret the statute.

ALJ: Yeah, understood. I mean, ultimately, it's, it's my job, but we can certainly hear from an expert as to his opinion on, on what he believes it says. Overruled. Go ahead.

MR. DRIBAN: Yeah, I, it proves that the demand or impact of the development being proposed is less than that assumed by the district standard.

Improvements that we're recommending can not only accommodate traffic from this project, but again, they actually, you know, they're, it's better not only the, you know, the existing traffic that's out there, but it's, you know, we accounted for some regional growth and some background traffic.

And even with that accounted for, with our site, with our site traffic accounted for, the intersection will be substantially better. I mean, orders of magnitude better in terms of the, the overall delay, the average delay per vehicle than it is today. And it will also leave the, the rest of the intersections along the corridor in a better place than, than they're in today, based on the corridor analysis.

MR. ROSENBLATT: And can you explain the, the interplay of the SHA versus County ownership of the intersections and the lights and how these improvements would be made, absent this project?

MR. DRIBAN: Yeah, so, that's a good question. The, so as I was explaining before, you know, the County has oversight of, of, of the development process and review of, of the site. And SHA, ultimately, has responsibility and, and oversight of, of whether to allow, you know, improvements, or

to, or to do their own improvements in the corridor.

And so, it's actually, you know, it's kind of, this is, Falls Road kind of falls into a catch twenty-two to some extent. Where, you know, by SHA's methodologies, for the most part, you know, we saw that Greenspring Valley is a level of service B or C, depending on the methodology you look at.

You know, or the intersection of Joppa, or Joppa Road is only failing under one of the two methodologies. It's unlikely that SHA would ever improve this on their own, based on the fact that the modern methodologies, the methodologies that SHA uses, don't show failures.

And, and actually, that's evidenced by, if you go back and look at, you know, the, the history of this intersection and the signal plans that SHA maintains, the last time lanes were added, as far as I could tell from my research of SHA's date was 1985. So, we're, you know, thirty-seven years out from any, from any additional lanes to the Falls or Joppa intersection. Or really, any kind of major improvements with capacity of that magnitude being added.

So, you know, and, and I guess what I kind of glossed over there is Baltimore County, since it's an SHA roadway, would not be making their own improvements. So, really, I mean, the opportunity to, to make an improvement like this is, is through mitigation, is through the County, the County.

The County's basic services map identifies this as a

level of service F, based on the loaded signal methodology, and the loaded cycle methodology, and, you know, so, I think the idea, I can't speak to the intent of it, but certainly it's an opportunity to, you know, to provide, to provide mitigation and make (inaudible) benefits, not just the site, but again, benefits all of the, the residents that pass through that intersection today.

MR. ROSENBLATT: Will the, the granting of this Petition, did you find any reserve capacity certificate request that would be negatively impacted by approval of this special variance?

MR. DRIBAN: I did not.

MR. ROSENBLATT: Okay and, in your professional opinion, does this development, with the improvements that you've explained, meet the standard for obtaining a special variance in Baltimore County?

MR. DRIBAN: Yes, it does.

MR. ROSENBLATT: And, in your opinion, does the proposed development meet all rules and regulations related to traffic?

MR. DRIBAN: Yes, it does.

MR. ROSENBLATT: A few, few more issues to discuss. I heard some questions this morning on Tallyho, the neighboring road. And I just want to ask you, during, during the development process, did you learn that Tallyho, that

neighborhood, believes there, or believe they're facing a cut through problem of, of people between Seminary and Joppa Roads?

MR. DRIBAN: We did, yeah. Through some, some of the neighborhood coordination meetings that the Developer was undertaking, we definitely heard that that was, that that was an issue.

MR. ROSENBLATT: Did you perform a study to determine the extent, or if there is a, a cut through problem?

MR. DRIBAN: Yeah, so, when we were, were alerted about this potential concern from the community, we did coordinate with Baltimore County traffic staff. Keith Lank oversees their traffic (inaudible) program, or at least did at the time we were coordinating.

And so, we were in discussions with him about, you know, potential, about sort of the, trying to understand the magnitude of the cut through issue and whether the County had any plans. And he did inform us that one of the things they were looking at, the County was looking at at the time, was insulation of speed humps, removal of stop signs within the, within portions of the, the, the Tallyho neighborhood, to be replaced with speed humps.

And so, we, we had some discussions with them, just back and forth about, again, really just trying to understand the issue. And one of the things they asked us to do was to conduct an origin destination study, which is a, a pretty

detailed, I mean, it's, it's a very detailed study that really is not particularly common just because it's data intensive and effort intensive.

But basically involves, you know, sitting at either end of the, of the, of a neighborhood and documenting the, the volume of vehicles that actually cut through from one end to another. And so we did that study over the course of several days in the fall of 2021.

And the results of that study were that there's actually a very low volume of cut through in that neighborhood during the peak periods that we evaluated. You know, on average, during the a.m. peak period, we found somewhere between three, three vehicles and ten vehicles, depending on the day, which was about five percent of the traffic on one day, twelve percent on another.

During the mid-day, one and a half vehicles on average, over the course of one set of observations we did, and then one and a half again another day, another set of observations. So, that was three percent of the total traffic going through the neighborhood or within the neighborhood.

And then during the p.m. peak hour, again, five vehicles and four vehicles, you know, on average over the course of several days that we, that we collected this data, which accounted for about five percent of the traffic within the neighborhood.

So, those volumes, just for context, you know, they're, the, the County doesn't have a specific threshold or, or cut off for when cut through traffic is considered an issue. Like they don't say it's x number of cars that is, is considered problematic.

But there are some, you know, some neighboring jurisdictions, you know, states, counties, that, that do have fairly harden facts, guidelines, you know. For instance, PennDOT says that if the cut through traffic on a local residential street needs to be more than forty percent of the volume and a minimum of one hundred cut through trips. Again, we're talking about, you know, less than ten during every, every peak hour we analyzed except for one. Certainly nothing near a hundred.

VDot has guidance, says a hundred and fifty trips or more, forty percent of the total traffic. And then Prince George's County also has some guidance that says a majority of the traffic on the street must be cut through traffic in order for it to be considered for, problematic.

So, the bottom line is, we did a study at the County's request, you know. The, the data showed that there's really not a, there's really not a substantial volume of cut through. And, you know, but out of that coordination with the County, you know, I can't say for sure whether, whether, you know, we helped move this along or not.

But it was while we were in discussions with the County, with, with traffic division, that the speed humps were ultimately installed and that the stop signs, some of the stop signs were removed within the community.

So, as a project, they had, they had been planning and, you know, I, I can't, I don't know that we can take credit for, for it. But certainly, the, the timing was as we were speaking to them and yeah, so.

MR. ROSENBLATT: Were the numbers you mentioned, was that before or after the, the speed bumps were installed?

MR. DRIBAN: That was before the speed bumps were installed. And speed bumps, if you look at the literature, there's typically about a twenty percent reduction to, to cut through traffic at the time they're installed. So, the numbers that I quoted, you know, could potentially be even, even lower now.

MR. ROSENBLATT: Okay. I'm going to show you, and I'm going to talk about the Mays Chapel gate issue with you. Before I do, I don't believe I asked for your, the prior three exhibits to be admitted. So, twenty-four is your resume, twenty-five is your traffic study, whoops, sorry. And twenty-six is your corridor analysis that you explained. And Judge, I'd move these three into evidence.

ALJ: Mr. McCann, any objection?

MR. MCCANN: No objection, thank you.

ALJ: Mr. Zimmerman?

MR. ZIMMERMAN: No objection, Your Honor.

ALJ: Thank you.

MR. ROSENBLATT: Okay. Let's, let's talk about the, the proposed emergency access only gate at the rear of this property to Mays Chapel Road. Showing you what has been marked as actually Protestant's, Mr. McCann's Exhibit 9, a copy of the pages from the Bureau of Development Plans Review Policy Manual.

And I'll turn your attention to the bottom of the second page of this exhibit, page twenty-two of the manual, and the policy, I believe it begins on the bottom of twenty-two and runs into twenty-three. And can you just, can you explain the policy and then we'll talk about it?

MR. DRIBAN: Sure. So, the, the policy provides unit counts wherein a gate could, would be required. In this case, it limits the limits on the number of units are a hundred units, with no future street extension proposed --

MR. ROSENBLATT: I'm sorry, Mr. Driban, I think you said where a gate would be required. What, --

MR. DRIBAN: Excuse me. Yeah, apologies. Where, where --

MR. ROSENBLATT: Start over, start over just so it's (inaudible) --

MR. DRIBAN: Yeah, sorry. Where a secondary access

point would be required. In this case, the, you know, the access guidelines state the maximum number of, of units with one means of access. So, you know, above these numbers, the guidelines would, would say that in a typical situation, you would need to have a second means of access.

So, in this case, the limit on the number of units is a hundred units with no future street extension proposed, a hundred and fifty units when a future street extension is proposed and is feasible or, and greater than a hundred and fifty units, a second means of access must be constructed.

Now, there are exceptions to that. The first is, these limits may be increased when restricted by a limited or controlled access highway or other physical barrier or limitation as advised by the Department of Public Works. And also, emergency access points in place of full access points generally may be discouraged but may be approved in unusual circumstances.

MR. ROSENBLATT: Okay. Let's, let's talk about the policy and then we'll talk about the exceptions, so I am, I'm going to show you what's been marked as Developer's Exhibit 27 in a second. But I want to focus your attention on the, the guideline maximum number of units with one means of access, limit of units, one hundred units with no future street extension proposed and then the one fifty you just explained.

MR. DRIBAN: Um hm.

MR. ROSENBLATT: Can you explain what exhibit, Developer's Exhibit 27 is?

MR. DRIBAN: Yeah. So, so the guidelines talk about the number of units. They don't talk about that, with, with one means of access. They don't talk about, you know, that that, that that access must be to a certain classification of roadways.

So, they don't say that you must have two means of access to a, an arterial road or a collector road. These are different functional classes of roads, right? It just says means of access.

So, in this case, you know, we looked at the communities around, as well as the site and the Meadows at Greenspring, which is the red boxed area on this exhibit, has ninety-nine units, by my count. It's got two access points to Mays Chapel Road. Boxwood has twenty-seven units, it's got one access to Mays Chapel Road.

Greenspring Manor would propose to have sixty-one units, or is proposed to have sixty-one units, which would be, which, which would have one access point to Joppa Road. So, if you look at the requirements, none of those, none of those neighborhoods have more than a hundred units, you know, with, with, with a single access point.

MR. ROSENBLATT: In your opinion, does the policy mandate that there be two separate access points for

Greenspring Manor?

MR. DRIBAN: No, I don't believe it does.

MR. ROSENBLATT: Okay and can you speak to the purpose of this policy? You said you've seen similar policies. What, what's, what's the purpose of requiring more than one access point in certain circumstances?

MR. DRIBAN: Yeah, so, I mean, there can, there's, there's kind of a couple things, you know. One of them can be circulation, the need for site circulation, you know, to, to enhance getting in and out of different sites without undue delay.

The second I think it would probably be emergency access. You know, making sure that if, I don't know, a tree falls across the driveway and there's an emergency inside that, emergency responders, police, fire, EMTs, would have, would have access via an alternative means.

MR. ROSENBLATT: Okay and in, in your opinion, if the proposal is as suggested by the Developer, that being full access to Joppa Road, emergency only access via gate to existing Mays Chapel Road in the rear, does that fulfill the purpose of this policy?

MR. DRIBAN: Yes, I believe it does.

MR. ROSENBLATT: And explain it. So, for, for the Meadows and Boxwood, if, if their access to Seminary Avenue was blocked by a tree, could there still be emergency response to

those neighborhoods with the proposal this Developer has put together?

MR. DRIBAN: Yes, there are. So, with a gated access back there, there are a number of different, different systems. I mean, we've, we've worked on other, you know, similar projects in other areas where, you know, there, there are systems that can open a gate based on recognition of sirens.

There's systems that can open a gate based on recognition of, you know, the, the flashing lights of a, of a vehicle. I mean, there are, there are a number, a number of different ways that the gates can be, the gates can be allowed for, for emergency vehicles. And it's actually a fairly common condition, I would say.

MR. ROSENBLATT: And I guess vice versa. If a tree falls across Joppa Road access to Greenspring Manor, could emergency vehicles respond with this proposed gate?

MR. DRIBAN: Yes.

MR. ROSENBLATT: Let's go back to the policy for a second. You've talked about your opinion as to whether the policy itself applies. Assume for a minute, if the Judge were to determine that it does apply, I want to focus your attention on, on the exception under C, which states emergency access points in place of full use access points generally may be discouraged but may be approved in unusual circumstances.

And I want to talk about your opinion as to whether

this is an unusual circumstance. And to do that, I'm going to show you what has been marked as Developer's Exhibit 28. Can you explain what this exhibit shows?

MR. DRIBAN: Yeah, so, so, what this exhibit is showing is kind of the, the different routes between Joppa and Seminary, between Joppa and Seminary. So, you've got, you know, today Falls Road and Green, you can go northbound or, you know, I'm just thinking about that direction. Northbound on Falls Road, you can make a right on Seminary and, you know, you can get between them that way.

You can go through Tallyho, which is a windy road through little streets. It's, it's, it's got eight speed humps, you know, there are turns all along it, and it's a much longer route. Or I guess it's comparable to Falls Road. But if this Mays Chapel connection were to be created, it's a very direct route. And it's, and it's parallel to Falls Road, you know, roughly parallel and not that far off.

So, you know, we've talked about the fact that Falls Road is signalized, you know, Mays Chapel Road is not. It, it really, it really would create a very direct connection between Joppa and Seminary that, you know, analysis that we've conducted shows that likely to be used by hundreds of vehicles, hundreds, during the, the morning and evening peak hour. As well as, you know, as well as likely throughout the rest of the day.

MR. ROSENBLATT: What, what impact could that have on the Meadows, Boxwood and Greenspring Manor?

MR. DRIBAN: Yeah, so there's this, there's a concept I sort of mentioned it earlier, but there's a concept of functional classification. So, functional, functional classification is a hierarchy of roads. So, if full access controlled highways that are meant to provide the most mobility and the least amount of access.

Down from that, you've got arterials, which are high level of mobility, minimal access. Collectors are kind of a cross between mobility and access.

And then at the, the bottom, the lowest level of mobility, the highest degree of access, is local roads. And local roads are, you know, what you would think, Mays, Mays Chapel Road is a local road. It's your typical neighborhood streets with a lot of driveways, they're not meant to be high speed roads typically. They're not meant to carry a high volume of traffic. They're meant to get people into and out of their driveways to their, sort of final, ultimate destination.

And so, you know, the, the challenge with creating a, a, a, a direct connection via Mays Chapel Road, is that Falls Road is, is a, is an arterial. You know, it's designed to handle traffic. And Mays, Mays Chapel is a local road, it's really not. It's really meant to provide people access to their driveways.

And there's a lot, a lot of best practices, traffic engineering and transportation planning engineer, planning information out there that speaks to, you know, the hierarchy of these roads and how they should be used.

So, you know, specifically, the County, the County has a couple bits of guidance. The Department of Public Works' neighborhood traffic management program has a paragraph that reads the neighborhood traffic management program for residential streets, so this is kind of the County's cut through control program.

The neighborhood traffic management program for residential streets represents the commitment by Baltimore County to promote and maintain the safety and livability of the County's residential neighborhoods.

And it goes on from there. But it concludes with, increased traffic volumes and vehicular speeds have negatively impacted the livability of residential communities. So, you know, it's, it's, it's saying pretty directly, we don't, it's not a good idea to put traffic on local roads.

This is from County's master plan 2010. There's a sentence discussing managing traff, or a paragraph discussing, discussing managing traffic within communities that concludes with mitigation measures should be taken to insure that community streets remain safe and compatible with perspective, with the respective community.

And then lastly, for County guidance, from the County's design manual for roads and streets, they talk about the term traffic calming refers to measures intended to reduce the undesirable effects of traffic. Such effects are generally twofold. In, inappropriate, in parenthesis, generally too high speeds for a route or street, and inappropriate traffic, e.g., through traffic on a residential street.

So, the County's own master planning documents and traffic calming documents are discussing that, you know, allowing through traffic, cut through traffic, is, is, is not recommended.

And I'll, I'll wrap up quickly on this topic, but the, a couple neighboring jurisdictions have similar language. For instance, Anne Arundel County's functional classification, they describe local roads. Local roads are designed specifically to have high accessibility to abutting land uses and access to the higher classification facilities. They offer the lowest level of mobility. And service to through traffic is usually deliberately discouraged.

And finally, Federal Highway Administration, in their highway functional classification concepts, they say, urban local roads provide direct access to adjacent land, provide access to higher systems, carry no through traffic.

You know, in this case, again, based on volumes of traffic in, in the immediate vicinity along Falls Road, and

particularly traffic, I guess I should probably explain this just a little bit further.

So, so when we look at the potential cut through volumes, it's primarily traffic that today is going westbound on Seminary Road and making a left to go southbound on Falls Road that, that might now go westbound on Seminary Road, cut through Mays Chapel, come out on Joppa and cut through to make that movement or vice versa.

And that's where, you know, again, there's I think something like six hundred vehicles that do that in the morning, a thousand roughly in the evening. And you know, even if a small fraction of that volume cuts through, you're, you're putting a high volume of commuter traffic that, that shouldn't be on residential streets onto streets where people are walking dogs, where children might be playing. And it's just really for all intents and purposes, and all best practices, it's really an undesirable situation.

MR. ROSENBLATT: So, two, two questions and then I think we can move on. But one, Mr. Zimmerman showed Mr. Bishop a zoning regulation Section 260.4, that spoke to providing a second means of connection to neighborhoods for, quote, good traffic circulation. And can you explain, in your opinion, does the proposed emergency only access gate facilitate good traffic circulation under these circumstances?

MR. ZIMMERMAN: Objection to, to the interpretation.

ALJ: Okay. Well, overruled. Go ahead.

MR. DRIBAN: I, I think, you know, it certainly provides the ability to move more vehicles, but it's moving more vehicles in a place where they're not designed or meant to be. So, I, I don't, in my opinion, that's not, that's not good circulation.

MR. ROSENBLATT: Is the proposal for the emergency access only gate, does that promote better traffic circulation in your opinion?

MR. DRIBAN: I believe it does. We, we heard Mr. Gino (inaudible) testify very early on that one of the, one of the reasons for, for an exception, you know, for a gated access is, is safety. And I believe that the emergency access gate would, would promote safety for the existing neighborhood while still allowing, you know, a functional and effective access for emergency vehicles. So, yes.

MR. ROSENBLATT: And just, just one final area of testimony. We've, we've been shown a comment from fall of 2021 from Terry Curtis, the Department of Public Works and Transportation, that questions the analysis that you provided and, I wanted, I wanted you to sort of explain your personal experience dealing with Public Works throughout this process, from 2021 to now with Mr. Nebre and in, in your personal experience, what happened there?

MR. DRIBAN: Yeah, so, as I, as we've discussed, the,

you know, the original traffic impact studies were submitted in, in September, first sort of back and forth with the County, September of 2020. We had comments from them. We submitted an updated study that was approved in December of 2020, that was approved in January by State Highway Administration.

At the same time as the State Highway Administration approved our study, we actually got an e-mail from, from Mike Hilsinger at the County that stated that they concurred with, with our improvements. I'm trying to find, if you could just give me one second to find the language.

He said, while the proposed improvement is located within a failing traffic shed, the proposed improvements associated with the traffic impact study, will mitigate the increased traffic generated by the proposed development.

And so, you know, we understood at that point, in January of 2021, that we had approval from both the County and the State and that the County was, was onboard with concurring with our, with our approach to, to meeting the special variance requirements. That we had mitigated all of our traffic based on the improvements.

Subsequent to that, I mentioned there was some back and forth on Tallyho based on community questions and things that came up. There's also, you know, as we've discussed, the Mays Chapel Road connection has been a subject of discussion and debate, you know, within, within our (inaudible) as well as

within the County.

So, there was a meeting in June of ’21 with Greg (inaudible), who at the time was the head of the, the Department of Traffic, the Division of Traffic, and Mike Hilsinger. And they requested at that time, an analysis.

They wanted more information of what would happen, you know, what the potential impacts if the gate is open, does it work well, does it not, you know, can you give us traffic data to support, you know, to, either way. Whether it does or doesn’t.

And so, we, we prepared a detailed analysis that was submitted to them, that was, that was specific to that quest. It was an analysis of, if you open Mays Chapel Road, how much traffic is likely to cut through, you know, what are the impacts of that, is it, you know, is it recommended.

And we submitted that on July 8th of 2021. In, around that time, not maybe exactly then, but around that time, the, both, both Greg Karski (phonetic) and Mike Filsinger moved on and Kris Nebre came in as the, I think at the time, acting leader for the traffic division.

And so, there was a change over in, in staffing, in terms of people who had been in that meeting and sort of directly involved with this project. And so, we got that comment that you’re referencing where somebody said, this isn’t a traffic, but, I’m paraphrasing, but somebody said, this isn’t

a traffic study.

Traffic impact study needs to present, you know, an unbiased review of, of the study, intersections, you know, based on, based on the, the standard methodology (inaudible) and basically sort of, sort of lambasted the, the fact that we, quote unquote, hadn't done a proper traffic impact study.

That study that was, I believe the basis for that comment, was not the traffic impact study. Again, at this point, we thought we had an approved traffic impact study. It had been reviewed by the County, the State, we had e-mails from both stating that they concurred with it. And this was a supplemental analysis that we conducted at the request of folks from the County who ended up departing prior to reviewing it.

So, you know, there was definitely some, some confusion. And I think that's where the comment that you're referencing originated from.

MR. ROSENBLATT: Over the past year, have you been able to resolve that communication issue with Mr. Nebre?

MR. DRIBAN: Yes, we've had correspondence with Mr. Nebre over, over the course of the past year and he's asked for some clarification on different things. He's asked us to conduct additional analysis on different things.

You know, he, he wanted to, I think, kind of make his own, come to his own conclusion and not just take for granted, you know, the information that, that we had from Mike

Filsinger, you know, in January of 2021. So, yes, there's been a substantial amount of back and forth with him.

MR. ROSENBLATT: And, and I think this may have already been an exhibit, but I couldn't find the number, so I've made Developer's Exhibit 29 a August 16th, 2022 e-mail from Kris Nebre to yourself, among others, and ask you is this the, the latest communication you had with Mr. Nebre prior to this hearing?

MR. DRIBAN: Yes.

MR. ROSENBLATT: And can you just explain what, what Mr. Nebre, what his e-mail did for your analysis?

MR. DRIBAN: I, I should clarify, actually, my last statement. I, so in this e-mail, he requested that I send over a, a P.E. stamped copy of a couple documents, and I did send those back to him subsequent to this. So, that would have been my, my last official communication with him, but.

This, this e-mail that's kind of his, is his sign off on, you know, his review of, of the traffic impact study, as well as the, you know, the additional information that we provided, where he is agreeing that the improvements are, at the Joppa intersection, are enough to accommodate the volumes from the site and that the mitigation from the improvement results in net zero impact along the corridor. Actually, it, it results, I, this is my, you know, annotation, actually results in improvement along the corridor.

MR. ROSENBLATT: Okay. I believe, Your Honor, that I have not asked for Exhibits 27, which was the overview of number of units in the area, number twenty-eight, which was the aerial with the connections between Seminary and Joppa highlighted, and twenty-nine, which was Mr. Nebre's e-mail, e-mail to Mr. Driban. So, I would ask that these three exhibits be admitted.

ALJ: Any objection, Mr. McCann?

MR. MCCANN: No objection. But Adam, if you could send the, the new one, twenty-nine quickly.

ALJ: That's also twenty, exhibit number thirteen, by the way. Twenty-nine, Developer's, excuse me, Developer's twenty-nine is County exhibit number thirteen.

MR. MCCANN: Yeah, I'm not sure I have that County exhibit so.

ALJ: Yeah.

MR. MCCANN: Thank you. No objection.

MR. ROSENBLATT: It, Mr. McCann, I think it was all e-mailed to you before we started this afternoon, but if not, I'll do it right now (inaudible).

MR. MCCANN: Including twenty-nine? Including twenty-nine?

MR. ROSENBLATT: I think so, yes. That was the intent.

MR. MCCANN: Yep, I have it.

MR. ROSENBLATT: Okay, thank you.

MR. MCCANN: Thank you.

ALJ: And do we have the exhibit, the e-mail that the witness was just talking about? January of 2021, from Mr. Filsinger? I haven't seen that. (inaudible) --

MR. ROSENBLATT: That was part of one of their exhibits, there were a series of e-mails. But if not, I can, I can find it.

ALJ: Well, I, I haven't seen that one.

MR. MCCANN: Yeah, it's not introduced yet, but I --

ALJ: It's not, oh, were you introducing it, Mr. McCann?

MR. MCCANN: No, but I --

ALJ: Oh.

MR. MCCANN: -- I can, I think it should come in, it was referenced.

ALJ: Yeah, I didn't, I don't have it. So, the ones that Mr. McCann put in, fifteen through nineteen, --

MR. MCCANN: Yep.

ALJ: -- they were the, the traffic e-mails. That's not in there.

MR. MCCANN: Correct.

MR. ROSENBLATT: Okay. We, we will make that our Exhibit 30 and I will, I imagine, Mr. Driban, as much as he probably wants to, is not leaving the stand anytime soon. So,

I will make sure I do that before he's done. If that's okay?

ALJ: Okay.

MR. MCCANN: Yeah, and I have no objection to that. I would just ask that the entire chain be, e-mail chain, be introduced, not just that e-mail. And I have that, if you don't, so.

MR. ROSENBLATT: Okay. I, and what I will do, Mr. McCann, is I'll e-mail what I have to you and confirm that is what you think is the entire chain and we'll do it --

MR. MCCANN: Sounds good.

MR. ROSENBLATT: -- at the appropriate time. Okay.

MR. MCCANN: Sounds good, thank you.

ALJ: Then, Mr. Zimmerman, you don't have any objection to the Developer's exhibits? You're, you're muted again, you're, okay, try again. Nope, you just muted yourself.

MR. ZIMMERMAN: Okay, can you hear me? Sorry.

ALJ: I can, yeah.

MR. ZIMMERMAN: No objection. I'd like to be included in the distribution of exhibits, if that's –

MR. ROSENBLATT: Of course. You also were sent all these exhibits before we started this afternoon.

MR. ZIMMERMAN: Right. Thank you very much. Thank you.

ALJ: Okay. Then cross, Mr. McCann?

MR. MCCANN: Yeah, can I take a, a two minute break?

ALJ: Sure.

MR. MCCANN: Break and then come back?

ALJ: I'll pause the record.

(PAUSE)

ALJ: Back on the record after a break and Mr. McCann, cross?

MR. MCCANN: Okay, thank you. Good afternoon, Mr. Driban.

MR. DRIBAN: Good afternoon.

MR. MCCANN: I'd like to start first with just a couple questions about your resume and if I could share, Your Honor? Great, thank you very much. So, this is Developer's twenty-four. You recognize this as your resume?

MR. DRIBAN: Yes.

MR. MCCANN: Okay and is it blown up enough for you to read it?

MR. DRIBAN: Yep.

MR. MCCANN: Okay. I guess first, a couple questions. You're resume mentions your work with SHA and with Montgomery County. I thought you had mentioned a couple of positions with firms, including your present firm, during the course of your testimony. Is this not an updated resume or am I missing something?

MR. DRIBAN: These are, this is my project resume. So, these are, these are projects that I've worked with, worked

on, been a part of, you know, at various firms that I've, that I've worked for. So, the SHA Access Management Division, that was, that was a job. I was there for about two years.

The districts three, four, five and seven was a project that I worked on at STV and we, we had an on call contract with different divisions within SHA, where we would do tasks, traffic related tasks, for those divisions, or those districts, excuse me. District four is Baltimore County. You know, safety studies, traffic signal (inaudible), traffic impact study reviews from time to time.

And then, the Montgomery County DOT is similar to that. Where we had an on call contract in my time at STV where we worked on --

MR. MCCANN: Okay, --

MR. DRIBAN: Yeah.

MR. MCCANN: -- it's just unusual, I didn't see the actual employer for when you were employed on here. But that, you're, you're sort of describing this as a project resume, is how you put it, correct?

MR. DRIBAN: Correct, yes.

MR. MCCANN: Yeah, --

MR. DRIBAN: I'm, I'm happy to provide, you know, specifics on employers if, if helpful.

MR. MCCANN: No, that's okay. Just STV, one more time, what's that --

MR. DRIBAN: Yeah, STV, Incorporated.

MR. MCCANN: Okay. Does that acronym stand for anything or is it just STV?

MR. DRIBAN: It's just STV.

MR. MCCANN: Okay and where are they, where's, where's that company based out of?

MR. DRIBAN: Headquarters is in New York, but I was in the Baltimore office, which is in Woodlawn.

MR. MCCANN: Okay and although not entirely described here, it sounds like, but where was most of your work for STV performed, what jurisdictions?

MR. DRIBAN: Yeah, so we, as I sort of briefly touched on with the, the, the SHA districts three, four, five and seven, --

MR. MCCANN: Yeah.

MR. DRIBAN: -- you know, the, the majority of the work for STV was in, was in Mar, was within Maryland. We did work for an array of different, different districts and different divisions within SHA.

So, district three is Prince George's and Montgomery County. We had an on call contract with them where we looked at anything and everything traffic related, you know, traffic safety, traffic operations. District four, again, Baltimore, Harford County, on call contract with them where we looked at traffic tasks, you know, same type of stuff.

MR. MCCANN: Yeah.

MR. DRIBAN: District five is south, is Southern Maryland, that's Anne Arundel, Charles, Calvert and St. Mary's. And district seven is Frederick and Carroll counties. So, we had, you know, it was the same, similar type of work for each of those agencies.

We also did work in Montgomery County. We did work in Baltimore City. I mean, we, we covered a lot of ground but it was all, you know, traffic, traffic focused and --

MR. MCCANN: Yeah.

MR. DRIBAN: -- you know, throughout the State of Maryland.

MR. MCCANN: What about Lenhart, your current firm's offices, where are they located?

MR. DRIBAN: Lenhart Traffic, our offices are located in Severna Park.

MR. MCCANN: Okay, all right. Well, I guess regardless of who you were working for at the time, just look, looking at the introductory paragraph to your resume, it looks like you have performed services within Baltimore County before.

MR. DRIBAN: Yes.

MR. MCCANN: Okay and what percentage of your work over the years that you've been licensed and the jobs that you've just described, would you say is in Baltimore County as

opposed to other jurisdictions?

MR. DRIBAN: It's hard to put a percentage on it. I mean, I, I can tell you that we had a direct on call contract with State Highway district four where we did projects directly for State Highway for public agency in Baltimore County.

We, and then, during my time at SHA, we, I was, the traffic impact study reviewer, there were three of us that covered the whole state and so, a chunk of that was with Baltimore County projects, coordinating with State Highway divisions and, and with County staff as well. I couldn't, I couldn't put a percentage to it, but certainly done, you know, with the course of my experience, tens of projects.

MR. MCCANN: Tens of projects?

MR. DRIBAN: Tens of projects.

MR. MCCANN: Yeah, and those, it sounds like those projects, since you were working in conjunction with, with SHA, involved application, review and application of SHA standards as opposed to the standards in Baltimore County, the development regulations and/or the zoning regulations, is that fair?

MR. DRIBAN: Yeah, it's, it's both. I mean, the, the SHA, you know, in a lot of things they are working hand in hand with, with counties. You know, I kind of mentioned in this case that SHA has jurisdiction over the roadways. But the County has jurisdiction over approval of the, of the

development.

And so, when we're reviewing traffic impact study, there's back and forth that occurs where you, you know, you sort of need to be knowledgeable in, you know, what the County standards are and whether, you know, the study you're reviewing complies with those as well as with SHA's standards.

MR. MCCANN: Okay. Well, let me, let me be more specific. Of all the projects, the tens of projects over the years that you've worked on that involved property within Baltimore County, how many of those projects involved the review, evaluation of the Baltimore County development regulations or the Baltimore County zoning regulations as opposed to any State Highway standards?

MR. DRIBAN: I mean, none directly. I wasn't a Baltimore County reviewer --

MR. MCCANN: Okay.

MR. DRIBAN: -- so when I was with SHA, we didn't, we didn't have any, you know, like I, I wasn't applying, I wasn't responsible for overseeing the County's standards, if you will.

MR. MCCANN: Got it, got it. So, this is your first project involving a proposed development in, in Baltimore County involving the application, review and application of the Baltimore County zoning regulations, correct?

MR. DRIBAN: We've done with, at Lenhart Traffic, we do, we've done, I've done studies within Baltimore County that,

you know, have been reviewed and approved as part of that. This is, this is my first time testifying in a special variance hearing.

MR. MCCANN: Okay. How about, other than testifying in a special variance hearing, have you ever worked on a project in Baltimore County, not in connection with State Highway standards, but rather, involving the application of the special variance provision in the Baltimore County zoning regulations.

MR. DRIBAN: Only in the capacity of reviewing SHA studies, not, not directly.

MR. MCCANN: Well, are you telling me that, in reviewing SHA studies, SHA considers the standards in the Baltimore County zoning regulations for special variances?

MR. DRIBAN: SHA typically, in most counties that have detailed traffic impact study guidelines, SHA does defer to the County guidelines. In this case, you know, Baltimore County doesn't have, they have the loaded cycle methodology for their intersections, but they don't have, you know, kind of detailed, you know, traffic impact study guidelines of, of their own.

So, at my time at SHA, when traffic impact studies would come in within Baltimore County, I had coordination with, you know, with County staff pertaining to traffic and to their zoning regulations through the lens of an SHA reviewer. So, I

was not overseeing the Baltimore County standards, but I had to be aware of what those standards were as part of my review.

MR. MCCANN: Okay. I'm not asking about traffic impact studies. I just want to make this clear. I'm asking about the special variance standard in the zoning regulations. Have you ever been involved in a project, where you were specifically asked that, as you have in this case, to review and evaluate that standard in the regulations?

MR. DRIBAN: No.

MR. MCCANN: Other than this case, have you ever been accepted as an expert before either the Administrative Law Judge of Baltimore County or the, or the Baltimore County Board of Appeals?

MR. DRIBAN: Within Baltimore County, no.

MR. MCCANN: And prior to being retained in connection with this project, had you even ever looked at the special variance standard in the section of the, the applicable section of the Baltimore County zoning regulations?

MR. DRIBAN: Yes, I was aware of the standard and had looked at it before.

MR. MCCANN: But not in connection with any project.

MR. DRIBAN: Not in connection with this specific project, but we do work in Baltimore County. And so, I, I've reviewed that. When I say we, Lenhart Traffic, does work in Baltimore County and so, I've reviewed that standard before.

MR. MCCANN: Okay, all right. I'll move on. Just a couple basic things before we get to your report, Mr. Driban. I think you've acknowledged much in your report, I can certainly show it to you, that all three of these intersections, all three that, the F rated intersections, Falls and Seminary, Falls and Greenspring Valley and Falls and Joppa, are inherently related and should be considered together when evaluating traffic impacts. Would you agree with that?

MR. DRIBAN: They operate as part of a coordinated signal system, so they are, they are connected.

MR. MCCANN: And should be evaluated together, correct?

MR. DRIBAN: There's, there's a degree of evaluation that is required for that, sure.

MR. MCCANN: And let's just, let's just get to your traffic impact study. I just have a number of questions about it. This is, I believe, Exhibit 25, the Developer's, Developer's fourteen apparently, yeah. I don't know why it's labeled twenty-five. But do you recognize this document --

ALJ: It's twenty, it is twenty-five. Maybe they renumbered the exhibits. Because I had an old sticker on something else that said fourteen. But this is twenty-five, just for the record.

MR. MCCANN: Okay. Thank you, Judge.

ALJ: Yep.

MR. MCCANN: Okay. Do you recognize this document as the traffic impact analysis you did, the final one, that is, revised as of December 7th, 2020?

MR. DRIBAN: Yes, I do.

MR. MCCANN: Okay. Just a couple specific questions about some of the, the underlying information that you relied upon. You mentioned the traffic counts that you used. Let me go to page six of this Exhibit 25. And I'll just highlight it. This paragraph which mentions the Baltimore County, I assume, yeah, Baltimore County traffic counts that were dated February 19, 2020. Are those, those the counts that you relied upon in connection with this report?

MR. DRIBAN: That is the count at that specific intersection that's referenced in that paragraph, yes.

MR. MCCANN: Okay, because in, it references Appendix A and I, maybe my copy, I did not see those, those traffic counts in Exhibit, Appendix A, so maybe you can provide them to us. I'll go down to Appendix A. I saw counts for what I, what I, look to be Greenspring Valley, so bear with me one second as I scroll down.

Appendix A. There's the basic services map. It's the growth projection. Then here's some traffic counts. This is on page twenty-seven of this Exhibit 25. These appear to be State Highway counts for Falls and Greenspring Valley Road, correct?

MR. DRIBAN: Yeah, you're, you're correct.

MR. MCCANN: Okay. I didn't see, I'll let you look as I scroll down, but I didn't see any for Falls and Joppa, though I've been wrong before.

MR. DRIBAN: No, I, I think you're right. I'm looking through it now and it looks like that count may have been omitted from Appendix A. What happened, as I explained initially, is we came in with, with counts in our original study that were provided by SHA, which I think is what remains in Appendix A.

And Baltimore County gave us sort of a hand marked up count that they had conducted with that date that they asked us to use. So, it looks like it was omitted from Appendix A, but that is the, the correct source of the count.

MR. MCCANN: No, I, I understand there's different dates, two different dates, of the traffic counts. I'm more concerned about getting the counts for Joppa Road and Falls Road. So, I would ask, Your Honor, you know, it's a bit unusual, that those be provided since they were supposed to be part of the report.

ALJ: (inaudible) Appendix A, you go, page twenty-six of seventy-nine, is a handwritten, I'm not sure if this is what he's referring to, if you could just scroll to twenty-six and see if that is the, those are the counts that the County asked him to use, twenty-six, is that it?

MR. DRIBAN: Yeah, I didn't see that one when you were flipping through. Yes, that is, that is it. It says our counts, 2/19/20. That is their, that was the handwritten marked up by Baltimore County staff.

MR. MCCANN: Okay.

MR. DRIBAN: And it's, yeah.

MR. MCCANN: And they include Joppa Road, obviously.

MR. DRIBAN: Specific to Joppa Road, yes. That was the one that they, they said they had a count for, that they asked us to use.

MR. MCCANN: So, this is all you got? This, this page right here, which is page twenty-six, and I saw this before, didn't know it was quite this. But page twenty-six of Exhibit 25, these are the traffic counts upon which your traffic study is based?

MR. DRIBAN: This is what Baltimore County asked us to use, correct. Yes, we had a count, the, I mean, as you were flipping through Appendix A, you can see the count, I believe it's the original count, that we had in there --

MR. MCCANN: That's Greenspring, that's Greenspring Valley, right? Right?

MR. DRIBAN: It was hard to tell as you were scrolling through --

MR. MCCANN: Yeah, I didn't mean to do that too quickly. I'll go back and, I guess it doesn't matter since we,

we know those are the counts, but. Just, and they say what they say, but, but I'll move on. You can look at --

MR. DRIBAN: (inaudible) --

MR. MCCANN: -- (inaudible).

MR. DRIBAN: -- just to clarify, by way of clarification. Yes, we, so it, those are Greenspring Valley, I have my own copy up there. Those are the Greenspring Valley counts that are in there. And then you would have seen a similar count in the original study for Joppa Road. What we exchanged that out for was this hand marked up copy from Baltimore County that they asked us to use.

MR. MCCANN: Okay, all right. Got it. And I was going to use, let me turn to page eight. So, these, these, this is Exhibit 3, page eight, of Developer's Exhibit 25. These are the peak hour volumes, I guess, based on the older counts, right?

MR. DRIBAN: Those should be based on the newer count, I believe.

MR. MCCANN: Okay. So, they, they were different than the handwritten notes that we just saw. But in any event, I, I wanted to get a sense from you, because you, you didn't really talk during your testimony about sheer volume of cars during peak hours.

So, and maybe, rather than this, I should use the hand counts. Let me go down to those. So, if we wanted to

look at, for folks that haven't looked at this type of document before, if we wanted, I take it the, the two thousand, February 2020 counts are in handwriting, not the other ones, right?

MR. DRIBAN: Correct, yes.

MR. MCCANN: Okay. If we wanted to take a look at all of those, during the peak hour, a.m. and p.m., the sheer number of cars that are, for instance, heading northbound on Falls Road during the a.m. peak hour, we would take, and I'm just going to turn this, we would take these numbers right here, 2016 is six hundred eighty-nine, I'm sorry, two hundred forty-eight, one thousand one hundred ninety-six in two thousand, and two hundred fifty-six, we would add those up and that would tell us the number of cars heading northbound, entering the failing intersection of Joppa Road in the a.m., is that the a.m.? That's p.m. peak hour, correct?

MR. DRIBAN: P.m., correct, yes. Yeah, and that's, that's on the northbound approach.

MR. MCCANN: Okay.

MR. DRIBAN: Now, just, just a small point of clarification. The two hundred fifty-two at the bottom there, they have a channelized right turn, so they don't, they don't, you know, they're at the intersection, but they're not, you know, part of the signalized movement. So, semantics, but just, just by way of clarification.

MR. MCCANN: They're not subject to the light, is

what you're saying? They're, --

MR. DRIBAN: Correct. There's a sweeping wide channelized right turn lane for that, for that movement.

MR. MCCANN: But during the p.m. peak hour, so in the evening rush hour, roughly, there's seventeen hundred cars in a single hour heading northbound on Falls Road towards that intersection, correct?

MR. DRIBAN: Sounds right, yes.

MR. MCCANN: Okay and then in the a.m., roughly seventeen hundred or eighteen hundred cars heading towards northbound, heading towards that intersection of Falls and Joppa during the a.m. peak hour, correct?

MR. DRIBAN: Based on quick math, yes. It, I, I agree.

MR. MCCANN: Okay. That's my quick math as well.

MR. DRIBAN: Yeah, I'm, I'm with you.

MR. MCCANN: Let me just back around to Joppa eastbound, we could do the same thing if we, if we spent the time looking, adding up these numbers and I'll, so eastbound, the total number of cars, and again, these are estimates. These are all estimates based on past traffic counts, correct?

MR. DRIBAN: It's not, it's not estimated, it's an actual --

MR. MCCANN: Actual --

MR. DRIBAN: -- turning movement count, so it's,

some, you know, we go out and collect data. In this case, the County went out and collected data and these are their actual volumes that, that were counted on that day.

MR. MCCANN: Got it. So, the total number of a.m. cars heading westbound on West Joppa Road towards the failing intersection, you would add up these numbers, and it looks to be roughly five to six hundred, correct?

MR. DRIBAN: Agreed, yeah.

MR. MCCANN: And in during the peak p.m. hour roughly seven hundred or so, correct?

MR. DRIBAN: Looks right, yes.

MR. MCCANN: Okay. Next, growth rate, back to page eight, I'm sorry, page nine. This is page nine of Exhibit 25 again, Developer's exhibit. You applied a growth rate of 1.5%. And I think you indicated during your examination by Mr. Rosenblatt, that that number you got from State Highway, right?

MR. DRIBAN: We developed that number based on data that State Highway maintains.

MR. MCCANN: Okay and that, I guess, by its nature, is a projection, it's an estimate, right?

MR. DRIBAN: It's a, it's an estimate, it's a look back at historical data to see what the growth pattern has been, yes.

MR. MCCANN: Yeah, and is that, that specific percentage, or that num, rather the statistics that you looked

at, were they locations specific? I mean, were they specific to Baltimore County or, or some portion of Baltimore County or were they state wide statistics, do you know?

MR. DRIBAN: Yeah, they're, they're specific. SHA maintains maps going back ten years of data, volume data, you know, in various locations. But I think within the County, this one is Falls Road, south of MD 130. So, it's right, you know, it's within the corridor, just, you know, north of the Joppa Road intersection.

MR. MCCANN: Okay and how old were those statistics, projections, do you know?

MR. DRIBAN: Well, so, they collect a count every year at certain locations throughout the state. So, we looked at data for 2009, '10, '11, '12, '13 through 2019. So, it was ten years' worth of data, historical counts that the State had collected.

MR. MCCANN: Okay and you didn't attach that data to the report, did you?

MR. DRIBAN: Page twenty-five.

MR. MCCANN: Okay, all right. You spoke about trip generation. So, I'm going to turn to page thirteen of this exhibit, Developer's Exhibit 25. And I think you explained where this is derived from and I'm sure the Judge is very familiar with where these numbers come from.

But I wanted to ask you about the, the trip

generation manual itself. I've, I've looked at it before, and certainly looked at it in this case, and those, those, these numbers that we get from the ITE trip generation manual, are based on studies that are performed by the ITE, correct?

MR. DRIBAN: Yes, that's correct.

MR. MCCANN: And not necessarily studies in Maryland, it may be studies from all over the country, correct?

MR. DRIBAN: That's right, yep.

MR. MCCANN: In fact, let me show you, bear with me one second. This would be our next exhibit, Judge. It's not been marked yet. I'll have the witness identify it and mark it as our next exhibit, share this with you.

ALJ: And that would be thirty-five, right?

MR. MCCANN: Thirty-five, correct. And it's a nineteen-page document. I'll scroll down through it slowly but tell me if you recognize what it is, Mr. Driban.

MR. DRIBAN: Yes, it appears to be pages excerpted from the ITE trip generation manual.

MR. MCCANN: Okay. So, this is what specifically for a single family detached housing, correct?

MR. DRIBAN: Correct.

MR. MCCANN: Okay and you used, as I understand it, first of all, let me ask you about, there's an introductory section here and it talks about the basis for this, for these trip generation numbers. In this case, it looks like studies

were conducted in a number of states, including Maryland, back in the eighties, nineties, two thousands and two thousands and ten, correct, two thousand and tens?

MR. DRIBAN: Yes.

MR. MCCANN: Okay and as I read this, and I won't scroll through the whole thing, but there are two ways, two ways actually, to look at trip generation for single family detached housing. You can do so based on the number of dwelling units, as in, as in this second page, is that correct?

MR. DRIBAN: That is correct, that is correct, yes.

MR. MCCANN: And if I scroll down, these are all dwelling units. Later on, there are portions of this provision of ITE that determined trip generation, not based on dwelling units, but rather the, the number of residents, correct? For instance, this is page eleven of this exhibit. It says residents there. Is that, that's an alternative way of looking at, at getting trip generation numbers, right?

MR. DRIBAN: It appears so. I've never seen any, anybody do it that way, but yes, that's what you're showing.

MR. MCCANN: All right. But you used units, correct?

MR. DRIBAN: Correct.

MR. MCCANN: Okay and specifically, I think where you got your numbers from, that we just saw in Exhibit 25, you got your numbers from, I guess I wanted to ask you that. This is page three. It says, dwelling units, weekday, peak hour of

adjacent street traffic, is that the one you used, for your trip generation numbers in your study?

MR. DRIBAN: That looks to be correct, yes.

MR. MCCANN: Okay and that's a.m., and here's the average rate, it says .7, right?

MR. DRIBAN: Correct.

MR. MCCANN: And I'll ask you about that in a moment. And then for p.m. peak hour, adjacent street traffic, this is page four of this exhibit, the average rate is .94, correct?

MR. DRIBAN: That, that is correct, yep.

MR. MCCANN: Okay. So, getting back to your study, whoop, excuse me. It's simply really just once you have the manual, it's just a matter of doing the math, take the number of units and multiply it by .7. At least for the a.m. trips, that's how it's generated, correct?

MR. DRIBAN: So, there's, there's a rate and an equation --

MR. MCCANN: Yeah.

MR. DRIBAN: -- just to be, yeah. And so, there's, the ITE provides guidance on whether to use the rate or the equation. And they often produce similar but slightly different results.

When there are more than twenty studies for a specific type of site, which single family detached has over two hundred. Actually, close to three hundred studies that

support the, the equation, they consider the equation to be the, the proper use.

So, it's not, you know, in this case, it's .7 times the number of units, plus 9.74. So, it's not, it's not just the rate that you were highlighting, it's actually an equation.

MR. MCCANN: Yeah, I, I mischaracterized it. I appreciate that. And the same thing, there's a, there's a calculation for the p.m. trips right here, correct?

MR. DRIBAN: Correct, yes.

MR. MCCANN: Okay. So, you didn't, it sounds like you didn't do trip generation evaluation based on the number of residents as opposed to dwelling units. It sounds like you've never done that before.

MR. DRIBAN: Not only have I not done it, but I've never seen it. And typically the guidance, and, and that's speaking as a former reviewer of traffic impact studies for the State.

Typically, the guidance for, you know, what, whether to use a, given an independent variable from ITE is to look at which one has the, the most studies. You know, in this case, the single family, using units, has order of magnitude, two hundred twenty-six studies that support the a.m. peak hour, trip generation rate, two hundred forty-eight for the p.m.

Whereas, the residents based rate equation has twenty-one studies for the a.m. and twenty-one for the p.m.

So, the, the quality of data, the quality of the information using units is substantially better and it's what is, it's what's used industry wide for single family.

MR. MCCANN: Yeah. Where did you get that information from? I don't see that in the, in the introduction to this provision --

MR. DRIBAN: Yeah, they have a, ITE has a web based, web based app that provides some additional information and, you know, beyond just the sheets that you see there.

MR. MCCANN: Yep.

MR. DRIBAN: And so, so the web based, the web based document lists the number of studies and just some additional kind of statistic type stuff.

MR. MCCANN: All right. But the question I had, struck me about using dwelling units, because if you look at these numbers, I think anybody looking at them would think they're, they're rather low. I mean, for a.m. peak hour, what you're suggesting, or what you're telling us that the ITE manual projects for sixty-two units in the a.m. peak hours is only, is only forty-six trips, correct?

MR. DRIBAN: That's correct. And, and, you know, what I should point out about that, as I did in my testimony, is that this is looking at the single highest hour. So, in sixty-two households, you may have, you know, you likely have more than sixty-two trips that occur over the course of, let's

say, 6:00 a.m. to 9:00 a.m., or 6:00 a.m. to 10:00 a.m., as people are leaving and coming back, and people go to work or school. But based on hundreds of studies conducted throughout the country where they actually sat, you know, at the entrance to a community and looked at how many go in and out during the highest hour based on --

MR. MCCANN: (inaudible).

MR. DRIBAN: -- (inaudible) forty-six would be, would be occurring during the a.m. peak hour.

MR. MCCANN: Correct, forty-six would be what?

MR. DRIBAN: Forty-six trips would occur during the a.m. peak hour. So, eleven in and thirty-five (inaudible) --

MR. MCCANN: It says, it says peak here, I think everybody understood that. It, does that strike you as low though? During peak hour for a development of sixty-two homes, only forty-six trips are being made? That doesn't sound low to you, just based on personal experience?

MR. DRIBAN: I just explained, I just explained what I think that's, that's accounting for.

MR. MCCANN: You (inaudible) --

MR. DRIBAN: (inaudible) these are numbers based on studies.

MR. MCCANN: I understand. But these studies, and I'll get to this eventually, but you just mentioned two hundred plus studies. You would agree with me that there's a margin of

error, not only in these numbers that we're, you're using right now, but there's a margin of error in, in each and every one of, or collectively, of the studies that are, that we're talking about, correct?

MR. DRIBAN: I'm not sure what you mean by margin of error.

MR. MCCANN: Well, tell me what --

MR. DRIBAN: In, in this context.

MR. MCCANN: Yeah, well, we'll get to that in a little bit. In any event, --

MR. DRIBAN: I mean, I, I would say that, I would say that --

MR. MCCANN: No, no, wait for a question. Wait for a question, Mr. Driban. In terms of, these are peak hours, as you pointed out. Am I correct though that, what, what you didn't mention, the, the average daily trip generation, daily that is, for this proposed development, is six hundred cars per day, correct?

MR. DRIBAN: We didn't look at, I don't have that number in front of me, I'm not certain.

MR. MCCANN: Well, let me, let me show you Developer's Exhibit 1-B, and just direct you to note eleven. I'll blow it up. It says, total ADT generated by the site, six hundred. Do you see that?

MR. DRIBAN: I do.

MR. MCCANN: Any reason to think that's not correct?

MR. DRIBAN: I mean, I, I haven't independently verified it, but I trust that it, the engineer who put it on the plan said they did, so. I, I'm sure it's, I mean, I'm sure that they did their due diligence on it.

MR. MCCANN: Did you personally, I take it not, but did you, I'll ask anyway, did you personally review any of the studies upon which this trip generation, this specific provision of the trip generation manual is based, are based?

MR. DRIBAN: You mean, like the individual studies that go in to, to creating the rates?

MR. MCCANN: Yes, yes. I've never, I've never reviewed the individual studies. I have reviewed the underlying information that, you know, that, that forms the basis of the ITE trip generation manual as a whole and some of the, you know, --

MR. MCCANN: I'm just asking about the studies.

MR. DRIBAN: (inaudible).

MR. MCCANN: (inaudible) Mr. Powell's testimony, for instance?

MR. DRIBAN: Sorry?

MR. MCCANN: Were you here for Mr. Powell's testimony?

MR. DRIBAN: Yes, I was.

MR. MCCANN: Did you hear Mr. Powell testify that

these homes could have two to three car garages? Did you hear that testimony?

MR. DRIBAN: I did hear that testimony.

MR. MCCANN: Did, I, I take it you don't know, but did any of the studies upon which this trip generation manual provision is based, take into consideration such things as the number of garages? Do you know if that's the case, yes or no?

MR. DRIBAN: I'm not certain, but I'm sure that within two hundred plus studies conducted across the country, that certainly some of those sites would have had that configuration.

MR. MCCANN: I, how can you say, you haven't reviewed any?

MR. DRIBAN: The, the, the --

MR. MCCANN: (inaudible) --

MR. DRIBAN: -- the amount of data for this land use in particular is, is far above and beyond any other land use in the ITE trip generation manual. There have been more studies done on single family housing units than any, than anything else. Probably because that's, you know, one of the more common types of development. At least, at least that I'm aware of. But the, I mean, the data is more robust for this use than probably, probably anything in the, in the manual.

MR. MCCANN: Okay. The, the next page, which is fourteen, of Exhibit 25, Developer's Exhibit 25, is the trip

assignment or distribution for the proposed development, correct?

MR. DRIBAN: Correct.

MR. MCCANN: Okay and just a little more detail on this. Essentially, what this distribution tells us is of the cars leaving the site, which is right here where I x'd, where I've x'd, the, you've estimated that the distribution of those, the travel of those cars, is in, in the percentages that I've circled, correct?

MR. DRIBAN: Correct, yes.

MR. MCCANN: So, in other words, twenty percent heading eastbound on West Joppa, sixty percent heading southbound on, on Falls Road, correct?

MR. DRIBAN: Yes.

MR. MCCANN: Okay and, and these, these, these are estimate, right? These are --

MR. DRIBAN: Yes, yes.

MR. MCCANN: -- these percentages are based on estimates. I know they're based on, I'm sure they're based on the ITE manual, but they're estimates, correct?

MR. DRIBAN: Yes.

MR. MCCANN: Okay. Are they based on the ITE manual or are they derived from somewhere else?

MR. DRIBAN: They're based on the trip generation and then applying regional, local and regional patterns to

determine where origins and destinations would be.

MR. MCCANN: Okay. But because they're estimates, there's, there's some margin of error for this, right? This is not, by any means, these percentages, particularly, you know, nice, even percentages like sixty percent and twenty percent, there's a margin of error in these numbers, right?

MR. DRIBAN: Yes.

MR. MCCANN: Okay. All right, let's talk about the, the level of service results, we're getting there. So, this is page sixteen of Exhibit 25. I'll blow it up a little bit. First, let's talk, maybe this is, this is the critical lane volume results, correct?

MR. DRIBAN: Correct.

MR. MCCANN: All right. On page sixteen, that is. The critical lane volume, I think you've already described what it is, but it's been around for quite a while too, has it not? I've read somewhere thirty years or so, does that sound about right?

MR. DRIBAN: That sounds about right, yeah.

MR. MCCANN: Yeah.

MR. DRIBAN: I mean, I don't know exactly, but it's been around.

MR. MCCANN: Okay and, and I take it, just on a very practical level, you have, as you're sitting at your desktop in your office, there is some computer HCM, I'm sorry, CLV

software that you use, where you input some of the, the data and these numbers are, are outputted. Is that fair? That's an oversimplification, but is that basically, is that basically how it works?

MR. DRIBAN: The CLV is more, that would, that would apply to the highway capacity manual. But for the CLV, it's more SHA and different counties publish the CLV procedures and it's, it's more of a calculation and (inaudible) use Excel to do it, but they're, you know, there's, it's more of a calculation based on the volumes and the, and the formula that's put forth by the agencies.

MR. MCCANN: Yeah. But, putting aside the existing morning and peak hour counts, the, certainly the background and the total counts, those are, those are estimates, those are projections, correct?

MR. DRIBAN: They're projections that are conducted based on the guidelines for traffic impact study that are, you know, published by SHA and are standard in commonplace throughout, throughout the country, throughout the practice. So, yes, they, they are, but, you know, there's a methodology behind them.

MR. MCCANN: I'm not questioning whether there's a methodology. I'm just asking whether they're projections. And because they're projections, would you agree with me that there's some margin of error in whatever, whatever computations

are, whatever that method, that methodology calls for, the CLV methodology, that is, is that fair?

MR. DRIBAN: There's not, I mean, the CLV calculations are what the CLV calculations are. They're, if there's any, you know, anything that, certainly a projection, projection is just that. It's a projection. So, the, the way that --

MR. MCCANN: I'm just asking --

MR. DRIBAN: -- what's, what's, if I could just finish. What's projected is the volumes that go into the CLV, that we've looked at, that we've looked at in the previous exhibits. The CLV itself is a formula that is hard and fast and that's not, that piece of it is not a projection, the actual CLV number is not.

MR. MCCANN: Well, it's, it's an output based on the input of estimates or projections, right?

MR. DRIBAN: It's an output based on, yes. But the CLV itself isn't, semantics, yes.

MR. MCCANN: Okay. Well, I'll move on. I just, so, it, to cut to the chase, in terms of the results in the critical lane volume analysis for Falls and Joppa, we're, we're going under existing conditions without the improvements, I'm sorry. Yeah, from existing to total, that is, with the proposed development, we're going from, I'm sorry about that. We're going from an E to an E. So, no change without the

proposed improvements, correct?

MR. DRIBAN: There's no change in the level of service. The C, the actual CLV number used to determine the letter grade does change as you can see --

MR. MCCANN: I understand that. I'm just asking about the letter grade.

MR. DRIBAN: The letter grade is still an E, correct, yes.

MR. MCCANN: With, with improvements, the, there apparently is a change. And according to CLV manual, it's from an E to a D, right? That's reflected here, right?

MR. DRIBAN: Right, yes.

MR. MCCANN: The fourteen twenty-eight, right? Is that correct?

MR. DRIBAN: Yeah, that's correct.

MR. MCCANN: Okay and then, evening peak hour, comparing the existing critical lane volume, level of service to the total or the post-development level of service, the level of service itself does not change, correct? It stays at a D, right?

MR. DRIBAN: The letter, the letter level of service is the same, yes.

MR. MCCANN: Okay and then, and I'll get to the percentages in a moment. But under the highway capacity manual, the, the numbers are reflected in page seventeen of

Exhibit 25, correct?

MR. DRIBAN: Correct, yes.

MR. MCCANN: Okay and for Falls and Joppa, it goes from, actually it goes from a D under existing conditions, to an E without the improvements, correct?

MR. DRIBAN: That's right, yeah. The threshold between D and E is 55.0 seconds, so, it crosses, crosses the threshold.

MR. MCCANN: Yeah, but with the improvements, that is this number here, the level of service D, with the improvements, comparing the existing level of service to the level of service that exists post-development, the level of service does not change, it goes from a D to a D, correct? So, no improvement, no improvement there in terms of level of service, right?

MR. DRIBAN: In terms of the level, so level of service is made, is derived from the, the amount of delay. So, when you're talking about level of service, you're really, you're not, you can't just talk about it as the letter grade --

MR. MCCANN: Well, I'm asking the questions, Mr. Driban, and I'm sorry to interrupt, but my question --

MR. DRIBAN: I'm answering your question --

MR. MCCANN: -- is about the level of service, I know you want to say what you want to say --

MR. ROSENBLATT: Well, he, he does get to answer the

questions and, and I know this is always a tough balance. But, I mean, he gets to answer in his own words.

MR. MCCANN: But he's not, he's not being responsive --

ALJ: All right. Well, I think he, he, he believes he's being responsive. One second. It's 4:28, Mr. Rosenblatt. You have to leave at 4:30.

MR. ROSENBLATT: I'm so sorry.

ALJ: No, no, understood. I just want to make sure. I was looking at the clock and I just want to make sure. I'm sure Mr. McCann has more questions --

MR. ROSENBLATT: Yeah.

ALJ: -- that he won't finish today. So, I just want to give him a heads up. You know, we have like two minutes. But so, so that he knows, he, he has to come back tomorrow anyway. Everyone has to come back tomorrow, nobody's, nobody's free. So, Mr. McCann, did you want to continue for two more minutes or would you --

MR. MCCANN: No, maybe I'll just finish this up at level of service results and Adam has to go --

ALJ: Okay, all right.

MR. MCCANN: -- so that's fine. I don't have a problem with that at all. So, real quick, highway capacity manual level of service, I think I just asked you, goes from a D to a, a D for the morning peak hour, evening peak hour also

goes from a D to a D. So, stays, the level of service stays the same, correct?

MR. DRIBAN: The letter grade, it stays the same.

MR. MCCANN: Okay and maybe, maybe I should stop there, Your Honor, before I move onto something else. If we're going to stop anyway, so.

ALJ: Yeah, that's what I was thinking, so that you could, you know, gather your thoughts then for tomorrow too. All right. So, everyone, we are back here tomorrow at 10:00. And we'll just continue again with the same witness. So, we'll, after Mr. McCann is done, we'll turn to Mr. Zimmerman, Mr. Zimmerman, Mr. Wyatt, everyone. We'll just make sure Mr. Sachse, you, you have questions, you can also ask them tomorrow. Does that make sense, 10:00?

MR. MCCANN: It does, yep.

ALJ: All right. All right. And I know Mr. Rosenblatt, you're running out the door.

MR. ROSENBLATT: I know, I'm so sorry. Thank you, everybody. I'll see you tomorrow.

ALJ: I've been, I've been, we've all been in those shoes many times. So, yep, and what I'm going to do is stop the recording. So, we are off the record.

CERTIFICATE OF TRANSCRIBER

I hereby certify that the hearing in the matter of Greenspring Manor, 2310 W. Joppa Road, case numbers 08-0922 and 2021-0250-SPH, heard before the Office of Administrative Hearings of Baltimore County, October 27, 2022, were recorded by means of audiotape.

I further certify that, to the best of my knowledge and belief, page numbers 1 through 271 constitute a complete and accurate transcript of the proceedings as transcribed by me.

I further certify that I am neither a relative to nor an employee of any attorney or party herein, and that I have no interest in the outcome of this case.

In witness thereof, I have affixed my signature this 22nd day of March 2023.

Christine R. Leary

Christine R. Leary

Transcriber

BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF	:	PAI NO.: 08-0922
COMBINED ZONING AND DEVELOPMENT	:	TRACKNG NO.:
PLAN HEARING – GREENSPRING MANOR:		MAJ-2021-00001
	:	
	:	ZONING CASE NO.:
2310 WEST JOPPA ROAD	:	2021-0250-SPH

Friday, September 21, 2022

BEFORE:

MAUREEN MURPHY

PUBLIC UTILITY LAW JUDGE

TRANSCRIPTION SERVICES PROVIDED BY: CRC Salomon

APPEARANCES:

On behalf of Developer:

ADAM ROSENBLATT, ESQ.
Venable, LLP
210 West Pennsylvania Avenue, Suite 500
Baltimore, MD 21204

On behalf of Protestant:

MICHAEL MCCANN, ESQ.
Cowie & Mott
1321 Generals Highway, Suite 302
Crownsville, MD 21032

On behalf of Office of People’s Counsel:

PETER ZIMMERMAN, ESQ.
Assistant People’s Counsel
William Donald Schaefer Tower
6 St. Paul Street, Suite 2102
Baltimore, MD 21202

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P R O C E E D I N G S

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JUDGE MURPHY: Good afternoon, everyone. You're attending day three of case number 08-0922 and 2021-0250-SPH, property address 2310 West Joppa Road. Again, this is a combined development plan special variance case for the project known as Greenspring Manor.

For the record, we have counsel for the developer and protestants and Mr. Zimmerman. I'll let you introduce yourselves.

MR. ROSENBLATT: Good afternoon, Your Honor. Adam Rosenblatt and Chris Mudd of Venable, LLP on behalf of the developer petitioner.

JUDGE MURPHY: All right. Mr. McCann?

MR. MCCANN: Thank you. Good afternoon, Judge. Michael McCann on behalf of the protestants.

MR. ZIMMERMAN: Peter Max Zimmerman, people's counsel for Baltimore County, Towson, Maryland.

JUDGE MURPHY: All right. Thank you. So

when we left off yesterday, we had the developer's case started, and so we had another witness for the developer I understand, is that right?

MR. ROSENBLATT: Yes, Judge, we're ready. Just so everyone is aware, we hope to get through three witnesses today. They are all ready to go.

JUDGE MURPHY: That's ambitious. All right. So who do we have first?

MR. ROSENBLATT: The first witness is Russell Powell.

JUDGE MURPHY: Okay. There you are. Raise your right hand, please.

Whereupon,

RUSSELL POWELL

A witness of lawful age, after being duly sworn to tell the truth, the whole truth and nothing but the truth, testified as follows:

DIRECT EXAMINATION

BY MR. ROSENBLATT:

Q. Good afternoon, Mr. Powell.

A. Good afternoon.

Q. Could you please tell the Judge with who you work, and what position you have?

A. Sure. Atapco properties, and I am a senior vice president.

Q. How long have you had that job?

A. Fourteen years.

Q. Is that with Atapco the whole time?

A. Yes.

Q. Tell us a little bit about your career with them.

A. Sure. Yeah, I was with Atapco for 14 years. Prior to that, I spent 11 years vice president of Toll Brothers. Prior to that, I came from general brokerage.

Q. Okay. Just in a sentence or two, tell the judge what it is you do with Atapco.

A. Sure. My function primarily is to be in charge of all new acquisitions. That would include residential, retail, industrial/commercial, in office, as well as performing an executive function for all residential projects, both lot development and

vertical multi-family.

Q. Can you just talk a little bit about the company in general, Atapco?

A. Sure. So Atapco properties has a long history. It can trace its roots back into Baltimore for over 100 years. Atapco properties is a wholly owned subsidiary of Atapco. Atapco is an acronym, it stands for American Tradition and Production Company, excuse me.

That company was founded by the Blausteins. It was the foundation of what later became Amoco, and then beyond that, BP/Amoco. The real estate group was formed probably 25 years ago now in order to diversify the family's holdings, and we operate across all platforms as I mentioned. We do residential lot development, vertical multi-family development, as well as ownership management, retail, office and industrial. So --

Q. Do you have more than one project in the Baltimore area?

A. We do. Currently we are open for sales

at Longview. That is a 173-unit community on International Drive. It's about a nine iron away from the Wegman's up in Hunt Valley. We are the 90 percent partner of the Madison Park Redevelopment Project which recently broke ground. That's on North Avenue in Baltimore City.

We are also under development, or I should say entitlement, soon to be development of an 80-unit apartment building in Baltimore City. Obviously Greenspring, which we're here today talking about, and we also own the former Baltimore Sun headquarters downtown.

Q. Okay.

A. As well as offices downtown.

Q. So your company purchased the property we're all here talking about?

A. We did.

Q. So what, can you tell the Judge what is it that you liked about this particular property?

A. Yeah. So in full disclosure, I've chased this property through multiple life's, both my

previous employer and now with Atapco. It's a highly desirable location. Great walkability to retail, to office, great commuter access, so it's one of those projects that I think has been on a lot of folks' radar for a long time.

You know, we love the fact obviously the proximity to Greenspring Station, you know, obviously Johns Hopkins Medical. Like I said, you know, access to great schools, so it just really checked all the boxes.

Q. Are there many undeveloped, unencumbered properties in this area of Baltimore County?

A. Not that I'm aware of.

Q. Can you describe Atapco's approach for proposing development on this property?

A. Sure. One of the things that really appealed to us is kind of the low impact nature of the development. You know, we were able to preserve almost half the project. In open space, we were able to push all of the proposed new homes back from Joppa Road.

Actually I think behind the existing manor house to kind of preserve that viewshed.

The property afforded us the ability to kind of, you know, set up a community that we were able to create some buffer between us and the neighbors. You know, it was previously cleared, had access to utilities. It was zoned, so it was a buy right [phonetic] project, so, you know, that fit, again, a lot of our criteria is, you know, kind of like I said, low impact.

Q. What is being proposed with the existing Langford home?

A. So we're going to preserve the Manor House. It will be subdivided and remain on its own parcel. We'll be hooking it to public utilities when and if, and at some point we will sell that home to a new buyer. So it will remain a private residence.

Q. Do you have a builder selected for the project?

A. We do. NVR Homes is our builder. We are under agreement with them.

Q. Okay. Do you have any idea of what the selling price for the homes would be?

A. Yeah, they haven't posted their actual pricing yet, but I would suspect what we're hearing from those, between 800 and a million dollars.

Q. Let's talk a little bit about your role leading up to this hearing. Did you do any community outreach?

A. Yes, we have. In fact, I would say this project probably stands alone, and the most amount of community outreach for any project I've worked on in the county, we have made the rounds with various HOA's, Boxwoods, Tally Ho, et cetera, multiple times to try to update continually, listen to feedback, try to make changes to the plan where appropriate. So yes, quite a bit.

Q. Did you offer to meet with the Planning Council?

A. We did.

Q. And did a meeting take place?

A. It did not.

Q. Can you, you said you made some changes and did some things to satisfy community concerns. Can you give us some example of changes that were made from the concept plan to now?

A. Sure. I think one of the big ones early on is we added some landscaping and a berm at the rear of the property in order to enhance the buffer between some of the existing homes. We, I think I had mentioned we had actually pushed the homes towards the new access road and away from Joppa Road again to minimize any effects to the surrounding community.

That was made very clear to us very early that, you know, Mays Chapel should be an emergency access road only. I think we embraced that concept, so I think we proposed that as an emergency access only. I know that has been a hot topic of discussion, but, you know, we advocated, we heard obviously traffic concerns early on.

We advocated and provided traffic analysis to, for speed bumps in Tally Ho. You know, we proposed to start immediately and spend almost a

million dollars to improve the Falls Road traffic corridor. We are going to hopefully finish I think what the county and Johns Hopkins started in upgrading the sections of the sewer identified by Baltimore County as needing upgrades. So just some of the things we talked about.

Q. With respect to the traffic and sewer off site improvements, although your development plan has not been approved, have you proceeded with obtaining approval of the construction documents for those projects?

A. We have.

Q. For which one?

A. Both.

Q. Okay. And do you know the status of those, how far along you are in the process?

A. I do not. I'll have to defer to someone else on that one.

Q. Sure, sure. No problem. Okay. Thank you, Mr. Powell. I think that's all the questions I have on direct.

A. Great. Thank you.

JUDGE MURPHY: Mr. McCann?

MR. MCCANN: Yes, thank you. Just a couple.

DIRECT EXAMINATION

BY MR. MCCANN:

Q. Good afternoon, Mr. Powell.

A. How are you, Mr. McCann?

Q. Good, thank you. When exactly did your company acquire the property?

A. I believe closing was March of 2021.

Q. Okay. As part of that acquisition process, well, did you, can you pinpoint for us, you mentioned for example the sewer capacity problems that this county has identified, that Hopkins was supposed to fix, correct? You know what I'm talking about, right?

A. Yes.

Q. Okay. When did you learn about that issue? Was that before or after your company's acquisition of the property in March of 2021?

A. That was during our due diligence

period, so prior to acquisition.

Q. Okay. But I take it you didn't learn about the necessity of making the road improvements that we've been talking about over the last couple of days until after the acquisition, correct?

A. I'm obviously aware of that intersection. Some of the issues, I'd say that's been an ongoing topic, so I'm not sure I can answer you clearly.

Q. You may have bought the property knowing that there would be some road improvements that would be necessary?

A. Yeah, we were aware that, you know, work needed to be done, sure.

Q. Because of the failing intersections?

A. I'm assuming.

Q. Okay. Do you live in the area, sir?

A. I do not. I'm in Anne Arundel County.

Q. You mentioned the amount of outreach that you did. Can you just specify that a little bit? I'm not asking for names, but what organizations did

you or someone else on behalf of your company meet with?

A. Yeah, no, that's fine. Representatives, and thank you for not asking me names, because I would probably get them wrong, but we have met with Seminary Ridge, Tally Ho, Boxwood, and the Meadows at various points over the last year plus.

Q. Okay.

A. And in some of those groups, it was multiple meetings. As they'd request and the plans were change, we would, you know, respond back and share with them, you know, the progress.

Q. Okay. And when you say meetings, is it fair to say that not all those were in person meetings, given the state of affairs?

A. Some were actually, but there were some that were virtual.

Q. And then in terms of the changes that you identified in response to Mr. Rosenblatt's questions, you identified, that is changes to the plan, you have identified five of them.

That is you did some landscaping, number one. Number two, you pushed the homes back away from Joppa in order to minimize the effect on adjoining communities. Number three, you proposed traffic speed humps on Tally Ho Road. Number four, you are proposing to incur a million dollars to improve the intersection at Falls Road, and then five, you intend to comply with your, with the request that you fix the sewer segments that we've talked about. Is that correct?

A. Correct.

Q. Okay. But at no point, I assume you would have identified it, at no point have you ever, at least since the filing of the concept plan, have you ever reduced the density of this proposed development, is that correct?

A. That's correct.

Q. And you mentioned just, one point of clarification. You mentioned that a meeting with the Valley Planning Council did not occur. Can you be a little more specific about that? Was a meeting

requested and it was denied? Or give me some detail on that, if you will.

A. Yeah, to my knowledge a meeting was requested and denied.

Q. In other words, you are telling us that Valley's Planning Council said no, we do not want to meet with you?

A. Correct.

Q. Do you know, can you tell us anymore about it than that? Or is that just --

A. I don't. I'd have to go back and look at, you know, some emails and phone logs, et cetera. I do not.

Q. Okay. Thank you, sir. Appreciate your time.

A. Thank you.

JUDGE MURPHY: Mr. Zimmerman?

MR. ZIMMERMAN: Thank you, yes.

DIRECT EXAMINATION

BY MR. ZIMMERMAN:

Q. So just following up on the last

question or two, so the interaction with Valley's Planning Council was like we don't need to meet with you because we love the project? We don't need to meet with you because we're against it? Or [indiscernible]

A. I don't --

Q. -- information?

A. I don't think a reason was given. Not to my knowledge.

Q. Okay. All right. So the project is not a senior citizen project, is it?

A. It is not.

Q. Okay. So are you part of the marketing team, or you have marketing people under you?

A. I do, I'm involved.

Q. So could you give us an idea of the type of houses that are proposed?

A. Sure. They are all single family detached. There will be a range in sizes as far as widths in the homes. Some will accommodate two and/or three car side load garages, so I don't know if I'm

answering your question.

Q. Yeah, it's fine.

A. [indiscernible] go on that.

Q. Yeah, keep going, sure.

A. Yeah. And again, the idea is to offer some variety, and obviously, you know, a range in price points. So all going to be high end materials, obviously the fitting, you know, the proposed pricing.

Q. Are they mainly two, three or four bedroom? Can you give us an idea of the number of bedrooms?

A. I, I believe they are all at minimum two bedroom. They're between three and four bedroom typically. I'd have to go back and look at the plans, it's been awhile.

Q. And what about, can you give us a range for the square footage of the homes?

A. Off the top of my head I want to say probably 3,000 feet plus to 4,500. And again, I'm guessing on that.

Q. Does that include the basement?

A. Not typically unless it's finished.

Q. Okay. So there may be finished, there would be basements?

A. That is what we're proposing, yes, or the builder is proposing, yes.

Q. Okay. And the square footage that you mentioned doesn't include the garages, does it?

A. Typically not.

Q. Okay. And the idea of three car garages, you know, why is that currently, you know, a good idea?

A. I think it's what the market demands. The buyer profile here likes three car garages. They own multiple vehicles.

Q. Does that, for example, like teenagers have their cars to go to school or college, something like that?

A. I would suspect something, yes. I don't get that far into those weeds. I trust the builders to understand the marketplace, but I know I could use an extra bay at my house, but I have those teenagers.

Q. So, and, well since you mentioned that you want to, your builder or whoever indicates a sale price of $800,000 to $1,000,000 for each, on the average for the different lots, right?

A. Mm-hmm.

Q. How important is that to the project, to be able to sell at those numbers?

A. I'm not sure I follow your question.

Q. Well, I guess, I have to ask, you have economists in your group? In the company?

A. We have finance people. I wouldn't grant them the title of economists. We have a lot of people who like to theorize on the economy, but --

Q. I mean, is the project dependent on the current, or past interest rates? Or is there some interest rate that's critical for --

MR. ROSENBLATT: Objection, objection.

JUDGE MURPHY: Mr. Rosenblatt?

MR. ROSENBLATT: Both relevance and I cannot possibly see how this is within the scope of people counsel's authority to be pursuing this line of

questioning.

JUDGE MURPHY: So Mr. Zimmerman, is the line of questioning going to your argument about master plan conflict?

MR. ZIMMERMAN: Well, indirectly, yeah. But you know what? I'll withdraw the question, I'll withdraw the question.

JUDGE MURPHY: Okay.

MR. ZIMMERMAN: Thank you, Mr. Powell. That's all I have, Judge. Thank you.

MR. POWELL: Thank you, Mr. Zimmerman.

JUDGE MURPHY: Mr. Wyatt?

MR. WYATT: Yes, Your Honor, I do have a question or two for this witness if I may.

JUDGE MURPHY: Sure, absolutely.

MR. WYATT: Thank you.

DIRECT EXAMINATION

BY MR. WYATT:

Q. Good afternoon, Mr. Powell. I just wish to follow up on an item or two. By way of introduction, I live on Traloni [phonetic] Court,

which is in Seminary Ridge. It backs up to the proposed development.

I think we may have met on a Zoom call a little over a year ago. Do you remember that?

A. I do, sir. Yes. Nice to see you again.

Q. And I guess that was part of your community outreach was to reach out to also individual residents like myself who might be impacted by this development. Would you agree with that?

A. Yes, sir.

Q. Safe to say during that meeting that the issue of the location of the houses and the number of lots was more or less not a topic that the developer was willing to negotiate or even discuss?

MR. ROSENBLATT: Objection.

MR. WYATT: Your Honor, he opened the door in all of the questions of this witness about this Herculean outreach supposedly with all these neighborhoods and individuals. I'm just, I want to explore that.

JUDGE MURPHY: Understood. Mr. Rosenblatt, we're going to overrule the objection. Go ahead.

MR. POWELL: Sorry. Could you restate that?

BY MR. WYATT:

Q. Okay. So during our, during at least our discussions and what I understand to be discussions with many of the other neighborhoods, is it safe to say that basically the number of lots, the density or the location of where the lots are to be is non-negotiable from the developer's standpoint?

A. No, I don't think that's a fair statement. I think we have looked into moving lots, changing lot sizes, and I think comments ran the gamut, so I would say that was the only two issues. I don't recall specifically what you and I might have discussed, it has been some time, but I think there was a range of issues and topics, but --

Q. All right. Well, let me ask it to you this way. Since that meeting, has the development plan changed in terms of the numerosity of lots or the location of the lots?

A. No.

Q. Okay.

A. I'd have to go back and look at our last meeting. I'll go ahead and say I don't think so. I don't recall when you and I spoke, which plan you're referring to, but --

Q. All right. And do you remember specifically telling me that the number of lots was non-negotiable?

A. I don't specifically remember that. It sounds like you do.

Q. Okay. Well, I'll be likely testifying later, and you can listen in on my testimony if you'd like.

A. Sure.

Q. So during, any changes that have been made to the number of lots or the location of lots since concept plan through the revised development plan have you would agree been made in connection with comments from Baltimore County, not from neighborhoods?

A. Sure, we've responded to comments from Baltimore. Absolutely.

Q. All right. And there may be an elimination of maybe one lot and a relocation of a lot or two or a few, but substantively, no material change has been made from the original concept plan to the development plan that's before Her Honor today.

A. I'll defer that to the future expert to get into the details with you.

Q. All right. And just to follow up on Mr. Zimmerman's questioning about the demographics or the economics of this project, these are going to be inhabited if this development is approved by families generally. We're not talking single people would buy a home like this that don't have a family, you would agree?

A. Look, we don't discriminate. Anybody that wants to buy these houses can. In all fairness, it's probably a question posed better for the builder. Sure. These demographics certainly represents folks that have families.

Q. But you have familiarity in the industry. You have been in the business for a few decades now. You would agree this isn't going to be something a single professional just starting out with no family is likely to buy. The target market here is a family, correct?

MR. ROSENBLATT: Objection. Asked and answered.

MR. POWELL: Yeah, I --

JUDGE MURPHY: Overruled. Go ahead.

MR. WYATT: I'm sorry, I didn't get your answer.

JUDGE MURPHY: Go ahead, sir.

MR. POWELL: Me?

JUDGE MURPHY: Yes.

MR. POWELL: Oh. Yes, I suspect at this price point it's probably difficult for a lot of first-time home buyers, typical single buyers. But again, I think you're asking market related questions that would probably be better answered by somebody who is a little closer to it on the building side.

BY MR. WYATT:

Q. All right. And then let me ask you this. At a price point of $800,000 to a million dollars, is that based on your experience, is that a starter home for a family? Or is that a move up type home for a family?

A. I think it really depends on where you live. The price points range wildly across the state. I think the answer you're looking for which I'll give you is it's probably more typical a move up buyer.

Q. Okay. Thank you. And some of these, as Mr. Zimmerman pointed out, some of these homes are going to have more than two cars, or are designed to accommodate families with more than two cars.

A. Yes, sir.

Q. Most likely children of driving age going to high school or college.

A. Again, I can't really speak to who is going to show up and buy these homes. I wish I could tell you definitely.

Q. You have experience. I mean, you

probably live in a neighborhood yourself. If you can just tell us your common experience, when you have three cars, it's usually not a mom and dad, no children, who would own the three cars. You've got kids driving, coming and going, high school, college, even a job, summer job or something like that.

A. Sure.

Q. All right. Thank you very much.

MR. WYATT: No further questions, Your Honor.

JUDGE MURPHY: Okay. Let me do this. Let me go down the list here. I just want to make sure, this might be long in the beginning doing this just to see who needs to ask a question, but I'm going to unmute. Mr. Sachs, do you have any questions?

MR. SACHS: No, I don't. Thank you.

JUDGE MURPHY: Thank you. All right. Mr. Racal? [phonetic] Any questions? Mr. Racal? Previously with Baltimore County land acquisition. Mr. Racal, are you there? No. All right. Well, we can't hear you if you're there, Mr. Racal. Sorry,

folks. All right. Just making sure here. Okay. The next person is Ying, hello? Hello? Ying We Lun? [phonetic] Hello? Hello?

MR. LUN: Sorry.

JUDGE MURPHY: Yes, hi. Sorry. You're in a hearing. Did you have any questions of the witness?

MR. LUN: No. I'm not a lawyer, I'm just listening in.

JUDGE MURPHY: Just listening. Okay. Well, I'm not going to come back to you, then, I'm just going to keep you muted now I know that you don't, you're just listening. Okay. All right. Folks, all right. The next person, Brandy Becker, [phonetic] do you have any questions of the witness?

MS. BECKER: No.

JUDGE MURPHY: Thank you. Elaine Tipton, [phonetic] do you have any questions of the witness?

MS. TIPTON: No.

JUDGE MURPHY: Thank you. Actually, and I don't even know, some of these might be your clients, too, Mr. McCann, but I know some, I know one name, but

I don’t know them all.

MR. MCCANN: I’m just going to help you out and tell you who is.

JUDGE MURPHY: Can you? That would be great actually. I’m on Jeffrey Budniss. [phonetic]

MR. MCCANN: He’s not my client.

JUDGE MURPHY: Okay. How about Juliette Eastwick? [phonetic]

MR. MCCANN: No, not that I’m aware of. People within the communities I represent, but I’m not not aware of her.

JUDGE MURPHY: Okay. How about Karen Dailey? [phonetic]

MR. MCCANN: No.

JUDGE MURPHY: Karen McGraw? [phonetic]

MR. MCCANN: No.

JUDGE MURPHY: And we know who Katie Beach [phonetic] is. Lara Peake Townsley? [phonetic]

MR. MCCANN: No.

JUDGE MURPHY: Okay. So I need to ask all these people. Patrick Coggins? [phonetic]

MR. MCCANN: No.

JUDGE MURPHY: And then Rebecca is with Mr. Zimmerman. Ms. Amedius [phonetic] with Valley Planning Council, and then we have, it's Richard Compton?

MR. MCCANN: Richard Compton, he's a client.

JUDGE MURPHY: Richard. He's a client of yours?

MR. MCCANN: Yes.

JUDGE MURPHY: Okay. I'll skip them. Let me just go back here.

MR. MCCANN: As is just for future reference, Judge, Brandy Becker. Just so you know, she was --

JUDGE MURPHY: I try to remember this.

MR. MCCANN: Yeah.

JUDGE MURPHY: Brandy Becker, but not Elaine Tipton?

MR. MCCANN: Not that I'm aware, no.

JUDGE MURPHY: Okay. Brandy Becker is yours. All right. I'm just going to unmute Mr.

Budniss. Can you hear me? He's away from his computer. Hello, Mr. Budniss? No. All right. Juliette Eastwick, do you have any questions of the witness?

MS. EASTWICK: I'm just listening.

JUDGE MURPHY: Thank you. I won't come back to you, then. All right. Just making sure, folks. Karen Dailey, any questions of the witness?

MS. DAILEY: No. Just listening, thank you.

JUDGE MURPHY: Okay. We'll get through this quicker, folks, I know it seems long here, but Karen McGraw, any questions of the witness? No? Ms. McGraw? No answer. Lara Peake Townsley, do you have any questions?

MS. TOWNSLEY: No, thank you.

JUDGE MURPHY: Thank you. All right. And we have Mr. Coggins, Patrick Coggins. Any questions?

MR. COGGINS: No questions, Your Honor.

JUDGE MURPHY: Thank you. And then Mr. Compton is with you. All right. So, I mean, we're probably going to move pretty, much quicker, because

now I know who's who, people didn't have questions. Okay. I think that was it for your witness. Mr. Rosenblatt?

MR. ROSENBLATT: I just had one follow up question, single question.

JUDGE MURPHY: Well, let's see. Redirect. All right. Missed you. Go ahead.

REDIRECT EXAMINATION

BY MR. ROSENBLATT:

Q. Are you still there, Mr. Powell?

A. Yes.

Q. Just one question. The meetings that you described with the various community groups, were those meetings that were required by Baltimore County as part of the development process?

A. No, not to my knowledge.

Q. Thank you.

MR. ROSENBLATT: Nothing further.

JUDGE MURPHY: All right. Thank you, sir.

MR. POWELL: Thank you, Your Honor.

JUDGE MURPHY: Sure. Next witness?

MR. ROSENBLATT: Next witness will be a longer witness. This is Matt Bishop.

JUDGE MURPHY: Okay.

MR. ROSENBLATT: Just giving everybody a heads up.

JUDGE MURPHY: Right, sure. And, but it looks like we really don't have many people who are, I'm thinking Mr. McCann is covering a lot of these people, so we don't need to go through everyone again. All right. Mr. Bishop, there you are. Raise your right hand, please.

Whereupon,

MATT BISHOP

A witness of lawful age, after being duly sworn to tell the truth, the whole truth and nothing but the truth, testified as follows:

JUDGE MURPHY: Mr. Bishop has been admitted as an expert many times before. What areas of expertise are you offering him in?

MR. ROSENBLATT: Yes. If I could have permission to share.

JUDGE MURPHY: Yes.

MR. ROSENBLATT: Share his resume. Thank you, Judge. So I'm sharing for everyone's knowledge what's been marked as Developer's Exhibit 2. Mr. Bishop is a professional landscape architect and land planner. As he said, Judge, he has years and years of experience in Baltimore County with planning and developments, development plans, zoning cases.

I'd offer him as an expert in the field of land planning with specific knowledge and expertise in the laws and regulations applicable to Baltimore County's development and zoning processes.

JUDGE MURPHY: Development and zoning processes. Processes? Is that what you said?

MR. ROSENBLATT: That's what I said. It sounded better when I thought it than maybe when we're repeating it, but --

JUDGE MURPHY: Is he an expert in the process I guess? There wasn't any issues about the process, but --

MR. ROSENBLATT: The zoning and development

regulations, and yes, he probably will testify to parts of the development process. I'm sure he'll be asked, if not by me.

JUDGE MURPHY: All right. Any objection, Mr. McCann?

MR. MCCANN: No objection. Thank you.

JUDGE MURPHY: He'll be admitted. I'm sorry, Mr. Zimmerman?

MR. ZIMMERMAN: Yeah. So what I would like to say is I don't object to Mr. Bishop's expertise as a landscape architect. I'm preparing site plans. But if he goes into any statutory construction on the key issues in the case, I think that would be beyond his expertise.

JUDGE MURPHY: Okay. He, you know, he can testify, you can cross-examine him on that. All experts in this field give their opinions about what it says. Ultimately I get to decide in the regulations, and you'll always have your, you, and you give me that view. So, you know?

MR. ZIMMERMAN: Thank you very much.

JUDGE MURPHY: Okay. He'll be admitted as an expert land planner and the laws, and with specialty in the laws and regulations of the development, for developments and the zoning process, if I said that right.

MR. ROSENBLATT: The only thing I'll mention is he is a professional landscape architect as well.

JUDGE MURPHY: I did not say that, even though I knew that. Professional landscape architect. Okay. And we'll admit his CV has Developer's Exhibit 2.

(Developer Exhibit No. 2 was marked for identification and entered into evidence.)

DIRECT EXAMINATION

BY MR. ROSENBLATT:

Q. Good afternoon, Mr. Bishop.

A. Good afternoon.

Q. Did you, were you hired by Atapco to prepare various plans and exhibits for this case?

A. Yes. Myself and my firm were hired to prepare many exhibits in support of this case.

Q. All right. Did you prepare the development plan and exhibits we're going to show today?

A. Yes, I did.

Q. Okay. And have you been to this property before?

A. I've been to the property many times over the past two years, yes.

Q. And let's, before we talk about the specific plan, let's go through what I've marked as Developer's Exhibit A, there's actually a 2-page exhibit with aerial photographs. If you could, please orient everyone listening to the location of the property and some of the surrounding land uses.

A. Sure. I think everybody knows where we are based on all the testimony we've had so far, but we have about a 40-acre parcel located in the center of this image. The property is located northwest of I-695, and due north/northeast of West Joppa Road, and just east of Falls Road.

The surrounding area is predominantly

residential to the north and east. It's a mix of single-family detached homes and townhouses. Directly to our south is a Maryland State Highway Administration facility. It's in various stages of use and unuse at this point, and then directly to our west is the larger Greenspring Manor, sorry, Greenspring Station mixed use project that has offices, medical office, retail restaurants, banks.

Q. In reviewing the surrounding area, did you perform an analysis of the size of the lots, the residential lots, in the surrounding area?

A. Yes, we did.

Q. I'm going to show you what's been marked as Developer's exhibit 4. Can you please explain what this exhibit shows?

A. So this is an exhibit, as you mentioned, that analyzes the size and type of development in our immediate vicinity. We are the pinkish/purplish block in kind of the center of the plan. There is a legend, but to go into detail a little bit more, the areas in red, which we are either

directly adjacent to or very close to, are mainly semi-detached and townhouse developments, and they have average lot sizes by our analysis in the range of 6,500 square feet to 12,500 square feet.

There is in purple, which is the kind of area that we're in plus many other areas due southeast of us, their lots range from the 10,000 square foot to 30,000 square foot range. The blue areas have slightly larger lots, which are in the range of 20,000 to 25,000 square feet. The tan lots are the largest of them, and the range of 31,500 square to 50,000 square feet, and then finally we have in yellow all of the existing commercial and institutional zone areas or developed areas basically to our north, west and south of the plan.

Q. Was this analysis something submitted to the Department of Planning between their concept plan comments and the development plan? The development plan comments?

A. Yes, it was. We put this together to help answer some concerns or questions that the

Department of Planning had based on our concept plan.

Q. Let's take a look at the property itself, and some photos of the property and surrounding area. I'm going to show you what's been marked as Developer's Exhibit 5. It's a series of actually 25 photographs. So did you take these photographs?

A. Yes, I did.

Q. I'm going to scroll through each one, so we have a clear record, I'll say what number photograph we're on, and if you could describe for the Judge what's shown in the photographs. The first page of Developer's Exhibit 5.

A. I'll be relatively quick, since we have so many pictures, but this is a photograph from West Joppa Road facing the existing home on the property. You'll see that there's a large lawn area between the house and West Joppa Road and the existing entrance with the entry walls to the left in the photograph.

Q. What is proposed in this area, both in front of the home and where the existing driveway is

located?

A. That area will remain undeveloped, and it will become an environmental conservation area.

Q. And with respect to the existing driveway?

A. The existing driveway will be removed. The new driveway will come in, and we'll see from a plan later, will come in from the new proposed road, sort of at the rear of the existing home, and we will also I guess I'll go into for a second, we're going to take the house off of the existing private septic system and connect the house to the public sewer system in West Joppa Road using the bed of the existing driveway, which is to be removed.

Q. Photograph number 2?

A. All right. This is the existing driveway, which we just discussed, which serves the home, the existing home. This driveway will be removed and reverted back to natural state, and in the bed of it will be the new proposed sewer connection that we discussed.

Q. And you'll start to see on the left side of this photograph, can you describe what the existing state of the property is?

A. Right. So areas that aren't occupied by the house and the lawn that you see here are current active agricultural fields. I think this photo was taken, and it was a soy crop. I've seen it in years past where it was also a corn crop. The majority of the rest of the property was actively farmed.

Q. Okay. Photograph 3?

JUDGE MURPHY: Before you get to the next one, so these are not labeled, you know, 5A, B, C. So can we do 5A, 5B, 5C? Does that work? Otherwise, I'm going to do 5-1, and that won't, I'm just trying to be neat about this, because otherwise it just all says number 5.

MR. ROSENBLATT: It does. So that the record is most clear, yeah, they can each receive a letter if that's easier, Judge.

JUDGE MURPHY: Yeah. The first one is going to be 5A. Is that fine? 5A instead of 5?

MR. ROSENBLATT: Sure.

JUDGE MURPHY: Okay. And then you did 5B.

MR. ROSENBLATT: Yes, and we can revise it and send it to everyone with labels on them if that's preferred, or people can --

JUDGE MURPHY: Well, I'm just marking them on my exhibit, yeah. All right. So you were on 5C.

BY BY MR. ROSENBLATT:

Q. So yeah, I'll say the third page of the PDF, which we'll call 5C, Mr. Bishop. Can you explain what's shown there?

A. Right. This is similar to the last photograph, and it's starting to show more about the farming activity that I was mentioning, and you'll see in the background, the trees that you most seen in the background are right at the edge of the property. Most of those trees are on the adjacent property, but you also see as you go up in the back of the photograph here is the grade has a gentle rise toward the rear of the property.

Q. Okay. Photograph 4, which is 5D?

A. All right. This is turning around from where I was standing in the previous photograph, in the existing driveway looking back at the State Highway Administration building that's across the street.

Q. And the fifth page, 5E?

A. Basically the same position, but now looking west toward Falls Road along West Joppa Road.

Q. And what, if anything, is proposed along Joppa Road if this development proceeds?

A. We are proposing widening of Joppa Road to facilitate acceleration/deceleration lanes as requested by Baltimore County, and we also will have additional landscaping, streetscaping and forest conservation mitigation plantings to the right of the existing property.

Q. Sixth page, which is 5F?

A. This is further into the property, down the driveway. This is the rear of the existing home. The home will be staying, this driveway will be staying, but we'll have a different connection off of

the new road instead of Joppa, as I mentioned.

Q. And what is to the rear? In other words, behind the trees in the distance, which neighborhood?

A. That is the Tally Ho neighborhood. So those trees are a mix of being on our property and the rears of some of the homes in Tally Ho. Those will all stay.

Q. Page 7, which is 5G?

A. I believe this picture is back off of Mays Chapel Road at the rear of the property looking toward the west. So you'll see the farming activity, as I mentioned, and the treeline, the properties adjacent to Greenspring Station in the background.

Q. Okay. The eighth page of this document, which will be 5H?

A. Same location, just turned a little bit, and now looking directly toward the rear of the existing house and Joppa Road, basically showing the existing farming and the existing trees that are off to the left.

Q. And the ninth photograph, which is 5I?

A. It just finishes the panoramic here, so same location off of Mays Chapel looking east toward the edge of the property. Again, the trees in the background are basically close to the dividing line between our property and the rear of the Tally Ho community.

Q. Okay. All right. Number 10, 5J?

A. 5J is showing a representative home within the Tally Ho community, off of Tally Ho Road. Behind that house is our subject property.

Q. 11, 5K?

A. Similar photograph. I think I took a handful of these just to show what some of the homes in the adjacent communities look like. Again, our project is I believe behind the rear property of this home.

Q. And 12? So 5L?

A. Similar, it's just a little further up. It's down Tally Ho Road, but again, it's another similar home in the community.

Q. How many homes can you see in this photograph?

A. I see three. The white one, the brick one, and then I think there's one to the right, but it reflects, you know, very typical home in the area, the size, front load garage, the parking pad in the front, the home is set back relatively far from the street, plantings. Very typical.

Q. Can you describe --

A. [Indiscernible]

Q. -- sorry, a little bit about the distance between the homes?

A. Yeah. They are typical. I'm not sure exactly what the distance is, I didn't measure that on this exhibit, but they are, they meet the zoning requirements for the zone they're within. But they're relatively close together.

Q. 13, which is 5M?

A. Again, a little further up Tally Ho Road, showing existing homes. They are typical building to building setbacks, and their distance from

the street. Again, front load garages, two car garages, parking pads, relatively deep setbacks. When I say relatively deep, I think they meet the zoning requirements.

Q. 14, which is 5N?

A. Getting up closer to Seminary, similar houses and setbacks.

Q. Okay. 15, 5O?

A. 50 is up into the community, that's due north of our project, off of Mays Chapel. These are, I would call them townhouse units. They are connected multiple homes in one building. They are closer to the street. They have front load garages. I took all these pictures just to show that there is a mix of housing types in the area. There are single families with smaller lots, larger lots, attached homes, townhouses, a very wide mix of housing types in the area.

Q. The 16th image is P, 5P?

A. Again, this is another section of the community due north of our project, off of the Mays

Chapel Road, and again, they are, I would call them townhouses again per the zoning regulations. They are multiple homes in one building.

Q. Okay. And 5Q, which is 17?

A. Right. Same community, and again, just illustrating the variety of housing types. These are, you know, three or four homes in one building. They are close to the road. You can probably get one car in the driveway in front. They are frontload garages as well.

Q. 18, photograph, this would be 5R?

A. This was similar to one of the earlier photographs, but it's off of Mays Chapel Road. This is where the, as you'll see on our plan, Mays Chapel Road terminates at our property, and you'll see our property in the background with the farm fields.

Q. We've heard a lot about this gated or not gated issue. Is this the location on the property being discussed?

A. Yes, that's correct. That's the exact location.

Q. Page 19, which is 5S?

A. This is basically that same photograph but turned around, looking back north on Mays Chapel Road, merely illustrating the existing Mays Chapel Road in its existing condition.

Q. And at the sort of back end of this photograph, what road, what cross street would this road lead into?

A. That would be West Seminary Avenue.

Q. The 20th page is 5T?

A. This is another home that is just north of our property, and illustrating the wide variety of housing types in the neighborhood.

Q. Just to go back for one second, I know we're trying to get through these, but to go back to the 18th photograph showing the gate, this is 5R. If this project is approved, is this gate to remain?

A. We are proposing a gate to remain. Whether or no it is that exact gate is up for discussion, but yes, we are proposing a gate in that location.

Q. This gate, the condition it's in, would the developer propose something newer, nice, if permitted to gate this access?

A. Yes. I'm sure I can safely say that they would.

Q. And I apologize, Mr. Bishop. I'm on 20, which was T, I think you may have spoken about this.

A. I did.

Q. I'm trying to keep track of my letters. So far I think I've got them all. The 21st page is 5U?

A. That's the same community as the previous photograph, just a little bit further north. Again, it's a representation of townhouse type units there. I think there's four or five homes within that one building.

Q. Page 22, that's 5V?

A. This is a photograph of Greenspring Station, which is directly adjacent to us, to the west, and it is showing the mix of office space and

various commercial uses.

Q. So where would the subject property be in relation to the building shown in this photograph?

A. It's a few hundred feet behind us. This is the main access road, one of the main access roads into the Greenspring Station development.

Q. And 23, which is 5W?

A. Again, this is another one of the office buildings that's located within Greenspring Station directly to our west.

Q. 24, which is 5X?

A. This is also within Greenspring Station, and this is the newer Johns Hopkins medical facility that was built a few years ago.

Q. And finally, the 25th photograph, 5Y?

A. Again, this is another office building in Greenspring Station. This is the building that's directly adjacent to our property to the west, closest to Joppa Road.

Q. Thank you, Mr. Bishop. In connection with going through the development process and this

hearing, did you prepare a rendered development plan?

A. Yes, I did.

Q. I want to show you what's been marked as Developer's Exhibit 6, and I'll try and zoom in so you can see everything. Can you, before we get to the specifics of, you know, the road and specific units, can you explain what the overall concept was for designing a layout on this property?

A. Sure. So the property is somewhat unique in a few aspects. We definitely want to come off of West Joppa Road as the main access point. We also wanted to try and respect the natural topography of the land, so you'll see that the road comes in off of Joppa Road, and it comes in and then it swoops down a bit before it goes up and terminates close to Mays Chapel Road.

If you look at the existing grading of the property, it's of a natural valley of the property there, so we set that up so we could stay close to existing grade, and then because the property widens toward the rear, we have the upper loop and the

interior loop to take advantage of that area where it widened out.

We have also placed all the homes basically where the existing agricultural activity was going on and left as much of the natural surrounding environmental areas in their current state, and we also left the existing home in place and put it on its own roughly 3-acre parcel. As I mentioned before, we relocated the driveway so it comes in off of the new road, so you can see in red on this plan.

Q. On previous versions on a concept plan level, were homes proposed to be closer to Joppa Road?

A. Yes. We've had multiple iterations, and we did at one point have the homes closer to Joppa Road in what is now an open space area.

Q. Okay.

A. Currently, and we might get into this later, but the first proposed homes are about 550 feet away from the edge of Joppa Road, so there's quite a bit of physical and visual separation there from what you can see from West Joppa Road.

Q. And you spoke a little bit about grading. With respect to topography, are there any exterior retaining walls proposed for this project?

A. There are no perimeter retaining walls around this property, which would lead you to think that there's no, the grading is not terribly extensive, which is the case. We've been very intentional in minimizing the grading activities on the property.

The only retaining wall you'll find is in the interior, and that was really to facilitate some walk out conditions for variety for potential buyers.

Q. Okay. Let's talk a little bit about the proposed road network, and I can zoom in or out as needed, but can you describe how traffic is proposed to access and circulate around the property?

A. Sure. So as I mentioned briefly, our main access will be off of West Joppa Road, so we have a main entrance there, and we have a, I call it a monumental entrance. It'll be wider and have a bifurcation, meaning that there is an in on the right,

there's a landscaped median, and then there's an out lane on the left, and we will have new entrance signage in that area.

And then as you come in, a I mentioned, there's a bit of a straight section, and then it turns into a curved linear form where it ties into the existing Mays Chapel, and as we're proposing as emergency access only with a gate. And then because of the shape of the property, we do have the larger loop to plan north, that will loop from the main spine road and come back around and tie into the spine road again, and there's an interior, smaller loop that's again, on the proposed spine road and is centrally, or located around a central open space. And finally, we have a short cul-de-sac in the bottom right of the plan.

Q. I'm going to zoom in a little bit on the rear sort of right side of this exhibit under Mays Chapel Road, and ask you to explain the note that is on this plan with respect to the emergency access gate.

A. Yes. So we put this note on the plan after having discussions internally with Baltimore County, and the note reads gated for emergency access only, to be approved by the administrative law judge.

Q. And we have heard about this issue, and we'll hear more I'm sure from other witnesses, but can you explain why that gate, in basic terms why we're proposing that gate?

A. Right. So it's in reaction to the community's request. So the communities to our north did not want to have new through traffic introduced to their neighborhoods. The potential connection would be between West Seminary and down to Joppa Road, but using the existing Mays Chapel Road and connecting through. Understandably, those communities don't want any additional traffic in that area, so we thought a great solution would be to put an emergency access only in that location, and so that's what we're proposing at this point in time.

If there is any emergencies on Mays Chapel Road or proposed road and one of the entrances was not

accessible, emergency responders could open that gate and either access our community, Mays Chapel Road communities, West Seminary or Joppa Road.

Q. And Mr. Powell, while we're zoomed in on this part of the property, Mr. Powell mentioned adding some berming and landscaping at the request of the community. Could you please explain where that is shown on the plan?

A. Sure. I can't read the exact numbers, but the lots that are adjacent to the existing community to the north and east on this plan, thank you, lots 24 through 30 roughly, we have proposed a berm that's 3 to 4 feet tall, and then on top of that, a dense planting of a mix of large shade trees, evergreen screen trees and flowering trees and lower shrubs to help buffer the proposed homes from the existing homes.

Q. Is that something that was required by Baltimore County?

A. No. Screening is required, but this is above and beyond what would be required by the county

in their landscape manuals.

Q. Speaking of landscape manual, can you explain, please just the general concept for landscaping, what type of landscaping and the locations where it is anticipated to be placed if this project is constructed?

A. Sure. So starting with the main roads, all of the roads will have a very defined street scape planting, so all of the larger green dots you see, those will be major shade trees. Oak trees, maple trees, that type of tree.

At the entrance, we've also supplemented that, or enhanced that with proposed flowering trees. At any of the road intersections where we may have side buildings facing the public road. We have enhanced the landscaping there as well, so we have more shade trees, more evergreen trees and shrubs in those areas, and as I mentioned, adjacent to any existing homes, we've enhanced the landscaping, perimeter of the properties, and finally behind any of the lots that are adjacent to proposed open space, we

have provided enhanced landscaping there to help buffer the rears of the homes from the community open space areas.

Q. Has Baltimore County approved the schematic landscape plan for this project?

A. Yes, they have.

Q. Do you know about how many plantings are proposed for the landscaping associated with Greenspring Manor?

A. Yes. The proposed landscape plan has about 1,000 new plantings on the plan.

Q. How many are trees versus evergreen, shrubs, et cetera?

A. I do. We have about 250 major shade trees, about 130 flowering trees, 278 evergreen trees, and 400 shrubs.

Q. Thank you. Let’s talk a little bit about the zoning and the zoning regulations. What is this property zoned?

A. It is split zoned DR1 and DR2.

Q. If I zoom in on the center of this

plan, can you describe how the zoning line and the two different zones is identified on this plan?

A. Sure. You can see there's an angled line, dark black line that's going north to south. The area to the left is DR1, and area to the east or north is DR2.

Q. You just brought up a good point by saying north/east. What is the, you've mentioned north a couple of times. How is this plan oriented? Where is north with respect to this plan?

A. North would be towards the label that says Mays Chapel to your right. So we've oriented, we rotated the plan about 90 degrees so it fits properly on planning documents.

Q. Okay. And if I zoom out, can you just describe how that zone line runs through the property?

A. So it's about the middle of the property, and again, to the south would be DR1, and to the north would be DR2.

Q. Okay. And does this plan meet all bulk and area regulations under the zoning regulations?

A. It does. We're not requesting any bulk area variances.

Q. How about, are there cases where variances for, blanket variances for decks on all units are proposed, how do these, how would decks fit onto the proposed lots in this case?

A. These lots are large enough to provide decks without the need for variances. We've actually shown them on the plan, there's a dashed line behind each of the units.

Q. Was that information shared with the Department of Planning between concept plan and development plan?

A. Yes, it was, because I know they're concerned about that on this project and others.

Q. About how many acres is this property?

A. It's about 40 acres.

Q. And can you tell the judge the density permitted and proposed?

A. I can. So there's 61 dwelling units permitted, and we're proposing 61.

Q. How many are new?

A. 60 are new, one existing, and we have 16 homes in the DR1 zone, and 45 in the DR2 zone.

Q. Is there any transfer of density attempted transfer between the two zones to fit the units on the property?

A. We intentionally did not try to transfer any of the density between the two zones.

Q. Let’s talk about open space. Does this project provide the required amount of open space for the 60 new homes, 61 total homes?

A. Yes. We provide what’s required, and then quite a bit more.

Q. Do you know how much more?

A. I actually have that noted here. So required 60,000 square feet for the 60 new homes, and we’re providing 148,300 square feet, so more than double what’s required.

Q. Let’s explain the open space areas and programs. So I can start wherever you’d like. Start maybe towards the entrance and go from there?

A. Yeah, that'd be good.

Q. It's not letting me zoom in for some reason. There we go. Okay. So I am zooming in towards the access road, and how you start with there's an area marked open space that is above the access road, or I guess that's west in terms of actual direction.

A. Correct. So right, you'll come in off of Joppa Road, a new proposed access road, and there will be an open space on your left, and it's mostly a grassy area for active type open space uses, but we're also proposing a pavilion and some walking areas, and garden areas. You can see that in the red to the I guess plan of the open space. And then if you, sorry.

Q. No, I was just trying to zoom in so you could read the notes if that helps.

A. No, I think I covered it. And we have a connection plan south. There will be a trail that goes next to lot 2 and connects it to the larger open space behind lots 2 through 9. This area will bring you closer to the environmental areas, but stay out of

the environmentally sensitive areas. It'll be a larger open area for active recreation, and we're proposing a trail system in there to connect all of the open spaces together.

That open space will continue up and connect back into the main spine road between lots 9 and 10, and that location will have our community mailbox area, and again, some more seating areas and planting areas. Our final open space area is the park in the middle that units 49 through 54 are oriented around, and we're proposing more pathways, more planting and a gazebo type structure in that area.

And all these areas are connected by the public sidewalk system on both sides of the, all the streets, and also an asphalt walking trail in the open space areas.

Q. And will the open space areas all be owned by the HOA?

A. Yes, they'll all be privately owned by the HOA.

Q. Let me zoom out for a minute. Let's

talk about the school impact of this project. Are any of the applicable schools, elementary, middle, high schools, overcrowded under Baltimore County law?

A. No, none of them are.

Q. Does this project require any adjacent capacity from other school districts to be used?

A. No, it does not.

Q. And there's three blue stormwater management labels on this plan. I'd just ask you generally, well, first, is there any stormwater management on the property currently?

A. Currently there are no stormwater management facilities existing today.

Q. And can you just, can you briefly explain the, what the program is to be? In other words, how many facilities, where are they located, and which parts of the property they will serve?

A. Sure. We're proposing three stormwater management facilities, all three of them will be submerged gravel wetland type facilities. Two of them are kind of centrally located on the plan, above the

forest buffer areas, but behind the homes. Those will treat both 100-year management for quantity of stormwater, as well as treat them for the quality of the stormwater, so to remove nutrients and pollutants.

And then we also have a facility adjacent to Joppa Road and our proposed road that will also treat stormwater management.

Q. You mentioned though the submerged gravel wetlands. If you know, what does that generally just look like to a layperson driving by or walking by?

A. It'll look like a naturalized area. It'll have stone in the bottom of it to help cool and filter the water and store the water, but above that there will be planting media they call it, and we'll also have plant material and form of grasses and native plant material.

Q. So, and I guess in sort of older projects, there will sometimes be big type facilities. Is that the type of facilities that are proposed here?

A. No, they won't, you won't see standing

water for long periods of time. They're not terribly deep, they're relatively shallow.

Q. And we hear the term from time-to-time ESD to the MEP. Is that the standard that was proposed in this case?

A. It is. That is what we have to at least meet as a minimum to meet Baltimore County requirements and state of Maryland requirements for stormwater management.

Q. Okay. Let's talk a little bit about, we've heard about the floodplain on this property. So did you perform a, or did you create an exhibit to show the boundaries of the floodplain that includes the floodplain on this property?

A. Yes, I did.

Q. I might have to stop for a second. This is blocking my ability to get to the next exhibit. Bear with me. Okay. So I'm going to show you, though slightly out of order, this is going to be Developer's Exhibit 23, and ask you, is this the exhibit that you and your firm prepared?

A. Yes, it is.

Q. Can you just explain what's depicted with respect to the existing floodplain that includes this property?

A. Sure. This exhibit is intended to show how large the drainage area is that contributes to the floodplain that's on the property, so the yellow, the white or yellow dashed line is the drainage area upstream of our property.

It's about 133 acres, and the intent here is to show that the communities north of us in our drainage area have their own existing stormwater management facility which treats the 100-year storm, and so does the Greenspring Station project to our west, that is the other lighter blue color. So they have their own stormwater management facility as well to treat their water before it goes into the larger drainage system.

I also want to point out that we are proposing our three, three of our own stormwater management facilities as I mentioned, that also treat

the stormwater management before it goes, or the stormwater before it goes into the naturally occurring drainage area or drainage system.

Q. Now, when Baltimore County reviews floodplain studies, do they allow people to take advantage of the existing or proposed stormwater management facilities?

A. No, the requirements are incredibly conservative, and they do not allow you to consider those.

Q. So, okay. From this plan, let’s go back to the subject property, and can you talk about where is the floodplain currently located on the subject property?

A. It’s a little hard to see here zoomed out, but it’s mainly the darker green areas to the south of the plan. If you zoomed in, there’s a line that’s depicted as the 100-year floodplain boundary. The inner dashed line, right there you go, it’s a good label there, right. So the inner dashed line there, that is the 100-year floodplain, and it extends west

or planned north up towards Greenspring Station, or if you're going down toward, if you go across the open space, down across the reforestation area, and then continues north along the property line, leaves the property in some areas, comes back onto the property in other areas. All that area we're including in forest buffer and forest conservation easement.

Q. And what is currently there now?

A. Some of it is existing active farm field, and some of it is existing forested areas.

Q. Okay. And focusing on, we're back to exhibit 6 so the record is clear, and the left side or southwest side of the property, so the, as the property runs along Joppa Road, can you explain currently where the floodplain boundary is?

A. Right. So if you zoom in for me one more time, I'd appreciate it. So we'll take the, thank you. We'll take where the label is that you see there next to lot 2, the 100-year floodplain, extends across our proposed road up across the open space label, up onto the adjacent Greenspring Station property where

those X's are, the red X's, comes back around and then crosses Joppa Road and then comes back.

Q. So under existing conditions, is there any part of the frontage of our property along Joppa Road that is not in a floodplain?

A. No. In order to access our property, you would have to cross floodplain in one place or the other along Joppa Road.

Q. Zooming in on sort of the front, again, close to Joppa Road on this exhibit, and there is a red indicator that says 100-year floodplain post construction. Can you explain what that is, what that shows?

A. Sure. We are proposing the addition of this road, which we discussed before, and that road will be built on some fill, and it will be elevated out of the floodplain. So once you put that road in, it effectively cuts off the floodplain to the west.

Q. Why does it cut off the floodplain? Can you explain that?

A. The source of the floodplain is the

drainage area system that's on the east side of our property, which runs basically north to south. So when we add fill and elevate the road a little bit, it basically cuts off the floodplain that's like I mentioned, to the west of us, because it's higher elevation.

Q. So from the road towards Greenspring Station, what impact does the construction of this project have on the boundary of the floodplain?

A. So the floodplain boundary would be reduced and taken off of our adjacent, our neighbor's property in Greenspring Station, so they'll no longer have 100-year floodplain on their property, which would be an improvement, and will also not be where our stormwater management is shown, or where our open space is shown any longer. It'll all be confined to the area plan south of our proposed access road.

Q. And how is the new location or post-construction location of the floodplain depicted on this plan?

A. It is, well, a series of red X's on the

existing floodplain where it's going away, and then a heavy red dashed line with the red label that says 100-year floodplain post-construction, right where your cursor is. Just south of the proposed road.

Q. You spoke about the change that would happen for the Greenspring Station property to the northwest. If I zoom out, what impact is this projected to have on floodplain issues to the opposite side, toward Tally Ho?

A. Zero. We've done all of our analysis following the county's requirements in the DPW design manual, we've run all the calculations pre and post, and we have no impact on any of our adjacent neighbor's properties from a --

Q. What, sorry. What is physically there on the property now versus what will be there in the reforestation area and the lands around the road and existing home?

A. So currently it's a mix of existing farm fields, crops as I mentioned, and lawn areas. When we are done with construction, those areas will

be converted to reforestation area, which means they will be planted with new trees, most mainly trees.

Q. And with respect to the driveway, I think we spoke about it but didn't go into any detail. Can you explain the existing and proposed driveway to the existing home?

A. Sure. Just underneath the label that says reforestation area in white, that's the area of the existing driveway, that's going to be removed, and a new driveway constructed in the red hatch connecting to the rear of the home, out to the new proposed road. Basically taking that driveway out of the existing floodplain.

Q. Let's talk a little bit about architecture and the pattern book.

MR. ROSENBLATT: For all the attorneys, our pattern book is exhibit 7, but it's such a big document, it's very hard to scroll through, so it's split up into 7A, B and C.

BY MR. ROSENBLATT:

Q. And Mr. Bishop, I'm going to have you,

there were some questions about architecture and the size of homes, so I think let's try and focus on that. So I will turn your attention to, we'll start with page 18 of the pattern book. Sorry. And have you, can you just explain a little bit about the architecture proposed for this project, type of homes, materials, sizes, et cetera?

A. Sure. I can speak in generalities. I know it's been discussed a little bit in earlier testimony, but we are proposing several different types of homes. They will all be similar to each other, but different.

They have, we have a range of 50-foot, 40-foot, 50-foot and 54-foot-wide homes. The building materials would be of a higher quality, the architecture I think is very attractive. It was mentioned that they are potentially going to sell in the $800,000 to a million-dollar range, and we have a mix of front load garage units and side load garage units.

We have a wide variety of housing types, but

all still in the same kind of architectural vein, so they will be, compliment each other.

Q. So if anyone wants to look at specific sizes and floor plans, does the pattern book, if I flip through it, does it detail specifics about layouts and sizes of each of the proposed units?

A. Its very detailed. It meets all the requirements of Section 260 as it relates to architecture.

Q. And we'll talk about those in more detail. On page 25 is another sort of unit. Can you describe the architecture?

A. Sure. This is a front 2-car garage, front load unit. It's predominantly brick, lots of windows, and attached covered stoop, integral with the garage.

Q. And again, the actual dimensions, layouts, and I will go to the next image, which is on page 32 of the pattern book, and describe the third now type of unit.

A. Similar unit, a little wider. Again, a

2-car front load garage unit with a full-length covered porch to kind of downplay the dominance of the garage.

Q. And one more in this exhibit, page 42.

A. Similar sized unit, just a little different style, 2-car garage, front load with a porch, columns, different style siding. Again, lots of windows.

Q. And just a couple more. Going through the broken-up pattern book on 7C, page 53 of the pattern book, there is another unit. Can you explain?

A. This is another unit. I believe this one is designed for more of a single floor living. It does have two stories, but it's more of a single floor plan, 2-car garage, front loaded.

Q. And finally, page 61 of the pattern book. Sorry.

A. This is, again, one of the larger units that has a covered porch, it has different types of materials on the front, mainly a brick, and this is actually showing a 3-car garage, which has in this

option has two cars that kind of, a 2-car garage unit that's kind of in the side of the building and a 1-car garage that's facing the street, but it's set back from the street quite a bit.

Q. Thank you, Mr. Bishop. I'm going to go back to the development plan itself, and ask you, there's one green line and a number of red lines on this plan, and ask you to kind of go through and explain what the red lines show. I'll start in the upper left corner of the plan, and ask you to explain what they read, and in this instance, one green line change. Who requested that, and what changes are shown?

A. Okay. So everything to the upper left is the dedication table, and an inset that we prepared, and those are basically real estate compliance issues that show what areas we are dedicating to Baltimore County, whether it be an easement or a road, right of way, and majority of the red was us working with the real estate compliance group to label all of the dedications in a way that

they thought was the easiest to follow.

Q. We'll talk about this a little bit more with Section 260, but the entrance monument, is that shown on the plan? Can you explain what it is to look like?

A. Sure. That is the proposed entrance sign. It's only red line because the zoning office asked us to put it physically on the plan. We always had it in the pattern book, but they asked us to also include it on the plan. It's a masonry entrance sign, about 8 feet tall that says Greenspring Manor on it.

Q. And as we scroll towards kind of the left center plan view, there is some red there. Can you explain what, there's a number of red triangles and labels, and ask you to explain what the red line changes are in this area?

A. Sure. Some of the red lines are the county landscape architect asking us to put the details that we had in the pattern book onto the plan for the proposed open space improvements, so that would be like the planting areas and the pavilion.

You'll see that with notes about what specific products are going to install there.

And then we also have the new driveway location, which was a request from environmental impact review of Baltimore County, so you'll see that in the red hatch at the rear of the existing home. The red triangles you mentioned are new forest conservation areas. We had those in a different location early on, but we decided that that was the best location for them, so that's all reforestation planting now where the red triangles are.

Q. Okay.

A. You'll see that the new proposed alignment of the public sewer connection in the bed of the existing driveway. A lot of other things were again, coordination with real estate compliance on how exactly they wanted the dedications areas labeled. The county landscape architect asked us to add some fending to screen between the private properties and the adjacent open spaces, which we did.

We had some notes to add once our

alternatives analysis and forest conservation variances were approved, so you'll see those in red in some of the general notes.

Q. Can you explain the labeling change to the typical units on the bottom of the plan?

A. I think we just added more detail to confirm that we had enough room for our decks without the need for variances.

Q. And some notes added or changed. Can you explain this?

A. Yeah. I think they are mostly just responding to development plan comments, mostly generic basic comments on open space and association labels. Yeah, that kind of stuff.

Q. And if I scroll up the right side of the plan, I'm trying to make sure I don't --

A. Sure. We added asphalt trail detail per the request of the county landscape architect.

Q. Okay.

A. Trails can be in the open space we discussed earlier. We added a cost estimate for all

the open space areas, for all the improvements that will go into that, that's that table by your hand.

Q. And what is the estimate of the improvements that are proposed?

A. Approximately $309,000.

Q. And then some changes to the maybe road or cul-de-sac?

A. We did revise the cul-de-sac slightly. Development plans review asked us to make the cul-de-sac a little bit larger, which we did, and you can see that in red. We also added a phasing line, a construction phasing line per the request of development plans review, and that just kind of shows which homes we think we'll build first versus second.

Q. The gate issue, it's not in red, but the same note we saw on the rendered plan I notice is not in red. Can you just say how much, or we said it clearly, where did the language for this note come from?

A. It came from the Department of Public Works of Baltimore County, and from the highway design

section.

Q. Okay. There's a few stormwater management notes. Can you explain on each of the facilities on the road what those notes are?

A. Sure. So we, on the stormwater management facilities, we changed the shape of the ones in the middle of the plan, thank you, a little bit to make sure we had enough separation from the forest conservation areas to the embankments of the stormwater management facilities.

There was a comment from environmental impact review. We also made them slightly deeper to gain a little more volume in them.

Q. Okay. And then on the road?

A. Added a few notes on how to label HOA easements and showed the entrance signs. Again, we had all the entrance signs and the open space details in the pattern book, but the county landscape architect asked that we add them to the plan itself, so that's why they are red now.

Q. With the exception of the one green

line that took place at the outset of our first hearing officer's hearing date, is this the red line's plan that was circulated to the county agencies prior to their testimony in front of the judge?

A. Yes, it was.

Q. All right. Mr. Bishop, did you perform an analysis of the master plan, and specifically the property and its transect designation under the master plan?

A. Yes, we put together quite extensive, quite an extensive report showing how we met that, or complied with the master plan.

Q. Okay. Before we turn to your exhibit, Mr. Zimmerman actually I'm going to show you people's counsel 8, he attached a few pages from master plan 2020, and ask you before we talk about our specific transect, what does the master plan say about the proposed land use map that shows the transects? And I'm turning your attention to page 27 of the master plan that is part of people's counsel exhibit 8.

MR. ZIMMERMAN: I'm going to object at this

point, just to indicate that any interpretations of the law, I think that's beyond Mr. Bishop's expertise. He can indicate what the plan says, but we are starting to get into interpretation, and I just want to put it for the record that I would object to that, because that requires a legal education.

JUDGE MURPHY: Overruled. Go ahead, Mr. Bishop.

MR. BISHOP: If you don't mind, I'm just going to read the first paragraph that starts the whole transect.

BY MR. ROSENBLATT:

Q. Sure.

A. Actually it says the proposed land use map, which they're referring to, the transect land use map provides general recommendations for land use based upon the policies provided in master plan 2020. The map is conceptual and general and is intended to reflect land use patterns and support the land use objectives of master plan 2020 rather than identify land uses of individual properties or parcels. So I'd

argue that it's intended to give guidance on how to develop these areas, not to be very strict guidelines in that regard.

Q. Turning to Developer's exhibit 8, which is our excerpt of the master plan, you just spoke about the proposed land use map. Can you explain what, first in general terms what this map shows?

A. Sure. This map shows out of the master plan 2020 the different transects that have been designated. so it goes from T1, the most natural, to T6, which is the core, basically just in Towson, downtown Towson.

Q. What is the transect for the subject property?

A. We are at T3 suburban transect.

Q. Before we turn to further pages, is there an image at the bottom of the map for each of the transects?

A. Yes.

Q. And I'm sure this is hard to see, zoomed in on the computer, but if you can, can you

explain what is shown in the image for T3?

A. Sure. You'll see single family detached homes adjacent to public streets with sidewalks with landscaping in the front yards.

Q. Can you tell from this image how many homes are depicted in the image for T3?

A. I wish I could. Maybe 3. It's a little grainy.

Q. Can you describe the distance between the homes in this photograph?

A. It's close, and I would say that it meets probably the county zoning requirements.

Q. All right. I'm going to zoom out and turn your attention to page 29 of the master plan, which is a part of Developer's exhibit 8 and ask you I guess if you could read what the description of the T3 suburban zone is in master plan 2020?

A. Sure. The T3 suburban zone means low density residential areas adjacent to higher zones that contain mixed use. Home occupations and out buildings may be allowed, landscaping is naturalistic,

and setbacks are relatively deep [indiscernible] roads irregular to county natural conditions.

Q. And turning to the next page, so page 30 of the master plan. Is there, again, a description of the T3 suburban zone?

A. Yes.

Q. And is the paragraph on the left side of T3 the same as what you just read?

A. Yes, it is.

Q. And is there an image, left most side of T3, depicting a layout?

A. Yes, there's a plan view schematic showing the general layout of a T3 suburban area.

Q. Can you please describe that, what's depicted in that image?

A. Sure. You have a grided street or a street grid, and single-family detached homes with landscaping and orientation toward the street.

Q. And how does the image for T3 differ from the images shown for tier 2 and T4?

A. So T2 is obviously much more rural and

less dense. You can tell the houses are much more set back from the streets, the lots are much larger, and the landscaping is even more naturalistic, and I think they're even showing intent for farming, agriculture uses, whereas the T4 really introduces attached product. I mean, it's very obvious that there is townhouse units there, and they're much closer to the street, with some single family detached as well.

Q. Now, turning back to, I just want to make sure it's exactly the same. Okay. So the description on page 29 of the master plan that you read into the record, can you explain in your opinion if and how this project complies with the description of what a T3 suburban zone development should be?

A. Sure. I think we're on exactly the definition of it. We are in the lowest density residential zone in Baltimore County, which are the DR1 and DR2 zones, so that addresses the low-density residential areas. We are adjacent to higher zones.

As I mentioned, there are communities directly to our north and adjacent to us that have

townhouse configurations in them, which are denser use. We also have the Greenspring Station project which contains mixed use as I showed with the mix of medical office, standard office, commercial uses.

The landscaping, we have as we mentioned, extensive landscaping with nearly 1,000 or more proposed trees, and we're leaving all of the naturalistic areas basically intact along our property's perimeters.

Q. Okay.

A. The roads are irregular. We have curved linear roads, and we are, as I mentioned, we are accommodating the natural conditions. We tried to use the existing grade to our advantage. When we laid this out, we stay very close to the existing grades. We are maintaining almost all of the existing naturalized areas, the adjacent forested areas in the stream network, so I think we fit nicely into the T3 suburban zone.

Q. And you spoke of, do you know what percentage of the property will remain open,

undeveloped if this project is constructed?

A. Correct. I believe it's about 40 percent.

Q. And in terms of local open space for county requirements, can you explain again, just in relation to this how we meet or exceed the open space requirements?

A. Sure. As I mentioned earlier, we have 60,000 square feet of open space required, and we're providing over 148,000 square feet, so that is over twice what is required.

Q. In anticipation of this hearing, did you review some other developments that are also in the T3 transect in the near vicinity of this project?

A. Yes, I did.

Q. I show you what's been marked as Developer's exhibit 9, starting with the same proposed land use map is the first page of exhibit 9, but then there are four numbers with red circles around them. Can you explain what that shows?

A. Sure. This is the transect map as we

discussed earlier, but with an overlay. I identified four different areas that are in the T3 transect similar to the transect or the same transect that we're in, and the intent is to show the vast mix of housing types and community types within the T3 transect.

Q. I'll turn your attention to page 2 of exhibit 9. You describe, describe what you are showing in this page.

A. Sure. This is a community that is on the T3 transect, or within the T3 transect. The photograph that I show to the left is just a random house that I picked, but it shows a similar setback and lot size and configuration as our proposed community, and if you scroll down, I also show that within the same transect and similar community, you have townhomes very similar to our setup.

As we mentioned earlier, there are communities directly to our north that have townhouses, and some others that have single family detached similar to the picture I showed earlier.

Q. On page 3 of exhibit 9, can you again describe, I'll zoom out for a second and then zoom in when you're talking about each image.

A. Sure. Again, another T3 transect in the general area that our project is in, and again, showing large townhouse development type houses, and also mixed amongst single family as well, so it's a mix of uses.

Q. In the, I guess the upper right of page 3, how many stories are the townhomes that you depicted?

A. I believe it's a 3-story townhouse.

Q. And again, you may have already said this, but you have an arrow pointing to a neighborhood off of Thornton Road. Can you explain what is depicted there?

A. Correct. Those are 2-story townhouses.

Q. Are they in the same transect as the subject property?

A. Sorry, yes, they are also in the T3

transect.

Q. And page 4, I'll try and zoom out at the beginning. Can you explain where these properties are located, and then I'll zoom into each one so you can describe what's depicted?

A. Sure. These are relatively close to us. They're about, they're on the other side of I-695 directly east of our project. They're in the DR35 zone, and they're showing single family detached homes, relatively small front yards, relatively close building to building setbacks.

Q. Okay. And there's another image on the right side. Did your description cover both images?

A. It covers both. They're similar. Neither of these have garages, but they are similar. I'm sorry, the one in the upper right, you're right, is a semi-detached project. Sorry. So that's a 2-house, two families in one building versus true single family detached.

Q. Got it. I'm jumping around a little bit. This is page 4, upper right of Developer's

exhibit 9. Can you just explain one more time so the record is clear what is shown?

A. Sure, I'm sorry. There's a, that is a semi-detached product or house, so there's two families in one building, and the intent really with these exhibits is jut to show the wide variety of densities and design and setbacks located within the T3 transect throughout Baltimore County.

Q. And the final page, one more image, where is this located, and what does it depict?

A. It's south of 695, again to the east of our project, but in the general vicinity, and these are showing, again, townhouses in the T3 transect.

Q. So were all the images that you picked out in the T3 transect?

A. Yes, they are.

Q. In your opinion as a land planner and landscape architect, is this development consistent with the T3 suburban designation and master plan 2020?

A. Yes, it is.

Q. Now, did the Department of Planning

make a finding with regard to consistency with the master plan for this project?

A. Yes, they did.

Q. Okay. I am going to turn back to the development plan for one more topic. Okay. So we have heard a bit about off site improvements for this project, but I'm going to ask you, is the proposed sewer upgrade that will be constructed if this property proceeds shown on the development plan?

A. Yes. The lower left-hand corner of the plan shows what we intend to do.

Q. And where is this improvement located, and what is the improvement itself?

A. Located, the improvement is located just south of our property across the street from West Joppa Road. It is proposed improvement of an 8-inch sewer line to 12 inches, and I believe there are two sections that we are agreeing, or required and agreeing to improve in that area.

Q. And have plans for the construction of the sewer upgrade been prepared, submitted to

Baltimore County?

A. Yes, they have been prepared, submitted and approved by Baltimore County.

Q. And do you know the, I had asked Mr. Powell, do you know the status of the construction plans for the traffic improvements that we've heard so much about?

A. Yes. So we have submitted our SHA access permit plans, and have been through a couple rounds of review, and are very close to having those plans approved as well.

Q. And the, either DPR or DTWP comment mentioned segments of sewer in addition to the ones shown on Atapco's development plan that must be upgraded prior to connecting these homes into the sewer system. Are you aware of that issue?

A. I am, yes.

Q. And is this something where a condition, would you suggest any condition if this plan is approved to address that issue?

A. Yes. The condition should be, and I

believe it has been required by DPW&T as well is that this, our sections of sewer and the sections that you just mentioned are also in the development plan comments, should all be installed and approved before we can get a building permit, any building permits for our project.

Q. Turning back to, I think this may be the best image for you to go through each of these requirements, but we are going to talk about Section 260, and what I'd like to do, because the issue has been raised, is to go through each of these requirements and have you explain how the requirements are addressed on our plan.

So Section 260.2 has to do with site planning, and I'm just going to go through and ask you each one. So how does this project retain the existing quality of vegetation of the site to the fullest extent possible and protect the root systems of that vegetation during construction?

A. So as I've mentioned probably briefly before, we are protecting basically all the trees

along the eastern property line. As you can see on this exhibit in the dark green, there are 27 specimen trees on the property now. We are retaining all of them but one, and the one that we have to remove, we have to remove because of required widening of West Joppa Road, and that tree has already been heavily limbed up and marginalized by Baltimore Gas and Electric, and on the site other than specimen trees, we're having very little clearing of the existing forest on the property.

Q. How does the plan integrate locally significant features of the site, such as distinctive buildings, vistas, topographic features, specimen trees, tree stands, monuments, landmarks, ruins and gardens into the site design and retain the character of the features and their settings?

A. So as mentioned before, we're keeping the existing home on the property and putting it on a 3-acre parcel, so that will stay the same. I also mentioned that we're trying to retain the existing shape of the land from a topography standpoint, and I

also just mentioned that we're not, we're only removing one of 27 specimen trees on the property.

Q. Does the project coordinate building design, site layout and grading so that grade transitions are gradual and respect the existing topography?

A. I'm sorry, I probably answered this one. Well, I answered number 2. But yes, we are maintaining most of the existing grading out there. In fact, most of our grading is within two feet of existing grade. We don't have any permitter retaining walls that would artificially change the character of the grade.

Q. Okay. Is there a landscape buffer between the rear yards of dwellings existing in 2001 and the rear yards of abutting new dwellings proposed?

A. Yes. I think we covered this earlier on testimony. We are providing an enhanced landscape screen and buffer between the homes off of Mays Chapel Road to the north of the project, and we're maintaining all the, or most of the existing

vegetation along the east side, backing up to the Tally Ho neighborhood.

Q. Does the project provide for smooth transitions between neighborhoods by ranging and orienting the proposed buildings and site improvements to compliment those in the surrounding neighborhood?

A. Yes. We've pushed, as I mentioned before, the proposed homes, about 550 feet away from Joppa Road, and we also discussed the, not compatibility, but how we are similar in size and design of all the surrounding communities.

Q. Does the project provide transitions with respect to setbacks, street patterns and building to street relationships?

A. Yes. As I've mentioned, we have integrated curved linear streets which are similar to what's done in the other neighborhoods, and we are also integrated into a mix of different uses, as I've mentioned several times before, with higher density, commercial, townhomes, and a mix of different single family lot sizes in the area.

Q. Okay. Let's, are there any reverse frontage lots or pan handle lots proposed?

A. No, there are not.

Q. Section 260.3, titled open space, it says development proposal shall integrate open space areas into proposed development by first, does the project create focal points along streets?

A. Yes. We have three areas of the open space that are directly adjacent to the streets. As I mentioned, the first one as you come in is on your left, and it will be landscaped and have a structure there that will create a focal point. As you get to the center of the project, there's another access to the open space that's going to have our, excuse me, our planting areas, and mailboxes, and then we have a centrally located kind of pocket park, which will have a gazebo and more gardens and walking areas.

Q. Does the term open space in Section 260, is that the same as the open space regulations in the development regulations?

MR. ZIMMERMAN: Objection. I don't see how

he can give that kind of interpretation.

JUDGE MURPHY: I don't think it's an interpretation. Go ahead, Mr. Bishop. Overruled.

MR. BISHOP: My opinion is that there are very specific open space requirements that are set forth in the open space manual in Baltimore County which are different than the intent of the Section 260 open space areas.

BY MR. ROSENBLATT:

Q. All right. Let's go through the rest of them. Is one of the requirements locating landscaped open green spaces in view of the development entrance or adjoining public street?

A. Right. So the entire frontage of Joppa Road is going to be planted with combination of decorative plantings and a combination of reforestation areas. So the whole front is going to be a green space.

Q. The next requirement is planning a linked network of natural and landscaped open areas connected by pedestrian and bike trails. Can you

explain the trail issues, and I don't know if we've talked about the frontage of the property, so if you can focus on that as well.

A. Sure. We're proposing a wider, multi modal sidewalk along our frontage of Joppa Road, so what that is is just a paved sidewalk that's wider than typical, so you can have walkers and bikers on the same trail, so that's along the frontage of Joppa.

And then we have the asphalt trail which we discussed earlier which connects the two larger open space areas. We have all that connecting to a sidewalk system throughout the entire community, so we'll have sidewalks on both sides of all streets, and then we'll also have a pedestrian connection at the end of our proposed street, and its connection to Mays Chapel Road at the north of the property.

Q. And are dwelling units oriented around open areas or squares?

A. Yes. So we have the pocket park in the middle there, which you just focused on, and we also have the other buildings a little bit to the left have

access to that open space as well.

Q. Okay. Does the project incorporate significant features such as spans of trees into open areas?

A. Right. So as I mentioned, most of the property is currently farmed, but the areas that are not and are currently natural, we've utilized and brought our open spaces closer to and incorporated a trail system so that residents can take advantage of that, those naturalized areas.

Q. Does the design link the development's open areas to the surrounding neighborhood open areas, including public parks, walks and bike trails, and create both functional and visual continuity by matching the design of a bike trail in the proposed development to a bike trail located in an adjoining community?

A. I think we've covered this already, but we are proposing that multimodal bike trail along Joppa Road, so it can be integrated into the neighboring communities.

Q. Does it run along the entire frontage of the property?

A. It does, yes.

Q. All right.

A. And I'd answer in connection to Mays Chapel Road as well.

Q. Section 260.4, streets and parking. The proposal shall provide for at least one street connection to an adjoining neighborhood and adjoining property, not including principal access to the subdivision, nor to facilitate good traffic circulation. How is that met in this case?

A. So this one we are providing the street connection, however we discussed it's going to be emergency only because of the desires of the community to our north, so making that emergency access only with some kind of open or movable gate.

Q. Again, we have heard traffic testimony, and I'm sure we'll hear more, but how does that relate to good traffic circulation from a planning perspective?

A. Well, it's going to not disrupt the Meadows and the Boxwood neighborhoods, I think that's our main concern with keeping that emergency only, so those communities can maintain their current status quo. It also helps direct traffic to the arterial streets in the area, and not through these local streets.

Q. Are the streets proposed designed to slow traffic by offsetting alignments, reducing street width, reducing the length of blocks, and employing the use of traffic management devices such as roundabouts, jokers, to accomplish traffic calming?

A. Yes. We have narrower streets with parking on one side, and as I've mentioned a few times before, we have incorporated curb to linear features, which is also a traffic calming measure.

Q. You mentioned, I think you already covered this, but is on-street parking allowed?

A. Yes, we have on-street parking proposed on one side of all the streets.

Q. Are pedestrian and bike access to

commercial areas and community facilities on site within the development and to the surrounding neighborhood proposed?

A. Yes. We discussed this, so we have the path along Joppa Road, and the pedestrian connection at Mays Chapel Road.

Q. And finally the section, are street and parking accommodations provided which compliment the surrounding neighborhood?

A. Yes, that's the parking in your garages, in your driveways, and on the streets.

Q. And there is language about cu-de-sacs that may be used if it's demonstrated that a street connection is not feasible due to site conditions such as grade transitions or natural features, and alternate layouts not feasible.

If cul-de-sacs are used, developments should consist of a balance of street patterns, and if cul-de-sacs are used, design elements such as center landscaping and traffic circles shall be used. Is there a cul-de-sac proposed for this project?

A. Yes. We have one cul-de-sac.

Q. And can you describe the design of it, with respect to size, landscaping, et cetera?

A. Sure. It's a larger cul-de-sac that allows for essentially planted island, and it is warranted because of all the environmental features we talked about before with the floodplain, the forest buffer, and forest conservation areas.

Q. And finally, street widths and front yard setbacks may be reduced in accordance with traditional neighborhood design standards. Is that something proposed in this case?

A. I don't think that's really terrible applicable. I think that's a more specific housing design type than we are doing here, but the road has been reduced to minimize stormwater management impacts, and to create traffic calming.

Q. We talked a bit about landscaping, so hopefully we can move through these quickly, but Section 260.5 speaks about landscape design. It says a project shall, it says landscape public open spaces

to invite users, particularly emphasizing the intended entrance to the open space, so try and depict the entrances to the open space and ask you how they are landscaped.

A. Sure. So each of the landscapes, or open space areas as I mentioned, have landscape features. So we have the, if we can start at the one closest to Joppa, that would be best.

But you'll see from here, and from pages in the pattern book that we have incorporated a sidewalk system to bring you into the open space with a pavilion and seating areas and gardens and landscape areas. We've done that will all three of the open space entrances.

So that one there, the one in the center as I mentioned has the group mailbox area with again, seating areas and bike racks and gardens, and then the one shown in the middle here has a gazebo, again, more walking trails and more garden areas.

Q. Okay. In addition to plant material, are fences, walls or earth forms used or needed to

provide excessive and attractive screens and buffers where necessary?

A. Yes. We've talked about the berm that we've incorporated in the north end of the property adjacent to the existing homes, and the extensive landscaping, and enhanced landscaping we'll put there.

So we've also incorporated a series of fences between the sides and rears of the private properties and the community open space areas.

Q. To provide for or reinforce and maintain a continuous street tree canopy by preserving healthy street trees, or if they're not present, planting new trees. The canopy shall be comprised of trees of the same species or trees with design characteristics and growth habits that are similar to those of the existing street trees.

A. Sure. So we are, as you can see from this plan, extensively landscaping and providing a continuity of street scape and street scape plantings.

Q. And are there any existing street trees that can be used?

A. No, there are no, I mean, most of it is farmed and farm field, so all of these trees will be new.

Q. Has the design for site signage shown on this landscape plan, and in this case on the development plan --

A. Yes, in both places.

Q. 260.6 talks about buildings, and we've gone through the architecture. I'm not going to make you go through each of the images, but if you could just give a little tidbit about each of these.

Does the project provide a variety of housing type or design while maintaining continuity of scale in proportion to detail?

A. Yes. As I mentioned in passing before, we're providing 40, 50 and 54-foot wide units, so there's a variety there. It provides variety and type of design, but they are not terribly different, so there was a continuity in their design, and we're also providing a combination of front load and side load or side entry garages.

Q. Are the dwellings oriented toward the street? And do they incorporate prominent entries such as porches or stoops into the front building facade?

A. Yes. All of the homes face public street, and all of the homes will provide a front porch or stoop.

Q. Do the dwellings adhere to a consistent front building setback on the same street or square so that the fronts of the dwellings define a uniform street --

A. Yes. Most of the homes maintain the same or similar front yard setback. There's only a couple of the homes of the proposed 60 that are set back a little bit further from the road.

Q. Decks, balconies and porches designed as components of the building following dominant building lines, proportions and style and in a scale appropriate to the available space on the site. It says decks shall be screened to minimize visibility from a public street.

A. So as we've also mentioned, all the proposed homes have the availability for decks if the buyers so choose, and we've also taken care to screen the corner lots or any of the lots where that deck area could be visible from the public area. So you'll see in the landscape plan more evergreen trees, more shrubs, more flowering trees in those areas.

Q. Accessory structures designed at a scale appropriate to the dwelling and design, storage buildings and garages with the same architectural theme as the principal buildings on the site providing consistency and materials, colors, roof pitch and style.

A. Yes. As we mentioned in some of the earlier areas, we have a pavilion and a gazebo. Those details can be found in the pattern book, and they are in keeping with the architecture of the neighborhood.

Q. And the finished material of the exteriors of building is extended to grade, or if not possible, to within 12 inches of grade on all sides of the building, excluding foundation walls which they'll

use a finished quality material such as decorative concrete block, or concrete with a brick pattern, or stucco, and provide landscaping along the foundations.

A. Yes, that is provided, and it can be seen in the pattern book as well, in the architectural section.

Q. Similar materials and design elements on all building facades proposed, and building facades articulated using coordinated architectural features such as porches, windows, doors, chimneys, gables and dormers.

A. Yes. We went through all the architecture, and I think they all have very similar styles, compatible porches, stoops, garage doors. Compatible variety of siding, be it stone or brick, or siding.

Q. The last 260 requirement, garages may not become the dominant street feature, garage doors shall use items such as windows, decorative patterns and color to relieve the visual impact to the house from the street. Is that provided in this case?

A. Yes. Since I mentioned we've incorporated some side load garages, and we feel we meet all of the CMDP in Section 260 architectural requirements.

Q. Okay. In your opinion, are the requirements of Section 260 met?

A. Yes, they are.

Q. Did the Department of Planning make a finding with respect to compliance with Section 260?

A. Yes, they did, it's in their report.

Q. And in your opinion, does the development plan meet all applicable development regulations contained in the county code, as well as any applicable policies, rules and regulations regarding --

A. Yes, it does.

Q. Thank you, Mr. Bishop.

MR. ROSENBLATT: I have no further questions.

JUDGE MURPHY: Well, let's move into evidence the ones you spoke about. Can we do that?

MR. ROSENBLATT: Yes, please. So starting with exhibit 2, which was Mr. Bishop's resume, we used 2 through 9, and 23.

JUDGE MURPHY: 2 through 9, and 23. Okay. And any objection, Mr. McCann?

MR. MCCANN: No objection.

JUDGE MURPHY: Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

JUDGE MURPHY: Okay.

(Developer Exhibit Nos. 3 through 9 were marked for identification and entered into evidence.)

(Developer Exhibit No. 23 was marked for identification and entered into evidence.)

JUDGE MURPHY: Mr. Rosenblatt, just so I don't forget, I think in the last hearing you had, there was a green line added to the development plan for the red line development plan. Number one, I thought you made it 1B.

MR. ROSENBLATT: Yes.

JUDGE MURPHY: We never got that, I mean, so

I know you dropped off other exhibits, but that 1B wasn't provided.

MR. ROSENBLATT: Okay. I apologize for that.

JUDGE MURPHY: No, I just want to make sure we get it, just so, and then your exhibit list will have to be, you'll have to add, you know, 1A, 1B.

MR. ROSENBLATT: Yes.

JUDGE MURPHY: Just revise it, so you'll have to do it again. All right. So that is, those are those. Mr. McCann?

MR. MCCANN: Yes, Judge. Could we take a break, a bathroom break and just maybe a little longer than that so that I can, five, ten minutes would be great.

JUDGE MURPHY: Yeah, let's take ten minutes. How does that sound?

MR. MCCANN: Great. Thank you.

JUDGE MURPHY: All right. I'll pause the record.

(Whereupon there was a brief recess)

JUDGE MURPHY: We're back on the record. Mr. Zimmerman had a question about --

MR. ZIMMERMAN: Can I say something? I'll defer to everybody else, and it's of course advantageous to have cross-examination right after direct. On the other hand, cross-examination may take awhile, and sometimes people get impatient towards the end of the day or have a harder time paying attention, so, I mean, I'll defer to your ruling, but the cross-examination could take awhile.

JUDGE MURPHY: Okay. I think Mr. McCann was going first anyway, right?

MR. ZIMMERMAN: Okay.

JUDGE MURPHY: All right. Well, we'll see what Mr. McCann has to do. Thanks. All right. Go ahead, Mr. McCann.

MR. MCCANN: Okay. Thanks, Judge.

CROSS EXAMINATION

BY MR. MCCANN:

Q. Good afternoon, Mr. Bishop. I'm not sure where you are, but I think you're here, correct?

A. I'm here.

Q. Okay. Great. So I know it has been stated a couple of times already, but 60 homes are proposed on property with a density that allows no more than 60 homes, correct?

A. There are 61 homes that are permitted, 61 are proposed, one of them is existing.

Q. All right. Yeah, the 60, or lot number 1 rather is the existing house, correct?

A. Correct.

Q. Okay. And you said I think during the discussion about the T3 transect that you consider this development or this area that is part of that transcript to be low density, correct?

A. No, I stated that I thought that we met the intent of the T3 suburban zone.

Q. Okay. Well, you didn't say it was low density?

A. It's located in a lower, the lowest designed residential zones.

Q. Zones, D1 and D2, correct?

A. Correct.

Q. Let me just show you exhibit, Developer's exhibit 1B, which is the green line plan. I'll pull it out so you can see it. I wanted to ask you about the zoning line, which if I'm correct runs sort of straight through the middle of the houses, correct? That's the zoning line right there. Can you see my cursor?

A. Yes, that is the zoning line, yes.

Q. And I'll use left from right as Mr. Rosenblatt did, it's sometimes easier. But the left from a plan view, I counted up those houses, there's 15 houses, and that's in the DR1 zone, correct?

A. Correct.

Q. So sort of the right-hand plan view of the development, there are 45, in other words, three quarters of the homes are in DR2, correct?

A. Correct.

Q. And are you familiar with the, obviously you are. Are you familiar with what the density is, permitted density in the DR1 as opposed to

the DR2 zone?

A. Yes.

Q. DR1 is one unit per acre, correct?

A. Correct.

Q. And DR2 is two units per acre, correct?

A. Correct.

Q. So literally two times the amount of density is permitted in the DR2 zone than is permitted in the DR1 zone, correct?

A. Correct.

Q. Okay. And while we're sort of looking at the plan, you talked about the mailboxes, community mailboxes that will be installed, is that right?

A. Yes.

Q. In the open space areas, correct?

A. Correct.

Q. Isn't that something you typically see in a townhome community as opposed to single family home community?

A. No. Several years ago the U.S. postal service stopped allowing individual mailboxes for

single family developments, single family detached developments.

Q. For new development?

A. Correct.

Q. I did not know that. Okay. And in terms of lot sizes, again this is Developer's exhibit 1B, I took the liberty of coloring up my copy a little bit. On the right-hand side of the plan, there's a lot area chart, is there not?

A. Yes.

Q. Just let me zoom in on that a little bit. I'm getting there, bear with me. Can you see that?

A. Yes, I see that.

Q. Okay. It's obviously lot areas. So what I did with my yellow and red pen here is I looked at the smallest lot amongst the new 60 lots, and then the largest lot amongst those new 60 lots, and what I found was in red here, lot number 9 is .172 acres. Do you see that?

A. I see that.

Q. So less than a fifth of an acre. And then in terms of square footage, 7,507 square feet, correct?

A. Correct.

Q. Okay. And then what I, I mean, obviously I'll give you time to look through this chart, but that's what I'll represent to you, that that's the smallest lot that I saw on my review, and then the largest lot I saw, other than of course lot one, which is the existing house, the largest lot is .495 acres, less than a half of an acre, or 21,571 square feet. Does that sound about right to you?

A. That sounds right.

Q. Okay. Because that struck me when you were discussing your that is Developer's exhibit 4, this document here, this is your, this is the document that you submitted to the planning office, I think you've indicated, and you spoke about this, correct?

A. Correct.

Q. And this reflects, hopefully it's big enough for you see, this reflects various, the

communities around the subject property including Greenspring Station, the SHA properties, and the square footage of the lots on those, in those areas, correct?

A. Correct.

Q. And I think you said this was something that, again, you submitted to the planning office, and the planning office apparently had no questions about it, or signed off on it? Did they respond in any specific way to this?

A. It was a supplement to our point by point response to their concept plan comments.

Q. Okay. But did you, did they respond to this at all?

A. I don’t recall.

Q. Okay. What’s that?

A. I don’t recall any response from the department of planning.

Q. Okay. No questions about it or anything like that?

A. I don’t remember any.

Q. Okay. Because when I was looking at this a little more closely than I had in the past, I noticed that you have purple areas, which are the subject property, and then these two other communities to the right, and lower right. You've categorized those purple areas as between 10,000 and 30,000 square feet, a rather broad range, is it not?

A. It is.

Q. And then you averaged, and when I look, go back and look at the green line plan, I looked at the number of lots that were under that range, again, the range being 10,000 to 30,000, and what I noticed was, and this is my sort of yellow markings. What I noticed is of the 60 new lots, what did I find? 24 of the 60 are less than 10,000 square feet. That is less than the very range that you created in exhibit 4. Do you see that?

A. I see that.

Q. Okay. In fact, the range again in exhibit 4, Developer's exhibit 4 was 10 to 30,000, would you agree with me that the vast majority of

these lots, even those beyond the ones I've circled in yellow are nowhere near 30,000 square feet? Would you agree with that?

A. I would say that there is a mix and a range of lot sizes, and the intent of that exhibit was to show the range of lot sizes, and I'd still argue that all of the lots in our development are average in that range of 10 to 30,000 square feet if you add them all up and divide by 61.

Q. Yeah, but that's a range of lot sizes in the community at large. The range of lot sizes of this particular proposed development in comparison to the range of lot sizes in the adjoining developments, I take it that's something that you didn't do?

A. I would disagree. If you look at all the other areas, I mean, the townhouse areas have a wide range of lot sizes as well. They have larger ones on the end, and smaller ones on the inside, and they've got outliers that are larger, and outliers that are smaller, so I would think this is very similar.

Q. Well, that wasn't my question. My question was did you undertake the task of comparing the range of lot sizes within this proposed development and compare them, that range, to the range of lot sizes in other developments? Did you do that?

A. Yeah, I think that's been done with the exhibit and how we calculated the numbers.

Q. What exhibit? 4?

A. We just looked at the plan that you were just showing me.

Q. This exhibit number 4 doesn't tell us anything about what the range is in the proposed subdivision, does it?

A. No.

Q. All right. I'll move on. Back to the plan, a couple of other things on the plan itself, we'll move on. I noticed that, I'll blow it out and then come close again. Developer's exhibit 1B, at the bottom of the plan, there are typical layouts. Do you see that?

A. Yes.

Q. You're familiar with that obviously. I'll blow it up a little bit. So you have typical 54-foot wide, typical 50-foot wide, and typical 40-foot-wide layouts amongst the proposed new 60 homes, right?

A. Yes.

Q. Okay. And then if we look a little closer at not the width of the lot, but the setbacks, and I'll use my highlighter if it works, setbacks for each layout, beginning with the front yard, is 25 feet, right?

A. That's correct.

Q. Okay. And that is the county's minimum, minimum front yard setback, correct?

A. In this zone, correct.

Q. Okay. And then likewise, the minimum required setback under the county zoning regulations for the side yard is 30 feet, and in each of these layouts, the setback provided for is 30 feet, correct?

A. That's correct.

Q. And then for the rear yard, likewise the minimum county requirement for the rear yard

setback under the zoning regulations is 30 feet, and in each of these layouts you have the development plan proposes 30-foot rear yards, correct?

A. That is correct, but these are typical layouts, they are not indicative of all the layouts. This is something that the zoning office makes us do so they can check permits when they come in to make sure that all of our proposed lots meet the minimums. These are not indicative of all the lots out there.

Q. Okay. How many lots is it, are these layouts indicative of?

A. They are minimums basically. To make sure that we meet these requirements.

Q. That’s not my question.

A. [indiscernible] answer.

Q. Yeah, my question was how many, if these are supposed to be representative or indicative as you said, and was required by the planning office, how many, of the 60 new lots, how many of those lots are these three layouts indicative or representative of?

A. I've not done that analysis. There are several that are much larger setbacks than this.

Q. Okay. Well, we can, on a scale plan, we can do all of that if we wanted to spend the time, could we not?

A. We could.

Q. But you haven't done that?

A. Not specifically, no. I just know because I know the plan very intimately that there are plenty of lots that are, have larger rear-yard setbacks, and some that have wider front yard setbacks and some that have more than 30-foot building to building. There is a range.

Q. Okay. Well, I'll hold you to planning, and we'll talk next time perhaps. But the, another thing I wanted to know about the plan is we have a listing up here of adjacent property information, and that's typical, that's required for development plans under the Baltimore County code, is it not?

A. Yes.

Q. Okay. What I noticed was a lot of old

Boxwood Lane and Seminary Farm addresses. These are the folks that received, well, there is multiple reasons, do you agree with me, why the county requires that this be put on the plan?

A. Sure.

Q. Okay. Well, I guess my question was why amongst those adjacent property owner, that listing, why are none of these properties to the immediate, I'm going to say bottom of the plan view, none of these folks, how come none of these folks, folks that will live right next door to this development, proposed, all of these homes, you can see them all. How come none of these folks were listed on the adjacent property listing?

A. Well, the idea is that because I had enough room on the plan to list them on their individual lots, they are listed there. The ones that I couldn't list because of space constraints are listed in that chart that you just mentioned.

Q. Okay. Is that the reason?

A. Yes.

Q. Okay. Because this adjacent, again, this is a somewhat I'll call it formal requirement to identifying adjacent property information, or development plans, for example, and concept plans and community input minutes, were those sent to not only the folks that are identified at the top of the plan under that listing, but also to the folks who own homes at the bottom of this plan?

A. Correct.

Q. Okay. It was?

A. They were. They were notified as well, and they got a copy of the plan.

Q. Okay. All right. Thank you for that. I think you said, and I wrote down that 40 percent of the property will remain undeveloped. I wanted to talk about that for a minute, because, bear with me. I'm going to show you, this has already been marked and introduced as Protestant's exhibit 5. It's the concept plan, and I've got some coloring on it.

I'll just scroll down so you can see it. It's got the county stamp on it. It's entitled

concept plan. This is, again, Protestant's exhibit number 5. And what I did on this plan was, and it's somewhat rough, given scale, but I wanted to get your confirmation, and I'll zoom in once I sort of look at it.

In total, what I did was I outlined in green the extent or the outline, boundary rather, of the forest buffer. Do you see that?

A. I see that.

Q. Okay. And that green that I just outlined as we know because of the location of the stream to the bottom of the plan, so everything to the left and below that line was identified in this concept plan as forest buffer, correct?

A. Correct.

Q. Okay. And then in terms of floodplain, I outlined the floodplain in blue, it in some ways parallels the forest buffer boundary. Do you see that?

A. I see that.

Q. So everything in this case below that

line and, let me zoom in a little bit, it'll be helpful, because it is labeled floodplain. I'll use my cursor. The record won't reflect it, but all this area right here that I'm moving my cursor through on the left-hand side, plan view, that's all floodplain, correct? As we sit here today.

A. No. As it was shown on the concept plan.

Q. Okay. That's how it was shown on the concept plan. Well, let me just finish this, and then we'll get to where I think you're headed. The floodplain extends on the concept plan, on the other side, or on the right-hand side of the plan as well, does it not?

A. Yes, it does.

Q. Okay. And then in red what I've done on this exhibit 5 concept plan is I have outlined areas of wetlands on site, which are admittedly minimal in comparison to the floodplain forest buffer, correct?

A. I'm sorry? What were you showing with

the red line?

Q. The floodplain. I'm sorry, the wetland.

A. Yes. I'm not quite sure you have the green line correct with the forest buffer. It looks like you jumped from forest buffer to tree line and back, so it is --

Q. Well, I was careful about it, I did it a couple of times, messed up a couple times, but if you're talking about right here, the tree line is shown in this sort of humped line, right?

A. Right.

Q. The forest buffer was shown in the dashed line.

A. But as you get to SD26 right there, you go up there and it deviates, it comes down [indiscernible]

Q. You're right. I apologize. I'm going to correct this if I could and have you confirm that I did it right. I may not be able to. There we go. I think I know what you mean by that, thank you for

that. The forest buffer actually goes down this way, correct? Following the dotted line?

A. Correct.

Q. Okay. If you don't mind, I'll do it while everybody is watching here. I think this got erased when I erased that.

A. Right. You've got it now. Yep.

Q. Is that right?

A. That's correct.

Q. Okay. Great. So I'm going to --

MR. MCCANN: Judge, it's a bit unusual, but I'm going to mark this as a separate exhibit, and this would be exhibit 20.

JUDGE MURPHY: Okay. And does it, will you be able to print that with the --

MR. MCCANN: Yes, I will. I'll print and save it. I'll save it right now. Yes, and be able to send somebody, you and Adam and Mr. Zimmerman a copy of this exact exhibit.

JUDGE MURPHY: Okay. So that's exhibit 20. Any objection, Mr. Rosenblatt?

MR. ROSENBLATT: No objection to admissibility.

JUDGE MURPHY: Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

JUDGE MURPHY: Thank you. Okay. That's 20.

(Protestant Exhibit No. 20 was marked for identification and entered into evidence.)

MR. MCCANN: Okay.

BY MR. MCCANN:

Q. And at least as shown on this concept plan, Mr. Bishop, you would agree with me that the natural resources and the protective areas associated within those shown on this plan, if you look at the area covered, I mean, it's roughly I would say best guess almost half of the entire property, right?

A. It's a piece of the property. I'm not sure what the percentage is.

Q. Okay. All right. Well, let's look at, back to the Developer's exhibit 1B, and again, I've done some coloring on this. I'm going to keep handy the concept plan. Okay.

So again, what I've done, and I'm going to have you verify that again, in rough, this is rough, and I'm not asking for anything more than confirmation than it's a rough outline.

I've outlined the floodplain in blue, forest buffer in green, and again, the wetlands in red or orange. Do you see that?

A. I see that.

Q. Okay. So on the right-hand side, if I've done it correctly in terms of the forest buffer, the green and the floodplain in blue are roughly where the floodplain and the forest buffer exists, correct?

A. It looks relatively correct, yes.

Q. Okay. Same thing with the wetland area, the smaller areas of wetland?

A. Sure.

Q. Okay. And as we move to the left-hand plan views portion of the plan, this is where I had some questions, and some of which you've answered in your direct examination, but focusing on this area right here where, you know, sort of the area that runs

along, above and below the entrance road, which is up here.

In green, again, forest buffer, this is different than as shown on concept plan, and the floodplain in blue is different than shown in the concept plan, and as I am just going back to exhibit 20, we can see obviously it's different. It's, for lack of a better term, it's a chunk, significant chunks have been taken out.

But am I correct that the reason why that is is that this development plan, as you've noted, is post construction? This plan, that is Developer's exhibit 1B, which I've colored here, is representative of what the extent of the floodplain and the extent of the forest buffer will be after this development is constructed. Is that fair?

A. Well, I think it's over simplistic. I think, let me explain this. So the development plan shows both existing and proposed conditions. They will both be there, and you'll see that where we changed the floodplain has little red X's on it.

Q. Yeah. Can I stop you there, Mr. Bishop, if you don't mind? Can I stop you there real quick?

A. Sure.

Q. So yeah, I want to make sure that we understand, this is the area you're talking about here. I won't outline it in blue, because you have it X'd out. There's an X.

A. Correct.

Q. That would not, as you've described in your direct examination, that will no longer be the extent of the floodplain, because you've described, you are reconstructing the floodplain, right? Is that what you're referring to when you said, when you had these X's right here?

A. Yes.

Q. Okay. Okay. So I interrupted, and the same thing down here, by the way. On the bottom of the plan, with respect to what I believe was, this used to be the forest buffer line, and that is X'd out now, is it not?

A. Correct, yes.

Q. And it is sort of somewhat lower to down here. Okay. So go ahead, I interrupted you.

A. So the difference between the concept plan, flood plan and forest buffer and the development is because as you know, this is an integrative process. The concept plan is conceptual data, and the floodplain at that point in time was very conceptual, and as we went through the process, we prepared a floodplain study to meet Baltimore County requirements, and the result of that was the floodplain that you see on the development plan now.

It's not because it is post construction floodplain versus existing conditions floodplain.

Q. Okay. And when you say using the floodplain as an example. When you say it's shown on the, on this development plan, you're including areas that I did not color in blue that have been X'd out, like right here?

A. Correct.

Q. Maybe I should have highlighted that in

blue. And is that yours, is your answer the same with respect to the forest buffer?

A. Yes, because they related to each other.

Q. Okay. So, and that includes, and that includes your answer that you just indicated that I think to put it succinctly, what you're telling us is that based on the floodplain study, it was not as expansive as you had thought?

A. When we ran through the more formal analysis that the county requires, we ended up with what we show here.

Q. Okay. What about the forest buffer? Was your answer the same with respect to that, the forest buffer is considerably different?

A. The forest buffer will be different as well, but the forest buffer shown in this plan matches the plans that were approved by Baltimore County environmental impact review.

Q. Okay. So that, so I think I understand, with respect to the forest buffer boundary or extent,

that is post construction and reflects the granting of the alternatives analysis and forest buffer variance that we mentioned a bit in this case, correct?

A. That I believe would be correct, yes.

Q. Okay. And I think as Mr. Rosenblatt pointed at the beginning of yesterday, the Board of Appeals recently had a deliberation and approved both of those requests, that is the forest buffer variance and the alternative analysis, correct?

A. Yes, correct.

Q. Okay. But as we know, things can get appealed, right? So we're sitting here today. If my clients decide to appeal that decision, we won't know for awhile whether or not this development plan truly reflects the state of affairs. You're assuming in 1B that that forest buffer variance and alternative analysis will be upheld. Is that a fair statement?

A. What is shown in this plan is consistent with what we submitted to Baltimore County and what environmental impact review approved and thought was appropriate.

Q. What the agency approved?

A. What the agency approved. I can't speak for the appeals process.

Q. Got it. No, I understand. And then I have other colors on here. I have a lighter green, a lime green. That is the, correct me if I'm wrong, that is the 45, I'm sorry, 35-foot setback from the forest buffer, correct?

A. That is a principal structure setback from the forest buffer, which is 35 feet for residential, yes.

Q. Okay. And you're referring to a provision in the development regulations, the environmental regulations that is that requires a 35-foot setback from principal structures, correct?

A. Correct.

Q. Now, I mean, we can zoom in and I understand that the line is very rough here. Is that 35-foot setback met with respect to lot 2 right here?

A. Yes, it is.

Q. Pretty close though?

A. Close, but it meets the requirement.

Q. Okay.

A. In Baltimore County, BIR agreed and approved it.

Q. Okay. And then I have, that I'm really not going to get into, I have outlined the stormwater management facilities that you've already discussed three different locations, do you see that?

A. Yes.

Q. In purplish. And then I have outlined again very roughly in yellow the specimen trees on site, correct?

A. Correct, yes.

Q. Okay. I've got that one up there. Okay. So you talked about what is going to happen to this floodplain, and I want, it may be better to look at the actual plan rather than this one. So this is 1B again.

I want to sort of have you identify for us, getting back to the floodplain, before we get into this. You said, and I think you said it carefully a

couple times that you've submitted a floodplain study that meets the requirements of Baltimore County floodplains, right?

A. Correct.

Q. Has Baltimore County as we sit here today, have the approved, formally approved the floodplain study that you submitted?

A. So they, I'll be real technical. The county doesn't approve floodplain studies. They accept them for filing, and we have submitted a couple times to make sure that we are comfortable with our floodplain line, but I will point out that floodplain studies are not required to be accepted for filing during phase 1 process. The county code allows them to be approved prior to permit. So they do not need to be approved at this --

Q. I wasn't suggesting that they were. I'm not going to, I appreciate your explanation, but my question was simply as we sit here today, has the floodplain study been approved?

A. The floodplain study has not been

accepted for filing by Baltimore County yet.

Q. It hasn't even been accepted for filing?

A. You are misunderstanding. They don't approve a floodplain study. Their approval is equal to acceptance for filing.

Q. Okay. I thought you, I misunderstood you. I thought you just indicated that approval of a floodplain approval as opposed to accepted for filing does not occur until phase 2, is that correct?

A. The county allows us to submit a floodplain study to be accepted for filing, which is equivalent to approval during the phase 2 process. It's not required prior to development plan approval.

Q. You said it a little different before, but maybe I misheard.

A. It's a nuance between the term approved and accepted for filing. They are roughly the same thing.

Q. Okay. So if there is a distinction, what you're saying is that there is no actual approval

by Baltimore County of a floodplain study. It's either accepted for filing, or it's not, correct?

A. Yes.

Q. And what's involved as we sit here, it has not been accepted for filing, right?

A. Correct.

Q. And what, I'm not sure I agree with you, but what is your understanding of what it means from the county's perspective when something is accepted for filing? What kind of review does that involve? And what kind of approval --

A. If you really want to get into it, you have to talk with development plans review in Baltimore County and their legal team about why they call it accept for filing versus approval. I think it's a liability thing, but they're one in the same.

So we have to submit a floodplain study, it has to meet all of the arduous checklist items listed in the Department of Public Works design manual. Once we meet all those requirements and check all those boxes off, then the county will accept it for filing,

and they'll put it in the records and that will be a public document, and it will be the documented floodplain.

Q. Okay. So you believe that you've submitted a floodplain study that meets all the requirements that you just mentioned, and many others, but the county hasn't yet agreed with that position and actually formally accepted it for filing.

A. We did enough to be confident that the floodplain study is accurately shown on this plan.

Q. Tha's not what I, I'm just asking you whether the county, I think you've already said the county has not accepted it for filing.

A. I said that, yes.

Q. Okay. But in terms of going where I was headed, in terms of all that, I'd like to identify the development that's actually going to occur in the floodplain, or in the area of the floodplain. I guess to be fair, obviously we have an access road, right?

A. Correct.

Q. We have the stormwater management

facilities that are depicted above the access road, correct?

A. Correct.

Q. We have some, in an area of open space, designated open space, we have a pavilion, an asphalt path, gardens, benches, two benches, two bike racks and two tables, correct?

A. Correct.

Q. Do we have, obviously we have sewer, water and sewer extensions, which are shown here to be under the access road, correct?

A. Correct.

Q. And we also have a new proposed sewer connection in this area to the existing house, correct? Through the floodplain?

A. That's correct.

Q. All right. And also proposed water house connection to their existing house, correct?

A. No, they kept the water house connection out of the floodplain, I believe.

Q. Okay. All right. What about any of

the road widening? Would that occur within the floodplain?

A. I believe it's, yes.

Q. Okay. And as I, did I miss anything? Or did I capture most of it? That is the question was if development will occur within the floodplain.

A. I think you --

MR. ROSENBLATT: Objection, objection. That was not the question at the outset.

MR. MCCANN: It was.

MR. ROSENBLATT: It was not. He said it was in the area of the floodplain, and --

MR. MCCANN: I'm sorry.

MR. ROSENBLATT: -- there were all sorts of things about the [indiscernible]

MR. MCCANN: Correct. I'm sorry. You're correct. I'll rephrase that.

JUDGE MURPHY: If you can, sustain the objection. Just rephrase, please, Mr. McCann.

MR. MCCANN: Sure.

BY MR. MCCANN:

Q. Yeah, the question was just a follow up to say did I capture everything that will be constructed within the area of the floodplain?

A. I think you got most of it. I'm not sure that you got all of it.

Q. Okay. Well, the plan speaks for itself, right?

A. Everything shown on the plan, yes, is there.

Q. Okay. All right. And you described I think a little bit about how the road will be built. I mean, it'll be, there will be a ton of grading going on in this area of the floodplain, correct?

MR. ROSENBLATT: Objection.

MR. MCCANN: A lot of grading.

JUDGE MURPHY: What's the objection, Mr. Rosenblatt?

MR. ROSENBLATT: A ton of grading.

JUDGE MURPHY: Okay. I mean --

MR. MCCANN: I'll use a lot of grading.

JUDGE MURPHY: Hold on. All right. We'll

sustain the objection, just because Mr. McCann is going to rephrase it. You're going to use the word a lot instead of --

MR. MCCANN: I will use --

BY MR. MCCANN:

Q. Will there be a substantial amount of grading in the area of the floodplain, Mr. Bishop?

A. I will say that there will be grading in the area of the floodplain. I'm not going to quantify how much.

Q. Is that because you don't know? Or you disagree that it's substantial?

A. I mean, substantial is a very loose term. How are we going to justify that?

Q. Okay. All right. Fair enough. But there will also be a lot of fill, a substantial amount of fill? Would you agree with that?

A. I'll use the same answer. It'll be some fill in the area. I'm not going to quantify it either. I mean, are we talking, in relation to the entire project, to a much larger project, smaller

project. I mean, I think that the qualifiers --

Q. Okay. Well, you said that the road will be built on fill. You said that, I wrote it down when you said it, correct?

A. I'm not arguing that. Yes, there will be fill in the area.

Q. Okay. Is there a reason why, you know, in a lot of cases we see existing condition maps. How come there is not one associated with this development plan?

A. It's required as part of the concept plan. A lot of the times when we get the development plan, we consolidate it onto one sheet. It makes it easier for everybody to review it.

Q. It makes it easier?

A. I know, I know. But if you look at the reviewers and talk to them, they prefer to see everything on one sheet and not have to flip back and forth. Another reason why we use larger sheets and not match lines.

Q. Okay. All right. But on that front,

you know, as an example, you know, we have forest buffer areas, we have floodplain areas, we have forest conservation areas, we have open space areas. There is not a single key in the legend for any of those areas. If we go into the key, there's the key. Why is that not the case?

We are left to deal with arrows, which I think when the judge takes the time to look at the plan closely, she may already have --

A. You are questioning our drafting styles, and that's fine. Everything is properly labeled on the plan.

Q. Well, I'm questioning the accuracy of the labeling is what I'm questioning, if you want to know, but you would agree with me that there is no legend describing, well, it speaks for itself. I'll move on. A. Well, there's a floodplain shown there, and there's a forest buffer line type --

Q. Well, it says floodplain, and there's an arrow, there's some arrows.

A. No, no. In the legend you just pointed

to, there was a label that said forest buffer, and there was a label that said floodplain with the line type next to it. So, at the bottom. Floodplains, the long dash and two double dots and forest buffer.

Q. What I meant to say, and I do recall seeing that. I meant to say sort of the area as opposed to the boundary is what I meant to say. I mean, there are all sorts of, and I don't mean to belabor this point.

There's crosshatching, there's circles, there's octagons, and then we are left to sort of figure out, but it's okay, I'll move on.

A. Can you scroll to the right of the plan for me, please? Where the general notes are. I believe there's another key for hatches. I may be wrong. Maybe zoom out. I may be wrong, I thought there was.

Q. I don't see it, but --

A. They're all there. You're right, the plans are complicated. The checklist and everything that we have to do requires a lot of information on

these planning documents, so it can get cluttered, but everything is labeled.

Q. All right. We mentioned, I think we mentioned the road widening that's proposed on Joppa Road. That's I guess to be, on sort of the right-hand side of the road, this will be, the road will be wide in that area?

A. Correct.

Q. Okay. To what extent, I mean, are there measurements? Do we know how much, to what extent --

A. It will be widened basically one lane width to provide for a deceleration and acceleration lane. Q. All right. So the construction will take place in the floodplain along Joppa Road. It will be within the area of the floodplain, correct?

A. Correct.

Q. How long do you, do you have an estimate of how long it will take for the widening of that significant length of Joppa Road will take?

A. I don't.

Q. Bear with me one second. Okay. I'm getting there. I wanted to show you, I don't think this has been introduced as an exhibit yet. This is from your firm, June 1, 2021, a letter from you to Ms. Walker with DPW, with a plan attached. Do you recognize this?

A. I do, yes.

Q. And this was submitted to Ms. Walker as the head of DPW for a finding that, I'll put it as a finding of no waiver, that is you were not, you the developer, on behalf of the developer, were not required to obtain a waiver in order to develop in a floodplain. Is that fair?

A. Can I read this for a second?

Q. Yeah, absolutely. I'll blow it up some more.

A. I can read it. Okay. Can you scroll down a little bit, please?

Q. Sure.

A. And the exhibit?

Q. Yeah.

A. Yes. We did submit this, Ms. Walker.

Q. And my more specific question, just because there was a delay there in your answer was this was a request or a confirmation as it says here that no waiver is required under 324107, right?

A. Correct.

Q. Okay. And the basis of that request, that is your belief that no waiver is required, is the Section 32414(c), right? I can show it to you if you want.

A. Yeah, I know the section. I'd have to see it just to make sure that --

Q. Real quick, I don't want to take up too much time, but let me show it to you so you can confirm whether it's correct or not. All right. So this is 324107, Baltimore County code. This is the first section that you cite in your letter entitled waivers, right?

A. Okay.

MR. ZIMMERMAN: Excuse me. Do these have exhibit numbers?

MR. MCCANN: They do not. They do not.

BY MR. MCCANN:

Q. Then 324-414(c) is the section you cite in your letter. I just want to make sure that this is --

A. That's correct.

Q. Let me just make sure I ask the right question. This section that’s highlighted here is 32-4-414(c) is the section upon which you rely upon in your request that a waiver is not required for the development of this floodplain, correct?

A. I believe, I’d have to look at the letter, but yes, that is the section I understand is the one we referred to.

Q. Okay. Let me go back to the letter. The letter again, 32-4-414(c).

A. Yes.

Q. Okay. All right.

MR. MCCANN: Judge, before I forget, I would like to move in, 20 was the colored concept plan, the other thing I showed Mr. Bishop I think was the

colored plan, Developer's Exhibit 1B. I'd like to move that in, 21. And then this June 1st letter from Mr. Bishop to Ms. Walker would be 22. I think that's all.

JUDGE MURPHY: Any objection, Mr. Rosenblatt?

MR. ROSENBLATT: Is 22 already in, Mr. McCann? That's my only question. I don't object to it, I just, it might be in twice. I think --

MR. MCCANN: No, that's the approval letter from Ms. Walker back to Mr. Bishop. This is the request letter.

MR. ROSENBLATT: No objection.

JUDGE MURPHY: Mr. Zimmerman?

MR. ZIMMERMAN: No objection.

JUDGE MURPHY: Okay. Thank you. They're admitted.

(Protestant Exhibit No. 21 was marked for identification and entered into evidence.)

(Protestant Exhibit No. 22 was marked for identification and entered into evidence.)

MR. MCCANN: Okay. Great.

BY MR. MCCANN:

Q. And then I wanted to ask you about this. This would be I think the last exhibit, this is 23. This is the June 28th cover sheet and letter. I'll scroll down to the bottom, from you, Mr. Bishop, four pages in total, to Ms. Walker. I'll blow it up and I'll ask you if you recognize it.

A. Yeah, I'm familiar with it.

Q. Okay. As I read this, this is a request that, I think it says as much in the last sentence of the first paragraph, you are asking Ms. Walker of DPW that the existing water over topping situation on West Joppa Road be permitted to remain after the project is approved, correct?

A. That's correct.

Q. Just explain that issue real quick. What is over topping, and what is going on on West Joppa Road?

A. It's a complicated scenario, but the existing floodplain study that the county requires

through the DPW design manual, the result of that study is that the existing condition before any development occurs out here, there would be potentially water and a flood event that would over top, or run over top of West Joppa Road.

Q. Okay. And that, this is permission for that situation in a 100-year storm event to remain. In other words, you're not going to correct that as part of this project?

A. That was the request at the time, yes, to not correct the existing condition problem.

Q. Okay.

A. I know you don't want to hear this, but we've also in our analysis and everything determined that we have, we were not increasing the over topping during our construction. So we were not making the situation any worse than it already is.

Q. Okay. So this letter was written, and then subsequent to that, the floodplain study that you performed indicated that the situation would still remain, which you indicate here, but it would not be

increased to any extent. That's what your floodplain study would show?

A. Yes.

Q. Okay. All right. Got it. So I noticed on the second, third page of the exhibit, second page of the letter it says potential solutions to eliminate that over topping and to meet the 3 foot [indiscernible] requirement, there's a bunch of things here that seem pretty significant. Is the county requiring you to do any of these?

A. No.

Q. Okay. And I did not see, but I assume the county approved this request in your letter of June 28th?

A. We never received any formal response to this letter.

Q. Okay. Okay. All right.

MR. MCCANN: Your Honor, I would mark this as 23.

JUDGE MURPHY: Any objection, Mr. Rosenblatt?

MR. ROSENBLATT: No objection.

JUDGE MURPHY: Mr. Zimmerman? Mr. Zimmerman, any objection?

MR. ZIMMERMAN: No objection.

JUDGE MURPHY: Thank you.

(Protestant Exhibit No. 23 was marked for identification and entered into evidence.)

MR. ZIMMERMAN: I got the muting wrong.

BY MR. MCCANN:

Q. Back to Exhibit 1B, Developer's Exhibit 1B, Mr. Bishop. On the left-hand side of the plan, it indicates stormwater management fee in lieu for 20,730 square feet, Joppa Road improvements which cannot be treated on site. Describe for me what that means and what the issue is there if you would.

A. So the situation is that the stormwater management treatment for quantity, which is what's related to 100-year floodplain issues cannot be located within the 100-year floodplain. The elevation of Joppa Road is about equal with the 100-year floodplain. Therefore, we cannot provide stormwater

management for the widening and improvements on West Joppa Road.

Q. Okay.

A. So this is a very typical scenario. Many projects where at the lowest point of the property, say for a driveway or road widening or something like that, that you cannot treat the last several thousand square feet, and therefore the county has a mechanism in place to pay a fee in lieu instead.

Q. Is it typical because it’s a fee being paid? Is that what you mean by that?

A. No, it’s typical to not be able to treat all of the water on your project.

Q. So was that fee in lieu request granted?

A. Not formally requested because that is a phase 2 final stormwater management thing, and all we need for development plan approval is concepts [indiscernible]

Q. Right. But sitting here today, again, we do not have approval for the fee in lieu that’s

indicated on the plan?

A. Correct, as a phase 2, Baltimore County phase 2 item.

Q. If it's phase 2, why is it on the plan? Strike that. Real quick on the sewer segments that you spoke about in response to Mr. Rosenblatt's questions, since the, at least the two segments that you are directly responsible for are on State Highway property, have you obtained their approval? I know you said the construction plans had been submitted and that sort of thing, but is there, has there been approval from State Highway in other words, in the form of an easement to do that?

A. Yes, there is an easement granted for the installation and construction of that storm drain, or sewer line.

Q. To Atapco? To you or your client? Or you're just saying the utility easement in that area?

A. No, it's not specifically to our client. It is an easement in place specifically for the installation of the sewer improvements.

Q. Right. Granted to Baltimore County and Baltimore County would allow you to do the work?

A. I would have to look at the document, but that could be the way it happens, yes.

Q. Okay. Beyond the two segments that your, the Developer is directly responsible for, and the six segments that Hopkins was responsible for, have you, or has anyone else on behalf of the Developer determined whether there is sufficient sewer capacity farther downstream of those segments?

A. I did not analyze that, it's not in my area of expertise.

Q. Okay. Has anyone else on behalf of the developer, other than you or anyone in your firm, determined whether there is sufficient sewer capacity downstream of those eight segments?

A. No, we're relying on the expertise of Baltimore County for that.

Q. Did Baltimore County determine whether or not there was any, there was sufficient sewer capacity downstream of the eight segments? Do you

know?

A. The only discussion I had was the specific eight sections that were included in their development plan comments.

Q. Okay. All right. So I think this is an obvious question, but I take it although you prepared these typical lot layouts, you don't have any information to provide regarding the demographics of the types of folks that might want to purchase these homes, or will purchase these homes?

A. No, that's not my area of expertise.

Q. Okay. How many of them are three car garages? Do we know that?

A. I do have some notes here, I could tell you. Bear with me a second.

Q. Sure.

A. 15.

Q. 15. Is it shown on the plan?

A. They are shown on the plan graphically, yes.

Q. Three car garages?

A. Yeah. I don't have a table quantifying them, but the plan dictates when they are 3 or 2-car garages.

Q. Okay. And lastly, you spoke about the master plan on direct examination, and just generally speaking, what's your understanding in Baltimore County is the master plan, is Baltimore County's master plan, is it mandatory? Or is it merely advisory in nature?

MR. ROSENBLATT: Objection.

JUDGE MURPHY: Are you asking him about H&S case? I'm not sure he knows about the H&S case. I'm not, you know, he's not a lawyer.

MR. MCCANN: That's ironic. We just allowed this gentleman to speak about all sorts of standards, despite the fact that he's not a lawyer.

MR. ZIMMERMAN: Can I say something? He testified that it was advisory basically when asked by Mr. Rosenblatt on the very first text that he looked at, he said it was advisory, it didn't mean much.

JUDGE MURPHY: Mr. McCann, were you going to

ask him what the H&S case says? Or were you --

MR. MCCANN: No, I'm just asking about his understanding, just as any experts ask about their understanding of their applicable, I mean, I'm not asking --

JUDGE MURPHY: Don't get into the case law then, all right? I'll overrule the objection.

MR. MCCANN: No, that's my last question of this gentleman.

JUDGE MURPHY: No, I understand. I just don't want you to get into the case law with him obviously, so if you can, sir, go ahead.

MR. MCCANN: You don't need to be a lawyer to understand the law.

JUDGE MURPHY: I mean, I just don't want, it's not fair to ask him, you know, if you asked about the case, what does the case say, and I don't expect him to be able to answer that. I mean, maybe he read it, but Mr. Bishop, go ahead. It's overruled, go ahead.

BY MR. MCCANN:

Q. I'll repeat the question. What is your understanding, Mr. Bishop, of whether or not generally speaking the Baltimore County master plan is mandatory or advisory in nature?

A. Well, my opinion and my knowledge is only what's written on the cover page of the master plan, which says that it is basically I'm paraphrasing, advisory in nature. It's written right on the first page of the master plan. If there's legal precedent beyond that, I'm not a lawyer, so I'd have to defer to somebody else.

Q. So I take it then you base your opinions in this case regarding the master plan on that assumption or that opinion?

A. No, I wouldn't say that that predicated any of my opinions on the master plan.

Q. Okay. All right.

MR. MCCANN: No further questions. Thank you, Mr. Bishop.

JUDGE MURPHY: And did I, Mr. McCann, I did move in 23, right?

MR. MCCANN: You may not have, but I would move it in.

JUDGE MURPHY: I don’t think there was any objection, right, Mr. Rosenblatt?

MR. ROSENBLATT: No objection.

JUDGE MURPHY: Yeah, yeah. Mr. Zimmerman didn’t either, right? Mr. Zimmerman?

MR. ZIMMERMAN: I didn’t object, no.

JUDGE MURPHY: That’s what I thought. We did. Okay. I just wanted to make sure that that’s in evidence. Okay. So it’s 5:00 folks. Mr. Zimmerman was saying he has a long cross-examination. How are you guys, what does it look like here? Does anyone have any, does anyone want to continue today? Or do you want to start tomorrow? Not tomorrow, it’s not tomorrow. Actually it’s the next time.

MR. ZIMMERMAN: I’ll defer to you, Judge, but it may take awhile.

JUDGE MURPHY: Right.

MR. ZIMMERMAN: I’m willing to go, because, you know, if everyone else wants to, I’ll do whatever

you'd like, but it might take awhile.

MR. ROSENBLATT: I'm so sorry, I didn't mean to interrupt. I would like to do it today if we can.

JUDGE MURPHY: Mr. Zimmerman, how long will yours take?

MR. ZIMMERMAN: I'm very poor at estimating, and a lot depends on the answers, so I really can't tell. I really can't tell.

JUDGE MURPHY: And Mr. Wyatt, did you also have questions?

MR. WYATT: I don't think I will have questions at this time, but again, it would depend on what Mr. Zimmerman asks of the witness, so I don't want to commit one way or another, but right now standing here if you asked me, I would say I have no questions.

JUDGE MURPHY: So in other words, I couldn't call you, okay.

MR. WYATT: Right. I have nothing to ask right now.

JUDGE MURPHY: I was going to ask you if you

had any questions to ask. All right. Mr. McCann, are you okay?

MR. MCCANN: Yeah, I'm okay with going forward.

JUDGE MURPHY: All right. Mr. Rosenblatt, are you okay?

MR. ROSENBLATT: Yes, thank you.

JUDGE MURPHY: All right. All right. Mr. Zimmerman, go ahead.

MR. BISHOP: Do I get a say?

MR. ROSENBLATT: Could we take a --

JUDGE MURPHY: Oh, hold on, hold on. I didn't ask the witness who has to answer the questions. Mr. Bishop, what? I'm sorry.

MR. BISHOP: I'm good as long as I can be done by 6:30. I have a hard stop at 6:30. Do you think we can achieve that?

JUDGE MURPHY: Yeah. I was actually hoping 5:30.

MR. BISHOP: Even better.

MR. ZIMMERMAN: I don't know about 5:30, but

could we take just a 5-minute break?

JUDGE MURPHY: Mr. Zimmerman, are you better coming back another day?

MR. ZIMMERMAN: Look, I can get through it, but --

JUDGE MURPHY: 5:30? How about 5:30, Mr. Zimmerman?

MR. ZIMMERMAN: I don’t know if it will end by 5:30, and that’s the problem. People get impatient at the end of the day.

JUDGE MURPHY: That’s right, so I want you to be able to ask your questions, and I don’t want you to [indiscernible]

MR. ZIMMERMAN: I do the best I can, but, you know --

JUDGE MURPHY: I know you do.

MR. ZIMMERMAN: But nobody else has been given a, you know, a hard limit. So --

JUDGE MURPHY: That’s true.

MR. ZIMMERMAN: And we went through hours of direct testimony.

JUDGE MURPHY: You're right. That is, we did, you're right, we did go through hours of direct testimony. I would, then I would suggest that we just, because Mr. Zimmerman has a ways to go, and I would like to end by 5:30, that we come back the next time and do the cross, and Mr. Bishop also has to leave at some point, 6:30, so let's do it that way.

Again, I wish we had started at 9:00 a.m. If we had started at 9:00 a.m., then we wouldn't have this problem.

MR. ZIMMERMAN: Thank you. I think that's better actually, I really do. We can pick it up, we can pick it up.

JUDGE MURPHY: Mr. Zimmerman does always get the short end of the stick, or maybe it's just years of hearing cases where he always seems to be at the end of the day, and sometimes the questions go on. I'm sure, Mr. Rosenblatt, that's not great for you, but your client is going to come back, I mean, excuse me, your witness is coming back anyway.

MR. ROSENBLATT: The only problem I have,

and I'm not saying let's not do this, but just for the record, he's my main person on this project, and I guess I can't talk to him for a month about the project, because he's on the witness stand.

JUDGE MURPHY: Yeah, I didn't set the dates in. I just found out yesterday.

MR. ROSENBLATT: No, I understand, and it is what it is, but that's, I just have to state that for the record. It's going to make it very hard to be ready for anything else if I can't talk to him for a month.

MR. ZIMMERMAN: May I say, you're not supposed to talk to him in between direct and cross.

MR. ROSENBLATT: That's exactly my point, Mr. Zimmerman.

MR. ZIMMERMAN: Yeah, but also a lot of these documents honestly, I've never even seen before. They were, as far as I can tell, and Mr. Rosenblatt will correct me if I'm wrong, a number of these exhibits were never put into the file. He'll correct me if I'm wrong. We see them for the first time

today.

MR. ROSENBLATT: That happens in every single case.

MR. ZIMMERMAN: Color coded stuff, the T3, you know, there were a whole bunch of exhibits. I didn't complain about it, okay? But as a matter of fact --

JUDGE MURPHY: Mr. Zimmerman, are you talking about Mr. McCann's exhibits, the color --

MR. ZIMMERMAN: No, I'm talking about Mr. Rosenblatt's exhibits. I didn't make a federal case out of it, but I would like to point out that many of these exhibits we saw for the first time today. As far as I know, they're not in the file. I don't know that the pattern book is even in the file. You can correct me.

MR. ROSENBLATT: The pattern book is in the file.

MR. ZIMMERMAN: The last time I looked, all right. But the color-coded stuff, the T3, all that stuff --

JUDGE MURPHY: I mean, that's exhibit number 4. You don't have a copy of all the --

MR. ZIMMERMAN: No, I never saw that before.

MR. ROSENBLATT: Everything was emailed to him before the hearing. [Indiscernible]

MR. ZIMMERMAN: Well, maybe today or yesterday, I don't know. Maybe today it was emailed, but, you know, we don't, I'm getting ready for the case, I'm not checking every email. But let Mr. Rosenblatt tell us exactly when he emailed that. Was it earlier today? Was it yesterday? Let him tell us.

JUDGE MURPHY: Mr. Rosenblatt, can you, do you know if all 23 exhibits were emailed to Mr. Zimmerman?

MR. ROSENBLATT: All 23 to both Mr. Zimmerman and Mr. McCann.

MR. ZIMMERMAN: When?

JUDGE MURPHY: Mr. McCann, you have them, right?

MR. ZIMMERMAN: When?

MR. MCCANN: I do.

MR. ROSENBLATT: Before the hearing started. If it was not a virtual hearing, you'd be seeing them live first time when I handed them out, so it's an advantage, if anything.

MR. ZIMMERMAN: So then it's fine for us to resume on the 27th and I'll have maybe a fair opportunity to look at some of that stuff, okay?

JUDGE MURPHY: All right. Mr. McCann, I don't have any exhibits for you.

MR. MCCANN: I sent them all to you, Your Honor.

JUDGE MURPHY: Well, we don't have any copies.

MR. MCCANN: Yes, I dropped them off.

JUDGE MURPHY: Have you?

MR. MCCANN: Yeah, I dropped, well, I dropped off all of them initially, then I dropped off the four or five or so that I introduced yesterday, I dropped those off this morning.

JUDGE MURPHY: Okay. But how about the

ones, numbers 1 through 15 or 14? Did you already --

MR. MCCANN: Those were --

JUDGE MURPHY: Were they in a binder?

MR. MCCANN: They weren't in a binder, but I dropped off the originals after the first, after the first hearing.

JUDGE MURPHY: Okay.

MR. MCCANN: I'll send them again if you want hard copies, or --

JUDGE MURPHY: No, let me just see if we can find them. For some reason, I don't know. Maybe they are with something else, but I just didn't have any exhibits at all. I was just working off the online version.

MR. MCCANN: No, I definitely did.

JUDGE MURPHY: Let me make sure. I don't want you to have to recopy stuff.

MR. MCCANN: I don't mind.

JUDGE MURPHY: Well, that can be expensive, so let me make sure we don't, we have it somewhere.

MR. MCCANN: Okay. All right.

JUDGE MURPHY: I'll look for them.

MR. MUDD: Judge Murphy?

JUDGE MURPHY: Yes, Mr. Mudd?

MR. MUDD: I've been quiet all day, but I'd just like to say one thing for the record, because there's a bunch of people here who don't participate in these hearings very often.

That actually apparently includes Mr. Zimmerman, because the insinuation by Mr. Zimmerman is that we're somehow holding back materials that he would otherwise be entitled to see, and the way that these hearings work is that some exhibits are things that are in the file in advance, and other exhibits are not, and there are things that through practice we have gotten used to the fact that we hand things off minutes, sometimes minutes before the hearing because we're not sure what we're going to introduce.

Mr. McCann does the same thing to us on rebuttal. We have no idea what his rebuttal case is going to be, so I just want that to be clear for the record that we've done nothing wrong and nothing

inconsistent with the way that the practice of this area has been for at least during the pandemic. Thank you.

MR. ZIMMERMAN: I wasn't insinuating anything. I was simply indicating it would be quite another point of why it's reasonable to delay as it actually gives us a chance to take a look at some of these documents, and by the way, we were requested by Mr. Rosenblatt with a PIA request September 2nd to provide him with just about everything which we're in the process of working that out.

So, you know, so I'm just, I'm not insinuating anyone did anything wrong at all, I'm just saying, you know, it's another good reason why it's not unreasonable to resume on the next hearing day, that's all.

JUDGE MURPHY: Okay. Understood. I didn't take it that either the developer's, the attorneys of course they always email and always deliver the document, so I didn't have any doubt that that happened at all. I'm sure that if Mr. Zimmerman

checks with Rebecca, I bet she has [indiscernible]

MR. ZIMMERMAN: No, I'm sure we got those emails, but we probably got them today or, you know, I asked Mr. Rosenblatt exactly the date and time when he sent them. You know, we're not here checking every single email from him the minute he sends it.

JUDGE MURPHY: Yeah.

MR. MUDD: I just wanted the record to be clear, and the people who are here to be aware of how these proceedings go. That's all I was trying to do.

JUDGE MURPHY: Absolutely, and sometimes when we're in the courtroom, too, you hand somebody a document and it's not been seen before and you want to --

SPEAKER: We live in the Wild West. We don't have [indiscernible] so it is what it is.

MR. ZIMMERMAN: Look, I didn't make a federal case out of it when it was happening. I was just pointing out it's not that, you know, anyway, it's, I said what I said.

JUDGE MURPHY: All right. So I think, is it

October the 27th? Does anyone have the date?

MR. ROSENBLATT: Yeah, the 27th and 28th.

JUDGE MURPHY: 27th and 28th already set in. Do you know if it's 10:00 a.m.?

MR. ROSENBLATT: I think it's 10:00. I mean, that would be great to start at 9:00 if we could, Judge.

JUDGE MURPHY: Well, again, it's probably going to be posted, so that has to change, and it has to be on the, you are reposting, right? The Developers are, so yeah, you're going to need to make, if you're going to change it to 9:00, then you have to put it there, and then it also has to be on the county website so everybody knows to come.

MR. ROSENBLATT: [indiscernible] on the property.

MR. MCCANN: We are in the process of changing or adding dates to the sign, just in an abundance of caution.

MR. ZIMMERMAN: Judge, one more --

JUDGE MURPHY: Mr. Zimmerman?

MR. ZIMMERMAN: Sorry.

JUDGE MURPHY: Right, but if you add, if we change it to 9:00 a.m., I'm fine with that, just let me know. But you have to make sure the sign matches, and that it's also on the county calendar that way so that people who don't have their [indiscernible] if Mr. Wyatt or whatever wanted to click in, he knows. He knows to click in. You know what I mean? Mr. Rosenblatt?

MR. ROSENBLATT: Yes. I'm just thinking, if I can get all that done, I'm going to try. If not, at least we have two full days instead of these half days.

JUDGE MURPHY: I agree with that. Right, I agree with that.

MR. ZIMMERMAN: Judge, one more thing.

JUDGE MURPHY: Okay, Mr. Zimmerman.

MR. ZIMMERMAN: On the sign posting, the north end, the sign is at the end of the dead-end road of Mays Chapel. Wouldn't it be reasonable to post a sign at Seminary and Mays Chapel? Otherwise, people

are not going to see it. I know a lot of people know about this case, but maybe not everybody. So right now that sign has been at the dead end.

MR. ROSENBLATT: He has absolutely no authority to ask us to put a sign anywhere. We have three signs on Joppa and two signs on the back of the property meeting the county code as has been certified by the sign poster. This is so far beyond his authority, it is unbelievable.

MR. ZIMMERMAN: It says [indiscernible]

JUDGE MURPHY: It is true. I mean, there are regulations for the sign posting and where they go. It has to be conspicuous, and it has to be near the property, so, you know, I'm sure you would love it to be that way, but, you know, and there's a newspaper article or posting, and then there's also on the county website. You know, everything.

MR. ZIMMERMAN: Well, it just doesn't make any sense, it's a dead-end road, but, you know, it's not conspicuous in my opinion, but I'll leave it at that.

JUDGE MURPHY: Okay. All right. All right. So I think we're finished, right, for today? Everyone? There's nothing else.

MR. ZIMMERMAN: Thank you so much.

JUDGE MURPHY: All right. Thank you. I'm going to turn off the record.

(Whereupon the hearing was adjourned.)

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BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF	: PAI NO.: 08-0922
COMBINED ZONING AND DEVELOPMENT	: TRACKNG NO.:
PLAN HEARING – GREENSPRING MANOR	: MAJ-2021-00001
	:
	: ZONING CASE NO.:
2310 WEST JOPPA ROAD	: 2021-0250-SPH

Thursday, September 20, 2022

BEFORE:

MAUREEN MURPHY

PUBLIC UTILITY LAW JUDGE

TRANSCRIPTION SERVICES PROVIDED BY: CRC Salomon

APPEARANCES:

On behalf of Developer:
ADAM ROSENBLATT, ESQ.
Venable, LLP
210 West Pennsylvania Avenue, Suite 500
Baltimore, MD 21204

On behalf of Protestant:
MICHAEL MCCANN, ESQ.
Cowie & Mott
1321 Generals Highway, Suite 302
Crownsville, MD 21032

On behalf of Office of People's Counsel:
PETER ZIMMERMAN, ESQ.
Assistant People's Counsel
William Donald Schaefer Tower
6 St. Paul Street, Suite 2102
Baltimore, MD 21202

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P R O C E E D I N G S

JUDGE MURPHY: Good afternoon, everyone. You're attending day two of case number 08-0922 and 2021-250-SPH, property address 2310 West Joppa Road. This is the combined development plan/special variance case for the project known as Greenspring Manor. Counsel for the record, starting with the Developer?

MR. ROSENBLATT: Good afternoon, Judge. Adam Rosenblatt and Chris Mudd of Venable, LLP on behalf of the Developer.

MR. MCCANN: Good afternoon, Judge. Michael McCann on behalf of the Protestants.

MR. ZIMMERMAN: Peter Max Zimmerman, People's Counsel for Baltimore County.

JUDGE MURPHY: All right. So again, day 2 here. Folks, if you were not here for day 1, you just want to make sure to keep your microphones muted. This is being recorded, and so I already actually hit the record button, so we can't have everyone just unmuting their microphones and speaking up, because there's a lot,

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there will be a lot of background noise on the record.

Just make sure that, you know, you just keep yourself muted, and then if it's your turn, I can unmute you, everyone in the attendee's room unmute themselves anyway. Having said that, all right. The last time we left off, we were going to have Mr. Nebre testify, and Mr. Nebre is here. Anything before we get started, by the way?

MR. ROSENBLATT: Judge, the only thing that has changed since the last hearing is the, as was mentioned at the first hearing, the Board of Appeals had considered an appeal of the forest buffer variance and alternatives analysis for this project, and a week ago on the 14th there was a public deliberation, and the Board indicated that it is approving both of those items. We don't have a written order yet, but the deliberation took place.

JUDGE MURPHY: So the alternatives analysis and the forest buffer variance?

MR. ROSENBLATT: Variance, yes.

JUDGE MURPHY: Okay. All right. I guess they didn't get into the interlocutory order stuff for another

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day.

MR. ROSENBLATT: Indeed.

JUDGE MURPHY: All right. Okay. In that case, so folks we have Mr. Nebre joining us at my request. He is from traffic engineering and planning. Mr. Nebre, can you raise your right hand?

Whereupon,

KRISTOFFER NEBRE

A witness of lawful age, after being duly sworn to tell the truth, the whole truth and nothing but the truth, testified as follows:

JUDGE MURPHY: Mr. Nebre, let me just start off, just get some general things out of the way here just to hopefully prevent everyone from asking the same questions. So I'm going to ask you a few questions, and then we're going to have the Developer's ask you, as you know, Mr. Mudd and Mr. Rosenblatt are representing the Developer, Mr. McCann is representing Protestants, and we also have Mr. Zimmerman, who is here for People's Counsel. So just to give you a heads up, you might have a few questions from them.

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EXAMINATION BY THE COURT

BY JUDGE MURPHY:

Q. So Mr. Nebre, you are the Traffic Engineer III, is that right? With traffic engineering and traffic planning with the Department of Public Works and Transportation?

A. Yes, I am.

Q. All right. And as I recall, you are the only Engineer III in your section?

A. Yes.

Q. Okay. And so you have been with the County as I recall since 2009?

A. Yes, I have.

Q. All right. And can you just describe what your duties are?

A. Part of it is reviewing traffic impact studies, part of that, reviewing traffic signal plans and maintenance of traffic plans, things pertaining to traffic and taking care of constituent concerns.

Q. Okay. And you're familiar with the project at Greenspring Manor?

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A. Yes.

Q. All right. How did you become familiar with it? Did you review the development plan?

A. Yeah. There was a development plan that was for review, but also the traffic impact study.

Q. And you reviewed both of those?

A. Yes.

Q. Okay. And the, what does the traffic shed for Greenspring Manor include?

A. The traffic shed for Greenspring Manor is in an F shed, and the two key intersections within that shed are Greenspring Valley and Falls, and Falls and Joppa.

Q. Okay. And what did you review that tells you that?

A. That was part of the, in the basic service map. It's located, the location in the shed is in that particular shed.

Q. Okay. And, all right. So it's both of those. Does it also the Falls and Seminary Road intersections?

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A. That is a mitigation shed.

Q. Okay. So that's not for this property?

A. It was part of, it's not, yeah, it's outside the shed for this property.

Q. Okay. Were you the one who determined what the traffic sheds were?

A. The sheds were, I mean, it's been an F for awhile, so I did not, I was not part of how those boundaries were determined. However, we evaluate that particular shed every year, and that shed was an F through our observations, yearly observations.

Q. Okay. The traffic shed is an F?

A. Yes.

Q. Okay. So the first one we have is, let me do this. So I'm just pulling up Google Maps so we can orient ourselves here, and the property address is right sort of next to this where it says Baltimore Orthodontic Group right here. And so you indicated that the first, that it's within the shed. Here's Greenspring Valley Road. Do you see where my cursor is?

A. Yes, I do.

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Q. And then there's Falls Road is right north to south?

A. Yes.

Q. Okay. And then just orient ourselves again, there's West Joppa Road where my circle is, where my cursor is, right?

A. Yes.

Q. Got that? All right. So let's just start with the first one, Greenspring Valley Road and Falls Road. So as I understand it, those are both state roads?

A. Yes. The intersections, the traffic signal, oh, yeah. At Falls Road and Greenspring Valley Road, both of those roads are state.

Q. State. Because Falls Road is Maryland 25, Route 25, right?

A. That's a state road, yes.

Q. And then Greenspring Valley Road is Maryland 130?

A. As seen in the map, yes.

Q. Okay. So the county, would the county have any jurisdiction over those two roads given that they're state roads?

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A. Not on the maintenance and operations of the road.

Q. And how about over the traffic signal at Greenspring Valley and Falls?

A. Greenspring Valley and Falls, that is also owned and maintained by the State Highway Administration.

Q. Okay. And so what is the, how does the county rate that intersection? Greenspring Valley and Falls Road.

A. Greenspring Valley and Falls Road per hour, grading system is an F.

Q. And what does that mean? Can you explain that?

A. The congestion is, the, our grading system is based on what we call failed cycles. So a failed cycle is when the last car in que does not make it through the green time, and within a certain hour if there's a certain percentage on a particular leg that reaches a certain percentage, then, you know, it's graded accordingly to how many failed cycles we see in one hour.

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Q. And the county conducts those traffic counts?

A. Yes, we do.

Q. And you do that how often?

A. For D, E and F intersections in the county, we'll evaluate them on a yearly basis.

Q. And is it called the loaded cycle methodology?

A. I think you could call it that, yes.

Q. All right.

A. Loaded cycle analysis.

Q. Analysis. What does the, do you know what the state rating is for Falls and Greenspring Valley Road? How do they rate the intersection?

A. I won't speak for them.

Q. But you don't know what it is, though?

A. Oh, I mean, their rating analysis?

Q. Right. Do you know how they rate that intersection?

A. No, I don't know what their rating, I mean, I will let, I may let them speak regarding that.

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Q. Oh, okay. I don't know if they are speaking, but all right.

A. Okay.

Q. Okay. So let's see. So is it fair to say that when you sign the F rating, what, well, why don't you tell me? What does that mean when you sign the F rating, I mean, I know you said it had to do with the failed cycles, that the county is doing these traffic counts. What does it mean, though, when you're an F rating?

A. An F rating means that okay, like on the evaluation, the percentage is, I think it's like 86 percent to 100 percent failed cycles in an hour for a particular leg. Is that what you're asking for?

Q. Yeah. And do you, is development permitted to go through when it's an F intersection?

A. We have a, something, like a guideline listed in our website on the traffic engineering page that development is under moratorium in an F shed.

Q. Okay. Is there any exceptions to that?

A. I think we've made exceptions regarding on

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how much demand you are throwing, you are generating to the intersection.

Q. Well, I don't understand. What does that mean?

A. Okay. I mean, if I could just speak in examples, if a certain site was a Walmart and became a flower shop, we can't, you know, fault that for becoming something that generates less traffic.

Q. Okay. I see, okay. Is the county looking for improvements, though, to the roadway or to the intersection before even to the signal, before they'll give a permit in an F intersection?

A. Because, yeah, we would want to see some sort of improvement at an intersection, because there is new development coming in for this case in particular. It was not an existing site, therefore there is new traffic going to be generated towards the site, and how will that be accommodated when we are in an F shed where our regulations cannot take anymore traffic. So it has to be, sorry.

Q. Go right ahead, go ahead.

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A. Something has to be shown that capacity will be accommodated.

Q. Okay. And does that mean that the developer who is improving the road or proposing to improve the road, does that mean that the rating has to change from F to say D? Or to B? Is that what you're looking for? Is the county looking for that?

A. Or we could, it could still stay an F, but it could be like maybe a better F so to say, like that's why we're seeing if there's capacity that the traffic generated by the site will be accommodated, meaning it won't be any worse.

Q. And so I understood there's a phrase that I just read throughout the documents that's called the net impact from the development will be zero. Is that how you look at it?

A. Or net impact will be less than zero added capacity, so it's as if there was no traffic added to the intersection, not making it any worse.

Q. Not making it any worse, okay. All right. So then let's go to the other, you did Falls and

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Greenspring Valley Road. And so do you know, what are the improvements, if any, that are being proposed for Greenspring Valley Road and Falls Road, if any?

A. As, there is, as I know it, there is no physical improvements that are going to be done on Greenspring Valley Road. The improvements to the corridor will be as a result of the improvements that are done along the south intersection at Falls and Joppa.

Q. Okay. So we're not to that one yet. I'm trying to stick to one intersection here. So no physical improvements to Falls and Greenspring Valley intersection?

A. Nothing that is proposed.

Q. Do you know which direction or approach at Greenspring Valley and Falls Road causes it to have an F intersection?

A. Not off the top of my head, sorry.

Q. Okay. Do you know how long it's been rated an F intersection?

A. No, I don't, but if I, no, I don't want to say if I'm not for sure, but as long as I have been in

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the county, I could say that part.

Q. And that was at least since 2009?

A. Yes.

Q. Do you know if there will be any changes or improvements to the traffic signal at Falls and Greenspring Valley?

A. Not the physical signal itself, not like physical indications, but probably as a, like I said, as a result of the changes that are going to be done at the Joppa and Falls, like you said, you're not focused there, but --

Q. [indiscernible]

A. -- for coordination sake, I think they will do changes to the timing along Falls.

Q. Meaning who is going to do changes?

A. Either SHA or, yeah, probably SHA.

Q. Because you were saying that they're, the intersections, excuse me, the signals are actually owned by SHA, right?

A. Yes.

Q. Okay. State Highway Administration. All

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right. Let's go to Falls and Joppa Road. So Falls Road, you already told us that was a state road, because that's Maryland Route 25. Joppa Road though is a county road, right?

A. That's a county road, yes.

Q. And so, but as I understand it, just looking at this Google Map for lack of a better tool, just to give us reference, it looks like this intersection here, there's two different signals, right? At least, so one at Joppa and Falls, and then there's one at kind of Falls and Falls, which goes down here to the south. Do you see what I mean?

A. Yes, but when we refer to a signal, we refer to something to controlling the whole intersection, so they're not like two separate things or split ownership. It's controlled by one controller.

Q. Oh, it's one --

A. One program, yeah.

Q. Okay. One controller. So, but these signals at this intersection of Falls and Joppa are just for combining them together, these are also owned by the

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state? Or by the county?

A. They're all owned by the state. Just to reiterate, yeah, it's like the whole intersection, the signal is like controlled by one controller and connected as one, I don't want to say the word network, but yeah.

Q. Okay. And then so what rating does the county give to Falls and Joppa Road intersection? When I say that, I mean the entire intersection, because you just, you know, explained that to me.

A. Yes. Falls and Joppa is an F intersection also.

Q. Okay. And do you know what the, how the state rates it?

A. Not how the state rates it. Sorry.

Q. Okay. Let's see. So what approach, which approach or direction at this intersection is causing it to be an F rated intersection by the county?

A. Off the top of my head, I don't have the report in front of me, sorry.

Q. Where would you find that?

A. Traffic counts? Performed by our count

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crew. They would know which direction was the failing direction.

Q. So I thought, didn't you say you reviewed those when they did those counts every year?

A. Yes.

Q. Okay. Do they provide it to you, which direction or approach is the one that causes it be an F.

A. Yes, it's on their count sheet, but on the map it's just, we have just the grades, we don't put the direction on the map.

Q. Okay. Let's see. So are there any improvements being proposed, I think you mentioned this twice now. What are the improvements being proposed for Falls and Joppa intersection? For this intersection?

A. There's going to be a bit of widening on both Falls and Joppa to accommodate a through only lane, so that we can have a separate, we could see, I think you could see like the pavement arrows.

The through movements along what we call the east and westbound movement, or we colloquially say the cross streets are shared with a turning movement. There

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is going to be improvements that are going to be done on the cross street that will separate the through movements, and the left-turn movements will have their own, be on their own also.

Q. You're going to have to give that to me in a breakdown. So what are we talking about? Is it on Joppa? Or is it on Falls?

A. Both sides, both sides of the cross movement. Not the main line. So we'll have like an extra lane that will have a through only, and then on the --

Q. Which way does a through only go? Which direction am I going?

A. Like east and west.

Q. Okay. So if I'm on Joppa, West Joppa, and I'm going through that intersection --

A. Towards the other side of Falls, yeah, towards the park.

Q. Yeah, this is Meadowbrook Park over here.

A. Yeah. So there will be an extra lane that will go from there, that will --

Q. It's going straight across?

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A. Yes.

Q. You can go straight across now, can't you?

A. No, but I said a separate. You can see the pavement marking where your cursor is that, that is shared with the left-turn movement.

Q. Okay.

A. So it's a split arrow, so it's, so both, that lane accommodates both left and through movement. However, there is going to be an extra lane now that only accommodates a left turn movement, and now, I mean, sorry, let me slow down.

There will be a separate lane that will only serve through movement, and the other two lanes will be serving left turn movements.

Q. And how is that going to help?

A. So both sides right now, because it's this configuration, the signal operates where it serves the west leg first, and the east leg first, or vice versa, but one, it can only serve one leg at a time, the signal.

With the new lane configuration for the traffic signal, for their traffic impact analysis, they will be

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operating in a way where the left turn movements could be simultaneously, and the through movements could be served simultaneously. So that would improve the capacity throughout the intersection and serve more traffic.

Q. And since the improvements are on this west Joppa Road leg where my cursor is, which is kind of next to that Exxon right there on the corner, or actually it's a snowball stand, does that mean that that's the approach or direction where it's failing, causing it to be F?

A. Not necessarily. By doing that, we could devote more time to the main line, so that's why we improve capacity on the east and west legs, so that the main line, we could devote more time to the main line, because right now, like I said, it's like the signal is doing it one by one, east leg, west leg.

But when you can make simultaneous movements, now time could be allocated where the main line can get more of the time.

Q. Main line is the Falls Road north/south?

A. Yes.

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Q. Okay. Any other improvements that they're proposing?

A. Yes, there's going to be some widening also on the, if I did not make it clear, there's going to be widening on the park side leg.

Q. The park side, okay. Now my cursor is over here. So what are we doing over here?

A. They're putting anther through lane.

Q. Another through lane, so if I'm at the park, I'm going to go straight, I can go straight then to Joppa, west Joppa, as opposed to what, sharing a lane, making a left and going straight?

A. Yeah. There will be a lane dedicated, I believe so. But I just know there is some sort of widening there, and the new lane configuration allows it so that you could, both turning movements could be done simultaneously.

So there will be widening, like you can see how close those left turn movements are, you cannot serve those two left turns simultaneously, they'll be crashing into each other, so that's why there will be some sort of

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widening so that the left turns could be also accommodated to where the left turns could be served simultaneously.

Q. And for this case, for the proposed development here, how is that going to help this development? Or, you know, how is it going to I guess not make traffic any worse is what you had said before.

A. Yeah, there's going to be more, now there could be more green time allocated to, on Falls Road.

Q. Green time on Falls Road meaning the green light stays green longer?

A. Yes.

Q. Is that what that means? Okay. North/south, right?

A. Yes.

Q. Okay. All right. So any other improvements to this intersection?

A. Along with that, that's the physical improvements, and then there's going to be the timing improvements that go along with that.

Q. And you had indicated before the timing of

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the traffic signals all along this whole corridor, the Falls Road corridor, SHA is then going to retime the lights?

A. They are the ones that are, yeah, it's under their control.

Q. But they will be doing that, do you know?

A. I mean, either they take the timings that are going to be proposed by the developer, or, you know, they will be doing the timing changes per their observations.

Q. And how will this improvement on Falls and Joppa, then you had said, how will that affect or impact this, the Falls and Greenspring Valley F intersection?

A. With more time that's allocated towards Falls on the through movement on Joppa. That means we could get probably more, hopefully more throughput, or it would improve the flow for traffic incoming from Greenspring Valley.

Q. It helps, so if I'm coming down Greenspring Valley and I'm facing, I'm at that, this light right here, Falls, having the improvements to the

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Joppa and Falls intersection will improve the flow along Greenspring Valley Road?

A. Greenspring Valley, yeah, Greenspring Valley going towards Falls. So if there's more green time allocated at Falls than traffic coming from Greenspring Valley going towards Falls would see an improvement.

Q. Okay. All right. So then let me ask you this. So were there any other improvements? Let me just make sure. Here's the property over here. Was there anything else that the were proposing? Do you remember? Or that was it? I mean, it can be, I just was making sure.

A. Regarding the traffic for those two intersections, yes. If any other improvements could, I mean, I don't have the site plan in front of me. It's considered an improvement. I believe there was talk about acceleration and deceleration lane in front of their frontage, but that's just part of development.

Q. Okay. All right. On the development plan, you mean?

A. Yeah.

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Q. Okay. Let me do this. I'm almost finished. I should be almost finished. Not quite almost finished, but I'm actually moving along pretty fast, aren't I? I'm not going to keep you all day, because I know you want to get back to work. I'll let the, I'll do this. Okay.

So contained in our file for the special variance was this ZAC comment, which is dated September 20th, 2021. It's from Mr. Curtis. So he's with your department, right?

A. Department, yeah, but not my bureau.

Q. Oh. He's a traffic, he's an Engineer III, Department of Public Works and Transportation. What does he, where does he work?

A. He works in the engineering and construction, Bureau of Engineering and Construction.

Q. Okay. He actually copied you on this email. Do you remember it?

A. No, I don't, I'm sorry.

Q. You don't remember? I don't know why, you don't have enough, you have every development plan to

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review. So anyway, well, so it appears that what he says in the second paragraph, and I'm trying to make it big enough for you so you can read it.

It says the Department of Public Works and Transportation Planning feels the request for the special variance, which this is referring to this case number, has to be denied because of the following reasons. And so they list these reasons, and so it looks like under number three, and that's why I wanted to ask you about this, number three, it says that there, it looks like he reviewed the proposed improvements by the developer, and so it says something about the benefits of the connection to Falls Road or glossed over.

So I need to understand what, is this the position currently of the Department of Public Works and Transportation? Go ahead.

A. That comment may have pertained to a supplemental study by the traffic engineer, because it had something to do with the cut through, like the connection of the whole community going to Mays Chapel Road.

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Q. That was one of them, that was one of them. That's in number 4, that was going to be my next question, but how about this one? I mean, was this, do you know, I mean, again, you said you don't remember, but looking at it now and since you were copied on it at the top, I'm trying to, you know, is this the current position dated September 20, 2021, which is actually last year today, does this reflect the position of the Department of Public Works on this development plan?

A. I think, I was going to get to sort of this point. Had the connection been allowed to come through, it would furthermore benefit Falls Road because of redirected traffic. So I think that's what that is trying to say, yeah, there is benefits for a, for the connection without the gate from a flow, traffic flow standpoint.

Q. Explain to me, I mean, I know where the gate is. The gate is proposed within the community, and it's supposed to, I mean, the, it says it's being proposed as an emergency access gate only. Is that the position of the Department right now?

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A. That one, I was going to, I say I was going to refer to the development manual, so that one is for development manual, because it hits a certain threshold of homes, that was a requirement from the development manual, and our stance was that's outside of traffic engineering issue regarding the gate.

Q. Outside of traffic engineering?

A. It's part of the development manual that was a development, that was like a development manual criteria.

Q. And so traffic, your section doesn't look at the gate issue about whether the gate should be closed or permanently open?

A. That one, yeah, that's why it was deferred to you, Judge.

Q. I always like when you do that, yeah, and I'm happy to do that. I'm happy to make the decision, but I, you know, what I'm going to say is, I'm going to ask you, what do you think as a traffic engineer, an engineer, so are you saying that you don't deal with gates?

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A. Every now and then, but that one was a proposed gate, so --

Q. Does it need to stay open to change the traffic? Or are you, or is, does the Department of Public Works Traffic Engineering section, are they comfortable with the improvements being made and the gate remaining emergency only?

A. Per the traffic impact study, it can be shown that it does not need to have the gate open. However, but the requirement of the gate being there or fully open would not, does not affect the improvements on Falls Road based on the physical improvements I know are proposed.

Q. So if I say this again, if I say that the gate remains closed or for emergency access only, you are comfortable having reviewed the improvements to Joppa and Falls Road, and no improvements to Greenspring Valley and Falls physical improvement at the intersection, you're comfortable from your section that the development plan should be approved based on the improvements?

A. Based on the improvements, I could only

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say yeah, from the traffic, from the traffic that is on Falls Road will not get any worse, even with the gate down. However, regarding the approval of the gate, we find that being a development plan issue.

Q. Okay. Traffic on Falls Road would not get any worse, and that is the standard that you look at? That's the one you apply?

A. Yes.

Q. Any worse. Okay. Again, doesn't need to be better than an F. In fact, you indicated before as I understand it, if the improvements are all made, let's say they're all made to Joppa and Falls Road intersection, the intersection may be still an F, or it may change, right?

A. Yes.

Q. So isn't that --

A. But it won't be a, but it won't be any worse F.

Q. It won't be a worse F. Right. But it's not, I mean, it could change, it could be then a D or it could be a B, depending on the traffic counts, right?

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A. Yes, yeah.

Q. So the county then through your traffic counter people, they need to go back to the intersection every year, and they have to count the, I guess the sequence again like you explained first about, you know, how much green time there was?

A. Yeah, they'll count the intersection, and they'll note the congestion that takes place.

Q. Okay. All right. And I think I just have one more thing. Look at that how fast I am today. I got this one. So I saw this email that you had sent, and so do you recognize this one?

A. This one is pretty recent. I think this is just stating, basically giving our approval of the traffic impact study.

Q. Yeah, it sits in the traffic shed, and you just, it repeats in here as you see that, you know, the intersections and all are owned by SHA. It talks about the improvements that you already mentioned along Joppa, and they have been approved by SHA, but they've also been approved by the county, right? The improvements along

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Joppa, because Joppa is a county road.

A. Yes.

Q. Okay. So you've looked at the traffic impact study I suppose that states the improvements will accommodate the generated volumes from the proposed site, so that's what you were talking about, mitigation from the improvements result in net zero impact along the corridor, is that right?

A. Yes.

Q. All right. Okay. Go ahead.

A. Yeah, I was going to say I probably should have been clear that it would not be more than, because net zero implies it stays the same but it could be better. It could be at zero, but I just wanted to make it clear, it's not going to be worse.

Q. Not going to be worse.

A. Yeah.

Q. Okay. Okay. So what I'm going to do is I'm going to make this County exhibit number 13, that's the exhibit we're on, because we had day 1 already, so we're already up to 13. So that will be in evidence for

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you.

(County Exhibit No. 13 was marked for identification and entered into evidence.)

JUDGE MURPHY: And I am finished. So I'm going to turn it over to Mr. Rosenblatt.

MR. ROSENBLATT: Thank you, Judge. I don't think I have any questions at this time.

JUDGE MURPHY: Okay. All right, Mr. Rosenblatt. Mr. McCann?

MR. MCCANN: Yes. Thank you, Judge.

DIRECT EXAMINATION

BY MR. MCCANN:

Q. Good afternoon, Mr. Nebre.

A. Hey, Mr. McCann.

Q. I wanted to ask you a little bit about your background, because I don't think we've, although we've been through this dance just a few short weeks ago, I didn't ask you any questions about your background. Well, number one, the Judge already asked you about your current position, you're an engineer III, correct?

A. Currently I'm a IV, but I just, but that's

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what it is right now.

Q. Are you a licensed engineer?

A. Yes, I am.

Q. Did you go to college for engineering, obviously?

A. Yes, I did.

Q. When did you graduate?

A. I graduated 2004.

Q. Okay. Where did you go to school?

A. University of Washington.

Q. Okay. And any post-graduate work after that?

A. No.

Q. [indiscernible] education, that is?

A. No, just a bachelors.

Q. Okay. And you began work with the county in 2009. Did you work anywhere else in any, in the engineering field between when you graduated and when you came to the county in 2009?

A. In California. I worked as a developer's engineer.

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Q. And what do you mean by that? What did you do?

A. I was doing land development design sites, particularly warehouses.

Q. Designing sites, you said?

A. Yes.

Q. Okay. So in that job, you weren't necessarily, and you were there for, strike that. You were there for the entire five years or so after graduation, before you came to the county?

A. I had maybe one year of tutoring, but other than that, yeah, from then onto the county.

Q. What do you mean by tutoring?

A. I got out of college, I worked at like an SAT math center.

Q. Okay. In the California job that we spoke about, were you during that period of time, were you reviewing traffic impact studies?

A. No, I was not.

Q. Okay. When you came to the county in 2009, did you start, were you reviewing traffic issues

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then? Or did you take on that at some later point?

A. Not like directly coming into the job. I, you know, I had people working above me who received the traffic impact studies, it was their responsibility, and I would just check certain aspects of the traffic impact study, but it was not a full blown study, you know, they asked me to just skim it and see how I understand it, and then later on I learned what the calculations mean. So it was more of like growing into it, but no, like coming into the job, I did not know about traffic impact studies.

Q. When you were first hired, you were hired in the Bureau of Traffic Engineering?

A. Yes, I was.

Q. And then at some point in time you began doing review of traffic impact studies and traffic engineering on a, on your own as opposed to under the supervision of others? Is that a fair statement?

A. Yes.

Q. And when was, when did that take place do you think?

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A. Probably more on my own, like in the last maybe three years, but we've had like a group of people always look over it.

Q. Okay. And in this case, would you agree with me, because I've seen all the documents, that there are hundreds if not thousands of documents related to traffic that were submitted by the Developer in this case? Is that a fair statement?

A. Was that regarding the particular project? Or you're talking --

Q. Yes, yes. I'm sorry, this particular project.

A. So there was the main traffic impact study from Lenhart? Is that what you're trying to say?

Q. Well, there were multiple traffic impact studies from the developer, were there not?

A. Okay. I believe there was one that came in, and we reviewed it and we asked for either supplemental studies or a revision of the traffic impact study.

Q. Okay. All right. I'm trying to somehow

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quantify what it is that the county received. But you've received multiple submittals either in the form of traffic impact studies or supplemental reports from the developer, correct?

A. Yes, yes.

Q. Okay. And have you reviewed all of that at some point in your --

A. Some point, yes.

Q. Okay. When was the last time you reviewed anything in connection with this case?

A. I can't recall too specifically.

Q. Okay. But you didn't review anything specifically in preparation for today's hearing?

A. For today's hearing, no.

Q. The Judge was asking you about the failing nature of the intersections at Falls and Greenspring and Falls and Joppa. Am I correct that in all of Baltimore County, there is only a handful of failing intersections?

A. Yeah. Yeah, it's not like a multitude, but a handful would be something like, I guess, yeah, I'm just looking at the map behind me. I mean, I'd say six

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or seven sheds, just like eyeballing it.

Q. Right. And there are three failing intersections at Greenspring Station amongst all of those, correct?

A. That corridor along Falls Road there's three failing intersections.

Q. Okay. I think you were a little bit unsure whether or not the traffic shed associated with Falls and Seminary was part of the traffic sheds for Falls and Greenspring and Falls and Joppa. Did I hear you correctly? That you're not sure about that?

A. No.

JUDGE MURPHY: Mr. McCann, I think he was clear about that, because I actually asked him. I said we're not talking about Falls and Seminary, just so we're clear, and he said it was separate.

MR. NEBRE: Yeah, I consulted with our GIS group, and they gave me an exhibit showing that the sheds were separate.

BY MR. MCCANN:

Q. Okay. Well, the sheds may be separate,

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but is it fair to say that all three of these intersections, Falls and Seminary, Falls and Greenspring Valley and Falls and Joppa are interconnected and need to be considered when reviewing any development in any one of the traffic sheds?

A. And, you know, I believe there was, it was considered.

Q. Yeah. In fact, the State Highway Administration, I can point you to some letters, but the State Highway Administration as well as the developer's engineer itself agreed that these intersections are interconnected and need to be considered together, correct?

A. Yes, performance as a whole.

Q. Yeah. Okay. A couple things about SHA. I think you indicated that the county has no control over the road itself to the extent there are state roads involved here, and then no control over the lights because those are owned and maintained by the State Highway Administration, correct?

A. The traffic signals are owned by SHA and

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yeah, most, the roads in question are owned by SHA.

Q. Okay. But in terms of the State Highway Administration's authority in this development plan case, as far as you know anyway, the only role that they have in connection with this development is to prove or disapprove an access permit number one, correct?

A. Because yeah, it's not on their road, the access on Joppa Road, I don't think they have as much, I don't think they could stop the development, if I understand their role on this.

Q. Yeah, I'm sorry, you're right. Joppa is not a state road, correct?

A. Yeah, Joppa is not a state road.

Q. So the reason the State Highway Administration's authority in this case really is derived from the fact that there are proposed improvements to roads that it owns, correct?

A. Yes, that is their interest in this.

Q. Okay. And then also I think you've acknowledged that the State Highway may, depending on how it plays out, may since it controls the traffic light,

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may have made some changes in the timing of the lights since it owns the lights, correct?

A. With the new configuration, I believe they would.

Q. Okay. But you would agree with me that the State Highway Administration has no authority to chime in on whether or not this special variance that's been requested should be granted under the county zoning regulations, would you agree?

MR. ROSENBLATT: Objection.

JUDGE MURPHY: Mr. Rosenblatt?

MR. ROSENBLATT: I'm objecting to asking this witness what legal authority SHA has.

JUDGE MURPHY: Yeah. Mr. McCann, you know, that's, you know, obviously for me to look at under the zoning regulations, and I don't think that's a fair question for the witness, Mr. Nebre.

MR. MCCANN: You mean the State Highway Administration's authority?

JUDGE MURPHY: Yes.

MR. MCCANN: Okay. All right. I'll move on.

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BY MR. MCCANN:

Q. I did want to ask you about the standard that you've described this afternoon, and you said I think you called it a standard, you said that what you want to see is that the proposed development won't make the situation, the traffic situation and these failing traffic sheds any worse, correct?

A. Yes.

Q. Number one, would you agree with me that that is not the standard that is set forth in the special variance standard in the zoning regulations? You're not speaking to that this afternoon, correct?

A. That is partially why I deferred to, made that statement to defer to the Judge on my response to Lenhart.

Q. Okay. So it's, and we'll get to that in a second. What you're referring to is the fact that on the special variance standard that is before the Judge, your office deferred any conclusions to the Judge in this case, correct?

A. Yeah, we deferred.

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Q. Okay.

A. Final statement there.

Q. Right. Now, this standard that you did mention doesn't have anything to do with the special variance standard, where do you get that from? In other words, where do you derive the standard as you've described it that proposed development cannot make the traffic situation any worse in these failing traffic sheds? Where does that come from?

A. That one, was that quoted on the, it was like, the impact is going to be less than standard?

Q. No, I'm asking you about your testimony earlier this afternoon about the fact that what you're looking at is whether or not the proposed development will make the traffic situation any worse in these traffic sheds. I'm asking where does that standard come from? That net zero or whatever you want to call it, where does that come from?

A. Partially engineering judgment, and also, yeah, there's not like a standard I could really point to for that one.

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Q. Okay. Would you agree with me that other folks in your department have expressed the opinion that in order for this development to be approved, that the county's level of service F has to be improved upon?

MR. ROSENBLATT: Objection.

JUDGE MURPHY: Hold on, Mr. Nebre. Mr. Rosenblatt?

MR. ROSENBLATT: Asking him what other people's opinions are.

JUDGE MURPHY: The question would be if he knows that, and so --

MR. MCCANN: These aren't any, yeah, just to be clear, I'll rephrase.

BY MR. MCCANN:

Q. Do you know whether or not anyone else in your department has expressed the opinion or just suggested that in order for this development to be approved, the level of service F, the county level of service F has to be changed from an F?

A. Not currently, no.

Q. Okay. What do you mean by not currently?

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A. There may have been expressed something from people that used to work, I used to work for, however, there has been changes in the department since this development has been proposed and reviewed, so if there was anything that was expressed then, I'm not akin to that.

Q. Okay. I'm asking you about in connection with this development. I'm not asking you about, strike that. Let me ask you about that since you brought it up. Other than this development, to your knowledge have representatives of your department expressed the opinion that in order for a development in a failing traffic shed to be approved, the county's level of service F had to be changed from an F?

JUDGE MURPHY: Well, we're just only talking about this development. I don't want him, you know, the witness is here on my request, and for him to have to respond to what happened in other developments, I mean, it's not fair to the witness. It's not a fair question to the witness.

I know, but you are suggesting that people have

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said things in other cases, and we're only here on this case, so I'll sustain the objection. I want only questions asked about this case.

MR. MCCANN: Can I be heard on that? Because this is an important point. I get this objection all the time, just because another development, the name of another development is raised, therefore automatically it's irrelevant.

The point here is that's the basis of the ruling, if there is a standard that the department has been applying in other cases, we get this question all the time as to the developer's witness who say every day, Your Honor, this is what the development, the people in the county tell me is the standard.

I'm asking this gentleman about the standard in his department, whether it's connected with another case or not, that doesn't matter. The point is it's the standard in his department, and it's highly relevant.

JUDGE MURPHY: I understand, and he has already expressed what the standard is to his knowledge, this is what the standard is, and so you're going to go down

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these roads where you're suggesting that X, Y and Z was said. It's not fair to the witness. The witness is here for this case, it's not [indiscernible]

MR. MCCANN: No.

JUDGE MURPHY: He's not a paid expert witness here. He's a county witness who is just giving his testimony based on this case.

MR. MCCANN: What difference --

JUDGE MURPHY: And you've asked him, and you've asked him what the standard is, he's given you what his answer is. The objection is sustained.

MR. MCCANN: All right. Well, if I could share? Bear with me one second.

BY MR. MCCANN:

Q. Before I, I want to get back to something else you said before, Mr. Nebre, and that is that there has been some change of some sort related to this issue of the standard. When did that occur, that change that you were speaking about?

A. Which change are you talking about?

Q. I think when I was asking you about the

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standard and whether other folks in your department had expressed a view on the standard, you said that at some point in time there were people that thought one way, but that that had changed during your tenure.

A. Oh, no, I did not say something about waiving opinions. I said there was a change in staff, and then, you know, if you were saying has there been anybody that had some sort of expression about a certain way a standard is viewed, I said I would not know about it because of the changing staff.

Q. Okay. Fair enough. Thank you for that. So let me show you an email. This is from Greg Karski [phonetic] to you, as well as some other folks in connection with this development, 2310 West Joppa Road, and it's two pages. I'll scroll down so you can have a moment to take a look at it, the initial email.

JUDGE MURPHY: If you could expand it a little bit so that he can actually --

MR. MCCANN: It's always bigger on this end.

BY MR. MCCANN:

Q. Okay. So that's the second page of the

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exhibit, the initial email to you from Mr. Lenhart. Do you see that?

A. Yes, I do.

Q. Here's a subsequent email from Mr. Lenhart to you and Vishnu and some others. Do you see that?

A. Yes, I do.

Q. Okay. Then here's an email dated October 3rd, 2020 from Mr. Karski. Do you see that?

A. Yes.

Q. Okay. Who is Mr. Karski?

A. Greg Karski was the bureau chief of transportation.

Q. Okay. Traffic engineering?

A. Yes.

Q. Okay. So the head of your bureau?

A. Yes.

Q. Okay. And is he no longer in that position?

A. He's no longer in this position.

Q. Okay. And where is he now? Do you know?

A. Not exactly. I'm sorry.

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Q. Is he within the county?

A. He's within the county somewhere.

Q. Okay. Okay. Do you recall this email by chance?

A. Not the details.

Q. Okay. But at the time he wrote this, and I'll move on, in October of 2020, Mr. Karski was the head of the Bureau of Traffic Engineering, correct?

A. Yes.

Q. Okay. All right. I'm going to show you another exhibit.

MR. ROSENBLATT: I'm just trying to keep track. Was there a number for that?

MR. MCCANN: I did not assign one yet. I will do that. Thank you for asking.

JUDGE MURPHY: Are you on 15?

MR. MCCANN: We are.

(Protestant Exhibit No. 15 was marked for identification and entered into evidence.)

BY MR. MCCANN:

Q. Let me just show you a couple more and ask

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the same question essentially. So this is a one page email exchange between Mr. Lenhart and Mr. Karski and yourself and Mr. Dasai, and same question I guess, at the time that Mr. Karski sent this email, number one, do you recall this email, Mr. Nebre?

A. I don't see anything on my screen right now, Mr. McCann.

Q. Okay. I'm looking at it, and no one else is. Let me know if that's too big. This is a one-page email. Go down to the first email on the page. Do you see that?

A. Yeah, I see the email.

Q. And then the response from Mr. Karski on Thursday, October 8, 2020, do you see that?

A. Yes.

Q. At the time Mr. Karski wrote this email, was he, again, this is October, 2020, so I assume the answer is the same, that he was head of the Bureau of Traffic Engineering?

A. Yes, he was.

Q. Okay.

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MR. MCCANN: So that would be 16.

(Protestant Exhibit No. 16 was marked for identification and entered into evidence.)

BY MR. MCCANN:

Q. Let me show you another one. This is also a single page email. The bottom page has an email from Mr. Rosenblatt, same month, October 2020 to Mr. Karski, and then a subsequent email to you from Mr. Filsinger a couple days later. Do you see that?

A. Yes.

Q. Okay. And am I correct, well, what is, it says here Mr. Filsinger was the Chief, Division of Traffic Engineering. Is that, the Division of Traffic Engineering, is that the same thing as the Bureau of Traffic Engineering?

A. It's within the Bureau of Traffic Engineering, Bureau of Transportation currently.

Q. Okay. So is this, so Division of Traffic Engineering is not the same as the Bureau of Traffic Engineering?

A. It works within. It's the same.

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Q. Okay. Was Mr. Filsinger, he was chief, it sounds like he didn't replace Mr. Karski, but this is another position that he held?

A. He worked under Mr. Karski. Greg Karski was the Bureau Chief, Mike Filsinger was the Division Chief.

Q. Got it, got it. Okay.

MR. MCCANN: So that would be exhibit 17.

(Protestant Exhibit No. 17 was marked for identification and entered into evidence.)

BY MR. MCCANN:

Q. I'll show, excuse me. This is a five-page email, so let me just blow it up and scroll down. I'll go to the bottom first. Let me know if I'm going too fast. I'm on the fifth page right now. As you can see, the fourth page, it begins with an email from Mr. Rosenblatt to Mr. Karski. Do you see that?

A. Yeah, I see the email.

Q. Okay. And then page 3, subsequent email from Mr. Rosenblatt. Do you see that?

A. Yes.

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Q. Okay. Also an email back from Mr. Karski of about the same date. Do you see that?

A. Yes.

Q. Okay. And then we're on the second page, another email from Mr. Rosenblatt to Mr. Karski. Do you see that?

A. Yes, I see the email.

Q. Okay. And then a response from Mr. Karski with Mr. Filsinger cc'd. Do you see that?

A. Yes.

Q. Okay. And let me just get to this final email from Mr. Karski with you cc'd, along with some others. Do you recall this email?

A. I think so, but not fully. I just know he made a response to someone representing the developers.

Q. Okay. I want to direct your attention, if you want to read the whole thing, obviously feel free to, but I wanted to direct your attention to the, I guess the third full paragraph, and I'll highlight for you a particular sentence, two sentences. I'll just read it.

Additionally, it does not appear that the

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proposed changes would bring the intersection of Falls Road and Joppa Road out of failed rating, out of the failed rating given the fact that the lowest level of service following improvements with site traffic is worse than the existing level of service. Clearly the changes would not ameliorate the currently failing intersection. Did I read that correctly?

A. That's what it says.

Q. Okay. So, and at the time, Mr. Karski wrote this, as is indicated, he was still Bureau Chief, correct?

A. Yes.

MR. MCCANN: So this would be exhibit 18, Your Honor.

(Protestant Exhibit No. 18 was marked for identification and entered into evidence.)

MR. MCCANN: Then I just have one more. Bear with me one second. Thanks for your patience. This would be exhibit 19.

(Protestant Exhibit No. 19 was marked for identification and entered into evidence.)

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BY MR. MCCANN:

Q. This is, I'll blow it up, a two-page email exchange. We'll go down to the bottom again. Correspondence between Mr. Rosenblatt and Mr. Karski. Do you see that?

A. Yes.

Q. Okay. And then Mr. Filsinger, an email from him to you. I'll just read this. It says, on October 27, 2020, Chris looking at this, the intersection just to the north is failing badly with the 92 percent load in the northbound direction the p.m. hours. Do you recall this email?

A. I think I do.

Q. Okay. And is Mr. Filsinger referring to the intersection of Falls and Greenspring?

A. Falls and Greenspring.

Q. Yeah. And he says right here, from a common sense perspective, I can't see how, see that it would help, therefore it would, I can't see that it would help, therefore would improve the overall failing shed. Do you recall what he meant by that, and what your

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thoughts, if any, were on that?

A. I think he's saying there's, if anything, there's not really, because there's no physical improvements to the intersection, so I think from that perspective that it may seem, it could make that particular intersection worse.

Q. Okay. And then lastly on the same exhibit, this is 19 again, the first page of the exhibit has an email from Mr. Filsinger to yourself, which says, "the lawyers are now asking that with the improvements will the intersection operate better than existing? Need to dive into this a bit more, we need it by early next week." Do you recall this email?

A. Not really.

Q. Okay. Was there, at this period of time in November, 2020, in connection with, we'll keep it in connection with this development, was there internal discussion between yourself and your superiors about what standard it is that you would apply in connection with this development in this failed intersection?

A. I don't remember.

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Q. Has there ever been in connection with this development, not any others, but this one, any discussion between you and your superiors about what standard should be applied in this case for this development?

A. Not that I recall.

JUDGE MURPHY: Any objection to 15 through 19, Mr. Rosenblatt?

MR. ROSENBLATT: I think they are all county emails, so --

JUDGE MURPHY: All right. Mr. Zimmerman, I'm assuming you don't have any objection?

MR. ZIMMERMAN: You are correct.

JUDGE MURPHY: All right. Thank you. We'll accept those.

MR. MCCANN: Thank you.

BY MR. MCCANN:

Q. I may have asked you this the last time we got together, Mr. Nebre, but I just want to make sure that when determining levels of service, the only standard that the county applies is the loaded cycle

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methodology. That's how level of service is determined, correct?

A. For the basic service map, yes.

Q. What do you mean by that?

A. That's the one that controls development on our basic service map. The thing, we would, the level of service that will be for the traffic analysis for the TIS report would be, we would use other analysis, CLB reports, but the one that controls development is the loaded cycle analysis.

Q. Okay. So when you say basic services maps, do you mean that when a development is proposed in a failing intersection, the standard that the county applies is the loaded cycle methodology?

A. Yes.

Q. And lastly, we talked, you talked to the Judge about the improvements that are being proposed by the developer at Falls and Joppa. Even with those improvements, would you, or do you rather agree with me that the level of service under the county's methodology is not being reduced from an F?

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A. We cannot guarantee that. I think that's why, our methodology does not make, like it's not something that can be forecasted. It's something that's based off of observations.

Q. Right.

A. Yeah.

Q. So, but my question is can you sitting here today, can you say with some degree of certainty to a reasonable degree of engineering certainty that the improvements proposed by this developer at Falls and Joppa Road will remove this particular intersection from an F level of service?

A. I cannot make that statement with certainty, if that's what you're trying to ask for.

Q. Well, to a reasonable degree of certainty.

A. Yeah.

Q. Okay.

MR. MCCANN: Thank you, Mr. Nebre. No further questions.

MR. NEBRE: All right.

JUDGE MURPHY: Mr. Zimmerman?

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MR. ZIMMERMAN: Yes, thank you. Can you hear me?

JUDGE MURPHY: I can.

MR. ZIMMERMAN: Okay. Thank you.

DIRECT EXAMINATION

BY MR. ZIMMERMAN:

Q. Mr. Nebre, first of all, just to be fair, you and I actually have never met or spoken about this case, have we?

A. I don't recognize who you are, Mr. Zimmerman. No, we have not spoken.

Q. I'll try to ask some fair, factual questions. The first one, I'm curious, is there such a thing as graduate education in traffic engineering? Or is it simply learning by experience?

A. There is post-graduate studies for traffic, focus on transportation.

Q. Okay. Is there such a thing as a graduate degree in traffic engineering?

A. I wouldn't know the names of the degrees.

Q. Okay. And following up on a few of Mr.

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McCann's questions, when you began work on traffic issues, was Mr., were Mr. Karski and Mr. Filsinger kind of your mentors?

A. Yes, they were.

Q. Okay. And is there currently a Bureau of Traffic Engineering or division, or have things kind of reorganized?

A. They are reorganized.

Q. So what's the current structure?

A. Okay. Bureau Chief is Angelica Daniel, and division chief is myself now.

Q. Okay. Okay.

MR. ZIMMERMAN: If I could share, Judge, a few exhibits. Okay. Here we go.

JUDGE MURPHY: I'll just give it to you.

MR. ZIMMERMAN: Right. So let's see if I know how to do this, or maybe I've lost it now.

JUDGE MURPHY: No, you have it. You were sharing your screen, but you're sharing the actual screen and not the document, so you are now sharing the Webex.

MR. ZIMMERMAN: Yeah. So, okay.

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JUDGE MURPHY: Just find the document.

MR. ZIMMERMAN: We are starting over again.

JUDGE MURPHY: Sure.

MR. ZIMMERMAN: We are trying. Wait a minute. I don't know, Judge, since you have my exhibits, would it be possible for you to, you might get it, we might get it on quicker.

JUDGE MURPHY: So I haven't opened any of yours.

MR. ZIMMERMAN: All right.

JUDGE MURPHY: But is there a particular one?

MR. ZIMMERMAN: Yeah. There were just two of them actually.

JUDGE MURPHY: Okay. Which ones are they?

MR. ZIMMERMAN: I believe 6 and 9. Here we go, here we go. I'm sorry.

JUDGE MURPHY: Did you find it?

MR. ZIMMERMAN: Yeah, yeah, yeah. Okay.

BY MR. ZIMMERMAN:

Q. Mr. Nebre, can you see this comment from the Department of Public Works and Transportation? I'm

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scrolling. With somewhat similar if not identical statements with the September email, excuse me, September 2021 email from Terry Curtis that the Judge showed you a little while ago.

JUDGE MURPHY: Could you just scroll up so that he can see the date? I mean, you kind of went through it pretty quick.

MR. ZIMMERMAN: Yeah. I'm trying to scroll up.

JUDGE MURPHY: Yeah, just use your --

MR. ZIMMERMAN: August 12, 2021. In the file there's this comment that we have seen before from, let's see, okay. From Baltimore County Department of Public Works and Transportation, development review on this Greenspring Manor. Let's see. I think there's an August 6 date. Wait a minute. Response, I guess the response was due August 6th, but your department got it in August 12th.

BY MR. ZIMMERMAN:

Q. Anyway, are you familiar with this comment from your department?

A. Which one in particular?

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Q. The whole thing, just the whole thing.

A. This looks like something, a similar thing that Mr. McCann showed.

Q. Yeah. The Judge showed you the email from Terry Curtis, which I will show you again in a moment, but did you work on anything relating to this comment? Or were these other people? Do you even know that this comment exists?

A. I think this was something we compiled as a group.

Q. Okay. So you worked on it?

A. Yeah.

Q. You remember working on it?

A. Definitely. I mean, it's here, we got it. We got the comments.

Q. Well, I'm asking you, do you remember specifically that you were one of the people who worked on this comment?

A. Yes.

Q. Okay. So you agreed with everything in this comment at the time, or did you not?

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A. I'll say at the time.

Q. Okay. All right. Is there, to the best of your knowledge, is there any other comment on our department stationery updating or later on this case?

A. I thought I provided everything I did to Mr. McCann. So --

Q. Well, that's not my question. Is there any other, can you identify any other document on your department's letterhead with the county executive's name, the acting director's name, you know, the official Baltimore County logo, seal? I mean, any other supplemental or updated document adding to or revising or repealing anything in this document?

MR. ROSENBLATT: Objection.

JUDGE MURPHY: Yeah, go ahead, Mr. Rosenblatt.

MR. ROSENBLATT: Multiple objections to that question, but the way it's phrased with the letterhead and official seal, an also he's asked and answered this to the best of his ability.

JUDGE MURPHY: Right. I mean, Mr. Zimmerman, it's not a fair question. It's not a fair question,

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because first of all, it's multiple pages here, and so he hasn't gone through each page. He remembers working on it as a team is what he indicated. Remember, he's not a paid expert witness, he's a county witness that came in at my request, and so to ask him whether there's some other document that has the county seal with the county executive, I mean, how is he, and he's already said to Mr. McCann in response that there's lot, there were lots of submittals, there were lots of documents. How he supposed to know that?

MR. ZIMMERMAN: Well --

JUDGE MURPHY: I mean, in fairness.

MR. ZIMMERMAN: Well, I'll just say, and then I'll move on. I was just trying to ask him as a county staff member if there was any update, any other document that, you know, is sent to the file really from the department. That's, I didn't think it was that complicated of a question.

JUDGE MURPHY: I mean, I think you're assuming that he has it all memorized, every document that gets sent, and so can you just [indiscernible]

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MR. ZIMMERMAN: All right. I'll move on, I'll move on.

JUDGE MURPHY: Let's get to the question. I sustain the objection.

BY MR. ZIMMERMAN:

Q. And what I wanted to, and now I'm moving onto the email which the Judge asked you about a little while ago. So I think, correct me if I'm wrong, Terry Curtis is kind of the messenger, but not a traffic engineer?

A. Yes, he works for the ZAC, the Zoning Advisory Committee. He is just a representative for that ZAC, but he does not work for traffic.

Q. All right. He also does a lot of work on floodplains, right?

A. That's what mainly is line of expertise.

Q. Okay. So what I wanted to ask you about, paragraph 2, it does refer to three LOS F-rated intersections along Falls Road, correct?

A. Yes.

Q. So does that corroborate that one way or

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another it's relevant to look at all three intersections?

MR. ROSENBLATT: Objection.

JUDGE MURPHY: Mr. Zimmerman, I mean, he was clear at the beginning that Seminary and Falls Road is in a different traffic shed. He was clear. I mean, no matter how many times you ask him, he is still going to say the same thing, which is Seminary and Falls is in one traffic shed, and Greenspring and Falls and Joppa and Falls are in the other traffic shed.

So does it corroborate, I mean, this was a document written by Terry Curtis, and when I asked him about it, he said I can sort of remember, but not, I think he actually said he couldn't remember it, so I'm going to sustain the objection. So [indiscernible]

MR. ZIMMERMAN: I wasn't asking him if --

JUDGE MURPHY: -- a fair question, please.

MR. ZIMMERMAN: I wasn't asking him for a different shed. I was just asking him whether this is indicative of some relevance of the intersection, that's all.

JUDGE MURPHY: Irrelevance of the intersection?

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MR. ZIMMERMAN: Yeah, the F, when you have three LOS F-rated intersections, the third one is obviously Seminary and Falls, and I was just trying to ask if it had some relevance. I wasn't trying to get him to deny or to change his testimony about --

JUDGE MURPHY: His testimony was that I think in the traffic impact study they did request that his, his department did request, did request from the developer's traffic person expert to actually analyze all of them, made him analyze all of them, even though it's not even in the shed.

MR. ZIMMERMAN: Okay. I'm moving on.

JUDGE MURPHY: Okay. Sustained. Thank you.

MR. ZIMMERMAN: I'm moving on, I'm moving on. Okay.

BY MR. ZIMMERMAN:

Q. Just by way of background, so Mr. Nebre, just so we're, this exhibit 9, and the other one was People's Counsel 6. Exhibit 9, I've got the county public records on basic services maps. You're familiar with this, aren't you?

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A. Yes, I am.

Q. Okay. So, and I'm looking at the inter office correspondence dated February 24, 2022.

JUDGE MURPHY: You're going to have to zoom in. You have it, it's really, really, really small. Yep, just hit the plus sign.

MR. ZIMMERMAN: Yeah, let me do that. Sorry.

JUDGE MURPHY: That's all right. You're getting there. I mean, look at you putting stuff on the screen, Mr. Zimmerman. We're making progress here.

MR. ZIMMERMAN: Thank you very much. So --

JUDGE MURPHY: Move over, move it over into the middle of the screen.

MR. ZIMMERMAN: Let's see.

JUDGE MURPHY: See the arrow at the bottom?

MR. ZIMMERMAN: Yeah, got it. Wait a minute.

JUDGE MURPHY: There you go. Hit the arrow. There you go. Zoom in some more. It's still small. All right. You've got to move it over.

MR. ZIMMERMAN: Is that too big?

JUDGE MURPHY: Well, no, but you have to move

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the document to the, there you go. You're getting it.

MR. ZIMMERMAN: One thing at a time here.

JUDGE MURPHY: Unless Rebecca is helping you.

MR. ZIMMERMAN: No, I'm doing this by myself.

JUDGE MURPHY: You're doing it yourself. All right.

BY MR. ZIMMERMAN:

Q. All right. Just by way of background, have you seen this document before, Mr. Nebre?

A. Yes.

Q. Okay. So just, we're scrolling down. Just to kind of, you know, complete or, the information about F-level intersections, there are actually 12, are there not, in the county?

A. I mean, whatever is [indiscernible]

Q. Yeah. I'm not saying there was anything, you know, intentionally wrong or whatever with your previous answer, I'm just trying to get this, you know, I don't expect you to remember it on top of your head.

A. I was trying to just eyeball it from the map.

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Q. We've got 12 in the county, and they're all listed in this People's Counsel 9, and there we see the, well, we've got Falls and Joppa, Falls and Greenspring Valley, and I think if we went up a little, we'd get back to Seminary. Where is it? There it is, yeah. So we've got, whether it's, you know, what impact it has is to be determined, but we have three of the 12 F-level intersections in this area, correct?

A. Yes. You've got, three of them are on the list.

Q. Okay. And I think maybe you were asked, but you don't happen to know how long they've been level F?

A. No, I don't.

Q. All right. And maybe this is supplementing the Judge's question, but you don't happen to know what's in the capital, county's capital budget at this time for any plans to, for the county to do something to improve these intersections?

A. Not that I know.

Q. Okay. Okay.

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MR. ZIMMERMAN: I think that's all I need to share for the time being, Judge.

JUDGE MURPHY: You can just hit stop.

MR. ZIMMERMAN: We can get out of the sharing. Oh, here we go.

JUDGE MURPHY: Just hit stop sharing.

MR. ZIMMERMAN: Got it. Okay. Thank you.

JUDGE MURPHY: Look at that.

MR. ZIMMERMAN: Okay. I'm going to try to get through this as --

JUDGE MURPHY: Hold on. So exhibit 6 and 9, you want to offer those?

MR. ZIMMERMAN: All right, yes, yes. I was going to offer them all together, but yes, 6 and 9, yes.

JUDGE MURPHY: Okay.

MR. ZIMMERMAN: Background public records, yes.

JUDGE MURPHY: Mr. Rosenblatt, any objection?

MR. ROSENBLATT: No. I think 6 is already in, and 9 is public record. No objection.

JUDGE MURPHY: Okay. And I'm sure Mr. McCann has no objection.

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MR. MCCANN: No objection. Thank you.

JUDGE MURPHY: Thank you.

(County Exhibit No. 6 was marked for identification and entered into evidence.)

(County Exhibit No. 9 was marked for identification and entered into evidence.)

BY MR. ZIMMERMAN:

Q. So Mr. Nebre, I do want to ask you, did you work on the Terry Curtis email? Since we know he's not a traffic engineer, who worked on that email, do you know?

MR. ROSENBLATT: Objection. Objection.

JUDGE MURPHY: Mr. Rosenblatt?

MR. ROSENBLATT: That was asked and answered. Actually I almost objected the last time he asked who worked on that, because it was already asked and answered.

JUDGE MURPHY: Who worked on that? I have to be honest, I don't remember that question. I didn't ask it. When I showed it to him, he said I don't remember it, is what I remember him saying. So let me, I'll overrule it.

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Go ahead, Mr. Zimmerman.

BY MR. ZIMMERMAN:

Q. Do you know, do you happen to know who worked on that and gave the information to Terry Curtis to send to the Zoning Advisory Committee?

A. I mean, we send our portion, but his name is the one on, if it's sent by Terry Curtis, he may be the one that compiled it, but I can't say for sure.

Q. Okay. So we know he didn't do it, but somebody else in your office did it, but you don't remember?

A. There's a certain portion that was pertaining to traffic impact studies, or traffic engineering portion, and that was, we gave our comment to somebody, whether that was passed to Terry or did we send it directly to Terry, I don't know.

Q. Okay. And you don't remember at this moment that you were copied on the email?

A. No, I don't.

Q. Okay. But anyway, assuming you got the email, you didn't, you know, raise any objection to it?

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All right.

JUDGE MURPHY: Well, how is he, I mean, he's going to raise an objection to an email that Mr. Curtis sent? I mean, he is, this is the representative for the ZAC comments, when they do the ZAC committee, he is the one, you know?

MR. ZIMMERMAN: All right. I'm going to move on. I get it, I got it.

JUDGE MURPHY: Thank you.

BY MR. ZIMMERMAN:

Q. Now, I gather that from time to time you and/or your department, various people, have reviewed various submissions by the developer's traffic engineer, correct?

A. Yes.

Q. Okay. What I'd like to note is have you or your department produced a written report describing the traffic generation expected, describing each F level intersection, which direction it's F, what the deviation is from the required, you know, standard for waiting, you know, the cycles and so on. Is there any like report

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that's come from your office, other than kind of agreeing with some of the things, or all the things that the developer's traffic engineer is kind of telling you guys?

A. Not like a report, no.

Q. Okay. Can you, do you have or could you give us a chart showing with the three intersections in each direction which is F, which is not F, and what the deviations are, you know, you know, how much each situation exceeds what is required to get it down to D?

BY MR. ZIMMERMAN:

MR. ROSENBLATT: Objection.

MR. ZIMMERMAN: Can you do that so that we would know for each intersection the situation?

JUDGE MURPHY: Mr. Rosenblatt, objection?

MR. ROSENBLATT: He's asking a live witness to generate a chart in the future.

JUDGE MURPHY: I understand. Yeah, Mr. Zimmerman, I mean, I guess you could have asked him that before he came today. I mean, he doesn't have any other document or, I mean, Mr. Nebre, do you know whether that information is available online by any chance? I'll just

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go there with that.

MR. NEBRE: I think when he's asking about deviation, that's, you know, again, that's like a study in itself. But, I mean, so, but we do have information about, you know, where the failing direction is for each intersection. That could be exhibited, but like I said, just like doing it on the fly right now --

JUDGE MURPHY: No, no, no, I wasn't asking you to. Understood. My question is could you, is it available to him.

MR. ZIMMERMAN: Yeah, I didn't mean on the fly.

JUDGE MURPHY: Well, I know. I know you were asking whether he could produce a document at some other point later on in the future. Sustain the objection.

I mean, you can, you know, at some point if you wanted to ask that, I mean, you could certainly, you know, send a request to him.

MR. ZIMMERMAN: All right. So, all right. I don't want to repeat.

BY MR. ZIMMERMAN:

Q. But at this point, at least today, you are

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not able to tell us in which of the four directions or for each intersection the F level is applicable?

A. Yeah, I can't tell at this point.

Q. Okay. So it could be, it could be one in each intersection, it could be all four?

A. Yes.

Q. All right. Okay. And do you have, is there a diagram that you have of the before and after traffic improvements to show these lanes that you were trying to describe?

A. Yes, it's in the traffic impact study.

Q. The traffic engineers? The developer's engineer study?

A. Yes, they show an exhibit on the new lane configuration.

Q. And what is your assumption, what familiarity do you have as to how many lots are proposed, the nature of the dwellings, and what is assumed as to the trip generation?

A. I can't say that off the top of my head. I just, I can only, you know, give like what I, just a

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rough feel. I mean, I think it's about, I thought it more or less 100 units, but, I mean, again, that is all stated in the traffic impact study already.

Q. Do you know how the trip generation numbers or assumptions were assumed or estimated?

A. They were based off the trip generation reports, which is a standard traffic engineer document based on certain land uses, what the projected numbers from a site will be generated.

Q. The Institute of Traffic Engineers Manual?

A. Yes, the ITE.

Q. Okay. Correct me if I'm wrong, but is that manual based on a kind of average of study of many different land uses?

A. Yeah. As they kind of state in their manual what sites they surveyed, how many sites they surveyed, and yeah, it's based off like statistical analysis there.

Q. Could it be 100 sites, or 200? Do you have any idea how many sites?

A. Oh, for certain land uses? Yeah,

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different land uses had a different amount of surveys. In some of them they caution you, just take it with a grain of salt, because they only surveyed a site or two.

Q. How many, do you know how many they would have studied for this type of use?

A. That one, since like a single home residential, that's a pretty common site, so I think there as a fair amount of sites that they can survey for that one. A lot of data points I'd say. So something that, with no caution, I don't think there would be a caution for that one.

Q. Is it plausible that, you know, some types of residential development would be at the high end, and others at the low end, that they're not all in the middle?

MR. ROSENBLATT: Objection.

JUDGE MURPHY: Mr. Rosenblatt?

MR. ROSENBLATT: Just is it plausible?

JUDGE MURPHY: So Mr. Zimmerman, I'll sustain the objection. Can you just rephrase the question?

BY MR. ZIMMERMAN:

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Q. Well, let me ask it this way, Mr. Nebre. In order to get a better or best estimate of the likely traffic generation from the proposed development, would it be appropriate or reasonable to have traffic counts done in the neighborhood at intersections on Joppa Road and/or Seminary that are relatively nearby and see what the actual counts are in that area?

A. It can be done that way. I've seen very few traffic impact studies where they've taken that approach, but we have the trip generation manual for a reason, so, you know, so it could be just taken like, you know, as a standard book. So yeah, I don't know what you're getting at there, but it can be done, but it wasn't, so we don't object to not having it done that way. I mean, all traffic impact studies that we've received have, typically go through the ITE manual unless there's an overwhelming reason not to do so, and with the land use such as detached homes, there's not an overwhelming reason not to use the trip generation manual.

Q. How hard would it be to do traffic counts

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on Tally Ho and Joppa, for example? What is, is it White Manor? You know, White Manor, do you know the intersections into Joppa Road, in the area?

MR. ROSENBLATT: Objection.

JUDGE MURPHY: Mr. Rosenblatt?

MR. ROSENBLATT: How hard would it be to do traffic counts?

JUDGE MURPHY: Mr. Zimmerman, I think maybe just, yeah, the question, I mean, my understanding is that Mr. Nebre's division, they just do traffic counts. I thought he said in his direct at the intersections for, if it's D, E and F, that's where they do traffic counts. They don't just go to every street near the development, right? Am I right, Mr. Nebre?

MR. NEBRE: Yes. For our, our typical traffic counts, we count all signalized intersections in the county, and it is either a one-year cycle or a three-year cycle, depending on the grades.

Judge, may I interrupt here? I'm sorry to say, I was not expecting to be here this long, and I have to pick up my son soon, so I don't, if there's like any

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pressing issues, I don't know like how long I'm going to be expected to stay here.

JUDGE MURPHY: Gosh, no problem. What time do you have to be there?

MR. NEBRE: I typically leave like two minutes ago.

JUDGE MURPHY: Two minutes ago? All right. Mr. Zimmerman --

MR. ZIMMERMAN: I've got two or three more questions, and then I'm done.

JUDGE MURPHY: Make them relevant to this case.

BY MR. ZIMMERMAN:

Q. At the risk of whatever, given that this is a special variance situation, do you think it's worth reconsidering whether actual traffic counts, you know, should be done to see whether the IT manual is accurate?

A. For me, no, I don't think so. I mean, we know that there's going to generate some sort of traffic. The question is how much traffic will be generated, so I don't think like a special case count needs to be done for this for traffic generation purposes.

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Q. Okay. And you don't happen to remember the number that the developer's engineer is assuming based on ITE?

A. No, I don't.

Q. Okay. Final question. Your department doesn't look at the residential performance standards on Mays Chapel or on traffic or anything like that. You don't look at the zoning reg section 260 standards?

A. No, not when I review the traffic impact studies, I don't.

Q. Okay. any further comment on whether a Mays Chapel connection would to some extent reduce the traffic going into the F level intersection at Joppa and Falls?

MR. ROSENBLATT: Objection, asked and answered.

JUDGE MURPHY: Yeah, he already answered that, and yeah, so any other comment, not necessary. All right.

MR. ZIMMERMAN: That's it. Judge, that is all I have. Thank you.

JUDGE MURPHY: Thank you, Mr. Zimmerman.

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MR. ROSENBLATT: Judge, I had two questions that I think will take one minute.

JUDGE MURPHY: Wait, I thought you had no questions.

MR. WYATT: Judge Murphy, if I may. I actually have a few questions of this witness. I may be more than a few minutes. I don't know how you would like to handle that.

JUDGE MURPHY: Okay. So I, okay, hold on one second. Mr. Rosenblatt, I thought you didn't have any questions.

MR. ROSENBLATT: I didn't have any questions based off your questions, but I just have a few that I think will clarify points, and as the movant in the zoning case, we are typically given a last word so to speak, so --

JUDGE MURPHY: With a county witness?

MR. ROSENBLATT: Yes.

JUDGE MURPHY: Would not a county witness, no, and Mr. Nebre needs to actually leave. He was my witness today, and so Mr. Wyatt, I mean, again, you were here as

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an interested neighbor, and so unfortunately, I mean, I don't want to keep Mr. Nebre any longer.

He has already been here for an hour and a half today. I'm not sure why we started by the way at 1:30, we could have started at 10:00. So I can't, I'm not going to keep Mr. Nebre. He has to go pick up his son, and so if you wanted to have him come back at some point when it gets to your case, if you wanted to recall him, that's fine, but I'm not going to make him stay here today. Mr. Nebre, are you there?

MR. NEBRE: Yes, I am.

JUDGE MURPHY: I know you are. All right. Thank you very much, and also Ms. Daniels, she is also free to go. So thank you both for coming.

MR. NEBRE: All right. Thank you.

JUDGE MURPHY: Appreciate it.

MR. WYATT: Your Honor, just so I'm clear, you're releasing the witness without the full ability of participating panelists?

JUDGE MURPHY: No, not at all. You can, so again, you know how this works, you know how this works.

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So what we're doing is this is, these are the county witnesses. The county witnesses were, you know, giving information about whether or not there's unresolved conditions or comments on a development plan.

You can certainly call him back as a witness at some point when the Protestants go forward. We haven't even gotten to the Developer's case, as you know. So next we're going to do the developer's case, then we're going to have probably Mr. McCann's case, then we're going to have Mr. Zimmerman's case, and certainly, you know, you can absolutely call him back.

If you want to do that, you can certainly do that, okay? So you have every opportunity to. I mean, he's available, he's a county witness. There's no problem with doing that or calling any of the other county witnesses. So yeah, but I don't want to keep Mr. Nebre when he has to go pick up his son and had no idea he would be here for an hour and a half.

MR. WYATT: I understand. I didn't know his schedule, and I simply wanted the opportunity that everyone else had today while he was here at the hearing

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to ask a few simple questions. I don't intend to disrupt the proceeding, I'm not going to be asking every single witness questions, but he was a very important witness.

JUDGE MURPHY: Sure.

MR. WYATT: Because he is a traffic witness, he's the county traffic witness, so I just want to be clear. I shouldn't be required to call him, I should have had the opportunity I believe today to ask questions subject to his scheduling. But so be it. I registered my objection or my issue with Your Honor.

JUDGE MURPHY: No problem. I had no idea he had to leave either. He just, did you hear him speak up and say that at 3:00 he said I was supposed to leave two minutes ago to pick up my son.

And so, and typically what happens in these cases is DPR comes in and testifies for the traffic department. That's really the way it customarily works in development plans. I felt like we really needed to in this case bring him in so we were all kind of better off for that. So, but there's no problem if again, in recalling him as a witness if you have questions you want

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to ask hm, and so we can certainly do that, okay? So, I mean, you'll have every opportunity. I just want to make sure that's clear for the record.

Okay. We are now, Mr. Rosenblatt --

MR. ROSENBLATT: So, Judge, there's one more government, Erin Kuhn from SHA is here. I was going to ask, could we just take a 2-minute break, and then she will be my first, she will be the last government witness, or first of mine, however you view it, and then we'll jump into our case.

JUDGE MURPHY: Sure, absolutely. So we'll do, like how long do you need? Like 10 minutes, or 5 minutes?

MR. ROSENBLATT: Five minutes is fine.

JUDGE MURPHY: All right. We'll take 5 minutes. I'll pause the record.

MR. ZIMMERMAN: Judge, can I say one thing? So you had mentioned opening statements or whatever. I'm willing to defer my, I was going to do a statement, but in order to get things moving, I'd be glad to defer that until, you know, until my case, so we get, so we keep on

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moving.

JUDGE MURPHY: Sure. And Mr. Rosenblatt, I guess you're going to defer, if you had an opening statement, I guess --

MR. ROSENBLATT: I'm sorry, I didn't mean to cut you off. I also wanted, want to give an opening statement. I was going to do it after, because it's a government witness and I'm trying to get her back to her day as soon as I can, but after that it would be sort of the official opening of our developer witnesses, and I'll do it at that time.

JUDGE MURPHY: Okay. Sounds good. All right. I'll pause, did you say 10 minutes? Is that what you said?

MR. ROSENBLATT: Five minutes is plenty.

JUDGE MURPHY: Five minutes. Okay. Thank you.

MR. ROSENBLATT: Thank you.

(Whereupon there was a brief recess)

JUDGE MURPHY: Back on the record after a break. And Mr. Rosenblatt, you wanted to call a witness from the State Highway Administration I think you said?

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MR. ROSENBLATT: Yes, that's correct. Her name is Erin Kuhn, K-U-H-N. I see her as a participant.

JUDGE MURPHY: Okay. Would you raise your right hand, please?

Whereupon,

ERIN KUHN

A witness of lawful age, after being duly sworn to tell the truth, the whole truth and nothing but the truth, testified as follows:

JUDGE MURPHY: All right, Mr. Rosenblatt. And again, just for the record, we're just going to come back and do opening so that we can have Ms. Kuhn testify first and move her out of here so she can get back to work.

DIRECT EXAMINATION

BY MR. ROSENBLATT:

Q. Thank you. Good afternoon, Ms. Kuhn.

A. Good afternoon.

Q. With who are you employed, and what is your position?

A. I work for the Maryland Department of Transportation, State Highway Administration. I am the

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Assistant District Engineer for Traffic at the District 4 office, which covers Baltimore and Harford County.

Q. Is that the highest position in traffic a the district level?

A. Yes.

Q. And how long have you had that job?

A. Fifteen years.

Q. And can you just in a couple sentences tell the Judge what your duties and responsibilities are?

A. Responsible for safety and operations along the state highways in Baltimore and Harford County.

Q. Okay. As part of your job, does your district review traffic studies and development plans and zoning petitions and comment on various proposals in Baltimore County?

A. We do, as far as the traffic impact studies and development plans. Not necessarily the zoning issues.

Q. Let's talk about this project, Greenspring Manor. Did your department review a traffic study and analysis back in December of 2020?

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A. Yes, we did.

Q. And I'm going to share just a series of exhibits with you starting with, and everyone I apologize for the numbering, but we had pre-numbered other exhibits, and the hearings get out of order. So I'm showing you Developer's exhibit 15, and this is a letter from MDOT/SHA, dated January 21, 2021 to Mike Lenhart of Lenhart Consulting about this project. Do you recall this letter, Ms. Kuhn?

A. Yes.

Q. And at this time in January of 2021, what was MDOT/SHA's position with respect to the traffic impact analysis for this project?

A. Let me just make sure I'm looking at the correct letter. Yes, this was our approval letter where we approved the traffic impact study.

Q. Okay.

A. And indicated that an access permit would be needed for the improvements that are, would be required on Falls Road at Joppa Road.

Q. Okay. And so did this study that was

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approved at this time, did it include the proposed improvements to the intersection of Joppa Road and Falls Road that we heard about? I'm showing you Developer's exhibit 16, the before/after.

A. Yes, it did. That appears to be the improvements that were shown in the traffic impact study, which we approved.

Q. And I'll show you what has been marked as Developer's Exhibit 17, and this is a letter from MDOT/SHA dated August 4, 2021 to Lloyd Moxley, the development manager for Baltimore County, and ask you at this time did SHA/MDOT take a position as to the request for development plan approval in this case? I'm going to zoom in, given the bad copy.

A. And our response was that we had no objection to the development plan approval, which we usually do not since we don't approve or deny development, but, you know, we were reviewing the roadway improvement plans.

Q. And I guess likewise I'll show you what's been marked as, I just closed out of it. Bear with me.

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MR. MCCANN: Adam, while you're doing that, sorry to interrupt, but listen, I have no problem if we just introduced these exhibits that Adam has already sent me, which are 17 through 22. I'm sorry, 15 through 22, they're all State Highway documents. I'm not so sure why we need this witness to testify, she's not the author of any of these in particular, but they are public records nonetheless, so --

JUDGE MURPHY: He may want her go go through them just to, I mean, as part of her testimony, so, but you don't object to 15 through 22, so they will be admitted. Mr. Zimmerman, any objection to those?

MR. ZIMMERMAN: I haven't seen them, but I have no objection.

JUDGE MURPHY: Okay.

MR. ROSENBLATT: They were emailed to you before the hearing, Mr. Zimmerman. Just, you have them in your inbox.

MR. ZIMMERMAN: I guess I haven't seen the email. All right. Anyway, I have no objection.

JUDGE MURPHY: All right.

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(Developer Exhibit Nos. 15-22 were marked for identification and entered into evidence.)

JUDGE MURPHY: Go ahead, Mr. Rosenblatt.

MR. ROSENBLATT: Okay. I'll move as quickly as I can, but we are going to go through these.

BY MR. ROSENBLATT:

Q. Ms. Kuhn, I'll just ask you a question or two about each one. So turning to Developer's Exhibit 18, this is a letter dated September 13, 2021 from SHA to Kristin Lewis [phonetic] in the County's permits department, and ask you at this time did SHA express an opinion as to the petition for special hearing for special variance that is sought in this case.

A. No, we did not.

Q. Did you have any, did the department express any objection to the approval of the special variance plan?

A. We did not. We normally would not since that's really a county issue.

Q. Okay. Now, following these comments from the last being September 2021, did there come a time

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where the developer's consultant proposed to make an additional physical improvement to the intersection of Greenspring Valley Road and Falls Road?

A. Yes.

Q. I'm going to show you what's been marked as Developer's Exhibit 19. If you can see it, I can zoom in if needed, but does the restriping/reconfiguration depicted in Developer's Exhibit 19, is this the proposal that was submitted by the Developer's consultant to MDOT/SHA for review?

A. Yes, that's correct.

Q. And I show you what's been marked as Developer's Exhibit 20. This is a letter from MDOT/SHA dated March 7, 2022 to the traffic consultant for the developer. Did MDOT/SHA recommend approval of the physical improvements that were proposed to Greenspring Valley and Falls Roads?

A. No, we did not.

Q. Did the Department express any objection to the improvements that are proposed at Joppa Road and Falls Road?

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A. No, we supported those improvements at Joppa and Falls, but not the proposed improvements at Fall and Greenspring Valley.

Q. I'm going to turn your attention to the top paragraph on the screen right now and ask you, can you explain what MDOT/SHA's position is as to the impact that the proposed improvement at Joppa and Falls will have on the corridor. In other words, from Joppa Road up to Seminary Avenue on Falls Road?

A. We had asked originally when we first got the traffic impact study that all three signals at Seminary, Greenspring Valley and Falls be analyzed since they do all operate in a coordinated signal system together, and so as far as the improvements to be made at Falls and Joppa, those studies showed with those improvements that that would improve the corridor operations, it would reduce the delay, specifically reduce travel time through the corridor with the improvements that are being made at the Joppa Road intersection.

Q. Okay. You testified that the studies show

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that. Does MDOT/SHA agree with the report as to the impact that this will have on travel times along the corridor?

A. Yes, we do.

Q. Did the developer following issuance of this letter try again to make a submittal arguing to make the physical improvements that were proposed to Greenspring Valley and Falls Road?

A. Yes.

Q. And I'll show you what's been marked as Developer's Exhibit 21. This is the letter dated May 9, 2022, again from MDOT/SHA to traffic consultant for the developer, and again, did MDOT/SHA, did they support the proposed improvement at the intersection of Greenspring Valley Road and Falls Road?

A. We did not support the proposed improvement at Greenspring Valley, and at Falls and Greenspring Valley, we do support the proposed improvement at Falls and Joppa. We did not feel that the proposed improvement at Falls and Greenspring Valley would be beneficial, and again, we noted that travel

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times would be reduced through the corridor with just the improvements at Joppa Road.

Q. I'm going to ask you to just explain in a little more detail, and I've zoomed in on the paragraph of this letter that starts with during the morning peak hour. Can you just explain to the Judge what MDOT/SHA's position is on the impact in terms of timing that the proposed improvements would have on the corridor? In other words, from, on Falls Road from Joppa Road up through Seminary Avenue?

A. Well, the proposed --

MR. MCCANN: I'm going to object. I'm sorry to interrupt. I'm going to object, Judge.

JUDGE MURPHY: Objection?

MR. MCCANN: You know, basically on foundation. Number one, Ms. Kuhn is not the author of any of these letters that we've been looking at. Again, I don't mind them coming in, but she's being asked to talk substantively about the content of them, and now being asked for the first time to state the official position of SHA on issues that apparently are reflected in these

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letters.

I don't think there's been any foundation for either her involvement in any of these letters or the review of any of the reports, nor any foundation for her authority to speak on behalf of SHA. So I don't want to prolong things, but I don't want to get too far in this.

JUDGE MURPHY: Okay. I'm going to overrule the objection. She has actually indicated that she recognizes the document, she's here to speak on behalf of MDOT and SHA, and --

MR. MCCANN: I know that [indiscernible]

JUDGE MURPHY: -- and I'd actually like to hear what she has to say. Thank you.

MR. MCCANN: It is highly unusual to have, and I'm not sure why we're in Mr. Rosenblatt's case for this, this is the first time I've ever had a representative from State Highway testify as part of agency part of the case. So, but I guess that's not an objection, but I didn't hear her say she's here to testify on behalf of [indiscernible] is that what she said?

JUDGE MURPHY: Yes, that's what I heard her

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say. She is here on behalf of them, and she's from the department, and I want to hear what she has to say, so overruled. Go ahead.

THE WITNESS: Okay. The question was?

BY MR. ROSENBLATT:

Q. Just to state it more briefly, Ms. Kuhn, I have zoomed in on the paragraph that starts with during the morning peak hour of Exhibit 21, and I'm asking you to explain MDOT/SHA's position as to what impact the improvements that are being made at Joppa and Falls will have on the timing, the travel time on the corridor along Falls from Joppa up through Seminary Avenue.

A. Yes. The improvements on Joppa Road, adding the additional lanes on Joppa Road. When you add an additional lane through an intersection, it helps get more traffic through the intersection more quickly by getting more traffic through Joppa Road sides of the intersection more quickly, and that would mean that they would need less time in the signal, so we could give more green time to Falls Road, similar to what Chris has Asid, so Falls Road is our main concern at the state, that's

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our main corridor that we want to maintain traffic flow, so if we can give more green time to Falls Road, that is actually going to improve the corridor, because these three signals are timed together, and, you know, one intersection can actually hold up another intersection. So more time to Falls Road gets more traffic through along Falls Road, and as shown in the study, will reduce the travel time through the corridor, and these numbers were pulled directly from the study which analyzed the corridor and looked at travel times though the corridor both with and without the improvements.

Q. And your department as you previously indicated, have you approved the study?

A. Yes, we have.

Q. Okay. And in the next paragraph, just to ask you a couple questions about this. The letter reads the analysis contained in the report show that the intersections do not operate with failing levels of service. What methodology is that speaking to, if you know?

A. The methodologies used in the report were

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critical lane volume and highway capacity manual, current highway capacity manual.

Q. So under those two methodologies, are the intersections along Falls Road going to operate at a failing level once the improvements at Joppa and Falls Road are made?

A. Which intersections? All of them?

Q. Yes.

A. The Greenspring Valley Road with the highway capacity manual method and CLV is not currently failing, and will not be in the future. I believe Joppa Road is shown as level of service, about an E, which is close enough to failing. Even though it's not an F, but it operates at an E, the, with the improvements made, it will improve. I'm not sure if that brings it to, up to the next level, but it does improve it. I'd have to check.

Q. Okay. And, I'm sorry, I didn't mean to cut you off. Did you have anything else to say about that statement?

A. I think that it, that improvements do

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bring it from an E to a D, and actually yes, according to the study, that is the case.

Q. All right. And one final exhibit, I'm going to show you what's been marked as Developer's Exhibit 22, this is a letter from MDOT/SHA dated June 10, 2022 to the developer's consultant. Did there come a time after the last exhibit we looked at when the consultant for the developer reached out to discuss the potential retiming of the traffic signals along the Falls Road corridor?

A. Yes.

Q. And did, does this letter confirm, or strike that. Can you explain to the extent you haven't already, what will take place once the physical improvements are made at Joppa and Falls with respect to retiming of the intersections on the Falls Road corridor?

A. Again, since the three signals do operate in a coordinated signal system, we don't just look at one at a time or retime one signal and not the others, we have to look at the whole corridor, and so if changes are made geometrically to an intersection, we are going to

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look at retiming it. In this case, we would look at retiming all three of these intersections, and that I believe is what this letter is saying, that once the improvements are made, then we will go out and retime the three intersections.

Q. Will that help to sort of maximize the benefit of the physical improvement made at one intersection?

A. Yes. And generally timing is developed and implemented, and signal technicians will actually go on site and make adjustments in the field after the improvement is made to make sure that it's functioning well.

Q. And I guess one final question. What is SHA's position with respect to the impact, positive or negative, that the proposed development and the proposed improvement to Joppa and Falls Road will have on the Falls Road corridor?

A. The proposed development will increase traffic, but the proposed improvement will improve operations and flow along the corridor.

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Q. And that last statement about improvement of, along the corridor, does that include even with the new trips proposed by this development?

A. Yes. It would be, the travel times will be reduced from existing and background with the new development and the improvements.

Q. Thank you.

MR. ROSENBLATT: I have no further questions.

JUDGE MURPHY: So ma'am, before I ask the attorneys, I just want to confirm what you said.

EXAMNATION BY THE COURT

BY JUDGE MURPHY:

Q. What I thought you said was the level of service for Joppa and Falls is currently, SHA rates that at an E? Is that right?

A. Yes.

Q. Currently. And then you were, your testimony was I thought you said that, first you said you were unsure whether it brings it to a level D, but then you changed that to a D, is that what you said, or not?

A. I did. I pulled up the traffic study and

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did confirm that the study shows that it will go from an E to a D with the improvements.

Q. And the methodology that the SHA uses, is that different from the day the county rates intersections?

A. Yes, it is.

Q. Okay. I know the county we talked about Nebre today that used the loaded cycle methodology and the county, so the state does not use that method?

A. We do not. That is an older highway capacity manual method I think from 1969, and we use the latest version of the highway capacity manual, as well as critical lane volume.

Q. Okay. And let me just ask one more question about Greenspring Valley and Falls Road. Your testimony was that the SHA did not recommend those improvements, and why was that?

A. The improvements we did not feel would be beneficial. It was recommending pretty much a 30-foot double left turn lane, a 30-foot long lane, while you can, calculations might show an improvement, I don't see

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that really being used and being beneficial, especially when that if you make a double left from Greenspring Valley Road to northbound Falls Road, there is actually two lanes on northbound Falls Road, but the one lane drops, it goes down to one lane.

So why would you want to use that lane knowing that you're going to, that you're going to lose the lane right after the intersection?

Q. So the lane, there's one that goes, they both go left, and then one goes left and straight into Greenspring Station, right?

A. So right now there's just a single left-turn lane from Greenspring Valley to Falls Road. The proposal would be for widening a little bit so that you would have two left turn lanes. Actually there are two receiving lanes on Falls Road, so we could do that, but again, the left turn, the proposal would have a left turn lane that could hold one, maybe two cars, and then you are turning into a lane on Falls Road that then drops a couple of hundred feet from the intersection.

Q. Oh, that's right. Yeah, I remember now,

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yeah, it's that left turn. When you're going north on Falls before you get to Seminary, you are right, it's kind of like a merge lane is what I --

A. It's a merge lane. There's two lanes when you're approaching, northbound approaching Greenspring Valley Road. You can go straight through the intersection, but then as soon as you get through, that right lane, you're going to see, you know, right lane ends signs.

Q. Right.

A. And you have to get out of that lane. So that would be where we'd be double left turning people into a lane that's going to end.

Q. Got it. Okay.

A. You know, most people who know that, aggressive drivers might use that lane, but others will not want to use that lane.

Q. Got it. Okay. Thank you.

JUDGE MURPHY: All right. Mr. McCann, questions?

MR. MCCANN: Yes, thank you.

DIRECT EXAMINATION

BY MR. MCCANN:

Q. Good afternoon, Ms. Kuhn. How are you?

A. Good. How are you?

Q. Good, good. Thank you. I take it you were not issues a subpoena by Mr. Rosenblatt's office to appear today, is that correct?

A. That is not correct. I was issued a subpoena.

Q. Oh, you were?

A. Yes.

Q. Did you speak to Mr. Rosenblatt prior to your testimony today about your testimony?

A. Yes, I did.

Q. Okay. You mentioned that, and I certainly recognize your name, I've seen your name before on various SHA documents, but you said that you're an assistant district engineer, correct?

A. Yes.

Q. And then there is, the district engineer is Wendy Walcott, [phonetic] correct?

A. Yes, she was. She has retired.

Q. Okay. Has anybody replaced her?

A. Sutapa Sumanta [phonetic] is now the acting district engineer.

Q. Okay. So when you indicated, and maybe I just missed it, that you are here to testify on behalf of State Highway Administration, where does that authority come from? In other words, did you check with one of your superiors? Or the appropriate person to confirm that you could officially state the position of State Highway Administration this afternoon?

A. I did check, and I did confirm, and speak with our attorneys as well.

Q. And I don't want to get into your attorney conversations, but my question is not whether you spoke to them about testifying, my question is whether you spoke to them about the issue of you being authorized to speak on behalf of SHA.

A. They were fine with me being here to explain the previously approved letters that were written by my office.

Q. Yep. And, you know, on that point, I didn't see your name as the drafter of any of these documents, exhibits 15, 17, 18, 20, 21 or 22. Am I correct that you did not draft those letters?

A. No, I did write, I did approve all of them, and I personally drafted at least one of them.

Q. You approved all of them? In what way?

A. Yes.

Q. In what way?

A. Access management is under me, so all letters before they go to the district engineer for signature, they come through me and I have to review and approve them before they go to the district engineer.

Q. Okay. Got it. But it sounds like you, even though you didn't sign them, you reviewed and approved the letters, but did you review all of the submittals from the developer's engineer in response to which these letters were issued? Did you conduct that review?

A. I had my staff that reviewed the traffic impact study. I did end up having to personally review

the traffic impact study after there was quite a few questions that came up about what was happening with it.

Q. Okay. So you reviewed the traffic impact study?

A. Yes.

Q. Anything else?

A. No.

Q. Okay. And when you say the traffic impact study, as I understand it, there's a lot of documents in this case, but that's the traffic study that's dated December, 2020, correct?

A. The December, 2020, and then there was the supplement that was issued earlier this year.

Q. Okay. According to exhibit 20, it was dated January 18, 2022. Does that sound right?

A. That sounds about right.

Q. All right. I'll show you the letter. But anything else that you reviewed as opposed to maybe your staff other than the original impact, I'm sorry, traffic impact study and that supplemental study that's referenced in exhibit 20? Did you review anything else?

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A. Not me personally. My staff does get a lot of the site plans, things from the county to review, which we generally respond with, we either ask for a traffic impact study or indicate that there's no impact to state roads and we don't have comment, but we do get sent those to review.

Q. Okay.

MR. MCCANN: Judge, could I share real quick? Thank you. Okay.

BY MR. MCCANN:

Q. Ms. Kuhn, just a couple questions about the documents themselves. So this is, I'll scroll back so you can see it a little bit. This is Exhibit 18. Do you recall you testified about that document?

A. Yes.

Q. Okay. And in this letter you say, Ms. Walcott says rather than we have no objections to the approval of the special variance plan subjected to the condition that the developer was required to obtain an access permit, et cetera. Do you see that?

A. Yes.

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Q. Okay. So it sounds like based on your testimony thus far, number one, you did no review personally any special variance plan or special variance relief that was sought by the developer in this case?

A. I did not personally, no.

Q. Okay. And I think you've also candidly acknowledged with respect to zoning issues your office would not and did not in this case review this plan for compliance or, with those, with any zoning relief, correct?

A. That's correct. We do not review for that. That's why most of the time we have no objection to these zoning type issues, because we don't have authority in that manner.

Q. Correct. In fact, when you do comment on development plans, I think you were also candid about this. You said that you don't approve the plans or disapprove them. In that regard, your authority, State Highway's authority is strictly limited to whether or not to grant an access permit or not. Is that fair?

A. We comment on whether an access permit is needed, because any work within the state right of way needs an access permit, and we will comment on whether we would like to see a traffic impact study for review. Those are the things we comment on.

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Q. Okay. And then, so getting back to the question about zoning. In this case, you've talked about level of service, at least how State Highway looks at level of service. You did not look at level of service as the county reviews level of service. Is that a fair statement?

A. That's correct.

Q. And so you, strike that. Let me show you another exhibit. This is Exhibit 21. So this is, again, a letter drafted, or signed by Wendy Walcott anyway, and this is, it looks to be like different submittal from the developer than the two that you said you reviewed. It's a letter dated April 19, 2022, that's the subject of this letter, correct?

A. Yes.

Q. Okay. And so you did not review this point by point response from Mr. Lenhart that is the

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subject of this letter, which is exhibit 21. Is that fair?

A. Actually, I did.

Q. Oh, you did? Okay. But I think you've said, and maybe I heard you wrong, but there's this discussion in this paragraph about SimTraffic, and I'll just highlight it, blow it up a little bit so you can read it better, these two paragraphs here. There's a discussion here about SimTraffic. First of all, what's SimTraffic?

A. SimTraffic is a modeling software that functions along with Synchro and SimTraffic actually are two softwares that work together. Synchro determines signal timing and level of service, and SimTraffic actually takes that information and will model it, and you can see the cars actually moving and look at visual ques and issues with traffic.

Q. Yeah. So when I see SimTraffic, that word, I see the word simulation in there. Is that pretty much what it is? It's a --

A. Yes.

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Q. So you actually, if we were to look at it, if we had the opportunity to look at it, we could actually look at how the cars are moving, a model of how the cars are moving under certain conditions based on parameters that are inputted, correct?

A. That's correct.

Q. Okay. I think you said, correct me if I'm wrong, but this discussion about the queuing and travel time and these are, this is information that was pulled directly from Mr. Lenhart's study, correct?

A. Yes.

Q. So in other words, you personally did not go back and confirm whether any of these conclusions were or were not correct, but you reviewed them in Mr., it sounds like you reviewed them in Mr. Lenhart's report and approved them, correct?

A. That's correct.

Q. Okay. Then one more exhibit, exhibit 22. I'll blow it up. This is the last exhibit, and it pertains to some signal timing that State Highway Administration will undertake, correct?

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A. Correct.

Q. So once these improvements are made, if they are made, years from now State Highway Administration will look at the timing of these lights and will I guess since you own the lights, you'll be able to adjust the timing such, in such a way to, as you put it, increase green time as much as possible for the north and southbound lanes?

A. That's correct.

Q. Okay. But sitting here today, that timing hasn't been done? It can't be done, right?

A. It could be done on paper, but we're not going to do that unless we know an improvement is going to be made, and it would need to be then modified in the field when [indiscernible]

Q. Yeah. When you say, I'm sorry. When you say could be done on paper, you mean there's an analysis that you could do with the existing improvements assumed, I mean, with the proposed improvements assumed that would give you a basis to calculate what the timing should be?

A. Yes.

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Q. Okay. But that hasn't been done?

A. No.

Q. Okay. Stay with me one second.

MR. MCCANN: That's it. Thank you, Ms. Kuhn, I appreciate it.

JUDGE MURPHY: All right. Mr. Zimmerman, any questions?

MR. ZIMMERMAN: Yes, I do. Thank you.

DIRECT EXAMINATION

BY MR. ZIMMERMAN:

Q. Ms. Kuhn, how long has there been a difference between the state's methodology on F level intersections and the county's?

A. For as long as I have been here, 29 years.

Q. Okay.

A. Or longer.

Q. So your department hasn't tried to force the county to change to your methodology, has it?

A. No.

Q. Okay. All right.

MR. ZIMMERMAN: Maybe Mr., I hesitate to say

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this, Mr. Rosenblatt could share the photo of the Falls Greenspring Valley intersection.

MR. MCCANN: I could do that, since I have the sharing --

MR. ZIMMERMAN: Mr. McCann.

MR. MCCANN: Is that an exhibit?

MR. ZIMMERMAN: It was shown, it was shown --

SPEAKER: I think it's 19.

MR. MCCANN: Thank you. Bear with me one second.

BY MR. ZIMMERMAN:

Q. Okay. So we are looking again at that exhibit. Is that the only improvement that the Lenhart Engineering suggested, adding a left turn lane from Greenspring Valley Road, left onto North Falls Road?

A. Yes.

Q. Okay. And if I understand your testimony correctly, your department rejected it because of safety concerns?

A. We rejected it, we did not feel that it would be beneficial for safety or operations.

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Q. I mean, whenever there is merging traffic, that is an increase of the potential for hazard, correct? Something like that.

A. Yes.

Q. Okay. Okay. And there were no other even hypothetical improvements that would, were proposed for that intersection or considered, is that correct?

A. Not that I recall.

Q. Okay. And anyway, it was mentioned there were two different proposals. Were they basically the same? Can you give us a recap of what difference, if any, there were on the proposals that your department rejected?

A. I don't think there were two different proposals. It was proposed, the same basic improvement was proposed to us twice.

Q. He was trying to convince you.

A. Yes. We rejected it, and they submitted more information, and we rejected it again.

Q. Okay. It shows your independence of thoughts, right? All right. Let me ask you this. If I

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read some stack of material correctly that's in the file, there was also a proposal to improve the Falls Road/Seminary intersection, was there not?

A. I don't think there was. I believe we suggested that that be looked at.

Q. You don't recall there's some correspondence rejecting any of that? A proposal to add a left turn lane from St. Paul School north?

A. I don't recall seeing that with this development.

Q. Okay. Let me ask you about the assumptions on trip generation. What have you assumed the trip generation would be from this development?

A. Trip generations would be from the IT trip generation manual.

Q. Well, do you know what the number is that's assumed?

A. I don't. And actually, we have multiple offices at State Highway that review traffic impact studies, so the trip generation, there's two other offices that would be looking more closely at that than

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mine. That is not an area of my expertise. Mine is more in the analysis of the actual [indiscernible] that are coming through the intersection, and the needs of an area.

Q. Okay. So there's somebody else in your department that would know what the assumed trip generation is, or somebody looked at it, is that correct?

A. Yes, yes.

Q. But you don't happen to know the number?

A. I do not.

Q. Okay. You were here when I was questioning Mr. Nebre, correct?

A. Yes, I was.

Q. So what do you think of my suggestion that, to get a more accurate assessment of trip generation, it would be reasonable to do actual traffic counts at intersections, you know, going from current existing subdivisions into Joppa Road and Seminary Avenue?

JUDGE MURPHY: Hold on.

MR. ROSENBLATT: Objection.

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JUDGE MURPHY: Yeah, Mr. Zimmerman. Mr. McCann, you're showing us your emails right now. Thank you. I just wanted to make sure you knew that we were seeing your emails.

MR. MCCANN: Sorry, sorry.

JUDGE MURPHY: I'm sure you don't want us to. Mr. Zimmerman, how could she possibly answer that question? Are you asking whther she, you're asking for her opinion about whether the county should conduct traffic counts on these off streets when Mr. Nebre said that the county only conducts the traffic counts at the intersections? Is that what you're asking her?

MR. ZIMMERMAN: I'm asking her as an expert whether to get a plausibly more accurate assessment of trip generation that it would be reasonable to do traffic counts at the various intersections existing into Joppa Road and Seminary Avenue. It doesn't matter what Mr. Nebre said, I'm asking her what her view is as to, you know, best or better ways than maybe the IT manual to look at a specific situation and get a more accurate, updated trip generation assessment, especially in an

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important case. That's all.

JUDGE MURPHY: So are you asking whether SHA should conduct those traffic counts?

MR. ZIMMERMAN: No, no, I'm not asking that. I'm asking whether for somebody to do traffic counts, whether the developer, the county, it doesn't matter who, whether specific traffic counts are, stand a good chance --

JUDGE MURPHY: Should be done.

MR. ZIMMERMAN: -- of giving a more accurate assessment than just reading off the ITE manual. That's all I'm asking.

JUDGE MURPHY: All right. So do you understand the question, ma'am?

MS. KUHN: Yes.

JUDGE MURPHY: Okay.

MR. ROSENBLATT: I have the same objection.

JUDGE MURPHY: Okay. Overruled. Go ahead.

MS. KUHN: Okay. Well, the trip generation manual, the way that it is developed is by getting traffic counts at various sites. So, for example, a

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subdivision that has 100 homes or 200 homes, it takes samples of traffic counts at many different subdivisions with varying numbers of units, and as Chris I think had said, there are likely a lot of samples that have been taken at subdivisions, so the numbers in IT are probably pretty good.

To get a really good sample, if, I believe this was 62 homes, and if there's some subdivisions with similar numbers of homes and similar sized homes in a similar area, that could be counted to verify that the trip generation numbers are good, that could be useful, but I believe there's already a lot of information in the ITE, and to find specific comparisons that match exactly for this development might be difficult.

Q. Okay. Well, in your answer you've mentioned similar size subdivisions, but if you had a subdivision of 100, for example, couldn't you do the counts and then proportionately, you know, use some algebra to, you know, get an equivalent number?

MR. ROSENBLATT: Same objection.

MS. KUHN: Yes, and that's how it's done.

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JUDGE MURPHY: Overruled, the objection. Thank you.

BY MR. ZIMMERMAN:

Q. Okay. And does the IT manual indicate any degree of error or range, a variation that it assumes that there could be from the averages?

MR. ROSENBLATT: Judge, I'm sorry, I don't want to keep objecting, so I'm going to make an overall continuing objection. This is People's Counsel for Baltimore County who is now taking everyone's time who is listening to question the ITE manual, and this is an issue that is far outside of his code and charter authority to patriciate in cases, and we do not feel this is an appropriate either use of time, or something that is within his legal authority to raise in this case.

JUDGE MURPHY: Okay, well --

MR. ZIMMERMAN: We're dealing with a special variance, which is a zoning issue.

JUDGE MURPHY: Mr. Zimmerman?

MR. ZIMMERMAN: Sorry.

JUDGE MURPHY: Yeah, thank you. So he is here

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for the special variance. The special variance does have to do with traffic. He is questioning whether the best tool to use is to refer to the trip generation manual to gather that number that's in there for these 62 homes, or it's whether it's better to do a traffic count, so his question was is there any error, Ms. Kuhn, in the ITE manual that you know if in terms of the traffic counts, so I'll overrule the objection. Go ahead, ma'am. And you'll have a continuing line of objection, Mr. Rosenblatt, so you don't have to keep objecting. Go ahead, ma'am.

MS. KUHN: Yes, generally there is an error that's given in the ITE for most of these, and I'm not familiar with what it is for this type of subdivision. I'm not an expert on the trip generation manual.

MR. ZIMMERMAN: Okay. Thank you. Judge, everyone will be pleased to know that that's all the, I want to thank the witness as well as Mr. Nebre for their participation, and that's all I have. Thank you.

JUDGE MURPHY: Thank you, Mr. Zimmerman. Mr. Wyatt, do you have questions?

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MR. WYATT: Actually I do, Your Honor. Thank you.

JUDGE MURPHY: Okay. You're fine. Absolutely. Go ahead.

DIRECT EXAMINATION

BY MR. WYATT:

Q. Good afternoon, Ms. Kuhn. I'm Michael Wyatt, and I'm an adjoining property owner. I live in Seminary Ridge, which backs up to this development, the proposed development, just to give you some orientation.

So my neighbors and I are sort of new to some of these traffic issues, so I want to ask some basic questions. These are sort of the same questions I would have asked Mr. Nebre had he been able to stay around.

When we talk about the level of service standards that are off of the basic service map for Baltimore County, that is a Baltimore County maintained map, is that correct?

A. That is correct.

Q. Okay. And the state, or State Highway Administration does not maintain its own map for basic

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service maps or --

A. We do not.

Q. -- anything of that nature. So when you were saying earlier that portions of intersections may be a D or an E according to State Highway standards, there's no map on which those standards are maintained that we would be able to review today, correct?

A. That's correct.

Q. Okay. You would agree with me, would you not, that when we're talking about three class F intersections which are in rapid succession, it's all within less than a mile distance, correct?

A. Yes.

Q. All right. I'm talking about Joppa Road, Falls Road, I-83, Greenspring Valley and Falls Road, and Seminary and Falls Road. All three of those are almost within clearly under a mile distance. When you've looked at maps, they are all in pretty close proximity to one another, you would agree?

A. Yes.

Q. All right. And as far as Baltimore County

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is maintaining the basic service maps, all three of those intersections are rated as a Class F, is that correct?

A. Yes.

Q. All right. And just so we understand this point completely clearly, there is no such thing as a gradiated F. In other words, the grade of the intersection if it's an A, it's an A. There is no A+ or A- or A.1, .2 or so forth and so on. In other words, the letter grade is the letter grade, is that accurate?

A. It's similar to a letter grade as you get in school.

Q. Right. Some schools gave pluses and minuses, but some schools gave flat letter grades, and in this case the flat letter grade maintained on Baltimore County's basic service map is one letter grade, correct?

A. There's numbers behind it, but there's one letter grade, yes.

Q. All right. In other words, once you are a class F, there's no type of degree of that class F, it's a class F as far as the basic service map is concerned?

A. Correct.

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Q. Okay. All right. And there's no double F or triple F or anything like that, your F is F. E is E, D is D, and so forth and so on?

A. Yes.

Q. Mr. Zimmerman asked you earlier about, well, let's back up. So you look at a lot of the developer's traffic engineering reports as part of the basis for the letters that were introduced into, as part of your direct examination, correct?

A. Yes.

Q. All right. And as part of looking at those studies that were done by the developer's engineer, and Mr. Zimmerman asked you, started to ask you this. There is built into those reports, would you agree with me, a certain margin of error, or there's a margin of variation, because these are all theoretical based studies. The traffic engineering company didn't go out and actually count cars, because they can't, because it's based on a future possibility of development, it's all hypothetical. Would you agree?

A. As far as the trip generation, it's

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hypothetical. There should be traffic counts of existing locations.

Q. All right.

A. Which again, vary day to day, too.

Q. Right. And what I'm driving at here, because this is theoretical or hypothetical, there needs to be built into that a margin of error or potential for variation. Would you agree with that?

A. I'm not sure that you're trying to say. Traffic volumes vary from day to day.

Q. Well, for all of the conclusions reached by the developer's traffic engineering company, you would agree that those conclusions have built in within them some type of margin of error upon which the conclusions are based. Yes or no?

A. The conclusions are based on the assumptions that they have made, which obviously are assumptions and may have some variation to what actually happens when something is built.

Q. Correct. Because there's no empirical study here that a lot of this is based on theory and

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projected counts that you can't have exact, that's really what I'm saying here. Would you agree?

A. Correct, yes.

Q. All right. Do you know offhand what that margin for error is contained in the developer's traffic engineering report?

A. No, I do not.

Q. Did you have an opportunity to review any of the Baltimore County emails that were introduced as part of Mr. Nebre's testimony?

A. This afternoon?

Q. Well, before this afternoon. Let's start there.

A. I mean, I was here this afternoon, and so I was able to see emails that were put on the screen. I can't say to other emails that I may or may not have seen.

Q. And prior to today, had you seen any of those Baltimore County communications relating to traffic engineering?

A. If I was cc'd on them, I did.

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Q. All right.

A. But I don't believe I was.

Q. Okay. All right. Would you agree with me that those emails are informative, if nothing else, as it relates to interactions between the developer and Baltimore County Bureau of Traffic Engineering?

MR. ROSENBLATT: Objection.

JUDGE MURPHY: Mr. Rosenblatt?

MR. ROSENBLATT: Asking whether something is informative about communications between two other people that aren't --

JUDGE MURPHY: Yeah, and she doesn't know what, and it's so broad, too. You're not asking about a specific email, which she may or may not have been cc'd on. It's not a fair question. So if you want to rephrase that question, I'll sustain the objection.

MR. WYATT: As an expert witness, Ms. Kuhn, did you, what, if any, reliance did you place on those emails as in forming your opinion today?

MR. ROSENBLATT: Same objection to those emails. I think it's too broad.

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JUDGE MURPHY: Do you know which email you're talking about?

MR. WYATT: They were part of, I didn't write down all the exhibit numbers, but these were the emails that Mr., that were referenced during Mr. Nebre's testimony that Ms. Kuhn stated she witnessed and was watching as it occurred. I don't have all of them, or, in my possession.

JUDGE MURPHY: Right. There's five of them, and, I mean, it's not fair to the witness though just to ask, kind of in general did she, you know, find them informative or what she thought about them, because I'm not sure she even had a chance to read it.

If, you know, Mr. McCann had put them on the screen, I mean, I don't know how you want to do this, but it's just not fair to the witness to ask that question. So to the extent she could have read them on the screen and digested them and then give an opinion about them, so I'll sustain the objection.

BY MR. WYATT:

Q. Ms. Kuhn, did you review the emails that

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were put up on the screen during Mr. Nebre's testimony?

A. I read some of them. I wasn't able to read through all of them.

Q. And as a result of reading those today, to the extent you may not have been copied on any of them prior to today, what effect or what weight do you give those emails as part of your testimony now?

A. They didn't have any impact on my testimony.

Q. I'm just following up on one point Mr. McCann made, and that is you don't know sitting here today what the differences in signal timing would be if this development is approved and these highway improvements are made, correct?

A. Correct. I know there is some proposed signal timing improvements in the study submitted to us, but we would not finalize that until improvements were actually made.

Q. Okay. Thank you.

MR. WYATT: I have no further questions.

JUDGE MURPHY: Okay. And we did have Mr.

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Sachs. [phonetic] Did I say your name right?

MR. SACHS: Yes.

JUDGE MURPHY: You're an attorney, and I, you are an attorney, right?

MR. SACHS: Yes.

JUDGE MURPHY: And I didn't know if you had questions separate from Mr. Wyatt.

MR. SACHS: I don't have any now.

JUDGE MURPHY: Okay. All right.

MR. SACHS: I appreciate it.

JUDGE MURPHY: I moved you over to the panelist room. You didn't have to turn your camera on, but that's why I moved you over, because I saw you were in the file, your name was in the file.

MR. SACHS: No, I appreciate.

JUDGE MURPHY: Okay. All right. Mr. Rosenblatt, did you have any follow up, redirect?

REDIRECT EXAMINATION

BY MR. ROSENBLATT:

Q. Just one or two, Ms. Kuhn, I'm trying to, I'll try and get you back to your day. But is there,

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does SHA employ a standard methodology when reviewing traffic studies?

A. Yes.

Q. Did the study in this case comply with the methodologies that are routinely used in your field of expertise?

A. The original study that was submitted was lacking some information, which we asked for more, which was provided, and then ultimately the traffic impact study was approved.

Q. And to be more specific with my question, is the ITE manual routinely accepted as the method of projecting trips for a proposed development?

A. Yes, it is.

Q. Okay. Thank you.

MR. ROSENBLATT: I have no further questions.

JUDGE MURPHY: Okay. Thank you, ma'am. I think we are through. I appreciate your testimony. You were here today for several hours, so I do appreciate your coming in.

MS. KUHN: Thank you.

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JUDGE MURPHY: All right. You can log off, unless you want to stay and listen.

MS. KUHN: No, thank you.

JUDGE MURPHY: Okay. Thank you. Thank you very much. All right. So it is 4:15. What do we have planned next? Do you guys want to do opening statements?

MR. ROSENBLATT: We certainly can. It probably does not make sense to start one of our witnesses, but I'd like to do at least the opening statements if we can, just to move, to get things as far along as we can in a reasonable hour.

JUDGE MURPHY: I would, too. Does anyone, Mr. Rosenblatt, do you know since your microphone is open, why we're starting at 1:30? Did you all have conflicts?

MR. ROSENBLATT: I think that one of the attorneys did when they were scheduled.

JUDGE MURPHY: Okay.

MR. MCCANN: Yeah. If I recall, I thought someone said that you had code enforcement in the morning.

JUDGE MURPHY: I was supposed to be code

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enforcement this morning, but I didn't have it, so I don't have it tomorrow either, but we can't start until 1:30, because that's when the notice is issued. Unfortunately, I mean, I don't really love the 1:30 start time, but just trying to get through this, right? And then we also have two more days, I just found out today, October something. October 28th maybe. Did you all know that?

MR. ROSENBLATT: Yes.

MR. MCCANN: Yes.

JUDGE MURPHY: Okay. Well then you're ahead of me. I haven't seen October's calendar, that's probably why. Okay.

MR. MCCANN: [indiscernible] tomorrow morning, Judge, is that right?

JUDGE MURPHY: Well, I mean, I, you know, remember when I was [indiscernible] I would change, you know, I would change a start time to 9:00 a.m. But the problem is there's the notice issue. I think there were recertifications done by the developer's sign poster, and it says 1:30, and so that's what the county's website

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says, 1:30, so I can't just, I'll get in trouble if I unilaterally change that.

I mean, the Board of Appeals we don't mind that, but here, they don't like that, which makes sense, because people know it's 1:30 tomorrow. Anyway, yeah, it would have been nice, 10:00 would have been a nice start time. Okay. Mr. Rosenblatt can do his. Mr. McCann, are you going to have an opening? You usually reserve.

MR. MCCANN: Yeah, I will not have an opening. Thank you.

JUDGE MURPHY: You will not. But Mr. Zimmerman does?

MR. ZIMMERMAN: Yeah, I will have an opening, yes. Sorry about that.

JUDGE MURPHY: No, I figured as much. So why don't we start with Mr. Rosenblatt so we can try to get something done?

MR. ROSENBLATT: Okay. Thank you, Judge, and thank you, everyone.

OPENING STATEMENT

MR. ROSENBLATT: I think I'll be brief, but I do

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want to talk a little bit about the project overall. We've had some sort of specialized testimony mostly related to traffic, but we haven't really talked about the project overall.

So Greenspring Manor proposes 60 new homes on about 40 acres of land that's located as we know now on the northeast side of Joppa Road just east of Greenspring Station and the intersection with Falls Road. It's a project that's very important to Atapco, the owner and developer, and obviously it has drawn the interest of a number of community groups that are represented here.

Atapco has done more public outreach in this case than any case that I have ever worked on in Baltimore County. We have held numerous meetings with the Tally Ho community, the Meadows, Boxwood communities, and various changes were made to the plan to try to address the concerns of the community.

It is a plan that is by right, in other words it respects all zoning requirements. There is no variances to any bulk or area requirements or regulations, and the density proposed is permitted by

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right.

While things like open space are often a concern on Baltimore County development projects, this project provides more than double the amount of required open space and preserves over 40 percent of this property as open. And while school capacity is often a problem that we hear about in development cases, none of the schools are technically overcrowded for this project, so no relief is needed from Baltimore County's adequate public facilities regulations for schools.

If the project is built, thousands of trees will be planted where there is now a farm field. There is no forest clearing needed for this project, and the only specimen tree being removed is one single tree that is right next to existing Joppa Road that has been significantly limbed by BGE and their maintenance for power lines.

No specimen trees will be removed to build the proposed homes in this case, and no forest will be cleared. The existing Langford home, which has been on this property for many years, it is located in a forest

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buffer, near a stream, and it is currently on well and septic, and if this project is permitted to proceed, that home will be converted to public utilities, which is an upgrade environmentally, and maybe most importantly we've heard a lot about the traffic portion of this case, but approximately a million dollars in public improvements are going to be made as part of infrastructure upgrades related to both traffic and sewer.

So this Falls Road corridor has created traffic issues for Baltimore County for many years, and this project if approved is a mechanism for providing hundreds of thousands of dollars of relief that SHA just confirmed for everybody will improve the travel time through the entire corridor from Joppa Road up through Seminary Avenue.

The project is also providing a mechanism for upgrading portions of the sewer line that have been identified by Baltimore County as needing improvement. I know that's a very important issue along this Falls Road corridor, and this project right on the development plan in the lower left corner, which we'll obviously get into

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in detail is showing the off-site sanitary sewer improvements that will be constructed as part of this project.

We are aware communities, change is scary, everyone always prefers status quo, and maybe the idea where there is now a farm field and not a lot going on on this property of change and building homes is scary to some, but we intend through the witnesses you'll hear tomorrow and in October to show that the benefits of this project far outweigh any impact that Greenspring Manor will have on the community, and that this project which is proposing 60 new really upscale homes with upgraded materials, and you'll hear from the developer that a builder has been selected and what the proposed cost in the market will be for these homes, but this will really be a new neighborhood that's an asset for Baltimore County and provide much needed in fill development rather than trying to sprawl to out west or north where development is less than in this kind of tight corridor in Baltimore County.

So that is all for now. I appreciate everyone's

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time and look forward to hearing directly from the witnesses to bear out much of what I just said.

JUDGE MURPHY: Thank you, Mr. Rosenblatt. Mr. Zimmerman?

MR. ZIMMERMAN: Thank you, Judge.

OPENING STATEMENT

MR. ZIMMERMAN: This is a very interesting case, and I appreciate you being here and the way things have moved along so far. As a public office, although I think you are quite familiar with our office, many people are not, and also as a public office, I think I should explain how it came to pass that this case came to our attention and we felt it necessary in the public interest to participate.

I will say at the beginning that unless some citizens who are not represented by Mr. McCann ask us to facilitate their testimony, we don't anticipate presenting any expert witnesses. Maybe other witnesses, it depends whether citizens get in touch with us who are not represented by Mr. McCann at the moment. We don't necessarily have that. So our case after the opening

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statement is mainly documentary, and we've submitted exhibits, and of course questioning some of the witnesses.

So here's kind of a roadmap to the situation. And in preparation for the opening statement, I re-read kind of a classic law review article by Oliver Wendall Holmes entitled the Path of the Law, and I would say in addition to the specific issues that we deal with in this case, there is also according to homes necessary to look at the overall purposes of the law.

So we've got previous cases, and we've got the overall purposes. In terms of the path of our coming to the case, it came to our attention around the middle or second half of 2021 when it was scheduled for November 18th. We did write a letter dated November 9th, it's one of our exhibits. I realize it's not evidence, but we put it there so everyone can see it, and we may refer to it in our post hearing brief.

The case was then scheduled for November 18th. There was no reply directly to our letter, but the developer for other reasons asked for postponement. I

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will say we did send an email asking to be included in any scheduling discussions, but then eight months passed, and the next thing we knew about the case was we got a very nice invitation from Deborah Wiley [phonetic] of your office to participate as a panelist, and if I may say, it was an invitation we could not refuse.

Another way of looking at our path to the case, and we did identify in our November 9, 2021 letter the various issues that we thought could be important, and those are the issues that we're dealing with.

There had come to our attention in terms of the path in two previous cases that I think you're quite familiar with, Judge, Woodley Park and Davis Farms, there were master plan conflict issues involving the same T3 transect zones that were residential performance standard issues, and also in Woodley Park a compatibility issue, and we, as you know, we intervened and at the Board of Appeals when we kind of found out about those cases, to defend Administrative Law Judge Mayhew's decisions, and defend the zoning and the master plan in the public interest.

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As you know, the Board of Appeals affirmed Judge Mayhew mainly on residential performance standards, and noted the procedure actually to go to the Planning Board for master plan conflict issues. He had found a master plan conflict, as you know. And by the way, that case went into Circuit Court, but the county council rezoned the property downward, so that was the end of that case where the development plan was denied, and I would say our defense was contributed to a successful outcome.

The Davis Farms case you probably know about. Once again, we intervened and the case was remanded. Judge Mayhew confirmed our participation at the planning board and county council level explicitly, and again, we were dealing with master plan conflict and resdential performance standards, but mainly master plan conflict of course at the planning board level, and the county council eventually agreed with Judge Mayhew that there was in fact a master plan conflict based on the T3 transect zone, which he discussed at page 18 of his opinion, and it is one very compact and incisive

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paragraph.

So these cases heighgetened our attention to the case that then emerged here, and it did occur to use that if we found out or our attention was drawn to such a case at the ALJ level, that it would be reasonable for us to communicate and to participate at the earlier stage, and not just have to find out about it at the, after the opinion.

Obviously as you know, master plan zoning and development are three parts of land use law, and the development plans are supposed to comply with the master plan and zoning, and we hope and assume that the majority of the time they do, so those are development plan cases we do not need to participate in. But from time to time, we have to participate.

So this case comes in the wake of Woodley Park and Davis Farms, and then since every so often Mr. Rosenblatt has objections, we have to for the record say that the county charter assigns us to defend the comprehensive zoning maps and master plan in the public interest, and we prioritize these cases, especially the

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development cases as to the magnitude of master plan conflict issues, the scale of the development, and whether there are some zoning issues.

Of course we participated in the HNS development case, which is I think the landmark master plan conflict case of the 21st Century that you're very familiar with, and as far as zoning issues in development cases, it goes back to the 1990s with cases like People's Counsel versus Crown Development, Sycamore Realty versus People's Counsel, Marsula versus Caul. [phonetic]

We briefed those extensively in Woodley Park and Davis Farm, and we'll probably have to brief it again, but I think, Judge, you are familiar with the scope of our participation in development cases when we're focus on master plan conflict and zoning issues, and that's what we're focused on in this case, which means there may be some issues that Mr. McCann brings up that we're not going to focus on, because we don't view them as core master plan and zoning issues, so we try to do the right thing.

This brings us to the present case, and I'm

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going to try to be brief. I think the core issue is going to be master plan conflict with the T3 intersect, and as I briefed in Davis Farms, we know it's low density and deep setbacks is at the core of the intersect, and we did go to the dictionary, and I'll just mention the word low in Websters is deficient, inferior or unusually small in quantity, intensity, value or degree. That's how the definition begins. We can look at the whole definition.

Deep means extending far or comparatively far from some level of service or area, so what I will just say is this plan is twice as dense as the plan Judge Mayhew found in conflict in Davis Farms where you've got actually 61 dwellings as we understand it, unless it has been changed to 60, at maximum density squeezed onto .3 acre small lots, 14 of the 39 acres if our math is correct, which fractionally is 4.4 lots per acre on the area where the houses are.

Davis Farms had 21 lots on about half of the 19 acres with lots that were almost twice the size, .27 to .63. So if we're dealing with the language, the logic, the math, everything points to the fact that we have a

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master plan conflict issue here, and I would also say that Judge Mayhew's analysis focused just on the subject property. It didn't deal with, you know, a comparison with things in the area.

But anything, I do think you'll see the prevailing pattern here in the other subdivisions is half acre or more detached dwellings, and yes, there are some attached lots as well as we've seen.

So, and in order to send the case to the planning board, I don't even think you have to agree with me that it definitely looks, walks, quacks or, you know, the old quacks like a duck metaphor. You don't have to agree 100 percent that it's definitely a master plan conflict. I think it just has to be a serious concern that it's a master plan conflict, and then it goes to the planning board and to the county council.

But in any event, my view so far, unless something comes up to make me change my mind, is everything points to the fact that this is a master plan conflict. So that was, that really was the core issue. I'm going to briefly go through the other issues.

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Residential performance standards, we'll have to see how that gets sorted out. It looks like there are some issues. The planning department so far, as in Davis Farms and Woodley Park, they really in my view didn't make the kind of findings that were intended, and still haven't, and I won't go through the details of, you know, what we heard last time.

But in those cases, Woodley Park, Davis Farms, I think my reading is correct. Judge Mayhew just viewed it that he would just kind of cut through the situation and decide whether or not there were conflicts, regardless of the kind of skeletal view of the planning department, that they'd reviewed the pattern book and they were okay with it. So he went ahead and looked at whether there are conflicts, and at this preliminary stage, I'll just say let's see how all the evidence comes in, and at the end, we'll, you know, we'll try to analyze whether the residential performance standards have been satisfied. But suffice it to say that I think the issues are there for you to look at.

There's an interesting mixed zoning development

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issue that came up in Woodley Park that is quite a conundrum, and that you are very familiar with I know, and that is a legal issue that has not been resolved in the courts, and there's a difference of opinion between Judge Mayhew and the Board of Appeals, and that is whether compatibility review applies to all zones, or just certain zones under Code Section 324402.

Judge Mayhew basically decided that it did apply to Woodley Park, but on the Board of Appeals which you are familiar with, the Board indicated that it did not apply, and that case, you know, as I said, went to court, but then was dismissed out because of the down zoning. So we don't have a court decision on that. As respectfully as I can, and I often tell my deputy when we don't always agree 100 percent that Supreme Court justices can disagree respectfully, but I really think Judge Mayhew had the better of the analysis, and that compatibility review does apply to all zones, not just the zones where the planning director is slated to make a recommendation, but we'll brief that. But I just wanted to alert everybody that I think that's a legitimate issue

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that is not yet resolved, and I know that on the Board of Appeals you dealt with that issue, so that's a conundrum.

As far as the special variance, I will say at this point it's a zoning issue, it's complicated. I think the facts are complicated. The law may be complicated. We don't really have any court cases, you know, articulating precisely how to deal with it, even though it's been a law for a long time. So let's just see how that gets sorted out, and I won't give, you know, a preview of, you know, does it have to be granted, denied, or whatever. We'll see how that gets sorted out.

We can't ignore that we're still in a, I think the same sewer system, and I'll be corrected if I'm wrong, that Judge Bevrongin [phonetic] dealt with in the CP Falls Road case or CPC Falls Road, and that became quite an issue, so does the master water and sewer plan come in here? Does the growth management on sewers come in here? You know, these are zoning and master plan issues, and I would like to see how that gets sorted out. Maybe there will be some witnesses to address that.

So those are the issues that we see. I wanted

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to, you know, I'd rather say it now so that people can't say later that I didn't let them know what I think the issues may be. So I'm, at this point I'm definitive on the master plan conflict, and let's see what happens with all the other issues, with all the facts, and all of the analysis that we can do at the end of the case, and thank you for moving the case along and I guess we'll see you tomorrow.

JUDGE MURPHY: And you had said something about if anyone was not represented by Mr. McCann.

MR. ZIMMERMAN: Right.

JUDGE MURPHY: They could contact your office, and so that actually would be helpful. So I don't know folks that can look at the, you know, attendees list, and I can look at, you know, tomorrow the participants panelist list again and, you know, obviously some of the people I know, some people are very, very good about putting listening only, which is just very helpful. What a great, you know, idea.

But if you or, you're not represented by Mr. McCann, and he has, he is representing several of those

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neighborhood associations or community associations, you can reach out, Mr. Zimmerman, to your office? Can they reach out?

MR. ZIMMERMAN: Yes, and I've already spoken with one or two who may be represented by Mr. McCann, but I said there are some, frankly I think we know there are some differences of opinion on the Mays Chapel Road connection issue of different associations, and I've indicated that, you know, it's up to them whether or not he may call them as witnesses, from Heather Field and from Seminary Ridge, or if they would like it, I'd be glad to try to facilitate their testimony. Or if there's anyone else out there, it is sometimes helpful if, you know, I can ask them who they are, what their views are, you know, where they live and so on, it may make it a little bit easier.

JUDGE MURPHY: It does to me, because if you know who they are, then that saves me from, I mean, I won't be able to tell. Sometimes people come in one day and they don't come the next, and then if they need to testify, I try to go through each person at the end when

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it's the Protestant's case. If there's someone, but if you would let me know if you see someone --

MR. ZIMMERMAN: Yeah, I will, and I'll let everybody listening in now, if they are still around, the phone number is 410-887-2188, you know, so we are always available, and the more often than not, I answer the phone. So --

JUDGE MURPHY: And he is people's counsel for Baltimore County, so in case anyone didn't know that. I think we said that a couple times today.

MR. ZIMMERMAN: Right. Thank you.

JUDGE MURPHY: All right. Mr. Wyatt, you turned your camera on. Does that mean you want to have an opening statement?

MR. WYATT: It does not mean that. Thank you for asking though, Your Honor.

JUDGE MURPHY: Okay. All right. And sorry we couldn't get you to Mr. Nebre today, so you certainly can try to come back to that at a later time if that works for you. All right.

So all right. I think that was it for today.

So Mr. Rosenblatt, you know, I guess we're starting at 1:30 tomorrow with your next witness?

MR. ROSENBLATT: Yes, we'll be ready.

JUDGE MURPHY: Okay. Yeah. Unfortunately, so Judge Mayhew is doing the code enforcement cases, so anyway, I'll come on at 1:30.

SPEAKER: Can I ask before we break?

JUDGE MURPHY: Yes.

SPEAKER: Mr. Rosenblatt, can you share with me how many witnesses you may have tomorrow? Just in case I need to have anybody available. I mean, do you anticipate getting done tomorrow?

MR. ROSENBLATT: Given how this is going, very unlikely that you have any time to put a witness on. I definitely have enough to fill tomorrow. I hope that I finish tomorrow. We'll have to see how it goes.

SPEAKER: Sounds good. Thank you.

JUDGE MURPHY: Okay. Thanks everyone.

(Whereupon the hearing was adjourned.)

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BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF	:	PAI NO.: 08-0922
COMBINED ZONING AND DEVELOPMENT	:	TRACKNG NO.:
PLAN HEARING – GREENSPRING MANOR:		MAJ-2021-00001
	:	
	:	ZONING CASE NO.:
2310 WEST JOPPA ROAD	:	2021-0250-SPH

Thursday, September 1, 2022

BEFORE:

MAUREEN MURPHY

PUBLIC UTILITY LAW JUDGE

TRANSCRIPTION SERVICES PROVIDED BY: CRC Salomon

APPEARANCES:

On behalf of Developer:

ADAM ROSENBLATT, ESQ.
Venable, LLP
210 West Pennsylvania Avenue, Suite 500
Baltimore, MD 21204

On behalf of Protestant:

MICHAEL MCCANN, ESQ.
Cowie & Mott
1321 Generals Highway, Suite 302
Crownsville, MD 21032

On behalf of Office of People’s Counsel:

PETER ZIMMERMAN, ESQ.
Assistant People’s Counsel
William Donald Schaefer Tower
6 St. Paul Street, Suite 2102
Baltimore, MD 21202

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P R O C E E D I N G S

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THE JUDGE: Good morning, everyone. Calling case number 08-0922 and 2021-0250-SPH. Property address 2310 West Joppa Road. This is a combined development plan and zoning case for a project known as Greenspring Manor. We'll have counsel identify themselves for the record, beginning with the developer.

MR. ROSENBLATT: Good morning, Judge Murphy. Adam Rosenblatt and Chris Mudd of Venable, LLP on behalf of the developer.

THE JUDGE: All right. And with you, with your team is?

MR. ROSENBLATT: We have a number of people. I see Matthew Bishop and James Malico, our, with Kimley-Horn, the land consulting company. We have several representatives of the owner, I'm just looking at the participant list to see who is signed in. I do see Nick Drevin [phonetic] is part of the development team, Ross Powell, also part of the development team, and there may be a few others that I can't tell from the attendee list.

THE JUDGE: Okay. Understood. And you and Mr. Mudd are separated in the, you must be quarantined.

MR. ROSENBLATT: No, I just prefer the double monitor situation for the conference room, that's all.

MR. MUDD: He asked me not to sit with him today.

THE JUDGE: That's what I thought. That's what I thought. All right. So how about Mr. McCann?

MR. MCCANN: Good morning, Judge.

THE JUDGE: Good morning.

MR. MCCANN: Michael McCann on behalf of the Valley Planning Council, Seminary Ridge Owner's Association, Heather Field Community Association, the Falls Road Community Association, and the Boxwood Homeowner's Association.

THE JUDGE: Okay. Well, Valley Planning Council, Seminary Ridge Homeowner's Association, Heather Field Homeowner's Association, Falls Road Improvement Association?

MR. MCCANN: Community Association.

THE JUDGE: Community Association, Boxwood

Homeowner’s Association, right?

MR. MCCANN: That's correct.

THE JUDGE: I was looking for the file, I didn’t see a letter, an entry of appearance with who you represented, so okay, that clarifies things. And we have Mr. Zimmerman.

MR. ZIMMERMAN: Good morning, Judge. Peter Max Zimmerman, people’s counsel for Baltimore County, Towson, Maryland.

THE JUDGE: Good morning, Mr. Zimmerman. I’m surprised to see you in a development case.

MR. ZIMMERMAN: Well, we wrote a letter November 9th, and if you had a chance to read that, we decided that the right thing to do is to let everybody know what we think about the case and get more information.

THE JUDGE: Okay. All right. Let me see. I’ll put you back on mute, and I’m just going to unmute Mr. Wyatt. Mr. Wyatt, can you hear me?

MR. WYATT: I can, Your Honor. Good morning.

THE JUDGE: Good morning, Mr. Wyatt. You’re

Wyatt & Gunning, [phonetic] and we've had zoning cases before. Are you representing a party?

MR. WYATT: I am not representing a party, I am appearing pro se. I am a majority property owner to this development.

THE JUDGE: Okay. That's what I thought, I just wanted to make sure, so I'll put you back on mute. All right. Let's see, I think that was everyone that I saw for the attorneys. All right. Let's turn to you, Mr. Chen. Let's see. You're in the conference room there. You're muted. There you go. Can you hear me?

MR. CHEN: Can you hear me now?

THE JUDGE: Yes.

MR. CHEN: Okay. Good morning. Representing, yeah, in the conference room today is DPR, Mr. Cauley, Recs and Parks, Mr. James Herman.

THE JUDGE: Okay. All right. All right, folks. Well, before we get started, just some ground rules for people who haven't attended before. I do see some names in the attendees room that have attended other hearings, so they're professionals at this point.

There’s a lot of people in the attendees room.

So what we need everyone to do is just keep their microphones muted when you’re not speaking. So this is an actual hearing, just so everyone knows. It’s not a meeting, it’s not a community input meeting, it’s not a homeowner’s association meeting, it’s not a neighborhood association meeting, so that means you can’t just unmute your microphone and start talking.

There is a recording being made, it’s very important that the recording is clear. The recording is what is used on appeal. They need to be able to hear what’s being said, and if we have, you know, shuffling of paper and noises or people talking, then that’s a problem obviously. I try to keep my microphone muted when I’m not speaking, because I have a tendency to make noise as well, and so what I’ll do is I’ll unmute your microphones when it’s time for you all to speak.

Just so you know, here’s the process. The process is that the county goes first. The county agency representatives are here from the different departments, and they go first and they testify to tell me whether or

not there's any unresolved comment or condition that needs to be addressed, and whether or not they recommend approval or not of the plan.

So we'll hear from each county witness first, we'll put in exhibits, we'll put those up on the screen. One of the benefits to Webex is that you all participating get to see those exhibits on the screen as, you know, in real time as we go. You know, in the courtroom it's often difficult to sit in the back and not see anything. You could probably take a break and maybe glance at something, but this way you at least get to see the exhibits as we go through it.

And so after the county witnesses are finished testifying, we turn it over to the developer. The developer, through Mr. Rosenblatt and Mr. Mudd are going to put on their witnesses and their exhibits, they'll put those on the screen, and so the other side, the protestants, get a chance as well as Mr. Zimmerman, to cross-examine them on whatever evidence has been presented, and so we'll do that.

After the developer gets done their case, we

turn to the protestants, Mr. McCann with his clients, and then people's counsel as well. They have exhibits and they have testimony that they want to offer. After all of that, if there's someone who hasn't been, is not represented, I think you'll be representing a lot of people, so he's got several community associations, and so if he's doing that for those community associations, then, you know, you may not need to, but at some point I'll probably turn to go down the list and see if you all have anything to say.

And so we do have two other days scheduled, just so everyone is aware, I think it's the 20th and 21st starting at 1:30, and so you should have links for those dates. All right. Anything, Mr. Rosenblatt or Mr. Mudd or Mr. McCann before we get started?

MR. ROSENBLATT: Not from the developer, thank you.

THE JUDGE: Okay. All right. And so I was actually looking for, let's see. Mr. Chen, you don't have zoning in the conference room with you?

MR. CHEN: No, we don't. He should be online.

THE JUDGE: Oh, there he is, Mr. Crawford.

MR. ZIMMERMAN: Madam Chair, do we get opening statements?

THE JUDGE: Well, first, see, since you don't usually come, first we do the county witnesses, yeah, and then we go back and we'll do opening statements.

MR. ZIMMERMAN: All right. Sorry about that, thanks.

THE JUDGE: That's all right, Mr. Zimmerman, nice to see you. All right. Okay. Can I get the county witnesses to raise their right hands? Let's try to do everybody all at once. Everybody in the conference room, I've got Mr. Williams, I have Mr. Livingston, let's see. Ms. Anwico, [phonetic] I saw her earlier, she's here. And then everyone in the conference room, I again do not see anyone yet from zone, oh, I see, Mr. Crawford, that's right. Mr. Crawford, I didn't forget you.

All right. Everyone raise your right hand. Do you solemnly swear or affirm under penalties of perjury the testimony you're about to give is true and correct to the best of your knowledge and belief?

SPEAKERS: I do.

THE JUDGE: All right. Well, I was going to start with zoning, but zoning doesn't seem, oh, yes you are. There you are, Mr. Crawford. Why do I keep forgetting you? Mr. Crawford, there you are.

MR. CRAWFORD: Yes.

Whereupon,

SEAN CRAWFORD,

was called as a witness, being first duly sworn to tell the truth, the whole truth, and nothing but the truth, testified as follows:

EXAMINATION BY THE COURT

BY JUDGE MURPHY:

Q. All right. Mr. Crawford, why don't you identify yourself, you're testifying for, I'm actually going to put the documents on the screen. Go ahead.

A. Sean Crawford, I'm testifying on behalf of zoning review.

Q. Okay. And so your agency reviewed the development plan. Which plan did you review?

A. When submitted, I received a copy on

August 24th, which was the company that's hearing today.

Q. Okay. The plan is dated August 24th?

A. That's the day I received it. Give me just one moment.

Q. Sure.

A. It looks like this plan was dated November 10, 2021.

Q. 2021, that's the one you reviewed, okay. On the screen is the comment that you sent to our office dated August 24, 2022, and that's your signature and date at the bottom, is that correct?

A. Yes.

Q. All right. And so you're reviewing on behalf of zoning again, and so go ahead. Is there any, are there any comments left to be addressed?

A. No, beyond a final development plan will be required.

Q. Okay. And so I see that that's on your comment here, and so you also had a comment, or actually it was one for the development plan conference, the DPC date is August the 11th. Even though the subject says

concept plan, it's actually for the development plan conference. So have you seen this one? This one is by a different zoning planner. This was dated August 10, 2021.

A. Yes.

Q. Okay. So this was the initial, these were the initial comments, and the comments that were made were just by things that you needed to be added. And when, and I see the last paragraph here, it was copied into your newest comment, right?

A. Yes.

Q. Okay. And so going back to the August 10, 2021 comment, it says essentially that all of these issues, or at least you're saying that all of these issues have been addressed that are listed here, 1 through 5?

A. Yes.

Q. Okay. Because what it says in here is that the above, as you see at the bottom, the conclusion of the VFTP requirements of all notes and details specified above being included, meaning what? You see

the details where it says all notes and details specified above are included?

A. Right. That's an error on my part.

Q. Okay. So what notes, are they the ones that are listed in the first --

A. Yes. That was copied from the original. I didn't take that out, so that's an error. Once again, we're just requiring a final development plan.

Q. Okay. All right. We're going to make, exhibit number 1 is going to be the Office of Zoning Review development plan conference comment, and that is dated August 10th of 2021, that's 1A. 1B is going to be the other, which is the final, and it is dated August 24th, OZR final comment, August 24th, 2022.

(Developer Exhibit No. 1A was marked for identification and entered into evidence.)

(Developer Exhibit No. 1B was marked for identification and entered into evidence.)

BY JUDGE MURPHY:

Q. Let me just ask you, Mr. Crawford, so in this case, the developer is proposing, well, what's the

maximum permitted density for this? For this property, do you know?

A. Give me just a moment to check the plan. It looks like it's 61 proposed units. I don't know offhand what the total density counts are.

Q. Okay. All right. Do you know if all the homes that are being proposed are meeting all of the setbacks from the ER zone?

A. Yes.

Q. Okay. And so, it sounds like somebody is talking in the background there. Is that someone in your office, Mr. Crawford?

A. No, it is not.

Q. All right. Looking for somebody talking. I don't see anybody. Okay. All right. Mr. Crawford, and so it meets all the setbacks. That means that none of the homes that are being proposed will require variance relief, is that right?

A. No.

Q. Right. Okay. Thank you, sir.

JUDGE MURPHY: Mr. Mudd or Mr. Rosenblatt, I

don’t know which one of you is asking questions. Any --

MR. ROSENBLATT: It’ll largely be me, Your Honor.

THE JUDGE: Okay.

MR. ROSENBLATT: Mr. Rosenblatt. No questions of Mr. Crawford, thank you.

THE JUDGE: Okay. Mr. McCann?

MR. MCCANN: I do have a couple. Thank you, Judge.

DIRECT EXAMINATION

BY MR. MCCANN:

Q. Good morning, Mr. Crawford. Can you hear me?

A. I can. Good morning.

Q. Good morning. I don’t think you and I have met before, so if you don’t mind, I’m just going to ask you a couple of questions that I simply don’t know the answers to about you and your history with the department. How long have you been with Zoning Review?

A. Full time, a little over a year.

Q. Okay. And your position in Zoning Review?

A. Planner.

Q. Planner? Okay. And when did you first become involved in any review of this particular development?

A. Early August of this year.

Q. August of 2022?

A. Yes.

Q. Okay. Yeah, because I noticed you weren't, I think Judge Murphy indicated as much, that you weren't involved in the review of the concept plan and the drafting of the concept plan [indiscernible]

A. Correct.

Q. Okay. And then lastly, you said that there are no setback variances required. Have you personally gone back and looked at the plan and determined whether or not any of, all of the setback requirements, the front, side and rear setbacks and any others are complied with? Have you done that?

A. No, that was based off of the original planner's initial comments on August 10, 2021.

Q. Okay. Okay. Thank you, Mr. Crawford.

A. You're welcome.

THE JUDGE: All right. Mr. Zimmerman, any questions?

MR. ZIMMERMAN: Just a few. Thank you, Judge.

DIRECT EXAMINATION

BY MR. ZIMMERMAN:

Q. So Mr. Crawford, just to kind of clarify. The original staff person in your office who reviewed this was Rosalee Johnson, [phonetic] was it not?

A. Yes.

Q. And she's no longer with the office, is that correct?

A. Yes.

Q. So you're kind of pinch hitting?

A. Yes.

Q. So in your file, do you happen to have the March 5, 2021 concept plan conference comments from your office running several pages?

A. I do, dated March, yes, I do.

Q. Could you put them up, did you include them in your exhibit?

A. I don't know how I would share it.

MR. ZIMMERMAN: Judge, I happen to have it in my exhibits. Could we put it up on the screen and share it? If Mr. Crawford doesn't happen to have it?

THE JUDGE: Yeah. So I have the share button right now, and so I can find it. Do you want that on the screen?

MR. ZIMMERMAN: I'd like to make sure we've got a complete set of zoning exhibits.

THE JUDGE: Yeah, they're all contained within the file of course. All right.

MR. ZIMMERMAN: That's a pretty voluminous file, it's kind of hard to --

THE JUDGE: It's pretty big. It's two big green files. Hold on, I'm getting there. All right. Zoning, okay, hold on one second. Here it comes. All right. Can you see that, Mr. Zimmerman?

MR. ZIMMERMAN: Oh, great, great. Yeah.

BY MR. ZIMMERMAN:

Q. Well, first of all, Mr. Crawford, have you ever seen this piece of paper? I'm not trying to trick

you or criticize, because you just got in the case, but --

A. Prior to today, no.

Q. Okay.

MR. ZIMMERMAN: So could we scroll down a little bit, Judge?

BY MR. ZIMMERMAN:

Q. So Mr. McCann asked you a little bit about the density. So in fairness, your office pointed out that the, you've got a split zone situation of DR2 and DR2, right? Paragraph 1.

A. Correct, correct.

Q. Okay. Then paragraph 2, she does the arithmetic, so you've got 16.8 acres of DR1, which gives you 16 units maximum, and then you've got 22.6 acres of DR2 for 45. So that adds to a maximum of 61. And guess what, they're proposing 61 units. So by way of background, we're talking about they're at the maximum density, right?

A. Yes, correct.

Q. Okay. So they're within the maximum

density, and that's just background information on the situation. And then you've got a list of all the setback requirements, which as far as you know, they're meeting. Is that correct?

A. Yes.

Q. Okay. Okay.

MR. ZIMMERMAN: That's all I have. Thanks. And I just would like, Judge, if this could be included as, you know, part of the zoning exhibit somehow.

THE JUDGE: You want to make this --

MR. ZIMMERMAN: Or I've got it in my exhibits as well, maybe that'll take care of it.

THE JUDGE: That's fine. Yeah, you have it in your exhibits, and it is already numbered, so I'll let you put that in. How does that sound? All right. Thank you, Mr. Zimmerman. All right. All right, Mr. Crawford, I think that's it for you.

MR. CRAWFORD: All right. Thank you.

THE JUDGE: Thank you, and you're free to go. All right. Next up, Ms. Anwico. I'm trying to get the ones out up here who are not as controversial. All

right. Let's see, one minute. Let me do this. I'm just going to get rid of one.

MS. ANWICO: Good morning.

THE JUDGE: Good morning. One second. All right.

Whereupon,

LASHELLE ANWICO,

was called as a witness, being first duly sworn to tell the truth, the whole truth, and nothing but the truth, testified as follows:

EXAMINATION BY THE COURT

BY JUDGE MURPHY:

Q. All right, Ms. Anwico. You are here for who, and go ahead and tell us, and then you can tell us what you reviewed.

A. Good morning, everyone. Lashelle [phonetic] Anwico with Real Estate Compliance. We reviewed the plan, concept and development plan at this stage for the illustration and basically call out of proposed or easements that will be dedicated to Baltimore County and existing easements, easements that are

private, public easements that may run through the land in question.

I guess the original review was made, I reviewed the plan on November, the November 10, 2021 plan. I originally reviewed it in March. My only comment then was to add a dedication table, which they did, so the plan that I reviewed recently, my comments are dated August 25, 2022.

A review of the red line development plan for the above-referenced project results in the following comments. Real estate compliance's recommendation for approval of the above-mentioned development plan is contingent upon the following. The sum of the acreage called out on the dedication plan for the ten drainage and utility easements is not the total acreage shown in the dedication table.

The difference between the sum of the acreage called out for the drainage and utility easement and what is given in the dedication table is approximately .26 more or less acres. Just please rectify the discrepancy. The easements are labeled correctly. I just tried to go

back and recalculate a couple of times.

I'm sure a number is transposed somewhere. I would not hold up recommendation for, you know, for that, but if I could just see that that has been revised or rectified in some way, that will be enough for real estate compliance.

Q. Okay. All right. So that just needs to be changed on the plan. Let's do this just real quick before I have Mr. Rosenblatt ask, we can ask him whether that's been done.

So the initial review was August 11, 2021. We have, this would be your DPC comments, and you list them here. Six of them, and then seven was the site-specific comment, and then these are the ones that you just mentioned, how you had these comments, had these additions or corrections changed, right?

A. Well, no. Actually I did not. This is probably the first time they are seeing these comments.

Q. Okay.

A. Unfortunately, yes.

Q. They didn't see this from the development

plan conference?

A. Well, the development plan conference in August I asked them just to add a dedication table. They, that was done sometime between that development plan hearing and I guess, you know, through other agencies. Real Estate Compliance did not receive a copy of this red line plan with the dedication table added until August 24th. I had to request it from Jerry Chin. The developer did not send us a copy before, well, we did not receive a copy. We don't have record of receiving a copy with the dedication table added.

Q. Okay. You say August the 24th, 2022?

A. Yes, of 2022, yes.

Q. Oh, okay, because I had it, I can see that attached to your comment you had a chart, and I'll just flip it, but here's the chart. And this was your initials in terms of what you were requesting, right, be changed?

A. Yes.

Q. Okay.

A. Yes.

Q. And you --

A. So it was an update to change item, when we went back, we counted. It was nine easements showing, and now they changed it to ten, and now the acreage is not, does not match, but I did not see the red line plan with the change in the dedication table until August 24th.

Q. Okay. So --

A. 2022.

Q. 2022. Okay.

A. Yes.

Q. You then, you've since issued then your other comment, which showed on the screen the other one, which is the newer one, and this one just says that you need this added, this comment added?

A. Yes.

Q. Okay.

A. The easements may have been changed to 10, but I don't know if the areas had been.

Q. Okay. What we're going to do is I'm just going to mark before we move ahead here. I'll ask Mr.

Rosenblatt to respond. Real Estate DPC comments are August 11th, 2021, those were the ones I just put on the screen. Let me flip that again, flip, flip. All right. August 11th, and then the other one, 2B is going to be the final comment dated August 25th, 2022, final comment.

(County Exhibit No. 1A was marked for identification and entered into evidence.)

(County Exhibit No. 1B was marked for identification and entered into evidence.)

THE JUDGE: Okay. Mr. Rosenblatt, you might want to respond to the question here?

MR. ROSENBLATT: Yes, please.

DIRECT EXAMINATION

BY MR. ROSENBLATT:

Q. Good morning, Ms. Anwico. How are you?

A. I'm good. Good morning, Mr. Rosenblatt. How are you?

Q. Good.

MR. ROSENBLATT: Judge, could I have permission to share?

THE JUDGE: Yes. Give me one second.

Q. And while you're transferring that, Ms. Anwico, the final comment that you had, well, to back up for a second, the list of comments about the dedication table and adding certain things to the plan, are you confirming that all of that has been done? In other words, those comments have been satisfied?

A. Yes.

Q. And you have the one remaining comment which is basically a typo to the acreage to one of the easements being dedicated to Baltimore County?

A. Correct.

Q. So in pre-Covid times, we could walk, we'd be in the same room, we could walk up to the board with a magic marker and cross out the acreage and put the correct acreage on. Obviously we're not in the same room now, so I want to just share if I could, this is the red line plan that was circulated to the Judge, Mr. McCann and all the agencies, and I've zoomed in on the top left corner, and my question is we did not do this before today because of the red line policy.

But if this single acreage for a drainage and

utility easement is corrected, is that all your agency is requiring in order to recommend approval of the plan?

A. Yes.

Q. Okay.

MR. ROSENBLATT: Judge, I'm not sure exactly how you want to do this. I can make this exhibit 1B. We had declared an exhibit 1, that's a red line plan, again shared with Mr. McCann and your office, but this is a clerical error that we can easily correct either now or after the hearing, however you would prefer.

THE JUDGE: So your engineer usually corrects these, right?

MR. ROSENBLATT: Yes.

THE JUDGE: Okay. So they'll, they're going to do that in their case, but you're at least showing Ms. Anwico's purposes that it, that you've changed, you want to zoom in just a little bit.

MR. ROSENBLATT: Sure.

THE JUDGE: Yeah, just click again, click again, yeah. There we go. So you've changed it, is that right, Ms. Anwico?

MS. ANWICO: Yes, I believe so.

THE JUDGE: Okay.

MS. ANWICO: Let me just check my notes real quick.

MR. MCCANN: Judge, I don't have a problem with marking them as 1B. We don't need to do anything --

THE JUDGE: Great. Thank you, Mr. McCann.

MR. MCCANN: Yeah, and just --

THE JUDGE: Mr. Zimmerman, I'm assuming there's no objection from you either?

MS. ANWICO: Yes, the acreage is now, the green acreage --

MR. ZIMMERMAN: No objection. Maybe it would have been nice for Ms. Anwico to have it a month or two ago, but that's okay.

THE JUDGE: I'm sure she appreciates that.

MS. ANWICO: I do.

THE JUDGE: All right. Thank you, Mr. Zimmerman. All right. So Mr. Rosenblatt, you'll mark that as one of your exhibits, so 1B, we'll accept that.

MR. ROSENBLATT: And for my benefit, will 1B

be, it looks like there's multiple pages to this exhibit. Will it be all pages of the development plan?

SPEAKER: There's only one page to the plan, and that's the only change to the red line plan that I sent to you previously is that single green line. So I'll email, as soon as I stop sharing, I'll email this to you so you can have it.

MR. ROSENBLATT: Thank you.

THE JUDGE: All right. I think, let's see. Mr. Rosenblatt, anything else?

BY MR. ROSENBLATT:

Q. So based on that change, Ms. Anwico, your office recommended approval of the development plan?

A. Yes.

Q. Thank you.

MR. ROSENBLATT: I have no further questions.

MS. ANWICO: Thank you.

THE JUDGE: Mr. McCann, any questions?

MR. MCCANN: No questions. Thank you.

THE JUDGE: Mr. Zimmerman, any questions?

MR. ZIMMERMAN: No questions. Thank you.

THE JUDGE: Thank you, Ms. Anwico. You're finished.

MS. ANWICO: Thank you.

THE JUDGE: All right. And let's see. Next up, how about if we do Mr. Livingston.

Whereupon,

JEFF LIVINGSTON

was called as a witness, being first duly sworn to tell the truth, the whole truth, and nothing but the truth, testified as follows:

EXAMINATION BY THE COURT

BY JUDGE MURPHY:

A. Good morning, Your Honor. Jeff Livingston.

Q. Yes.

A. From the Baltimore County Department of Environmental Protection and Sustainability.

Q. Yes. All right. You're taking Mr. Ford's spot?

A. Mr. Ford retired.

Q. I know. I think maybe, you know, he was

tired of coming here.

A. After 53 years, yes.

Q. Right, right. Okay. Hold on one second, let me grab your, I'm just going to put yours on the screen. One second. Okay. Share, and there you go. All right. So I'm just putting yours up on the screen, but go ahead and explain who you review for, and then I've got your documents, we can go through them.

A. So environmental, I'm actually representing three sections within environmental. Those would be Environmental Impact Review, commonly referred to as EIR, Groundwater Management and Stormwater Management.

So this first page here, this is from Mr. Michael Coolis, [phonetic] he is in environmental impact review, and what they review for is they review for compliance with forest conservation regulations, and then the regulations for the protections of wetlands, streams, floodplains, commonly referred to as forest buffer regulations.

So this comment here from Mr. Coolis is in

regards to the red line development plan dated I believe November 10, 2021. He didn't really see those until fairly recently, but he did review it, and he had two comments. So the one comment was delete the narrow strip of forest conservation easement area shown between lots 17 and lot 18 so that this plan, the development plan, matches with the approved preliminary forest conservation plan.

That section can be wooded, it's just we don't want it in a forest conservation easement. They have met their obligation with that, including that in the forest easement. And then comment number two, illustrate the 15-foot woody vegetation free zone setback from the outer limits of the forest buffer easement adjacent to the stormwater management water quality facilities.

I believe that that, there is a note on there that says there is a 15-foot woody vegetation free zone. Typically there's just a leader line, and it gets put in that shows it's 15 feet. But I have discussed this with Mr. Coolis, he said once these have been done, he has no issues with the plan.

Q. Okay. So he would recommend approval if these two additions are made to the plan?

A. Correct, he can.

Q. Okay. All right. Well, what we're going to do is mark this as County exhibit number 3 is the EIR dated August 26, 2022.

(County Exhibit No. 3 was marked for identification and entered into evidence.)

BY JUDGE MURPHY:

Q. We'll come back to those in just a second with Mr. Rosenblatt, but let's go to this one, ground water management.

A. Yes. So this is the same comment that was provided by ground water management at the+ development plan conference, and that they have no outstanding issues.

Q. Okay.

A. The subdivision is going to be on public water and sewer.

Q. Public water and sewer, okay. All right. That's going to be County exhibit number 4.

(County Exhibit No. 4 was marked for identification and entered into evidence.)

BY JUDGE MURPHY:

Q. And then the last one, if I can just, yeah, this is --

A. So this is from our stormwater management section, and this provides stormwater concept plan approval, and this is in reference to the development plan dated November 10, 2021.

So what they're looking for is they're looking for the size, type and location of the stormwater management facilities. In other words, are the appropriate stormwater management facilities, are they in the right locations, and correct dimensions? Actively we're looking at a two-dimensional puzzle here, and this is Ms. Jiru Malotra, [phonetic] providing the approval for concept stormwater plan.

Q. And would you know how many stormwater management facilities they are proposing?

A. I believe there's three separate facilities on the property. I do have the plan up on my

second screen, much like Mr. Rosenblatt. The second screen really comes in handy.

Q. It does. And do you know what type they are? What type of stormwater management?

A. Submerged gravel wetlands, I believe.

Q. All right. And so, all right. So that is for stormwater management, and the only thing required in my understanding just doing these cases is the concept, right? Stormwater management plan?

A. Unless it's a planned unit development, correct, it is concept stormwater approval at development plan time, development plan hearing.

Q. All right. This is going to be County exhibit number 5.

(County Exhibit No. 5 was marked for identification and entered into evidence.)

BY JUDGE MURPHY:

Q. I do have, we'll come back to that question with Mr. Rosenblatt in just a second in regard to this first one with EIR. I also have the specimen tree approval that was dated September 21, 2021. Have

you seen this one?

A. I have, and I have discussed it with Mr. Coolis.

Q. And this was, go ahead. Do you remember what this is about?

A. This was for a single permission to take down a single specimen tree, and I believe it was relating to the access road in.

Q. Okay. And it was, it's recommended by the Director who is Mr. Lekins. [phonetic] Let me go down to the bottom. Is that Mr., Mr. Lekins is the director of the department?

A. It is.

Q. And he approved the removal of this one specimen tree for the widening of the roadway?

A. Correct.

Q. All right. And there will be at least, there should be on the plan, do you know if that's on there, that a special variance was granted in regard to the specimen tree? Is that on the plan?

A. It is.

Q. Okay.

A. It should be down at the bottom in red.

Q. Okay. All right. So this is County exhibit number 6.

(County Exhibit No. 6 was marked for identification and entered into evidence.)

BY JUDGE MURPHY:

Q. Specimen tree approval dated, it's really a recommendation, September 21st, 2021. Let me just ask you, I did note on the plan, the red line plan, that there was also, do you know about a forest buffer variance that was granted on 9/24/2021 having to do with 17,000 square feet or so of impact to a buffer?

A. Yes.

Q. Any idea what that is? Can you explain?

A. Well, some of it is for continued existing use for the yard and the house with the existing house. In other words, part of the floodplain would come up onto the property of the existing home, and part of the variance is for continued existing use. Part of the variance is also for the original driveway to the house,

goes through the buffer.

I believe on the concept plan, that driveway was scheduled to be saved, and we actually requested, EIR requested that it be moved so the house now accesses off of Foxwood Drive. There is still an impact to the buffer where the driveway was located, the existing driveway currently is located, because there will be a sewer line running through there, and that's actually one of the things that's actually allowed through the forest buffer easement.

Q. Okay. so that's what that one was for. Okay. And then there was also an alternatives analysis approved on 9/21/2021 for it looks like infrastructure and utility connections. Do you know about that one?

A. Yes. So roads, utilities, things like that are allowed through the buffer, to impact the buffer with what's called an alternatives analysis. You have to, the developer has to provide several different alternatives, and the Department can either accept that, one of them, or they can reject them all and ask for new alternatives.

Q. And here, the Department accepted it?

A. Eventually we did accept it, so there is the road coming in, there's the utility line for the sewer coming to the existing house, and there is a small impact for the location of the stormwater, and I don't believe any outfalls. It looks like it's just a little bit of a stormwater impact.

Q. For both of those, the forest buffer variance that was granted on 9/24, and the alternatives analysis, those were never in the development plan files. I was wondering, where did we find those?

A. You mean the actual plans that are used for that?

Q. Well, just the, isn't there usually a document, like a letter that says it was approved or not?

A. Correct, there are. Traditionally we've never actually sent those over, and discussing, I've discussed this before with Mr. Moxley [phonetic] in development management, as to how much, because the file consists of stacks and stacks of documents.

Q. Right.

A. So, and his response was to include the development plan comments in the summary.

Q. Got it. Okay. All right. I'm just wondering for my own curiosity, I was just wondering about those. I just saw those on the development plan. Okay.

JUDGE MURPHY: Mr. Rosenblatt, any questions?

MR. ROSENBLATT: Yes, just a few. Judge, could I have permission to share again? Thank you.

DIRECT EXAMINATION

BY MR. ROOSENBLATT:

Q. Good morning, Mr. Livingston. Can you hear me?

A. I can.

Q. Okay. Good. I'm going to show you a copy of the, what we have marked as exhibit 1B, it's the same plan that has the single green line to the red line. I'm just going to zoom in to discuss the two EIR comments, and ask you as to the first comment about eliminating a narrow strip of forest conservation easement between lots, I believe it said between lots 17 and 18, there is

a, do you see a red line through the .88 acres on the exhibit on the screen?

A. I do.

Q. Okay. Does that address the first comment? Removal of that forest conservation easement?

A. Well, actually it's that black line. You see where it says reforestation area with the 0.29 acres? And just to the right of the A in area, the last A, there's that vertical line.

Q. Yes.

A. Yes, this line.

Q. To the right of A, so the record is clear.

A. Correct. That's the boundary of the forest conservation easement. If you go further to the right I believe one of the original plans showed that that was going to be planted, and that's fine, that can be planted, but that's not, that's kind of above and beyond the preliminary forest conservation plan.

Q. Okay. And so removing the acreage for the forest conservation easement next to that, does that address your comment?

A. It does.

Q. Okay. And just the only other comment was to better I guess identify the 15-foot tree, shrub restriction area around stormwater management facilities. So I've scrolled more to the center of the plan, and there's a red hashed area to the left of the eastern most stormwater management facility with a note that says 15-foot tree/shrub restriction zone. Do you see that?

A. I do.

Q. And again, to the second stormwater management facility located more centrally in the project, the same red hash line with a 15-foot tree/shrub restriction zone highlighted?

A. Yes, I see that.

Q. And does that address the second EIR comment?

A. It does.

Q. Okay.

MR. ROSENBLATT: And Mr. McCann, Judge Murphy, this is the same plan that was submitted to both of you prior to the hearing. Again, the only change is what we

discussed earlier with real estate compliance.

Q. So Mr. Livingston, based on those changes on this plan, does your department recommend approval of the development plan?

A. We do recommend approval of the development plan.

Q. All right. Thank you.

MR. ROSENBLATT: I have no further questions.

THE JUDGE: Mr. McCann, any cross?

MR. MCCANN: I do. Can I share as well?

THE JUDGE: Yes. Let me find your name.

DIRECT EXAMINATION

BY MR. MCCANN:

Q. Good morning, Jeff. How are you?

A. Good morning.

Q. Good morning.

MR. MCCANN: Thank you.

Q. Mr. Livingston, you said that stormwater management section reviewed the stormwater management plan for, as you put it, size, height and location of facility, correct?

A. Correct.

Q. Okay. Let me show you, and I'll have this marked as Protestant's exhibit 1.

(Protestant Exhibit No. 1 was marked for identification and entered into evidence.)

BY MR. MCCANN:

Q. Do you see that, Mr. Livingston?

A. I do see that.

Q. Okay. And this is --

A. Is it from the DPC? The Development Planning Conference?

Q. Yes. Am I correct that this page right here, as well as the subsequent two pages for the development plan conference comments of the stormwater management section?

A. Correct.

Q. Okay. And I think what we looked at earlier was marked as County exhibit number 5, this document, this is the final approval of the stormwater management, correct?

A. It's concept. Concept stormwater plan

approval. Final stormwater approval comes later.

Q Yeah, I was referring to final approval of it, of the plan, but yeah, thank you for that. And this was signed off on this, meaning the final approval of the concept stormwater management plan was signed off by Jiru Malotra, is that right?

A. Jiru Malotra, correct.

Q. Malotra, okay. Turning back to what I'll mark as Protestant's exhibit 1, this August 11, 2021 development planning conference comment, this was reviewed apparently by Jeanette Appaloso, [phonetic] correct?

A. Correct. Jeanette Appaloso.

Q. Appaloso, okay. And she is no longer with stormwater management, correct?

A. Correct.

Q. Okay. Well, let's, I wanted to refer you to a particular comment on page 3 of these development plan comments. I'll blow it up so you can actually see it. P refers, you see, to the approval of the concept stormwater management plan. Do you see that?

A. I do.

Q. And then the reviewer's suggestion was to move the location of stormwater management facility as far as possible outside the 100-year floodplain, and she continues on giving the reason why, and in section, do you see that?

A. I do.

Q. Okay. And then in section, or item Q, she indicates that the project does not meet the Baltimore County code development plan requirements at this time, correct?

A. Correct.

Q. Okay. Am I correct that development plan does not remove the storm, number one, remove the stormwater management facility outside the 100-year floodplain? It's still in the floodplain, correct?

A. I believe, yes.

Q. Okay. Let me just show you, this is a copy of what Mr. Rosenblatt sent me prior to today's hearing, and I think it's been marked in this case as Developer's exhibit 1, and to confirm that, I'll just go

over to the date and I'm sure he'll correct me if I'm wrong.

A. Yeah, the one up top here, yes.

Q. I think the date on this is August 25, 2022.

MR. MCCANN: Am I looking at the right plan, Adam?

MR. ROSENBLATT: Yes, and you should have, if it matters to you, the green line plan was emailed, so this would, this is what was marked as exhibit 1, and then 1B is the one with the single green line. Yep.

MR. MCCANN: Great. I just wanted to make sure we were looking at your exhibit.

Q. So, and again, I know it's a busy plan, so it's hard to see, Mr. Livingston, but I'll sort of highlight in yellow the floodplain, the border of the floodplain that is.

A. I see it.

Q. Yeah, you see it. For the record, and for the Judge's benefit, below the proposed road it says 100-year floodplain, correct?

A. Correct.

Q. Okay. And then the line indicating the boundary of that floodplain sort of hits south southeast, and it continues actually on the other side of the road, does it not?

A. It does.

Q. Okay. And to the left of that, or I guess to the, approximately to the west of that is a rather large stormwater management facility, correct?

A. Correct.

Q. And that facility, would you agree with me, is entirely within the floodplain?

A. I do agree.

Q. Okay. The, you made reference to the forest buffer variance, and also to the alternative analysis that were approved, and those approvals are reflected in, well, not reflected, we have exhibit 7, but just first on the forest buffer variance, it’s your understanding that that forest buffer variance was for the continued use or continued existence of the house, the existing house on site, its driveway and its yard,

correct?

A. Well, we'd have to actually read the actual letter, because I believe it was for several different items, so we would have to look at the forest buffer variance and the alternatives analysis.

Q. Okay.

A. If I can bring those up as well.

Q. Well, I have it. Let me grab it real quick, just so you can answer. Let me blow that up. This is a letter dated September 24, 2021. Do you see that?

A. I do.

Q. And is this, I'll scroll down, it's three pages signed by Mr. Lekins. Is this the approval letter for that forest buffer variance?

A. It should be, yes.

Q. Okay. This is my highlighting obviously, but I highlighted it in order to reflect what the forest buffer and floodplain impacts are, and as I think you indicated, it says here for the dwelling and its yard area, is that correct?

A. Correct.

Q. Okay. And then the total of 17,424 square feet of variance was granted, correct?

A. I believe so.

Q. Okay. Now, that forest buffer variance was appealed by me, was it not? On behalf of my clients?

A. My understanding is yes, it was. I believe you've already had the hearing, but I am not familiar with the outcome.

Q. Okay. I think Mr. Rosenblatt would agree that's still pending, we haven't had the decision on that yet. So as we sit here today, let's just assume that the Board of Appeals agrees with me and denies this forest buffer variance, would you need to, is it fair to say that you and other members of your department will need to re-review the development plan in light of that denial?

A. In some capacity, correct, yeah. I believe the mechanism would be that the developer if they tried to go forward, they would be basically sent back to the development review committee, and they would have to ask for B2, to amend a previously approved plan if they

had to change the plan.

Q. When you say previously approved plan, are you referring to the development plan?

A. To the development plan.

Q. Well, you're assuming it's going to get approved. I didn't make that assumption yet.

A. What was going to be approved?

Q. Yeah. As we're sitting here today --

A. Oh, yeah.

Q. -- without any development plan approval, the granting or the denial of the forest buffer variance which is on appeal may make a difference in your recommendation of approval. Is that fair?

A. All of that would depend on the timing. Judge Murphy has a timeline to issue an order in this case, and I'm not sure, I mean, that would all come down to a matter of timing.

Q. I get you. I understand.

A. This comes down to like part of the legal proceedings that I'm never involved in as well.

Q. Yeah, I understand. You're saying if this

development plan is approved, and then we find out that the forest buffer variance was denied, it would have to go the BRC for an amendment to the approved plan.

A. Correct, or to try to amend it, or if it's significant enough, it might get remanded back, well, kicked back to a DPC. That's another possibility.

Q. Okay. And then we, you also talked about the alternatives analysis, which I think you indicated was a request for approval from DES [phonetic] to have the new road, the entrance road, and utilities and stormwater management in the forest buffer and floodplain, correct?

A. Correct.

Q. Okay. And am I correct that that alternative analysis also extended to, I'll pull it up again, to the widening of, the proposed widening of Joppa Road?

A. I believe so. I'd have to read the letter.

Q. Okay. Let me pull that up for you. So you see that? I'll pull it up.

A. Yeah. However, this alternatives analysis was raised pursuant to our design meeting for the widening of West Joppa Road to install a deceleration. I'm reading one of the other older versions, yeah.

Q. Okay. So let me just show you this, because I may mark both of these --

A. Correct.

Q. -- as exhibits. This is a 3-page letter signed by Mr. Lekins, I'm sorry, 4-page letter, actually it has the plan attached. I think they did it just for the record, and I'll introduce as just the four pages of the letter itself. But do you recognize this as the letter for approving, DES approval, of the alternative analysis?

A. At a fairly high rate of speed, yes, I do recognize that.

Q. I'm sorry. Let me know if you want to look at it closely. Hold on. I really wanted to focus in on one thing, but let me know when you're satisfied it's the right letter.

A. Okay. If you can scroll down, please.

Q. Sure. Keep on going?

A. Yeah, if you can hold it right there.

Q. Okay.

A. I believe it is. I believe this is the correct letter.

Q. Okay. Just so you see it, page 3 is, you see Mr. Lekins, I'm sorry, Mr. Schaeffer's signature. Do you see that?

A. Yes, I can see that.

Q. Okay. Getting back to the areas that I highlighted of course, am I correct, now having read it, would you agree with me that the alternative analysis extended not just to the new entrance road in the stormwater management facility, but also the widening of Joppa Road?

A. I believe so, yes.

Q. Okay. All right. And am I correct also that the alternative analysis approval that's reflected in this letter, the September 21, 2021 letter from Mr. Schaeffer, is also the subject of an appeal by me on behalf of my clients?

A. Correct.

Q. And that appeal is likewise pending?

A. Correct, to the best of my knowledge.

Q. Okay. And sitting here today, would you agree with me depending on the timing, that the approval or disapproval of the alternatives analysis by the Board of Appeals may affect your recommendation in this case for development plan approval?

A. I would agree that it could, yes.

Q. Okay.

MR. MCCANN: That's all I have, Judge Murphy. I would just ask that those two letters be marked as Protestant's exhibits 1 and 2, number 1 being the forest buffer approval, and number 2 being the alternative analysis approval.

THE JUDGE: Any objection, Mr. Rosenblatt?

MR. ROSENBLATT: No. Just to be clear, one of the documents had a submittal attached to it, and you're just limiting the exhibit to the approval letter?

MR. MCCANN: Correct. I'll send you a copy when we get done.

MR. ROSENBLATT: Okay.

MR. MCCANN: And I'll remove the highlighting so it's not part of the exhibit.

MR. ROSENBLATT: Okay. No objection.

THE JUDGE: Okay. Thank you. Mr. Zimmerman, I'm assuming you don't have any objection?

MR. ZIMMERMAN: No objection. No objection. I have questions, but no objection.

(Protestant Exhibit No. 2 was marked for identification and entered into evidence.)

THE JUDGE: Mr. McCann, you're finished? Was that a yes? Okay. All right. Mr. Livingston, hang in there. Mr. Zimmerman, you're next.

MR. ZIMMERMAN: Thank you.

DIRECT EXAMINATION

BY MR. ZIMMERMAN:

Q. Good to see you, Mr. Livingston.

A. Likewise, Mr. Zimmerman.

Q. By way of background for everybody listening, you know this case was scheduled actually to be heard last November of 2021, right?

A. Correct.

Q. And so that explains why some of the comments and activities were from September to November, 2021 from your office, correct?

A. Correct.

Q. The first thing I want to ask you is what's the date of that red line development plan that was on the screen, if you know? Or maybe Mr. Rosenblatt can tell us. He was asking you about it and you said hey, things are okay now, something like that.

A. The one that he had up?

Q. Right.

A. I believe it was the November 10th, 2021.

Q. Okay.

A. I believe that was the date.

MR. ROSENBLATT: For the record, the one I had was August 25, 2022. That's Mr. Rosenblatt.

MR. LIVINGSTON: That is exhibit 1B, yes.

BY MR. ZIMMERMAN:

Q. Okay. Exhibit 1, that's the November 10th, correct?

A. Exhibit 1 is, so I'm scrolling over. I think it's the same day. It actually is August 25, 2022. This was the plan submitted to Mr. McCann and the ALJ's office.

Q. All right. So Mr. Livingston, are there some differences between the November 10, 2021 plan and the August 25, 2022 plan?

A. I was, this went up as we were going along, there is the change was, did have the forest conservation line delineated. Remember when we were discussing that with Mr. Rosenblatt?

Q. I'm just asking you, you know, what the main differences that are --

A. I believe what I'm calling the second plan does have a line with the forest conservation line shown on the plan, and it has got the planting stricken between lots 17 and lot 18, they're not on there.

Q. Yeah.

A. And then there was a minor line in the bottom of the one stormwater management pond. But other than that, I did not see any other changes.

Q. Okay. Given that this case was postponed from last November, do you have any concern about not getting a revised plan until a week before the hearing? Is that a concern?

A. In this case, no, because it's not changing anything structurally for EPS.

Q. Okay. And do you know whether or not this August 25th revised plan was made available to the public, other than to Mr. McCann?

A. I don't know. That's probably more of a development management issue.

Q. Okay. As far as the forest buffer variance goes, it was approved September 24, 2021, and is on appeal. Can you say why your department didn't provide all that information for the file for Judge Murphy to have available?

MR. ROSENBLATT: Objection, Your Honor.

THE JUDGE: What's the objection?

MR. ROSENBLATT: I have, I have two objections. One, the forest buffer variance which I allowed Mr. McCann to put the letters in, to ask questions about it,

but as you know it is a separate legal process that is not before the ALJ, it is never before the ALJ. If it's appealed, it goes to the Board of Appeals separately from a development plan, so that is the first part of the objection.

The second part of the objection, and I didn't do this at the outset, because thought that Mr. Zimmerman would respect the statutory authority that allows him to participate in certain types of cases, but we now have people's counsel whose authority to attend and participate in hearings is limited by the Baltimore County charter and code, asking environmental questions that have absolutely nothing to do with the zoning regulations, petitions for variance, special exception, reclassification, and he is far exceeding his statutory authority in asking these witnesses questions that have nothing to do with his role as a Baltimore County employee, not an interested citizen.

THE JUDGE: Okay. Mr. Zimmerman, yeah, I did have the same, I did look up that again, so you and I have had that discussion before. Your authority is

limited to the zoning issue, which is the special variance.

MR. ZIMMERMAN: Well, and actually the master plan conflict, we participated in the landmark, many master plan cases, H&S Development versus People's Counsel is the landmark case on master plan conflict and master plan was added to our charter in 1978.

So yeah, our priority in this case as I'll explain in the opening statement is the master plan and residential performance. Zoning standards, special variance issues, yes, which in the zoning law, but I thought it might be helpful since you asked about, you know, the forest buffer variance and the alternatives analysis not being in the file, it seems to me they are inter-related, and they may relate to some extent to the master plan, I don't know, but I was actually just trying to be helpful, because it looks like, you know, this is all inter-related, and the idea that these things are separate doesn't make any sense to me, but I think the point, you've made the point that you don't have that material, so I'll try to, you know, I'll refocus back on

the master plan and zoning issues so we don't spend, you know, four or five days on this case.

THE JUDGE: I appreciate that. One of the reasons I brought it up was because the Board of Appeals in a recent case that I had, development plan case, ruled that the alternatives analysis or interlocutory orders based on a Chesapeake Bay case, Chesapeake Bay Foundation case dated January of 2022, that they are not interlocutory, and so that was one of the reasons they changed the alternatives analysis, so I was curious whether or not the Board in this case, again, getting into too much here, but whether or not these would really be part of the development plan based on that case.

But again, for your purposes, if you can tell me how your questions in regard to environmental issues are related to master plan conflict, I didn't see a master plan conflict.

MR. ZIMMERMAN: Well, the master plan conflict is mainly the T3 transect issue, which you had in the, you know, Whitley Park, [phonetic] so I don't know if, I can't say at this point whether the environmental issues

relate directly to the master plan.

THE JUDGE: All right.

MR. ZIMMERMAN: I was just trying to be a little bit helpful. By the way, there was a Court of Appeals case the last week on the interlocutory versus final, at least in Harford County of the, it may be the same case you're referring to.

THE JUDGE: It's the same case, it is.

MR. ZIMMERMAN: It just came out last week, that was the Court of Appeals on that, and they actually said that the, under the Harford County Code, the forest conservation decision was a final decision, so that's a new case. I'm just trying to be helpful there.

THE JUDGE: Okay. All right.

MR. ZIMMERMAN: I'll refocus on, you know, I'll stick to the master plan and the zoning, okay?

THE JUDGE: If you could, yes, if you could.

MR. ZIMMERMAN: So I do have a zoning question.

THE JUDGE: A zoning question for Mr. Livingston?

MR. ZIMMERMAN: For Mr. Livingston, yeah.

THE JUDGE: Okay, Mr. Livingston.

MR. ZIMMERMAN: Yeah.

BY MR. ZIMMERMAN:

Q. So Mr. Livingston, are you familiar with the growth management law?

A. You're talking about growth allocation in the critical area?

Q. No. I'm talking about growth management law and the zoning law relating to sewer sheds and adequate sewer. Are you familiar with that?

A. I am not.

Q. Okay. And what about, there is also a master water and sewer plan that the country has, correct?

A. Correct.

Q. That's part of the master plan. Are you familiar with that?

MR. ROSENBLATT: Objection.

MR. ZIMMERMAN: It's a water sewer plant question.

MR. LIVINGSTON: But that's not environmental.

MR. ZIMMERMAN: Okay. So that's not your department. That's not within the department, that's another, that's like public works department or somebody [indiscernible]

THE JUDGE: [indiscernible] Mr. Zimmerman? Hold on one second. There was an objection. Overruled, since you already talked over top of the objection. All right. Just let me get a chance to rule on the objection first. The objection is overruled.

MR. ZIMMERMAN: Okay.

THE JUDGE: Mr. Livingston said it's not an environmental issue.

MR. ZIMMERMAN: Okay. That's fine. I just wanted, he gave a good answer, that's fine, but the question related to the county's master sewer and water plan, which is part of the master plan, all right. So, you know, we are going to have a lot of these, you know, nitpicking objections when I'm asking questions about the, you know, the master plan.

THE JUDGE: Understood. We're just trying to move it along, so that's fine, sir. Go right ahead, Mr.

Zimmerman.

MR. ZIMMERMAN: No, that's it. I just wanted to find out if his department, you know, gets involved with those adequate sewer growth management master water sewer plan issues, and apparently they don't.

THE JUDGE: Okay. All right.

MR. ZIMMERMAN: Okay. I'll accept that.

THE JUDGE: All right.

MR. ZIMMERMAN: That's all I have.

THE JUDGE: Thank you, Mr. Zimmerman. All right, Mr. Livingston, you are free.

MR. LIVINGSTON: Thank you.

THE JUDGE: Thank you.

MR. ZIMMERMAN: I neglected to introduce that August 11, 2021 stormwater management development plan, stormwater management comment, those three pages, so I would --

THE JUDGE: Which one was that?

MR. ZIMMERMAN: That was the three page stormwater management comment that I showed Mr. Livingston. It would be exhibit 3.

THE JUDGE: Oh, right.

MR. ZIMMERMAN: And I'll send that to you and Adam as well.

THE JUDGE: And that's Protestant's exhibit 3.

MR. ZIMMERMAN: Correct.

(Protestant Exhibit No. 3 was marked for identification and entered into evidence.)

THE JUDGE: Okay. All right.

MR. ZIMMERMAN: Thank you.

THE JUDGE: No problem. All right. Thank you, Mr. Livingston. Next up is going to be planning, Mr. Williams.

MR. WILLIAMS: Good morning, Judge. How are you?

THE JUDGE: Good morning. How are you? We are moving right along here.

MR. WILLIAMS: Yes, ma'am.

THE JUDGE: Let me do this. Let me find yours, give me one second here. All right.

Whereupon,

BRETT WILLIAMS

was called as a witness, being first duly sworn to tell the truth, the whole truth, and nothing but the truth, testified as follows:

EXAMINATION BY THE COURT

BY JUDGE MURPHY:

Q. Department of Planning, go right ahead.

A. Good morning, everyone. My name is Brett Williams [phonetic] with the Department of Planning. The development plan for site design pursuant to the Baltimore County zoning regulations master plan 2020 comprehensive manual of development policies and other applicable community plans associated with this development.

So we have submitted our HOH report dated 11/8/21. If you scroll down to the school impact section, under evaluation and recommendation, the Department of Planning finds that the, at the time of the filing date for July 9, 2021, the school impact analysis that was submitted has been approved by our department.

The subject schools are Bridlewood [phonetic] Elementary school, Ridgely Middle School and Dulaney High

school, all of which are under the threshold of 115 percent of state capacity respectively, and we recommend approval of this school impact analysis.

Q. Let me ask you that. Don't we need a new school impact analysis, or am I wrong about that? Here it is on the screen dated July 9th, 2021. I thought every November they re-did the numbers based on September 30th numbers.

A. Honestly, I'm not sure. I don't believe, to my knowledge we haven't gotten the new numbers yet.

Q. Oh, the Planning Department hasn't?

A. Yes, because I believe we get it from the Baltimore County public schools, and we haven't gotten them yet.

Q. Okay. No new numbers. All right. Okay.

A. But if you'd like, we could re-run another school impact analysis just as a precautionary measure.

Q. Well, you wouldn't be able to write it though if you don't have the numbers, right?

A. Yeah. To my knowledge, we don't have the numbers.

Q. Okay. All right. Well, if you don't have them, then we don't have them. I just wanted to ask that question while you were on that topic. Okay. So that's analysis. All right.

A. We are, our department is also aware that there is a special variance request for failing F level traffic shed as delineated on the 2020 basic services map. With regard to the special variance request, the Department of Planning has no objection, but will defer and rely upon the expert judgment of the Department of Public Works and Transportation for final recommendation and decision.

Q. So on that one, on that one, you reviewed for some reason the traffic impact study was sent to Department of Planning, right?

A. Yes, and we have reviewed that as well.

Q. It's attached to your report. In fact, it was the, here we go, it's the back of it. So this was attached to your right, to your HOH report?

A. Correct. We wanted to put on the record that we did in fact review it, but we are not the

technical experts behind the decision making for whether it should be approved or not. We rely upon the experts of DPW and Transportation.

Q. We had this in another case, and of course the statute for, the statute, the code, the Baltimore County zoning regulation section for special variance indicates that Department of Planning is charged with the report. Did you actually have any conversations with the Department of Public Works? Have you met with them? Is there anything that you could tell us about it?

A. We have not met with the DPW on this report, but we have reviewed the report, and our position is that we have no objection to approving, with the recommended improvements that we saw in the Lenhart, [phonetic] I think it was called the Lenhart traffic report. We have no objections to approving this variance, special variance request.

Q. Do you remember based on your review of the Lenhart traffic consulting traffic impact study, what are the improvements that they're proposing for the project?

A. So I'm, I am going to have to re-look, revisit it, but I believe they were extending, widening a couple of lanes along the intersection, and providing traffic, additional traffic signals and things like that.

Q. Okay. And you were the one who would have read the traffic impact study?

A. I did read it myself, yes.

Q. Okay. For the Department of Planning.

A. Yes.

Q. Okay. All right. And so that's that part of your HOH report. And then you had the residential standards.

A. Yes, ma'am. So the Baltimore County zoning regulation 260 requires the Director of the Department of Planning to make a finding based on residential development of four lots or more with the submittal of the August 30, 2021 pattern book that Department of Planning recommends approval of that pattern book, and our final recommendation through a point by point response letter received on September 16th, 2021, being attached to this report, the

applicants have positively responded to the August 11, 2021 DPC comments made by Department of Planning.

The Department is, the development plan is in conformance with the Baltimore County zoning regulations, the comprehensive manual development policies, as well as the master plan 2020. The Department of Planning has reviewed the submitted red line development plan, and associated materials for the above development for Greenspring Manor, and recommends approval.

Q. Okay. For the performance standards, the pattern book that you reviewed was submitted on August 30th, that's 2021?

A. Yes.

Q. So there's a newer version of that? Did you get the updated version of the pattern book? I think that's dated August 29, 2022.

A. Let me see what we, yes, we did receive it.

Q. Okay. And would you have reviewed that one as well?

A. Yes. Our comments still don't change as

far as recommendation. We did see that.

Q. Okay. That was my, go ahead. That was my next question, whether your position had changed based on your review of the latest pattern book. And so you indicate here that it is, the development plan has conformed with the master plan. Do you see any conflict with the master plan or any of the local community plans?

A. No, I do not.

Q. Okay. The, you mentioned the, we have the school impact analysis of course which we showed on the screen. The point-by-point responses to your planning comments, this is from the concept plan comments dated July 29th of 2021.

You had in your initial comments, one of the things Department of Planning said is that they considered this site to be overdeveloped, and so did you change your position on that?

A. Yes, we did.

Q. And why was that?

A. Well, with working with the developer through several meetings, we, it was determined that with

the proposal being 61 units and meeting the density that it was not over developed.

They were able to actually provide open space without the need for requests for relief. There are no regulation variances being requested for this property, and also the lot sizes were similar to the surrounding area. I think Seminary Farms Road, it was determined that the lots were about 24,000 square feet on average. Also the lots proposed for this development were an average of about 11,500 square feet, which is less than some of the surrounding single family attached lots in the area.

Like I said, they were able to also meet the density by right, so without any bulk regulations, so --

Q. And you're also, you had concern that you wanted homeowners to be able to put up decks, right? And so without the need for variances, and that was also a concern. Did they address that?

A. Yes. So they, in the same DP, there's a regulation to provide 500 consecutive square feet of very useful lot area. This was met on all of the lots without

need for relief, and also the proposed lots are able to meet, provide decks without a variance on all of the lots.

Q. Okay. All right. And then there were, I mean, there's a lot more here you went through, but you were satisfied when you got this document which is many pages that you, they had addressed all of your initial concerns from the concept plan conference.

A. Correct.

Q. Okay. And I'm just showing it for the record, it, the pages, they are not numbered, but they do go on analysis for the master plan 2020, the comprehensive manual development policies, also I just want to show it on the screen just to show that this is the document that you reviewed.

A. Yes.

Q. Yeah, okay. So that is another exhibit. All right. So we're going to say the Department of Planning hearing officer's report, which is the one we first showed on the screen dated November 8, 2021 is County 7.

(County Exhibit No. 7 was marked for identification and entered into evidence.)

THE JUDGE: The school impact analysis is County exhibit number 8, dated 7/29/2021.

(County Exhibit No. 8 was marked for identification and entered into evidence.)

THE JUDGE: The Department of Planning, the point-by-point response from the developer which typically I don’t put in because it’s not a county generated document, however the county did review this based on this point-by-point response did recommend approval based on this response, and that is going to be County exhibit number 9.

(County Exhibit No. 9 was marked for identification and entered into evidence.)

THE JUDGE: All right. Mr. Rosenblatt, any questions?

MR. ROSENBLATT: No questions. I think I missed what exhibit 6 was, Your Honor.

THE JUDGE: The specimen tree approval.

MR. ROSENBLATT: Okay. Thank you, and thank

you, Mr. Williams. I don't have any questions at this time.

THE JUDGE: Okay. Mr. McCann?

MR. MCCANN: Yeah, thank you.

DIRECT EXAMINATION

BY MR. MCCANN:

Q. Good morning, Mr. Williams.

A. Good morning, Mr. McCann. How are you?

Q. Good, thank you. So let me show you, it sounds like you were very frank with the judge in explaining your reasons for why your office's position on this development changed, and you mentioned a number of things. Let me just, before I show you anything, let me just make sure I've captured the reasons.

And again, the question is are these the reasons why the Planning Office changed its position to now support those development? Number one, you said that the development meets the zoning density.

A. Correct.

Q. Number two, you said that the development provides open space?

A. Correct.

Q. Number three, you said that the developer is not seeking any variances from the county's bulk regulations.

A. That's correct.

Q. Okay. You said, number four, that the proposed lot sizes are similar to some of the other single-family residents in the area, correct?

A. Correct.

Q. And number five, the developer is not seeking any variances for any rear-yard decks that are [indiscernible] is that correct?

A. Correct.

Q. Did I miss anything?

A. I think you have it all.

Q. Okay. Let me show you what I'll mark as Protestant's exhibit number 3.

THE JUDGE: That should be Protestant's 4, I think. You already put --

MR. MCCANN: Oh, I'm sorry. I was thinking 4 and said 3, thank you.

THE JUDGE: Yes.

(Protestant Exhibit No. 4 was marked for identification and entered into evidence.)

MR. MCCANN: Okay. And I'll blow these up a little bit so you can see them. This is dated March 1, 2021.

BY MR. MCCANN:

Q. I'll scroll down slowly, Mr. Williams, so you can see it. Let me know if you want me to stop. The question I'm going to ask you at the end of this scrolling is whether or not you can confirm for me that these are the Department of Planning's concept planning comments of March, 2021.

A. These do in fact look like our comments.

Q. Okay. Great. And the four pages, that's your signature at the bottom?

A. Correct.

Q. And that's Ms. Nugent's [phonetic] signature at the bottom?

A. Correct.

Q. And at the top, page 1 of this exhibit 4,

Steve Lafferty, [phonetic] the Director of the Department of Planning, those are his initials?

A. Correct.

Q. So Mr. Lafferty as well as Ms. Nugent signed off on these concept plan comments back in March, 2021?

A. Correct.

Q. And let’s just direct your attention to, bear with me one second. Special variance request. Read the first two sentences and I’ll highlight them in the second paragraph under special variance request.

It says the Department of Planning considers this site to be over-developed. Many of the lot sizes are not compatible to surrounding neighborhoods. The number of lots should be decreased to allow for larger lots, and would help achieve a design that could accommodate future improvements in yard space without the need for relief. Did I read that correctly?

A. Correct.

Q. Those first two sentences. I want to also show you and have marked as Protestant’s exhibit 5, the

concept plan.

(Protestant Exhibit No. 5 was marked for identification and entered into evidence.)

BY MR. MCCANN:

Q. Let me show that to you. This is a two-page document. First, I'll show you the two pages. I'm sorry. Go up a little bit. So page 1 of this exhibit, and page 2, okay, and then I'll move over to the legend so you can see the dates. I'll blow it up a little bit. Bear with me a second. I can turn that if you'd like, but do you see that date of this concept plan, two pages? February 15, 2021?

A. Yes.

Q. Okay. And in fact there's a seal on this. It says received February 16, 2021 from Department of [indiscernible] and Inspections. Do you see that?

A. Yes.

Q. Okay. Below that, again, does this appear to be the two-page concept plan that was filed in February of 2021 in which is the subject of your March 1, 2021 concept plan comments?

A. Yes.

Q. Okay. Okay. First of all, we can, I know it's busy, but would you agree with me, number one, that this concept plan proposed the very same number of lots as the development plan, Developer's exhibit 1, correct?

A. Yes. 61 units, yes.

Q. Okay. And would you agree with me that the lot sizes have not appreciably changed? You can look at the lot areas on this table and compare it to the development.

A. I believe, to my knowledge, lot 7 was removed for open space.

Q. Yeah.

A. And the cul-de-sac was added for better circulation.

Q. Okay. But in terms of the lot areas, and we can all look at the two charts on the concept plan, the development plan ourselves, but would you agree with me based on your review of this plan back then and the current development plan that the lot areas were all 61 new lots, so roughly the same as they were, as they are

in the development plan. Would you agree?

A. Yes, they are similar.

Q. Okay. And the, with the exception of the things you just mentioned, the configuration of the lots themselves is the same. That is same central road network, same orientation of the houses, that sort of thing.

A. There's slight variations to the road networks, and we made sure that we reinforce the lot depths to provide better site design for each lot.

Q. Okay. So you said two things there. You said the road network had slightly changed. Let me show you Developer's exhibit 1A, we had it up before. This is the current development plan. Would you agree with me that the road network and the configuration of the houses is roughly the same?

A. It's similar, but I believe there has been minor changes to reduce the visual impact at Joppa Road.

Q. Okay. And what changes are those?

A. Some of, like I said, we, they got rid of I believe lot 7 to provide open space, the cul-de-sac,

circulation, and I believe the lot depths, the housing depths on some of the lots were increased.

Q. Okay. Let's just look at that real quick, and I'll show you. To be fair, I'll direct you to it. This is the concept plan, again. Protestant's exhibit 5. I'll blow it up a little bit so you can see it. Do you see that in this concept plan that there are proposed houses to the immediate I guess east of the stormwater management facility? Do you see that?

A. Correct, I see it.

Q. Okay. And then going back to Developer's exhibit 1, to be fair, I think this is what you were referring to. That area that I just described in the concept plan is now as you've described it, is not, all the houses have been moved a little further back.

A. Yes.

Q. Is that what you were referring to?

A. Yes, to reduce the visual impact, impacts on Joppa.

Q. So the removal, the moving of these houses, what 100 feet or 200 feet or so, in your mind

lessens the impact of the houses, is it the, let me rephrase that. Is it the visual impact from Joppa towards the houses that you're concerned about? Or is it the visual impact from the houses to Joppa Road that you're concerned about?

A. So from Joppa Road to the houses, we have what are called Section 260, we like to mitigate impacts of the houses, and one of the main thing that visual viewshed, and also with the high visibility lots, in 260 there is what is called high visibility lots, and we'd like to reduce impacts of the size of the houses, and also into the rear yards.

Q. Okay. So for the houses, going back to the concept plan again, exhibit 5, what has been achieved in the development plan I guess is what you're suggesting is that these I guess roughly two houses here, lots 61 and 60, they are no longer in your opinion high visibility lots?

A. So if you can go back to the other one.

Q. Sure.

A. 661, so those two were removed, but the

house on this plan is still a high visibility lot.

Q. 661 in the development plan is still a high visibility lot?

A. Correct.

Q. And that hasn't been removed obviously?

A. Correct.

Q. What about 60, lot 60?

A. Lot 60 is not a high visibility lot.

Q. Okay. What about lot 2 to the south across the street? Is that a high visibility lot?

A. Yes.

Q. What about lot 3? Is that a high visibility lot?

A. No. High visibility lots are only lots visible from the public right of way, where the side facades are exposed from the public right of way.

Q. Okay. The public right of way being?

A. On this case, the main, the public road, Foxwood Drive, the public road as well.

Q. Okay. So as we sit here today, the development plan as proposed still has high visibility

lots?

A. Yes.

Q. Okay. You mentioned the cul-de-sac, and I wanted to ask you what it is about the development plan that's changed. I apologize for switching back and forth, but I'm showing you now Protestant's exhibit 5, and I'll zoom in if you'd like.

What's different between this concept plan, Protestant's exhibit 5 [indiscernible] in terms of [indiscernible]

A. I'm sorry, I can't hear you. Something --

Q. That's not a cul-de-sac. So when you say cul-de-sac --

A. It's in the bottom right where the HO is, yeah.

Q. I'm sorry, I temporarily forgot what a cul-de-sac was apparently. Let me go to that area of the plan, thank you for that. Here is the concept plan, the cul-de-sac. What has changed between the two plans? Let me know which one you want to look at.

A. So now, in this first exhibit right here,

the, it was not meeting the county requirements, so, and the DPC or the red line plan meets county requirements, sidewalk is added, and it now has a landscape island to meet all of the requirements set forth in the regulations.

Q. Okay.

A. And that also provides better function and circulation for the site.

Q. So for this, for the lots on the cul-de-sac, which ones specifically have been changed, or should have been changed? Which ones? Which lot numbers? Looking at the concept plan first.

A. I'm sorry, I don't understand the question.

Q. Yeah. Maybe go to the development plan. Tell me what has changed, or repeat for me what has changed on the development plan with respect to the cul-de-sac, I think you said.

A. So lots 17 and 18 were shifted. Lot 19, lot 19 was HOH open space. HOA open space. Again, you can see they've added the sidewalks, there's better

turning radius for the cul-de-sac. The landscape island has been provided, which is a part of the regulations as well, and yeah, it provides better circulation and function for those houses that are serviced by the cul-de-sac.

Q. Okay. And all those things you just mentioned, those relate in your opinion to, well, strike that. Lastly, or not lastly, but another question in terms of the houses themselves. On this plan as well as the concept plan, there is a breakdown, is there not, of the typical unit layout? Do you see that on Developer's exhibit 1?

A. Yes, I do.

Q. So in other words, the developer is proposing certain units to be 54 feet wide and some 50 feet wide and some 40 feet wide, correct?

A. Correct.

Q. So pretty significant differences in square footage, correct?

A. Correct.

Q. And then in the concept plan, likewise,

I'll turn to that same table. In the concept plan, the developer likewise was proposing 54-foot, 50 foot and 40-foot-wide units, correct?

A. Correct.

Q. Do you know offhand how many of each of those size units there are on the concept plan, and how many of those, each of those --

A. I do not.

Q. Let me just finish the question, sir.

A. I'm sorry.

Q. It will help my train of thought as well. Do you, amongst the 61 new lots, do you know in the concept plan, do you know how many are 54 foot wide, 50 feet wide, or 40 feet wide?

A. Not offhand, no.

Q. And in terms of the development plan, do you know what the distribution is between the 54-foot wide, the 50-foot wide, and the 40-foot wide?

A. Not offhand, I do not.

Q. Okay. Okay. In terms of traffic, would you agree with me that under both plans, the traffic

generated by each plan will be the same?

A. Yes.

Q. Would you agree with me that the sewer generated by the 61 homes will be the same under both the concept plan and the development plan?

A. I would assume so, but I'm sure it's not [indiscernible] but I would assume so.

Q. Okay. All right. A couple other things. You mentioned that, in response to Judge Murphy's questions that you did not, the Planning Office, did not submit a report to her on the office's recommendations regarding this type of variance, correct?

THE JUDGE: Let me just say for the record, it was in the report. It's in the HOH report? I don't want there to be a misunderstanding. So they actually, special variance was mentioned as you saw in the HOH report.

MR. WILLIAMS: Yeah.

MR. ROSENBLATT: Judge, would you mind pulling that up? Because I don't think I have that.

SPEAKER: I certainly don't have the, yeah, I

don’t have the --

BY MR. MCCANN:

Q. Maybe I did mishear you, Mr. Williams. I thought you said that you weren’t a technical expert, and that the Planning Office didn’t --

A. I’m sorry, go ahead.

Q. And the, it’s okay. You’re a step ahead of me. I thought you said that you were not a technical expert in traffic, and you and your office did not submit the report required by the zoning regulations on the special variance issue.

THE JUDGE: Let me pull it up. So just to be clear, I mean, it’s, again, the special variance language is in the HOH report, so it’s right here. So there’s the report, it is just that they defer to the department.

MR. MCCANN: Okay.

THE JUDGE: I just don’t want there to be, you know, confusion about my question.

MR. MCCANN: I guess that’s an important distinction. So let me, what exhibit is that, Your Honor?

THE JUDGE: It is exhibit 7.

MR. MCCANN: 7, okay.

BY MR. MCCANN:

Q. So this HOH report of November 8, 2021 is a report, you call it a report, correct?

A. Correct.

Q. And it makes reference to and uses the word special variance, correct?

A. Correct.

Q. But you did not, aside from that, you nor anyone else in your office actually reported on or spoke to or explained what your position was on a special variance, correct?

A. So I can’t speak, I can speak for my review, so I reviewed the Lenhart traffic report, and it was determined, I determined that these improvements positively improved, would improve the traffic, the traffic level in this area, but pursuant, there’s no regulation stating that it is under our purview to do the review and make a final recommendation finding, but through our review it was determined that we have no objection to this, to the granting of the special

variance, and, but we ultimately defer to DPW and transportation.

Q. Okay. So when you use, in this paragraph we're looking at on page 3, when you say the Department of Planning has no objection, the basis of that, to the extent that that's a report, the basis of that are the things you just described thus far, correct?

A. Yes.

Q. And anything else that you haven't said?

A. No.

Q. Okay.

A. I think that's it.

Q. You're a planner, correct, Mr. Williams?

A. Correct.

Q. Did anyone other than yourself review the traffic report?

A. Yes. So all of the people who have signatures on the final HOH report, Jennifer Nugent and Steve Lafferty have reviewed it as well.

Q. You know that they did?

A. Yes.

Q. Okay. And why is it that you say based on your review of the report that, strike that. You mentioned, before I forget, you mentioned changes in lot depth between the concept plan and development plan. Did I hear you right?

A. Correct.

Q. When you say that, how many, again, we can all look at it ourselves and measure it, but how many lots do you think have been increased in depth in the development plan?

A. So --

Q. [indiscernible] to the concept plan.

A. So I can’t say exactly how many, but if you look at the differences between the concept plan and development plan, you will see the setbacks have been adjusted, especially around the road area and open space, and also the, with the adjustment of the lot depths, you can see that the rear yard areas for all the lots are now able to meet the regulations of the CMBP. [phonetic]

Q. Okay. They can adjust it. You would agree with me that any adjustments to the lot depth

between the concept plan and the development plan aren't very significant. If any have been made to any of the lots.

A. You said aren't?

Q. Yes, are not.

A. I would say so.

Q. Okay. You would say they are? Or are you agreeing with me that they're not significant?

A. I would say the lot depth changes, and the adjustments of the lots have been significant in changing the layout, and now they also meet the code requirements of the CMBP, so --

Q. Well, again, we can all look at the differences. When you say they have been changed a lot, are we talking a couple feet, right, at most if they have been changed?

A. I'm saying they've been adjusted enough to now meet the codes without bulk regulations, and also meet all of the requirements and regulations.

Q. Okay. I was unaware of any lot in the concept plan that did not meet the bulk regulations

either in terms of setbacks or anything of that nature. Are you saying that there were violations?

A. I do not believe there were violations, but some of the lots were not meeting the CMBP rear yard, the minimum rear yard square footage.

Q. Okay. And so it's the CMBP you're talking about, not the bulk regulations?

A. Correct.

Q. And what does the CMBP provide for in regard to rear lot areas?

A. If I'm not mistaken, the residential development must provide 500 consecutive square feet of usable rear yard area.

Q. That's kind of small. I mean, is there, are there any, are you telling me that there are lots, if we look at the concept plan, that there are lots that were under 500 feet? Is that what you're saying?

A. Some of, I, I'm not 100 percent sure, but some of the lots look pretty tight, just visually looking at them, the rear lot areas look like some maybe couldn't accommodate decks or provide the rear yard area, and

that's --

Q. Which lots were those?

A. The ones to the north. If you could bring up your screen again.

Q. Sure.

A. I could --

Q. You want to look at the concept plan first?

A. Sure.

Q. Okay. Let me know if you want me to blow it up at all.

A. Yeah, I still can't see your screen.

Q. Oh. Maybe share. Thank you. This is the concept plan, this is exhibit 5, Protestant's exhibit 5. Do you see that?

A. Yes.

Q. Okay. So tell me what lots you were talking about.

A. Okay. So if you, right where the entrance is, that lot, it's a little tight there.

Q. Are you talking about lot 35? I can blow

it up.

A. Yeah, because I can't--

Q. The entrance to this, to this road right here?

A. Yes.

Q. So which lot are you talking about? 36? 35?

A. Okay. Is that HOH area? I think I see HOH area for lot 35, and I'm not sure if that --

Q. Let me re-ask the question so we're all on the same page about what it is I'm looking for. I'm just asking you to identify if you can any of the lots in the concept plan that you think were insufficient in terms of rear yard.

A. So I'm not 100 percent sure just by looking at them if they are, but it was confirmed on, at, by the point-by-point response at the DPC, comments that each lot can now accommodate the rear yard areas, and you can see the adjustments that have been made from CPC to DPC.

Q. Okay. So the developer's representative

told you that those improvements were made?

A. Yes, they confirmed it by note.

Q. Okay. And again, we can all look at the plan ourselves, but it's your testimony again that the development plan provides to some significant degree more rear yard space?

A. Yes.

Q. Okay. All right. I'll move on from that. Getting back to the concept plan comments, the next sentence, I'll read to you, and I just have a couple more questions. The next sentence, this again is the concept plan comments of March, 2021. I'll read the next sentence where I left off.

It says, as designed, the proposed development does not achieve the vision of the master plan 2020, nor the comprehensive manual development policies, the master plan 2020 recommends low density residential development adjacent to higher zones consisting of mixed uses. This would also require extensive grading. The site should be redesigned to minimize cut and fill while using the natural features of the land pursuant to the CMBP, as

well as Section 26 of the BCZR. Did I read that correctly?

A. Correct.

Q. Well, first and foremost, what is your understanding, Mr. Williams, of the master plan? Is it in your opinion, is it mandatory, or is it advisory in nature?

A. I believe, I believe it is. I'm not 100 percent sure, but I believe it is not advisory. I believe it's binding.

Q. Okay. And the reason why back in March of 2021 you believe that the development plan was, does not achieve the vision of master plan 2020 was among other reasons that it was inconsistent with the T3 transect in that master plan, correct?

A. At the time, yes.

Q. Okay. And one of the things that the T3 transect talks about is, as you indicated here, low density, right?

A. Yes.

Q. And another thing that the T3 transect

talks about is setbacks, I'm sorry, one second. Setbacks that are relatively deep, correct?

A. Correct.

Q. Okay. And another thing that the T3 transect talks about is that the properties adjacent to biozones, meaning higher density zones, correct?

A. Correct.

Q. And adjacent to zones that contain mixed uses, correct?

A. Yes.

Q. All right. One second. I'll stop sharing. You mentioned as I just read, you mentioned that the site should be redesigned to minimize cut and fill. These are, again, in your concept plan comments of March, 2021. In what way specifically has the proposed development minimized cut and fill? If at all. If at all.

A. Well, just from visually looking at the two plans, they have reduced grading. It looks, just from the visual, visually looking at it, you can see that they demonstrated, they have reduced cut and fill. I'm

not sure --

Q. You're not sure to what extent?

A. Well, I can say just from visually looking at it, they have reduced the grading of the site, so it's not massive grading, and cutting and filling hasn't been drastically reduced, but it's been reduced.

Q. Okay. And so both of those comments, that is that the, there is no longer massive grading, and the cut and fill has been reduced, that's based on your sort of visual look of the development plan, correct?

A. Correct.

Q. You did not conduct any investigation beyond that to determine how much grading or how much cut and fill was involved in the development plan versus the concept plan.

A. You mean did I do an analysis to compare exactly?

Q. Yes.

A. No, I did not.

Q. Okay. A little beyond your expertise?

A. Yes.

Q. Okay. And when you say, you actually said that the development plan does not involve massive grading. What do you base, what could you possibly base that conclusion on? Particularly if you didn't do an investigation.

A. Well, a grading plan was, you can see the grading on the development plan, the difference between the gradings, between the development plan and the concept plan.

Q. Okay. Anything else that you looked at? I think you said no, right?

A. As far as?

Q. The amount of grading required for the development plan versus the concept plan.

A. I personally didn't do an analysis of comparing the amounts of grading and cut and fill between the concept and development plan. What I believe the engineers have done their own analysis as far as that.

Q. What engineers? The developers?

A. The developers, correct.

Q. Did you review that analysis before you

reached a conclusion you did in your develop plan comments? No?

A. No.

Q. Okay. I'm going to show you, I have, I have the Judge has already showed us the HOH report that was submitted. I actually have development plan comments, which I understand are different. Am I correct about that?

A. Correct. I believe there were still open comments that we had at DPC.

Q Let me just show this to you, and I'll mark those as the next exhibit, which I think is 6. I'll show those to you. Do you see this? This is dated August 11, 2021. It says subject development plan conference. Do you see that?

A. Mm-hmm.

Q. These are Mr. Lafferty's initials?

A. Yes.

Q. Okay. And then I'll scroll down slowly to final page, page 4, signed by you and Ms. Nugent, correct?

A. Correct.

Q. Okay. I have a question about one note, and that is note 6. I'll blow it up a little bit and let you take a look at it rather than me reading it to you.

A. Okay.

Q. So just real quick, I'll show you the plan. Again, Developer's exhibit 1 so everybody knows where we're talking about. This is in sort of the rear of site, and I'll blow it up. It says, if you see here, it says gated for emergency access only to be approved by Administrative Law Judge. Do you see that?

A. Correct.

Q. So in other words, the developer is not proposing that this be connected, that is that this development be connected to the community behind it, right?

A. Correct.

Q. And it sounds like based on your comment that we just looked at, that the Planning Department supports that, correct? As opposed to making it connected.

A. Correct. I believe there was a community meeting that transpired, and the community did not support the connection.

Q. Okay. And you believe the, I take it from your comment here that the lack of connection, that is gating it for emergency access only, is consistent with the master plan and the CMBP, as well as applicable community plans, correct?

A. Correct. We believe that the connectivity should be done, the connectivity should be there, but only to provide for emergency access due to the negative response from the community.

Q. Okay. And from a planning perspective, does that make sense as well?

A. Yes.

Q. Okay. And when you say connectivity, I gather from this comment that you believe that having the ability for pedestrians to walk between the communities achieves that connectivity, correct?

A. Correct. That's why we asked for a sidewalk.

Q. Okay. I know I keep on saying I'm done, but I am done, Mr. Williams.

A. Thank you, Mr. McCann.

Q. Thank you very much.

MR. MCCANN: Before I let you go, I'll ask the judge if we can mark the August 11, 2021 development plan conference comments as our next exhibit, which I think is 6.

THE JUDGE: It's 6, right. Any objection, Mr. Rosenblatt?

MR. ROSENBLATT: No objection.

THE JUDGE: All right.

(Protestant Exhibit No. 6 was marked for identification and entered into evidence.)

THE JUDGE: Are you finished, Mr. McCann?

MR. MCCANN: I am. Thank you. Thank you, Mr. Williams.

THE JUDGE: Mr. Zimmerman, did you have any questions?

MR. ZIMMERMAN: I do. Thank you, Judge.

THE JUDGE: Okay.

DIRECT EXAMINATION

BY MR. ZIMMERMAN:

Q. So Mr. Williams, just preliminarily, did I not call you last week to ask whether there were any additional detailed comments from your office subsequent to August 10, 2021?

A. I believe, yes, we did speak, yes.

Q. And there are no other detailed comments after the August 10th development plan conference comment, am I correct?

A. Correct.

Q. Okay. And nothing in whatever plan red line was submitted a few days ago, you know, changes anything as far as you're concerned?

A. No, it doesn't change our recommendation to the ALJ.

Q. Okay. And for the record, you have no idea what I'm going to ask you today, right?

A. Um --

Q. We didn't discuss what I was going to ask you?

A. No.

Q. I did send you a copy of the letter that I wrote November 9, 2021, didn't I?

A. Correct.

Q. Okay. Did you have a chance to read it?

A. I did.

Q. Okay, good. By way of background, how many years have you worked in the Planning Department?

A. It will be ten years January 28th.

Q. Okay. And what is, do you have a specialty within the department? Or what's your area of concentration?

A. I'm with development review, Department of Planning.

Q. Okay. And how long have you been in that section?

A. Since I started working with the county.

Q. Okay. And just by way of background, can you give the judge very briefly your educational background and other, any other education in the planning profession?

MR. ROSENBLATT: Objection, Judge.

THE JUDGE: Do we need to know, I mean, I'm sure he, you know, he has graduated and all that, and he's already testified now for an hour and a half. Do I need, do I honestly need to know where he graduated? I know you are always interested in this, Mr. Zimmerman.

MR. ZIMMERMAN: Well, yeah. I mean, it would have been over by now if Mr. Rosenblatt hadn't objected. I mean, just, you know, it is good to know the, you know, he may have majored in a certain type of planning. I mean, it's good to know.

THE JUDGE: He's testifying for the Department of Planning --

MR. ZIMMERMAN: All right. All right.

THE JUDGE: -- we don't need to know, sustained.

MR. ZIMMERMAN: All right. I get it. We'll move on.

BY MR. ZIMMERMAN:

Q. So as far as the Planning Department comments go, you've observed that of course Mr. Lafferty, the Director, ultimately signed them or initialed them,

and then you've got Jennifer Nugent, you've got, also there's an MK. That's, can I print out, why don't you print out? It's hard for me to print out.

A. It's my immediate supervisor, Marta Chekalchesky. [phonetic]

Q. Okay. So did you do the main work on these comments and then discuss them with everybody? Or was it like a collaboration?

A. So I'm the primary reviewer of the plan. I've reviewed it, made comments. It was then reviewed by my immediate supervisor, Marta Chekalchesky. She provided feedback and edits, and then it was, after clearance, it was sent up to Jennifer Nugent. She did her review. After she cleared it, it went to Steve Lafferty.

Q. Okay.

MR. ZIMMERMAN: Now, let me, maybe Mr. McCann will help me out. Can we get the March 1st, 2021 concept plan conference up? I mean, I've got it as an exhibit, but I think Mr. McCann already made an exhibit, didn't he?

MR. MCCANN: Yes, I can get it.

MR. ZIMMERMAN: Can we get the March 1st one up for a few more questions?

MR. MCCANN: Okay. There it is.

MR. ZIMMERMAN: Okay. And let's scroll, can you scroll down, Mr. McCann? All right. Wait a minute. Let's just get this. Page 1, I'm sorry, let's see. Page 2. Okay. Can we scroll down to the master plan? All right.

BY MR. ZIMMERMAN:

Q. So right there, Mr. Williams, you refer to the T3 suburban transect, and you described it, right?

A. Yes.

Q. And basically you do that in every concept plan conference you have a paragraph on the transect, correct?

A. Correct.

Q. And what's your understanding of the purpose of the transects in the master plan? Can you give a description of what the master plan says about transects?

A. It is a tool designed to help guide and establish development throughout the county.

Q. And is it advisory, or mandatory?

A. To my knowledge, it is mandatory.

Q. Okay.

A. It's basically used in conjunction with the zoning.

Q. Do you know whether it's a kind of zone in a way?

MR. ROSENBLATT: Objection.

THE JUDGE: What's the objection, Mr. Rosenblatt?

MR. ROSENBLATT: Whether it's a kind of zone?

THE JUDGE: Is it a type of zoning? Or consistent with zoning? Used with zoning, is it used with zoning. What was the question?

MR. WILLIAMS: It's used in conjunction with the zoning.

THE JUDGE: Okay.

MR. ZIMMERMAN: I don't know if Mr. McCann can, we'll get to this in a moment, about the transects and the zones and so on.

BY MR. ZIMMERMAN:

Q. Let's get to the next page, or is it the, on the exhibit. Page 3. So let's go to the, I don't know, third to last sentence in the third paragraph. "The master plan 2020 recommends low density residential development adjacent to higher zones consisting of mixed uses." Isn't that in part a reference to the T3 transect?

A. Yes.

Q. Okay. So is it fair to say that the T3 transect was a factor in your conclusion that the Department of Planning considers this site to be over developed?

A. Yes.

Q. Okay. All right. Okay. And, all right. What, if anything, did your later August 10th, 2021 comment say about the T3 transect and its relevance? Did it say anything?

A. So the master plan also promotes connectivity whenever possible, and we really wanted the connectivity of the communities, and we, I believe with every development we do push forward that, but with the

negative feedback of, well, the negative feedback we got from a community input meeting, we decided to accommodate the connectivity with the gate to provide the, recommend providing the connectivity with the gate, but --

Q. Okay. Well, actually that wasn't my question.

MR. ZIMMERMAN: But can we get the August 11, 2021 development plan conference comment up? I have it as an exhibit 2, but Mr. McCann I think has it handy.

MR. MCCANN: Do you see that?

MR. ZIMMERMAN: And by the way, was this exhibit 4 or 5 of Mr. McCann's, the March 1st one?

MR. MCCANN: The March 1st was exhibit 4.

MR. ZIMMERMAN: Okay.

MR. MCCANN: This is exhibit 6.

MR. ZIMMERMAN: All right. We were talking about 4, and now we're onto 6. All right. Let Mr. McCann go through it.

BY MR. ZIMMERMAN:

Q. And I want Mr. Williams to tell me where, if anywhere, you mentioned again the T3 transect, and

anything relating directly to it.

A. I believe it should be a master plan comment on these DPC I believe.

Q. Well, let's look for it.

A. There it is.

Q. Okay. Okay. That's just a repeat of your description that you had in the March one, correct?

A. Mm-hmm.

Q. That's an exact, exactly the same. All right. Let's go through the, your statement about consistency. All right. Well, all right, you repeated the recommendation, master plan 20 recommends low density residential development adjacent to higher zones consisting of mixed uses, and yet this had been a factor in your stating the site was over developed, so there's nothing different about the master plan from the time of the, from one to the other. I mean, it's still the T3 transect, it's still low density, and it was a factor in your reasoning --

A. So what I was unaware of during my initial review, the, so firstly, single family detached dwellings

are considered a low density use. Not saying I didn't know that before, but what I didn't know is the surrounding community is, has commercial uses as well as townhouse development as well, which is considered higher density uses compared to single family detached, which is being proposed here.

Q. All right. So in your opinion, or your office's opinion, I mean, single family detached dwellings are by definition are categorically always low density. Is that what you've just told us?

A. No.

Q. They're not always low density?

A. They're not. Compared to the townhouse uses and the commercial use, it is a low-density use, and most times it depends on the zoning whether a site is considered low density. In this case, the property is zoned DR1 and DR2.

Q. Okay. Do you have any written analysis that your office produced to explain why the situation here is low density?

A. We do not have any reports or analysis.

Q. Do you know how many acres are involved with the actual location of the houses?

A. I believe we went over it earlier with zoning, but I don’t recall offhand.

Q. Did you see, do you know whether or not you agree with the statement in my letter that when you subtract all the, you know, forest buffer areas and stormwater management, all the things that are listed in the dedication table and the open space, you end up with about 14 acres where the houses are located?

MR. ROSENBLATT: Objection.

MR. ZIMMERMAN: Do you agree with that?

THE JUDGE: Hold on. What’s the objection?

MR. ROSENBLATT: He’s asking if he agrees to a letter that’s not been presented, part of the case, it’s the form of the question that I’m objecting to.

THE JUDGE: Okay. So just, if you could just rephrase, please.

MR. ZIMMERMAN: I’ll rephrase it.

THE JUDGE: The question [indiscernible]

MR. ZIMMERMAN: Did you analyze --

THE JUDGE: Hold on, hold on, hold on. Mr. Williams indicated earlier that he did read the letter, that Mr. Zimmerman did provide it to him, so he supposedly is familiar with the letter. All right. Go ahead. Just rephrase it.

BY MR. ZIMMERMAN:

Q. Yeah. Whether based on my letter or not, would you agree with me that first of all, that the houses, proposed dwellings, lots, are clustered together on a part of the property?

A. Can you explain?

Q. Do they occupy a part of the property? They don’t, they’re not spread out over the entre property.

MR. ZIMMERMAN: Maybe Mr. McCann can, did he get the development plan up? I mean, I can get it up, too, but maybe Mr. McCann has it. Can we get the whole thing? We’re getting close here now.

BY MR. ZIMMERMAN:

Q. Okay. So there are a lot of areas of the property that are relating to environmental aspects,

stormwater management, open space and so on, correct?

A. Correct.

Q. Okay. So did you evaluate whether or not the houses are on a less than half of the site?

A. What I did during my review and evaluation, I made sure that it complied with zoning regulations and requirements, that no zoning relief was needed, and also we did not look at, of course I noticed, am aware of where the houses are located. We look at the development as a whole, and the regulations.

Q. Okay. All right. And before I get to the next question, which kind of is a segue from that one, the dwelling lots average about one quarter acre, don't they? You know, one third, maybe one fifth of an acre, one third? .3 or a little more than that, and the middle, one quarter acre. Is that, do you understand that to be the case?

A. Yes.

Q. Okay. And by the way, if I told you that, if you look, if you drive through Heather Field, if you drive through Hunt Spring, if you drive through other

adjacent communities, you're going to see lots with one half an acre to close to an acre. Do you recognize that? Many of the single family detached other lots are one half acre or more?

MR. ROSENBLATT: Objection, objection.

THE JUDGE: Mr. Rosenblatt?

MR. ROSENBLATT: Again, it's the form of the question. He asked a question, then he qualified it with another.

MR. ZIMMERMAN: All right. Let me rephrase the question.

THE JUDGE: Okay. All right. Sustained.

BY MR. ZIMMERMAN:

Q. What's your understanding of the average lot sizes in Heather Field?

A. So, hold on, give me a second. I really don't know. What I can tell you is in response to, point by point response at concept, it was, the developer's exhibited how, in relation to the surrounding neighborhood, the lot sizes were similar if not --

Q. Okay. Well, before I get to the segue

question then, I guess I'm going to do a little sharing. But before I do that, have you driven around Heather Field? Have you driven around these neighborhoods to see what the lots look like?

A. No, I have not.

Q. All right.

MR. ZIMMERMAN: Judge, may I share something?

THE JUDGE: Yes.

MR. ZIMMERMAN: Okay. Let's see if I can do this. Okay. I may need a bit of help here. Hold on. Hold on one moment while we get my chief of staff on the sharing.

THE JUDGE: Did you need a certain exhibit up?

MR. ZIMMERMAN: Yeah. I want to, where's my exhibit? Exhibit 16. I'd like to get that one up.

THE JUDGE: I'll tell you what.

MR. ZIMMERMAN: Judge, you can do that? Thanks.

THE JUDGE: I'll just do it, yeah. It's going to be faster, so we can, we still have two more county witnesses.

MR. ZIMMERMAN: Okay.

THE JUDGE: And I'm sure they're probably ready for lunch at this point.

MR. ZIMMERMAN: We're not taking a lunch break, are we?

THE JUDGE: Well --

MR. ZIMMERMAN: I'm ready to go through. I'm going through, you know?

THE JUDGE: Okay. [indiscernible]

MR. ZIMMERMAN: Mr., I'm sorry. Can I continue?

THE JUDGE: Yeah. Is this the one?

MR. ZIMMERMAN: Yeah. I think so. Wait a minute. Yeah. We've got to scroll down though, I'm sorry. I wish I could do the, okay. All right.

BY MR. ZIMMERMAN:

Q. So do you see this lot outlined in Seminary Ridge?

A. Yes.

Q. Division, just north of the property, not far from Mays Chapel Road? [phonetic]

A. Yes.

Q. All right. Okay. So let's continue to scroll. This is just a sample for you, Mr., by the way, does it look somewhat similar to some of the other lots? Okay. So let's look at the SDAT information. All right. 23,251 square feet, that's more than a half an acre, right?

A. Correct.

Q. Okay. Let's continue on, let's scroll on. All right. Here's the Seminary Ridge subdivision, right? Do you recognize that? Or I'm sorry, I made a mistake. Meadows of Greenspring, Meadows of Greenspring. Is this, right. So do you recognize that as having larger lots than on quarter acre lots?

A. Um --

Q. Meadows of Greenspring. I think there are a bunch of plats here if we scroll down.

A. Yeah. I really can't tell.

Q. I mean, did you ever look at this when, to check these allegations that the lots are the same sizes?

A. I haven't seen this document, no.

Q. Okay. All right.

MR. ZIMMERMAN: Let's scroll down, Madam Chair. These are just additional, to get through this, these are just additional plats for Meadows of Greenspring, and I'm sure everybody will have a chance at leisure to examine these in detail and test whether, test, you know, what we're talking about here. So let's continue down past Meadows of Greenspring. Keep going. Let's keep going, Judge. I'm sorry to have to ask you to do this.

Let's keep going. We're going to go to the next subdivision. Okay. All right. I think this is Heather Field if I'm not mistaken, and we have a sample. I think we've got a sample lot in there. Yeah, that's on Tally Ho Road, right next to this property, right?

BY MR. ZIMMERMAN:

Q. Do you see that, Mr. Williams?

A. The blue outline?

Q. Yeah, the blue outline on Tally Ho Road.

A. Yes, I see it.

Q. Yeah, and it's somewhat similar in size to many of the other, I mean, it's some variation, right?

A. Mm-hmm.

Q. Okay. Let's keep going.

MR. ZIMMERMAN: Judge, if you'll help me out. Let's keep going down. Again, the SDAT, 30, whoops. Let's go back to the SDAT. 30,000 square feet.

BY MR. ZIMMERMAN:

Q. Now, a quarter of an acre is about 10,000 or 11,000 square feet, right? Is my math right? 43,560 square feet an acre, one quarter of that --

A. Correct.

Q. Right. So instead of 10,000 or 11,000 square lots, maybe a little less, a little more in the proposal. Now here you've got a sample 30,000, right? Okay. Let's take a look at Heather Field. Let's continue to scroll down. All right. Heather Field. All right. Did you ever look at the subdivision plat of Heather Field to check the accuracy of the claim that the proposed lots here are similar to those in the neighborhood?

A. No, I haven't, but I have used the GIS, which is our mapping system, and looked around at lots. To the north of the property there are varying lot sizes,

similar to what is proposed in this development, and these lots, the lots proposed in the Greenspring development are varying lot sizes as well, and also look pretty similar and close to what is described in the area.

Q. Can you identify a single lot in Meadows at Greenspring and Heather Field that's a quarter acre?

A. Not offhand, I cannot.

Q. Okay. And isn't that something that you should have been doing? Shouldn't you have charted this out to check the lot sizes?

A. Well --

MR. ROSENBLATT: Objection.

THE JUDGE: So hold, on there's an objection. Mr. Rosenblatt?

MR. ROSENBLATT: Yes. Object. Couldn't he have done something?

MR. ZIMMERMAN: Yeah, a good question.

THE JUDGE: So I think Mr. Williams' testimony, to be fair to him, is that he had looked at the sizes to the north of the property. I'm not sure whether these

are. Mr. Zimmerman, are these north of the property?

MR. ZIMMERMAN: Well, Meadows of Greenspring is right north, we know that.

THE JUDGE: All right.

MR. ZIMMERMAN: We can go back. We can go back. I don't know what he was looking at.

THE JUDGE: Okay. Well, in fairness, I mean, he did say he did not review these specific documents, but he did use the my neighborhood GIS map.

MR. ZIMMERMAN: Okay.

THE JUDGE: So he did look at those, you know, the lot sizes [indiscernible]

MR. ZIMMERMAN: I'm not trying to, I'm not trying to, sorry. I'm not trying to trick him.

BY MR. ZIMMERMAN:

Q. Let's go back. Based on your GIS, can you, do you agree that Meadows of Greenspring is right to the north where Mays Chapel Road would connect?

A. Well, if you can go back to the site plan one that showed the existing property and the surrounding areas, and you look to the north, you will see varying

lot sizes.

Q. Well, isn't Meadows of Greenspring right to the north? Isn't that the immediate subdivision to the north?

A. Well, can you go to the site plan?

Q. Okay. All right. I don't know whether to ask the Judge or Mr. McCann to go back to the --

THE JUDGE: What are we looking for now?

MR. ZIMMERMAN: I think Mr. Williams wants to see the proposed site plan for this new subdivision.

MR. MCCANN: I can pull it up. I have it handy.

THE JUDGE: Let me just do this.

MR. ZIMMERMAN: And if we can save this one to come back to, I don't know if that's possible.

THE JUDGE: Okay. Is this the one?

MR. WILLIAMS: No. In the documents he was just showing, he passed like, when he showed the existing property in comparison to the surrounding neighborhoods, I believe the housing to the north had varying lot sizes as well. They weren't all consistent and exactly the

same.

BY MR. ZIMMERMAN:

Q. So going to the north, Joppa Road is actually to the south, right? When you look at these site plans, they go from right to left?

A. Yes.

Q. But north is actually Meadows of Greenspring? Okay. Well, let’s assume --

THE JUDGE: Mr. Zimmerman? Mr. Zimmerman, hold on a second. Mr. Williams just said this, he just was looking for this document, which is part of your exhibit 16, and he wanted to refer to this to answer your question.

MR. ZIMMERMAN: Okay.

THE JUDGE: So Mr. Williams, did you want to add something?

MR. WILLIAMS: Yes. So if you look at these, the housing to the north of the existing property, none of them are exactly the same or consistent with each other. They’re close in lot size, but they are all varying in size, and what the developers have proposed I

believe meets the spirit of the existing character of the neighborhood and serves as a transition for, from low density to high density of the surrounding neighborhood.

MR. ZIMMERMAN: Okay.

THE JUDGE: Anything else, Mr. Zimmerman?

MR. ZIMMERMAN: Yeah.

THE JUDGE: Okay.

BY MR. ZIMMERMAN:

Q. And what about Heather Field? Did you look –-

A. Can you show me where, can you show me where that is on this map?

Q. Okay.

MR. ZIMMERMAN: Let’s scroll down. I think we have to keep, keep going.

THE JUDGE: Mr. Williams wanted to know where Heather Field was on [indiscernible]

MR. ZIMMERMAN: Heather Field being just to the east of this property, Tally Ho Road area, among others.

MR. WILLIAMS: Is it not on this map?

THE JUDGE: There is Tally Ho Road, I mean,

it's --

MR. ZIMMERMAN: You have to scroll down to the next subdivision.

MR. WILLIAMS: Okay. So it's not immediately adjacent to the proposed development.

MR. ZIMMERMAN: Well, actually it is adjacent to the east, isn't it? Let's keep, let's keep going down. Keep, we've got to keep going.

THE JUDGE: This one?

MR. ZIMMERMAN: Right, right.

BY MR. ZIMMERMAN:

Q. So did you look at this area to check whether the lot sizes are generally speaking half acre or more?

A. Look at what area? Which area?

Q. The area to the east. All right, I'm using my arrow. The area --

THE JUDGE: Wait. You can't highlight it because it's on my screen. So where do you want me to, where is it specifically?

MR. ZIMMERMAN: I'm looking for Tally Ho Road.

It's --

THE JUDGE: There's Tally Ho Road right here.

MR. ZIMMERMAN: Yeah, Tally Ho Road right there, and the rest of that area, just adjacent to this site to the east, they are mainly half acre lots or more.

MR. WILLIAMS: I believe, aren't those single family detached dwellings as well?

BY MR. ZIMMERMAN:

Q. Yes.

A. And --

Q. [indiscernible] half acre or more lots. Isn't that part of what your thinking was when you originally wrote the concept plan conference comment?

A. So looking at this, they are similar uses, and I believe, so that DR2 section to the north of Tally Ho, yes, right there. Are you saying all of those houses are the same exact acreage?

Q. Well, can't you tell from your experience that most of them are half acre or more?

MR. ROSENBLATT: Objection.

MR. WILLIAMS: I can't, I can't tell you just

by looking at a lot how --

THE JUDGE: Hold on.

MR. ZIMMERMAN: All right. I don't want to beat a dead horse, Judge.

THE JUDGE: There was an objection. Mr. Rosenblatt?

MR. ROSENBLATT: It sounds like he's withdrawing or --

MR. ZIMMERMAN: Yeah. I mean, look, these documents will be available for anyone to look at and critique and comment on, so I'll go onto another subject.

THE JUDGE: Okay.

MR. ZIMMERMAN: So we can get these off the screen, Judge, if that's not inconvenient.

THE JUDGE: Not at all.

MR. ZIMMERMAN: Okay.

BY MR. ZIMMERMAN:

Q. So I thought it was interesting, Mr. Williams, an I think Mr. McCann also asked you about this. As I understand it, am I, okay. Are we still there?

A. Yes.

Q. We had some electricity problems yesterday, so hopefully we won't have them today. Okay. So Mr. Williams, as I understand it, your observations about the office's policy that basically if, and I don't want to mislead or misstate what you said, but basically if they meet the density, if they don't need variances, if they meet the open space requirements, and add something if I'm missing something, that you are okay with the master plan. That's your office's approach, correct?

A. No. We use the master plan in conjunction with the zoning regulations. The zoning regulations are also mandatory as well. So --

Q. Okay. But I mean if it meets the zoning regulations, if it meets the, and the open space, and when I say the zoning regulations, I mean it meets the density, it meets the setbacks, it meets the area, the rest of it, meets the open space, then as far as you're concerned, as far as your office has been concerned in the past, the T3 transect is satisfied. That is your

office's policy as I understand it. Correct me if I'm wrong.

A. So my understanding is that with the master plan, following the T3 transect, this is, this, the zoning of the property is low density, single family detached and surrounded by some townhouse uses and commercial uses which are high density uses compared to the proposal of the site.

After reviewing all of the material, my final recommendation is that yes, this does in fact meet the intent, spirit and intent of the master plan 2020 and the T3 transect.

Q. So either you are agreeing or disagreeing with me that in general as long as they meet the zoning density, they meet the zoning setbacks are and heigh and so on and open space, then that's coincidental with the T3 transect. Are you agreeing or not agreeing?

MR. ROSENBLATT: Objection.

MR. WILLIAMS: I believe --

MR. ROSENBLATT: Objection.

THE JUDGE: Hold on, there's an objection.

MR. ROSENBLATT: Two or three times it's asked [indiscernible]

MR. ZIMMERMAN: Well, that's it, I'm asking a yes or no answer.

THE JUDGE: Mr. Zimmerman, can he, he did answer the question.

MR. ZIMMERMAN: All right.

THE JUDGE: He actually said the master plan was used in conjunction with the Baltimore County zoning regulations, so you've asked it three times. He did answer it, so yeah, let's move on.

MR. ZIMMERMAN: All right. Okay.

BY MR. ZIMMERMAN:

Q. All right. Mr. Williams, do you or your office, do you take a look at the administrative law judge decisions on master plan conflict in previous cases to get some guidance?

A. Yes. I've reviewed, I believe the latest one I reviewed was Davis Farms.

Q. Okay. And in Davis Farms, didn't your office basically indicate that as long as they meet the

zoning, there's no master plan conflict?

MR. ROSENBLATT: Objection.

MR. ZIMMERMAN: Well, that's their policy. I'm asking [indiscernible]

THE JUDGE: Hold on, hold on. Hold on, Mr. Zimmerman. Mr. Zimmerman, hold on.

MR. ZIMMERMAN: All right.

THE JUDGE: Mr. Rosenblatt, what's your objection?

MR. ROSENBLATT: He's asking about a different case that's not before the ALJ today.

THE JUDGE: Yeah.

MR. ROSENBLATT: What happened in other cases has no bearing on this.

MR. ZIMMERMAN: I'm speaking about the policy --

THE JUDGE: I think he's trying to get to whether or not there's a master plan conflict here, so I'll overrule it. Go ahead, Mr. Zimmerman.

MR. ZIMMERMAN: Okay. So once again, Judge, I'll ask your help in People's Counsel exhibit 18, which is the Davis Farms case. Okay. We're going to do a lot

of scrolling.

BY MR. ZIMMERMAN:

Q. But first of all, Mr. Williams, do you recognize the introductory page, the first age of Administrative Law Judge's Paul Mayhew's order on remand in the Davis Farms case?

A. Yes, I have seen this document, but it's been awhile.

Q. At some point did you read it?

A. Yes.

Q. I'm not, okay. All right.

MR. ZIMMERMAN: Let's scroll down to the Planning Department's position paper.

MR. ROSENBLATT: Objection. Again, objection to this entire line of questioning. What they wrote in another case, Mr. Zimmerman can argue at the end of the case that this, he thinks this is similar, but to ask this witness in this case about a different case that is not before the judge is definitely inappropriate.

THE JUDGE: Yeah. Mr. Zimmerman, I'm starting to, I mean, I'm trying to give you a little leeway here,

but this again, this is another case. This is for argument, and if you want to provide this, this is one of your exhibits, if you want to argue this at the end, I mean, having, having a planner go through this and then reiterate what it says --

MR. ZIMMERMAN: I just want to ask him about one or two sentences, and we'll be done.

MR. ROSENBLATT: Judge Murphy? Judge Murphy?

MR. ZIMMERMAN: It's about the policy.

THE JUDGE: Hold on.

MR. ZIMMERMAN: It's about the Department's policy, which I think is relevant here.

THE JUDGE: Okay. Well, you can ask him what the policy is, and he doesn't need to repeat what's in here. Just whatever you have, whatever is in here, you can certainly [indiscernible]

MR. ZIMMERMAN: Then I have to, then just let me make a proffer.

THE JUDGE: Mr. Mudd, you wanted to object?

MR. MUDD: I'm just observing here. I would ask Your Honor to instruct Mr. Zimmerman to allow people,

including yourself --

THE JUDGE: Yes.

MR. MUDD: -- finish your statements before he interjects. This is absurd to be listening to this and how rude he is being. I'm sorry.

THE JUDGE: I understand. Mr. Zimmerman, I don't think he's doing it on purpose honestly, I don't. I think he's listening in the headphones, so I don't, there's no offense taken. I have stopped him when it's an issue.

So Mr. Zimmerman, you can put this in and you can argue this. Do you want to --

MR. ZIMMERMAN: I can either ask, I just want to make a proffer of one or two sentences.

THE JUDGE: All right. Make the proffer.

MR. ZIMMERMAN: The proffer would be on page 3 of the Planning Department's, now I've lost it. Wait a minute. All right.

On page 3 of the August 23, 2021 letter from Steve Lafferty to the Planning Board, among other things, and I guess we'll have to quote this in the brief under

findings, the Planning Board said, “after reviewing the master plan 2020 proposed land use map, the urban rural demarcation line and zoning map at the time of the master plan 2020 adoption,” and this is the key part. “The transect designation for the development proposal site was mapped to run coincident with the zoning classification,” and then it goes on and on. And I guess we’ll all argue that case.

THE JUDGE: Yes. Let’s [indiscernible]

MR. ZIMMERMAN: It’s also in the exhibit that the county council reversed the Planning Department and Planning Board position, okay?

THE JUDGE: All right. But you’re asking Mr. Williams to go through all this, it’s really --

MR. ZIMMERMAN: Right. I’m ready to move on, and I apologize. Electronically sometimes I’m not realizing when other people have finished, so I apologize. I’m going to make a major effort to slow down. Okay.

THE JUDGE: Understood. So are you [indiscernible]

MR. ZIMMERMAN: I've got a few more questions.

THE JUDGE: Okay. Are they related to the master plan conflict or any of the, you know, again [indiscernible]

MR. ZIMMERMAN: No, they relate to the special variance and the residential performance standards.

THE JUDGE: Mr. Williams, are you doing okay?

MR. WILLIAMS: Yeah, I'm all right.

THE JUDGE: Hang in there. Okay. We still have two more witnesses, county witnesses. They're in a conference room. They're in the conference room.

MR. ZIMMERMAN: Okay. All right. Well, let's talk about residential performance standards in Section 260 of the zoning regulations.

MR. ROSENBLATT: Objection. This is outside the scope of people's counsel's statutory authority.

THE JUDGE: He can get involved in zoning cases, this is the zoning regulations. I'm [indiscernible] where he's going, but we're going to let him.

MR. ZIMMERMAN: And we did, we went into this

in Woodley Park, Davis Farms, I mean, it's zoning, okay?

THE JUDGE: All right. Go ahead.

MR. ZIMMERMAN: All right.

BY MR. ZIMMERMAN:

Q. Mr. Williams, in terms of the findings, does your, did your department do a point-by-point finding relating to each subsection of Section 260 of the zoning regulations performance standards?

A. Well, with 260, our department usually requires the applicant submit a book that includes illustrations and details of materials and proposals that, what has been proposed and how it meets what is outlined in Section 260.

Q. Okay. So, but my question is did you prepare, or your colleagues, a point-by-point subsection by subsection finding in each instance as to whether the proposed plan meets every single subsection of Section 260 of the zoning regulations?

THE JUDGE: So what he just said was that he has the developer do it.

Q. Is that it? Is that about it?

A. Yeah. So we don't do the point-by-point response. We have the developer assemble the required pattern book, and we review to ensure that it meets the requirements of Section 260.

Q. Okay. Is there a page in the pattern book where they go through each section, subsection one by one? Can you point us to a page where it says residential performance standards that meets 260.1 because of this, 260.2 because of that, and so on?

A. So there is a, I want to say glossary that outlines each section, tells you what's on what page, but we, I don't believe that they did a point by point.

Q. Okay. There's no specific page you can refer us. Do you have the pattern book in front of you?

A. Not open currently in front of me.

Q. Is the pattern book in the file, in the judge's file?

A. I believe the developer was going to submit the pattern book.

Q. I'm just, yeah. Anyway, all right, I don't want to prolong this too much. There's no specific

page at the moment that you can refer us to. Maybe the developer will later, all right.

Now, let me ask you however some other questions based on your overall review of the residential performance standards.

MR. ZIMMERMAN: And once again I'm going to ask for some sharing of people's counsel exhibit 13. Okay. Let's scroll down. Now, let's scroll down to subsection C, just for background. I'm sorry, on the very first page, 164 should be there. Yeah.

BY MR. ZIMMERMAN:

Q. Mr. Williams, you're familiar with Section 260, are you not?

A. Correct.

Q. Okay. And 260.1C talks about the findings that your department is supposed to have made, actually made by the Director of Planning, correct?

A. Correct. So our finding was made in the final HOH report.

Q. Okay. Which you've described, and we've asked about. All right. Let's scroll down to Section

262.A6 on the next page. All right. You can read that, right? Providing transitions with respect to setbacks, street patterns and building to street grade relationships. Okay.

So my question is, and this may be a controversial issue, but wasn't the set up in Meadows of Greenspring and the dead end, Mays Chapel Road, set up so there would be a connection to this development when this property would be developed?

A. To my knowledge, yes.

Q. And from an overall traffic point of view, whatever the difference of opinion may be among community associations, doesn't it make sense to connect up Mays Chapel Road?

MR. ROSENBLATT: Objection.

MR. ZIMMERMAN: Under this standard?

THE JUDGE: Hold on. Mr. Rosenblatt, objection?

MR. ROSENBLATT: He, first of all, this topic was asked and answered, and second of all, he's asking him from a traffic perspective only, which he, the

witness has already said we've done the best we can with traffic, but we are not the traffic reviewers for Baltimore County.

THE JUDGE: Yeah, I know.

MR. ZIMMERMAN: It's a zoning question, sorry.

THE JUDGE: [indiscernible] he talked about the gate, it's about the gate connection to Mays Chapel I believe. Right, Mr. Zimmerman?

MR. ZIMMERMAN: Yes, yes. It's been asked about.

THE JUDGE: Right.

MR. ZIMMERMAN: And I'm cross-examining him. I mean --

THE JUDGE: You asked him about it in the policy I think of the department, or Mr. McCann may have, that at least the, or I'm sorry, the position of the Department was that it should remain closed for emergency reasons only. Are you now asking him whether it should now be opened?

MR. ZIMMERMAN: Yes. I'm asking whether that gate, whether that closing is consistent with this

section of the residential performance standards.

THE JUDGE: All right.

MR. ZIMMERMAN: It's a different question.

THE JUDGE: All right. Overruled. Go ahead, Mr. Williams.

MR. WILLIAMS: It was my position that the Department of Planning supported the connectivity. We got the connectivity, and yes, I do believe, we do refer to the expertise of DPW and transportation, but with the community's response to the connectivity, I don't, it was decided that we would make it for emergency uses only.

MR. ZIMMERMAN: Well, what did the Public Works Department say about the Mays Chapel Road connection?

MR. ROSENBLATT: Objection.

THE JUDGE: So we have them testifying next, not them, but DPR is testifying next, so my question to Mr. Williams was had he met with them or talked to DPW, and he indicated no.

MR. ZIMMERMAN: Well, I don't want to interrupt anyone.

BY MR. ZIMMERMAN:

Q. So my next question is do you know what DPW's position is on the Mays Chapel Road connection?

A. I do not.

Q. Okay. All right.

MR. ZIMMERMAN: All right. Let's scroll down. Let's go to Section 260.3, open space. Would you take a moment, Mr. Williams, and read Section 260.3A, which I want to ask you about.

A. Mm-hmm.

Q. Okay. So do you know where the open space sections are on the proposed plan?

A. Yes.

Q. Okay. And are there three or four of them? Do you know? They are split up.

A. If you could bring up the plan, I don't want to speak. I know --

MR. ZIMMERMAN: Can we do that for a moment?

MR. WILLIAMS: I know there's a centralized open space where the road [indiscernible] and there are several HOA areas throughout the site.

BY MR. ZIMMERMAN:

Q. Do you know whether there's an open space right on Joppa Road? I don't want to trick you. We can get the plan up.

A. Yes, I believe so.

THE JUDGE: Do you need the plan, Mr. Zimmerman?

MR. ZIMMERMAN: Yeah, I think we need the plan. I'm sorry. Okay. Is it, I'm sorry, is anyone bringing, is Mr. McCann bringing it up? Or do you want me to? I can get the original plan. Judge, can you hear me? Can anyone hear me?

SPEAKERS: Yes, we can.

THE JUDGE: Hold on one second, hold on. I've got it. It's just that I closed it because I have a lot of things open. Okay. Here you go.

MR. ZIMMERMAN: And I don't know if we'll need to zoom in a little bit, but --

BY MR. ZIMMERMAN:

Q. Correct me if I'm wrong, and I may be missing something. The first open space area is some distance from Joppa Road. I mean, Mr. McCann talked about

the stormwater management facility which Mr. Livingston talked about, and then just east of that on the north side of the main access road in, I believe there is open space.

If you zoomed in a little bit, you could probably read the writing a little better. Do you see that, Mr. Williams?

A. Yes, sir.

Q. Okay. And what's that about?

A. That's HOA common area.

Q. Yeah.

A. I believe these are also considered open space as well.

Q. What? The reforestation area?

A. No, the stormwater management area.

Q. That's open space? That's local open space? Are you serious?

MR. ROSENBLATT: Judge? Objection.

THE JUDGE: Mr. Zimmerman, I know you're asking questions about residential performance standards, but we do have VPR, Mr. [indiscernible] usually address, he's

the Baltimore County landscape architect. He usually addresses open space issues, and so maybe your questions are better directed to him. I mean, are you asking --

MR. ZIMMERMAN: Excuse me, but this is a zoning issue, and the Planning Department does the findings on residential performance standards. So --

THE JUDGE: I know, but –

MR. ZIMMERMAN: He is the best, this is the best person for me to ask in my opinion.

THE JUDGE: Okay.

MR. ZIMMERMAN: We'll get through it pretty quickly if we could, but --

THE JUDGE: We will?

MR. ZIMMERMAN: Yes, we will. So I just want to make sure we can confirm, we've got the, right now the .55 acre area number 1, which is, I don't know -–

BY MR. ZIMMERMAN:

Q. How far is that from Joppa Road? Do you have any idea, Mr. Williams?

A. I do not.

Q. Okay. All right. To get through this

quickly, there's another open space area on the south side of the access road, if we move to the right, which is somewhat larger.

THE JUDGE: This one?

MR. ZIMMERMAN: We've got to keep going to the right, and maybe zoom out a bit and we can see it.

Well, anyway, there's one area that's in the triangle, you can see that, it's a relatively small open space area. That's area number, it doesn't have, area number 3, and area number 2 is below the main access road a little to the left, which is bigger. Wait a minute.

THE JUDGE: There, it's right there.

MR. ZIMMERMAN: There we go, 2.55 acres, area 2. Okay.

BY MR. ZIMMERMAN:

Q. Are there any, am I missing any? Is there another open space area, Mr. Williams, that, I'm missing?

A. I don't think so.

Q. All right. Well, if there is, we'll get it corrected. But with those three, let's go back to Section 260.3. How do these three open space sections

create focal points along streets? And does that mean Joppa Road? Does that include Joppa Road?

A. So there's a difference between the passive and local open space, there's different types of open spaces. So I believe Mr., that the Baltimore County landscape architect will have the final say on approving open space areas.

Q. All right. Well, let's go, number A2, locating, this is more specific. Locating landscaped, open green spaces in view of the development entrance or adjoining public street. Do you see that? Did I read that correctly?

A. Yes.

Q. Okay. Well, this, these open spaces do not do that, do they?

A. Well, there is a centralized open space that does, creates a focal point of centralized, and provides, and amenities are provided for the users of the development.

Q. And what about in view of the development entrance or adjoining public street? What about that?

A. Really those HOA areas, I'm not too sure about. Looking at it, at Joppa, there seems to be green space, so --

Q. Anyway, your department did not do a detailed analysis of the open space provision of the residential performance standards, right?

THE JUDGE: You already asked him that question.

MR. ZIMMERMAN: All right, okay.

THE JUDGE: And he said no.

MR. ZIMMERMAN: All right.

THE JUDGE: Any other questions?

MR. ZIMMERMAN: Yeah.

BY MR. ZIMMERMAN:

Q. Number 4, orienting dwelling units around open areas or squares, how does the largest open space area number 2 fit with that particular requirement?

A. I believe the centralized open space meets that requirement.

Q. I'm asking area number 2, it seems to be to the rear of a lot of units.

A. Is this the one we're talking about, the one that's on the screen now?

Q. Yes, 2.55 acres. How does that fit with Section 260.3A4 in your opinion?

A. It looks like they provided trails and a walking path.

Q. All right. Okay.

THE JUDGE: All right. Does that answer your question, Mr. Zimmerman?

MR. ZIMMERMAN: Yeah, let's move on. Section 260.4, the next page, top of the next page --

THE JUDGE: Are we going through each one of them?

MR. ZIMMERMAN: Well, we're close to being finished. We're not going, obvious I'm not going through every detail, but I think it's mainly one point here.

BY MR. ZIMMERMAN:

Q. A1, provide for at least one street connection to an adjoining neighborhood or an adjoining property, and then it goes on, in order to facilitate good traffic circulation. Mr. Williams, did I quote

that, paraphrasing it?

A. That's correct.

Q. Yeah.

A. So the connection was provided. It's only for emergency uses.

Q. Well, is that the intent of this section, that you gate things up with the adjoining neighborhood, and --

MR. ROSENBLATT: Objection as to the intent of the statute.

THE JUDGE: Yeah, that's sustained.

MR. ZIMMERMAN: All right. I guess we lawyers will argue about that one.

THE JUDGE: That's right, yeah.

MR. ZIMMERMAN: Okay. And, all right.

BY MR. ZIMMERMAN:

Q. Well, I have to ask you, let's go down to 260.5, and maybe this is a detail, but landscape design, and maybe this is Mr. Herman, it is zoning. Landscape public open spaces to invite users, okay. What's your thought on that one?

A. Yeah. So final decision, landscape decision are given and recommended and approved by the Baltimore County landscape.

Q. And have you consulted with the landscape architect on that subject?

A. Not besides reviewing his comments made at CPC and DPC. I have not spoken with him directly.

Q. Okay. All right. Moving onto another subject. With reference to transportation issues, with reference to sewer issues, isn't that part of the interdisciplinary planning function, to consider those and not simply to defer to other departments?

A. No, not in my opinion.

Q. I mean, isn't, doesn't the Planning Department, don't you have the ability to ask questions when you see what another department has to say, some kind of common sense planning questions about the assumptions different departments make?

A. We coordinate where necessary.

Q. Okay. And what is your understanding as to which department would be most involved with the sewer

system and pollution issues relating to the sewer system?

A. I believe that would be Department of Public Works and Transportation.

Q. Okay. Has it come to your attention that there is an Administrative Law Judge decision on the Jones Falls sewer shed and adequacy of sewer?

THE JUDGE: He just said that he thought that was handled by DPW and [indiscernible] you asked a follow up of whether or not he's reviewed a legal opinion on the sewer shed, right?

MR. ZIMMERMAN: All right. I was just curious whether they kind of take note of it, that's all. But I'm stopping on that.

THE JUDGE: Okay. All right. Almost finished. Just a couple of questions.

BY MR. ZIMMERMAN:

Q. Following up on Mr. McCann's questions on the setbacks and so on, what is your understanding as to the average setbacks that are provided? Are they just about what's, you know, within what is permitted? Or, you know --

A. They are meeting the --

Q. Can you give any quantification of the average front, rear and side setbacks?

A. If you look at the development plan, there is typical layout on the plans, and they all meet the requirements of the Baltimore County zoning regulations.

Q. But, I mean, what are they? Are the 25, 30 feet? I mean, are they 100 feet? Are they 1,000 feet? What are we really talking about?

A. Like 25-foot front averaging is what it says.

Q. And side and rear?

A. Thirty.

Q. Okay. So pretty close to the, you know, what the minimums are, correct?

A. Yes.

THE JUDGE: Well, it meets the regulations, so --

MR. ZIMMERMAN: It meets, but, I mean, they could be providing more. They could be providing double what the regulations are. I just wanted to get a sense.

BY MR. ZIMMERMAN:

Q. Do you have any sense from the pattern book or anything else as to the size of the proposed buildings, the houses? How many square feet? How high? Basements? How many cars are assumed for each dwelling?

A. So they are providing, I know the maximum height they cannot exceed 50 feet. They are providing garage units that support two cars as well as a driveway, and the housing, housing sizes vary from 54 foot wide, 50 feet wide and 40 wide, and they all meet the requirements.

Q. So what about square, I mean, are we talking about four bedroom, two bedroom? What are we talking about?

THE JUDGE: Well, I mean, doesn't that come later, Mr. Zimmerman, in terms of [indiscernible]

MR. ZIMMERMAN: No, he's a planner. I mean, shouldn't he know? Based on --

THE JUDGE: Let me ask this, [indiscernible]

MR. ZIMMERMAN: I would think that's a legitimate planning question.

THE JUDGE: Mr. Williams, in your review as a planner, do you need to know the square footage of the houses? Is that something you typically look at?

MR. WILLIAMS: Lot coverage as far as, it depends on development, but we do sometimes look at lot coverage.

THE JUDGE: Okay.

MR. WILLIAMS: It depends on the zoning and type of development, but sometimes we, lot widths and lot areas, minimum lot widths and areas, as well as lot coverage, we do reveal.

THE JUDGE: Okay.

MR. ZIMMERMAN: Well, I was hoping he would answer the question and just give a ballpark on what we're talking about, what type of houses we're talking about here. I mean, I thought that would be pretty, you know, kind of garden variety question.

THE JUDGE: So Mr. Williams, do you have any idea what the square footage of these different houses are? Is it listed?

MR. WILLIAMS: You keep moving the screen, I

can't, okay. There's the --

THE JUDGE: Here we go.

MR. WILLIAMS: There's the lot area, square footage of the houses.

THE JUDGE: So the square footage of the house is on here?

MR. WILLIAMS: I believe that's the square footage of the lots.

THE JUDGE: Yeah, of the lots, right. He wants to know the square footage of the house.

MR. WILLIAMS: They are located in the pattern, but if you --

THE JUDGE: So we don't have the pattern book up yet. All right. They're in the pattern book.

MR. WILLIAMS: Yes.

MS. JACKSON: All right, Mr. Zimmerman, they're in the pattern book.

MR. ZIMMERMAN: What are you assuming as to how many cars each family will have?

THE JUDGE: He answered that. There's two.

MR. WILLIAMS: Parking requirements, yeah, I

answered that, and parking requirements are zoning, are --

BY MR. ZIMMERMAN:

Q. I'm not asking you whether or not they meet the parking requirement, I'm just asking you what your assumption is. Will the families have two or three cars typically based on your experience?

MR. ROSENBLATT: Objection.

MR. WILLIAMS: I'm sorry, Judge, but he is, this is like consulting questions.

THE JUDGE: [indiscernible] Mr. Williams. Hold on, Mr. Williams. Yeah. You've already, he's already answered the question. There's cars, you know, here on the plan, you can see them. There's two, there's three. I mean, it shows what it is on the plan.

MR. ZIMMERMAN: All right. Well, we're bringing it out, then. I mean, we're bringing it up so it's clear on the record for people. A lot of people are attending the hearing, and they can't necessarily see every detail, so --

THE JUDGE: Okay.

MR. WILLIAMS: So with the square footage of

the houses, they are in the pattern book, you can see the first-floor elevation numbers on the units, you can see the parking garages where the two car garages, they are proposing front loaded and side loaded garages, as well as driveways.

MR. ZIMMERMAN: All right. I'll move on. I thought Mr. Williams could just give us a ballpark and, you know, without us having to study the pattern book or bring it out in more detail, but I'll move on. One or two more questions, and that's it.

BY MR. ZIMMERMAN:

Q. With reference to the community input meeting, did anyone from your department attend the community input meeting?

A. I can't speak for anyone else, but I did not attend. I read the minutes.

Q. You did read the minutes?

A. Yes.

Q. Did you read all the emails and input that came in from the different people?

A. So most of the emails went to the sector

planner. I reviewed a couple that came my way, but most of my review was done, most of my comments came from the community input meeting minutes.

Q. And does your department have any kind of response or position with respect to what various community members had to say by email or questioning at the CIM?

A. I incorporated to the best of my abilities the responses of the community, that's why the connectivity with the gate was not really pushed for.

Q. Okay. Thank you.

MR. ZIMMERMAN: That's all I have, Judge. Thank you.

THE JUDGE: Okay.

MR. ZIMMERMAN: Thank you for your patience.

THE JUDGE: All right. Thank you, Mr. Zimmerman.

MR. WILLIAMS: No problem.

THE JUDGE: Mr. Williams, you are finished.

MR. WILLIAMS: Thank you, Judge.

THE JUDGE: Does anyone need a break?

MR. ROSENBLATT: Yes.

THE JUDGE: Appreciate it, Mr. Williams.

MR. WILLIAMS: Have a good one.

THE JUDGE: You, too. Yes. Do we need a break? Do we need a 10-minute break? Or do we need a lunch break? It's 1:15. We have two witnesses that are in the conference room.

SPEAKER: Yeah, Judge, with the county witnesses still having not gone, I would suggest just a 10-minute break to try and get them on their day.

THE JUDGE: Yeah, I would, too. All right. Let's do 10 minutes and we'll come back. I'm going to pause the record. So it's 1:13 now, so let's just say 1:25. Great.

(Whereupon there was a brief recess.)

MR. ROSENBLATT: I really need it zoomed in if possible.

THE JUDGE: Yep.

MR. ROSENBLATT: Thank you. And while you're doing that, I'm going to ask Mr. Herman, and I can certainly pull it up.

Whereupon,

JAMES HERMAN

was called as a witness, being first duly sworn to tell the truth, the whole truth, and nothing but the truth, testified as follows:

DIRECT EXAMINATION

BY MR. MCCANN:

Q. There is a provision in the county code dealing directly with open space, 326108, correct?

A. That is correct.

Q. Okay. I'm sure you're familiar with that section. And there's a more specifically, and let me know if you want me to pull it up, but there's a provision in there that talks about what are called environmentally constrained areas. Are you familiar with that term?

A. Yes.

Q. Okay.

MR. MCCANN: And, Judge, maybe I'd better share this rather than trying to shortcut Mr. Herman here. So if I could share that real quick, and then I'll get back

to this document. Thank you. Okay. I'll blow this up.

BY MR. MCCANN:

Q. Do you see that, Mr. Herman?

A. Yes.

Q. 326108A1 defines environmentally constrained areas. Are you familiar with that definition?

A. Yes.

Q. Yes?

A. Yes.

Q. Okay. Great. And there's a provision in 326108 that allows open space to include environmentally constrained areas. This is subsection 6, which I'm highlighting now. Do you see that?

A. Yes.

Q. Okay. Would you agree with me when that is done, there's another section that says, and this would be, sorry, scroll down, B, I'm sorry, D, under 326108, that there is a finding required by the Director of Rec and Parks and the Director of Permits, Approvals and Inspections whenever open space is provided for in an

environmentally constrained area, residential transition area, or an area encumbered by an easement, one of the easements. Am I correct about that?

A. That is correct.

Q. Okay. So I wanted to, does that provision apply here? In other words, we can get to the plan itself, but is there any, any of the open space that's being proposed, is any of it in an environmentally constrained area?

A. I believe it is just in a stormwater management area when it's all said and done.

Q. Okay. We'll get to the plan, but while we have the code here, it does speak to stormwater management here, the subsection D, and I'll blow it up a little bit. It says that the findings that I just spoke about are required when the open space areas are encumbered by a stormwater management easement, correct? So if you could answer that question first, and then we'll move on, Mr. Herman.

The question was simply whether or not the finding that I was referring to earlier from the Director

of Rec and Parks and PAI applied when the open space is in a, in the area of a stormwater management easement, correct?

A. Correct.

Q. Okay. And you're looking to see if that's the case here?

A. Yeah. It's on that exhibit.

Q. Okay.

MR. MCCANN: Judge, can we go back to that? Exhibit 11. Great. Thank you. Okay. I think this is going to be difficult for me, but, maybe I'll do it this way. I have a copy of the plan, the development plan, and I think open space is indicated on that, so maybe I can do that, Judge, if I can share again. Thank you. Okay. This is Developer's exhibit 1, a plan dated Augus 25, 2022.

BY MR. MCCANN:

Q. So before I get to this, it looks like you are ready to answer my question already, Mr. Herman, and that is whether or not any of the proposed open space is in the area of a stormwater management easement or any

other, one of the other areas that we just looked at in the code. Is that the case?

A. Yeah. I was looking into it, yes.

Q. And did you, what did you determine?

A. It's in the stormwater management easement.

Q. Okay. Could you tell us where that is? Which part of the plan?

A. Well, you had your cursor down there. It's below --

Q. Which facility?

A. It's the one that's, it's the facility behind lot 7, 8 and 9.

Q. Okay. I'll blow that up.

A. Okay. And then --

Q. Bear with me one second while I focus in on it. Okay. So it's the central stormwater management facility, correct?

A. Correct, correct.

Q. Okay. And could you describe maybe using this exhibit, Developer's 1, where it is that the open

space is provided for in the easement?

A. Yeah. And it follows, if you see on the left-hand side of lot 6, there is a utility easement that's coming down. That dashed line there that comes down --

Q. Yeah, right here.

A. No, no, the straight line that follows the easement that's between unit 6 and 7.

Q. Right here?

A. Correct. That actually goes down. On this exhibit, it actually shows it, it just carries that line down to basically the forest buffer line.

Q. Okay.

A. Straight down, and then it follows the forest buffer over to basically where the open space area line that's to the right of lot number 9, and it's basically that line extended to the forest buffer, and it's the area that's in that, that goes from basically from the forest buffer up to, there's a line below the stormwater management area there, you can see the grade.

Q. Okay. Go ahead, I'm sorry.

A. Go ahead. No, go ahead.

Q. You go ahead.

THE JUDGE: Why don't you use the highlighter and just highlight [indiscernible]

MR. MCCANN: I forgot about that. Thank you.

THE JUDGE: I know you know how to use markers.

BY MR. MCCANN:

Q. This is again, Developer's 1. This is the dotted line you're talking about, right?

A. Yeah. It continues down.

Q. And extends to the forest buffer, which is right here?

A. No, it continues straight down I believe. And what might also help is I'm sure the design team has probably a larger scale of this that they might be able to put on the screen.

Q. Yeah.

A. So that it's more accurate.

Q. It's just hard to see the one the judge has. So do you see where my highlighting ends?

A. I see it, but you need to back up.

Q. Oh, it's too long?

A. Yeah. You need to go back up to lot number 6, and there's a drainage and utility, or an access easement that's coming down between unit 6 and unit 7.

Q. Yeah. Right here?

A. And that dashed line that comes down and it's got stormwater management easement to the right of it. Stormwater management easement, it's a dark dash, and then on the exhibit, that line is extended on the same trajectory to the forest buffer.

Q. This line between lots 6 and 7?

A. Not between it, to the left side of it. See where it says access easement? That arrow? If you carry that line on the same trajectory down to the forest buffer.

Q. Okay. I thought I had done that. Maybe you can't see it.

A. No, you followed the contour line 304.

Q. Did I?

A. Yes.

Q. Okay. I'm sorry.

THE JUDGE: He looks like he's following the --

MR. MCCANN: I followed the contoured line, I saw a line and I just, yeah, I messed up. This is a bit cumbersome.

BY MR. MCCANN:

Q. So here's the line right here, right? Am I right?

A. Yes, that line, extended.

Q. That line extended. Got it. It's just not showing on the --

A. Yes. Yeah, it's not, that's why I was saying if we, you know, if the design team had a larger exhibit, I think it would be clear.

Q. Okay. And I guess the extent of the, for present purposes anyway, the extent to which the open space is in the easement doesn't matter so much as you do agree it sounds like that finding by the Directors of Rec and Parks and PI, PAI would be required for that, correct?

A. Correct.

Q. Okay. And that has not been done, right?

A. Oh, no, this letter has been signed both by Mr. Gutwall [phonetic] and Ms. Johnson.

Q. Is this the letter from Venable?

A. Yes.

Q. Okay. That's another exhibit I hadn't seen, so I apologize. I don't know why I don't have that. Okay. Well, other than the stormwater management easement areas, which apparently that letter indicates have been approved as being in the open space area, are there any other areas of open space, or any other environmentally constrained areas as defined in the code?

A. I don't believe there are, sir.

Q. Let me get rid of this. Let me ask you about another area. Bear with me one second. Another question, I'm sorry, back to the stormwater management facility, we were just looking at it. Would the, would there be, to your knowledge, would there be a stormwater management easement that extends to this area of where the swale is?

A. What swale are you referring to?

Q. Well, a swale, it says swale with [indiscernible] so maybe it's more than one.

A. Oh. Well, we took the lot number 9's down, and the line that's extended, and at that point in time, that's what was identified as being within the stormwater management easement. I'm not aware of those being any type of stormwater management facilities.

Q. Well, let's do this, since I don't have the plans in front of me. I'll let you go, Mr. Herman, and if I need you to bring you back for the next hearing, I hope you don't mind, I'll ask you to do so. But right now rather than me stumbling around, I think it would probably make sense just to let you go. Everything may be clarified by the exhibits once I see them.

A. Okay.

Q. Okay? But thank you.

THE JUDGE: All right.

MR. MCCANN: No other questions, Judge.

MR. ROSENBLATT: Judge, if I could just really quickly, I don't want to take away from the hearing, but if your staff could send us, is that exhibit 11, then if

it’s not clear from seeing it in an email, I can try and provide a clearer version of any of those documents. It may be scanned, the version you have, and I could maybe provide another one, but I need to see what it is.

THE JUDGE: Okay. I’ll do it right now. They don’t have it, I have it. So hold on one second. Okay. I sent the email, you should both get it. I hope it’s coming through.

SPEAKER: Thank you, Judge.

SPEAKER: Thank you, Judge.

THE JUDGE: Okay. It said it went through, so --

MR. MCCANN: As I said, I’ll just, I don’t have any other questions for Mr. Herman. I’ll [indiscernible] bringing him back, but if I do need to, I’ll just ask him to come back.

THE JUDGE: All right. Mr. Herman, sit tight.

THE WITNESS: Well, also what I was going to say is the intent behind this was to be able to connect the trail system through the stormwater management easement. So from that standpoint, that was the intent, and that was the intent to have that whole area done.

So, you know, if down the road the stormwater management was extended, the intent is to connect the trail so that it all consistently works and ties the whole thing together. Just as a general --

MR. MCCANN: Okay.

THE JUDGE: All right. Mr. Zimmerman, any questions?

MR. ZIMMERMAN: Yeah, thanks.

DIRECT EXAMINATION

BY MR. ZIMMERMAN:

Q. So Mr. Herman, the [indiscernible] note that you sent, was that basically a reconfirmation of the position of the department last year, prior to the previously scheduled November hearing that got postponed?

A. I'm sorry?

Q. I mean, your August 25th, 2022 note that you just produced, was that just a reconfirmation of your position last year?

A. Actually I met with Mr. Bishop prior to that, and we went back through, back through all the comments and basically that was an up to date, that was

up to date.

Q. Okay. So you did do, you actually did take another look at the situation?

A. I did look at the latest red line development plan that I have an August 24th date stamped in here at the county. I have the, I also have I think the date on it is the one that everybody has been talking about, November 10, 2021.

Q. Any significant difference from the plan you looked at last year with reference to open space and landscaping?

A. I don’t know that there was, no.

Q. Okay. And in fairness to the developer, area 2 alone provides more than enough space by itself from a quantitative point of view?

A. Yes.

Q. Okay. Are the three open space areas that were mentioned in my questioning of Mr. Brett Williams, are those the three spaces? Are there any other locations that we’ve missed?

A. Well, let me make this statement from the

standpoint that with regards to my review, with regards to Rec and Parks, I reviewed with Section 32, I reviewed for Rec and Parks with regards to 326108, with regards to open space.

Q. I'm just asking you if the three numbered areas are, is that it? I mean, I just want to double check that we haven't missed one, that's all.

A. Those are the three areas, the one north of Foxwood Drive, the larger pieces that's below units 2 through 9, and the smaller area that's between Lankford Court and Foxwood Drive. That is correct.

Q. How far is area number 1 from Joppa Road?

A. I don't know. I don't have a scale. I could go get one.

Q. Do you have one immediately available?

A. Gino is going to get me one, or Mr. [indiscernible]

Q. While you're doing that, let me ask you out of curiosity. The bike or walking path that you've described, is that connected to the next subdivision?

A. It is connected --

Q. Meadows at Greenspring?

A. Is that the development that's down below it?

Q. It's actually above it, but --

A. Above it on the plan?

Q. Where Mays Chapel Road ends.

A. Well, from the trail and connectivity standpoint, the trail connects to the public roadway with sidewalks on both sides, and that connects up with Mays Chapel on the right-hand side of the plan.

Q. I mean, the path doesn't go straight through to Mays Chapel Road by itself.

A. No.

Q. Okay. Can you scale the distance of the area number 1 from Joppa Road?

A. Yes, sir. It's about 240 feet.

Q. Okay. Eighty yards. Did you, okay. Were you in attendance when I asked Mr. Brett Williams some questions about residential performance standards on open space?

A. Yes, I was.

Q. Did you do a point by point finding on the extent to which based on locations the plan satisfied Section 260.3 of the residential performance standards?

A. Again, from my standpoint, I review with Rec and Parks, and I review based on the open space manual, and it's Section 326108.

Q. Okay. Would you like to make any comment on how the plan relates to Section 260.3 of the zoning regulations?

THE JUDGE: Well, how can he do that if he doesn't review it for that? He only reviews for the 32108 in the open space manual.

MR. ZIMMERMAN: Maybe he has some knowledge of it, I don't know.

THE JUDGE: But he just said he doesn't review it for the residential performance standards.

MR. ZIMMERMAN: Okay. All right. Fair enough, Judge. Fair enough.

BY MR. ZIMMERMAN:

Q. And the same goes for Section 260.5 of the zoning regulations, right? You don't, that's not part of

your review obviously?

A. That is correct. I don't normally take the zoning code out and review it on those instances.

Q. I'm not being critical, I'm just asking, that's all.

A. That's okay. [indiscernible]

Q. Yeah, that's, yeah. I'm just trying to get information.

MR. ZIMMERMAN: Judge, that's all I've got. Thank you.

THE JUDGE: Okay, Mr. Herman. All right.

MR. HERMAN: Thank you.

THE JUDGE: You're free. We've got your two exhibits. Thank you.

MR. HERMAN: If you need anything else, just let me know.

THE JUDGE: Thank you. All right. Last but not least we have Mr. Cauley is there I heard.

SPEAKER: Yes, he is, Your Honor.

THE JUDGE: So is he still awake?

SPEAKER: He's right here.

THE JUDGE: All right. All right.

Whereupon,

EUGENE CAULEY

was called as a witness, being first duly sworn to tell the truth, the whole truth, and nothing but the truth, testified as follows:

EXAMINATION BY THE COURT

BY JUDGE MURPHY:

Q. Go ahead and let us know who you're reviewing for.

A. Yes. Hello, good afternoon. My name is Mr. Eugene Cauley, I review for DPR, and also DPW. Just going back through a little bit of history of this, we originally reviewed these plans I believe back in September, September of 2020.

At that point, DPR generated comments which were submitted for their incorporation into the plans. It was basically our boilerplate comments in addition to 28 site specific comments. Most of the comments were pretty much taken care of. Some of them had been maybe moved forward. I will discuss those in detail.

Specifically, and this goes back to our, I guess our memo that we sent into your office on August 26th, I believe, and the first one is the landscape comment, just a general comment that we provide all the time in terms of final landscape approval. That's actually done in phase 2.

The site specific comments are kind of sitting out there. There has been some resolution, but people probably want to know what's going on. The floodplain study, the review and acceptance of the floodplain study has been moved to phase 2, and in accordance to our general comments from our original review, the floodplain must be accepted for filing by the county prior to our recordation, and prior to building permits being issued. That's where the floodplain is situated at at this time, floodplain study.

Q. Is there a reason why it got moved to phase 2? Is that typical?

A. Yeah, it happens. I mean, it just happened recently in another project. I think there maybe a few outstanding items that need to be resolved, but

that does happen, yes.

Q. Okay. Go ahead.

A. I'm going to go to item number 3 in terms of the traffic impact study. The traffic impact study has been approved by SHA, and the county has no further comment. I did talk to the traffic engineer this morning, he, his no further comments is he considers that approved.

Now, I want to make this very clear. The traffic, the outcome based on talking to our traffic engineer, the traffic shed will be somewhat improved with the improvements that have been discussed prior. Those improvements I believe are at the intersection of Falls and Joppa and Falls and Greenspring Valley Road.

They will be approved, there will be no negative impact to the traffic shed from the additional traffic generated from this proposed development with said improvements, okay? So he did indicate that the traffic will still be operating at a level of service of F.

Now, I'm going to go back to the access gate.

Q. Well, with the traffic study, who is the traffic engineer you talked to that approved this?

A. County traffic engineer is Kris Nebre.

Q. Nebre, okay. All right. Do I understand that he's an Engineer III, and he's the only one in that department, right?

A. He's not, well, there's more in that department. I know he's an engineer. I believe his boss is an engineer also. I believe they are both engineers.

Q. Oh, she's an engineer as well. Okay, I didn't know that.

A. I'm clarifying who is an engineer in the office I guess.

Q. So what's the reason why DPR is testifying for DPWT? [indiscernible]

A. We've been doing that for as long as I have been here.

Q. For how long is that?

A. I've been here since, September 25th will be five years.

Q. For five years? Okay. I mean, because

basically what you do is you reiterate what they tell you, right?

A. To some extent, yes, for the most part. We typically in our department do not review the traffic impact study, we rely on the traffic, DPW traffic, to review them.

Q. Yeah, all right. So, okay. So what I understand then is what Mr. Nebre's opinion is that it looks like in here is the traffic shed will be somewhat improved with the improvements that are going to be made, right?

A. Yes, yes, correct. The improvements have been made at the two intersections, yes.

Q. Is it, are you sure it's both intersections? I was, I thought that SHA was not recommending the improvements at Falls and Greenspring Valley, but only at Falls and Joppa.

A. My understanding is that Falls, if I could, and I'm sure somebody can answer this from the design side, but talking to Chris is at Falls and Joppa, they are doing some I guess phasing and lane improvement,

and because that may impact Falls and Greenspring further out, they are doing some timing. No real I guess capital, I mean, fiscal improvement of more timing improvement with the lights I believe.

Q. So Joppa and Falls Road, they are doing a lane extension, or not?

A. I believe they're doing a lane on each side [indiscernible] lane on each side coming from, what is it, Joppa Road and the other lane, there's a easy passthrough.

Q. Okay. So yeah, I mean, the design team from the developer is going to say what they're going to say, but we always like to know what the county says, as opposed to hearing only from what they --

A. They're doing some capital improvement. For the Falls and Joppa Road, they are doing capital improvement to the road itself, and then they're doing some improvement to the phasing of the lights, and that's going to make that operate and function much better. That's based on the report.

Q. Phasing of the lights and Falls and Joppa

--

A. The traffic impact study, the traffic impact study.

Q. Okay. So --

A. From Falls, go ahead. I'm sorry.

Q. No, I'm sorry. Go ahead.

A. Falls and Greenspring, we're going to change the timing, because of what they're doing so that they work together. That's my understanding. That the two intersections work together.

Q. Right. And did you discuss with Mr. Nebre whether or not the Joppa and Falls intersection and the Falls and Greenspring intersection are part of the same traffic shed that need to be considered? I mean, they have to have, for this development you have to consider both of those, right?

A. Yes. Yes. And I believe they are part of the shed, yes.

Q. Right. And so, and then the Seminary and Falls Road as I understand it is a part of a different traffic shed, is that right? Do you know?

A. I'm not sure. I've got to be honest, I'm not sure about that.

Q. Okay. All right.

A. There is some improvement going there, I don't know much about that.

Q. So, and then number four, you were going to get to this, but Mr. Nebre is indicating that it will still be a level of service of F, even after the improvements?

A. With that, yes, yes.

Q. Even after the improvements are done --

A. If I could explain this. He's saying that the additional traffic generated by this development will no be any, will not cause any negative impact to the shed itself because of these improvements, but the overall improvement to the overall shed will be very minimal. That's what he's saying. I hope I'm saying that clearly to you.

Q. See, here's the problem with you coming in. I mean, it puts you in the hot seat on a topic that, you know, you're more sewers and --

A. Correct, yes.

Q. Sewer, storm drains and everything else, and you're in here trying to, I mean --

A. I want to make sure I explained that correctly, that the traffic generated by this development will not cause less of a level of operation or level of service because of those improvements that we're making at the intersection.

Q. Well, there's no lesser level of service than F, right?

A. Well, I think what, let me explain that. I think what Chris is saying is there might be a little bit, I think there might be, you [indiscernible] range, and it might be a little bit better, but not much, much better I guess is what he's trying to, is what he told me, okay?

Q. So the way I read this then, the development can't make the intersection that is F worse?

A. Right, correct. Right. Basically the improvements, those two improvements are supposed to improve the Falls Road corridor in terms of traffic, and

traffic that's generated by the development will not cause a greater impact.

Q. Okay. But I thought you said that the whole traffic shed, which is the whole corridor of Joppa and Falls, Greenspring Valley and Falls, that whole shed, that's one shed, that will still be, that also will still be an F?

A. In discussions with Chris, it will still be an F level of service, yes.

Q. But they do review these intersections every year, right? They take the traffic counts every year for the F intersections? D, E and F I think, right?

A. I, to be honest with you, I do not know that. I have to refer back to Chris on that. It makes sense, but I do not know that.

Q. Yeah. I did have them come in another case, so that might be the case here.

A. Okay.

Q. He came, and so he's been here. By the way, it probably would be easier for you all honestly if DPW and T just kind of was part of this process and was

one more witness, you know, rather than jumping in on, I'm saying it the wrong way. You know what I mean.

A. I'm not totally, I'm not disagreeing with you.

Q. Right, right, okay. All right. So, and then you were, I'm sorry, I cut you off, and you were going to go back up to the gate.

A. Yeah. In terms of, well, I'm going to talk about the development, development traffic shed operating at level of service F, basically DPWT would defer this issue to the ALJ.

Q. Well, that's me.

SPEAKER: That is exactly you.

BY JUDGE MURPHY:

Q. So there's a lot of deferring here. So the thing is I can't change the level of service, right? I have no way of changing that, so I don't know what the deferral is. I'm not sure, what does that mean, number 4? Development of traffic shed operating will continue, and you're deferring it to --

A. I think there's a, I believe there's a

variance, is part of the variance in terms of developing level of service F.

Q. Right. And so what happens with the variances in the section for the special variance in the zoning regulations, it requires Department of Planning to provide a report to me before I can consider it, and their report they generated was the hearing officer's hearing report, which you saw this morning perhaps on the screen, and that says we defer to DPW&T, and DPW&T is referring it to me.

So, you know, we are looking for some kind of, you know, some kind of expertise on the part of traffic engineers to say whether or not, but what I understand that you're saying is traffic engineering is saying under number 3 that it's not going to be any worse if this development is here in terms of the Joppa and Falls Road intersection.

A. Right. Yes.

Q. Okay. So that is their opinion, so I'm not sure why they say 4, because 4 doesn't really make sense to me. In terms, I mean, I know I have to decide

the variance, but I need their opinion. So, you know, these issues, that's probably just maybe a note for Mr. Chad if he's taking notes. All right. Go ahead, so what were you going to say next?

A. If I can, just go to the proposed access gate. If you see on the plan basically have a note on there, and the note, let's see, the note, this is another one of those deferrals.

Q. They have no opinion at all about whether or not this gate should be for emergency access only?

A. Yes, the gate, and this is put on the plan, based on some internal discussions that are requested to be put on the plan, gate for emergency access only to be approved by the administrative law judge, which is you.

Q. Which is me. But again, they don't have any position one way or the other as traffic engineers about whether or not that gate has to be open all the time?

A. I'm not getting an answer, but in terms of our DPR development policy, our policy basically

specifies, let me pull it out for a second just so you're clear, is that access guidelines, minimal number of use with one means of access should be 100 units with no, okay. I'm going to do this, okay?

Access minimum, this is DPR's policy manual. Maximum number of units with one means of access limits of units, 100 units with no future street extension proposed, so that 150 units when the [indiscernible] extension is proposed and is feasible, okay, greater than 150 units, second means of access must be constructed. There are some exceptions to these rules also.

Q. And this --

A. And between, this is a development plan review policy manual, and there are exceptions to these rules. One is emergency access points, well, these limits may be increased and restricted by a limited or controlled access highway or other barrier or limitations as advised by the Department of Public Works.

In order to see access points in place of full use access points generally will be discouraged, but may be approved in unusual circumstances.

Q. Okay. So is it the position of DPR that there should be full access, and not just emergency?

A. We try to be consistent with DPW, but based on our design manual, I think between the three communities that are being served, I think we have 61 in one community, one community to the north of us, I guess northwest has I think 99, and the other community to the northeast, which are all tied into the same road I believe has 26 or 27 units, so there would be a total of I think, I'm doing the math in my head, 186 units maybe between the three of them, and that's greater than 150.

So therefore, if you're greater than 150, there should be a second means of access, means of, second means of access must be constructed.

Q. Okay. So what I've got here on the screen is your, the DPR development plan conference comments dated August 10, 2021 under Section 3, the site specific comments that DPR issued said that since the number of off site units are over 100, Mays Chapel Road needs to be a full access road and not an emergency access road?

A. Correct, correct.

Q. Does DPR still believe that that's the case?

A. Since there are 150, yes, that is our claim.

Q. So you're not consistent then with I guess it's the Department of Planning?

A. Department of, no, Department of DPW&T.

Q. Well, DPW&T, I don't know what their position is on it. They are just deferring to --

A. They, they want that note put at the plan there, because they are a part of the review process, and that, I think that's their position.

Q. Which is that [indiscernible]

A. They [indiscernible] they want to defer to you I guess is the question.

Q. Yeah. So they want the emergency access, or they don't?

A. By deferring, I'm assuming they don't want it. I'd have to talk to them again about this, to be honest with you.

Q. So, but DPR's position is the same though

as it was in, on the screen, the DPR, I'm sorry, DPR/DPC comments dated August 10th which says number, you know, again, number 3, is that still DPR's position? Yes?

A. That is DPR's position, yes.

Q. Okay. And so that is supported by the design policy manual of DPR?

A. Yes.

Q. Okay. So you were, I think you were on, I'm just trying to move along here. So that was all the, go ahead.

A. That was all those outstanding items at this point in time, yes.

Q. So, all right. Well, that was the gate. So that's, so based on this note that you sent us, which is, sorry, let me go back. Final comment, this is the one dated August 26, 2022 that you sent over to us.

A. Right.

Q. Is DPR and DPW, are they recommending approval of the plan?

A. The DPR, they can't recommend the approval plan based on the fact that the gate doesn't meet our

requirements within the, in accordance with our development policy.

DPW&T is basically saying approve the plan with the understanding that they are deferring those two items to the judge. That's how I read this right now.

Q. Yeah. Okay. All right. So we really don't know one way or the other, I mean, I guess from DPW's standpoint whether they want the gate closed or not. Okay. Let me ask you, let me just ask you this.

So in this same DPR/DPC comments, in the site specific comments, we get down here to a different topic, which is --

A [indiscernible]

Q. It was 18 first of all, I guess the storm drains, they had to be checked for adequacy and upgraded to, or provide stormwater management as needed, or was DPR satisfied that that was met?

A. Well, in terms of storm management, that's a comment that actually comes from DPW&C, and I believe they are satisfied with that. I think that the storm management conceptual plan is approved, so they would be

okay with that, yes.

Q. Okay. All right. And then we have number 20, the following eight sewer segments do not have adequate capacity to accommodate the proposed 61 home subdivision that's being proposed here. Six of those segments have to be addressed by another developer.

A. Yes.

Q. What other development is there? Which development is --

A. Okay. There's actually, could you go further down on those comments? I believe there might be a chart below, an immediate chart below. Okay. So the two that are starred are required to be taken care of by the developer, which in, he has already designed those two upgrades for those pipes. They're already designed.

They are, I believe they are trying to get the UAO for that design, but the plans have been approved. In terms of the other six sections, they are to be done by Johns Hopkins University, and I don't believe they have, I'm not sure exactly where they are in the process of designing and getting those upgrades, basically

upsizing those pipes at this point in time.

Q. So hwo do we know? I mean, how do we find out?

A. They are, DPW&T has been in contact with Johns Hopkins in order to get them to complete that work, and they're working with, but I'm not, I don't believe the plans have been completed as of yet.

Q. So how long ago were they, was Johns Hopkins University supposed to, or maybe it's Johns Hopkins Hospital, how long ago were they supposed --

A. I think it's Johns Hopkins University, and I believe that was part of a development from years ago I believe, and they haven't done it as of yet. I cannot remember, to be honest, I don't remember which development that was, but that was something that was supposed to be taken care of I believe, I think a couple years ago.

Q. Would it have been in Greenspring Station?

A. I think it's, well, it's probably below where we are. I'd have to research those exact type segments where they are. I really didn't do that, I just

looked at it from our pipe segments to make sure that they're done. SO yeah, they are required to get that done, and DPW&T have been chasing them to get that work completed.

Q. So who is the developer then that has to do the two ones that are starred?

A. The two ones that are being done by the developer that is working on this particular development, and they have been very aggressive in getting that done.

Q. Okay. They're the ones with the design plans already in the works?

A. Yes, they are. The design plans are already approved, signed and approved.

Q. Okay. All right. So let's go down here to 27. This has to do back, again, with the traffic study. As of the date of this DPC comment, which again was a year ago in fairness, August 10, 2021, the developer submitted the traffic compact study, and this is going back to this issue. DPW&T had not completed their review of the study at the time.

A. Yes.

Q. Right. So then, and then what happened was we got this comment that was in the file from Mr. Curtis. Is he still doing these?

A. Yes, he is. Yes, he is.

Q. Have you seen this comment from Mr. Curtis?

A. Let me see. I probably have awhile ago. Which particular comment? All of them? Or which one?

Q. Well, yeah, I mean it is part of one comment. It was a comment to the, for the special variance request, and so he indicates he has now reviewed it, because it's after the August, it's after your August the 10th, 2021 DPR/DPC comments, so he's now responding. He has now had a chance to review the traffic impact study.

He reviewed the supplemental traffic impact study. He says that, you know, he had reviewed it, and he said the traffic impact study didn't even say that it was in a traffic shed at the time.

A. Well, that may have, the report does not note that the proposed development has any level of

service F traffic. It probably, it is in a level of service F traffic shed, it would probably get noted in the study, and I don't recall, if I could, this is going to sound really, I want to step back for a second.

We used to work together with DPW&T in putting together the variances. Their comments used to be, our comments would be one common package. For awhile back in the Covid period, I believe that they separated and we did our comments separate from DPW&T. So I may not have seen these specific comments at that time, that's what I'm, and now going back and doing them jointly, so I may not have seen that at that time.

Q. So now you're back jointly kind of putting the comments together?

A. Yes, we're jointly putting the comments together, yes. I know you didn't want to hear that.

Q. I mean, he indicates here that, you know, in number four, however, this development is currently in an F traffic shed which by definition is at capacity, cannot handle anymore volume. And so he talks about the Mays Chapel bypass. Is that the gateway? Is that the

gate?

A. That Mays Chapel bypass accounted for, already showed an increase in CLV's on Falls Greenspring. I'd have to go back and talk to him to find out, in all fairness I believe he is actually getting these comments from Kris Nebre, and he incorporated them in this document. So I'd have to go back and get a clear definition of what he means by Mays Chapel bypass accounted for already showed an increase in CLV at Falls and Greenspring Valley full build out condition.

Supplemental report does not address Falls and Seminary with the scenario of no bypass, oh, okay. Yeah, I believe, the further I read this, I think the context is that, you're right, the Falls Chapel bypass, I believe he's kind of saying that without the gate, that's considered a bypass. I believe that's what he's trying to insinuate there.

Q. Without the gate, it's a bypass?

A. Without, I think without the gate, I think he's saying that's the bypass.

Q. Okay. So in the end sentence, what he

does is he says the development should have some improvements, which you've already indicated are being proposed here?

A. Yes, yes.

Q. Okay.

A. You see zero net critical [indiscernible] so he is basically saying, I think the same thing. There will be no net, there's no impact due to these improvements. That's what it's saying. The shed still offers [indiscernible] but there's no real impact, so the operation is already failing.

Q. Well, at this point he is, this is September of 2021, he's looking for the improvements here, but you've indicated in your final comment that we just looked at that there is improvements, that they are going to improve the traffic shed, and there's no net impact to the traffic shed, right? So this is from --

A. Correct.

Q. Yeah. Okay. All right. So that's Mr. Curtis'. And then we had, we're going in chronological order here, we had October 18, 2021, Mr., that's you, Mr.

Cauley, actually this is your initial.

A. Yes, it is.

Q. That's you. Now you write at the bottom, no development allowed within a traffic shed or along local roads with an F level of service. This request needs to be coordinated and discussed with DPW&T.

A. Yes.

Q. So you can't have the development obviously within the F traffic, so was this then discussed with DPW&T? Is that how we got to your recent comment, which was --

A. Yes, a lot has happened in the meantime in terms of I think some revisions to the traffic study, the improvements that were added, and that type. That's what brought us to where we are today, yes.

Q. Okay. So what I'm going to do is mark, go ahead, I'm sorry.

A. No, go ahead. I'm sorry.

Q. I'm going to mark as exhibits, I'm going to mark the, it's going to be the, so DPR, just hold with me for a second. DPR, DPC comments, they are dated

August the 10th, back up to the top here, August the 10th of 2021, that's going to be exhibit 12, Exhibit 12A actually. That's going to be 12A, because I want to put these all together in one packet.

(County Exhibit No. 12A was marked for identification and entered into evidence.)

THE JUDGE: Okay. 12B in chronological order is going to be Mr. Curtis' ZAC [phonetic] comment from 9/21/21, the ZAC comment, and then 12C is going to be the, Mr. Cauley's comment dated October 18, 2021, and this was for another ZAC meeting it looks like for September the 21st.

(County Exhibit No. 12B was marked for identification and entered into evidence.)

(County Exhibit No. 12C was marked for identification and entered into evidence.)

A. I believe they're the same case item, are they not? The one, yes, okay.

BY JUDGE MURPHY:

Q. It's the zoning filed for the special hearing, it's case number 2021250. So you were providing

this for the ZAC meeting? The zoning advisory comments.

A. Correct.

Q. And then his was, Mr. Curtis's say the same thing, the ZAC agenda, and that was for the same case, 250SBH.

A. Right.

Q. All right.

A. We were doing that separately at that time.

Q. Separately. That makes sense. So that's when you did it separately, okay. All right. And then the last one is going to be 12D, and that is going to be the August 26, 2022, these are the DPR and DPW&T final comments.

(County Exhibit No. 12D was marked for identification and entered into evidence.)

THE JUDGE: Okay. All right. I've got those four. I'm going to turn it over to Mr. Rosenblatt. Any questions?

MR. ROSENBLATT: Yes, I do have some questions. Can I have permission to share, please?

THE JUDGE: Yes.

DIRECT EXAMINATION

BY MR. ROSENBLATT:

Q. Good afternoon, Mr. Cauley.

A. Good afternoon, Mr. Rosenblatt.

Q. I'm going to ask you a couple of questions, starting with the floodplain comments, so I'm turning to your August 10, 2021 development plan conference comments, and on page 6 I have highlighted, and again, this is back in August 10, 2021. I don't know if you can see the screen from where you're sitting, but I'll zoom in.

A. Yes.

Q. And it stated that floodplain studies will be necessary to be reviewed and approved prior to the recording of any record plat or issuance of any grading or building permits. Do you see that language?

A. Correct.

Q. So back in 2021 over a year ago, the comment today saying that the floodplain study will be in phase 2 is consistent with this statement that it will

be, must be approved prior to the recording of a record plat or issuance of grading and building permits, right?

A. That's fair, yes, true.

Q. Okay. On the traffic study, I think your words were a lot has happened since last year. Did I hear that correctly?

A. That is correct.

Q. I agree, and to follow up on the exhibits that you just went over, which were county exhibits 12A through D, I want to show you an email from Kris Nebre, which I'm wondering if, looking at it today, I see that Vishnu Dasai [phonetic] is copied on this. Vishnu is in DPR as well, right?

A. Yes, he is.

Q. Is he the super-, basically the supervisor DPR?

A. He is the Chief of DPR, yes.

Q. Okay. I can zoom in more. Have you seen this email from August 16, 2022 from Kris Nebre to a number of people, including Visnu Dasai?

A. I don't know. I don't think I have.

MR. ROSENBLATT: Judge, I wasn't sure whether to make this a County or Developer exhibit, but I'd like --

BY MR. ROSENBLATT:

Q. Mr. Cauley, if you could take a look at this email that was sent to the supervisor of DPR, and --

A. [indiscernible] maintained by SHA along with a traffic signal to be [indiscernible] improvements along Joppa [indiscernible] yes, and [indiscernible] result in a net zero impact along the corridor, correct. I agree. The scope of [indiscernible] study are SHA intersections.

We agree that the proposed development along with the intersection would not have a negative impact on the intersection [indiscernible] may request a copy of the traffic impact study supplemental analysis, Bates stamped and signed by a professional engineer.

We do not have additional comments to offer. The developments its in a current level of service traffic shed and therefore [indiscernible] defer findings to Lenhart traffic and SHA response [indiscernible]

reviewed from the Zoning Commission to determine if this development would be eligible for a waiver based off the zoning regulations.

Q. Okay. And my question for you based on this email, is this the basis for several of the statements in your hearing officer's hearing comment dated August 26, 2022? In other words, you state in number 3 the traffic impact study has been approved by SHA, and the county has no further comment.

A. Right.

MR. ZIMMERMAN: I have an objection. Excuse me, I have an objection. Judge? Judge, can I make an objection?

THE JUDGE: All right. Mr. Zimmerman, go ahead.

MR. ZIMMERMAN: Yeah. Number one, unless Mr. Nebre is brought in to testify, this witness should not be allowed to testify based on some email, and so I think we need to get Mr. Nebre in here, number one. And number two, so far as I know, this email has not been shared with the public. Unless you correct me, I don't think it's in the file.

THE JUDGE: I have not seen it.

MR. ZIMMERMAN: And I don't even think Mr. McCann has it. He'll correct me. So, you know, that's, this is not proper process really.

MR. MCCANN: If I may add to that, Judge, I'm sorry, I didn't get my objection in quick enough.

THE JUDGE: Sure.

MR. MCCANN: I think Mr. Cauley has already candidly admitted that he has not seen the email before, and Mr. Rosenblatt's question, if I'm correct, said is the email the basis for this comment? He's trying to connect that email, which Mr. Cauley hasn't ever seen before, with the site specific comments, which by the way aren't really generated by Mr. Cauley anyway.

He clearly didn't do any of this traffic analysis to even make his comment in number three, so I think it's way too, lacks complete foundation to try to make that connection between the two.

THE JUDGE: And that's what I also heard Mr. Rosenblatt, I heard that Mr. Cauley, in fairness to him, he had not seen that email and then, you know, he

proceeded as you asked to read it, looking at it, and then you're trying to make a connection, and I understand, but, you know, it can't come in through him.

I do believe that we need, again, Mr. Nebre here as he did, in another case that we had, similar issue. It really needs to be as a matter of course, and that's not anyone's fault here, other than, I mean, it's just been a custom that DPR testifies for DPW&T and Mr. Cauley is in the hot seat and trying to answer questions, but, you know, we wouldn't be asking DPW&T to answer questions about sewers, and I don't know why we're asking DPR to answer questions about traffic. You could always just keep it, mark it, and then we could bring in Mr. Nebre again.

MR. MCCANN: Actually to be clear, I'm okay with the exhibit coming in. I have seen the email before. It's the same document that I had gotten in response to my request, so I don't have a problem with the email itself. I just need to see the rest of it, and if we call Mr. Nebre or not, I'm just saying it's okay for it to come in now from my perspective.

THE JUDGE: I thought that was your objection, that you didn't want it to come in.

MR. MCCANN: My objection to the question asked of Mr. Cauley --

MR. ZIMMERMAN: My objection is to both. I don't think it should be admitted until Mr. Nebre comes in and we can cross-examine him.

THE JUDGE: Right, yeah. And I'm sure, Mr. McCann, you probably did a public record, maybe a request or something like that, that's how you got it I'm thinking?

MR. MCCANN: Yes.

THE JUDGE: Right. Okay. So Mr. Rosenblatt, I would just would rather, you know, Mr. Nebre has to authenticate that.

MR. ROSENBLATT: I understand. In the interest of time and everything else, I'm going to reserve. I just want to the record to be clear. I obviously have a lot of questions of the county about traffic, but I'm going to try and reserve most of them if you said Mr. Nebre is going to be part of this case, or someone will

be part of this case, then I'll skip that issue altogether and we'll just, we'll come back to it, and I'll come back to this email so that selfishly I don't have to renumber a whole bunch of exhibits that we've already numbered.

THE JUDGE: That makes sense, right, yeah, that makes sense to do that. It's not in your exhibits that you produced.

MR. ROSENBLATT: Okay.

BY MR. ROSENBLATT:

Q. So Mr. Cauley, I just want to focus on one or two more issues and I'll get you to the next lawyer. So you were reading from the DPR policy manual, and you're reading the policy about means of access.

A. Correct.

Q. I just highlighted that, and I'm asking you, it's at the bottom of page 22 into page 23 of the manual. Is this the standard that you were discussing in determining whether the Mays Chapel extension could be gated for emergency access, or had to be open for full access?

A. That is the, what I was referring to, correct.

Q. Okay. And you explained the requirements when there is 100 units or 150 units, and then the exceptions which include as relates to this case potentially that emergency access points in place of full use access points generally will be discouraged, but may be approved in unusual circumstances, right?

A. Correct, correct.

Q. And you have relayed that DPWT has deferred that issue to the ALJ, right?

A. That's correct.

Q. And your personal position is that --

A. DPR’s position.

Q. DPR’s position is that there are a sufficient number of units, that that needs to be full, open access?

A. Yes.

Q. And you would agree with me that if we can convince the judge that this is a “unusual circumstance,” that that gate could be left in place and meet this

exception here?

A. Yeah. Yes.

Q. And you had said that DPR is not recommending approval of the plan at this point solely because of this gate issue, right?

A. Right.

MR. ZIMMERMAN: Objection, objection.

THE JUDGE: Mr. Zimmerman?

MR. ZIMMERMAN: I don't think that's what he's been saying the whole time. I just don't think that's accurate.

[Crosstalk]

THE JUDGE: Hold on, hold on, I can't, there's too many people talking at once. So Mr. Zimmerman, does this issue with the gate have to do with your authority in regard to zoning and master plan?

MR. ZIMMERMAN: It's part of the special variance issue.

THE JUDGE: Okay.

MR. ZIMMERMAN: Yeah, it's all part of the special variance issue. Obviously if you have a Mays

Chapel Road connection, it increases circulation, it reduces the impact to some extent on the F level intersections. It's mentioned in Terry Curtis' email relating to the special variance. It's all wrapped up in the F level intersection special variance circulation issue.

THE JUDGE: Okay.

MR. ZIMMERMAN: So yes. It's a zoning issue, it's a zoning issue. I just thought that this [indiscernible] and it is kind of a misstatement to try to boil it down to one sentence. I just didn't think that made any sense, but I'll defer to the Judge, of course.

THE JUDGE: So Mr. Cauley, I think the question was whether or not DPR, their position as an agency was that there should be full access unless the developer can prove that there's unusual circumstances under the policy manual? Did I hear that right?

MR. CAULEY: Yes.

THE JUDGE: So what in your mind are unusual circumstances under the policy manual? When have you seen

this in other cases? What are unusual circumstances?

MR. CAULEY: I guess if there's safety concerns through there, too much traffic going through might be an unusual situation. I guess if this scenario or cut through pass doesn't occur elsewhere, which I'm not sure if that exists, but I think safety is really the issue here.

If it's an unusual safety concern going from 7 to 9 in the morning, or from 3 to 5 in the afternoon might be an unusual circumstance.

THE JUDGE: Okay. Thank you.

MR. CAULEY: [indiscernible] kids running around out there maybe. You might have kids running around.

THE JUDGE: Kids running around, okay. So the DPR policy manual, is that within the county website? Or is that something you've got to find? It's like only a paper copy, and you can't scroll through it?

MR. CAULEY: I am not sure if it's on the website, I'd have to check that. I have a paper copy here. I can send you over the section of it if you want, if you want --

THE JUDGE: I might not be ablet, I might not have that. I might be able to find it, but if we, if you see an email from me asking for that, I'll copy everyone.

MR. ZIMMERMAN: I will follow up.

THE JUDGE: Okay. Thank you. All right. Mr. Rosenblatt?

BY MR. ROSENBLATT:

Q. Just to follow up on my last question, I believe you testified, and correct me if I'm wrong, that DPR is the only issue preventing your recommendation of approval of this plan is this gate issue to Mays Chapel Road?

A. Yes.

Q. Other than the gate, DPR is satisfied that this plan meets all other requirements and can be approved?

A. Yes.

Q. Okay. DPWT is recommending plan approval and deferring the gate issue to the Judge?

A. Correct.

MR. ZIMMERMAN: I object, because I don't think

that’s consistent with the documents we’ve seen. I think the documents we’ve seen are much more ambiguous, so I don’t think it’s a fair question or comment by the witness.

THE JUDGE: Okay. Well, Mr., but Mr. Cauley, he’s seasoned and he’s been here a long time, he knows what the documents say, he can answer as he sees fit, so overruled. Go ahead, Mr. Cauley.

THE WITNESS: What’s the question? I’m sorry.

BY MR. ROSENBLATT:

Q. Yes, sir. The question was DPWT is recommending approval of the plan and deferring the gate issue to the ALJ?

A. Correct.

Q. Okay. All right.

MR. ROSENBLATT: Judge, with the understanding that we’re going to have other opportunities to talk about traffic, I’m going to ask no further questions. Thank you, Mr. Cauley.

THE JUDGE: All right. I’ll do my best to send Mr. Nebre an email, so Mr. Cauley you’ll have to just

warn Mr. Nebre that it's coming. I told him before that I might be bugging him again, and so --

SPEAKER: I already warned him.

THE JUDGE: You already warned him?

SPEAKER: Yes.

THE JUDGE: He loves, he loves coming, he loves coming. All right. So next person, Mr. McCann?

MR. MCCANN: Thank you. Can I have the ability to share, please?

DIRECT EXAMINATION

BY MR. MCCANN:

Q. Hello, Mr. Cauley.

A. Hello.

Q. I wanted to address the floodplain issue first. Let me show you this August 11th, I'm sorry, August 10, 2001 development plan comments of DPR. Do you see that?

A. Yes.

Q. I believe that is 12A.

THE JUDGE: Yes.

MR. MCCANN: Okay. Judge, I definitely don't

have exhibits, some of the other 12 exhibits, 12B and, that I'll have to get from you. In fact, 12D I definitely need to ask some questions, if that could be sent to me.

THE JUDGE: Mr. Curtis' email?

MR. MCCANN: Yes. August 26th was just a couple days ago, so --

THE JUDGE: Actually the August 26th one is 12D. Mr. Terry Curtis's was the September 20, 2021 ZAC comment. I'm sure you've seen that, because that was that --

MR. MCCANN: No, I've seen that. I'm talking about 12D as in dog.

THE JUDGE: D, okay. I will, I'll email that right now to both of you.

MR. MCCANN: Great. That way we don't have to call Mr. Cauley back.

BY MR. MCCANN:

Q. So this DPC comment of August 10th, which are as I said, exhibit 12A, County exhibit 12A, Mr. Rosenblatt referred you to under general comments to a provision that said, actually --

A. It's under the stormwater section, page 6.

Q. Page 6.

A. Yes.

Q. And it may not be under general comments, I may have mischaracterized that. But you referred to, on page 6, to this note that says floodplain studies will be necessary to be reviewed and approved prior to the recording of any record plat, issuance of any grading or building permits, correct?

A. Right, correct.

Q. And, but I wanted to direct you to another revision of these very same comments, the site specific comments, specifically, excuse me, note 26. It says right here, a revised study was submitted to DPR, and it's under review. Did I read that correctly?

A. Yes, you did.

Q. Okay. And when I read that, it suggests to me that we're, you know, that there will be some review and comment on the study prior to phase 2. Am I misreading that entirely?

A. Yes. No, you're not. There was a review,

and there were comments generated, and I believe they were in our file.

Q. Okay. There have been, as you said, comments on the floodplain study, but the floodplain study has not been completed and approved yet, has it?

A. Correct, correct.

Q. Okay. And then with regard to this phase 1 versus phase 2 concept, would you agree with me that there's nothing in Baltimore County regulations anywhere that says that floodplain studies can or should be, or must be reviewed only in phase 2 of the development review process? In other words, are you aware of anything that says that?

A. No, I'm not aware of anything that says that. I, in the five years or almost five years that I've been here, we have reviewed them both in phase 1 and in phase 2.

Q. Okay. And just for everybody's benefit, when you say phase 1 and phase 2, phase 1 is the process --

A. [indiscernible]

Q. Let me finish. Is the process that we're in right now that is review and approval by the agencies and by the administrative law judge, correct?

A. Correct.

Q. So when things are allocated to phase 2 like they are sometimes, there is no public hearing on that, correct?

A. Correct.

Q. Okay. And in this case, we know that a substantial portion of this site, in fact, the whole front of it, is in a floodplain, correct?

A. A large portion of the front of it, yes, is in a floodplain, yes.

Q. Okay. Let me show you another document. Bear with me one second. This is, and I'll scroll down so you can see it, it's a three page document that has your initials on it dated April 26, 2001. Do you see that?

A. Yes, I see it, yes.

Q. Three pages, I'll go down. Just let me know if you need me to go any slower to verify what it

is. Does that look familiar to you?

A. Yes.

Q. Okay. And these are, correct me if I'm wrong, based on this introduction right here, let me blow it up for you, this appears to be a memo that is related strictly to the floodplain issue, right?

A. Correct, correct.

Q. And I direct you to, I'll blow it up a little bit. This was authored by, number 9, this was approved by you, correct? It has your initials, right?

A. Yes.

Q. Okay. So number 9, I'll just read it to you. The engineering shows the proposed entrance to this site is located within the existing floodplain. A waiver request to permit such an improvement shall be submitted to the county, Department of Public Works, for approval. Did I read that correctly?

A. Correct.

Q. So it was your position, and I take it the position of DPR at the time that a waiver is required in order --

A. Yes.

Q. Okay. In order for it to be more specific. Everything that's happening at the entrance to occur within the floodplain, right?

A. Correct.

Q. Okay.

MR. MCCANN: Your Honor, I would this in as the next exhibit, which I'm starting to lose track as I tend to do.

THE JUDGE: I have 7 as the next one. Is that right? 7? No?

MR. MCCANN: Let me see. I actually have been marking as we go. Yeah, it is 7, yep. Great.

THE JUDGE: Okay. And this is called?

MR. MCCANN: I'll get back to it. It is I would say DPR comments dated April 26, 2021 regarding floodplain. That's how, I think that's a fair description.

THE JUDGE: Okay. Any objection, Mr. Rosenblatt?

MR. ROSENBLATT: It looks like a county comment

letter, so --

THE JUDGE: Okay. Mr. Zimmerman, no comment, right?

MR. ZIMMERMAN: No objection.

THE JUDGE: Thank you.

(Protestant Exhibit No. 7 was marked for identification and entered into evidence.)

MR. MCCANN: Let me show you something else. I'll have this marked as exhibit 8.

BY MR. MCCANN:

Q. This is a two page document dated August 18, 2021, and I'll go through it slowly, just let me know if you need me to slow down.

A. No, I have it right here.

Q. So you recognize this document, which we'll mark as exhibit --

A. Yes, I do.

Q. This is an approval letter from the director of DPW, Ms. Walker.

A. Correct.

Q. Which determines I guess in a nutshell

that a waiver will not be required under the Baltimore County [indiscernible], correct?

A. Yeah. Waiver, request for [indiscernible] will not, will not have negative impacts to upstream or downstream properties, and are not detrimental to floodplain management programs. Oh, based on this criteria noted above, the development will not require a waiver under that particular section.

Q. Okay. So are you, number one, have you drafted the memo that we just looked at April 26, 2021?

A. Right.

Q. Do you necessarily agree with Ms. Walker's conclusion that a waiver is not required?

A. No, because I believe what they're saying is that, and I thought a waiver was required, but I believe what they're saying is for insulation of ponds, culverts, bridges, streets, utilities or drain facilities that the county finds not detrimental to the floodplain or management programs, so, and that's code, so I had misstated that, to be honest with you.

Q. Just so I'm clear, when you stated in your

April 26, 2021 comment that we just looked at, Protestant's exhibit 7, that a waiver was required, as we sit here today, you believe that was a mistake?

A. That was a mistake on my part.

Q. Okay. Are there any other waivers required under the Baltimore County code, other than the one that's identified here?

A. Well --

Q. I'm sorry. To be more specific, just to finish that thought, is for the proposed aspects of this development in the floodplain.

A. I guess there may be one, may be one required down the line due to possible flooding of the road out on Joppa Road.

Q. Okay.

A. It depends on how, it depends on what the proposed remedy is for the floodplain crossing West Chapel Road.

Q. Okay.

MR. MCCANN: Your Honor, I would move in exhibit 8 as well.

MR. ROSENBLATT: No objection.

THE JUDGE: Thank you. Mr. Zimmerman, no objection?

MR. ZIMMERMAN: No objections. Sorry, I just unmuted.

THE JUDGE: Thank you.

(Protestant Exhibit No. 8 was marked for identification and entered into evidence.)

BY MR. MCCANN:

Q. Let’s talk about this cut through issue, Mr. Cauley. I’m a little bit confused, but I’ll ask my questions anyway.

A. Okay.

Q. I’m going to show you, one second. So this again is I think exhibit 12A, it’s the county exhibit. I won’t mark it separately, but this is, it’s the August 10, 2021 comments. I’ll scroll up to the top so you can see it. Do you see that?

A. Yes.

Q. Okay. And I’m going down to site specific comment number 3, and it says right here, since the

number of off site units are over 100, Mays Chapel Road needs to be a full access road, and not an emergency access road. Did I read that correctly?

A. Yes.

Q. Okay.

A. Yes, but there are exceptions to that, obviously.

Q. Right. Well, let's, let me pull up the design manual, because I think the Judge said she didn't have a copy of it, but I do have a copy, and I will mark it, bear with me one second.

MR. MCCANN: So this would be, Your Honor, number 9.

(Protestant Exhibit No. 9 was marked for identification and entered into evidence.)

MR. MCCANN: I'm going to identify it first, but this is an excerpt, this is the cover page.

BY MR. MCCANN:

Q. Do you recognize that as the cover page of the design manual?

A. Yeah. The development plan review --

Q. Policy manual. I'm sorry, policy manual.

A. No problem.

Q. And this is pages, this, oh, my goodness.

A. Page 24.

Q. I'm missing a page.

A. 22, I apologize, 22 and 23.

Q. I don't know why the copy didn't come out. But you have it in front of you, right?

A. Yes, I do.

Q. So this page forward, my page here, it actually says, does it not say maximum number of units with single means of access?

A. Maximum units with one means of access, 100 units with no --

Q. Hold on, hold on, hold on. The heading of this section A, which is not in my exhibit right now, I'll have to grab it, read that, the heading of A. Just read A itself.

A. Maximum number of units with one means of access.

Q. Okay. And then underneath that, it says

100, right?

A. Correct.

Q. Okay. 100 units. Let me show you what's marked as exhibit 10. This is my neighborhood map. Do you see that?

A. Yes.

Q. Okay. I'm going to blow it up. So do you recognize where we are here? This is Joppa Road. Do you see that there?

A. Yes, I do.

Q. And here's the subject site.

A. Yep, I see it.

Q. Okay. Let's talk about the on-site developments, and hopefully you're familiar enough with them. I am going to circle this development right here, which is the development at which we've been talking about about connecting to. Do you see that? I just circled.

A. Yeah, I think it was 99 units in there, I believe.

Q. Yeah, 99, right?

A. Yep.

Q. Okay. Not 100, but 99.

A. Correct.

Q. Okay. And that development, are you familiar with its name?

A. I am not familiar.

Q. It’s called the Meadows, is it not?

A. I can’t, I’m sorry, I don’t remember.

Q. But would you agree with me based on this my neighborhood map that this development, which I’ll represent to you is called the Meadows of Greenspring --

A. Correct.

Q. -- has one means of access, correct?

A. Correct.

Q. Okay. So let’s look at the next development over to the east, which I’ll represent to you is called Boxwood.

A. Yep.

Q. Right in here, right?

A. Yes. I think you might be missing, are you missing two units?

Q. Yeah, I may.

A. That's fine.

Q. I don't want to be inexact about it.

A. We got you. I think there's 27 in there.

Q. Right. And that development has a means of access, correct, right here? Same --

A. Correct.

Q. And then if we go a little further to the east, this development right here, you can see where it says Seminary Drive. That, do you know how many homes are there?

A. I do not know off the top of my head.

Q. Okay. That development has one means of access, does it not?

A. Correct, correct.

Q. Okay. And then the subject development is going to have one means of access onto West Joppa Road, right?

A. Through the connection it's going to have two means of access.

Q. Well, if it's as proposed, as we sit here

today, the development plan shows one means of access, right?

A. It shows, it shows one means of access with one other gated means of access. But yeah, okay.

Q. Yeah. Well, that's fair. Put it this way, it shows at least one means of access, right?

A. Okay. Okay.

Q. Correct?

A. Correct.

Q. Okay. And so each of these developments, the proposed development, the Meadows, Boxwood and this development that I last highlighted, which I'll represent to you is Seminary Ridge, all of those developments, number one, have less than 100 units, 99 or less, and each of those developments has one means of access, correct?

A. Well, the two, the one that is going on Mays Chapel now actually if you look at, they are two separate communities, it's 126 units, and it's 126 units with one means of access. Just so I'm being clear. Do I make myself clear?

Q. Yeah, but each of the developments, again, the question is I understand what you're saying, but each of the developments that we've gone through has one means of access, correct?

A. One means and one shared means, yes.

Q. Okay. All right. Let me show you one more exhibit. This is the comment of the fire marshal in this case. I'll blow it up. It's dated March 8, 2021. Do you see that?

A. Yeah, I do see it.

Q. Okay. I did not see any development plan comment from the fire marshal, only this comment. Are you familiar with whether or not, maybe not, maybe Mr. Chen will correct me, but are you familiar with a development plan comment being issued by the fire marshal?

A. I am not off the top of my, I'd probably have to go back and look through my file real quick. I've got water, sewer, I don't see anything from, that is for, is that for the concept plan? Or is that for the development? That's concept plan.

Q. It says concept plan on it. I just, as I said, I haven't seen --

A. There hasn't been, oh, I gotcha. Let me check, sir, I'm sorry. We've got a little bit of a pile here. Concept plan comments. Environmental. What's that for? That's Department of Rec. I don't seem to have one from the fire department for the development plan. Oh.

Q. Okay. You may or may not have seen this, but there isn't any reference in any of the comments by the fire marshal to any safety concerns from the fire marshal about making this the access or connection with Mays, with the Meadows, to be emergency only and gated from vehicular access. Do you agree with that?

A. I'd have to read the whole thing, but I'm assuming you are, let me see. Can you go down a little bit more? [mumbling while reading] Is it only nine comments? Is there more to the bottom? I'm sorry. No problem. [mumbling while reading] fire code requires that the address numbers be [mumbling while reading]. Yeah, there is no mention of the emergency access.

Q. Okay. I mean, are you as a representative

of DPR, and I guess as DPW&T as well, are you aware of anyone conveying any concerns to you or anyone else regarding the ability of the fire department to access this proposed development, if approved, because of the limited access that's been proposed? Have you heard that from anybody at all?

A. No, I have not.

Q. Okay. And in fact, it's not, that kind of access is not really uncommon. You can, there are, there is other places in the county where that same type of access is provided for, correct?

A. In terms of two access points?

Q. No, I'm talking about an access that is not, that's blocked off for vehicular access, other than emergency, and is dated. It's not unusual at all, is it?

A. I don't, I know, I have heard that there are blocked off access points. I haven't seen them myself personally.

Q. Okay. Just to be clear, we keep on talking about a gate. How about in your experience, what will actually be there? Will it be, I don't want anybody

to be left with the impression that it's an iron gate that's 12 feet high. What will be there in your experience, if approved?

A. I don't, I will not know that until the details come in, but considering the fluency of the area, I would think it would probably be, I would assume it would be a pretty decorative gate, that's what I would guess. I do not know how it opens, if it swings open, if it's slide open, or how it is. I just haven't seen the details at this time.

Q. But it will be such, I think we've talked about this already, it will be such that pedestrians can walk between the two developments, just vehicles cannot, correct?

A. I would think that the developer would think both neighborhoods would want that, yes. I would think that. I just haven't seen any, once we get the construction drawings, that'll become much more defined.

Q. Okay.

A. I would think.

Q. And then lastly on this issue, you

mentioned something about unusual circumstances when there's 150 or so units or more. I don't think we get there, as I think I've already indicated, but when you were asked about what type of unusual circumstances you think you were referring to, you said safety concerns. And by that --

A. [indiscernible]

Q. Go ahead, I'm sorry.

A. That's what I'm saying, maybe. Continue.

Q. So in other words, if we, if there are concerns from the community about the vehicles, not pedestrians, but vehicles going from one development to another, from the proposed development to Meadows, that may, in your experience, that may be something that would allow this access to remain the way it is, if that's proven to, is that fair?

A. Yes, I would think for the safety, yes.

Q. Okay. For instance, do you know whether or not the Meadows, the community next door has sidewalks or not? Do you even know that?

A. No, I haven't been involved in

development. I would need to go out there and look at that.

Q. Do you know how wide the road is, for instance? Mays Chapel Road.

A. I think the road leading, I think the road leading up is 24 feet wide, and it comes up to the other development, I believe.

Q. Okay. All right. Lastly, on the sewer issue, let me show you, this is a four-page document, looks to be, correct me if I'm wrong, looks to be the development plan comments for DPR, March 8, 2020.

A. Yeah. They are the concept plan comments, yes.

Q. Oh, they are? You're right, I'm sorry.

A. Yes. Yes, they are.

Q. So I'll mark these as exhibit 12. Let me go to the bottom to number 18, which was discussed before by you, where it indicates eight sewer segments that don't have adequate capacity, correct?

A. One second. Is this the development, I apologize.

Q. I'll blow it up so you can see it. You've already said it was a concept plan comments.

A. Yeah. Okay. This was, I didn't know these were added to the concept plan. I thought these were just added to the development plan comments. Yeah, they are the eight sections that are to be improved, yes.

Q. Okay. And it says, to be more precise, it says the following existing eight sewer segments do not have adequate capacity to accommodate the proposed 61 homes, correct?

A. Yes.

Q. Okay. And then I think you've indicated that the bottom six segments on this chart below were to have been completed by Hopkins, correct?

A. Yes, yes.

Q. And that the first two segments in that chart are to be improved by this developer in this case, correct?

A. Correct.

Q. And by the way, these improvements are not just the lining of these pipes, but we're talking

replacement, altogether replacement of these eight inch diameter sewer lines with larger sewer lines, correct?

A. Yes. They are to be upsized, correct.

Q. Okay.

A. It's not a rehab, it's a replacement. You are correct.

Q. And I think you indicated that the developer in this case has already prepared, is ahead of the game apparently, has already prepared sewer design plans for these two sewer segments, correct?

A. Correct.

Q. One thing I don't think you mentioned, let's go down to the beginning of page 3, I'll blow it up a little. It actually says, does it not, that this development cannot connect to public sewer until all of the sewer improvements are completed, correct?

A. Correct.

Q. So that would include the two that, as you've indicated, the county believes that this developer is responsible for, and it would include the other six that the county believes Hopkins is responsible for,

correct?

A. Correct.

Q. Okay. And then it says, and I highlight this, umber 19, says developer is responsible for acquisition of off-site easements for sewer improvements. I take it improvements that are being referred to here and 19 of the same ones we're talking about in Section 18?

A. Yeah, the first, they are responsible for the easement relating to their two sections, and they did, that's, they have access, and it's shown on, and it is actually shown on our construction drawing.

Q. Okay. So they have easements, and they have acquired easements for the two segments, correct?

A. Correct, absolutely.

Q. All right.

MR. MCCANN: Your Honor, I don't think this has been introduced, so I would move this in as exhibit 12 without the highlighting.

THE JUDGE: Yes, exhibit 12. We do not have this.

(Protestant Exhibit No. 12 was marked for identification and entered into evidence.)

MR. MCCANN: Great. Thank you.

BY MR. MCCANN:

Q. Next, bear with me. I'm usually faster than this. So I'll mark this as exhibit 13. This is a one-page document, this time from Mr. Bayer, [phonetic] acting chief of sewer design, to Mr. Dasai, addressing the same issue, correct? And I'll blow it up.

A. Correct, correct.

Q. Okay. And this memo likewise says that the Greenspring Manor development may not connect public sewer until the agreement with Hopkins is enforced, and all sewer improvements are completed, correct?

A. Correct.

Q. Okay.

MR. MCCANN: Your Honor, I would move that in as exhibit 13.

THE JUDGE: What was the date on that one?

MR. MCCANN: Date is March 3, 2021.

THE JUDGE: March 3rd, okay. Thank you. Any

objection, there's no objection, right?

MR. ROSENBLATT: No objection.

THE JUDGE: Thank you.

MR. ZIMMERMAN: No objections.

(Protestant Exhibit No. 13 was marked for identification and entered into evidence.)

BY MR. MCCANN:

Q. Next, this likewise is a one-page memorandum, this time from Lisa Icolt, [phonetic] chief of the sewer design section. Do you see that?

A. Yes.

Q. Okay. One page, also dealing with the same issue of the sewer segments, correct?

A. Right.

Q. Okay. And Ms. Icolt indicates in this paragraph, and I think you said as much, that the improvements that Hopkins was to undertake have not been completed, correct?

A. Correct.

MR. MCCANN: Your Honor, I would move that as exhibit 14.

THE JUDGE: And the date on that one?

MR. MCCANN: That is August 2, 2021.

MR. ZIMMERMAN: No objection.

THE JUDGE: Thank you.

(Protestant Exhibit No. 14 was marked for identification and entered into evidence.)

MR. MCCANN: We're getting there.

BY MR. MCCANN:

Q. All right. Going back to March 3, 2021 memo, which is I think is exhibit 13, I forgot to ask you this question. It says in the second paragraph, again, March 3rd, 2021, it says in the second paragraph, PAI could not enforce this requirement, and the project was completed without the necessary sewer system improvements being completed. Did I read that correctly?

A. Yes, you did.

Q. Okay. What, if anything, can you tell us about that? That is --

A. I have to be honest, that is before my time. I became aware of that as I read it at that moment. I don't know anything about the past project

that was required. I wasn't here. I can do research if you need me to.

Q. That's okay. And I think you indicated, I'm trying to avoid going there if we don't have to, but I think you've indicated that you do not know, or maybe you said you didn't look to see where these sewer segments are located in relationship --

A. No, I didn't know where they were specifically located, no, I do not.

Q. Okay. Okay. I think that's all I have. Bear with me one second, Mr. Cauley.

A. Sure, sure.

Q. Oh, I'm sorry.

MR. MCCANN: I would like to take a look if I could at that 12D, Your Honor. I'm not sure if it was sent.

THE JUDGE: Do you have it?

MR. MCCANN: I do. Thank you for doing that.

BY MR. MCCANN:

Q. So this is 12D, which I just received from Judge Murphy. Remember this August 26, 2022 --

A. Yes.

Q. So you spoke, real quick, I know it sounds like we're going to have Mr. Nebre here.

A. Right.

Q. But anything that you know or conveyed about during the course of the hearing today regarding traffic that was based on your communications solely, or was solely based on your communications with Mr. Nebre, correct?

A. Correct.

Q. In other words, you did not, you personally did not look into any issue in this case regarding the traffic impact study, the level of service or the --

A. Well, we have a map that basically tells us the level of service, so I can see that pretty readily. But in terms of sitting down and reviewing and analyzing the traffic impact study, no, I did not. I refer back to Mr. [indiscernible]

Q. Okay. And I don't want to belabor it, but this language in 3, that's not your language, that's Mr.

Nebre's correct?

A. Yes, it is.

Q. Okay. Did you draft this? Or did he draft it?

A. I drafted it. I drafted it based on discussions with Chris to get some follow up.

Q. Okay.

A. Because I knew this was going to be a little problematic.

Q. So you drafted number 3?

A. I drafted the whole, yes.

Q. Okay. Okay.

MR. MCCANN: That's all I have. To the extent I didn't do 13 or 14, I would do so now, Your Honor. Thank you.

THE JUDGE: Yes, those are accepted.

MR. MCCANN: Okay. Thank you, Mr. Cauley.

MR. CAULEY: Thank you.

THE JUDGE: Hold on, Mr. Cauley. We've still got Mr. Zimmerman.

MR. CAULEY: Oh, I'm here.

THE JUDGE: Mr. Zimmerman?

MR. ZIMMERMAN: Excuse me. May I begin? Let me see if I can share my, do a little better job on sharing myself with People's Counsel 6, public works department. Sorry.

THE JUDGE: I sent it to you.

MR. ZIMMERMAN: Let's see, I'm trying to, here we go, I think. I don't know if I have to go to Adobe, or, wait a minute. Okay. I think I got it, wait a minute.

THE JUDGE: You do, you got it.

MR. ZIMMERMAN: Here we go, here we go.

DIRECT EXAMINATION

BY MR. ZIMMERMAN:

Q. So Mr. Cauley, you can see this? People's Counsel 6? We're going to scroll down in a minute.

A. Okay.

Q. I don't know if I can, let me see if I can, okay. So this is the, I'll go to 75. Okay. So this is an August 12th comment from the Public Works Department.

A. Yes.

Q. Have you ever seen this, Mr. Cauley?

A. Yes, I believe, yes, I have.

Q. Okay. You didn't produce it today though, did you?

A. It's in our file. I did not produce it, no.

Q. Okay. You didn't show, I'm not criticizing, I'm just getting the information. You didn't happen to show it today?

A. No, I did not.

THE JUDGE: So just to be clear, Mr. Zimmerman, all the documents I put on the screen are what I chose out of the file to show him. He didn't choose them, just so we're clear.

MR. ZIMMERMAN: Okay. All right. Excuse me. I'm not trying to attach any blame here.

THE JUDGE: I'm just making clear.

MR. ZIMMERMAN: Right. Okay.

BY MR. ZIMMERMAN:

Q. Anyway, we haven't seen this before today,

for whatever reason. So let's take a look at the next page.

A. If I could clarify that?

Q. Sure, go ahead.

A. Can you go to the top of the page for a real quick second?

Q. I'm trying to go up now, and I'm being kind of blocked. Let's see. On the right hand, wait a minute.

A. I think that's their, is that their comment? Wait a second, let me just see. Development, development, intersection, this is response to, yeah, I believe these are the comments, it's DPWT's development plan comments that they send down to us, and then we incorporate, yes.

Q. Okay.

A. Go ahead.

Q. And by the way, just for the record, although most of us don't, Falls Road is a state road, but Joppa Road is a county road, am I correct?

A. You are correct. Falls Road is I believe,

yes, I'm pretty sure. I'm just making sure if Joppa Road, I believe Joppa Road is a county road, yeah.

Q. And Seminary Avenue is a county road or state road?

A. Seminary, let me just see real quick. Seminary I believe there's no, there's no route number I believe on Seminary. Hang on. There's no route number.

THE JUDGE: It should be Maryland 131, I think.

MR. CAULEY: Seminary?

THE JUDGE: Should be.

MR. CAULEY: Seminary is, maybe it is. If it has a route number on it, it is a state road.

BY MR. ZIMMERMAN:

Q. Okay. We'll get that confirmed. I think you're right. By the way, I think Greenspring Valley Road is a state road, too, isn't it? Or is it?

A. I'm not sure off the top of my, I'd have to go back.

Q. Sorry, didn't mean to interrupt. I'm going to scroll down to the next page of this comment, and I don't want to put you on the spot. Some of it looks

similar to what we saw. I'm going to scroll for a minute to say this exhibit also includes the Terry Curtis comment that we've seen, right? So it's, part of it, the Public Works comment I would suggest to --

A. [indiscernible] that's a zoning, they are two separate, I believe they are two separate documents, because the one up top is comments, and that's a zoning, that's a variance comment, I believe.

Q. Right, exactly. Combined two, I've combined two different documents in this exhibit, yes.

A. Okay.

Q. To point out to you that some of the language, and, you know, people can study, some of the language is the same on both documents. For example, number 4, or even number 1 on the Meadows of Greenspring and the regulation and so on, right? Do you see there's some overlap with these two documents, right?

MR. ROSENBLATT: Judge, at this point I'm objecting. Again, this is not an email even from Mr. Cauley's department. I don't know what purpose this serves, and it is information that you've already had

before you but being asked about someone's opinion that is not even here for examination.

THE JUDGE: So is --

MR. ZIMMERMAN: Do I need to respond to this?

THE JUDGE: So Mr. Zimmerman, just, if you could just move up one page. So what it is, it's actually a county document, so Department of Public Works memo, and attached to it is the comment, and I've actually read it, and it mirrors the Terry Curtis ZAC comment, just two different I guess piles. One went into the ZAC pile, one went into this one.

I mean, there should be no objection. I mean, I've read it, so I, you're trying to tell me they're very similar. The ones from Terry Curtis is already a county exhibit, so we have that one.

MR. ZIMMERMAN: Right, right. Anyway --

THE JUDGE: You can ask him about it, I mean, he can't, he's not going to go through line by line.

MR. ZIMMERMAN: Well, let me, and I'm going to be --

BY MR. ZIMMERMAN:

Q. I understand Mr. Cauley, you're not really, you're not really the engineer to talk about traffic issues, but you have been asked by the other lawyers some different things about different documents, and this is kind of a segue to Mr. McCann's questioning.

First of all, let's see, I want to get back to, do I have the Public Works comment up? Yeah. So do you know whether this Public Works comment was really coordinated with Terry Curtis's comment? I mean, do you know who really worked on this one?

A. Which one would that be?

Q. Well, the Public Works comment here, and the overlapping language on the Public Works Department, official comment on the development plan, and then Terry Curtis's email relating to the special variance which have overlapping language. So do you know whether Terry Curtis contributed, do you know who contributed to the Public Works Department comment here?

MR. MUDD: Objection.

MR. CAULEY: I wasn't involved [indiscernible]

MR. MUDD: Objection.

THE JUDGE: Go ahead, Mr. Mudd.

MR. MUDD: Sorry, Judge Murphy. I know Mr. Rosenblatt tried this, but I think this is the exact same issue that you ruled on that we should not be hearing from Mr. Cauley regarding information that may have come from a different source who is not here. We can't cross-examine that person. It was the same ruling you made for the Nebre email.

THE JUDGE: I just didn't know if he was going to say oh, sure, I know what this is, you know, because there is overlap between these two departments whether he was going to say that. Mr. Zimmerman, it might be easier and better for everybody if you just wait until Mr. Nebre comes for this first document, and again, the second one was already put into evidence.

I mean, the County exhibit, because remember, the top of the first page of this document is the Department of Public Works transportation.

MR. ZIMMERMAN: All right.

BY MR. ZIMMERMAN:

Q. Let me just say, Mr. Cauley, are there any

other official Public Works Department comments on the transportation issue that you know of?

A. None except what has been shown today, no.

Q. Did any other departments respond specifically to this comment and indicate they agreed, disagreed, or --

THE JUDGE: So again, this is for the Department of Public Works and Transportation. So, I mean, let's have Mr. Nebre do that.

MR. ZIMMERMAN: All right. Got it, got it.

BY MR. ZIMMERMAN:

Q. This is, if I'm permitted, a sequel to Mr. McCann's questions about what unusual situation there might be that would justify not having access to Mays Chapel Road with a connection. Could it be an unusual situation where you have F level intersections and having an access road might reduce the pressure on those intersections? Or at least Falls and Joppa. Would that be an unusual situation?

A. Say again?

Q. Is it an unusual situation that you have F

level intersection at Falls and Joppa Road, and that if you put, if you connect these two subdivisions, if you connect in Mays Chapel to Joppa Road, then it relieves some of the pressure on that F level intersection. Isn't that an unusual condition as well, but a condition which would suggest maybe we should have an access?

MR. MUDD: Objection, objection. He's now testifying.

THE JUDGE: Well, he's asking a question, but it sounds like he's asking a question that would probably maybe it sounds like it's helpful for your client if it's relieving the F intersection. That's sort of what I heard.

MR. ZIMMERMAN: You know, I'm actually trying to be fair, believe it or not. We try to be fair to everybody.

THE JUDGE: [indiscernible] Mr. Rosenblatt?

MR. ROSENBLATT: I did not take it that way.

THE JUDGE: I think that's what he was suggesting, that if the access gat is open all the time, then it relieves the congestion with the F level

intersection at Joppa and Falls.

MR. ZIMMERMAN: To some extent, to some extent.

THE JUDGE: To some extent. All right. So we'll overrule that objection.

MR. ZIMMERMAN: Okay. All right.

MR. CAULEY: It may, but it would probably be a better question for Chris than myself.

MR. ZIMMERMAN: Fair enough, Mr. Cauley. I've just got a couple more questions. I guess you haven't, you've talked with Kris Nebre about a few things, but you haven't actually talked to Terry Curtis about the situation subsequent to his email?

A. No. I have to be honest, I didn't know that email, again, if we did the variances together, I would have seen that email. I didn't see that email until today.

BY MR. ZIMMERMAN:

Q. Okay. I've just got a couple more questions. Which department, or which particular engineer or other qualified person can comment on whether or not there are some issues relating to the master water

and sewer plan, the overall adequacy of the sewer system, the basic services situation for sewer and the sewer shed, those kind of issues? Who could address that?

A. I can in coordination with DPWT. When we do our development plan review process and our CPC review process, one of the things that's always asked and answered and provided a memo is is the water system and sewer system out there adequate to meet the new development?

Or the demands for the new development, and there was no comment to that fact that that feeder system would be problematic with this new development. That's always part of the early process of the CPC review and a DPDI review.

Q. Well, is there a specific comment that says exactly what you just said?

A. Well, yeah.

Q. Something in writing that says the [indiscernible]

A. [indiscernible]

Q. You know, sewer shed is adequate, and that

there are no --

THE JUDGE: Hold on, you guys are, excuse me, but both of you are speaking over one another.

MR. ZIMMERMAN: Sorry.

THE JUDGE: Remember, this is being recorded, and the problem is it's going to be all jumbled, so just give, Mr. Zimmerman, finish your question, then Mr. Cauley can answer.

MR. ZIMMERMAN: Okay.

BY MR. ZIMMERMAN:

Q. Is there anything in writing from your department that you can point us to, and when I say your department, I mean the Public Works Department also, to indicate that the Jones Falls sewer shed has adequate capacity --

A. [indiscernible]

Q. -- to handle everything, and that there's no sewer problems, and that the things that were, for example, identified in Judge Beverongan's [phonetic] decision of a few years ago on the Bear Hills case, the CPC Falls Road, that we don't have to worry about any of

that? Is there any study or comment?

A. I apologize, I misstated. I meant that in general, when we get general comments to that effect, and on this particular case, yes, we received, if you saw the prior email, we received from DPW&T that there was a problem with the sewer shed, and that's why we have this sewer relief that was done, and I was mentioning it earlier, I meant it as a general, I should have been specific to this, on this one, yes.

The comments were all pulled up earlier, saying that they have to improve those sewer lines, and I apologize. Go ahead.

Q. Sorry, I didn't mean to interrupt you. Were you finished?

A. No. If DPW sent those comments down to us, and you, we've already went through them I believe about five minutes ago.

Q. I saw the comments that indicated certain improvements.

A. Right.

Q. That Mr. McCann really focused on.

A. Right.

Q. But what I'm asking you is whether there's an overall analysis and assessment in writing that these improvements will in fact resolve any of the problems that have been identified as to the adequacy of the Jones Falls sewer shed.

A. I, and this is something that I have to go back and talk to sewer specifically, but I believe they have a model of their system, and they know where they have problems in terms of [indiscernible] stuff, and then from there, they make a requirement for improvements, and --

Q. Yeah. Who would be the best person to discuss that issue?

A. It would probably be the Chief of Sewer.

Q. And who would that be?

A. Amy, Amy, I'm not sure, I don't remember her last, she's relatively new. Amy, I can get her last name.

Q. Okay. You can let us know.

A. I can let you know, but if I could, it

generally, if I could, the entire water and sewer system is analyzed upstairs by each department, and they know pretty much where their problems are, and hence that's where this memo came out of.

Q. Do you think it would be a good idea for somebody from that department to come in and give us a summary?

A. If you want to have a lesson on sewer modeling, sure. But I'm not sure it's necessary.

Q. All right.

MR. ZIMMERMAN: Judge, I think that's enough for me for today. Thank you.

THE JUDGE: All right. I think, Mr. Cauley, I think we are finished.

MR. CAULEY: Okay.

THE JUDGE: I know you can't believe it, but it's 10 of 4, you've been here all day.

MR. CAULEY: All right. You guys have a great day, a great rest of the day.

THE JUDGE: Thank you, Mr. Cauley. All right. Let Mr. Nebre know that I'll be emailing him.

MR. CAULEY: Yes, I will most certainly tell him that.

THE JUDGE: Thanks so much.

MR. CAULEY: Have a good day.

THE JUDGE: Great. It's 10 of 4. I know everyone wanted to go, what is everyone's thought in terms of what we can accomplish? Mr. Rosenblatt, do you have other witnesses? This was an all day affair with the county.

MR. ROSENBLATT: I had no idea it was going to take this long, but I unfortunately don't have anything that can be accomplished in the remaining work day, so I'm not sure whether we're going to start with more county people, like Kris Nebre, or the developer's case next hearing. We'll come in ready to go, if it's us, or if it's better to do the county first.

THE JUDGE: Any objection, Mr. McCann? Because I know that the two of you had emailed me and said we have all day, right? And I said yes, we have all day, and so it's, you know, still all day. I mean, I just, it's up to you all. I didn't want to, you know

[indiscernible]

MR. MCCANN: I'm a little concerned about finishing in the days we have, but I'm okay with stopping now. So maybe Adam and I can talk about getting some subsequent days.

MR. ROSENBLATT: Yeah.

THE JUDGE: You might need to include Mr. Zimmerman.

MR. MCCANN: I'm sorry, Mr. Zimmerman and Mr. Wyatt as well.

THE JUDGE: And Mr. Wyatt, we've been ignoring you, but you said you were participating as an individual, so I didn't ask to you to ask questions, because I assumed you weren't asking questions given everyone else's questions.

And so, you know, we have two more days, I think it's the 20th and 21st I think in the afternoon as I said. I'll check with Mr. Nebre, and I'll see if Mr. Nebre can do either of those days. I don't know whether he's available. The last time it was a little bit more difficult to get that day, but I think that's because

it’s the first time he had come to a hearing, and now that he has done it, I don’t think it’s going to be as tough. I don’t know that, but I’ll certainly check with him.

So if he could come and he’s available on that first day, we’ll have him right away. If not, I mean, either way I’ll let you guys know.

SPEAKER: Okay. Great. Appreciate it.

THE JUDGE: Okay. All right. Anything else? Let’s see. So, Mr. McCann, you have your exhibits. Are you going to submit what you just talked about today, all 14 of them?

MR. MCCANN: Yeah. I mean, I’m going to try to do it today if not tomorrow.

THE JUDGE: You don’t have to do it today. I was just saying yeah, that’s probably good for you to at least submit it, I mean, whenever the next time over is, you know,

MR. MCCANN: Yeah, 1 through 14 I have with an exhibit list. I’ll bring it over.

THE JUDGE: Yeah, I know you all have to keep

revising your exhibit list when you add stuff, I mean, like the developer does, too, with exhibit 1B, but, you know, that's just the way it goes.

MR. MCCANN: Yeah, I can do that. Can I ask you before we go?

THE JUDGE: Yes.

MR. MCCANN: I was trying to listen to Mr. Zimmerman and get my exhibits together. Are you, what do you have, if you don't mind me asking, for exhibit 9? I can't seem to recall what that was.

THE JUDGE: Is that for you?

MR. MCCANN: Yeah, I'm sorry. Our exhibit 9.

THE JUDGE: You said the DPR policy manual, 3/27.

MR. MCCANN: If I could, I could find that missing page and I'll send it to you and Adam if it's all right.

THE JUDGE: I don't have any [indiscernible]

SPEAKER: [indiscernible] come over a second.

THE JUDGE: So anyway, Mr. McCann, I don't have any of your exhibits.

MR. MCCANN: Right. I'm going to send them all, but what I'm saying is [indiscernible]

SPEAKER: [indiscernible] get out of this.

MR. MCCANN: -- because I couldn't ask questions about it. I think I'll send it to you, if Adam has objections --

MR. ROSENBLATT: No, no objection. I know what page you meant to be there, you just add it and make that the exhibit.

MR. MCCANN: Okay. Sounds good.

THE JUDGE: Okay. Yours were all county exhibits anyway, at least I recall, that's what I recall. Okay. Anything else?

MR. ZIMMERMAN: I was going to say, if you think it will expedite the case next time, I'm willing to share all my exhibits with all the attorneys in advance so they can figure out, you know, what objections they want to make. That might, you know, make things quicker, although I think they're all public, I think they're all public records actually, but I'll be glad to share my exhibits, you know, with the other attorneys in the

meantime if that helps.

THE JUDGE: I'll let you all deal with that.

MR. ZIMMERMAN: All right.

THE JUDGE: Sound good? Okay. Anything else? I'm going to pause the record, or stop.

SPEAKER: Thank you, Judge.

THE JUDGE: See you guys next time.

SPEAKER: Bye bye.

THE JUDGE: Thank you, Your Honor.

(Whereupon the hearing was adjourned.)

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IN WITNESS THEREOF, I have subscribed my name on July 5, 2023.



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